

N60201.AR.002441
NS MAYPORT
5090.3a

CONTAMINATION ASSESSMENT REPORT TANK SITE 1343 NS MAYPORT FL
2/12/1998
BHATE ENVIRONMENTAL ASSOCIATES, INC.

Work Copy

BUREAU OF WASTE CLEANUP

NAVAL STATION MAYPORT
MAYPORT, FLORIDA
BHATE PROJECT NO: 9970058
BHATE COMPQAP NO:970052G

FEB 12 1998

TECHNICAL REVIEW SECTION

1343 a1.doc

CONTAMINATION ASSESSMENT REPORT
TANK SITE 1343

Prepared for:

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DRIVE, POST OFFICE BOX 190010
NORTH CHARLESTON, SOUTH CAROLINA 29419-1910

ATTENTION: MS. BEVERLY S. WASHINGTON

Prepared by:



Bhate Environmental Associates, Inc.
Environmental Engineers & Scientists

TABLE OF CONTENTS

CONTAMINATION ASSESSMENT REPORT
NAVAL STATION MAYPORT
UST-1343
BEA PROJECT NO.: 9970058

BUREAU OF WASTE CLEANUP

FEB 12 1998

TECHNICAL REVIEW SECTION

ACRONYMS, ABBREVIATIONS, AND UNITS OF MEASURE	i
1.0 INTRODUCTION	1
2.0 BACKGROUND	2
2.1 Location and Area of Investigation	2
2.2 Underground Utilities	2
2.3 Site History	2
3.0 SITE CHARACTERIZATION	3
3.1 Physiography	3
3.2 Regional Hydrogeology	3
3.3 Site Hydrogeology	4
3.4 Well Inventory	4
4.0 SITE ASSESSMENT METHODS	5
4.1 Soil Test Probes	5
4.2 Geoprobe Groundwater Sample Collection	6
4.3 Monitoring Well Installation and Development	6
4.4 Monitoring Well Groundwater Sampling	7
4.5 Groundwater Flow Direction and Gradient	8
4.6 Slug Test Hydraulic Conductivity	8
5.0 RESULTS OF THE CONTAMINATION ASSESSMENT	10
5.1 Soil Analytical Results	10
5.2 Gas Chromatograph Screening Results	10
5.3 Monitoring Well Groundwater Analytical Results	10
6.0 QUALITY ASSURANCE/QUALITY CONTROL	12
7.0 SAFETY CONSIDERATIONS	13
8.0 SUMMARY AND CONCLUSIONS	14
8.1 Summary	14
8.2 Conclusions	15
9.0 RECOMMENDATIONS	16
10.0 CLOSING REMARKS	17



TABLES

Table 1	-	Potable Well Survey Data
Table 2	-	Monitoring Well Construction and Water Level Data
Table 3	-	Summary of Hydraulic Conductivities
Table 4	-	Summary of Soil Headspace Analyses
Table 5	-	Summary of FL-PRO Analytical Results
Table 6	-	Summary of Gas Chromatograph Results
Table 7	-	Summary of Monitoring Well Groundwater Analytical Results

FIGURES

Figure 1	-	Site Location Diagram
Figure 2	-	Site Map with approximate Utility Locations
Figure 3	-	Locations of Potable Water Wells
Figure 4	-	Sampling Locations
Figure 5	-	Water Table Contour Map, 6/16/97
Figure 6	-	Water Table Contour Map, 7/24/97
Figure 7	-	Slug Test Locations
Figure 8	-	Geoprobe Soil Analytical Results
Figure 9	-	Geoprobe Groundwater Analytical Results
Figure 10	-	Monitoring Well Groundwater Analytical Results

APPENDICES

Appendix A	-	Boring Logs
Appendix B	-	Groundwater Sampling Logs
Appendix C	-	Soil Laboratory Reports
Appendix D	-	Groundwater Laboratory Reports and Chain of Custody Forms
Appendix E	-	Slug Test Data



ACRONYMS, ABBREVIATIONS, AND UNITS OF MEASURE

The following list contains many of the acronyms, abbreviations, and units of measure used in this report:

ATV	all terrain vehicle
BDL	below detection limits
BTEX	benzene, toluene, ethylbenzene and xylenes
bls	below land surface
CAR	Contamination Assessment Report
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FID	Flame Ionization Detector
FL-PRO	Florida Petroleum Residual Organics
GC	Gas Chromatograph
ID	inner diameter
k	hydraulic conductivity
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
msl	mean sea level
OVA	Organic Vapor Analyzer
ppb	parts per billion
ppm	parts per million
PAH	polynuclear aromatic hydrocarbons
PVC	polyvinyl chloride
RAP	Remedial Action Plan
T	transmissivity
TPH	total petroleum hydrocarbons
ug/L	micrograms per liter
UST	underground storage tank



1.0 INTRODUCTION

Bhate was engaged, under Contract Number N62467-96-D-0976, to perform a contamination assessment of the Naval Station Mayport Tank Site 1343. The work has involved characterization of soil and groundwater contamination caused by petroleum product releases from the tank system. The site assessment was conducted in two phases, during May through July of 1997. Work elements included:

PHASE I

- Collection of soil samples, utilizing a Geoprobe soil sampler.
- Headspace analysis of Geoprobe soil samples to determine the extent of soil contamination.
- Collection of groundwater samples for screening purposes, utilizing Geoprobe slotted sampling rods.
- Laboratory analyses of soil samples for petroleum hydrocarbons, using the FL-PRO method.
- Screening of groundwater samples for petroleum compounds, utilizing a portable field gas chromatograph (GC) unit.

PHASE II

- Installation of permanent monitoring wells, utilizing a hollow stem auger rig, to verify the lateral extent of petroleum contamination.
- Collection of groundwater samples for laboratory analyses.
- Collection of water-level data, to determine the direction of groundwater movement.
- Performance of slug tests, to estimate aquifer hydraulic conductivity.
- Completion of a potable water well survey.

The work presented in this contamination assessment report was performed in compliance with Chapter 62-770, Florida Administrative Code (FAC) and Florida Department of Environmental Protection (FDEP) "Guidelines for Assessment and Remediation of Petroleum Contaminated Soil" and "Guidelines for the Preparation of Contamination Assessment Reports for Petroleum Contaminated Sites."



2.0 BACKGROUND

2.1 Location and Area of Investigation

The subject site is located at the Mayport Naval Station in Mayport, Florida (Figure 1). A 10,000-gallon underground storage tank (UST) that had contained fuel oil was closed in place in June of 1995.

The UST is located adjacent to Building 1343 (Figure 2). A fenced security area to the northeast contains electrical transformers and a replacement above ground fuel tank. Two above ground storage tanks, situated on a concrete pad, are located immediately north of the site, also within a fenced area. The ground surface at the immediate area of the UST is not covered and is relatively flat with poor surface water drainage. Surface water drainage outside of the area is toward surface drainage ditches to the southeast.

2.2 Underground Utilities

Prior to beginning subsurface exploration, the Naval Public Works Center was contacted to determine the location of underground utilities. Site plans with utility locations were also obtained. Finding the utility line was necessary for precautionary purposes, prior to subsurface exploration. It also served to indicate whether any underground utilities might act as contaminant migration pathways. Various underground utilities including water, sanitary sewer, and electrical were identified at the site (Figure 2). The various underground lines cross the area in close proximity of the UST. Piping from the abandoned UST extends into Building 1343. Piping from the above ground tank to the northeast crosses the UST.

2.3 Site History

In June of 1995, the 10,000-gallon UST-1343 was closed in place. An area of stained soil was reported on the northwestern end of the UST at the ground surface. This was the location of the UST fill port. According to a UST closure report prepared by G. B. Robbins, heavily contaminated soils were identified during the excavation to the top of the tank. Soil samples collected at the north and east ends of the fill port at depths of one and two feet, exhibited very strong petroleum odors. A soil sample collected from the east side of the tank at a depth of three feet also exhibited very strong petroleum odors. The soils had elevated OVA headspace concentrations. Contaminated soils were not removed and ground water samples were not taken during the abandonment.



3.0 SITE CHARACTERIZATION

3.1 Physiography

Duval County topography is gently variable to flat, being dominated by a series of ancient marine terraces (Cooke, 1945; Leve, 1966; Fairchild, 1972). These features formed during the Pleistocene, as declining sea levels caused the progressive emergence of off-shore sea floor. The terraces trend parallel to the present Atlantic shoreline and become higher to the west. The Mayport Naval Station contains areas categorized as Silver Bluff Terrace and Pamlico Terrace. Elevations are generally less than about twelve feet above mean sea level (MSL). The site lies at the mouth of the St. Johns River, in the Eastern Valley geomorphological division of the northern Florida Coastal Lowlands (Puri and Vernon, 1964; White, 1970; Scott, 1992).

3.2 Regional Hydrogeology

Portions of three major aquifer systems underlie northern Florida. The Surficial system and the Floridan system are regionally important aquifers along the entire South Carolina-Georgia-Florida coast. The Southern Coastal Plain aquifer is thought to extend into Nassau and Duval Counties from widespread occurrences further north. The following remarks were summarized from information provided by Leve (1966), Krause and Randolph (1989), and Miller (1990).

Rocks of the Surficial aquifer system are late Miocene to Holocene in age and generally contain water under unconfined conditions. Constituent beds are primarily unconsolidated sand, shelly sand, and shell. Northeastern Florida accumulations are typically less than fifty feet, although thicknesses up to 150 feet are known in eastern St. Johns County. Most of the groundwater taken from this system goes for public supply or domestic/commercial uses.

The Floridan system is one of the most productive aquifers in the world. Average freshwater withdrawals in 1988 exceeded three billion gallons per day. Floridan rocks are Paleocene to Miocene series Tertiary carbonates. Northeastern Florida constituent formations contain groundwater under confined conditions and range in thickness between 1,400 and 2,300 feet. Floridan units underlie the Surficial system and are separated from it by a clay-rich confining layer of variable thickness. In most places, the system can be divided into Upper and Lower Floridan aquifers. A second, less-permeable confining unit intervenes between the two.



The Southeastern Coastal Plain aquifer system consists of regional aquifers that are composed primarily of Cretaceous to late Tertiary clastic rocks. At some localities, it lies below the Floridan system. At others, it grades laterally into the Floridan. Both the Surficial and Floridan aquifers are known to underlie Duval County. Elements of the Southeastern Coastal Plain system may also be present.

3.3 Site Hydrogeology

Surface soils in the former UST area are partially grassed. Soils at the northwestern end of the UST (near the former fill port) were stained dark brown to black to a depth of approximately one foot below the land surface (bls). Soils to the approximate depth of groundwater typically consisted of a tan to medium gray, loose, dry, well sorted, fine sand with shell fragments. Fill material consisting of brick and concrete fragments was encountered at the sampling location on the southern area of the UST. At approximately seven feet bls was a brown, wet, firm, well sorted fine sand with clay and organics.

During probe activities, saturated soil conditions were encountered at a depth of approximately 4.5 feet.

3.4 Well Inventory

A total of five wells are utilized at Naval Station Mayport. Four wells (N-1 through N-4) are used for potable water and one well (D-236) is used for irrigation. Information about and locations of the wells were provided by the Environmental Division of the Mayport Naval Station. A summary of potable well data is provided in Table 1.

Well locations relative to site UST-1343 are provided on Figure 3. One potable well, N-1 is less than 1/4 mile from the site and is approximately 1,000 feet east of UST-1343. Well N-2 is less than 1/2 mile and is approximately 2,100 feet southeast of the site. All other potable wells are greater than 1/2 mile from site UST-1343.

Groundwater contaminant does not pose a threat to the potable or irrigation supply wells. The wells are screened within deeper groundwater aquifers, at depths greater than 419 feet below the ground surface.



4.0 SITE ASSESSMENT METHODS

4.1 Soil Test Probes

As part of the initial phase of the assessment, four soil test probes (S-1 through S-4) were installed on May 14, 1997 (Figure 4). The test probes were installed at specific locations to aid in determining the extent of petroleum contamination impact to soil and groundwater in the vicinity of the former UST. The test probes were installed utilizing a Geoprobe ATV direct push sampling system, equipped with a hydraulic hammer. The Geoprobe soil sampler consists of a hollow steel 1.5 inch outside diameter soil sampler, attached to one-inch steel probe rods. A reusable decontaminated Teflon sample liner was placed inside the soil sampler prior of collection of each soil sample. The soil sampler is driven to the designated sample depth using the hydraulic hammer. After reaching the sample depth, the soil sampler is opened and the sampling tube is driven an additional two feet to collect a continuous soil sample. The rods and sampling tube are then retrieved from the boring. Drill cuttings are not generated using the Geoprobe System.

Two soil samples were collected from each of the borings and examined in the field by a geologist for visual and olfactory evidence of petroleum hydrocarbons. Samples were collected at depths of one to three feet and four to six feet below the land surface (bls). The soil borings were terminated at depths of six feet below the surface. One boring location was extended to twenty bls, for soil characterization purposes.

Following retrieval, the soil samples were transferred from the Teflon liners into clean, laboratory supplied glass jars. The jars were covered with aluminum foil and allowed to stabilize for five minutes. A flame ionization detector (FID) was used to field screen the soil gas headspace of each soil sample for organic vapors. Carbon filters were used on the Organic Vapor Analyzer (OVA) to aid in distinguishing naturally occurring methane from hydrocarbon vapors.

Soil samples collected from four to six feet bls, which is the approximate groundwater capillary fringe were submitted for laboratory analysis. Soil samples submitted for analysis were contained in laboratory supplied clean glass jars, sealed with Teflon-lined lids, and cooled to approximately 4°C. All soil samples were delivered under chain-of-custody to V.O.C. Analytical Laboratories in Boca Raton, Florida for analyses. Soil samples were analyzed for the following parameter:

- Florida Petroleum Residual Organics (FL-PRO) - Method TPH (C8 - C40)



4.2 Geoprobe Groundwater Sample Collection

On May 14, 1997, groundwater samples from each soil sampling location were analyzed, in order to screen locations for permanent monitoring wells. The groundwater samples were taken by advancing a slotted Geoprobe rod into the uppermost water-bearing zone. Prior to groundwater sample collection, a peristaltic pump was used to purge approximately three well volumes of groundwater from the slotted rod. A groundwater sample was then immediately collected from the slotted rod, utilizing a decontaminated stainless steel bailer. Groundwater samples were placed on wet ice and transported to a mobile Gas Chromatograph (GC) located near the site. The samples were analyzed for Benzene, Toluene, Ethylbenzene and Xylenes (BTEX).

4.3 Monitoring Well Installation and Development

Soil and groundwater analytical results from the Geoprobe investigation were reviewed and utilized in placement of permanent monitoring wells at the site. The estimated direction of groundwater movement was expected to be to the north-northwest. On June 4, 1997, groundwater monitoring wells were installed at three locations (Figure 4). Physical obstructions including buildings, fencing, tanks and utilities restricted monitoring well placement. The monitoring wells were completed at approximate depths of fourteen feet bgs. Monitoring well construction logs are contained in Appendix A. Pertinent data on monitoring wells can also be found in Table 2.

Drilling was conducted with a truck-mounted drill rig equipped with 4¼ inch (ID), continuous flight, hollow stem augers. The wells were constructed of 2-inch diameter flush-threaded Schedule 40 PVC pipe with ten feet of 0.01-inch slotted screen. Construction began by advancing the augers to the designated depth. The casing and screen were placed inside, driving the end plug from the augers. The annular space around the screen was filled with 20/30 grade filter sand, as the augers were removed. Due to the shallow depth of groundwater, the sand pack extended to approximately one foot above the top of the well screen. The upper surface of the sand pack was sealed with bentonite pellets. The thickness of the bentonite seal was approximately 0.5 feet. The bentonite pellets were hydrated with potable water, prior to introducing grout into the borehole. The annular space above the bentonite seal was grouted to the ground surface. Approximately 1.5 feet of grout was placed within the annulus above the bentonite to the ground surface. A steel manhole assembly was placed over each completed well and secured in the grout column. The PVC well casings were fitted with lockable expansion caps and the caps were secured with padlocks. A flush mounted, two foot concrete pad was completed at the ground surface of each well.



Representative composite samples of auger cuttings were collected during drilling activities and FID headspace analyses were conducted on each. Results of the headspace analyses were utilized in soil disposal. Soils with headspace analyses of less than 50 ppm were spread on site. Although elevated FID readings were not measured, soils from MW-1 were drummed and disposed as petroleum contaminated waste since the boring was located near stained soils.

The monitoring wells were developed on June 7, 1997, by purging with a 2-inch submersible Geopump. The device was decontaminated between each well development. The wells were developed until they were relatively clear of fine-grained sediment.

4.4 Monitoring Well Groundwater Sampling

Groundwater samples were collected from each monitoring well on June 13, 1997. The PAH groundwater sample collected from MW-2 was broken during transport to the laboratory. A replacement sample was collected on June 16, 1997. To ensure a representative groundwater sample, the wells were purged prior to sampling. Decontaminated Teflon bailers were used to purge each well. Purging continued until three well volumes had been removed, or until subsequent stabilization of field parameters had occurred. Copies of the Water Sampling Logs are provided in Appendix B. Water in each well was allowed to return to equilibrium depth, prior to sample collection.

Groundwater samples were collected with the Teflon bailer utilized for purging. Prior to sample collection, each monitoring well was examined for the presence of separate phase petroleum hydrocarbons (free product). Field observations did not indicate the presence of free product in the groundwater collected from any of the wells on the date of groundwater sample collection. Groundwater samples collected from each monitoring well were placed in appropriate containers, cooled on ice, and transported under chain-of-custody to V.O.C Analytical Laboratories. Groundwater samples were analyzed for BTEX compounds by EPA Method 602, for PAH (PAH) by Method 8270 and for Lead by Method 6010A.

Groundwater evacuated during development and sampling of the monitoring wells was contained in 55-gallon drums. The water was disposed of as non-hazardous petroleum contaminated waste through the oily-waste treatment system at the Mayport Naval Station.



4.5 Groundwater Flow Direction and Gradient

All wells were located with respect to horizontal and vertical data. The survey was supervised and certified by a Registered Land Surveyor. All elevations are referenced to mean sea level (msl).

Groundwater levels were measured on June 13, 1997 and July 24, 1997. Water level measurements were obtained with an electronic water level indicator. Each was taken to the nearest 0.01 foot and is referenced to a point on top of the well casing. Relative groundwater elevations were calculated and are summarized in Table 2.

The elevations were used to prepare water table contour maps (Figure 5 and Figure 6). As indicated on the figures, the direction of groundwater migration on the two dates of measurement is generally to the east.

The groundwater flow direction is estimated from flow lines drawn perpendicular to the elevation contours. The hydraulic gradient of the groundwater was determined by calculating the difference in elevation between two data points on the map and dividing the elevation difference by the distance between the two points. The hydraulic gradient was approximately .005 ft/ft on June 13, 1997.

4.6 Slug Test Hydraulic Conductivity

The hydraulic conductivity has been estimated to evaluate aquifer characteristics at the subject site. One hydraulic conductivity test was conducted at the UST 1343 site. Ten additional slug tests have been conducted at other UST contamination assessment sites across the Naval Station, with similar soil and hydraulic conditions. Two tests were conducted at the Fuel Farm. The UST slug test locations are indicated on Figure 7. From this data, hydraulic conductivities have been calculated and are presented in Table 3. Test results from across the Naval Station are included in Appendix E.

An aquifer slug test was performed on monitoring well 1343-MW-2 on June 14, 1997. The test provided data used for the estimation of hydraulic conductivity of soils around the well.

In slug tests, the groundwater level is raised or lowered and the water levels in the well are measured for a period of time following the initial change in water level. The procedures involved the following:

1. The depth to water in the monitoring well was recorded.
2. A Solinst Levelogger pressure transducer was lowered within the well to a depth slightly above the well bottom.



3. A section of solid PVC pipe was lowered into the well, causing the water level within the monitoring well to rise. Depths to water at specific time intervals were recorded by the pressure transducer until the water level reached the original static level.
5. The PVC pipe was removed from the well, causing the water level in the well to fall. Rising depths to water were recorded, until the water level reached the original static level.

The data obtained in the procedures outlined above were evaluated using methods described by Bouwer and Rice for estimation of hydraulic conductivity, k. The analysis is among those included in Appendix E.

Using gradient values (dh/dl), the hydraulic conductivity (k) and effective porosity (n), Darcy's Law can be used to estimate the seepage velocity. This is the rate at which groundwater moves through soil pore spaces. The average gradient across the area of study was determined to be 0.005ft/ft based on the Figure 5 water table. The estimated effective porosity of the soils as described in the boring logs is approximately 30 %. Using these values and a geometric mean k value for all sites of 2.82×10^{-4} ft./sec, the seepage velocity was estimated to be:

$$V_s = \frac{2.82 \times 10^{-4} * 0.005 * 31536000}{0.3}$$
$$= 148\text{ft/yr}$$

This rate provides an upper estimate of the possible distance traveled by a release. It should not be interpreted as an actual flow rate of any plume contaminants which might be present.



5.0 RESULTS OF THE CONTAMINATION ASSESSMENT

5.1 Soil Analytical Results

The results of the OVA headspace analysis of soil samples taken during contamination assessment are shown in Table 4. A reconnaissance of the soil samples collected from one to three feet bls and above the groundwater table did not detect any excessive soil contamination (OVA results > 50 ppm for kerosene group contaminants) at the sampling locations (Figure 8). The soil sample collected at S-1 near the area of surface soil staining had a corrected headspace value of 12 ppm.

A summary of FL-PRO laboratory analytical results is presented in Table 5. Copies of the laboratory analytical reports and chain-of-custody records are provided in Appendix C. A reconnaissance of soil samples collected from the groundwater capillary fringe detected a maximum FL-PRO concentration of 35 ppm at sample location S-3 and 28 ppm at location S-1 (Figure 8). Each were collected at depths from 4 to 6 feet bls. The FL-PRO concentrations are below the 2,500 ppm Maximum Contaminant Level (MCL) as established within Chapter 62-770 F.A.C. for the direct exposure industrial scenario that pertains at this location.

5.2 Gas Chromatograph Screening Results

Gas Chromatograph screening results of groundwater samples collected from the slotted probe rods are summarized in Table 6. BTEX results are indicated on Figure 9. The GC results did not detect any elevated BTEX concentrations at sample locations S-1, S-2, S-3 and S-4 above the instrument detection limit of 1 ppb.

5.3 Monitoring Well Groundwater Analytical Results

A summary of laboratory analytical results for groundwater samples collected from the permanent monitoring wells is presented in Table 7. Copies of the laboratory analytical reports and chain-of-custody records are provided in Appendix D.

Results of the groundwater analyses indicated concentrations of PAH constituents were detected at monitoring well location 1343-MW-1. BTEX was not detected at 1343-MW-1. Napthalene was detected in groundwater sampled from 1343 MW-1 at 4.3 ppb. This is less than the regulatory limit of 20 ppb. Total PAH concentrations in sample 1343-MW-1 were 16.7 ppb. All other PAH constituents in sample 1343-MW-1 were less than the regulatory limit. PAH and BTEX constituents were not detected at any of the other monitoring well locations.



Lead concentrations were detected above the regulatory limit of 0.015 ppm at well location MW-1. Similar lead concentrations were detected within groundwater samples collected at other UST sampling locations on the Naval Station. The elevated values may be a result of the sampling method employed. The lead samples were not filtered or collected using quiescent sampling techniques.

During groundwater sample collection on June 13, 1997, each well was measured for free petroleum product. Product was not measured in any of the monitoring wells on this date. Additional water levels were measured in each well on July 24, 1997. A product sheen was observed on tip of the water level indicator after removal from monitoring 1343-MW-1. Well 1343-MW-1 was checked for free product on August 8, 1997 using a new PVC bailer. Approximately 3/8 inch of product was measurable in 1343-MW-1.

The approximate extent of groundwater petroleum contamination, based on laboratory analyses of monitoring wells, is shown on Figure 10.



6.0 QUALITY ASSURANCE/QUALITY CONTROL

BHATE maintained a stringent QA/QC program for all activities from data acquisition through report preparation in accordance with Comprehensive Quality Assurance Plan 970052G. All appropriate Geoprobe drilling and sampling equipment was decontaminated by appropriate FDEP procedures. Auger drilling equipment was steam cleaned, prior to drilling and between each boring. All soil and groundwater-sampling equipment was decontaminated with laboratory-grade detergent, appropriate solvent and alcohol wash and then rinsed with deionized and analyte-free water before each sample collection.



7.0 SAFETY CONSIDERATIONS

Prior to implementation of drilling activities, a survey of underground utilities was conducted at the site. All BHATE and subcontractor field personnel have received OSHA-approved health and safety training. A Health and Safety Plan was prepared specifically for the site in accordance with OSHA guidelines. Subcontractors working at the facility reviewed the Health and Safety Plan. Before beginning work, a health-and-safety meeting was conducted by the BHATE site coordinator. During this meeting, personnel were told of on-site hazards and all safety equipment (hard hats, steel-toed boots, protective clothing, etc.) required. An "exclusion zone" was maintained around the drilling areas. Unauthorized personnel were not allowed in this area. Air quality in the exclusion zone was monitored regularly, to assure the safety of the field crew.



8.0 SUMMARY AND CONCLUSIONS

8.1 Summary

The following is a summary of site conditions based on the results of field and laboratory investigations made during the contamination assessment:

- Soil borings indicated soils beneath the site consist of well sorted fine sands to silty fine sands with shell fragments extending to boring termination at approximate depths of fourteen feet, bls. Construction material was encountered within the upper five feet of well MW-3.
- Groundwater was encountered at depths of approximately 4 to 4.5 feet bls. The direction of groundwater movement is generally to the east as determined from measurements on two different dates.
- OVA-FID headspace concentrations of soil samples collected from each boring at a depth of one to three feet were less than 50 ppm. Stained soils were visible at the northwest end of the UST.
- Laboratory analyses of soil samples collected from depths of 4.0 to 6.0 feet bls indicated FL-PRO concentrations at locations S-1 and S-3 of 28 and 35 ppm, respectively. The concentrations are below the regulatory limit MCL of 2,500 ppm. Concentrations were below laboratory detection limits in soil samples collected from S-2 and S-4.
- Laboratory analyses of groundwater samples from three permanent monitoring wells installed at the site indicated one well, MW-1, contained detectable PAH constituents. PAH concentrations were below the regulatory limits. BTEX was not detected.
- Lead concentrations were above the regulatory limit at well 1343-MW-1. The elevated concentrations may be a result of the sampling method employed.
- Free petroleum product was not measurable on June 13, 1997 during groundwater sample collection. Approximately 3/8 inch of product was measured in 1343-MW-1 on August 8, 1997.
- One potable water supply well (N-1) is less than 1/4 mile from the assessment site. Well N-2 less than 1/2 mile from the site. The wells are screened at depths greater than 419 feet. The limited extent of the groundwater plume at the subject site indicates that the wells are not impacted by the contaminant release.



8.2 Conclusions

- FID soil headspace analyses and FL-PRO laboratory analyses of soil samples collected at the site did not indicate any concentrations above regulatory limits.
- Laboratory groundwater analysis of groundwater samples collected from the monitoring wells indicates that groundwater has been effected by a contaminant release from the UST.



9.0 RECOMMENDATIONS

Based on field results and analysis of all the data obtained during the contamination assessment BHATE recommends the preparation of a ~~Remedial Action Plan (RAP)~~ for the subject site. BHATE has determined that:

- Approximately 3/8 inch of free product was measurable in one well.
- Soil samples collected above groundwater had FID concentrations less than 1 ppm. Visible soil contamination appears to be limited to soils at the northwest end of the UST.



10.0 CLOSING REMARKS

This Contamination Assessment Report has been prepared on behalf of the Department of Navy, Southern Division, for specific application to the subject site. Future environmental conditions at the subject site can change subject to alterations in operations and land usage. The opinions and findings of this report represent those conditions apparent at the time and dates the work was performed. New regulations, changes in surrounding land use, altered geologic conditions and other factors may also result in changed conditions.

The work described in this report has been conducted in accordance with current FDEP UST regulations and with standard industry practice. No other warranty is implied or expressed.



11.0 LITERATURE REFERENCES

- Bouwer, H. and Rice, R.C., 1976. A slug test for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells. *Water Resources Research*, v. 12, no. 3, p. 423-428.
- Bouwer, H., 1989. The Bouwer and Rice slug test - an update. *Groundwater*, v.27, no. 3, p. 304-309.
- Cooke, C.W., 1945. "Geology of Florida". Florida Geological Survey Bulletin 29, 339 p.
- Fairchild, R.W., 1972. "The Shallow-Aquifer System in Duval County, Florida". Florida Bureau of Geology Report of Investigations No. 59. 50 p.
- Krause, R.E. and Randolph, R.B., 1989. "Hydrogeology of the Floridan Aquifer System in Southeast Georgia and Adjacent Parts of Florida and South Carolina". U. S. Geological Survey Professional Paper 1403-D. 65 p.
- Leve, G.W., 1966. "Ground Water in Duval and Nassau Counties, Florida". Florida Geological Survey Report of Investigations No. 43. 91 p.
- Miller, J.A., 1990. "Ground Water Atlas of the United States; Segment 6 - Alabama, Florida, Georgia, South Carolina". U. S. Geological Survey Hydrologic Investigations Atlas 730-G. 28 p.
- Puri, H.S. and Vernon, R.O., 1964. "Summary of the Geology of Florida". Florida Geological Survey Special Publication 5 (Revised). 312 p.
- Scott, T.M., 1992. "A Geological Overview of Florida". Florida Geological Survey Open File Report No. 50. 78 p.
- White, W.A., 1970. "Geomorphology of the Florida Peninsula". Florida Geological Survey Bulletin 51. 164 p.



**TABLE 1
 POTABLE WELL SURVEY DATA
 CONTAMINATION ASSESSMENT REPORT
 UST 245
 BEA PROJECT NO.: 9970058**

WELL DESTINATION	OWNER	INSTALLATION DATE	CASING DIAMETER (in)	SURFACE ELEVATION (ft)	TOTAL DEPTH (ft)	SCREENED INTERVAL (ft)	WATER USAGE
N-1	U.S. NAVY	1961	12	10	1,001	435-1,001	POTABLE
N-2	U.S. NAVY	1958	12	10	1,000	435-1,000	POTABLE
N-3	U.S. NAVY	1979	16	10	1,000	435-1,000	POTABLE
N-4	U.S. NAVY	1979	16	10	1,000	419-1,000	POTABLE
D-236	U.S. NAVY	1962	6	9	814	440-814	IRRIGATION



**TABLE 2
MONITORING WELL CONSTRUCTION AND WATER LEVEL DATA
CONTAMINATION ASSESSMENT REPORT
NAVAL STATION MAYPORT
UST-1343**

WELL NO.	DATE	TOTAL DEPTHS OF WELL (ft. bls)	TOP OF CASING (ft. bls)	SURVEYED TOP OF CASING ELEVATION (msl)*	SCREENED INTERVAL DEPTH BLS (ft.)	DEPTH TO WATER FROM TOP OF CASING (ft.)	ELEVATION OF WATER TABLE (msl)*
1343-MW-1	7/24/97	13.75	0.25	9.45	3.54-13.04	4.32	5.13
1343-MW-1	6/13/97	13.75	0.25	9.45	3.54-13.04	4.16	5.29
1343-MW-2	7/24/97	13.75	0.25	9.47	3.54-13.04	4.62	4.85
1343-MW-2	6/13/97	13.75	0.25	9.47	3.54-13.04	4.23	5.24
1343-MW-3	7/24/97	13.75	0.25	9.17	3.54-13.04	4.18	4.99
1343-MW-3	6/13/97	13.75	0.25	9.17	3.54-13.04	3.93	5.24

Notes:

bls = below land surface

* = Elevations referenced to msl (mean sea level)

Water level measurements were obtained on June 13 and July 24, 1997



TABLE 3
SUMMARY OF HYDRAULIC CONDUCTIVITIES
NAVAL STATION MAYPORT
UST 1343

UST LOCATION	WELL NUMBER	k (cm/sec)	k (ft/sec)
Fuel Farm	MW-2	8.46×10^{-3}	2.78×10^{-4}
Fuel Farm	MW-5	1.47×10^{-2}	4.82×10^{-4}
UST-245	MW-3	5.16×10^{-3}	1.69×10^{-4}
UST-350	MW-3	1.42×10^{-2}	4.65×10^{-4}
UST-353	MW-3	2.55×10^{-2}	8.35×10^{-4}
UST-365	MW-3	2.07×10^{-3}	6.78×10^{-4}
UST-1326	MW-3	3.66×10^{-2}	1.20×10^{-3}
UST-1343	MW-2	3.18×10^{-3}	1.04×10^{-4}
UST-1363	MW-3	6.07×10^{-3}	1.99×10^{-4}
UST-1388	MW-2	2.35×10^{-2}	7.72×10^{-4}
UST-1552	MW-1	3.82×10^{-3}	1.25×10^{-4}
UST-1556	MW-3	1.79×10^{-2}	5.86×10^{-4}
UST-1864	MW-2	2.63×10^{-3}	8.64×10^{-5}
Geometric Mean - all sites		8.61×10^{-3}	2.82×10^{-4}

Notes:

k = hydraulic conductivity
cm/sec = centimeters per second
ft/sec = feet per second

TABLE 4
SUMMARY OF SOIL HEADSPACE ANALYSES
NAVAL STATION MAYPORT
UST 1343

SAMPLE DESIGNATION	Date	DEPTH (feet)	OVA HEADSPACE READING (ppm)	OVA HEADSPACE READING WITH CARBON FILTER (ppm)	CORRECTED OVA HEADSPACE READING (ppm)
S-1/1343-1-1	5/14/97	1-3	12	<1	12
S-2/1343-2-1	5/14/97	1-3	<1	NR	<1
S-3/1343-3-1	5/14/97	1-3	<1	NR	<1
S-4/1343-4-1	5/14/97	1-3	1	<1	1

Notes:

ppm = parts per million

NR = not recorded

OVA = Organic Vapor Analyzer with a Flameionization Detector



TABLE 5
SUMMARY OF FL-PRO ANALYTICAL RESULTS
UST 1343
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

Sample I.D. No.	Date	Depth (feet)	TPH (ppm)
S-1/1343-1-2	5/14/97	4 - 6	28
S-2/1343-2-2	5/14/97	4 - 6	BDL
S-3/1343-3-2	5/14/97	4 - 6	35
S-4/1343-4-1	5/14/97	1 - 3	BDL

Notes:

TPH = total petroleum hydrocarbons
 ppm = parts per million
 BDL = below detection limit



TABLE 6
SUMMARY OF GAS CHROMATOGRAPH RESULTS
UST 1343
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

PARAMETER	DATE	SAMPLE DESIGNATION			
		S-1	S-2	S-3	S-4
Benzene (ppb)	5/14/97	BDL	BDL	BDL	BDL
Toluene (ppb)	5/14/97	BDL	BDL	BDL	BDL
Ethylbenzene (ppb)	5/14/97	BDL	BDL	BDL	BDL
Total Xylenes (ppb)	5/14/97	BDL	BDL	BDL	BDL
Total BTEX (ppb)	5/14/97	BDL	BDL	BDL	BDL

Notes:

ppb = parts per billion

BDL = Below Detection Limit of 1.0 ppb

NA = Not Analyzed

RS = Regulatory Standard



TABLE 7
SUMMARY OF MONITORING WELL GROUNDWATER ANALYTICAL RESULTS
UST-1343
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

POLYNUCLEAR AROMATIC HYDROCARBONS (Method 8270)							
PARAMETER		MW-1	MW-2 (6/13/97)	MW-3	MW-3A (Duplicate)	Regulatory Standard	Detection Limit
Naphthalene ug/l	6/13/97	4.3	BDL	BDL	BDL	20	1.0
2-Methylnaphthalene ug/l	6/13/97	5.8	BDL	BDL	BDL	NR	1.0
1-Methylnaphthalene ug/l	6/13/97	BDL	BDL	BDL	BDL	NR	1.0
Acenaphthylene ug/l	6/13/97	6.6	BDL	BDL	BDL	210	1.0
Acenaphthene ug/l	6/13/97	BDL	BDL	BDL	BDL	20	1.0
Fluorene ug/l	6/13/97	BDL	BDL	BDL	BDL	280	1.0
Phenanthrene ug/l	6/13/97	BDL	BDL	BDL	BDL	210	1.0
Anthracene ug/l	6/13/97	BDL	BDL	BDL	BDL	2100	1.0
Fluoranthene ug/l	6/13/97	BDL	BDL	BDL	BDL	280	1.0
Pyrene ug/l	6/13/97	BDL	BDL	BDL	BDL	210	1.0
Benzo(a)anthracene ug/l	6/13/97	BDL	BDL	BDL	BDL	0.2	1.0
Chrysene ug/l	6/13/97	BDL	BDL	BDL	BDL	5	1.0
Benzo(b)Fluoranthene ug/l	6/13/97	BDL	BDL	BDL	BDL	0.2	1.0
Benzo(k)Fluoranthene ug/l	6/13/97	BDL	BDL	BDL	BDL	0.2	1.0
Benzo(a)pyrene ug/l	6/13/97	BDL	BDL	BDL	BDL	0.2	1.0

BDL = Below Detection Limit
 Shaded values indicate value exceeding regulatory standard
 RS = Regulatory Standard
 NR = Not Regulated

TABLE 7
SUMMARY OF MONITORING WELL GROUNDWATER ANALYTICAL RESULTS
(CONTINUED)
UST-1343
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

POLYNUCLEAR AROMATIC HYDROCARBONS (Continued)

PARAMETER	DATE	MW-1	MW-2 (6/13/97)	MW-3	MW-2A (Duplicate)	Regulatory Standard	Detection Limit
Dibenzo(a,h)Anthracene ug/l	6/13/97	BDL	BDL	BDL	BDL	0.2	1.0
Indeno(1,2,3-c,d)pyrene ug/l	6/13/97	BDL	BDL	BDL	BDL	0.2	1.0
Benzo(g,h,i)perylene ug/l	6/13/97	BDL	BDL	BDL	BDL	210	1.0

BTEX COMPOUNDS (METHOD 8020)

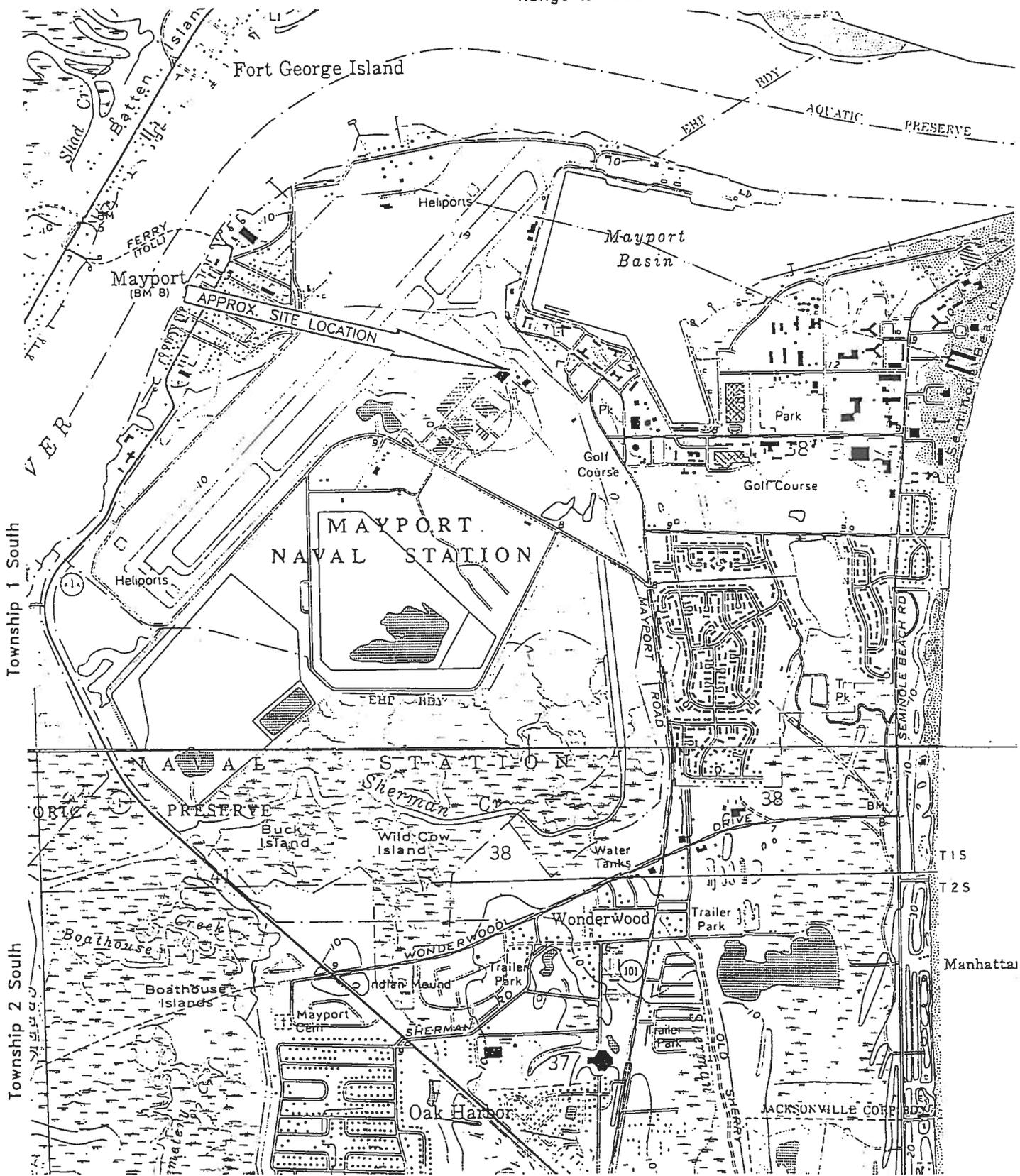
Benzene ug/l	6/13/97	BDL	BDL	BDL	BDL	1.0	1.0
Chlorobenzene ug/l	6/13/97	BDL	BDL	BDL	BDL	NR	1.0
1,2-Dichlorobenzene ug/l	6/13/97	BDL	BDL	BDL	BDL	600	1.0
1,3-Dichlorobenzene ug/l	6/13/97	BDL	BDL	BDL	BDL	10	1.0
1,4-Dichlorobenzene ug/l	6/13/97	BDL	BDL	BDL	BDL	75	1.0
Ethylbenzene ug/l	6/13/97	BDL	BDL	BDL	BDL	30	1.0
Toluene ug/l	6/13/97	BDL	BDL	BDL	BDL	40	1.0
Total Xylenes ug/l	6/13/97	BDL	BDL	BDL	BDL	20	1.0
Total BTEX ug/l	6/13/97	BDL	BDL	BDL	BDL	NR	1.0
MTBE ug/l	6/13/97	BDL	BDL	BDL	BDL	35	1.0

METALS (METHOD 6010A)

LEAD mg/l	6/13/97	0.054	0.012	0.0069	0.0067	0.015	0.005
-----------	---------	-------	-------	--------	--------	-------	-------



Notes:
 BDL = Below Detection Limit
 Shaded values indicate value exceeding regulatory standard
 RS = Regulatory Standard
 NR = Not Regulated



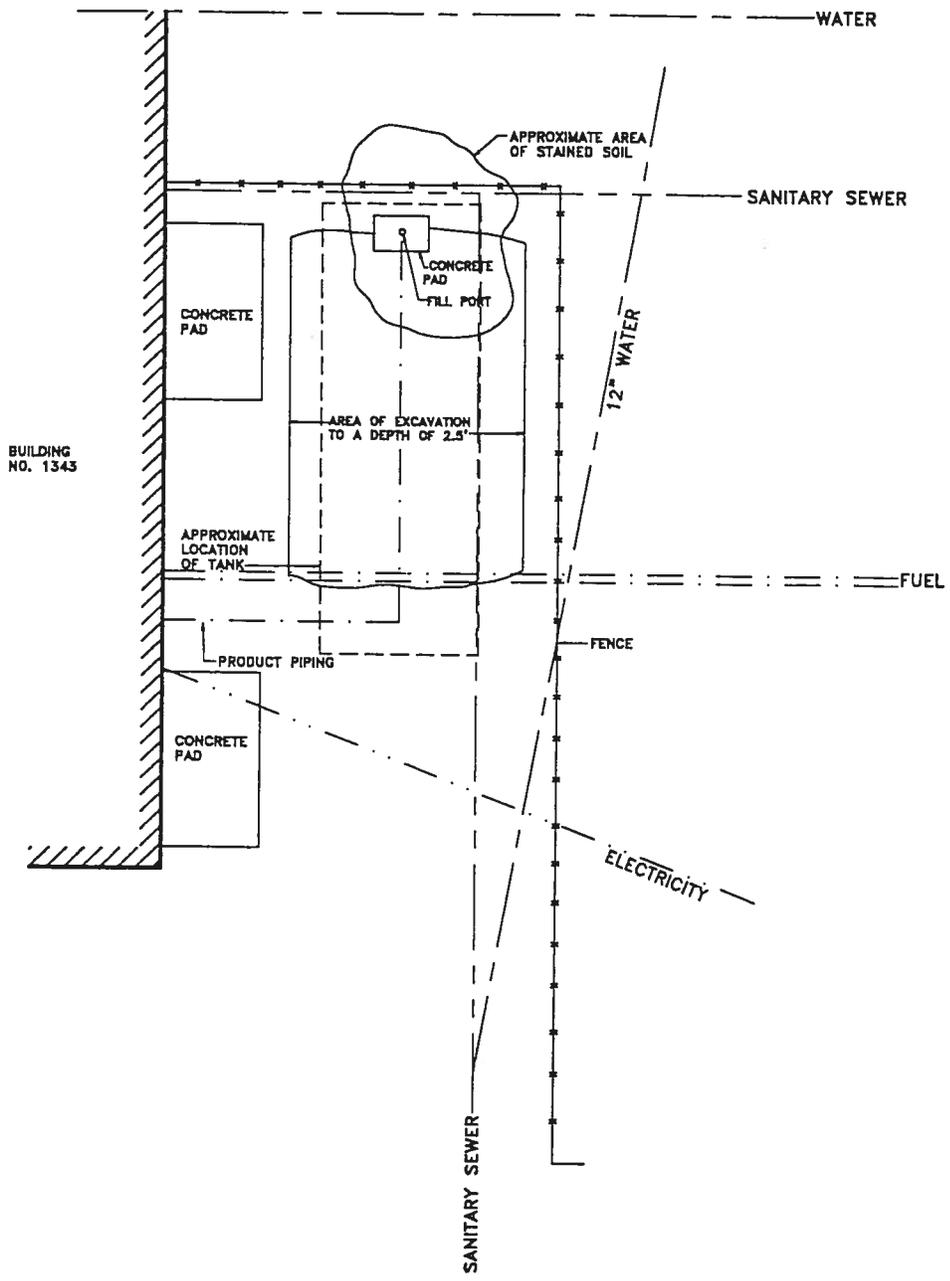
BEA
 Bate Environmental Associates, Inc.
 Environmental Engineers & Scientists

Source: USGS 7.5 Minute Topographic Map
 Mayport, Florida Quadrangle, Revised 1992
 Jacksonville Beach, Florida, Revised 1992
SITE LOCATION DIAGRAM

Contamination Assessment Report
 UST 1343
 Department of the Navy
 Naval Station Mayport
 Mayport, Florida

PROJECT NO.	SCALE	DATE	DRAWN BY:
9970058	1:24,000	3/19/97	USGS
			DRAWING NO:
			1552F1

Figure 1



NOTE:
 The information shown on this map was obtained from existing maps from previous investigations prepared by others. This information is depicted to provide visual aid within the context of this plan and should not be used as a sole reference in precise dimensioning of features indicated.

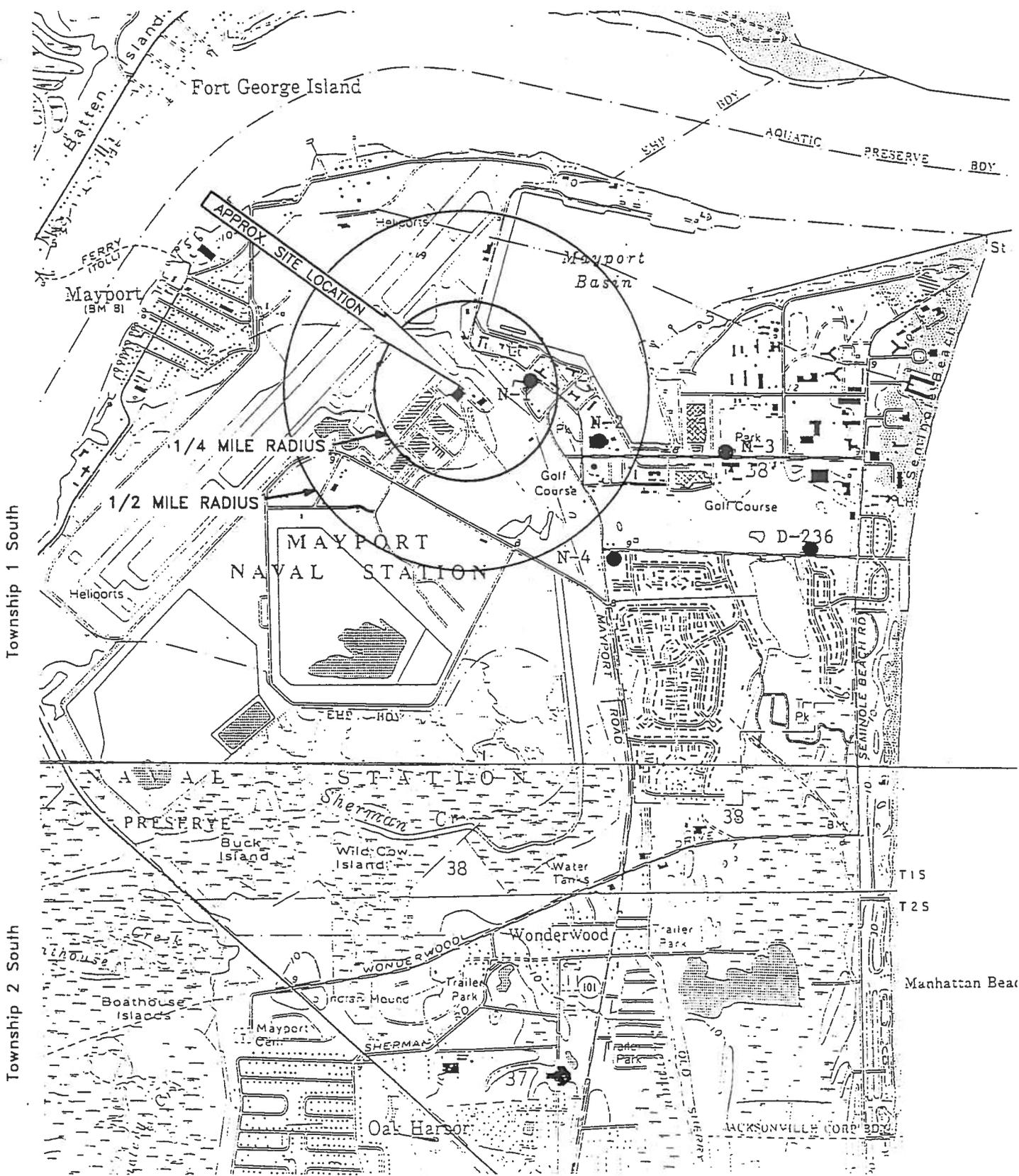
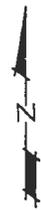
LEGEND

- WATER
- SANITARY SEWER
- ELECTRICITY
- FUEL

Graphic Scale: -10' 0' 10'
 1" = 10'

 Bhat Environmental Associates, Inc. Environmental Engineers & Scientists	UST-1343 SOIL AND GROUNDWATER SAMPLING LOCATIONS			Contamination Assessment Report UST 1343 Department of the Navy Naval Station Mayport Mayport, Florida	
	PROJECT NO. 9970058	SCALE 1" = 10'	DATE 3/18/97		

Figure 2



Township 1 South

Township 2 South



Bhate Environmental Associates, Inc.
Environmental Engineers & Scientists

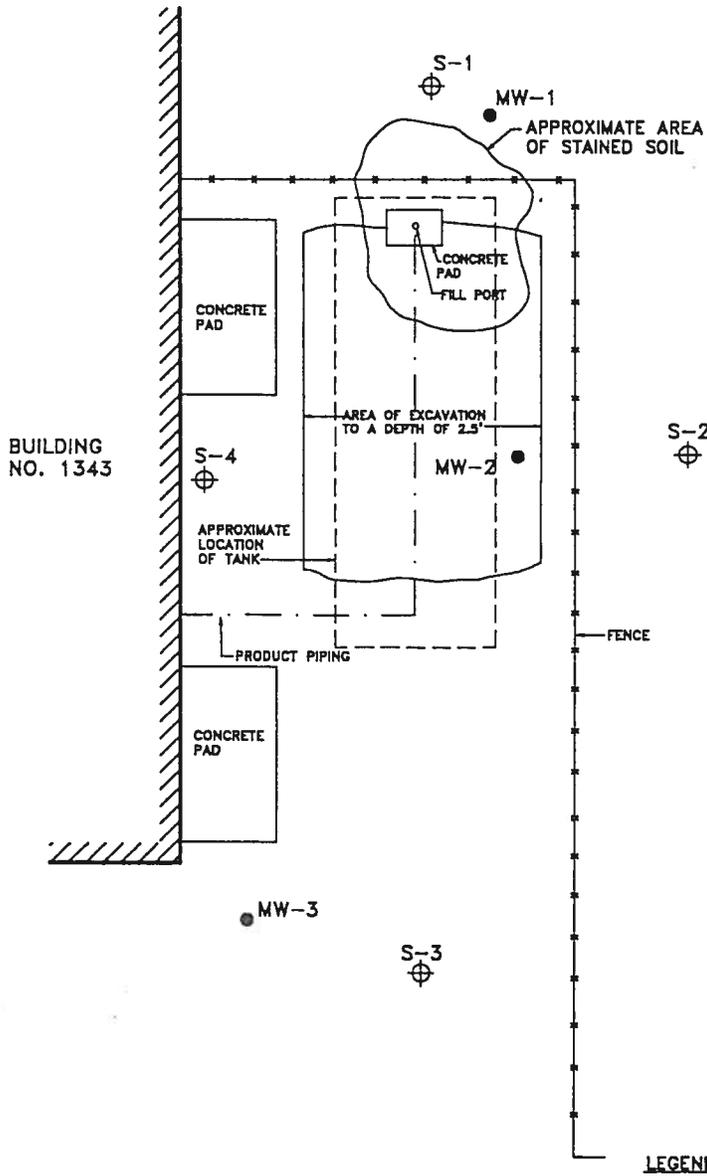
Source: USGS 7.5 Minute Topographic Map
Mayport, Florida Quadrangle, Revised 1992
Jacksonville Beach, Florida, Revised 1992
LOCATIONS OF WATER WELLS

PROJECT NO.	SCALE	DATE	DRAWN BY:
9970058	1:24,000	3/19/97	USGS
			DRAWING NO:
			1552F3

Contamination Assessment Report
UST 1343

Department of the Navy
Naval Station Mayport
Mayport, Florida

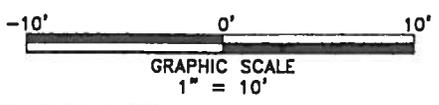
Figure 3



BUILDING NO. 1343

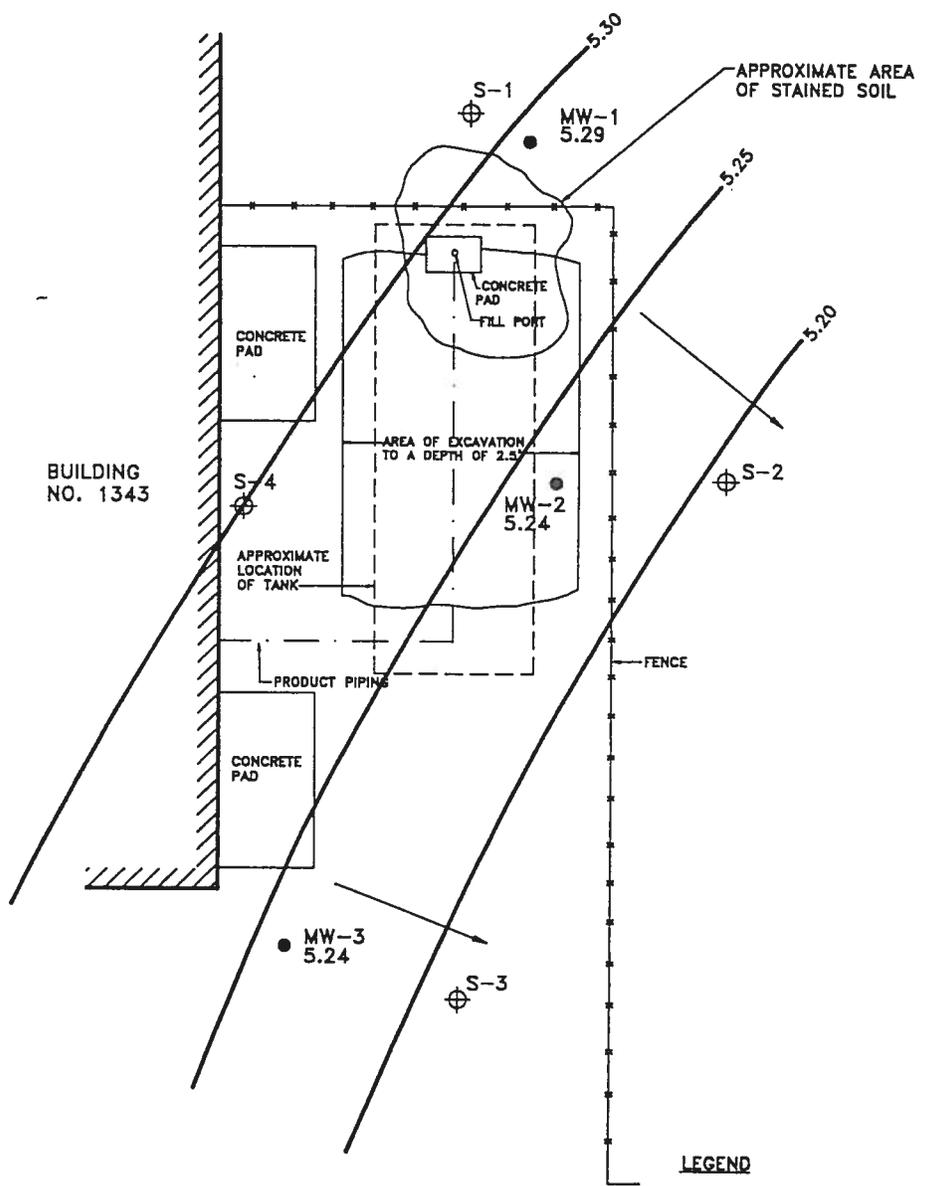
LEGEND

- ⊕ GEOPROBE SOIL AND GROUNDWATER SAMPLING LOCATIONS
- MONITOR WELL LOCATIONS

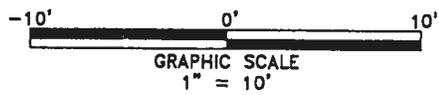


NOTE:
The information shown on this map was obtained from existing maps from previous investigations prepared by others. This information is depicted to provide visual aid within the context of this plan and should not be used as a sole reference in precise dimensioning of features indicated.

 Bhate Environmental Associates, Inc. Environmental Engineers & Scientists	SAMPLING LOCATIONS			Contamination Assessment Report UST 1343 Department of the Navy Naval Station Mayport Mayport, Florida Figure 4	
	PROJECT NO.	SCALE	DATE		DRAWN BY:
	9970058	1"=10'	7/21/97		-
			DRAWING NO:	FIG-4	



NOTE:
 The information shown on this map was obtained from existing maps from previous investigations prepared by others. This information is depicted to provide visual aid within the context of this plan and should not be used as a sole reference in precise dimensioning of features indicated.



LEGEND

-  GEOPROBE SOIL AND GROUNDWATER SAMPLING LOCATIONS
-  MONITOR WELL LOCATIONS
-  ESTIMATED DIRECTION OF GROUNDWATER MOVEMENT
-  WATER TABLE ELEVATION CONTOUR (CONTOUR INTERVALS = 0.05 Ft.)
- 6.34 WATER TABLE ELEVATION IN FEET ABOVE MEAN SEA LEVEL

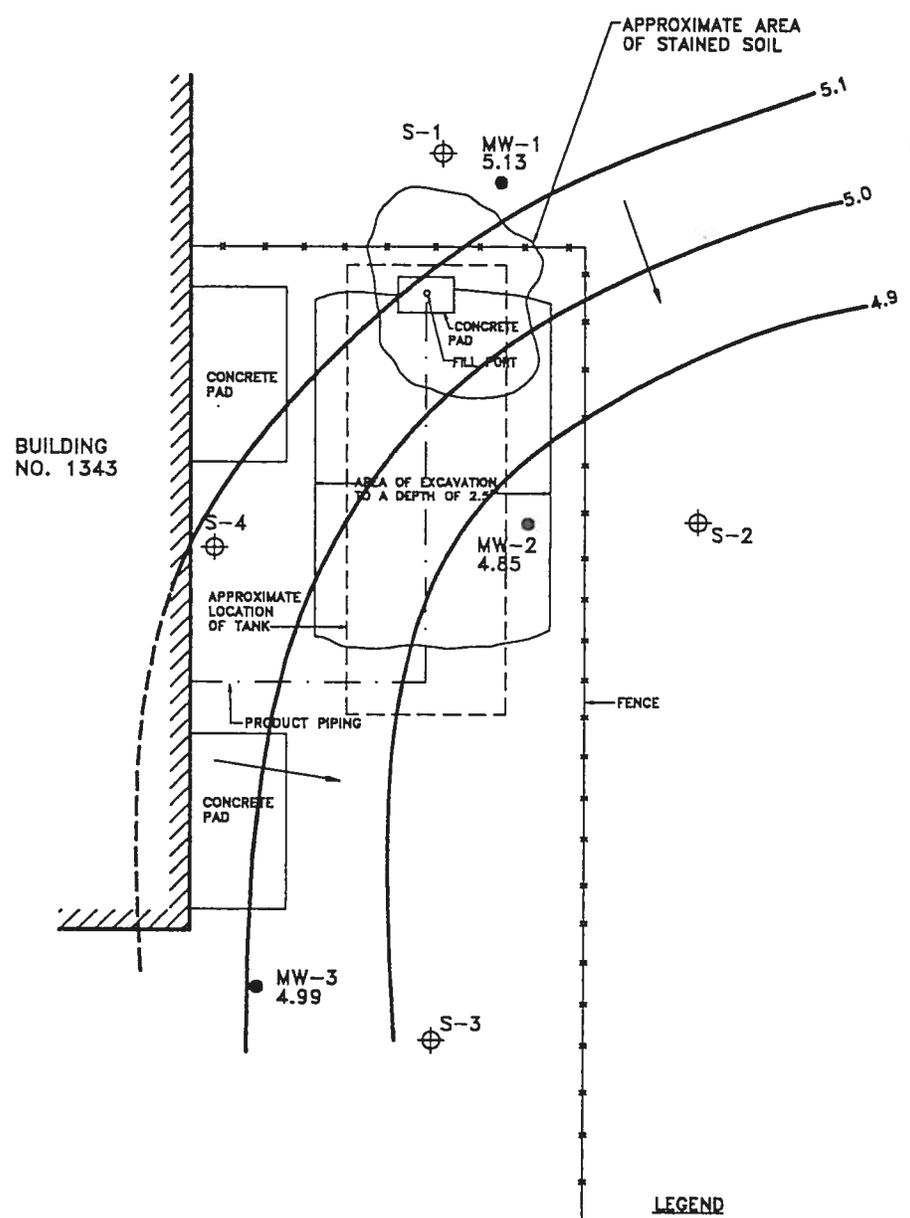
BEA
 Bhate Environmental Associates, Inc.
 Environmental Engineers & Scientists

WATER TABLE CONTOUR MAP
 6/13/97

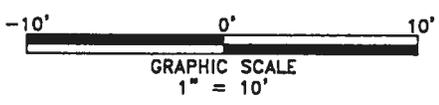
PROJECT NO.	SCALE	DATE	DRAWN BY:
9970058	1"=10'	7/21/97	-
			DRAWING NO:
			FIG-5

Contamination Assessment Report
 UST 1343
 Department of the Navy
 Naval Station Mayport
 Mayport, Florida

Figure 5



NOTE:
 The information shown on this map was obtained from existing maps from previous investigations prepared by others. This information is depicted to provide visual aid within the context of this plan and should not be used as a sole reference in precise dimensioning of features indicated.



LEGEND

- GEOPROBE SOIL AND GROUNDWATER SAMPLING LOCATIONS
- MONITOR WELL LOCATIONS
- ESTIMATED DIRECTION OF GROUNDWATER MOVEMENT
- WATER TABLE ELEVATION CONTOUR (CONTOUR INTERVALS = 0.01 Ft.)
- 4.99** WATER TABLE ELEVATION IN FEET ABOVE MEAN SEA LEVEL

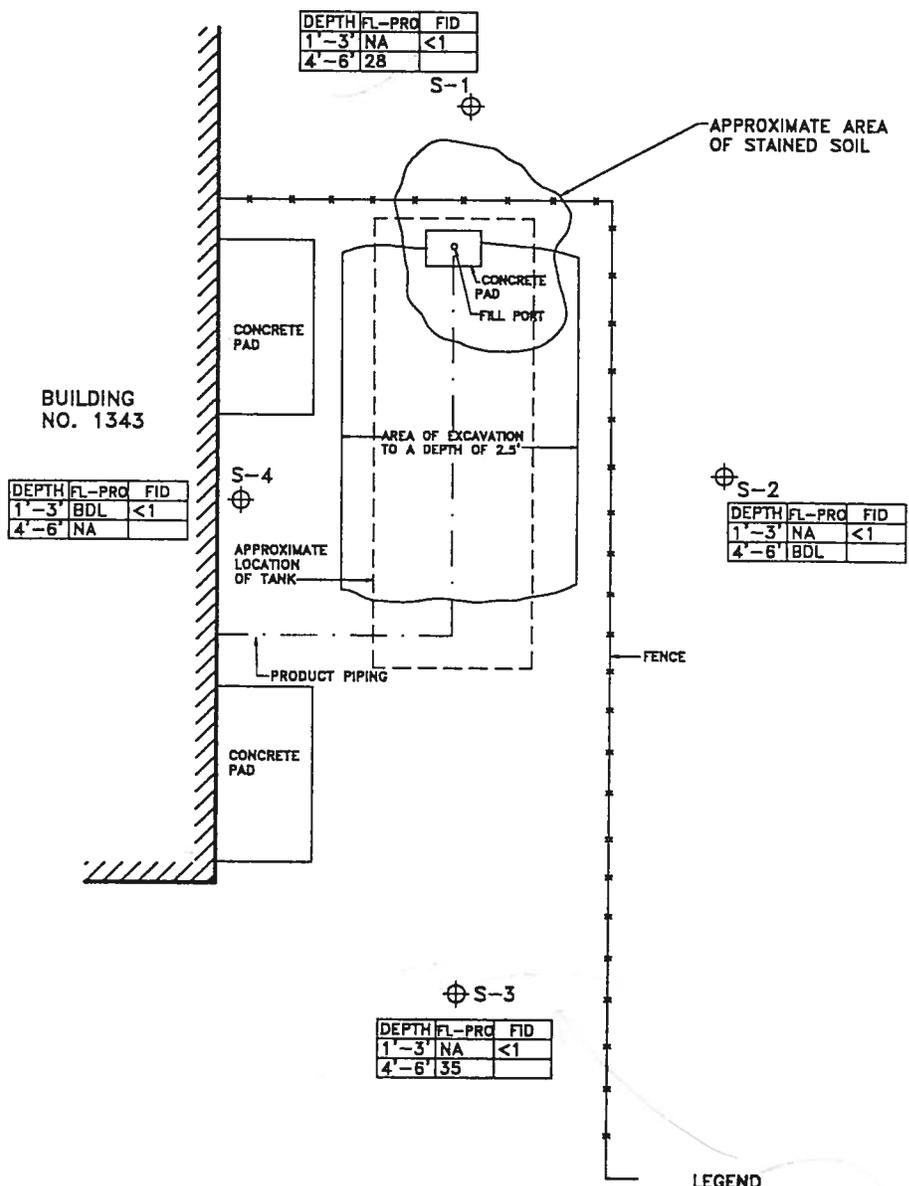
BEA
 Bhat Environmental Associates, Inc.
 Environmental Engineers & Scientists

WATER TABLE CONTOUR MAP
 7/24/97

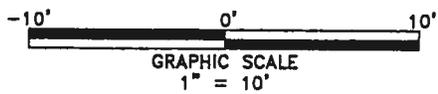
PROJECT NO.	SCALE	DATE	DRAWN BY:
9970058	1"=10'	7/21/97	-
			DRAWING NO: FIG-6

Contamination Assessment Report
 UST 1343
 Department of the Navy
 Naval Station Mayport
 Mayport, Florida

Figure 6



NOTE:
 The information shown on this map was obtained from existing maps from previous investigations prepared by others. This information is depicted to provide visual aid within the context of this plan and should not be used as a sole reference in precise dimensioning of features indicated.



LEGEND

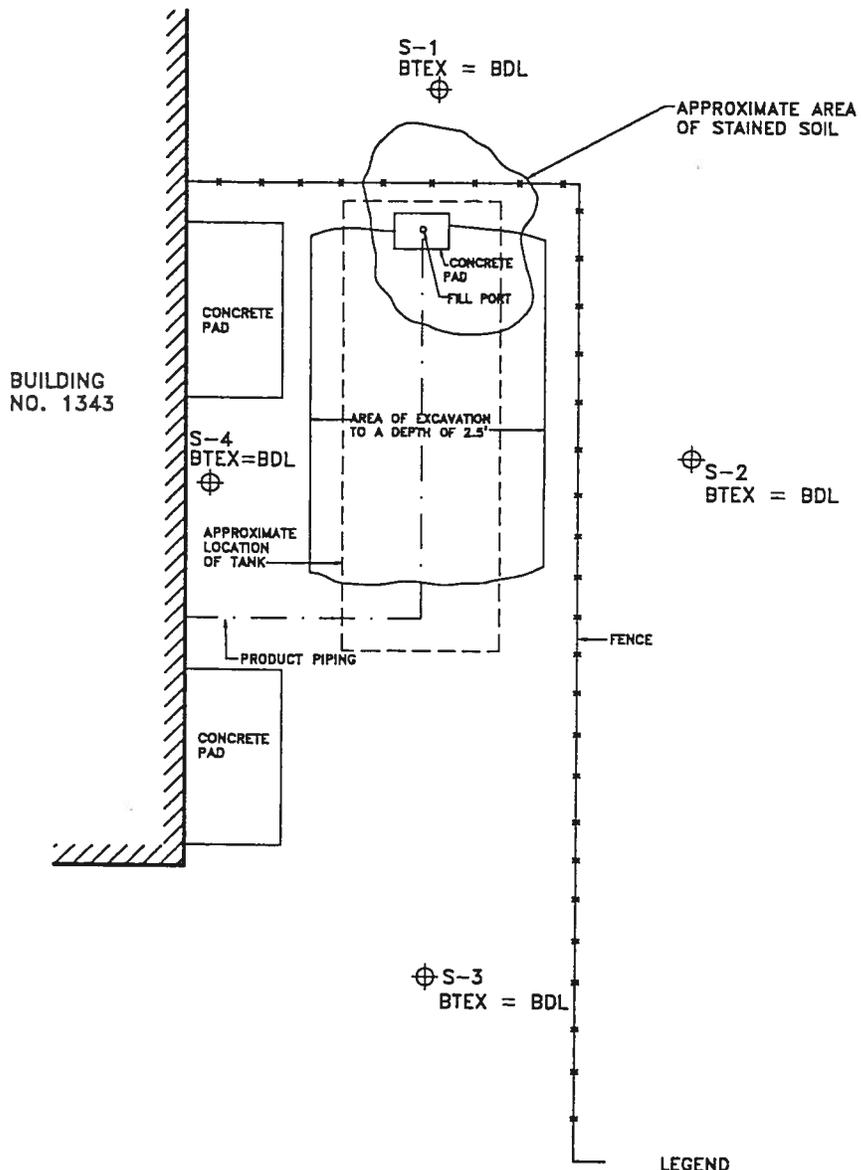
- ⊕ GEOPROBE SOIL AND GROUNDWATER SAMPLING LOCATIONS
- FL-PRO FLORIDA PETROLEUM RESIDUAL ORGANICS IN PARTS PER MILLION (ppm)
- FID FLAME IONIZATION DETECTOR IN PARTS PER MILLION
- BDL BELOW DETECTION LIMITS
- NA NOT ANALYZED



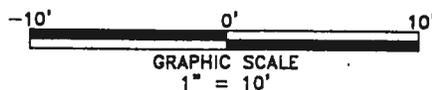
GEOPROBE SOIL ANALYTICAL RESULTS

PROJECT NO.	SCALE	DATE	DRAWN BY:
9970058	1"=10'	7/21/97	-
			DRAWING NO:
			FIG-8

Contamination Assessment Report
 UST 1343
 Department of the Navy
 Naval Station Mayport
 Mayport, Florida
 Figure 8



NOTE:
 The information shown on this map was obtained from existing maps from previous investigations prepared by others. This information is depicted to provide visual aid within the context of this plan and should not be used as a sole reference in precise dimensioning of features indicated.



LEGEND

- ⊕ GEOPROBE SOIL AND GROUNDWATER SAMPLING LOCATIONS
- BTEX TOTAL BENZENE, TOLUENE, ETHYLBENZENE AND XYLENE CONCENTRATION IN PARTS PER BILLION
- BDL BELOW DETECTION LIMITS



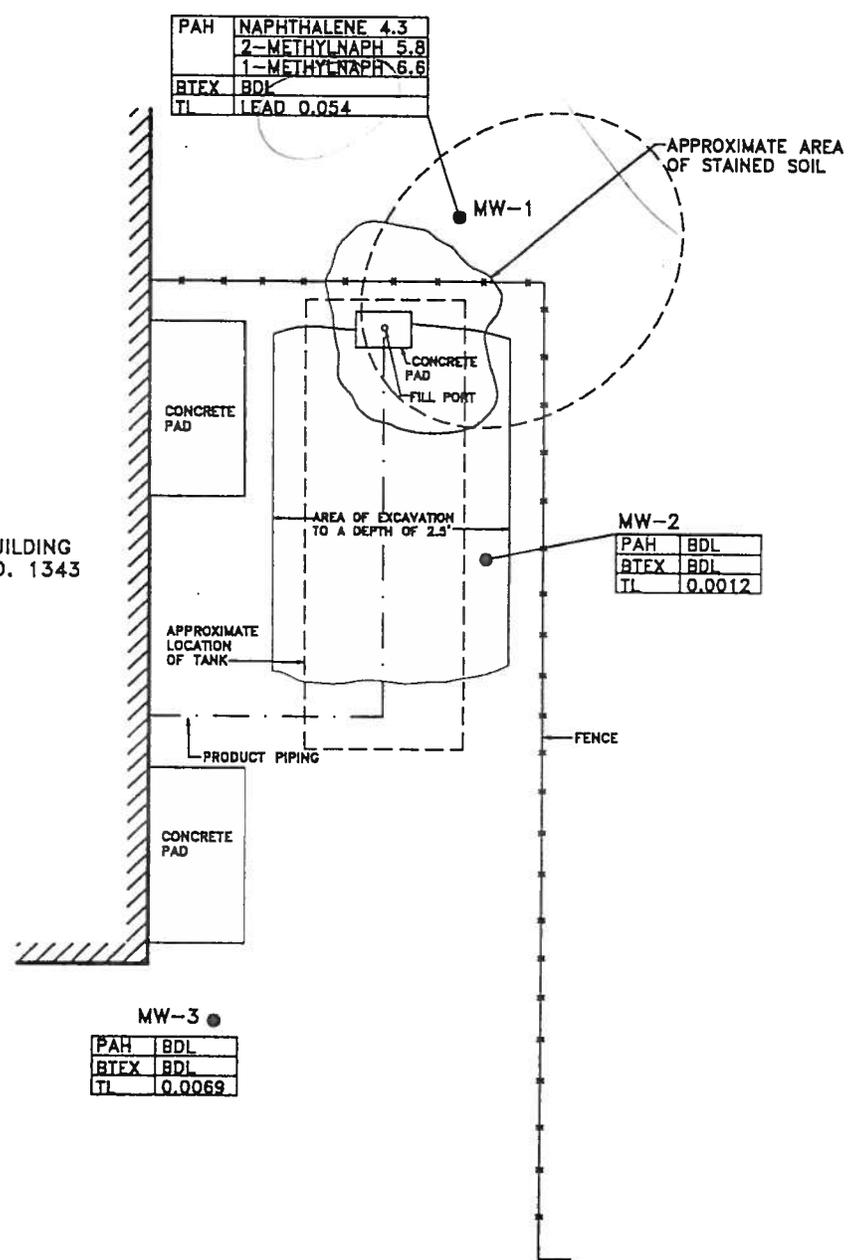
Bhate Environmental Associates, Inc.
 Environmental Engineers & Scientists

GEOPROBE GROUNDWATER ANALYTICAL RESULTS

PROJECT NO.	SCALE	DATE	DRAWN BY:
9970058	1" = 10'	7/21/97	-
			DRAWING NO: FIG-9

Contamination Assessment Report
 UST 1343
 Department of the Navy
 Naval Station Mayport
 Mayport, Florida

Figure 9



PAH	NAPHTHALENE 4.3
	2-METHYLNAPH 5.8
	1-METHYLNAPP 6.6
BTEX	BDL
TL	LEAD 0.054

APPROXIMATE AREA OF STAINED SOIL

MW-1

CONCRETE PAD
FILL PORT

CONCRETE PAD

BUILDING NO. 1343

AREA OF EXCAVATION TO A DEPTH OF 2.3'

PAH	BDL
BTEX	BDL
TL	0.0012

MW-2

APPROXIMATE LOCATION OF TANK

PRODUCT PIPING

FENCE

CONCRETE PAD

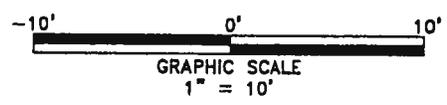
MW-3

PAH	BDL
BTEX	BDL
TL	0.0069

LEGEND

- MONITOR WELL LOCATIONS
- PAH POLYNUCLEAR AROMATIC HYDROCARBONS IN PARTS PER BILLION
- BTEX BENZENE, TOLUENE, ETHYLBENZENE AND XYLENE IN PARTS PER BILLION
- TL TOTAL LEAD IN PARTS PER MILLION
- ESTIMATED EXTENT OF GROUNDWATER CONTAMINATION

NOTE:
The information shown on this map was obtained from existing maps from previous investigations prepared by others. This information is depicted to provide visual aid within the context of this plan and should not be used as a sole reference in precise dimensioning of features indicated.



MONITORING WELL GROUNDWATER ANALYTICAL RESULTS

Contamination Assessment Report
UST 1343
Department of the Navy
Naval Station Mayport
Mayport, Florida

PROJECT NO.	SCALE	DATE	DRAWN BY:
9970058	1" = 10'	7/21/97	-
			DRAWING NO: FIG-10

Figure 10



Bhate Environmental, Inc.
Environmental Engineers & Scientists

MONITORING WELL LOG

BORING NO: 1343-MW-1

PROJECT NO: 9970058

PROJECT NAME: NAVSTA Mayport

CLIENT: U.S. Navy

PROJECT LOCATION: UST 1343

DRILLING MTHD: 4 1/4 Inch Hollow Stem Auger

SAMPLE MTHD: Drill Cuttings

DATE STARTED: 6/4/97 DATE FINISHED: 6/4/97

ENGINEER/GEOLOGIST: D. Trapp

ELEV.	LITHOLOGIC DESCRIPTION	DEPTH. (FT.)	SAMPLE	TPH (mg/kg)	WATER LEVEL	WELL SECTION	ANNULAR AND WELL CONSTRUCTION MATERIALS
	Dark brown and black, loose fine sand (stained) Medium gray, loose dry, well sorted fine sand with shell fragments	0.0					FLUSH MOUNTED COVER WITH LOCKING CAP
	Diesel odor	5.0			Approximately 2.0 feet of cement grout Approximately 0.5 feet thick Bentonite Seal Well Casing consists of a 2-inch diameter Schedule 40 PVC Section		
	Brown with dark gray, firm wet silty fine sand with clay and organics	10.0			Sand packed Material of 20/30 gradation Well Screen Consists of a 10-foot section Schedule 40 0.010 inch factory slotted PVC screen (2-inch diameter)		
	BORING TERMINATED @ 14.0 FEET BELOW GROUND SURFACE	15.0					

BOTTOM OF TEST BORING: 14.0' BGS

BGS = BELOW GROUND SURFACE



Bhate Environmental, Inc.
Environmental Engineers & Scientists

MONITORING WELL LOG

BORING NO: 1343-MW-2

PROJECT NO: 9970058

PROJECT NAME: NAVSTA Mayport

CLIENT: U.S. Navy

PROJECT LOCATION: UST 1343

DRILLING MTHD: 4 1/4 Inch Hollow Stem Auger

SAMPLE MTHD: Drill Cuttings

DATE STARTED: 6/4/97 DATE FINISHED: 6/4/97

ENGINEER/GEOLOGIST: D. Trapp

ELEV.	LITHOLOGIC DESCRIPTION	DEPTH (FT.)	SAMPLE	TPH (mg/kg)	WATER LEVEL	WELL SECTION	ANNULAR AND WELL CONSTRUCTION MATERIALS
							FLUSH MOUNTED COVER WITH LOCKING CAP
	Brown silty fine sand with organics (grassed)	0.0					Approximately 2.0 feet of cement grout
	Tan, loose, dry, well sorted fine sand with shell fragments						Approximately 0.5 feet thick Bentonite Seal
	Medium gray, firm, wet, well sorted fine sand with shell fragments	5.0					Well Casing consists of a 2-inch diameter Schedule 40 PVC Section
	Brown with gray, firm, wet, silty fine sand with clay and organics (organic odor)						Sand packed Material of 20/30 gradation
		10.0					Well Screen Consists of a 10-foot section Schedule 40 0.010 inch factory slotted PVC screen (2-inch diameter)
		15.0					

BORING TERMINATED @ 14.0 FEET BELOW GROUND SURFACE

BOTTOM OF TEST BORING: 14.0' BGS

BGS = BELOW GROUND SURFACE



Bhate Environmental, Inc.
Environmental Engineers & Scientists

MONITORING WELL LOG

BORING NO: 1343-MW-3

PROJECT NO: 9970058

PROJECT NAME: NAVSTA Mayport

CLIENT: U.S. Navy

PROJECT LOCATION: UST 1343

DRILLING MTHD: 4 1/4 Inch Hollow Stem Auger

SAMPLE MTHD: Drill Cuttings

DATE STARTED: 6/4/97 DATE FINISHED: 6/4/97

ENGINEER/GEOLOGIST: D. Trapp

ELEV.	LITHOLOGIC DESCRIPTION	DEPTH. (FT.)	SAMPLE	TPH (mg/kg)	WATER LEVEL	WELL SECTION	ANNULAR AND WELL CONSTRUCTION MATERIALS
						FLUSH MOUNTED COVER WITH LOCKING CAP	
	Light brown, loose dry, silty fine sand with shell fragments	0.0					Approximately 2.0 feet of cement grout
	Brick and concrete fragments						Approximately 0.5 feet thick Bentonite Seal
	Light gray, moist, loose fine to coarse sand						Well Casing consists of a 2-Inch diameter Schedule 40 PVC Section
	With numerous shell fragments	5.0			6/13/97		Sand packed Material of 20/30 gradation
	Brown, wet, firm, well sorted fine sand with organics (organic odor)						Well Screen Consists of a 10-foot section Schedule 40 0.010 Inch factory slotted PVC screen (2-Inch diameter)
	BORING TERMINATED @ 14.0 FEET BELOW GROUND SURFACE						
		15.0					

BOTTOM OF TEST BORING: 14.0' BGS

BGS = BELOW GROUND SURFACE



FDEP Form # 15-700 (02)
 Form Title: Petroleum or Petroleum Products
 Water Sampling Log
 Revision Date: _____

Petroleum or Petroleum Products Water Sampling Log

FDEP FACILITY NO.: 1343 | WELL NO.: 1 | SAMPLE ID: | DATE: 6/13/97
 SITE NAME: NAUSTA MAYPORT | SITE LOCATION:

PURGE DATA

WELL DIAMETER (in): 2"		TOTAL WELL DEPTH (ft): 13.41		DEPTH TO WATER (ft): 4.16		WELL CAPACITY (gal): 9.31		
1 WELL VOLUME (gal) = (TOTAL WELL DEPTH - DEPTH TO WATER) x WELL CAPACITY = 1.58								
PURGE METHOD: Bailen				PURGING INITIATED AT: 1345		PURGING ENDED AT:		
WELL VOLS. PURGED	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (C)	COND. (umhos)	PURGE RATE (gpm):		TOTAL VOLUME PURGED (gal):	
					COLOR	ODOR	APPEARANCE	OTHER
1	1.25	6.77		7	GRAY	BLK	SWAMPY	
2	3.50	6.96		1	"	"		
3	5.25	6.99		3	"	"	"	

SAMPLING DATA

SAMPLED BY / AFFILIATION				SAMPLER(S) SIGNATURE(S)			
SAMPLING METHOD(S):				SAMPLING INITIATED AT:		SAMPLING ENDED AT:	
FIELD DECONTAMINATION: Y N			FIELD-FILTERED: Y N			DUPLICATE: Y N	
SAMPLE CONTAINER SPECIFICATIONS			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH		

REMARKS:
 MATERIAL CODES: AG - AMBER GLASS; CG - CLEAR GLASS; HDP - HIGH DENSITY POLYETHYLENE; O - OTHER (SPECIFY)
 WELL CAPACITY: 1.25" = 0.06 gal/ft; 2" = 0.16 gal/ft; 4" = 0.65 gal/ft; 6" = 1.47 gal/ft; 8" = 2.61 gal/ft; 12" = 5.33 gal/ft

NOTE: this does not constitute all the information required by Chapter 62-160, F.A.C.

[Handwritten signatures and scribbles]



DEP Form # 11-770-9000
 Form Title: Petroleum or Petroleum Products
 Water Sampling Log
 Effective Date:

Petroleum or Petroleum Products Water Sampling Log

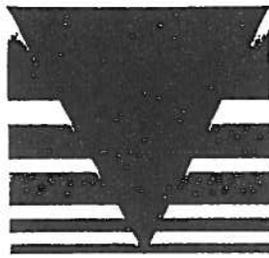
FDEP FACILITY NO.:	347	WELL NO.:	2	SAMPLE ID:	DATE: 6/13/97
SITE NAME:	NAUSTA WAREHOUSE		SITE LOCATION:		

PURGE DATA															
WELL DIAMETER (in):		2"		TOTAL WELL DEPTH (ft):		13.43		DEPTH TO WATER (ft):		4.23		WELL CAPACITY (gal):		9.2	
$1 \text{ WELL VOLUME (gal)} = (\text{TOTAL WELL DEPTH} - \text{DEPTH TO WATER}) \times \text{WELL CAPACITY} = 1.56$															
PURGE METHOD:						PURGING INITIATED AT:						PURGING ENDED AT:			
Bailer						7415									
WELL VOL. PURGED	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (C)	COND. (umhos)	PURGE RATE (gpm):		TOTAL VOLUME PURGED (gal):		APPEARANCE	OTHER					
					COLOR	ODOR									
1	1.75	7.34		6	1.32	N/O	1.75	1.75	Clear						
2	3.50	7.29		0	"	N/O	3.50	3.50	"						
3	5.25	7.58		0	1.32	N/O	5.25	5.25	Mostly Clear						

SAMPLING DATA									
SAMPLED BY / AFFILIATION:					SAMPLER(S) SIGNATURE(S):				
SAMPLING METHOD(S):					SAMPLING INITIATED AT:			SAMPLING ENDED AT:	
FIELD DECONTAMINATION: Y N			FIELD-FILTERED: Y N			DUPLICATE: Y N			
SAMPLE CONTAINER SPECIFICATIONS:			SAMPLE PRESERVATION:				INTENDED ANALYSIS AND/OR METHOD:		
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (gal)	FINAL pH				

REMARKS:
 MATERIAL CODES: AG - AMBER GLASS; CG - CLEAR GLASS; HDP - HIGH DENSITY POLYETHYLENE; O - OTHER (SPECIFY)
 WELL CAPACITY: 1.25" = 0.06 gal/ft; 2" = 0.16 gal/ft; 4" = 0.65 gal/ft; 6" = 1.47 gal/ft; 8" = 2.61 gal/ft; 12" = 5.33 gal/ft

NOTE: this does not constitute all the information required by Chapter 62-160, F.A.C.



Our Quality Control Is Your Quality Assurance

Client #: MOB-97-020803
Address: Bhate Environmental
1608 13th Ave South
Suite 300
Birmingham, AL 35205
Dewey Trapp

Page: Page 1 of 1
Date: 06/05/97
Log #: L19271-1

Sample Description:
NAVSTA Proj#9960058

Label: 1343-1-2
Date Sampled: 05/14/97
Time Sampled: 07:39
Date Received: 05/15/97
Collected By: Client

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Analysis Date	Analyst
Percent Solids							
Percent Solid	84	%	SM2540B	0.10	05/16	05/16	SMP
Petroleum Range Organics							
TPH (C8-C40)	28	mg/kg	FLPRO	10	05/16	05/21	SP
Dilution Factor	1.0		FLPRO		05/16	05/21	SP

BDL = Below Detection Limits

* Compounds are Screened Only, with an estimated detection limit.

All analyses were performed using EPA, ASTM, USGS, or Standard Methods.

All analyses were performed within EPA holding times unless otherwise noted.

Analyses are reported in dry weight unless otherwise indicated by units.

QAP# 900376G	HRS# E86240,86356	NC CERT# 444
SUB HRS# 86122,86109,E86048	ADEM ID# 40850	ND CERT# R-148
SC CERT# 96031	TN CERT# 02985	CT CERT# PH-0122
ELPAT# 13801	CA CERT# I-1068	USACE CERT
VA CERT# 00395	AZ CERT# AZ0529	MA CERT# M-FL449

Respectfully submitted,
Chad Moore
Project Manager
L19271-1

RECEIVED
JUN 09 1997

Client #: MOB-97-020803
 Address: Bhate Environmental
 1608 13th Ave South
 Suite 300
 Birmingham, AL 35205
 Dewey Trapp

Page: Page 1 of 1
 Date: 06/05/97
 Log #: L19271-2

Sample Description:

NAVSTA Proj#9960058

Label: 1343-3-2
 Date Sampled: 05/14/97
 Time Sampled: 08:29
 Date Received: 05/15/97
 Collected By: Client

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Analysis Date	Analyst
Percent Solids							
Percent Solid	71	%	SM2540B	0.10	05/16	05/16	SMP
Petroleum Range Organics							
TPH (C8-C40)	35	mg/kg	FLPRO	10	05/16	05/21	SP
Dilution Factor	1.0		FLPRO		05/16	05/21	SP

BDL = Below Detection Limits

* Compounds are Screened Only, with an estimated detection limit.

All analyses were performed using EPA, ASTM, USGS, or Standard Methods.

All analyses were performed within EPA holding times unless otherwise noted.

Analyses are reported in dry weight unless otherwise indicated by units.

QAP# 900376G	HRS# E86240,86356	NC CERT# 444
SUB HRS# 86122,86109,E86048	ADEM ID# 40850	ND CERT# R-148
SC CERT# 96031	TN CERT# 02985	CT CERT# PH-0122
ELPAT# 13801	CA CERT# I-1068	USACE CERT
VA CERT# 00395	AZ CERT# AZ0529	MA CERT# M-FL449

Respectfully submitted,

 Project Manager
 L19271-2

Client #: MOB-97-020803
 Address: Bhate Environmental
 1608 13th Ave South
 Suite 300
 Birmingham, AL 35205
 Dewey Trapp

Page: Page 1 of 1
 Date: 06/05/97
 Log #: L19271-3

Sample Description:

NAVSTA Proj#9960058

Label: 1343-4-1
 Date Sampled: 05/14/97
 Time Sampled: 09:10
 Date Received: 05/15/97
 Collected By: Client

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Analysis Date	Analyst
Percent Solids							
Percent Solid	86	%	SM2540B	0.10	05/16	05/16	SMP
Petroleum Range Organics							
TPH (C8-C40)	BDL	mg/kg	FLPRO	10	05/16	05/21	SP
Dilution Factor	1.0		FLPRO		05/16	05/21	SP

BDL = Below Detection Limits

* Compounds are Screened Only, with an estimated detection limit.

All analyses were performed using EPA, ASTM, USGS, or Standard Methods.

All analyses were performed within EPA holding times unless otherwise noted.

Analyses are reported in dry weight unless otherwise indicated by units.

QAP# 900376G	HRS# E86240,86356	NC CERT# 444
SUB HRS# 86122,86109,E86048	ADEM ID# 40850	ND CERT# R-148
SC CERT# 96031	TN CERT# 02985	CT CERT# PH-0122
ELPAT# 13801	CA CERT# I-1068	USACE CERT
VA CERT# 00395	AZ CERT# A20529	MA CERT# M-FL449

Respectfully submitted,



Project Manager

L19271-3

Client #: MOB-97-020803
Address: Bhate Environmental
1608 13th Ave South
Suite 300
Birmingham, AL 35205
Dewey Trapp

Page: Page 1 of 1
Date: 06/05/97
Log #: L19271-4

Sample Description:

NAVSTA Proj#9960058

Label: 1343-2-2
Date Sampled: 05/14/97
Time Sampled: 10:27
Date Received: 05/15/97
Collected By: Client

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Analysis Date	Analyst
Percent Solids							
Percent Solid	83	%	SM2540B	0.10	05/16	05/16	SMP
Petroleum Range Organics							
TPH (C8-C40)	BDL	mg/kg	FLPRO	10	05/16	05/21	SP
Dilution Factor	1.0		FLPRO		05/16	05/21	SP

BDL = Below Detection Limits

* Compounds are Screened Only, with an estimated detection limit.

All analyses were performed using EPA, ASTM, USGS, or Standard Methods.

All analyses were performed within EPA holding times unless otherwise noted.

Analyses are reported in dry weight unless otherwise indicated by units.

QAP# 900376G	HRS# E86240,86356	NC CERT# 444
SUB HRS# 86122,86109,E86048	ADEM ID# 40850	ND CERT# R-148
SC CERT# 96031	TN CERT# 02985	CT CERT# PH-0122
ELPAT# 13801	CA CERT# I-1068	USACE CERT
VA CERT# 00395	AZ CERT# AZ0529	MA CERT# M-FL449

Respectfully submitted,


Project Manager

L19271-4

Client #: MOB-97-020803
Address: Bhate Environmental
1608 13th Ave South
Suite 300
Birmingham, AL 35205
Dewey Trapp

Page: Page 1 of 1
Date: 06/05/97
Log #: L19271-5

Sample Description:

NAVSTA Proj#9960058

Label: 1343-R(Rinsate)
Date Sampled: 05/14/97
Time Sampled: 11:37
Date Received: 05/15/97
Collected By: Client

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Analysis Date	Analyst
Petroleum Range Organics							
TPH(C8-C40)	BDL	mg/l	FLPRO	0.65	05/16	05/25	SP
Dilution Factor	1.0		FLPRO		05/16	05/25	SP

BDL = Below Detection Limits

* Compounds are Screened Only, with an estimated detection limit.

All analyses were performed using EPA, ASTM, USGS, or Standard Methods.

All analyses were performed within EPA holding times unless otherwise noted.

Analyses are reported in dry weight unless otherwise indicated by units.

QAP# 900376G

HRS# E86240,86356

NC CERT# 444

SUB HRS# 86122,86109,E86048

ADEM ID# 40850

ND CERT# R-148

SC CERT# 96031

TN CERT# 02985

CT CERT# PH-0122

ELPAT# 13801

CA CERT# I-1068

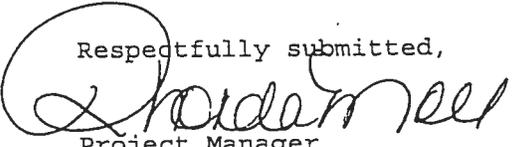
USACE CERT

VA CERT# 00395

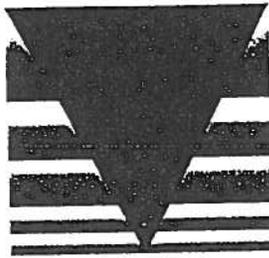
AZ CERT# AZ0529

MA CERT# M-FL449

Respectfully submitted,


Project Manager

L19271-5



Our Quality Control Is Your Quality Assurance

Client #: MOB-97-020803
Address: Bhate Environmental
1608 13th Avenue South
Suite 300
Birmingham, AL 35205
Emmett Beers

Page: Page 1 of 2
Date: 07/01/97
Log #: L20538-1

Sample Description:

NAV STA Mayport

Label: 1343 RA
Date Sampled: 06/13/97
Time Sampled: 13:45
Date Received: 06/14/97
Collected By: Client

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Analysis Date	Analyst
Metals							
Lead	BDL	mg/l	3010/6010A	0.0050	06/17	06/17	DM
Polynuclear Aromatic Hydrocarbons							
Naphthalene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
2-Methylnaphthalene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
1-Methylnaphthalene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Acenaphthylene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Acenaphthene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Fluorene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Phenanthrene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Anthracene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Fluoranthene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Pyrene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Benzo(a)anthracene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Chrysene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Benzo(b)fluoranthene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Benzo(k)fluoranthene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Benzo(a)pyrene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Dibenzo(a,h)Anthracene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Indeno(1,2,3-c,d)pyrene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Benzo(g,h,i)perylene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Dilution Factor	1.0		3510/8270		06/18	06/20	SW
Surrogate Recoveries:							
Nitrobenzene-d5	35.0	%	3510/8270	35-114	06/18	06/20	SW
2-Fluorobiphenyl	42.0	%	3510/8270	43-116	06/18	06/20	SW
Terphenyl-d14	72.0	%	3510/8270	33-141	06/18	06/20	SW
BTEX Compounds							
Benzene	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
Toluene	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME

Client #: MOB-97-020803
 Address: Bhate Environmental
 1608 13th Avenue South
 Suite 300
 Birmingham, AL 35205
 Emmett Beers

Page: Page 2 of 2
 Date: 07/01/97
 Log #: L20538-1

Sample Description:

NAV STA Mayport

Label: 1343 RA
 Date Sampled: 06/13/97
 Time Sampled: 13:45
 Date Received: 06/14/97
 Collected By: Client

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Analysis Date	Analyst
BTEX Compounds (continued)							
Ethylbenzene	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
Total Xylenes	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
Total BTEX	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
MTBE	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
Dilution Factor	1.0		5030/8020		06/26	06/26	ME
Surrogate Recoveries:							
a,a,a-Trifluorotoluene	100	%	5030/8020	50-150	06/26	06/26	ME

BDL = Below Detection Limits

* Compounds are Screened Only, with an estimated detection limit.

All analyses were performed using EPA, ASTM, USGS, or Standard Methods.

All analyses were performed within EPA holding times unless otherwise noted.

Analyses are reported in dry weight unless otherwise indicated by units.

QAP# 900376G	HRS# E86240,86356	NC CERT# 444
SUB HRS# 86122,86109,E86048	ADEM ID# 40850	ND CERT# R-148
SC CERT# 96031	TN CERT# 02985	CT CERT# PH-0122
ELPAT# 13801	CA CERT# I-1068	USACE CERT
VA CERT# 00395	AZ CERT# AZ0529	MA CERT# M-FL449

Respectfully submitted,

 Project Manager
 L20538-1

Client #: MOB-97-020803
 Address: Bhate Environmental
 1608 13th Avenue South
 Suite 300
 Birmingham, AL 35205
 Emmett Beers

Page: Page 1 of 2
 Date: 07/01/97
 Log #: L20538-2

Sample Description:

NAV STA Mayport

Label: 1343 MW1
 Date Sampled: 06/13/97
 Time Sampled: 14:00
 Date Received: 06/14/97
 Collected By: Client

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Analysis Date	Analyst
Metals							
Lead	0.054	mg/l	3010/6010A	0.0050	06/17	06/17	DM
Polynuclear Aromatic Hydrocarbons							
Naphthalene	4.3	ug/l	3510/8270	1.0	06/18	06/20	SW
2-Methylnaphthalene	5.8	ug/l	3510/8270	1.0	06/18	06/20	SW
1-Methylnaphthalene	6.6	ug/l	3510/8270	1.0	06/18	06/20	SW
Acenaphthylene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Acenaphthene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Fluorene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Phenanthrene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Anthracene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Fluoranthene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Pyrene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Benzo(a)anthracene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Chrysene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Benzo(b)fluoranthene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Benzo(k)fluoranthene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Benzo(a)pyrene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Dibenzo(a,h)Anthracene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Indeno(1,2,3-c,d)pyrene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Benzo(g,h,i)perylene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Dilution Factor	1.0		3510/8270		06/18	06/20	SW
Surrogate Recoveries:							
Nitrobenzene-d5	40.0	%	3510/8270	35-114	06/18	06/20	SW
2-Fluorobiphenyl	49.0	%	3510/8270	43-116	06/18	06/20	SW
Terphenyl-d14	76.0	%	3510/8270	33-141	06/18	06/20	SW
BTEX Compounds							
Benzene	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
Toluene	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME

Client #: MOB-97-020803
 Address: Bhate Environmental
 1608 13th Avenue South
 Suite 300
 Birmingham, AL 35205
 Emmett Beers

Page: Page 2 of 2
 Date: 07/01/97
 Log #: L20538-2

Sample Description:

NAV STA Mayport

Label: 1343 MW1
 Date Sampled: 06/13/97
 Time Sampled: 14:00
 Date Received: 06/14/97
 Collected By: Client

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Analysis Date	Analyst
BTEX Compounds (continued)							
Ethylbenzene	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
Total Xylenes	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
Total BTEX	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
MTBE	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
Dilution Factor	1.0		5030/8020		06/26	06/26	ME
Surrogate Recoveries:							
1,4-Difluorobenzene	n/a	%	5030/8020	49-136	06/26	06/26	ME
a,a,a-Trifluorotoluene	98.0	%	5030/8020	50-150	06/26	06/26	ME
Dibromofluoromethane	n/a	%	5030/8020	58-146	06/26	06/26	ME
Toluene-D8	n/a	%	5030/8020	76-119	06/26	06/26	ME
Bromochloromethane	n/a	%	5030/8020	-	06/26	06/26	ME
4-Bromofluorobenzene	n/a	%	5030/8020	76-130	06/26	06/26	ME

BDL = Below Detection Limits

* Compounds are Screened Only, with an estimated detection limit.

All analyses were performed using EPA, ASTM, USGS, or Standard Methods.

All analyses were performed within EPA holding times unless otherwise noted.

Analyses are reported in dry weight unless otherwise indicated by units.

QAP# 900376G	HRS# E86240,86356	NC CERT# 444
SUB HRS# 86122,86109,E86048	ADEM ID# 40850	ND CERT# R-148
SC CERT# 96031	TN CERT# 02985	CT CERT# PH-0122
ELPAT# 13801	CA CERT# I-1068	USACE CERT
VA CERT# 00395	AZ CERT# AZ0529	MA CERT# M-FL449

Respectfully submitted,



Project Manager

L20538-2

Client #: MOB-97-020803
 Address: Bhate Environmental
 1608 13th Avenue South
 Suite 300
 Birmingham, AL 35205
 Emmett Beers

Page: Page 1 of 1
 Date: 07/01/97
 Log #: L20538-3

Sample Description:

NAV STA Mayport

Label: 1343 MW2
 Date Sampled: 06/13/97
 Time Sampled: 14:30
 Date Received: 06/14/97
 Collected By: Client

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Analysis Date	Analyst
Metals							
Lead	0.012	mg/l	3010/6010A	0.0050	06/17	06/17	DM
BTEX Compounds							
Benzene	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
Toluene	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
Ethylbenzene	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
Total Xylenes	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
Total BTEX	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
MTBE	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
Dilution Factor	1.0		5030/8020		06/26	06/26	ME
Surrogate Recoveries:							
1,4-Difluorobenzene	n/a	%	5030/8020	49-136	06/26	06/26	ME
a,a,a-Trifluorotoluene	100	%	5030/8020	50-150	06/26	06/26	ME
Dibromofluoromethane	n/a	%	5030/8020	58-146	06/26	06/26	ME
Toluene-D8	n/a	%	5030/8020	76-119	06/26	06/26	ME
Bromochloromethane	n/a	%	5030/8020	-	06/26	06/26	ME
4-Bromofluorobenzene	n/a	%	5030/8020	76-130	06/26	06/26	ME

BDL = Below Detection Limits

* Compounds are Screened Only, with an estimated detection limit.

All analyses were performed using EPA, ASTM, USGS, or Standard Methods.

All analyses were performed within EPA holding times unless otherwise noted.

Analyses are reported in dry weight unless otherwise indicated by units.

QAP# 900376G HRS# EB6240,86356 NC CERT# 444
 SUB HRS# 86122,86109,E86048 ADEM ID# 40850 ND CERT# R-148
 SC CERT# 96031 TN CERT# 02985 CT CERT# PH-0122
 ELPAT# 13801 CA CERT# I-1068 USACE CERT
 VA CERT# 00395 AZ CERT# AZ0529 MA CERT# M-FL449

Respectfully submitted,

 Project Manager
 L20538-3

Client #: MOB-97-020803
 Address: Bhate Environmental
 1608 13th Avenue South
 Suite 300
 Birmingham, AL 35205
 Emmett Beers

Page: Page 1 of 2
 Date: 07/01/97
 Log #: L20538-4

Sample Description:

NAV STA Mayport

Label: 1343 MW3
 Date Sampled: 06/13/97
 Time Sampled: 15:10
 Date Received: 06/14/97
 Collected By: Client

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Analysis Date	Analyst
Metals							
Lead	0.0069	mg/l	3010/6010A	0.0050	06/17	06/17	DM
Polynuclear Aromatic Hydrocarbons							
Naphthalene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
2-Methylnaphthalene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
1-Methylnaphthalene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Acenaphthylene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Acenaphthene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Fluorene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Phenanthrene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Anthracene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Fluoranthene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Pyrene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Benzo (a) anthracene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Chrysene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Benzo (b) fluoranthene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Benzo (k) fluoranthene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Benzo (a) pyrene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Dibenzo (a, h) Anthracene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Indeno (1, 2, 3- c, d) pyrene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Benzo (g, h, i) perylene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Dilution Factor	1.0		3510/8270		06/18	06/20	SW
Surrogate Recoveries:							
Nitrobenzene-d5	61.0	%	3510/8270	35-114	06/18	06/20	SW
2-Fluorobiphenyl	34.0	%	3510/8270	43-116	06/18	06/20	SW
Terphenyl-d14	52.0	%	3510/8270	33-141	06/18	06/20	SW
BTEX Compounds							
Benzene	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
Toluene	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME

Client #: MOB-97-020803
 Address: Bhate Environmental
 1608 13th Avenue South
 Suite 300
 Birmingham, AL 35205
 Emmett Beers

Page: Page 2 of 2
 Date: 07/01/97
 Log #: L20538-4

Sample Description:

NAV STA Mayport

Label: 1343 MW3
 Date Sampled: 06/13/97
 Time Sampled: 15:10
 Date Received: 06/14/97
 Collected By: Client

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Analysis Date	Analyst
BTEX Compounds (continued)							
Ethylbenzene	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
Total Xylenes	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
Total BTEX	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
MTBE	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
Dilution Factor	1.0		5030/8020		06/26	06/26	ME
Surrogate Recoveries:							
1,4-Difluorobenzene	n/a	%	5030/8020	49-136	06/26	06/26	ME
a,a,a-Trifluorotoluene	98.0	%	5030/8020	50-150	06/26	06/26	ME
Dibromofluoromethane	n/a	%	5030/8020	58-146	06/26	06/26	ME
Toluene-D8	n/a	%	5030/8020	76-119	06/26	06/26	ME
Bromochloromethane	n/a	%	5030/8020	-	06/26	06/26	ME
4-Bromofluorobenzene	n/a	%	5030/8020	76-130	06/26	06/26	ME

BDL = Below Detection Limits

* Compounds are Screened Only, with an estimated detection limit.

All analyses were performed using EPA, ASTM, USGS, or Standard Methods.

All analyses were performed within EPA holding times unless otherwise noted.

Analyses are reported in dry weight unless otherwise indicated by units.

QAP# 900376G	HRS# E86240,86356	NC CERT# 444
SUB HRS# 86122,86109,E86048	ADEM ID# 40850	ND CERT# R-148
SC CERT# 96031	TN CERT# 02985	CT CERT# PH-0122
ELPAT# 13801	CA CERT# I-1068	USACE CERT
VA CERT# 00395	AZ CERT# AZ0529	MA CERT# M-FL449

Respectfully submitted,



Project Manager

L20538-4

Client #: MOB-97-020803
 Address: Bhate Environmental
 1608 13th Avenue South
 Suite 300
 Birmingham, AL 35205
 Emmett Beers

Page: Page 1 of 2
 Date: 07/01/97
 Log #: L20538-5

Sample Description:

NAV STA Mayport

Label: 1343 MW3A
 Date Sampled: 06/13/97
 Time Sampled: 15:10
 Date Received: 06/14/97
 Collected By: Client

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Analysis Date	Analyst
Metals							
Lead	0.0067	mg/l	3010/6010A	0.0050	06/17	06/17	DM
Polynuclear Aromatic Hydrocarbons							
Naphthalene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
2-Methylnaphthalene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
1-Methylnaphthalene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Acenaphthylene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Acenaphthene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Fluorene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Phenanthrene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Anthracene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Fluoranthene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Pyrene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Benzo (a) anthracene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Chrysene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Benzo (b) fluoranthene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Benzo (k) fluoranthene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Benzo (a) pyrene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Dibenzo (a, h) Anthracene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Indeno (1, 2, 3-c, d) pyrene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Benzo (g, h, i) perylene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Dilution Factor	1.0		3510/8270		06/18	06/20	SW
Surrogate Recoveries:							
Nitrobenzene-d5	57.0	%	3510/8270	35-114	06/18	06/20	SW
2-Fluorobiphenyl	32.0	%	3510/8270	43-116	06/18	06/20	SW
Terphenyl-d14	47.0	%	3510/8270	33-141	06/18	06/20	SW
BTEX Compounds							
Benzene	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
Toluene	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME

Client #: MOB-97-020803
Address: Bhate Environmental
1608 13th Avenue South
Suite 300
Birmingham, AL 35205
Emmett Beers

Page: Page 2 of 2
Date: 07/01/97
Log #: L20538-5

Sample Description:

NAV STA Mayport

Label: 1343 MW3A
Date Sampled: 06/13/97
Time Sampled: 15:10
Date Received: 06/14/97
Collected By: Client

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Analysis Date	Analyst
BTEX Compounds (continued)							
Ethylbenzene	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
Total Xylenes	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
Total BTEX	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
MTBE	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
Dilution Factor	1.0		5030/8020		06/26	06/26	ME
Surrogate Recoveries:							
1,4-Difluorobenzene	n/a	%	5030/8020	49-136	06/26	06/26	ME
a,a,a-Trifluorotoluene	98.0	%	5030/8020	50-150	06/26	06/26	ME
Dibromofluoromethane	n/a	%	5030/8020	58-146	06/26	06/26	ME
Toluene-D8	n/a	%	5030/8020	76-119	06/26	06/26	ME
Bromochloromethane	n/a	%	5030/8020	-	06/26	06/26	ME
4-Bromofluorobenzene	n/a	%	5030/8020	76-130	06/26	06/26	ME

BDL = Below Detection Limits

* Compounds are Screened Only, with an estimated detection limit.

All analyses were performed using EPA, ASTM, USGS, or Standard Methods.

All analyses were performed within EPA holding times unless otherwise noted.

Analyses are reported in dry weight unless otherwise indicated by units.

QAP# 900376G HRS# E86240,86356 NC CERT# 444
SUB HRS# 86122,86109,E86048 ADEM ID# 40850 ND CERT# R-148
SC CERT# 96031 TN CERT# 02985 CT CERT# PH-0122
ELPAT# 13801 CA CERT# I-1068 USACE CERT
VA CERT# 00395 AZ CERT# AZ0529 MA CERT# M-FL449

Respectfully submitted,



Project Manager

L20538-5

Client #: MOB-97-020803
 Address: Bhate Environmental
 1608 13th Avenue South
 Suite 300
 Birmingham, AL 35205
 Emmett Beers

Page: Page 1 of 1
 Date: 07/01/97
 Log #: L20538-6

Sample Description:

NAV STA Mayport

Label: Trip Blank
 Date Sampled: 06/13/97
 Time Sampled: 00:00
 Date Received: 06/14/97
 Collected By: Client

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Analysis Date	Analyst
BTEX Compounds							
Benzene	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
Toluene	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
Ethylbenzene	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
Total Xylenes	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
Total BTEX	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
MTBE	BDL	ug/l	5030/8020	1.0	06/26	06/26	ME
Dilution Factor	1.0		5030/8020		06/26	06/26	ME
Surrogate Recoveries:							
1,4-Difluorobenzene	n/a	%	5030/8020	49-136	06/26	06/26	ME
a,a,a-Trifluorotoluene	96.0	%	5030/8020	50-150	06/26	06/26	ME
Dibromofluoromethane	n/a	%	5030/8020	58-146	06/26	06/26	ME
Toluene-D8	n/a	%	5030/8020	76-119	06/26	06/26	ME
Bromochloromethane	n/a	%	5030/8020	-	06/26	06/26	ME
4-Bromofluorobenzene	n/a	%	5030/8020	76-130	06/26	06/26	ME

BDL = Below Detection Limits

* Compounds are Screened Only, with an estimated detection limit.

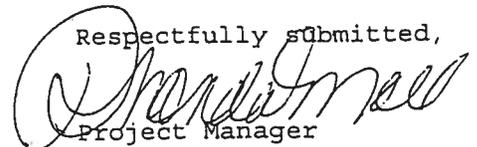
All analyses were performed using EPA, ASTM, USGS, or Standard Methods.

All analyses were performed within EPA holding times unless otherwise noted.

Analyses are reported in dry weight unless otherwise indicated by units.

QAP# 900376G	HRS# E86240,86356	NC CERT# 444
SUB HRS# 86122,86109,E86048	ADEM ID# 40850	ND CERT# R-148
SC CERT# 96031	TN CERT# 02985	CT CERT# PH-0122
ELPAT# 13801	CA CERT# I-1068	USACE CERT
VA CERT# 00395	AZ CERT# AZ0529	MA CERT# M-FL449

Respectfully submitted,



Project Manager

L20538-6

Client #: MOB-97-020803
 Address: Bhate Environmental
 1608 13th Avenue South
 Suite 300
 Birmingham, AL 35205
 Emmett Beers

Page: Page 1 of 2
 Date: 07/01/97
 Log #: L20538-7

Sample Description:

NAV STA Mayport

Label: 1343 MW2
 Date Sampled: 06/16/97
 Time Sampled: 14:00
 Date Received: 06/17/97
 Collected By: Client

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Analysis Date	Analyst
Polynuclear Aromatic Hydrocarbons							
Naphthalene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
2-Methylnaphthalene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
1-Methylnaphthalene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Acenaphthylene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Acenaphthene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Fluorene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Phenanthrene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Anthracene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Fluoranthene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Pyrene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Benzo(a)anthracene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Chrysene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Benzo(b)fluoranthene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Benzo(k)fluoranthene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Benzo(a)pyrene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Dibenzo(a,h)Anthracene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Indeno(1,2,3-c,d)pyrene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Benzo(g,h,i)perylene	BDL	ug/l	3510/8270	1.0	06/18	06/20	SW
Dilution Factor	1.0		3510/8270		06/18	06/20	SW
Surrogate Recoveries:							
Nitrobenzene-d5	63.0	%	3510/8270	35-114	06/18	06/20	SW
2-Fluorobiphenyl	69.0	%	3510/8270	43-116	06/18	06/20	SW
Terphenyl-d14	104	%	3510/8270	33-141	06/18	06/20	SW

Client #: MOB-97-020803
Address: Bhate Environmental
1608 13th Avenue South
Suite 300
Birmingham, AL 35205
Emmett Beers

Page: Page 2 of 2
Date: 07/01/97
Log #: L20538-7

Sample Description:

NAV STA Mayport

Label: 1343 MW2
Date Sampled: 06/16/97
Time Sampled: 14:00
Date Received: 06/17/97
Collected By: Client

Parameter	Results	Units	Method	Reportable Limit	Extr. Date	Analysis Date	Analyst
-----------	---------	-------	--------	------------------	------------	---------------	---------

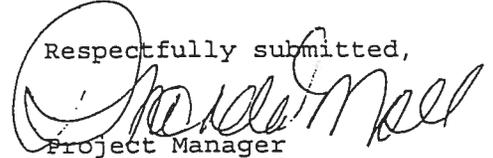
Polynuclear Aromatic Hydrocarbons (continued)

BDL = Below Detection Limits

* Compounds are Screened Only, with an estimated detection limit.
All analyses were performed using EPA, ASTM, USGS, or Standard Methods.
All analyses were performed within EPA holding times unless otherwise noted.
Analyses are reported in dry weight unless otherwise indicated by units.

QAP# 900376G	HRS# E86240,86356	NC CERT# 444
SUB HRS# 86122,86109,E86048	ADEM ID# 40850	ND CERT# R-148
SC CERT# 96031	TN CERT# 02985	CT CERT# PH-0122
ELPAT# 13801	CA CERT# I-1068	USACE CERT
VA CERT# 00395	AZ CERT# AZ0529	MA CERT# M-FL449

Respectfully submitted,



Project Manager

L20538-7

HYDROCON - 1.2
HYDRAULIC CONDUCTIVITY
Bouwer and Rice Method

Well: MW-3

PROJECT NAME: NAVSTA Mayport - UST 245
PROJECT NUMBER: 9970058
FIELD WORK DATE(S): 06-14-1997

USER NAME: cvc
DATE: 07-24-1997

Rw - BORING RADIUS (IN): 4.88
L - SCREEN LENGTH (FT): 9.5
HT - SCREEN BASE TO WATER TABLE (FT): 8.44
START TIME (H,M,S): 0,0,0

Rc - WELL RADIUS (IN): 1
D - AQUIFER THICKNESS (FT)
STATIC WATER LEVEL (FT):

Rc was corrected for response in well screen filter material to 2.801 i

TIME (H,M,S)	DEPTH (FT)	TIME (H,M,S)	DEPTH (FT)
0,0,0	5.6004	0,0,18	3.8292
0,0,.5	5.3544	0,0,20	3.8292
0,0,1	5.0592	0,0,22	3.8292
0,0,1.5	4.8296	0,0,24	3.8292
0,0,2	4.6328	0,0,24.5	3.8292
0,0,2.5	4.4852	0,0,25	3.8128
0,0,3	4.354	0,0,28	3.8128
0,0,3.5	4.272	0,0,30	3.8128
0,0,4	4.2228		
0,0,4.5	4.1572		
0,0,5	4.0916		
0,0,5.5	4.0588		
0,0,6	4.026		
0,0,6.5	4.0096		
0,0,7	3.9604		
0,0,7.5	3.9504		
0,0,8	3.944		
0,0,8.5	3.9276		
0,0,9	3.9112		
0,0,9.5	3.8948		
0,0,10	3.8948		
0,0,10.5	3.8948		
0,0,11	3.8948		
0,0,12	3.8784		
0,0,12.5	3.862		
0,0,13	3.862		
0,0,14	3.862		
0,0,15	3.862		
0,0,15.5	3.8292		
0,0,16	3.8292		

FT : Ln(Yt-Yo) cvc 9970058 NAVSTA Mayport - UST 245

10.00

5.00

1.00

0.50

0.10

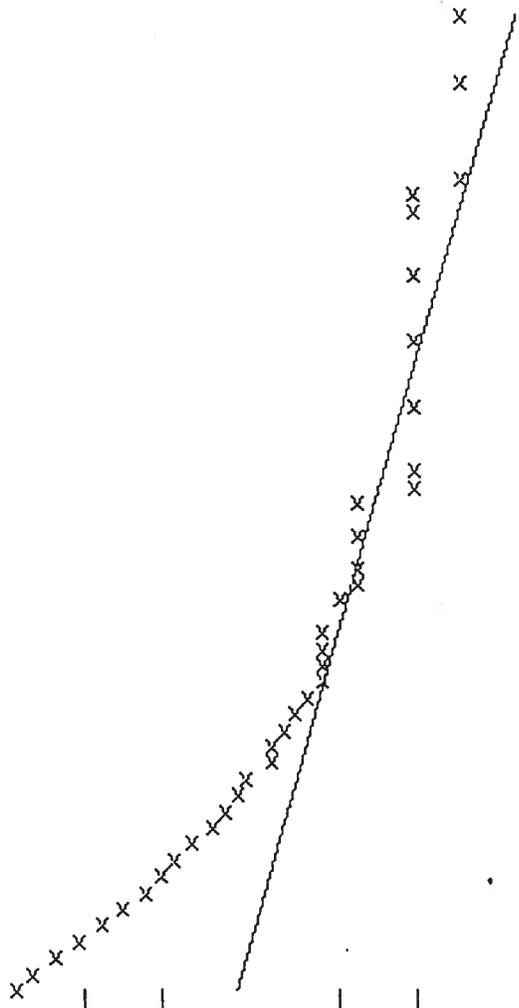
0.05

0.01

Well: MW-3

07-24-1997

Slope
0.0841364
CONDUCTIVITY
1.42E-02
cm/sec



10 secs/unit

HYDROCON - 1.2
 HYDRAULIC CONDUCTIVITY
 Bouwer and Rice Method

Well: MW-2

PROJECT NAME: NAVSTA Mayport - Fuel Farm MW-2 USER NAME: cvc
 PROJECT NUMBER: 9970058 DATE: 07-28-1997
 FIELD WORK DATE(S):

Rw - BORING RADIUS (IN): 5.2 Rc - WELL RADIUS (IN): 1
 L - SCREEN LENGTH (FT): 9.5 D - AQUIFER THICKNESS (FT)
 HT - SCREEN BASE TO WATER TABLE (FT): 4.07 STATIC WATER LEVEL (FT):
 START TIME (H,M,S): 0,0,0

Rc was corrected for response in well screen filter material to 2.969 i

TIME (H,M,S)	DEPTH (FT)	TIME (H,M,S)	DEPTH (FT)
0,0,0	14.2232	0,0,16.5	12.5012
0,0,.5	14.0264	0,0,17	12.4848
0,0,1	13.8624	0,0,18	12.4848
0,0,1.5	13.7476	0,0,20	12.4684
0,0,2	13.6328	0,0,22	12.4684
0,0,2.5	13.5016	0,0,24	12.4684
0,0,3	13.6492	0,0,24.5	12.4684
0,0,3.5	13.5672	0,0,25	12.4356
0,0,4	13.4196	0,0,26	12.4356
0,0,4.5	13.4032	0,0,28	12.4356
0,0,5	13.108	0,0,30	12.4356
0,0,5.5	12.9604	0,0,31	12.4356
0,0,6	12.944	0,0,31.5	12.4356
0,0,6.5	12.9112	0,0,32	12.4192
0,0,7	12.8128	0,0,33	12.4192
0,0,7.5	12.78	0,0,34	12.4356
0,0,8	12.7308	0,0,36	12.4192
0,0,8.5	12.698	0,0,37	12.4192
0,0,9	12.698	0,0,37.5	12.4028
0,0,9.5	12.6652	0,0,38	12.4028
0,0,10	12.6324	0,0,58	12.4028
0,0,11	12.5996	0,1,17.5	12.3864
0,0,11.5	12.5832	0,1,18	12.3864
0,0,12	12.5832	0,1,28	12.3864
0,0,12.5	12.5832	0,1,38	12.37
0,0,13	12.5504		
0,0,14	12.534		
0,0,14.5	12.5176		
0,0,15	12.5176		
0,0,16	12.5176		

$$(1/t) (\ln(Y_o/Y_t)) = 0.0566723$$

PARTIALLY PENETRATING: A= 2.26 B= 0.36

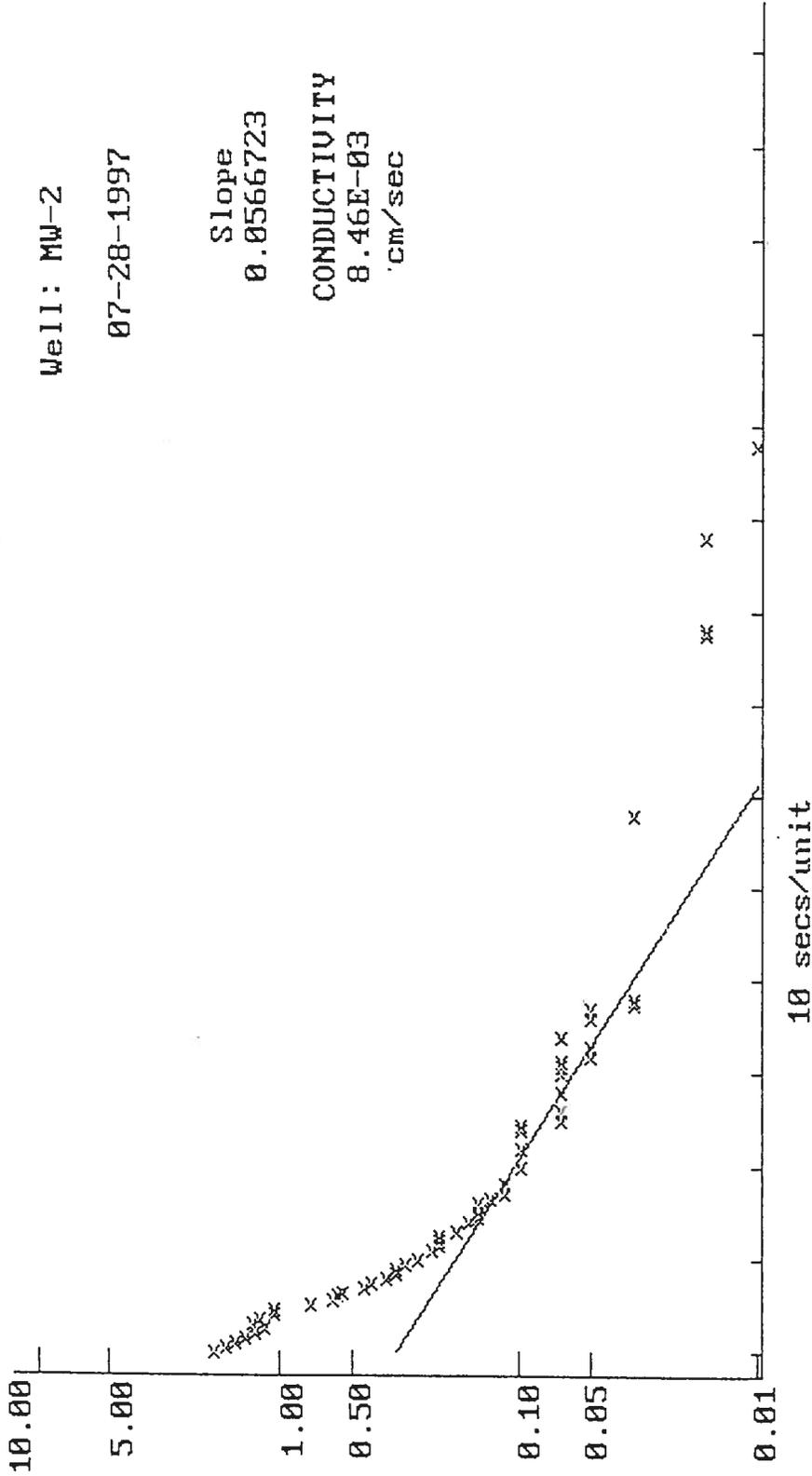
HYDRAULIC CONDUCTIVITY: 2.78E-04 ft/sec
8.46E-03 cm/sec

FT : Ln(Yt-Yo) cvc 9970058 NAVSTA Mayport - Fuel Farm MW-2

Well: MW-2

07-28-1997

Slope
0.0566723
CONDUCTIVITY
8.46E-03
'cm/sec



HYDROCON - 1.2
 HYDRAULIC CONDUCTIVITY
 Bouwer and Rice Method

Well: MW-5

PROJECT NAME: NAVSTA Mayport - Fuel Farm MW-5 USER NAME: cvc
 PROJECT NUMBER: 9970058 DATE: 07-28-1997
 FIELD WORK DATE(S):

Rw - BORING RADIUS (IN): 5.07 Rc - WELL RADIUS (IN): 1
 L - SCREEN LENGTH (FT): 9.5 D - AQUIFER THICKNESS (FT)
 HT - SCREEN BASE TO WATER TABLE (FT): 4.14 STATIC WATER LEVEL (FT):
 START TIME (H,M,S): 0,0,0

Rc was corrected for response in well screen filter material to 2.900 i

TIME (H,M,S)	DEPTH (FT)	TIME (H,M,S)	DEPTH (FT)
0,0,0	11.8232	0,0,22	10.0356
0,0,.5	11.6264	0,0,23	10.0192
0,0,1	11.4296	0,0,25	10.0192
0,0,1.5	11.282	0,0,26	10.0028
0,0,2	11.118	0,0,28	10.0028
0,0,2.5	10.9868	0,0,30	10.0028
0,0,3	10.872	0,0,32	10.0028
0,0,3.5	10.7736	0,0,34	10.0028
0,0,4	10.6752	0,0,36	10.0028
0,0,4.5	10.6096	0,0,38	9.9864
0,0,5	10.5276	0,0,40	9.9864
0,0,5.5	10.462	0,0,41	9.9864
0,0,6	10.4456	0,0,43	9.9864
0,0,6.5	10.38	0,0,44	9.9864
0,0,7	10.3308	0,0,44.5	9.97
0,0,7.5	10.298		
0,0,8	10.2652		
0,0,8.5	10.2324		
0,0,9	10.1996		
0,0,10	10.1832		
0,0,10.5	10.1504		
0,0,11.5	10.134		
0,0,12	10.1176		
0,0,13	10.0848		
0,0,14	10.0848		
0,0,15	10.0848		
0,0,16	10.0684		
0,0,17	10.0684		
0,0,18	10.0356		
0,0,20	10.0356		

HYDROCON - 1.2
HYDRAULIC CONDUCTIVITY
Bouwer and Rice Method

Well: MW-3

PROJECT NAME: NAVSTA Mayport - UST 350
PROJECT NUMBER: 9970058
FIELD WORK DATE(S): 06-14-1997

USER NAME: cvc
DATE: 07-24-1997

Rw - BORING RADIUS (IN): 3.72
L - SCREEN LENGTH (FT): 9.5
HT - SCREEN BASE TO WATER TABLE (FT): 8.7
START TIME (H,M,S): 0,0,0

Rc - WELL RADIUS (IN): 1
D - AQUIFER THICKNESS (FT)
STATIC WATER LEVEL (FT):

Rc was corrected for response in well screen filter material to 2.203 i

TIME (H,M,S)	DEPTH (FT)	TIME (H,M,S)	DEPTH (FT)
0,0,0	6.4472	0,0,16	5.0696
0,0,.5	6.2012	0,0,18	5.0696
0,0,1	6.316	0,0,20	5.0696
0,0,1.5	6.1192	0,0,22	5.0696
0,0,2	6.0372	0,0,24	5.0532
0,0,2.5	5.9388	0,0,26	5.0696
0,0,3	5.824	0,0,28	5.0532
0,0,3.5	5.824	0,0,30	5.0696
0,0,4	5.7748		
0,0,4.5	5.7748		
0,0,5	5.742		
0,0,5.5	5.7092		
0,0,6	5.4796		
0,0,6.5	5.25		
0,0,7	5.1844		
0,0,7.5	5.168		
0,0,8	5.1516		
0,0,8.5	5.1516		
0,0,9	5.1352		
0,0,9.5	5.1352		
0,0,10	5.1352		
0,0,10.5	5.1352		
0,0,11	5.1188		
0,0,11.5	5.1188		
0,0,12	5.1024		
0,0,13	5.1024		
0,0,14	5.1024		
0,0,14.5	5.086		
0,0,15	5.086		
0,0,15.5	5.0696		

$$(1/t) (\ln(Y_0/Y_t)) = 0.1011776$$

PARTIALLY PENETRATING: A= 2.27 B= 0.36

HYDRAULIC CONDUCTIVITY: 4.82E-04 ft/sec
1.47E-02 cm/sec

NAUSTIA Mayport - Fuel Farm MW-5
Well: MW-5
07-28-1997

9970058

CVC

FT : Ln(Yt-Yo)

10.00

5.00

1.00

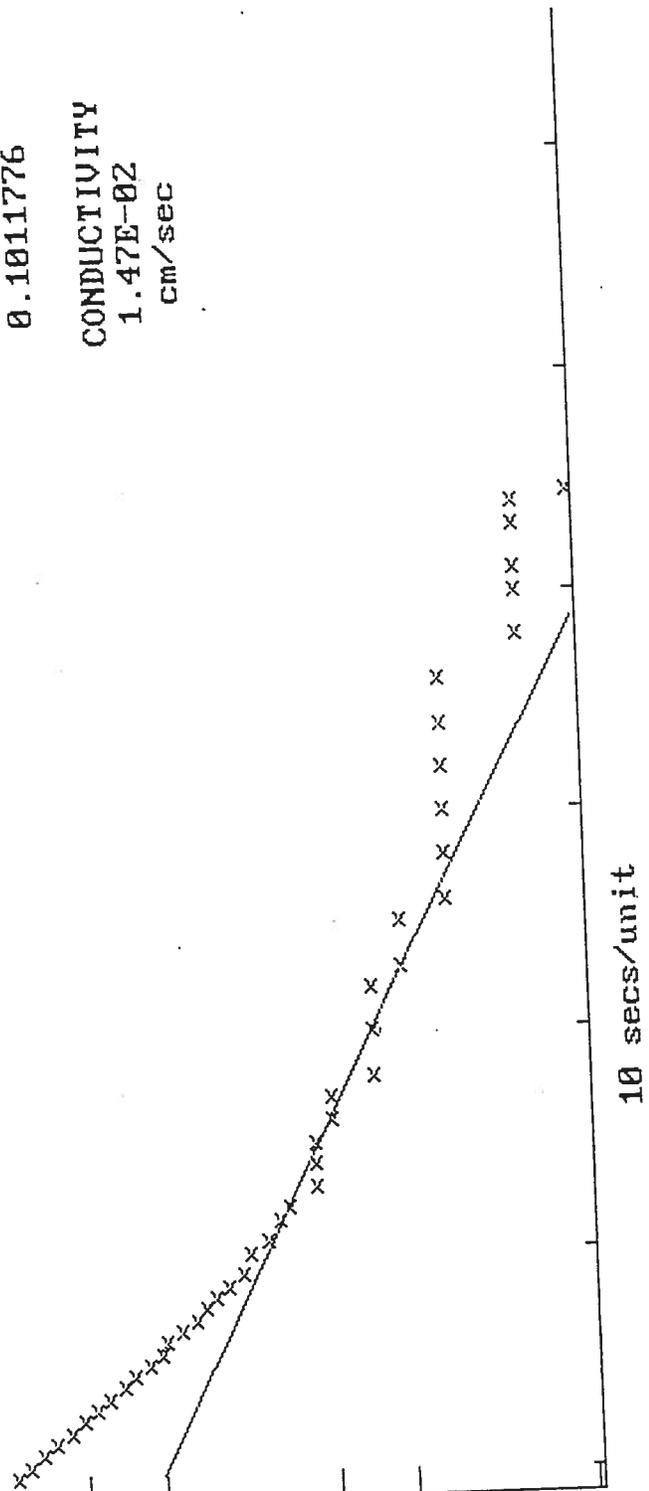
0.50

0.10

0.05

0.01

Slope
0.1011776
CONDUCTIVITY
1.47E-02
cm/sec



10 secs/unit

HYDROCON - 1.2
HYDRAULIC CONDUCTIVITY
Bouwer and Rice Method

Well: MW-3

PROJECT NAME: NAVSTA Mayport - UST 350
PROJECT NUMBER: 9970058
FIELD WORK DATE(S): 06-14-1997

USER NAME: cvc
DATE: 07-24-1997

Rw - BORING RADIUS (IN): 3.72
L - SCREEN LENGTH (FT): 9.5
HT - SCREEN BASE TO WATER TABLE (FT): 8.7
START TIME (H,M,S): 0,0,0

Rc - WELL RADIUS (IN): 1
D - AQUIFER THICKNESS (FT)
STATIC WATER LEVEL (FT):

Rc was corrected for response in well screen filter material to 2.203 i

TIME (H,M,S)	DEPTH (FT)	TIME (H,M,S)	DEPTH (FT)
0,0,0	6.4472	0,0,16	5.0696
0,0,.5	6.2012	0,0,18	5.0696
0,0,1	6.316	0,0,20	5.0696
0,0,1.5	6.1192	0,0,22	5.0696
0,0,2	6.0372	0,0,24	5.0532
0,0,2.5	5.9388	0,0,26	5.0696
0,0,3	5.824	0,0,28	5.0532
0,0,3.5	5.824	0,0,30	5.0696
0,0,4	5.7748		
0,0,4.5	5.7748		
0,0,5	5.742		
0,0,5.5	5.7092		
0,0,6	5.4796		
0,0,6.5	5.25		
0,0,7	5.1844		
0,0,7.5	5.168		
0,0,8	5.1516		
0,0,8.5	5.1516		
0,0,9	5.1352		
0,0,9.5	5.1352		
0,0,10	5.1352		
0,0,10.5	5.1352		
0,0,11	5.1188		
0,0,11.5	5.1188		
0,0,12	5.1024		
0,0,13	5.1024		
0,0,14	5.1024		
0,0,14.5	5.086		
0,0,15	5.086		
0,0,15.5	5.0696		

$$(1/t) (\ln(Y_0/Y_t)) = 0.0841364$$

PARTIALLY PENETRATING: A= 2.30 B= 0.36

HYDRAULIC CONDUCTIVITY: 4.65E-04 ft/sec
1.42E-02 cm/sec

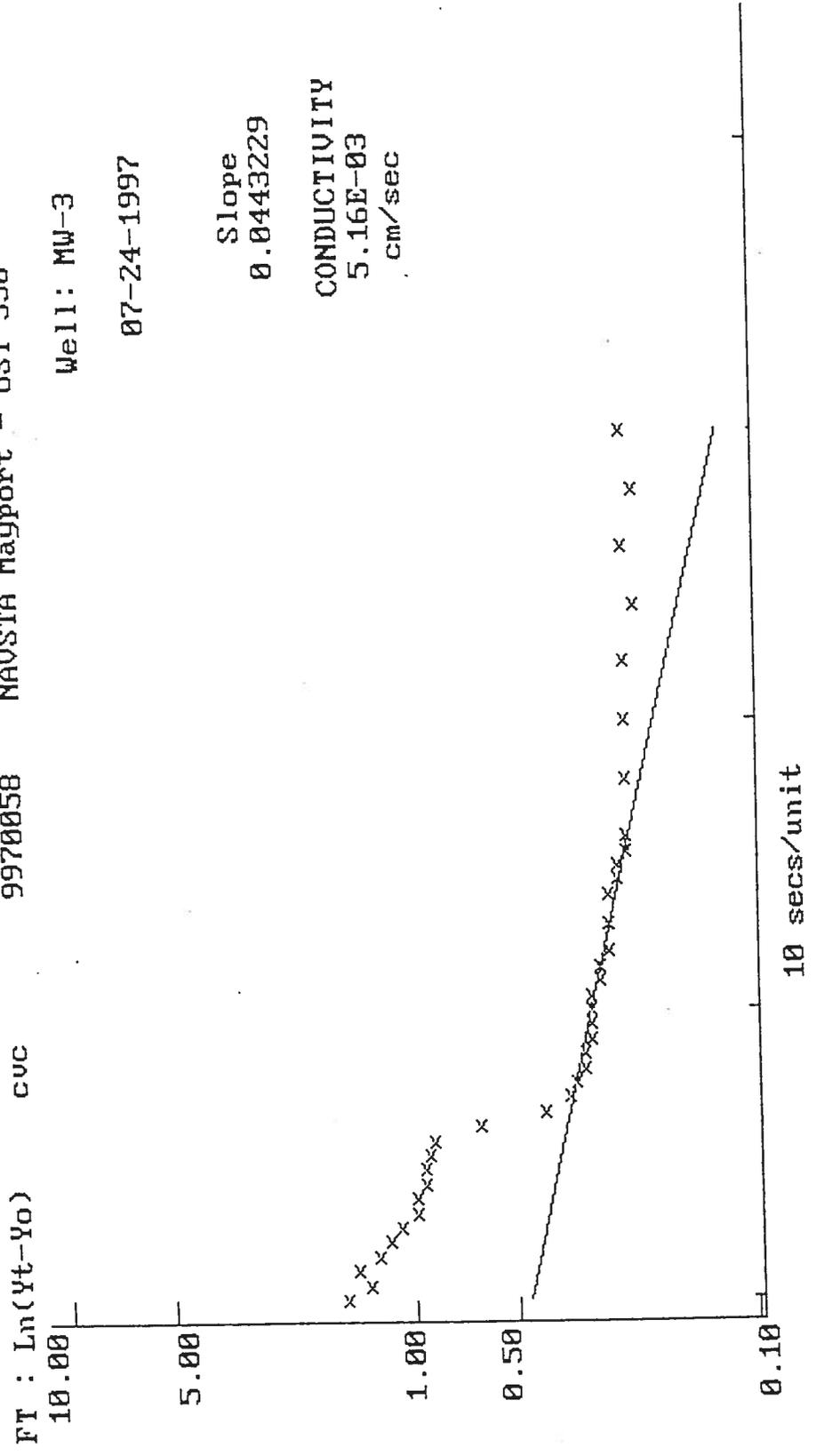
FT : Ln(Yt-Yo) cvc 9970058 NAVSTA Mayport - UST 350

Well: MW-3

07-24-1997

Slope
0.0443229

CONDUCTIVITY
5.16E-03
cm/sec



HYDROCON - 1.2
HYDRAULIC CONDUCTIVITY
Bouwer and Rice Method

Well: MW-3

PROJECT NAME: NAVSTA Mayport - UST 353
PROJECT NUMBER: 3970058
FIELD WORK DATE(S): 06-17-1997

USER NAME: cvc
DATE: 07-24-1997

Rw - BORING RADIUS (IN): 5.94
L - SCREEN LENGTH (FT): 9.5
HT - SCREEN BASE TO WATER TABLE (FT): 8.96
START TIME (H,M,S): 0,0,0

Rc - WELL RADIUS (IN): 1
D - AQUIFER THICKNESS (FT)
STATIC WATER LEVEL (FT):

Rc was corrected for response in well screen filter material to 3.359 i

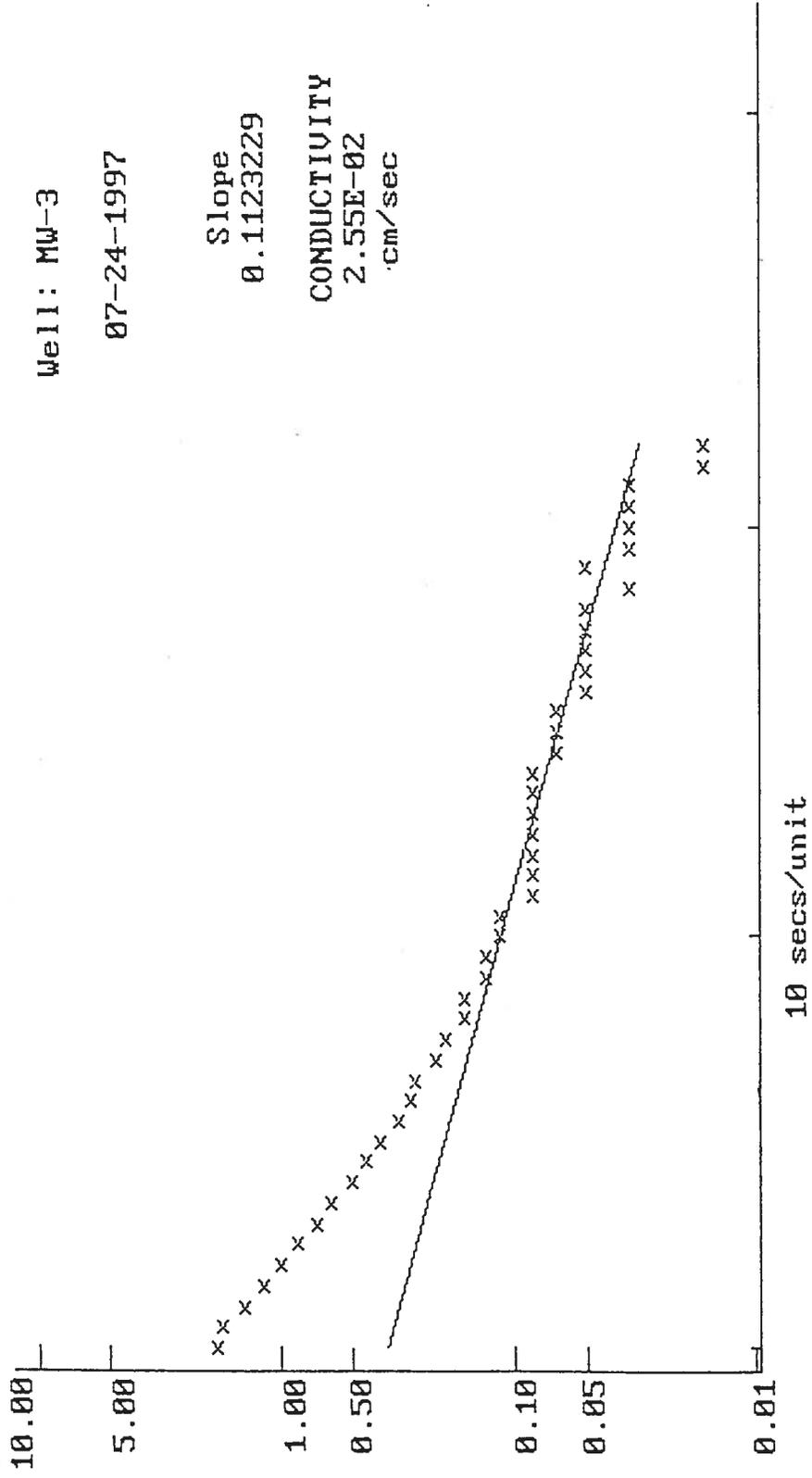
TIME (H,M,S)	DEPTH (FT)	TIME (H,M,S)	DEPTH (FT)
0,0,0	4.6404	0,0,15	2.8856
0,0,.5	4.542	0,0,15.5	2.8856
0,0,1	4.2304	0,0,16	2.8692
0,0,1.5	4.0008	0,0,16.5	2.8692
0,0,2	3.804	0,0,17	2.8692
0,0,2.5	3.6564	0,0,17.5	2.8692
0,0,3	3.5252	0,0,18	2.8692
0,0,3.5	3.4268	0,0,18.5	2.8528
0,0,4	3.312	0,0,19	2.8692
0,0,4.5	3.2464	0,0,19.5	2.8528
0,0,5	3.1972	0,0,20	2.8528
0,0,5.5	3.1316	0,0,20.5	2.8528
0,0,6	3.0988	0,0,21	2.8528
0,0,6.5	3.0824	0,0,21.5	2.8364
0,0,7	3.0332	0,0,22	2.8364
0,0,7.5	3.0168		
0,0,8	2.984		
0,0,8.5	2.984		
0,0,9	2.9512		
0,0,9.5	2.9512		
0,0,10	2.9348		
0,0,10.5	2.9348		
0,0,11	2.902		
0,0,11.5	2.902		
0,0,12	2.902		
0,0,12.5	2.902		
0,0,13	2.902		
0,0,13.5	2.902		
0,0,14	2.902		
0,0,14.5	2.8856		

FT : Ln(Yt-Yo) cvc 3970058 NAVSTA Mayport - UST 353

Well: MW-3

07-24-1997

Slope
0.1123229
CONDUCTIVITY
2.55E-02
cm/sec



$$(1/t) (\ln(Y_0/Y_t)) = 0.0114121$$

PARTIALLY PENETRATING: A= 2.28 B= 0.36

HYDRAULIC CONDUCTIVITY: 6.78E-05 ft/sec
2.07E-03 cm/sec

HYDROCON - 1.2
 HYDRAULIC CONDUCTIVITY
 Bouwer and Rice Method

Well: MW-3

PROJECT NAME: NAVSTA Mayport - UST 365
 PROJECT NUMBER: 9970058
 FIELD WORK DATE(S): 06-14-1997

USER NAME: cvc
 DATE: 07-28-1997

Rw - BORING RADIUS (IN): 5.02
 L - SCREEN LENGTH (FT): 9.5
 HT - SCREEN BASE TO WATER TABLE (FT): 9.63
 START TIME (H,M,S): 0,0,0

Rc - WELL RADIUS (IN): 1
 D - AQUIFER THICKNESS (FT)
 STATIC WATER LEVEL (FT):

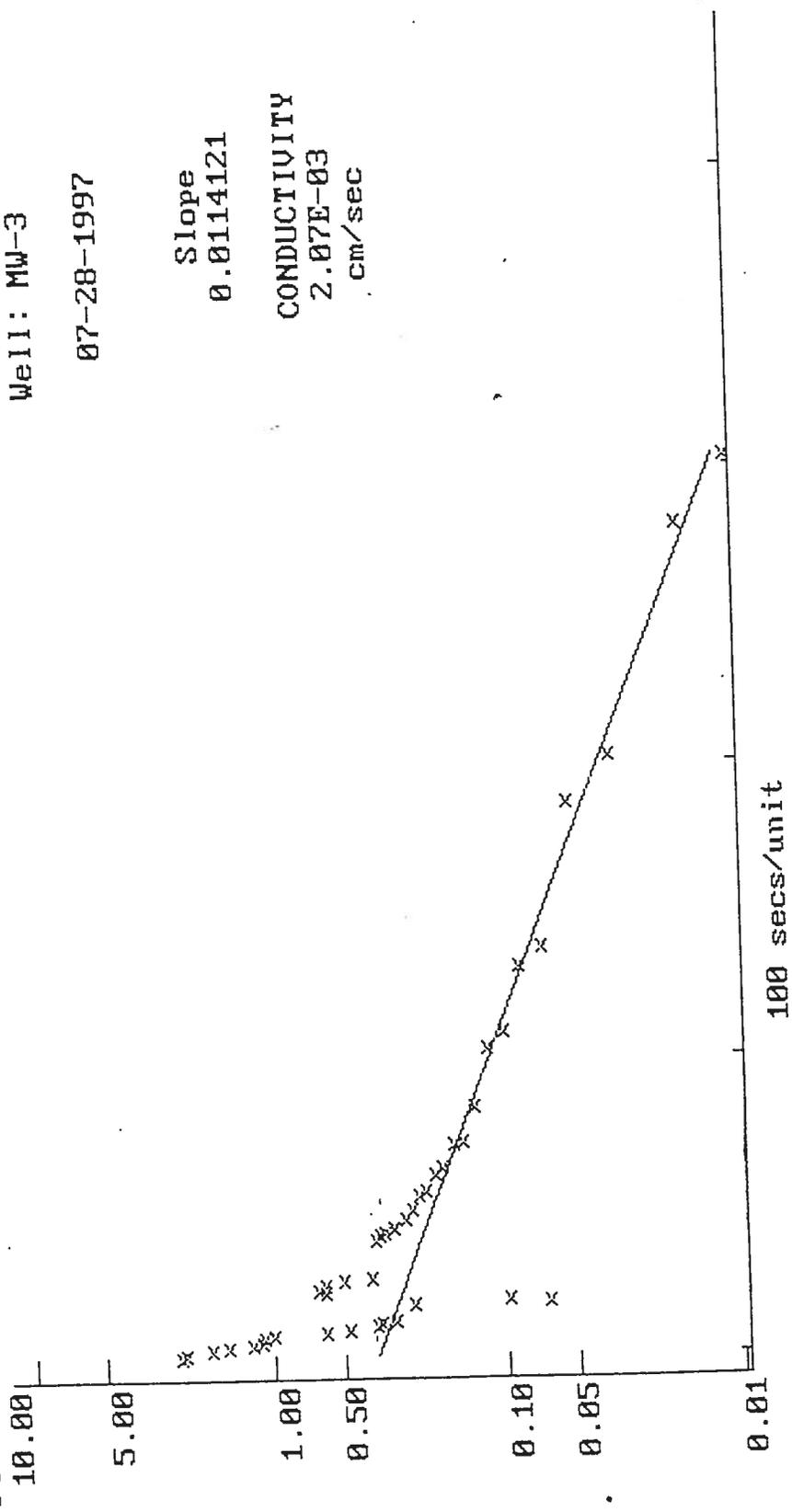
Rc was corrected for response in well screen filter material to 2.874 i

TIME (H,M,S)	DEPTH (FT)	TIME (H,M,S)	DEPTH (FT)
0,0,0	5.8464	0,1,3	3.5504
0,0,1	5.7316	0,1,11	3.534
0,0,2	5.174	0,1,12	3.5176
0,0,3	4.9116	0,1,24	3.5012
0,0,4	4.6	0,1,43	3.4848
0,0,5	4.4852	0,1,49	3.4684
0,0,6	4.4524	0,2,11	3.452
0,0,7	4.3704	0,2,17	3.4356
0,0,8	3.9604	0,3,6	3.4192
0,0,9	3.8456	0,3,22	3.4028
0,0,10	3.7308	0,4,40	3.3864
0,0,11	3.7144	0,5,3	3.37
0,0,12	3.6652		
0,0,17	3.616		
0,0,18	3.4356		
0,0,19	3.4684		
0,0,21	3.9604		
0,0,22	4.0096		
0,0,24	3.9604		
0,0,25	3.862		
0,0,26	3.7472		
0,0,39	3.7308		
0,0,40	3.7144		
0,0,41	3.698		
0,0,43	3.6652		
0,0,46	3.6324		
0,0,49	3.616		
0,0,54	3.5996		
0,0,55	3.5832		
0,1,1	3.5668		

NAUSTIA Mayport - UST 365
9970058
Well: MW-3
07-28-1997

cvc

FT : Ln(Yt-Yo)



Slope
0.0114121
CONDUCTIVITY
2.07E-03
cm/sec

HYDROCON - 1.2
HYDRAULIC CONDUCTIVITY
Bouwer and Rice Method

Well: MW-3

PROJECT NAME: NAVSTA Mayport - UST 1326
PROJECT NUMBER: 9970058
FIELD WORK DATE(S): 06-18-1997

USER NAME: cvc
DATE: 07-24-1997

Rw - BORING RADIUS (IN): 4.28
L - SCREEN LENGTH (FT): 9.5
HT - SCREEN BASE TO WATER TABLE (FT): 10.34
START TIME (H,M,S): 0,0,0

Rc - WELL RADIUS (IN): 1
D - AQUIFER THICKNESS (FT)
STATIC WATER LEVEL (FT):

Rc was corrected for response in well screen filter material to 2.489 i

TIME (H,M,S)	DEPTH (FT)	TIME (H,M,S)	DEPTH (FT)
0,0,0	3.6136	0,0,17	2.0064
0,0,.5	3.384	0,0,17.5	1.99
0,0,1	3.138	0,0,18	2.0064
0,0,1.5	2.974	0,0,18.5	1.99
0,0,2	2.8264	0,0,19	1.99
0,0,2.5	2.6952	0,0,20	1.99
0,0,3	2.5968		
0,0,3.5	2.4984		
0,0,4	2.4164		
0,0,4.5	2.3672		
0,0,5	2.318		
0,0,5.5	2.2852		
0,0,6	2.2524		
0,0,6.5	2.2196		
0,0,7	2.1868		
0,0,7.5	2.154		
0,0,8	2.1212		
0,0,8.5	2.1212		
0,0,9	2.1048		
0,0,9.5	2.072		
0,0,10	2.072		
0,0,10.5	2.072		
0,0,11	2.0556		
0,0,11.5	2.0392		
0,0,12	2.0392		
0,0,13	2.0392		
0,0,13.5	2.0064		
0,0,14	2.0064		
0,0,15	2.0064		
0,0,16	2.0064		

$$(1/t) (\ln(Y_0/Y_t)) = 0.2494020$$

PARTIALLY PENETRATING: A= 2.40 B= 0.38

HYDRAULIC CONDUCTIVITY: 1.20E-03 ft/sec
3.66E-02 cm/sec

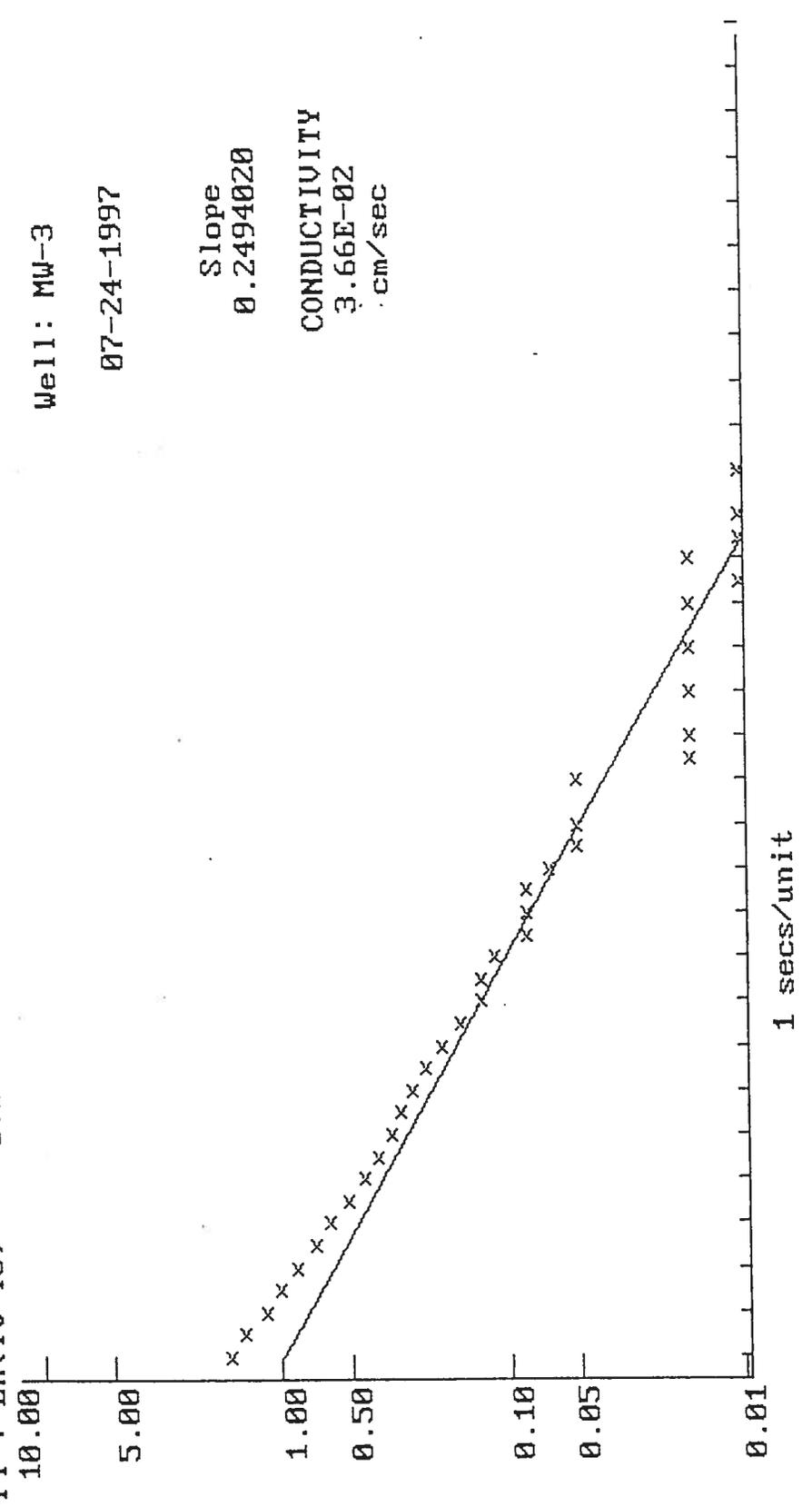
FT : Ln(Yt-Yo) cvc 9970058 NAVSTA Mayport - UST 1326

Well: MW-3

07-24-1997

Slope
0.2494020

CONDUCTIVITY
3.66E-02
cm/sec



HYDROCON - 1.2
HYDRAULIC CONDUCTIVITY
Bouwer and Rice Method

Well: MW-2

PROJECT NAME: NAVSTA Mayport - UST 1343
PROJECT NUMBER: 9970058
FIELD WORK DATE(S): 06-14-1997

USER NAME: cvc
DATE: 07-24-1997

Rw - BORING RADIUS (IN): 3.5
L - SCREEN LENGTH (FT): 9.5
HT - SCREEN BASE TO WATER TABLE (FT): 9.39
START TIME (H,M,S): 0,0,0

Rc - WELL RADIUS (IN): 1
D - AQUIFER THICKNESS (FT)
STATIC WATER LEVEL (FT):

Rc was corrected for response in well screen filter material to 2.092 i

TIME (H,M,S)	DEPTH (FT)	TIME (H,M,S)	DEPTH (FT)
0,0,0	6.4368	0,0,15	4.8132
0,0,.5	6.2892	0,0,15.5	4.7968
0,0,1	6.1908	0,0,16	4.7804
0,0,1.5	6.0924	0,0,16.5	4.764
0,0,2	6.0104	0,0,17	4.7476
0,0,2.5	5.9284	0,0,17.5	4.7148
0,0,3	5.8628	0,0,18	4.6984
0,0,3.5	5.7972	0,0,18.5	4.682
0,0,4	5.6988	0,0,19	4.6656
0,0,4.5	5.6496	0,0,20	4.6656
0,0,5	5.584	0,0,20.5	4.6328
0,0,5.5	5.5348	0,0,21	4.6328
0,0,6	5.4692	0,0,21.5	4.6
0,0,6.5	5.42	0,0,22	4.6
0,0,7	5.3708	0,0,22.5	4.6
0,0,7.5	5.3216	0,0,23	4.5672
0,0,8	5.2724	0,0,23.5	4.5836
0,0,8.5	5.2396	0,0,24	4.5672
0,0,9	5.1904	0,0,24.5	4.5508
0,0,9.5	5.1576	0,0,25	4.5508
0,0,10	5.1248	0,0,26	4.5508
0,0,10.5	5.0756	0,0,26.5	4.5508
0,0,11	5.0428	0,0,27	4.518
0,0,11.5	5.01	0,0,28	4.518
0,0,12	4.9772	0,0,29	4.518
0,0,12.5	4.9444	0,0,29.5	4.518
0,0,13	4.928	0,0,30	4.4852
0,0,13.5	4.8952	0,0,31	4.4852
0,0,14	4.8624	0,0,32	4.4852
0,0,14.5	4.8296	0,0,33	4.4852

TIME (H,M,S)	DEPTH (FT)
0,0,33.5	4.4688
0,0,34	4.4688
0,0,34.5	4.4524
0,0,35	4.4524
0,0,36	4.4524
0,0,37	4.4524
0,0,37.5	4.436
0,0,38	4.436
0,0,38.5	4.4196
0,0,39	4.4196

$$(1/t) (\ln(Y_0/Y_t)) = 0.0291026$$

PARTIALLY PENETRATING: A= 2.55 B= 0.42

HYDRAULIC CONDUCTIVITY: 1.04E-04 ft/sec
3.18E-03 cm/sec

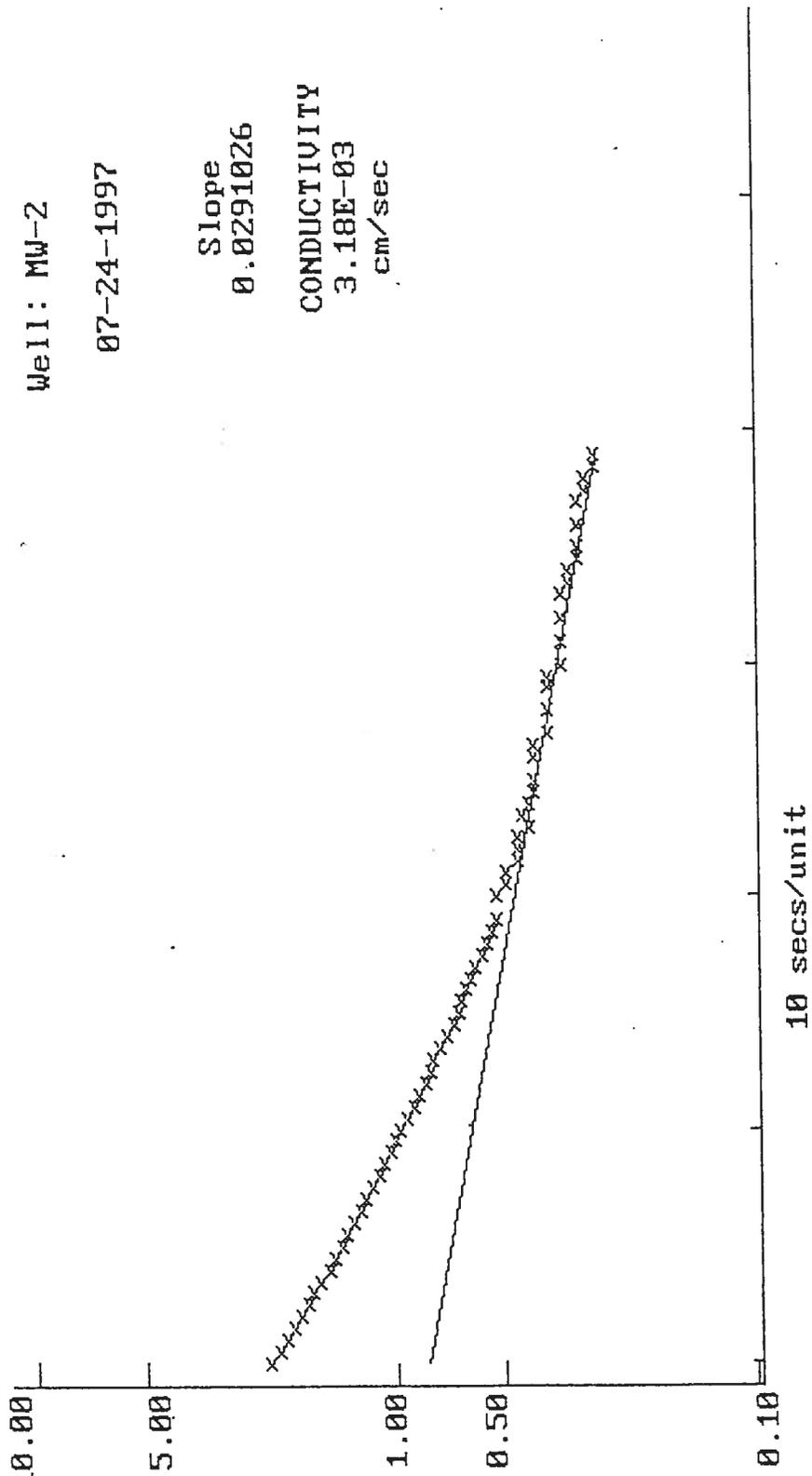
FT : Ln(Yt-Yo) CVC 9970058 NAVSTA Mayport - UST 1343

Well: MW-2

07-24-1997

Slope
0.0291026

CONDUCTIVITY
3.18E-03
cm/sec



10 secs/unit

HYDROCON - 1.2
 HYDRAULIC CONDUCTIVITY
 Bouwer and Rice Method

Well: MW-3

PROJECT NAME: NAVSTA Mayport - UST 1363
 PROJECT NUMBER: 9970058
 FIELD WORK DATE(S): 07-18-1997

USER NAME: cvc
 DATE: 07-22-1997

Rw - BORING RADIUS (IN): 4.55
 L - SCREEN LENGTH (FT): 9.5
 HT - SCREEN BASE TO WATER TABLE (FT): 10.03
 START TIME (H,M,S): 0,0,0

Rc - WELL RADIUS (IN): 1
 D - AQUIFER THICKNESS (FT)
 STATIC WATER LEVEL (FT):

Rc was corrected for response in well screen filter material to 2.629 i

TIME (H,M,S)	DEPTH (FT)	TIME (H,M,S)	DEPTH (FT)
0,0,0	4.91	0,0,41.67	3.29
0,0,1.16	4.72	0,0,41.67	3.27
0,0,2.32	4.29	0,0,42.83	3.29
0,0,3.48	3.99	0,0,42.83	3.29
0,0,4.63	3.81	0,0,43.98	3.29
0,0,5.79	3.68	0,0,43.98	3.29
0,0,6.94	3.62	0,0,45.14	3.27
0,0,8.11	3.55	0,0,45.14	3.27
0,0,9.26	3.5	0,0,46.3	3.29
0,0,10.42	3.45	0,0,46.3	3.29
0,0,11.58	3.44	0,0,47.46	3.27
0,0,12.73	3.42	0,0,47.46	3.29
0,0,13.89	3.39	0,0,48.61	3.27
0,0,15.05	3.39	0,0,48.61	3.27
0,0,16.21	3.37	0,0,49.77	3.27
0,0,17.36	3.37	0,0,49.77	3.27
0,0,18.52	3.34	0,0,50.93	3.27
0,0,23.15	3.34		
0,0,24.31	3.34		
0,0,25.46	3.34		
0,0,26.63	3.31		
0,0,27.78	3.31		
0,0,35.88	3.31		
0,0,35.88	3.29		
0,0,38.2	3.29		
0,0,38.2	3.31		
0,0,39.36	3.29		
0,0,39.36	3.31		
0,0,40.51	3.29		
0,0,40.51	3.29		

$$(1/t) (\ln(Y_0/Y_t)) = 0.0381560$$

PARTIALLY PENETRATING: A= 2.35 B= 0.37

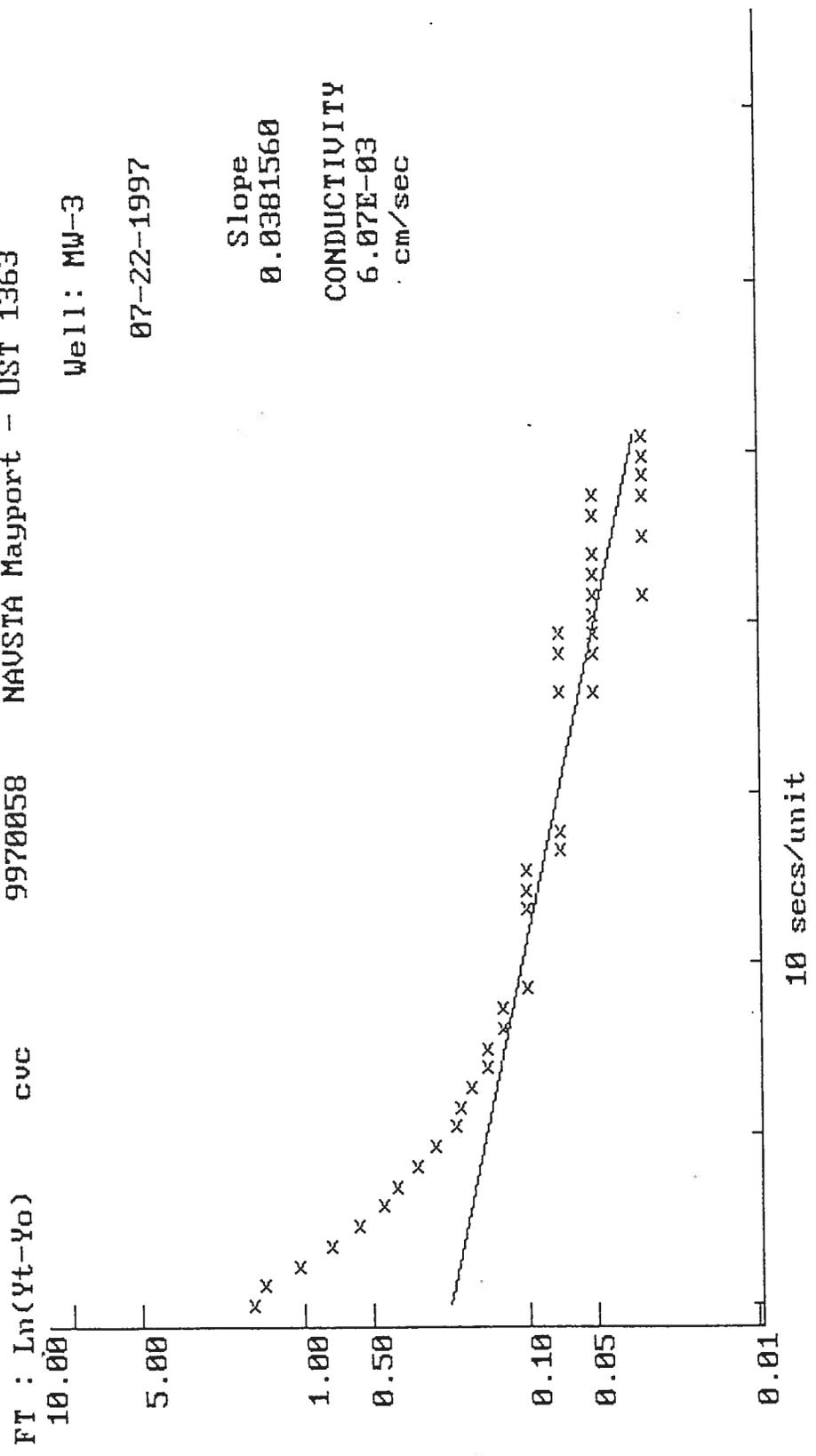
HYDRAULIC CONDUCTIVITY: 1.99E-04 ft/sec
6.07E-03 cm/sec

FT : Ln(Yt-Yo) cvc 9970058 NAUSTA Mayport - UST 1363

Well: MW-3

07-22-1997

Slope
0.0381560
CONDUCTIVITY
6.07E-03
cm/sec



HYDROCON - 1.2
 HYDRAULIC CONDUCTIVITY
 Bouwer and Rice Method

Well: MW-2

PROJECT NAME: NAVSTA Mayport - UST 1388
 PROJECT NUMBER: 9970058
 FIELD WORK DATE(S): 06-17-1997

USER NAME: cvc
 DATE: 07-28-1997

Rw - BORING RADIUS (IN): 5.49
 L - SCREEN LENGTH (FT): 9.5
 HT - SCREEN BASE TO WATER TABLE (FT): 8.13
 START TIME (H,M,S): 0,0,0

Rc - WELL RADIUS (IN): 1
 D - AQUIFER THICKNESS (FT)
 STATIC WATER LEVEL (FT):

Rc was corrected for response in well screen filter material to 3.121 i

TIME (H,M,S)	DEPTH (FT)	TIME (H,M,S)	DEPTH (FT)
0,0,0	5.3696	0,0,26	3.9264
0,0,.5	5.0252	0,0,28	3.9264
0,0,1	4.7628	0,0,30	3.9264
0,0,1.5	4.566	0,0,31.5	3.9264
0,0,2	4.4348	0,0,32	3.91
0,0,2.5	4.32	0,0,34	3.91
0,0,3	4.238	0,0,36	3.91
0,0,3.5	4.1724	0,0,38	3.91
0,0,4	4.1232	0,0,40	3.91
0,0,4.5	4.0904		
0,0,5	4.074		
0,0,5.5	4.0576		
0,0,6	4.0248		
0,0,6.5	4.0248		
0,0,7	4.0084		
0,0,7.5	4.0084		
0,0,8	3.992		
0,0,8.5	3.992		
0,0,9	3.9756		
0,0,10.5	3.9756		
0,0,11.5	3.9592		
0,0,13	3.9592		
0,0,13.5	3.9428		
0,0,15.5	3.9428		
0,0,17.5	3.9428		
0,0,19.5	3.9428		
0,0,21.5	3.9428		
0,0,23	3.9428		
0,0,23.5	3.9264		
0,0,24	3.9264		

$$(1/t) (\ln(Y_0/Y_t)) = 0.1193989$$

PARTIALLY PENETRATING: A= 2.22 B= 0.35

HYDRAULIC CONDUCTIVITY: 7.72E-04 ft/sec
2.35E-02 cm/sec

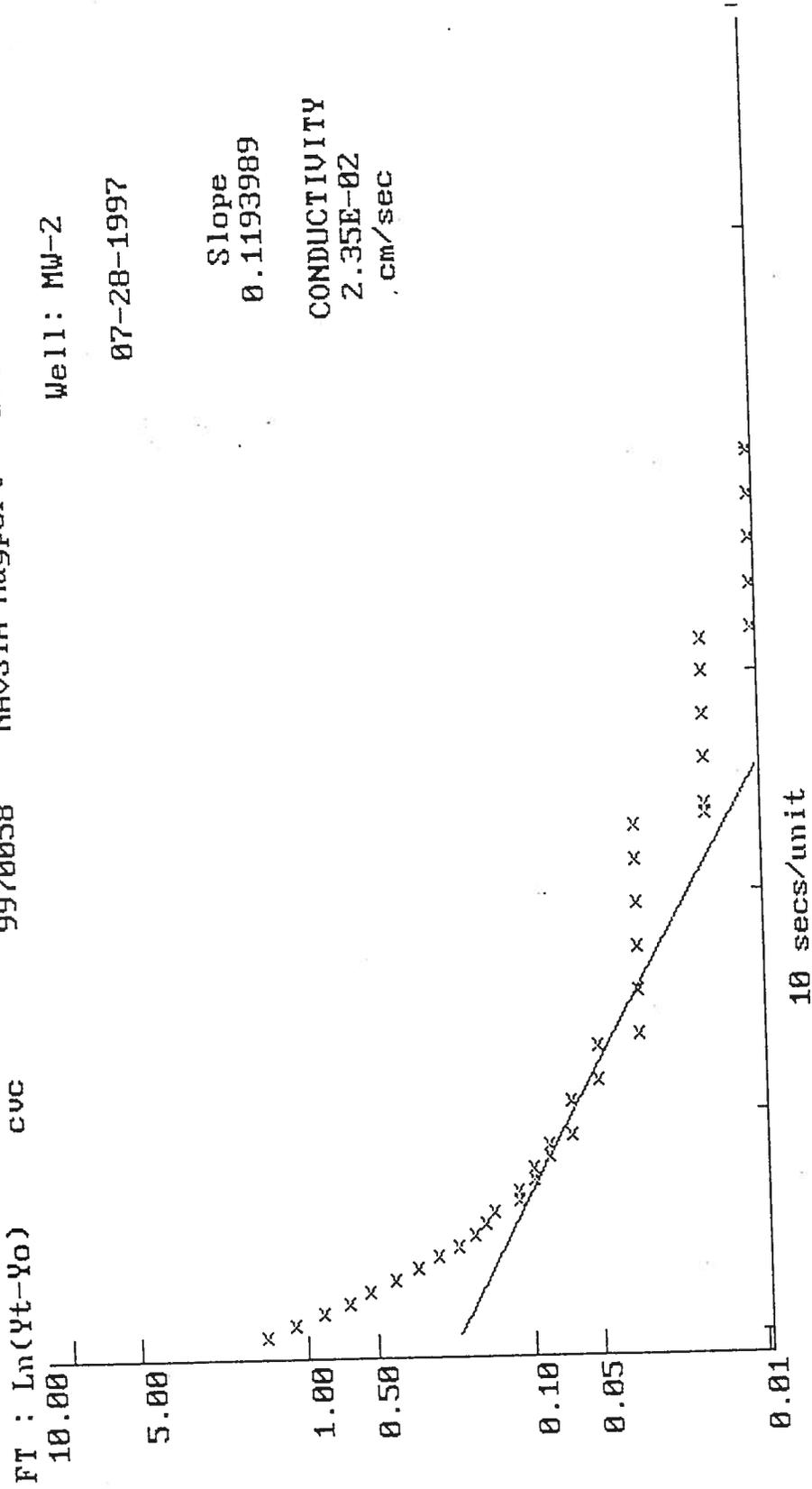
FT : Ln(Yt-Yo) cvc 9970058 NAVSTA Mayport - UST 1388
10.00
5.00

Well: MW-2

07-28-1997

Slope
0.1193989

CONDUCTIVITY
2.35E-02
. cm/sec



HYDROCON - 1.2
 HYDRAULIC CONDUCTIVITY
 Bouwer and Rice Method

Well: MW-1

PROJECT NAME: NAVSTA Mayport - UST 1552
 PROJECT NUMBER: 9970058
 FIELD WORK DATE(S): 06-16-1997

USER NAME: cvc
 DATE: 07-24-1997

Rw - BORING RADIUS (IN): 3.37
 L - SCREEN LENGTH (FT): 9.5
 HT - SCREEN BASE TO WATER TABLE (FT): 8.93
 START TIME (H,M,S): 0,0,0

Rc - WELL RADIUS (IN): 1
 D - AQUIFER THICKNESS (FT)
 STATIC WATER LEVEL (FT):

Rc was corrected for response in well screen filter material to 2.027 i

TIME (H,M,S)	DEPTH (FT)	TIME (H,M,S)	DEPTH (FT)
0,0,0	5.2584	0,0,15	3.6348
0,0,.5	5.0288	0,0,15.5	3.6348
0,0,1	4.914	0,0,16	3.6184
0,0,1.5	4.8484	0,0,16.5	3.602
0,0,2	4.75	0,0,17	3.5856
0,0,2.5	4.6844	0,0,17.5	3.5856
0,0,3	4.6024	0,0,18	3.5856
0,0,3.5	4.5368	0,0,18.5	3.5528
0,0,4	4.4876	0,0,19	3.5364
0,0,4.5	4.4056	0,0,19.5	3.52
0,0,5	4.34	0,0,20	3.52
0,0,5.5	4.2908	0,0,20.5	3.5036
0,0,6	4.2252	0,0,21	3.4872
0,0,6.5	4.1924	0,0,21.5	3.4872
0,0,7	4.1268	0,0,22	3.4708
0,0,7.5	4.1104	0,0,22	3.4708
0,0,8	4.0448	0,0,23	3.4708
0,0,8.5	4.012	0,0,24	3.4708
0,0,9	3.9792	0,0,24.5	3.438
0,0,9.5	3.93	0,0,25	3.438
0,0,10	3.8972	0,0,25.5	3.438
0,0,10.5	3.8644	0,0,26	3.4216
0,0,11	3.848	0,0,27	3.4216
0,0,11.5	3.8152	0,0,27.5	3.4052
0,0,12	3.7824	0,0,28	3.4052
0,0,12.5	3.7496	0,0,29	3.4052
0,0,13	3.7332	0,0,29.5	3.4052
0,0,13.5	3.7168	0,0,30	3.3888
0,0,14	3.7004	0,0,30.5	3.3888
0,0,14.5	3.6676	0,0,31	3.3724
		0,0,32	3.3724

TIME (H,M,S)	DEPTH (FT)
0,0,33	3.3724
0,0,33.5	3.356
0,0,34	3.356
0,0,35	3.356
0,0,36	3.356
0,0,37	3.356
0,0,37.5	3.356
0,0,38	3.3396
0,0,38.5	3.3396
0,0,39	3.3396
0,0,39.5	3.3232
0,0,40	3.3232
0,0,41	3.3232
0,0,42	3.3232

$$(1/t) (\ln(Y_0/Y_t)) = 0.0371601$$

PARTIALLY PENETRATING: A= 2.58 B= 0.42

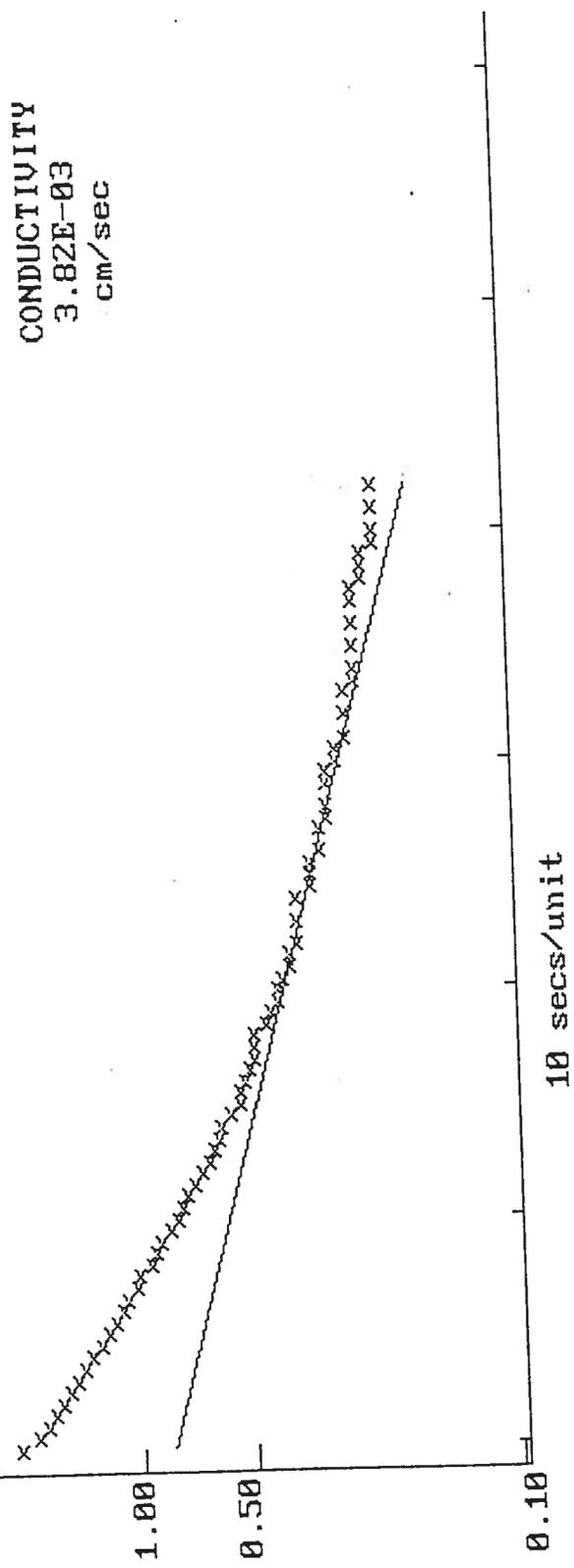
HYDRAULIC CONDUCTIVITY: 1.25E-04 ft/sec
 3.82E-03 cm/sec

FT : Ln(Yt-Yo) cvc 9970058 NAVSTA Mayport - UST 1552
10.00

Well: MW-1

07-24-1997

Slope
0.0371601
CONDUCTIVITY
3.82E-03
cm/sec



HYDROCON - 1.2
HYDRAULIC CONDUCTIVITY
Bouwer and Rice Method

Well: MW-3

PROJECT NAME: NAVSTA Mayport - UST 1556
PROJECT NUMBER: 9970058
FIELD WORK DATE(S): 06-17-1997

USER NAME: cvc
DATE: 07-24-1997

Rw - BORING RADIUS (IN): 6.06
L - SCREEN LENGTH (FT): 9.5
HT - SCREEN BASE TO WATER TABLE (FT): 7.88
START TIME (H,M,S): 0,0,0

Rc - WELL RADIUS (IN): 1
D - AQUIFER THICKNESS (FT)
STATIC WATER LEVEL (FT):

Rc was corrected for response in well screen filter material to 3.423 i

TIME (H,M,S)	DEPTH (FT)	TIME (H,M,S)	DEPTH (FT)
0,0,0	6.836	0,0,17	5.0156
0,0,.5	6.6556	0,0,17.5	4.9992
0,0,1	6.3768	0,0,18	4.9992
0,0,1.5	6.1472	0,0,19	4.9992
0,0,2	5.9668	0,0,19.5	4.9828
0,0,2.5	5.7864	0,0,20	4.9828
0,0,3	5.6552	0,0,22	4.9828
0,0,3.5	5.5568	0,0,24	4.9828
0,0,4	5.4748	0,0,26	4.9828
0,0,4.5	5.3928	0,0,28	4.9664
0,0,5	5.3272	0,0,32	4.9664
0,0,5.5	5.2616	0,0,34	4.95
0,0,6	5.2124	0,0,34.5	4.95
0,0,6.5	5.2124		
0,0,7	5.1796		
0,0,7.5	5.1468		
0,0,8	5.1304		
0,0,8.5	5.114		
0,0,9	5.0976		
0,0,9.5	5.0976		
0,0,10	5.0812		
0,0,10.5	5.0648		
0,0,11	5.0484		
0,0,11.5	5.032		
0,0,12	5.032		
0,0,13	5.032		
0,0,13.5	5.032		
0,0,14	5.0156		
0,0,15	5.0156		
0,0,16	5.0156		

$$(1/t) (\ln(Y_0/Y_t)) = 0.0791318$$

PARTIALLY PENETRATING: A= 2.15 B= 0.34

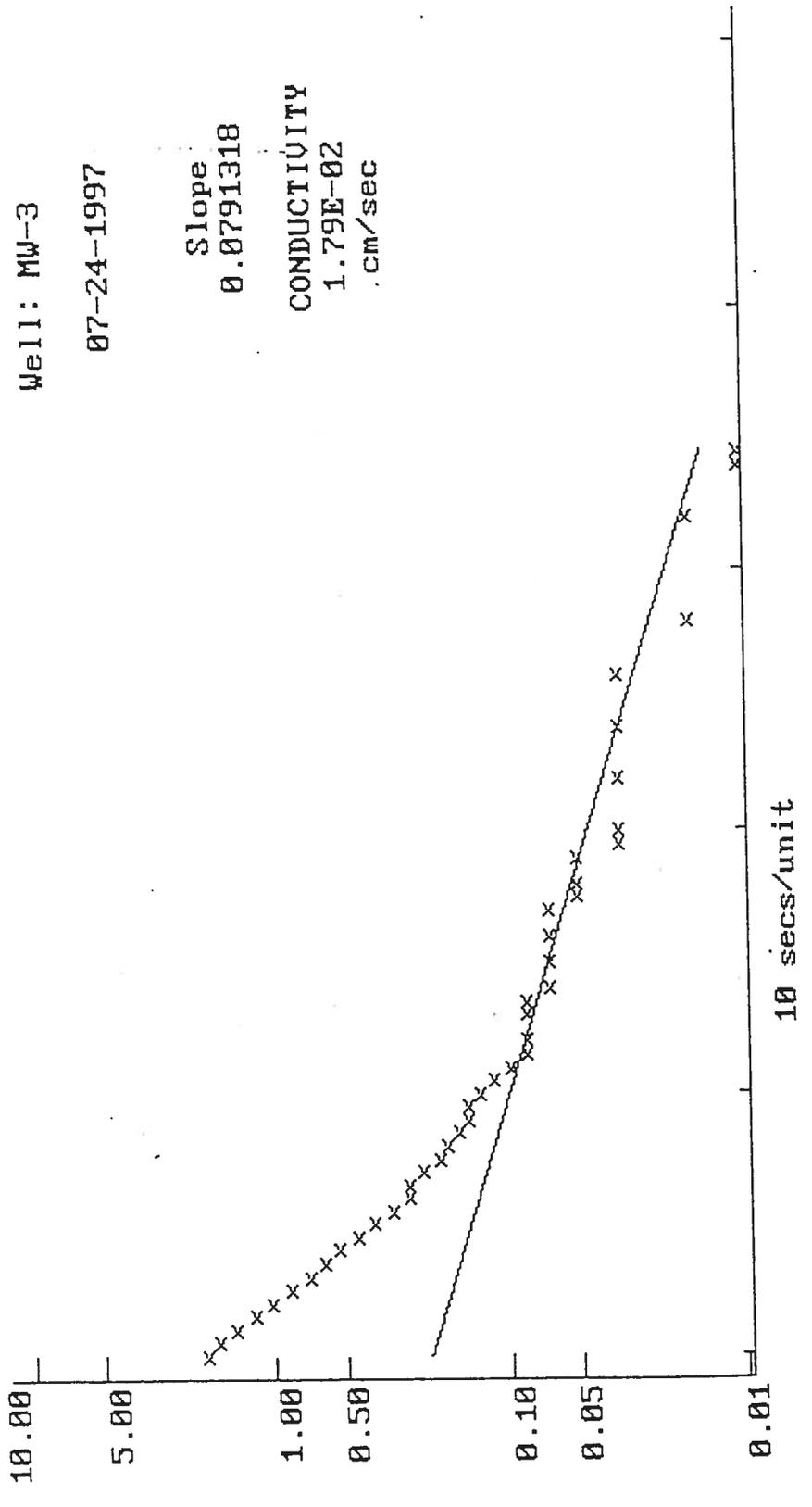
HYDRAULIC CONDUCTIVITY: 5.86E-04 ft/sec
1.79E-02 cm/sec

FT : Ln(Yt-Yo) cvc 9970058 NAVSTA Mayport - UST 1556

Well: MW-3

07-24-1997

Slope:
0.0791318
CONDUCTIVITY
1.79E-02
.cm/sec



HYDROCON - 1.2
 HYDRAULIC CONDUCTIVITY
 Bouwer and Rice Method

Well: MW-2

PROJECT NAME: NAVSTA Mayport - UST 1864
 PROJECT NUMBER: 9970058
 FIELD WORK DATE(S): 06-16-1997

USER NAME: cvc
 DATE: 07-24-1997

Rw - BORING RADIUS (IN): 3.2
 L - SCREEN LENGTH (FT): 9.5
 HT - SCREEN BASE TO WATER TABLE (FT): 9.16
 START TIME (H,M,S): 0,0,0

Rc - WELL RADIUS (IN): 1
 D - AQUIFER THICKNESS (FT)
 STATIC WATER LEVEL (FT):

Rc was corrected for response in well screen filter material to 1.942 i

TIME (H,M,S)	DEPTH (FT)	TIME (H,M,S)	DEPTH (FT)
0,0,0	7.0048	0,0,15	5.4796
0,0,.5	6.89	0,0,15.5	5.4468
0,0,1	6.7588	0,0,16	5.4304
0,0,1.5	6.726	0,0,16.5	5.414
0,0,2	6.808	0,0,17	5.3976
0,0,2.5	6.726	0,0,17.5	5.3812
0,0,3	6.6276	0,0,18	5.3812
0,0,3.5	6.5948	0,0,18.5	5.3484
0,0,4	6.48	0,0,19	5.3484
0,0,4.5	6.2504	0,0,19.5	5.332
0,0,5	6.5456	0,0,20	5.332
0,0,5.5	6.5784	0,0,20.5	5.332
0,0,6	6.562	0,0,21	5.2992
0,0,6.5	6.4636	0,0,21.5	5.2992
0,0,7	6.316	0,0,22	5.2992
0,0,7.5	6.4636	0,0,22.5	5.2828
0,0,8	6.316	0,0,23	5.2664
0,0,8.5	6.2504	0,0,23.5	5.2664
0,0,9	6.316	0,0,24	5.2664
0,0,9.5	6.0864	0,0,24.5	5.2664
0,0,10	5.8732	0,0,25	5.25
0,0,10.5	5.7256	0,0,25.5	5.25
0,0,11	5.6764	0,0,26	5.2336
0,0,11.5	5.6436	0,0,26.5	5.2336
0,0,12	5.6108	0,0,27	5.2172
0,0,12.5	5.5944	0,0,27.5	5.2172
0,0,13	5.5616	0,0,28	5.2172
0,0,13.5	5.5288	0,0,28.5	5.2172
0,0,14	5.5124	0,0,29	5.2172
0,0,14.5	5.496	0,0,29.5	5.2172

TIME (H,M,S)	DEPTH (FT)
0,0,30	5.2172
0,0,30.5	5.2008
0,0,31	5.1844
0,0,31.5	5.1844
0,0,32	5.1844
0,0,32.5	5.1844
0,0,33	5.1844
0,0,33.5	5.1844
0,0,34	5.168
0,0,34.5	5.168
0,0,35	5.1516
0,0,35.5	5.168
0,0,36	5.1516
0,0,36.5	5.1516
0,0,37	5.1516
0,0,37.5	5.1516
0,0,38	5.1516
0,0,38.5	5.1516
0,0,39	5.1516
0,0,39.5	5.1516

TIME (H,M,S)	DEPTH (FT)
0,0,40	5.1352
0,0,40.5	5.1352
0,0,41	5.1188
0,0,41.5	5.1188
0,0,42	5.1352
0,0,42.5	5.1188
0,0,43	5.1188
0,0,43.5	5.1188
0,0,44	5.1188
0,0,44.5	5.1188

$(1/t) (\ln(Y_0/Y_t)) = 0.0272113$

PARTIALLY PENETRATING: A= 2.62 B= 0.44

HYDRAULIC CONDUCTIVITY: 8.64E-05 ft/sec
2.63E-03 cm/sec

FT : Ln(Yt-Yo) cvc 9970058 NAVSTA Mayport - UST 1864

Well: MW-2

07-24-1997

Slope
0.0272113
CONDUCTIVITY
2.63E-03
cm/sec

