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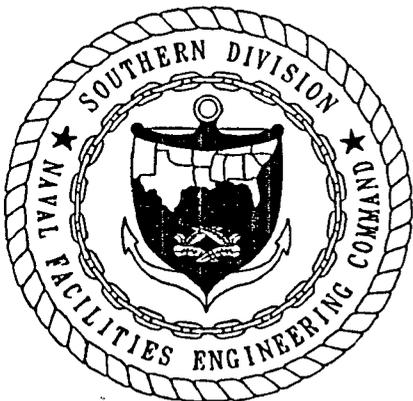
CONTAMINATION ASSESSMENT REPORT ADDENDUM SITE 3810N NAVAL AVIATION
DEPOT NAS PENSACOLA FL
3/1/1993
ABB ENVIRONMENTAL SERVICES, INC



**CONTAMINATION ASSESSMENT
REPORT ADDENDUM**

**SITE 3810N
NAVAL AVIATION DEPOT
NAVAL AIR STATION
PENSACOLA, FLORIDA**

MARCH 1993



**SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NORTH CHARLESTON, SOUTH CAROLINA
29419-9010**

**CONTAMINATION ASSESSMENT REPORT
ADDENDUM**

**SITE 3810N
NAVAL AVIATION DEPOT
NAVAL AIR STATION
PENSACOLA, FLORIDA**

UIC: N00204

Contract No. N62467-89-D-0317

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March 1993



FOREWORD

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

The Navy's UST program policy is to comply with all Federal, State, and local regulations pertaining to USTs. This report was prepared to satisfy the requirements of the Florida Department of Environmental Regulation (FDER) Chapter 17-770, Florida Administrative Code (FAC) (*State Underground Petroleum Environmental Response*) regulations on petroleum contamination in Florida's environment as a result of spills or leaking tanks or piping.

Questions regarding this report should be addressed to the Environmental Coordinator, Naval Aviation Depot (NADEP), Naval Air Station, Pensacola, Florida, at 904-452-2320, or to Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), Code 1843, at DSN 563-0613 or 803-743-0613.

EXECUTIVE SUMMARY

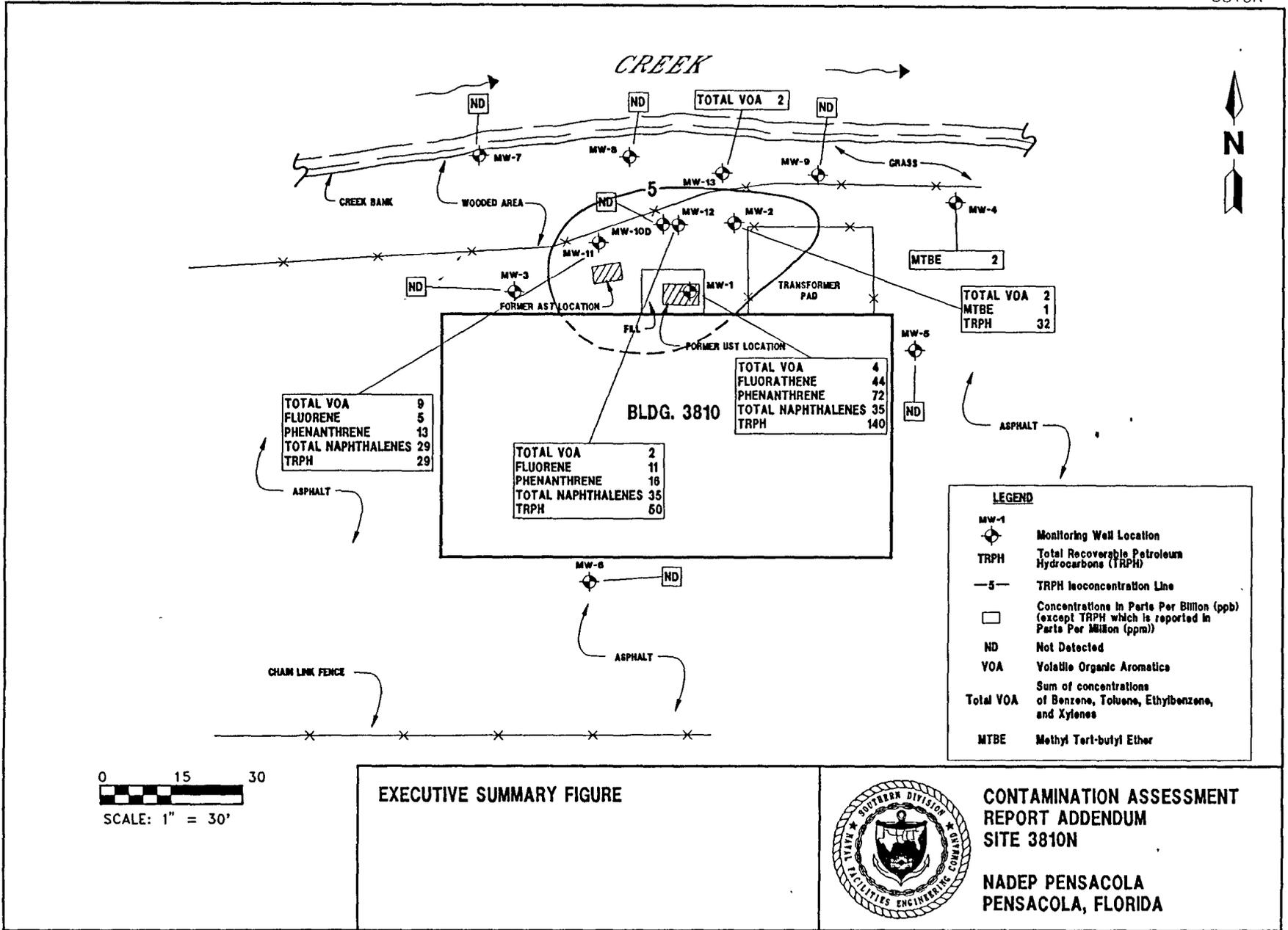
Site 3810N, located within Naval Aviation Depot (NADEP), Pensacola, is the former location of a 500-gallon underground storage tank (UST) used for fuel oil storage. The former UST was located on the north side of Building 3810. An aboveground storage tank (AST), reportedly used to store fuel oil, was located approximately 15 feet northwest of the former UST location. This tank was removed from the site during this investigation.

A contamination assessment (CA) was performed at Site 3810N from January 1992 through August 1992. Nineteen soil borings were drilled and 12 monitoring wells were installed during the CA (see Executive Summary Figure). A Contamination Assessment Report (CAR) was submitted to the Navy and the Florida Department of Environmental Regulation (FDER) in August 1992. According to the findings of the CAR, organic vapor analyzer (OVA) headspace analysis indicates the presence of excessively petroleum-contaminated soils. This contamination appears to be restricted to a small area north and northwest of the former UST location. Groundwater samples were collected on February 5, 1992, and April 23, 1992, and analyzed for constituents of the kerosene analytical group. Groundwater contaminants that exceeded State target levels were total volatile organic aromatics (total VOA), total naphthalenes, fluorene, phenanthrene, and total recoverable petroleum hydrocarbons (TRPH). The areal extent of soil and groundwater contamination appear to coincide. Because groundwater contamination did not appear to be migrating offsite, a *Monitoring Only Plan (MOP)* was recommended for Site 3810N.

On January 12 and 13, 1993, an additional field investigation was performed at Site 3810N to address comments and concerns posed by FDER pertaining to the CAR. To fulfill FDER requirements, an additional well (PEN-3810N-MW13) was installed between monitoring wells PEN-3810N-MW8 and PEN-3810N-MW9 to further define the extent of the contaminant plume and to further assess if groundwater contamination was migrating offsite. Additionally, each of the 13 monitoring wells was sampled on January 13, 1993, and analyzed by U.S. Environmental Protection Agency (USEPA) Methods 602, 610, and 418.1 (see Executive Summary Figure). The results of the supplemental investigation are summarized below.

Findings

- The groundwater flow direction at the site is northerly, which is consistent with data from the previous investigation.
- Volatile organic aromatics (VOA) were detected in samples collected from four monitoring wells (PEN-3810N-MW1, PEN-3810N-MW11, PEN-3810N-MW12, and PEN-3810N-MW13). Total VOA (the sum of the concentrations of benzene, ethyl benzene, toluene, and xylenes) concentrations ranged from 2 to 9 parts per billion (ppb), which are below the State target level of 50 ppb.
- Methyl tert-butyl ether (MTBE) was detected in samples collected from two monitoring wells, PEN-3810N-MW2 and PEN-3810N-MW4, at concentrations of 1 and 2 ppb, respectively. These concentrations are below the State target level for MTBE of 50 ppb.



- Total naphthalenes, fluorene, and phenanthrene were detected in only the samples collected from monitoring wells PEN-3810N-MW11 and PEN-3810N-MW12. Fluoranthene was detected in only the sample collected from well PEN-3810N-MW1. Total naphthalene concentrations were below State target levels. Fluorene, phenanthrene, and fluoranthene were detected in concentrations exceeding State recommended concentrations.
- TRPH were detected in groundwater samples collected from monitoring wells PEN-3810N-MW1, PEN-3810N-MW2, PEN-3810N-MW11, and PEN-3810N-MW12 at concentrations ranging from 29 to 140 parts per million (ppm). These concentrations exceed the State target level of 5 ppm. The approximate area of TRPH contamination (5 ppm isocon) is shown in the Executive Summary Figure.
- TRPH, fluorene, phenanthrene, and fluoranthene were not detected in downgradient wells along the creek.

Conclusions

Based on the results of the January 1993 laboratory analyses and the findings presented in the 1992 CAR, petroleum groundwater contamination has shown a significant reduction.

- The source of contamination has been removed from the site.
- Groundwater contamination appears to be restricted to the vicinity of the former UST.
- The vertical extent of the contamination appears to be limited to 15 feet below land surface. No groundwater contaminants were detected in the sample collected from the deep monitoring well PEN-3810N-MW10D, which is screened from 15 to 20 feet below land surface.
- Groundwater contamination in the five downgradient wells along the creek appears to be minimal. MTBE (2 ppb) and total VOA (2 ppb) were detected in the samples collected from wells PEN-3810N-MW4 and PEN-3810N-MW13, respectively. Groundwater contamination was not detected in the samples collected from the other three downgradient wells, PEN-3810N-MW7, PEN-3810N-MW8, and PEN-3810N-MW9.

Recommendations

Based on the findings and conclusions discussed above, a MOP is recommended for site 3810N. See Section 4.3 of this document for details of the MOP.

ACKNOWLEDGMENTS

In preparing this report, the Underground Storage Tank Section of the Comprehensive Long-Term Environmental Action, Navy (CLEAN) Group at ABB Environmental Services, Inc. (ABB-ES), commends the support, assistance, and cooperation provided by the personnel of the Naval Aviation Depot (NADEP), Pensacola, Florida, and Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM). In particular, ABB-ES acknowledges the efforts provided by the following people during the investigation and preparation of this report.

Name	Title	Position	Location
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GLOSSARY

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

ABB-ES	ABB Environmental Services, Inc.
AST	aboveground storage tank
bls	below land surface
CA	Contamination Assessment
CAP	Contamination Assessment Plan
CAR	Contamination Assessment Report
CFR	Code of Federal Regulations
CLEAN	Comprehensive Long-Term Environmental Action, Navy
CompQAP	Comprehensive Quality Assurance Plan
CTO	Contract Task Order
EDB	ethylene dibromide
FAC	Florida Administrative Code
FDER	Florida Department of Environmental Regulation
NADEP	Naval Aviation Depot
NAS	Naval Air Station
ND	not detected
MOP	Monitoring Only Plan
MTBE	methyl tert-butyl ether
MW	monitoring well
OVA	organic vapor analyzer
PAH	polynuclear aromatic hydrocarbons
ppb	parts per billion
POA	Plan of Action
ppm	parts per million
PVC	polyvinyl chloride
SOUTHNAVFACENGC	Southern Division, Naval Facilities Engineering Command
SWDA	Solid Waste Disposal Act
TRPH	total recoverable petroleum hydrocarbons
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank
VOA	volatile organic aromatics
VOC	volatile organic compounds

1.0 INTRODUCTION

The Naval Aviation Depot (NADEP) Pensacola, Florida, is a tenant command located on NAS facilities within the Pensacola Naval Base Complex. The Pensacola Naval Base Complex is located on the western edge of Pensacola Bay on State Route 295 (Navy Boulevard; Figure 1-1). NADEP Pensacola occupies approximately 130 acres at Naval Air Station (NAS) Pensacola. The mission of NADEP Pensacola is to: maintain and operate facilities for, and perform a complete range of depot-level rework operations on designated weapons systems, accessories, and equipment; manufacture parts and assemblies, as required; provide engineering services in hardware design; furnish technical services on aircraft maintenance and logistic problems; and perform other levels of aircraft maintenance.

During a tank removal program implemented by the U.S. Department of the Navy in 1989 and 1990, petroleum underground storage tanks (USTs) at various NADEP site locations were removed. In many cases, these tanks were replaced with new USTs. Tank contents were reportedly restricted to petroleum products ranging from waste oil, diesel fuel, and unleaded gasoline to PD-680 (a petroleum distillate solvent similar to mineral spirits). The reported volumes of the tanks varied from 500 to 3,000 gallons. Soil samples were collected from each tank excavation and analyzed for total recoverable petroleum hydrocarbons (TRPH). Based on TRPH concentrations, 18 sites were found to be non-compliant with Florida Department of Environmental Regulation (FDER) target levels, as defined in Chapter 17-770, Florida Administrative Code (FAC).

ABB Environmental Services, Inc. (ABB-ES), was contracted by Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) to perform a contamination assessment and submit a contamination assessment report (CAR) for each of the 18 petroleum contaminated sites at NADEP. The scope of services is described in Contract Task Order (CTO) No. 008, the Plan of Action (POA), and the Contamination Assessment Plan (CAP) and included the following:

- drilling soil borings and analyzing site soil samples to assess the extent of soil contamination,
- installing and sampling groundwater monitoring wells to assess the extent of groundwater contamination,
- collecting water level data to assess the groundwater flow direction and hydraulic gradient at the site,
- conducting a potable well inventory within a 0.25-mile radius of the site,
- conducting slug tests on selected wells to estimate aquifer characteristics, and
- reducing and analyzing pertinent data gathered during the contamination assessment to complete a CAR.

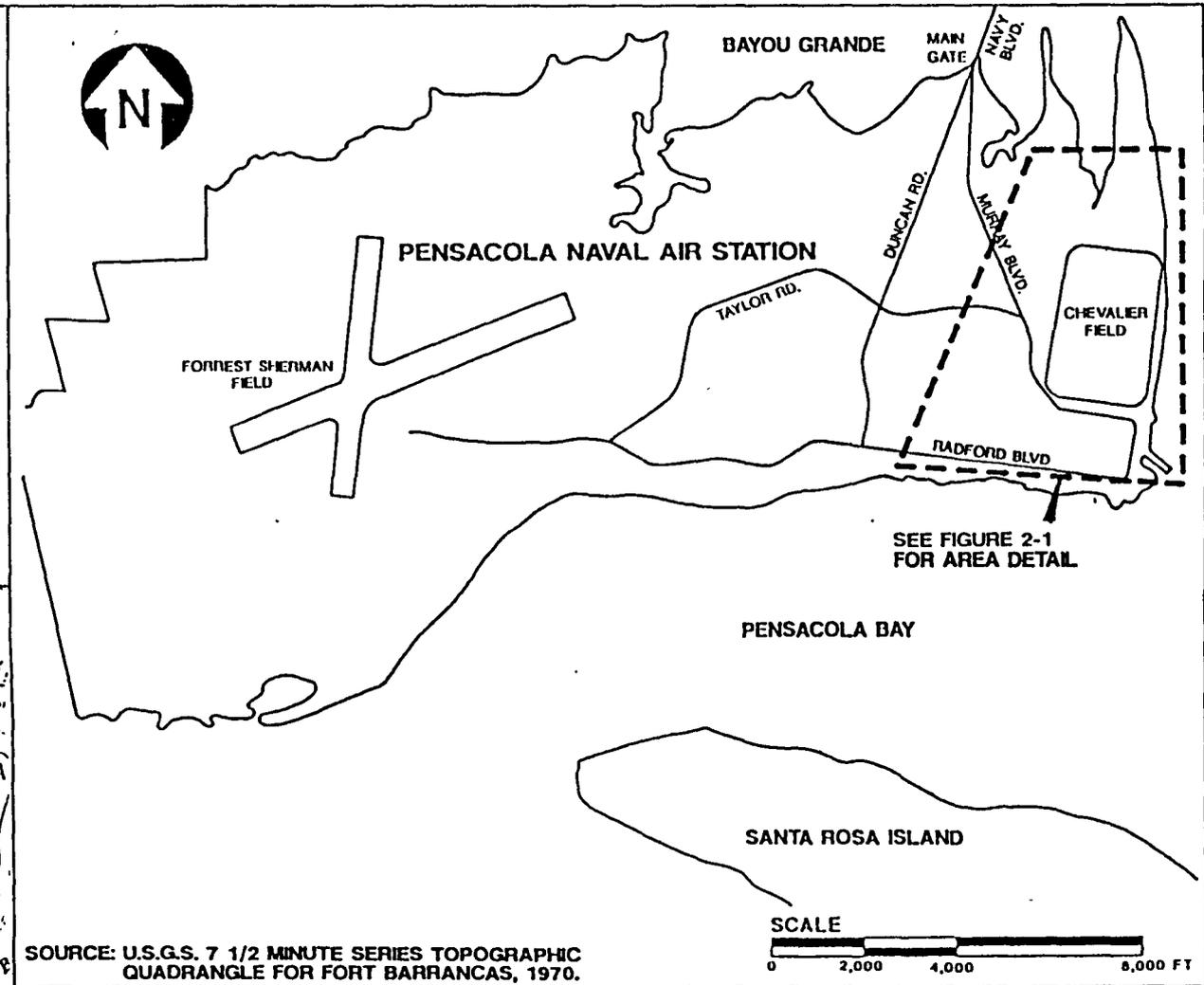
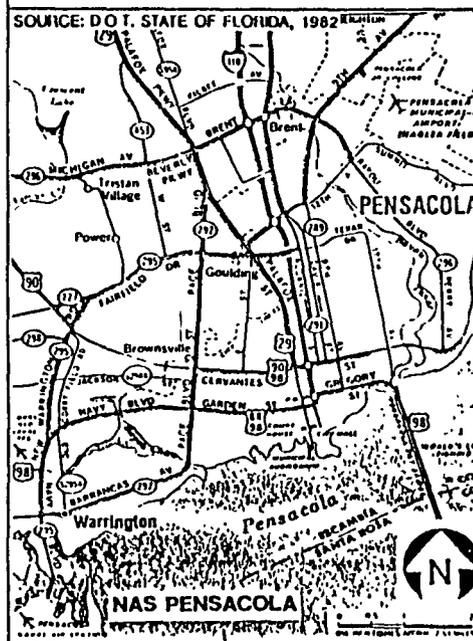
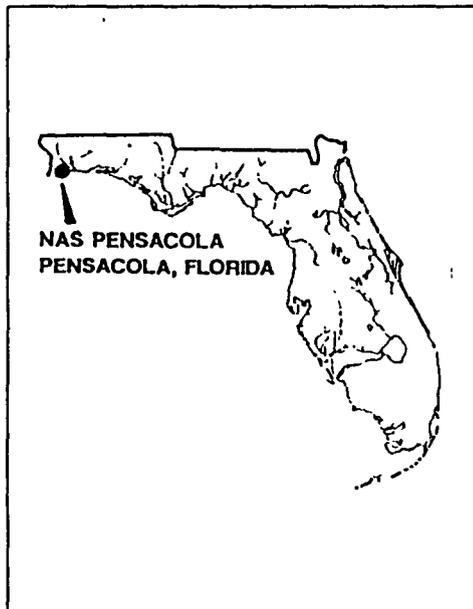


FIGURE 1-1
FACILITY LOCATION MAP

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The contamination assessment at Site 3810N was conducted from January 1992 through August 1992. A CAR was submitted to FDER in August 1992. At the request of FDER, a supplemental field investigation was performed, which was conducted on January 13, 1993. This report is an addendum to the original CAR, in which the findings and conclusions of the supplemental field investigation are presented.

2.0 SITE BACKGROUND

2.1 SITE DESCRIPTION. Building 3810 is located on the north perimeter of Chevalier Field (see Figure 2-1). Activities in and around this building include the testing of helicopter blades. Site 3810N is the former location of a 500-gallon UST used for fuel oil storage, located on the north side of Building 3810 (Figure 2-2). The area in the immediate vicinity of the former UST is a small grassy area surrounded by asphalt. A creek exists approximately 60 feet north of Building 3810 and runs east into Pensacola Bay.

2.2 SITE HISTORY. The former fuel oil UST was installed in 1982. During the tank removal and replacement program, the UST was removed and replaced with an aboveground storage tank (AST), located approximately 15 feet northwest of the former UST location. The AST was removed from the site in 1992. A composite soil sample was collected from the UST excavation and analyzed for TRPH. The reported TRPH concentration of 1,600 parts per million (ppm) exceeded the State target level of 50 ppm for petroleum contaminated soils (FDER, May 1992) and, therefore, warranted further investigation pursuant to Chapter 17-770, FAC.

2.3 PREVIOUS SITE INVESTIGATION. A contamination assessment (CA) was conducted at Site 3810N by ABB-ES from January 1992 through August 1992. This CA included the advancement of 19 soil borings and the installation of 12 monitoring wells. Soil boring and monitoring well locations are shown in Figure 2-2.

Soil samples were collected from each soil boring and analyzed for volatile organic compounds (VOC) by organic vapor analyzer (OVA) headspace analyses. Groundwater samples were collected from monitoring wells PEN-3810N-MW1 through PEN-3810N-MW10D on February 5, 1992. These monitoring wells and two additional wells, PEN-3810N-MW11 and PEN-3810N-MW12, were sampled on April 23, 1992, to verify the concentrations of compounds reported in the February 5, 1992, analytical results, and to assess if contaminants had migrated downgradient into the creek located north of the site. Samples were analyzed for constituents of the kerosene analytical group, as defined in Chapter 17-770, FAC. The results of these sampling events are presented in Tables 2-1 and 2-2.

The findings of the CAR are summarized below.

- The groundwater flow direction at the site is north-northeast.
- OVA headspace analyses of soils indicate that excessively petroleum-contaminated soil is present in a small area in the vicinity of the former UST (Figure 2-2). The vertical extent of soil contamination appears to be restricted to within 1 foot of the water table (ABB-ES, 1992).
- Laboratory results of groundwater samples collected February 5, 1992, and April 23, 1992, indicated that groundwater contamination exceeded State target levels or recommended guidance concentrations for fluorene, phenanthrene, total volatile organic aromatics (total VOA), total naphthalenes, and TRPH.

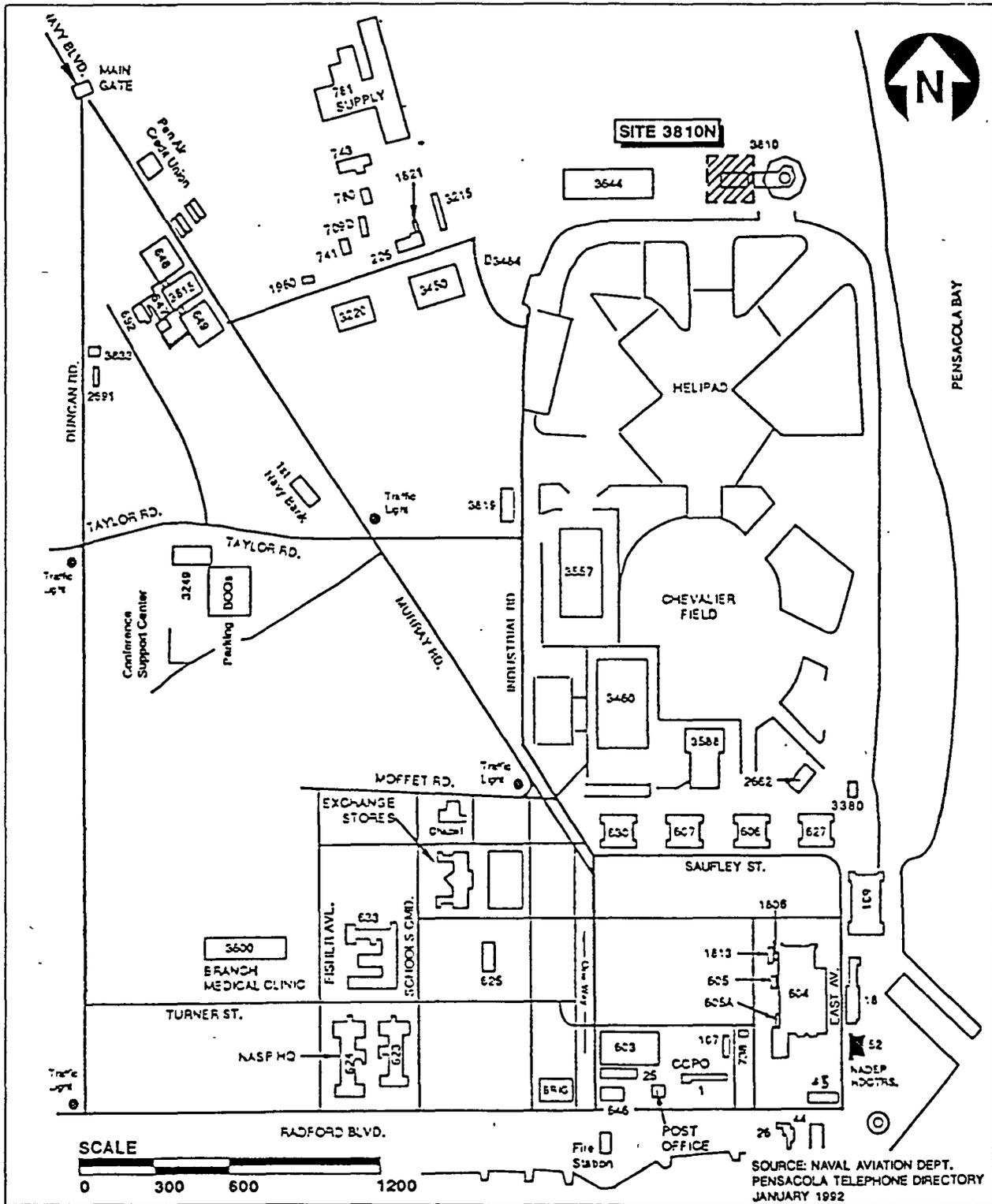
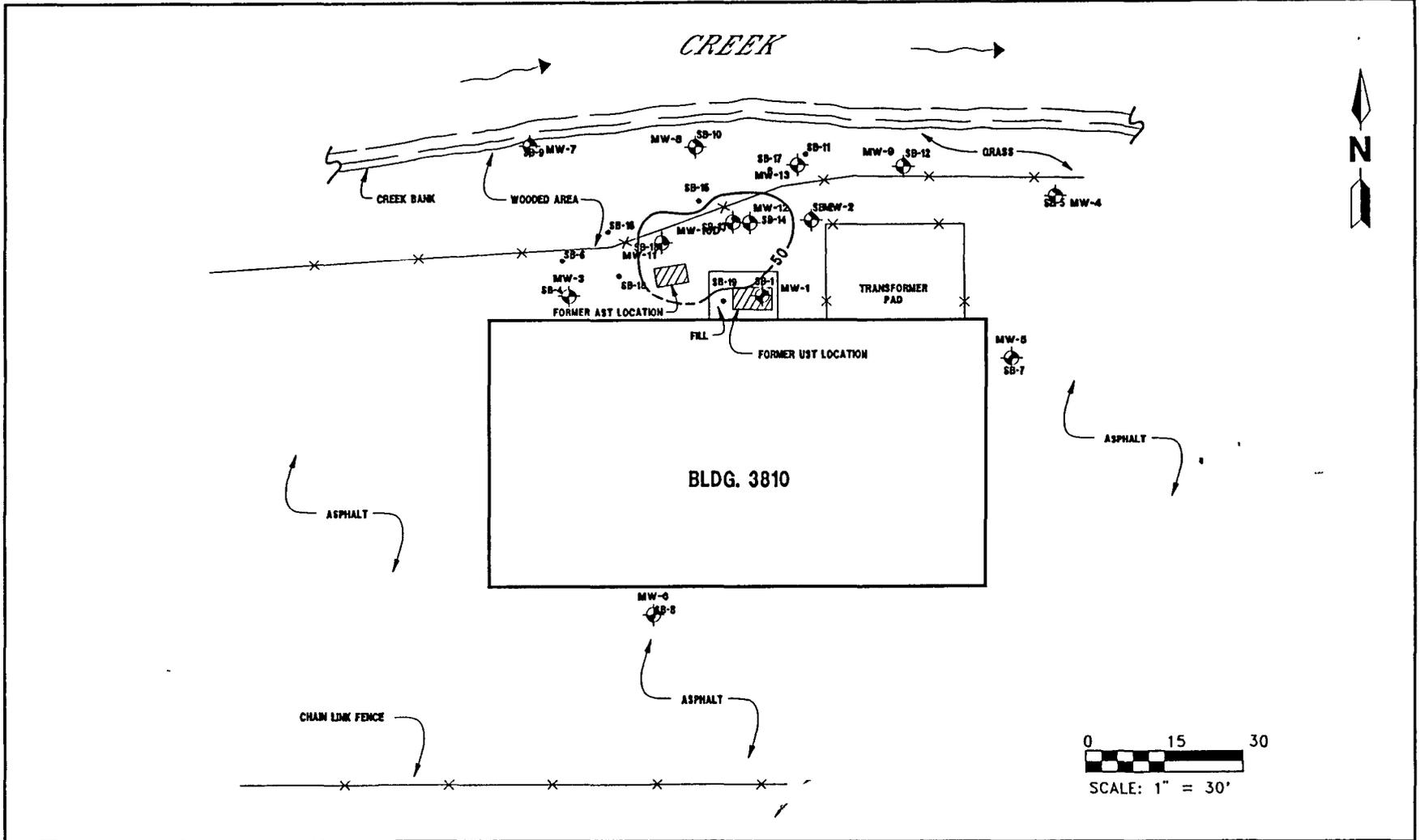


FIGURE 2-1
 SITE LOCATION MAP
 SITE 3810N



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LEGEND	
MW-1	Monitoring Well Location
SB-1	Soil Boring Location
—50—	Isoconcentration Line (dashed where inferred)

FIGURE 2-2
SITE PLAN SHOWING MONITORING WELL LOCATIONS, SOIL BORING LOCATIONS, AND AREAL EXTENT OF EXCESSIVELY CONTAMINATED SOIL



**CONTAMINATION ASSESSMENT
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**NADEP PENSACOLA
 PENSACOLA, FLORIDA**

**Table 2-1
Summary of Groundwater Sample Laboratory Analyses,
Contaminants of Concern,
February 5, 1992**

Contamination Assessment Report Addendum
Site 3810N, Naval Aviation Depot
Pensacola, Florida

Compound	State Target Level or Guidance Concentration	MW1	MW2	MW3	MW4	MW5	MW5 Duplicate	MW6	MW7	MW8	MW9	MW10D
Ethyl benzene		ND	16	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes		30	39	ND	ND	ND	ND	ND	ND	ND	ND	5
Toluene ¹		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total VOA	² 50	30	55	ND	ND	ND	ND	ND	ND	ND	ND	5
1-Methylnaphthalene		ND	88	ND	ND	ND	ND	ND	ND	ND	ND	30
2-Methylnaphthalene		ND	76	ND	ND	ND	ND	ND	ND	ND	ND	31
Naphthalene		ND	45	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total naphthalenes ³	² 100	ND	209	ND	ND	ND	ND	ND	ND	ND	ND	61
Fluorene	⁴ 10	ND	13	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	⁴ 10	ND	14	ND	ND	ND	ND	ND	ND	ND	ND	ND
TRPH	² 5	5	54	ND	ND	1	ND	ND	ND	2	2	1

¹Detected in trip blank at a concentration of 30 parts per billion (ppb).

²State target level (Florida Department of Environmental Regulation [FDER], Chapter 17-770, Florida Administrative Code [FAC]).

³Total naphthalenes is the sum of naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene.

⁴Guidance concentration recommended by FDER (February, 1989).

Notes: Concentrations are in parts per billion, except total recoverable petroleum hydrocarbons, which are in parts per million.

Duplicate sample was collected from monitoring well MW-5.

ND = not detected.

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

TRPH = total recoverable petroleum hydrocarbons.

**Table 2-2
Summary of Groundwater Sample Laboratory Analyses,
Contaminants of Concern,
April 23, 1992**

Contamination Assessment Report Addendum
Site 3810N, Naval Aviation Depot
Pensacola, Florida

Compound	State Target Level or Guidance Concentration	MW1	MW2	MW3	MW3 Duplicate	MW4	MW5	MW6	MW6 Duplicate	MW7	MW8	MW9	MW10D	MW11	MW12
Benzene		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1
Ethyl benzene		4	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2	4
Xylenes		25	2	1	ND	4	ND	ND	ND	ND	ND	ND	ND	9	12
Toluene		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total VOA	¹ 50	29	3	1	ND	4	ND	ND	ND	ND	ND	ND	ND	¹ 11	17
1,1,1-Trichloroethane	¹ 200	ND	ND	ND	ND	ND	ND	ND	ND	ND	7	ND	ND	13	ND
1-Methylnaphthalene		ND	24	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	22
2-Methylnaphthalene		ND	18	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	13	23
Naphthalene		ND	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5	13
Total naphthalenes ²	¹ 100	ND	49	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	31	58
Fluorene	³ 10	ND	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	³ 10	ND	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5	ND
TRPH	¹ 5	3	14	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4	1

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

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

³Guidance concentrations recommended by FDER (February 1989).

Notes: Concentrations are in parts per billion, except total recoverable petroleum hydrocarbons, which are in parts per million.

Duplicate samples were collected from monitoring wells MW-3 and MW-6.

ND = not detected.

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

TRPH = total recoverable petroleum hydrocarbons.

- Groundwater contamination appeared generally to coincide with the area of excessive soil contamination and does not appear to be migrating offsite. No contamination was detected in the samples collected from the downgradient wells PEN-3810N-MW7, PEN-3810N-MW8, and PEN-3810N-MW9.
- The vertical extent of groundwater contamination appears to be less than 15 feet below land surface (bls) in the area downgradient of the former UST. Groundwater contamination in well PEN-3810N-MW10D, which is screened from 15 to 20 feet bls, was below State target levels.
- No potable water wells were identified within a 0.25-mile radius of the site.

A *Monitoring Only Plan (MOP)* was submitted in the CAR. Upon completion of review, FDER requested that an additional field investigation, involving the installation of one additional downgradient shallow well and an additional round of groundwater sampling, be performed at the site to assess if contaminants were migrating offsite between wells PEN-3810N-MW8 and PEN-3810N-MW9. A copy of the correspondence from FDER is presented in Appendix A.

2.4 SCOPE The scope of services developed to perform the additional field work included:

- installation of one shallow monitoring well (PEN-3810N-MW13) to a depth of 13 feet bls;
- collection of groundwater samples from each well to be analyzed for constituents of the kerosene analytical group (lead and ethylene dibromide were not detected in previous sampling events and were not analyzed); and
- reduction and analysis of all data gathered during the field investigation to prepare this CAR addendum.

3.0 SUPPLEMENTAL GROUNDWATER ASSESSMENT RESULTS

3.1 METHODOLOGIES AND EQUIPMENT. All methodologies and equipment used during the additional field investigation were in conformance with the ABB-ES, FDER-approved, Comprehensive Quality Assurance Plan (CompQAP).

3.1.1 Monitoring Well Construction. PEN-3810N-MW13 was installed to a depth of 13 feet bls and constructed of 2-inch inside diameter, schedule 40, polyvinyl chloride casing (PVC) with flush-threaded joints and 10 feet of 0.010-inch machine-slotted screen. PVC well casing extends from the top of the screen to land surface. A 20/30 grade silica sand filter pack was placed in the annular space to approximately 1 to 2 feet above the top of the screen. A 1-foot thick bentonite seal was then placed on top of the filter pack. The remaining annular space was grouted to the surface with a neat cement grout. A protective traffic-bearing vault was installed to complete the well location. The monitoring well is equipped with a locking well cap and a padlock.

3.1.2 Groundwater Sampling and Analyses. Groundwater samples were collected from each well on January 13, 1993, in accordance with ABB-ES' CompQAP. Before sampling, the monitoring wells were purged with a Teflon™ bailer. Purging continued until five volumes had been removed from the well. Groundwater samples were collected using an extruded Teflon™ bailer. The samples were placed into appropriate containers, properly preserved, placed on ice, and shipped to Wadsworth/ALERT Laboratories, Inc., in Tampa, Florida. All groundwater samples collected were analyzed for USEPA methods 601, 602, 610, and 418.1.

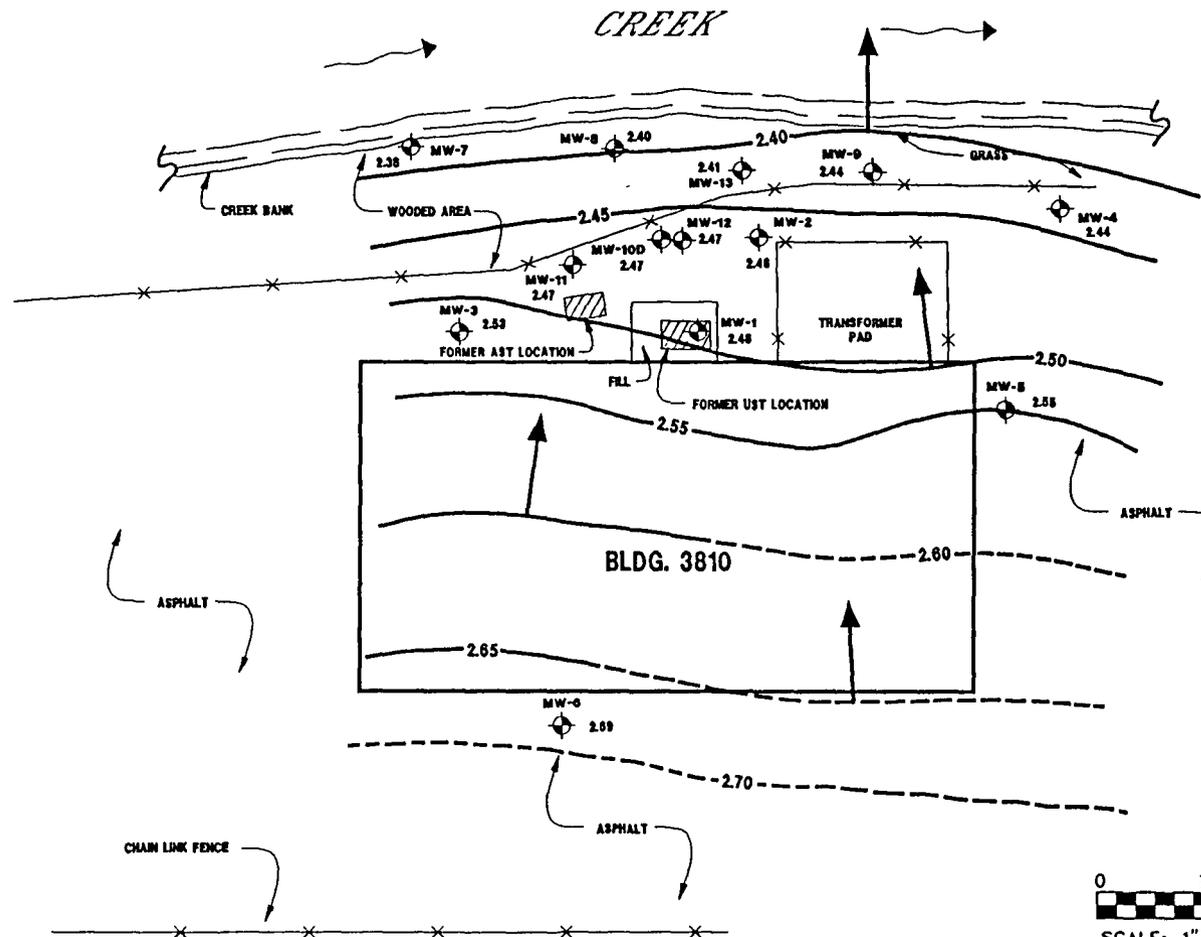
3.2 GROUNDWATER ASSESSMENT RESULTS. Water level measurements were taken from each monitoring well, including PEN-3810N-MW13, prior to groundwater sampling on January 13, 1993. A water level elevation contour map was constructed using this information (see Figure 3-1). The groundwater at Site 3810N has been consistently flowing northerly as indicated by previous data (ABB-ES, 1992).

VOAs, methylene chloride, methyl tert-butyl ether (MTBE), fluorene, phenanthrene, fluoranthene, naphthalenes, and TRPH were detected in the groundwater samples collected January 13, 1993. Analytical results from the this sampling event are presented in Appendix B and are summarized in Table 3-1 and in Figure 3-2.

Total VOA (the sum of concentrations of benzene, ethyl benzene, toluene, and xylenes) concentrations were detected in only the samples collected from wells PEN-3810N-MW1, PEN-3810N-MW2, and PEN-3810N-MW11 through PEN-3810N-MW13. The detected concentrations (4, 2, 9, 2, and 2 parts per billion [ppb], respectively) are below the State target level of 50 ppb.

MTBE was detected in only the samples collected from monitoring wells PEN-3810N-MW2 and PEN-3810N-MW4 at concentrations of 1 and 2' ppb, respectively. This is well below the State target level of 50 ppb for MTBE.

1-Methylnaphthalene and 2-methylnaphthalene were detected in only the groundwater sample collected from PEN-3810N-MW11. Their combined concentration of 29 ppb does not exceed the State target level of 100 ppb for total naphthalenes.



LEGEND	
MW-1 2.48	Monitoring well location with water table elevation in feet
— 2.60 —	Equipotential Line (dashed where inferred)
Contour Interval = 0.05 feet	

FIGURE 3-1
WATER TABLE ELEVATION CONTOUR
MAP, SURFICIAL ZONE,
JANUARY 13, 1993



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NADEP PENSACOLA
PENSACOLA, FLORIDA

Table 3-1
Summary of Groundwater Sample Laboratory Results,
January 13, 1993

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Site 3810N, Naval Aviation Depot
Pensacola, Florida

Compound	State Target Level or Guidance Concentration	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW	MW10D	MW	MW11	MW	MW
		1	2	3	4	5	6	7	8	9	10D	Duplicate	11	Duplicate	12	13
Ethyl benzene		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	1	ND	ND
Xylenes		4	2	ND	ND	8	8	2	2							
Total VOA	¹ 50	4	2	ND	ND	9	9	2	2							
Methylene chloride ²	³ 5	ND	ND	ND	ND	ND	ND	1	2	21	2	1	ND	ND	1	ND
Methyl tert-butyl ether	¹ 50	ND	1	ND	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	³ 10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5	ND	⁵ 11	ND
Phenanthrene	³ 10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	13	6	⁵ 16	ND
Fluoranthene	⁵ 44	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1-Methylnaphthalene		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	16	9	ND	ND
2-Methylnaphthalene		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	13	7	ND	ND
Total naphthalenes ⁴	¹ 100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	29	16	⁵ 35	ND
TRPH	¹ 5	140	32	ND	ND	29	24	50	ND							

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

²Methylene chloride was detected in trip blank. See text for discussion.

³Guidance concentrations recommended by FDER (February 1989).

⁴Total naphthalenes is the sum of naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene.

⁵Estimated concentration.

Notes: Concentrations are in parts per billion, except total recoverable petroleum hydrocarbons, which are in parts per million.

Duplicate samples were collected from monitoring wells MW-10 and MW-11.

ND = not detected.

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

TRPH = total recoverable petroleum hydrocarbons.

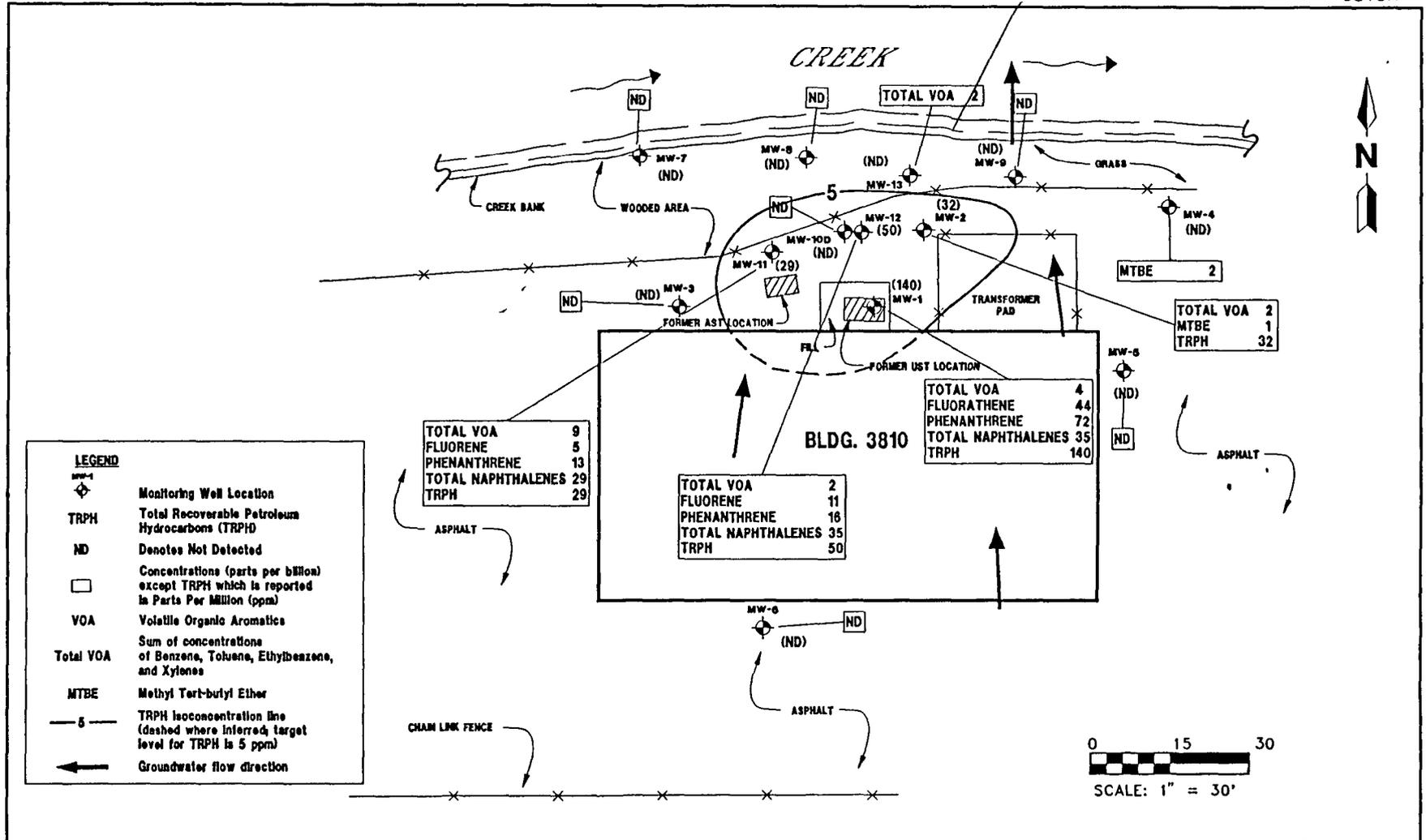
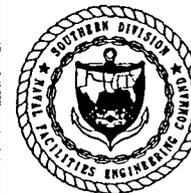
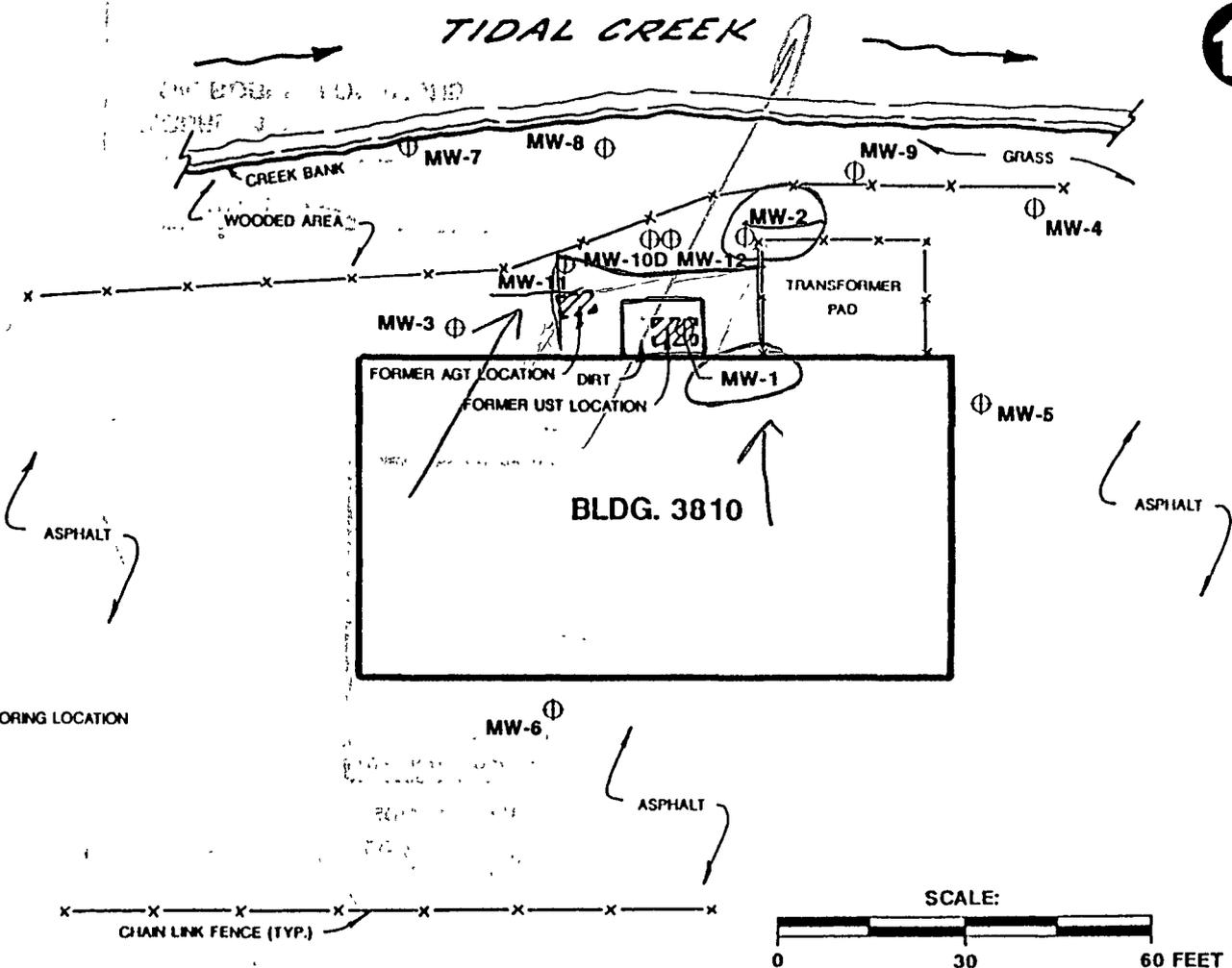


FIGURE 3-2
GROUNDWATER CONTAMINATION
DISTRIBUTION MAP,
JANUARY 13, 1993



CONTAMINATION ASSESSMENT
REPORT ADDENDUM
SITE 3810N

NADEP PENSACOLA
PENSACOLA, FLORIDA



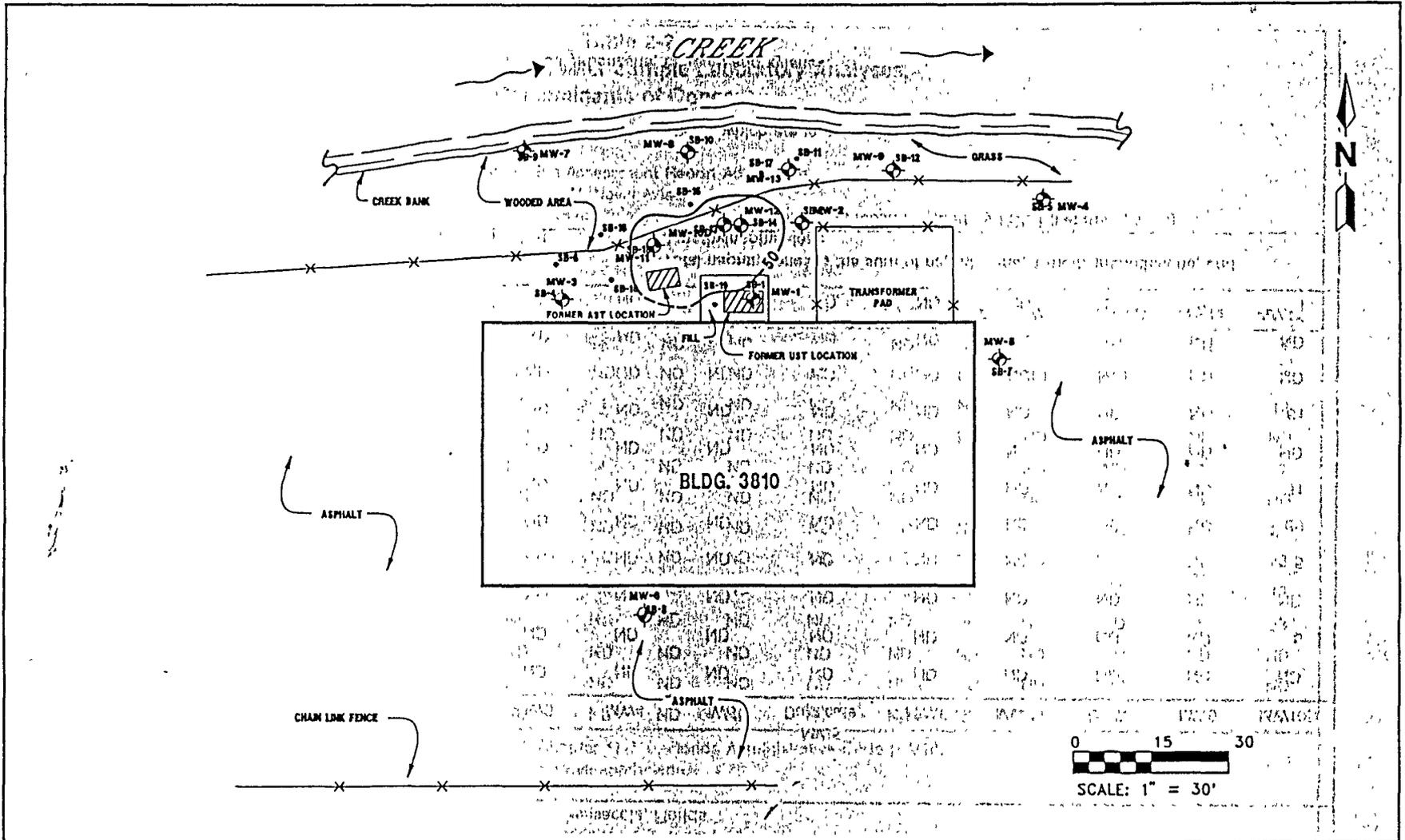
LEGEND

⊕ MONITORING WELL AND/OR SOIL BORING LOCATION

**FIGURE 4-2
MONITORING WELL LOCATIONS**



**CONTAMINATION
ASSESSMENT REPORT
SITE 3810N
NADEP PENSACOLA
PENSACOLA, FLORIDA**



LEGEND

- MW-1 Monitoring Well Location
- SB-1 Soil Boring Location
- 50 — Isoconcentration Line (dashed where inferred)

FIGURE 2-2
SITE PLAN SHOWING MONITORING WELL LOCATIONS, SOIL BORING LOCATIONS, AND AREAL EXTENT OF EXCESSIVELY CONTAMINATED SOIL



**CONTAMINATION ASSESSMENT
 REPORT ADDENDUM
 SITE 3810N**

**NADEP PENSACOLA
 PENSACOLA, FLORIDA**

TRPH contamination has been persistent throughout all three sampling events. Samples collected on January 13, 1993, from monitoring wells PEN-3810N-MW1, PEN-3810N-MW2, PEN-3810N-MW11, and PEN-3810N-MW12 each contained concentrations of TRPH exceeding the State target level of 5 ppm. TRPH concentrations ranged from 29 ppm in PEN-3810N-MW11 to 140 ppm in PEN-3810N-MW1. The horizontal extent of the TRPH plume, based on the January 13, 1993, analytical data, is shown in Figure 3-2. Because TRPH were not detected in downgradient wells, TRPH contamination does not appear to be migrating offsite.

Fluorene was detected in the samples collected from monitoring wells PEN-3810N-MW11 and PEN-3810N-MW12 at concentrations of 5 ppb and 11 ppb, respectively. Phenanthrene was detected in the samples collected from these two wells at concentrations of 13 ppb and 16 ppb, respectively. Fluoranthene was detected in only the sample collected from well PEN-3810N-MW1, at a concentration of 44 ppb. Because these contaminants were not detected in samples collected from the downgradient wells along the creek, they do not appear to be migrating offsite and appear to be contained within the TRPH plume.

Methylene chloride was detected in the samples collected from monitoring wells PEN-3810N-MW7, PEN-3810N-MW8, PEN-3810-MW9, PEN-3810N-MW10D, and PEN-3810N-MW12 at concentrations ranging from 1 ppb to 21 ppb. Because methylene chloride was detected in the trip blank at a concentration of 14 ppb, the presence of methylene chloride in these groundwater samples can be attributed to laboratory contamination.

4.0 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

4.1 SUMMARY. Based upon results of the previous investigation and the additional field investigation, the following is a summary of the conditions observed at Site 3810N.

- Total VOA concentrations and total naphthalene groundwater concentrations are well below State target levels.
- TRPH, fluorene, phenanthrene, and fluoranthene groundwater contaminants exceeded State target levels or recommended guidance concentrations in samples collected from wells near the former UST location.

4.2 CONCLUSIONS. Based on the results of the January, 1993, laboratory analyses and the findings presented in the 1992 CAR, the following can be stated.

- The source of contamination has been removed from the site.
- The vertical extent of the contamination appears to be limited to 15 feet bls (no contamination was detected in the sample from the deep monitoring well PEN-3810N-MW10D).
- Groundwater contamination was minimal in the samples collected from the downgradient wells along the creek.
- The area of concern appears to be restricted to the vicinity of the former USTs.

4.3 RECOMMENDATIONS. Based on the findings and conclusions discussed above, a MOP is recommended for site 3810N. It is recommended that six wells (PEN-3810N-MW1, PEN-3810N-MW7, PEN-3810N-MW8, PEN-3810N-MW9, PEN-3810N-MW11, and PEN-3810N-MW13) be sampled quarterly for a 1-year period according to FDER Chapter 17-770.660, FAC. The remaining wells are excluded from the monitoring plan because they are located away from the area of concern, contaminant levels detected in groundwater samples from these wells were minimal, and groundwater flow direction maps indicate they will not be impacted by the contaminated area.

Groundwater samples should be analyzed for volatile organic compounds by USEPA Methods 601 and 602, for base-neutral and polynuclear aromatic hydrocarbons by USEPA Method 610, and for TRPH by USEPA Method 418.1. Lead and ethylene dibromide analyses are excluded because these constituents were not detected in any samples collected during the investigation.

5.0 PROFESSIONAL REVIEW CERTIFICATION

The contamination assessment contained in this report was prepared using sound, hydrogeologic principles and judgment. This assessment is based on the geologic investigation and associated information detailed in the text and appended to this report. If conditions are determined to exist that differ from those described, the undersigned geologist should be notified to evaluate the effects of any additional information on the assessment described in this report. This Contamination Assessment Report Addendum was developed for the UST located at Site 3810N at the Naval Aviation Depot, Naval Air Station, Pensacola, Florida, and should not be construed to apply to any other site.

Roger Durham
Professional Geologist
P.G. No. 001127

Date

6.0 REFERENCES

- ABB Environmental Services, Inc., 1992, Contamination Assessment Report, Site 3810N, Naval Aviation Depot, Naval Air Station, Pensacola, Florida: Prepared for Southern Division, Naval Facilities Engineering Command, Charleston, South Carolina.
- Florida Department of Environmental Regulation, February 1989, Groundwater guidance concentrations: compiled by R. Merchant, Division of Water Facilities.
- Florida Department of Environmental Regulation, May 1992, Guidelines for assessment and remediation of petroleum contaminated soils, revised: Division of Waste Management.
- Florida Department of Transportation, 1982, Florida official transportation map: 1 sheet.
- Naval Aviation Depot, Pensacola, 1992, Telephone Directory, 32 p.
- U.S. Geological Survey, 1970, Fort Barrancas Quadrangle: 7.5-minute topographic series.

APPENDIX A
FDER Correspondence



State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee	
To: _____	Location: _____
By: _____	Location: _____
Date: _____	Location: _____
From: _____	Date: _____

Interoffice Memorandum

TO: Eric S. Nuzie, Federal Facilities Coordinator
Bureau of Waste Cleanup

THROUGH: Dr. James J. Crane, P.G. III/Administrator *JJC*
Technical Review Section

~~Tim Behr, Professional Geologist II~~ *B*
~~Technical Review Section~~

FROM: Michael J. Deliz, Environmental Specialist II *mgS*
Technical Review Section

DATE: November 4, 1992

SUBJECT: Draft Final Contamination Assessment Report - dated
September, 1992
Naval Aviation Depot, Naval Air Station, Pensacola
Site 3810N

The Bureau of Waste Cleanup has reviewed the Contamination Assessment Report (CAR) dated September 1991 (received September 29, 1992). In order to meet the requirements of Chapter 17-770, Florida Administrative Code (F.A.C.), the following comments need to be addressed:

General Comments

1. ~~Please dash contours~~ when the areal extent of isoconcentrations is unknown or if there is no data to support a closed contour.
2. Tidally influenced areas should have water level determinations that encompass one tide cycle.

Specific Comments

3. This Contamination Report (CAR) and all supplemental contamination assessment related documents should be signed and sealed by a registered professional in accordance with Rule 17-770.500, F.A.C. The certification should be made by a registered professional who is able to demonstrate competence in the subject area addressed within the sealed document. Until this document is signed and sealed by a registered professional it cannot be approved.

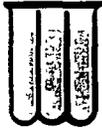
4. Page 5-9, Table 5-4, The groundwater analysis on monitor well MW-11 for 1,1,1-Trichloroethane and 1-Methylnaphthalene are reversed with respect to the laboratory results in the Appendix.
5. An additional, permanent, water table monitoring well should be installed 20 feet east of MW-8 to define the horizontal extent of groundwater contamination in the down gradient direction.
6. Following installation of the supplemental monitoring well, ~~a complete round of sampling and analysis for EPA Methods~~ 602 (including MTBE), 610, and 418.1 should be performed. In addition, monitoring wells MW-8 and MW-11 should be sampled and analyzed for EPA Method 601 so that this review can be completed and a Remedial Action Plan (RAP) can be prepared based on current data. Note, additional monitoring wells should be installed if significant contaminant concentrations are detected at perimeter monitoring wells or at the vertical extent well.

Please provide the results of the supplemental assessment to the Technical Review Section within sixty (60) days of receipt of this request. If additional time is needed, it should be requested in accordance with the Navy's Petroleum Contamination Agreement Site Management Plan process.

/mjd

APPENDIX B

**Analytical Data
January 13, 1993, Sampling Event**



WADSWORTH/Alert Laboratories

5910 Breckenridge Parkway, Suite H
Tampa, FL 33610

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

ANALYTICAL REPORT

SUBCONTRACT NUMBER: SE1-08-134

TASK ORDER NUMBER: 28

NADEP PENSACOLA

Presented to:

ROGER DURHAM

ABB ENVIRONMENTAL SERVICES, INC.

ENSECO-WADSWORTH/ALERT LABORATORIES

5910 BRECKENRIDGE PARKWAY, SUITE H

TAMPA, FLORIDA 33610

(813) 621-0784

Joanne Anderson
Joanne Anderson
Project Manager

Randall C. Grubbs
Randall C. Grubbs
Laboratory Director - Florida

February 1, 1993



ENSECO-WADSWORTH/
Laboratories

INVOLVEMENT

This report summarizes the analytical results of the NADEP Pensacola site submitted by ABB Environmental Services, Inc. to Enseco-Wadsworth/ALERT Laboratories who provided independent, analytical services for this project under the direction of Roger Durham. The samples were accepted into Wadsworth's Florida facility on 14 January 1993, in accordance with documented sample acceptance procedures. The associated analytical methods and sample results are outlined sequentially in this report.

Analytical results included in this report have been reviewed for compliance with the Laboratory QA/QC Plan as summarized in the Quality Control Section at the rear of the report. Sample custody documentation describing the number of samples and sample matrices is also included. Any qualifications and/or non-compliant items have been noted below.



ENSECO-WADSWORTH/ALERT
Laboratories

ANALYTICAL METHODS

Wadsworth/ALERT Laboratories utilizes only USEPA approved analytical methods and instrumentation. The analytical methods utilized for the analysis of these samples are listed below.

PARAMETER	METHOD
ORGANICS	
Volatile Organics	** EPA Method 601/2
Polynuclear Aromatic Hydrocarbons	** EPA Method 625
MISCELLANEOUS	
Tot. Rec. Petroleum Hydrocarbons	** EPA Method 418.1

NOTE: ** Indicates usage of this method to obtain results for this report.

(D) Indicates draft version of this method was used
EPA Methods Methods for Chemical Analysis of Water and Wastes, USEPA, 600/4-79-020, March, 1983. July, 1982
Drinking Waters USEPA, 600/4-88/039, December, 1988.
Std. Methods Standard Methods for the Examination of Water and Waste-water, APHA, 16th edition, 1985.
USEPA Methods From 40CFR Part 136, published in Federal Register on October 26, 1984.
SW846 Methods Test Methods for Evaluating Solid Waste Physical/Chemical Methods, 3rd Edition, USEPA, 1986.
ASTM Methods American Society for Testing and Materials.
NIOSH Method NIOSH Manual of Analytical Methods, National Institute for Occupational Safety and Health, 2nd Edition, April 1977.



ENSECO-WADSWORTH/ALERT
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3A1402-11
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: NA
DATE ANALYZED: 1/27/93

SAMPLE ID: PEN-3810N-MW1

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	4
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	115	(78-122)
Trifluorotoluene (PID)	100	(73-131)



ENSECO-WADSWORTH/ALERT
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, . INC.
LAB #: 3A1402-11
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: 1/15/93
DATE ANALYZED: 1/24/93

SAMPLE ID: PEN-3810N-MW1

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

POLYNUCLEAR AROMATIC HYDROCARBONS

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
benz (a, h) anthracene	ND
Fluoranthene	44
Fluorene	ND
Indeno (1, 2, 3-cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	72
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	99	(22-135)	(10-155)
Fluorobiphenyl	9	(34-140)	(12-153)
Biphenyl-d14	34	(10-132)	(13-140)



ENSECO-WADSWORTH/LEERT
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3A1402-11
MATRIX : WATER

DATE RECEIVED: 1/14/93

SAMPLE ID : PEN-3810N-MW1

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Tot Recoverable Pet Hydrocarbons	1/21- 1/22/93	140	25	mg/l

NOTE: ND (None Detected)



ENSECO-WADSWORTH/ LERT
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3A1402-9
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: NA
DATE ANALYZED: 1/27/93

SAMPLE ID: PEN-3810N-MW2

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	2
		Methyl-tert-butylether	1

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	113	(78-122)
Trifluorotoluene (PID)	104	(73-131)



ENSECO-WADSWORTH/ ~~LEBT~~
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3A1402-9
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: 1/15/93
DATE ANALYZED: 1/24/93

SAMPLE ID: PEN-3810N-MW2

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3 - cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	74	(22-135)	(10-155)
Fluorobiphenyl	67	(34-140)	(12-153)
Terphenyl-d14	45	(10-132)	(13-140)



ENSECO-WADSWORTH/ ~~ART~~
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3A1402-9
MATRIX : WATER

DATE RECEIVED: 1/14/93

SAMPLE ID : PEN-3810N-MW2

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Tot Recoverable Pet Hydrocarbons	1/21- 1/22/93	32	5 mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/ERT
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3A1402-3
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: NA
DATE ANALYZED: 1/27/93

SAMPLE ID: PEN-3810N-MW3

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = 1 ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	109	(78-122)
Trifluorotoluene (PID)	100	(73-131)



ENSECO-WADSWORTH/ALERT
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3A1402-3
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: 1/15/93
DATE ANALYZED: 1/25/93

SAMPLE ID: PEN-3810N-MW3

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3 - cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	71	(22-135)	(10-155)
Fluorobiphenyl	64	(34-140)	(12-153)
Terphenyl-d14	23	(10-132)	(13-140)



ENSECO-WADSWORTH/ALBERT
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3A1402-3
MATRIX : WATER

DATE RECEIVED: 1/14/93

SAMPLE ID : PEN-3810N-MW3

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Tot Recoverable Pet Hydrocarbons	1/21- 1/22/93	ND	1 mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/LEST
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3A1402-4
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: NA
DATE ANALYZED: 1/27/93

SAMPLE ID: PEN-3810N-MW4

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	2

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = 1 ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	115	(78-122)
Trifluorotoluene (PID)	98	(73-131)



ENSECO-WADSWORTH/ ~~LETT~~
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3A1402-4
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: 1/15/93
DATE ANALYZED: 1/25/93

SAMPLE ID: PEN-3810N-MW4

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3 - cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	77	(22-135)	(10-155)
Fluorobiphenyl	71	(34-140)	(12-153)
Terphenyl-d14	29	(10-132)	(13-140)



ENSECO-WADSWORTH/ALERT
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3A1402-4
MATRIX : WATER

DATE RECEIVED: 1/14/93

SAMPLE ID : PEN-3810N-MW4

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Tot Recoverable Pet Hydrocarbons	1/21- 1/22/93	ND	1	mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/ALERT
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3A1402-2
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: NA
DATE ANALYZED: 1/27/93

SAMPLE ID: PEN-3810N-MW5

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	103	(78-122)
Trifluorotoluene (PID)	99	(73-131)



ENSECO-WADSWORTH/ERT
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3A1402-2
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: 1/15/93
DATE ANALYZED: 1/24/93

SAMPLE ID: PEN-3810N-MW5

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3-cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	38	(22-135)	(10-155)
Fluorobiphenyl	35	(34-140)	(12-153)
Terphenyl-d14	11	(10-132)	(13-140)



ENSECO-WADSWORTH/ LEST
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3A1402-2
MATRIX : WATER

DATE RECEIVED: 1/14/93

SAMPLE ID : PEN-3810N-MW5

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Tot Recoverable Pet Hydrocarbons	1/21- 1/22/93	ND	1	mg/l

NOTE: ND (None Detected)



ENSECO-WADSWORTH/ALERT
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3A1402-1
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: NA
DATE ANALYZED: 1/27/93

SAMPLE ID: PEN-3810N-MW6

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	97	(78-122)
Trifluorotoluene (PID)	98	(73-131)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3A1402-1
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: 1/15/93
DATE ANALYZED: 1/25/93

SAMPLE ID: PEN-3810N-MW6

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3-cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 6 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	70	(22-135)	(10-155)
Fluorobiphenyl	65	(34-140)	(12-153)
Terphenyl-d14	20	(10-132)	(13-140)



ENSECO-WADSWORTH/ENR
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3A1402-1
MATRIX : WATER

DATE RECEIVED: 1/14/93

SAMPLE ID : PEN-3810N-MW6

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Tot Recoverable Pet Hydrocarbons	1/21- 1/22/93	ND	1	mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3A1402-15
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: NA
DATE ANALYZED: 1/27/93

SAMPLE ID: PEN-3810N-MW7

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	1
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	118	(78-122)
Trifluorotoluene (PID)	100	(73-131)



ENSECO-WADSWORTH/ERT
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3A1402-15
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: 1/15/93
DATE ANALYZED: 1/25/93

SAMPLE ID: PEN-3810N-MW7

PROJ #3810N

CERTIFICATION #: E84059

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

HRS84297

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3-cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 6 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	71	(22-135)	(10-155)
Fluorobiphenyl	67	(34-140)	(12-153)
Terphenyl-d14	22	(10-132)	(13-140)



ENSECO-WADSWORTH/ ~~LIST~~
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3A1402-15
MATRIX : WATER

DATE RECEIVED: 1/14/93

SAMPLE ID : PEN-3810N-MW7

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Tot Recoverable Pet Hydrocarbons	1/21- 1/22/93	ND	1	mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3A1402-13
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: NA
DATE ANALYZED: 1/27/93

SAMPLE ID: PEN-3810N-MW8

PROJ #3810N

VOLATILE ORGANICS
METHOD 601/602 - GC

CERTIFICATION #: E84059
HRS84297

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	2
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	117	(78-122)
Trifluorotoluene (PID)	101	(73-131)



ENSECO-WADSWORTH/LET
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3A1402-13
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: 1/15/93
DATE ANALYZED: 1/24/93

SAMPLE ID: PEN-3810N-MW8

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3 -cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 6 ug/L) as rec'd
ND* (None Detected, lower detectable limit = ug/L) as rec'd
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	69	(22-135)	(10-155)
Fluorobiphenyl	69	(34-140)	(12-153)
Terphenyl-d14	45	(10-132)	(13-140)



ENSECO-WADSWORTH/ ~~ERT~~
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3A1402-13
MATRIX : WATER

DATE RECEIVED: 1/14/93

SAMPLE ID : PEN-3810N-MW8

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Tot Recoverable Pet Hydrocarbons	1/21- 1/22/93	ND	1 mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/NEERT
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3A1402-12
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: NA
DATE ANALYZED: 1/27/93

SAMPLE ID: PEN-3810N-MW9

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	21
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'
 ND* (None Detected, lower detectable limit = 1 ug/L) as rec'
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	118	(78-122)
Trifluorotoluene (PID)	102	(73-131)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3A1402-12
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: 1/15/93
DATE ANALYZED: 1/24/93

SAMPLE ID: PEN-3810N-MW9

PROJ #3810N

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

CERTIFICATION #: E84059
HRS84297

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3 - cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
ND* (None Detected, lower detectable limit = ug/L) as rec'd
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	79	(22-135)	(10-155)
Fluorobiphenyl	74	(34-140)	(12-153)
Terphenyl-d14	24	(10-132)	(13-140)



ENSECO-WADSWORTH/ INT
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3A1402-12
MATRIX : WATER

DATE RECEIVED: 1/14/93

SAMPLE ID : PEN-3810N-MW9

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Tot Recoverable Pet Hydrocarbons	1/21- 1/22/93	ND	1	mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/ALERT
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3A1402-8
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: NA
DATE ANALYZED: 1/27/93

SAMPLE ID: PEN-3810N-MW10D

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	2
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	109	(78-122)
Trifluorotoluene (PID)	100	(73-131)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3A1402-8
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: 1/15/93
DATE ANALYZED: 1/24/93

SAMPLE ID: PEN-3810N-MW10D

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3 -cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 6 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	72	(22-135)	(10-155)
Fluorobiphenyl	73	(34-140)	(12-153)
Terphenyl-d14	34	(10-132)	(13-140)



ENSECO-WADSWORTH/LENT
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3A1402-8
MATRIX : WATER

DATE RECEIVED: 1/14/93

SAMPLE ID : PEN-3810N-MW10D

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Tot Recoverable Pet Hydrocarbons	1/21- 1/22/93	ND	1 mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/LABORATORIES

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
 LAB # 3A1402-7
 MATRIX: WATER

DATE RECEIVED: 1/14/93
 DATE EXTRACTED: NA
 DATE ANALYZED: 1/27/93

SAMPLE ID: PEN-3810N-DUP2

PROJ #3810N

CERTIFICATION #: E84059
 HRS84297

VOLATILE ORGANICS
 METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	1
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = 1 ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	99	(78-122)
Trifluorotoluene (PID)	101	(73-131)



ENSECO-WADSWORTH/ALERT
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3A1402-7
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: 1/15/93
DATE ANALYZED: 1/24/93

SAMPLE ID: PEN-3810N-DUP2

PROJ #3810N

CERTIFICATION #: E84059

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

HRS84297

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3-cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
ND* (None Detected, lower detectable limit = ug/L) as rec'd
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	73	(22-135)	(10-155)
Fluorobiphenyl	70	(34-140)	(12-153)
Terphenyl-d14	25	(10-132)	(13-140)



ENSECO-WADSWORTH/ALERT
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3A1402-7
MATRIX : WATER

DATE RECEIVED: 1/14/93

SAMPLE ID : PEN-3810N-DUP2

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Tot Recoverable Pet Hydrocarbons	1/21- 1/22/93	ND	1	mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/LEST
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3A1402-5
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: NA
DATE ANALYZED: 1/27/93

SAMPLE ID: PEN-3810N-MW11

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	1
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	8
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	93	(78-122)
Trifluorotoluene (PID)	100	(73-131)



ENSECO-WADSWORTH/LETT
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3A1402-5
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: 1/15/93
DATE ANALYZED: 1/25/93

SAMPLE ID: PEN-3810N-MW11

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	5
Indeno (1, 2, 3 - cd) pyrene	ND
1-Methylnaphthalene	16
2-Methylnaphthalene	13
Naphthalene	ND
Phenanthrene	13
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	79	(22-135)	(10-155)
Fluorobiphenyl	71	(34-140)	(12-153)
Terphenyl-d14	31	(10-132)	(13-140)



ENSECO-WADSWORTH/ ~~LENT~~
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3A1402-5
MATRIX : WATER

DATE RECEIVED: 1/14/93

SAMPLE ID : PEN-3810N-MW11

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Tot Recoverable Pet Hydrocarbons	1/21- 1/22/93	29	5	mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3A1402-6
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: NA
DATE ANALYZED: 1/27/93

SAMPLE ID: PEN-3810N-DUP1

PROJ #3810N

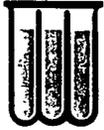
CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	1
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	8
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'
 ND* (None Detected, lower detectable limit = 1 ug/L) as rec'
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	94	(78-122)
Trifluorotoluene (PID)	97	(73-131)



ENSECO-WADSWORTH/ALERT
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3A1402-6
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: 1/15/93
DATE ANALYZED: 1/24/93

SAMPLE ID: PEN-3810N-DUPL

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3 - cd) pyrene	ND
1-Methylnaphthalene	9
2-Methylnaphthalene	7
Naphthalene	ND
Phenanthrene	6
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	57	(22-135)	(10-155)
Fluorobiphenyl	50	(34-140)	(12-153)
Terphenyl-d14	26	(10-132)	(13-140)



ENSECO-WADSWORTH/
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3A1402-6
MATRIX : WATER

DATE RECEIVED: 1/14/93

SAMPLE ID : PEN-3810N-DUP1

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Tot Recoverable Pet Hydrocarbons	1/21- 1/22/93	24	5	mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/ALERT
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3A1402-10
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: NA
DATE ANALYZED: 1/27/93

SAMPLE ID: PEN-3810N-MW12

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	1
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	2
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
ND* (None Detected, lower detectable limit = ug/L) as rec'd
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	102	(78-122)
Trifluorotoluene (PID)	100	(73-131)



ENSECO-WADSWORTH/ALERT
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, - INC.
LAB #: 3A1402-10
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: 1/15/93
DATE ANALYZED: 1/24/93

SAMPLE ID: PEN-3810N-MW12

PROJ #3810N

CERTIFICATION #: E84059
POLYNUCLEAR AROMATIC HYDROCARBONS HRS84297
METHOD 625 HSL/TCL LIST - GC/MS

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	11
Indeno (1, 2, 3 -cd) pyrene	ND
1-Methylnaphthalene	17
2-Methylnaphthalene	13
Naphthalene	5
Phenanthrene	16
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	84	(22-135)	(10-155)
Fluorobiphenyl	62	(34-140)	(12-153)
Terphenyl-d14	39	(10-132)	(13-140)



ENSECO-WADSWORTH/ALERT
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3A1402-10
MATRIX : WATER

DATE RECEIVED: 1/14/93

SAMPLE ID : PEN-3810N-MW12

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Tot Recoverable Pet Hydrocarbons	1/21- 1/22/93	50	10	mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/ ERT
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3A1402-14
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: NA
DATE ANALYZED: 1/27/93

SAMPLE ID: PEN-3810N-MW13

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	2
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	104	(78-122)
Trifluorotoluene (PID)	100	(73-131)



ENSECO-WADSWORTH/ALERT
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3A1402-14
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: 1/15/93
DATE ANALYZED: 1/24/93

SAMPLE ID: PEN-3810N-MW13

PROJ #3810N

CERTIFICATION #: E84059
POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS
HRS84297

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3-cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
ND* (None Detected, lower detectable limit = ug/L) as rec'd
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	75	(22-135)	(10-155)
Fluorobiphenyl	69	(34-140)	(12-153)
Terphenyl-d14	22	(10-132)	(13-140)



ENSECO-WADSWORTH/ABERT
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3A1402-14
MATRIX : WATER

DATE RECEIVED: 1/14/93

SAMPLE ID : PEN-3810N-MW13

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT	
Tot Recoverable Pet Hydrocarbons	1/21- 1/22/93	ND	1	mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/ALERT
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3A1402-16
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: NA
DATE ANALYZED: 1/27/93

SAMPLE ID: PEN-3810N-EB

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = 1 ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	106	(78-122)
Trifluorotoluene (PID)	101	(73-131)



ENSECO-WADSWORTH/CLERT
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3A1402-16
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: 1/15/93
DATE ANALYZED: 1/26/93

SAMPLE ID: PEN-3810N-EB

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3-cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
ND* (None Detected, lower detectable limit = ug/L) as rec'd
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	76	(22-135)	(10-155)
Fluorobiphenyl	73	(34-140)	(12-153)
Terphenyl-d14	68	(10-132)	(13-140)



ENSECO-WADSWORTH/ALERT
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3A1402-16
MATRIX : WATER

DATE RECEIVED: 1/14/93

SAMPLE ID : PEN-3810N-EB

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Tot Recoverable Pet Hydrocarbons	1/21- 1/22/93	ND	1 mg/L

NOTE: ND (None Detected)



ENSECO-WADSWORTH/ LEST
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3A1402-17
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: NA
DATE ANALYZED: 1/27/93

SAMPLE ID: TRIP BLANK

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	14
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = 1 ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	119	(78-122)
Trifluorotoluene (PID)	100	(73-131)



**ENSECO-WADSWORTH/ALERT
Laboratories**

QUALITY CONTROL SECTION

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



ENSECO-WADSWORTH/ALERT
Laboratories

QUALITY ASSURANCE / QUALITY CONTROL
PROGRAM SUMMARY

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

Surrogate Spike Recovery Evaluations

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

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

Laboratory Analytical Method Blank Evaluations

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

<u>Volatiles</u>	<u>Semi-volatiles</u>	<u>Metals</u>
Methylene chloride	Dimethyl phthalate	Calcium
Toluene	Diethyl phthalate	Magnesium
2-Butanone	Di-n-butyl phthalate	Sodium
Acetone	Butyl benzyl phthalate	
	Bis (2-ethylhexyl) phthalate	

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

Laboratory Analytical Method Check Sample Evaluations

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



ENSECO-WADSWORTH/ALERT
Laboratories

QUALITY ASSURANCE / QUALITY CONTROL
PROGRAM SUMMARY
(cont'd)

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

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

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

*****EXAMPLE*****

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

Analytical Result Qualifiers

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

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

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

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



ENSECO-WADSWORTH/ALERT
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3A1402-BK
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: NA
DATE ANALYZED: 1/26/93

SAMPLE ID: LABORATORY BLANK

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
ND* (None Detected, lower detectable limit = ug/L) as rec'd
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	105	(78-122)
Trifluorotoluene (PID)	97	(73-131)



ENSECO-WADSWORTH/ALERT
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3A1402-BK
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: NA
DATE ANALYZED: 1/27/93

SAMPLE ID: LABORATORY BLANK

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'd
 ND* (None Detected, lower detectable limit = 1 ug/L) as rec'd
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	117	(78-122)
Trifluorotoluene (PID)	101	(73-131)



ENSECO-WADSWORTH/ERT
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB # 3A1402-BK
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: NA
DATE ANALYZED: 1/28/93

SAMPLE ID: LABORATORY BLANK

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

VOLATILE ORGANICS
METHOD 601/602 - GC

Benzene	ND	1,2-Dichloroethane	ND
Bromodichloromethane	ND	1,1-Dichloroethene	ND
Bromoform	ND	1,2-Dichloroethene (Total)	ND
Bromomethane	ND	1,2-Dichloropropane	ND
Carbon tetrachloride	ND	cis-1,3-Dichloropropene	ND
Chlorobenzene	ND	trans-1,3-Dichloropropene	ND
Chloroethane	ND	Ethylbenzene	ND
2-Chloroethylvinyl ether	ND	Methylene chloride	ND
Chloroform	ND	1,1,2,2-Tetrachloroethane	ND
Chloromethane	ND	Tetrachloroethene	ND
Dibromochloromethane	ND	Toluene	ND
1,2-Dichlorobenzene	ND	1,1,1-Trichloroethane	ND
1,3-Dichlorobenzene	ND	1,1,2-Trichloroethane	ND
1,4-Dichlorobenzene	ND	Trichloroethene	ND
Dichlorodifluoromethane	ND	Trichlorofluoromethane	ND
1,1-Dichloroethane	ND	Vinyl chloride	ND
		Xylenes	ND
		Methyl-tert-butylether	ND

NOTE: ND (None Detected, lower detectable limit = 1 ug/L) as rec'
 ND* (None Detected, lower detectable limit = 1 ug/L) as rec'
 -- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS
Bromochloromethane (HECD)	122	(78-122)
Trifluorotoluene (PID)	102	(73-131)



ENSECO-WADSWORTH/ALERT
Laboratories

COMPANY: ABB ENVIRONMENTAL SERVICES, INC.
LAB #: 3A1402-BK
MATRIX: WATER

DATE RECEIVED: 1/14/93
DATE EXTRACTED: 1/15/93
DATE ANALYZED: 1/23/93

SAMPLE ID: LABORATORY BLANK

PROJ #3810N

CERTIFICATION #: E84059

POLYNUCLEAR AROMATIC HYDROCARBONS
METHOD 625 HSL/TCL LIST - GC/MS

HRS84297

Acenaphthene	ND
Acenaphthylene	ND
Anthracene	ND
Benzo (a) anthracene	ND
Benzo (a) pyrene	ND
Benzo (b) fluoranthene	ND
Benzo (ghi) perylene	ND
Benzo (k) fluoranthene	ND
Chrysene	ND
Dibenz (a, h) anthracene	ND
Fluoranthene	ND
Fluorene	ND
Indeno (1, 2, 3-cd) pyrene	ND
1-Methylnaphthalene	ND
2-Methylnaphthalene	ND
Naphthalene	ND
Phenanthrene	ND
Pyrene	ND

NOTE: ND (None Detected, lower detectable limit = 5 ug/L) as rec'd
ND* (None Detected, lower detectable limit = ug/L) as rec'd
-- (Not Analyzed)

SURROGATE RECOVERY:	%	ACCEPTABLE LIMITS	
		WATER	SOLID
Nitrobenzene-d5	76	(22-135)	(10-155)
Fluorobiphenyl	78	(34-140)	(12-153)
Terphenyl-d14	99	(10-132)	(13-140)



ENSECO-WADSWORTH/ERT
Laboratories

COMPANY : ABB ENVIRONMENTAL SERVICES, INC.
LAB # : 3A1402-BK
MATRIX : WATER

DATE RECEIVED: 1/14/93

SAMPLE ID : LABORATORY BLANK

PROJ #3810N

CERTIFICATION #: E84059
HRS84297

ANALYTICAL REPORT

PARAMETER	PREPARATION - ANALYSIS DATE	RESULT	DETECTION LIMIT
Tot Recoverable Pet Hydrocarbons	1/21- 1/22/93	ND	1 mg/l

NOTE: ND (None Detected)



ENSECO-WADSWORTH/ALERT
Laboratories

LAB ID : LCS
MATRIX : WATER
METHOD : 601/2
RUN ID : MA/MB00261

DATE EXTRACTED: N/A
DATE ANALYZED : 01/26/93

DUPLICATE LABORATORY CONTROL SAMPLE RESULTS

COMPOUND	ANALYTICAL RUN ID #	LCS %REC	LCSD %REC	RPD	QC LIMITS RPD %REC
Benzene	MA/MB00261	87	84	4	15 70-117
Toluene		86	82	5	16 70-117
Chlorobenzene		74	71	4	24 58-133
1,1-Dichloroethene		82	79	4	28 43-131
Trichloroethene		78	81	4	13 75-123
Dichlorobromomethane		83	85	2	22 61-133



ENSECO-WADSWORTH/
Laboratories

LAB ID : LCS
MATRIX : WATER
METHOD : 601/2
RUN ID : MA/MB00286A

DATE EXTRACTED: N/A
DATE ANALYZED : 01/27/93

LABORATORY CONTROL SAMPLE RESULTS

COMPOUND	ANALYTICAL RUN ID #	LCS %REC	QC LIMITS	
			RPD	%REC
Benzene	MA/MB00286A	98	15	70-117
Toluene		95	16	70-117
Chlorobenzene		88	24	58-133
1,1-Dichloroethene		111	28	43-131
Trichloroethene		93	13	75-123
Dichlorobromomethane		104	22	61-133



ENSECO-WADSWORTH/ALERT
Laboratories

LAB ID : LCS
MATRIX : WATER
METHOD : 601/2
RUN ID : MA/MB00312

DATE EXTRACTED: N/A
DATE ANALYZED : 01/28/93

DUPLICATE LABORATORY CONTROL SAMPLE RESULTS

COMPOUND	ANALYTICAL RUN ID #	LCS %REC	LCSD %REC	RPD	QC LIMITS RPD %REC
Benzene	MA/MB00312	93	100	7	15 70-117
Toluene		91	98	7	16 70-117
Chlorobenzene		83	93	11	24 58-133
1,1-Dichloroethene		106	114	7	28 43-131
Trichloroethene		92	97	5	13 75-123
Dichlorobromomethane		107	117	9	22 61-133



ENSECO-WADSWORTH/ WEST
Laboratories

LAB ID : LCS
MATRIX : WATER
METHOD : 625
RUN ID : A0376

DATE EXTRACTED: 01/15/93
DATE ANALYZED : 01/23/93

LABORATORY CONTROL SAMPLE RESULTS

COMPOUND	ANALYTICAL RUN ID #	LCS %REC	QC LIMITS	
			RPD	%REC
Naphthalene	A0376	79	43	10-139
1-Methylnaphthalene		85	48	10-150
Acenaphthene		100	29	45-130
Fluorene		102	24	37-133
Pyrene		115	41	20-144
Chrysene		111	45	15-152



ENSECO-WADSWORTH/ALERT
Laboratories

LAB ID : LCS

MATRIX : WATER

LABORATORY CONTROL SAMPLE RESULTS
WET CHEMISTRY

PARAMETER	DATE	DATE	LCS	QC LIMITS		
	PREPARED	ANALYZED	%REC	RPD	%REC	
TRPH (IR)	01/21/93	01/21/93	89	24	75-124	LCS



ENSECO-WADSWORTH/
Laboratories

LAB ID : 3A1402-1
MATRIX : WATER
METHOD : 601/2
RUN ID : MA/MB00314

DATE RECEIVED : 01/14/93
DATE PREPARED : N/A
DATE ANALYZED : 01/28/93

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	ANALYTICAL RUN ID #	MS	MSD	RPD	QC LIMITS	
		%REC	%REC		RPD	%REC
Benzene	MA/MB00314	98	101	3	15	70-117
Toluene		97	99	2	16	70-117
Chlorobenzene		94	94	0	24	58-133
1,1-Dichloroethene		127	119	7	28	43-133
Trichloroethene		109	100	9	13	75-128
Dichlorobromomethane		124	119	4	22	61-133

* = Diluted Out



ENSECO-WADSWORTH/ALERT
Laboratories

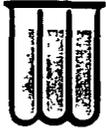
LAB ID : 3A1402-2
MATRIX : WATER
METHOD : 625
RUN ID : A0436/A0437

DATE RECEIVED : 01/14/93
DATE PREPARED : 01/15/93
DATE ANALYZED : 01/25/93

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY

COMPOUND	ANALYTICAL RUN ID #	MS	MSD	RPD	QC LIMITS	
		%REC	%REC		RPD	%REC
Naphthalene	A0436/A0437	72	65	10	23	25-97
1-Methylnaphthalene		74	66	11	24	48-101
Acenaphthene		88	79	11	24	57-104
Fluorene		88	80	10	28	34-118
Pyrene		60	52	14	30	58-148
Chrysene		75	59	24	36	48-118

* = Diluted Out



ENSECO-WADSWORTH/
Laboratories

LAB ID : 3A1402
MATRIX : WATER

DATE RECEIVED : 01/14/93

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY
INORGANIC PARAMETERS - WET CHEMISTRY

PARAMETER	DATE PREPARED	DATE ANALYZED	MS %REC	MSD %REC	RPD	QC LIMITS RPD %REC	LAB ID
TRPH (IR)	01/21/93	01/21/93	93	93	0	24 75-124	3A1402

* = Diluted out

Client		Project Name / Location			No Of CON- TAINERS	Parameter										Remarks		
ABB		NAOEP PEN / 3810N				Project # 3810N	VOC - ALC	PAH -	METALS -	TRPH - ALC	EDB -							
Item #	Date	Time	MATRIX	Sample Location														
1	1-13-93	12:45	H2O	PEN-3810N-FZ	6	3	2		1									
2	1-13-93	12:45	H2O	PEN-3810N-MW10	6	3	2		1									
3	1-17-93	12:45	H2O	PEN-3810N-MW15	6	3	2		1									
4	1-13-93	12:40		PEN-3810N-MW3	6	3	2		1									
5	1-13-93	13:45		PEN-3810N-MW4	6	3	2		1									
6	1-13-93	14:05		PEN-3810N-MW11	6	3	2		1									
7	1-13-93	14:15		PEN-3810N-MW1	6	3	2		1									
8	1-13-93			PEN-3810N-MW2	6	3	2		1									
9	1-13-93	14:25		PEN-3810N-MW10	6	3	2		1									
10	1-13-93	14:25		PEN-3810N-MW2	6	3	2		1									
11	1-13-93	15:00		PEN-3810N-MW2	6	3	2		1									

Total Containers

66

Number of Coolers in Shipment

5

Bailers

Report To	Transfer Number	Item Number(s)	Relinquished By / Company	Accepted By / Company	Date	Time
Additional Comments. Sample analyzed 1-17-93 1-13-93	1	1-11	Mark Wagner ABB 1-13-93 12:00	Jack Butler	1/13/93	
	2					
	3					
	4					
	5					
	6					

Original Accompanies Shipment



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

5910 Breckenridge Pkwy
Suite H
Tampa, FL 33610

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

Chain of Custody Record

Record of

10094

Client		Project Name / Location			No. Of CONTAINERS	Parameter						Remarks
Sampler(s)		Project #				VOC -	PAH -	METALS -	TRPH - HCL	EDB -		
Item #	Date	Time	MATRIX	Sample Location								
1			H2O	4/21/03 - 3rd floor - ...	6	3	2	1				
2			"	4/21/03 - 3rd floor - ...	6	3	2	1				
3			"	4/21/03 - 3rd floor - ...	6	3	2	1				
4			"	4/21/03 - 3rd floor - ...	6	3	2	1				
5			"	4/21/03 - 3rd floor - ...	6	3	2	1				
6	1-13-23			TECH BLDG	3	3						
7												
8												
9												
10												
11												

Total Containers **33**

Number of Coolers in Shipment **5**

Bailers **1**

Report To	Transfer Number	Item Number(s)	Relinquished By / Company	Accepted By / Company	Date	Time
Additional Comments	1	1	1/4/03 ...			
	2					
	3					
	4					
	5					
	6					

Original Accompanies Shipment

ABB Environmental Services Inc.
2590 Executive Center Circle East
Berkeley Building
Tallahassee, FL 32301-5001