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CONTAMINATION ASSESSMENT REPORT FOR BACHELOR ENLISTED QUARTERS
BUILDING 1586 NS MAYPORT FL
11/1/1994
ABB ENVIRONMENTAL

CONTAMINATION ASSESSMENT REPORT

**BACHELOR ENLISTED QUARTERS
BUILDING 1586**

**NAVAL STATION MAYPORT
MAYPORT, FLORIDA**

Unit Identification Code: N60201

Contract Number N62467-89-D-0317

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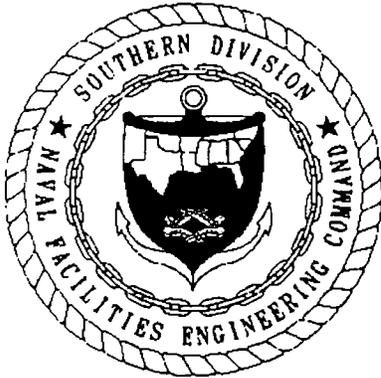
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November 1994



FOREWORD

Subtitle I of the Hazardous and Solid Waste Amendments (HSWA) of 1984 to the Solid Waste Disposal Act (SWDA) of 1965 established a national regulatory program for managing underground storage tanks (USTs) containing hazardous materials, primarily petroleum products. Hazardous wastes stored in USTs were already regulated under the Resource Conservation and Recovery Act (RCRA) of 1976, which was also an amendment to SWDA. Subtitle I requires that the U.S. Environmental Protection Agency (USEPA) promulgate UST regulations. The program was designed to be administered by the individual States, who were allowed to develop more stringent standards, but not less stringent standards. Local governments were permitted to establish regulatory programs and standards that are more stringent, but not less stringent than either State or Federal regulations. The USEPA UST regulations are found in the Code of Federal Regulations, Title 40, Part 280 (Title 40 CFR 280), *Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks*, and Title 40 CFR 281, *Approval of State Underground Storage Tank Programs*. Title 40 CFR 280 was revised and published on September 23, 1988, and became effective December 22, 1988.

The Navy's UST program policy is to comply with all Federal, State, and local regulations pertaining to USTs. This report was prepared to satisfy the requirements of Chapter 62-770, Florida Administrative Code (FAC) (*State Underground Petroleum Environmental Response*) regulations pertaining to petroleum contamination in Florida's environment as a result of spills or leaking tanks or piping.

Questions regarding this report should be addressed to the Environmental Coordinator, Naval Station Mayport, Florida, at (904) 270-6730, or to Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), Bryan Kizer, Code 1842, at DSN 563-0613 or (803) 743-0613.

EXECUTIVE SUMMARY

Bachelor Enlisted Quarters (BEQ) Building 1586 is located east of the turning basin at the intersection of Biltmore Street and Bailey Avenue at Naval Station (NAVSTA) Mayport, Mayport, Florida. A 4,000-gallon underground storage tank (UST) containing diesel fuel number 2 was used in the BEQ building heating system. A boiler fuel system leak was detected September 6, 1991, during a weekly fuel inventory. Galvanic corrosion of a section of the heating fuel system pipeline resulted in the release of approximately 3,000 gallons of diesel fuel outside the BEQ in September 1991. According to base personnel, the pipeline and associated UST have never been tested for tightness. The UST was installed in 1985 and is constructed of asphalt-coated steel. The system has steel piping and no leak detection systems.

Following the replacement of a section of the heating fuel pipeline and initial remedial activity (IRA) that included free product recovery and contaminated soil and groundwater removal, ABB Environmental Services, Inc. (ABB-ES), performed a preliminary contamination assessment (PCA) to assess the effectiveness of the IRA and, if necessary, recommend appropriate further action for the site. ABB-ES performed the PCA on April 12 through 14, 1993, and recommended a contamination assessment (CA) to assess the horizontal and vertical extent of petroleum contamination at the site.

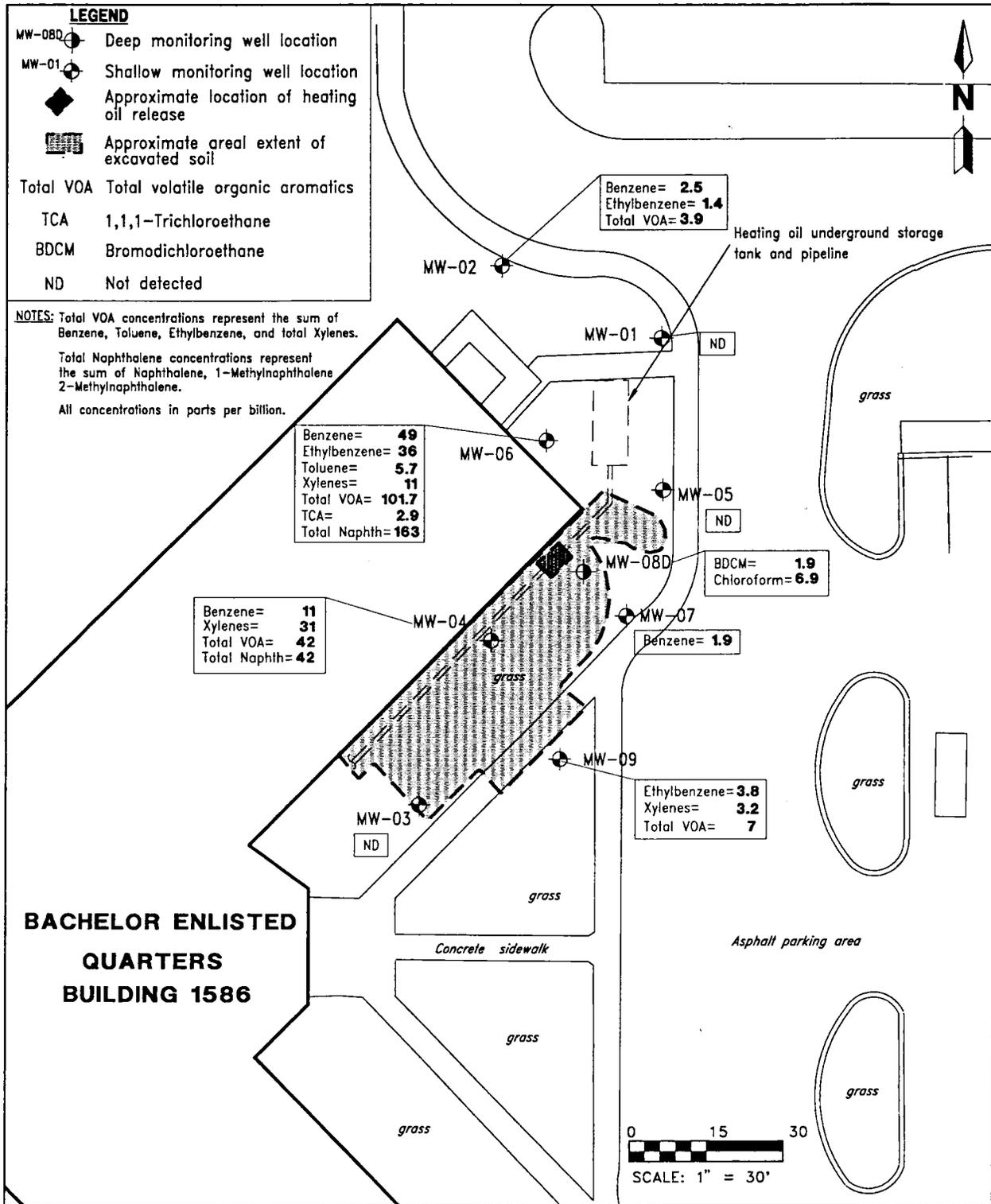
ABB-ES was contracted by the Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) to perform a CA and submit a contamination assessment report (CAR) for the site. The CA was conducted from May to June 1994 following State guidelines for petroleum assessment and cleanup, which are outlined in Chapter 62-770, Florida Administrative Code (FAC). The findings, conclusions, and recommendations of the NAVSTA Mayport BEQ site CAR are summarized below.

The water table was encountered at approximately 5 to 6 feet below land surface (bls). The general groundwater flow direction in the surficial aquifer is northeast to northwest.

Only the surficial, unconfined aquifer was encountered during drilling operations. Water in the upper part of the unconfined surficial aquifer is relatively fresh. Generally, over much of the facility, groundwater at depths greater than 40 feet bls becomes brackish and is classified as G-III.

There are two known potable wells in the NAVSTA Mayport area. There are two onsite wells for potable and irrigation water within a 1/2-mile radius of the site. The closest potable well is upgradient of the site. Both wells have total depths and open hole intervals in the Floridan aquifer system and are separated from the shallow sediments and the surficial aquifer by the sediments of the Hawthorn Group. Potable water wells have not been nor are expected to be impacted by petroleum contaminants from the BEQ site.

Benzene, toluene, ethylbenzene, xylenes, naphthalenes, total recoverable petroleum hydrocarbons (TRPH), 1,1,1-trichloroethane (TCA), and several polynuclear aromatic hydrocarbons (PAHs) were identified in groundwater samples (see Executive Summary Figure). Benzene, total volatile organic aromatic (VOA) compounds, and total naphthalenes exceed State target levels for G-II in several monitoring wells at the site.



EXECUTIVE SUMMARY FIGURE



CONTAMINATION ASSESSMENT REPORT
BACHELOR ENLISTED QUARTERS BUILDING 1586
NAVSTA MAYPORT
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The areal extent of benzene, total VOA, and total naphthalenes in groundwater appears to be restricted to the vicinity of the fuel pumphouse. The vertical extent of total VOA and total naphthalenes in groundwater does not appear to exceed 30 feet bls.

Free product was not observed in any of the shallow monitoring wells or recovery wells at the site.

Soil contamination detected at the site appears to be restricted to the vicinity of the fuel pump housing and the pipeline release. The vertical extent of excessively contaminated soil is approximately 6 feet bls.

Based on the findings and interpretations of this contamination assessment, ABB-ES recommends monitoring only (MO). The following conditions considered essential for an approvable MO status have been met: (1) the source of the contamination has been abated (i.e., the broken section of fuel pipeline has been repaired), (2) free product is not currently present at the site, (3) excess soil contamination is minimal, and (4) the groundwater contamination is not widespread, is not extending offsite, and is not migrating vertically.

Monitoring wells should be sampled quarterly for the appropriate analyses for a period of 1 year. Results of analyses will be compared to "action levels" (upper limit contaminant concentrations above which the MO program is no longer considered appropriate) derived from MO criteria to determine if the MO program should continue for the specified duration. If contaminant concentrations increase, then resampling or supplemental assessment will be performed.

ACKNOWLEDGMENTS

In preparing this report, the Underground Storage Tank Section of the Comprehensive Long-Term Environmental Action, Navy group at ABB Environmental Services, Inc., commends the support, assistance, and cooperation provided by the personnel of the Naval Station Mayport, Mayport, Florida, and Southern Division, Naval Facilities Engineering Command.

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GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
BEQ	Bachelor Enlisted Quarters
BDL	below detection limits
BTEX	benzene, toluene, ethylbenzene, and xylenes
bls	below land surface
BOSS	Base Operations and Support Services
CA	contamination assessment
CAP	Contamination Assessment Plan
CAR	Contamination Assessment Report
CFR	Code of Federal Regulations
CLEAN	Comprehensive Long-Term Environmental Action, Navy
CompQAP	Comprehensive Quality Assurance Plan
CTO	Contract Task Order
EDB	1,2-Dibromoethane (ethylene dibromide)
EIC	Engineer-in-Charge
ERG	Environmental Recovery Group
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FDER	Florida Department of Environmental Regulation
ft/day	feet per day
ft ² /day	square feet per day
FID	flame ionization detector
GC	gas chromatograph
gpm	gallons per minute
HSWA	Hazardous and Solid Waste Amendments of 1984
ID	inside diameter
IRA	Initial Remedial Action
MCL	maximum contaminant levels
mg/l	milligrams per liter
μg/l	micrograms per liter
msl	mean sea level
MOP	monitoring only plan
MTBE	methyl tert-butyl ether
μmhos/cm	micromhos per centimeter
NAVSTA	Naval Station
NGVD	National Geodetic Vertical Datum
NOAA	National Oceanic and Atmospheric Administration
NFAP	No Further Action Plan
OVA	organic vapor analyzer

GLOSSARY (Continued)

PAHs	polynuclear aromatic hydrocarbons
PCA	preliminary contamination assessment
PCAR	Preliminary Contamination Assessment Report
POA	Plan of Action
ppb	parts per billion
ppm	parts per million
PVC	polyvinyl chloride
QA/QC	quality assurance and quality control
RCRA	Resource Conservation and Recovery Act
SOUTHNAV-	
FACENCOM	Southern Division, Naval Facilities Engineering Command
SWDA	Solid Waste Disposal Act of 1965
TCA	trichloroethane
TRPHs	total recoverable petroleum hydrocarbons
USEPA	U.S. Environmental Protection Agency
USCGS	U.S. Coastal and Geodetic Survey
UST	underground storage tank
VOAs	volatile organic aromatics
VOCs	volatile organic compounds

1.0 INTRODUCTION

ABB Environmental Services, Inc. (ABB-ES), was contracted by Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) to perform a contamination assessment (CA) and submit a contamination assessment report (CAR) for the Bachelor Enlisted Quarters (BEQ), Building 1586, at Naval Station (NAVSTA) Mayport, Florida. The scope of services is described in Contract Task Order (CTO) No. 077, the Plan of Action (POA), and the Contamination Assessment Plan (CAP) and included the following:

- analyzing soil samples in the unsaturated zone to assess the concentrations of volatile organic compounds (VOCs) in soil,
- installing temporary piezometers and recording groundwater elevations to assess the groundwater flow direction and hydraulic gradient at the site,
- installing and sampling groundwater monitoring wells to assess the horizontal and vertical extent of groundwater contamination,
- performing a potable well inventory within a ½-mile radius of the site, and
- reducing and analyzing pertinent data gathered during the CA to complete the CAR.

The CA was conducted following State guidelines for petroleum assessment and cleanup, which are outlined in Chapter 62-770, Florida Administrative Code (FAC). The field investigation for the CA of the BEQ site was initiated in May 1994 and completed in June 1994.

This CAR addresses findings concerning petroleum contamination in soil and groundwater. The following sections of this CAR present the background information, data compilation, field investigative results, and recommendations for further action at the site.

For simplicity, the prefix MPT-1586 has been dropped from soil boring and monitoring well designations in the text, tables, and figures of this report.

2.0 SITE DESCRIPTION AND HISTORY

The U.S. Naval Station at Mayport, Florida, is located about 15 miles east-northeast of downtown Jacksonville, Florida (Figure 2-1). NAVSTA Mayport was established in 1942 on approximately 700 acres of land. The original mission of the station included use of patrol craft, target, and rescue boats. The station was placed in caretaker status in 1946, reopened in 1948, and in 1952 was assigned an aircraft carrier. Today NAVSTA Mayport is primarily involved in intermediate level maintenance of equipment, ships, aircraft, and other support units assigned to that part of the Second Fleet stationed at the facility.

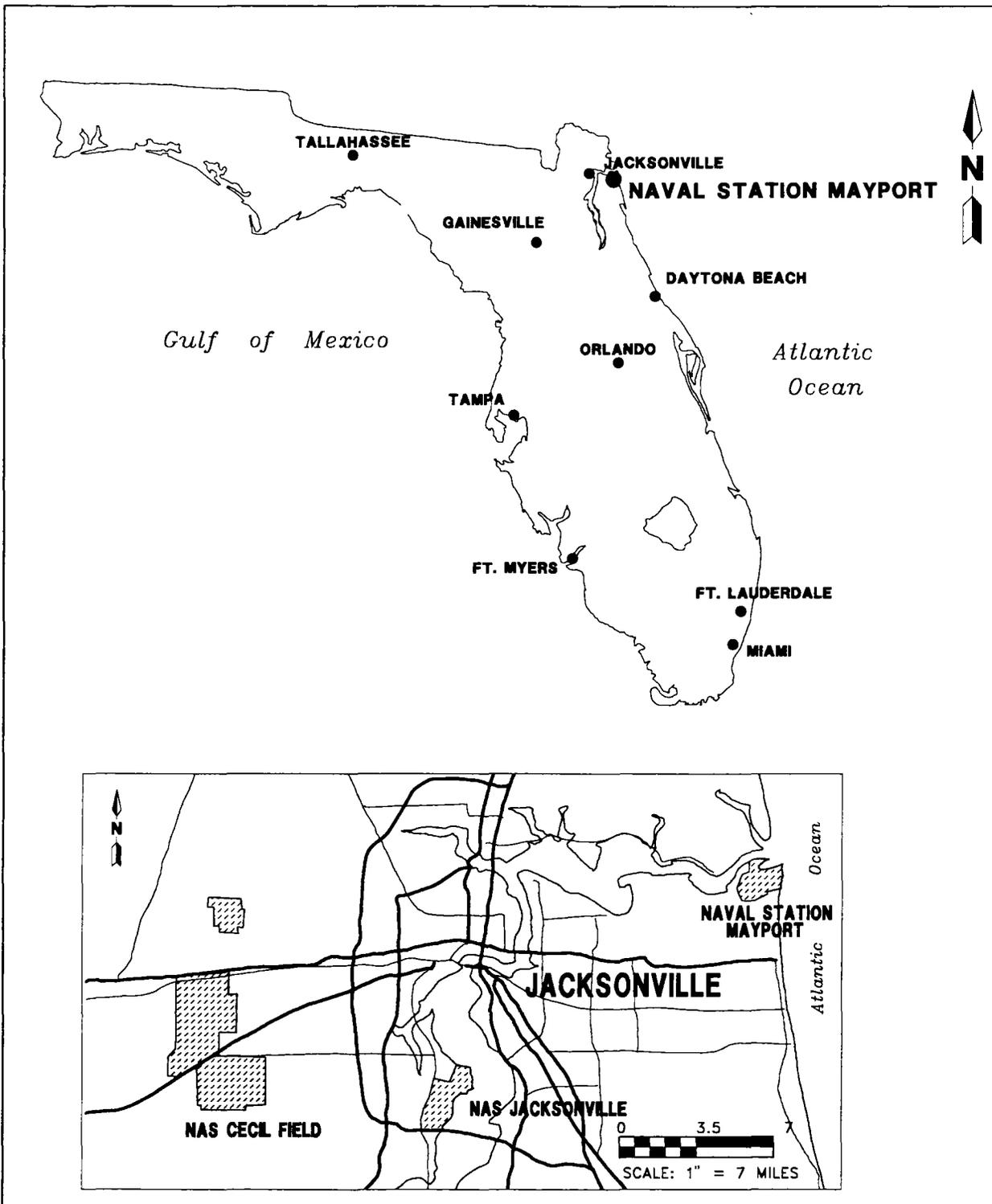
The BEQ site, Building 1586, is located in the northeast section of NAVSTA Mayport east of the turning basin at the intersection of Biltmore Street and Bailey Avenue (Figure 2-2). The BEQ site consists of an underground storage tank (UST) containing diesel fuel number 2 used in the building heating system. A boiler fuel system leak was detected September 6, 1991, during a weekly fuel inventory. Galvanic corrosion of a section of the heating fuel system pipeline resulted in the release of 3,000 gallons of diesel fuel outside the BEQ in September 1991. According to base personnel, the pipeline and associated 4,000-gallon UST had never been tested for tightness. The UST was installed in 1985 and is constructed of asphalt coated steel. The system has steel piping and no leak detection systems.

2.1 PREVIOUS PETROLEUM RELEASE. Based on information provided by the Base Environmental Coordinator, initial site assessment was conducted by Enviropact in September 1991. Soil samples were obtained and the headspace was screened using a field organic vapor analyzer (OVA) equipped with a flame ionization detector (FID). Results are included in Appendix A, Site Background Information.

The corroded portion of the fuel supply pipeline was replaced in September 1991. In addition, two 24-inch by 48-inch inside diameter (ID) perforated, corrugated metal pipes were installed to act as recovery wells to remove any remaining free product from the groundwater at the site. The Base Operations and Support Services (BOSS) contracted with Environmental Recovery Group (ERG) for services to implement an initial remedial action (IRA) at the site, which included removal of approximately 800 gallons of free product, 2,000 gallons of contaminated groundwater, and 270 cubic yards of contaminated soil. The water-contaminated free product and the contaminated groundwater were disposed at the NAVSTA Mayport wastewater treatment facility. Petroleum-contaminated soil was transported offsite for thermal treatment. The excavated area was reportedly backfilled with 4 feet of gravel, covered with a plastic Visqueen™ liner to act as a vapor barrier, then covered with an additional 2 feet of topsoil.

During the excavation, RSDI Environmental, Inc., conducted onsite soil screening. Soil borings were completed to an average depth of 4 feet below land surface (bls). From September 10, 1991, through September 24, 1991, soil samples were collected using a stainless-steel hand auger and were screened with an OVA equipped with an FID. Soil screening results and site sketches from the 1991 RSDI report are included in Appendix A, Site Background Information.

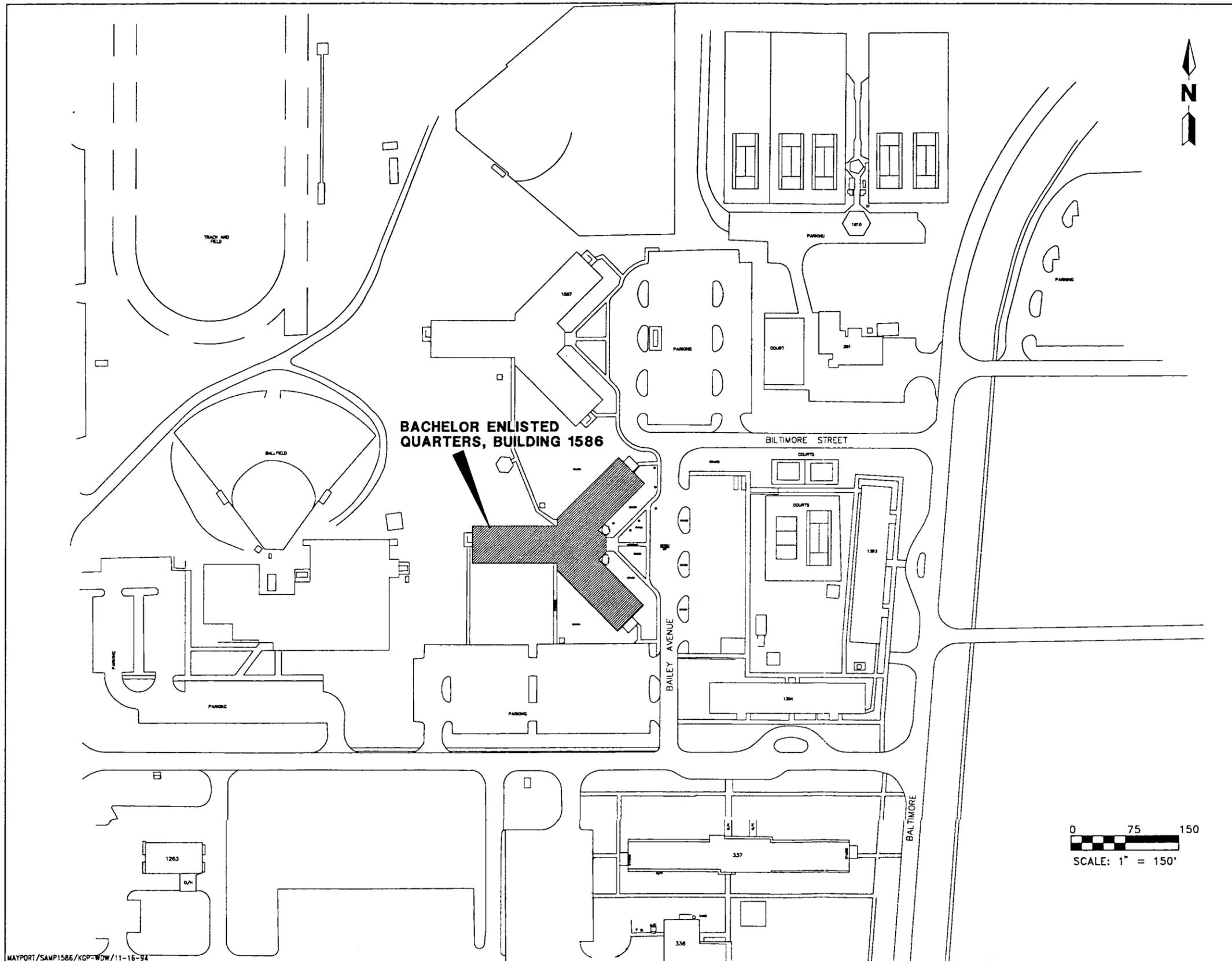
On October 17, 1991, 353.08 tons of petroleum-contaminated soil were thermally treated by Anderson Columbia Co., Inc., in their thermal desorber plant in



**FIGURE 2-1
FACILITY LOCATION MAP**



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BUILDING 1586
NAVSTA MAYPORT
MAYPORT, FLORIDA**



MAYPORT/SAMP1586/KGP-WOW/11-16-94

**FIGURE 2-2
SITE LOCATION MAP**



**CONTAMINATION ASSESSMENT
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Maxville, Florida, under permit number A0-10-91939. Treatment was completed to levels at or below soil cleanup standards set forth by the Florida Department of Environmental Protection (FDEP) Bureau of Waste Cleanup. A copy of the Certificate of Thermal Treatment documenting successful treatment of the contaminated soil is included in Appendix A, Site Background Information.

Following the fuel supply pipeline repair and subsequent efforts to recover free product and remove contaminated soil and groundwater, ABB-ES performed a preliminary contamination assessment (PCA) to assess the effectiveness of previous cleanup actions and, if appropriate, recommend action at the site. The results of the PCA indicated that a CA should be conducted at the site to assess the horizontal and vertical extent of petroleum contamination as described in Chapter 62-770, FAC. On July 8, 1993, ABB-ES submitted a Technical Memorandum summarizing the findings, conclusions, and recommendations of the PCA to SOUTHNAVFACENGCOM. A copy of the Technical Memorandum for the BEQ site is attached in Appendix A, Site Background Information.

2.2 1993 PRELIMINARY CONTAMINATION ASSESSMENT. ABB-ES performed a PCA on April 12, 13, and 14, 1993. The objectives of the PCA were to assess the effectiveness of the previous cleanup, estimate the extent of petroleum contaminants in the soil and groundwater, and recommend appropriate action for the site. The TerraProbeSM system was used to obtain groundwater and soil samples at 11 boring locations for field screening and laboratory analyses.

Soil and groundwater data gathered during the BEQ site PCA were summarized in the Technical Memorandum submitted to SOUTHNAVFACENGCOM in July 1993 (Appendix A, Site Background Information). The findings, conclusions, and recommendations of the Technical Memorandum are summarized below.

- Soil encountered at TerraProbeSM boring locations appears to be fill material, and typically consisted of fine-grained silty clayey sand with shell fragments throughout.
- Groundwater beneath the site was encountered at approximately 5 to 6 feet bls.
- The apparent groundwater flow direction at the site is toward the northwest.
- Free product was not encountered in any soil boring locations or recovery wells at the site.
- Contaminants detected in saturated soil samples by field gas chromatograph (GC) headspace screening samples include benzene and toluene.
- Groundwater contaminants detected during the PCA include total volatile organic aromatics (total VOAs), which are defined in Chapter 62-770, FAC, as the sum of benzene, toluene, ethylbenzene, and xylenes (BTEX); polynuclear aromatic hydrocarbons (PAHs); total naphthalenes, the sum of naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene; and total recoverable petroleum hydrocarbons (TRPHs).

- Contaminant concentrations in groundwater samples that equal or exceed FDEP standards or target levels include total VOAs, total naphthalenes, PAHs, and TRPHs.
- The contamination at the BEQ site emanated from the broken fuel oil pipeline associated with Building 1586. The pipeline has been repaired and excessively contaminated soil associated with the pipeline release has been removed from the site.
- Soil at the site is excessively contaminated, as defined in Chapter 62-770 FAC, to a depth of at least 6 feet bls along the boundary of the excavated area.
- Groundwater samples at one location along the fuel pipeline (approximately 15 to 20 feet from the source area) contain contaminant concentrations exceeding standards established in Chapter 62-770, FAC.

2.3 POTABLE WELL SURVEY. ABB-ES conducted a survey of potable water wells within a ½-mile radius of the site. NAVSTA Mayport currently uses two onsite wells for potable and irrigation water. These wells are identified as N-3 (potable water) and D-236 (irrigation water). Production and potable water wells located within a ½-mile radius of the site are shown in Figure 2-3.

The closest well, N-3, is upgradient of the site, and well D-236 is sidegradient to the south. Wells N-3 and D-236 have total depths and open hole intervals in the Floridan aquifer system. Table 2-1 lists the construction and operation information concerning the wells. These wells are separated from the shallow sediments and the shallow aquifer system by Hawthorn Group sediments. The Hawthorn Group, which is a regional confining unit, is approximately 300 feet thick at the facility.

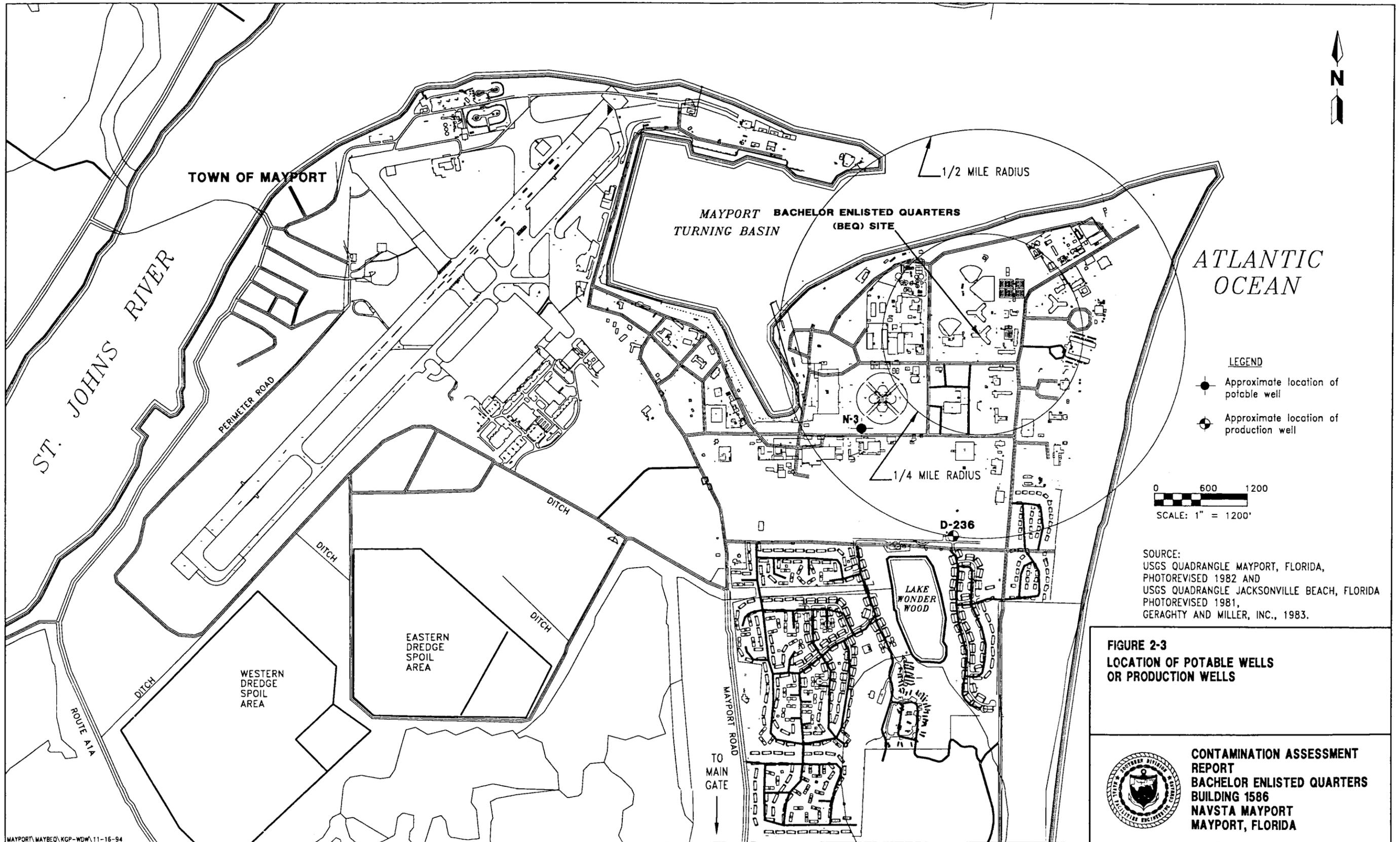
**Table 2-1
Potable Well Data**

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Well Designation	Owner	Date Installed	Casing Diameter (inches)	Surface Elevation (ft msl)	Total Depth (feet)	Interval Open to Formation (feet depth)	Status
N-3	U.S. Navy	1979	16	10	1,000	433 to 1,000	In use
D-236	U.S. Navy	1962	6	9	814	440 to 814	Used for irrigation

Source: Geraghty & Miller, 1983.

Note: ft msl = feet above mean sea level.



TOWN OF MAYPORT

MAYPORT BACHELOR ENLISTED QUARTERS (BEQ) SITE
TURNING BASIN

1/2 MILE RADIUS

ATLANTIC OCEAN

LEGEND

- Approximate location of potable well
- ⊗ Approximate location of production well

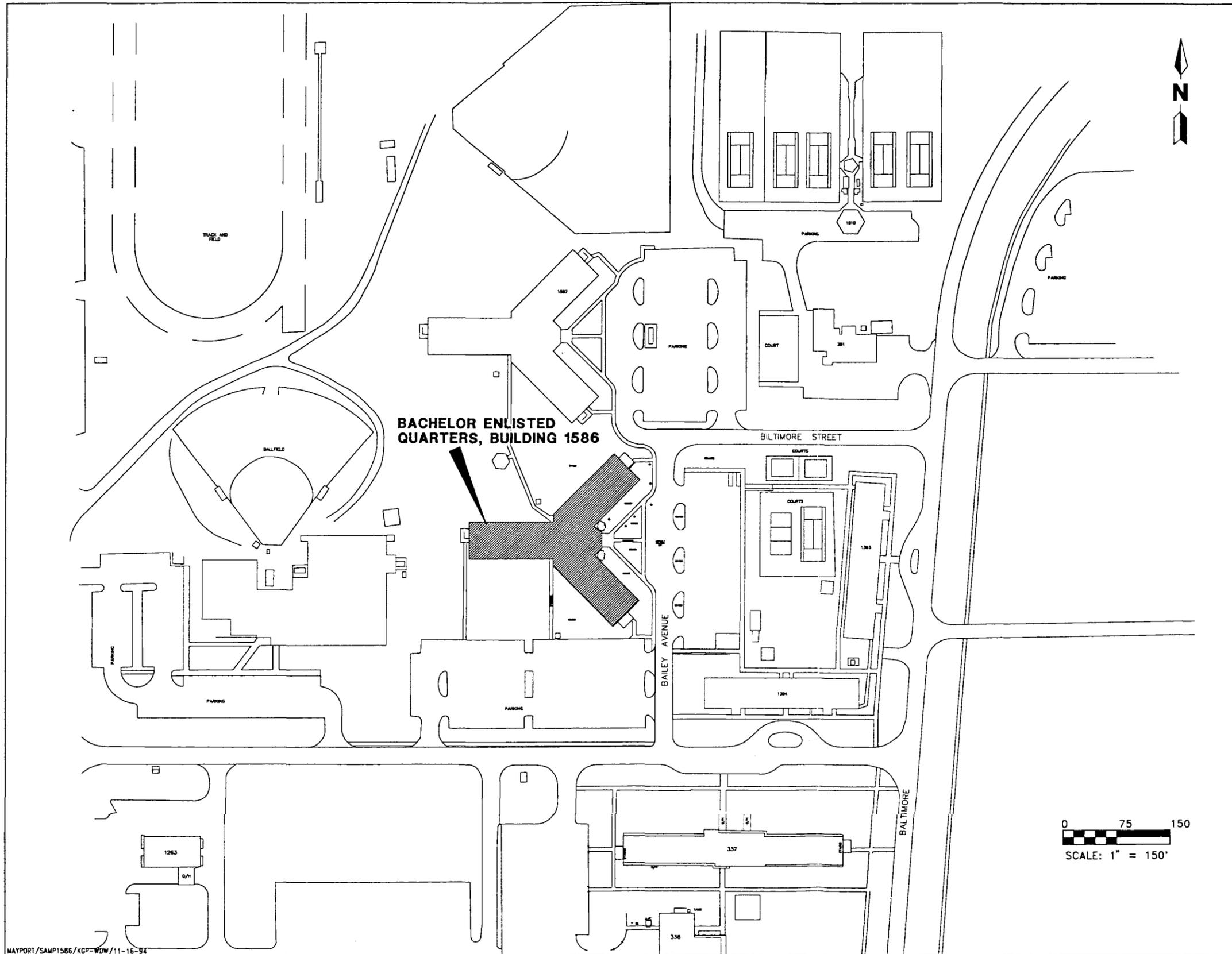
0 600 1200
SCALE: 1" = 1200'

SOURCE:
USGS QUADRANGLE MAYPORT, FLORIDA,
PHOTOREVISED 1982 AND
USGS QUADRANGLE JACKSONVILLE BEACH, FLORIDA
PHOTOREVISED 1981,
GERAGHTY AND MILLER, INC., 1983.

FIGURE 2-3
LOCATION OF POTABLE WELLS
OR PRODUCTION WELLS



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**BACHELOR ENLISTED
QUARTERS, BUILDING 1586**

**FIGURE 2-2
SITE LOCATION MAP**



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3.0 PHYSIOGRAPHY AND HYDROGEOLOGY

3.1 PHYSIOGRAPHY.

3.1.1 Regional The general physiography of the Duval County area is discussed in Appendix B, Site Conditions.

3.1.2 Local NAVSTA Mayport, located at the junction of the St. Johns River and the Atlantic Ocean, lies at the northern extent of a low, broad plain, the Eastern Valley (White, 1970). Relict beach ridges exist throughout the length and width of the valley. Elevations typically vary from 25 feet above mean sea level (msl) to less than 5 feet above msl. Relict beach ridge elevations may be as high as 30 feet above msl. At NAVSTA Mayport, both the broad lowland and a relict beach are represented. At the BEQ site, elevations generally range between 5 and 10 feet above msl. Much of the site area is either covered by grass or paved, and surface drainage is toward storm drains in the parking lot on the east side of Building 1586.

3.2 HYDROGEOLOGY.

3.2.1 Regional The regional hydrogeology of the Duval County area is discussed in Appendix B, Site Conditions.

3.2.2 Local The Holocene to Pliocene undifferentiated deposits that comprise the shallow surficial aquifer system are of variable thicknesses in Duval County. The surficial aquifer system was not totally penetrated during the CA, but the literature indicates the sediment to be approximately 70 feet thick at NAVSTA Mayport. The sediment consists of unconsolidated sand, shell, and clay (Causey and Phelps, 1978). The principal water-bearing zone at NAVSTA Mayport is a shell bed 35 to 55 feet bls (Franks, 1980).

The subsurface materials encountered at the BEQ appear to be mostly fill material; typically fine-grained sandy topsoil underlain by gravel and sand. Naturally occurring sediment consists of fine-grained sand and shell beds.

The unconfined shallow aquifer system at NAVSTA Mayport is not used as a water supply source. Water in the aquifer contains high concentrations of dissolved solids and is not considered to be a future source of potable water supply (Franks, 1980). During the PCA and the CA investigations at the BEQ site, the water table was generally encountered at approximately 5 to 6 feet bls. Franks (1980) indicates that the water table at NAVSTA Mayport ranges in depth from approximately 2.5 to approximately 4.5 feet bls. Water table elevations from a U.S. Army Corps of Engineers preliminary assessment were reported to be approximately 5 feet below those recorded during the PCA and the CA investigations. Fluctuations in water table depths are believed to be associated with seasonal variations in rainfall and tidal activity.

The surficial aquifer at the site is generally brackish, with a freshwater lens present in the upper zone. According to Franks (1980), "The local surficial aquifer acts as a single unconfined (water-table) aquifer to a depth of about 70 feet bls." The freshwater lens varies in thickness from about 40 feet, near the center of NAVSTA Mayport, to zero at the St. Johns River and the Atlantic Ocean.

Franks (1980) goes on to state that "Although the water above a depth of 40 feet is fresh and initially could be used in a water supply system, after a short pumping interval brackish water from the lower zone would rise in response to a reduction in head, contaminating the upper freshwater zone." During Franks' investigation, water in one test well, which was being pumped at about 20 gallons per minute (gpm), was observed to be gradually increasing in specific conductance after pumping for only about 30 minutes.

3.3 TIDAL STUDY. During a 1992 tidal study at the Alpha-Delta Pier, water level data were collected during the full moon phase of a lunar cycle. Water levels were measured during a high high tide, a low low tide, and an intermediate tide to assess the effect the maximum tidal range has on groundwater elevation. Groundwater elevation data are summarized in Table 3-1. Data indicate that groundwater elevations at the Alpha-Delta Pier site in monitoring wells nearest the Turning Basin showed the greatest variation in elevation and that tidal effects on groundwater elevations decrease with distance from the Turning Basin.

During the Alpha-Delta Pier CA, the groundwater flow direction varied from easterly to northeasterly to northerly; however, groundwater flow was predominantly north toward the Turning Basin. The water table configuration at the site roughly paralleled the topography and groundwater flow direction showed very little change with the rise and fall of the water table. Tidal effects at the BEQ site are expected to be less pronounced because it is farther inland than the Alpha-Delta Pier site.

**Table 3-1
Water Table Elevation Data, 1992 Tidal Study**

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Monitoring Well Number	July 14, 1992		High Tide (0902 Hours)		Low Tide (1524 Hours)		Intermediate Tide (1915 Hours)	
	Total Well Depth (feet)	Top of Casing Elevation ¹ (feet)	Depth to Water (feet)	Water Level Elevation ¹ (feet)	Depth to Water (feet)	Water Level Elevation ¹ (feet)	Depth to Water (feet)	Water Level Elevation ¹ (feet)
MPT-1406-01	12.51	6.96	4.45	2.51	4.55	2.41	4.50	2.46
MPT-1406-02	12.77	6.80	4.23	2.57	4.28	2.52	4.25	2.55
MPT-1406-03	12.69	7.19	4.95	2.24	5.67	1.52	5.00	2.19
MPT-1406-04	12.82	6.82	4.54	2.28	5.59	1.23	4.55	2.27
MPT-1406-05	12.90	6.46	3.77	2.69	3.98	2.48	3.81	2.65
MPT-1406-06	12.50	7.45	4.75	2.70	5.31	2.14	4.80	2.65
MPT-1406-07	11.90	7.69	4.92	2.77	5.15	2.54	4.97	2.72
MPT-1406-08	12.47	7.50	4.26	3.24	4.29	3.21	4.28	3.22
MPT-1406-09	NM	6.50	3.46	3.04	3.53	3.56	3.46	3.63
MPT-1406-10	12.85	7.41	4.20	3.21	4.22	3.19	4.23	3.18
MPT-1406-11	12.80	7.67	5.44	2.23	5.78	1.89	5.57	2.10
MPT-1406-12	11.70	6.76	4.24	2.52	4.30	2.46	4.30	2.46
MPT-1406-13	12.76	6.82	4.05	2.77	4.15	2.67	4.10	2.72
MPT-1406-14	12.68	6.26	3.66	2.60	3.78	2.48	3.71	2.55
MPT-1406-15	12.80	5.93	3.36	2.57	3.74	2.19	3.43	2.50
MPT-1406-16	13.20	8.49	5.77	2.72	FP	FP	FP	FP
MPT-1406-17	13.50	7.24	4.28	2.96	4.30	2.94	4.22	3.02
MPT-1406-18	29.70	22.40	18.44	3.96	18.44	3.96	18.44	3.96
MPT-1406-19	12.73	7.09	3.84	3.25	3.92	3.17	3.92	3.17
MPT-1406-20	12.42	6.57	4.21	2.36	4.46	2.11	4.34	2.23
MPT-1406-21	12.74	6.62	4.24	2.38	4.49	2.13	4.39	2.23
MPT-1406-22	12.56	7.26	5.00	2.26	5.34	1.92	5.17	2.09

¹ Elevation datum is 8.20 feet, located on top of the bulkhead at the junction of Delta 1 and Delta 2 piers.

Notes: NM = not measured.
FP = free product exists in well, no measurement taken.

4.0 CONTAMINATION ASSESSMENT PROGRAM

Methodologies and equipment used during the field investigation were in conformance with the ABB-ES, FDEP-approved, Comprehensive Quality Assurance Plan (CompQAP). Investigative methodologies and equipment used during the CA are discussed in Appendix C, Investigative Methodologies and Equipment.

4.1 SOIL BORING ADVANCEMENT, SOIL SAMPLING, AND SOIL ASSESSMENT PROGRAM. Thirty soil borings, SB-01 through SB-30, were manually advanced into the water table on May 18, 19, and 20, 1994, to assess the horizontal and vertical extent of petroleum contamination in the unsaturated zone, to characterize the type of subsurface material, and to aid in the placement of groundwater monitoring wells. Groundwater was generally encountered at a depth of 5 to 6 feet bls. Soil borings were advanced to approximately 5 feet bls using a stainless-steel hand auger. Where possible, soil samples were collected at 1 foot bls and at 2-foot bls intervals vertically thereafter until the groundwater was encountered. Soil boring locations are shown on Figure 4-1 and lithologic logs are presented in Appendix D.

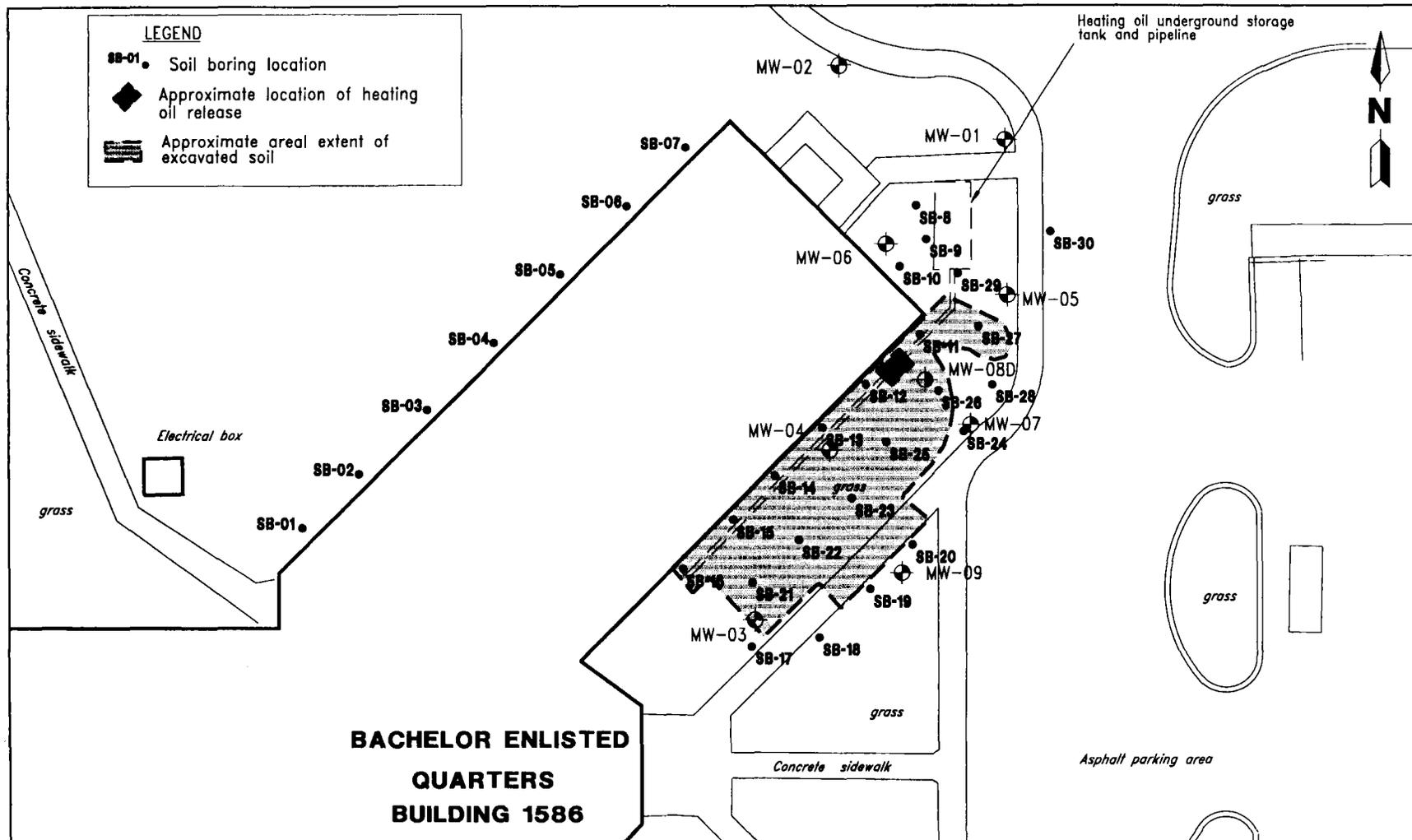
Unsaturated soil samples were collected above the water table in accordance with ABB-ES' FDEP approved CompQAP and underwent OVA headspace screening to assess the concentration of total VOCs in the soil. Samples were placed in glass jars, then sealed and analyzed with an OVA equipped with an FID in accordance with Chapter 62-770, FAC. The results of the soil boring and soil sampling program are discussed in Subsection 5.2.1.

4.2 GROUNDWATER MONITORING WELL INSTALLATION AND SAMPLING PROGRAM. Eight shallow permanent monitoring wells (MW-01 through MW-07 and MW-09) and one deep permanent monitoring well (MW-08D) were installed during the investigation to characterize and assess the horizontal extent of the groundwater contaminant plume. The locations of all site monitoring wells are shown in Figure 4-2. Soil samples were collected at intervals of 2 feet vertically from each borehole until total depth was reached. Soil samples collected below the water table were screened with a portable GC for comparison with petroleum standards.

Shallow monitoring wells were installed to a depth of 13 feet bls. The deep, double cased well, MW-08D, installed in the vicinity of monitoring well MW-04, was installed to a depth of 30 feet bls.

Groundwater samples were collected from monitoring wells MW-01 through MW-09 on June 20, 1994. Groundwater samples were collected in accordance with ABB-ES' CompQAP. A minimum of five well volumes were purged from each monitoring well before sampling. Groundwater samples were collected using an extruded Teflon™ bailer. The groundwater samples were placed in appropriate containers, preserved, and packed on ice. They were then shipped to Wadsworth/ALERT Laboratories, Inc., in Tampa, Florida, for analyses.

Groundwater samples collected from all site monitoring wells were analyzed for kerosene analytical group analytes, including U.S. Environmental Protection Agency (USEPA) Methods 601 and 602 (including methyl tert-butyl ether [MTBE]) for VOCs,



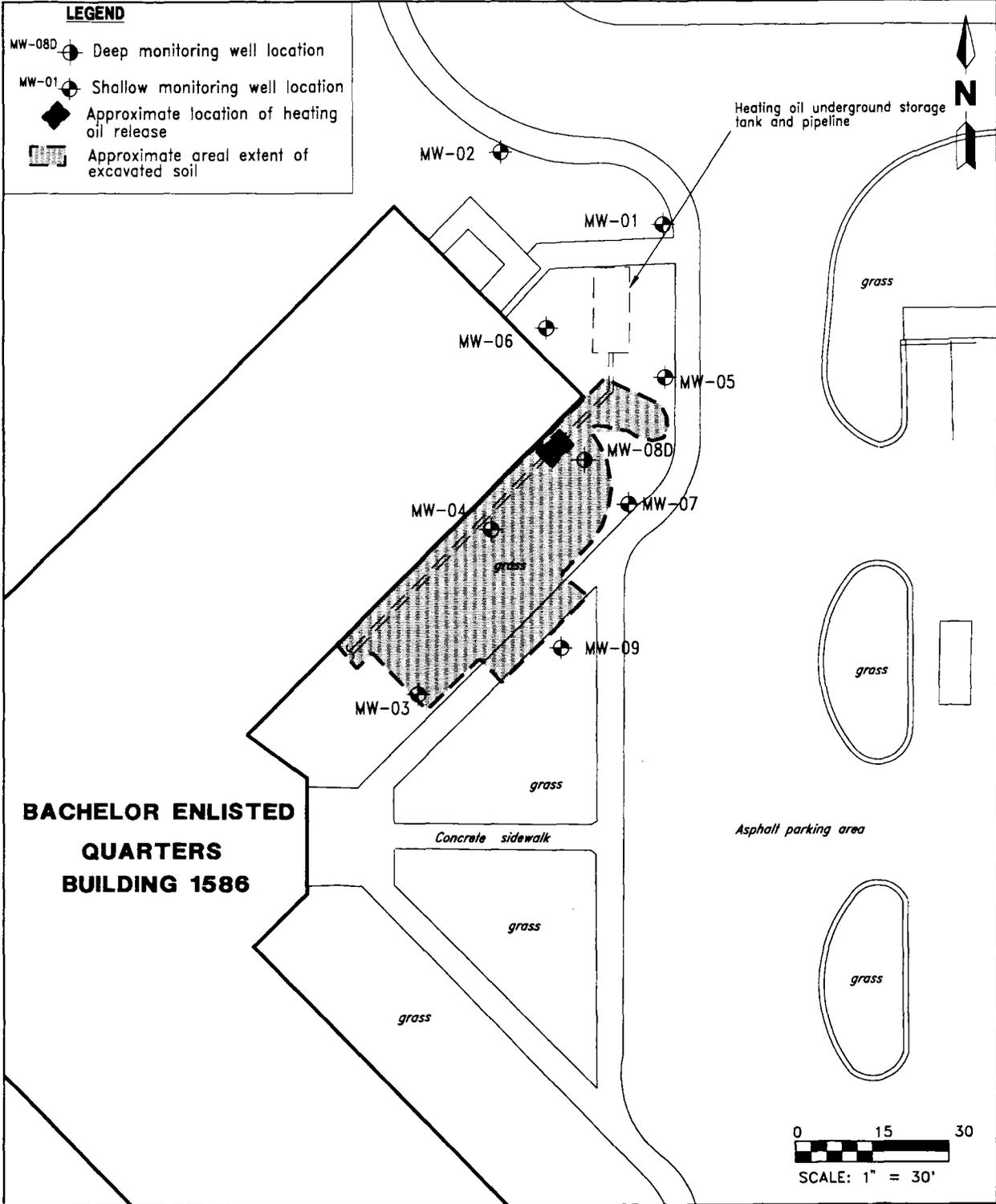
**FIGURE 4-1
SOIL BORING LOCATION MAP**



MAYPORT\BLDG1586\WDM\10-25-94



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**FIGURE 4-2
MONITORING WELL LOCATION MAP**



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USEPA Method 625 for PAHs, and Methods for Chemical Analysis of Water and Wastes (MCAWW) Methods 418.1 for TRPH and 239.2 for lead. One duplicate sample was collected from monitoring well MW-06. Equipment and trip blanks were also collected and analyzed as appropriate. Groundwater analytical results are discussed in Subsection 5.2.2.

4.3 GROUNDWATER ELEVATION SURVEY. Depth to groundwater was measured and water table elevations were calculated for each monitoring well on June 14, 1994, and September 23, 1994. Depth to groundwater was measured using an electronic water level indicator. Water level elevations were calculated by subtracting the measured depth to groundwater from the elevation of the top of the well casing. Piezometric surface maps were prepared for the June 14 and September 23, 1994, water level data and are discussed in Subsection 5.1.1.

Monitoring well top of casing elevations were surveyed by a Florida-registered professional land surveyor and referenced to the U.S. Coastal and Geodetic Survey 1927 North American Datum (USCGS NAD'27).

4.4 TIDAL STUDY. The tidal study performed at the NAVSTA Mayport Alpha-Delta Pier site in July 1992 is referenced to demonstrate the effects of tides on groundwater elevations at the BEQ site.

4.5 AQUIFER CHARACTERIZATION. Slug test data from wells MW-02, MW-04, and MW-08D indicate horizontal hydraulic conductivity (K) values range between 5.96 and 20.73 feet per day (ft/day). The upper range of 20.73 ft/day is likely an artifact of the slug test method and most likely reflects the K value for the deep well filter pack. The K value for well MW-08D, therefore, was not used in calculating aquifer parameters. The calculated hydraulic gradient in the northeast direction is 0.001 foot per foot. Based on the shallow well aquifer data, the calculated average pore water velocity (V) ranges from 0.024 to 0.027 ft/day in the northeast direction. The calculated average transmissivity (T) is 51.32 square feet per day (ft²/day). Slug test data, average equations, and calculations used to derive these values are presented in Appendix E, Aquifer Parameter Calculations.

5.0 CONTAMINATION ASSESSMENT RESULTS

5.1 SITE-SPECIFIC AQUIFER CHARACTERISTICS AND HYDROGEOLOGIC PARAMETERS. Only the surficial, unconfined aquifer was encountered during drilling operations. The base of this aquifer was not determined during the field investigation. A literature search indicates the base of the aquifer is approximately 70 feet bls. Water in the upper part of the unconfined surficial aquifer is relatively fresh. Generally, over much of the facility, groundwater at depths greater than 40 feet bls becomes brackish and is classified as G-III. The surficial aquifer was penetrated to a depth of 30 feet bls during the CA. Subsurface sediment inside the area that was excavated and backfilled is generally composed of limestone gravel fill material to an average depth of 4 feet bls. The gravel fill material is underlain by tan to light gray silty sand with trace amounts of clay. Lithologic descriptions of soil types encountered in each monitoring well are attached in Appendix D, Lithologic Logs.

Groundwater levels in site monitoring wells generally ranged from approximately 5 to 7 feet bls. Depth to water, top of casing, and water table elevation data for all site groundwater monitoring wells are presented in Table 5-1. Piezometric surface maps for each date are shown in Figures 5-1 and 5-2. (Note: The water table elevation from the vertical extent well, MW-08D, was not used in preparing the piezometric surface maps because the well is screened at a deeper interval than the shallow monitoring wells.)

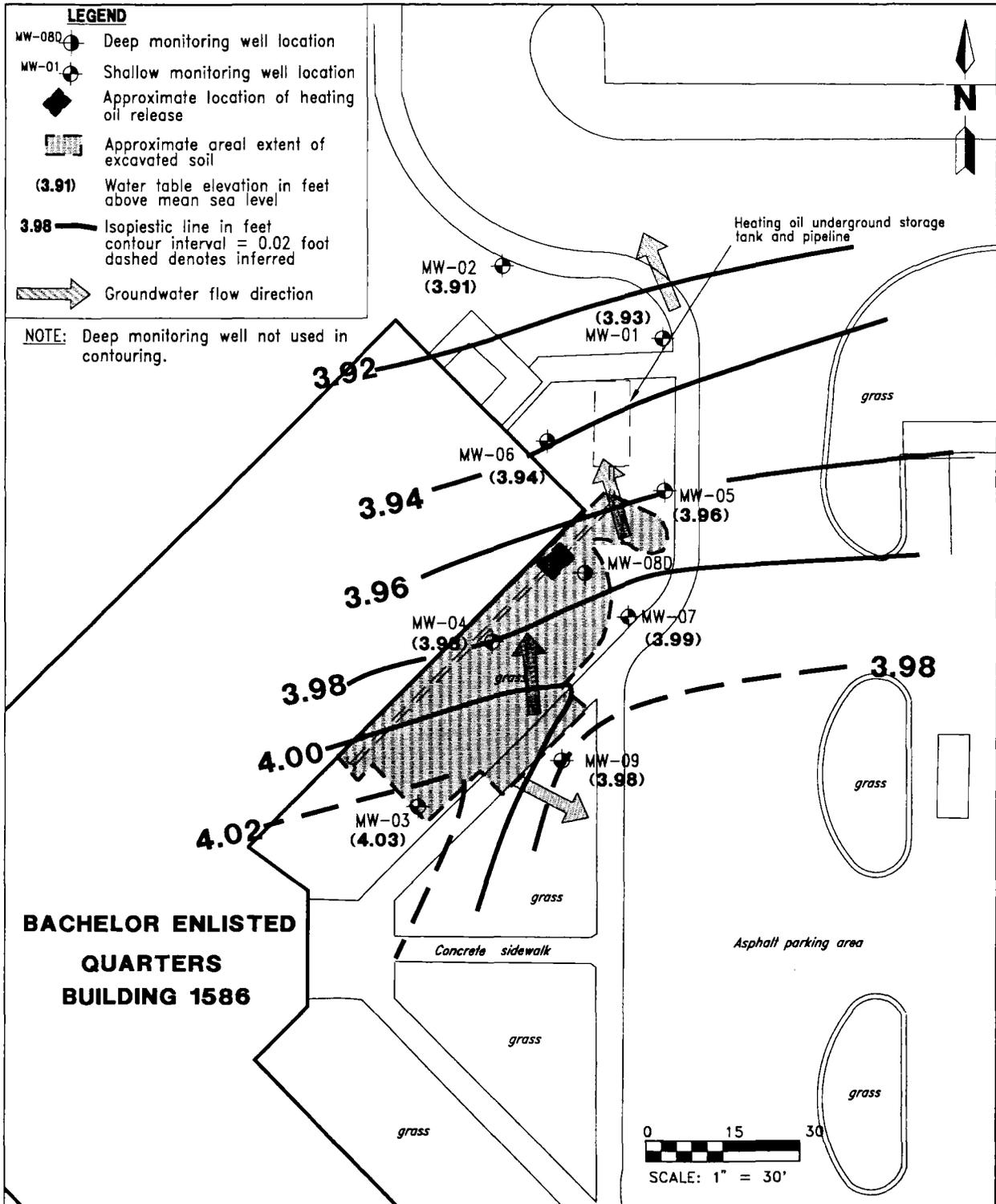
**Table 5-1
Water Table Elevation Data, 1994**

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NAVSTA Mayport, Mayport, Florida

Monitoring Well Number	Total Well Depth (feet bls)	Screened Interval (feet bls)	TOC Elevation ¹	June 20, 1994		September 23, 1994	
				Depth to Water (feet TOC)	Water Level Elevation ¹ (feet TOC)	Depth to Water (feet TOC)	Water Level Elevation ¹ (feet TOC)
MPT-1586-01	13.0	3.0 to 13.0	9.38	5.45	3.93	5.41	3.97
MPT-1586-02	13.0	3.0 to 13.0	9.49	5.58	3.91	5.53	3.96
MPT-1586-03	13.0	3.0 to 13.0	10.35	6.32	4.03	6.29	4.06
MPT-1586-04	13.0	3.0 to 13.0	9.98	6.00	3.98	5.96	4.02
MPT-1586-05	13.0	3.0 to 13.0	9.27	5.31	3.96	5.29	3.98
MPT-1586-06	13.0	3.0 to 13.0	10.98	7.04	3.94	6.98	4.00
MPT-1586-07	13.0	3.0 to 13.0	9.31	5.32	3.99	5.31	4.00
MPT-1586-08D	30.0	25.0 to 30.0	9.73	5.96	3.77	5.90	3.83
MPT-1586-09	13.0	3.0 to 13.0	9.80	5.82	3.98	5.78	4.02

¹ Relative elevation datum is 8.82 feet taken from a box cut in the northeast corner of the sidewalk that borders the parking lot on its north and east sides.

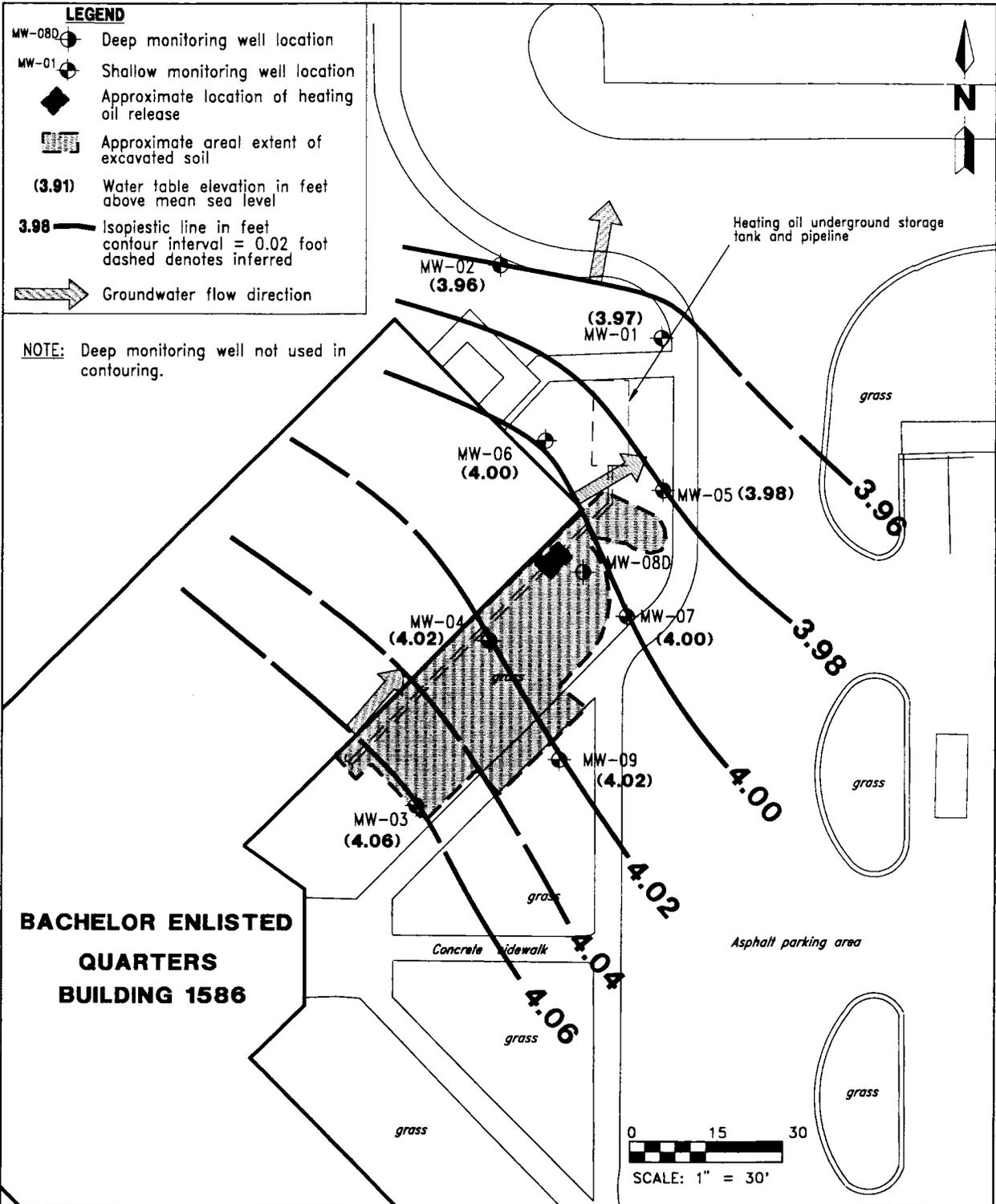
Notes: bls = below land surface.
TOC = top of casing.
D = deep monitoring well.



**FIGURE 5-1
PIEZOMETRIC SURFACE MAP,
JUNE 20, 1994**



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**FIGURE 5-2
PIEZOMETRIC SURFACE MAP,
SEPTEMBER 23, 1994**



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Groundwater elevations measured in the shallow monitoring wells indicate the groundwater flow direction at the site is generally toward the northwest.

5.2 CONTAMINANT PLUME CHARACTERIZATION.

5.2.1 Volatile Organic Compounds (VOCs) in Soil Soil sample VOC concentrations were assessed by OVA headspace screening techniques and are summarized in Table 5-2. For soil contaminated by constituents of the kerosene analytical group, OVA concentrations greater than 10 parts per million (ppm) are defined in Chapter 62-770, FAC, as "petroleum contaminated" and may require remediation. Soil with OVA concentrations greater than 50 ppm is defined as "excessively contaminated" and must be remediated to remove the source of contamination to the groundwater.

A total of 73 soil samples from soil borings SB-01 through SB-30 were collected on May 18 through May 20, 1994, and screened using an OVA with an FID. Excessively contaminated soil in the unsaturated zone was detected in SB-12 at 3 to 3.5 feet bls, SB-13 at 2 to 2.5 feet bls, and SB-14 at 3 to 4 feet bls. Petroleum-contaminated soil was detected in the vicinity of the fuel oil UST pump house near the northeast corner of Building 1586. Excessively contaminated soil in the vadose zone (0 to 4 feet bls) was detected only near the fuel pipeline break in the area excavated during the IRA performed in September 1992 (Figure 5-3). Excessively contaminated soil detected between 4 and 5 feet bls is associated with contaminated groundwater smearing in the capillary zone. Figure 5-3 shows the approximate areal extent of both petroleum-contaminated soil (>10 ppm) and excessively contaminated soil (>50 ppm) in the unsaturated zone at the BEQ site.

Saturated soil samples were collected from boreholes during monitoring well installation on June 13 through 17, 1994. Saturated soil was screened in the field using a portable GC equipped with a PID for comparison with BTEX standards. The field GC saturated soil screening methods (headspace) differs significantly from laboratory analytical methods (purge and trap); however, field GC screening provides rough order-of-magnitude accuracy within minutes of sample collection. Concentrations of BTEX compounds estimated from field GC screening often vary significantly from laboratory analytical results of groundwater samples. Soil samples were collected at the soil-water interface for GC screening from monitoring well locations MW-01 through MW-09. Field GC screening results are summarized in Table 5-3.

5.2.2 Groundwater Assessment Groundwater contaminants identified by laboratory analyses during the CA investigation include BTEX; bromodichloromethane; chloroform; 1,1,1-trichloroethane (TCA); PAHs including acenaphthalene, fluorene, phenanthrene, and total naphthalenes (the sum of naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene); TRPHs; and lead. Free product was not detected in any monitoring well at the site. Analytical laboratory results of groundwater samples collected on June 20, 1994, are presented in Appendix F, Groundwater Analytical Data, and summarized in Table 5-4.

**Table 5-2
Summary of Soil Sample Organic Vapor Analyzer (OVA) Results,
June 1994**

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NAVSTA Mayport, Mayport, Florida

Boring Number	Depth (feet bls)	Unfiltered Concentration	Filtered Concentration	Actual Concentration	Comments
SB-1	0 to 1	0	--	0	
	3 to 4	0	--	0	
	¹ / ₄ to 5	0	--	0	
SB-2	0 to 1	0	--	0	
	3 to 4	0	--	0	
	¹ / ₄ to 5	0	--	0	
SB-3	0 to 1	0	--	0	
	3 to 4	0	--	0	
	¹ / ₄ to 5	0	--	0	
SB-4	0 to 1	0	--	0	
	3 to 4	0	--	0	
	¹ / ₄ to 5	0	--	0	
SB-5	0 to 1	0	--	0	
	3 to 4	0	--	0	
	¹ / ₄ to 5	0	--	0	
SB-6	0 to 1	0	--	0	
	3 to 4	0	--	0	
	¹ / ₄ to 5	0	--	0	
SB-7	0 to 1	0	--	0	
	3 to 4	0	--	0	
	¹ / ₄ to 5	0	--	0	
SB-8	0 to 1	0	--	0	
	3 to 4	0	--	0	
	¹ / ₄ to 4.5	0	--	0	
SB-9	0 to 1	2	0	2	
	2 to 3	0	--	0	
	¹ / ₄ to 5	9	0	9	
SB-10	0 to 1	14	0	14	
	2 to 3	5	0	5	
	¹ / ₄ to 4.5	320	0	320	Gray to black staining observed.
SB-11	0 to 1	0	--	0	
	2 to 3	0	--	0	Inside excavation zone fill material.
	¹ / ₄ to 5	0	--	0	
SB-12	0.5 to 1	0	--	0	
	3 to 3.5	160	0	160	Inside excavation zone fill material.
	¹ / ₄ .5 to 5	1,200	0	1,200	

See notes at end of table.

Table 5-2 (Continued)
Summary of Soil Sample Organic Vapor Analyzer (OVA) Results
June 1994

Contamination Assessment Report
Bachelor Enlisted Quarters, Building 1586
NAVSTA Mayport, Mayport, Florida

Boring Number	Depth (feet bls)	Unfiltered Concentration	Filtered Concentration	Actual Concentration	Comments
SB-13	2 to 2.5	2,000	0	2,000	Inside excavation zone vapor barrier at 1 foot bls.
	¹ / ₄ to 4.5	2,500	0	2,500	
SB-14	0 to 1	0	--	0	Inside excavation zone vapor barrier at 1 foot bls.
	3 to 4	1,300	0	1,300	Strong odor and gray to black staining observed.
	¹ / ₄ to 5	2,400	0	2,400	
SB-15	1 to 1.5	0	--	0	Inside excavation zone vapor barrier at 1 foot bls.
	2.5 to 3	0	--	0	
	¹ / ₄ to 4.5	10	0	10	
SB-16	0 to 1	0	--	0	Outside excavation zone
	3 to 4	1	--	1	
	¹ / ₄ to 5	0	--	0	
SB-17	0.5 to 1	0	--	0	Outside excavation zone
	2.5 to 3	0	--	0	
	¹ / ₄ to 4.5	0	--	0	
SB-18	0.5 to 1	0	--	0	Inside excavation zone
	2.5 to 3	0	--	0	
	¹ / ₄ to 4.5	60	0	60	
SB-19	0.5 to 1	0	--	0	Inside excavation zone; pea gravel backfill encountered at 0.5 foot to 4.5 foot bls.
	3.5 to 4	0	--	0	
	¹ / ₄ to 4.5	23	0	23	
SB-20	0.5 to 1	0	--	0	
	3.5 to 4	1	--	1	Inside excavation zone
	¹ / ₄ to 4.5	40	0	40	
SB-21	0.5 to 1	0	--	0	
	2.5 to 3	0	--	0	
	¹ / ₄ to 4.5	0	--	0	
SB-22	At borehole	0	--	0	Inside excavation zone; pea gravel backfill encountered at 1 foot bls; could not be penetrated by hand auger.
SB-23	At borehole	0	--	0	Inside excavation zone; pea gravel backfill encountered at 1 foot bls; could not be penetrated by hand auger.

See notes at end of table.

Table 5-2 (Continued)
Summary of Soil Sample Organic Vapor Analyzer (OVA) Results
June 1994

Contamination Assessment Report
 Bachelor Enlisted Quarters, Building 1586
 NAVSTA Mayport, Mayport, Florida

Boring Number	Depth (feet bls)	Unfiltered Concentration	Filtered Concentration	Actual Concentration	Comments
SB-24	0.5 to 1	0	—	0	
	2.5 to 3	0	—	0	
	¹ 4 to 4.5	16	0	16	
SB-25	1 to 1.5	10	1	9	Inside excavation zone; pea gravel backfill encountered at 1 foot bls; could not be penetrated by hand auger. Sample collected immediately below vapor barrier at 1 foot bls.
SB-26	0.5 to 1	0	—	0	Inside excavation zone vapor barrier at 1 foot bls. Pea gravel backfill encountered at 1 foot bls could not be penetrated by hand auger.
SB-27	0.5 to 1	0	—	0	Inside excavation zone. Pea gravel backfill encountered at 1 foot bls could not be penetrated by hand auger.
SB-28	1 to 1.5	0	—	0	
	3.5 to 4	0	—	0	
SB-29	0.5 to 1	0	—	0	
	2.5 to 3	0	—	0	
	¹ 4 to 4.5	0	—	0	
SB-30	0 to 1	10	1	9	
	2 to 3	0	—	0	
	¹ 3.5 to 4	1	—	1	
MW-01	¹ 5.0	12	—	12	
MW-02	¹ 5.0	7	—	7	
MW-03	¹ 5.0	22	—	22	
MW-04	¹ 5.0	2,700	—	2,700	
MW-05	¹ 5.0	290	—	290	
MW-06	¹ 5.0	340	—	340	
MW-07	¹ 5.0	2,400	—	2,400	
MW-08D	¹ 5.0	0	—	0	
MW-09	¹ 5.0	36	—	36	

¹ Sample was wet, indicating groundwater encountered.

Notes: Concentrations are reported in parts per million (ppm).
 bls = below land surface.
 SB = soil boring.
 MW = monitoring well.

Table 5-3
Field Gas Chromatograph Screening Results, June 13-17, 1994

Contaminated Assessment Report
Bachelor Enlisted Quarters, Building 1586
NAVSTA Mayport, Mayport, Florida

Saturated Soil

Sample Identification	Run	Benzene	Toluene	Ethylbenzene	m/p-Xylene	o-Xylene
MW-01	1	ND	ND	ND	ND	ND
	2	ND	ND	ND	ND	ND
MW-02	1	ND	ND	ND	ND	ND
	2	ND	ND	ND	ND	ND
MW-03	1	ND	ND	ND	ND	ND
	2	ND	ND	ND	ND	ND
MW-04	1	460E	ND	ND	1,814E	819E
MW-05	1	ND	ND	ND	ND	ND
	2	ND	ND	ND	ND	ND
MW-06	1	252E	ND	ND	ND	ND
MW-07	1	ND	2,324E	ND	1,848E	896E
MW-08D	1	ND	ND	ND	ND	ND
					ND	ND
MW-09	1	67	ND	87	37	47
	2	50	ND	111	80	ND

See notes at end of table.

Table 5-3 (Continued)
Field Gas Chromatograph Screening Results

Contaminated Assessment Report
Bachelor Enlisted Quarters, Building 1586
NAVSTA Mayport, Mayport, Florida

Monitoring Wells (Pre-Development)

Sample Identification	Run	Benzene	Toluene	Ethylbenzene	m/p-Xylene	o-Xylene
MW-01	1	ND	ND	ND	ND	ND
MW-02	1	23	ND	9	ND	ND
	2	23	ND	4	ND	ND
MW-03	1	ND	ND	ND	ND	ND
	2	ND	ND	ND	ND	ND
MW-04		N/A	ND	ND	ND	ND
			ND	ND	ND	ND
MW-05	1	ND	ND	ND	ND	ND
	2	ND	ND	ND	ND	ND
MW-06		N/A	N/A	N/A	N/A	N/A
MW-07	1	3	ND	ND	ND	ND
	2	4	ND	ND	ND	ND
MW-08D		N/A	N/A	N/A	N/A	N/A
MW-09	1	8	ND	4	4	ND
	2	10	ND	13	32	17

See notes at end of table.

Table 5-3 (Continued)
Field Gas Chromatograph Screening Results

Contaminated Assessment Report
 Bachelor Enlisted Quarters, Building 1586
 NAVSTA Mayport, Mayport, Florida

Monitoring Wells (Post-Development)

Sample Identification	Run	Benzene	Toluene	Ethylbenzene	m/p-Xylene	o-Xylene
MW-01	1	ND	ND	ND	ND	ND
	2	ND	ND	ND	ND	ND
MW-02	1	ND	ND	ND	ND	ND
	2	1	ND	ND	ND	ND
MW-03	1	ND	ND	ND	ND	ND
MW-04	1	7	2	7	8	13
	2	4	3	4	2/2	1
MW-05	1	BDL	ND	ND	ND	ND
	2	BDL	ND	BDL	ND	ND
MW-06	1	29	6	ND	ND	11
	2	18	3	3	ND	43
MW-07	1	1	ND	ND	ND	ND
	2	4	ND	ND	ND	ND
	3	2	ND	ND	ND	ND
MW-08D	1	ND	ND	ND	ND	ND
	2	ND	ND	ND	ND	ND
MW-09	1	5	ND			
	2	4	ND	6	15	ND
				4	13	ND

Notes: ND = not detected.
 N/A = not analyzed.

Table 5-4
Summary of Groundwater Analytical Results,
June 1994

Contamination Assessment Report
Bachelor Enlisted Quarters, Building 1586
NAVSTA Mayport, Mayport, Florida

Contaminant	Well Identification, MW-										Regulatory Standards ¹ Class G-II and G-III Groundwater
	01	02	03	04	05	06	06 DS	07	08D	09	
Volatile Organics (USEPA Method 601/602), ppb											
Benzene	ND	2.5	ND	11	ND	49	45	1.9	ND	ND	200 ppb
Toluene	ND	ND	ND	ND	ND	5.7	ND	ND	ND	ND	
Ethylbenzene	ND	1.4	ND	ND	ND	36	ND	ND	ND	3.8	
Xylenes, total	ND	ND	ND	31	ND	11	6.0	ND	ND	3.2	
Total VOAs	ND	3.9	ND	42	ND	101.7	51	1.9	ND	7	200 ppb
Bromodichloromethane	ND	ND	ND	ND	ND	ND	ND	ND	1.9	ND	
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	6.9	ND	
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	2.9	ND	ND	ND	ND	
Methyl tert-butyl ether	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	50 ppb
Polynuclear Aromatic Hydrocarbons (USEPA Method 625), ppb											
Acenaphthene	ND	ND	ND	ND	ND	ND	5.2	ND	ND	ND	
Fluorene	ND	ND	ND	8.8	ND	6.1	6.1	ND	ND	ND	
Phenanthrene	ND	ND	ND	12	ND	6.2	6.6	ND	ND	ND	
1-Methylnaphthalene	ND	ND	ND	30	ND	57	46	ND	ND	ND	
2-Methylnaphthalene	ND	ND	ND	12	ND	56	8.5	ND	ND	ND	
Naphthalene	ND	ND	ND	ND	ND	50	ND	ND	ND	ND	
Total naphthalenes	ND	ND	ND	42	ND	163	54.5	ND	ND	ND	100 ppb
Total Recoverable Petroleum Hydrocarbons (MCAWW Method 418.1), ppm											
TRPH	ND	ND	ND	ND	ND	2.9	1.4	ND	ND	ND	5 ppm
Ethylene Dibromide (EDB) (USEPA 601, Modified), ppb											
EDB	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.02 ppb
Metals (MCAWW Method 239.2) ppb											
Lead, unfiltered	11.6	28.2	8.3	26.5	22.8	20.6	14	9.6	ND	27.5	50 ppb
Lead, filtered	ND	ND	ND	ND	ND	ND	ND	ND	N/A	ND	50 ppb

¹ Chapter 62-770.730 (5A), Florida Administrative Code.

Notes: DS = duplicate sample.

ppb = parts per billion.

ND = not detected.

Total VOAs = total volatile organic aromatics; the sum of benzene, toluene, ethylbenzene, and xylenes.

MCAWW = Methods for Chemical Analysis of Water and Wastes.

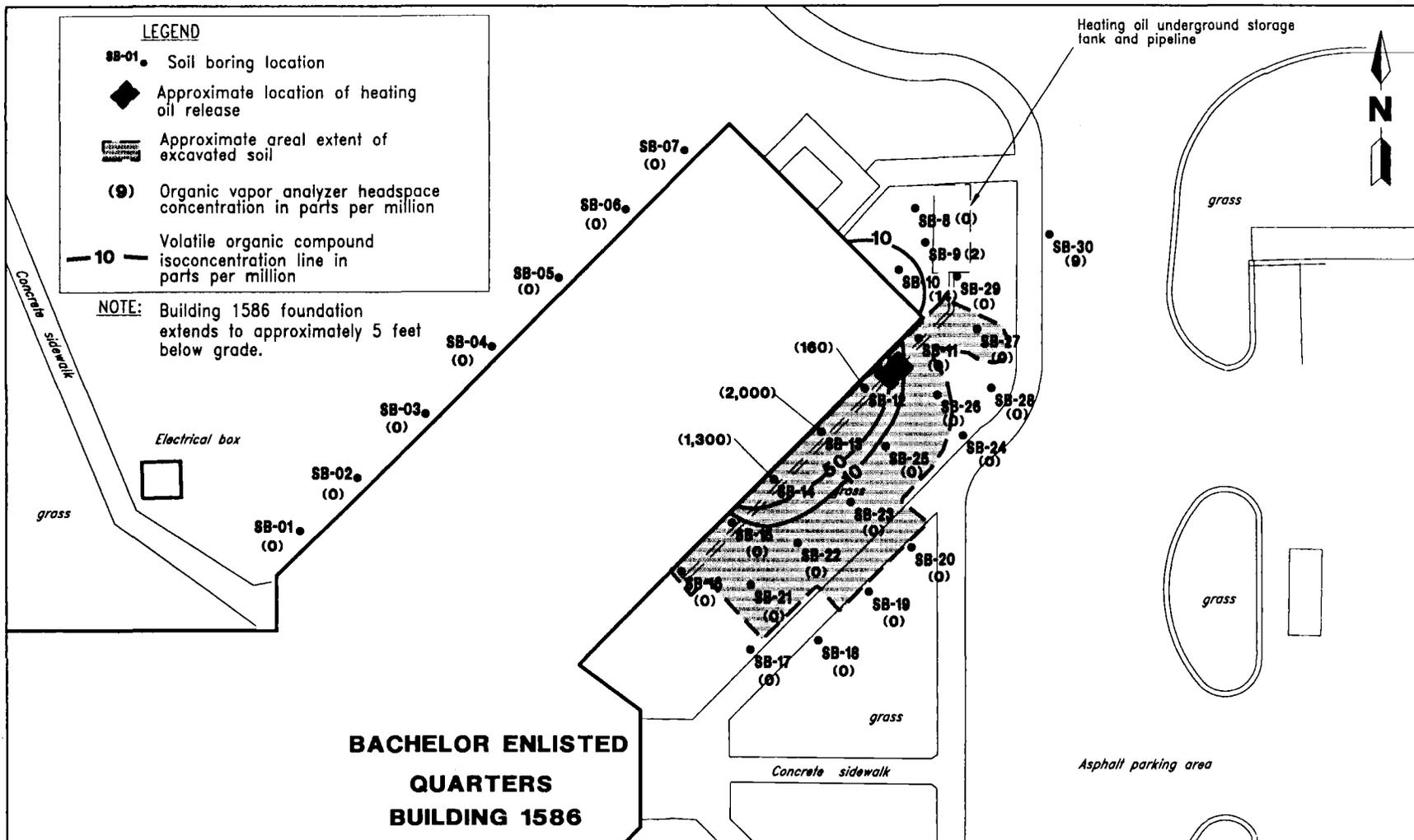
ppm = parts per million.

5.2.2.1 Benzene and Total Volatile Organic Aromatics (VOAs) in Groundwater Benzene, total VOAs, and TRPH concentrations are compared to State target levels for groundwater (see Section 3.2 for explanation). (Note: total VOA is the sum of benzene, toluene, ethylbenzene, and xylenes.) The concentrations of benzene detected in MW-02 were 2.5 ppb; 11 ppb in MW-04, 49 ppb in MW-06, and 1.9 ppb in MW-07. The concentrations of ethylbenzene detected were 1.4 ppb in MW-02; 36 ppb in MW-06, and 3.8 ppb in MW-09. The concentration of toluene detected was 5.7 ppb in MW-06 and the concentrations of xylenes detected were 31 ppb in MW-04; 11 ppb in MW-06, and 3.2 ppb in MW-09. Benzene concentrations exceeded the Class G-II groundwater target level of 1 ppb in groundwater samples from MW-02, MW-04, MW-06, and MW-07. Total VOA concentrations exceeded regulatory limits of 50 ppb in groundwater samples from MW-06. The approximate areal extent of benzene and total VOAs detected in groundwater samples is shown on Figures 5-4 and 5-5, respectively. The highest concentrations appear to be near the fuel pumphouse and near the repaired section of the fuel supply pipeline. Benzene and total VOAs were not detected in vertical extent monitoring well MW-08D.

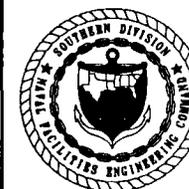
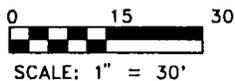
5.2.2.2 Total Naphthalenes in Groundwater Naphthalenes were detected in monitoring well samples MW-04 and MW-06. Total naphthalenes concentrations exceeded the State Class G-II groundwater target level of 100 ppb in groundwater samples from MW-06. The approximate areal extent of total naphthalenes contamination is shown in Figure 5-6. Naphthalenes were not detected in the samples from the vertical extent monitoring well MW-08D.

5.2.3 Vertical Extent of Groundwater Contamination One vertical extent well, MW-08D, was installed to assess the vertical extent of groundwater contamination at the site. Monitoring well MW-08D is screened from 25 to 30 feet bls.

Two compounds were detected in monitoring well MW-08D, bromodichloromethane and chloroform. The concentrations of bromodichloromethane and chloroform in the groundwater sample from well MW-08D were 1.9 ppb and 6.9 ppb, respectively. The source of these compounds is suspected to be laboratory contamination. No contaminants attributable to petroleum contamination were detected in samples from monitoring well MW-08D. The groundwater data indicate that the vertical extent of groundwater contamination does not extend deeper than 25 feet bls.



**FIGURE 5-3
SOIL CONTAMINATION DISTRIBUTION MAP,
MAY 18 TO 20, 1994**



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MAYPORT, FLORIDA**

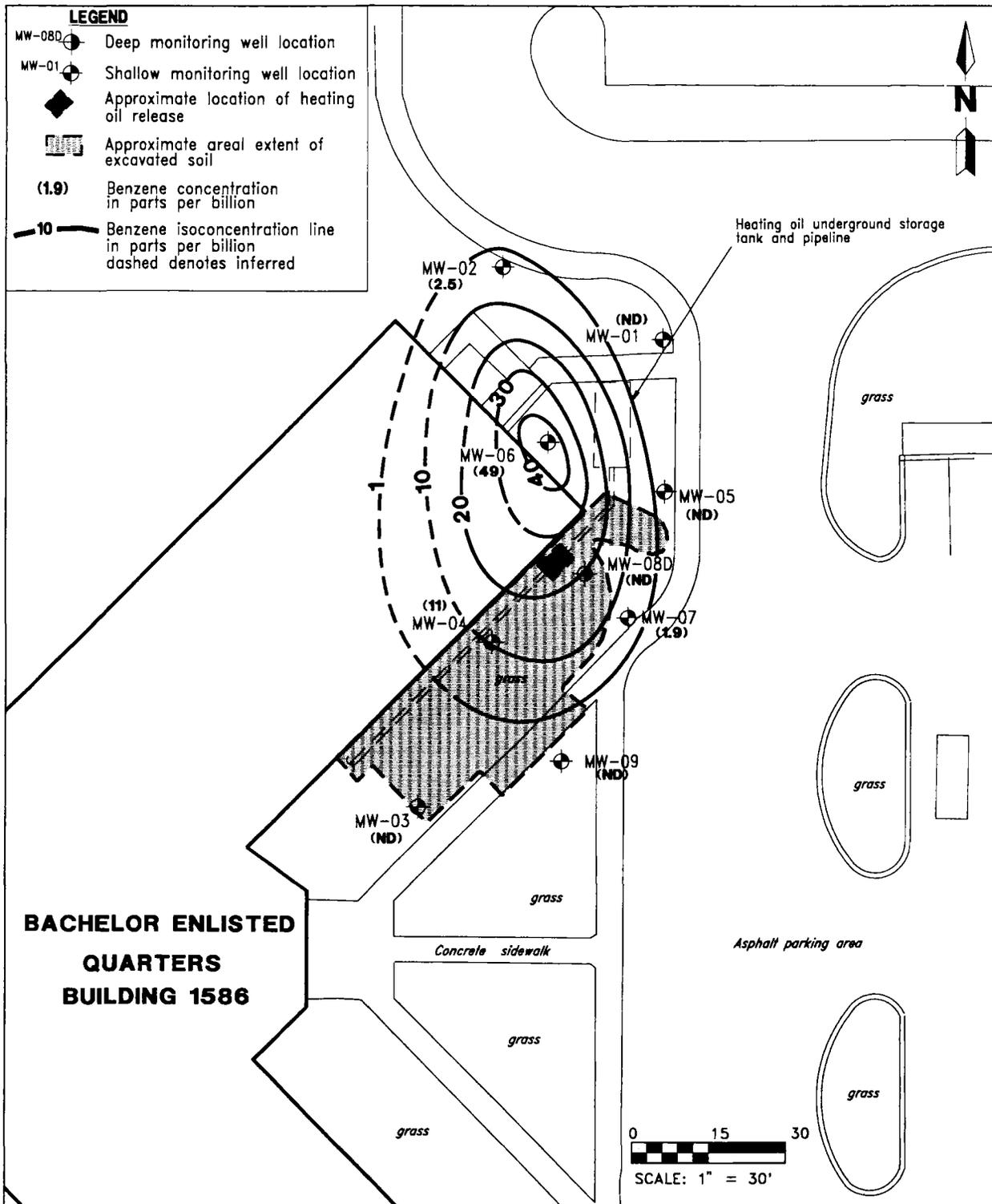
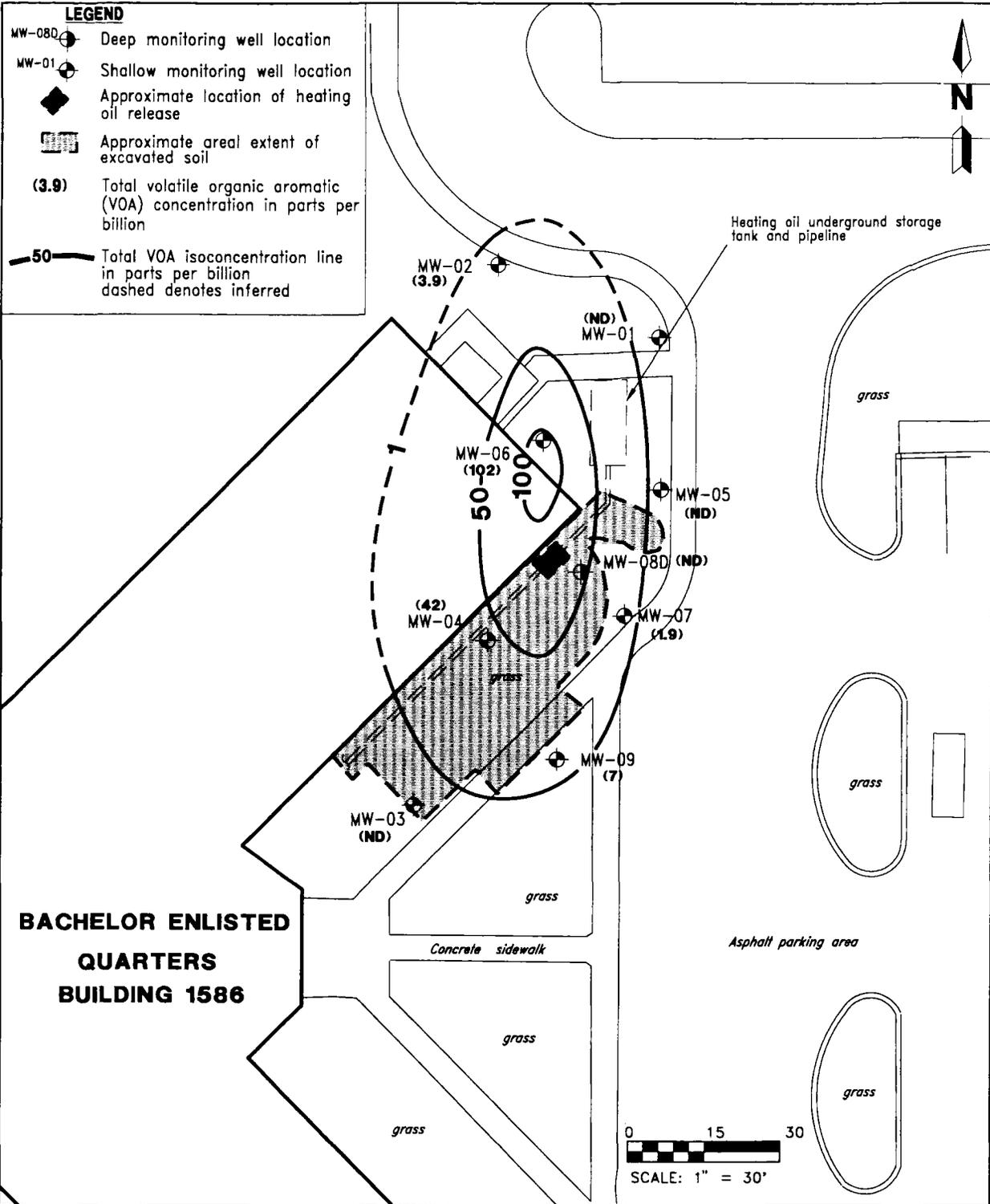


FIGURE 5-4
ISOCONCENTRATION MAP OF BENZENE
IN GROUNDWATER, JUNE 20, 1994



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**FIGURE 5-5
ISOCONCENTRATION MAP OF TOTAL VOLATILE ORGANIC AROMATICS (VOAs) IN GROUNDWATER, JUNE 20, 1994**



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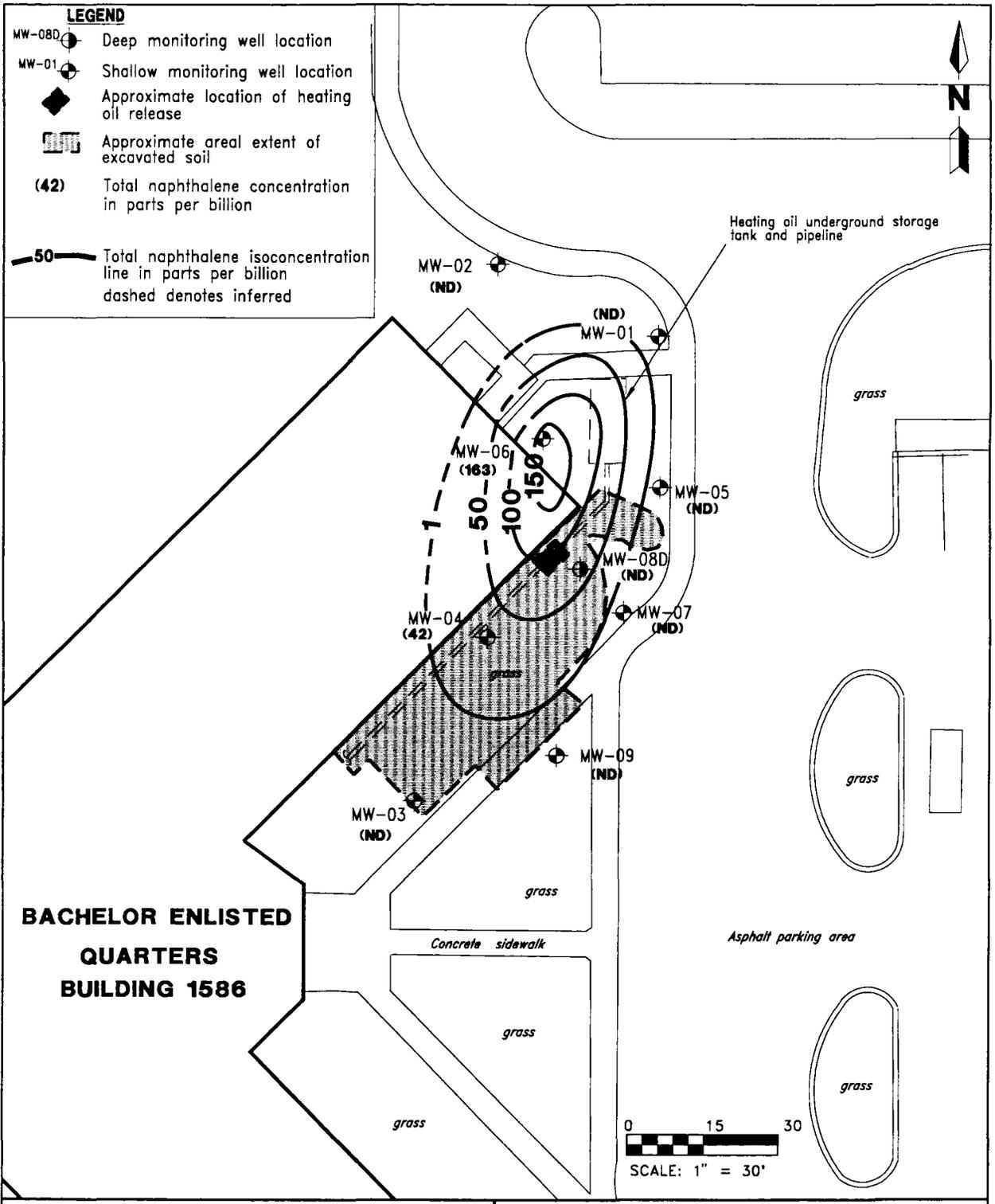


FIGURE 5-6
ISOCONCENTRATION MAP OF TOTAL
NAPHTHALENES IN GROUNDWATER,
JUNE 20, 1994



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MAYPORT, FLORIDA

6.0 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

6.1 SUMMARY

- Based on the findings of the CA field investigation and laboratory analytical results, the following is a summary of existing conditions at the site.
- The aquifer of concern at the site is the unconfined surficial aquifer. Water quality data indicate water in the upper part of the unconfined surficial aquifer is relatively fresh. Generally, over much of the facility, groundwater at depths greater than 40 feet bls becomes brackish and is classified as G-III.
- The surficial aquifer was penetrated to a depth of 30 feet bls during this investigation. Subsurface sediment encountered at boring locations appear to be mostly fill material and typically consisted of fine-grained sand, silt, and shell material. Naturally occurring sediments consisted of fine-grained sand and shell beds.
- The water table at the site was encountered at 5 to 6 feet bls.
- The general groundwater flow direction in the surficial aquifer is northeast to northwest.
- Excessively contaminated soil identified by OVA headspace screening appears to be limited to the vicinity of monitoring well MW-04 near the repaired section of fuel pipeline. Petroleum contaminated soil was detected in a second area in the vicinity of the fuel oil UST near the pumphouse and may represent a separate source of petroleum contamination.
- No free product was observed in any borings, monitoring wells, or recovery wells at the site.
- There are two production wells within a 1/2-mile radius of the site used to supply potable and irrigation water. Both potable water wells, however, are outside a 1/4-mile radius of the site. The closest potable well is upgradient of the site. Both wells have total depths and open hole intervals in the Floridan aquifer system and are separated from the shallow sediments and the surficial aquifer by sediment of the Hawthorn Group. Potable water wells have not been nor are expected to be impacted by petroleum contaminants from the BEQ site.
- BTEX, TRPH, TCA, and PAHs were detected in groundwater samples collected from site monitoring wells. Chloroform and bromodichloromethane are suspected to be laboratory contaminants. Total VOAs and total naphthalenes exceed State target levels for G-II groundwater at sites with no potable water wells within a 1/4-mile radius. Concentrations of TRPH, TCA, and PAHs including acenaphthene, fluorene, and phenanthrene in groundwater do not exceed their respective maximum contaminant levels (MCLs).

- The areal extent of benzene, total VOAs, and total naphthalenes in groundwater appears to be restricted to the vicinity of the pipeline leak and the fuel pumphouse where contaminant concentrations are greatest. The vertical extent of benzene, total VOAs, and total naphthalenes in groundwater does not appear to exceed 25 feet bls.
- Hydraulic conductivity (K) values ranged from 5.96 to 6.87 feet per day. The hydraulic gradient (I) was calculated to be 0.001 foot per foot. Based on an average K of 6.42 feet per day and I of 0.001, the average linear pore water velocity (V) beneath the site was calculated to be 0.026 foot per day or 9.31 feet per year.

6.2 CONCLUSIONS. The freshwater lens at NAVSTA Mayport is not a viable potable water source, is not otherwise distinguishable from the brackish zone, and because of the site proximity to a surface water body, G-III groundwater standards for monitoring only are considered appropriate. These parameters and target concentrations are as follows.

Parameter	Groundwater Target Concentration (ppb)	
	Source	Plume Perimeter
Total BTEX	1,000	200
Benzene	500	200
TRPH	100,000	5,000
Lead	1,000	50
Arsenic	1,000	50
Cadmium	200	5
Chromium	1,000	50

Naphthalenes and PAHs have been identified at the site, but are not listed as parameters for monitoring in G-III groundwater.

Soil contamination at the site exceeds standards presented in Chapter 62-770, FAC. Those standards, however, are based on risks associated with contaminated soil over a potable water source aquifer. The surficial aquifer at this site is G-III and, therefore, not a potable water source.

- The contamination at the BEQ site emanated from a broken heating fuel pipeline and possibly from unreported releases associated with the UST or fuel pumphouse. The pipeline has been repaired and an IRA was conducted to remove free product contaminated groundwater and contaminated soil from the site.
- A small area of soil at the site, approximately 40 feet long and 8 feet wide, is excessively contaminated as defined in Chapter 62-770, FAC, to a depth of approximately 4 feet bls.

- Class G-II groundwater in the unconfined surficial aquifer has been impacted by petroleum constituents that exceed Chapter 62-770, FAC, groundwater cleanup target levels.
- Conventional pump-and-treat groundwater remedial technology may remove the class G-II groundwater at the site causing intrusion of Class G-III groundwater.
- Potable water wells have not been and are not expected to be impacted by contaminants from the BEQ site.

6.3 RECOMMENDATIONS. Total VOA and total naphthalene concentrations in groundwater at the BEQ site exceed FDEP guidelines for recommending a monitoring only proposal at sites with Class G-II groundwater and no potable water wells in the site vicinity (FDER, 1990). However, Class G-II groundwater at the BEQ site occurs only as a shallow lens above Class G-III groundwater. Groundwater quality at NAVSTA Mayport deteriorates rapidly (becomes brackish) below depths greater than 40 feet bls, or when water is pumped from wells for a relatively short duration (Franks, 1980). Because groundwater at the BEQ site is predominantly Class G-III, contaminant concentrations in site monitoring wells are significantly less than FDEP guidelines for both monitoring only and no further action proposals. ABB-ES recommends that tightness testing be performed on the UST and associated heating fuel pipeline and that excessively contaminated soil be removed from the site and replaced with clean fill materials.

Based on the findings and conclusions of this investigation, ABB-ES recommends a monitoring only plan (MOP) for the BEQ site. The following conditions are considered essential for an approvable MOP to be implemented: (1) the source of the contamination has been abated (i.e., the broken section of fuel pipeline has been repaired and the UST and pipelines have passed tightness testing), (2) free product is not currently present at the site, (3) excessively contaminated soil has been removed, and (4) the groundwater contamination is not widespread, is not extending offsite, and is not migrating vertically.

Monitoring wells MW-02, MW-06, and MW-09 should be sampled quarterly for USEPA Methods 601, 602, and 610 for a period of 1 year. Results of analyses will be compared to State target levels to determine if the monitoring only program should continue. If contaminant concentrations increase, then resampling or supplemental assessment will be performed.

If a trend in decreasing contaminant concentrations is observed, the continuation of the monitoring only program will be considered appropriate. If a decreasing trend is not serious, then supplemental CA and active remediation may be necessary.

If contaminant levels drop below State target levels at the end of the monitoring period, a No Further Action Plan (NFAP) will be submitted. If contaminant levels persist above State target levels, then additional monitoring or remediation may be required.

7.0 PROFESSIONAL REVIEW CERTIFICATION

This report was prepared using sound hydrogeologic principles and judgment. This assessment is based on the geologic investigation and associated information detailed in the CAR and in the text and appended to this report. If conditions are revealed that differ from those described, the undersigned geologist should be notified to evaluate the effects of any additional information on the assessment described in this report. This CAR was developed for the BEQ, Building 1586, NAVSTA Mayport, Mayport, Florida, and should not be construed to apply to any other site.



Michael J. Williams
Professional Geologist
P.G. No. 344

Date

11/17/94

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APPENDIX A
SITE BACKGROUND INFORMATION

TECHNICAL MEMORANDUM
BACHELOR ENLISTED QUARTERS, BUILDING 1586

NAVAL STATION MAYPORT
MAYPORT, FLORIDA

CTO No. 077

Contract No. N62467-89-D-0317

Prepared by:

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Prepared for:

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

Cliff Casey, Engineer-in-Charge

July 1993

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GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
BEQ	Bachelor Enlisted Quarters
bls	below land surface
CTO	Contract Task Order
FAC	Florida Administrative Code
FDER	Florida Department of Environmental Regulation
FID	flame ionization detector
GC	gas chromatograph
NAVSTA	Naval Station
PCAP	Preliminary Contamination Assessment Plan
PCAR	Preliminary Contamination Assessment Report
POA	Plan of Action
ppb	parts per billion
ppm	parts per million
TRPH	total recoverable petroleum hydrocarbons
VOA	volatile organic aromatics
VOC	volatile organic compounds
USEPA	U.S. Environmental Protection Agency

1.0 INTRODUCTION

ABB Environmental Services, Inc. (ABB-ES), was authorized in April 1993, by Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) to conduct a preliminary contamination assessment (PCA) of soil and groundwater at the Bachelor Enlisted Quarters (BEQ) site, at Naval Station (NAVSTA) Mayport in Mayport, Duval County, Florida. The scope of services for the work is described in Contract Task Order (CTO) No. 77, the Plan of Action (POA), and the Preliminary Contamination Assessment Plan (PCAP) for that CTO.

1.1 PURPOSE. The purpose of this Technical Memorandum is to present the findings and conclusions of the PCA and recommend appropriate further action for this site.

The scope of services developed to perform the PCA included:

- collection of soil samples and groundwater samples using the Terra-ProbeSM system;
- field screening of 21 soil samples using an organic vapor analyzer (OVA) with a flame ionization detector (FID);
- field screening of 8 soil samples and 10 groundwater samples for field analyses using a portable gas chromatograph (GC);
- Laboratory analysis of five groundwater samples collected from Terra-ProbeSM locations and two groundwater samples obtained from the existing onsite recovery wells for the kerosene analytical group constituents as described in Florida Department of Environmental Regulation (FDER) Chapter 17-770, Florida Administrative Code (FAC);
- location survey of all sampling locations; and
- reduction and analysis of all data gathered during the PCA.

1.2 SITE HISTORY. The BEQ site is located at Building 1586 in the northwest corner of NAVSTA Mayport. In September 1991, it was discovered that the pipeline leading from the heating fuel underground storage tank had corroded and was leaking. NAVSTA Mayport personnel estimated that approximately 3,000 gallons of the fuel had been released into the surrounding soil. Remedial measures were initiated to repair the pipeline and recover free product and contaminated groundwater. Contaminated soil in the vicinity of the release was excavated and disposed of during the pipeline repair. Approximately 800 gallons of free product, 2,000 gallons of contaminated groundwater, and 270 cubic yards of contaminated soil were removed and disposed of as part of the cleanup activities at the site. The excavated area was reportedly backfilled with 4 feet of gravel, covered with a layer of plastic sheeting, and overlain with 2 feet of topsoil.

1.3 SITE INVESTIGATION. The PCA was performed by ABB-ES on April 13 and 14, 1993. The TerraProbeSM system was used to obtain groundwater and soil samples for field screening and analysis. A total of 21 soil samples were screened in the field for volatile organic compounds and seven groundwater samples were collected for laboratory analysis of kerosene analytical group compounds. Groundwater samples collected for analysis of kerosene analytical group compounds were shipped by overnight carrier to Wadsworth/Alert Laboratories, Tampa, Florida. TerraProbeSM sample locations at the site are shown in Figure 1.

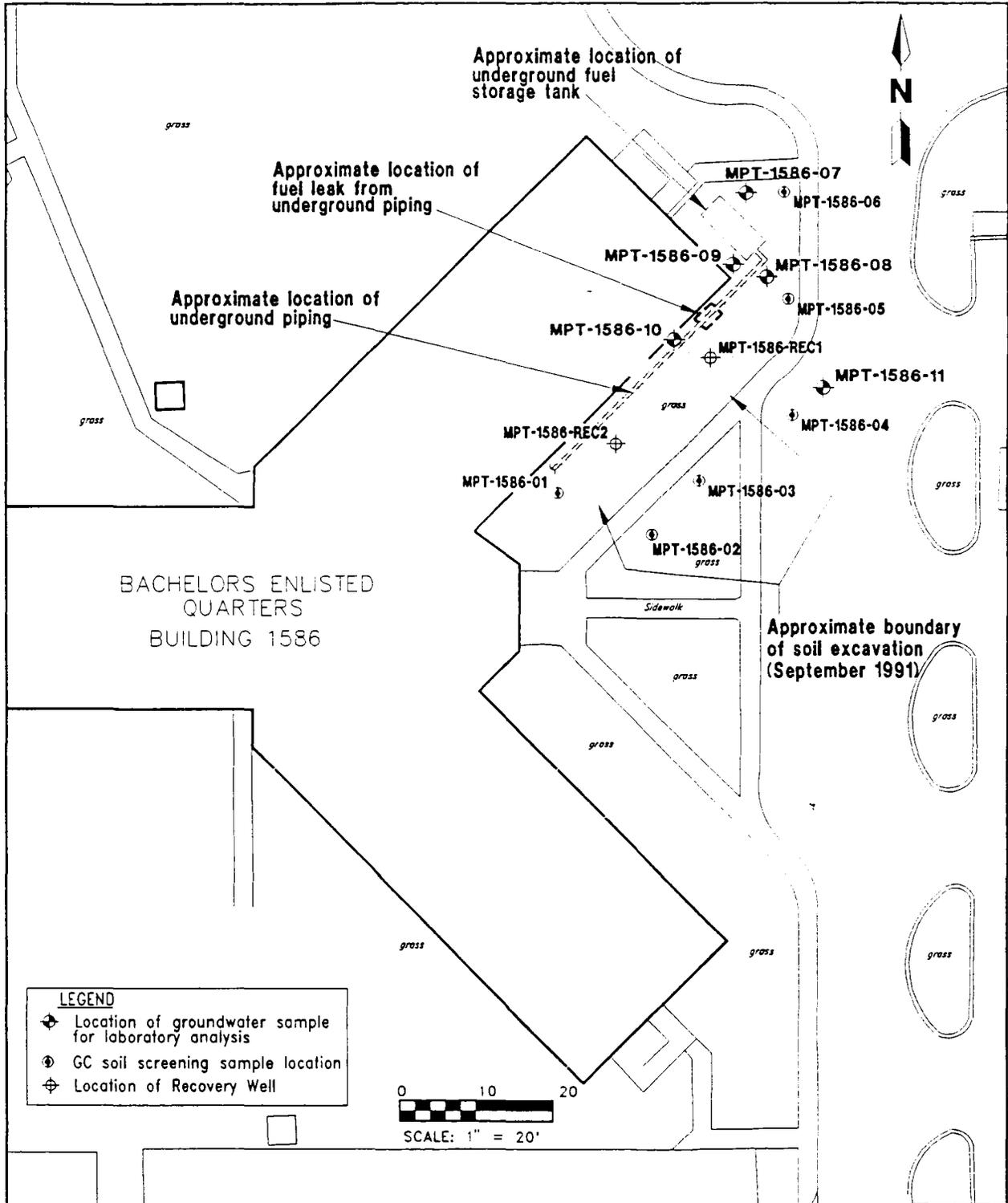
In accordance with the scope of services described in CTO No. 077, a Preliminary Contamination Assessment Report (PCAR) was prepared for the BEQ site. The findings, conclusions, and recommendations of the PCAR are summarized below.

2.0 FINDINGS

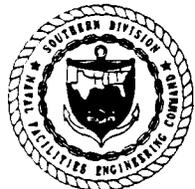
- Soil encountered during TerraProbeSM sampling typically consisted of fine-grained silty clayey sands with shell fragments.
- Groundwater at the site was encountered at approximately 5 to 6 feet below land surface (bls).
- Free product was not encountered in any of the sampling locations at the site.
- Excessively contaminated soil (OVA reading greater than 50 parts per million [ppm]), as defined in FDER Chapter 17-770, FAC, was detected in a total of 10 sampling intervals at 6 boring locations outside the excavated area. OVA headspace results are summarized in Table 1 and presented in Figure 2.
- Contaminants detected in the soil by field GC headspace analysis include benzene and toluene. Benzene concentrations ranged from 4 parts per billion (ppb) to 18 ppb. Toluene was detected in one sample at a concentration of 2 ppb. Field GC headspace results are summarized in Table 2.
- Groundwater contaminants identified by laboratory analysis during the PCA investigation include volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs), naphthalenes, and total recoverable petroleum hydrocarbons (TRPH).
- Contaminants detected in groundwater samples at concentrations that equal or exceed standards or target levels established by the FDER include total volatile organic aromatics (VOAs), total naphthalenes, PAHs, and TRPHs. Compounds detected by laboratory analysis of groundwater samples are listed in Table 3. Laboratory analytical results are presented in Figure 3.

3.0 CONCLUSIONS

- Petroleum contamination at the BEQ site resulted from a release of heating oil associated with a broken fuel pipeline.



**FIGURE 1
TERRAPROBE SAMPLING LOCATIONS**



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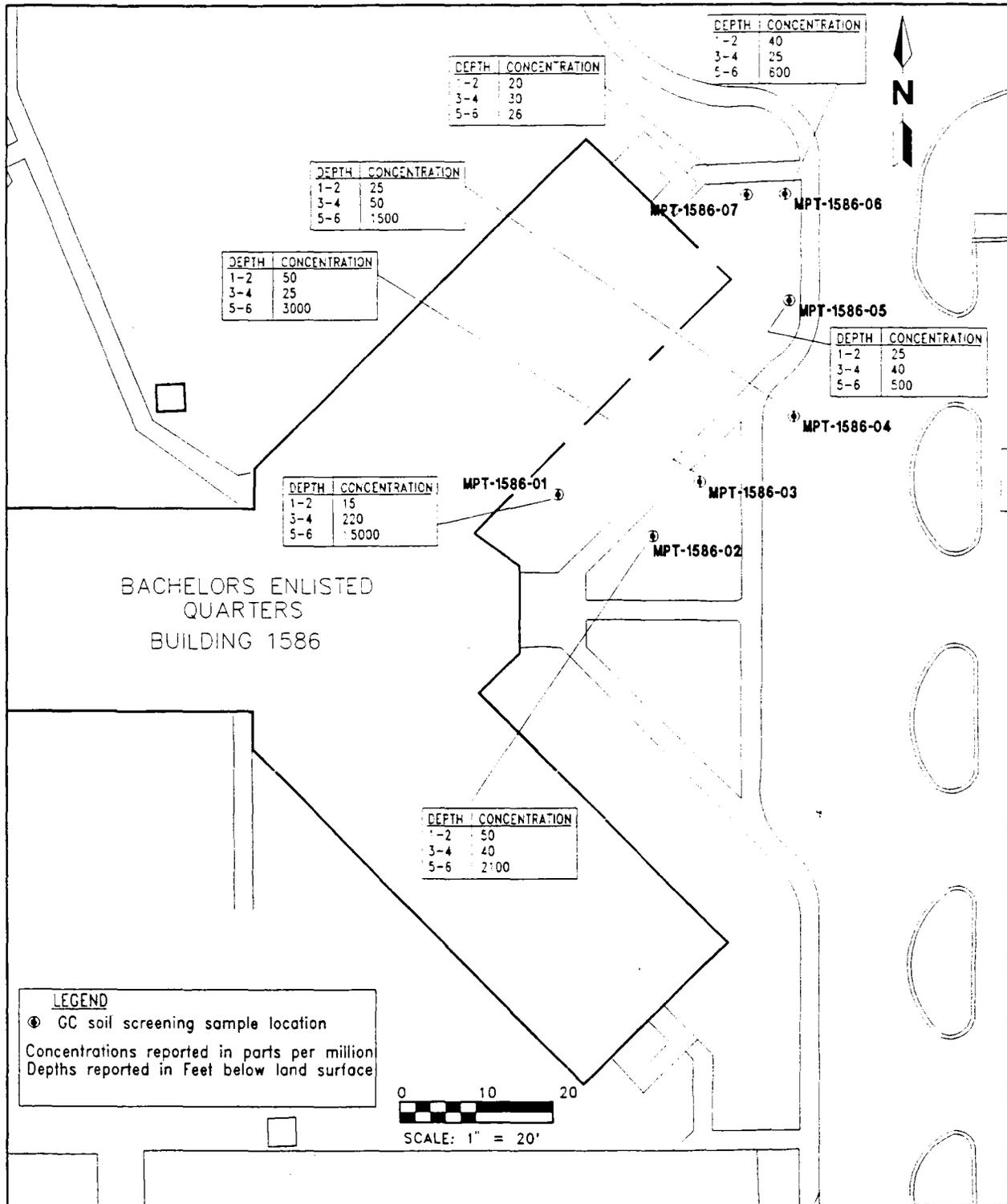
Table 1
Summary of Organic Vapor Analyzer (OVA) Soil Sample Results,
April 12 to 14, 1993

Technical Memorandum
 Bachelor Enlisted Quarters, Building 1586
 NAVSTA Mayport, Mayport, Florida

TerraProbe SM Boring Identification	Depth (feet bls)	Unfiltered ¹ (ppm)	Comments
MPT-1586-01	1 to 2	15	Strong fuel odor.
	3 to 4	220	
	5 to 6	>5,000	
MPT-1586-02	1 to 2	50	Strong fuel odor.
	3 to 4	40	
	5 to 6	2,100	
MPT-1586-03	1 to 2	50	
	3 to 4	25	
	5 to 6	3,000	
MPT-1586-04	1 to 2	25	
	3 to 4	50	
	5 to 6	1,500	
MPT-1586-05	1 to 2	40	Slight fuel odor.
	3 to 4	25	
	5 to 6	600	
MPT-1586-06	1 to 2	25	
	3 to 4	40	
	5 to 6	500	
MPT-1586-07	1 to 2	20	
	3 to 4	30	
	5 to 6	26	

¹Unfiltered OVA reading, without the use of a methane filter.

Notes: bls = below land surface.
 ppm = parts per million.



**FIGURE 2
 OVA RESULTS FOR SOIL**



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Table 2
Compounds Detected by Gas Chromatograph (GC) Analysis of Soil Samples,
April 12 to 14, 1993

Technical Memorandum
 Bachelor Enlisted Quarters, Building 1586
 NAVSTA Mayport, Mayport, Florida

TerraProbe SM Boring Identification	Depth (feet)	Benzene (ppb)	Toluene (ppb)
MPT-1586-03	2 to 3	13	ND
	4 to 5	4	2
MPT-1586-06	5 to 6	14	ND
MPT-1586-07	5 to 6	18	ND

Notes: ppb = parts per billion.
 ND = not detected.

**Table 3
Groundwater Sample Analytical Results,
April 12 to 14, 1993**

Technical Memorandum
Bachelor Enlisted Quarters, Building 1586
NAVSTA Mayport, Mayport, Florida

Contaminant	Monitoring Point Number, MPT-1586-								Regulatory Standards/ Guidance Concentrations
	07	08	09	09D	10	11	REC1	REC2	
Volatile Organics (USEPA Methods 601 and 602), ppb									
Benzene	ND	ND	ND	ND	88	ND	ND	ND	¹
Ethylbenzene	ND	ND	ND	ND	110	3	ND	ND	
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	
Xylenes	ND	ND	ND	ND	320	ND	ND	ND	
Total VOA	ND	ND	ND	ND	518	3	ND	ND	¹ 50
Bromodichloromethane	ND	ND	2	2	ND	ND	ND	1	
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	² 10
Chloroform	ND	3	ND	14	ND	ND	ND	17	
Methylene Chloride	ND	6	ND	1	ND	ND	ND	1	³ 3,800
Total Naphthalenes (USEPA Method 625), ppb									
1-Methylnaphthalene	ND	ND	ND	ND	130	0.67J	ND	ND	
2-Methylnaphthalene	ND	ND	ND	ND	170	1.10J	ND	ND	
Naphthalene	ND	ND	ND	ND	140	0.90J	ND	ND	
Total Naphthalene	ND	ND	ND	ND	440	2.67	ND	ND	¹ 100
Polynuclear Aromatic Hydrocarbons (PAHs) (625), ppb									
Acenaphthylene	ND	ND	ND	ND	2.8J	ND	ND	ND	² 10
Acenaphthene	ND	ND	ND	ND	8.6	ND	ND	ND	² 20
Fluorene	ND	ND	ND	ND	11	ND	ND	ND	² 10
Phenanthrene	ND	ND	ND	ND	19	ND	ND	ND	² 10
Pyrene	ND	ND	ND	ND	2.8J	ND	ND	ND	² 10
Total Recoverable Petroleum Hydrocarbons (TRPH), ppm									
TRPH	ND	ND	ND	ND	104	ND	ND	ND	¹ 5
Metals, ppb									
Lead	ND	ND	ND	ND	ND	6	ND	ND	³ 50

¹ State target level (Florida Department of Environmental Regulations [FDER], Chapter 17-770, Florida Administrative Code [FAC]).

² Guidance concentration recommended by FDER (February 1989).

³ Florida primary drinking water standard (FDER Chapter 17-550, FAC)

Notes: REC = recovery well.

USEPA = U.S. Environmental Protection Agency.

ND = not detected.

D = duplicate sample.

ppm = parts per million.

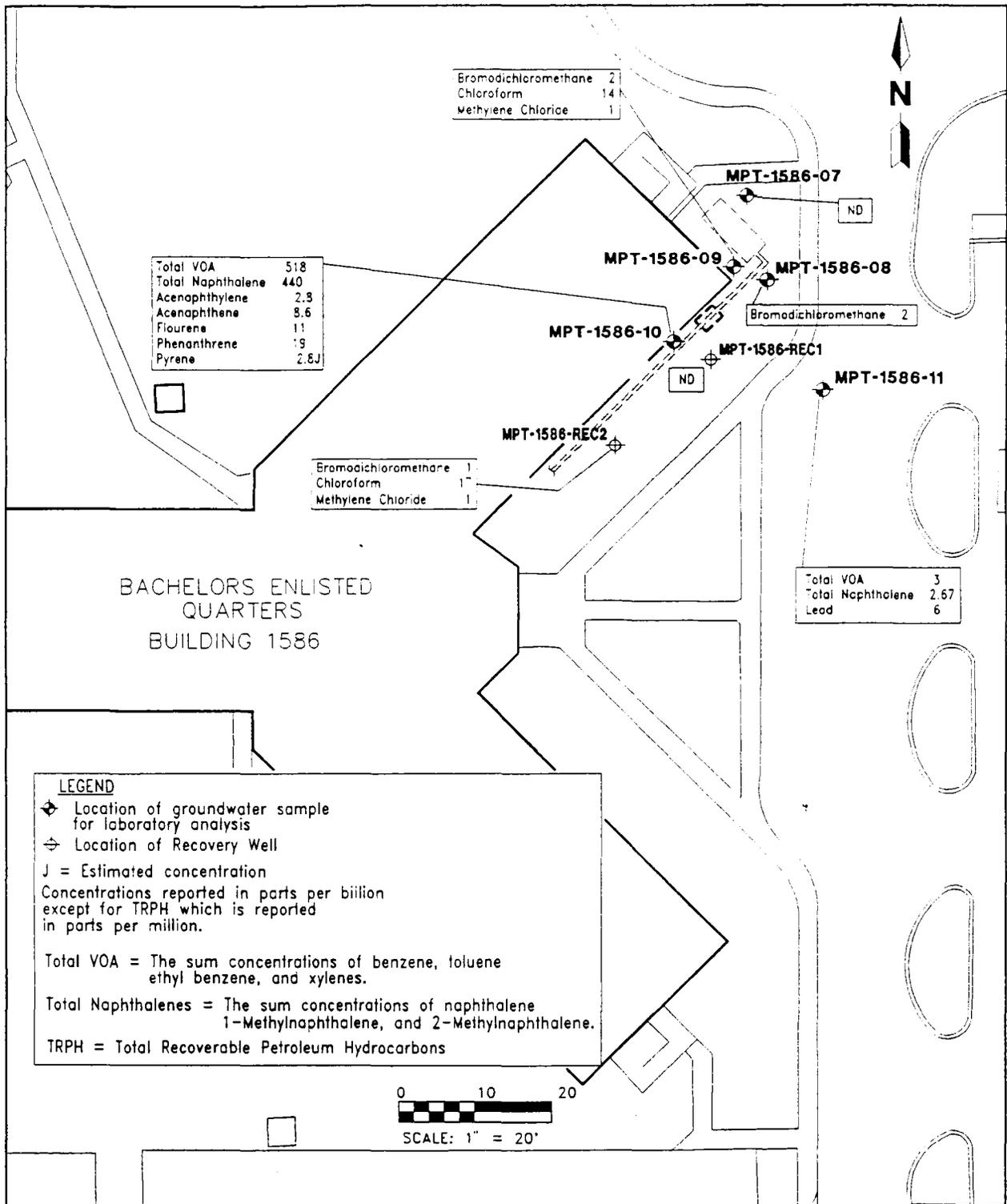
ppb = parts per billion.

J = estimated concentration.

Total VOA = total volatile organic aromatics (VOA); the sum of benzene, ethyl benzene, toluene, and xylenes.

Total naphthalenes = the sum of naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene.

TRPH = total recoverable petroleum hydrocarbons.



**FIGURE 3
LABORATORY ANALYTICAL RESULTS
OF GROUNDWATER SAMPLES**



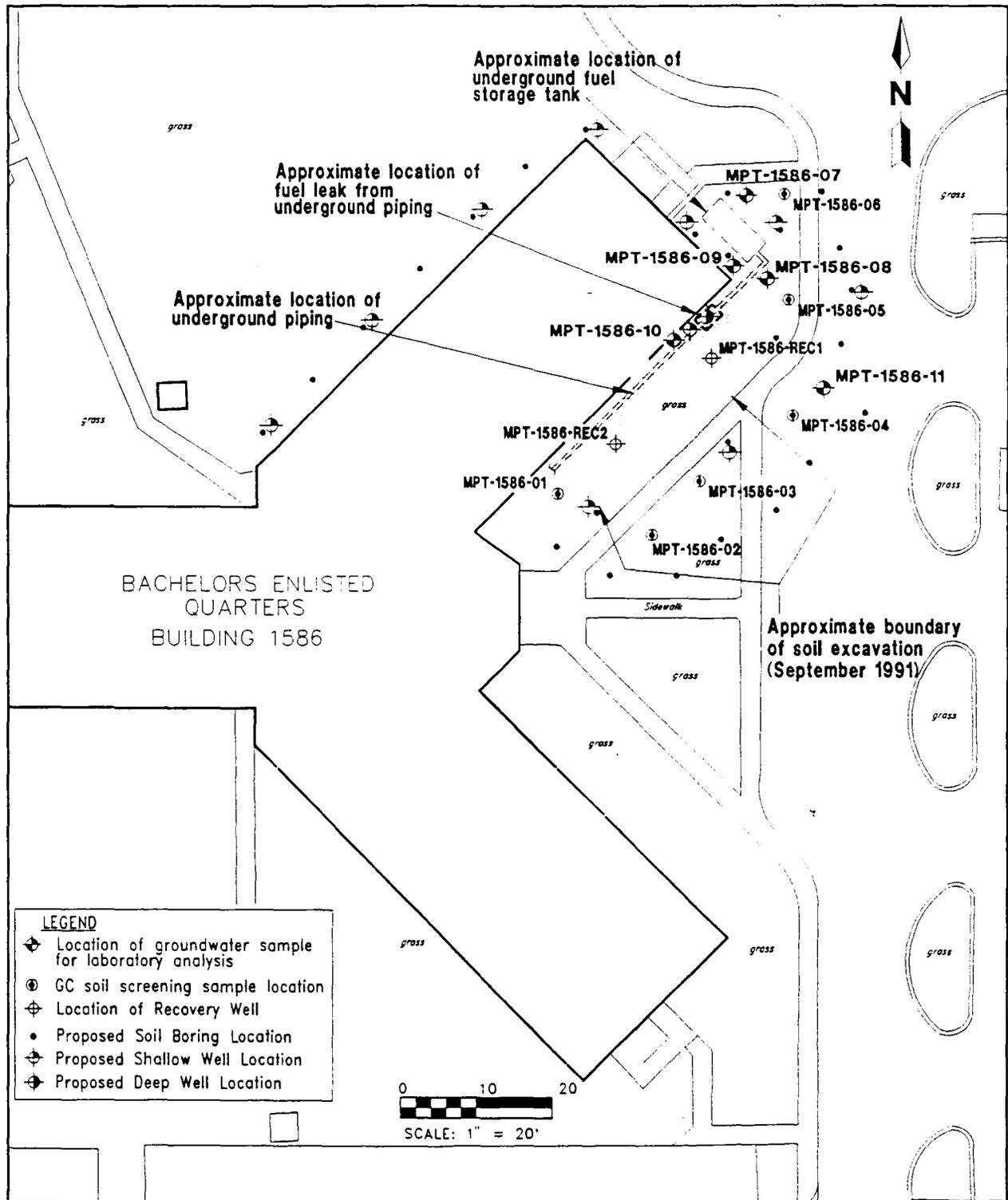
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- Soil outside of the previously excavated area at the site is excessively contaminated, as defined in FDER Chapter 17-770, FAC, to a depth of at least 6 feet bls.
- Laboratory analysis of groundwater at one sampling location along the fuel pipeline approximately 15 to 20 feet from the source area indicates contaminant levels exceeding FDER standards.
- Contaminated soil has been excavated from the area affected by the release, thus reducing the source of petroleum contamination to the groundwater. However, not all of the contaminated soil has been removed from the site and the extent of soil and groundwater contamination has not been adequately delineated to prepare a Contamination Assessment Report (CAR) for FDER approval.

4.0 RECOMMENDATIONS. Additional soil and groundwater sampling is needed to assess the horizontal and vertical extent of contamination at the site so that a CAR can be prepared and remedial action can be addressed to meet FDER clean-up requirements. The proposed scope of work for the contamination assessment includes the following:

- Approximately 20 to 25 soil borings will be installed to a depth of 6 feet bls with continuous soil sampling for OVA headspace screening at 2-foot intervals to assess the horizontal and vertical extent of soil contamination, in accordance with FDER May 1992, Guidelines, and Chapter 17-770, FAC.
- Eight to 10 permanent shallow wells and 1 deep monitoring wells will be installed to assess the vertical and horizontal extent of groundwater contamination and flow direction at the site. At a minimum, shallow monitoring wells should be installed within the area of highest contamination, at an upgradient location as a background well, and downgradient of the source of contamination. The deep monitoring well should be installed downgradient of the source area and within the groundwater contaminant plume. A map showing proposed soil boring and monitoring well locations is presented in Figure 4.



**FIGURE 4
PROPOSED SOIL BORING AND
MONITORING WELL LOCATIONS**



**TECHICAL MEMORANDUM
BEQ SITE**

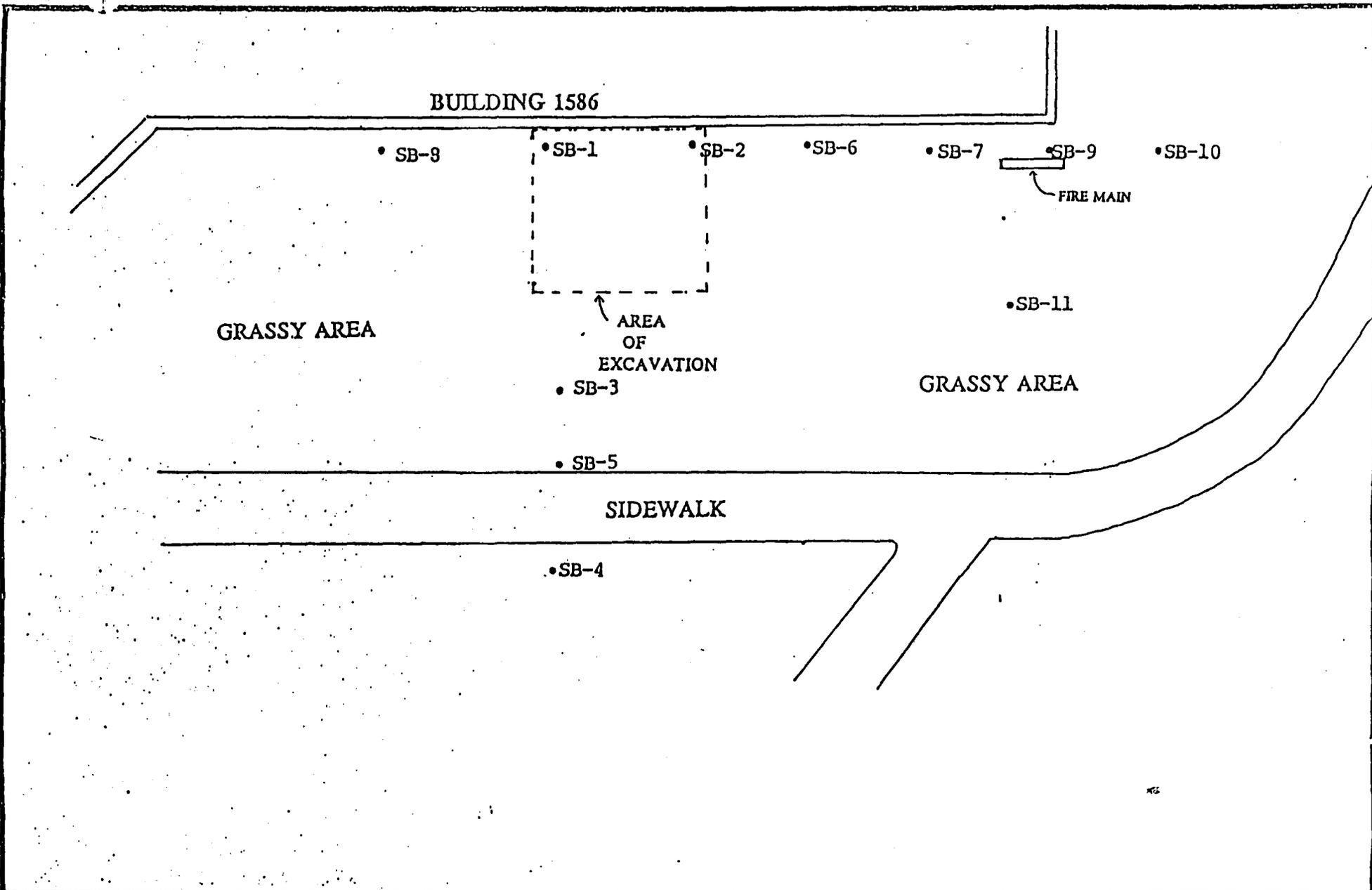
**NS MAYPORT
MAYPORT, FLORIDA**

OVA SOIL SCREENING RESULTS
 Mayport Naval Station/Building 1586
 Fuel Leak From Supply Line
 RSDI Project Number 91069
 9/10/91

ORGANIC VAPOR CONCENTRATION
 (in parts per million)

Sample No.	Sample Depth	<u>Unfiltered</u>	<u>Filtered</u>	<u>Corrected Value</u>	<u>Remarks</u>
1	4.0 Ft.	920	120	800	NW Corner of Excavation
2	4.5 Ft.	500	8	492	NE Corner of Excavation
3	4.5 Ft.	780	32	748	20 Ft. South of #1
4	3.0 Ft.	0	0	0	31 Ft. South of #1
5	4.0 Ft.	660	12	648	24 Ft. South of #1
6	4.0 Ft.	580	0	580	7 Ft. East of #2
7	4.0 Ft.	540	12	528	17 Ft. East of #2
8	4.0 Ft.	9	0	9	15 Ft. West of #1
9A	4.0 Ft.	220	42	178	NE Corner of Bldg 1586
9B	5.0 Ft.	210	28	182	Below # 9A
10	4.0 Ft.	18	2	16	10 Ft. East of #9
11	4.0 Ft.	0	0	0	11 Ft. South of Bldg

Size of original excavation: 13 Ft x 10 Ft x 4.5 Ft
 Samples taken by soil boring using stainless steel hand auger
 Field Meter: Foxboro 120 OVA/FID
 Field Calibration Check: 9/10/91. 13:42 300 ppm BTEX Standard



Environmental, Inc.
Consultants, Engineers & Services

MAYPORT NAVAL STATION, BUILDING 1586
Site Sketch 9/10/91 Showing Area of Excavation
and Soil Boring Locations
(not to scale)



OVA SOIL SCREENING RESULTS
 Mayport Naval Station/Building 1586
 Fuel Leak from Supply Line
 RSDI Project Number 91069
 9/12/91 thru 9/24/91

ORGANIC VAPOR CONCENTRATION (in parts per million)					
Sample No.	Sample Depth	<u>Unfiltered</u>	<u>Filtered</u>	<u>Corrected Value</u>	<u>Remarks</u>
9/12/91					
1A	4.0 Ft.	1	0	1	NW corner of excavation
2	4.0 Ft.	0	0	0	SW corner of excavation
1B	7.0 Ft.	1	0	1	Below # 1A
3	5.0 Ft.	38	0	38	20 Ft. out from bldg.
4	5.0 Ft.	30	2	28	17 Ft. out from bldg.
5	4.0 Ft.	230	6	224	20 Ft. out from bldg.
6	4.0 Ft.	82	1	81	13 Ft. out from bldg.
7	4.0 Ft.	720	10	710	19 Ft. out from bldg.
9/13/91					
8	4.0 Ft.	0	0	0	outside edge of sidewalk
9	4.0 Ft.	600	22	578	inside edge of sidewalk
10	4.0 Ft.	4	0	4	outside edge of sidewalk
11	4.0 Ft.	88	3	85	inside edge of sidewalk
12	4.0 Ft.	1	0	1	inside edge of sidewalk
13	4.0 Ft.	360	12	348	—
14	4.0 Ft.	5	0	5	—
15	4.0 Ft.	34	3	31	12 Ft. out from bldg.
16	4.0 Ft.	58	36	22	5 Ft. east of bldg.
17	4.0 Ft.	2	2	0	East side of UST
18	4.0 Ft.	2	0	2	NW side of UST





OVA SOIL SCREENING RESULTS (Contd.)
Mayport Naval Station/Building 1586

Sample No.	Sample Depth	ORGANIC VAPOR CONCENTRATION (in parts per million)			Remarks
		<u>Unfiltered</u>	<u>Filtered</u>	<u>Corrected Value</u>	
9/16/91					
RS-1	.5-1.0 Ft.	0	0	0	Random smpl, clean fill
RS-2	.5-1.0 Ft.	0	0	0	Random smpl, clean fill
RS-3	.5-1.0 Ft.	0	0	0	Random smpl, clean fill
19	3.5 Ft.	5	0	5	SW corner of excavation
20	4.0 Ft.	7	0	7	west wall of excavation
21	3.5 Ft.	540	3	537	Floor of excavation
22	4.0 Ft.	520	6	513	Under sprinkler main
23	4.0 Ft.	38	16	22	South wall of excavation
24	4.0 Ft.	62	0	62	South wall of excavation
25	5.0 Ft.	160	3	157	Floor of excavation
26	4.0 Ft.	200	4	196	South wall of excavation
27	4.0 Ft.	14	0	14	Below sidewalk
28	4.0 Ft.	3	0	3	Dup. of #1, NW corner

9/17/91					
29	4.0 Ft.	420	16	404	NE corner of excavation
30	4.0 Ft.	0	0	0	SE corner of excavation
31	4.0 Ft.	4	0	4	South wall of excavation
32	4.0 Ft.	3	0	3	South wall of excavation
33	4.0 Ft.	2	0	2	South wall of excavation
34	4.0 Ft.	40	1	39	South wall of excavation
35	4.0 Ft.	0	0	0	North wall of excavation
36	4.0 Ft.	12	0	12	North wall of excavation
37	4.0 Ft.	140	0	140	North wall of excavation
38	4.0 Ft.	340	0	340	North wall of excavation
39	4.0 Ft.	620	12	608	North wall of excavation
40	4.0 Ft.	68	0	68	North wall of excavation
41	4.0 Ft.	58	0	58	South wall of excavation
42	4.0 Ft.	32	0	32	South wall of excavation
43	4.0 Ft.	26	0	26	South wall of excavation
44	3.0 Ft.	600	96	504	Between fuel lines



OVA SOIL SCREENING RESULTS (CONT)
Mayport Naval Station/Building 1586

ORGANIC VAPOR CONCENTRATION (in parts per million)					
Sample No.	Sample Depth	<u>Unfiltered</u>	<u>Filtered</u>	<u>Corrected Value</u>	<u>Remarks</u>
9/20/91					
45	4.0 Ft.	560	420	140	Below fuel lines
46	3.0 Ft.	1	0	1	Below fuel lines
47	4.0 Ft.	100	64	36	Floor of excavation
48	4.0 Ft.	140	16	124	Floor of excavation
49	4.0 Ft.	220	0	220	South wall midpoint
50	4.0 Ft.	52	28	24	East wall of excavation
51	4.0 Ft.	10	4	6	North wall, NE corner
52	4.0 Ft.	18	12	6	North wall, NW corner
53	4.0 Ft.	12	4	8	North wall, center
54	4.0 Ft.	1	0	1	S. wall, below sidewalk
55	4.0 Ft.	3	0	3	S. wall, below sidewalk
56	4.0 Ft.	74	3	71	S. wall, below sidewalk
57	4.0 Ft.	15	0	15	S. wall, below sidewalk
58	4.0 Ft.	2	0	2	South wall
59	4.0 Ft.	0	0	0	South wall
60	4.0 Ft.	9	0	9	South wall
9/23/91					
61	40 Ft.	3	1	2	S. wall, below sidewalk
62	4.0 Ft.	420	0	420	S. wall, below sidewalk
63	4.0 Ft.	180	0	180	S. wall, below sidewalk
64	4.0 Ft.	120	2	118	2ft S. of # 62

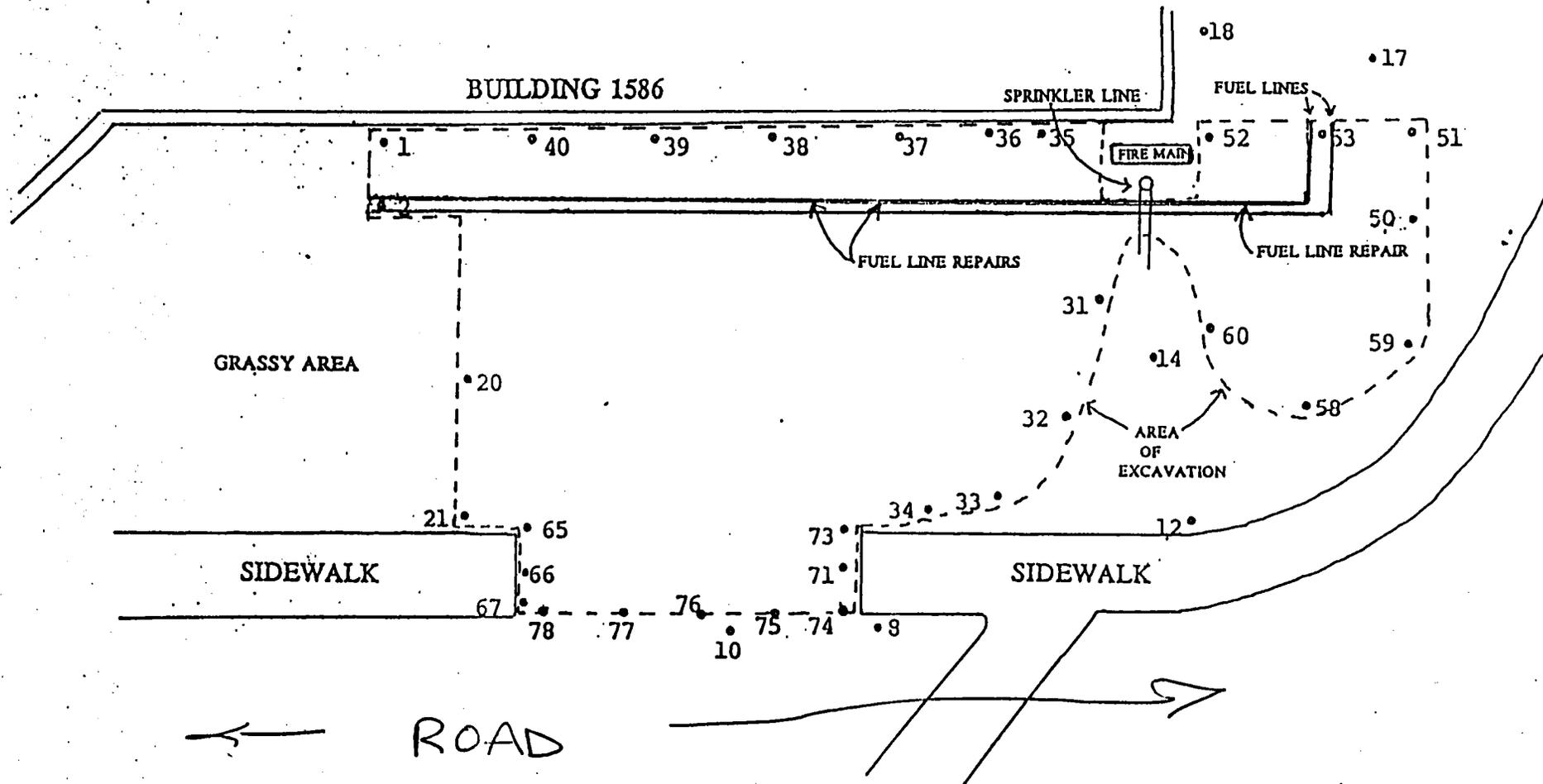


OVA SOIL SCREENING RESULTS (Contd.)
Mayport Naval Station/Building 1586

ORGANIC VAPOR CONCENTRATION
(in parts per million)

Sample No.	Sample Depth	<u>Unfiltered</u>	<u>Filtered</u>	<u>Corrected Value</u>	<u>Remarks</u>
9/24/91					
65	4.0 Ft.	16	1	15	West wall, NW corner
66	4.0 Ft.	4	0	4	West wall, center
67	4.0 Ft.	1	0	1	West wall, SW corner
68	4.0 Ft.	1	0	1	South wall
69	4.0 Ft.	70	3	67	South wall, center
70	4.0 Ft.	120	1	119	South wall
71	4.0 Ft.	14	0	14	East wall, center
72	4.0 Ft.	200	1	199	South wall, SE corner
73	4.0 Ft.	34	2	32	East wall, NE corner
74	4.0 Ft.	2	0	2	S wall, 1.5 ft S of #72
75	4.0 Ft.	32	14	18	S wall, 1.5 ft S of #70
76	4.0 Ft.	22	8	14	S wall, 1.5 ft S of #69
77	4.0 Ft.	3	0	3	S wall, 1.5 ft S of #68
78	4.0 Ft.	2	0	2	S wall, SW corner

Field Meter: Foxboro 128 OVA/FID
Field Calibration check: Daily, on site before use
Calibration gas: 300 ppm BTEX Standard



CERTIFICATE OF THERMAL TREATMENT

This Certificate is hereby issued to:

U. S. NAVAL BASE - MAYPORT

to document that 353.08 tons of petroleum hydrocarbon contaminated soil belonging to said certificate holder were received and processed through Anderson Columbia Co., Inc.'s Thermal Desorber Plant in Maxville, Florida

Petroleum contaminated soil was successfully treated on 10/17/91 to levels at or below soil cleanup standards set forth by the Florida Department of Environmental Regulation, Bureau of Waste Cleanup.

Treatment was completed in compliance with all applicable rules and regulations required by state and federal authorities and the facility permit.

ANDERSON COLUMBIA
ENVIRONMENTAL, INC.



01/29/92

Date

Michael H. McRae, V.P.

A0-10-91939

Permit No.

Cheryl FYI

242
P
10/2

5000
Ser N4226/5890
24 OCT 91

From: Commanding Officer, Naval Station, Mayport
To: Commanding Officer, Southern Division, Naval Facilities
Engineering Command (Code 18237)

Subj: POLLUTION CONTROL REPORT (PCR) NUMBERS S046M AND S046N

Ref: (a) Petroleum Contamination Agreement
(b) Florida Department of Environmental Regulation 17-770

Encl: (1) NAVSTA MAYPORT FL 041520Z OCT 91, Oil Spill Report

1. It is requested that Building 1586, Bachelor's Enlisted Quarters, be added to reference (a) and the subject PCRs' lists of sites for contamination assessment.

2. Enclosure (1) explains that the spill occurred on September 6, 1991, in the Building 1586 boiler fuel system and was detected by weekly inventory records. A leak of approximately 3,000 gallons of #2 fuel oil occurred in a portion of the fuel supply pipe. An emergency contract was procured through our base operations and support services (BOSS) contractor for the clean-up which included removal of approximately 800 gallons of free product, 2,000 gallons of contaminated groundwater and 270 cubic yards of contaminated soil. The site is filled with 4' of gravel and covered with a vapor barrier and 2' of topsoil. Two 24" perforated pipes are installed to act as wells to draw any remaining free product. Numerous soil borings and organic vapor analysis (OVA) readings were performed to determine the extent of the contamination. A complete report on the readings will be available at the conclusion of the contract. The majority of the free product and contaminated soil have been removed. As stated in reference (b), a contamination assessment is still required to determine the extent of remaining contamination.

3. If you have any questions, please contact Ms. Cheryl Mitchell, code N4226, AV 960-6730.

J. S. VEAL
By direction

cc: N428

wp/A:BEQ-PCR/PL/10-22

APPENDIX B
SITE CONDITIONS

Physiography

A persistent scarp exists in the eastern part of Florida. The longitudinal axis of the scarp roughly parallels the present coastline. East of the scarp is a broad flat valley that White (1970) calls the Eastern Valley. The length of the Eastern Valley also parallels the coastline and exists along much of eastern Florida. In north Florida, the valley extends eastward to the Atlantic Coastal Ridge and westward to the Duval Upland. Relict beach ridges exist throughout the length and width of the valley. Elevations vary from about 30 feet to less than 5 feet above mean sea level. It is likely that the valley represents a relict beach ridge plain.

Naval Station (NAVSTA) Mayport is located in the northern part of the Eastern Valley, near the western border of the Atlantic Coastal Ridge. The facility is located at the junction of the St. Johns River and the Atlantic Ocean. Physiographic features at the facility include the broad, low plain of the Eastern Valley, relict beach ridges of the Valley or the Atlantic Coastal Ridge, and tidal flats and plains associated with the St. Johns River. Elevations at the facility vary from approximately 5 feet to greater than 26 feet above mean sea level. These features and the topography play a significant role in mapping the potentiometric surface of the unconfined aquifer. The potentiometric surface roughly follows the contour of the land surface.

Regional Hydrogeology

NAVSTA Mayport is underlain by two water-bearing units. These include the shallow aquifer system and the Floridan aquifer system.

Franks (1980) states that the surficial (or unconfined) aquifer at NAVSTA Mayport has a thickness of approximately 70 feet. It consists of unconsolidated Pleistocene Age sand, shell, and clay. Fairchild (1972) considers this surficial aquifer to be part of the shallow aquifer system in Duval County. The thickness of the unconsolidated Pleistocene sand may be as much as 200 feet in some parts of Duval County. Also included in the shallow aquifer system is the Hawthorn Group; increasing the thickness of the system to greater than 400 feet at Naval Station (NAVSTA) Mayport. Much of the Hawthorn Group sediment acts as a hydraulic barrier, separating the shallow aquifer system from the deeper Floridan Aquifer System.

Franks (1980) separates the surficial aquifer into an upper zone and a lower zone. The zones are separated by beds of lower permeability that generally consist of a greenish-gray clay with minor amounts of shell fragments and sand.

The upper zone generally extends from land surface to 25 to 50 feet below land surface (bls). The sediment of the upper zone is generally unconsolidated, fine-grained, well-sorted sand and shell beds. Thin lenses of clay may be locally present. The shell beds generally have a higher water yield than do the sand beds.

The lower zone (locally called the shallow-rock zone) consists of sand, shell, sandy clay, and limestone. This zone is typically encountered from approximately 50 feet to greater than 200 feet bls. The limestone is the major water-yielding

zone in the shallow aquifer system. At NAVSTA Mayport this limestone has been encountered at approximately 85 feet bls (Franks, 1980).

The upper section of the surficial aquifer is recharged by local rainfall and discharges to area streams or percolates downward to the lower sections. The depth to the surficial aquifer water table at the BEQ site typically is about 5 feet bls.

Water quality data (Franks, 1980) indicate that both freshwater and brackish water exist at the facility. Specific conductance in the fresh water zone ranged from 630 micromhos per centimeter ($\mu\text{mhos/cm}$) to 1,350 $\mu\text{mhos/cm}$. Specific conductance in the brackish water zone ranged from 12,800 $\mu\text{mhos/cm}$ to 15,500 $\mu\text{mhos/cm}$. The interface between the fresh and brackish zones ranges from 35 to 44 feet bls. Total dissolved solids in the upper zone of the water table aquifer range from 570 to 840 milligrams per liter (mg/l). This zone can potentially be used as a potable water source and total dissolved solids are less than 10,000 mg/l. This groundwater, therefore, is considered Class G-II (Chapter 62-3, Florida Administrative Code [FAC], *Water Quality Standards*). Groundwater in the brackish water zone is considered Class G-III.

The Floridan aquifer system is the principal source of freshwater in northeast Florida. It is comprised of, in ascending order, the Oldsmar, Lake City, and Avon Park Limestones; the Ocala Group; and a few discontinuous, thin, water-bearing zones in the lower part of the Hawthorn Group, some of which are not present in all areas.

The Ocala Group is a homogeneous sequence of permeable, hydraulically connected, marine limestones containing a few hard, less transmissive dolomite or limestone beds that restrict the vertical movement of water. The Avon Park Limestone is Eocene in age and consists almost entirely of hard, relatively impermeable, dolomite confining beds and soft permeable limestone and dolomite water-bearing zones. The Lake City Limestone unconformably underlies the Avon Park Limestone and is also Eocene in age. Lithologically, it consists of alternating beds of white to brown, chalky to granular limestone with lignite bands, and gray to tan dolomite. Below the Lake City Limestone is the Oldsmar Limestone of early Eocene Age. It consists of a cream to brown, soft, granular limestone and cherty, glauconitic, massive to finely crystalline dolomite (Leve, 1968).

The top of the Floridan aquifer system occurs at a depth of about 300 feet bls at NAVSTA Mayport. Leve (1966) reports that NAVSTA Mayport receives water from the Floridan aquifer system. Leve states that production wells at the facility are approximately 1,000 feet deep and produce an average of 1.5 million gallons per day of water. Groundwater flow in the Floridan aquifer system in eastern Duval County is to the east and northeast (Leve, 1966).

APPENDIX C

INVESTIGATIVE METHODOLOGIES AND EQUIPMENT

Soil Boring Advancement, Soil Sampling, and Organic Vapor Analyzer (OVA) Headspace Analysis. Soil borings were advanced using a stainless-steel hand auger. Soil samples were collected directly from the auger buckets and placed in 16-ounce glass jars, which were sealed with a double layer of aluminum foil. Soil volatile organic compound (VOC) concentrations were assessed by OVA headspace screening following procedures outlined in *Guidelines for Assessment and Remediation of Petroleum Contaminated Soil* (FDEP, 1994). Samples were analyzed using an OVA equipped with a flame ionization detector (FID).

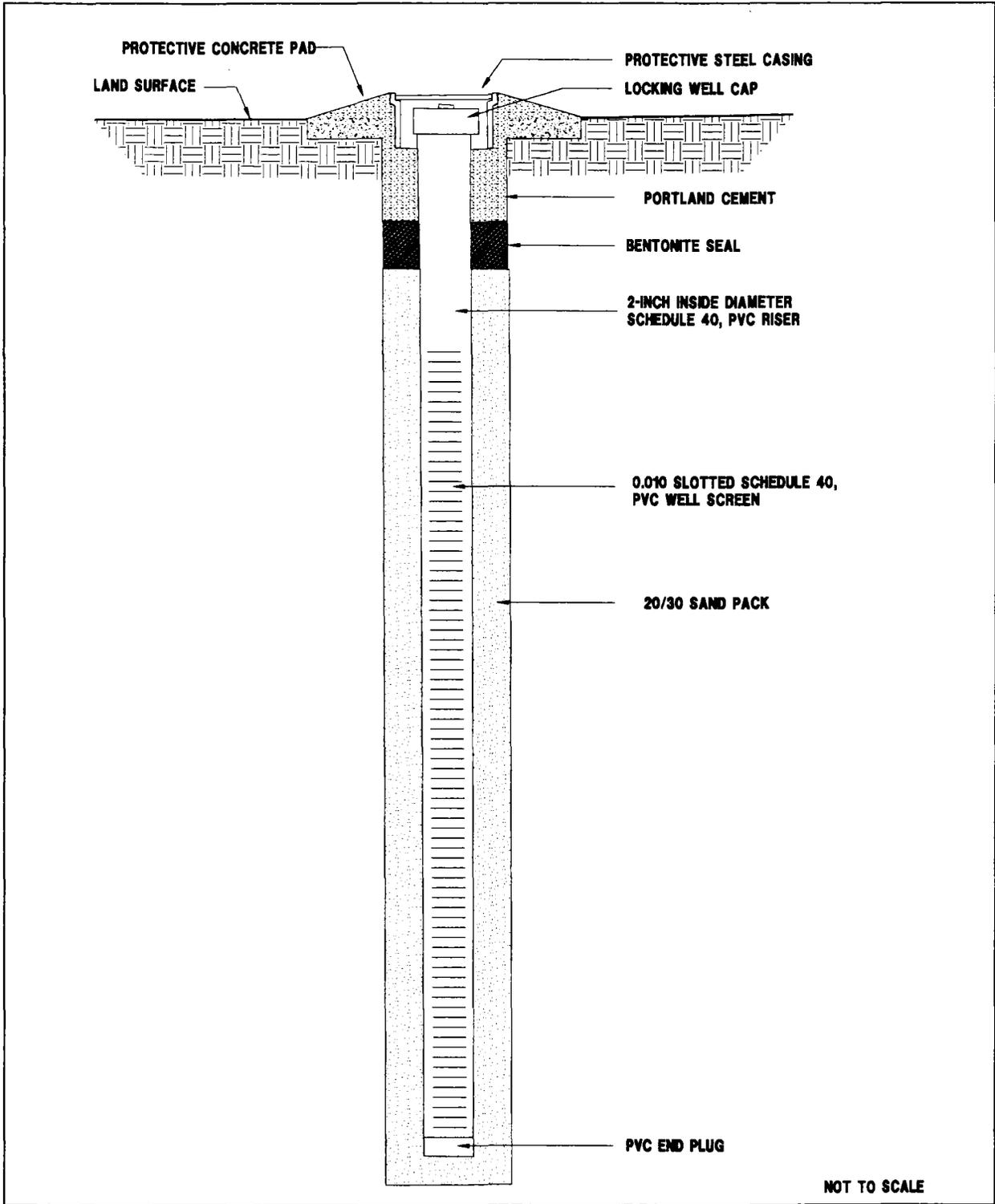
Monitoring Well Installation and Construction. Borings for monitoring wells were advanced with a truck-mounted drill rig using rotary drilling techniques with 4.25-inch inside diameter (ID), hollow-stemmed augers. Monitoring wells MW-01 through MW-07 and MW-09 were installed to a depth of 13 feet below land surface (bls). Monitoring well MW-08D was installed to a depth of 30 feet bls.

Typical shallow monitoring well installation details are presented in Figure C-1. The shallow monitoring wells are constructed of 2-inch ID, schedule 40, polyvinyl chloride (PVC) casing with flush-threaded joints and 10 feet of 0.010-inch machine-slotted screen. PVC well casing extends from the top of the screen to land surface. A 20/30 grade silica sand filter pack was placed in the annular space to approximately 0.3 foot above the top of the screened interval. A 0.3-foot-thick bentonite seal was placed on top of the filter pack. The remaining annular space was grouted to surface with a neat cement grout. A protective traffic-bearing vault was installed to complete the well. Monitoring wells are equipped with a locking well cap and a padlock.

Monitoring Well MW-08D is double cased, with 6-inch ID, Schedule 40 PVC surface casing installed to a depth of 22 feet bls. The well riser pipe is constructed of 2-inch ID, Schedule 40, PVC. The lower 5 feet of the well consists of 2-inch ID, Schedule 40 PVC, with 0.010-inch slotted well screen. Filter pack, bentonite seal, and grout details for the deep well are similar to those of the shallow monitoring wells. Typical construction details of deep monitoring wells are presented in Figure C-2.

Groundwater Elevation Measurements. Depth to groundwater was measured to the nearest 0.01 foot using an electronic water level indicator. Water table elevations were calculated by subtracting the measured depth to groundwater from the top of casing elevation for each respective well. Top of casing elevations are referenced to a datum point arbitrarily set at an elevation of 10.00 feet above msl.

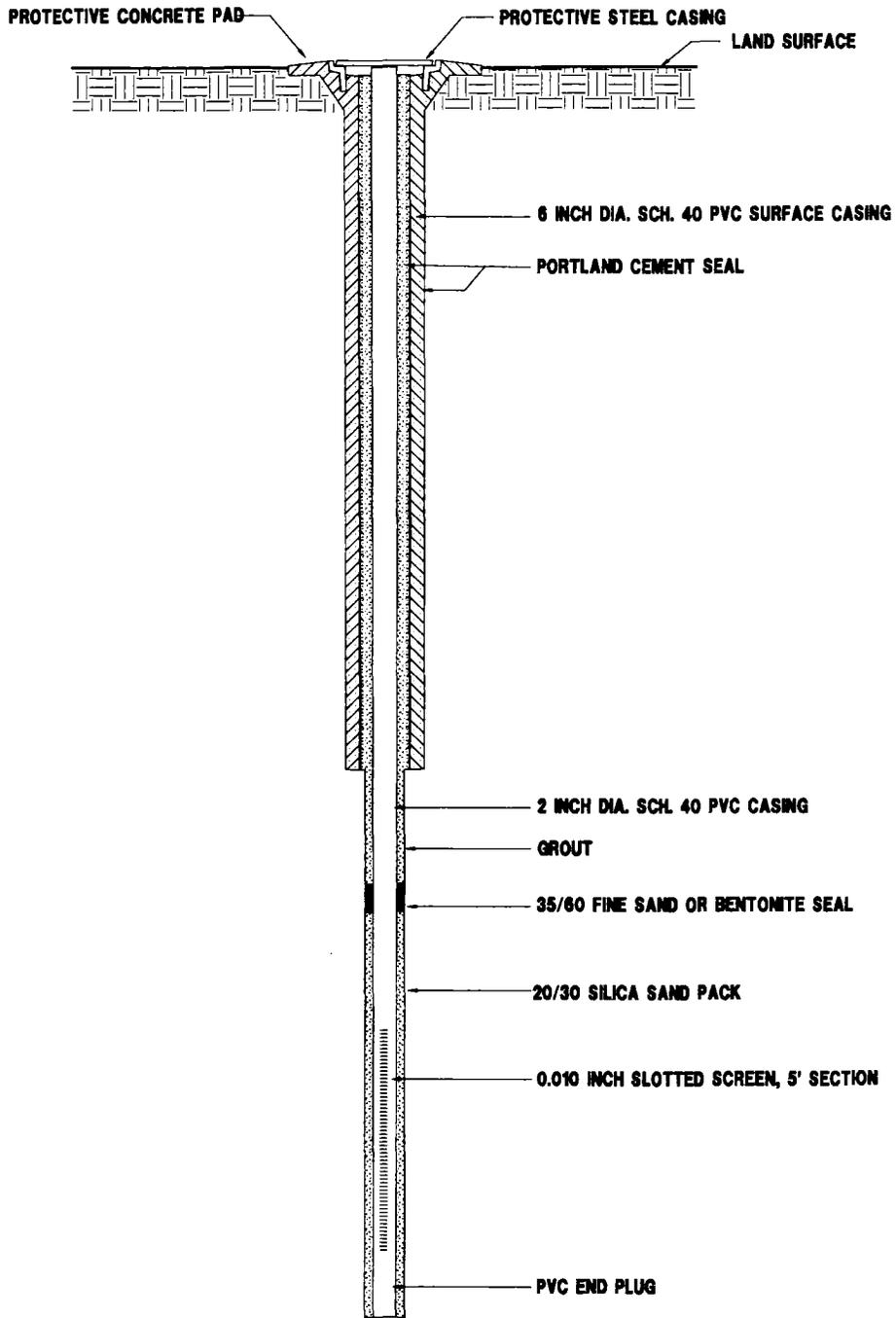
Groundwater Sampling and Procedures. Before sample collection, each monitoring well was purged with a decontaminated polyethylene bailer until five well volumes had been removed from the well. Groundwater samples were then collected with the bailer used to purge the well. Groundwater samples were placed into appropriate containers, properly preserved, and placed on ice. Groundwater samples were sent by overnight carrier to Enseco-Wadsworth/ALERT Laboratories, Tampa, Florida, under chain-of-custody procedures. Appropriate quality assurance and quality control (QA/QC) samples were collected and analyzed.



**FIGURE C-1
TYPICAL MONITORING WELL
INSTALLATION DETAIL**



**CONTAMINATION ASSESSMENT
REPORT
BACHELOR ENLISTED QUARTERS
BUILDING 1586
NAVSTA MAYPORT
MAYPORT, FLORIDA**



NOT TO SCALE

**FIGURE C-2
TYPICAL DEEP MONITORING WELL
INSTALLATION DETAIL**



**CONTAMINATION ASSESSMENT
REPORT
BACHELOR ENLISTED QUARTERS
BUILDING 1586
NAVSTA MAYPORT
MAYPORT, FLORIDA**

APPENDIX D
LITHOLOGIC LOGS

Project: Bachelor Enlisted Quarters, Building 1586 Contamination Assessment Report	Monitoring Well I.D.: MPT-1586-01	Soil Boring I.D.:
Site: NAVSTA Mayport	Client: SOUTHNAVFACENCOM	Project no.: 07587.31
Drilling contractor: Alliance Environmental	Drill rig: Mobil Drill B-81	Drilling method: Hollow Stem Auger

Installation date: 06/13/94	Completion date: 06/13/94	Well development date: 06/15/94
Casing ID: 2 in.	Screened Int.: 3-13 ft. bls'	Total depth: 13.0ft.
TOC elev.: 9.38ft.	Monitor instrument/OVD type: Porta-FID	Geologist: M. Joop

Depth (ft.)	Laboratory Sample ID.	Sample Recovery	Headspace (ppa)	Geologic Description and Remarks	Lithologic symbol	Soil class.	Blows/6-in.	Well construction diagram
				Topsoil		SM		
5	GC (soil)		12	<p>SAND: Tan, very fine grained to silt with shell fragments, soft, loose, dry.</p> <p>SILTY SAND: Light gray, very fine grained to silt, wet, with dark gray clay lens at 5.5 to 6.0 ft. bls. GC sample collected above clay lens for on-site screening.</p> <p><i>Well installed outside excavation zone.</i></p> <p># = approximate depth</p>			6.1, 11, 17.32	
10								
15								

Project: Bachelor Enlisted Quarters, Building 1586 Contamination Assessment Report		Monitoring Well I.D.: MPT-1586-02	Soil Boring I.D.:
Site: NAVSTA Mayport		Client: SOUTHNAVFACENGCOM	Project no.: 07587.31
Drilling contractor: Alliance Environmental		Drill rig: Mobil Drill B-81	Drilling method: Hollow Stem Auger
Installation date: 08/14/94	Completion date: 08/14/94	Well development date: 08/15/94	
Casing ID: 2 in.	Screened Int.: 3-13 ft. b/s	Total depth: 13.0 ft.	Initial depth to \bar{y} 5.0 ± ft.
TOC elev.: 9.49 ft.	Monitor instrument/OVD type: Porta-FID		Geologist: M. Joop

Depth (ft.)	Laboratory Sample ID.	Sample Recovery	Headspace (pps)	Geologic Description and Remarks	Lithologic symbol	Soil class.	Blows/6-in.	Well construction diagram
				Topsoil		SM		
				SAND: Tan quartz sand, very fine grained to silt with shell fragments, soft, loose, dry.				
5	GC (soil)		7	SILTY SAND: Light gray quartz sand, very fine grained to silt with shell fragments, dense, wet.			6,11,17,32	
10								
15								

Well installed outside excavation zone.

8 = approximate depth

Project: Bachelor Enlisted Quarters, Building 1586 Contamination Assessment Report		Monitoring Well I.D.: MPT-1586-03	Soil Boring I.D.:
Site: NAVSTA Mayport		Client: SOUTHNAVFACENGCOM	Project no.: 07587.31
Drilling contractor: Alliance Environmental		Drill rig: Mobil Drill B-81	Drilling method: Hollow Stem Auger

Installation date: 06/14/94	Completion date: 06/14/94	Well development date: 06/15/94
Casing ID: 2 in.	Screened in.: 3-13 ft. bls	Total depth: 13.0 ft.
TDC elev.: 10.35 ft.	Monitor instrument/OVD type: Porta-FID	Geologist: M. Joop

Depth (ft.)	Laboratory Sample ID.	Sample Recovery	Headspace (ppm)	Geologic Description and Remarks	Lithologic symbol	Soil class.	Blows/6-in.	Well construction diagram
				Topsoil		SM		
				SAND: Tan quartz sand, very fine grained to silt with shell fragments, soft, loose, dry.				
5	GC (soil)		22	SAND: Tan quartz sand, very fine grained to silt with shell fragments, dense, wet.			10, 16, 8, 5	
10				Well installed outside excavation zone.				
15				8 = approximate depth				

Project: Bachelor Enlisted Quarters, Building 1588 Contamination Assessment Report		Monitoring Well I.D.: MPT-1588-04	Soil Boring I.D.:
SRE: NAVSTA Mayport		Client: SOUTHNAVFACENGCOM	Project no.: 07587.31
Drilling contractor: Alliance Environmental		Drill rig: Mobil Drill B-81	Drilling method: Hollow Stem Auger
Installation date: 06/14/94	Completion date: 06/14/94	Well development date: 06/15/94	
Casing ID: 2 in.	Screened in.: 3-13 ft. bis	Total depth: 13.0 ft.	Initial depth to ∇ 5.0 \pm ft.
TOC elev.: 9.98 ft.	Monitor instrument/OVD type: Porta-FID		Geologist: M. Joop

Depth (ft.)	Laboratory Sample ID.	Sample Recovery	Headspace (ppm)	Geologic Description and Remarks	Lithologic symbol	Soil class.	Blows/6-in.	Well construction diagram
5	GC (soil)		2700	Topsoil SILTY SAND: Medium gray quartz sand, very fine grained to silt with shell fragments, dense, wet. <i>Well installed inside excavation zone.</i>		SM	Posthole 12,16,18,30	
10								
15								

\pm = approximate depth

Project: Bachelor Enlisted Quarters, Building 1586 Contamination Assessment Report		Monitoring Well I.D.: MPT-1586-05	Soil Boring I.D.:
Site: NAVSTA Mayport		Client: SOUTHNAVFACENGC0M	Project no.: 07587.31
Drilling contractor: Alliance Environmental		Drill rig: Mobil Drill B-61	Drilling method: Hollow Stem Auger
Installation date: 05/14/94	Completion date: 05/14/94	Well development date: 05/15/94	
Casing ID: 2 in.	Screened Int.: 3-13 ft. bis	Total depth: 13.0 ft.	Initial depth to \bar{g} 5.0 ± ft.
TOC elev.: 9.27 ft.	Monitor instrument/OVD type: Porta-FID		Geologist: M. Joop

Depth (ft.)	Laboratory Sample ID.	Sample Recovery	Headspace (ppa)	Geologic Description and Remarks	Lithologic symbol	Soil class.	Blows/6-in.	Well construction diagram
				Topsoil		SM		
5	GC (soil)		290	SILTY SAND: Medium gray quartz sand, very fine grained to silt with shell fragments, dense, wet.			6,13,20,23	
10								
15								

± = approximate depth

Project: Bachelor Enlisted Quarters, Building 1586 Contamination Assessment Report		Monitoring Well I.D.: MPT-1586-06	Soil Boring I.D.:
Site: NAVSTA Mayport		Client: SOUTHNAVFACENGCOM	Project no.: 07587.31
Drilling contractor: Alliance Environmental		Drill rig: Mobil Drill B-61	Drilling method: Hollow Stem Auger
Installation date: 06/14/94	Completion date: 06/14/94	Well development date: 06/15/94	
Casing ID: 2 in.	Screened Int.: 3-13 ft. bis	Total depth: 13.0 ft.	Initial depth to γ 5.0 ± ft.
TOC elev.: 10.98 ft.	Monitor instrument/OVD type: Porta-FID		Geologist: M. Joop

Depth (ft.)	Laboratory Sample ID.	Sample Recovery	Headspace (ppa)	Geologic Description and Remarks	Lithologic symbol	Soil class.	Blows/6-in.	Well construction diagram
0				Topsoil		SM		
5	GC (soil)		340	SILTY SAND: Light gray quartz sand, very fine grained to silt with shell fragments, dense, wet.			12, 25, 37, 50	
10								
15								

± = approximate depth

Project: Bachelor Enlisted Quarters, Building 1586 Contamination Assessment Report		Monitoring Well I.D.: MPT-1586-07	Soil Boring I.D.:
Site: NAVSTA Mayport		Client: SOUTHNAVFACENCOM	Project no.: 07587.31
Drilling contractor: Alliance Environmental		Drill rig: Mobil Drill B-81	Drilling method: Hollow Stem Auger
Installation date: 06/14/94	Completion date: 06/14/94	Well development date: 06/15/94	
Casing ID: 2 in.	Screened Int.: 3-13 ft. bis	Total depth: 13.0ft.	Initial depth to ∇ 5.0 \pm ft.
TOC elev.: 9.31ft.	Monitor instrument/OVD type: Porta-FID		Geologist: M. Joop

Depth (ft.)	Laboratory Sample ID.	Sample Recovery	Headspace (ppm)	Geologic Description and Remarks	Lithologic symbol	Soil class.	Blows/6-in.	Well construction diagram
				Topsoil		SM		
5	GC (soil)		2400	SILTY SAND: Light gray quartz sand, very fine grained to silt with shell fragments, dense, wet.			Posthole	
10								
15								

\pm = approximate depth

Project: Bachelor Enlisted Quarters, Building 1586 Contamination Assessment Report		Monitoring Well I.D.: MPT-1586-08D	Soil Boring I.D.:
Site: NAVSTA Mayport		Client: SOUTHNAVFACENCOM	Project no.: 07587.31
Drilling contractor: Alliance Environmental		Drill rig: Mobil Drill B-81	Drilling method: Mud Rotary
Installation date: 06/15/94	Completion date: 06/16/94	Well development date: 06/17/94	
Casing ID: 2 in.	Screened Int.: 25-30 ft. bis	Total depth: 30.0ft.	Initial depth to \bar{y} 5.0 \pm ft.
TOC elev.: 9.73ft.	Monitor instrument/OVD type: Porta-FID		Geologist: K. Murray/M. Joop

Depth (ft.)	Laboratory Sample ID.	Sample Recovery	Headspace (ppm)	Geologic Description and Remarks	Lithologic symbol	Soil class.	Blows/6-in.	Well construction diagram
				Posthole		SM	Topsoil	
				Limestone pea gravel fill material.		Fill		
5				SILTY SAND: Light gray quartz sand, very fine grained to silt with shell fragments, dense, wet.		SM	8,8,15,32	
							15,28,29,30	
10							16,14,>50	
							10,40,38,30	
15				SILTY SAND: Light gray quartz sand, very fine grained to silt with few shell fragments, dense, wet. Dark gray clayey sand from 16'-17' bis.			N/A	
							8,27,47,>50	
20							12,22,32,>50	
							25,>50	
25				SILTY SAND: Light gray quartz sand, very fine grained to silt with thin interbedded layers of shell fragments and clayey sand.			16,50,>50	
							12,23,45,>50	
30	GC (soil)		0				55,>50	
				Well installed inside excavation zone.				
				\bar{y} = approximate depth				

Project: Bachelor Enlisted Quarters, Building 1586 Contamination Assessment Report		Monitoring Well I.D.: MPT-1586-09	Soil Boring I.D.:
Site: NAVSTA Mayport		Client: SOUTHNAVFACENCOM	Project no.: 07587.31
Drilling contractor: Alliance Environmental		Drill rig: Mobil Drill B-61	Drilling method: Hollow Stem Auger
Installation date: 06/16/94	Completion date: 06/16/94	Well development date: 06/17/94	
Casing ID: 2 in.	Screened in: 3-13 ft. bis	Total depth: 13.0 ft.	Initial depth to \pm 5.0 \pm ft.
TOC elev.: 9.80 ft.	Monitor instrument/OVD type: Porta-FID		Geologist: M. Joop

Depth (ft.)	Laboratory Sample ID.	Sample Recovery	Headspace (ppm)	Geologic Description and Remarks	Lithologic symbol	Soil class.	Blows/6-in. construction diagram
				Topsoil			
5	GC (soil)		36	SILTY SAND: Light gray quartz sand, very fine grained to silt with shell fragments, dense, wet.		SM	
10							
15							

Well installed outside excavation zone.

$\#$ = approximate depth

APPENDIX E
AQUIFER PARAMETER CALCULATIONS

Estimates of average pore water velocity were obtained using the following formula:

$$V = (K \cdot I) / n$$

where

V = seepage (velocity) (ft/day),
K = hydraulic conductivity (ft/day),
I = hydraulic gradient, and
n = estimated porosity.

Assuming a high hydraulic conductivity of 6.87 ft/day and a low conductivity of 5.96 ft/day, an estimated porosity of 25 percent and a hydraulic gradient of 0.001 in the northeast direction, the calculated average linear pore water velocities would be as follows:

a: Northeast direction - gradient calculated from wells MW-02 to MW-04.

$$\begin{aligned} V &= (6.87 * 0.001 / 0.25 \text{ and} \\ V &= (5.96 * 0.001 / 0.25 \\ V &= 0.027 \text{ ft/day to } 0.24 \text{ ft/day or} \\ V &= 9.86 \text{ ft/year to } 8.76 \text{ ft/year} \end{aligned}$$

In order to calculate a transmissivity value from the slug test results, the following formula was used:

$$T = K * b$$

where

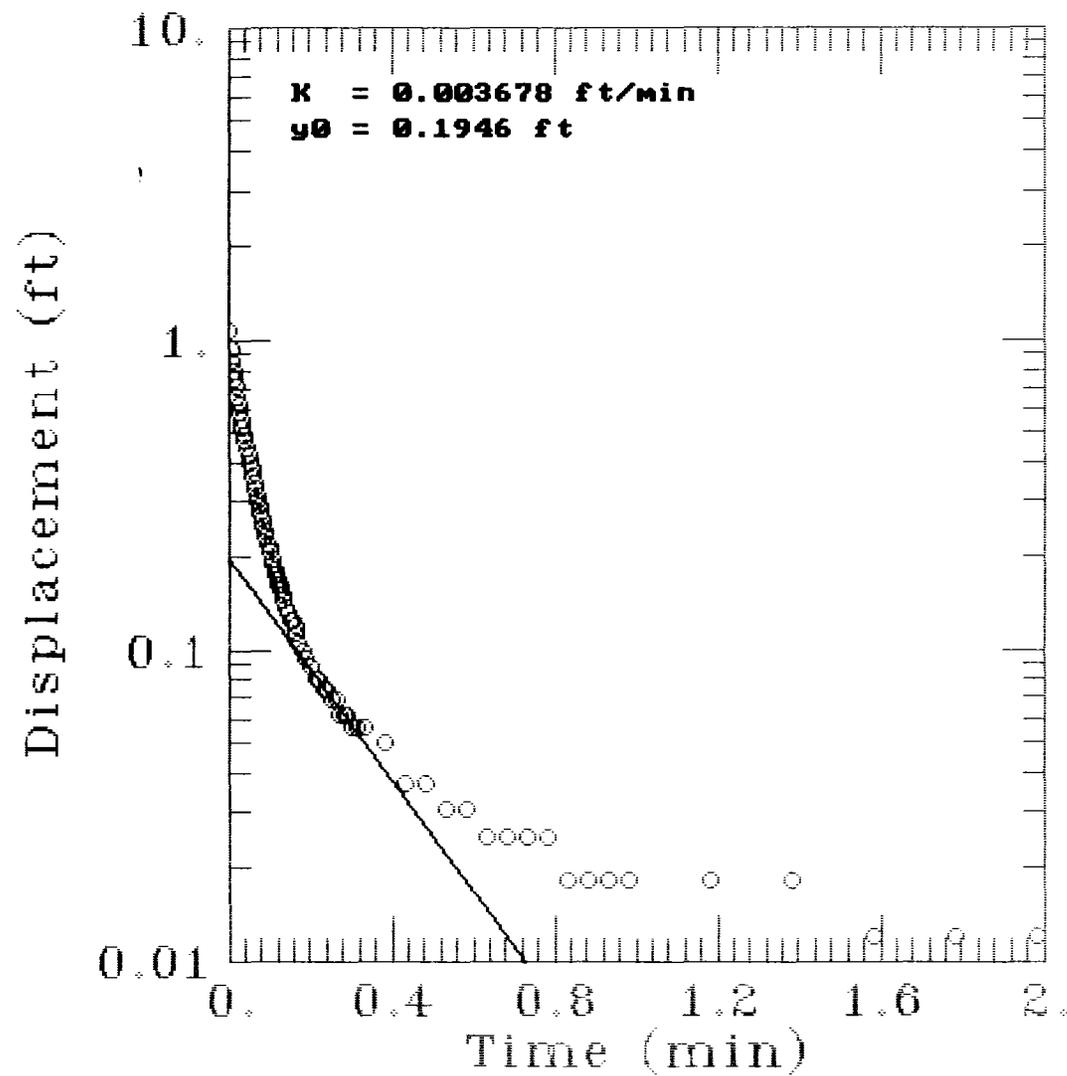
Tavg = average transmissivity (ft²/day),
K = hydraulic conductivity (ft/day), and
b = aquifer test interval (approximate thickness in feet penetrated by well).

Based on the formula, the calculation for T would be as follows:

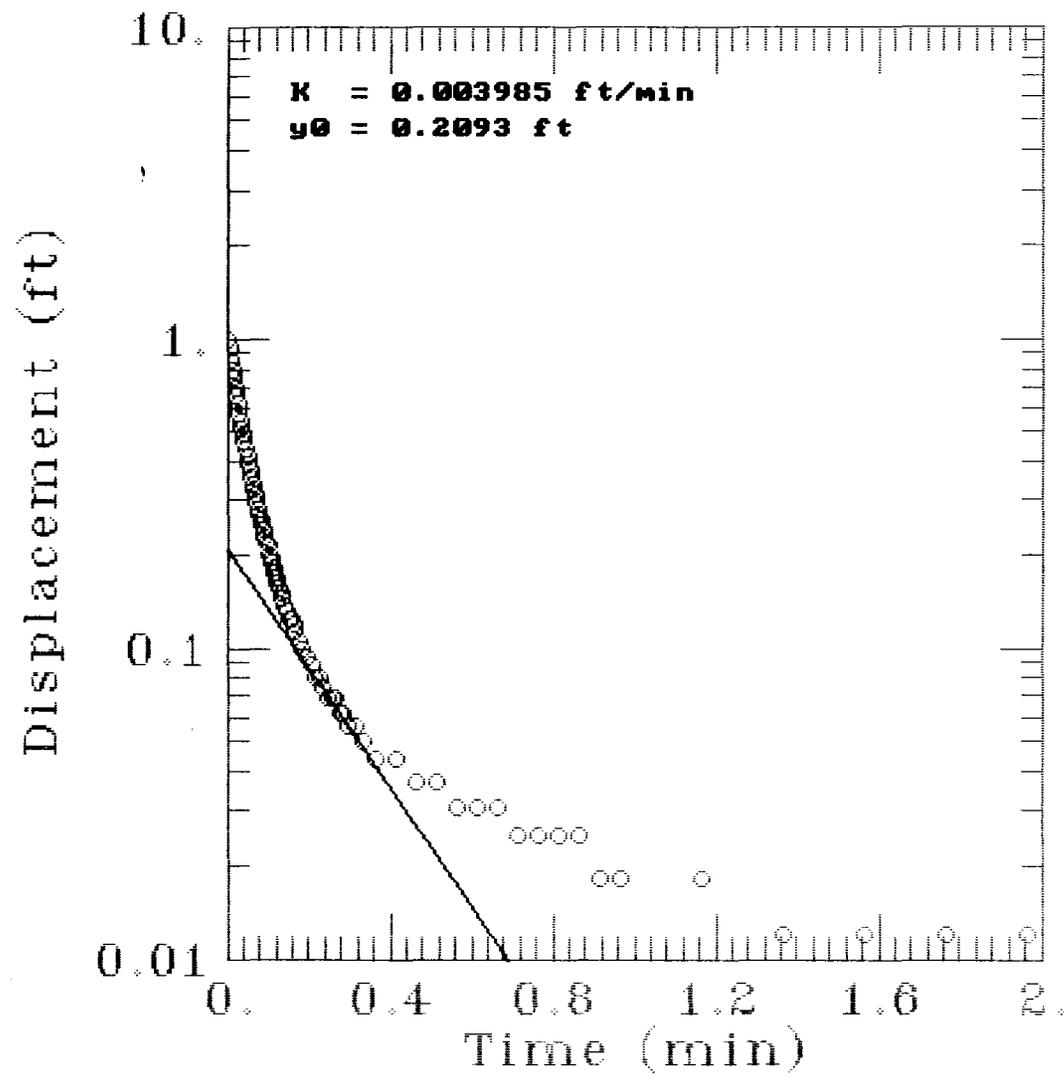
$$T_{avg} = (6.87 + 5.96) / 2 * 8$$

$$T_{avg} = 51.32 \text{ ft}^2 / \text{day}$$

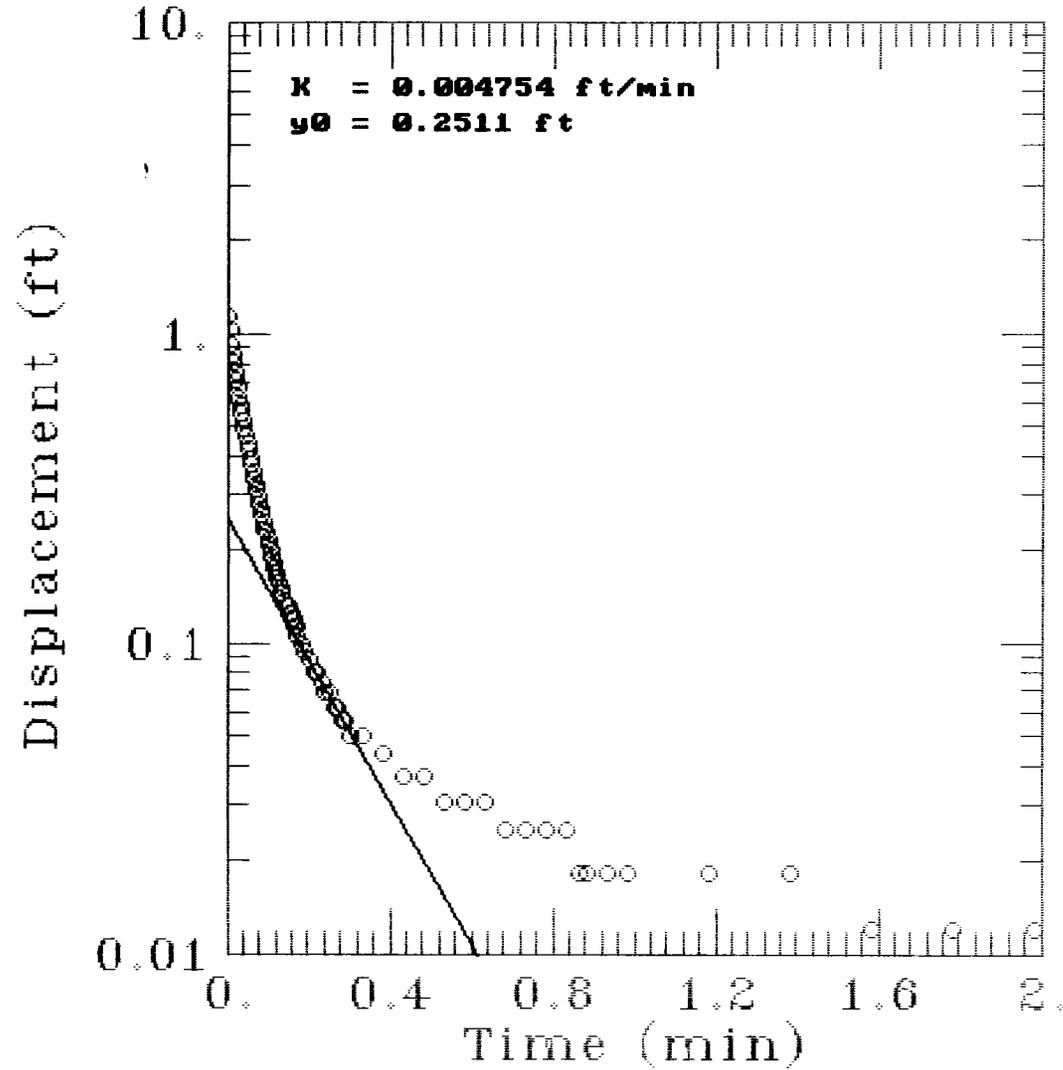
BEQ MAYPORT MW02 RISING HEAD RUN 1



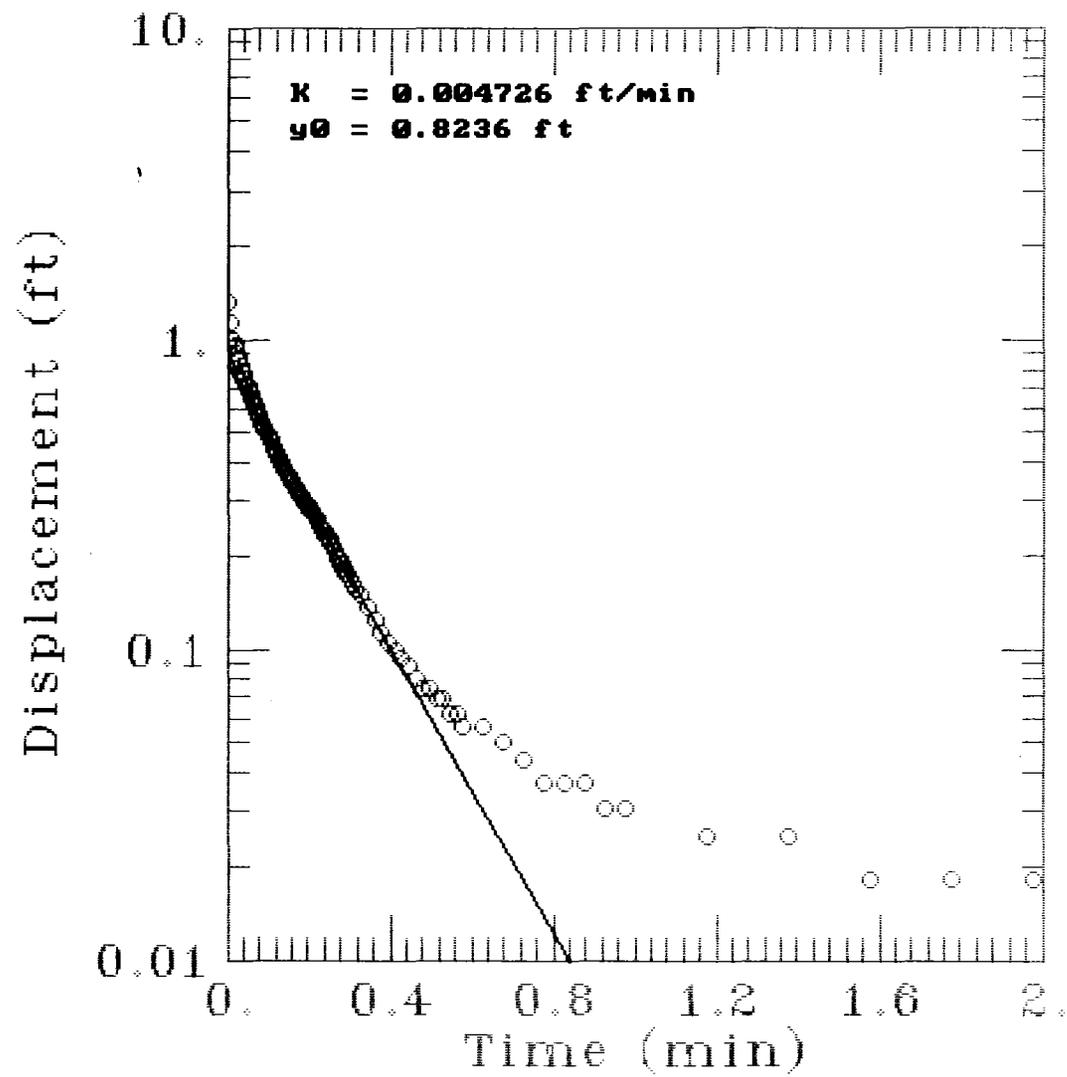
BEQ MAYPORT MW02 RISING HEAD RUN 2



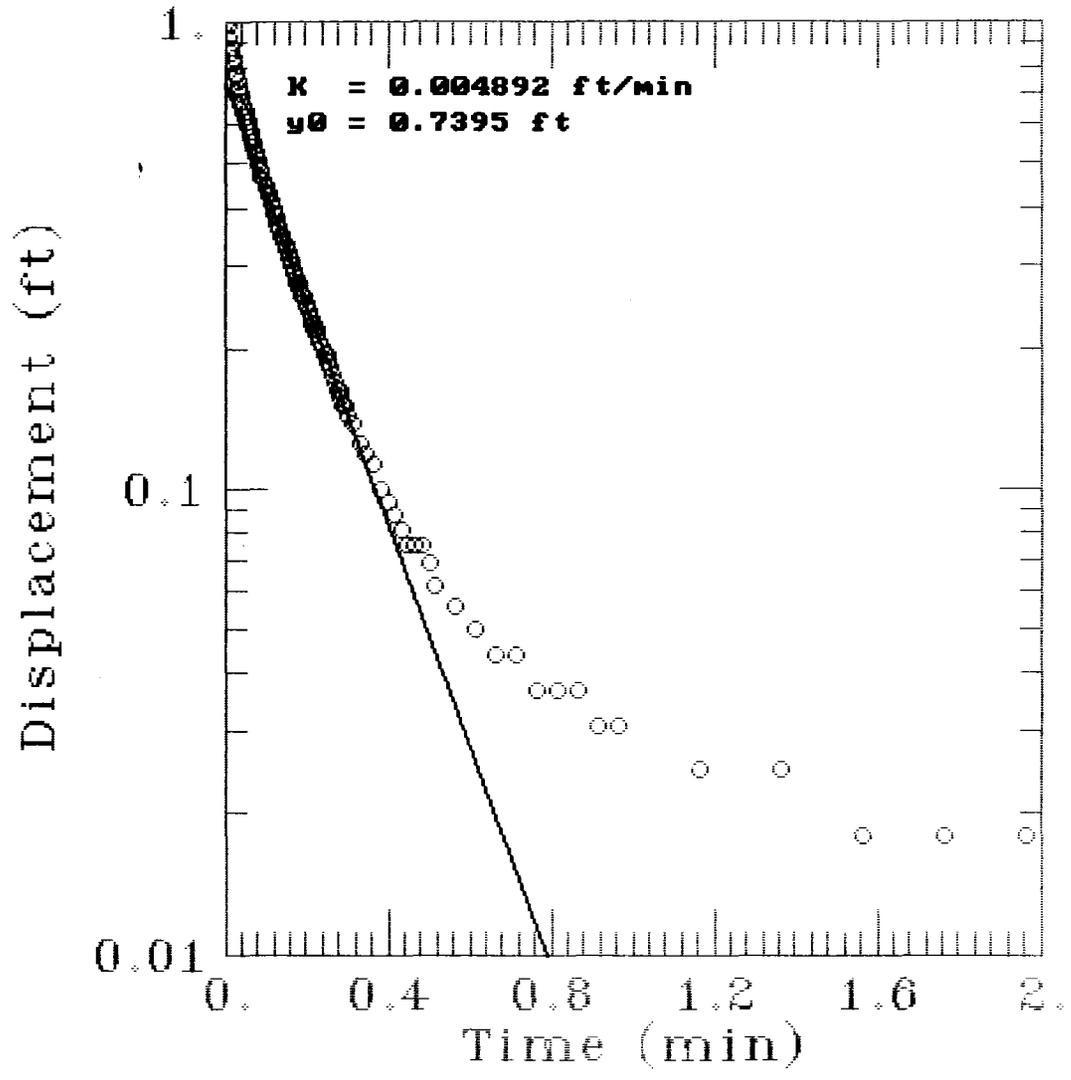
BEQ MAYPORT MW02 RISING HEAD RUN 3



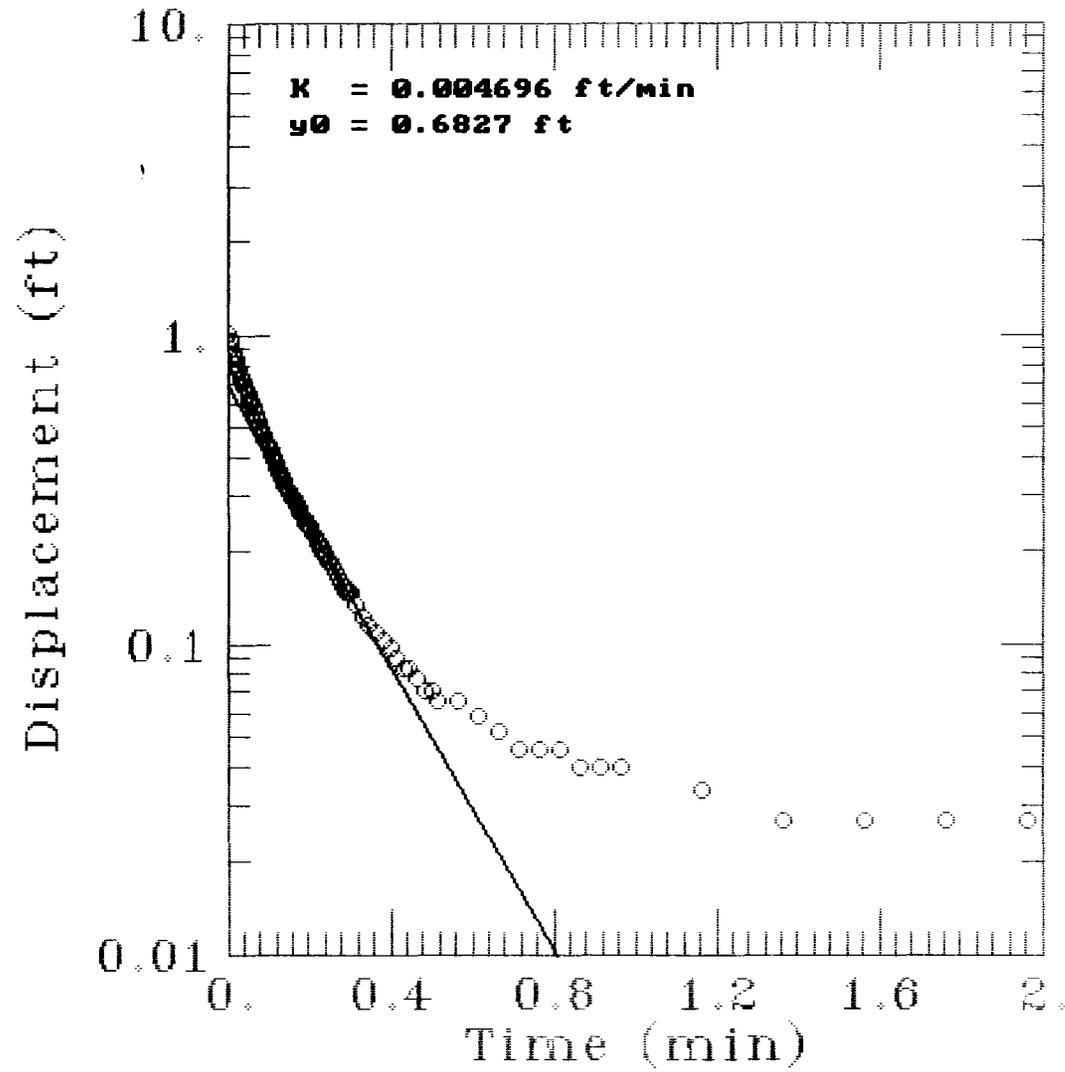
BEQ MAYPORT MW04 RISING HEAD RUN 1



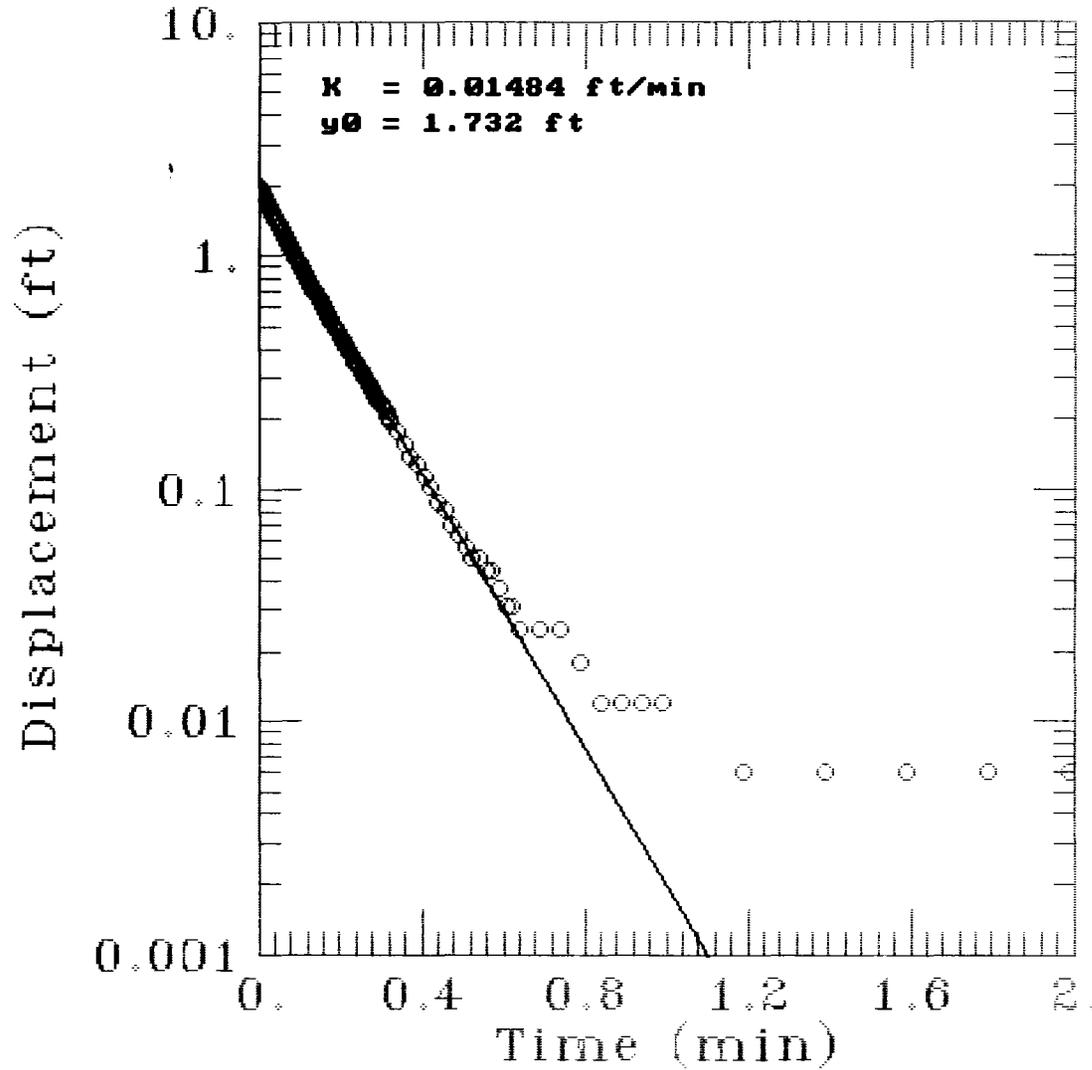
BEQ MAYPORT MW04 RISING HEAD RUN 2



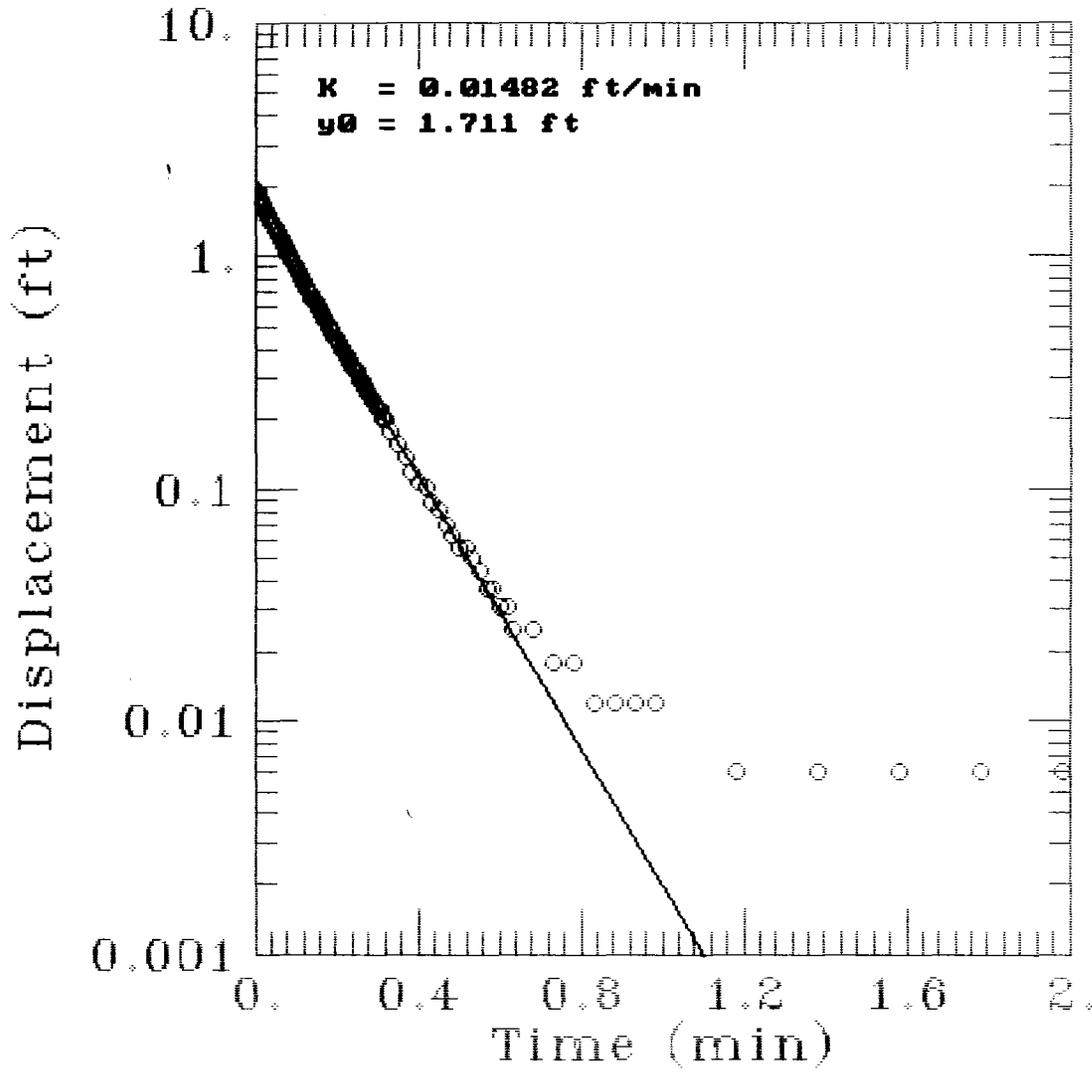
BEQ MAYPORT MW04 RISING HEAD RUN 3



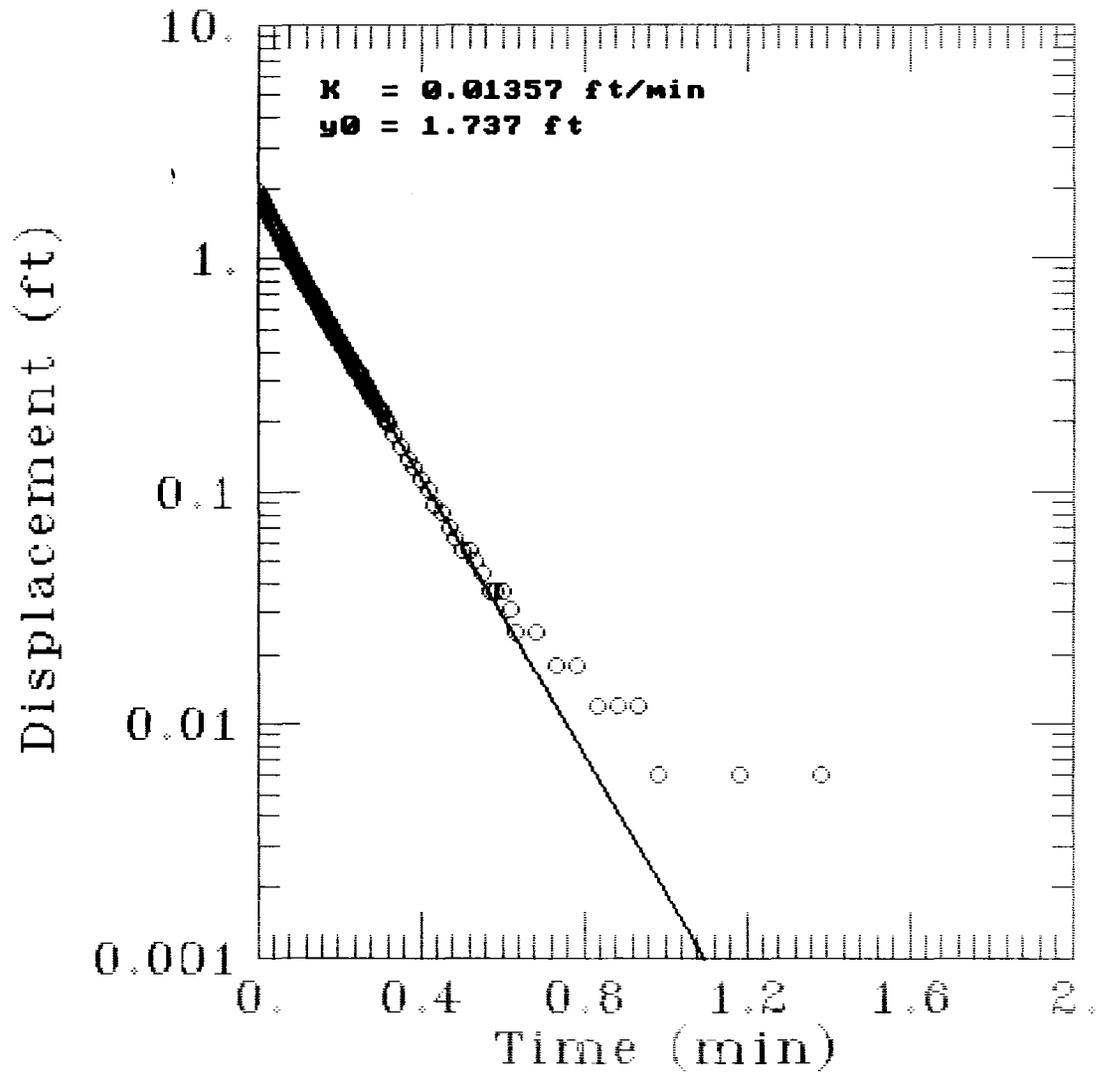
BEQ MAYPORT MW08D RISING HEAD RUN 1



BEQ MAYPORT MW08D RISING HEAD RUN 2

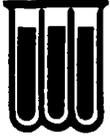


BEQ MAYPORT MW08D RISING HEAD RUN 3





APPENDIX F
GROUNDWATER ANALYTICAL DATA



ENSECO-WADSWORTH/ALERT Laboratories

Division of Corning Lab Services, Inc.

5910 Breckenridge Parkway, Suite H 813-621-0784
Tampa, FL 33610 FAX 813-623-6021

ANALYTICAL REPORT

PROJECT NO. 7587.31

NAVSTA MAYPORT BEQ

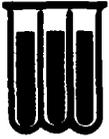
KAREN HARTNETT

ABB ENVIRONMENTAL SERVICES

ENSECO-WADSWORTH/ALERT LABORATORIES
Certification Numbers: E84059, HRS84297
FDEP CompQAP: 870270G

Chris Amstutz
Project Manager

July 7, 1994



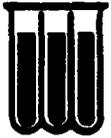
ENSECO-WADSWORTH/ALERT

Laboratory ANALYTICAL METHODS SUMMARY

<u>Parameters</u>	<u>Methods</u>
Ethylene Dibromide	FL-HRS 601-MODIFIED
by Purge and Trap/ECD	
Polyaromatic Hydrocarbons	USEPA 625
Volatile Organics	USEPA 601/2
Color	MCAWW 110.2
Hardness	MCAWW 130.2
Total Dissolved Solids	MCAWW 160.1
Solids, Total Suspended	MCAWW 160.2
Solids, Total (TS)	MCAWW 160.3
Iron	MCAWW 200.7
Manganese	MCAWW 200.7
Lead	MCAWW 239.2
Nitrogen, Total Kjeldahl	MCAWW 351.3
Nitrate-Nitrite	MCAWW 353.3
Phosphorous, Total	MCAWW 365.2
Sulfide	MCAWW 376.1
Biochemical Oxygen Demand	MCAWW 405.1
- 5 Day	
Chloride	MCAWW 300.0A
Carbon, Total Organic	MCAWW 415.1
Petroleum Hydrocarbons	MCAWW 418.1
Total Recoverable	
Sulfide	SW846 9030
Carbon, Total Organic	SW846 9060
Oil and Grease,	MCAWW 413.1
Gravimetric	
Oxygen, Dissolved	MCAWW 360.1
Nitrogen, Ammonia	MCAWW 350.3
Petroleum Hydrocarbons,	SW846 9073
Total Recoverable	
Solids, Total (TS)	MCAWW 160.3 MODIFIED
Sulfate	MCAWW 375.4
Alkalinity, Total	MCAWW 310.1
Chemical Oxygen Demand	MCAWW 410.4
Nitrogen, Ammonia	MCAWW 350.2 MODIFIED

References:

- FL-HRS Method Developed by the State of Florida Department of Health and Rehabilitative Services Analytical Laboratories.
- MCAWW Methods for Chemical Analysis of Water and Wastes, EMSL: Cincinnati, OH: March 1983 and its updates.
- SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, September, 1986.



ENSECO-WADSWORTH/ALERT

Laboratories

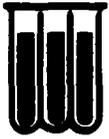
ANALYTICAL METHODS SUMMARY

Parameters

Methods

References:

USEPA Methods for Organic Chemical Analysis of Municipal and
Industrial Wastewater, 40CFR, Part 136, Appendix A,
October 26, 1984 (and its revisions and amendments)

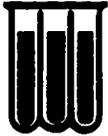


ENSECO-WADSWORTH/ALERT
Laboratories

SAMPLE SUMMARY

The analytical results of the samples listed below are presented on the following pages.

<u>WO #</u>	<u>LABORATORY ID</u>	<u>SAMPLE IDENTIFICATION</u>
O4621	B4F210008-001	MPT-1586-MW01
O4623	B4F210008-002	MPT-1586-MW01 FILTERED
O4624	B4F210008-003	MPT-1586-MW02
O4625	B4F210008-004	MPT-1586-MW02 FILTERED
O4626	B4F210008-005	MPT-1586-MW03
O4627	B4F210008-006	MPT-1586-MW04
O4628	B4F210008-007	MPT-1586-MW05
O4629	B4F210008-008	MPT-1586-MW05 FILTERED
O4630	B4F210008-009	MPT-1586-MW06
O4631	B4F210008-010	MPT-1586-MW06 FILTERED
O4632	B4F210008-011	MPT-1586-MW09
O4633	B4F210008-012	MPT-1586-MW-04S
O4634	B4F210008-013	MPT-1586-EQ1
O4636	B4F210008-014	TRIP BLANK
O4784	B4F210008-015	MPT-1586-MW09 FILTERED



**ENSECO-WADSWORTH/ALERT
Laboratories**

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW01

WO #: O4621103
LAB #: B4F210008-001
MATRIX: WATER

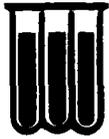
DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

- - - - - GC Volatiles - - - - -
1 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Benzene	ND	1.0	USEPA 601/2	06/29/94	4181090
Bromodichloromethane	ND	1.0	USEPA 601/2	06/29/94	4181090
Bromoform	ND	1.0	USEPA 601/2	06/29/94	4181090
Bromomethane	ND	1.0	USEPA 601/2	06/29/94	4181090
Carbon tetrachloride	ND	1.0	USEPA 601/2	06/29/94	4181090
Chlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4181090
Dibromochloromethane	ND	1.0	USEPA 601/2	06/29/94	4181090
Chloroethane	ND	1.0	USEPA 601/2	06/29/94	4181090
2-Chloroethyl vinyl ether	ND	1.0	USEPA 601/2	06/29/94	4181090
Chloroform	ND	1.0	USEPA 601/2	06/29/94	4181090
Chloromethane	ND	1.0	USEPA 601/2	06/29/94	4181090
1,2-Dichlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4181090
1,3-Dichlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4181090
1,4-Dichlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4181090
Dichlorodifluoromethane	ND	1.0	USEPA 601/2	06/29/94	4181090
1,1-Dichloroethane	ND	1.0	USEPA 601/2	06/29/94	4181090
1,2-Dichloroethane	ND	1.0	USEPA 601/2	06/29/94	4181090
1,1-Dichloroethene	ND	1.0	USEPA 601/2	06/29/94	4181090
cis-1,2-Dichloroethene	ND	1.0	USEPA 601/2	06/29/94	4181090
trans-1,2-Dichloroethene	ND	1.0	USEPA 601/2	06/29/94	4181090
1,2-Dichloropropane	ND	1.0	USEPA 601/2	06/29/94	4181090
cis-1,3-Dichloropropene	ND	1.0	USEPA 601/2	06/29/94	4181090
trans-1,3-Dichloropropene	ND	1.0	USEPA 601/2	06/29/94	4181090
Ethylbenzene	ND	1.0	USEPA 601/2	06/29/94	4181090
<u>SURROGATE RECOVERY</u>	<u>‡</u>	<u>ACCEPTABLE LIMITS</u>			
Bromochloromethane	90	(78 - 122)			
Trifluorotoluene	98	(73 - 131)			

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



**ENSECO-WADSWORTH/ALERT
Laboratories**

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW01

WO #: O4621103
LAB #: B4F210008-001
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

- - - - - GC Volatiles - - - - -
2 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Trichlorofluoromethane	ND	1.0	USEPA 601/2	06/29/94	4181090
Methylene chloride	ND	1.0	USEPA 601/2	06/29/94	4181090
1,1,2,2-Tetrachloroethane	ND	1.0	USEPA 601/2	06/29/94	4181090
Tetrachloroethene	ND	1.0	USEPA 601/2	06/29/94	4181090
Toluene	ND	1.0	USEPA 601/2	06/29/94	4181090
1,1,1-Trichloroethane	ND	1.0	USEPA 601/2	06/29/94	4181090
1,1,2-Trichloroethane	ND	1.0	USEPA 601/2	06/29/94	4181090
Trichloroethene	ND	1.0	USEPA 601/2	06/29/94	4181090
Vinyl chloride	ND	1.0	USEPA 601/2	06/29/94	4181090
Xylenes, Total	ND	1.0	USEPA 601/2	06/29/94	4181090
Methyl tert-butyl ether	ND	1.0	USEPA 601/2	06/29/94	4181090

SURROGATE RECOVERY

‡

ACCEPTABLE LIMITS

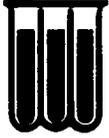
Bromochloromethane
Trifluorotoluene

90
98

(78 - 122)
(73 - 131)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW01

WO #: O4621104
 LAB #: B4F210008-001
 MATRIX: WATER

DATE SAMPLED: 6/20/94
 DATE RECEIVED: 6/21/94

----- GC Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Ethylene dibromide	ND	0.020	FL-HRS 601-M	06/30/94	4182046

SURROGATE RECOVERY

3

ACCEPTABLE LIMITS

Bromoform

92

(41 - 152)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW01

WO #: O4621102
LAB #: B4F210008-001
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- GC/MS Semi-Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Acenaphthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Acenaphthylene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Anthracene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo (a) anthracene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo (b) fluoranthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo (k) fluoranthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo (ghi) perylene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo (a) pyrene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Chrysene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Dibenz (a, h) anthracene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Fluoranthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Fluorene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Indeno (1, 2, 3 -cd) pyrene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
2-Methylnaphthalene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Naphthalene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Phenanthrene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Pyrene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
1-Methylnaphthalene	ND	5.0	USEPA 625	06/22-06/27/94	4173064

SURROGATE RECOVERY

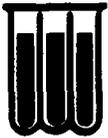
‡

ACCEPTABLE LIMITS

Nitrobenzene-d5	54	(22 - 135)
2-Fluorobiphenyl	48	(34 - 140)
Terphenyl-d14	22	(10 - 132)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT ABB ENVIRONMENTAL SERVICES
Laboratories

MPT-1586-MW01

WO #: 04621
LAB #: B4F210008-001
MATRIX: WATER

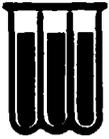
DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Petroleum Hydrocarbons Total Recoverable	ND	1.0	mg/L	MCAWW 418.1	6/28/94	4180122

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT ABB ENVIRONMENTAL SERVICES
Laboratories

MPT-1586-MW01

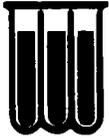
WO #: O4621
LAB #: B4F210008-001
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- REQUESTED METALS -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Lead	11.6	5.0	ug/L	MCAWW 239.2	6/23/94	4174003

NOTE: AS RECEIVED



ENSECO-WADSWORTH/ALERT ABB ENVIRONMENTAL SERVICES
Laboratories

MPT-1586-MW01 FILTERED

WO #: 04623
 LAB #: B4F210008-002
 MATRIX: WATER

DATE SAMPLED: 6/20/94
 DATE RECEIVED: 6/21/94

----- REQUESTED METALS -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
- - DISSOLVED METALS - -						
Lead	ND	5.0	ug/L	MCAWW 239.2	6/22/94	4173037

NOTE: AS RECEIVED
 ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW02

WO #: 04624103
LAB #: B4F210008-003
MATRIX: WATER

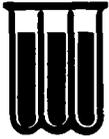
DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

- - - - - GC Volatiles - - - - -
1 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Benzene	2.5	1.0	USEPA 601/2	06/29/94	4181090
Bromodichloromethane	ND	1.0	USEPA 601/2	06/29/94	4181090
Bromoform	ND	1.0	USEPA 601/2	06/29/94	4181090
Bromomethane	ND	1.0	USEPA 601/2	06/29/94	4181090
Carbon tetrachloride	ND	1.0	USEPA 601/2	06/29/94	4181090
Chlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4181090
Dibromochloromethane	ND	1.0	USEPA 601/2	06/29/94	4181090
Chloroethane	ND	1.0	USEPA 601/2	06/29/94	4181090
2-Chloroethyl vinyl ether	ND	1.0	USEPA 601/2	06/29/94	4181090
Chloroform	ND	1.0	USEPA 601/2	06/29/94	4181090
Chloromethane	ND	1.0	USEPA 601/2	06/29/94	4181090
1,2-Dichlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4181090
1,3-Dichlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4181090
1,4-Dichlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4181090
Dichlorodifluoromethane	ND	1.0	USEPA 601/2	06/29/94	4181090
1,1-Dichloroethane	ND	1.0	USEPA 601/2	06/29/94	4181090
1,2-Dichloroethane	ND	1.0	USEPA 601/2	06/29/94	4181090
1,1-Dichloroethene	ND	1.0	USEPA 601/2	06/29/94	4181090
cis-1,2-Dichloroethene	ND	1.0	USEPA 601/2	06/29/94	4181090
trans-1,2-Dichloroethene	ND	1.0	USEPA 601/2	06/29/94	4181090
1,2-Dichloropropane	ND	1.0	USEPA 601/2	06/29/94	4181090
cis-1,3-Dichloropropene	ND	1.0	USEPA 601/2	06/29/94	4181090
trans-1,3-Dichloropropene	ND	1.0	USEPA 601/2	06/29/94	4181090
Ethylbenzene	1.4	1.0	USEPA 601/2	06/29/94	4181090
<u>SURROGATE RECOVERY</u>	<u>‡</u>	<u>ACCEPTABLE LIMITS</u>			
Bromochloromethane	96	(78 - 122)			
Trifluorotoluene	99	(73 - 131)			

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



**ENSECO-WADSWORTH/ALERT
Laboratories**

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW02

WO #: 04624103
LAB #: B4F210008-003
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

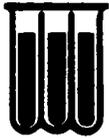
----- GC Volatiles -----
2 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Trichlorofluoromethane	ND	1.0	USEPA 601/2	06/29/94	4181090
Methylene chloride	ND	1.0	USEPA 601/2	06/29/94	4181090
1,1,2,2-Tetrachloroethane	ND	1.0	USEPA 601/2	06/29/94	4181090
Tetrachloroethene	ND	1.0	USEPA 601/2	06/29/94	4181090
Toluene	ND	1.0	USEPA 601/2	06/29/94	4181090
1,1,1-Trichloroethane	ND	1.0	USEPA 601/2	06/29/94	4181090
1,1,2-Trichloroethane	ND	1.0	USEPA 601/2	06/29/94	4181090
Trichloroethene	ND	1.0	USEPA 601/2	06/29/94	4181090
Vinyl chloride	ND	1.0	USEPA 601/2	06/29/94	4181090
Xylenes, Total	ND	1.0	USEPA 601/2	06/29/94	4181090
Methyl tert-butyl ether	ND	1.0	USEPA 601/2	06/29/94	4181090

<u>SURROGATE RECOVERY</u>	<u>‡</u>	<u>ACCEPTABLE LIMITS</u>
Bromochloromethane	96	(78 - 122)
Trifluorotoluene	99	(73 - 131)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW02

WO #: O4624104
 LAB #: B4F210008-003
 MATRIX: WATER

DATE SAMPLED: 6/20/94
 DATE RECEIVED: 6/21/94

----- GC Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Ethylene dibromide	ND	0.020	FL-HRS 601-M	06/30/94	4182046

SURROGATE RECOVERY

‡

ACCEPTABLE LIMITS

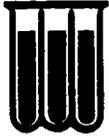
Bromoform

98

(41 - 152)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW02

WO #: O4624102
LAB #: B4F210008-003
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- GC/MS Semi-Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Acenaphthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Acenaphthylene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Anthracene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo (a) anthracene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo (b) fluoranthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo (k) fluoranthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo (ghi) perylene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo (a) pyrene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Chrysene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Dibenz (a, h) anthracene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Fluoranthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Fluorene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Indeno (1, 2, 3-cd) pyrene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
2-Methylnaphthalene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Naphthalene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Phenanthrene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Pyrene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
1-Methylnaphthalene	ND	5.0	USEPA 625	06/22-06/27/94	4173064

SURROGATE RECOVERY

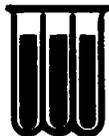
μ

ACCEPTABLE LIMITS

Nitrobenzene-d5	38	(22 - 135)
2-Fluorobiphenyl	39	(34 - 140)
Terphenyl-d14	23	(10 - 132)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT ABB ENVIRONMENTAL SERVICES
Laboratories

MPT-1586-MW02

WO #: O4624
LAB #: B4F210008-003
MATRIX: WATER

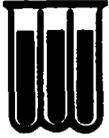
DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Petroleum Hydrocarbons Total Recoverable	ND	1.0	mg/L	MCAWW 418.1	6/28/94	4180122

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW02

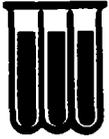
WO #: 04624
 LAB #: B4F210008-003
 MATRIX: WATER

DATE SAMPLED: 6/20/94
 DATE RECEIVED: 6/21/94

----- REQUESTED METALS -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Lead	28.2	5.0	ug/L	MCAWW 239.2	6/23/94	4174003

NOTE: AS RECEIVED



ENSECO-WADSWORTH/ALERT ABB ENVIRONMENTAL SERVICES
Laboratories

MPT-1586-MW02 FILTERED

WO #: O4625
 LAB #: B4F210008-004
 MATRIX: WATER

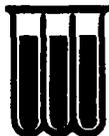
DATE SAMPLED: 6/20/94
 DATE RECEIVED: 6/21/94

----- REQUESTED METALS -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
- - DISSOLVED METALS - -						
Lead	ND	5.0	ug/L	MCAWW 239.2	6/22/94	4173037

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



**ENSECO-WADSWORTH/ALERT
Laboratories**

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW03

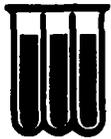
WO #: O4626103
LAB #: B4F210008-005
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- GC Volatiles -----					
1 OF 2					
<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Benzene	ND	1.0	USEPA 601/2	06/29/94	4181090
Bromodichloromethane	ND	1.0	USEPA 601/2	06/29/94	4181090
Bromoform	ND	1.0	USEPA 601/2	06/29/94	4181090
Bromomethane	ND	1.0	USEPA 601/2	06/29/94	4181090
Carbon tetrachloride	ND	1.0	USEPA 601/2	06/29/94	4181090
Chlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4181090
Dibromochloromethane	ND	1.0	USEPA 601/2	06/29/94	4181090
Chloroethane	ND	1.0	USEPA 601/2	06/29/94	4181090
2-Chloroethyl vinyl ether	ND	1.0	USEPA 601/2	06/29/94	4181090
Chloroform	ND	1.0	USEPA 601/2	06/29/94	4181090
Chloromethane	ND	1.0	USEPA 601/2	06/29/94	4181090
1,2-Dichlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4181090
1,3-Dichlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4181090
1,4-Dichlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4181090
Dichlorodifluoromethane	ND	1.0	USEPA 601/2	06/29/94	4181090
1,1-Dichloroethane	ND	1.0	USEPA 601/2	06/29/94	4181090
1,2-Dichloroethane	ND	1.0	USEPA 601/2	06/29/94	4181090
1,1-Dichloroethene	ND	1.0	USEPA 601/2	06/29/94	4181090
cis-1,2-Dichloroethene	ND	1.0	USEPA 601/2	06/29/94	4181090
trans-1,2-Dichloroethene	ND	1.0	USEPA 601/2	06/29/94	4181090
1,2-Dichloropropane	ND	1.0	USEPA 601/2	06/29/94	4181090
cis-1,3-Dichloropropene	ND	1.0	USEPA 601/2	06/29/94	4181090
trans-1,3-Dichloropropene	ND	1.0	USEPA 601/2	06/29/94	4181090
Ethylbenzene	ND	1.0	USEPA 601/2	06/29/94	4181090
 <u>SURROGATE RECOVERY</u>					
	<u>3</u>	<u>ACCEPTABLE LIMITS</u>			
Bromochloromethane	89	(78 - 122)			
Trifluorotoluene	98	(73 - 131)			

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



**ENSECO-WADSWORTH/ALERT
Laboratories**

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW03

WO #: O4626103
LAB #: B4F210008-005
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- GC Volatiles -----

2 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Trichlorofluoromethane	ND	1.0	USEPA 601/2	06/29/94	4181090
Methylene chloride	ND	1.0	USEPA 601/2	06/29/94	4181090
1,1,2,2-Tetrachloroethane	ND	1.0	USEPA 601/2	06/29/94	4181090
Tetrachloroethene	ND	1.0	USEPA 601/2	06/29/94	4181090
Toluene	ND	1.0	USEPA 601/2	06/29/94	4181090
1,1,1-Trichloroethane	ND	1.0	USEPA 601/2	06/29/94	4181090
1,1,2-Trichloroethane	ND	1.0	USEPA 601/2	06/29/94	4181090
Trichloroethene	ND	1.0	USEPA 601/2	06/29/94	4181090
Vinyl chloride	ND	1.0	USEPA 601/2	06/29/94	4181090
Xylenes, Total	ND	1.0	USEPA 601/2	06/29/94	4181090
Methyl tert-butyl ether	ND	1.0	USEPA 601/2	06/29/94	4181090

SURROGATE RECOVERY

‡

ACCEPTABLE LIMITS

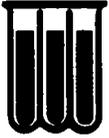
Bromochloromethane
Trifluorotoluene

89
98

(78 - 122)
(73 - 131)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



**ENSECO-WADSWORTH/ALERT
Laboratories**

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW03

WO #: O4626104
LAB #: B4F210008-005
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- GC Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> <u>(ug/L)</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Ethylene dibromide	ND	0.020	FL-HRS 601-M	06/30/94	4182046

SURROGATE RECOVERY

±

ACCEPTABLE LIMITS

Bromoform

100

(41 - 152)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW03

WO #: O4626102
LAB #: B4F210008-005
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- GC/MS Semi-Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Acenaphthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Acenaphthylene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Anthracene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo (a) anthracene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo (b) fluoranthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo (k) fluoranthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo (ghi) perylene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo (a) pyrene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Chrysene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Dibenz (a, h) anthracene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Fluoranthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Fluorene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Indeno (1, 2, 3- cd) pyrene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
2-Methylnaphthalene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Naphthalene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Phenanthrene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Pyrene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
1-Methylnaphthalene	ND	5.0	USEPA 625	06/22-06/27/94	4173064

SURROGATE RECOVERY

‡

ACCEPTABLE LIMITS

Nitrobenzene-d5	45	(22 - 135)
2-Fluorobiphenyl	42	(34 - 140)
Terphenyl-d14	32	(10 - 132)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT ABB ENVIRONMENTAL SERVICES
Laboratories

MPT-1586-MW03

WO #: 04626
LAB #: B4F210008-005
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Petroleum Hydrocarbons Total Recoverable	ND	1.0	mg/L	MCAWW 418.1	6/28/94	4180122

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



**ENSECO-WADSWORTH/ALERT
Laboratories**

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW04

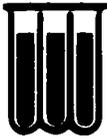
WO #: O4627103
LAB #: B4F210008-006
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- GC Volatiles -----					
1 OF 2					
<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Benzene	11	1.0	USEPA 601/2	06/29/94	4180048
Bromodichloromethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Bromoform	ND	1.0	USEPA 601/2	06/29/94	4180048
Bromomethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Carbon tetrachloride	ND	1.0	USEPA 601/2	06/29/94	4180048
Chlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4180048
Dibromochloromethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Chloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
2-Chloroethyl vinyl ether	ND	1.0	USEPA 601/2	06/29/94	4180048
Chloroform	ND	1.0	USEPA 601/2	06/29/94	4180048
Chloromethane	ND	1.0	USEPA 601/2	06/29/94	4180048
1,2-Dichlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4180048
1,3-Dichlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4180048
1,4-Dichlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4180048
Dichlorodifluoromethane	ND	1.0	USEPA 601/2	06/29/94	4180048
1,1-Dichloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
1,2-Dichloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
1,1-Dichloroethene	ND	1.0	USEPA 601/2	06/29/94	4180048
cis-1,2-Dichloroethene	ND	1.0	USEPA 601/2	06/29/94	4180048
trans-1,2-Dichloroethene	ND	1.0	USEPA 601/2	06/29/94	4180048
1,2-Dichloropropane	ND	1.0	USEPA 601/2	06/29/94	4180048
cis-1,3-Dichloropropene	ND	1.0	USEPA 601/2	06/29/94	4180048
trans-1,3-Dichloropropene	ND	1.0	USEPA 601/2	06/29/94	4180048
Ethylbenzene	ND	1.0	USEPA 601/2	06/29/94	4180048
<u>SURROGATE RECOVERY</u>	<u>‡</u>	<u>ACCEPTABLE LIMITS</u>			
Bromochloromethane	98	(78 - 122)			
Trifluorotoluene	102	(73 - 131)			

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW04

WO #: O4627103
 LAB #: B4F210008-006
 MATRIX: WATER

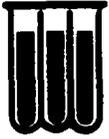
DATE SAMPLED: 6/20/94
 DATE RECEIVED: 6/21/94

- - - - - GC Volatiles - - - - -
 2 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Trichlorofluoromethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Methylene chloride	ND	1.0	USEPA 601/2	06/29/94	4180048
1,1,2,2-Tetrachloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Tetrachloroethene	ND	1.0	USEPA 601/2	06/29/94	4180048
Toluene	ND	1.0	USEPA 601/2	06/29/94	4180048
1,1,1-Trichloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
1,1,2-Trichloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Trichloroethene	ND	1.0	USEPA 601/2	06/29/94	4180048
Vinyl chloride	ND	1.0	USEPA 601/2	06/29/94	4180048
Xylenes, Total	31	1.0	USEPA 601/2	06/29/94	4180048
Methyl tert-butyl ether	ND	1.0	USEPA 601/2	06/29/94	4180048

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
Bromochloromethane	98	(78 - 122)
Trifluorotoluene	102	(73 - 131)

NOTE: AS RECEIVED
 ND NOT DETECTED AT THE STATED REPORTING LIMIT



**ENSECO-WADSWORTH/ALERT
Laboratories**

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW04

WO #: O4627104
LAB #: B4F210008-006
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- GC Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> <u>(ug/L)</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Ethylene dibromide	ND	0.020	FL-HRS 601-M	06/30/94	4182046

SURROGATE RECOVERY

‡

ACCEPTABLE LIMITS

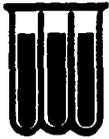
Bromoform

94

(41 - 152)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



**ENSECO-WADSWORTH/ALERT
Laboratories**

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW04

WO #: O4627102
LAB #: B4F210008-006
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- GC/MS Semi-Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Acenaphthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Acenaphthylene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Anthracene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo(a)anthracene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo(b)fluoranthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo(k)fluoranthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo(ghi)perylene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo(a)pyrene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Chrysene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Dibenz(a,h)anthracene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Fluoranthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Fluorene	8.8	5.0	USEPA 625	06/22-06/27/94	4173064
Indeno(1,2,3-cd)pyrene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
2-Methylnaphthalene	12	5.0	USEPA 625	06/22-06/27/94	4173064
Naphthalene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Phenanthrene	12	5.0	USEPA 625	06/22-06/27/94	4173064
Pyrene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
1-Methylnaphthalene	30	5.0	USEPA 625	06/22-06/27/94	4173064

SURROGATE RECOVERY

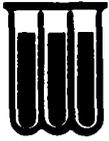
μ

ACCEPTABLE LIMITS

Nitrobenzene-d5	61	(22 - 135)
2-Fluorobiphenyl	47	(34 - 140)
Terphenyl-d14	22	(10 - 132)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT ABB ENVIRONMENTAL SERVICES
Laboratories

MPT-1586-MW04

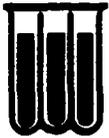
WO #: O4627
LAB #: B4F210008-006
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- REQUESTED METALS -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Iron	43,000	50.0	ug/L	MCAWW 200.7	6/23- 6/24/94	4174009
Manganese	640	20.0	ug/L	MCAWW 200.7	6/23- 6/24/94	4174009
Lead	26.5	5.0	ug/L	MCAWW 239.2	6/23/94	4174009

NOTE: AS RECEIVED



ENSECO-WADSWORTH/ALERT
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW04

WO #: 04627
LAB #: B4F210008-006
MATRIX: WATER

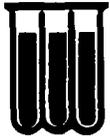
DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- INORGANIC ANALYTICAL REPORT -----

PARAMETER	RESULT	REPORTING		METHOD	PREPARATION - ANALYSIS DATE	QC BATCH
		LIMIT	UNIT			
Color	25.0	5.0	C.U.	MCAWW 110.2	6/22/94	4173050
Hardness	560	25.0	mg/L	MCAWW 130.2	6/30/94	4181116
Total Dissolved Solids	571	5.0	mg/L	MCAWW 160.1	6/22- 6/23/94	4174061
Solids, Total Suspended	1,300	10.0	mg/L	MCAWW 160.2	6/22- 6/23/94	4174064
Solids, Total (TS)	1,840	5.0	mg/L	MCAWW 160.3	6/22- 6/23/94	4174065
Nitrogen, Total Kjeldahl	0.78	0.50	mg/L	MCAWW 351.3	7/01/94	4182048
Nitrate-Nitrite	1,080	0.050	mg/L	MCAWW 353.3	7/06/94	4187089
Phosphorous, Total	0.32	0.10	mg/L	MCAWW 365.2	7/01/94	4182120
Sulfide	10.1	1.0	mg/L	MCAWW 376.1	6/23/94	4175068
Biochemical Oxygen Demand - 5 Day	11.6	3.0	mg/L	MCAWW 405.1	6/22- 6/27/94	4173038
Chloride	18.5	1.0	mg/L	MCAWW 300.0A	7/06/94	4173038
Carbon, Total Organic	11.7	1.0	mg/L	MCAWW 415.1	6/23/94	4173038
Petroleum Hydrocarbons Total Recoverable	1.2	1.0	mg/L	MCAWW 418.1	6/28/94	4180122
Oil and Grease, Gravimetric	ND	5.0	mg/L	MCAWW 413.1	6/30- 7/01/94	4182058
Oxygen, Dissolved	6.6	0.50	mg/L	MCAWW 360.1	6/21/94	4172090
Nitrogen, Ammonia	0.38	0.10	mg/L	MCAWW 350.3	7/05/94	4186122
Sulfate	30.9	5.0	mg/L	MCAWW 375.4	6/30/94	4181079
Alkalinity, Total	426	5.0	mg/L	MCAWW 310.1	6/30/94	4181073
Chemical Oxygen Demand	310	50.0	mg/L	MCAWW 410.4	6/22/94	4173121

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



**ENSECO-WADSWORTH/ALERT
Laboratories**

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW05

WO #: O4628103
LAB #: B4F210008-007
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

- - - - - GC Volatiles - - - - -					
1 OF 2					
<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Benzene	ND	1.0	USEPA 601/2	06/29/94	4180048
Bromodichloromethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Bromoform	ND	1.0	USEPA 601/2	06/29/94	4180048
Bromomethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Carbon tetrachloride	ND	1.0	USEPA 601/2	06/29/94	4180048
Chlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4180048
Dibromochloromethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Chloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
2-Chloroethyl vinyl ether	ND	1.0	USEPA 601/2	06/29/94	4180048
Chloroform	ND	1.0	USEPA 601/2	06/29/94	4180048
Chloromethane	ND	1.0	USEPA 601/2	06/29/94	4180048
1,2-Dichlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4180048
1,3-Dichlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4180048
1,4-Dichlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4180048
Dichlorodifluoromethane	ND	1.0	USEPA 601/2	06/29/94	4180048
1,1-Dichloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
1,2-Dichloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
1,1-Dichloroethene	ND	1.0	USEPA 601/2	06/29/94	4180048
cis-1,2-Dichloroethene	ND	1.0	USEPA 601/2	06/29/94	4180048
trans-1,2-Dichloroethene	ND	1.0	USEPA 601/2	06/29/94	4180048
1,2-Dichloropropane	ND	1.0	USEPA 601/2	06/29/94	4180048
cis-1,3-Dichloropropene	ND	1.0	USEPA 601/2	06/29/94	4180048
trans-1,3-Dichloropropene	ND	1.0	USEPA 601/2	06/29/94	4180048
Ethylbenzene	ND	1.0	USEPA 601/2	06/29/94	4180048
<u>SURROGATE RECOVERY</u>	<u>‡</u>	<u>ACCEPTABLE LIMITS</u>			
Bromochloromethane	100	(78 - 122)			
Trifluorotoluene	99	(73 - 131)			

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW05

WO #: O4628103
LAB #: B4F210008-007
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- GC Volatiles -----
2 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Trichlorofluoromethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Methylene chloride	ND	1.0	USEPA 601/2	06/29/94	4180048
1,1,2,2-Tetrachloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Tetrachloroethene	ND	1.0	USEPA 601/2	06/29/94	4180048
Toluene	ND	1.0	USEPA 601/2	06/29/94	4180048
1,1,1-Trichloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
1,1,2-Trichloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Trichloroethene	ND	1.0	USEPA 601/2	06/29/94	4180048
Vinyl chloride	ND	1.0	USEPA 601/2	06/29/94	4180048
Xylenes, Total	ND	1.0	USEPA 601/2	06/29/94	4180048
Methyl tert-butyl ether	ND	1.0	USEPA 601/2	06/29/94	4180048

SURROGATE RECOVERY

1

ACCEPTABLE LIMITS

Bromochloromethane
Trifluorotoluene

100
99

(78 - 122)
(73 - 131)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/ALERT
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW05

WO #: 04628104
LAB #: B4F210008-007
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- GC Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Ethylene dibromide	ND	0.020	FL-HRS 601-M	06/30/94	4182046

SURROGATE RECOVERY

3

ACCEPTABLE LIMITS

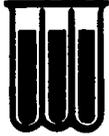
Bromoform

85

(41 - 152)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



**ENSECO-WADSWORTH/ALERT
Laboratories**

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW05

WO #: O4628102
LAB #: B4F210008-007
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- GC/MS Semi-Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> (uq/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Acenaphthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Acenaphthylene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Anthracene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo (a) anthracene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo (b) fluoranthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo (k) fluoranthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo (ghi) perylene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo (a) pyrene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Chrysene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Dibenz (a, h) anthracene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Fluoranthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Fluorene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Indeno (1, 2, 3-cd) pyrene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
2-Methylnaphthalene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Naphthalene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Phenanthrene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Pyrene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
1-Methylnaphthalene	ND	5.0	USEPA 625	06/22-06/27/94	4173064

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
Nitrobenzene-d5	53	(22 - 135)
2-Fluorobiphenyl	48	(34 - 140)
Terphenyl-d14	19	(10 - 132)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW05

WO #: 04628
LAB #: B4F210008-007
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Petroleum Hydrocarbons Total Recoverable	ND	1.0	mg/L	MCAWW 418.1	6/28/94	4180122

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW05

WO #: 04628
LAB #: B4F210008-007
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- REQUESTED METALS -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Lead	22.8	5.0	ug/L	MCAWW 239.2	6/23/94	4174003

NOTE: AS RECEIVED



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW05 FILTERED

WO #: 04629
LAB #: B4F210008-008
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- REQUESTED METALS -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
- - DISSOLVED METALS - -						
Lead	ND	5.0	ug/L	MCAWW 239.2	6/22/94	4173037

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



**ENSECO-WADSWORTH/
Laboratories**

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW06

WO #: O4630103
LAB #: B4F210008-009
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- GC Volatiles -----

1 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Benzene	49	1.0	USEPA 601/2	06/29/94	4180048
Bromodichloromethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Bromoform	ND	1.0	USEPA 601/2	06/29/94	4180048
Bromomethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Carbon tetrachloride	ND	1.0	USEPA 601/2	06/29/94	4180048
Chlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4180048
Dibromochloromethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Chloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
2-Chloroethyl vinyl ether	ND	1.0	USEPA 601/2	06/29/94	4180048
Chloroform	ND	1.0	USEPA 601/2	06/29/94	4180048
Chloromethane	ND	1.0	USEPA 601/2	06/29/94	4180048
1,2-Dichlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4180048
1,3-Dichlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4180
1,4-Dichlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4180048
Dichlorodifluoromethane	ND	1.0	USEPA 601/2	06/29/94	4180048
1,1-Dichloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
1,2-Dichloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
1,1-Dichloroethene	ND	1.0	USEPA 601/2	06/29/94	4180048
cis-1,2-Dichloroethene	ND	1.0	USEPA 601/2	06/29/94	4180048
trans-1,2-Dichloroethene	ND	1.0	USEPA 601/2	06/29/94	4180048
1,2-Dichloropropane	ND	1.0	USEPA 601/2	06/29/94	4180048
cis-1,3-Dichloropropene	ND	1.0	USEPA 601/2	06/29/94	4180048
trans-1,3-Dichloropropene	ND	1.0	USEPA 601/2	06/29/94	4180048
Ethylbenzene	3.6	1.0	USEPA 601/2	06/29/94	4180048
<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>			
Bromochloromethane	111	(78 - 122)			
Trifluorotoluene	98	(73 - 131)			

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW06

WO #: 04630103
LAB #: B4F210008-009
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- GC Volatiles -----
2 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Trichlorofluoromethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Methylene chloride	ND	1.0	USEPA 601/2	06/29/94	4180048
1,1,2,2-Tetrachloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Tetrachloroethene	ND	1.0	USEPA 601/2	06/29/94	4180048
Toluene	5.7	1.0	USEPA 601/2	06/29/94	4180048
1,1,1-Trichloroethane	2.9	1.0	USEPA 601/2	06/29/94	4180048
1,1,2-Trichloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Trichloroethene	ND	1.0	USEPA 601/2	06/29/94	4180048
Vinyl chloride	ND	1.0	USEPA 601/2	06/29/94	4180048
Xylenes, Total	11	1.0	USEPA 601/2	06/29/94	4180048
Methyl tert-butyl ether	ND	1.0	USEPA 601/2	06/29/94	4180048

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
Bromochloromethane	111	(78 - 122)
Trifluorotoluene	98	(73 - 131)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



**ENSECO-WADSWORTH/
Laboratories**

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW06

WO #: 04630104
LAB #: B4F210008-009
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- GC Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Ethylene dibromide	ND	0.020	FL-HRS 601-M	06/30/94	4182046

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
Bromoform	89	(41 - 152)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW06

WO #: 04630102
LAB #: B4F210008-009
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- GC/MS Semi-Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Acenaphthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Acenaphthylene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Anthracene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo(a)anthracene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo(b)fluoranthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo(k)fluoranthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo(ghi)perylene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo(a)pyrene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Chrysene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Dibenz(a,h)anthracene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Fluoranthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Fluorene	6.1	5.0	USEPA 625	06/22-06/27/94	4173064
Indeno(1,2,3-cd)pyrene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
2-Methylnaphthalene	56	5.0	USEPA 625	06/22-06/27/94	4173064
Naphthalene	50	5.0	USEPA 625	06/22-06/27/94	4173064
Phenanthrene	6.2	5.0	USEPA 625	06/22-06/27/94	4173064
Pyrene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
1-Methylnaphthalene	57	5.0	USEPA 625	06/22-06/27/94	4173064

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
Nitrobenzene-d5	51	(22 - 135)
2-Fluorobiphenyl	38	(34 - 140)
Terphenyl-d14	14	(10 - 132)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW06

WO #: 04630
LAB #: B4F210008-009
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Petroleum Hydrocarbons Total Recoverable	2.9	1.0	mg/L	MCAWW 418.1	6/28/94	4180122

NOTE: AS RECEIVED



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW06

WO #: 04630
LAB #: B4F210008-009
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- REQUESTED METALS -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Lead	20.6	5.0	ug/L	MCAWW 239.2	6/23/94	4174003

NOTE: AS RECEIVED



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW06 FILTERED

WO #: 04631
LAB #: B4F210008-010
MATRIX: WATER

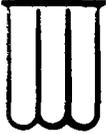
DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- REQUESTED METALS -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
- - DISSOLVED METALS - - Lead	ND	5.0	ug/L	MCAWW 239.2	6/22- 6/23/94	4173037

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW09

WO #: 04632103
LAB #: B4F210008-011
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- GC Volatiles -----					
PARAMETER	1 OF 2		METHOD	EXTRACTION- ANALYSIS DATE	QC BATCH
	RESULT (ug/L)	REPORTING LIMIT			
Benzene	ND	1.0	USEPA 601/2	06/29/94	4180048
Bromodichloromethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Bromoform	ND	1.0	USEPA 601/2	06/29/94	4180048
Bromomethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Carbon tetrachloride	ND	1.0	USEPA 601/2	06/29/94	4180048
Chlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4180048
Dibromochloromethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Chloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
2-Chloroethyl vinyl ether	ND	1.0	USEPA 601/2	06/29/94	4180048
Chloroform	ND	1.0	USEPA 601/2	06/29/94	4180048
Chloromethane	ND	1.0	USEPA 601/2	06/29/94	4180048
1,2-Dichlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4180048
1,3-Dichlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4180048
1,4-Dichlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4180048
Dichlorodifluoromethane	ND	1.0	USEPA 601/2	06/29/94	4180048
1,1-Dichloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
1,2-Dichloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
1,1-Dichloroethene	ND	1.0	USEPA 601/2	06/29/94	4180048
cis-1,2-Dichloroethene	ND	1.0	USEPA 601/2	06/29/94	4180048
trans-1,2-Dichloroethene	ND	1.0	USEPA 601/2	06/29/94	4180048
1,2-Dichloropropane	ND	1.0	USEPA 601/2	06/29/94	4180048
cis-1,3-Dichloropropene	ND	1.0	USEPA 601/2	06/29/94	4180048
trans-1,3-Dichloropropene	ND	1.0	USEPA 601/2	06/29/94	4180048
Ethylbenzene	3.8	1.0	USEPA 601/2	06/29/94	4180048
<u>SURROGATE RECOVERY</u>					
	%	<u>ACCEPTABLE LIMITS</u>			
Bromochloromethane	96	(78 - 122)			
Trifluorotoluene	99	(73 - 131)			

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



**ENSECO-WADSWORTH/
Laboratories**

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW09

WO #: O4632103
LAB #: B4F210008-011
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- GC Volatiles -----
2 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Trichlorofluoromethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Methylene chloride	ND	1.0	USEPA 601/2	06/29/94	4180048
1,1,2,2-Tetrachloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Tetrachloroethene	ND	1.0	USEPA 601/2	06/29/94	4180048
Toluene	ND	1.0	USEPA 601/2	06/29/94	4180048
1,1,1-Trichloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
1,1,2-Trichloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Trichloroethene	ND	1.0	USEPA 601/2	06/29/94	4180048
Vinyl chloride	ND	1.0	USEPA 601/2	06/29/94	4180048
Xylenes, Total	3.2	1.0	USEPA 601/2	06/29/94	4180048
Methyl tert-butyl ether	ND	1.0	USEPA 601/2	06/29/94	4180048

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
Bromochloromethane	96	(78 - 122)
Trifluorotoluene	99	(73 - 131)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW09

WO #: 04632104
LAB #: B4F210008-011
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- GC Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Ethylene dibromide	ND	0.020	FL-HRS 601-M	06/30/94	4182046

SURROGATE RECOVERY

%

ACCEPTABLE LIMITS

Bromoform

129

(41 - 152)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW09

WO #: O4632102
LAB #: B4F210008-011
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- GC/MS Semi-Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Acenaphthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Acenaphthylene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Anthracene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo (a) anthracene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo (b) fluoranthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo (k) fluoranthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo (ghi) perylene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo (a) pyrene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Chrysene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Dibenz (a, h) anthracene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Fluoranthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Fluorene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Indeno (1, 2, 3-cd) pyrene	ND	5.0	USEPA 625	06/22-06/27/94	417
2-Methylnaphthalene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Naphthalene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Phenanthrene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Pyrene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
1-Methylnaphthalene	ND	5.0	USEPA 625	06/22-06/27/94	4173064

SURROGATE RECOVERY

%

ACCEPTABLE LIMITS

Nitrobenzene-d5	43	(22 - 135)
2-Fluorobiphenyl	39	(34 - 140)
Terphenyl-d14	18	(10 - 132)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW09

WO #: 04632
LAB #: B4F210008-011
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- REQUESTED METALS -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Lead	27.5	5.0	ug/L	MCAWW 239.2	6/23/94	4174003

NOTE: AS RECEIVED



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW09

WO #: 04632
LAB #: B4F210008-011
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		<u>METHOD</u>	<u>PREPARATION</u>	<u>QC</u>
		<u>LIMIT</u>	<u>UNIT</u>		<u>ANALYSIS DATE</u>	<u>BATCH</u>
Petroleum Hydrocarbons Total Recoverable	ND	1.0	mg/L	MCAWW 418.1	6/28/94	4180122

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW-04S

WO #: C4633
LAB #: B4F210008-012
MATRIX: SOLID

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>			<u>METHOD</u>	<u>PREPARATION -</u>	<u>QC</u>
		<u>LIMIT</u>	<u>UNIT</u>			<u>ANALYSIS DATE</u>	<u>BATCH</u>
Nitrogen, Total Kjeldahl	9.6	0.62	mg/kg	MCAWW 351.3	7/01/94	4182048	
Nitrate-Nitrite	0.32	0.31	mg/kg	MCAWW 353.3	7/06/94	4187089	
Phosphorous, Total	165	24.9	mg/kg	MCAWW 365.2	7/01/94	4182120	
Sulfide	69.6	62.1	mg/kg	SW846 9030	6/23/94	4175068	
Petroleum Hydrocarbons, Total Recoverable	1,260	24.9	mg/kg	SW846 9073	6/23/94	4172062	
Solids, Total (TS)	80.5	1.0	%	MCAWW 160.3 M	6/24/94	4175126	
Nitrogen, Ammonia	ND	31.1	mg/kg	MCAWW 350.2 M	6/30/94	4181070	

NOTE: DRY WEIGHT

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW-04S

WO #: C4633
LAB #: B4F210008-012
MATRIX: SOLID

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94
DATE LEACHED: 0/00/00

----- INORGANIC ANALYTICAL REPORT -----

This sample was leached in accordance with Laboratory DI Leaching Procedure

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Carbon, Total Organic	1,120	62.1	mg/kg	SW846 9060	6/28/94	4179089

NOTE: DRY WEIGHT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-EQ1

WO #: O4634103
LAB #: B4F210008-013
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- GC Volatiles -----

1 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Benzene	ND	1.0	USEPA 601/2	06/29/94	4180048
Bromodichloromethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Bromoform	ND	1.0	USEPA 601/2	06/29/94	4180048
Bromomethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Carbon tetrachloride	ND	1.0	USEPA 601/2	06/29/94	4180048
Chlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4180048
Dibromochloromethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Chloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
2-Chloroethyl vinyl ether	ND	1.0	USEPA 601/2	06/29/94	4180048
Chloroform	ND	1.0	USEPA 601/2	06/29/94	4180048
Chloromethane	ND	1.0	USEPA 601/2	06/29/94	4180048
1,2-Dichlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4180048
1,3-Dichlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4180048
1,4-Dichlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4180048
Dichlorodifluoromethane	ND	1.0	USEPA 601/2	06/29/94	4180048
1,1-Dichloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
1,2-Dichloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
1,1-Dichloroethene	ND	1.0	USEPA 601/2	06/29/94	4180048
cis-1,2-Dichloroethene	ND	1.0	USEPA 601/2	06/29/94	4180048
trans-1,2-Dichloroethene	ND	1.0	USEPA 601/2	06/29/94	4180048
1,2-Dichloropropane	ND	1.0	USEPA 601/2	06/29/94	4180048
cis-1,3-Dichloropropene	ND	1.0	USEPA 601/2	06/29/94	4180048
trans-1,3-Dichloropropene	ND	1.0	USEPA 601/2	06/29/94	4180048
Ethylbenzene	ND	1.0	USEPA 601/2	06/29/94	4180048

SURROGATE RECOVERY

%

ACCEPTABLE LIMITS

Bromochloromethane	105	(78 - 122)
Trifluorotoluene	98	(73 - 131)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



**ENSECO-WADSWORTH/
Laboratories**

ABB ENVIRONMENTAL SERVICES

MPT-1586-EQ1

WO #: O4634103
LAB #: B4F210008-013
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- GC Volatiles -----
2 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Trichlorofluoromethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Methylene chloride	ND	1.0	USEPA 601/2	06/29/94	4180048
1,1,2,2-Tetrachloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Tetrachloroethene	ND	1.0	USEPA 601/2	06/29/94	4180048
Toluene	ND	1.0	USEPA 601/2	06/29/94	4180048
1,1,1-Trichloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
1,1,2-Trichloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Trichloroethene	ND	1.0	USEPA 601/2	06/29/94	4180048
Vinyl chloride	ND	1.0	USEPA 601/2	06/29/94	4180048
Xylenes, Total	ND	1.0	USEPA 601/2	06/29/94	4180048
Methyl tert-butyl ether	ND	1.0	USEPA 601/2	06/29/94	4180048

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
Bromochloromethane	105	(78 - 122)
Trifluorotoluene	98	(73 - 131)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-EQ1

WO #: 04634104
LAB #: B4F210008-013
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- GC Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Ethylene dibromide	ND	0.020	FL-HRS 601-M	06/30/94	4182046

SURROGATE RECOVERY

‡

ACCEPTABLE LIMITS

Bromoform

97

(41 - 152)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-EQ1

WO #: 04634102
LAB #: B4F210008-013
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- GC/MS Semi-Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Acenaphthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Acenaphthylene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Anthracene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo(a)anthracene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo(b)fluoranthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo(k)fluoranthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo(ghi)perylene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Benzo(a)pyrene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Chrysene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Dibenz(a,h)anthracene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Fluoranthene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Fluorene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Indeno(1,2,3-cd)pyrene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
2-Methylnaphthalene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Naphthalene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Phenanthrene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
Pyrene	ND	5.0	USEPA 625	06/22-06/27/94	4173064
1-Methylnaphthalene	ND	5.0	USEPA 625	06/22-06/27/94	4173064

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
Nitrobenzene-d5	36	(22 - 135)
2-Fluorobiphenyl	35	(34 - 140)
Terphenyl-d14	51	(10 - 132)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW09 FILTERED

WO #: 04784
LAB #: B4F210008-015
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- REQUESTED METALS -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
- - DISSOLVED METALS - -						
Lead	ND	5.0	ug/L	MCAWW 239.2	6/22/94	4173037

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-EQ1

WO #: 04634
LAB #: B4F210008-013
MATRIX: WATER

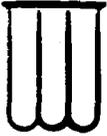
DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Petroleum Hydrocarbons Total Recoverable	ND	1.0	mg/L	MCAWW 418.1	6/28/94	4180122

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-EQ1

WO #: 04634
LAB #: B4F210008-013
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- REQUESTED METALS -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Lead	ND	5.0	ug/L	MCAWW 239.2	6/23/94	4174003

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

TRIP BLANK

WO #: 04636101
LAB #: B4F210008-014
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- GC Volatiles -----					
1 OF 2					
<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Benzene	ND	1.0	USEPA 601/2	06/29/94	4180048
Bromodichloromethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Bromoform	ND	1.0	USEPA 601/2	06/29/94	4180048
Bromomethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Carbon tetrachloride	ND	1.0	USEPA 601/2	06/29/94	4180048
Chlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4180048
Dibromochloromethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Chloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
2-Chloroethyl vinyl ether	ND	1.0	USEPA 601/2	06/29/94	4180048
Chloroform	ND	1.0	USEPA 601/2	06/29/94	4180048
Chloromethane	ND	1.0	USEPA 601/2	06/29/94	4180048
1,2-Dichlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4180048
1,3-Dichlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4180048
1,4-Dichlorobenzene	ND	1.0	USEPA 601/2	06/29/94	4180048
Dichlorodifluoromethane	ND	1.0	USEPA 601/2	06/29/94	4180048
1,1-Dichloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
1,2-Dichloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
1,1-Dichloroethene	ND	1.0	USEPA 601/2	06/29/94	4180048
cis-1,2-Dichloroethene	ND	1.0	USEPA 601/2	06/29/94	4180048
trans-1,2-Dichloroethene	ND	1.0	USEPA 601/2	06/29/94	4180048
1,2-Dichloropropane	ND	1.0	USEPA 601/2	06/29/94	4180048
cis-1,3-Dichloropropene	ND	1.0	USEPA 601/2	06/29/94	4180048
trans-1,3-Dichloropropene	ND	1.0	USEPA 601/2	06/29/94	4180048
Ethylbenzene	ND	1.0	USEPA 601/2	06/29/94	4180048
<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>			
Bromochloromethane	111	(78 - 122)			
Trifluorotoluene	98	(73 - 131)			

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

TRIP BLANK

WO #: O4636101
LAB #: B4F210008-014
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/21/94

----- GC Volatiles -----					
2 OF 2					
<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Trichlorofluoromethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Methylene chloride	ND	1.0	USEPA 601/2	06/29/94	4180048
1,1,2,2-Tetrachloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Tetrachloroethene	ND	1.0	USEPA 601/2	06/29/94	4180048
Toluene	ND	1.0	USEPA 601/2	06/29/94	4180048
1,1,1-Trichloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
1,1,2-Trichloroethane	ND	1.0	USEPA 601/2	06/29/94	4180048
Trichloroethene	ND	1.0	USEPA 601/2	06/29/94	4180048
Vinyl chloride	ND	1.0	USEPA 601/2	06/29/94	4180048
Xylenes, Total	ND	1.0	USEPA 601/2	06/29/94	4180048
Methyl tert-butyl ether	ND	1.0	USEPA 601/2	06/29/94	4180048

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
Bromochloromethane	111	(78 - 122)
Trifluorotoluene	98	(73 - 131)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

QUALITY CONTROL SECTION

- Quality Control Summary
- Laboratory Blanks
- Laboratory Control Sample
- Matrix Spike/Matrix Spike Duplicate Results
- Sample Custody Documentation



ENSECO-WADSWORTH/
Laboratories QUALITY ASSURANCE / QUALITY CONTROL
PROGRAM SUMMARY

Wadsworth/ALERT Laboratories considers continuous analytical method performance evaluations to be an integral portion of the data package, and routinely includes the pertinent QA/QC data associated with various analytical result reports. Brief discussions of the various QA/QC procedures utilized to measure acceptable method and matrix performance follow.

Surrogate Spike Recovery Evaluations

Known concentrations of designated surrogate spikes, consisting of a number of similar, non-method compounds or method compound analogues, are added, as appropriate, to routine GC and GC/MS sample fractions prior to extraction and analysis. The percent recovery determinations calculated from the subsequent analysis is an indication of the overall method efficiency for the individual sample. This surrogate spike recovery data is displayed alongside acceptable analytical method performance limits at the bottom of each applicable analytical result report sheet.

NOTE: Acceptable method performance for Base/Neutral Acid extractables is indicated by two (2) of three (3) surrogates for each fraction with a minimum recovery of ten (10) percent each. For Pesticides one (1) of two (2) surrogates meeting performance criteria is acceptable.

Laboratory Analytical Method Blank Evaluations

Laboratory analytical method blanks are systematically prepared and analyzed in order to continuously evaluate the system interferences and background contamination levels associated with each analytical method. These method blanks include all aspects of actual laboratory method analysis (chemical reagents, glassware, etc.), substituting laboratory reagent water or solid for actual sample. The method blank must not contain any analytes above the reported detection limit. The following common laboratory contaminants are exceptions to this rule provided they are not present at greater than five times the detection limit.

Volatiles

Methylene chloride
Toluene
2-Butanone
Acetone

Semi-volatiles

Dimethyl phthalate
Diethyl phthalate
Di-n-butyl phthalate
Butyl benzyl phthalate
Bis (2-ethylhexyl) phthalate

Metals

Calcium
Magnesium
Sodium

A minimum of five percent (5%) of all laboratory analyses are laboratory analytical method blanks.

Laboratory Analytical Method Check Sample Evaluations

Known concentrations of designated matrix spikes (actual analytical method compounds) are added to a laboratory reagent blank prior to extraction and analysis. Percent recovery determinations demonstrate the performance of the analytical method. Failure of a check sample to meet established laboratory recovery criteria is cause to stop the analysis until the problem is resolved.



ENSECO-WADSWORTH/
Laboratories QUALITY ASSURANCE / QUALITY CONTROL
PROGRAM SUMMARY

(cont'd)

At that time all associated samples must be re-analyzed. A minimum of five percent (5%) of all laboratory analyses are laboratory analytical method check samples.

Matrix Spike (MS)/Matrix Spike Duplicate (MSD) Recovery Evaluations

Known concentrations of designated matrix spikes (actual analytical method compounds) are added to two of three separate aliquots of a sequentially predetermined sample prior to extraction and analysis. Percent recovery determinations are calculated from both of the spiked samples by comparison to the actual values generated from the unspiked sample. These percent recovery determinations indicate the accuracy of the analysis at recovering actual analytical method compounds from the matrix. Relative percent difference determinations calculated from a comparison of the MS/MSD recoveries demonstrate the precision of the analytical method. Actual percent recovery and relative percent difference data is displayed alongside their respective acceptable analytical method performance limits in the QA/QC section of the report. The MS/MSD are considered in control when the precision is within established control limits and the associated check sample has been found to be acceptable. A minimum of ten percent (10%) of all analyses are MS/MSD quality control samples.

*****EXAMPLE*****

COMPOUND	SAMPLE CONC.	MS %REC	MSD %REC	RPD	RPD	QC LIMITS RECOVERY
4,4'-DDT	0	95	112	16	22	66-119
Benzene	10	86	93	8	20	39-150
(cmpd. name)	sample result	1st% recov.	2nd% recov.	Rel.% diff.		accep. method perform range

Analytical Result Qualifiers

The following qualifiers, as defined below, may be appended to analytical results in order to allow proper interpretation of the results presented:

J - indicates an estimated concentration (typically used when a dilution, matrix interference or instrumental limitation prevents accurate quantitation of a particular analyte).

B - indicates the presence of a particular analyte in the laboratory blank analyzed concurrently with the samples. Results must be interpreted accordingly.

DIL - indicates that because of matrix interferences and/or high analyte concentrations, it was necessary to dilute the sample to a point where the surrogate or spike concentrations fell below a quantifiable amount and could not be reported.



ENSECO-WADSWORTH/
Laboratories

INTRA-LAB BLANK REPORT

LAB #: B4F290000-048

----- GC Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> <u>(ug/L)</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Benzene	ND	1.0	6/28/94	4180048
Bromodichloromethane	ND	1.0	6/28/94	4180048
Bromoform	ND	1.0	6/28/94	4180048
Bromomethane	ND	1.0	6/28/94	4180048
Carbon tetrachloride	ND	1.0	6/28/94	4180048
Chlorobenzene	ND	1.0	6/28/94	4180048
Dibromochloromethane	ND	1.0	6/28/94	4180048
Chloroethane	ND	1.0	6/28/94	4180048
2-Chloroethyl vinyl ether	ND	1.0	6/28/94	4180048
Chloroform	ND	1.0	6/28/94	4180048
Chloromethane	ND	1.0	6/28/94	4180048
1,2-Dichlorobenzene	ND	1.0	6/28/94	4180048
1,3-Dichlorobenzene	ND	1.0	6/28/94	4180048
1,4-Dichlorobenzene	ND	1.0	6/28/94	4180048
Dichlorodifluoromethane	ND	1.0	6/28/94	4180048
1,1-Dichloroethane	ND	1.0	6/28/94	4180048
1,2-Dichloroethane	ND	1.0	6/28/94	4180048
1,1-Dichloroethene	ND	1.0	6/28/94	4180048
cis-1,2-Dichloroethene	ND	1.0	6/28/94	4180048
trans-1,2-Dichloroethene	ND	1.0	6/28/94	4180048
1,2-Dichloropropane	ND	1.0	6/28/94	4180048
cis-1,3-Dichloropropene	ND	1.0	6/28/94	4180048
trans-1,3-Dichloropropene	ND	1.0	6/28/94	4180048
Ethylbenzene	ND	1.0	6/28/94	4180048
Trichlorofluoromethane	ND	1.0	6/28/94	4180048
<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>		
Bromochloromethane	101	(78 - 122)		
Trifluorotoluene	99	(73 - 131)		

NOTE:

ND (NONE DETECTED)



ENSECO-WADSWORTH/
Laboratories

INTRA-LAB BLANK REPORT

LAB #: B4F290000-048

----- GC Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Methylene chloride	ND	1.0	6/28/94	4180048
1,1,2,2-Tetrachloroethane	ND	1.0	6/28/94	4180048
Tetrachloroethene	ND	1.0	6/28/94	4180048
Toluene	ND	1.0	6/28/94	4180048
1,1,1-Trichloroethane	ND	1.0	6/28/94	4180048
1,1,2-Trichloroethane	ND	1.0	6/28/94	4180048
Trichloroethene	ND	1.0	6/28/94	4180048
Vinyl chloride	ND	1.0	6/28/94	4180048
Xylenes, Total	ND	1.0	6/28/94	4180048
Methyl tert-butyl ether	ND	1.0	6/28/94	4180048

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
Bromochloromethane	101	(78 - 122)
Trifluorotoluene	99	(73 - 131)

NOTE:

ND (NONE DETECTED)



ENSECO-WADSWORTH/
Laboratories

INTRA-LAB BLANK REPORT

LAB #: B4F300000-090

----- GC Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Benzene	ND	1.0	6/29/94	4181090
Bromodichloromethane	ND	1.0	6/29/94	4181090
Bromoform	ND	1.0	6/29/94	4181090
Bromomethane	ND	1.0	6/29/94	4181090
Carbon tetrachloride	ND	1.0	6/29/94	4181090
Chlorobenzene	ND	1.0	6/29/94	4181090
Dibromochloromethane	ND	1.0	6/29/94	4181090
Chloroethane	ND	1.0	6/29/94	4181090
2-Chloroethyl vinyl ether	ND	1.0	6/29/94	4181090
Chloroform	ND	1.0	6/29/94	4181090
Chloromethane	ND	1.0	6/29/94	4181090
1,2-Dichlorobenzene	ND	1.0	6/29/94	4181090
1,3-Dichlorobenzene	ND	1.0	6/29/94	4181090
1,4-Dichlorobenzene	ND	1.0	6/29/94	4181090
Dichlorodifluoromethane	ND	1.0	6/29/94	4181090
1,1-Dichloroethane	ND	1.0	6/29/94	4181090
1,2-Dichloroethane	ND	1.0	6/29/94	4181090
1,1-Dichloroethene	ND	1.0	6/29/94	4181090
cis-1,2-Dichloroethene	ND	1.0	6/29/94	4181090
trans-1,2-Dichloroethene	ND	1.0	6/29/94	4181090
1,2-Dichloropropane	ND	1.0	6/29/94	4181090
cis-1,3-Dichloropropene	ND	1.0	6/29/94	4181090
trans-1,3-Dichloropropene	ND	1.0	6/29/94	4181090
Ethylbenzene	ND	1.0	6/29/94	4181090
Trichlorofluoromethane	ND	1.0	6/29/94	4181090
<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>		
Bromochloromethane	93	(78 - 122)		
Trifluorotoluene	99	(73 - 131)		

NOTE:

ND (NONE DETECTED)



LAB #: B4F300000-090

----- GC Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Methylene chloride	ND	1.0	6/29/94	4181090
1,1,2,2-Tetrachloroethane	ND	1.0	6/29/94	4181090
Tetrachloroethene	ND	1.0	6/29/94	4181090
Toluene	ND	1.0	6/29/94	4181090
1,1,1-Trichloroethane	ND	1.0	6/29/94	4181090
1,1,2-Trichloroethane	ND	1.0	6/29/94	4181090
Trichloroethene	ND	1.0	6/29/94	4181090
Vinyl chloride	ND	1.0	6/29/94	4181090
Xylenes, Total	ND	1.0	6/29/94	4181090
Methyl tert-butyl ether	ND	1.0	6/29/94	4181090

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
Bromochloromethane	93	(78 - 122)
Trifluorotoluene	99	(73 - 131)

NOTE:

ND (NONE DETECTED)



ENSECO-WADSWORTH/
Laboratories

INTRA-LAB BLANK REPORT

LAB #: B4G010000-046

----- GC Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> <u>(ug/L)</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Ethylene dibromide	ND	0.020	6/30/94	4182046

SURROGATE RECOVERY
Bromoform

%
95

ACCEPTABLE LIMITS
(41 - 152)

NOTE:

ND (NONE DETECTED)



LAB #: B4F220000-064

----- GC/MS Semi-Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Acenaphthene	ND	5.0	6/22- 6/25/94	4173064
Acenaphthylene	ND	5.0	6/22- 6/25/94	4173064
Anthracene	ND	5.0	6/22- 6/25/94	4173064
Benzo(a)anthracene	ND	5.0	6/22- 6/25/94	4173064
Benzo(b)fluoranthene	ND	5.0	6/22- 6/25/94	4173064
Benzo(k)fluoranthene	ND	5.0	6/22- 6/25/94	4173064
Benzo(ghi)perylene	ND	5.0	6/22- 6/25/94	4173064
Benzo(a)pyrene	ND	5.0	6/22- 6/25/94	4173064
Chrysene	ND	5.0	6/22- 6/25/94	4173064
Dibenz(a,h)anthracene	ND	5.0	6/22- 6/25/94	4173064
Fluoranthene	ND	5.0	6/22- 6/25/94	4173064
Fluorene	ND	5.0	6/22- 6/25/94	4173064
Indeno(1,2,3-cd)pyrene	ND	5.0	6/22- 6/25/94	4173064
2-Methylnaphthalene	ND	5.0	6/22- 6/25/94	4173064
Naphthalene	ND	5.0	6/22- 6/25/94	4173064
Phenanthrene	ND	5.0	6/22- 6/25/94	4173064
Pyrene	ND	5.0	6/22- 6/25/94	4173064
1-Methylnaphthalene	ND	5.0	6/22- 6/25/94	4173064

SURROGATE RECOVERY

	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
Nitrobenzene-d5	46	(22 - 135)
2-Fluorobiphenyl	53	(34 - 140)
Terphenyl-d14	83	(10 - 132)

NOTE:

ND (NONE DETECTED)



ENSECO-WADSWORTH/
Laboratories

INTRA-LAB BLANK REPORT

LAB #: B4F210008

METALS

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>
Lead	ND	BATCH: 4174003 5.0	ug/L	MCAWW 239.2	6/23/94
Iron	ND	BATCH: 4174009 50.0	ug/L	MCAWW 200.7	6/23 - 6/24/94
Manganese	ND	20.0	ug/L	MCAWW 200.7	6/23 - 6/24/94
Lead	ND	5.0	ug/L	MCAWW 239.2	6/23/94

NOTE:

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

INTRA-LAB BLANK REPORT

LAB #: B4F210008

*** DISSOLVED METALS ***

METALS

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>
Lead	ND	BATCH:4173037 5.0	ug/L	MCAWW 239.2	6/22/94

NOTE:

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

INTRA-LAB BLANK REPORT

LAB #: B4F210008

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Carbon, Total Organic	ND	50.0	mg/kg	6/28/94	4179089
Petroleum Hydrocarbons, Total Recoverable	ND	5.0	mg/kg	6/23/94	4172062
Nitrogen, Ammonia	ND	25.0	mg/kg	6/30/94	4181070
Color	ND	5.0	C.U.	6/22/94	4173050
Hardness	ND	5.0	mg/L	6/30/94	4181116
Total Dissolved Solids	ND	5.0	mg/L	6/22- 6/23/94	4174061
Solids, Total Suspended	ND	5.0	mg/L	6/22- 6/23/94	4174064
Solids, Total (TS)	ND	5.0	mg/L	6/22- 6/23/94	4174065
Nitrogen, Total Kjeldahl	ND	0.50	mg/L	7/01/94	4182048
Nitrate-Nitrite	ND	0.050	mg/L	7/06/94	4187089
Phosphorous, Total	ND	0.10	mg/L	7/01/94	4182120
Sulfide	ND	1.0	mg/L	6/23/94	4175068
Biochemical Oxygen Demand - 5 Day	ND	3.0	mg/L	6/22- 6/27/94	4173038
Chloride	ND	1.0	mg/L	7/06/94	4187069
Carbon, Total Organic	ND	1.0	mg/L	6/23/94	4173103
Petroleum Hydrocarbons Total Recoverable	ND	1.0	mg/L	6/28/94	4180122
Oil and Grease, Gravimetric	ND	5.0	mg/L	6/30- 7/01/94	4182058
Nitrogen, Ammonia	ND	0.10	mg/L	7/05/94	4186122
Sulfate	ND	5.0	mg/L	6/30/94	4181079
Alkalinity, Total	ND	5.0	mg/L	6/30/94	4181073
Chemical Oxygen Demand	ND	20.0	mg/L	6/22/94	4173121

NOTE:

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

CHECK SAMPLE REPORT

QC BATCH: 4180048
LAB #: B4F290000-048 C

PREPARATION DATE: 6/28/94
DATE ANALYZED: 6/28/94

----- GC Volatiles -----

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
Dichlorodifluoromethane	128	(58-156)
Chloromethane	108	(65-138)
Vinyl chloride	100	(65-146)
Bromomethane	112	(44-153)
Chloroethane	102	(64-163)
Trichlorofluoromethane	73	(59-129)
1,1-Dichloroethene	89	(62-137)
Methylene chloride	91	(82-122)
trans-1,2-Dichloroethene	114	(73-139)
1,1-Dichloroethane	92	(64-124)
cis-1,2-Dichloroethene	82	(65-113)
Chloroform	99	(65-138)
1,1,1-Trichloroethane	96	(81-125)
Carbon tetrachloride	107	(80-134)
1,2-Dichloroethane	96	(76-119)
Trichloroethene	107	(71-129)
1,2-Dichloropropane	102	(80-131)
Bromodichloromethane	98	(70-128)
Dibromomethane	96	(68-118)
2-Chloroethyl vinyl ether	90	(24-158)
cis-1,3-Dichloropropene	92	(66-117)
trans-1,3-Dichloropropene	95	(83-146)
1,1,2-Trichloroethane	92	(81-133)
Tetrachloroethene	105	(71-137)
Dibromochloromethane	104	(70-132)
1-Chlorohexane	101	(58-133)
1,1,1,2-Tetrachloroethane	108	(72-116)
Bromoform	72	(58-138)
Chlorobenzene	97	(71-118)
1,1,2,2-Tetrachloroethane	78	(70-126)
1,2,3-Trichloropropane	96	(72-122)
Bromobenzene	81	(78-114)
1,3-Dichlorobenzene	97	(61-136)
1,4-Dichlorobenzene	98	(75-121)
1,2-Dichlorobenzene	100	(77-126)
2-Chlorotoluene	92	(40-160)
Benzyl chloride	148	(80-120)



ENSECO-WADSWORTH/
Laboratories

CHECK SAMPLE REPORT

QC BATCH: 4180048
LAB #: B4F290000-048 C

PREPARATION DATE: 6/28/94
DATE ANALYZED: 6/28/94

----- GC Volatiles -----

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
Methyl tert-butyl ether	97	(70-133)
Benzene	107	(76-124)
Toluene	103	(81-120)
Chlorobenzene	99	(80-117)
Ethylbenzene	103	(89-120)
Xylenes, Total	97	(61-142)
1,3-Dichlorobenzene	88	(61-136)
1,4-Dichlorobenzene	83	(75-121)
1,2-Dichlorobenzene	96	(77-126)



ENSECO-WADSWORTH/
Laboratories

CHECK SAMPLE REPORT

QC BATCH: 4181090
LAB #: B4F300000-090 C

PREPARATION DATE: 6/29/94
DATE ANALYZED: 6/29/94

----- GC Volatiles -----

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
Dichlorodifluoromethane	110	(58-156)
Chloromethane	83	(65-138)
Vinyl chloride	83	(65-146)
Bromomethane	93	(44-153)
Chloroethane	81	(64-163)
Trichlorofluoromethane	62	(69-129)
1,1-Dichloroethene	73	(62-137)
Methylene chloride	83	(82-122)
trans-1,2-Dichloroethene	95	(73-139)
1,1-Dichloroethane	79	(64-124)
cis-1,2-Dichloroethene	73	(65-113)
Chloroform	88	(65-138)
1,1,1-Trichloroethane	85	(81-125)
Carbon tetrachloride	89	(80-134)
1,2-Dichloroethane	87	(76-119)
Trichloroethene	98	(71-129)
1,2-Dichloropropane	98	(80-131)
Bromodichloromethane	85	(70-128)
Dibromomethane	88	(68-118)
2-Chloroethyl vinyl ether	77	(24-158)
cis-1,3-Dichloropropene	67	(66-117)
trans-1,3-Dichloropropene	70	(83-146)
1,1,2-Trichloroethane	94	(81-133)
Tetrachloroethene	113	(71-137)
Dibromochloromethane	88	(70-132)
1-Chlorohexane	106	(58-133)
1,1,1,2-Tetrachloroethane	112	(72-116)
Bromoform	59	(58-138)
Chlorobenzene	99	(71-118)
1,1,2,2-Tetrachloroethane	88	(70-126)
1,2,3-Trichloropropane	109	(72-122)
Bromobenzene	88	(78-114)
1,3-Dichlorobenzene	94	(61-136)
1,4-Dichlorobenzene	104	(75-121)
1,2-Dichlorobenzene	107	(77-126)
2-Chlorotoluene	98	(40-160)
Benzyl chloride	159	(80-120)



ENSECO-WADSWORTH/
Laboratories

CHECK SAMPLE REPORT

QC BATCH: 4181090
LAB #: B4F300000-090 C

PREPARATION DATE: 6/29/94
DATE ANALYZED: 6/29/94

----- GC Volatiles -----

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
Methyl tert-butyl ether	99	(70-133)
Benzene	107	(76-124)
Toluene	105	(81-120)
Ethylbenzene	103	(89-120)
Xylenes, Total	98	(61-142)
Chlorobenzene	99	(71-113)
1,3-Dichlorobenzene	99	(61-136)
1,4-Dichlorobenzene	94	(75-121)
1,2-Dichlorobenzene	98	(77-126)



ENSECO-WADSWORTH/
Laboratories

CHECK SAMPLE REPORT

QC BATCH: 4182046
LAB #: B4G010000-046 C

PREPARATION DATE: 6/30/94
DATE ANALYZED: 6/30/94

----- GC Volatiles -----

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
Ethylene dibromide	122	(62-129)



ENSECO-WADSWORTH/
Laboratories

CHECK SAMPLE REPORT

QC BATCH: 4173064
LAB #: B4F220000-064 C

PREPARATION DATE: 6/22/94
DATE ANALYZED: 6/25/94

----- GC/MS Semi-Volatiles -----

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
Naphthalene	69	(22-151)
1-Methylnaphthalene	69	(33-120)
2-Methylnaphthalene	70	(39-113)
Acenaphthylene	73	(17-145)
Acenaphthene	72	(30-150)
Fluorene	75	(24-117)
Phenanthrene	75	(26-126)
Anthracene	85	(20-117)
Fluoranthene	78	(29-118)
Pyrene	72	(34-125)
Benzo (a) anthracene	77	(31-115)
Chrysene	71	(18-140)
Benzo (b) fluoranthene	69	(12-119)
Benzo (k) fluoranthene	66	(23-134)
Benzo (a) pyrene	70	(40-115)
Indeno (1, 2, 3-cd) pyrene	67	(22-95)
Dibenzo (a, h) anthracene	70	(10-93)
Benzo (ghi) perylene	70	(10-103)



ENSECO-WADSWORTH/
Laboratories

CHECK SAMPLE REPORT

LAB #: B4F210008

METALS

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS	PREPARATION - ANALYSIS DATE
	BATCH: 4174003		
Lead	104	(70-126)	6/23/94
	BATCH: 4174009		
Iron	107	(84-119)	6/23 - 6/24/94
Manganese	99	(87-117)	6/23 - 6/24/94
Lead	104	(70-126)	6/23/94



ENSECO-WADSWORTH/
Laboratories

CHECK SAMPLE REPORT

LAB #: B4F210008

*** DISSOLVED METALS ***

METALS

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS	PREPARATION - ANALYSIS DATE
Lead	BATCH: 4173037 104	(70-126)	6/22/94



ENSECO-WADSWORTH/
Laboratories

CHECK SAMPLE REPORT

LAB #: B4F210008

----- INORGANIC ANALYTICAL REPORT -----

<u>COMPOUND</u>	<u>SPIKE PERCENT RECOVERY</u>	<u>LIMITS</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>Q/C BATCH</u>
Nitrogen, Ammonia	97	(86-119)	6/30/94	4181070
Carbon, Total Organic	102	(90-110)	6/28/94	4179089
Petroleum Hydrocarbons, Total Recoverable	96	(63-111)	6/21- 6/23/94	4172062
Hardness	101	(90-112)	6/30/94	4181116
Total Dissolved Solids	99	(89-105)	6/22- 6/23/94	4174061
Solids, Total Suspended	93	(68-132)	6/22- 6/23/94	4174064
Solids, Total (TS)	100	(80-120)	6/22- 6/23/94	4174065
Nitrogen, Total Kjeldahl	104	(92-109)	7/01/94	4182048
Nitrate-Nitrite	106	(63-130)	7/06/94	4187089
Phosphorous, Total	119	(66-126)	7/01/94	4182120
Sulfide	71	(66-95)	6/23/94	4175068
Biochemical Oxygen Demand - 5 Day	92	(54-147)	6/22- 6/27/94	4173
Chloride	99	(75-125)	7/06/94	4187069
Carbon, Total Organic	107	(70-130)	6/23/94	4173103
Petroleum Hydrocarbons Total Recoverable	97	(69-125)	6/28/94	4180122
Oil and Grease, Gravimetric	109	(85-125)	6/30- 7/01/94	4182058
Nitrogen, Ammonia	104	(86-119)	7/05/94	4186122
Sulfate	101	(82-105)	6/30/94	4181079
Alkalinity, Total	96	(85-110)	6/30/94	4181073
Chemical Oxygen Demand	111	(85-123)	6/22/94	4173121



ENSECO-WADSWORTH/
Laboratories

MATRIX SPIKE REPORT

QC BATCH: 4180048
LAB #: B4F210008-009 S
MATRIX: WATER

WO #: 04630
PREPARATION DATE: 6/29/94
DATE ANALYZED: 6/29/94

GC Volatiles

COMPOUND	SPIKE PERCENT RECOVERY	SPIKE/DUP PERCENT RECOVERY	Q/C LIMITS	RPD	RPD LIMIT
Methyl tert-butyl ether	88	89	(75-108)	1.6	(0-16)
Benzene	85	57	(70-117)	39	(0-15)
Toluene	86	86	(70-117)	11	(0-16)
Ethylbenzene	86	80	(84-106)	4.0	(0-10)
Xylenes, Total	82	79	(84-123)	0.9	(0-21)
Dichlorodifluoromethane	80	76	(40-160)	17	(0-20)
Chloromethane	76	70	(67-134)	7.8	(0-33)
Vinyl chloride	76	69	(44-176)	10	(0-22)
Bromomethane	75	79	(37-148)	5.0	(0-36)
Chloroethane	80	67	(67-117)	17	(0-25)
Trichlorofluoromethane	61	55	(65-125)	9.4	(0-16)
1,1-Dichloroethene	70	63	(45-137)	9.8	(0-30)
Methylene chloride	93	77	(83-135)	19	(0-25)
trans-1,2-Dichloroethene	95	91	(77-108)	3.6	(0-15)
1,1-Dichloroethane	80	74	(63-125)	7.9	(0-15)
cis-1,2-Dichloroethene	76	66	(70-130)	14	(0-20)
Chloroform	84	78	(66-125)	6.9	(0-17)
1,1,1-Trichloroethane	69	73	(83-119)	5.9	(0-17)
Carbon tetrachloride	86	85	(62-111)	1.2	(0-24)
1,2-Dichloroethane	86	82	(70-125)	4.4	(0-16)
Trichloroethene	80	76	(64-121)	4.5	(0-28)
1,2-Dichloropropane	91	83	(60-111)	8.8	(0-25)
Bromodichloromethane	86	79	(65-127)	8.5	(0-31)
Dibromomethane	86	88	(86-143)	2.3	(0-28)
2-Chloroethyl vinyl ether	0	0	(54-127)	0	(0-36)
cis-1,3-Dichloropropene	80	79	(28-125)	1.3	(0-26)
trans-1,3-Dichloropropene	91	88	(58-125)	3.3	(0-26)
1,1,2-Trichloroethane	87	84	(68-119)	3.8	(0-25)
Tetrachloroethene	91	84	(65-125)	7.4	(0-22)
Dibromochloromethane	97	94	(69-133)	3.6	(0-31)
1-Chlorohexane	88	96	(75-119)	8.7	(0-15)
1,1,1,2-Tetrachloroethane	99	105	(72-116)	5.8	(0-28)
Bromoform	73	71	(77-125)	2.4	(0-28)
Chlorobenzene	86	84	(58-133)	2.5	(0-24)
1,1,2,2-Tetrachloroethane	95	94	(56-125)	0.92	(0-24)
1,2,3-Trichloropropane	99	113	(84-119)	13	(0-18)
Bromobenzene	75	84	(82-106)	12	(0-11)
1,3-Dichlorobenzene	74	74	(84-115)	0.75	(0-15)
1,4-Dichlorobenzene	80	79	(85-119)	1.2	(0-17)



ENSECO-WADSWORTH/
Laboratories

MATRIX SPIKE REPORT

QC BATCH: 4182046
LAB #: B4F210008-009 S
MATRIX: WATER

WO #: 04630
PREPARATION DATE: 6/30/94
DATE ANALYZED: 6/30/94

----- GC Volatiles -----

COMPOUND	SPIKE PERCENT RECOVERY	SPIKE/DUP PERCENT RECOVERY	Q/C LIMITS	RPD	RPD LIMIT
Ethylene dibromide	95	95	(81-135)	0.10	(0-25)



ENSECO-WADSWORTH/
Laboratories

MATRIX SPIKE REPORT

QC BATCH: 4173064
LAB #: B4F210008-009 S
MATRIX: WATER

WO #: 04630
PREPARATION DATE: 6/22/94
DATE ANALYZED: 6/27/94

----- GC/MS Semi-Volatiles -----

COMPOUND	SPIKE PERCENT RECOVERY	SPIKE/DUP PERCENT RECOVERY	Q/C LIMITS	RPD	RPD LIMIT
Naphthalene	66	66	(25-97)	0.14	(0-23)
1-Methylnaphthalene	65	62	(48-101)	4.9	(0-24)
2-Methylnaphthalene	63	67	(43-82)	1.8	(0-15)
Acenaphthylene	61	66	(57-104)	3.2	(0-19)
Acenaphthene	61	63	(57-104)	15	(0-24)
Fluorene	62	58	(34-118)	6.2	(0-28)
Phenanthrene	64	58	(36-118)	9.3	(0-27)
Anthracene	69	61	(39-124)	13	(0-28)
Fluoranthene	53	47	(60-120)	12	(0-30)
Pyrene	56	49	(58-148)	14	(0-30)
Benzo(a)anthracene	54	46	(36-128)	17	(0-31)
Chrysene	51	44	(48-118)	15	(0-36)
Benzo(b)fluoranthene	58	47	(43-108)	19	(0-22)
Benzo(k)fluoranthene	50	45	(28-126)	9.4	(0-33)
Benzo(a)pyrene	56	48	(35-117)	14	(0-27)
Indeno(1,2,3-cd)pyrene	58	49	(33-194)	17	(0-41)
Dibenzo(a,h)anthracene	57	48	(32-180)	16	(0-37)
Benzo(ghi)perylene	57	49	(29-232)	16	(0-51)



ENSECO-WADSWORTH/
Laboratories

MATRIX SPIKE REPORT

LAB #: B4F210008-009

----- METALS -----

COMPOUND	SPIKE PERCENT RECOVERY	SPIKE/DUP PERCENT RECOVERY	Q/C LIMITS	RPD	RPD LIMITS	PREPARATION - ANALYSIS DATE
	BATCH:4174003 MATRIX: WATER					
Lead	107	102	(76-124)	4.8	(0-24)	6/23/94

NOTE:

Calculations are performed before rounding to avoid round-off errors in calculated results



ENSECO-WADSWORTH/
Laboratories

MATRIX SPIKE REPORT

LAB #: B4F210008-010

*** DISSOLVED METALS ***

----- METALS -----

COMPOUND	SPIKE PERCENT RECOVERY	SPIKE/DUP PERCENT RECOVERY	Q/C LIMITS	RPD LIMITS	PREPARATION - ANALYSIS DATE
Lead	105	106	BATCH:4173037 MATRIX: WATER (76-124)	0.23 (0-24)	6/22- 6/23/94

NOTE:

Calculations are performed before rounding to avoid round-off errors in calculated results



ENSECO-WADSWORTH/
Laboratories

MATRIX SPIKE REPORT

Lot #: B4F210008

----- INORGANIC ANALYTICAL REPORT -----

<u>COMPOUND</u>	RECOVERY		Q/C <u>LIMITS</u>	<u>RPD</u>	RPD <u>LIMITS</u>	PREPARATION - <u>ANALYSIS DATE</u>	Q/C <u>BATCH</u>
	PERCENT						
	<u>MS</u>	<u>MSD</u>					
Lab# B4F210008- 6 Matrix: WATER							
Hardness	50	50	(78-122)	0	22	6/30/94	4181116
Lab# B4F210008- 9 Matrix: WATER							
Petroleum Hydrocarbons	92	91	(75-125)	1.1	24	6/28/94	4180122
Total Recoverable							



ENSECO-WADSWORTH/
Laboratories

MATRIX SPIKE REPORT

BATCH:4174009

METALS

COMPOUND	SPIKE PERCENT RECOVERY	SPIKE/DUP PERCENT RECOVERY	Q/C LIMITS	RPD	RPD LIMITS	PREPARATION - ANALYSIS DATE
Arsenic	0	0	WORK ORDER: O4105108 MATRIX: WATER	0	10	6/23/94
Chromium	96	96	WORK ORDER: O4105110 MATRIX: WATER	0.31	20	6/23- 6/24/94
Copper	99	98	WORK ORDER: O4105112 MATRIX: WATER	1.0	20	6/23- 6/24/94
Manganese	94	94	WORK ORDER: O4105114 MATRIX: WATER	0.11	20	6/23- 6/24/94
Lead	DIL		WORK ORDER: O4105116 MATRIX: WATER			6/23/94

DIL Diluted out

ENSECO-WADSWORTH/ALERT LABORATORIES SAMPLE SHIPPER EVALUATION AND RECEIPT FORM

Client: ABB-ES Project Name/Number: 7587.31

Samples Received By: Eral A. Echan Date Received: 4/21/94
(Signature)

Sample Evaluation Form By: Eral A. Echan LAB No: 34F210008
(Signature)

Type of shipping container samples received in? WAL Cooler
 Client Cooler WAL Shipper Box Other

Any "NO" responses or discrepancies should be explained in comments section.

- | | YES | NO |
|--|-------------------------------------|--------------------------|
| 1. Were custody seals on shipping container(s) intact? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Were custody papers properly included with samples? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Were custody papers properly filled out (ink, signed, match labels)? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4. Did all bottles arrive in good condition (unbroken)? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5. Were all bottle labels complete (Sample No., date, signed, analysis preservatives)? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 6. Were correct bottles used for the tests indicated? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 7. Were proper sample preservation techniques indicated? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 8. Were samples received within adequate holding time? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 9. Were all VOA bottles checked for the presence of air bubbles? (If air bubbles were found indicate in comment section) | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 10. Were samples in direct contact with wet ice? (NOTE TEMPERATURE BELOW) | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 11. Were samples accepted into the laboratory? (If no see comments) | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Cooler # 481522 Temp 8 °C Cooler # 72588 Temp 8 °C
 Cooler # 482 Temp 8 °C Cooler # 486 Temp 8 °C

Comments: VOA air bubble 01, 02

a, - 01→1; 02→1, 03→2, 04→1, 05→1, 06→1, 09→3, EB→01
 DB 01→3, 02→01, 02→. BOD is not written on COC for MW-4.
 There isn't a filtered Pb bottle for MW3, 4 & 9. MW-5 has 2 filtered Pb bottles, with one being the only pl. liter of the project.



**WADSWORTH/ALERT
LABORATORIES**
Sampling, testing, mobile labs

5910 Breckenridge Pkwy.
Suite H
Tampa, FL 33610
(813) 621-0784
Fax (813) 623-6021

Record # of

3835

Client: <i>HPB-ES</i>		Project Name / Location: <i>NAVSTA ALBERT BEQ</i>			No. Of CONTAINERS	Parameter										Remarks
Sampler(s): <i>L. Murray, II</i>		Project #: <i>7007-31</i>				VOC-	PAH-625	METALS-Pb	TRPH-	EDB-	<i>PCB-14</i>	<i>PCB-15</i>	<i>PCB-16</i>	<i>PCB-17</i>	<i>PCB-18</i>	
Item #	Date	Time	MATRIX	Sample Location												
1	6/20/04	1608	Water	<i>17-1800-1000</i>	11	2	1	1	1							
2		1630		<i>17-1800-1000</i>	11	2	1	1	1							
3		1700		<i>17-1800-1000</i>	11	2	1	1	1							
4		1700		<i>17-1800-1000</i>	15	2	1	1	1	1	1	1	1	1	1	1
5		1653		<i>17-1800-1000</i>	11	2	1	1	1							
6		1615		<i>17-1800-1000</i>	13	2	1	1	1							<i>Sample sent for PCBs</i>
7	_____ km															
8	_____ km															
9		1705		<i>17-1800-1000</i>	11	3	1	1	1							
10		1700		<i>17-1800-1000</i>	10	3	1	1	1	0						
11	_____ km															

Total Containers

93

Number of Coolers in Shipment

Bailers

Report To: *Kelly Murray, JAX*
Karen Murray, TX

Additional Comments:

Transfer Number	Item Number(s)	Relinquished By / Company	Accepted By / Company	Date	Time
1		<i>Kelly Murray</i>	<i>Kelly Murray</i>	<i>6/20/04</i>	<i>1940</i>
2			<i>Paula</i>	<i>6/21/04</i>	<i>1100</i>
3					
4					
5					
6					

Original Acceptance Companies Shipment



Client:		Project Name / Location			No. OF CONTAINERS	Parameter										Remarks						
Sampler(s)		Project #:				VOC - CoVOCs	PAH - CoPAHs	METALS - Pb	TRIPH - 415.1	EDB -	TC	TC	TC	TC	TC		TC	TC	TC	TC	TC	TC
Item #	Date	Time	MATRIX	Sample Location																		
1	6/20/94	11:00	Water	Site 1	2																	
2	6/20/94	1:15	Soil	Site 1	2																	
3	6/20/94	1:45	Soil	Site 1	5																	
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						

Total Containers

9

Number of Coolers in Shipment

Bailers

Report To:	Transfer Number	Item Number(s)	Relinquished By / Company	Accepted By / Company	Date	Time
Additional Comments:	1		Kelly Murray		6/20/94	11:00
	2			FedEx	6/24/94	11:00
	3					
	4					
	5					
	6					

Original Accompanies Shipment



ENSECO-WADSWORTH/
Division of Corning Lab Services, Inc.

Laboratories

5910 Breckenridge Parkway, Suite H 813-621-0784
Tampa, FL 33610 FAX 813-623-6021

ANALYTICAL REPORT

PROJECT NO. 7587.31

NAVSTA MAYPORT BEQ

KAREN HARTNETT

ABB ENVIRONMENTAL SERVICES

ENSECO-WADSWORTH/ALERT LABORATORIES
Certification Numbers: E84059, HRS84297
FDEP CompQAP: 870270G

Chris Amstutz
Project Manager

July 5, 1994



ENSECO-WADSWORTH/
Laboratories

EXECUTIVE SUMMARY - Detection Highlights

B4F220054

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>
MPT-1586-MW-08D				
Bromodichloromethane	1.9	1.0	ug/L	USEPA 601/2
Chloroform	6.9	1.0	ug/L	USEPA 601/2
MPT-1586-MW-07				
Benzene	1.9	1.0	ug/L	USEPA 601/2
Lead	9.6	5.0	ug/L	MCAWW 239.2
MPT-1586-MW-DUP1				
Acenaphthene	5.2	5.0	ug/L	USEPA 625
Fluorene	6.1	5.0	ug/L	USEPA 625
2-Methylnaphthalene	8.5	5.0	ug/L	USEPA 625
Phenanthrene	6.6	5.0	ug/L	USEPA 625
1-Methylnaphthalene	46	5.0	ug/L	USEPA 625
Benzene	45	1.0	ug/L	USEPA 601/2
Xylenes, Total	6.0	1.0	ug/L	USEPA 601/2
Lead	14.0	5.0	ug/L	MCAWW 239.2
Petroleum Hydrocarbons	1.4	1.0	mg/L	MCAWW 418.1
Total Recoverable				



ENSECO-WADSWORTH/
Laboratories

ANALYTICAL METHODS SUMMARY

Parameters

Ethylene Dibromide
by Purge and Trap/ECD
Polyaromatic Hydrocarbons
Volatile Organics
Lead
Petroleum Hydrocarbons
Total Recoverable

Methods

FL-HRS 601-MODIFIED
USEPA 625
USEPA 601/2
MCAWW 239.2
MCAWW 418.1

References:

- FL-HRS Method Developed by the State of Florida Department of Health and Rehabilitative Services Analytical Laboratories.
- MCAWW Methods for Chemical Analysis of Water and Wastes, EMSL: Cincinnati, OH: March 1983 and its updates.
- USEPA Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater, 40CFR, Part 136, Appendix A, October 26, 1984 (and its revisions and amendments)



ENSECO-WADSWORTH/
Laboratories

SAMPLE SUMMARY

The analytical results of the samples listed below are presented on the following pages.

<u>WO #</u>	<u>LABORATORY ID</u>	<u>SAMPLE IDENTIFICATION</u>
05310	B4F220054-001	MPT-1586-MW-08D
05311	B4F220054-002	MPT-1586-MW-07
05312	B4F220054-003	MPT-1586-MW-07 FILTERED
05313	B4F220054-004	MPT-1586-MW-DUP1
05314	B4F220054-005	MPT-1586-MW-DUP1 FILTERED
05315	B4F220054-006	MPT-1586-MW-MW03 FILTERED
05316	B4F220054-007	MPT-1586-MW-MW04 FILTERED



**ENSECO-WADSWORTH/
Laboratories**

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW-08D

WO #: 05310103
LAB #: B4F220054-001
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/22/94

----- GC Volatiles -----					
PARAMETER	1 OF 2		METHOD	EXTRACTION- ANALYSIS DATE	QC BATCH
	RESULT (ug/L)	REPORTING LIMIT			
Benzene	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090
Bromodichloromethane	1.9	1.0	USEPA 601/2	06/29-06/30/94	4181090
Bromoform	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090
Bromomethane	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090
Carbon tetrachloride	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090
Chlorobenzene	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090
Dibromochloromethane	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090
Chloroethane	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090
2-Chloroethyl vinyl ether	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090
Chloroform	6.9	1.0	USEPA 601/2	06/29-06/30/94	4181090
Chloromethane	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090
1,2-Dichlorobenzene	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090
1,3-Dichlorobenzene	ND	1.0	USEPA 601/2	06/29-06/30/94	418
1,4-Dichlorobenzene	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090
Dichlorodifluoromethane	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090
1,1-Dichloroethane	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090
1,2-Dichloroethane	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090
1,1-Dichloroethene	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090
cis-1,2-Dichloroethene	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090
trans-1,2-Dichloroethene	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090
1,2-Dichloropropane	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090
cis-1,3-Dichloropropene	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090
trans-1,3-Dichloropropene	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090
Ethylbenzene	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090
<u>SURROGATE RECOVERY</u>					
	%	<u>ACCEPTABLE LIMITS</u>			
Bromochloromethane	91	(78 - 122)			
Trifluorotoluene	98	(73 - 131)			

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



**ENSECO-WADSWORTH/
Laboratories**

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW-08D

WO #: 05310103
LAB #: B4F220054-001
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/22/94

----- GC Volatiles -----
2 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Trichlorofluoromethane	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090
Methylene chloride	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090
1,1,2,2-Tetrachloroethane	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090
Tetrachloroethene	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090
Toluene	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090
1,1,1-Trichloroethane	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090
1,1,2-Trichloroethane	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090
Trichloroethene	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090
Vinyl chloride	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090
Xylenes, Total	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090
Methyl tert-butyl ether	ND	1.0	USEPA 601/2	06/29-06/30/94	4181090

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
Bromochloromethane	91	(78 - 122)
Trifluorotoluene	98	(73 - 131)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



**ENSECO-WADSWORTH/
Laboratories**

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW-08D

WO #: 05310104
LAB #: B4F220054-001
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/22/94

----- GC Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Ethylene dibromide	ND	0.020	FL-HRS 601-M	06/29/94	4180022

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
Bromoform	613*	(41 - 152)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT

* SURROGATE(S) OUTSIDE ACCEPTANCE CRITERIA DUE TO DEMONSTRATED MATRIX EFFECT.



**ENSECO-WADSWORTH/
Laboratories**

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW-08D

WO #: O5310102
LAB #: B4F220054-001
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/22/94

----- GC/MS Semi-Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Acenaphthene	ND	5.0	USEPA 625	06/23-06/27/94	4174050
Acenaphthylene	ND	5.0	USEPA 625	06/23-06/27/94	4174050
Anthracene	ND	5.0	USEPA 625	06/23-06/27/94	4174050
Benzo (a) anthracene	ND	5.0	USEPA 625	06/23-06/27/94	4174050
Benzo (b) fluoranthene	ND	5.0	USEPA 625	06/23-06/27/94	4174050
Benzo (k) fluoranthene	ND	5.0	USEPA 625	06/23-06/27/94	4174050
Benzo (ghi) perylene	ND	5.0	USEPA 625	06/23-06/27/94	4174050
Benzo (a) pyrene	ND	5.0	USEPA 625	06/23-06/27/94	4174050
Chrysene	ND	5.0	USEPA 625	06/23-06/27/94	4174050
Dibenz (a, h) anthracene	ND	5.0	USEPA 625	06/23-06/27/94	4174050
Fluoranthene	ND	5.0	USEPA 625	06/23-06/27/94	4174050
Fluorene	ND	5.0	USEPA 625	06/23-06/27/94	4174050
Indeno (1, 2, 3-cd) pyrene	ND	5.0	USEPA 625	06/23-06/27/94	4174050
2-Methylnaphthalene	ND	5.0	USEPA 625	06/23-06/27/94	4174050
Naphthalene	ND	5.0	USEPA 625	06/23-06/27/94	4174050
Phenanthrene	ND	5.0	USEPA 625	06/23-06/27/94	4174050
Pyrene	ND	5.0	USEPA 625	06/23-06/27/94	4174050
1-Methylnaphthalene	ND	5.0	USEPA 625	06/23-06/27/94	4174050

SURROGATE RECOVERY

%

ACCEPTABLE LIMITS

Nitrobenzene-d5	48	(22 - 135)
2-Fluorobiphenyl	45	(34 - 140)
Terphenyl-d14	34	(10 - 132)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



**ENSECO-WADSWORTH/
Laboratories**

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW-08D

WO #: 05310
LAB #: B4F220054-001
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/22/94

----- REQUESTED METALS -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Lead	ND	5.0	ug/L	MCAWW 239.2	6/23/94	4174003

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



**ENSECO-WADSWORTH/
Laboratories**

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW-08D

WO #: 05310
LAB #: B4F220054-001
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/22/94

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		<u>METHOD</u>	<u>PREPARATION - QC</u>	
		<u>LIMIT</u>	<u>UNIT</u>		<u>ANALYSIS DATE</u>	<u>BATCH</u>
Petroleum Hydrocarbons Total Recoverable	ND	1.0	mg/L	MCAWW 418.1	6/28/94	4180122

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



**ENSECO-WADSWORTH/
Laboratories**

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW-07

WO #: 05311103
LAB #: B4F220054-002
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/22/94

----- GC Volatiles -----					
1 OF 2					
<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Benzene	1.9	1.0	USEPA 601/2	06/30/94	4181090
Bromodichloromethane	ND	1.0	USEPA 601/2	06/30/94	4181090
Bromoform	ND	1.0	USEPA 601/2	06/30/94	4181090
Bromomethane	ND	1.0	USEPA 601/2	06/30/94	4181090
Carbon tetrachloride	ND	1.0	USEPA 601/2	06/30/94	4181090
Chlorobenzene	ND	1.0	USEPA 601/2	06/30/94	4181090
Dibromochloromethane	ND	1.0	USEPA 601/2	06/30/94	4181090
Chloroethane	ND	1.0	USEPA 601/2	06/30/94	4181090
2-Chloroethyl vinyl ether	ND	1.0	USEPA 601/2	06/30/94	4181090
Chloroform	ND	1.0	USEPA 601/2	06/30/94	4181090
Chloromethane	ND	1.0	USEPA 601/2	06/30/94	4181090
1,2-Dichlorobenzene	ND	1.0	USEPA 601/2	06/30/94	4181090
1,3-Dichlorobenzene	ND	1.0	USEPA 601/2	06/30/94	4181090
1,4-Dichlorobenzene	ND	1.0	USEPA 601/2	06/30/94	4181090
Dichlorodifluoromethane	ND	1.0	USEPA 601/2	06/30/94	4181090
1,1-Dichloroethane	ND	1.0	USEPA 601/2	06/30/94	4181090
1,2-Dichloroethane	ND	1.0	USEPA 601/2	06/30/94	4181090
1,1-Dichloroethene	ND	1.0	USEPA 601/2	06/30/94	4181090
cis-1,2-Dichloroethene	ND	1.0	USEPA 601/2	06/30/94	4181090
trans-1,2-Dichloroethene	ND	1.0	USEPA 601/2	06/30/94	4181090
1,2-Dichloropropane	ND	1.0	USEPA 601/2	06/30/94	4181090
cis-1,3-Dichloropropene	ND	1.0	USEPA 601/2	06/30/94	4181090
trans-1,3-Dichloropropene	ND	1.0	USEPA 601/2	06/30/94	4181090
Ethylbenzene	ND	1.0	USEPA 601/2	06/30/94	4181090
<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>			
Bromochloromethane	91	(78 - 122)			
Trifluorotoluene	99	(73 - 131)			

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW-07

WO #: 05311103
LAB #: B4F220054-002
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/22/94

----- GC Volatiles -----					
2 OF 2					
PARAMETER	RESULT (ug/L)	REPORTING LIMIT	METHOD	EXTRACTION- ANALYSIS DATE	QC BATCH
Trichlorofluoromethane	ND	1.0	USEPA 601/2	06/30/94	4181090
Methylene chloride	ND	1.0	USEPA 601/2	06/30/94	4181090
1,1,2,2-Tetrachloroethane	ND	1.0	USEPA 601/2	06/30/94	4181090
Tetrachloroethene	ND	1.0	USEPA 601/2	06/30/94	4181090
Toluene	ND	1.0	USEPA 601/2	06/30/94	4181090
1,1,1-Trichloroethane	ND	1.0	USEPA 601/2	06/30/94	4181090
1,1,2-Trichloroethane	ND	1.0	USEPA 601/2	06/30/94	4181090
Trichloroethene	ND	1.0	USEPA 601/2	06/30/94	4181090
Vinyl chloride	ND	1.0	USEPA 601/2	06/30/94	4181090
Xylenes, Total	ND	1.0	USEPA 601/2	06/30/94	4181090
Methyl tert-butyl ether	ND	1.0	USEPA 601/2	06/30/94	4181090

SURROGATE RECOVERY

%

ACCEPTABLE LIMITS

Bromochloromethane	91	(78 - 122)
Trifluorotoluene	99	(73 - 131)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW-07

WO #: 05311104
LAB #: B4F220054-002
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/22/94

----- GC Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Ethylene dibromide	ND	0.020	FL-HRS 601-M	06/29/94	4180022

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
Bromoform	46	(41 - 152)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT



**ENSECO-WADSWORTH/
Laboratories**

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW-07

WO #: 05311102
LAB #: B4F220054-002
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/22/94

----- GC/MS Semi-Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Acenaphthene	ND	5.0	USEPA 625	06/23-06/28/94	4174050
Acenaphthylene	ND	5.0	USEPA 625	06/23-06/28/94	4174050
Anthracene	ND	5.0	USEPA 625	06/23-06/28/94	4174050
Benzo (a) anthracene	ND	5.0	USEPA 625	06/23-06/28/94	4174050
Benzo (b) fluoranthene	ND	5.0	USEPA 625	06/23-06/28/94	4174050
Benzo (k) fluoranthene	ND	5.0	USEPA 625	06/23-06/28/94	4174050
Benzo (ghi) perylene	ND	5.0	USEPA 625	06/23-06/28/94	4174050
Benzo (a) pyrene	ND	5.0	USEPA 625	06/23-06/28/94	4174050
Chrysene	ND	5.0	USEPA 625	06/23-06/28/94	4174050
Dibenz (a,h) anthracene	ND	5.0	USEPA 625	06/23-06/28/94	4174050
Fluoranthene	ND	5.0	USEPA 625	06/23-06/28/94	4174050
Fluorene	ND	5.0	USEPA 625	06/23-06/28/94	4174050
Indeno (1,2,3-cd) pyrene	ND	5.0	USEPA 625	06/23-06/28/94	4174050
2-Methylnaphthalene	ND	5.0	USEPA 625	06/23-06/28/94	4174050
Naphthalene	ND	5.0	USEPA 625	06/23-06/28/94	4174050
Phenanthrene	ND	5.0	USEPA 625	06/23-06/28/94	4174050
Pyrene	ND	5.0	USEPA 625	06/23-06/28/94	4174050
1-Methylnaphthalene	ND	5.0	USEPA 625	06/23-06/28/94	4174050

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
Nitrobenzene-d5	55	(22 - 135)
2-Fluorobiphenyl	48	(34 - 140)
Terphenyl-d14	21	(10 - 132)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW-07

WO #: 05311
LAB #: B4F220054-002
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/22/94

----- REQUESTED METALS -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Lead	9.6	5.0	ug/L	MCAWW 239.2	6/23/94	4174003

NOTE: AS RECEIVED



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW-07 FILTERED

WO #: 05312
LAB #: B4F220054-003
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/22/94

----- REQUESTED METALS -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
- - DISSOLVED METALS - -						
Lead	ND	5.0	ug/L	MCAWW 239.2	6/27/94	4178080

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



**ENSECO-WADSWORTH/
Laboratories**

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW-07

WO #: 05311
LAB #: B4F220054-002
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/22/94

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		<u>METHOD</u>	<u>PREPARATION - QC</u>	
		<u>LIMIT</u>	<u>UNIT</u>		<u>ANALYSIS DATE</u>	<u>BATCH</u>
Petroleum Hydrocarbons Total Recoverable	ND	1.0	mg/L	MCAWW 418.1	6/28/94	4180122

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



**ENSECO-WADSWORTH/
Laboratories**

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW-DUPL

WO #: 05313103
LAB #: B4F220054-004
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/22/94

GC Volatiles

1 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Benzene	45	1.0	USEPA 601/2	06/30/94	4181090
Bromodichloromethane	ND	1.0	USEPA 601/2	06/30/94	4181090
Bromoform	ND	1.0	USEPA 601/2	06/30/94	4181090
Bromomethane	ND	1.0	USEPA 601/2	06/30/94	4181090
Carbon tetrachloride	ND	1.0	USEPA 601/2	06/30/94	4181090
Chlorobenzene	ND	1.0	USEPA 601/2	06/30/94	4181090
Dibromochloromethane	ND	1.0	USEPA 601/2	06/30/94	4181090
Chloroethane	ND	1.0	USEPA 601/2	06/30/94	4181090
2-Chloroethyl vinyl ether	ND	1.0	USEPA 601/2	06/30/94	4181090
Chloroform	ND	1.0	USEPA 601/2	06/30/94	4181090
Chloromethane	ND	1.0	USEPA 601/2	06/30/94	4181090
1,2-Dichlorobenzene	ND	1.0	USEPA 601/2	06/30/94	4181090
1,3-Dichlorobenzene	ND	1.0	USEPA 601/2	06/30/94	4181090
1,4-Dichlorobenzene	ND	1.0	USEPA 601/2	06/30/94	4181090
Dichlorodifluoromethane	ND	1.0	USEPA 601/2	06/30/94	4181090
1,1-Dichloroethane	ND	1.0	USEPA 601/2	06/30/94	4181090
1,2-Dichloroethane	ND	1.0	USEPA 601/2	06/30/94	4181090
1,1-Dichloroethene	ND	1.0	USEPA 601/2	06/30/94	4181090
cis-1,2-Dichloroethene	ND	1.0	USEPA 601/2	06/30/94	4181090
trans-1,2-Dichloroethene	ND	1.0	USEPA 601/2	06/30/94	4181090
1,2-Dichloropropane	ND	1.0	USEPA 601/2	06/30/94	4181090
cis-1,3-Dichloropropene	ND	1.0	USEPA 601/2	06/30/94	4181090
trans-1,3-Dichloropropene	ND	1.0	USEPA 601/2	06/30/94	4181090
Ethylbenzene	ND	1.0	USEPA 601/2	06/30/94	4181090
<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>			
Bromochloromethane	92	(78 - 122)			
Trifluorotoluene	99	(73 - 131)			

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



**ENSECO-WADSWORTH/
Laboratories**

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW-DUP1

WO #: 05313103
LAB #: B4F220054-004
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/22/94

----- GC Volatiles -----
2 OF 2

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Trichlorofluoromethane	ND	1.0	USEPA 601/2	06/30/94	4181090
Methylene chloride	ND	1.0	USEPA 601/2	06/30/94	4181090
1,1,2,2-Tetrachloroethane	ND	1.0	USEPA 601/2	06/30/94	4181090
Tetrachloroethene	ND	1.0	USEPA 601/2	06/30/94	4181090
Toluene	ND	1.0	USEPA 601/2	06/30/94	4181090
1,1,1-Trichloroethane	ND	1.0	USEPA 601/2	06/30/94	4181090
1,1,2-Trichloroethane	ND	1.0	USEPA 601/2	06/30/94	4181090
Trichloroethene	ND	1.0	USEPA 601/2	06/30/94	4181090
Vinyl chloride	ND	1.0	USEPA 601/2	06/30/94	4181090
Xylenes, Total	6.0	1.0	USEPA 601/2	06/30/94	4181090
Methyl tert-butyl ether	ND	1.0	USEPA 601/2	06/30/94	4181090

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
Bromochloromethane	92	(78 - 122)
Trifluorotoluene	99	(73 - 131)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW-DUP1

WO #: 05313104
LAB #: B4F220054-004
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/22/94

----- GC Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Ethylene dibromide	ND	0.020	FL-HRS 601-M	06/29/94	4180022

SURROGATE RECOVERY

%

ACCEPTABLE LIMITS

Bromoform

25*

(41 - 152)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT

* SURROGATE(S) OUTSIDE ACCEPTANCE CRITERIA DUE TO DEMONSTRATED MATRIX EFFECT.



**ENSECO-WADSWORTH/
Laboratories**

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW-DUP1

WO #: 05313102
LAB #: B4F220054-004
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/22/94

----- GC/MS Semi-Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Acenaphthene	5.2	5.0	USEPA 625	06/23-06/28/94	4174050
Acenaphthylene	ND	5.0	USEPA 625	06/23-06/28/94	4174050
Anthracene	ND	5.0	USEPA 625	06/23-06/28/94	4174050
Benzo (a) anthracene	ND	5.0	USEPA 625	06/23-06/28/94	4174050
Benzo (b) fluoranthene	ND	5.0	USEPA 625	06/23-06/28/94	4174050
Benzo (k) fluoranthene	ND	5.0	USEPA 625	06/23-06/28/94	4174050
Benzo (ghi) perylene	ND	5.0	USEPA 625	06/23-06/28/94	4174050
Benzo (a) pyrene	ND	5.0	USEPA 625	06/23-06/28/94	4174050
Chrysene	ND	5.0	USEPA 625	06/23-06/28/94	4174050
Dibenz (a, h) anthracene	ND	5.0	USEPA 625	06/23-06/28/94	4174050
Fluoranthene	ND	5.0	USEPA 625	06/23-06/28/94	4174050
Fluorene	6.1	5.0	USEPA 625	06/23-06/28/94	4174050
Indeno (1, 2, 3-cd) pyrene	ND	5.0	USEPA 625	06/23-06/28/94	4174050
2-Methylnaphthalene	8.5	5.0	USEPA 625	06/23-06/28/94	4174050
Naphthalene	ND	5.0	USEPA 625	06/23-06/28/94	4174050
Phenanthrene	6.6	5.0	USEPA 625	06/23-06/28/94	4174050
Pyrene	ND	5.0	USEPA 625	06/23-06/28/94	4174050
1-Methylnaphthalene	46	5.0	USEPA 625	06/23-06/28/94	4174050

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
Nitrobenzene-d5	59	(22 - 135)
2-Fluorobiphenyl	46	(34 - 140)
Terphenyl-d14	27	(10 - 132)

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW-DUP1

WO #: 05313
LAB #: B4F220054-004
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/22/94

----- REQUESTED METALS -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Lead	14.0	5.0	ug/L	MCAWW 239.2	6/23/94	4174003

NOTE: AS RECEIVED



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW-DUP1

WO #: 05313
LAB #: B4F220054-004
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/22/94

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Petroleum Hydrocarbons Total Recoverable	1.4	1.0	mg/L	MCAWW 418.1	6/28/94	4180122

NOTE: AS RECEIVED



LAB #: B4F230000-050

----- GC/MS Semi-Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Acenaphthene	ND	5.0	6/23- 6/27/94	4174050
Acenaphthylene	ND	5.0	6/23- 6/27/94	4174050
Anthracene	ND	5.0	6/23- 6/27/94	4174050
Benzo (a) anthracene	ND	5.0	6/23- 6/27/94	4174050
Benzo (b) fluoranthene	ND	5.0	6/23- 6/27/94	4174050
Benzo (k) fluoranthene	ND	5.0	6/23- 6/27/94	4174050
Benzo (ghi) perylene	ND	5.0	6/23- 6/27/94	4174050
Benzo (a) pyrene	ND	5.0	6/23- 6/27/94	4174050
Chrysene	ND	5.0	6/23- 6/27/94	4174050
Dibenz (a, h) anthracene	ND	5.0	6/23- 6/27/94	4174050
Fluoranthene	ND	5.0	6/23- 6/27/94	4174050
Fluorene	ND	5.0	6/23- 6/27/94	4174050
Indeno (1, 2, 3-cd) pyrene	ND	5.0	6/23- 6/27/94	4174050
2-Methylnaphthalene	ND	5.0	6/23- 6/27/94	4174050
Naphthalene	ND	5.0	6/23- 6/27/94	4174050
Phenanthrene	ND	5.0	6/23- 6/27/94	4174050
Pyrene	ND	5.0	6/23- 6/27/94	4174050
1-Methylnaphthalene	ND	5.0	6/23- 6/27/94	4174050

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
Nitrobenzene-d5	55	(22 - 135)
2-Fluorobiphenyl	50	(34 - 140)
Terphenyl-d14	65	(10 - 132)

NOTE:

ND (NONE DETECTED)



ENSECO-WADSWORTH/
Laboratories

INTRA-LAB BLANK REPORT

LAB #: B4F290000-022

----- GC Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> <u>(ug/L)</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Ethylene dibromide	ND	0.020	6/29/94	4180022

SURROGATE RECOVERY
Bromoform

%
81

ACCEPTABLE LIMITS
(41 - 152)

NOTE:

ND (NONE DETECTED)



ENSECO-WADSWORTH/
Laboratories

INTRA-LAB BLANK REPORT

LAB #: B4F290000-122

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Petroleum Hydrocarbons	ND	1.0	mg/L	6/28/94	4180122

NOTE:

ND (NONE DETECTED)



ENSECO-WADSWORTH/
Laboratories

INTRA-LAB BLANK REPORT

LAB #: B4F220054

*** DISSOLVED METALS ***

METALS

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>
Lead	ND	BATCH:4178080 5.0	ug/L	MCAWW 239.2	6/27/94

NOTE:

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

INTRA-LAB BLANK REPORT

LAB #: B4F220054

METALS

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>
Lead	ND	BATCH: 4174003 5.0	ug/L	MCAWW 239.2	6/23/94

NOTE:

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

CHECK SAMPLE REPORT

QC BATCH: 4181090
LAB #: B4F300000-090 C

PREPARATION DATE: 6/29/94
DATE ANALYZED: 6/29/94

----- GC Volatiles -----

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
Dichlorodifluoromethane	110	(58-156)
Chloromethane	83	(65-138)
Vinyl chloride	83	(65-146)
Bromomethane	93	(44-153)
Chloroethane	81	(64-163)
Trichlorofluoromethane	62	(69-129)
1,1-Dichloroethene	73	(62-137)
Methylene chloride	83	(82-122)
trans-1,2-Dichloroethene	95	(73-139)
1,1-Dichloroethane	79	(64-124)
cis-1,2-Dichloroethene	73	(65-113)
Chloroform	88	(65-138)
1,1,1-Trichloroethane	85	(81-125)
Carbon tetrachloride	89	(80-134)
1,2-Dichloroethane	87	(76-119)
Trichloroethene	98	(71-129)
1,2-Dichloropropane	98	(80-131)
Bromodichloromethane	85	(70-128)
Dibromomethane	88	(68-118)
2-Chloroethyl vinyl ether	77	(24-158)
cis-1,3-Dichloropropene	67	(66-117)
trans-1,3-Dichloropropene	70	(83-146)
1,1,2-Trichloroethane	94	(81-133)
Tetrachloroethene	113	(71-137)
Dibromochloromethane	88	(70-132)
1-Chlorohexane	106	(58-133)
1,1,1,2-Tetrachloroethane	112	(72-116)
Bromoform	59	(58-138)
Chlorobenzene	99	(71-118)
1,1,2,2-Tetrachloroethane	88	(70-126)
1,2,3-Trichloropropane	109	(72-122)
Bromobenzene	88	(78-114)
1,3-Dichlorobenzene	94	(61-136)
1,4-Dichlorobenzene	104	(75-121)
1,2-Dichlorobenzene	107	(77-126)
2-Chlorotoluene	98	(40-160)
Benzyl chloride	159	(80-120)



ENSECO-WADSWORTH/
Laboratories

CHECK SAMPLE REPORT

QC BATCH: 4181090
LAB #: B4F300000-090 C

PREPARATION DATE: 6/29/94
DATE ANALYZED: 6/29/94

----- GC Volatiles -----

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
Methyl tert-butyl ether	99	(70-133)
Benzene	107	(76-124)
Toluene	105	(81-120)
Ethylbenzene	103	(89-120)
Xylenes, Total	98	(61-142)
Chlorobenzene	99	(71-118)
1,3-Dichlorobenzene	99	(61-136)
1,4-Dichlorobenzene	84	(75-121)
1,2-Dichlorobenzene	98	(77-126)



ENSECO-WADSWORTH/
Laboratories

CHECK SAMPLE REPORT

QC BATCH: 4180022
LAB #: B4F290000-022 C

PREPARATION DATE: 6/29/94
DATE ANALYZED: 6/29/94

----- GC Volatiles -----

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
Ethylene dibromide	86	(62-129)



ENSECO-WADSWORTH/
Laboratories

CHECK SAMPLE REPORT

QC BATCH: 4174050
LAB #: B4F230000-050 C

PREPARATION DATE: 6/23/94
DATE ANALYZED: 6/27/94

----- GC/MS Semi-Volatiles -----

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
Naphthalene	57	(22-151)
1-Methylnaphthalene	55	(33-120)
2-Methylnaphthalene	55	(39-113)
Acenaphthylene	59	(17-145)
Acenaphthene	58	(30-150)
Fluorene	64	(24-117)
Phenanthrene	50	(26-126)
Anthracene	57	(20-117)
Fluoranthene	53	(29-118)
Pyrene	61	(34-125)
Benzo (a) anthracene	57	(31-115)
Chrysene	55	(18-140)
Benzo (b) fluoranthene	58	(12-119)
Benzo (k) fluoranthene	57	(23-134)
Benzo (a) pyrene	59	(40-115)
Indeno (1,2,3-cd) pyrene	60	(22-95)
Dibenzo (a,h) anthracene	59	(10-93)
Benzo (ghi) perylene	58	(10-103)



**ENSECO-WADSWORTH/
Laboratories**

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW-DUP1 FILTERED

WO #: 05314
LAB #: B4F220054-005
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/22/94

----- REQUESTED METALS -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
- - DISSOLVED METALS - -						
Lead	ND	5.0	ug/L	MCAWW 239.2	6/27/94	4178080

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW-MW03 FILTERED

WO #: 05315
LAB #: B4F220054-006
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/22/94

----- REQUESTED METALS -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION</u> - <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
- - DISSOLVED METALS - -						
Lead	ND	5.0	ug/L	MCAWW 239.2	6/27/94	4178080

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

ABB ENVIRONMENTAL SERVICES

MPT-1586-MW-MW04 FILTERED

WO #: 05316
LAB #: B4F220054-007
MATRIX: WATER

DATE SAMPLED: 6/20/94
DATE RECEIVED: 6/22/94

----- REQUESTED METALS -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
- - DISSOLVED METALS - -						
Lead	ND	5.0	ug/L	MCAWW 239.2	6/27/94	4178080

NOTE: AS RECEIVED

ND NOT DETECTED AT THE STATED REPORTING LIMIT



ENSECO-WADSWORTH/
Laboratories

QUALITY CONTROL SECTION

- Quality Control Summary
- Laboratory Blanks
- Laboratory Control Sample
- Matrix Spike/Matrix Spike Duplicate Results
- Sample Custody Documentation



ENSECO-WADSWORTH/
Laboratories QUALITY ASSURANCE / QUALITY CONTROL
PROGRAM SUMMARY

Wadsworth/ALERT Laboratories considers continuous analytical method performance evaluations to be an integral portion of the data package, and routinely includes the pertinent QA/QC data associated with various analytical result reports. Brief discussions of the various QA/QC procedures utilized to measure acceptable method and matrix performance follow.

Surrogate Spike Recovery Evaluations

Known concentrations of designated surrogate spikes, consisting of a number of similar, non-method compounds or method compound analogues, are added, as appropriate, to routine GC and GC/MS sample fractions prior to extraction and analysis. The percent recovery determinations calculated from the subsequent analysis is an indication of the overall method efficiency for the individual sample. This surrogate spike recovery data is displayed alongside acceptable analytical method performance limits at the bottom of each applicable analytical result report sheet.

NOTE: Acceptable method performance for Base/Neutral Acid extractables is indicated by two (2) of three (3) surrogates for each fraction with a minimum recovery of ten (10) percent each. For Pesticides one (1) of two (2) surrogates meeting performance criteria is acceptable.

Laboratory Analytical Method Blank Evaluations

Laboratory analytical method blanks are systematically prepared and analyzed in order to continuously evaluate the system interferences and background contamination levels associated with each analytical method. These method blanks include all aspects of actual laboratory method analysis (chemical reagents, glassware, etc.), substituting laboratory reagent water or solid for actual sample. The method blank must not contain any analytes above the reported detection limit. The following common laboratory contaminants are exceptions to this rule provided they are not present at greater than five times the detection limit.

Volatiles

Methylene chloride
Toluene
2-Butanone
Acetone

Semi-volatiles

Dimethyl phthalate
Diethyl phthalate
Di-n-butyl phthalate
Butyl benzyl phthalate
Bis (2-ethylhexyl) phthalate

Metals

Calcium
Magnesium
Sodium

A minimum of five percent (5%) of all laboratory analyses are laboratory analytical method blanks.

Laboratory Analytical Method Check Sample Evaluations

Known concentrations of designated matrix spikes (actual analytical method compounds) are added to a laboratory reagent blank prior to extraction and analysis. Percent recovery determinations demonstrate the performance of the analytical method. Failure of a check sample to meet established laboratory recovery criteria is cause to stop the analysis until the problem is resolved.



LAB #: B4F300000-090

----- GC Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Benzene	ND	1.0	6/29/94	4181090
Bromodichloromethane	ND	1.0	6/29/94	4181090
Bromoform	ND	1.0	6/29/94	4181090
Bromomethane	ND	1.0	6/29/94	4181090
Carbon tetrachloride	ND	1.0	6/29/94	4181090
Chlorobenzene	ND	1.0	6/29/94	4181090
Dibromochloromethane	ND	1.0	6/29/94	4181090
Chloroethane	ND	1.0	6/29/94	4181090
2-Chloroethyl vinyl ether	ND	1.0	6/29/94	4181090
Chloroform	ND	1.0	6/29/94	4181090
Chloromethane	ND	1.0	6/29/94	4181090
1,2-Dichlorobenzene	ND	1.0	6/29/94	4181090
1,3-Dichlorobenzene	ND	1.0	6/29/94	4181090
1,4-Dichlorobenzene	ND	1.0	6/29/94	4181090
Dichlorodifluoromethane	ND	1.0	6/29/94	4181090
1,1-Dichloroethane	ND	1.0	6/29/94	4181090
1,2-Dichloroethane	ND	1.0	6/29/94	4181090
1,1-Dichloroethene	ND	1.0	6/29/94	4181090
cis-1,2-Dichloroethene	ND	1.0	6/29/94	4181090
trans-1,2-Dichloroethene	ND	1.0	6/29/94	4181090
1,2-Dichloropropane	ND	1.0	6/29/94	4181090
cis-1,3-Dichloropropene	ND	1.0	6/29/94	4181090
trans-1,3-Dichloropropene	ND	1.0	6/29/94	4181090
Ethylbenzene	ND	1.0	6/29/94	4181090
Trichlorofluoromethane	ND	1.0	6/29/94	4181090
<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>		
Bromochloromethane	93	(78 - 122)		
Trifluorotoluene	99	(73 - 131)		

NOTE:

ND (NONE DETECTED)



LAB #: B4F300000-090

----- GC Volatiles -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Methylene chloride	ND	1.0	6/29/94	4181090
1,1,2,2-Tetrachloroethane	ND	1.0	6/29/94	4181090
Tetrachloroethene	ND	1.0	6/29/94	4181090
Toluene	ND	1.0	6/29/94	4181090
1,1,1-Trichloroethane	ND	1.0	6/29/94	4181090
1,1,2-Trichloroethane	ND	1.0	6/29/94	4181090
Trichloroethene	ND	1.0	6/29/94	4181090
Vinyl chloride	ND	1.0	6/29/94	4181090
Xylenes, Total	ND	1.0	6/29/94	4181090
Methyl tert-butyl ether	ND	1.0	6/29/94	4181090

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
Bromochloromethane	93	(78 - 122)
Trifluorotoluene	99	(73 - 131)

NOTE:

ND (NONE DETECTED)



ENSECO-WADSWORTH/
Laboratories

CHECK SAMPLE REPORT

LAB #: B4F220054

METALS

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS	PREPARATION - ANALYSIS DATE
Lead	BATCH: 4174003 104	(70-126)	6/23/94



ENSECO-WADSWORTH/
Laboratories

CHECK SAMPLE REPORT

LAB #: B4F220054

*** DISSOLVED METALS ***

METALS

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS	PREPARATION - ANALYSIS DATE
Lead	BATCH: 4178080 99	(70-126)	6/27/94



ENSECO-WADSWORTH/
Laboratories

CHECK SAMPLE REPORT

LAB #: B4F220054

----- INORGANIC ANALYTICAL REPORT -----

<u>COMPOUND</u>	<u>SPIKE PERCENT RECOVERY</u>	<u>LIMITS</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>Q/C BATCH</u>
Petroleum Hydrocarbons Total Recoverable	97	(69-125)	6/28/94	4180122



ENSECO-WADSWORTH/
Laboratories

MATRIX SPIKE REPORT

QC BATCH: 4181090
LAB #: B4F220054-002 S
MATRIX: WATER

WO #: 05311
PREPARATION DATE: 6/30/94
DATE ANALYZED: 6/30/94

GC Volatiles

COMPOUND	SPIKE PERCENT RECOVERY	SPIKE/DUP PERCENT RECOVERY	Q/C LIMITS	RPD	RPD LIMIT
Methyl tert-butyl ether	100	98	(75-108)	1.5	(0-16)
Benzene	112	108	(70-117)	3.6	(0-15)
Toluene	105	104	(70-117)	1.3	(0-16)
Ethylbenzene	108	107	(84-106)	1.7	(0-10)
Xylenes, Total	305	301	(84-128)	1.2	(0-21)
Dichlorodifluoromethane	85	83	(40-160)	2.7	(0-20)
Chloromethane	90	77	(67-134)	15	(0-33)
Vinyl chloride	82	73	(44-176)	11	(0-22)
Bromomethane	87	94	(37-148)	8.0	(0-36)
Chloroethane	75	75	(67-117)	0.040	(0-25)
Trichlorofluoromethane	58	52	(65-125)	10	(0-16)
1,1-Dichloroethene	72	71	(45-137)	1.5	(0-30)
Methylene chloride	85	79	(83-135)	7.1	(0-25)
trans-1,2-Dichloroethene	100	94	(77-108)	6.0	(0-15)
1,1-Dichloroethane	81	73	(63-125)	10	(0-15)
cis-1,2-Dichloroethene	80	75	(70-130)	6.5	(0-20)
Chloroform	90	85	(66-125)	4.8	(0-17)
1,1,1-Trichloroethane	86	84	(83-119)	1.6	(0-17)
Carbon tetrachloride	97	92	(62-111)	5.4	(0-24)
1,2-Dichloroethane	95	94	(70-125)	1.4	(0-16)
Trichloroethene	92	90	(64-121)	2.9	(0-28)
1,2-Dichloropropane	100	100	(60-111)	0.040	(0-25)
Bromodichloromethane	94	90	(65-127)	4.4	(0-31)
Dibromomethane	97	93	(86-143)	4.0	(0-28)
2-Chloroethyl vinyl ether	0	0	(54-127)	0	(0-36)
cis-1,3-Dichloropropene	76	77	(28-125)	0.95	(0-26)
trans-1,3-Dichloropropene	88	82	(58-125)	6.7	(0-26)
1,1,2-Trichloroethane	100	95	(68-119)	5.4	(0-25)
Tetrachloroethene	107	104	(65-125)	3.3	(0-22)
Dibromochloromethane	101	97	(69-133)	3.6	(0-31)
1-Chlorohexane	111	103	(75-119)	7.4	(0-15)
1,1,1,2-Tetrachloroethane	117	114	(72-116)	2.8	(0-28)
Bromoform	64	58	(77-125)	10	(0-28)
Chlorobenzene	101	100	(58-133)	1.4	(0-24)
1,1,2,2-Tetrachloroethane	107	104	(56-125)	3.1	(0-24)
1,2,3-Trichloropropane	111	104	(84-119)	6.0	(0-18)
Bromobenzene	93	88	(82-106)	5.0	(0-11)
1,3-Dichlorobenzene	90	88	(84-115)	2.0	(0-15)
1,4-Dichlorobenzene	87	86	(85-119)	1.6	(0-17)



ENSECO-WADSWORTH/
Laboratories

MATRIX SPIKE REPORT

QC BATCH: 4180022
LAB #: B4F220054-002 S
MATRIX: WATER

WO #: 05311
PREPARATION DATE: 6/29/94
DATE ANALYZED: 6/29/94

----- GC Volatiles -----

COMPOUND	SPIKE PERCENT RECOVERY	SPIKE/DUP PERCENT RECOVERY	Q/C LIMITS	RPD	RPD LIMIT
Ethylene dibromide	53	60	(81-135)	13	(0-25)



ENSECO-WADSWORTH/
Laboratories

MATRIX SPIKE REPORT

QC BATCH: 4174050
LAB #: B4F220054-002 S
MATRIX: WATER

WO #: 05311
PREPARATION DATE: 6/23/94
DATE ANALYZED: 6/30/94

----- GC/MS Semi-Volatiles -----

COMPOUND	SPIKE PERCENT RECOVERY	SPIKE/DUP PERCENT RECOVERY	Q/C LIMITS	RPD	RPD LIMIT
Naphthalene	52	53	(25-97)	1.7	(0-23)
1-Methylnaphthalene	55	55	(48-101)	0.32	(0-24)
2-Methylnaphthalene	54	55	(43-82)	2.1	(0-15)
Acenaphthylene	51	51	(57-104)	0.27	(0-19)
Acenaphthene	51	53	(57-104)	2.2	(0-24)
Fluorene	53	53	(34-118)	1.2	(0-28)
Phenanthrene	52	52	(36-118)	0.65	(0-27)
Anthracene	58	60	(39-124)	4.8	(0-28)
Fluoranthene	48	51	(60-120)	5.7	(0-30)
Pyrene	51	51	(58-148)	0.67	(0-30)
Benzo (a) anthracene	48	48	(36-128)	0.70	(0-31)
Chrysene	48	45	(48-118)	4.6	(0-36)
Benzo (b) fluoranthene	43	44	(43-108)	2.3	(0-22)
Benzo (k) fluoranthene	46	47	(28-126)	1.2	(0-33)
Benzo (a) pyrene	45	45	(35-117)	0.22	(0-27)
Indeno (1, 2, 3-cd) pyrene	41	42	(33-194)	0.77	(0-41)
Dibenzo (a, h) anthracene	43	41	(32-180)	4.6	(0-37)
Benzo (ghi) perylene	44	43	(29-232)	3.0	(0-51)



ENSECO-WADSWORTH/
Laboratories

MATRIX SPIKE REPORT

LAB #: B4F220054-002

----- METALS -----

COMPOUND	SPIKE PERCENT RECOVERY	SPIKE/DUP PERCENT RECOVERY	Q/C LIMITS	RPD	RPD LIMITS	PREPARATION - ANALYSIS DATE
Lead						
			BATCH: 4174003 MATRIX: WATER			
	98	99	(76-124)	0.50	(0-24)	6/23/94

NOTE:

Calculations are performed before rounding to avoid round-off errors in calculated results



ENSECO-WADSWORTH/
Laboratories

MATRIX SPIKE REPORT

LAB #: B4F220054-003

*** DISSOLVED METALS ***

----- METALS -----

COMPOUND	SPIKE PERCENT RECOVERY	SPIKE/DUP PERCENT RECOVERY	Q/C LIMITS	RPD	RPD LIMITS	PREPARATION - ANALYSIS DATE
Lead	98	98	(76-124)	0.76	(0-24)	6/27/94

BATCH:4178080 MATRIX: WATER

NOTE:

Calculations are performed before rounding to avoid round-off errors in calculated results

ENSECO-WADSWORTH/ALERT LABORATORIES SAMPLE SHIPPER EVALUATION AND RECEIPT FORM

Client: ABB-ES Project Name/Number: 7587.31 *May 1st NAS.*

Samples Received By: *[Signature]* Date Received: 6/22/94
(Signature)

Sample Evaluation Form By: *[Signature]* LAB No: B4F220054
(Signature)

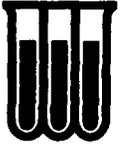
Type of shipping container samples received in? WAL Cooler
 Client Cooler WAL Shipper Box Other

Any "NO" responses or discrepancies should be explained in comments section.

- | | YES | NO |
|--|-------------------------------------|--------------------------|
| 1. Were custody seals on shipping container(s) intact? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Were custody papers properly included with samples? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Were custody papers properly filled out (ink, signed, match labels)? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4. Did all bottles arrive in good condition (unbroken)? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5. Were all bottle labels complete (Sample No., date, signed, analysis preservatives)? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 6. Were correct bottles used for the tests indicated? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 7. Were proper sample preservation techniques indicated? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 8. Were samples received within adequate holding time? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 9. Were all VOA bottles checked for the presence of air bubbles? (If air bubbles were found indicate in comment section) | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 10. Were samples in direct contact with wet ice? (NOTE TEMPERATURE BELOW) | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 11. Were samples accepted into the laboratory? (If no see comments) | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Cooler # 72001 Temp 3⁰ °C Cooler # _____ Temp _____ °C
 Cooler # _____ Temp _____ °C Cooler # _____ Temp _____ °C

Comments: _____



**WADSWORTH/ALERT
LABORATORIES**
Sampling, testing, mobile labs

5910 Breckenridge Pkwy.
Suite H
Tampa, FL 33610

(813) 621-0784
Fax (813) 623-6021

Chain of Custody Record

Record _____ of _____

3838

Client: <i>ENSECO</i>		Project Name / Location: <i>John K... 10</i>			No. Of CON-TAINERS	Parameter										Remarks
Sampler(s): <i>...</i>		Project #: <i>...</i>				VOC	PAH	METALS	TRPH	EDB						
Item #	Date	Time	MATRIX	Sample Location												
1	6/20/94					2	1	1	1							
2						2	1	1	1							
3						2	1	1	1							
4																
5																
6																
7																
8																
9																
10																
11																

Total Containers

Number of Coolers in Shipment

Bailers

Report To: <i>...</i>	Transfer Number	Item Number(s)	Relinquished By / Company	Accepted By / Company	Date	Time
Additional Comments:	1		<i>Kelly...</i>		6/20/94	2035
	2	1-5		<i>ENSECO</i>	6/22/94	15 ⁰⁰
	3					



ENSECO-WADSWORTH/VEBT
 Laboratories QUALITY ASSURANCE / QUALITY CONTROL
 PROGRAM SUMMARY
 (cont'd)

At that time all associated samples must be re-analyzed. A minimum of five percent (5%) of all laboratory analyses are laboratory analytical method check samples.

Matrix Spike (MS)/Matrix Spike Duplicate (MSD) Recovery Evaluations

Known concentrations of designated matrix spikes (actual analytical method compounds) are added to two of three separate aliquots of a sequentially predetermined sample prior to extraction and analysis. Percent recovery determinations are calculated from both of the spiked samples by comparison to the actual values generated from the unspiked sample. These percent recovery determinations indicate the accuracy of the analysis at recovering actual analytical method compounds from the matrix. Relative percent difference determinations calculated from a comparison of the MS/MSD recoveries demonstrate the precision of the analytical method. Actual percent recovery and relative percent difference data is displayed alongside their respective acceptable analytical method performance limits in the QA/QC section of the report. The MS/MSD are considered in control when the precision is within established control limits and the associated check sample has been found to be acceptable. A minimum of ten percent (10%) of all analyses are MS/MSD quality control samples.

*****EXAMPLE*****

COMPOUND	SAMPLE CONC.	MS %REC	MSD %REC	RPD	QC LIMITS	
					RPD	RECOVERY
4,4'-DDT	0	95	112	16	22	66-119
Benzene	10	86	93	8	20	39-150
(cmpd. name)	sample result	1st% recov.	2nd% recov.	Rel.% diff.	accep. method perform range	

Analytical Result Qualifiers

The following qualifiers, as defined below, may be appended to analytical results in order to allow proper interpretation of the results presented:

J - indicates an estimated concentration (typically used when a dilution, matrix interference or instrumental limitation prevents accurate quantitation of a particular analyte).

B - indicates the presence of a particular analyte in the laboratory blank analyzed concurrently with the samples. Results must be interpreted accordingly.

DIL - indicates that because of matrix interferences and/or high analyte concentrations, it was necessary to dilute the sample to a point where the surrogate or spike concentrations fell below a quantifiable amount and could not be reported.