N00204.AR.005033
NAS PENSACOLA
5090.3a

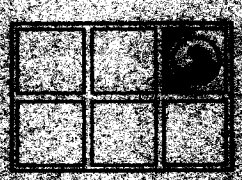
CONTAMINATION ASSESSMENT REPORT BILGEWATER TREATMENT PLANT NAS PENSACOLA FL

01/11/1993

GROUNDWATER TECHNOLOGY GOVERNMENT SERVICES

CONTAMINATION ASSESSMENT REPORT
BILGEWATER TREATMENT PLANT
PENSACOLA NAVAL AIR STATION
PENSACOLA, FLORIDA
CONTRACT #N62467-92-M-2221

830011089.01



GROUNDWATER TECHNOLOGY GOVERNMENT SERVICES

GROUNDWATER
TECHNOLOGY
GOVERNMENT SERVICES

Groundwater Technology Government Services, Inc.
3700 Creighton Road, Suite 10, Pensacola, FL 32504
Tel: (904) 478-7128 Fax: (904) 478-7546

CONTAMINATION ASSESSMENT REPORT
BILGEWATER TREATMENT PLANT
PENSACOLA NAVAL AIR STATION
PENSACOLA, FLORIDA
CONTRACT #N62467-92-M-2221

830011089.01

January 11, 1993

Prepared for:

Officer in Charge
NAVFAC Contracts
Navy Public Works Center
Building 458
NAS, Pensacola, Florida

Groundwater Technology
Government Service, Inc.
Written/Submitted by:

Jim Hoelscher
Site Manager

Groundwater Technology
Government Service, Inc.
Reviewed/Approved by:

Wesley F. Wiley
Project Manager

For:

Frank Jasiulewicz
Vice President

830011089.01/22/gsi538.rep

CERTIFICATION

PROFESSIONAL GEOLOGIST LICENSED IN THE STATE OF FLORIDA

This is to certify that I have reviewed and approve this Contamination Assessment Report prepared for Bilgewater Treatment Plant, Pensacola Naval Air Station, Pensacola, Florida.

Doyle Traxler
State of Florida License #1314
Groundwater Technology, Inc.
3700 Creighton Road, Suite 10
Pensacola, Florida 32504
(904) 478-7128

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

1.0 INTRODUCTION

1.1 BACKGROUND INFORMATION

Groundwater Technology Government Services, Inc. (GSI) was contracted by the U.S. Navy to conduct a contamination assessment at the Bilgewater Treatment Plant located at the Naval Air Station (NAS) in Pensacola, Florida.

The contamination assessment was initiated after the accidental release of approximately 3,000 gallons of waste oil from the treatment facility. The release was discovered on March 11, 1992, after rainwater had been left to drain from a containment area located inside the facility.

1.2 SITE LOCATION AND AREA OF INVESTIGATION

The Bilgewater Treatment Plant site is located within the confines of the Pensacola NAS in Section 1, Range 30 W, Township 3 S. The site is located at the base of Magazine Point, a narrow peninsula that extends north from the Air Station landmass and separates Bayou Grande from Escambia Bay. A site location map is included as Figure 1 showing the site in relation to surrounding features.

Land use in the vicinity of the site is industrial. To the north of the site is the Wastewater Treatment Plant. To the east of the site is Escambia Bay. The site is bordered on the south by a drainage ditch believed to have been built at the time of the airfield's construction. Across the drainage ditch is a helicopter rotor blade testing facility built on the edge of the old airfield. Beyond that is tarmac associated with Chevalier Field. To the west of the site is undeveloped property, primarily lowlying wetlands. Figure 2 identifies prominent site features.

The area encompassed by this investigation consists of only the area immediately surrounding the Bilgewater Treatment Plant and the adjacent low lying area to the west.

1.3 SITE HISTORY AND OPERATIONS

The site is located within the historical confines of the Pensacola NAS, a United States Government Military Installation in continuous usage since before the Civil War. It occupies a low lying, swampy area to the north of Chevalier Field that suggests historically light usage.

The current Bilgewater Treatment Plant was constructed in the spring of 1991. NAS engineering personnel indicated that excavated soil from other parts of the base was used to build up the site to its current elevation. Access to the area is from a road that was constructed along the south side of the wastewater treatment plant. General construction debris (broken concrete, bricks, timbers) was observed along an unpaved road to the east of the site, forming a breakwater along Escambia Bay.

The Bilgewater Treatment Plant collects ship discharge water and separates it into water, oil, and sludge components for treatment and disposal. According to Wastewater Treatment Plant records, the accidental release occurred on March 11, 1992, while rainwater was being drained from the containment area surrounding the waste oil tanks. A check valve failure in the pump station allowed approximately 3,000 gallons (calculated from tank level records) of waste oil to drain back into the pump station. As the level in the pump station rose it backed up a drainline into the containment area surrounding the waste oil tanks, and then out the rainwater drainline. It flowed north, west, and south, eventually covering the open, lowlying, swampy area to the west of the plant. This path is shown on Figure 3.

1.4 INITIAL REMEDIAL ACTION

The Navy initiated a response action that attempted to recover the majority of the discharge. Three pits were dug and used as sumps in an effort to collect contaminated water and waste oil. Additional water was sprayed from a fire pump truck around the perimeter of the swamp in an effort to move the discharged material back towards the sumps. Fluids recovered in the sumps were pumped to the Bilgewater Treatment Plant. No estimate is available concerning the total volume of oil recovered, or of the total volume of water sprayed or recovered. Sump locations are shown on the Hand Auger Boring Location Map shown as Figure 4.

Soil samples were collected by Navy personnel from the area immediately beyond the rainwater discharge line on April 9, 1992. These were submitted to a state certified laboratory for extraction by the Toxicity Characteristic Leachate Procedure (TCLP) and analysis for the eight Resource Conservation and Recovery Act (RCRA) metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver), volatiles by

EPA Method 8240, and semi-volatiles (base/neutral and acid extractables) by EPA Method 8270. Results of the analyses were below detection limits (BDL) for all parameters with the exception of Methyl Ethyl Ketone, found at 0.074 parts per million (ppm). Copies of the laboratory analytical reports provided by NAS personnel can be found in Appendix A.

Approximately eight cubic yards of contaminated soil were excavated from the area immediately beyond the discharge outfall and trucked to the Perdido Landfill for disposal, after the results of the above mentioned characterization were known.

The rainwater drainline pipe was capped at its termination to prevent a recurrence of any unauthorized release.

1.5 PREVIOUS INVESTIGATIONS

No information was available concerning any previous investigations at the Bilgewater Treatment Plant site. However, the property to the immediate north has been the focus of several investigations (Missimer & Associates, Inc./1982, Geraghty & Miller, Inc./1984 and 1985, Ecology & Environment, Inc./1992) and is currently being monitored quarterly for RCRA permit compliance. In 1991 a contamination assessment was performed on the property adjacent to Building #3810 to the south of the site by ABB, Inc., due to the release of petroleum products from an underground storage tank (UST).

1.6 REGIONAL GEOLOGY AND HYDROGEOLOGY

The regional geology underlying Pensacola NAS is comprised of the Sand-and-Gravel Aquifer to a depth of approximately 400 feet, the Pensacola Clay from approximately 400 to 900 feet, and the upper and lower Floridan Aquifer from 900 to approximately 1,700 feet. (G&M, 1985)

Previous investigations at adjacent sites have shown that sands extend from ground surface to an elevation of approximately -35 feet below mean sea level (BMSL). Below this is approximately 15 feet of marine clay which appears continuous below the area of investigation, but whose areal extent is unknown. Underlying the clay is more sand with numerous clay lenses, the depths and dimensions of which are not well defined. (G&M, 1985)

U.S. Geological Survey Topographic Map (7.5 Minute Series, Fort Barrancas Quadrangle, 1987) indicates that the Bilgewater Treatment Plant site straddles a narrow strip of raised elevation described as a remnant

dune. (M&A, 1982)

This investigation was confined to the uppermost sands above the marine clay expected at -35 feet BMSL. A series of hand auger borings performed to delineate the extent of contamination found a four to eight-inch thick layer of sandy vegetative mat (decomposed grasses, roots, sticks, and pine needles) lying under the western and northern edges of the raised site location. This corresponded to the approximate water level observed in the low lying area to the west of the Bilgewater Treatment Plant. The even distribution of this occurrence further indicates that the low lying area once extended under the western edge of the Bilgewater Treatment Plant, and that soils found above this layer have been added as fill. Below the vegetative layer was an even layer of medium to fine grained white sand, to a depth of approximately 17 feet below land surface (BLS).

1.7 WELL SURVEY

NAS engineering personnel were contacted regarding any public or private water wells within a half mile radius of the site. Information supplied revealed that potable water for the base is primarily supplied by a well field at Corry Station, located several miles to the north. The well field is supplemented when needed by three wells at Pensacola NAS, the locations of which are shown in Figure 5. None of the wells are located within a half mile radius of the site. Construction details of the water supply wells are given in Table 1. (G&M, 1985)

2.0 SITE ASSESSMENT

2.1 SOIL BORING, PIEZOMETER, AND MONITORING WELL CONSTRUCTION DETAILS

GSI initiated the investigation with the installation of six piezometers (P-1 through P-6) located around the area suspected of being impacted by the waste oil release. These were installed on December 1, 1992. Piezometer P-1 was installed to a depth of approximately 12 feet BLS using four and 1/4-inch hollow stem augers. Piezometers P-2 through P-6 were installed using the internal hand bailing method to a depth of approximately 12 feet BLS. All piezometers consist of ten feet of two-inch diameter 0.010-inch slotted Schedule 40 PVC pipe threaded to five feet of two-inch diameter solid Schedule 40 PVC riser. A two-inch diameter Schedule 40 PVC "bailing foot" was attached to the bottom of piezometer P-1 through P-6 with stainless steel screws. After installation the bottom of each piezometer was sealed with a wooden plug. Piezometer locations are illustrated on Figure 6.

Monitoring wells MW-1 through MW-4 were installed on December 16, 1992, to a depth of approximately 17 feet BLS. The wells consist of four-inch diameter by 15 feet of 0.010-inch slotted Schedule 40 PVC pipe, threaded to five feet of solid PVC riser. All wells were completed in ten and 5/8-inch diameter boreholes using the hollow stem auger drilling method. A filter sand pack was installed in the annular space between the well screen and the borehole wall. The sand pack consisted of coarse silica sand and extended approximately one foot above the top of the well screen. Sieve analyses of formation sand and filter pack, and the design criterion for the well screen slot size are included in Appendix B. A six-inch bentonite clay seal was placed above the sand pack, and the remaining annular space was filled with concrete. The PVC casing was brought up approximately three feet above ground level and finished with water tight well caps and protected in six-inch steel covers. Figure 7 illustrates a typical monitoring well diagram.

Monitoring well GMW-13A was reportedly constructed in the summer of 1992 by C.B. Drilling Company. It was a replacement for a monitoring well installed by Geraghty and Miller, Inc. as a background well during an investigation at the Wastewater Treatment Plant. It was installed to a depth of approximately 12 1/2 feet BLS. The well consists of two-inch diameter by two and 1/2 feet of 0.010-inch slotted Schedule 40 PVC pipe threaded to 13 feet of solid Schedule 40 PVC riser. The well was finished with a water tight well cap and protected in a six-inch steel cover. Water samples were collected from this well and analyzed as part of the

groundwater assessment.

Soil borings SB-1 through SB-55 were conducted by GSI personnel to the water table, or taken at or from below the water, depending on the elevation, and were performed with the hand auger drilling method.

2.2 GROUNDWATER FLOW DIRECTION

On December 2, 1992, the piezometer top of casing elevations were surveyed and depth to water measurements taken. The top of casing elevation was given by NAS personnel for monitoring well (GMW-13A) located on the corner of the site, and used as a reference. The calculated water table elevations indicated that on December 2, 1992, groundwater flow direction beneath the site was to the southeast.

Depth to water measurements were repeated on the morning of December 8, 1992, and again on the afternoon of December 9, 1992, to informally assess any tidal influence on the groundwater flow direction. No groundwater flow direction tidal impact was observed. Depth to water measurements and groundwater elevations can be found in Table 2. Groundwater flow direction is illustrated on Figure 8.

2.3 GROUNDWATER FLOW VELOCITY

Horizontal groundwater flow velocity was calculated using the equation $v = KI/n$. Hydraulic gradients (I) were calculated from the groundwater elevation data collected on December 2, and December 8, 1992. Hydraulic conductivity (K) was provided by base engineering personnel, estimated from the values obtained during previous investigations. The two velocities obtained were averaged to give an estimated groundwater flow velocity of 0.175 feet per day. This gave an estimate of calculated groundwater flow of 47 feet since the date of the release. Monitoring wells were placed approximately 40 feet downgradient of the impacted areas in an effort to intercept the leading edge of any potential contaminant plume.
Groundwater flow velocity calculations can be found in Appendix C.

2.4 HAND AUGER BORINGS

To further assess the impact and extent of the release, 55 hand auger borings were conducted by GSI personnel at the outflow area and around the perimeter of the marshy lowlying area to the west. These locations were previously illustrated on Figure 4. Soil samples were collected from just above the water table, at the water table, or from below the water table, depending upon the boring elevation, for OVA screening.

Dry soil samples were taken on an approximate ten foot grid pattern around the rainwater discharge outflow point. These gave results that delineate the area of soils exhibiting >10 ppm OVA reading and are shown on Figure 9. Wet soil samples gave less conclusive information, due to the volume of methane gas naturally present, and the applicability of the screening method to a saturated soil sample.

During the hand auger borings, an area roughly equivalent to the extent of the marshy lowlying area was observed to be covered with dead vegetation. Standing water in this area was also observed to have droplets of a clear immiscible liquid floating on the surface. This area was reported by base personnel to have been covered by the initial spill, and is assumed to have been impacted.

2.5 SURFACE WATER ASSESSMENT

On December 9, 1992, four surface water samples (SW-1 through SW-4) were collected and delivered to a state certified laboratory for analysis by EPA Methods 602, and 610, and for total arsenic, cadmium, chromium, and lead. Sample locations (SW-1 and SW-2) were from the first and third collection sumps, standing water towards the back of the lowlying area (SW-3), and from a point in the drainage ditch downstream of the site (SW-4). Sample locations are illustrated on Figure 10.

Results of the surface water sample analyses indicate that all samples were BDL for all parameters, with the exception of SW-3 which contained toluene at 1.1 part per billion (ppb) and lead at 16 ppb, collected from the back of the lowlying area to the west of the site. Surface water sample analytical results are summarized in Table 3. Full analytical reports are contained in Appendix A.

2.6 SOIL ASSESSMENT

Soil quality at the site was determined by OVA screening and laboratory analysis of Total Petroleum Hydrocarbons (TPH), Total Volatile Organic Aromatics (VOA), TCLP for eight RCRA metals, and total Arsenic, Cadmium, Chromium, and Lead, by EPA Methods 9073, 8021, 1311, and 3050, respectively.

Fifty-five soil borings (SB-1 through SB-55) were performed using a hand auger. Soil borings SB-1 through SB-22 were performed on December 3, 1992, in the area around and beyond the point of release. These were done on an approximate ten foot grid pattern. Borings were continued until a vegetative mat was encountered at the approximate water table elevation, and a soil sample was collected from the grey sand immediately above this layer.

Soil samples were also collected during installation of the piezometers and the monitoring wells. The OVA screening was performed utilizing a Foxboro Model 108 OVA with a flame ionization detector. The OVA was calibrated with a Century OVA 108 Calibration Kit, No. CR009UZ. All OVA screening was conducted following the methods and procedures outlined in the FDER Guidelines for Assessment and Remediation of Petroleum Contaminated Soils.

This methodology was also used for water saturated samples collected from elevations at or below the water table, in an effort to qualify the areal extent of surface contamination. At the time of the initial release, the marsh area was reported by NAS personnel to have no standing water. A variation of as much as two feet was remarked on, depending upon rainfall.

Soil borings SB-23 through SB-55 were conducted around the perimeter of the marsh. The relatively small sample sizes, and the large concentration of methane gas present in the saturated samples has led to a reduced confidence in the value of the data, particularly as a quantitative measure of contamination. Results of all the OVA screening are summarized in Table 4.

To further assess the soil quality at the site, a soil sample from soil boring SB-8, collected from just above the water table, was submitted to a state certified laboratory for analysis of the above mentioned contaminants. Results revealed all parameters to be BDL with the exception of ethyl benzene at 411 ppb, total xylenes at 900 ppb, and Total Recoverable Petroleum Hydrocarbons (TRPH) at 41,400 ppm. These results are summarized in Table 5. Full soil analytical reports are contained in Appendix A.

The approximate extent of soil contamination identified at the outflow area during this investigation is shown on Figure 9. The volume of soil exhibiting OVA concentrations greater than 10 ppm is estimated to be 100 cubic yards.

2.7 SITE SPECIFIC GEOLOGY

The site specific geology was determined by examination of soil samples collected during the soil boring, piezometer and monitoring well installations. The shallow subsurface lithology beneath the site is characterized by a white to grey medium to medium-fine sand to a depth of seventeen feet. A composite sample was gathered for a sieve analysis. The results of the sieve analysis have been included in Appendix B. Stratigraphic units are shown on geologic logs compiled during the drilling of the monitoring wells and included in Appendix D.

2.8 GROUNDWATER QUALITY ASSESSMENT

Groundwater sampling was conducted following the methods and procedures outlined in GTI's Comprehensive Quality Assurance Plan No. 900506G, dated July 22, 1992. Samples were analyzed by EPA Methods 8021 for Volatile Organic Aromatics and Volatile Organic Halocarbons, 504 for ethylene dibromide, 418.1 for TRPH, 8270 for Polynuclear Aromatic Hydrocarbons, 9010 for cyanide, 206.3 for arsenic, 213.2 for cadmium, 218.2 for chromium, and 239.2 for lead.

Groundwater samples were collected from monitoring wells MW-1 through MW-4, and GMW-13A on December 17, 1992. Laboratory results from monitoring wells MW-3 and GMW-13A revealed all parameters to be BDL. Monitoring well MW-1 was BDL for all parameters except for toluene at 6 ppb, ethyl benzene at 2.6 ppb, total xylenes at 6.4 ppb, and chromium at 6 ppb. Monitoring well MW-2 was BDL for all parameters tested with the exception of toluene at 1.3 ppb, and total xylenes at 3.5 ppb. Monitoring well MW-4 was BDL for all parameters tested with the exception of toluene at 3.0 ppb, ethyl benzene at 2.1 ppb, total xylenes at 14 ppb, 1-methyl naphthalene at 4.7 ppb, 2-methyl naphthalene at 3.7 ppb, and cadmium at 7 ppb. The groundwater analytical results are summarized in Table 6. Full laboratory analytical reports are included in Appendix A, which also includes the detection limits for each parameter.

3.0 CONCLUSIONS AND RECOMMENDATIONS

3.1 CONCLUSIONS

- The initial discharge consisted of approximately 3,000 gallons of separated waste oil that was released due to a mechanical failure and an open drain line.
- Initial remedial actions taken by the Navy included the recovery of an undetermined amount of waste oil from the adjacent swampy area and the disposal of approximately eight cubic yards of contaminated soil.
- No public or private water supply wells were identified within a half mile radius of the site.
- The closest surface water body is a drainage creek bordering the site to the south, and flowing east to Escambia Bay.
- Six piezometers were installed to determine groundwater flow direction. Groundwater elevation surveys measured on December 2, 8, and 9, 1992, indicated that groundwater flow direction on those days was to the southeast and was unaffected by tidal action.
- Fifty-five soil borings were performed in an effort to delineate the extent of impacted soils.
- Four monitoring wells (MW-1 through MW-4) were installed on December 16, 1992, placed downgradient from the impacted area.
- Four surface water samples (SW-1 through SW-4) were collected and analyzed by EPA Method 8021, 8270, 206.3, 213.2, 218.2, and 239.2. All samples were BDL for all parameters, with the exception of SW-3, which contained lead at 16 ppb and toluene at 1.1 ppb.
- Five monitoring wells were sampled and analyzed for petroleum constituents and heavy metals. Results indicate that low levels of contaminants have migrated in the groundwater away from the spill area.
- Treatment of the waste oil prior to the accidental release, the Navy's prompt initial response action, and the biologic activity naturally present in the impacted area have combined to minimize the long term impact of the release.

3.2 RECOMMENDATIONS

GSI recommends that all soil exhibiting a total organic vapor concentration greater than 10 ppm, as measured by OVA screening and previously illustrated on Figure 9, be excavated and properly disposed of.

Subsequent to the removal of the contaminated soil, GSI recommends that the groundwater and surface water be monitored for a period of one year with sampling to be performed quarterly for all parameters identified during the assessment as per the criteria outlined in the Florida Administrative Code Chapter 17-770.600 (7) and (8).

4.0 REFERENCES

Ecology and Environment, Inc. Semi-annual Report on Groundwater Monitoring, Industrial Wastewater Treatment Plant, Naval Air Station, Pensacola, Florida, September 1992

Geraghty and Miller, Inc. (G&M), 1984 Verification Study, Assessment of Potential Groundwater Pollution at Naval Air Station, Pensacola, Florida

Geraghty and Miller, Inc. (G&M), 1985 b, Water Quality Assessment Program at the Wastewater Treatment Plant, Naval Air Station, Pensacola, Florida (Phase II)

Missimer and Associates, Inc. (M&A), 1982, Evaluation of Groundwater Contamination Potential from the Pensacola Naval Air Station Surge Pond, Pensacola, Florida

FIGURES

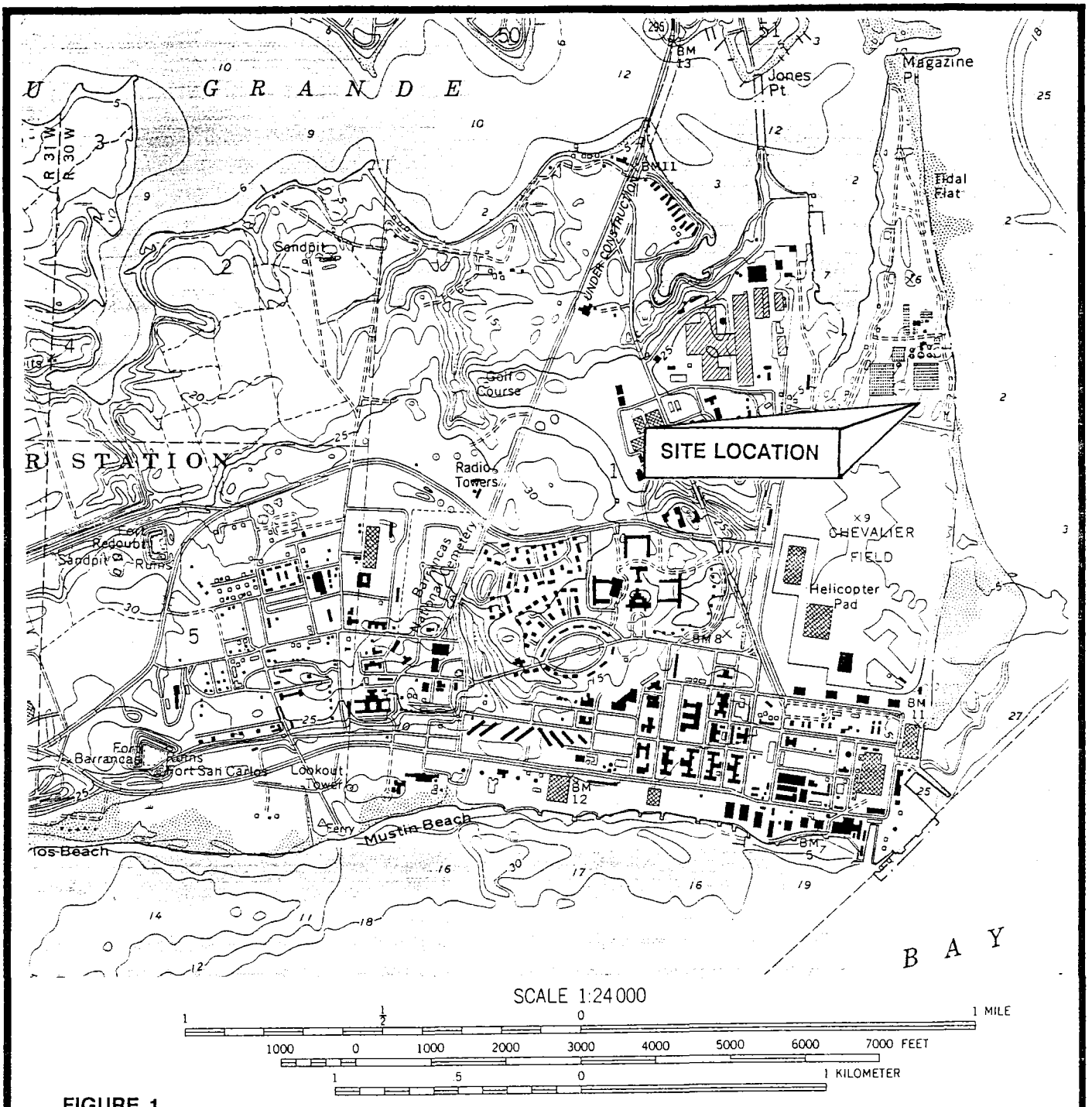


FIGURE 1

SITE LOCATION MAP

Bilgewater Treatment Plant
Pensacola Naval Air Station
Pensacola, Escambia County, Florida

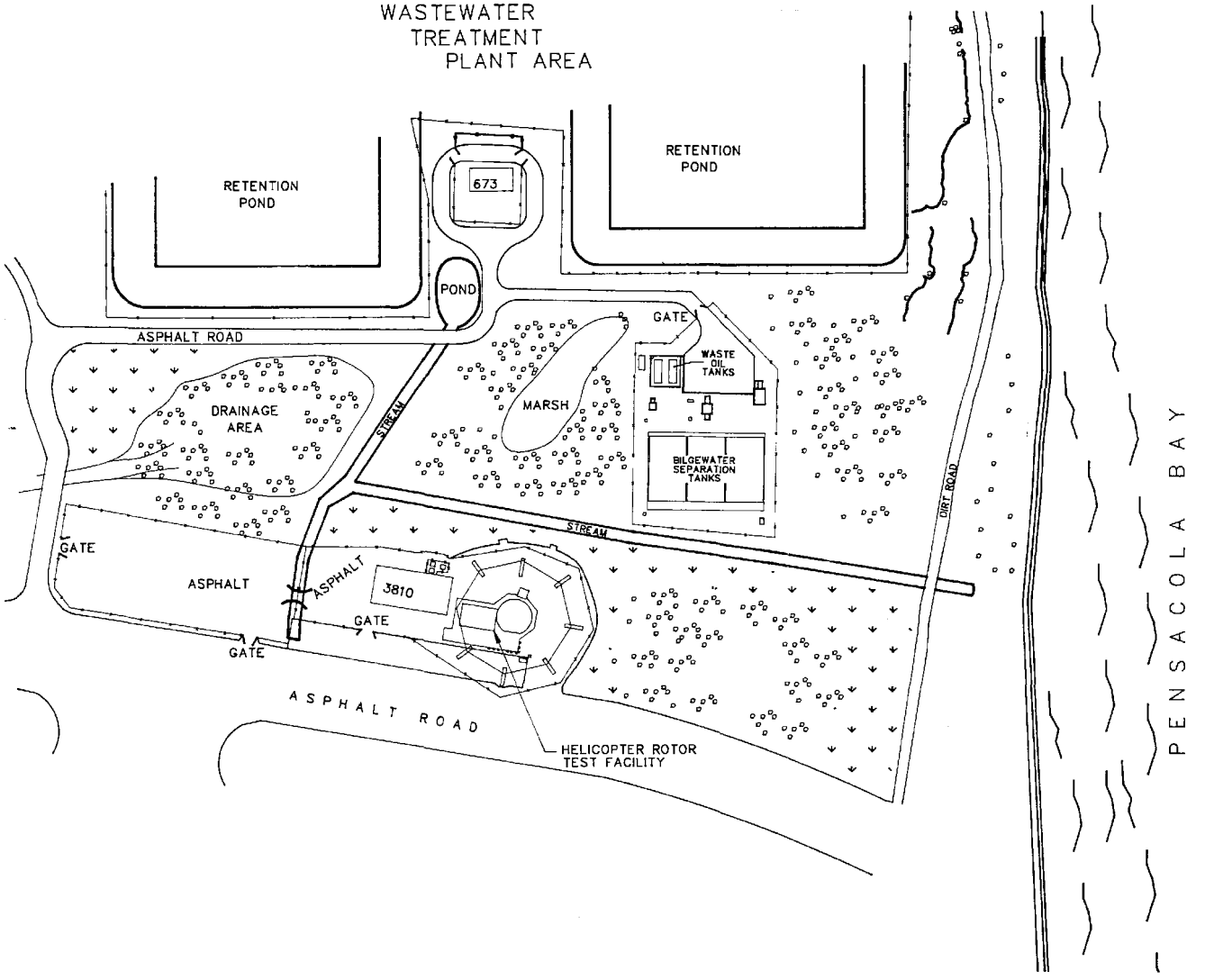
N

QUADRANGLE LOCATION

Source: USGS Quadrangle Map
7.5 Minute Series,
Ft. Barrancas, Florida
1970/1987

830011089.01

GROUNDWATER TECHNOLOGY GOVERNMENT SERVICES



LEGEND

NOTES: EXISTING MONITORING WELLS NOT INSTALLED BY GROUNDWATER TECHNOLOGY GOVERNMENT SERVICES.

SOURCE: THIS MAP WAS CREATED FROM NAVFAC DRAWINGS.

N

0 150 300

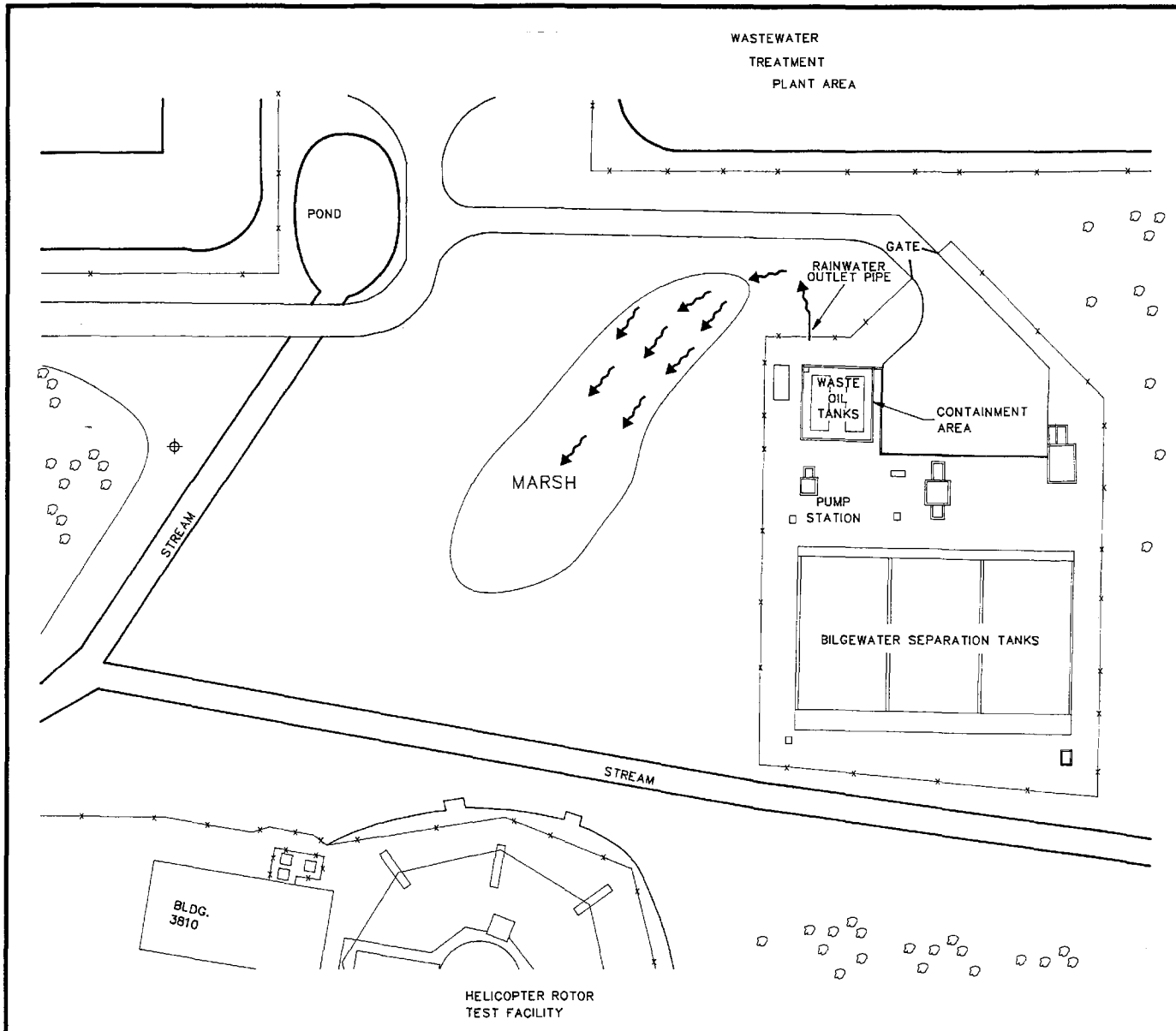
SCALE FEET

GROUNDWATER TECHNOLOGY GOVERMENT SERVICES
3700 CREIGHTON ROAD
PENSACOLA, FLORIDA 32504
(904) 4778-7128

REV. NO.:	DRAWING DATE:	ACAD FILE:
ORIG.	10-21-92	8901GTI

SITE MAP

CLIENT:			PM:
DEPARTMENT OF THE NAVY PUBLIC WORKS CENTER			
LOCATION:			PE/RG:
N.A.S. PENSACOLA PENSACOLA, FLORIDA			DT
DESIGNED:	DETAILED:	PROJECT NO.:	FIGURE:
JWH	GPB	830011089.01	2



LEGEND

ACCIDENTAL RELEASE FLOW PATH DIRECTION

SOURCE: THIS MAP WAS CREATED FROM NAVFAC DRAWINGS.

N

0 60 120

SCALE FEET

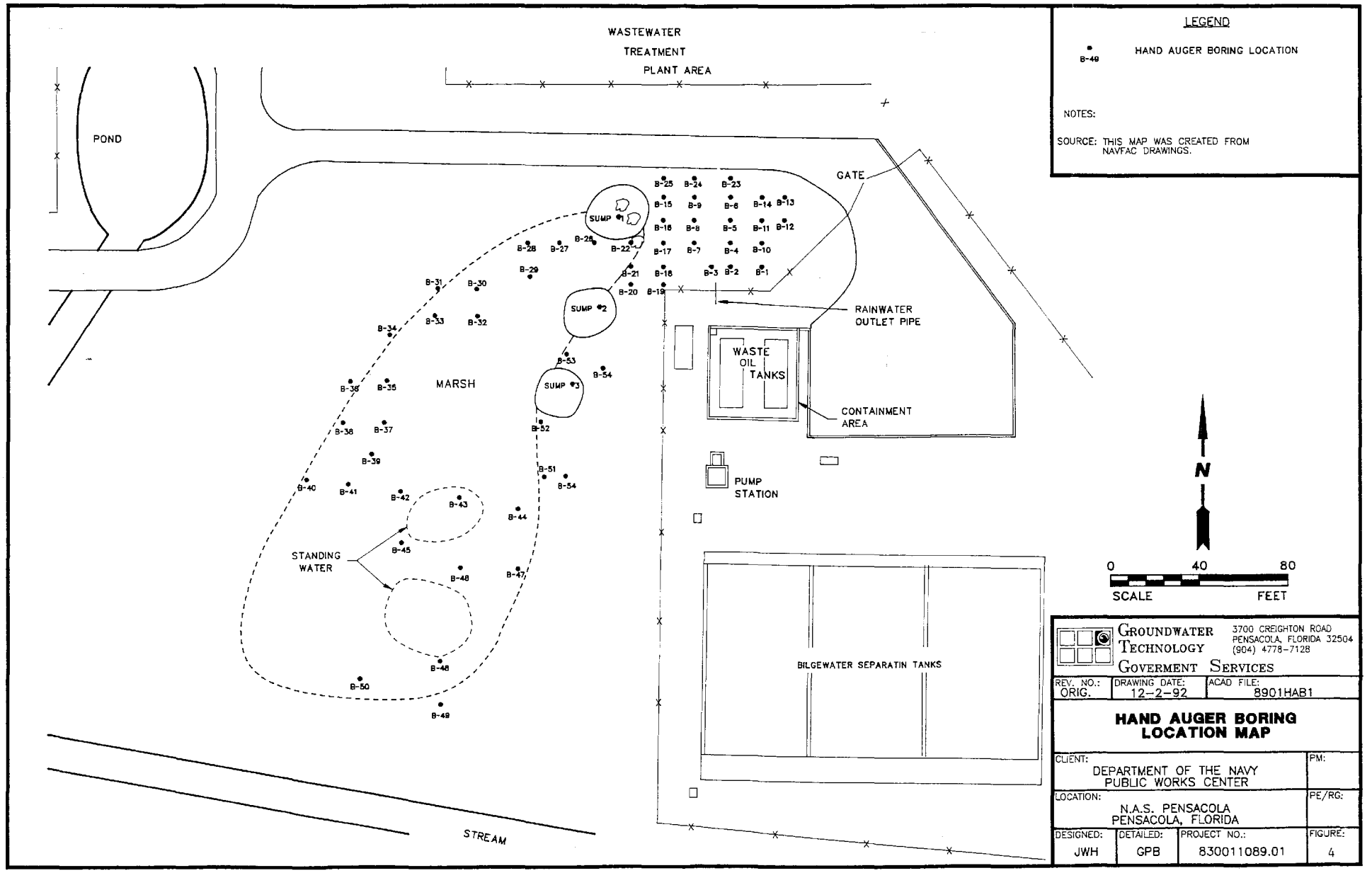
GROUNDWATER TECHNOLOGY GOVERMENT SERVICES
3700 CREIGHTON ROAD
PENSACOLA, FLORIDA 32504
(904) 477B-712B

REV. NO.:	DRAWING DATE:	ACAD FILE:
ORIG.	12-2-92	8901ARFP

ACCIDENTAL RELEASE FLOW PATH MAP

CLIENT:	PM:
DEPARTMENT OF THE NAVY PUBLIC WORKS CENTER	
LOCATION:	PE/RG:
N.A.S. PENSACOLA PENSACOLA, FLORIDA	

DESIGNED:	DETAILED:	PROJECT NO.:	FIGURE:
JWH	GPB	830011089.01	3



LEGEND

B-49 HAND AUGER BORING LOCATION

NOTES:

SOURCE: THIS MAP WAS CREATED FROM NAVFAC DRAWINGS.

N

0 40 80

SCALE FEET

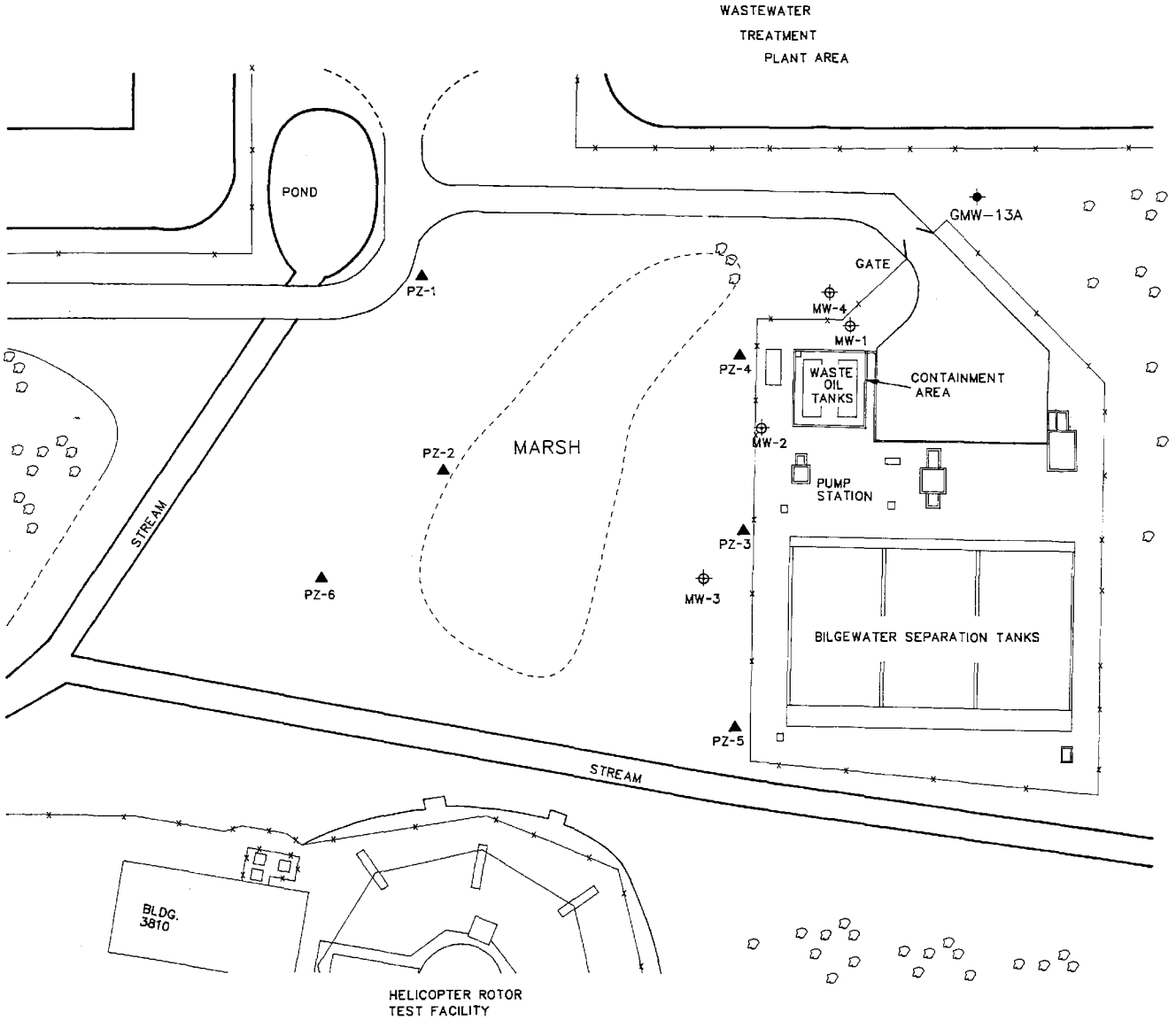
GROUNDWATER TECHNOLOGY GOVERMENT SERVICES
3700 CREIGHTON ROAD
PENSACOLA, FLORIDA 32504
(904) 4778-7128

REV. NO.:	DRAWING DATE:	ACAD FILE:
ORIG.	12-2-92	8901HAB1

HAND AUGER BORING LOCATION MAP

CLIENT:	PM:
DEPARTMENT OF THE NAVY PUBLIC WORKS CENTER	
LOCATION:	PE/RG:
N.A.S. PENSACOLA PENSACOLA, FLORIDA	

DESIGNED:	DETAILED:	PROJECT NO.:	FIGURE:
JWH	GPB	830011089.01	4



LEGEND

GMW-13A — PRE-EXISTING 2" MONITORING WELL LOCATION

MW-1 — 4" MONITORING WELL LOCATION

PZ-1 — PIEZOMETER LOCATION

NOTES: PRE-EXISTING MONITORING WELLS NOT INSTALLED BY GROUNDWATER TECHNOLOGY GOVERNMENT SERVICES.

SOURCE: THIS MAP WAS CREATED FROM NAVFAC DRAWINGS.

N

0 60 120

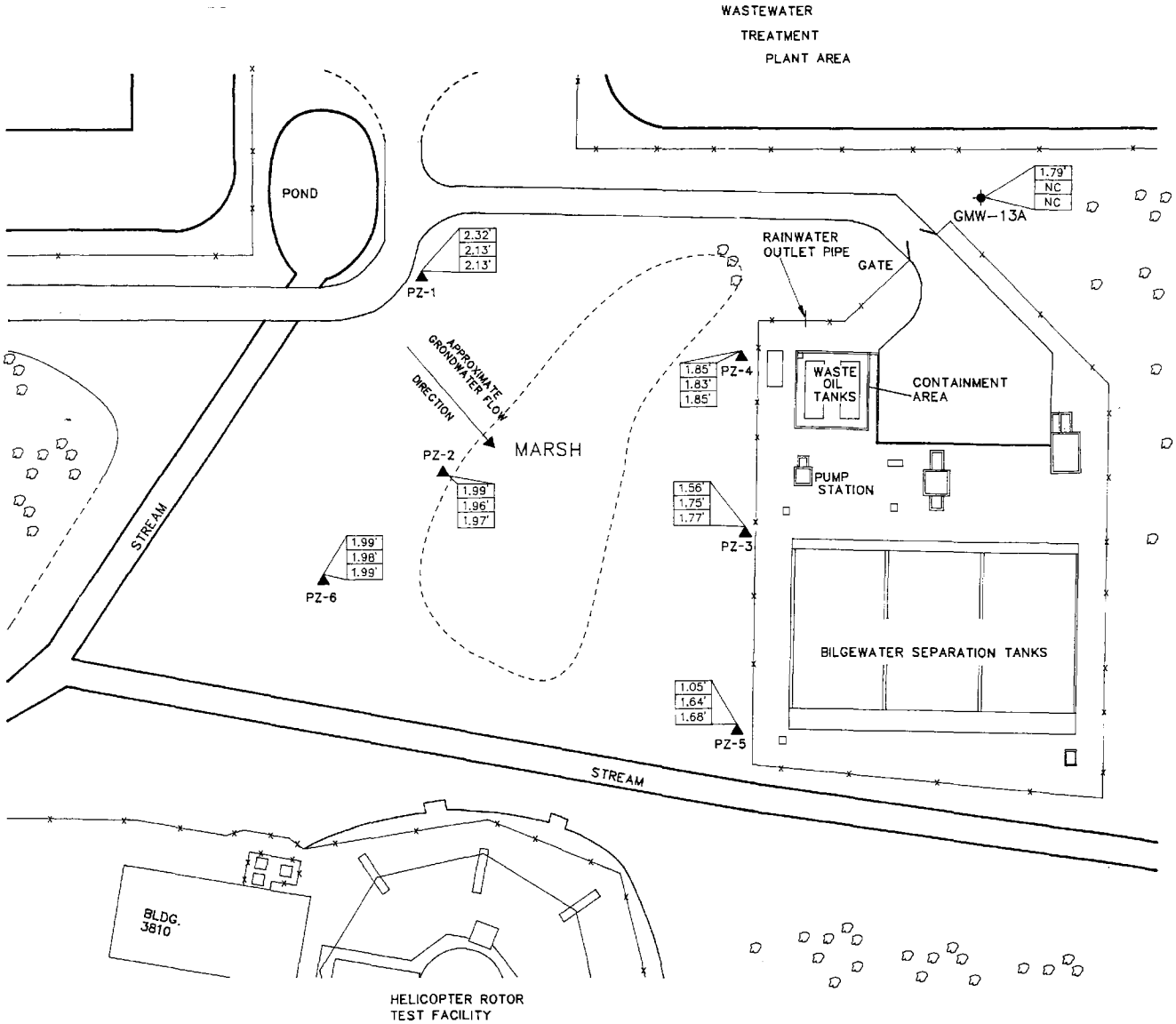
SCALE FEET

GROUNDWATER TECHNOLOGY GOVERMENT SERVICES
3700 CREIGHTON ROAD
PENSACOLA, FLORIDA 32504
(904) 478-7128

REV. NO.:	DRAWING DATE:	ACAD FILE:
ORIG.	1-6-93	8901PZTR

PIEZOMETER AND MONITORING WELL LOCATION MAP

CLIENT:			PM:
DEPARTMENT OF THE NAVY PUBLIC WORKS CENTER			
LOCATION:			PE/RG:
N.A.S. PENSACOLA PENSACOLA, FLORIDA			
DESIGNED:	DETAILED:	PROJECT NO.:	FIGURE:
JWH	GPB	830011089.01	6



LEGEND

GMW-13A — PRE-EXISTING 2" MONITORING WELL LOCATION

MW-1 — 4" MONITORING WELL LOCATION

PZ-1 — PIEZOMETER LOCATION

2.32' - 12/2/92 WATER TABLE ELEVATION
2.13' - 12/8/92 (ABOVE MEAN SEA LEVEL)
2.13' - 12/9/92

NOTES: PRE-EXISTING MONITORING WELLS NOT INSTALLED BY GROUNDWATER TECHNOLOGY GOVERNMENT SERVICES.
NC= NOT COLLECTED

SOURCE: THIS MAP WAS CREATED FROM NAVFAC DRAWINGS.

N

0 60 120
SCALE FEET

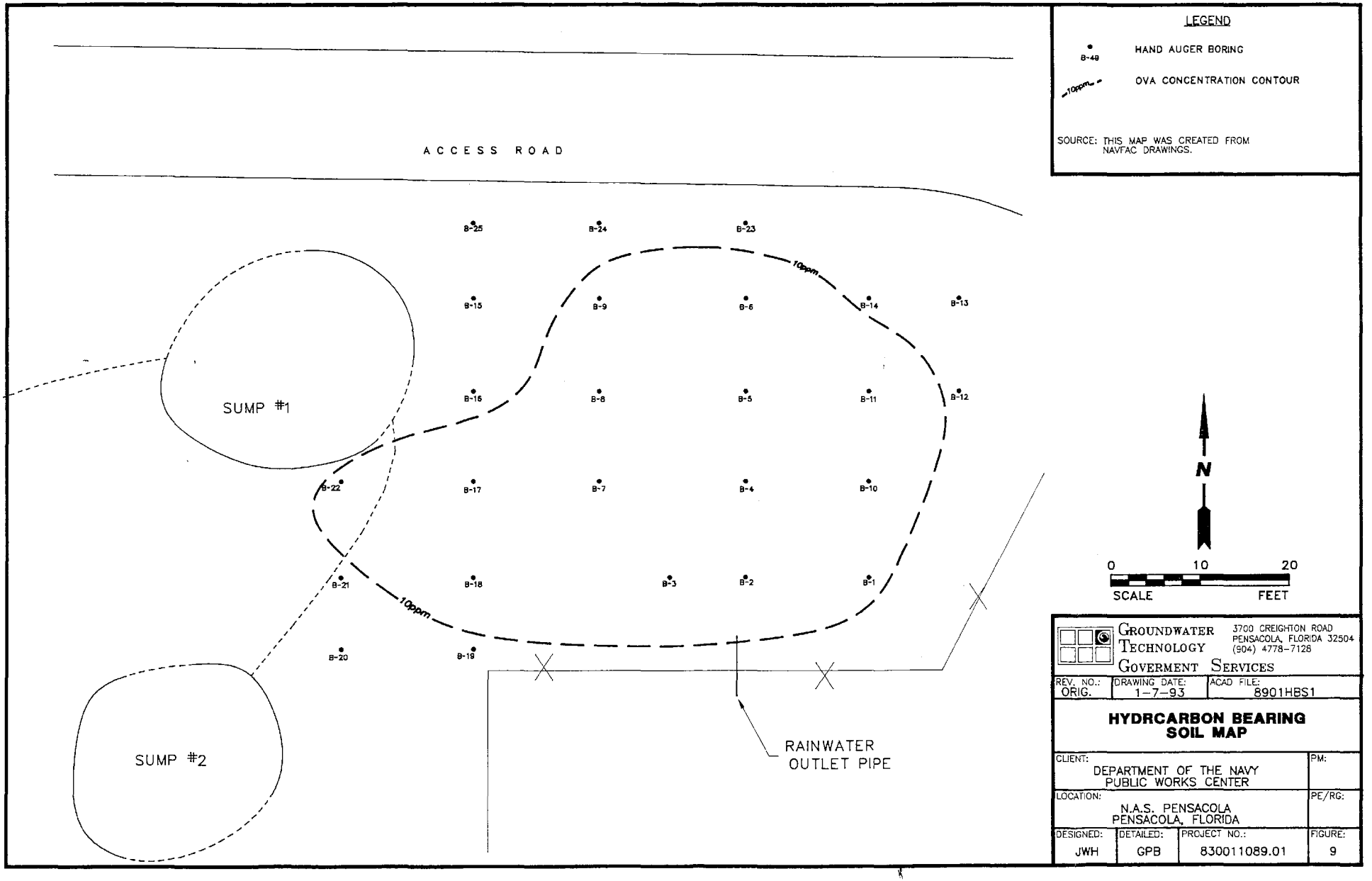
GROUNDWATER TECHNOLOGY GOVERNMENT SERVICES
3700 CREIGHTON ROAD
PENSACOLA, FLORIDA 32504
(904) 477-8-7128

REV. NO.:	DRAWING DATE:	ACAD FILE:
ORIG.	1-11-93	8901GFD1

GROUNDWATER FLOW DIRECTION MAP

CLIENT:		PM:
DEPARTMENT OF THE NAVY PUBLIC WORKS CENTER		
LOCATION:		PE/RG:
N.A.S. PENSACOLA PENSACOLA, FLORIDA		

DESIGNED:	DETAILED:	PROJECT NO.:	FIGURE:
JWH	GPB	830011089.01	8



LEGEND

B-49 HAND AUGER BORING

10ppm OVA CONCENTRATION CONTOUR

SOURCE: THIS MAP WAS CREATED FROM NAVFAC DRAWINGS.

N

0 10 20

SCALE FEET

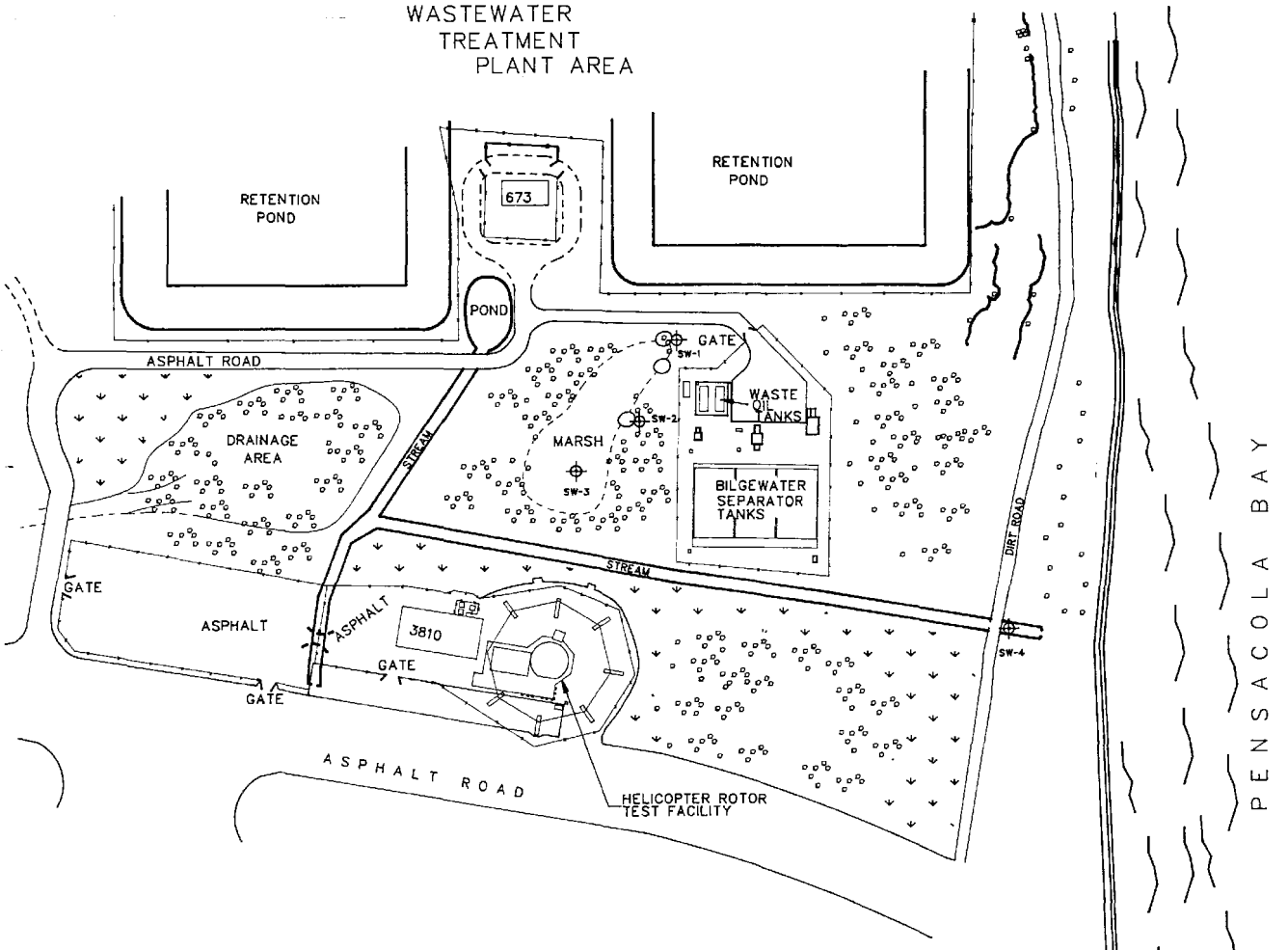
GROUNDWATER TECHNOLOGY GOVERMENT SERVICES
3700 CREIGHTON ROAD
PENSACOLA, FLORIDA 32504
(904) 4778-7128

REV. NO.:	DRAWING DATE:	ACAD FILE:
ORIG.	1-7-93	8901HBS1

HYDRCARBON BEARING SOIL MAP

CLIENT:	PM:
DEPARTMENT OF THE NAVY PUBLIC WORKS CENTER	
LOCATION:	PE/RG:
N.A.S. PENSACOLA PENSACOLA, FLORIDA	

DESIGNED:	DETAILED:	PROJECT NO.:	FIGURE:
JWH	GPB	830011089.01	9



LEGEND

SW-1 SURFACE WATER SAMPLE LOCATION

SOURCE: THIS MAP WAS CREATED FROM NAVFAC DRAWINGS.

N

0 150 300

SCALE FEET

GROUNDWATER TECHNOLOGY GOVERMENT SERVICES
3700 CREIGHTON ROAD
PENSACOLA, FLORIDA 32504
(904) 4778-7128

REV. NO.:	DRAWING DATE:	ACAD FILE:
ORIG.	1-6-93	8901SWS1

SURFACE WATER SAMPLE LOCATION MAP

CLIENT:			PM:
DEPARTMENT OF THE NAVY PUBLIC WORKS CENTER			JWH
LOCATION:			PE/RG:
N.A.S. PENSACOLA PENSACOLA, FLORIDA			DT
DESIGNED:	DETAILED:	PROJECT NO.:	FIGURE:
JWH	GPB	830011089.01	10

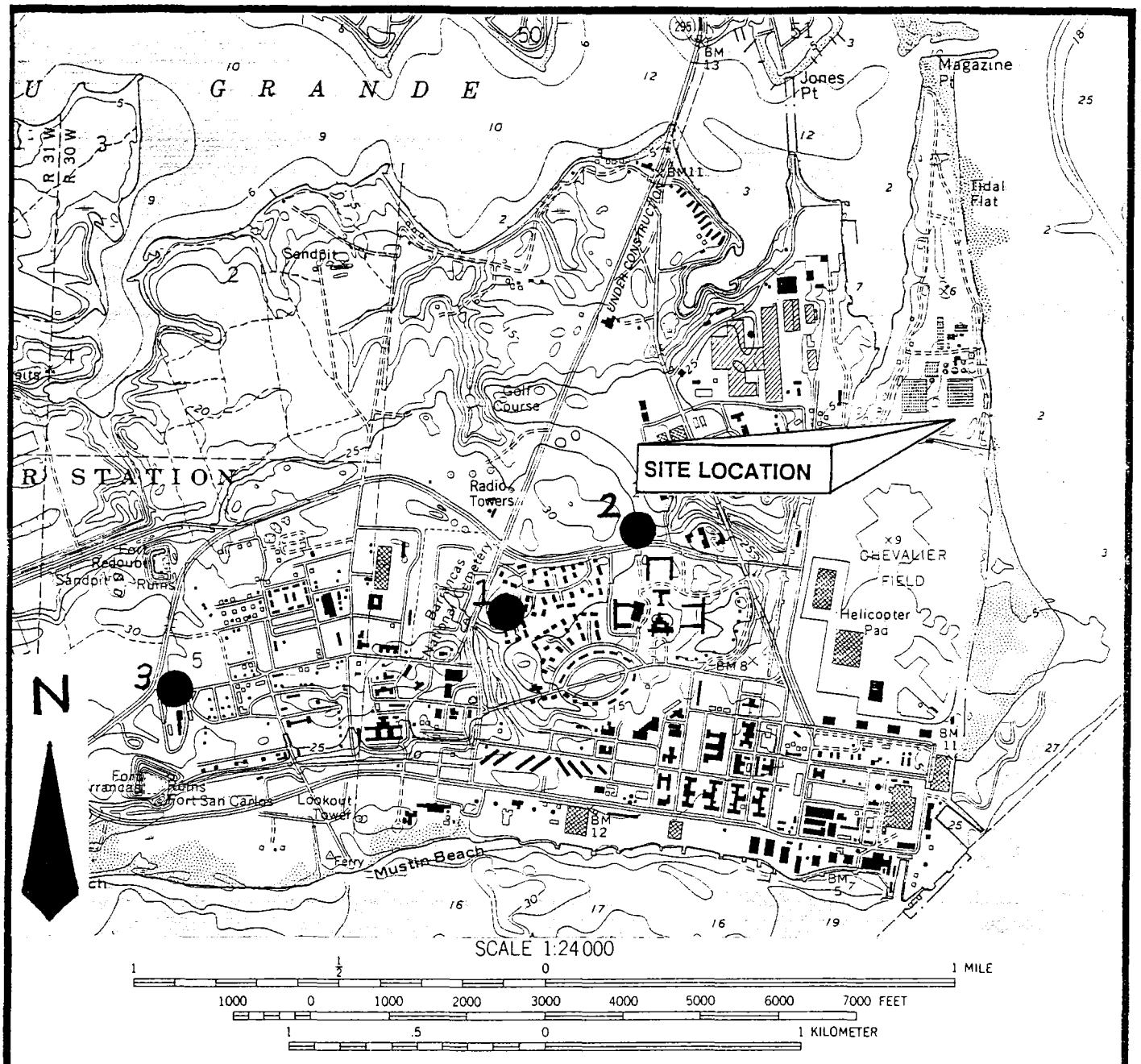


FIGURE 5

WATER WELL LOCATION MAP

Bilgewater Treatment Plant
Pensacola Naval Air Station
Pensacola, Escambia County, Florida

LEGEND

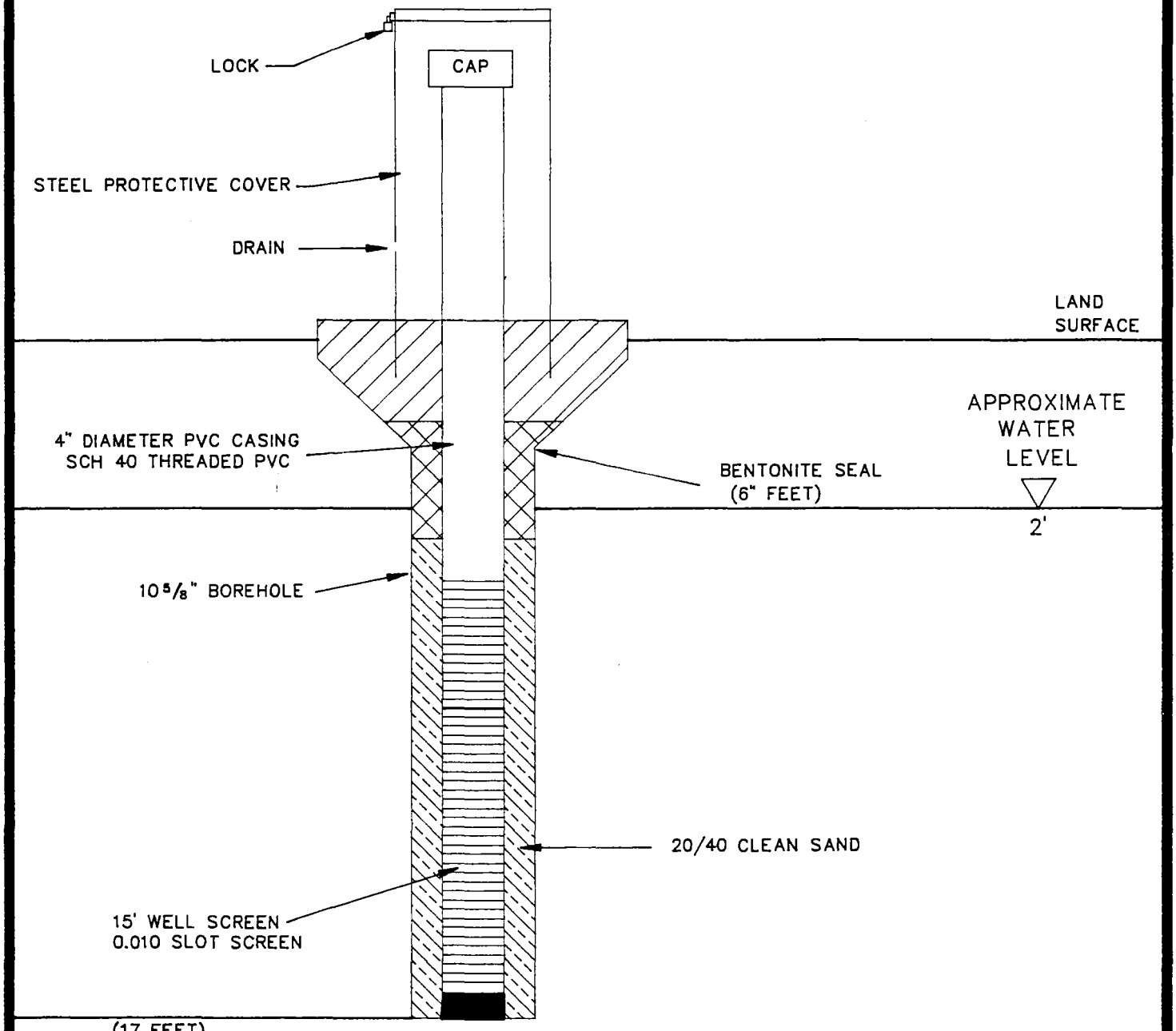
Public Supply Well

QUADRANGLE LOCATION

Source: USGS Quadrangle Map
7.5 Minute Series,
Ft. Barrancas, Florida
1970/1987

830011089.01

GROUNDWATER TECHNOLOGY GOVERNMENT SERVICES



NOTE: DRAWING IS NOT TO SCALE

GROUNDWATER TECHNOLOGY GOVERNMENT SERVICES	3700 CREIGHTON ROAD PENSACOLA, FLORIDA 32504 (904) 478-7128		
DESIGNED BY: JWH	DRAFTED BY: GPB	APPROVED BY:	DATE: 1-8-92

TYPICAL 4" MONITORING WELL DIAGRAM

ACAD FILE: 8901-MW	PROJECT ID: 830011089.01	FIGURE NO. 7

TABLES

TABLE 1

CONSTRUCTION DETAILS OF WATER-SUPPLY WELLS

NAS BILGEWATER TREATMENT PLANT
NAVAL AIR STATION, PENSACOLA

NAS FACILITY NUMBER	#1 696	#2 706	#3 1802
Year Drilled	1942	1942	1969
Depth Drilled	174' - 6"	178'	240'
Length, outside casing	106	114'	180'
Diameter, outside casing	24" - 100' 12" - 106'	24" - 110' 12" - 114'	30" - 180'
Material, outside casing	steel	steel	steel
Depth to static water level	23'	24'	45'
Normal suction lift (wkng. level)	32'	38'	69'
Normal yield, GPM	650	650	1,120
Test yield, GPM	u/k	u/k	u/k
Type of grout	cement	cement	cement
Drilling method	rotary	rotary	rotary
Type of strainer	bronze	bronze	S.S.
Depth to top of strainer	106'	114'	185'
Protection from surface water?	yes	yes	yes
Is inundation of well possible	no	no	no
Sale intrusion noted in past?	no	no	no
Has the well ever been contaminated?	no	no	no
Pump manufacturer's name	Layne Bowler	Layne Bowler	Layne Bowler
Model number	RKLC	RKLC	12 RK
Capacity GPM	750	750	750
Check valve present in line?	yes	yes	yes
Date of last servicing	routine	maint.	program
Maintenance schedule (day/mo.)	daily	daily	daily

Notes: u/k = unknown
s.s. = stainless steel

TABLE 2

GROUNDWATER ELEVATION SURVEY

NAS BILGEWATER TREATMENT PLANT
PENSACOLA NAVAL AIR STATION

DATE	STA	HI	FS	ELE	DTW	WTE
12/02/92	GMW-13A	10.74	3.29	7.45	5.66	1.79
12/02/92	P-1	10.74	3.99	6.75	4.43`	2.32
12/02/92	P-2	8/84	3.84	5.00	3.01	1.99
12/02/92	P-3	8.84	1.40	7.44	5.88	1.56
12/02/92	P-4	10.74	5.29	5.45	3.60	1.85
12/02/92	P-5	10.66	3.75	6.91	5.86	1.05
12/02/92	P-6	7.62	2.64	4.98	2.99	1.99
12/08/92	P-1	10.74	3.99	6.75	4.62	2.13
12/08/92	P-2	8.84	3.84	5.00	3.04	1.96
12/08/92	P-3	8.84	1.40	7.44	5.69	1.75
12/08/92	P-4	10.74	5.29	5.45	3.62	1.83
12/08/92	P-5	10.66	7.35	6.91	5.27	1.64
12/08/92	P-6	7.62	2.64	4.98	3.00	1.98
12/09/92	P-1	10.74	3.99	6.75	4.62	2.13
12/09/92	P-2	8.84	3.84	5.00	3.03	1.97
12/09/92	P-3	8.84	1.40	7.44	5.67	1.77
12/09/92	P-4	10.74	5.29	5.45	3.60	1.85
12/09/92	P-5	10.66	3.75	6.91	5.23	1.68
12/09/92	P-6	7.62	2.64	4.98	2.99	1.99

NOTES: Assumed elevation of GMW-13A is 7.45' top of casing elevation.
STA = Stadia
HI = Height of instrument
FS = Fore sight
ELE = Elevation
DTW = Depth to water
WTE = Water table elevation
GMW = Geraghty & Miller well
P = Piezometer

TABLE 3

SUMMARY OF SURFACE WATER ANALYTICAL RESULTS

NAS BILGEWATER TREATMENT PLANT
PENSACOLA NAVAL AIR STATION

SAMPLE ID	BENZENE	TOLUENE	ETHYL BENZENE	TOTAL XYLENES	TOTAL BTEX	MTBE	Pb	TOTAL NAPHTHALENES
SW-1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
SW-2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
SW-3	BDL	1.1	BDL	BDL	BDL	BDL	BDL	BDL
SW-4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

NOTES: All results reported in parts per billion.
Total BTEX = Summation of benzene, toluene, ethyl benzene, and total xylenes
MTBE = Methyl tert-butyl ether
TPH = Total Petroleum Hydrocarbons
EDB = Ethylene dibromide
Pb = Total lead
Total Naphthalenes = Summation of naphthalene, 1, methylnaphthalene, and 2, methylnaphthalene
BDL = Below detection limits

Sample Date = December 9, 1992

TABLE 4

ORGANIC VAPOR CONTENT OF SOIL
(OVA HEADSPACE SCREENING)

NAS BILGEWATER TREATMENT PLANT
PENSACOLA NAVAL AIR STATION

I.D.	OVA
HA-1	10
HA-2	600
HA-3	900
HA-4	175
HA-5	125
HA-6	105
HA-7	1,000
HA-8	2,000
HA-9	875
HA-10	15
HA-11	250
HA-12	0
HA-13	0
HA-14	0
HA-15	0
HA-16	7.5
HA-17	30
HA-18	150
HA-19	0
HA-20	0
--	--

I.D.	OVA
HA-21	0
HA-22	1,500
HA-23	0
HA-24	4
HA-25	0.5
HA-26	1,100
HA-27	600
HA-28	850
HA-29	350
HA-30	425
HA-31	0
HA-32	900
HA-33	260
HA-34	300
HA-35	100
HA-36	80
HA-37	40
HA-38	270
HA-39	330
HA-40	10
--	--

I.D.	OVA
HA-41	350
HA-42	250
HA-43	0
HA-44	7
HA-45	0
HA-46	40
HA-47	280
HA-48	540
HA-49	0
HA-50	3
HA-51	25
HA-52	0
HA-53	3,300
HA-54	19
HA-55	11
P-1; 2'	2
P-2; 4'	2
P-2; G.C.	1
P-3; 4'	1
P-4; 1'	0
P-5; 1'	0

NOTES: All results reported in parts per million
HA = Hand auger
P = Piezometer

TABLE 5

SUMMARY OF SOIL ANALYTICAL RESULTS

NAS BILGEWATER TREATMENT PLANT
PENSACOLA NAVAL AIR STATION

DATE	SAMPLE I.D.	BENZENE	TOLUENE	ETHYL BENZENE	TOTAL XYLENES	TOTAL BTEX	TPH (ppm)
12/09/92	HA-8	BDL	BDL	411	900	1,311	41,400

NOTES: All results reported in parts per billion unless otherwise noted.
ppm = Parts per million
Total BTEX = Summation of benzene, toluene, ethyl benzene and total xylenes
TPH = Total Petroleum Hydrocarbons
HA = Hand auger
BDL = Below detection limits

TABLE 6

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

NAS BILGEWATER TREATMENT PLANT
PENSACOLA NAVAL AIR STATION

SAMPLE ID	BENZENE	TOLUENE	ETHYL BENZENE	TOTAL XYLENES	TOTAL BTEX	MTBE	TPH	EDB	Pb	TOTAL NAPHTHALENES
MW-1	BDL	6.0	2.6	6.4	15.0	BDL	BDL	BDL	BDL	BDL
MW-2	BDL	1.3	BDL	3.5	4.8	BDL	BDL	BDL	BDL	BDL
MW-3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
MW-4	BDL	3.0	2.1	14.0	19.1	BDL	BDL	BDL	BDL	8.4
GMW-13A	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

NOTES: All results reported in parts per billion.
Total BTEX = Summation of benzene, toluene, ethyl benzene, and total xylenes
MTBE = Methyl tert-butyl ether
TPH = Total Petroleum Hydrocarbons
EDB = Ethylene dibromide
Pb = Total lead
Total Naphthalenes = Summation of naphthalene, 1, methylnaphthalene, and 2, methylnaphthalene
BDL = Below detection limits
GMW = Geraghty and Miller well

Sample Date = December 17, 1992

APPENDIX A
LABORATORY ANALYTICAL REPORTS

AnalyticalTechnologies,Inc. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Client: NAS, CO, PWC

Project Number: 145
Project Name: BILGE WATER SOIL
Sample Site: TREATMENT PLANT
Sample Type: SOIL

Lab I.D.#: 92-2888-1
Received Date: 04/09/92
Sampled By: PAUL SEMMES

Sample ID.: BILGEWATER SOIL Sample Date: 04/09/92 Time: 0810

CI /VOL TCLP VOLATILES METHOD 8240

Parameter	Units	Result	Detection Limit
BENZENE	PPM	BDL	0.001
CARBON TETRACHLORIDE	PPM	BDL	0.002
CHLOROBENZENE	PPM	BDL	0.001
CHLOROFORM	PPM	BDL	0.002
1,4-DICHLOROBENZENE	PPM	BDL	0.002
1,2-DICHLOROETHANE	PPM	BDL	0.002
1,1-DICHLOROETHYLENE	PPM	BDL	0.002
METHYL ETHYL KETONE	PPM	0.074	0.010
TETRACHLOROETHYLENE	PPM	BDL	0.002
TRICHLOROETHYLENE	PPM	BDL	0.001
VINYL CHLORIDE	PPM	BDL	0.001
BROMOFLUOROBENZENE *SURR*	% REC	100	
1,2-DICHLOROETHANE D4 *SURR*	% REC	100	
TOLUENE D8 *SURR*	% REC	101	

end of report

Client: NAS, CO, PWC

Project Number: 145
Project Name: BILGE WATER SOIL
Sample Site: TREATMENT PLANT
Sample Type: SOIL

Lab I.D.#: 92-2888-1
Received Date: 04/09/92
Sampled By: PAUL SEMMES

Sample ID.: BILGEWATER SOIL Sample Date: 04/09/92 Time: 0810

TCLP/BASE TCLP BASE/NEUTRALS

Parameter	Units	Result	Detection Limit
2,4-DINITROTOLUENE	PPM	BDL	0.020
HEXACHLOROBENZENE	PPM	BDL	0.020
HEXACHLOROBUTADIENE	PPM	BDL	0.020
HEXACHLOROETHANE	PPM	BDL	0.020
NITROBENZENE	PPM	BDL	0.020
PYRIDINE	PPM	BDL	0.020
2-FLUOROBIPHENYL *SURR*	% REC	88	
NITROBENZENE D5 *SURR*	% REC	84	
TERPHENYL D14 *SURR*	% REC	78	

AnalyticalTechnologies, Inc. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Client: NAS, CO, PWC

Project Number: 145
Project Name: BILGE WATER SOIL
Sample Site: TREATMENT PLANT
Sample Type: SOIL

Lab I.D.#: 92-2888-1
Received Date: 04/09/92
Sampled By: PAUL SEMMES

Sample ID.: BILGEWATER SOIL Sample Date: 04/09/92 Time: 0810

TC P/ACID TCLP ACID EXTRACTABLES

Parameter	Units	Result	Detection Limit
CRESOL, TOTAL	PPM	BDL	0.050
O-CRESOL	PPM	BDL	0.050
M,P CRESOL	PPM	BDL	0.050
PENTACHLOROPHENOL	PPM	BDL	0.050
2,4,5-TRICHLOROPHENOL	PPM	BDL	0.050
2,4,6-TRICHLOROPHENOL	PPM	BDL	0.050
2-FLUOROPHENOL *SURR*	% REC	69	
PHENOL D5 *SURR*	% REC	70	
2,4,6-TRIBROMOPHENOL *SURR*	% REC	82	

Analytical Technologies, Inc. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Client: NAS, CO, PWC

Project Number: 145
Project Name: BILGE WATER SOIL
Sample Site: TREATMENT PLANT
Sample Type: SOIL

Lab I.D.#: 92-2888-1
Received Date: 04/09/92
Sampled By: PAUL SEMMES

Sample ID.: BILGEWATER SOIL Sample Date: 04/09/92 Time: 0810

TCLP/METALS TCLP METALS ANALYSIS

Parameter	Units	Result	Detection Limit
SILVER, TCLP	PPM	BDL	0.5
ARSENIC, TCLP	PPM	BDL	0.5
BARIUM, TCLP	PPM	BDL	10
CADMIUM, TCLP	PPM	BDL	0.1
CHROMIUM, TCLP	PPM	BDL	0.5
MERCURY, TCLP	PPM	BDL	0.002
LEAD, TCLP	PPM	BDL	0.5
SELENIUM, TCLP	PPM	BDL	0.1

* BDL = Below Detection Limits
All analyses were performed using EPA, ASTM, USGS, or Standard Methods

CLP # 90-0376G
HRS # E86240, 86356
SUB HRS# 86122, 86109, E86048
REM ID# 40720

Respectfully Submitted,

Jeffrey S. Glass
Laboratory Director

3658-5

V.O.C ANALYTICAL

CLIENT # 151M
ADDRESS: GROUNDWATER TECHNOLOGY
GOVERNMENT SERVICES
223 WILMINGTON-W.CHESTER PIKE
CHADDS FORD, PA. 19317

PAGE: 1
DATE: 01-05-1993
LOG #: 3719-1

SAMPLE DESCRIPTION: GROUNDWATER TECHNOLOGY
NAS BILGEWATER
PENSACOLA, FL.
GROUNDWATER ANALYSIS

LABEL: MW-1
DATE SAMPLED: 12/17/92
DATE RECEIVED: 12/21/92
COLLECTED BY:CLIENT

Parameter	Result	Units	Method	Detection Limit	Extr. Date	Anal Date	Analyst
EPA 8021 in water		ug/l	5030/8021		12/22/92	12/22/92	GP
Bromodichloromethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Bromoform	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Bromomethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Carbon Tetrachloride	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Chloroethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Cis-1,2-Dichloroethene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Chloroform	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Chloromethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Dibromochloromethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,2-Dichlorobenzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,3-Dichlorobenzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,4-Dichlorobenzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Dichlorofluoromethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Chlorobenzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Vinyl Chloride	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,1-Dichloroethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,2-Dichloroethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,1-Dichloroethene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Trans-1,2-Dichloroethene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,2-Dichloropropane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Cis-1,3-Dichloropropane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Trans-1,3-Dichloropropen	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Methylene Chloride	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,1,2,2-Tetrachloroethan	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Tetrachloroethene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,1,1-Trichloroethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,1,2-Trichloroethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Trichloroethene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Trichlorofluoromethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Benzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Toluene	6.0	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
MTBE	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Ethyl Benzene	2.6	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Total Xylenes	6.4	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP

CLIENT # 151M

DDRESS: GROUNDWATER TECHNOLOGY
GOVERNMENT SERVICES
223 WILMINGTON-W.CHESTER PIKE
CHADDS FORD, PA. 19317

PAGE: 2
DATE: 01-05-1993
LOG #: 3719-1

AMPLE DESCRIPTION: GROUNDWATER TECHNOLOGY
NAS BILGEWATER
PENSACOLA, FL.
GROUNDWATER ANALYSIS

LABEL: MW-1
DATE SAMPLED: 12/17/92
DATE RECEIVED: 12/21/92
COLLECTED BY:CLIENT

arameter	Result	Units	Method	Detection Limit	Extr. Date	Anal Date	Analyst
ilution Factor	1	ug/l	5030/8021	.	12/22/92	12/22/92	GP
DB	BDL	ug/l	504	0.01	12/21/92	12/22/92	FY
TRPH	BDL	mg/l	418.1	2.0	12/22/92	12/22/92	JV
PAH Compounds in water		ug/l	3510/8270		12/22/92	12/23/92	FY
aphthalene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
cenaphthylene	BDL	ug/l	3510/8270	2.5	12/22/92	12/23/92	FY
Acenaphthene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
luorene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
henanthrene	BDL	ug/l	3510/8270	3.5	12/22/92	12/23/92	FY
Anthracene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
luoranthene	BDL	ug/l	3510/8270	2.5	12/22/92	12/23/92	FY
yrene	BDL	ug/l	3510/8270	2.0	12/22/92	12/23/92	FY
Benzo (A) Anthracene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
Chrysene	BDL	ug/l	3510/8270	2.5	12/22/92	12/23/92	FY
enzo (B) Fluoranthene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
Benzo (K) Fluoranthene	BDL	ug/l	3510/8270	2.5	12/22/92	12/23/92	FY
Benzo (A) Pyrene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
ndeno-(1,2,3,-CD)Pyrene	BDL	ug/l	3510/8270	8.0	12/22/92	12/23/92	FY
ibenzo (A,H) Anthracene	BDL	ug/l	3510/8270	7.0	12/22/92	12/23/92	FY
Dibenzo (G,H,I) Perylene	BDL	ug/l	3510/8270	4.0	12/22/92	12/23/92	FY
-Methyl Naphthalene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
-Methyl Naphthalene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
Ammenable Cyanide	BDL	mg/l	9010	0.005	12/23/92	12/23/92	BT

CLIENT # 151M

DDRESS: GROUNDWATER TECHNOLOGY
GOVERNMENT SERVICES
223 WILMINGTON-W.CHESTER PIKE
CHADDS FORD, PA. 19317

PAGE: 3
DATE: 01-05-1993
LOG #: 3719-1

AMPLE DESCRIPTION: GROUNDWATER TECHNOLOGY
NAS BILGEWATER
PENSACOLA, FL.
GROUNDWATER ANALYSIS

LABEL: MW-1
DATE SAMPLED: 12/17/92
DATE RECEIVED: 12/21/92
COLLECTED BY:CLIENT

arameter	Result	Units	Method	Detection Limit	Extr. Date	Anal Date	Analyst
rsenic	BDL	mg/l	206.3	0.010	12/21/92	12/24/92	JK
admium	BDL	mg/l	213.2	0.005	12/21/92	12/21/92	JK
Chromium	0.006	mg/l	218.2	0.005	12/21/92	12/22/92	JK
Lead	BDL	mg/l	239.2	0.005	12/21/92	12/22/92	JK

BDL = Below Detection Limits
All analyses were performed using EPA, ASTM, USGS, or Standard Methods

QAP # 90-0376G
HRS # E86240, 86356
SUB HRS# 86122, 86109, E86048
ADEM ID# 40720

Respectfully Submitted,

Jeffrey S. Glass
Laboratory Director

3719-1

LIENT # 151M

ADDRESS: GROUNDWATER TECHNOLOGY
GOVERNMENT SERVICES
223 WILMINGTON-W.CHESTER PIKE
CHADDS FORD, PA. 19317

PAGE: 1
DATE: 01-05-1993
LOG #: 3719-2

SAMPLE DESCRIPTION: GROUNDWATER TECHNOLOGY
NAS BILGEWATER
PENSACOLA, FL.
GROUNDWATER ANALYSIS

LABEL: MW-2
DATE SAMPLED: 12/17/92
DATE RECEIVED: 12/21/92
COLLECTED BY:CLIENT

Parameter	Result	Units	Method	Detection Limit	Extr. Date	Anal Date	Analyst
PA 8021 in water		ug/l	5030/8021		12/22/92	12/22/92	GP
Bromodichloromethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Bromoform	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Bromomethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Carbon Tetrachloride	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Chloroethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Cis-1,2-Dichloroethene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Chloroform	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Chloromethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Dibromochloromethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
,2-Dichlorobenzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,3-Dichlorobenzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,4-Dichlorobenzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Dichlorofluoromethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Chlorobenzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Vinyl Chloride	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
,1-Dichloroethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
,2-Dichloroethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,1-Dichloroethene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Trans-1,2-Dichloroethene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
,2-Dichloropropane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Cis-1,3-Dichloropropane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Trans-1,3-Dichloropropen	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Methylene Chloride	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,1,2,2-Tetrachloroethan	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Tetrachloroethene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,1,1-Trichloroethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,1,2-Trichloroethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Trichloroethene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Trichlorofluoromethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Benzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Toluene	1.3	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
MTBE	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Ethyl Benzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Total Xylenes	3.5	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP

CLIENT # 151M ñ
DDRESS: GROUNDWATER TECHNOLOGY PAGE: 2
GOVERNMENT SERVICES DATE: 01-05-1993
223 WILMINGTON-W.CHESTER PIKE LOG #: 3719-2
CHADDS FORD, PA. 19317
AMPLE DESCRIPTION: GROUNDWATER TECHNOLOGY LABEL: MW-2
NAS BILGEWATER DATE SAMPLED: 12/17/92 ñ
PENSACOLA, FL. DATE RECEIVED: 12/21/92
GROUNDWATER ANALYSIS COLLECTED BY:CLIENT

arameter	Result	Units	Method	Detection Limit	Extr. Date	Anal Date	Analyst
ilution Factor	1	ug/l	5030/8021	.	12/22/92	12/22/92	GP
DB	BDL	ug/l	504	0.01	12/21/92	12/22/92	FY
TRPH	BDL	mg/l	418.1	2.0	12/22/92	12/22/92	JV
PAH Compounds in water		ug/l	3510/8270		12/22/92	12/23/92	FY
aphthalene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
Acenaphthylene	BDL	ug/l	3510/8270	2.5	12/22/92	12/23/92	FY
Acenaphthene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
luorene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
henanthrene	BDL	ug/l	3510/8270	3.5	12/22/92	12/23/92	FY
Anthracene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
luoranthene	BDL	ug/l	3510/8270	2.5	12/22/92	12/23/92	FY
yrene	BDL	ug/l	3510/8270	2.0	12/22/92	12/23/92	FY
Benzo (A) Anthracene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
Chrysene	BDL	ug/l	3510/8270	2.5	12/22/92	12/23/92	FY
enzo (B) Fluoranthene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
Benzo (K) Fluoranthene	BDL	ug/l	3510/8270	2.5	12/22/92	12/23/92	FY
Benzo (A) Pyrene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
ndeno-(1,2,3,-CD)Pyrene	BDL	ug/l	3510/8270	8.0	12/22/92	12/23/92	FY
ibenzo (A,H) Anthracene	BDL	ug/l	3510/8270	7.0	12/22/92	12/23/92	FY
Dibenzo (G,H,I) Perylene	BDL	ug/l	3510/8270	4.0	12/22/92	12/23/92	FY
-Methyl Naphthalene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
-Methyl Naphthalene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
Ammenable Cyanide	BDL	mg/l	9010	0.005	12/23/92	12/23/92	BT

CLIENT # 151M
DDRESS: GROUNDWATER TECHNOLOGY
GOVERNMENT SERVICES
223 WILMINGTON-W.CHESTER PIKE
CHADDS FORD, PA. 19317

PAGE: 3
DATE: 01-05-1993
LOG #: 3719-2

AMPLE DESCRIPTION: GROUNDWATER TECHNOLOGY
NAS BILGEWATER
PENSACOLA, FL.
GROUNDWATER ANALYSIS

LABEL: MW-2
DATE SAMPLED: 12/17/92
DATE RECEIVED: 12/21/92
COLLECTED BY:CLIENT

Parameter	Result	Units	Method	Detection Limit	Extr. Date	Anal Date	Analyst
rsenic	BDL	mg/l	206.3	0.010	12/21/92	12/24/92	JK
admium	BDL	mg/l	213.2	0.005	12/21/92	12/21/92	JK
Chromium	BDL	mg/l	218.2	0.005	12/21/92	12/22/92	JK
ead	BDL	mg/l	239.2	0.005	12/21/92	12/22/92	JK

* BDL = Below Detection Limits
All analyses were performed using EPA, ASTM, USGS, or Standard Methods

QAP # 90-0376G
RS # E86240, 86356
UB HRS# 86122, 86109, E86048
ADEM ID# 40720

Respectfully Submitted,

Jeffrey S. Glass
Laboratory Director

CLIENT # 151M

ADDRESS: GROUNDWATER TECHNOLOGY
GOVERNMENT SERVICES
223 WILMINGTON-W.CHESTER PIKE
CHADDS FORD, PA. 19317

PAGE: 1
DATE: 01-05-1993
LOG #: 3719-3

SAMPLE DESCRIPTION: GROUNDWATER TECHNOLOGY
NAS BILGEWATER
PENSACOLA, FL.
GROUNDWATER ANALYSIS

LABEL: MW-3
DATE SAMPLED: 12/17/92
DATE RECEIVED: 12/21/92
COLLECTED BY:CLIENT

Parameter	Result	Units	Method	Detection Limit	Extr. Date	Anal Date	Analyst
EPA 8021 in water		ug/l	5030/8021		12/22/92	12/22/92	GP
Bromodichloromethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Bromoform	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Bromomethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Carbon Tetrachloride	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Chloroethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Cis-1,2-Dichloroethene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Chloroform	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Chloromethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Dibromochloromethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,2-Dichlorobenzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,3-Dichlorobenzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,4-Dichlorobenzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Dichlorofluoromethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Chlorobenzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Vinyl Chloride	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,1-Dichloroethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,2-Dichloroethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,1-Dichloroethene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Trans-1,2-Dichloroethene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,2-Dichloropropane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Cis-1,3-Dichloropropane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Trans-1,3-Dichloropropen	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Methylene Chloride	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,1,2,2-Tetrachloroethan	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Tetrachloroethene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,1,1-Trichloroethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,1,2-Trichloroethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Trichloroethene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Trichlorofluoromethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Benzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Toluene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
MTBE	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Ethyl Benzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Total Xylenes	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP

CLIENT # 151M

DDRESS: GROUNDWATER TECHNOLOGY
GOVERNMENT SERVICES
223 WILMINGTON-W.CHESTER PIKE
CHADDS FORD, PA. 19317

PAGE: 2
DATE: 01-05-1993
LOG #: 3719-3

AMPLE DESCRIPTION: GROUNDWATER TECHNOLOGY
NAS BILGEWATER
PENSACOLA, FL.
GROUNDWATER ANALYSIS

LABEL: MW-3
DATE SAMPLED: 12/17/92
DATE RECEIVED: 12/21/92
COLLECTED BY:CLIENT

arameter	Result	Units	Method	Detection Limit	Extr. Date	Anal Date	Analyst
ilution Factor	1	ug/l	5030/8021	.	12/22/92	12/22/92	GP
DB	BDL	ug/l	504	0.01	12/21/92	12/22/92	FY
TRPH	BDL	mg/l	418.1	2.0	12/22/92	12/22/92	JV
PAH Compounds in water		ug/l	3510/8270		12/22/92	12/23/92	FY
laphthalene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
cenaphthylene	BDL	ug/l	3510/8270	2.5	12/22/92	12/23/92	FY
Acenaphthene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
luorene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
henanthrene	BDL	ug/l	3510/8270	3.5	12/22/92	12/23/92	FY
Anthracene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
luoranthene	BDL	ug/l	3510/8270	2.5	12/22/92	12/23/92	FY
yrene	BDL	ug/l	3510/8270	2.0	12/22/92	12/23/92	FY
Benzo (A) Anthracene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
Chrysene	BDL	ug/l	3510/8270	2.5	12/22/92	12/23/92	FY
Benzo (B) Fluoranthene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
Benzo (K) Fluoranthene	BDL	ug/l	3510/8270	2.5	12/22/92	12/23/92	FY
Benzo (A) Pyrene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
ndeno-(1,2,3,-CD)Pyrene	BDL	ug/l	3510/8270	8.0	12/22/92	12/23/92	FY
ibenzo (A,H) Anthracene	BDL	ug/l	3510/8270	7.0	12/22/92	12/23/92	FY
Dibenzo (G,H,I) Perylene	BDL	ug/l	3510/8270	4.0	12/22/92	12/23/92	FY
-Methyl Naphthalene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
-Methyl Naphthalene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
Ammenable Cyanide	BDL	mg/l	9010	0.005	12/23/92	12/23/92	BT

CLIENT # 151M
ADDRESS: GROUNDWATER TECHNOLOGY
GOVERNMENT SERVICES
223 WILMINGTON-W.CHESTER PIKE
CHADDS FORD, PA. 19317

PAGE: 3
DATE: 01-05-1993
LOG #: 3719-3

SAMPLE DESCRIPTION: GROUNDWATER TECHNOLOGY
NAS BILGEWATER
PENSACOLA, FL.
GROUNDWATER ANALYSIS

LABEL: MW-3
DATE SAMPLED: 12/17/92
DATE RECEIVED: 12/21/92
COLLECTED BY:CLIENT

Parameter	Result	Units	Method	Detection Limit	Extr. Date	Anal Date	Analyst
Arsenic	BDL	mg/l	206.3	0.010	12/21/92	12/24/92	JK
Cadmium	BDL	mg/l	213.2	0.005	12/21/92	12/21/92	JK
Chromium	BDL	mg/l	218.2	0.005	12/21/92	12/22/92	JK
Lead	BDL	mg/l	239.2	0.005	12/21/92	12/22/92	JK

* BDL = Below Detection Limits
All analyses were performed using EPA, ASTM, USGS, or Standard Methods

QAP # 90-0376G
RS # E86240, 86356
UB HRS# 86122, 86109, E86048
ADEM ID# 40720

Respectfully Submitted,

Jeffrey S. Glass
Laboratory Director

3719-3

CLIENT # 151M

ADDRESS: GROUNDWATER TECHNOLOGY
GOVERNMENT SERVICES
223 WILMINGTON-W.CHESTER PIKE
CHADDS FORD, PA. 19317

PAGE: 1
DATE: 01-05-1993
LOG #: 3719-4

SAMPLE DESCRIPTION: GROUNDWATER TECHNOLOGY
NAS BILGEWATER
PENSACOLA, FL.
GROUNDWATER ANALYSIS

LABEL: MW-4
DATE SAMPLED: 12/17/92
DATE RECEIVED: 12/21/92
COLLECTED BY:CLIENT

Parameter	Result	Units	Method	Detection Limit	Extr. Date	Anal Date	Analyst
EPA 8021 in water		ug/l	5030/8021		12/22/92	12/22/92	GP
Bromodichloromethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Bromoform	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Bromomethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Carbon Tetrachloride	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Chloroethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Cis-1,2-Dichloroethene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Chloroform	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Chloromethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Dibromochloromethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,2-Dichlorobenzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,3-Dichlorobenzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,4-Dichlorobenzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Dichlorofluoromethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Chlorobenzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Vinyl Chloride	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,1-Dichloroethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,2-Dichloroethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,1-Dichloroethene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Trans-1,2-Dichloroethene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,2-Dichloropropane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Cis-1,3-Dichloropropane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Trans-1,3-Dichloropropen	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Methylene Chloride	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,1,2,2-Tetrachloroethan	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Tetrachloroethene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,1,1-Trichloroethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,1,2-Trichloroethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Trichloroethene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Trichlorofluoromethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Benzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Toluene	3.0	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
MTBE	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Ethyl Benzene	2.1	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Total Xylenes	14.0	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP

CLIENT # 151M

ADDRESS: GROUNDWATER TECHNOLOGY
GOVERNMENT SERVICES
223 WILMINGTON-W.CHESTER PIKE
CHADDS FORD, PA. 19317

PAGE: 2
DATE: 01-05-1993
LOG #: 3719-4

SAMPLE DESCRIPTION: GROUNDWATER TECHNOLOGY
NAS BILGEWATER
PENSACOLA, FL.
GROUNDWATER ANALYSIS

LABEL: MW-4
DATE SAMPLED: 12/17/92
DATE RECEIVED: 12/21/92
COLLECTED BY:CLIENT

Parameter	Result	Units	Method	Detection Limit	Extr. Date	Anal Date	Analyst
Dilution Factor	1	ug/l	5030/8021	.	12/22/92	12/22/92	GP
EDB	BDL	ug/l	504	0.01	12/21/92	12/22/92	FY
TRPH	BDL	mg/l	418.1	2.0	12/22/92	12/22/92	JV
PAH Compounds in water		ug/l	3510/8270		12/22/92	12/23/92	FY
Naphthalene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
Acenaphthylene	BDL	ug/l	3510/8270	2.5	12/22/92	12/23/92	FY
Acenaphthene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
Fluorene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
Phenanthrene	BDL	ug/l	3510/8270	3.5	12/22/92	12/23/92	FY
Anthracene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
Fluoranthene	BDL	ug/l	3510/8270	2.5	12/22/92	12/23/92	FY
Pyrene	BDL	ug/l	3510/8270	2.0	12/22/92	12/23/92	FY
Benzo (A) Anthracene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
Chrysene	BDL	ug/l	3510/8270	2.5	12/22/92	12/23/92	FY
Benzo (B) Fluoranthene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
Benzo (K) Fluoranthene	BDL	ug/l	3510/8270	2.5	12/22/92	12/23/92	FY
Benzo (A) Pyrene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
Indeno-(1,2,3,-CD)Pyrene	BDL	ug/l	3510/8270	8.0	12/22/92	12/23/92	FY
Dibenzo (A,H) Anthracene	BDL	ug/l	3510/8270	7.0	12/22/92	12/23/92	FY
Dibenzo (G,H,I) Perylene	BDL	ug/l	3510/8270	4.0	12/22/92	12/23/92	FY
1-Methyl Naphthalene	4.7	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
2-Methyl Naphthalene	3.7	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
Ammenable Cyanide	BDL	mg/l	9010	0.005	12/23/92	12/23/92	BT

CLIENT # 151M
ADDRESS: GROUNDWATER TECHNOLOGY
GOVERNMENT SERVICES
223 WILMINGTON-W.CHESTER PIKE
CHADDS FORD, PA. 19317

PAGE: 3
DATE: 01-05-1993
LOG #: 3719-4

SAMPLE DESCRIPTION: GROUNDWATER TECHNOLOGY
NAS BILGEWATER
PENSACOLA, FL.
GROUNDWATER ANALYSIS

LABEL: MW-4
DATE SAMPLED: 12/17/92
DATE RECEIVED: 12/21/92
COLLECTED BY:CLIENT

Parameter	Result	Units	Method	Detection Limit	Extr. Date	Anal Date	Analyst
Arsenic	BDL	mg/l	206.3	0.010	12/21/92	12/24/92	JK
Cadmium	0.007	mg/l	213.2	0.005	12/21/92	12/21/92	JK
Chromium	BDL	mg/l	218.2	0.005	12/21/92	12/22/92	JK
Lead	BDL	mg/l	239.2	0.005	12/21/92	12/22/92	JK

* BDL = Below Detection Limits
All analyses were performed using EPA, ASTM, USGS, or Standard Methods

QAP # 90-0376G
HRS # E86240, 86356
SUB HRS# 86122, 86109, E86048
ADEM ID# 40720

Respectfully Submitted,

Jeffrey S. Glass
Laboratory Director

LIENT # 151M

DDRESS: GROUNDWATER TECHNOLOGY
GOVERNMENT SERVICES
223 WILMINGTON-W.CHESTER PIKE
CHADDS FORD, PA. 19317

PAGE: 1
DATE: 01-05-1993
LOG #: 3719-6

SAMPLE DESCRIPTION: GROUNDWATER TECHNOLOGY
NAS BILGEWATER
PENSACOLA, FL.
GROUNDWATER ANALYSIS

LABEL: GM-13A
DATE SAMPLED: 12/17/92
DATE RECEIVED: 12/21/92
COLLECTED BY:CLIENT

Parameter	Result	Units	Method	Detection Limit	Extr. Date	Anal Date	Analyst
PA 8021 in water		ug/l	5030/8021		12/22/92	12/22/92	GP
Bromodichloromethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Bromoform	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
romomethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Carbon Tetrachloride	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Chloroethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
is-1,2-Dichloroethene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
hloroform	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Chloromethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
ibromochloromethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
,2-Dichlorobenzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,3-Dichlorobenzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,4-Dichlorobenzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
ichlorofluoromethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
hlorobenzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Vinyl Chloride	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
,1-Dichloroethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
,2-Dichloroethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,1-Dichloroethene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
rans-1,2-Dichloroethene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
,2-Dichloropropane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
is-1,3-Dichloropropane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Trans-1,3-Dichloropropen	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
ethylene Chloride	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
,1,2,2-Tetrachloroethan	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Tetrachloroethene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
,1,1-Trichloroethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
,1,2-Trichloroethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Trichloroethene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
richlorofluoromethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
enzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
oluene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
MTBE	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
thyl Benzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
otal Xylenes	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP

CLIENT # 151M

DDRESS: GROUNDWATER TECHNOLOGY
GOVERNMENT SERVICES
223 WILMINGTON-W.CHESTER PIKE
CHADDS FORD, PA. 19317

PAGE: 2
DATE: 01-05-1993
LOG #: 3719-6

AMPLE DESCRIPTION: GROUNDWATER TECHNOLOGY
NAS BILGEWATER
PENSACOLA, FL.
GROUNDWATER ANALYSIS

LABEL: GM-13A
DATE SAMPLED: 12/17/92
DATE RECEIVED: 12/21/92
COLLECTED BY:CLIENT

arameter	Result	Units	Method	Detection Limit	Extr. Date	Anal Date	Analyst
ilution Factor	1	ug/l	5030/8021	.	12/22/92	12/22/92	GP
DB	BDL	ug/l	504	0.01	12/21/92	12/22/92	FY
TRPH	BDL	mg/l	418.1	2.0	12/22/92	12/22/92	JV
PAH Compounds in water		ug/l	3510/8270		12/22/92	12/23/92	FY
aphthalene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
cenaphthylene	BDL	ug/l	3510/8270	2.5	12/22/92	12/23/92	FY
Acenaphthene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
luorene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
henanthrene	BDL	ug/l	3510/8270	3.5	12/22/92	12/23/92	FY
Anthracene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
luoranthene	BDL	ug/l	3510/8270	2.5	12/22/92	12/23/92	FY
yrene	BDL	ug/l	3510/8270	2.0	12/22/92	12/23/92	FY
Benzo (A) Anthracene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
Chrysene	BDL	ug/l	3510/8270	2.5	12/22/92	12/23/92	FY
enzo (B) Fluoranthene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
Benzo (K) Fluoranthene	BDL	ug/l	3510/8270	2.5	12/22/92	12/23/92	FY
Benzo (A) Pyrene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
ndeno-(1,2,3,-CD)Pyrene	BDL	ug/l	3510/8270	8.0	12/22/92	12/23/92	FY
ibenzo (A,H) Anthracene	BDL	ug/l	3510/8270	7.0	12/22/92	12/23/92	FY
Dibenzo (G,H,I) Perylene	BDL	ug/l	3510/8270	4.0	12/22/92	12/23/92	FY
-Methyl Naphthalene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
-Methyl Naphthalene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
Ammenable Cyanide	BDL	mg/l	9010	0.005	12/23/92	12/23/92	BT

CLIENT # 151M

DDRESS: GROUNDWATER TECHNOLOGY
GOVERNMENT SERVICES
223 WILMINGTON-W.CHESTER PIKE
CHADDS FORD, PA. 19317

PAGE: 3
DATE: 01-05-1993
LOG #: 3719-6

AMPLE DESCRIPTION: GROUNDWATER TECHNOLOGY
NAS BILGEWATER
PENSACOLA, FL.
GROUNDWATER ANALYSIS

LABEL: GM-13A
DATE SAMPLED: 12/17/92
DATE RECEIVED: 12/21/92
COLLECTED BY:CLIENT

arameter	Result	Units	Method	Detection Limit	Extr. Date	Anal Date	Analyst
rsenic	BDL	mg/l	206.3	0.010	12/21/92	12/24/92	JK
admium	BDL	mg/l	213.2	0.005	12/21/92	12/21/92	JK
hromium	BDL	mg/l	218.2	0.005	12/21/92	12/22/92	JK
Lead	BDL	mg/l	239.2	0.005	12/21/92	12/22/92	JK

BDL = Below Detection Limits
All analyses were performed using EPA, ASTM, USGS, or Standard Methods

QAP # 90-0376G
RS # E86240, 86356
UB HRS# 86122, 86109, E86048
ADEM ID# 40720

Respectfully Submitted,

Jeffrey S. Glass
Laboratory Director

CLIENT # 151M

ADDRESS: GROUNDWATER TECHNOLOGY
GOVERNMENT SERVICES
223 WILMINGTON-W.CHESTER PIKE
CHADDS FORD, PA. 19317

PAGE: 1
DATE: 01-05-1993
LOG #: 3719-5

SAMPLE DESCRIPTION: GROUNDWATER TECHNOLOGY
NAS BILGEWATER
PENSACOLA, FL.
BLANK WATER ANALYSIS

LABEL: EQUIP BLANK
DATE SAMPLED: 12/17/92
DATE RECEIVED: 12/21/92
COLLECTED BY:CLIENT

Parameter	Result	Units	Method	Detection Limit	Extr. Date	Anal Date	Analyst
EPA 8021 in water		ug/l	5030/8021		12/22/92	12/22/92	GP
Bromodichloromethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Bromoform	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Bromomethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Carbon Tetrachloride	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Chloroethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Cis-1,2-Dichloroethene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Chloroform	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Chloromethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Dibromochloromethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,2-Dichlorobenzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,3-Dichlorobenzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,4-Dichlorobenzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Dichlorofluoromethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Chlorobenzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Vinyl Chloride	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,1-Dichloroethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,2-Dichloroethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,1-Dichloroethene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Trans-1,2-Dichloroethene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,2-Dichloropropane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Cis-1,3-Dichloropropane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Trans-1,3-Dichloropropen	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Methylene Chloride	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,1,2,2-Tetrachloroethan	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Tetrachloroethene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,1,1-Trichloroethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
1,1,2-Trichloroethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Trichloroethene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Trichlorofluoromethane	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Benzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Toluene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
MTBE	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Ethyl Benzene	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP
Total Xylenes	BDL	ug/l	5030/8021	1.0	12/22/92	12/22/92	GP

CLIENT # 151M

ADDRESS: GROUNDWATER TECHNOLOGY
GOVERNMENT SERVICES
223 WILMINGTON-W.CHESTER PIKE
CHADDS FORD, PA. 19317

PAGE: 2
DATE: 01-05-1993
LOG #: 3719-5

SAMPLE DESCRIPTION: GROUNDWATER TECHNOLOGY
NAS BILGEWATER
PENSACOLA, FL.
BLANK WATER ANALYSIS

LABEL: EQUIP BLANK
DATE SAMPLED: 12/17/92
DATE RECEIVED: 12/21/92
COLLECTED BY:CLIENT

Parameter	Result	Units	Method	Detection Limit	Extr. Date	Anal Date	Analyst
Dilution Factor	1	ug/l	5030/8021	.	12/22/92	12/22/92	GP
EDB	BDL	ug/l	504	0.01	12/21/92	12/22/92	FY
TRPH	BDL	mg/l	418.1	2.0	12/22/92	12/22/92	JV
PAH Compounds in water		ug/l	3510/8270		12/22/92	12/23/92	FY
Naphthalene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
Acenaphthylene	BDL	ug/l	3510/8270	2.5	12/22/92	12/23/92	FY
Acenaphthene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
Fluorene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
Phenanthrene	BDL	ug/l	3510/8270	3.5	12/22/92	12/23/92	FY
Anthracene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
Fluoranthene	BDL	ug/l	3510/8270	2.5	12/22/92	12/23/92	FY
Pyrene	BDL	ug/l	3510/8270	2.0	12/22/92	12/23/92	FY
Benzo (A) Anthracene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
Chrysene	BDL	ug/l	3510/8270	2.5	12/22/92	12/23/92	FY
Benzo (B) Fluoranthene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
Benzo (K) Fluoranthene	BDL	ug/l	3510/8270	2.5	12/22/92	12/23/92	FY
Benzo (A) Pyrene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
Indeno-(1,2,3,-CD)Pyrene	BDL	ug/l	3510/8270	8.0	12/22/92	12/23/92	FY
Dibenzo (A,H) Anthracene	BDL	ug/l	3510/8270	7.0	12/22/92	12/23/92	FY
Dibenzo (G,H,I) Perylene	BDL	ug/l	3510/8270	4.0	12/22/92	12/23/92	FY
1-Methyl Naphthalene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
2-Methyl Naphthalene	BDL	ug/l	3510/8270	3.0	12/22/92	12/23/92	FY
Ammenable Cyanide	BDL	mg/l	9010	0.005	12/23/92	12/23/92	BT

CLIENT # 151M ñ
DDRESS: GROUNDWATER TECHNOLOGY
GOVERNMENT SERVICES
223 WILMINGTON-W.CHESTER PIKE
CHADDS FORD, PA. 19317

PAGE: 3
DATE: 01-05-1993
LOG #: 3719-5

AMPLE DESCRIPTION: GROUNDWATER TECHNOLOGY
NAS BILGEWATER
PENSACOLA, FL.
BLANK WATER ANALYSIS

LABEL: EQUIP BLANK
DATE SAMPLED: 12/17/92 ñ
DATE RECEIVED: 12/21/92
COLLECTED BY:CLIENT

arameter	Result	Units	Method	Detection Limit	Extr. Date	Anal Date	Analyst
rsenic	BDL	mg/l	206.3	0.010	12/21/92	12/24/92	JK
admium	BDL	mg/l	213.2	0.005	12/21/92	12/21/92	JK
Chromium	BDL	mg/l	218.2	0.005	12/21/92	12/22/92	JK
ead	BDL	mg/l	239.2	0.005	12/21/92	12/22/92	JK

* BDL = Below Detection Limits
All analyses were performed using EPA, ASTM, USGS, or Standard Methods

QAP # 90-0376G
RS # E86240, 86356
UB HRS# 86122, 86109, E86048
ADEM ID# 40720

Respectfully Submitted,

Jeffrey S. Glass
Laboratory Director

3719-5

V.O.C ANALYTICAL

CLIENT # 151M

ADDRESS: GROUNDWATER TECHNOLOGY
GOVERNMENT SERVICES
223 WILMINGTON-W.CHESTER PIKE
CHADDS FORD, PA. 19317

PAGE: 1
DATE: 12-24-1992
LOG #: 3658-1

SAMPLE DESCRIPTION: GROUNDWATER TECHNOLOGY
NAS PENSACOLA
830011089.02
SURFACE WATER ANALYSIS

LABEL: SW-1
DATE SAMPLED: 12/09/92
DATE RECEIVED: 12/11/92
COLLECTED BY:CLIENT

Parameter	Result	Units	Method	Detection Limit	Extr. Date	Anal Date	Analyst
OA in Water		ug/l	5030/8021		12/15/92	12/15/92	RL
Benzene	BDL	ug/l	5030/8021	1.0	12/15/92	12/15/92	RL
nlorobenzene	BDL	ug/l	5030/8021	1.0	12/15/92	12/15/92	RL
,2,-Dichlorobenzene	BDL	ug/l	5030/8021	1.0	12/15/92	12/15/92	RL
Toluene	BDL	ug/l	5030/8021	1.0	12/15/92	12/15/92	RL
MTBE	BDL	ug/l	5030/8021	1.0	12/15/92	12/15/92	RL
thyl Benzene	BDL	ug/l	5030/8021	1.0	12/15/92	12/15/92	RL
otal Xylenes	BDL	ug/l	5030/8021	1.0	12/15/92	12/15/92	RL
1,3-Dichlorobenzene	BDL	ug/l	5030/8021	1.0	12/15/92	12/15/92	RL
,4-Dichlorobenzene	BDL	ug/l	5030/8021	1.0	12/15/92	12/15/92	RL
ilution Factor	1	ug/l	5030/8021	.	12/15/92	12/15/92	RL
PAH Compounds in water		ug/l	3510/8270		12/16/92	12/17/92	MF
aphthalene	BDL	ug/l	3510/8270	3.0	12/16/92	12/17/92	MF
cenaphthylene	BDL	ug/l	3510/8270	2.5	12/16/92	12/17/92	MF
Acenaphthene	BDL	ug/l	3510/8270	3.0	12/16/92	12/17/92	MF
Fluorene	BDL	ug/l	3510/8270	3.0	12/16/92	12/17/92	MF
henanthrene	BDL	ug/l	3510/8270	3.5	12/16/92	12/17/92	MF
Anthracene	BDL	ug/l	3510/8270	3.0	12/16/92	12/17/92	MF
Fluoranthene	BDL	ug/l	3510/8270	2.5	12/16/92	12/17/92	MF
yrene	BDL	ug/l	3510/8270	2.0	12/16/92	12/17/92	MF
enzo (A) Anthracene	BDL	ug/l	3510/8270	3.0	12/16/92	12/17/92	MF
Chrysene	BDL	ug/l	3510/8270	2.5	12/16/92	12/17/92	MF
enzo (B) Fluoranthene	BDL	ug/l	3510/8270	3.0	12/16/92	12/17/92	MF
enzo (K) Fluoranthene	BDL	ug/l	3510/8270	2.5	12/16/92	12/17/92	MF
Benzo (A) Pyrene	BDL	ug/l	3510/8270	3.0	12/16/92	12/17/92	MF
Indeno-(1,2,3,-CD)Pyrene	BDL	ug/l	3510/8270	8.0	12/16/92	12/17/92	MF
ibenzo (A,H) Anthracene	BDL	ug/l	3510/8270	7.0	12/16/92	12/17/92	MF
Dibenzo (G,H,I) Perylene	BDL	ug/l	3510/8270	4.0	12/16/92	12/17/92	MF
1-Methyl Naphthalene	BDL	ug/l	3510/8270	3.0	12/16/92	12/17/92	MF
-Methyl Naphthalene	BDL	ug/l	3510/8270	3.0	12/16/92	12/17/92	MF
rsenic	BDL	mg/l	206.3	0.010	12/12/92	12/12/92	JK
Cadmium	BDL	mg/l	213.2	0.005	12/12/92	12/15/92	JK
hromium	BDL	mg/l	218.2	0.005	12/12/92	12/15/92	JK
ead	BDL	mg/l	239.2	0.005	12/12/92	12/14/92	JK

BDL = Below Detection Limits
All analyses were performed using EPA, ASTM, USGS, or Standard Methods

AP # 90-0376G
HRS # E86240, 86356
UB HRS# 86122, 86109, E86048
DEM ID# 40720

Respectfully Submitted,

Jeffrey S. Glass
Laboratory Director

3658-1

LIENT # 151M

ADDRESS: GROUNDWATER TECHNOLOGY
GOVERNMENT SERVICES
223 WILMINGTON-W.CHESTER PIKE
CHADDS FORD, PA. 19317

PAGE: 1
DATE: 12-24-1992
LOG #: 3658-2

SAMPLE DESCRIPTION: GROUNDWATER TECHNOLOGY
NAS PENSACOLA
830011089.02
SURFACE WATER ANALYSIS

LABEL: SW-2
DATE SAMPLED: 12/09/92
DATE RECEIVED: 12/11/92
COLLECTED BY:CLIENT

Parameter	Result	Units	Method	Detection Limit	Extr. Date	Anal Date	Analyst
.OA in Water		ug/l	5030/8021		12/15/92	12/15/92	RL
Benzene	BDL	ug/l	5030/8021	1.0	12/15/92	12/15/92	RL
hlorobenzene	BDL	ug/l	5030/8021	1.0	12/15/92	12/15/92	RL
,2,-Dichlorobenzene	BDL	ug/l	5030/8021	1.0	12/15/92	12/15/92	RL
Toluene	BDL	ug/l	5030/8021	1.0	12/15/92	12/15/92	RL
MTBE	BDL	ug/l	5030/8021	1.0	12/15/92	12/15/92	RL
thyl Benzene	BDL	ug/l	5030/8021	1.0	12/15/92	12/15/92	RL
otal Xylenes	BDL	ug/l	5030/8021	1.0	12/15/92	12/15/92	RL
1,3-Dichlorobenzene	BDL	ug/l	5030/8021	1.0	12/15/92	12/15/92	RL
,4-Dichlorobenzene	BDL	ug/l	5030/8021	1.0	12/15/92	12/15/92	RL
ilution Factor	1	ug/l	5030/8021	.	12/15/92	12/15/92	RL
PAH Compounds in water		ug/l	3510/8270		12/16/92	12/17/92	MF
aphthalene	BDL	ug/l	3510/8270	3.0	12/16/92	12/17/92	MF
cenaphthylene	BDL	ug/l	3510/8270	2.5	12/16/92	12/17/92	MF
Acenaphthene	BDL	ug/l	3510/8270	3.0	12/16/92	12/17/92	MF
Fluorene	BDL	ug/l	3510/8270	3.0	12/16/92	12/17/92	MF
henanthrene	BDL	ug/l	3510/8270	3.5	12/16/92	12/17/92	MF
Anthracene	BDL	ug/l	3510/8270	3.0	12/16/92	12/17/92	MF
Fluoranthene	BDL	ug/l	3510/8270	2.5	12/16/92	12/17/92	MF
yrene	BDL	ug/l	3510/8270	2.0	12/16/92	12/17/92	MF
enzo (A) Anthracene	BDL	ug/l	3510/8270	3.0	12/16/92	12/17/92	MF
Chrysene	BDL	ug/l	3510/8270	2.5	12/16/92	12/17/92	MF
enzo (B) Fluoranthene	BDL	ug/l	3510/8270	3.0	12/16/92	12/17/92	MF
enzo (K) Fluoranthene	BDL	ug/l	3510/8270	2.5	12/16/92	12/17/92	MF
Benzo (A) Pyrene	BDL	ug/l	3510/8270	3.0	12/16/92	12/17/92	MF
ndeno-(1,2,3,-CD)Pyrene	BDL	ug/l	3510/8270	8.0	12/16/92	12/17/92	MF
ibenzo (A,H) Anthracene	BDL	ug/l	3510/8270	7.0	12/16/92	12/17/92	MF
ibenzo (G,H,I) Perylene	BDL	ug/l	3510/8270	4.0	12/16/92	12/17/92	MF
1-Methyl Naphthalene	BDL	ug/l	3510/8270	3.0	12/16/92	12/17/92	MF
-Methyl Naphthalene	BDL	ug/l	3510/8270	3.0	12/16/92	12/17/92	MF
rsenic	BDL	mg/l	206.3	0.010	12/12/92	12/16/92	JK
Cadmium	BDL	mg/l	213.2	0.005	12/12/92	12/15/92	JK
hromium	BDL	mg/l	218.2	0.005	12/12/92	12/15/92	JK
ead	BDL	mg/l	239.2	0.005	12/12/92	12/14/92	JK

BDL = Below Detection Limits
All analyses were performed using EPA, ASTM, USGS, or Standard Methods

QAP # 90-0376G
HRS # E86240, 86356
UB HRS# 86122, 86109, E86048
DEM ID# 40720

Respectfully Submitted,

Jeffrey S. Glass
Laboratory Director

3658-2

CLIENT # 151M

ADDRESS: GROUNDWATER TECHNOLOGY
GOVERNMENT SERVICES
223 WILMINGTON-W.CHESTER PIKE
CHADDS FORD, PA. 19317

PAGE: 1
DATE: 12-24-1992
LOG #: 3658-3

SAMPLE DESCRIPTION: GROUNDWATER TECHNOLOGY
NAS PENSACOLA
830011089.02
SURFACE WATER ANALYSIS

LABEL: SW-3
DATE SAMPLED: 12/09/92
DATE RECEIVED: 12/11/92
COLLECTED BY:CLIENT

Parameter	Result	Units	Method	Detection Limit	Extr. Date	Anal Date	Analyst
VOA in Water		ug/l	5030/8021		12/12/92	12/12/92	RL
Benzene	BDL	ug/l	5030/8021	1.0	12/12/92	12/12/92	RL
Chlorobenzene	BDL	ug/l	5030/8021	1.0	12/12/92	12/12/92	RL
1,2,-Dichlorobenzene	BDL	ug/l	5030/8021	1.0	12/12/92	12/12/92	RL
Toluene	1.1	ug/l	5030/8021	1.0	12/12/92	12/12/92	RL
MTBE	BDL	ug/l	5030/8021	1.0	12/12/92	12/12/92	RL
Ethyl Benzene	BDL	ug/l	5030/8021	1.0	12/12/92	12/12/92	RL
Total Xylenes	BDL	ug/l	5030/8021	1.0	12/12/92	12/12/92	RL
1,3-Dichlorobenzene	BDL	ug/l	5030/8021	1.0	12/12/92	12/12/92	RL
1,4-Dichlorobenzene	BDL	ug/l	5030/8021	1.0	12/12/92	12/12/92	RL
Dilution Factor	1	ug/l	5030/8021	.	12/12/92	12/12/92	RL
PAH Compounds in water		ug/l	3510/8270		12/16/92	12/17/92	MF
Naphthalene	BDL	ug/l	3510/8270	30.0	12/16/92	12/17/92	MF
Acenaphthylene	BDL	ug/l	3510/8270	25.0	12/16/92	12/17/92	MF
Acenaphthene	BDL	ug/l	3510/8270	30.0	12/16/92	12/17/92	MF
Fluorene	BDL	ug/l	3510/8270	30.0	12/16/92	12/17/92	MF
Phenanthrene	BDL	ug/l	3510/8270	35.0	12/16/92	12/17/92	MF
Anthracene	BDL	ug/l	3510/8270	30.0	12/16/92	12/17/92	MF
Fluoranthene	BDL	ug/l	3510/8270	25.0	12/16/92	12/17/92	MF
Pyrene	BDL	ug/l	3510/8270	20.0	12/16/92	12/17/92	MF
Benzo (A) Anthracene	BDL	ug/l	3510/8270	30.0	12/16/92	12/17/92	MF
Chrysene	BDL	ug/l	3510/8270	25.0	12/16/92	12/17/92	MF
Benzo (B) Fluoranthene	BDL	ug/l	3510/8270	30.0	12/16/92	12/17/92	MF
Benzo (K) Fluoranthene	BDL	ug/l	3510/8270	25.0	12/16/92	12/17/92	MF
Benzo (A) Pyrene	BDL	ug/l	3510/8270	30.0	12/16/92	12/17/92	MF
Indeno-(1,2,3,-CD)Pyrene	BDL	ug/l	3510/8270	80.0	12/16/92	12/17/92	MF
Dibenzo (A,H) Anthracene	BDL	ug/l	3510/8270	70.0	12/16/92	12/17/92	MF
Dibenzo (G,H,I) Perylene	BDL	ug/l	3510/8270	40.0	12/16/92	12/17/92	MF
1-Methyl Naphthalene	BDL	ug/l	3510/8270	30.0	12/16/92	12/17/92	MF
2-Methyl Naphthalene	BDL	ug/l	3510/8270	30.0	12/16/92	12/17/92	MF
Arsenic	BDL	mg/l	206.3	0.010	12/12/92	12/16/92	JK
Cadmium	BDL	mg/l	213.2	0.005	12/12/92	12/15/92	JK
Chromium	BDL	mg/l	218.2	0.005	12/12/92	12/15/92	JK
Lead	0.016	mg/l	239.2	0.005	12/12/92	12/14/92	JK

BDL = Below Detection Limits
All analyses were performed using EPA, ASTM, USGS, or Standard Methods

CAP # 90-0376G
HRS # E86240, 86356
UB HRS# 86122, 86109, E86048
DEM ID# 40720

Respectfully Submitted,

Jeffrey S. Glass
Laboratory Director

3658-3

LIENT # 151M

ADDRESS: GROUNDWATER TECHNOLOGY
GOVERNMENT SERVICES
223 WILMINGTON-W.CHESTER PIKE
CHADDS FORD, PA. 19317

PAGE: 1
DATE: 12-24-1992
LOG #: 3658-4

SAMPLE DESCRIPTION: GROUNDWATER TECHNOLOGY
NAS PENSACOLA
830011089.02
SURFACE WATER ANALYSIS

LABEL: SW-4
DATE SAMPLED: 12/09/92
DATE RECEIVED: 12/11/92
COLLECTED BY:CLIENT

Parameter	Result	Units	Method	Detection Limit	Extr. Date	Anal Date	Analyst
OA in Water		ug/l	5030/8021		12/12/92	12/12/92	RL
Benzene	BDL	ug/l	5030/8021	1.0	12/12/92	12/12/92	RL
hlorobenzene	BDL	ug/l	5030/8021	1.0	12/12/92	12/12/92	RL
,2,-Dichlorobenzene	BDL	ug/l	5030/8021	1.0	12/12/92	12/12/92	RL
Toluene	BDL	ug/l	5030/8021	1.0	12/12/92	12/12/92	RL
MTBE	BDL	ug/l	5030/8021	1.0	12/12/92	12/12/92	RL
thyl Benzene	BDL	ug/l	5030/8021	1.0	12/12/92	12/12/92	RL
otal Xylenes	BDL	ug/l	5030/8021	1.0	12/12/92	12/12/92	RL
1,3-Dichlorobenzene	BDL	ug/l	5030/8021	1.0	12/12/92	12/12/92	RL
,4-Dichlorobenzene	BDL	ug/l	5030/8021	1.0	12/12/92	12/12/92	RL
ilution Factor	1	ug/l	5030/8021	.	12/12/92	12/12/92	RL
PAH Compounds in water		ug/l	3510/8270		12/16/92	12/17/92	MF
aphthalene	BDL	ug/l	3510/8270	3.0	12/16/92	12/17/92	MF
cenaphthylene	BDL	ug/l	3510/8270	2.5	12/16/92	12/17/92	MF
Acenaphthene	BDL	ug/l	3510/8270	3.0	12/16/92	12/17/92	MF
Fluorene	BDL	ug/l	3510/8270	3.0	12/16/92	12/17/92	MF
henanthrene	BDL	ug/l	3510/8270	3.5	12/16/92	12/17/92	MF
nthracene	BDL	ug/l	3510/8270	3.0	12/16/92	12/17/92	MF
Fluoranthene	BDL	ug/l	3510/8270	2.5	12/16/92	12/17/92	MF
yrene	BDL	ug/l	3510/8270	2.0	12/16/92	12/17/92	MF
enzo (A) Anthracene	BDL	ug/l	3510/8270	3.0	12/16/92	12/17/92	MF
Chrysene	BDL	ug/l	3510/8270	2.5	12/16/92	12/17/92	MF
enzo (B) Fluoranthene	BDL	ug/l	3510/8270	3.0	12/16/92	12/17/92	MF
enzo (K) Fluoranthene	BDL	ug/l	3510/8270	2.5	12/16/92	12/17/92	MF
Benzo (A) Pyrene	BDL	ug/l	3510/8270	3.0	12/16/92	12/17/92	MF
Indeno-(1,2,3,-CD)Pyrene	BDL	ug/l	3510/8270	8.0	12/16/92	12/17/92	MF
ibenzo (A,H) Anthracene	BDL	ug/l	3510/8270	7.0	12/16/92	12/17/92	MF
ibenzo (G,H,I) Perylene	BDL	ug/l	3510/8270	4.0	12/16/92	12/17/92	MF
1-Methyl Naphthalene	BDL	ug/l	3510/8270	3.0	12/16/92	12/17/92	MF
-Methyl Naphthalene	BDL	ug/l	3510/8270	3.0	12/16/92	12/17/92	MF
rsenic	BDL	mg/l	206.3	0.010	12/12/92	12/16/92	JK
Cadmium	BDL	mg/l	213.2	0.005	12/12/92	12/15/92	JK
hromium	BDL	mg/l	218.2	0.005	12/12/92	12/15/92	JK
ead	BDL	mg/l	239.2	0.005	12/12/92	12/14/92	JK

BDL = Below Detection Limits
All analyses were performed using EPA, ASTM, USGS, or Standard Methods

QAP # 90-0376G
HRS # E86240, 86356
UB HRS# 86122, 86109, E86048
DEM ID# 40720

Respectfully Submitted,

Jeffrey S. Glass
Laboratory Director

3658-4

CLIENT # 151M

ADDRESS: GROUNDWATER TECHNOLOGY
GOVERNMENT SERVICES
223 WILMINGTON-W.CHESTER PIKE
CHADDS FORD, PA. 19317

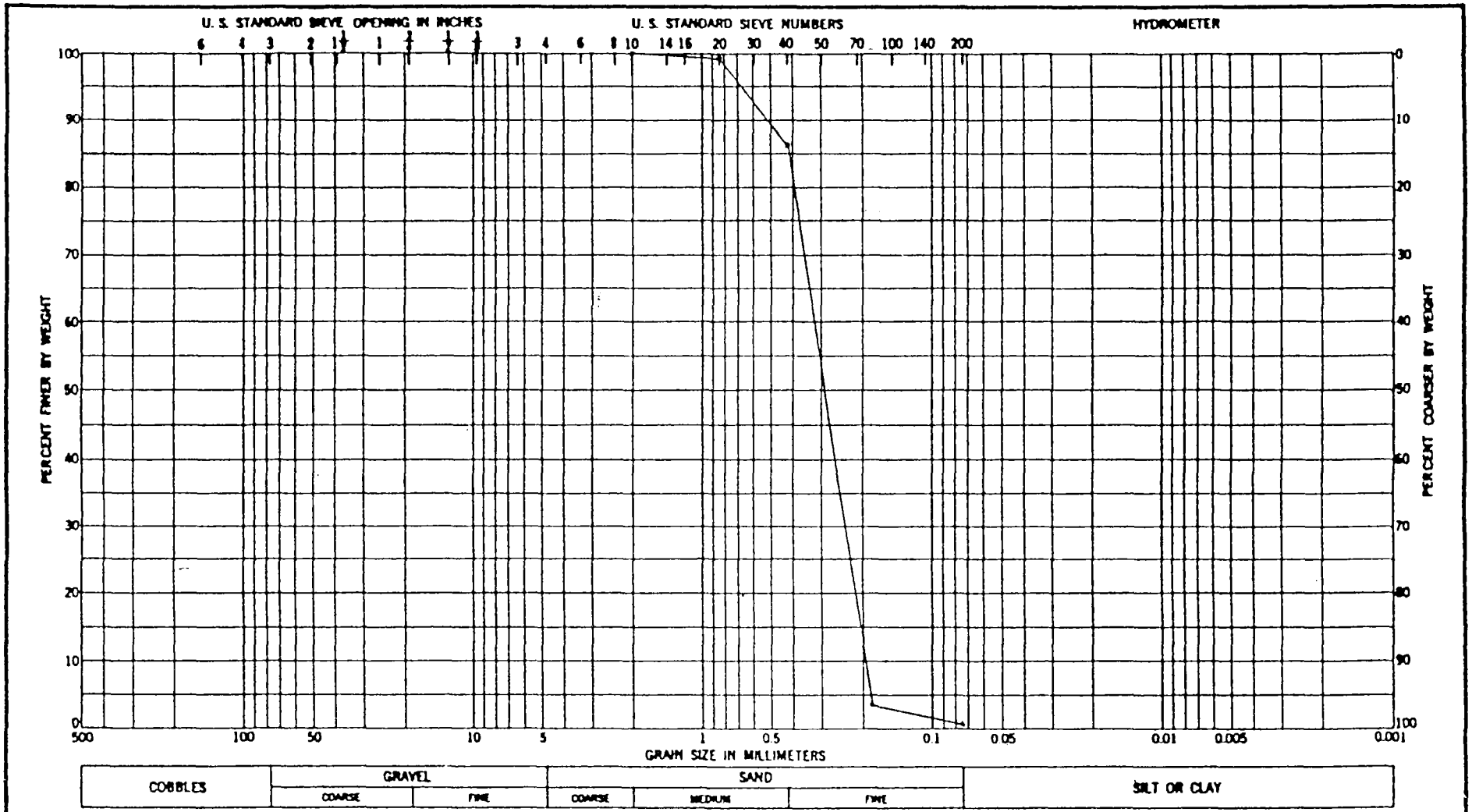
PAGE: 1
DATE: 01-11-1993
LOG #: 3658-5

SAMPLE DESCRIPTION: GROUNDWATER TECHNOLOGY
NAS PENSACOLA
830011089.02
SOIL ANALYSIS

LABEL: HA-8
DATE SAMPLED: 12/09/92
DATE RECEIVED: 12/11/92
COLLECTED BY:CLIENT

Parameter	Result	Units	Method	Detection Limit	Extr. Date	Anal Date	Analyst
TCLP Silver	BDL	mg/l	1311/7760	0.1	12/12/92	12/16/92	JK
TCLP Arsenic	BDL	mg/l	1311/7061	0.10	12/12/92	12/16/92	JK
TCLP Barium	BDL	mg/l	1311/7080	0.10	12/12/92	12/16/92	JK
TCLP Cadmium	BDL	mg/l	1311/7130	0.10	12/12/92	12/16/92	JK
TCLP Chromium	BDL	mg/l	1311/7190	0.10	12/12/92	12/16/92	JK
TCLP Mercury	BDL	mg/l	1311/7471	0.001	12/12/92	12/18/92	JK
TCLP Lead	BDL	mg/l	1311/7420	0.10	12/12/92	12/16/92	JK
TCLP Selenium	BDL	mg/l	1311/7741	0.010	12/12/92	12/14/92	JK
TCLP Extraction	DONE	---	1311		12/12/92	12/12/92	JK
VOA in Soil		mg/kg	5030/8021	0.125	12/17/92	12/17/92	PR
Benzene	BDL	mg/kg	5030/8021	0.125	12/17/92	12/17/92	PR
Chlorobenzene	BDL	mg/kg	5030/8021	0.125	12/17/92	12/17/92	PR
1,2-Dichlorobenzene	BDL	mg/kg	5030/8021	0.125	12/17/92	12/17/92	PR
Toluene	BDL	mg/kg	5030/8021	0.125	12/17/92	12/17/92	PR
MTBE	BDL	mg/kg	5030/8021	0.125	12/17/92	12/17/92	PR
Ethyl Benzene	0.411	mg/kg	5030/8021	0.125	12/17/92	12/17/92	PR
Total Xylenes	0.900	mg/kg	5030/8021	0.125	12/17/92	12/17/92	PR
1,3-Dichlorobenzene	BDL	mg/kg	5030/8021	0.125	12/17/92	12/17/92	PR
1,4-Dichlorbenzene	BDL	mg/kg	5030/8021	0.125	12/17/92	12/17/92	PR
Dilution Factor	1	mg/kg	5030/8021	.	12/17/92	12/17/92	PR
TRPH	41400.0	mg/kg	9073	2.7	12/12/92	12/12/92	JV
Arsenic	BDL	mg/kg	3050/7061	1.0	12/12/92	12/16/92	JK
Cadmium	BDL	mg/kg	3050/7130	1.0	12/12/92	12/15/92	JK
Chromium	BDL	mg/kg	3050/7190	1.0	12/12/92	12/15/92	JK
Lead	BDL	mg/kg	3050/7420	1.0	12/12/92	12/14/92	JK
Acid Digestion	DONE	---	3050		12/12/92	12/12/92	JK

APPENDIX B
SIEVE ANALYSES



Sample No.	Elev or Depth	Classification	Nat w %	LL	PL	PI
--	5'-7' &	White & Gray Poorly Graded	---	--	---	NP
	10'-12'	Sand - SP				
	Composite					
		NP=Non-Plastic				
		Sample washed over #200 sieve.				

GRADATION CURVES

Project NAS Bilgewater Treatment Plant

Groundwater Technologies, Inc.

ATTN: Mr. Jim Hoelscher

Boring No. MW-1

Date

Patrick A Wheeler

PENSACOLA
TESTING LABORATORIES INC.

PENSACOLA TESTING LABORATORIES INC., 217 East Brent Lane,Pensacola,Fl. 32503
PHONE 904/477-5100

Our Job#	Client No.	PO#	RPT#	Date:	Page:
1925	01-9383	Verbal/C.B.	74908-1	2/24/92	1 of 1

REPORT OF: Sieve Analysis of Sand

For: C. B. Drilling Company, Inc.
Address: 8000 El Estrecho Drive
City: Pensacola, FL 32514
Att: Mr. Chuck Bright

Date Of Service: 2/20/92
Technician: D.B.W.

Project: General Information **Sample Identification** Red Bay Sand Company (Filter Sand)

Sample Submitted By: C.B. **Date Submitted:** 2/20/92

Sieve Size	#4	#10	#20	#40	#80	#200
% Retained (By Wt.)	0	0	9.6	98.2	100.0	0
% Passing (By Wt.)	100	100	90.4	1.8	0	0

Note: Sample was not washed over #200 sieve.

"I hereby certify that the [equipment][materiel] shown and marked in this submittal is that proposed to be incorporated into Contract Number _____ is in compliance with the contract drawings and specifications, can be installed in the allocated spaces and is submitted for Government approval."

Certified by _____ Date _____

Reports To: 3-C. B. Drilling Company, Inc.

Reviewed By: M A Johnson

By: Patrick A Wheeler

APPENDIX C

GROUNDWATER FLOW VELOCITY CALCULATIONS

GROUNDWATER FLOW VELOCITY CALCULATIONS

NAS BILGEWATER TREATMENT PLANT

$$V = kI/n$$

where:
V = groundwater flow velocity
k = hydraulic conductivity (provided by NAS as 15.7 ft/day)
I = gradient (elevation/distance)
n = porosity, estimated at 0.28%

December 2, 1992 $I = \frac{2.32' - 1.05'}{290'} = 0.0044$ ft/ft

December 8, 1992 $I = \frac{2.13' - 1.60'}{290'} = 0.0018$ ft/ft

December 2, 1992 $V = \frac{15.7 \text{ ft/day} \times 0.0044 \text{ ft/ft}}{0.28} = 0.25$ ft/day

December 8, 1992 $V = \frac{15.7 \text{ ft/day} \times 0.0018 \text{ ft/ft}}{0.28} = 0.10$ ft/day

Average groundwater flow velocity

$$\frac{0.25 + 0.10}{2} = 0.175 \text{ ft/day}$$

0.175 ft/day x 270 days = 47.25 ft groundwater flow distance in 270 days

Monitoring well placement at 90% of 47.25 ft = 42.5 ft downgradient

APPENDIX D
GEOLOGIC LOGS

GEOLOGIC LOG

PROJECT INFORMATION	WELL COMPLETION DETAILS
PROJECT #: 830011089.01 CLIENT : NAS-PENSACOLA	DATE DRILLED: 12/16/92 MOINITORING WELL #: MW-1 LOGGED BY: JIM HOELSCHER TOTAL DEPTH: 17' DRILLING CO.: C.B. DRILLING HOLE DIAMETER: 11" METHOD: HOLLOW STEM AUGER DEPTH TO WATER: 3'
SITE LOCATION: BILGEWATER TREATMENT PLANT NAS-PENSACOLA PENSACOLA, FLORIDA	CASING TYPE: SCHEDULE 40 PVC DIAMETER: 4" LENGTH: 2'
PROJECT MANAGER: JIM HOELSCHER	SCREEN TYPE: SCHEDULE 40 PVC DIAMETER: 4" LENGTH: 15' SLOT SIZE: .010"

LAB ID	DEPTH	B.C.	OVA	LITHOLOGY	COMMENTS
	0		(ppm)	0-2' BROWN MEDIUM GRAINED SAND, MOIST, SUBROUNDED, MEDIUM SORT	
				2'-3' GREY MEDIUM TO FINE GRAINED SAND, DRY, TRACE ORGANICS	
	5		ND	3'-17' WHITE MEDIUM TO FINE GRAINED SAND, WET	
	10		50		
	15				
				WELL SET 17' BLS	
	20				
	25				
	30				
	35				

NOTES: ND = NONE DETECTED

GROUNDWATER TECHNOLOGY GOVERNMENT SERVICES

GEOLOGIC LOG

PROJECT INFORMATION	WELL COMPLETION DETAILS
PROJECT #: 830011089.01 CLIENT : NAS-PENSACOLA	DATE DRILLED: 12/16/92 MOINITORING WELL #: MW-2 LOGGED BY: JIM HOELSCHER TOTAL DEPTH: 17' DRILLING CO.: C.B. DRILLING HOLE DIAMETER: 11" METHOD: HOLLOW STEM AUGER DEPTH TO WATER: 4'
SITE LOCATION: BILGEWATER TREATMENT PLANT NAS-PENSACOLA PENSACOLA, FLORIDA	CASING TYPE: SCHEDULE 40 PVC DIAMETER: 4" LENGTH: 2'
PROJECT MANAGER: JIM HOELSCHER	SCREEN TYPE: SCHEDULE 40 PVC DIAMETER: 4" LENGTH: 15' SLOT SIZE: .010"

LAB ID	DEPTH	B.C.	OVA	LITHOLOGY	COMMENTS
	0		(ppm)	0-1' DARK BROWN MEDIUM GRAINED SAND, MOIST, TRACE ORGANICS	
				1'-3' BROWN MEDIUM TO FINE GRAINED SAND, DRY, SUBROUNDED, MEDIUM SORT	
	5		50	3'-4' GREY MEDIUM TO FINE GRAINED SAND, DRY, SUBROUNDED, MEDIUM SORT	
	10		450	4'-17' WHITE MEDIUM TO FINE GRAINED SAND, WET	
	15				
				WELL SET 17' BLS	
	20				
	25				
	30				
	35				

GROUNDWATER TECHNOLOGY GOVERNMENT SERVICES

GEOLOGIC LOG

PROJECT INFORMATION	WELL COMPLETION DETAILS
PROJECT #: 830011089.01 CLIENT : NAS-PENSACOLA	DATE DRILLED: 12/16/92 MOINITORING WELL #: MW-3 LOGGED BY: JIM HOELSCHER TOTAL DEPTH: 17' DRILLING CO.: C.B. DRILLING HOLE DIAMETER: 11" METHOD: HOLLOW STEM AUGER DEPTH TO WATER: 4'
SITE LOCATION: BILGEWATER TREATMENT PLANT NAS-PENSACOLA PENSACOLA, FLORIDA	CASING TYPE: SCHEDULE 40 PVC DIAMETER: 4" LENGTH: 2'
PROJECT MANAGER: JIM HOELSCHER	SCREEN TYPE: SCHEDULE 40 PVC DIAMETER: 4" LENGTH: 15' SLOT SIZE: .010"

LAB ID	DEPTH	B.C.	OVA	LITHOLOGY	COMMENTS
	0		(ppm)	0-1' GREY MEDIUM GRAINED SAND, MOIST, TRACE ORGANICS	
				1'-4' WHITE MEDIUM TO FINE GRAINED SAND, DRY	
	5		45	4'-11' WET SAA	
	10		250	11'-17' LIGHT BROWN MEDIUM TO FINE GRAINED SAND, WET	
	15			WELL SET 17' BLS	
	20				
	25				
	30				
	35				

NOTES: SAA = SAME AS ABOVE

GROUNDWATER TECHNOLOGY GOVERNMENT SERVICES

GEOLOGIC LOG

PROJECT INFORMATION	WELL COMPLETION DETAILS
PROJECT #: 830011089.01 CLIENT : NAS-PENSACOLA	DATE DRILLED: 12/16/92 MOINITORING WELL #: MW-4 LOGGED BY: JIM HOELSCHER TOTAL DEPTH: 17' DRILLING CO.: C.B. DRILLING HOLE DIAMETER: 11" METHOD: HOLLOW STEM AUGER DEPTH TO WATER: 4'
SITE LOCATION: BILGEWATER TREATMENT PLANT NAS-PENSACOLA PENSACOLA, FLORIDA	CASING TYPE: SCHEDULE 40 PVC DIAMETER: 4" LENGTH: 2'
PROJECT MANAGER: JIM HOELSCHER	SCREEN TYPE: SCHEDULE 40 PVC DIAMETER: 4" LENGTH: 15' SLOT SIZE: .010"

LAB ID	DEPTH	B.C.	OVA	LITHOLOGY	COMMENTS
	0		(ppm)	0-1' BROWN MEDIUM GRAINED SAND, DRY, SUBROUNDED, MEDIUM SORT	
	5		300	1'-4' GREY MEDIUM GRAINED SAND, MOIST, TRACE ORGANICS	
	10		100	4'-17' WHITE MEDIUM TO FINE GRAINED SAND, WET	
	15				
	20			WELL SET 17' BLS	
	25				
	30				
	35				

GROUNDWATER TECHNOLOGY GOVERNMENT SERVICES

LIMITATION OF WORK PRODUCT

Groundwater Technology has performed the preliminary assessment contained in this Report in a professional manner using that degree of skill and care exercised for similar projects under similar conditions by reputable and competent environmental consultants. Groundwater Technology shall not be responsible for conditions or consequences arising from relevant facts that were concealed, withheld or nor fully disclosed to it at the time of the investigation was performed. The conclusions presented in this Report were based solely upon the services described, which were performed within the time and budgetary constraints imposed by the customer.

This Report shall not be construed to create any warranty or representation that the real property on which the investigation was conducted is free of pollution or complies with any or all applicable regulatory or statutory requirements, or that the property is fit for any particular purpose. No third party is entitled to rely upon any information or opinions contained in this Report.