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NAS WHITING FIELD
5090.3a

CONTAMINATION ASSESSMENT REPORT ADDENDUM SITE 3054 NAS WHITING FIELD FL
10/1/1993
ABB ENVIRONMENTAL

CONTAMINATION ASSESSMENT REPORT ADDENDUM

**SITE 3054
NAVAL AIR STATION WHITING FIELD
MILTON, FLORIDA**

Unit Identification Code (UIC): N60508

Contract No. N62467-89-D-0317

Prepared by:

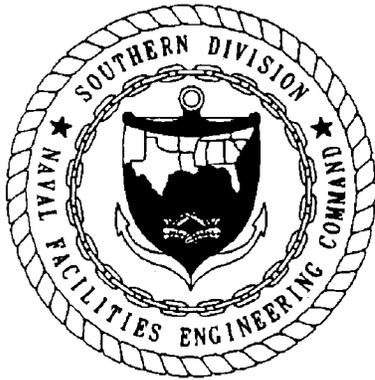
**ABB Environmental Services, Inc.
2590 Executive Center Circle, East
Tallahassee, Florida 32301**

Prepared for:

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

Luis Vazquez, Code 1843, Engineer-in-Charge

October 1993



FOREWORD

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

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

Questions regarding this report should be addressed to the Environmental Coordinator, Naval Air Station (NAS) Whiting Field, Milton, Florida, at 904-623-7181, or to Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), Code 1843, at DSN 563-0613 or 803-743-0613.

EXECUTIVE SUMMARY

ABB Environmental Services, Inc. (ABB-ES), was contracted by Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) to perform a supplemental investigation and develop an addendum to address comments and questions from Florida Department of Environmental Protection (FDEP) pertaining to the Contamination Assessment Report for Site 3054 that was submitted to FDEP in September 1992. To fulfill FDEP requirements, an additional monitoring well was placed at the site and sampled along with four other monitoring wells for kerosene analytical group constituents. The findings, conclusions, and recommendations of the Contamination Assessment Report Addendum (CARA) are summarized below.

Findings

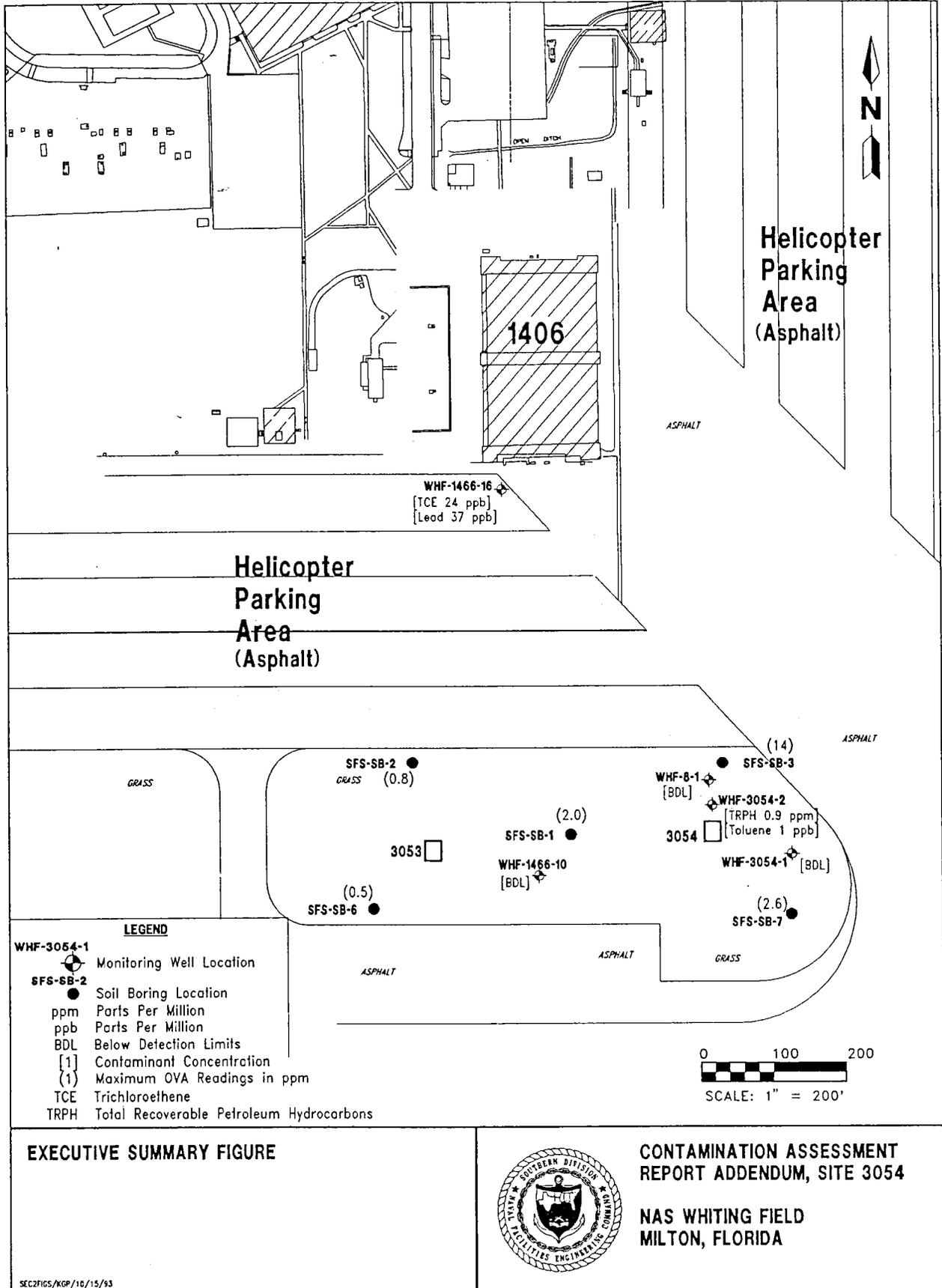
- No groundwater contamination was detected above State regulatory standards in site monitoring wells (see Executive Summary Figure). Laboratory analysis detected 24 micrograms per liter ($\mu\text{g}/\ell$) trichloroethene (TCE) in monitoring well WHF-1466-16. This well was installed as part of an investigation for a site upgradient to Site 3054. The suspected source of the TCE contamination is Installation Restoration (IR) Site 30, the South Field Maintenance Hangar.
- As stated in the CAR, the net groundwater flow direction at the site is to the southwest.

Conclusions

- The groundwater at the site has not been contaminated as a result of the AVGAS spill.
- As stated in the CAR, no soil contamination exceeding State regulatory standards was identified at Site 3054.

Recommendations

Based on the findings and conclusions of the CAR and the CARA, a No Further Action Proposal (NFAP) is recommended for Site 3054.



ACKNOWLEDGMENTS

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

TABLE OF CONTENTS

Contamination Assessment Report Addendum
Site 3054, Naval Air Station Whiting Field
Milton, Florida

<u>Section</u>	<u>Title</u>	<u>Page No.</u>
1.0	INTRODUCTION	1-1
1.1	PURPOSE	1-1
1.2	PREVIOUS INVESTIGATION	1-1
1.3	SCOPE	1-2
2.0	METHODOLOGIES AND EQUIPMENT	2-1
2.1	MONITORING WELL INSTALLATION PROGRAM	2-1
2.2	SAMPLING PROGRAM	2-1
3.0	CONTAMINATION ASSESSMENT RESULTS	3-1
3.1	AQUIFER CHARACTERISTICS AND HYDROGEOLOGIC PARAMETERS	3-1
3.2	GROUNDWATER QUALITY ASSESSMENT	3-1
4.0	SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS	4-1
4.1	SUMMARY	4-1
4.2	CONCLUSIONS	4-1
4.3	RECOMMENDATIONS	4-1
5.0	PROFESSIONAL REVIEW CERTIFICATION	5-1

REFERENCES

APPENDICES

- Appendix A: FDEP Correspondence
- Appendix B: Monitoring Well Completion Logs
- Appendix C: Analytical Results

LIST OF FIGURES

Contamination Assessment Report Addendum
Site 3054, Naval Air Station Whiting Field
Milton, Florida

<u>Figure</u>	<u>Title</u>	<u>Page No.</u>
2-1	Monitoring Well Locations	2-2
2-2	Typical Shallow Monitoring Well Installation Detail	2-3
3-1	Water Table Elevation Contour Map, Upper Zone, Sand-and-Gravel Aquifer, August 1, 1992	3-2
3-2	Water Table Elevation Contour Map, Upper Zone, Sand-and-Gravel Aquifer, July 16, 1993	3-3

LIST OF TABLES

<u>Tables</u>	<u>Title</u>	<u>Page No.</u>
3-1	Top of Casing and Groundwater Elevations, April 4 and August 1, 1992, and July 16, 1993	3-1
3-2	Analytical Results, August 17, 1993	3-4

GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
AVGAS	aviation gas
bls	below land surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
CA	contamination assessment
CAR	Contamination Assessment Report
CARA	Contamination Assessment Report Addendum
CFR	Code of Federal Regulations
CLEAN	Comprehensive Long-Term Environmental Action, Navy
CompQAP	Comprehensive Quality Assurance Plan
EDB	ethylene dibromide
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FDER	Florida Department of Environmental Regulation
HSWA	Hazardous and Solid Waste Amendments
IR	Installation Restoration
mg/l	milligrams per liter
µg/l	micrograms per liter
NAS	Naval Air Station
NFAP	No Further Action Proposal
OVA	organic vapor analyzer
PAH	polynuclear aromatic hydrocarbons
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
SOUTHNAV- FACENCOM	Southern Division, Naval Facilities Engineering Command
TCE	trichloroethene
TRAWING FIVE	Training Air Wing Five
TRPH	total recoverable petroleum hydrocarbons
UIC	Unit Identification Code
USEPA	U.S. Environmental Protection Agency
USTs	underground storage tanks

1.0 INTRODUCTION

Site 3054 is located at the Naval Air Station (NAS) Whiting Field in the northwest coastal area of Florida approximately 7 miles north of Milton and 20 miles northeast of Pensacola (Figure 2-1). NAS Whiting Field occupies approximately 3,490 acres in north-central Santa Rosa County with easement rights to an additional 457 acres. The station is the home base of Training Air Wing Five (TRAWING FIVE) whose mission is to administer, coordinate, and supervise flight and academic training. The station is divided into a North Field, where fixed wing training takes place, and a South Field used for helicopter training. Support facilities are located between the two fields (Figure 2-2).

Site 3054 is located south of Building 1406 on the South Field runway. In the summer of 1972, approximately 25,000 gallons of aviation gas (AVGAS) were spilled at the site when a rubber fuel line broke and leaked for a 36-hour period during a 3-day weekend. The fuel flowed to a grassy area where it pooled, primarily in the vicinity of Building 3054. It is estimated that approximately 2 acres of the grassy area were affected by the AVGAS spill.

A contamination assessment (CA) was conducted by ABB Environmental Services, Inc. (ABB-ES), at NAS Whiting Field from November 1991 through August 1992. The CA consisted of an intrusive investigation of soil borings and monitoring well installations at six sites. The initial Site 3054 field investigation was conducted as part of the six site investigations. Seven soil borings were sampled and analyzed using organic vapor analyzer (OVA) headspace techniques to detect the presence of petroleum hydrocarbons. No significant petroleum hydrocarbon contamination was detected in the soil at the site by this method. One shallow monitoring well (WHF-3054-MW-1) was installed and sampled at the site for kerosene analytical group constituents according to Chapter 17-770, Florida Administrative Code (FAC). Deep monitoring well WHF-8-1, which is screened in the lower water-bearing zone and had been installed at the site in 1989, was also sampled for kerosene analytical group compounds. The groundwater samples were sent overnight to Wadsworth/Alert Laboratories, Inc., in Tampa, Florida, for analysis. Laboratory analytical results of these groundwater samples did not indicate contamination.

ABB-ES submitted a Contamination Assessment Report (CAR) to Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOCM) in September 1992.

ABB-ES was authorized by SOUTHNAVFACENGCOCM to conduct additional field investigations and develop an addendum to the CAR for Site 3054 at NAS Whiting Field, Milton, Florida. The additional field work was required by the Florida Department of Environmental Protection (FDEP) prior to approval of the CAR.

1.1 PURPOSE. The purpose of this addendum is to report the results of additional field investigation conducted July 17, 1993, and incorporate responses to FDEP's comments concerning the CAR submitted for Site 3054 at NAS Whiting Field, Milton, Florida.

1.2 PREVIOUS INVESTIGATION. The initial field investigation at Site 3054 was completed in August 1992. The findings, conclusions, and recommendations for the

site were submitted to FDEP for review in September 1992. Upon completion of the review, it was decided by FDEP that additional field investigation at the site was necessary to support the No Further Action Proposal (NFAP) recommended in the CAR. Correspondence between FDEP and SOUTHNAVFACENGCOCM and the responses of ABBES to these questions and comments are presented in Appendix A.

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

- installation of one shallow monitoring well;
- collection of groundwater samples from existing site monitoring wells, from the newly installed monitoring well, and from two monitoring wells installed as part of the field investigation at Site 1466; and
- reduction and analysis of all data gathered during the field investigation to prepare this CAR Addendum (CARA).

2.0 METHODOLOGIES AND EQUIPMENT

All methodologies and equipment used during the supplemental field investigation were in conformance with the ABB-ES, FDEP approved, Comprehensive Quality Assurance Plan (CompQAP).

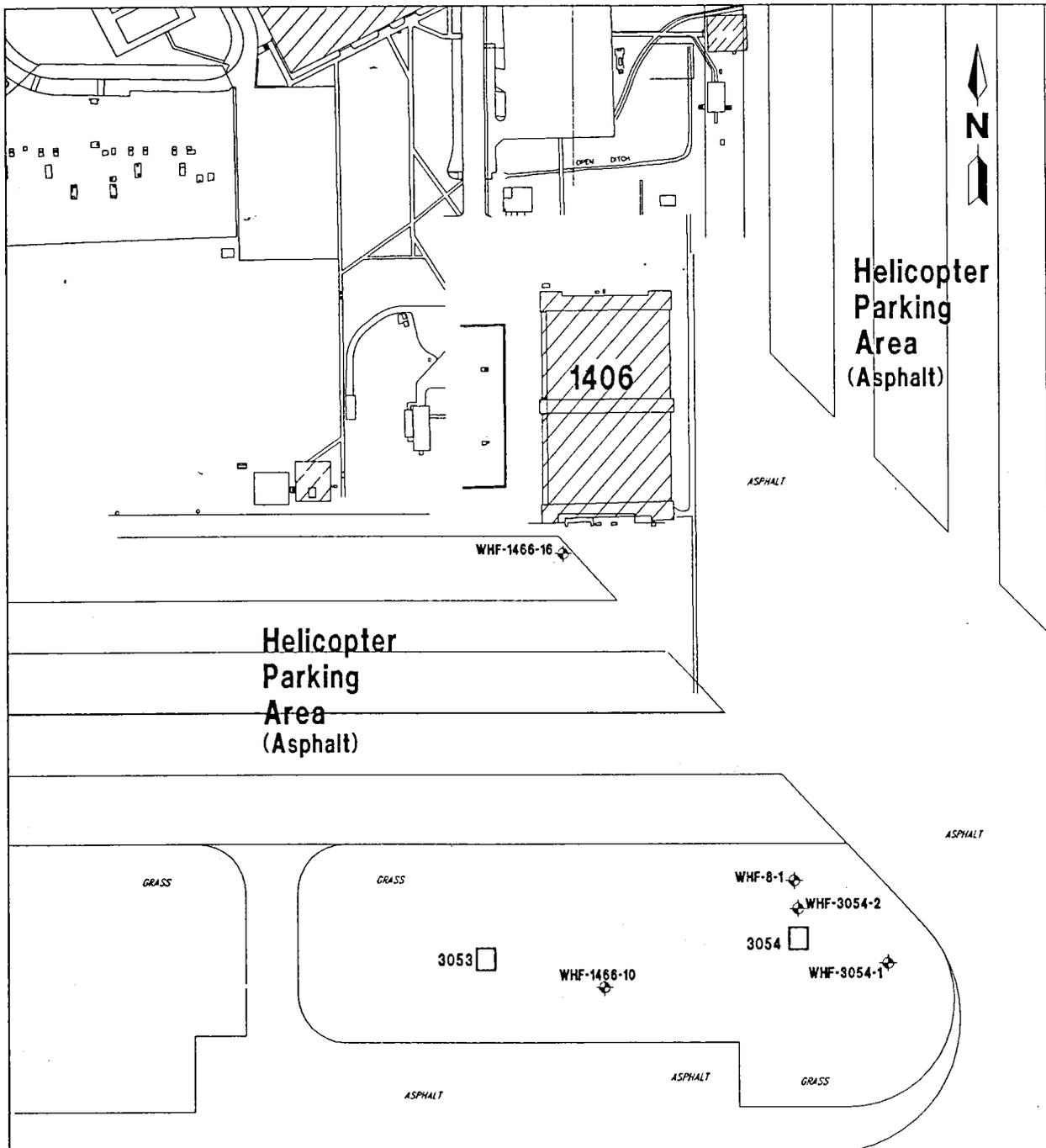
2.1 MONITORING WELL INSTALLATION PROGRAM. In addition to existing monitoring well WHF-8-1, which was installed in the lower water-bearing zone during an Installation Restoration (IR) investigation, one monitoring well, WHF-3054-1, was installed at this site in the upper water-bearing zone during the initial field investigation for this CA. During the supplemental field investigation, another shallow monitoring well, WHF-3054-2, screened through the upper water-bearing zone, was installed. Well locations are shown in Figure 2-1.

Monitoring well WHF-3054-2 was installed using a drill rig equipped with 6¼-inch inside diameter hollow stem augers. The monitoring well is constructed of 4-inch, schedule 40 polyvinyl chloride (PVC) casing with flush-threaded joints and 15 feet of 0.010-inch slotted screen. The well screen was placed at a depth interval to encompass seasonal water table fluctuations. The well casing extends from the top of the screen to land surface. A 20/30 grade silica filter pack was placed in the annular space around the well to approximately 2 feet above the top of the screen. A 2-foot fine sand seal, 30/65 grade, was 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 well installation. The monitoring well is equipped with a locking well cap and a padlock. Figure 2-2 depicts a typical shallow monitoring well installation.

Monitoring well completion logs for all site monitoring wells are included in Appendix B.

2.2 SAMPLING PROGRAM. Groundwater samples were collected from monitoring wells WHF-3054-1 and WHF-8-1 on April 4, 1992, as part of the initial field investigation. The samples were shipped by overnight carrier to Wadsworth/Alert Laboratories, Inc., in Tampa, Florida, for analysis. One laboratory blank and one trip blank were analyzed in accordance with ABB-ES' CompQAP.

On July 17, 1993, groundwater samples were collected from monitoring wells WHF-3054-1, WHF-3054-2, WHF-8-1, WHF-1466-1, and WHF-1466-10 for analysis of kerosene analytical group constituents. Monitoring wells WHF-1466-1 and WHF-1466-10 were installed during the field investigation for Site 1466. The two wells were sampled as requested in FDEP's February 25, 1993, letter. Appropriate quality assurance/quality control (QA/QC) samples, a duplicate sample, an equipment blank, a source blank, and trip blanks for each sample shipment were collected at this time or on July 14, 1993, in conjunction with sampling of Site 2894 at NAS Whiting Field. All samples were shipped by overnight carrier to CH2M Hill, Inc., Alachua, Florida, for analysis. The samples were analyzed by U.S. Environmental Protection Agency (USEPA) Method 239.2 for lead; Method 418.1 for total recoverable petroleum hydrocarbons (TRPH); Method 504 for ethylene dibromide (EDB); Method 601 for 1,2-dichloroethane; Method 602 for benzene, toluene, ethylbenzene, and xylenes (BTEX); and Method 610 for polynuclear aromatic hydrocarbons (PAH).



LEGEND

WHF-8-1  Monitoring Well Location

0 100 200

 SCALE: 1" = 200'

**FIGURE 2-1
 MONITORING WELL LOCATIONS**



**CONTAMINATION ASSESSMENT
 REPORT ADDENDUM, SITE 3054**

**NAS WHITING FIELD
 MILTON, FLORIDA**

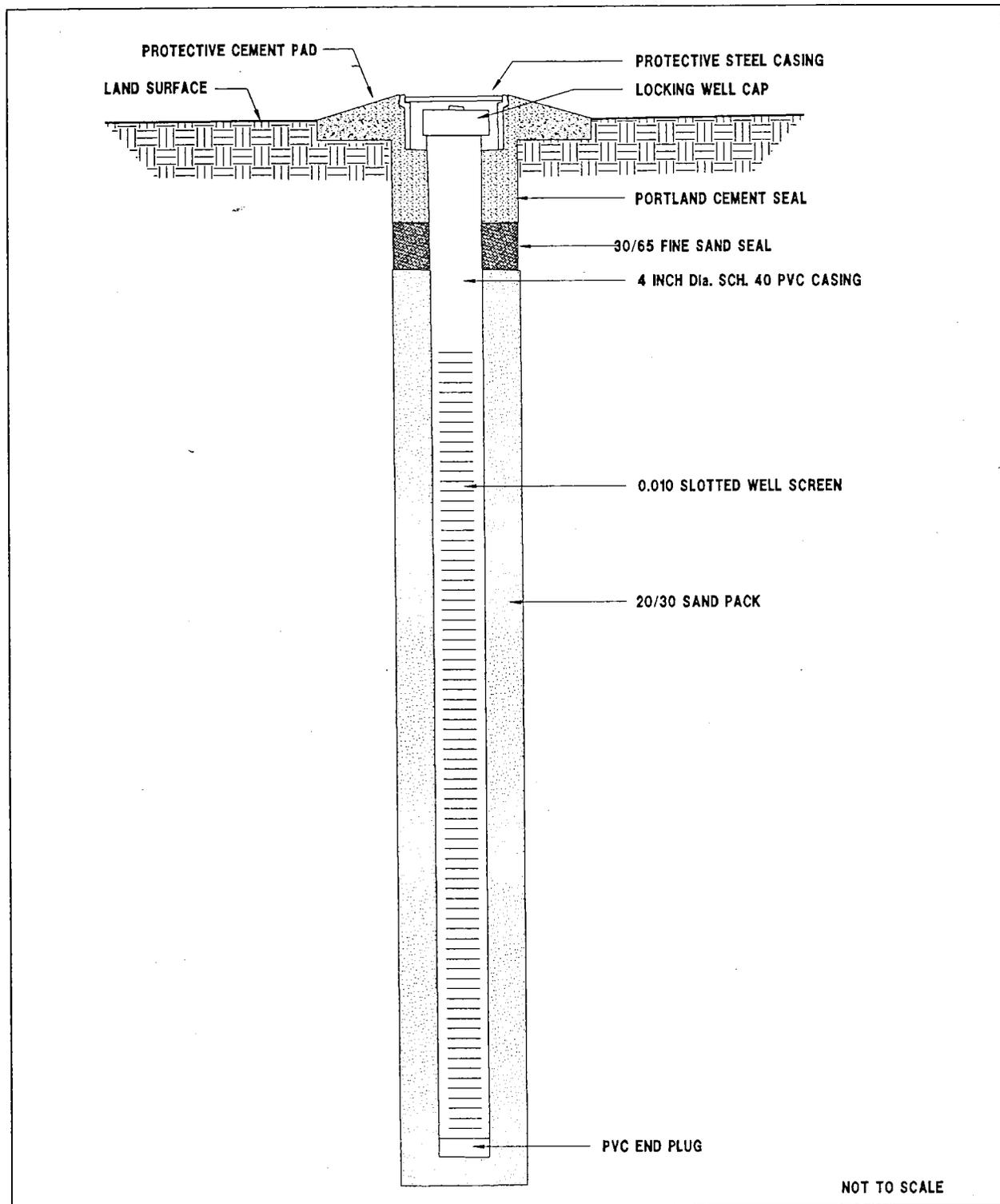


FIGURE 2-2
TYPICAL SHALLOW MONITORING WELL
INSTALLATION DETAIL

TANKWELL/KGP/10/15/93



CONTAMINATION ASSESSMENT
REPORT ADDENDUM, SITE 3054

NAS WHITING FIELD
MILTON, FLORIDA

3.0 CONTAMINATION ASSESSMENT RESULTS

3.1 AQUIFER CHARACTERISTICS AND HYDROGEOLOGIC PARAMETERS. The sand-and-gravel aquifer is the primary water-bearing interval of concern at the site. The upper water-bearing zone was encountered at a depth approximately 107 feet below land surface (bls).

Depth to groundwater in site monitoring wells was measured on April 4 and August 1, 1992, and July 16, 1993. These measurements, shown in Table 3-1, were used to prepare water table elevation contour maps for those dates and estimate the groundwater flow direction at the site. Water table elevation contour maps for August 1, 1992, and the July 16, 1993, are shown in Figures 3-1 and 3-2. The maps indicate net groundwater flow direction is west-southwest.

Table 3-1
Top of Casing and Groundwater Elevations,
April 4 and August 1, 1992, and July 16, 1993

Contamination Assessment Report Addendum
Site 3054, Naval Air Station, Whiting Field
Milton, Florida

Monitoring Well	Top of Casing	April 4, 1992		August 1, 1992		July 16, 1993	
		Depth to Water	Groundwater Elevation	Depth to Water	Groundwater Elevation	Depth to Water	Groundwater Elevation
WHF-3054-1	171.47	108.39	63.08	107.63	63.84	107.05	64.42
WHF-3054-2	171.09	NI	NI	NI	NI	107.5	63.59
WHF-8-1 ¹	172.92	116.41	56.51	NM	NM	116.6	56.32
WHF-1466-10	171.86	NM	NA	114.82	57.04	114.04	57.82
WHF-1466-16	176.29	NM	NA	116.93	59.36	116.77	59.52

¹Deep well with screen interval in lower water-bearing zone of sand-and-gravel aquifer.

Notes: NI = not installed.
NM = not measured.

3.2 GROUNDWATER QUALITY ASSESSMENT. As part of the initial field investigation, monitoring wells WHF-8-1 and WHF-3054-1 were sampled April 9 through April 10, 1992, for kerosene analytical group constituents. Laboratory analysis did not detect contamination in the groundwater. Laboratory analytical results are included in Appendix C.

As requested in FDEP's February 25, 1993, correspondence, groundwater samples were collected from monitoring wells WHF-3054-1, WHF-8-1, WHF-1466-10, WHF-1466-16, and newly installed well WHF-3054-2. Laboratory analysis of groundwater samples from monitoring wells WHF-8-1 and WHF-3054-1, as in the initial CA, indicated all parameters analyzed were below method detection limits. Laboratory analysis of groundwater samples from the newly installed well, WHF-3054-2, detected 0.09 milligrams per liter (mg/l) TRPH and 1.0 micrograms per liter ($\mu\text{g}/\text{l}$) toluene.

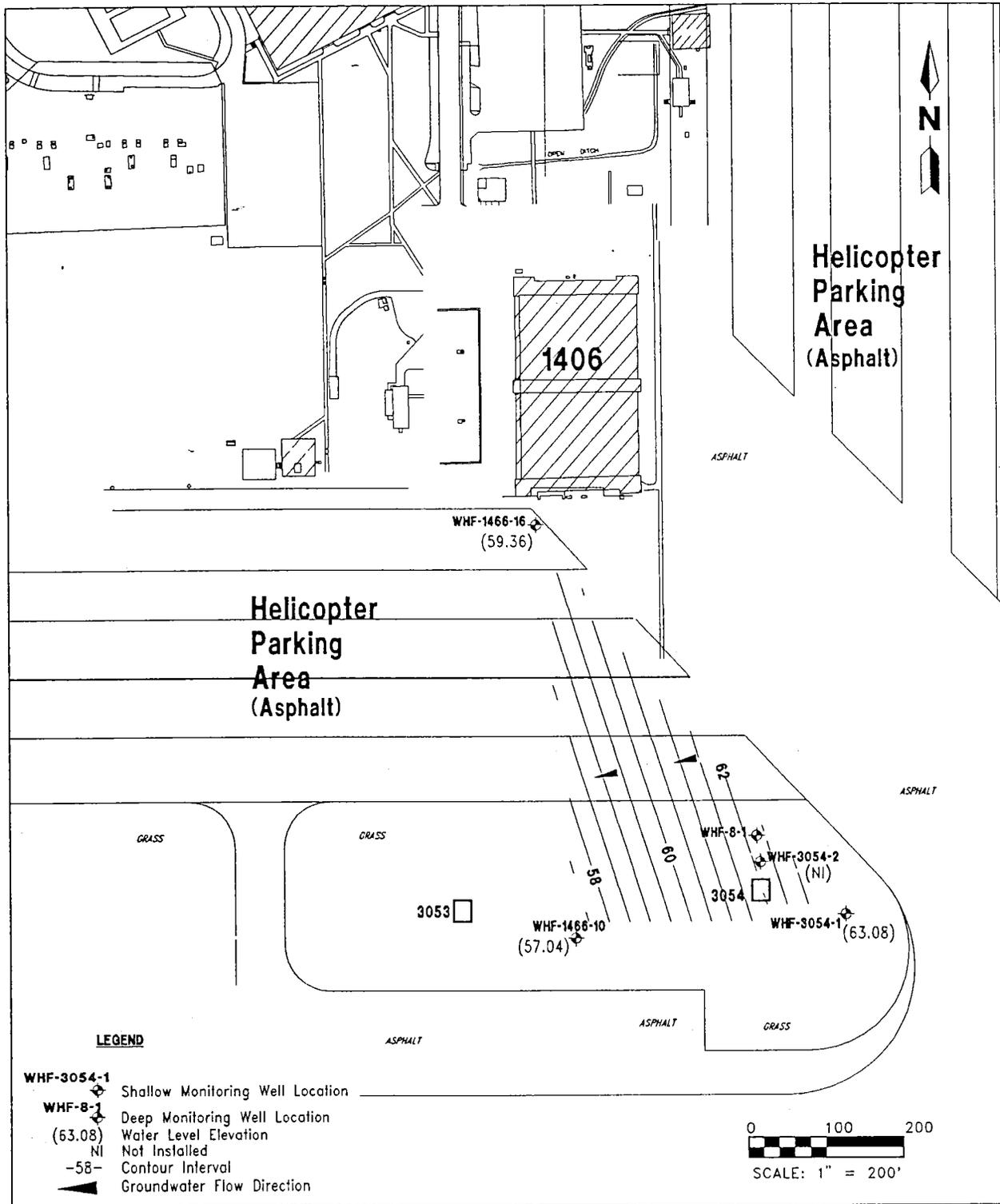


FIGURE 3-1
WATER TABLE ELEVATION CONTOUR MAP,
UPPER ZONE, SAND-AND-GRAVEL AQUIFER,
AUGUST 1, 1992



CONTAMINATION ASSESSMENT
REPORT ADDENDUM, SITE 3054
NAS WHITING FIELD
MILTON, FLORIDA

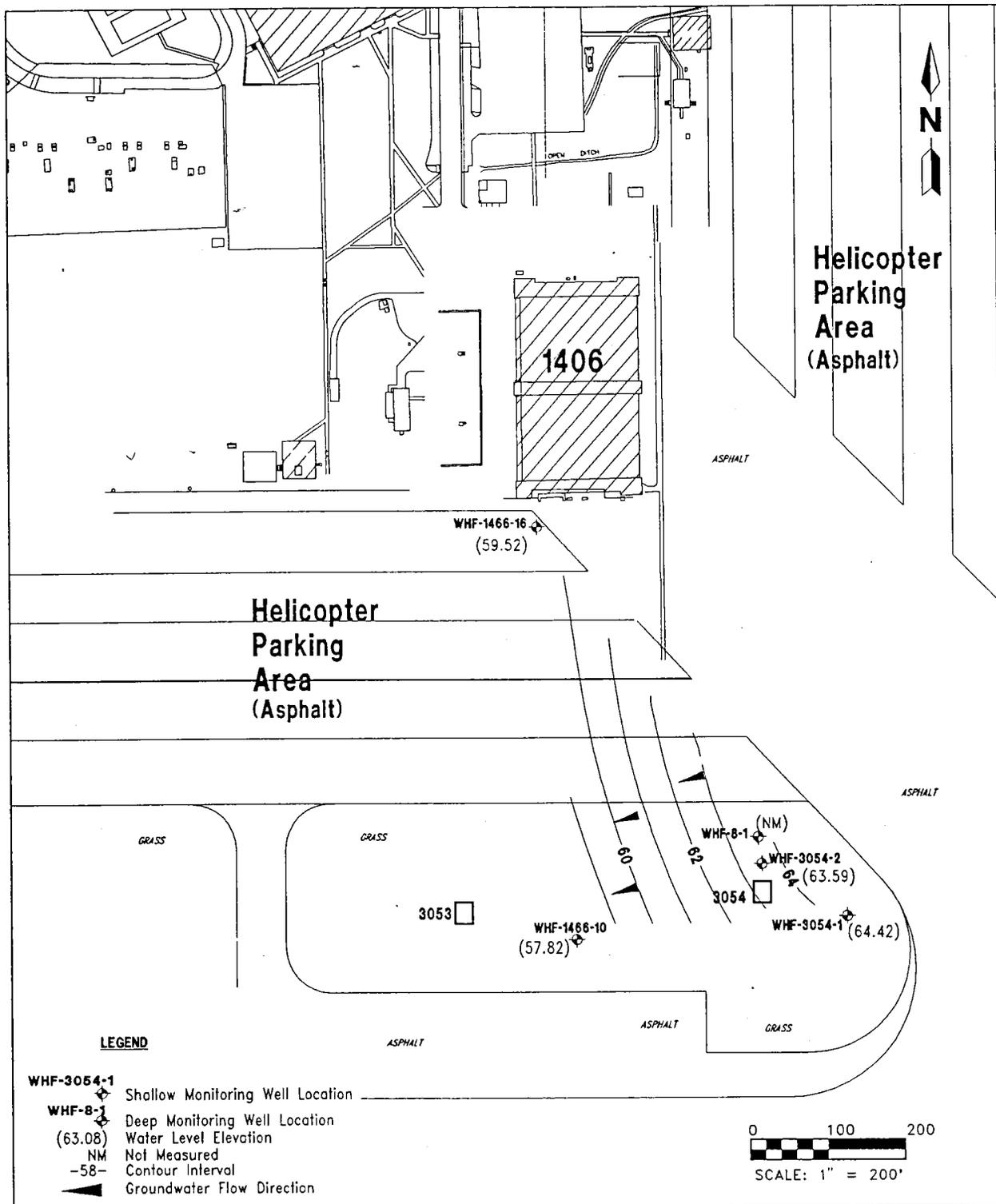


FIGURE 3-2
WATER TABLE ELEVATION CONTOUR MAP,
UPPER ZONE, SAND-AND-GRAVEL AQUIFER
JULY 16, 1993



CONTAMINATION ASSESSMENT
REPORT ADDENDUM, SITE 3054

NAS WHITING FIELD
MILTON, FLORIDA

Both compound detections are less than the State regulatory standards of 5 mg/l for TRPH and 50 µg/l for total volatile organic aromatics (the sum of benzene, toluene, ethylbenzene, and xylenes). Monitoring wells WHF-1466-10 and WHF-1466-16, which were installed as part of the field investigation at the South Fuel Farm (Site 1466) were also sampled at the request of FDEP. TRPH concentrations in monitoring well WHF-1466-10 were 0.20 mg/l, which is below the State regulatory standard. Trichloroethene and lead were detected in monitoring well WHF-1466-16 at concentrations of 24 µg/l and 37 µg/l, respectively. The lead concentration in WHF-1466-16 is less than the State regulatory standard of 50 µg/l. Trichloroethene is not regulated under Chapter 17-770, FAC. The suspected source of the trichloroethene contamination in WHF-1466-16 is Installation Restoration (IR) Site 30, the South Field Maintenance Hangar, not Site 3054. Laboratory analytical results of groundwater samples collected August 17, 1993, are summarized in Table 3-2 and attached in Appendix C.

**Table 3-2
Analytical Results, August 17, 1993**

Contamination Assessment Report Addendum
Site 3054, Naval Air Station, Whiting Field
Milton, Florida

Analyte	Concentrations Detected in Sample:				
	WHF-3054-1	WHF-3054-2/Duplicate	WHF-8-1	WHF-1466-10	WHF-1466-16
Total lead (µg/l)	ND	ND	ND	ND	37
Total recoverable petroleum hydrocarbons (mg/l)	ND	0.09/0.07	ND	0.20	ND
Toluene (µg/l)	ND	1.0/1.1	ND	ND	ND
Trichloroethene (µg/l)	ND	ND	ND	ND	24

Notes: µg/l = micrograms per liter.
ND = not detected.
mg/l - milligrams per liter.

4.0 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

4.1 SUMMARY. Based on data collected during the CA from November 1991 to August 1992; the supplemental field investigation of July 17, 1993; and the laboratory analytical results, the following is a summary of the conditions observed at the site.

- No groundwater contamination above State regulatory standards was detected in site monitoring wells. Laboratory analysis detected 24 $\mu\text{g}/\text{l}$ trichloroethene (TCE) in monitoring well WHF-1466-16. This well was installed as part of the investigation for Site 1466 (South Fuel Farm) to the north of Site 3054. The suspected source of the TCE contamination is IR Site 30, the South Field Maintenance Hangar.
- As stated in the CAR, the net groundwater flow direction at the site is west-southwest.

4.2 CONCLUSIONS. No excessive soil contamination was identified at Site 3054. One soil OVA headspace reading of 14 ppm exceeded the State regulatory standard for "petroleum contaminated" soil of 10 ppm. This sample was limited to the upper 5 feet of soil at the site where the fuel release was reported to have accumulated. Petroleum contamination is not present in groundwater at Site 3054.

4.3 RECOMMENDATIONS. Based on the findings and interpretations of the CA and the additional field investigation, a NFAP is recommended for Site 3054.

5.0 PROFESSIONAL REVIEW CERTIFICATION

This contamination assessment report was prepared using sound hydrogeologic principles and judgment. This assessment is based on the field investigation and associated activities and 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 Site 3054 at NAS Whiting Field in Milton, Florida, and should not be construed to apply to any other site.

Michael J. Williams
Professional Geologist
P.G. No. 000344

Date

REFERENCES

FAC
CAR, September 1992

APPENDIX A
FDEP Correspondence

CC: J. Williams
N. Pagan
file (orig)

11 December 1992

MEMORANDUM

From: SouthDiv Code 1843, Luis A. Vazquez
To: ABB Environmental, Peter Redfern

Subj: FDER COMMENTS, SITE 3054 NAVAL AIR STATION, MILTON, FL; CTO-9

Encl: (1) FDER letter dated December 11, 1992 with enclosure

Review Enclosure (1) and advise me on a plan of action to satisfy FDER requirements.

L. A. Vazquez
Luis A. Vazquez, EIC

Post-It™ brand fax transmittal memo 7671		# of pages ▶ 4
To: <i>Peter Redfern</i>	From: <i>Luis Vazquez</i>	
Co. <i>ABB Environmental</i>	Co. <i>South Div</i>	
Dept.	Phone # <i>803 743 0613</i>	
Fax # <i>904 656 3386</i>	Fax # <i>0563</i>	



Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Carol M. Browner, Secretary

December 7, 1992

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Luis Vasquez
Code 1843
Department of the Navy
Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
Post Office Box 10068
Charleston, South Carolina 26411-0068

Dear Mr. Vasquez:

Department personnel have completed the technical review of the Contamination Assessment Report for Site 3054, NAS Whiting Field. I have enclosed a memorandum addressed to me from Mr. Michael Deliz. It documents our comments on the referenced report.

If I can be of any further assistance with this matter, please contact me at 904/188-0190.

Sincerely,

Eric S. Nuzie
Federal Facilities Coordinator

ESN/bb

Enclosure

cc: Michael Deliz
Robert Barr
Bill Kellenberger
Lynn Griffin
Ron Joyner
John Mitchell
Allison Drew



State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee

To: _____	Location: _____
To: _____	Location: _____
To: _____	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
Technical Review Section *JJC*

~~Tim J. Bahr, Professional Geologist II
Technical Review Section *TJB*~~

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

DATE: November 25, 1992

SUBJECT: Contamination Assessment Report - dated, November 1992
Naval Air Station, Whiting Field - Site 3054

The Bureau of Waste Cleanup has reviewed the Contamination Assessment Report (CAR) dated September, 1992 (received October 1, 1992), submitted for this site. The document submitted will adequately meet the contamination assessment requirements of Rules 17-770.600 and 17-770.630, Florida Administrative Code (F.A.C.), once the following information is submitted, and if the excluded laboratory analytical data is contaminant free and the assessment data was collected from within the spill area.

1. What do the rectangles numbered 3053 and 3054 represent in the figures showing the contamination site?
2. Please show the approximate location and areal extent of the spilled AVGAS on your figures.
3. To what was the rubber hose that ruptured originally attached? The consultant needs to be more specific on where and how the AVGAS was originally stored?
4. Was any immediate remedial action undertaken in 1972 to contain or recover the 25,000 gallons of spilled product? If so, what methods were used?

Eric S. Nuzie
November 25, 1992
Page Two

5. The analytical laboratory data for assessment wells WHF-1466-10 and WHF 1466-16 was omitted from this CAR, please submit this data.
6. What are station locations WHF-MW-5 and WHF-MW-6 on Wadsworth/Alert's Laboratory chain of custody form?

/mjd

10 March 1993

MEMORANDUM

From: SouthDiv Code 1843, Luis A. Vazquez
To: ABB Environmental, John Kaiser

Subj: FDER COMMENTS, SITE 3054 NAVAL AIR STATION, MILTON, FL; CTO-9

Encl: (1) FDER letter dated March 1, 1993 with enclosure

Review Enclosure (1) and advise me on a plan of action to satisfy FDER requirements.

L. A. Vazquez
Luis A. Vazquez, EIC

Post-It™ brand fax transmittal memo 7671		# of pages	4
To	[Redacted]	From	L. A. VAZQUEZ
Co.	ABB	Co.	SouthDiv
Dept.		Phone #	803-743-0613
Fax #	904-656-3386	Fax #	803-743-0563



Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Lawton Chiles, Governor

Virginia B. Wetherell, Secretary

March 1, 1993

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Luis Vazquez
Code 1843
Department of the Navy
Southern Division
Naval Facilities Engineering Command
Post Office Box 10068
Charleston, South Carolina 29411-0068

Dear Mr. Vazquez:

Department personnel have completed the technical review of the Navy's responses to our comments on the Contamination Assessment Report, Site 3054, NAS Whiting Field. I have enclosed a memorandum addressed to me from Mr. Michael J. Deliz. It documents our comments on the referenced report.

If I can be of any further assistance with this matter, please contact me at 904/488-0190.

Sincerely,

Eric S. Nuzie

Federal Facilities Coordinator

ESN/bb

Enclosure

cc: Michael Deliz
Robert Barr
Bill Kellenberger
Lynn Griffin
Ron Joyner
John Mitchell
Allison Drew



State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee	
To: _____	Location: _____
Tel: _____	Location: _____
Tel: _____	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
Technical Review Section *JJC*

Tim J. Bahr, Professional Geologist II
Technical Review Section *TJB*

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

DATE: February 25, 1993

SUBJECT: ~~Response to FDER Comments Concerning Contamination~~
Assessment Report Site 3054 - dated February, 1993
Naval Air Station Whiting Field

} No action if these

The Bureau of Waste Cleanup has reviewed responses to FDER's comments dated February 10, 1993 (received February 15, 1993) submitted for this site. The responses given are not entirely satisfactory and do not warrant the approval of a No Further Action (NFA) for this site. In order to meet the requirements of Chapter 17-770, Florida Administrative Code (F.A.C.), the following comments need to be addressed:

1. One additional monitoring well should be installed as follows to define the possible extent of groundwater contamination:
 - a. One water table well in the immediate vicinity of monitor well WHF8-1. This well should be designed to sample the uppermost portion of the aquifer and have a screened interval overlapping the water table. Note, the screened interval of this well should be at least two feet above the mean annual high water table and include at least five, but not more than fifteen feet of the saturated zone.
2. Following installation of the supplemental monitoring well a complete round of sampling and analysis for EPA Methods 602, 610, and 418.1 (including monitor wells WHF-1466-10 and WHF-

Mr. Eric S. Nuzi
February 25, 1993
Page Two

1466-16) should be performed, so that this review can be completed and a decision reached, based on current data, on the type of action that is warranted. Note, additional monitoring wells should be installed if significant contaminant concentrations are detected at perimeter 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



January 18, 1993

Commanding Officer
Naval Facilities Engineering Command
ATTN: Mr. Luis Vazquez, Code 1843
P.O. Box 10068
2155 Eagle Drive
Charleston, SC 29411-0068

Subject: Response to FDER Comments Concerning Contamination Assessment Report
Site 3054, NAS Whiting Field

Dear Luis:

ABB Environmental Services, Inc., (ABB-ES) is pleased to submit the following response to Florida Department of Environmental Regulations (FDER) comments dated November 25, 1992, pertaining to the Contamination Assessment Report (CAR) entitled, *Contamination Assessment Report, Site 3054, Naval Air Station Whiting Field, Milton, Florida.*

Comment 1

What do the rectangles numbered 3053 and 3054 represent in the figures showing the contamination site?

Response

Buildings 3053 and 3054 are changing facilities for aviators and aircraft maintenance crews.

Comment 2

Please show the approximate location and areal extent of the spilled AVGAS on your figures.

Response

Figure 2-3 has been revised to show the approximate location and areal extent of the spill and is appended hereto.

Comment 3

To what was the rubber hose that ruptured originally attached? The consultant need to be more specific on where and how the AVGAS was originally stored?

Response

The rubber hose was attached the fuel hydrant system used to fuel aircraft in the vicinity of Site 3054. The fuel hydrant system was abandoned in 1983 and is no longer utilized for refueling aircraft.

z:\users\luis\working\site3054\va90118.ltr

ABB Environmental Services, Inc.

2590 Executive Center Circle East
Berkeley Building
Tallahassee, Florida 32301

Telephone
(904) 656-1293

Fax
(904) 877-0742

Comment 4

Was any immediate remedial action undertaken in 1972 to contain or recover the 25,000 gallons of spilled product? If so, what methods were used?

Response

At the time of the spill, there was no remedial action taken. The fuel was left on the asphalt aircraft parking area to evaporate.

Comment 5

The analytical laboratory data for assessment wells WHF-1466-10 and WHF-1466-16 was omitted from this CAR, please submit this data.

Response

Monitoring wells WHF-1466-10 and WHF-1466-16 were installed during the contamination assessment for the South Fuel Farm (Site 1466) after the contamination assessment for Site 3054 was completed. Groundwater samples have not yet been collected from wells WHF-1466-10 and WHF-1466-16 because the contamination assessment for Site 1466 is incomplete.

Comment 6

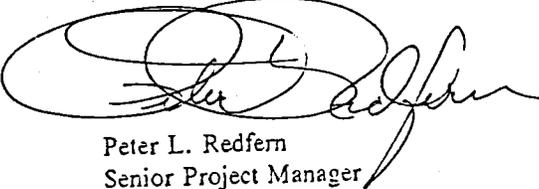
What are station locations WHF-MW-5 and WHF-MW-6 on Wadsworth/Alert's Laboratory chain of custody form?

Response

Monitoring wells WHF-MW-5 and WHF-MW-6 are assessment wells for Site 1467, approximately one mile north of Site 3054 and are not part of the analytical requirements for this site.

Once you have reviewed these comments they should be submitted to FDER for their evaluation. If you wish us to respond directly to these comments, we would be pleased to do so, following your direction.

Very truly yours,
ABB ENVIRONMENTAL SERVICES, INC.


Peter L. Redfern
Senior Project Manager

Enc.

cc: J. Williams
N. Pagano
file

**Response to FDER Comments
Site 3054
Naval Air Station Whiting Field
Milton, Florida
Contract No. N62467-89-D-0317, CTO No. 009.**

Comment 1.

"One additional monitoring well should be installed as follows to define the possible extent of groundwater contamination:

- a. One water table well in the immediate vicinity of monitor well WHF8-1. This well should be designed to sample the uppermost portion of the aquifer and have a screened interval overlapping the water table. Note, the screened interval of this well should be at least two feet above the mean annual high water table and include at least five, but not more than fifteen feet of the saturated zone."

Response 1.

ABB-ES and the Navy do not agree that it is necessary to install one additional monitoring well in the immediate vicinity of monitoring well WHF-8-1 to define the possible extent of groundwater contamination at Site 3054. One monitoring well, WHF-3054-1, was installed at the site in a location where historical data indicated the released AVGAS fuel had accumulated. Laboratory analytical results of groundwater samples from well WHF-3054-1 indicated that all Kerosene group compounds were below method detection limits. Results of OVA headspace analysis of soil samples from borings drilled at the site were far below FDER May 1992, "Guidelines for the Assessment and Remediation of Petroleum Contaminated Soils" and OVA readings of soil samples collected at the water table ranged from 0 to 2 ppm (the highest OVA soil headspace reading was 14 ppm at 5 feet below land surface in the boring, SB-3, nearest well WHF-3054-1).

The screened interval of monitoring well WHF-3054-1 is 110' to 125' below land surface. Because the water table was approximately 108.4' below land surface and, therefore, above the top of the screened interval, the well was purged by lowering a submersible pump down the well to the approximate midpoint of the screened interval. After pumping three well volumes of water from the mid-screened interval depth, the pump was raised to the uppermost 5-foot section of screen. When the pump began cavitating, it was removed from the well. This method of purging the well ensured that water from the uppermost portion of the aquifer was introduced into the well and sampled because the water table was lowered to the depth at which the pump began cavitating. The well was purged of approximately 35 gallons of water by pumping for 23 minutes before sampling. No free product, sheens, or petroleum odors were noted during purging or sampling of the well.

There was no indication of groundwater contamination at the site. No free product was encountered during installation or sampling of well WHF-3054-1 and results of analysis of Kerosene group contaminants indicated that concentrations were below Method detection limits.

It is likely that the AVGAS released at the site evaporated relatively quickly and did not migrate very deeply into the soil. Approximately 25,000 gallons of AVGAS was reported to have spilled and accumulated over a 2-acre area. The calculated thickness of 25,000 gallons spread over 2 acres is 1.1 millimeters or 0.046 inches. The release occurred in the month of August when average daily temperatures are usually in excess of 90 degrees Fahrenheit. The soil near the surface at the site contains a significant amount of clay, is quite hard and of low permeability. This is confirmed in the site boring logs and evidenced by the difficulty experienced in posthole digging prior to drilling, and the standing water that persists after a rainfall event.

Existing monitoring wells WHF-1466-10 and WHF-1466-16 (installed for site 1466 after submittal of this CAR) are located in the immediate vicinity of the site and provide adequate spatial coverage of the area affected by the AVGAS release to assess the extent of groundwater contamination. ABB-ES recommends that groundwater samples be collected from these wells to augment the existing groundwater and soil analytical data. The installation of an additional monitoring well screened in the upper water bearing zone in the immediate vicinity of existing well WHF-8-1, is not recommended.

A No Further Action Proposal (NFAP) was submitted based on technical criteria for investigation of soil and groundwater contamination presented in the FDER's "No Further Action and Monitoring Only Guidelines for Petroleum Contaminated Sites":

- 1.) The source of contamination has been abated,
- 2.) Free product is not currently present,
- 3.) Excess soil contamination is not currently present, and
- 4.) The Groundwater contamination (if present) is not widespread, not extending off-site, or not migrating vertically.

It is understood that these issues have been discussed with FDER's Technical Review Section Supervisor and, despite the data presented in the CAR and the responses to these comments, FDER maintains that the additional well be installed and sampled prior to approval of the NFAP recommended in the CAR. It is the wish of the Navy and ABB-ES to cooperate fully with FDER, however it is the opinion of ABB-ES that the contamination assessment of Site 3054 was conducted in accordance with all applicable FDER guidelines and regulations, and that the NFAP recommended in the CAR should be approved.

Comment 2

"Following installation of the supplemental monitoring well a complete round of sampling and analysis for EPA Methods 602, 610, and 418.1 (including monitor wells WHF-1466-10 and WHF-1466-16) should be performed so that this review can be completed and a decision reached, based on current data, on the type of action that is warranted. Note, additional monitoring wells should be installed if significant contaminant concentrations are detected at perimeter wells or at the vertical extent well."

Response 2

ABB-ES plans to install the additional monitoring well requested by FDER and collect a complete round of groundwater samples for analysis by EPA Methods 602, 610, and 418.1 (including monitor wells WHF-1466-10 and WHF-1466-16). It is not clearly understood what concentrations of which contaminants constitute the "...significant contaminant concentrations..." referred to in the last sentence of Comment 2. FDER's October 1990, "No Further Action and Monitoring Only Guidelines for Petroleum Contaminated Sites" cite specific contaminants and concentrations to be used as guidance for making the appropriate recommendation for sites regulated under Chapter 17-770 F.A.C. It is the understanding of the Navy and ABB-ES that the referenced guidelines are to be used in conjunction with FDER's October 1989, "Guidelines for the Preparation of Contamination Assessment Reports for Petroleum Contaminated Sites" when assessing the degree and extent of groundwater contamination so that the recommendations presented in the CAR are based on accepted standards, and not made on an arbitrary basis. Unless FDER indicates otherwise, it will be assumed that all recommendations for disposition of Site 2891 will be made in accordance with the referenced FDER guidelines and target cleanup levels contained in Chapter 17-770.730(5)(a)2 F.A.C. Additional monitoring wells shall be installed if contaminant concentrations in excess of FDER target cleanup levels are detected at perimeter wells or in the vertical extent well.

APPENDIX B

Monitoring Well Completion Logs

TITLE: NAS Whiting Field Site 3054		LOG of WELL: WHF-3054-2	BORING NO. SFS-SB-3
CLIENT: SOUTHNAVFACENGCOM			PROJECT NO: 7518-30
CONTRACTOR: Groundwater Protection, Inc.		DATE STARTED: 11/09/91	COMPLTD: 11/09/91
METHOD: HSA	CASE SIZE: 4 inch	SCREEN INT.: 102'-117'	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: OVA	TOT DPTH: 117.5FT.	DPTH TO ∇ 109 FT.
LOGGED BY: N. Pagano	WELL DEVELOPMENT DATE:		SITE: 3054

DEPTH F.T.	LABORATORY SAMPLE ID.	RECOVERY SAMPLE	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
			14.0	SAND: Light brown to tan, very fine grained, silty, trace clay.		ML		POSTHOLE
5		2/2	0.4	SAND: Brown to red, stained black, very fine grained, moderately sorted, silty, trace clay.		SC	3,2,3,3	
10		1.3/2	0.2	CLAYEY SAND: Red, very fine grained, well-sorted.			3,4,3,3	
15		1.5/2	0.2				3,5,5,5	
20		1.2/2	0.2	SAND: Red, very fine grained, moderate to well-sorted.		ML	6,9,10,10	
25		1.3/2	0.0	SAND: White, very fine to fine grained, well-sorted, trace clay.			7,6,7,7	
30		1.1/2	0.0	SAND: White to pink, fine to medium grained, well-sorted.		SM	6,7,8,9	
35		1.7/2	0.0	SAND: White to pink, medium grained, well-sorted.		SP	9,12,18,22	
40		1.5/2	0.0	SAND: White to pink, very fine grained, well-sorted.		ML	15,22,22,25	
45		2/2	0.2	SAND: White, very fine grained, well-sorted.			10,14,11,15	
50		2/2	0.1	SAND: White to very light gray, very fine grained, well-sorted.			7,12,12,12	
55		N/A	0.0	SAND: Light gray to pink, very fine grained.			10,25,25,24	
60		1.5/2	0.0				12,15,15,14	
65								

TITLE: NAS Whiting Field Site 3054		LOG of WELL: WHF-3054-2	BORING NO. SFS-SB-3
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 7518-30	
CONTRACTOR: Groundwater Protection, Inc.		DATE STARTED: 11/09/91	COMPLTD: 11/09/91
METHOD: HSA	CASE SIZE: 4 inch	SCREEN INT.: 102'-117'	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: OVA	TOT DPTH: 117.5FT.	DPTH TO ∇ 109 FT.
LOGGED BY: N. Pagano	WELL DEVELOPMENT DATE:		SITE: 3054

DEPTH F.T.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
Continued from PAGE 1									
70		2/2	0.2		SAND: Light gray to white, very fine to fine grained.		ML	15,20,23,30	
75		1.1/2	0.2		SAND: White to light pink, very fine to fine grained with some coarse quartz grains.			30,26,30,31	
80		1.8/2	0.2		SAND: Pink, very fine grained with some coarse quartz grains, moderate to poorly sorted.			23,24,30,29	
85		2/2	0.0		SAND: White to pink to very light gray, fine to medium grained, well-sorted.		SM	25,35,35,42	
90		2/2	1.0		SAND: White to pink to very light gray, fine to medium grained, well-sorted.			22,30,30,33	
95		2/2	1.6		SAND: White to pink to very light gray, fine to medium grained, well-sorted.			29,33,39,42	
100		1.8/2	0.2		SAND: Light red to light gray, medium to coarse grained with some gravel-sized quartz grains, moderately sorted.		SW	33,49,53,58	
105		1.8/2	1.2		SAND: White to light gray, fine grained, well-sorted.		ML	30,40,55,60	
110		1.8/2	0.0		SAND: Light tan to buff, fine to coarse grained with some gravel-sized quartz grains, saturated.		GM	27,40,45,40	
115		2/2	2.0		SAND: Light red to tan, medium to coarse grained with some gravel-sized quartz grains, poorly sorted, saturated.		GW	12,22,48,50	
120		2/2	0.6		SAND: Brown to tan, coarse grained, well-sorted, saturated.		GP	12,15,15,16	

APPENDIX C
Analytical Results

**UST NON-CLP DATA REVIEW
FIELD INFORMATION
NEESA LEVEL E SAMPLING DATA**

DATE: August 13, 1993

PROJECT: NAS Whiting Field

PROJECT No.: 7518-41

PROJECT MGR: John Kaiser

TO BE FILLED IN BY PROJECT PROFESSIONAL:

- | | | |
|--|-------------------------|--------------------|
| 1. Total number of samples: | monitoring wells | <u>5</u> |
| | duplicates (10%) | <u>1</u> |
| | trip blanks (1/cooler) | <u>1</u> |
| | equipment blank (1/day) | <u>0</u> |
| | field blank (1/event) | <u>0</u> |
| 2. Were any QA problems encountered during sampling?
If yes, explain below. | | <u>No</u> |
| 3. Were there any client-required deviations from standard field QA?
If yes, explain below. | | <u>No</u> |
| 4. What was the source of the sample bottles? | | <u>Lab</u> |
| 5. What was the sampling period? | From: <u>7/17/93</u> | To: <u>7/17/93</u> |

} see det. 7/14/93

TO BE FILLED IN BY THE REVIEWER:

- | | |
|--|------------------------|
| 1. Data set complete? | Y <u> </u> N <u>✓</u> |
| 2. Were there any laboratory QA/QC problems noted in the report? | Y <u>✓</u> N <u> </u> |
| 3. Appropriate number of blanks collected? | Y <u>✓</u> N <u> </u> |
| 4. Appropriate number of duplicates collected? | Y <u>✓</u> N <u> </u> |
| 5. Complete chain of custody provided? | Y <u>✓</u> N <u> </u> |
| 6. Were the holding times for any sample exceeded? | Y <u> </u> N <u>✓</u> |
| 7. Appropriate sample preservatives indicated on chain of custody? | Y <u>✓</u> N <u> </u> |

Explanations/Other: ① LSC results: spike results not available.
② Some problems w/ matrix spike for volatiles see next page.

UST NON-CLP DATA VALIDATION
KEROSENE AND MIXED PRODUCT ANALYTICAL GROUP

PROJECT: NAS Whiting LABORATORY: CH2M HILL

VOLATILES ANALYSES (including EDB):
EPA Methods 601/602 or 5030/8010/8020

Were surrogates within accepted limits? Y N ITEM:

Were laboratory and equipment blanks non-detects? Y N ITEM:

Were trip blanks non-detects? Y N ITEM:

Are the units of measure consistent? Y N ITEM:

Duplicates meet UST acceptance criteria (15-20%)? Y N ITEM:

Reported concentrations above detection limits? Y N ITEM:

Was an MS/MSD run? Was the recovery within limits? Y N ITEM: ②

Was an LCS run each day samples were analyzed? Y N ITEM: ①

Were LCS results within limits? Y N ITEM: ①

POLYNUCLEAR AROMATIC HYDROCARBONS (PAH):
EPA Methods 610, 8100, 625, 3510/8240 or 3510/8270)

Were surrogates within accepted limits? Y N ITEM:

Were laboratory and equipment blanks non-detects? Y N ITEM:

Are the units of measure consistent? Y N ITEM:

Reported concentrations above detection limits? Y N ITEM:

Duplicates meet UST acceptance criteria (15-20%)? Y N ITEM:

Was an MS/MSD run? Was the recovery within limits? Y N ITEM:

Was an LCS run each day samples were analyzed? Y N ITEM: ①

Were LSC results within limits? Y N ITEM: ①

ITEMS: ① LSC results not available.

② 2-Chloroethyl vinyl ether was outside limits.

UST NON-CLP DATA VALIDATION
KEROSENE AND MIXED PRODUCT ANALYTICAL GROUP

PROJECT: NAS Whiting LABORATORY: CH2MHILL

INORGANICS ANALYSES - LEAD
EPA Method 239.2 or 7421

Were laboratory ~~and equipment blanks~~ non-detects? Y N ITEM:
Duplicate samples meet UST acceptance criteria (20%)? Y N ITEM
Was an LCS run each day samples were analyzed? Y N ITEM ①
Were LSC recovery results within limits? Y N ITEM ①
Reported concentrations above detection limits? Y N ITEM
Are the units of measure consistent? Y N ITEM:

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (TRPH):
EPA Method 418.1

Were laboratory ~~and equipment blanks~~ non-detects? Y N ITEM:
Are the units of measure consistent? Y N ITEM:
Were reported concentrations above detection limits? Y N ITEM:
Duplicates meet UST acceptance criteria (15-20%)? Y N ITEM:
Was an MS/MSD run? Was the recovery within limits? Y N ITEM: ②
Was an LSC run each day samples were analyzed? Y N ITEM: ①
Were LSC recovery results within limits? Y N ITEM: ①

Items: ① LSC info not available. ② MS/MSD info not in report.

Recommendations:

Reviewer: [Signature]

Date: 8-13-93



Engineers
Planners
Economists
Scientists

August 9, 1993

John Kaiser
ABB Environmental
2590 Executive Center Circle
Tallahassee, FL 32301

RE: Analytical Data for ABB/NAS Whiting Field
Lab Ref. No. 90069

Dear Mr. Kaiser:

On July 19, 1993 the CH2M HILL Gainesville Laboratory (LGN) received seven samples with a request for analysis of selected organic and inorganic parameters.

The analytical results and associated quality control data are enclosed. The samples for analyses of TPH were sent to the CH2M HILL Montgomery Laboratory (LMG).

Under CH2M HILL policy, your samples will be stored for up to 30 days after reporting. If you have not given us prior instructions for disposal, we will contact you if any samples require disposal as hazardous waste.

CH2M HILL Laboratories appreciate your business and look forward to serving your analytical needs again. If you should have any questions concerning the data, or if you need additional information, please call me or Tom Emenhiser, Client Services Manager, at 904-462-3050.

Sincerely,

Karen Daniels
Client Services Coordinator

Enclosures

State Certifications:

Florida No. 82112, E82124

Alabama No. 40080

California No. I-1014

TABLE OF CONTENTS

CH2M HILL Lab Ref. No. 90069

	Page <u>No.</u>
List of Organic Data Qualifiers	i
List of Sample ID Qualifiers	ii
Client Sample Cross-Reference	iii
 Inorganic Data	
Cations	
Case Narrative(s)	1
Analytical Results	1A
Blank(s) Results	2
TPH(Performed by LMG)	
Case Narrative(s)	3
Analytical Results	4
Blank(s) Results	10
 Organic Data	
Purgeable Halocarbons/Aromatics	
Case Narrative	11
Analytical Results	14
Blank(s) Results	21
EDB	
Case Narrative(s)	23
Analytical Results	25
Blank(s) Results	31
Polynuclear Aromatic Hydrocarbons	
Case Narrative(s)	32
Analytical Results	34
Blank(s) Results	40
 Copy of COC Documentation	 41

ORGANIC DATA QUALIFIERS

- U Indicates the compound was analyzed for, but not detected. The number adjacent to the "U" qualifier indicates the reporting limit for that compound. The reporting limit can vary from sample to sample depending on dilution factors or percent moisture adjustment when indicated.
- J Indicates an estimated value. It is used when the data indicates the presence of a compound below the stated reporting limit.
- C This flag applies to GC analytes only. The "C" flag indicates the presence of this compound has been confirmed by GC/MS analysis.
- B This flag is used when the analyte is found in the associated blank, as well as the sample. This notation indicates possible blank contamination and suggests the data user evaluate these compounds and their amounts carefully.
- E This qualifier indicates that the value reported exceeds the linear calibration range for that compound. Therefore, the sample should be reanalyzed at an appropriate dilution. The "E" qualified amount is an estimated concentration, and the results of the dilution will be reported on a separate Form I.
- D This qualifier indicates compounds which have been identified during a diluted reanalysis. "D" qualifiers are used for samples that have been analyzed initially at a lesser dilution than required for accurate quantification.

SAMPLE ID QUALIFIERS

The qualifiers that may be appended to the sample ID for organic analyses are defined below:

- DL or D -- Dilution Run. Indicates the sample contained compounds exceeding the calibration range. The sample was diluted and reanalyzed. Both results are reported.
- R -- Rerun. The sample was reanalyzed. The "R" is not used if the sample was also re-extracted.
- RE -- Re-extraction Analysis. The sample was re-extracted and reanalyzed.
- MS -- Matrix Spike (may be followed by a digit to indicate multiple matrix spikes within a sample set)
- MSD or MD -- Matrix Spike Duplicate (may be followed by a digit to indicate multiple matrix spike duplicates within a sample set)

CLIENT SAMPLE CROSS-REFERENCE

CH2M HILL Lab Ref. No. 90069

CH2M HILL Lab Sample ID.	Client Lab Sample ID.
90069001	WHF1466DU
90069002	WHF810000
90069003	WHF146610
90069004	WHF146616
90069005	WHF305401
90069006	WHF305402
90069007	TRAVEL BLANK

CASE NARRATIVE
Cations

Lab Number: GN-90069

Client/Project: ABB - NAS Whiting Field

- I. Holding Time:
All holding times were met.
- II. Digestion Exceptions:
None
- III. Analysis:
- A. Calibration:
All acceptance criteria were met.
 - B. Blanks:
All acceptance criteria were met.
 - C. ICP Interference Check Sample:
All acceptance criteria were met.
 - D. Spike Sample(s):
All acceptance criteria were met.
 - E. Duplicate Sample(s):
All acceptance criteria were met.
 - F. Laboratory Control Sample(s):
All acceptance criteria were met.
 - G. ICP Serial Dilution:
Not required for this level QC.
 - H. Other:
None.
- IV. Documentation Exceptions:
None
- V. I certify that this data package is in compliance with the terms and conditions agreed to by the client and CH2M HILL, both technically and for completeness, except for the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

SIGNED: Isaac Lynch DATE: 08/04/93
Isaac Lynch
Supervisor, Inorganics Division

000001



Engineers
Planners
Economists
Scientists

REPORT OF ANALYSIS

Florida Certification: 82112; E82124

AA1581

08/04/93

Page 1 of 2

Sample Nos: 9006901 - 9006906

ABB Environmental Services	CH2M HILL
Attention: John Kaiser Address: ABB	Project No: LGN35227.XY Received: 07/19/93 Reported: 08/04/93
Collected: 07/17/93 by client Type: water, grab Location: NAS Whiting Field Site 3054	

SAMPLE NUMBER	9006901	9006902	9006903	9006904	9006905
SAMPLE DESCRIPTIONS	WHF1466DU 07/17/93	WHF810000 07/17/93 10:45	WHF146610 07/17/93 11:00	WHF146616 07/17/93 12:00	WHF305401 07/17/93 13:30
METALS					
Lead, Furnace	<0.002 07/30/93	<0.002 07/30/93	<0.002 07/30/93	0.037 07/30/93	<0.002 07/30/93

NOTE: Values are mg/l as substance unless otherwise stated.

Respectfully submitted,

Isaac D. Lynch, Inorganics Supervisor

n/r = not requested

NOTE: This report contains test data and no interpretation is intended or implied.



Engineers
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REPORT OF ANALYSIS

Florida Certification: 82112; E82124

AA1581

08/04/93

Page 2 of 2

Sample Nos: 9006901 - 9006906

ABB Environmental Services	CH2M HILL
Attention: John Kaiser Address: ABB	Project No: LGN35227.XY Received: 07/19/93 Reported: 08/04/93
Collected: 07/17/93 by client Type: water, grab Location: NAS Whiting Field Site 3054	

SAMPLE NUMBER	9006906	
SAMPLE DESCRIPTIONS	WHF305402 07/17/93 14:20	Laboratory Method Blank
METALS		
Lead, Furnace	<0.002 07/30/93	<0.002 07/30/93

NOTE: Values are mg/l as substance unless otherwise stated.

Respectfully submitted,

Isaac D. Lynch, Inorganics Supervisor

n/r = not requested

NOTE: This report contains test data and no interpretation is intended or implied.

CASE NARRATIVE
General Chemistry

Lab Ref. No: 90069

Client/Project: NAS WHITING FIELD

I. Holding Time:

All holding times were met.

II. Analysis:

A. Calibration:

All acceptance criteria were met.

B. Blanks:

All acceptance criteria were met.

C. Matrix Spike Sample(s):

All acceptance criteria were met.

D. Duplicate Sample(s):

All acceptance criteria were met.

E. Lab Control Sample(s):

All acceptance criteria were met.

F. Other:

None.

III. Documentation Exceptions:

None.

IV. I certify that this data package is in compliance with the terms and conditions agreed to by the client and CH2M HILL, both technically and for completeness, except for the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

SIGNED: _____

Joe Basile
Joe Basile

General Organic/Inorganic Supervisor

DATE: _____

8/4/93

REPORT OF ANALYTICAL RESULTS

Date: 08/04/93

Client: CH2M HILL/LGN
ONE INNOVATION DRIVE, SUITE C
ALACHUA, FL 32615-9586

Project Number: LGN00999.99.WH
NAS WHITING FIELD SITE 3054
Laboratory Number: 90069
Date Received: 07/20/93

Atten: MS. NANCY MOSURICK

=====
Sample Description: WHF146616 1200 GRAB
Laboratory Sample Number: 90069004 Date Collected: 07/17/93 Matrix: WATER
=====

Analytical Parameter	Method	Rep Limit	Result	Units	Ana Date
Total Petroleum Hydrocarbons	EPA418.1	0.06	0.52	mg/L	08/02/93

Results for non-aqueous matrices are based on dry sample weight unless noted otherwise.

Reviewed by: *JB*

INRPRPT(v910124)

REPORT OF ANALYTICAL RESULTS

Date: 08/04/93

Client: CH2M HILL/LGN
ONE INNOVATION DRIVE, SUITE C
ALACHUA, FL 32615-9586

Project Number: LGN00999.99.WH
NAS WHITING FIELD SITE 3054
Laboratory Number: 90069
Date Received: 07/20/93

Atten: MS. NANCY MOSURICK

Sample Description: METHOD BLANK

Laboratory Sample Number: 90069ZW1 Date Collected: 07/20/93 Matrix: WATER

Analytical Parameter	Method	Rep Limit	Result	Units	Ana Date
Total Petroleum Hydrocarbons	EPA418.1	0.05	<0.05	mg/L	08/02/93

Results for non-aqueous matrices are based on dry sample weight unless noted otherwise.

Reviewed by: JS

INRPRPT(v910124)

CASE NARRATIVE
GC VOLATILE SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: ABB Whiting UST #47
CASE NO. : N/A CONTRACT NO.: N/A
LAB NO. : GN-90069-A01-A07 SDG NO.: GN-90069

I. RECEIPT

A. DATE: JULY 19, 1993

B. SAMPLE INFORMATION

<u>LAB</u> <u>SAMPLE ID</u>	<u>CLIENT</u> <u>SAMPLE ID</u>	<u>SAMPLE</u> <u>MATRIX</u>	<u>DATE</u> <u>SAMPLED</u>	<u>EXTRACTION</u> <u>DATE</u>	<u>ANALYSIS</u> <u>DATE</u>
90069A01R1	WHF1466DU	WATER	07/17/93	N/A	07/25/93
90069A02	WHF810000	WATER	07/17/93	N/A	07/25/93
90069A03	WHF146610	WATER	07/17/93	N/A	07/25/93
90069A04	WHF146616	WATER	07/17/93	N/A	07/25/93
90069A05	WHF305401	WATER	07/17/93	N/A	07/25/93
90069A06	WHF304502	WATER	07/17/93	N/A	07/25/93
90069A07	TRAVEL BLA	WATER	07/17/93	N/A	07/25/93
2VBG24A	VBLK001	WATER	N/A	N/A	07/24/93
2VBG25A	VBLK002	WATER	N/A	N/A	07/25/93

C. Documentation

Exceptions: No exceptions were encountered.

000011

II. EXTRACTION

- A. Holding Times: Not applicable.
- B. Extraction
Exceptions: Not applicable.

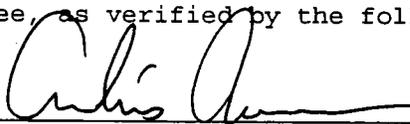
III. ANALYSIS

- A. Holding times: All holding times were met.
- B. Analytical
Exceptions: There were no analytical exceptions.

IV. QUALITY CONTROL

- A. Method Blank: All blanks met acceptable QC criteria.
- B. Surrogate
Recoveries: All samples met acceptable QC criteria.
- C. Matrix Spike
Results: 2-Chloroethyl vinyl ether was outside acceptable limits for accuracy and/or precision. However, analysis of a continuing calibration standard immediately after the matrix spikes indicated that the analytical system was in control. Since MS/MSD results are subject to matrix effects, these values should be considered to be advisory.

- V. I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, except for the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.



Andrés A. Romeu, Ph.D.
Manager, Organics Division

8/4/93
Date

QC REFERENCES

The following is a list of the QC analyses to which the samples are referenced.

LAB SAMPLE ID	QC SAMPLE ID METHOD BLANK
90069A01R1	2VBG24A
90069A02	2VBG25A
90069A03	
90069A04	
90069A05	
90069A06	
90069A07	

WHF1466DU

REPORT OF ANALYTICAL RESULTS
PURGEABLE HALOCARBONS/AROMATICS

Date collected:	7/17/93	Sample Group:	GN-90069
Date extracted:	N/A	Lab Sample ID:	GN-90069A01R1
Date analyzed:	7/25/93	Lab file 1 ID:	G25C005
Matrix:	WATER	Lab file 2 ID:	G25D005
Method:	601/602M	Dilution Factor:	1.0000
% Moisture:	100	Reporting units:	ug/L

CAS NUMBER	COMPOUND NAME	REPORTING LIMIT	RESULT
71-43-2	Benzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
100-75-8	2-Chloroethyl vinyl ether	1.0	U
124-48-1	Dibromochloromethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
74-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-4	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethyl Benzene	1.0	U
1634-04-4	Methyl tert butyl ether	1.0	U
75-09-2	Methylene chloride (Dichloromethane)	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	1.1
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
108-38-3/106-42-3	m- and p-Xylene	2.0	U
95-47-6	o-Xylene	1.0	U
SURROGATE-Fluorobenzene (QC Limits - 61 to 133%)			97 % Rec.

WHF810000

REPORT OF ANALYTICAL RESULTS
PURGEABLE HALOCARBONS/AROMATICS

Date collected:	7/17/93	Sample Group:	GN-90069
Date extracted:	N/A	Lab Sample ID:	GN-90069A02
Date analyzed:	7/25/93	Lab file 1 ID:	G24C015
Matrix:	WATER	Lab file 2 ID:	G24D015
Method:	601/602M	Dilution Factor:	1.0000
% Moisture:	100	Reporting units:	ug/L

CAS NUMBER	COMPOUND NAME	REPORTING LIMIT	RESULT
71-43-2	Benzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
100-75-8	2-Chloroethyl vinyl ether	1.0	U
124-48-1	Dibromochloromethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
74-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-4	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethyl Benzene	1.0	U
1634-04-4	Methyl tert butyl ether	1.0	U
75-09-2	Methylene chloride (Dichloromethane)	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
108-38-3/106-42-3	m- and p-Xylene	2.0	U
95-47-6	o-Xylene	1.0	U
SURROGATE-Fluorobenzene (QC Limits - 61 to 133%)			97 % Rec.

WHF146610

REPORT OF ANALYTICAL RESULTS
PURGEABLE HALOCARBONS/AROMATICS

Date collected:	7/17/93	Sample Group:	GN-90069
Date extracted:	N/A	Lab Sample ID:	GN-90069A03
Date analyzed:	7/25/93	Lab file 1 ID:	G24C016
Matrix:	WATER	Lab file 2 ID:	G24D016
Method:	601/602M	Dilution Factor:	1.0000
% Moisture:	100	Reporting units:	ug/L

CAS NUMBER	COMPOUND NAME	REPORTING LIMIT	RESULT
71-43-2	Benzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
100-75-8	2-Chloroethyl vinyl ether	1.0	U
124-48-1	Dibromochloromethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
74-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-4	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethyl Benzene	1.0	U
1634-04-4	Methyl tert butyl ether	1.0	U
75-09-2	Methylene chloride (Dichloromethane)	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
108-38-3/106-42-3	m- and p-Xylene	2.0	U
95-47-6	o-Xylene	1.0	U
SURROGATE-Fluorobenzene (QC Limits - 61 to 133%)			96 % Rec.

000016

REPORT OF ANALYTICAL RESULTS
PURGEABLE HALOCARBONS/AROMATICS

Date collected:	7/17/93	Sample Group:	GN-90069
Date extracted:	N/A	Lab Sample ID:	GN-90069A04
Date analyzed:	7/25/93	Lab file 1 ID:	G24C017
Matrix:	WATER	Lab file 2 ID:	G24D017
Method:	601/602M	Dilution Factor:	1.0000
% Moisture:	100	Reporting units:	ug/L

CAS NUMBER	COMPOUND NAME	REPORTING LIMIT	RESULT
71-43-2	Benzene		
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
100-75-8	2-Chloroethyl vinyl ether	1.0	U
124-48-1	Dibromochloromethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
74-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-4	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethyl Benzene	1.0	U
1634-04-4	Methyl tert butyl ether	1.0	U
75-09-2	Methylene chloride (Dichloromethane)	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	24
75-01-4	Vinyl chloride	1.0	U
108-38-3/106-42-3	m- and p-Xylene	1.0	U
95-47-6	o-Xylene	2.0	U
		1.0	U
SURROGATE-Fluorobenzene (QC Limits - 61 to 133%)			99 % Rec.

WHF305401

REPORT OF ANALYTICAL RESULTS
PURGEABLE HALOCARBONS/AROMATICS

Date collected:	7/17/93	Sample Group:	GN-90069
Date extracted:	N/A	Lab Sample ID:	GN-90069A05
Date analyzed:	7/25/93	Lab file 1 ID:	G24C018
Matrix:	WATER	Lab file 2 ID:	G24D018
Method:	601/602M	Dilution Factor:	1.0000
% Moisture:	100	Reporting units:	ug/L

CAS NUMBER	COMPOUND NAME	REPORTING LIMIT	RESULT
71-43-2	Benzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
100-75-8	2-Chloroethyl vinyl ether	1.0	U
124-48-1	Dibromochloromethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
74-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-4	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethyl Benzene	1.0	U
1634-04-4	Methyl tert butyl ether	1.0	U
75-09-2	Methylene chloride (Dichloromethane)	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
108-38-3/106-42-3	m- and p-Xylene	2.0	U
95-47-6	o-Xylene	1.0	U
SURROGATE-Fluorobenzene (QC Limits - 61 to 133%)			98 % Rec.

WHF305402

REPORT OF ANALYTICAL RESULTS
PURGEABLE HALOCARBONS/AROMATICS

Date collected:	7/17/93	Sample Group:	GN-90069
Date extracted:	N/A	Lab Sample ID:	GN-90069A06
Date analyzed:	7/25/93	Lab file 1 ID:	G24C019
Matrix:	WATER	Lab file 2 ID:	G24D019
Method:	601/602M	Dilution Factor:	1.0000
% Moisture:	100	Reporting units:	ug/L

CAS NUMBER	COMPOUND NAME	REPORTING LIMIT	RESULT
71-43-2	Benzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
100-75-8	2-Chloroethyl vinyl ether	1.0	U
124-48-1	Dibromochloromethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
74-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-4	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethyl Benzene	1.0	U
1634-04-4	Methyl tert butyl ether	1.0	U
75-09-2	Methylene chloride (Dichloromethane)	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	1.0
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
108-38-3/106-42-3	m- and p-Xylene	2.0	U
95-47-6	o-Xylene	1.0	U
SURROGATE-Fluorobenzene (QC Limits - 61 to 133%)			95 % Rec.

TRAVEL BLANK

REPORT OF ANALYTICAL RESULTS
PURGEABLE HALOCARBONS/AROMATICS

Date collected:	7/17/93	Sample Group:	GN-90069
Date extracted:	N/A	Lab Sample ID:	GN-90069A07
Date analyzed:	7/25/93	Lab file 1 ID:	G24C020
Matrix:	WATER	Lab file 2 ID:	G24D020
Method:	601/602M	Dilution Factor:	1.0000
% Moisture:	100	Reporting units:	ug/L

CAS NUMBER	COMPOUND NAME	REPORTING LIMIT	RESULT
71-43-2	Benzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
100-75-8	2-Chloroethyl vinyl ether	1.0	U
124-48-1	Dibromochloromethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
74-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-4	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethyl Benzene	1.0	U
1634-04-4	Methyl tert butyl ether	1.0	U
75-09-2	Methylene chloride (Dichloromethane)	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
108-38-3/106-42-3	m- and p-Xylene	2.0	U
95-47-6	o-Xylene	1.0	U
SURROGATE-Fluorobenzene (QC Limits - 61 to 133%)			97 % Rec.

VBLK001

REPORT OF ANALYTICAL RESULTS
PURGEABLE HALOCARBONS/AROMATICS

Date collected:	N/A	Sample Group:	GN-90069
Date extracted:	N/A	Lab Sample ID:	2VBG24A
Date analyzed:	7/24/93	Lab file 1 ID:	G24C002
Matrix:	Water	Lab file 2 ID:	G24D002
Method:	601/602M	Dilution Factor:	1.0000
% Moisture:	100	Reporting units:	ug/L

CAS NUMBER	COMPOUND NAME	REPORTING LIMIT	RESULT
71-43-2	Benzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
75-00-3	Chloroethane	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
100-75-8	2-Chloroethyl vinyl ether	1.0	U
124-48-1	Dibromochloromethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
74-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-4	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethyl Benzene	1.0	U
1634-04-4	Methyl tert butyl ether	1.0	U
75-09-2	Methylene chloride (Dichloromethane)	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
108-38-3/106-42-3	m- and p-Xylene	2.0	U
95-47-6	o-Xylene	1.0	U
SURROGATE-Fluorobenzene (QC Limits - 61 to 133%)			98 % Rec.

VBLK002

REPORT OF ANALYTICAL RESULTS
PURGEABLE HALOCARBONS/AROMATICS

Date collected:	N/A	Sample Group:	GN-90069
Date extracted:	N/A	Lab Sample ID:	2VBG25A
Date analyzed:	7/25/93	Lab file 1 ID:	G25C004
Matrix:	Water	Lab file 2 ID:	G25D004
Method:	601/602M	Dilution Factor:	1.0000
% Moisture:	100	Reporting units:	ug/L

CAS NUMBER	COMPOUND NAME	REPORTING LIMIT	RESULT
71-43-2	Benzene	1.0	U
75-27-4	Bromodichloromethane	1.0	U
75-25-2	Bromoform	1.0	U
74-83-9	Bromomethane	1.0	U
56-23-5	Carbon tetrachloride	1.0	U
108-90-7	Chlorobenzene	1.0	U
75-00-3	Chloroethane	1.0	U
100-75-8	2-Chloroethyl vinyl ether	1.0	U
67-66-3	Chloroform	1.0	U
74-87-3	Chloromethane	1.0	U
124-48-1	Dibromochloromethane	1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	U
74-71-8	Dichlorodifluoromethane	1.0	U
75-34-3	1,1-Dichloroethane	1.0	U
107-06-2	1,2-Dichloroethane	1.0	U
75-35-4	1,1-Dichloroethene	1.0	U
156-59-4	cis-1,2-Dichloroethene	1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	U
78-87-5	1,2-Dichloropropane	1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	U
100-41-4	Ethyl Benzene	1.0	U
1634-04-4	Methyl tert butyl ether	1.0	U
75-09-2	Methylene chloride (Dichloromethane)	1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	U
127-18-4	Tetrachloroethene	1.0	U
108-88-3	Toluene	1.0	U
71-55-6	1,1,1-Trichloroethane	1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	U
79-01-6	Trichloroethene	1.0	U
75-69-4	Trichlorofluoromethane	1.0	U
75-01-4	Vinyl chloride	1.0	U
108-38-3/106-42-3	m- and p-Xylene	2.0	U
95-47-6	o-Xylene	1.0	U
SURROGATE-Fluorobenzene (QC Limits - 61 to 133%)			108 % Rec.

CASE NARRATIVE
GC VOLATILE SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: ABB Whiting UST #47
CASE NO. : N/A CONTRACT NO.: N/A
LAB NO. : GN-90069-B01-B06 SDG NO.: GN-90069

I. RECEIPT

A. DATE: JULY 19, 1993

B. SAMPLE INFORMATION

<u>LAB</u> <u>SAMPLE ID</u>	<u>CLIENT</u> <u>SAMPLE ID</u>	<u>SAMPLE</u> <u>MATRIX</u>	<u>DATE</u> <u>SAMPLED</u>	<u>EXTRACTION</u> <u>DATE</u>	<u>ANALYSIS</u> <u>DATE</u>
90069B01	WHF1466DU	WATER	07/17/93	07/21/93	07/23/93
90069B02	WHF810000	WATER	07/17/93	07/21/93	07/23/93
90069B03	WHF146610	WATER	07/17/93	07/21/93	07/23/93
90069B04	WHF146616	WATER	07/17/93	07/21/93	07/23/93
90069B05	WHF305401	WATER	07/17/93	07/21/93	07/23/93
90069B06	WHF304502	WATER	07/17/93	07/21/93	07/23/93
BKG21EDB	VBLK001	WATER	N/A	07/21/93	07/23/93

C. Documentation

Exceptions: No exceptions were encountered.

000023

II. EXTRACTION

- A. Holding Times: Not applicable.
- B. Extraction
Exceptions: Not applicable.

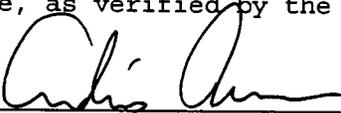
III. ANALYSIS

- A. Holding times: All holding times were met.
- B. Analytical
Exceptions: There were no analytical exceptions.

IV. QUALITY CONTROL

- A. Method Blank: All blanks met acceptable QC criteria.
- B. Surrogate
Recoveries: All samples met acceptable QC criteria.
- C. Matrix Spike
Results: All samples met acceptable QC criteria.

- V. I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, except for the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.



Andrés A. Romeu, Ph.D.
Manager, Organics Division

8/4/93

Date

WHF1466DU

REPORT OF ANALYTICAL RESULTS
EDB

Date collected:	7/17/93	Sample Group:	GN-90069
Date extracted:	7/21/93	Lab Sample ID:	GN-90069B01
Date analyzed:	7/23/93	Lab file 1 ID:	G23E008
Matrix:	WATER	Lab file 2 ID:	G23F008
Method:	504M	Dilution Factor:	1.0000
% Moisture:	100	Reporting units:	ug/L

CAS NUMBER	COMPOUND NAME	REPORTING LIMIT	RESULT
106-93-4	1,2-Dibromoethane	0.02	U
	SURROGATE-1,1,2-Trichloroethane (QC Limits - 46 to 105%)		101 % Rec.

WHF810000

REPORT OF ANALYTICAL RESULTS
EDB

Date collected:	7/17/93	Sample Group:	GN-90069
Date extracted:	7/21/93	Lab Sample ID:	GN-90069802
Date analyzed:	7/23/93	Lab file 1 ID:	G23E009
Matrix:	WATER	Lab file 2 ID:	G23F009
Method:	504M	Dilution Factor:	1.0000
% Moisture:	100	Reporting units:	ug/L

CAS NUMBER	COMPOUND NAME	REPORTING LIMIT	RESULT
106-93-4	1,2-Dibromoethane	0.02	U
	SURROGATE-1,1,2-Trichloroethane (QC Limits - 46 to 105%)		62 % Rec.

WHF146610

REPORT OF ANALYTICAL RESULTS
EDB

Date collected:	7/17/93	Sample Group:	GN-90069
Date extracted:	7/21/93	Lab Sample ID:	GN-90069B03
Date analyzed:	7/23/93	Lab file 1 ID:	G23E010
Matrix:	WATER	Lab file 2 ID:	G23F010
Method:	504M	Dilution Factor:	1.0000
% Moisture:	100	Reporting units:	ug/L

CAS NUMBER	COMPOUND NAME	REPORTING LIMIT	RESULT
106-93-4	1,2-Dibromoethane	0.02	U
	SURROGATE-1,1,2-Trichloroethane (QC Limits - 46 to 105%)		63 % Rec.

WHF146616

REPORT OF ANALYTICAL RESULTS
EDB

Date collected:	7/17/93	Sample Group:	GN-90069
Date extracted:	7/21/93	Lab Sample ID:	GN-90069B04
Date analyzed:	7/23/93	Lab file 1 ID:	G23E014
Matrix:	WATER	Lab file 2 ID:	G23F014
Method:	504M	Dilution Factor:	1.0000
% Moisture:	100	Reporting units:	ug/L

CAS NUMBER	COMPOUND NAME	REPORTING LIMIT	RESULT
106-93-4	1,2-Dibromoethane	0.02	U
	SURROGATE-1,1,2-Trichloroethane (QC Limits - 46 to 105%)		60 % Rec.

WHF305401

REPORT OF ANALYTICAL RESULTS
EDB

Date collected:	7/17/93	Sample Group:	GN-90069
Date extracted:	7/21/93	Lab Sample ID:	GN-90069805
Date analyzed:	7/23/93	Lab file 1 ID:	G23E015
Matrix:	WATER	Lab file 2 ID:	G23F015
Method:	504M	Dilution Factor:	1.0000
% Moisture:	100	Reporting units:	ug/L

CAS NUMBER	COMPOUND NAME	REPORTING LIMIT	RESULT
106-93-4	1,2-Dibromoethane	0.02	U
	SURROGATE-1,1,2-Trichloroethane (QC Limits - 46 to 105%)		68 % Rec.

WHF305402

REPORT OF ANALYTICAL RESULTS
EDB

Date collected:	7/17/93	Sample Group:	GN-90069
Date extracted:	7/21/93	Lab Sample ID:	GN-90069806
Date analyzed:	7/23/93	Lab file 1 ID:	G23E016
Matrix:	WATER	Lab file 2 ID:	G23F016
Method:	504M	Dilution Factor:	1.0000
% Moisture:	100	Reporting units:	ug/L

CAS NUMBER	COMPOUND NAME	REPORTING LIMIT	RESULT
106-93-4	1,2-Dibromoethane	0.02	U
	SURROGATE-1,1,2-Trichloroethane (QC Limits - 46 to 105%)		67 % Rec.

VBLK001

REPORT OF ANALYTICAL RESULTS
EDB

Date collected:	N/A	Sample Group:	GN-90069
Date extracted:	7/21/93	Lab Sample ID:	BKG21EDB
Date analyzed:	7/23/93	Lab file 1 ID:	G23E017
Matrix:	Water	Lab file 2 ID:	G23F017
Method:	504M	Dilution Factor:	1.0000
% Moisture:	100	Reporting units:	ug/L

CAS NUMBER	COMPOUND NAME	REPORTING LIMIT	RESULT
106-93-4	1,2-Dibromoethane	0.02	U
	SURROGATE-1,1,2-Trichloroethane (QC Limits - 46 to 105%)		67 % Rec.

CASE NARRATIVE
GC SEMI-VOLATILE SAMPLES

LABORATORY: CH2M HILL LABORATORIES CLIENT: NAS Whiting UST #47
CASE NO. : N/A CONTRACT NO.: N/A
LAB NO. : GN-90069-001-006 SDG NO.: GN-90069

I. RECEIPT

A. DATE: JULY 19, 1993

B. SAMPLE INFORMATION

<u>LAB</u> <u>SAMPLE ID</u>	<u>CLIENT</u> <u>SAMPLE ID</u>	<u>SAMPLE</u> <u>MATRIX</u>	<u>DATE</u> <u>SAMPLED</u>	<u>EXTRACTION</u> <u>DATE</u>	<u>ANALYSIS</u> <u>DATE</u>
90069001	WHF1466DU	WATER	07/17/93	07/23/93	07/27/93
90069002	WHF810000	WATER	07/17/93	07/23/93	07/27/93
90069003	WHF146610	WATER	07/17/93	07/23/93	07/27/93
90069004	WHF146616	WATER	07/17/93	07/23/93	07/27/93
90069005	WHF305401	WATER	07/17/93	07/23/93	07/27/93
90069006	WHF304502	WATER	07/17/93	07/23/93	07/27/93
SFBKG23PNA	SVBK001	WATER	N/A	07/23/93	07/27/93

C. Documentation

Exceptions: No exceptions were encountered.

000032

II. EXTRACTION

- A. Holding Times: All holding times were met.
- B. Extraction
Exceptions: There were no extraction exceptions.

III. ANALYSIS

- A. Holding times: All holding times were met.
- B. Analytical
Exceptions: There were no analytical exceptions. None of the samples required clean-up to remove interferences.

IV. QUALITY CONTROL

- A. Method Blank: All blanks met acceptable QC criteria.
- B. Surrogate
Recoveries: All samples met acceptable QC criteria.
- C. Matrix Spike
Results: All samples met acceptable QC criteria.

- V. I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, except for the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.



Andrés A. Romeu, Ph.D.
Manager, Organics Division

8/4/93

Date

REPORT OF ANALYTICAL RESULTS
POLYNUCLEAR AROMATIC HYDROCARBONS

Date collected: 7/17/93

Sample Group: GN-90069

Date extracted: 7/23/93

Lab Sample ID: 90069001

Date analyzed: 7/27/93

Lab file 1 ID: G26J013

Matrix: WATER

Lab file 2 ID: N/A

Method: 610

Dilution Factor: 1.0

% Moisture: 100

Reporting Units: ug/L

CAS NUMBER	COMPOUND NAME	REPORTING LIMIT	RESULT
90-12-0	1-Methylnaphthalene	2.0	U
91-57-6	2-Methylnaphthalene	2.0	U
83-32-9	Acenaphthene	2.0	U
208-96-8	Acenaphthylene	2.0	U
120-12-7	Anthracene	2.0	U
56-55-3	Benzo(a)anthracene	2.0	U
50-32-8	Benzo(a)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	2.0	U
205-99-2	Benzo(b)fluoranthene	2.0	U
191-24-2	Benzo(ghi)perylene	2.0	U
207-08-9	Benzo(k)fluoranthene	2.0	U
218-01-9	Chrysene	2.0	U
206-44-0	Fluoranthene	2.0	U
86-73-7	Fluorene	2.0	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
91-20-3	Naphthalene	2.0	U
85-01-8	Phenanthrene	2.0	U
129-00-0	Pyrene	2.0	U
SURROGATE D ₁₄ -p-Terphenyl (QC Limits - 24 to 100%)			71 % Rec.

REPORT OF ANALYTICAL RESULTS
POLYNUCLEAR AROMATIC HYDROCARBONS

Date collected: 7/17/93

Sample Group: GN-90069

Date extracted: 7/23/93

Lab Sample ID: 90069002

Date analyzed: 7/27/93

Lab file 1 ID: G26J014

Matrix: WATER

Lab file 2 ID: N/A

Method: 610

Dilution Factor: 1.0

% Moisture: 100

Reporting Units: ug/L

CAS NUMBER	COMPOUND NAME	REPORTING LIMIT	RESULT
90-12-0	1-Methylnaphthalene	2.0	U
91-57-6	2-Methylnaphthalene	2.0	U
83-32-9	Acenaphthene	2.0	U
208-96-8	Acenaphthylene	2.0	U
120-12-7	Anthracene	2.0	U
56-55-3	Benzo(a)anthracene	2.0	U
50-32-8	Benzo(a)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	2.0	U
205-99-2	Benzo(b)fluoranthene	2.0	U
191-24-2	Benzo(ghi)perylene	2.0	U
207-08-9	Benzo(k)fluoranthene	2.0	U
218-01-9	Chrysene	2.0	U
206-44-0	Fluoranthene	2.0	U
86-73-7	Fluorene	2.0	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
91-20-3	Naphthalene	2.0	U
85-01-8	Phenanthrene	2.0	U
129-00-0	Pyrene	2.0	U
SURROGATE D ₁₄ -p-Terphenyl (QC Limits - 24 to 100%)			60 % Rec.

REPORT OF ANALYTICAL RESULTS
POLYNUCLEAR AROMATIC HYDROCARBONS

Date collected: 7/17/93	Sample Group: GN-90069
Date extracted: 7/23/93	Lab Sample ID: 90069004
Date analyzed: 7/27/93	Lab file 1 ID: G26J018
Matrix: WATER	Lab file 2 ID: N/A
Method: 610	Dilution Factor: 1.0
% Moisture: 100	Reporting Units: ug/L

CAS NUMBER	COMPOUND NAME	REPORTING LIMIT	RESULT
90-12-0	1-Methylnaphthalene	2.0	U
91-57-6	2-Methylnaphthalene	2.0	U
83-32-9	Acenaphthene	2.0	U
208-96-8	Acenaphthylene	2.0	U
120-12-7	Anthracene	2.0	U
56-55-3	Benzo(a)anthracene	2.0	U
50-32-8	Benzo(a)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	2.0	U
205-99-2	Benzo(b)fluoranthene	2.0	U
191-24-2	Benzo(ghi)perylene	2.0	U
207-08-9	Benzo(k)fluoranthene	2.0	U
218-01-9	Chrysene	2.0	U
206-44-0	Fluoranthene	2.0	U
86-73-7	Fluorene	2.0	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
91-20-3	Naphthalene	2.0	U
85-01-8	Phenanthrene	2.0	U
129-00-0	Pyrene	2.0	U
SURROGATE D ₁₄ -p-Terphenyl (QC Limits - 24 to 100%)			61 % Rec.

REPORT OF ANALYTICAL RESULTS
POLYNUCLEAR AROMATIC HYDROCARBONS

Date collected: 7/17/93	Sample Group: GN-90069
Date extracted: 7/23/93	Lab Sample ID: 90069003
Date analyzed: 7/27/93	Lab file 1 ID: G26J015
Matrix: WATER	Lab file 2 ID: N/A
Method: 610	Dilution Factor: 1.0
% Moisture: 100	Reporting Units: ug/L

CAS NUMBER	COMPOUND NAME	REPORTING LIMIT	RESULT
90-12-0	1-Methylnaphthalene	2.0	U
91-57-6	2-Methylnaphthalene	2.0	U
83-32-9	Acenaphthene	2.0	U
208-96-8	Acenaphthylene	2.0	U
120-12-7	Anthracene	2.0	U
56-55-3	Benzo(a)anthracene	2.0	U
50-32-8	Benzo(a)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	2.0	U
205-99-2	Benzo(b)fluoranthene	2.0	U
191-24-2	Benzo(ghi)perylene	2.0	U
207-08-9	Benzo(k)fluoranthene	2.0	U
218-01-9	Chrysene	2.0	U
206-44-0	Fluoranthene	2.0	U
86-73-7	Fluorene	2.0	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
91-20-3	Naphthalene	2.0	U
85-01-8	Phenanthrene	2.0	U
129-00-0	Pyrene	2.0	U
SURROGATE D ₁₄ -p-Terphenyl (QC Limits - 24 to 100%)			64 % Rec.

REPORT OF ANALYTICAL RESULTS
POLYNUCLEAR AROMATIC HYDROCARBONS

Date collected: 7/17/93	Sample Group: GN-90069
Date extracted: 7/23/93	Lab Sample ID: 90069005
Date analyzed: 7/27/93	Lab file 1 ID: G26J019
Matrix: WATER	Lab file 2 ID: N/A
Method: 610	Dilution Factor: 1.0
% Moisture: 100	Reporting Units: ug/L

CAS NUMBER	COMPOUND NAME	REPORTING LIMIT	RESULT
90-12-0	1-Methylnaphthalene	2.0	U
91-57-6	2-Methylnaphthalene	2.0	U
83-32-9	Acenaphthene	2.0	U
208-96-8	Acenaphthylene	2.0	U
120-12-7	Anthracene	2.0	U
56-55-3	Benzo(a)anthracene	2.0	U
50-32-8	Benzo(a)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	2.0	U
205-99-2	Benzo(b)fluoranthene	2.0	U
191-24-2	Benzo(ghi)perylene	2.0	U
207-08-9	Benzo(k)fluoranthene	2.0	U
218-01-9	Chrysene	2.0	U
206-44-0	Fluoranthene	2.0	U
86-73-7	Fluorene	2.0	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
91-20-3	Naphthalene	2.0	U
85-01-8	Phenanthrene	2.0	U
129-00-0	Pyrene	2.0	U
SURROGATE D ₁₄ -p-Terphenyl (QC Limits - 24 to 100%)			57 % Rec.

REPORT OF ANALYTICAL RESULTS
POLYNUCLEAR AROMATIC HYDROCARBONS

Date collected: 7/17/93	Sample Group: GN-90069
Date extracted: 7/23/93	Lab Sample ID: 90069006
Date analyzed: 7/27/93	Lab file 1 ID: G26J020
Matrix: WATER	Lab file 2 ID: N/A
Method: 610	Dilution Factor: 1.0
% Moisture: 100	Reporting Units: ug/L

CAS NUMBER	COMPOUND NAME	REPORTING LIMIT	RESULT
90-12-0	1-Methylnaphthalene	2.0	U
91-57-6	2-Methylnaphthalene	2.0	U
83-32-9	Acenaphthene	2.0	U
208-96-8	Acenaphthylene	2.0	U
120-12-7	Anthracene	2.0	U
56-55-3	Benzo(a)anthracene	2.0	U
50-32-8	Benzo(a)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	2.0	U
205-99-2	Benzo(b)fluoranthene	2.0	U
191-24-2	Benzo(ghi)perylene	2.0	U
207-08-9	Benzo(k)fluoranthene	2.0	U
218-01-9	Chrysene	2.0	U
206-44-0	Fluoranthene	2.0	U
86-73-7	Fluorene	2.0	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
91-20-3	Naphthalene	2.0	U
85-01-8	Phenanthrene	2.0	U
129-00-0	Pyrene	2.0	U
SURROGATE D ₁₄ -p-Terphenyl (QC Limits - 24 to 100%)			56 % Rec.

REPORT OF ANALYTICAL RESULTS
POLYNUCLEAR AROMATIC HYDROCARBONS

Date collected: N/A
Date extracted: 7/23/93
Date analyzed: 7/27/93
Matrix: WATER
Method: 610
% Moisture: 100

Sample Group: GN-90069
Lab Sample ID: SFBKG23PNA
Lab file 1 ID: G26J005
Lab file 2 ID: N/A
Dilution Factor: 1.0
Reporting Units: ug/L

CAS NUMBER	COMPOUND NAME	REPORTING LIMIT	RESULT
90-12-0	1-Methylnaphthalene	2.0	U
91-57-6	2-Methylnaphthalene	2.0	U
83-32-9	Acenaphthene	2.0	U
208-96-8	Acenaphthylene	2.0	U
120-12-7	Anthracene	2.0	U
56-55-3	Benzo(a)anthracene	2.0	U
50-32-8	Benzo(a)pyrene	2.0	U
53-70-3	Dibenzo(a,h)anthracene	2.0	U
205-99-2	Benzo(b)fluoranthene	2.0	U
191-24-2	Benzo(ghi)perylene	2.0	U
207-08-9	Benzo(k)fluoranthene	2.0	U
218-01-9	Chrysene	2.0	U
206-44-0	Fluoranthene	2.0	U
86-73-7	Fluorene	2.0	U
193-39-5	Indeno(1,2,3-cd)pyrene	2.0	U
91-20-3	Naphthalene	2.0	U
85-01-8	Phenanthrene	2.0	U
129-00-0	Pyrene	2.0	U
SURROGATE D ₁₄ -P-Terphenyl (QC Limits - 24 to 100%)			68 % Rec.



QUALITY ANALYTICAL LABORATORIES

CHAIN OF CUSTODY RECORD AND AGREEMENT TO PERFORM SERVICES

CH2M HILL Project #		Purchase Order #		<div style="text-align: center;">SHADED AREA - FOR LAB USE ONLY</div>										Lab 1 #		Lab 2 #							
Project Name		Company Name/CH2M HILL Office												Lab 1 #		Lab 2 #							
Project Manager & Phone #		Report Copy to:		<div style="text-align: center;">ANALYSES REQUESTED</div>										Project #		Kit Request #							
Requested Completion Date:		Sampling Requirements												Sample Disposal:		No. of Samples:		Page of					
Date		Type		Matrix		CLIENT SAMPLE ID (9 CHARACTERS)										COC Rev		Login		LIMS Ver		Ack Gen	
Date		Time		Type		Matrix		CLIENT SAMPLE ID (9 CHARACTERS)										REMARKS		LAB 1 ID		LAB 2 ID	
07-17-93		—		X X		W H F		1 4 6 6 D U 8										3 2 1 1 1		001			
07-17-93		1045		X X		W H F		B 1 0 0 0 8										3 2 1 1 1		002			
07-17-93		1100		X X		W H F		1 4 6 6 1 0 8										3 2 1 1 1		003			
07-17-93		1200		X X		N H F		1 4 6 6 1 6 8										3 2 1 1 1		004		High silt/clay content.	
07-17-93		1330		X X		W H F		1 4 6															
07-17-93		1330		X X		W H F		3 0 5 4 0 1 8										3 2 1 1 1		005			
07-17-93		1420		X X		W H F		3 0 5 4 0 2 8										3 2 1 1 1		006			
07-17-93		—				T R A V E L		B L A 3										3		007			
Shipped By		Date/Time		Relinquished By		Date/Time		Relinquished By		Date/Time		Relinquished By		Date/Time		HAZWRAP/NESSA:							
NICOLE PAGANO		07-17-93		NICOLE PAGANO		07-17-93		S. WALLACE		7/19/93		S. WALLACE		7/19/93		Y (N)							
Received By		Date/Time		Relinquished By		Date/Time		Relinquished By		Date/Time		Relinquished By		Date/Time		QC Level:							
S. WALLACE		7/19/93		S. WALLACE		7/19/93		S. WALLACE		7/19/93		S. WALLACE		7/19/93		① 2 3 Other:							
Received By		Date/Time		Shipped Via		Shipping #		Shipped Via		Shipping #		Shipped Via		Shipping #		COC Rec							
				UPS BUS Fed-Ex Hand Other				UPS BUS Fed-Ex Hand Other				UPS BUS Fed-Ex Hand Other				Ana Reg							
Work Authorized By		Remarks		Work Authorized By		Remarks		Work Authorized By		Remarks		Work Authorized By		Remarks		Cust Seal							
		Any questions contact Nicole Pagano at 904-942-7454-308														ICE							
																TEMP 49C							
																Ph 22.0							

OF CONTAINERS

601/602 w/ HCl

504

610

4B.1 Preserved w/ H₂SO₄

239.2 Preserved w/ HNO₃

Lab 1 # 90069

Lab 2 #

Kit Request #

Project #

No. of Samples: 7

Page 1 of 1

COC Rev

Login: [Signature]

LIMS Ver

Ack Gen

REMARKS

LAB 1 ID

LAB 2 ID

001

002

003

004

005

006

007

000041



QUALITY ANALYTICAL LABORATORIES

CHAIN OF CUSTODY ...CORD AND AGREEMENT TO PERFORM SERVICES

CH2M HILL Project #		Purchase Order #		LAB TEST CODES										SHADED AREA - FOR LAB USE ONLY								
Project Name NAS Whiting Field Site 3054		Company Name/CH2M HILL Office ABB-ES		# OF CONTAINERS 601/602 w/ HCl 504 610 4B.1 Preserved w/ H ₂ SO ₄ 239.2 Preserved w/ HNO ₃										Lab 1 # 90069	Lab 2 #							
Project Manager & Phone # Mr. John Kaiser Ms. (904) 942-7454-210 Dr. (904) 942-7454-210		Report Copy to: John Kaiser																				
Requested Completion Date:		Sampling Requirements SDWA NPDES RCRA OTHER <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> FAC 17-170				Sample Disposal: Dispose Return <input checked="" type="checkbox"/> <input type="checkbox"/>				Project # 23527-XY										No. of Samples	Page	of
Sampling		Type	Matrix	CLIENT SAMPLE ID (9 CHARACTERS)										COC Rev	Log # 7/22/93	LIMS Ver	Ack Gen					
Date	Time	COMP	GRAB	WATER	SOIL											07K53786		LAB 1 ID	LAB 2 ID			
07-17-93		X	X	W	H	F	1	4	6	6	D	U	8	3	2	1	1	001				
07-17-93	1045	X	X	W	H	F	8	1	0	0	0	0	8	3	2	1	1	002				
07-17-93	1100	X	X	W	H	F	1	4	6	6	1	0	8	3	2	1	1	003				
07-17-93	1200	X	X	W	H	F	1	4	6	6	1	6	8	3	2	1	1	004				
07-17-93	1330	X	X	W	H	F	1	4	6													
07-17-93	1330	X	X	W	H	F	3	0	5	4	0	1	8	3	2	1	1	005				
07-17-93	1420	X	X	W	H	F	3	0	5	4	0	2	8	3	2	1	1	006				
07-17-93				T	R	A	V	E	L	B	L	A	3	3				007				

FOR LAB USE ONLY

LAB # 90069

PROJ # LGK00999.99

ACK 7/21/93 VERIFIED 7/20/93

HAZWRAP/NESSA Y

QC LEVEL 2 3

COC 7 ICE 7

ANA REQ 7 TEMP 4°C

CUST SEAL 4 PH

SAMPLE COND.

High silt/clay content.

Received By: Nicole Pagano (Signature)	Date/Time: 07-17-93 1545	Relinquished By: Nicole Pagano (Signature)	Date/Time: 07-17-93 1600	HAZWRAP/NESSA: Y <input checked="" type="checkbox"/>
Received By: S. Wallace (Signature)	Date/Time: 7/19/93	Relinquished By: S. Wallace (Signature)	Date/Time: 7/19/93	QC Level: ① 2 3 Other: ---
Received By: (Signature)	Date/Time: 7/20/93 0800	Shipped Via: UPS	Shipping #:	ANA REQ 7 TEMP 4°C
Work Authorized By: (Signature)	Remarks: Any questions contact Nicole Pagano at 904-942-7454-308	Other: Fed-Ex Hand		Cust Seal 4 Ph 210