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NAS JACKSONVILLE
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GROUNDWATER MONITORING ACTIVITY REPORT KEMEN TEST CELL NAS
JACKSONVILLE FL
10/1/1995
ABB ENVIRONMENTAL

FINAL DRAFT

**GROUNDWATER MONITORING ACTIVITY REPORT
KEMEN TEST CELL**

**NAVAL AIR STATION JACKSONVILLE
JACKSONVILLE, FLORIDA**

Unit Identification Code (UIC): N00207

Contract No. N62476-89-0-0317/074

Prepared by:

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

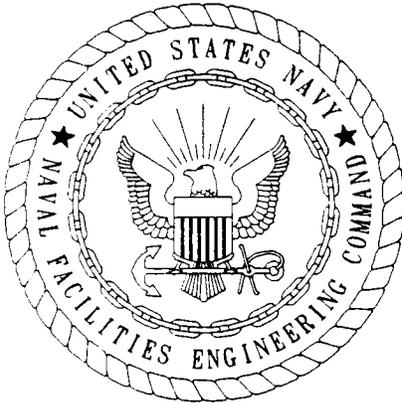
Prepared for:

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

Bryan Kizer, Code 1842, Engineer-in-Charge

October 1995

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CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

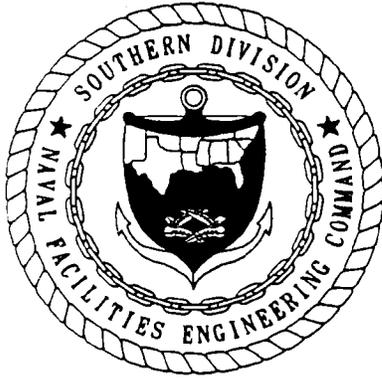
The Contractor, ABB Environmental Services, Inc., hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0317/074 are complete and accurate and comply with all requirements of this contract.

DATE: October 9, 1995

NAME AND TITLE OF CERTIFYING OFFICIAL: Philip Geogariou
Task Order Manager

NAME AND TITLE OF CERTIFYING OFFICIAL: Jesse Tremaine
Project Technical Lead

(DFAR 252.227-7036)



FOREWORD

Subtitle I of the Hazardous and Solid Waste Amendments (HSWA) of 1984 to the Solid Waste Disposal Act (SWDA) of 1965 requires that the U.S. Environmental Protection Agency (USEPA) promulgate underground storage tank (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 (40 CFR 280).

The Navy's UST program policy is to comply with all Federal, State, and local regulations pertaining to USTs. This report was prepared to satisfy the requirements of Chapter 62-770, Florida Administrative Code (FAC), regulations pertaining to petroleum contamination. All evaluations were in accordance with that regulation and the Florida Department of Environmental Protection (FDEP) *No Further Action and Monitoring Only Guidelines*. This document initiates reporting requirements for quarterly monitoring as stated in Chapter 62-770, FAC. Subsequent quarterly monitoring reports will be included as an addendum to this report.

Following completion of groundwater monitoring, a Site Rehabilitation Completion Report will be prepared and submitted to FDEP for approval.

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EXECUTIVE SUMMARY

Groundwater sampling will be performed quarterly to support a Monitoring Only classification for the 25,000-gallon JP-5 underground storage tank (UST) at Building 873, the Kemen Test Cell, at Naval Air Station (NAS) Jacksonville. Groundwater monitoring will be performed on a quarterly basis for one year. This report presents the results of the first quarter's sampling event. Subsequent monitoring reports will be provided as addenda to this report.

Analyses of groundwater samples collected on July 13, 1995, indicated contaminant concentrations in one sample exceeded the target concentration levels specified in Chapter 62-770.730(5), FAC. Because the elevated values may be the result of the recent remedial excavation, final evaluation of the site conditions and the effectiveness of the remedial action will be determined following the required one-year monitoring period.

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Kemen Test Cell
Naval Air Station Jacksonville
Jacksonville, Florida

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- Appendix C: Quarterly Monitoring
 - Addendum 1: Second Quarter Monitoring Event
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Kemen Test Cell
Naval Air Station Jacksonville
Jacksonville, Florida

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1.0 INTRODUCTION

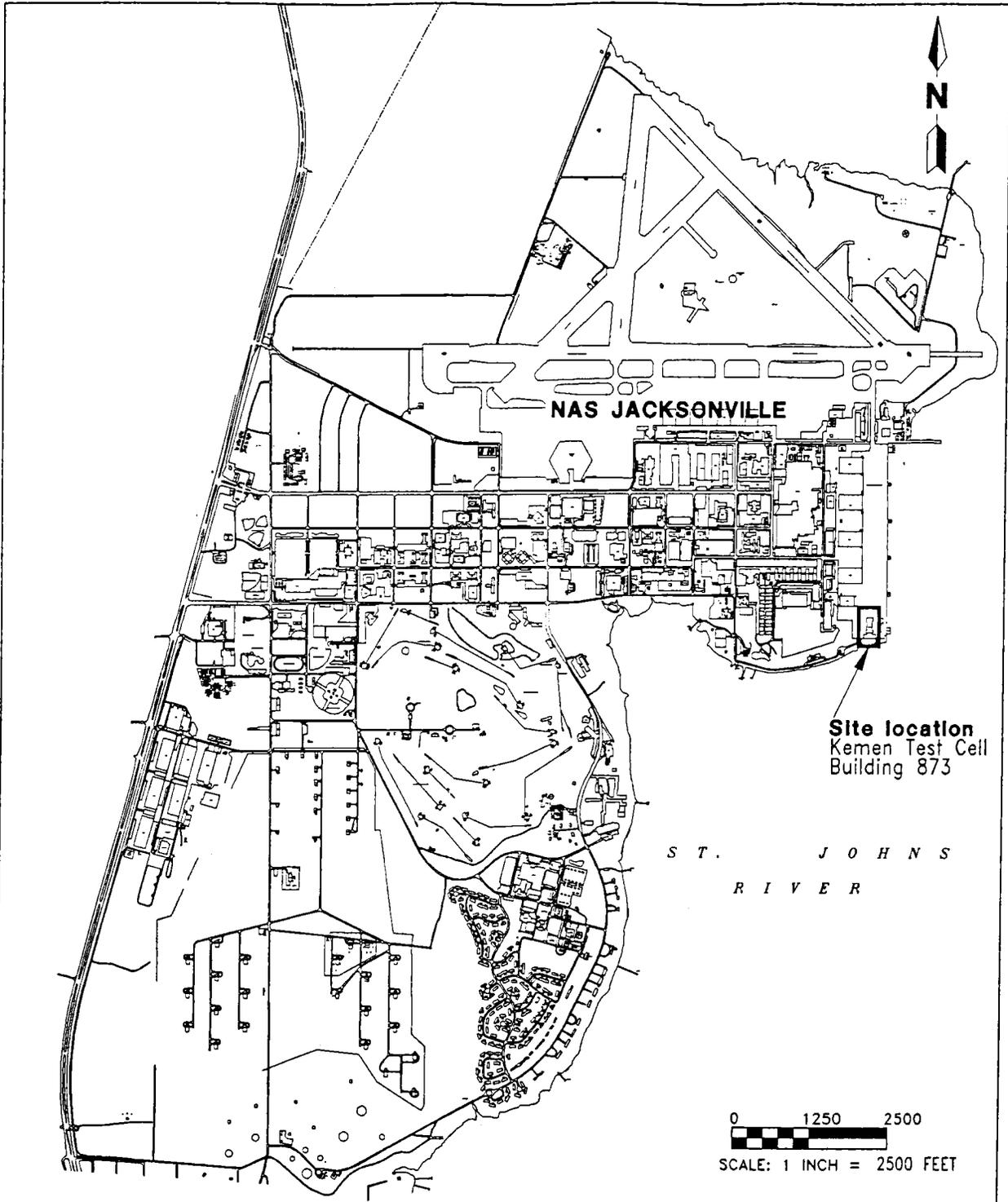
1.1 PURPOSE. The purpose of this document is to fulfill the remedial action groundwater monitoring reporting requirements at the Kemen Test Cell as stated in Chapter 62-770, Florida Administrative Code (FAC). Groundwater monitoring will occur on a quarterly basis for 1 year. This document presents the results of the first quarter's monitoring event. The results of subsequent quarterly monitoring events will be submitted as addenda to this report.

1.2 BACKGROUND. The Kemen Test Cell, Building 873, is located within operable unit (OU) 3 at the Naval Air Station (NAS) Jacksonville. Its location is depicted on Figures 1-1 and 1-2. The building functions as a jet engine test cell. A 25,000-gallon underground storage tank (UST) containing JP-5 fuel is maintained at the test cell to support its testing activities.

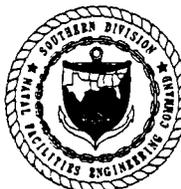
In April 1992, the U.S. Army Corps of Engineers, Savannah District, prepared the Contamination Assessment Report (CAR) for the Kemen Test Cell. This report indicated both soil and groundwater had been impacted by petroleum product, particularly in the vicinity of the UST. As a result of this assessment, Rust Environmental and Infrastructure prepared a Remedial Action Plan (RAP) to address the remedial actions needed to meet the "Monitoring Only" requirements as outlined in Chapter 62-770, FAC. The objectives were to reduce the petroleum contamination in the vadose zone soils, to reduce a source of groundwater contamination, and to reduce current and future exposure to soil (Bechtel Environmental, Inc., 1994). To achieve these objectives, the remedial action outlined in the RAP required excavation, thermal treatment, and offsite disposal of the excessively contaminated soil (soil with organic vapor analyzer [OVA] readings greater than 50 parts per million [ppm]). The two monitoring wells impacted by the soil excavation, JAX873-1-1 and JAX873-1-2, were to be abandoned, and replacement wells were to be installed (Rust Environmental and Infrastructure, 1993).

Bechtel Environmental, Inc., prepared a workplan to achieve the remedial action objectives set forth in the RAP. Implementation of the workplan occurred in April 1995. As stated in the workplan, the excessively contaminated soil was excavated and treated offsite by low-temperature thermal desorption. The excavation was backfilled with clean, crushed stone. As specified in the RAP, two monitoring wells, JAX873-1-1R and JAX873-1-2R, were installed to replace the monitoring wells removed during excavation.

Following removal of the contaminated soils, ABB Environmental Services, Inc. (ABB-ES), initiated quarterly groundwater monitoring in July 1995 in accordance with the RAP. The first quarter's results are presented in this report. Groundwater monitoring will continue on a quarterly basis for 1 year (Appendix C).



**FIGURE 1-1
SITE LOCATION**



**KEMEN TEST CELL
GROUNDWATER MONITORING
ACTIVITY, 1ST QUARTER**

**NAS JACKSONVILLE
JACKSONVILLE, FLORIDA**

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GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
CAR	Contamination Assessment Report
CFR	Code of Federal Regulations
COC	chain of custody
CompQAP	Comprehensive Quality Assurance Plan
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
HSWA	Hazardous and Solid Waste Amendment
IDW	investigation-derived waste
$\mu\text{g}/\ell$	microgram per liter
NAS	Naval Air Station
OU	Operable Unit
OVA	Organic Vapor Analyzer
ppm	parts per million
QAP	Quality Assurance Plan
RAP	Remedial Action Plan
SWDA	Solid Waste Disposal Act
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank

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1.0 INTRODUCTION

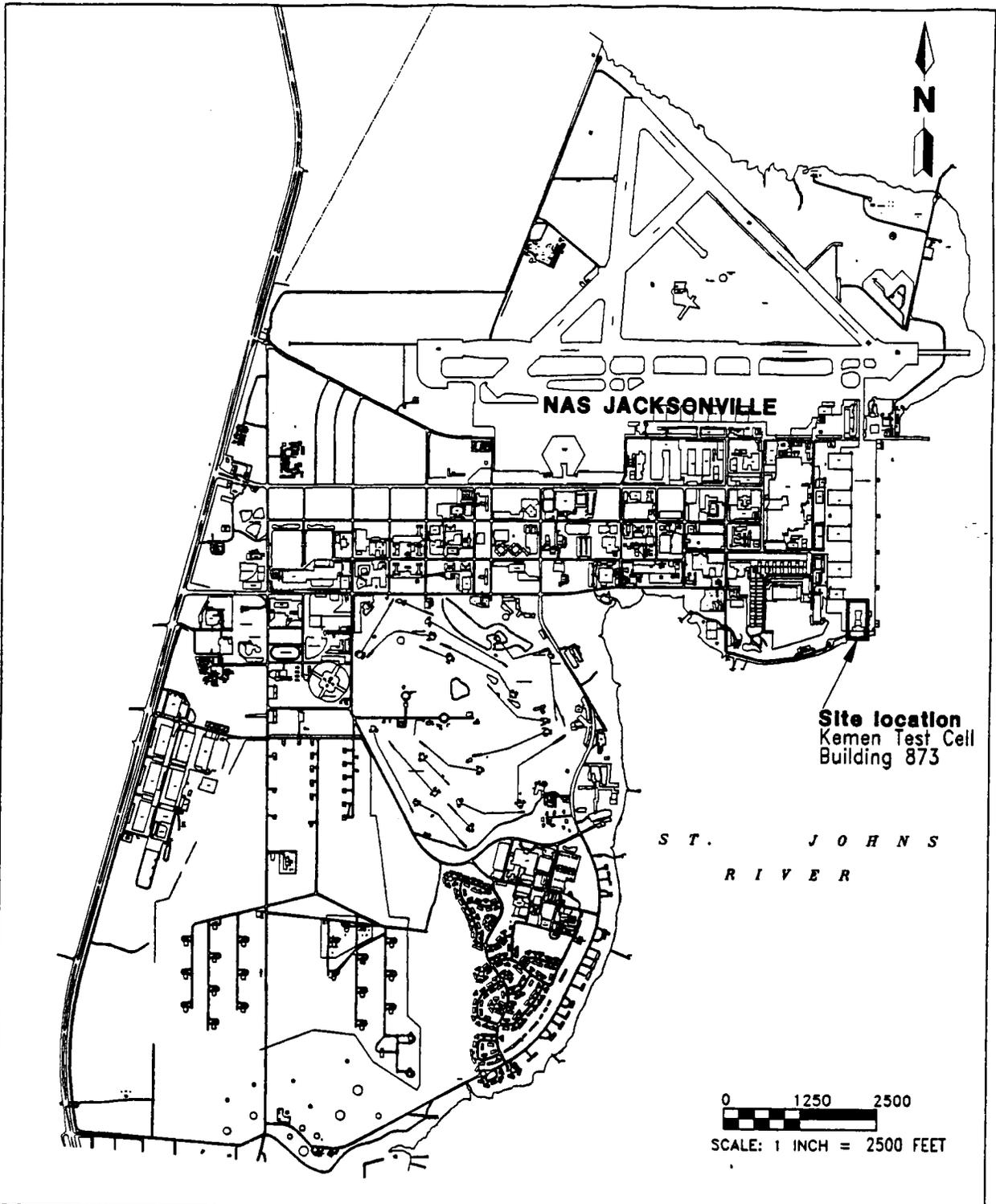
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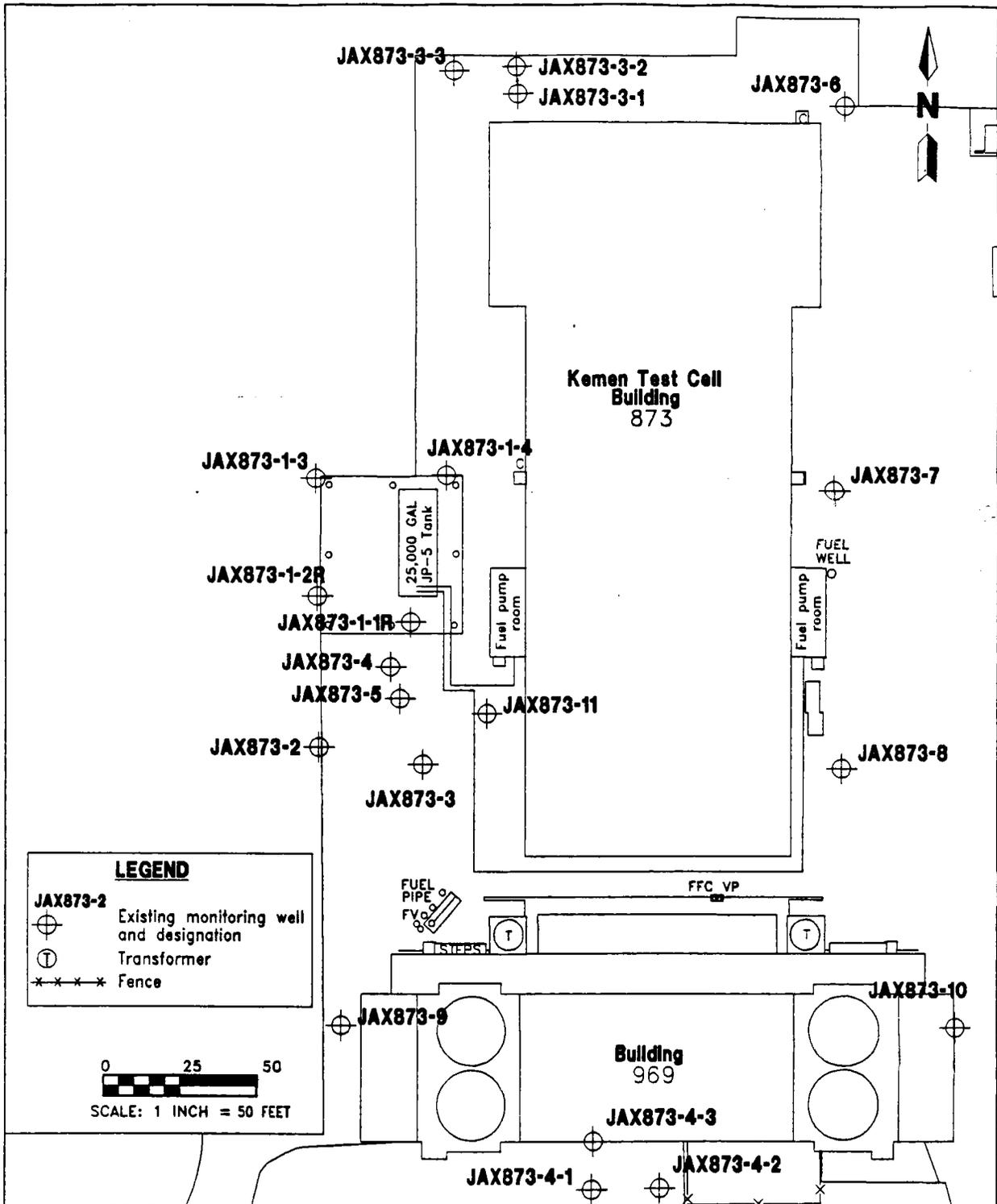
**FIGURE 1-1
SITE LOCATION**



**KEMEN TEST CELL
GROUNDWATER MONITORING
ACTIVITY, 1ST QUARTER**

**NAS JACKSONVILLE
JACKSONVILLE, FLORIDA**

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**FIGURE 1-2
SITE VICINITY MAP**



**KEMEN TEST CELL
GROUNDWATER
MONITORING ACTIVITY,
1ST QUARTER
NAS JACKSONVILLE
JACKSONVILLE, FLORIDA**

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2.0 FIELD ACTIVITY

2.1 GROUNDWATER SAMPLING. The groundwater samples were collected in accordance with the ABB-ES, Florida Department of Environmental Protection (FDEP)-approved, Comprehensive Quality Assurance Plan (CompQAP). The monitoring wells were purged with a Teflon™ bailer. Purging continued until water quality field parameters (specific conductance, temperature, and pH) stabilized. Copies of the field data records are presented in Appendix A. Groundwater samples were then collected using an extruded Teflon™ bailer. Each sample was placed into its appropriate container and preserved as specified by the required sample analysis and as outlined in the ABB-ES, FDEP-approved, CompQAP. All samples were immediately placed in a cooler containing ice. Samples were then shipped to Quality Analytical Laboratories, Inc., Alachua, Florida, via courier within 24 hours after collection. A chain-of-custody form (COC) was maintained for the groundwater samples collected during the investigation. The analytical data and COC are presented in Appendix B.

2.2 INVESTIGATIVE DERIVED WASTE MANAGEMENT (IDW). The IDW, including purge water, was containerized in a 55-gallon drum at Building 873 and will be properly disposed of by the Navy in accordance with the site-specific Quality Assurance Plan (QAP).

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3.0 ANALYTICAL RESULTS AND CONCLUSIONS

3.1 LABORATORY ANALYSIS. All groundwater samples collected during this activity were analyzed for kerosene analytical group parameters specified in Chapter 62-770.600(8). This analytical group consists of the following:

- volatile organic halocarbons (U.S. Environmental Protection Agency [USEPA] Method 601),
- total volatile organic aromatics (USEPA Method 602),
- polynuclear aromatic hydrocarbons (USEPA Method 610),
- total recoverable petroleum hydrocarbons (USEPA Methods 418.1),
- 1,2-dibromomethane (USEPA Method 601), and
- lead (USEPA Method 239.2).

These USEPA analytical methods used are described in detail in USEPA Solid Waste (SW)-846 (USEPA, 1986).

3.2 DATA EVALUATION AND CONCLUSIONS. A baseline evaluation of groundwater contamination was performed by Rust Environmental and Infrastructure in January 1992 as part of the preparation of the RAP. A summary of the analytes detected during the January 1992 and July 1995 sampling events are presented in table 3-1.

Groundwater contaminant concentrations were evaluated against the baseline values and the G-II groundwater target levels for the kerosene analytical group specified in Chapter 62-770.730(5). Total naphthalene concentrations were detected at levels below the 100 micrograms per liter ($\mu\text{g}/\ell$) target level in the samples collected from JAX873-11 (69.8 $\mu\text{g}/\ell$), JAX873-1-3 (7.5 $\mu\text{g}/\ell$), and JAX873-1-2R (11 $\mu\text{g}/\ell$). Total naphthalene concentrations exceeded the target concentration level in the sample collected from the replacement well JAX873-1-1R (376 $\mu\text{g}/\ell$). All other analyte concentrations were below reporting levels in the four samples.

The available data from the first quarter's sampling event indicated total naphthalene concentrations were at levels in excess of the target cleanup concentration. These elevated concentrations of naphthalene may be a result of contamination liberation and physical movement of the soil during the remedial excavation. A complete evaluation of site conditions and the effectiveness of the remedial action will be made upon completion of the one-year monitoring period.

Table 3-1
Groundwater Analytes Detected in Reportable Quantities

Groundwater Monitoring Activity Report, First Quarter
Kemen Test Cell
Naval Air Station, Jacksonville, Florida

Parameter	Target Compound	JAX873-1-11		JAX873-1-3	JAX873-1-1			JAX873-1-1R	JAX873-1-2	JAX873-1-2R
		FEB '93	JULY '95	JULY '95	JAN '92	JUNE '92	NOV '93	JULY '95	JAN '92	JAN '95
Free Product, inches	NA	NP	NP	NP	3.5	0.19	NP	NP	NP	NP
Total Lead, mg/l	50	NA	bdl	bdl	NA	NA	0.093	bdl	0.029	bdl
Acenaphthene, µg/l	NA	bdl	bdl	bdl	NA	NA	bdl	bdl	14	bdl
Acenaphthylene, µg/l	NA	bdl	bdl	bdl	NA	NA	bdl	bdl	13	bdl
Fluoranthene, µg/l	NA	bdl	bdl	bdl	NA	NA	bdl	bdl	10	bdl
Fluorene, µg/l	NA	bdl	bdl	bdl	NA	NA	bdl	bdl	32	bdl
Phenanthrene + Anthracene, µg/l	NA	bdl	bdl	bdl	NA	NA	bdl	bdl	26	bdl
1-Methylnaphthalene, µg/l	NA	NA	43	5.1	NA	NA	130	99	70	5.5
2-Methylnaphthalene, µg/l	NA	NA	8.8	2.4	NA	NA	170	87	96	2.8
Naphthalene, µg/l	NA	bdl	18	bdl	NA	NA	170	190	NA	2.7
Total Naphthalene, µg/l	100	bdl	69.8	7.5	NA	NA	470	376	192	11

Notes: JAX873-1-1R = Replacement well for JAX873-1-1.
JAX873-1-2R = Replacement well for JAX873-1-2.

NA = not available.
NP = none present.
mg/l = milligrams per liter.
bdl = below detection limits.
µg/l = micrograms per liter.

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REFERENCES

Bechtel Environmental, Inc., 1994, Remediation Workplan for Potential Source of Contamination 2 and the Kemen Test Cell, Naval Air Station Jacksonville, Florida: prepared for Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), North Charleston, South Carolina, April.

Rust Environmental and Infrastructure, 1993, Remedial Action Plan, Building 873 -Kemen Test Cell, NAS Jacksonville, Florida: prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina, December.

USEPA, 1986, Test Methods for Evaluating Solid Waste, Physical and Chemical Methods, SW-846, 3rd Edition: November.

APPENDIX A
FIELD DATA RECORDS

JAX-883-11

FIELD DATA RECORD - GROUNDWATER

PROJECT: Vermont Test Cell

JOB NUMBER: _____

DATE: 7-13-95

LOCATION ID: Vermont Test Cell

LOCATION ACTIVITY: START 1400 END 1740

FIELD QC DATA: FIELD DUPLICATE COLLECTED DUP ID: _____

WATER LEVEL / WELL DATA

WELL DEPTH: 13.73 FT MEASURED HISTORICAL TOP OF WELL TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): _____ FT

PROTECTIVE CASING/WELL DIFF.: _____ FT

DEPTH TO WATER: 7.28 FT HISTORICAL WELL DEPTH: _____ FT

WELL DIA.: 2 INCH 4 INCH 6 INCH

WELL INTEGRITY: PROT. CASING SECURE CONCRETE COLLAR INTACT WELL LOCKED OTHER: _____

HEIGHT OF WATER COLUMN: 6.45 FT x 1.6 GAL/FT (2 IN) 0.65 GAL/FT (4 IN) 1.5 GAL/FT (6 IN) _____ GAL/FT (____ IN)

1.03 GAL/VOL 4 TOTAL GAL PURGED

AMBIENT AIR VOA: 0 PPM WELL MOUTH: 0

PURGE DATA

PURGE VOLUME	1 GAL	2 GAL	3 GAL	4 GAL	5 GAL
TEMP, DEG C	<u>77.9</u>	<u>78.2</u>	<u>78.1</u>	<u>78.2</u>	
pH, UNITS	<u>7.31</u>	<u>7.29</u>	<u>7.29</u>	<u>7.25</u>	
SPECIFIC CONDUCTIVITY (UMHOS/CM)					
<u>Turbidity, ntu</u>	<u>27.0</u>	<u>25.3</u>	<u>25.0</u>	<u>24.4</u>	

- SAMPLE OBSERVATIONS
- CLEAR
 - COLORED Very Lt. yellow
 - CLOUDY
 - TURBID
 - ODR
 - OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

- PERISTALTIC PUMP EQUIPMENT ID: TSC0 8
- SUBMERSIBLE PUMP CHECK # _____
- BATTLER 12" 1" _____
- PVC/SILICON TUBING
- TEFLON/SILICON TUBING
- AIR LIFT
- WATERMETER
- IN-LINE FILTER GED
- PRESS/VAC FILTER

- REC'D FLUIDS USED
- LIQUID-NOX
 - DEIONIZED WATER
 - HMOS/D.I. WATER
 - POTABLE WATER
 - TSP SOLUTION
 - NONE

- WATER LEVEL EQUIP. USED
- ELECTRIC CONO. PROBE
 - FLOAT ACTIVATED
 - CHECK INTERFACE PROBE
 - OTHER _____

NUMBER OF FILTERS USED: _____

ANALYTICAL PARAMETERS

METHOD NUMBER	FILTERED	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS			
<u>VOC</u>	<u>NO</u>	<u>HCl</u>	<u>3-40ml</u>	<input checked="" type="checkbox"/>	/	/	/	/
<u>EDB</u>	<u>↙</u>	<u>H2SO4</u>	<u>3-40ml</u>	<input checked="" type="checkbox"/>	/	/	/	/
<u>TPH</u>	<u>↘</u>	<u>amber</u>	<u>1c amber</u>	<input checked="" type="checkbox"/>	/	/	/	/
<u>PAH</u>		<u>HNO3</u>	<u>1c amber</u>	<input checked="" type="checkbox"/>	/	/	/	/
<u>Lead</u>			<u>1c plastic</u>	<input checked="" type="checkbox"/>	/	/	/	/

NOTES

SIGNATURE: [Signature] 7-13-95

RECEIVED BY: _____



JAX-873-1-3

FIELD DATA RECORD - GROUNDWATER

PROJECT: Kemen Test Cell JOB NUMBER: DATE: 7-13-95
 LOCATION ID: Kemen Test Cell LOCATION ACTIVITY: START 1440 END
 FIELD QC DATA: FIELD DUPLICATE COLLECTED DUP ID:

WATER LEVEL / WELL DATA

WELL DEPTH: 15.13 FT MEASURED HISTORICAL TOP OF WELL TOP OF CASING FT
 PROTECTIVE CASING STICK-UP (FROM GROUND) FT PROTECTIVE CASING/WELL DIFF. FT
 DEPTH TO WATER: 7.35 FT HISTORICAL WELL DEPTH FT WELL DIA.: 2 INCH 4 INCH 6 INCH
 WELL MATERIAL: PVC SS WELL INTEGRITY: PROT. CASING SECURE CONCRETE COLLAR INTACT WELL LOCKED OTHER:
 HEIGHT OF WATER COLUMN: 7.78 FT x 1.6 GAL/FT (2 IN) 1.65 GAL/FT (4 IN) 1.5 GAL/FT (6 IN) GAL/FT (IN)
 WELL MATERIAL: WELL MATERIAL: AMBIENT AIR VOA PPM
 TOTAL GAL PURGED: 4.5 WELL MOUTH PPM

PURGE DATA

1.5 gal on 7-13-95

PURGE VOLUME	1	2	3	4	5
	<u>2.85</u> GAL	<u>3</u> GAL	<u>4.5</u> GAL	<u> </u> GAL	<u> </u> GAL
TEMP, DEG C	<u>75.8</u>	<u>75.5</u>	<u>75.2</u>	<u>75</u>	<u> </u>
PH, UNITS	<u>7.44</u>	<u>7.38</u>	<u>7.30</u>	<u> </u>	<u> </u>
SPECIFIC CONDUCTIVITY (UMHOS/CM)	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u>turbidity, mtc</u>	<u>233.7</u>	<u>230.9</u>	<u>230.2</u>	<u> </u>	<u> </u>

SAMPLE OBSERVATIONS
 CLEAR
 COLORED
 CLOUDY
 TURBID
 ODOR
 OTHER (SEE NOTE)

EQUIPMENT DOCUMENTATION

ROUTING SAMPLING: PERISTALTIC PUMP EQUIPMENT ID: 1500 8
 SUBMERSIBLE PUMP
 BAITER
 PVC/SILICON TUBING
 TEFLON/SILICON TUBING
 AIR LIFT
 WATERA
 IN-LINE FILTER
 PRESS/VAC FILTER
 RECON FLUIDS USED: LIQUID-NOX DEIONIZED WATER NH4OH/D.I. WATER POTABLE WATER TSP SOLUTION NONE
 WATER LEVEL EQUIP. USED: ELECTRIC CONDO. PROBE FLOAT ACTIVATED CHECK INTERFACE PROBE OTHER
 NUMBER OF FILTERS USED:

ANALYTICAL PARAMETERS

METHOD NUMBER	FILTERED	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS
<u>601/602</u> VOC	<u>NO</u>	<u>Hcl</u>	<u>3-40ml</u>	<input checked="" type="checkbox"/>	<u> </u>
<u>EDB</u>	<u> </u>	<u> </u>	<u>3-40ml</u>	<input checked="" type="checkbox"/>	<u> </u>
<u>PAH</u>	<u> </u>	<u> </u>	<u>1 L amber</u>	<input checked="" type="checkbox"/>	<u> </u>
<u>TRPH</u>	<u> </u>	<u>H2SO4</u>	<u>1 L amber</u>	<input checked="" type="checkbox"/>	<u> </u>
<u>Lead</u>	<u> </u>	<u>HNO3</u>	<u>1 L plastic</u>	<input checked="" type="checkbox"/>	<u> </u>
<u>239.2</u>	<u> </u>	<u> </u>	<u> </u>	<input checked="" type="checkbox"/>	<u> </u>

NOTES

$1 \text{ well vol.} = \pi (d/2)^2 L$

SIGNATURE: Kelly Murray 7-13-95
 RECEIVED BY:

JAY-873-2R

FIELD DATA RECORD - GROUNDWATER

PAGE 1 OF 1

PROJECT Kernen Test Cell
 LE LOCATION TO Kernen Test Cell
 FIELD QC DATA: FIELD DUPLICATE COLLECTED DUP ID _____

JOB NUMBER _____ DATE 7-13-95
 LOCATION ACTIVITY START END

WATER LEVEL / WELL DATA

WELL DEPTH 19.81 FT MEASURED HISTORICAL
 TOP OF WELL TOP OF CASING _____ FT
 PROTECTIVE CASING STICK-UP (FROM GROUND) _____ FT
 PROTECTIVE CASING/WELL OFF. _____ FT
 DEPTH TO WATER 5.84 FT HISTORICAL WELL DEPTH _____ FT
 WELL MATERIAL: PVC SS
 WELL DIA. 2 INCH 4 INCH 6 INCH
 WELL INTEGRITY: PROT. CASING SECURE CONCRETE COLLAR INTACT WELL LOCKED
 OTHER: _____
 HEIGHT OF WATER COLUMN 13.97 FT x 1.6 GAL/FT (2 IN) .65 GAL/FT (4 IN) 1.5 GAL/FT (6 IN) _____ GAL/FT (____ IN)
2.23 GAL/VOL TOTAL GAL PURGED
 AMBIENT AIR VOA _____ PPM
 WELL MOUTH _____ PPM

PURGE DATA

PURGE VOLUME	<u>2.5</u> GAL	<u>5</u> GAL	<u>7.5</u> GAL	_____ GAL	_____ GAL
TEMP, DEG C	<u>18.4</u>	<u>18.4</u>	<u>18.2</u>	_____	_____
PH, UNITS	<u>6.90</u>	<u>6.99</u>	<u>7.03</u>	_____	_____
SPECIFIC CONDUCTIVITY $\mu\text{mhos/cm}$	_____	_____	_____	_____	_____
<u>turbidity, Ntc</u>	<u>20.6</u>	<u>19.3</u>	<u>19.6</u>	_____	_____

SAMPLE OBSERVATIONS
 CLEAR
 COLORED _____
 CLOUDY _____
 TURBID _____
 OOR _____
 OTHER (SEE NOTES) _____

EQUIPMENT DOCUMENTATION

PURGING SAMPLING PERISTALTIC PUMP ISCO # _____
 SUBMERSIBLE PUMP CHECK 2" 1" # _____
 BAITER
 PVC/SILICON TUBING
 TEFLON/SILICON TUBING
 AIR LIFT
 WATERA
 IN-LINE FILTER GED
 PRESS/VAC FILTER
 RECON FLUIDS USED LIQUI-MIX DEIONIZED WATER
 MN03/D.I. WATER POTABLE WATER
 TSP SOLUTION NONE
 WATER LEVEL EQUIP. USED ELECTRIC COMD. PROBE
 FLOAT ACTIVATED KECK INTERFACE PROBE
 OTHER
 NUMBER OF FILTERS USED _____

ANALYTICAL PARAMETERS

	METHOD NUMBER	FILTERED NO.	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS
<input checked="" type="checkbox"/> VOC	<u>601/602</u>	<u>↙</u>	<u>Hcl</u>	<u>3-40ml</u>	<input checked="" type="checkbox"/>	_____
<input checked="" type="checkbox"/> EDB	<u>418.1</u>		<u>H2SO4</u>	<u>3-40ml</u>	<input checked="" type="checkbox"/>	_____
<input checked="" type="checkbox"/> DTPH	<u>625</u>		<u>_____</u>	<u>1Lamber</u>	<input checked="" type="checkbox"/>	_____
<input checked="" type="checkbox"/> PAH	<u>239.2</u>		<u>HNO3</u>	<u>1Lamber</u>	<input checked="" type="checkbox"/>	_____
<input checked="" type="checkbox"/> Lead				<u>1L plastic</u>	<input checked="" type="checkbox"/>	_____

NOTES

SIGNATURE: _____
 RECEIVED BY: _____

NO 8/9/89

OU-2

FIELD SAMPLING PLAN



FIELD DATA RECORD GROUNDWATER

APPENDIX B
ANALYTICAL DATA



QUALITY ANALYTICAL
LABORATORIES, INC.

August 18, 1995

Ann Marie Weaver
ABB Environmental Services
1536 Kingsley Ave. Suite 127
Orange Park, FL 32073

REVISION

RE: Analytical Data for NAS JAX OU2: Work Release 524
Laboratory Reference Number: G8017

Dear Ms. Weaver:

On July 14, 1995, QAL, Inc. received samples with a request for analysis. A report for this batch was issued August 11, 1995.

The organic data for the above referenced report was inadvertently omitted from the original data package. Enclosed please find this data, numbered for addition to this report. A new table of contents and the qualifier pages are included for substitution in the proper place. Please discard the chain of custody documentation and substitute the newly numbered forms included with this submission. We apologize for any inconvenience this may have caused.

QAL, Inc. appreciates your business and looks forward to serving your analytical needs again. If you have any questions concerning your report or need additional information, please call me at 904-462-3050.

Sincerely,

Karen Daniels
Client Services Manager

Enclosures

xc: Fred Bragdon

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Level 1

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Organic Data Qualifiers

- A -- This qualifier indicates that a TIC is a suspected aldol-condensation product.
- 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 that the data user evaluate these compounds and their amounts carefully.
- C -- The "C" flag indicates the presence of this compound has been confirmed by GC/MS analysis.
- D -- This qualifier is used for all compounds identified in an analysis at a secondary dilution factor. "D" qualifiers are used only for the samples reported at more than one dilution factor.
- E -- This flag 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.
- I -- This qualifier indicates that the reporting limit adjacent to the "I" qualifier has been raised. It is used when chromatographic interference prohibits detection of a compound at a level below the concentration expressed on the Form I.
- J -- Indicates an estimated value. It is used when the data indicates the presence of a target compound below the reporting limit or the presence of a Tentatively Identified Compound (TIC).
- N -- This qualifier indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds, where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the "N" qualifier is not used.
- P -- This qualifier is used for pesticide/Aroclor target analytes when there is a greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported on Form I and flagged with a "p".
- 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 adjustments when indicated.

Organic Sample ID Qualifiers

The qualifiers that may be appended to the Lab Sample ID and/or the Client Sample ID for organic analyses are defined below:

- DL -- Diluted reanalysis. Indicates that the results were determined in an analysis of a secondary dilution of a sample or extract. The "DL" suffix may be followed by a digit to indicate multiple dilutions of the sample or extract. The results of more than one diluted reanalyses may be reported.
- MS -- Matrix spike (may be followed by a digit to indicate multiple matrix spikes within a sample set).
- MSD - Matrix spike duplicate (may be followed by a digit to indicate multiple matrix spikes within a sample set).
- R -- Reanalysis. The extract was reanalyzed without re-extraction. The "R" is not used if the sample was also re-extracted. May be followed by a digit to indicate multiple reanalyses of the sample at the same dilution.
- RE -- Re-extraction analysis. The sample was re-extracted and reanalyzed. May be followed by a digit to indicate multiple re-extracted analyses of the sample at the same dilution.

GC PURGEABLE HALOCARBONS/AROMATICS

000022

CASE NARRATIVE
GC PURGEABLE HALOCARBONS/AROMATICS

QAL Lab Reference No./SDG. G8017

Project: NAS JAX OU2; Work Release 524

I. RECEIPT

No exceptions were encountered unless a Sample Receipt Exception Report is attached to the Chain-of-Custody included with this data package.

II. HOLDING TIMES

- A. Sample Preparation: Not applicable.
- B. Sample Analysis: All holding times were met.

III. METHOD

Preparation: N/A
Cleanup: N/A
Analysis: EPA 601/602

IV. PREPARATION

Not applicable.

V. ANALYSIS

- A. Calibration : All acceptance criteria were met.
- B. Blanks: All acceptance criteria were met.
- C. Surrogates: All acceptance criteria were met.
- D. Spikes: All acceptance criteria were met.
- E. Samples: Samples KTG00101 (G8017001), KTG00201 (G8017002), KTG00301 (G8017003), and KTG00401 (G8017004) contained large quantities of non-target compounds.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and QAL, Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

SIGNED: 

Herb Kelly
Organics Division Manager

DATE: 7/25/98

CASE NARRATIVE
Addendum

Sample Information

<u>LAB SAMPLE ID</u>	<u>CLIENT SAMPLE ID</u>	<u>SAMPLE MATRIX</u>	<u>DATE SAMPLED</u>	<u>DATE EXTRACTED</u>	<u>DATE ANALYZED</u>	<u>SAMPLE pH¹</u>
G8017001	KTG00101	WATER	07/13/95	N/A	07/14/95	<2
G8017002	KTG00201	WATER	07/13/95	N/A	07/14/95	<2
G8017003	KTG00301	WATER	07/13/95	N/A	07/14/95	<2
G8017004	KTG00401	WATER	07/13/95	N/A	07/14/95	<2
G8017005	KTT00101	WATER	07/13/95	N/A	07/14/95	<2
WGV45G141	WGV45G141	WATER	N/A	N/A	07/14/95	N/A

¹ Applies to samples designated for purgeable VOA analysis only.

000024

Report of Analytical Results
601/602(MOD)-HALOCARB/AROM,STD LIST,W/WW

Date Collected: 07/13/95
Date Received: 07/14/95
Date Extracted: None
Date Analyzed: 07/14/95

Client Sample ID: KTG00101
Lab ReferenceNum: G8017

Sample ID: G8017001
Sample Matrix: Water
Sample Description: JAX-873-11
Dilution: 1.00

Analytical Parameter	CAS/Storet Number	Result	Units	Reporting Level
GC VOLATILES (continued)				
Chloromethane	74-87-3	1.0 U	ug/L	1.0
Bromomethane	74-83-9	1.0 U	ug/L	1.0
Dichlorodifluoromethane	75-71-8	1.0 U	ug/L	1.0
Vinyl chloride	75-01-4	1.0 U	ug/L	1.0
Chloroethane	75-00-3	1.0 U	ug/L	1.0
Dichloromethane (Methylene chloride)	75-09-2	5.0 U	ug/L	5.0
Trichlorofluoromethane	75-69-4	1.0 U	ug/L	1.0
1,1-Dichloroethene	75-35-4	1.0 U	ug/L	1.0
1,1-Dichloroethane	75-34-3	1.0 U	ug/L	1.0
trans-1,2-Dichloroethene	156-60-5	1.0 U	ug/L	1.0
Chloroform	67-66-3	1.0 U	ug/L	1.0
1,2-Dichloroethane	107-06-2	1.0 U	ug/L	1.0
1,1,1-Trichloroethane	71-55-6	1.0 U	ug/L	1.0
Carbon tetrachloride	56-23-5	1.0 U	ug/L	1.0
Bromodichloromethane	75-27-4	1.0 U	ug/L	1.0
1,2-Dichloropropane	78-87-5	1.0 U	ug/L	1.0
cis-1,3-Dichloropropene	10061-01-5	1.0 U	ug/L	1.0
Trichloroethene	79-01-6	1.0 U	ug/L	1.0
Dibromochloromethane	124-48-1	1.0 U	ug/L	1.0
1,1,2-Trichloroethane	79-00-5	1.0 U	ug/L	1.0
trans-1,3-Dichloropropene	10061-02-6	1.0 U	ug/L	1.0
Bromoform	75-25-2	1.0 U	ug/L	1.0
1,1,2,2-Tetrachloroethane	79-34-5	1.0 U	ug/L	1.0
Tetrachloroethene	127-18-4	1.0 U	ug/L	1.0
Chlorobenzene	108-90-7	1.0 U	ug/L	1.0
1,3-Dichlorobenzene	541-73-1	1.0 U	ug/L	1.0
1,2-Dichlorobenzene	95-50-1	1.0 U	ug/L	1.0
1,4-Dichlorobenzene	106-46-7	1.0 U	ug/L	1.0
tert-Butyl methyl ether	1634-04-4	1.0 U	ug/L	1.0
Benzene	71-43-2	1.0 U	ug/L	1.0
Toluene	108-88-3	1.0 U	ug/L	1.0
Ethylbenzene	100-41-4	1.0 U	ug/L	1.0
Xylenes (Total)	1330-20-7	1.0 U	ug/L	1.0
Fluorobenzene - SS	462-06-6	111	%rec	1.0

Report of Analytical Results
601/602(MOD)-HALOCARB/AROM, STD LIST, W/WW

Date Collected: 07/13/95
Date Received: 07/14/95
Date Extracted: None
Date Analyzed: 07/14/95

Client Sample ID: KTG00201
Lab ReferenceNum: G8017

Sample ID: G8017002
Sample Matrix: Water
Sample Description: JAX-873-1-3
Dilution: 1.00

Analytical Parameter	CAS/Storet Number	Result	Units	Reporting Level
GC VOLATILES (continued)				
Chloromethane	74-87-3	1.0 U	ug/L	1.0
Bromomethane	74-83-9	1.0 U	ug/L	1.0
Dichlorodifluoromethane	75-71-8	1.0 U	ug/L	1.0
Vinyl chloride	75-01-4	1.0 U	ug/L	1.0
Chloroethane	75-00-3	1.0 U	ug/L	1.0
Dichloromethane (Methylene chloride)	75-09-2	5.0 U	ug/L	5.0
Trichlorofluoromethane	75-69-4	1.0 U	ug/L	1.0
1,1-Dichloroethene	75-35-4	1.0 U	ug/L	1.0
1,1-Dichloroethane	75-34-3	1.0 U	ug/L	1.0
trans-1,2-Dichloroethene	156-60-5	1.0 U	ug/L	1.0
Chloroform	67-66-3	1.0 U	ug/L	1.0
1,2-Dichloroethane	107-06-2	1.0 U	ug/L	1.0
1,1,1-Trichloroethane	71-55-6	1.0 U	ug/L	1.0
Carbon tetrachloride	56-23-5	1.0 U	ug/L	1.0
Bromodichloromethane	75-27-4	1.0 U	ug/L	1.0
1,2-Dichloropropane	78-87-5	1.0 U	ug/L	1.0
cis-1,3-Dichloropropene	10061-01-5	1.0 U	ug/L	1.0
Trichloroethene	79-01-6	1.0 U	ug/L	1.0
Dibromochloromethane	124-48-1	1.0 U	ug/L	1.0
1,1,2-Trichloroethane	79-00-5	1.0 U	ug/L	1.0
trans-1,3-Dichloropropene	10061-02-6	1.0 U	ug/L	1.0
Bromoform	75-25-2	1.0 U	ug/L	1.0
1,1,2,2-Tetrachloroethane	79-34-5	1.0 U	ug/L	1.0
Tetrachloroethene	127-18-4	1.0 U	ug/L	1.0
Chlorobenzene	108-90-7	1.0 U	ug/L	1.0
1,3-Dichlorobenzene	541-73-1	1.0 U	ug/L	1.0
1,2-Dichlorobenzene	95-50-1	1.0 U	ug/L	1.0
1,4-Dichlorobenzene	106-46-7	1.0 U	ug/L	1.0
tert-Butyl methyl ether	1634-04-4	1.0 U	ug/L	1.0
Benzene	71-43-2	1.0 U	ug/L	1.0
Toluene	108-88-3	1.0 U	ug/L	1.0
Ethylbenzene	100-41-4	1.0 U	ug/L	1.0
Xylenes (Total)	1330-20-7	1.0 U	ug/L	1.0
Fluorobenzene - SS	462-06-6	109	%rec	

Report of Analytical Results
601/602(MOD)-HALOCARB/AROM,STD LIST,W/WW

Date Collected: 07/13/95
Date Received: 07/14/95
Date Extracted: None
Date Analyzed: 07/14/95

Client Sample ID: KTG00301
Lab ReferenceNum: G8017

Sample ID: G8017003
Sample Matrix: Water
Sample Description: JAX-873-1-1R
Dilution: 1.00

Analytical Parameter	CAS/Storet Number	Result	Units	Reporting Level
GC VOLATILES (continued)				
Chloromethane	74-87-3	1.0 U	ug/L	1.0
Bromomethane	74-83-9	1.0 U	ug/L	1.0
Dichlorodifluoromethane	75-71-8	1.0 U	ug/L	1.0
Vinyl chloride	75-01-4	1.0 U	ug/L	1.0
Chloroethane	75-00-3	1.0 U	ug/L	1.0
Dichloromethane (Methylene chloride)	75-09-2	5.0 U	ug/L	5.0
Trichlorofluoromethane	75-69-4	1.0 U	ug/L	1.0
1,1-Dichloroethene	75-35-4	1.0 U	ug/L	1.0
1,1-Dichloroethane	75-34-3	1.0 U	ug/L	1.0
trans-1,2-Dichloroethene	156-60-5	1.0 U	ug/L	1.0
Chloroform	67-66-3	1.0 U	ug/L	1.0
1,2-Dichloroethane	107-06-2	1.0 U	ug/L	1.0
1,1,1-Trichloroethane	71-55-6	1.0 U	ug/L	1.0
Carbon tetrachloride	56-23-5	1.0 U	ug/L	1.0
Bromodichloromethane	75-27-4	1.0 U	ug/L	1.0
1,2-Dichloropropane	78-87-5	1.0 U	ug/L	1.0
cis-1,3-Dichloropropene	10061-01-5	1.0 U	ug/L	1.0
Trichloroethene	79-01-6	1.0 U	ug/L	1.0
Dibromochloromethane	124-48-1	1.0 U	ug/L	1.0
1,1,2-Trichloroethane	79-00-5	1.0 U	ug/L	1.0
trans-1,3-Dichloropropene	10061-02-6	1.0 U	ug/L	1.0
Bromoform	75-25-2	1.0 U	ug/L	1.0
1,1,2,2-Tetrachloroethane	79-34-5	1.0 U	ug/L	1.0
Tetrachloroethene	127-18-4	1.0 U	ug/L	1.0
Chlorobenzene	108-90-7	1.0 U	ug/L	1.0
1,3-Dichlorobenzene	541-73-1	1.0 U	ug/L	1.0
1,2-Dichlorobenzene	95-50-1	1.0 U	ug/L	1.0
1,4-Dichlorobenzene	106-46-7	1.0 U	ug/L	1.0
tert-Butyl methyl ether	1634-04-4	1.0 U	ug/L	1.0
Benzene	71-43-2	1.0 U	ug/L	1.0
Toluene	108-88-3	1.0 U	ug/L	1.0
Ethylbenzene	100-41-4	1.0 U	ug/L	1.0
Xylenes (Total)	1330-20-7	1.0 U	ug/L	1.0
Fluorobenzene - SS	462-06-6	101	%rec	

Report of Analytical Results
601/602(MOD)-HALOCARB/AROM,STD LIST,W/WW

Date Collected: 07/13/95
Date Received: 07/14/95
Date Extracted: None
Date Analyzed: 07/14/95

Client Sample ID: KTG00401
Lab ReferenceNum: G8017

Sample ID: G8017004
Sample Matrix: Water
Sample Description: JAX-873-1-2R
Dilution: 1.00

Analytical Parameter	CAS/Storet Number	Result	Units	Reporting Level
GC VOLATILES (continued)				
Chloromethane	74-87-3	1.0 U	ug/L	1.0
Bromomethane	74-83-9	1.0 U	ug/L	1.0
Dichlorodifluoromethane	75-71-8	1.0 U	ug/L	1.0
Vinyl chloride	75-01-4	1.0 U	ug/L	1.0
Chloroethane	75-00-3	1.0 U	ug/L	1.0
Dichloromethane (Methylene chloride)	75-09-2	5.0 U	ug/L	5.0
Trichlorofluoromethane	75-69-4	1.0 U	ug/L	1.0
1,1-Dichloroethene	75-35-4	1.0 U	ug/L	1.0
1,1-Dichloroethane	75-34-3	1.0 U	ug/L	1.0
trans-1,2-Dichloroethene	156-60-5	1.0 U	ug/L	1.0
Chloroform	67-66-3	1.0 U	ug/L	1.0
1,2-Dichloroethane	107-06-2	1.0 U	ug/L	1.0
1,1,1-Trichloroethane	71-55-6	1.0 U	ug/L	1.0
Carbon tetrachloride	56-23-5	1.0 U	ug/L	1.0
Bromodichloromethane	75-27-4	1.0 U	ug/L	1.0
1,2-Dichloropropane	78-87-5	1.0 U	ug/L	1.0
cis-1,3-Dichloropropene	10061-01-5	1.0 U	ug/L	1.0
Trichloroethene	79-01-6	1.0 U	ug/L	1.0
Dibromochloromethane	124-48-1	1.0 U	ug/L	1.0
1,1,2-Trichloroethane	79-00-5	1.0 U	ug/L	1.0
trans-1,3-Dichloropropene	10061-02-6	1.0 U	ug/L	1.0
Bromoform	75-25-2	1.0 U	ug/L	1.0
1,1,2,2-Tetrachloroethane	79-34-5	1.0 U	ug/L	1.0
Tetrachloroethene	127-18-4	1.0 U	ug/L	1.0
Chlorobenzene	108-90-7	1.0 U	ug/L	1.0
1,3-Dichlorobenzene	541-73-1	1.0 U	ug/L	1.0
1,2-Dichlorobenzene	95-50-1	1.0 U	ug/L	1.0
1,4-Dichlorobenzene	106-46-7	1.0 U	ug/L	1.0
tert-Butyl methyl ether	1634-04-4	1.0 U	ug/L	1.0
Benzene	71-43-2	1.0 U	ug/L	1.0
Toluene	108-88-3	1.0 U	ug/L	1.0
Ethylbenzene	100-41-4	1.0 U	ug/L	1.0
Xylenes (Total)	1330-20-7	1.0 U	ug/L	1.0
Fluorobenzene - SS	462-06-6	103	%rec	

Report of Analytical Results
601/602(MOD)-HALOCARB/AROM,STD LIST,W/WW

Date Collected: 07/13/95
Date Received: 07/14/95
Date Extracted: None
Date Analyzed: 07/14/95

Client Sample ID: KTT00101
Lab ReferenceNum: G8017

Sample ID: G8017005
Sample Matrix: Water
Sample Description:
Dilution: 1.00

Analytical Parameter	CAS/Storet Number	Result	Units	Reporting Level
GC VOLATILES				
Chloromethane	74-87-3	1.0 U	ug/L	1.0
Bromomethane	74-83-9	1.0 U	ug/L	1.0
Dichlorodifluoromethane	75-71-8	1.0 U	ug/L	1.0
Vinyl chloride	75-01-4	1.0 U	ug/L	1.0
Chloroethane	75-00-3	1.0 U	ug/L	1.0
Dichloromethane (Methylene chloride)	75-09-2	5.0 U	ug/L	5.0
Trichlorofluoromethane	75-69-4	1.0 U	ug/L	1.0
1,1-Dichloroethene	75-35-4	1.0 U	ug/L	1.0
1,1-Dichloroethane	75-34-3	1.0 U	ug/L	1.0
trans-1,2-Dichloroethene	156-60-5	1.0 U	ug/L	1.0
Chloroform	67-66-3	1.0 U	ug/L	1.0
1,2-Dichloroethane	107-06-2	1.0 U	ug/L	1.0
1,1,1-Trichloroethane	71-55-6	1.0 U	ug/L	1.0
Carbon tetrachloride	56-23-5	1.0 U	ug/L	1.0
Bromodichloromethane	75-27-4	1.0 U	ug/L	1.0
1,2-Dichloropropane	78-87-5	1.0 U	ug/L	1.0
cis-1,3-Dichloropropene	10061-01-5	1.0 U	ug/L	1.0
Trichloroethene	79-01-6	1.0 U	ug/L	1.0
Dibromochloromethane	124-48-1	1.0 U	ug/L	1.0
1,1,2-Trichloroethane	79-00-5	1.0 U	ug/L	1.0
trans-1,3-Dichloropropene	10061-02-6	1.0 U	ug/L	1.0
Bromoform	75-25-2	1.0 U	ug/L	1.0
1,1,2,2-Tetrachloroethane	79-34-5	1.0 U	ug/L	1.0
Tetrachloroethene	127-18-4	1.0 U	ug/L	1.0
Chlorobenzene	108-90-7	1.0 U	ug/L	1.0
1,3-Dichlorobenzene	541-73-1	1.0 U	ug/L	1.0
1,2-Dichlorobenzene	95-50-1	1.0 U	ug/L	1.0
1,4-Dichlorobenzene	106-46-7	1.0 U	ug/L	1.0
tert-Butyl methyl ether	1634-04-4	1.0 U	ug/L	1.0
Benzene	71-43-2	1.0 U	ug/L	1.0
Toluene	108-88-3	1.0 U	ug/L	1.0
Ethylbenzene	100-41-4	1.0 U	ug/L	1.0
Xylenes (Total)	1330-20-7	1.0 U	ug/L	1.0
Fluorobenzene - SS	462-06-6	97	%rec	1.0

Report of Analytical Results
601/602(MOD)-HALOCARB/AROM,STD LIST,W/WW

Date Collected: None
Date Received: None
Date Extracted: None
Date Analyzed: 07/14/95

Client Sample ID: WGV45G141
Lab ReferenceNum: LABQC

Sample ID: WGV45G141
Sample Matrix: Water
Sample Description:
Dilution: 1.00

Analytical Parameter	CAS/Storet Number	Result	Units	Reporting Level
GC VOLATILES				
Chloromethane	74-87-3	1.0 U	ug/L	1.0
Bromomethane	74-83-9	1.0 U	ug/L	1.0
Dichlorodifluoromethane	75-71-8	1.0 U	ug/L	1.0
Vinyl chloride	75-01-4	1.0 U	ug/L	1.0
Chloroethane	75-00-3	1.0 U	ug/L	1.0
Dichloromethane (Methylene chloride)	75-09-2	5.0 U	ug/L	5.0
Trichlorofluoromethane	75-69-4	1.0 U	ug/L	1.0
1,1-Dichloroethene	75-35-4	1.0 U	ug/L	1.0
1,1-Dichloroethane	75-34-3	1.0 U	ug/L	1.0
trans-1,2-Dichloroethene	156-60-5	1.0 U	ug/L	1.0
Chloroform	67-66-3	1.0 U	ug/L	1.0
1,2-Dichloroethane	107-06-2	1.0 U	ug/L	1.0
1,1,1-Trichloroethane	71-55-6	1.0 U	ug/L	1.0
Carbon tetrachloride	56-23-5	1.0 U	ug/L	1.0
Bromodichloromethane	75-27-4	1.0 U	ug/L	1.0
1,2-Dichloropropane	78-87-5	1.0 U	ug/L	1.0
cis-1,3-Dichloropropene	10061-01-5	1.0 U	ug/L	1.0
Trichloroethene	79-01-6	1.0 U	ug/L	1.0
Dibromochloromethane	124-48-1	1.0 U	ug/L	1.0
1,1,2-Trichloroethane	79-00-5	1.0 U	ug/L	1.0
trans-1,3-Dichloropropene	10061-02-6	1.0 U	ug/L	1.0
Bromoform	75-25-2	1.0 U	ug/L	1.0
1,1,2,2-Tetrachloroethane	79-34-5	1.0 U	ug/L	1.0
Tetrachloroethene	127-18-4	1.0 U	ug/L	1.0
Chlorobenzene	108-90-7	1.0 U	ug/L	1.0
1,3-Dichlorobenzene	541-73-1	1.0 U	ug/L	1.0
1,2-Dichlorobenzene	95-50-1	1.0 U	ug/L	1.0
1,4-Dichlorobenzene	106-46-7	1.0 U	ug/L	1.0
tert-Butyl methyl ether	1634-04-4	1.0 U	ug/L	1.0
Benzene	71-43-2	1.0 U	ug/L	1.0
Toluene	108-88-3	1.0 U	ug/L	1.0
Ethylbenzene	100-41-4	1.0 U	ug/L	1.0
Xylenes (Total)	1330-20-7	1.0 U	ug/L	1.0
Fluorobenzene - SS	462-06-6	102	%rec	

CONTROL CHARTS

Method 4650/601602	Compound Fluorobenzene	Instrument GC4
Month MAY	Updated Control Limits	
Year 1995	Reference Control No.: GC4021095	
Control No. GC4052495	Mean: 108	-2s: 95
	Std. Dev.: 6.3	+2s: 120
		-3s: 89
		+3s: 127

Date	Analyst	Filename	Value	Pass?	Recovery (%)
5-24-95	Mark W. Jacobs	E24G002	106	Y	
5-25	MWJ	E25G002	120	Y	
5-26	MWJ	E26G002	121	Y	
5-28	MWJ	E28G002	97	Y	
5-30	MWJ	E30G002	99	Y	
5-31	MWJ	E31G002	97	Y	
6-4	MWJ	F04G002	99	Y	
6-5	MWJ	F05G003	104	Y	
6-6	MWJ	F06G003	108	Y	
6-7	MWJ	F07G003	105	Y	
6-8	MWJ	F08G003	103	Y	
6-13	MWJ	F13G003	111	Y	
6-14	MWJ	F14G011	103	Y	
6-15	MWJ	F15G007	113	Y	
6-16	MWJ	F16G002	119	Y	
6-20	MWJ	F20G002	114	Y	
6-21	MWJ	F21G012	102	Y	
6-22	MWJ	F22G002	111	Y	
6-23	MWJ	F23G003	118	Y	
6-26	MWJ	F26G014	105	Y	
6-27	MWJ	F27G002	106	Y	
6-28	MWJ	F28G006	101	Y	
6-29	MWJ	F29G002	109	Y	
6-30	MWJ	F30G002	107	Y	
7-3	MWJ	G03G002	114	Y	
7-13	MWJ	G13G002	116	Y	
7-14	MWJ	G14G002	102	Y	

Average: _____
 Standard Deviation: _____

CL X CL 000002

**GC EXTRACTABLE VOLATILE ORGANICS
(EDB/DBCP)**

000033

CASE NARRATIVE
GC EXTRACTABLE VOLATILE ORGANICS (EDB/DBCP)

QAL Lab Reference No./SDG. G8017

Project: NAS JAX OU2; Work Release 524

I. RECEIPT

No exceptions were encountered unless a Sample Receipt Exception Report is attached to the Chain-of-Custody included with this data package.

II. HOLDING TIMES

A. Sample Preparation: Not applicable.
All holding times were met.

B. Sample Analysis: All holding times were met.

III. METHOD

Preparation: N/A
Cleanup: N/A
Analysis: EPA 504.1

IV. PREPARATION

Not applicable.
Sample preparation proceeded normally.

V. ANALYSIS

A. Calibration : All acceptance criteria were met.

B. Blanks: All acceptance criteria were met.

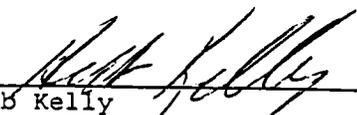
C. Surrogates: Control limits for surrogate recovery have not yet been determined due to insufficient data points.

D. Spikes: All acceptance criteria were met.

E. Samples: Sample analyses proceeded normally.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and QAL, Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

SIGNED: _____


Herb Kelly
Organics Division Manager

DATE: _____

7/25/95

CASE NARRATIVE
Addendum

Sample Information

<u>LAB SAMPLE ID</u>	<u>CLIENT SAMPLE ID</u>	<u>SAMPLE MATRIX</u>	<u>DATE SAMPLED</u>	<u>DATE EXTRACTED</u>	<u>DATE ANALYZED</u>	<u>SAMPLE pH¹</u>
G8017001	KTG00101	WATER	07/13/95	07/17/95	07/17/95	N/A
G8017002	KTG00201	WATER	07/13/95	07/17/95	07/17/95	N/A
G8017003	KTG00301	WATER	07/13/95	07/17/95	07/17/95	N/A
G8017004	KTG00401	WATER	07/13/95	07/17/95	07/17/95	N/A
WEDB5G171	WEDB5G171	WATER	N/A	07/17/95	07/17/95	N/A

¹ Applies to samples designated for purgeable VOA analysis only.

000035

Report of Analytical Results
504-ETHYLENE DIBROMIDE (EDB)

Date Collected: 07/13/95
Date Received: 07/14/95
Date Extracted: None
Date Analyzed: 07/17/95

Client Sample ID: KTG00101
Lab ReferenceNum: G8017

Sample ID: G8017001
Sample Matrix: Water
Sample Description: JAX-873-11
Dilution: 1.00

Analytical Parameter	CAS/Storet Number	Result	Units	Reporting Level
GC VOLATILES				
1,2-Dibromoethane	106-93-4	0.02 U	ug/L	0.02
1,1,2-Trichloroethane - SS	79-00-5	104	%rec	

Report of Analytical Results
504-ETHYLENE DIBROMIDE (EDB)

Date Collected: 07/13/95
Date Received: 07/14/95
Date Extracted: None
Date Analyzed: 07/17/95

Client Sample ID: KTG00201
Lab ReferenceNum: G8017

Sample ID: G8017002
Sample Matrix: Water
Sample Description: JAX-873-1-3
Dilution: 1.00

Analytical Parameter	CAS/Storet Number	Result	Units	Reporting Level
GC VOLATILES				
1,2-Dibromoethane	106-93-4	0.02 U	ug/L	0.02
1,1,2-Trichloroethane - SS	79-00-5	96	%rec	

Report of Analytical Results
 504-ETHYLENE DIBROMIDE (EDB)

Date Collected: 07/13/95
 Date Received: 07/14/95
 Date Extracted: None
 Date Analyzed: 07/17/95

Client Sample ID: KTG00301
 Lab ReferenceNum: G8017

Sample ID: G8017003
 Sample Matrix: Water
 Sample Description: JAX-873-1-1R
 Dilution: 1.00

Analytical Parameter	CAS/Storet Number	Result	Units	Reporting Level
GC VOLATILES				
1,2-Dibromoethane	106-93-4	0.02 U	ug/L	0.02
1,1,2-Trichloroethane - SS	79-00-5	108	%rec	

Report of Analytical Results
504-ETHYLENE DIBROMIDE (EDB)

Date Collected: 07/13/95
Date Received: 07/14/95
Date Extracted: None
Date Analyzed: 07/17/95

Client Sample ID: KTG00401
Lab ReferenceNum: G8017

Sample ID: G8017004
Sample Matrix: Water
Sample Description: JAX-873-1-2R
Dilution: 1.00

Analytical Parameter	CAS/Storet Number	Result	Units	Reporting Level
GC VOLATILES				
1,2-Dibromoethane	106-93-4	0.02 U	ug/L	0.02
1,1,2-Trichloroethane - SS	79-00-5	108	%rec	

Report of Analytical Results
504-ETHYLENE DIBROMIDE (EDB)

Date Collected: None
Date Received: None
Date Extracted: None
Date Analyzed: 07/17/95

Client Sample ID: WEDB5G171
Lab ReferenceNum: LABQC

Sample ID: WEDB5G171
Sample Matrix: Water
Sample Description:
Dilution: 1.00

Analytical Parameter	CAS/Storet Number	Result	Units	Reporting Level
GC VOLATILES				
1,2-Dibromoethane	106-93-4	0.02 U	ug/L	0.02
1,1,2-Trichloroethane - SS	79-00-5	102	%rec	

CONTROL CHARTS

GC POLYNUCLEAR AROMATIC HYDROCARBONS

CASE NARRATIVE
GC POLYNUCLEAR AROMATIC HYDROCARBONS

QAL Lab Reference No./SDG. G8017

Project: NAS JAX OU2; Work Release 524

I. RECEIPT

No exceptions were encountered unless a Sample Receipt Exception Report is attached to the Chain-of-Custody included with this data package.

II. HOLDING TIMES

- A. Sample Preparation: Not applicable.
B. Sample Analysis: All holding times were met.

III. METHOD

Preparation: N/A
Cleanup: N/A
Analysis: EPA 610

IV. PREPARATION

Not applicable.

V. ANALYSIS

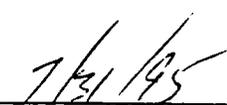
- A. Calibration : Some of the target compounds in the Continuing Calibration Standard analyzed on 7/21/95 did not meet the 15% Difference criterion, but were less than 18% Difference. None of the compounds found in the samples failed calibration criteria, and therefore there was no impact on data quality.
- B. Blanks: All acceptance criteria were met.
- C. Surrogates: All acceptance criteria were met.
- D. Spikes: A matrix spike/matrix spike duplicate was not analyzed because of insufficient sample volume, therefore aliquots of reagent water were used to prepare the blank spike and blank spike duplicate samples. These samples met acceptable QC criteria.
- E. Samples: Sample analyses proceeded normally.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and QAL, Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

SIGNED:


Herb Kelly
Organics Division Manager

DATE:


7/31/95

CASE NARRATIVE
Addendum

Sample Information

<u>LAB SAMPLE ID</u>	<u>CLIENT SAMPLE ID</u>	<u>SAMPLE MATRIX</u>	<u>DATE SAMPLED</u>	<u>DATE EXTRACTED</u>	<u>DATE ANALYZED</u>	<u>SAMPLE PH¹</u>
G8017001	KTG00101	WATER	07/13/95	07/17/95	07/19/95	N/A
G8017002	KTG00201	WATER	07/13/95	07/17/95	07/19/95	N/A
G8017003	KTG00301	WATER	07/13/95	07/17/95	07/21/95	N/A
G8017004	KTG00401	WATER	07/13/95	07/17/95	07/19/95	N/A
WPNA5G171	WPNA5G171	WATER	N/A	07/17/95	07/19/95	N/A

¹ Applies to samples designated for purgeable VOA analysis only.

Report of Analytical Results
 610(MOD)-PNA W/CLEANUP,STD LIST,GC,W/WW

Date Collected: 07/13/95
 Date Received: 07/14/95
 Date Extracted: 07/17/95
 Date Analyzed: 07/19/95

Client Sample ID: KTG00101
 Lab ReferenceNum: G8017

Sample ID: G8017001
 Sample Matrix: Water
 Sample Description: JAX-873-11
 Dilution: 1.00

Analytical Parameter	CAS/Storet Number	Result	Units	Reporting Level
GC SEMI-VOLATILES				
1-Methylnaphthalene	90-12-0	43	ug/L	2.0
2-Methylnaphthalene	91-57-6	8.8	ug/L	2.0
Acenaphthene	83-32-9	2.0 U	ug/L	2.0
Acenaphthylene	208-96-8	2.0 U	ug/L	2.0
Anthracene	120-12-7	2.0 U	ug/L	2.0
Benzo(a)anthracene	56-55-3	2.0 U	ug/L	2.0
Benzo(a)pyrene	50-32-8	2.0 U	ug/L	2.0
Benzo(b)fluoranthene	205-99-2	2.0 U	ug/L	2.0
Benzo(g,h,i)perylene	191-24-2	2.0 U	ug/L	2.0
Benzo(k)fluoranthene	207-08-9	2.0 U	ug/L	2.0
Chrysene	218-01-9	2.0 U	ug/L	2.0
Dibenzo(a,h)anthracene	53-70-3	2.0 U	ug/L	2.0
Fluoranthene	206-44-0	2.0 U	ug/L	2.0
Fluorene	86-73-7	2.0 U	ug/L	2.0
Indeno(1,2,3-cd)pyrene	193-39-5	2.0 U	ug/L	2.0
Naphthalene	91-20-3	18	ug/L	2.0
Phenanthrene	85-01-8	2.0 U	ug/L	2.0
Pyrene	129-00-0	2.0 U	ug/L	2.0
2-Fluorobiphenyl - SS	321-60-8	82	%rec	

Report of Analytical Results
 610(MOD)-PNA W/CLEANUP, STD LIST, GC, W/WW

Date Collected: 07/13/95
 Date Received: 07/14/95
 Date Extracted: 07/17/95
 Date Analyzed: 07/19/95

Client Sample ID: KTG00201
 Lab ReferenceNum: G8017

Sample ID: G8017002
 Sample Matrix: Water
 Sample Description: JAX-873-1-3
 Dilution: 1.00

Analytical Parameter	CAS/Storet Number	Result	Units	Reporting Level
GC SEMI-VOLATILES				
1-Methylnaphthalene	90-12-0	5.1	ug/L	2.0
2-Methylnaphthalene	91-57-6	2.4	ug/L	2.0
Acenaphthene	83-32-9	2.0 U	ug/L	2.0
Acenaphthylene	208-96-8	2.0 U	ug/L	2.0
Anthracene	120-12-7	2.0 U	ug/L	2.0
Benzo(a)anthracene	56-55-3	2.0 U	ug/L	2.0
Benzo(a)pyrene	50-32-8	2.0 U	ug/L	2.0
Benzo(b)fluoranthene	205-99-2	2.0 U	ug/L	2.0
Benzo(g,h,i)perylene	191-24-2	2.0 U	ug/L	2.0
Benzo(k)fluoranthene	207-08-9	2.0 U	ug/L	2.0
Chrysene	218-01-9	2.0 U	ug/L	2.0
Dibenzo(a,h)anthracene	53-70-3	2.0 U	ug/L	2.0
Fluoranthene	206-44-0	2.0 U	ug/L	2.0
Fluorene	86-73-7	2.0 U	ug/L	2.0
Indeno(1,2,3-cd)pyrene	193-39-5	2.0 U	ug/L	2.0
Naphthalene	91-20-3	2.0 U	ug/L	2.0
Phenanthrene	85-01-8	2.0 U	ug/L	2.0
Pyrene	129-00-0	2.0 U	ug/L	2.0
2-Fluorobiphenyl - SS	321-60-8	70	%rec	2.0

Report of Analytical Results
 610(MOD)-PNA W/CLEANUP, STD LIST, GC, W/W

Date Collected: 07/13/95
 Date Received: 07/14/95
 Date Extracted: 07/17/95
 Date Analyzed: 07/21/95

Client Sample ID: KTG00301
 Lab ReferenceNum: G8017

Sample ID: G8017003
 Sample Matrix: Water
 Sample Description: JAX-873-1-1R
 Dilution: 10.00

Analytical Parameter	CAS/Storet Number	Result	Units	Reporting Level
GC SEMI-VOLATILES				
1-Methylnaphthalene	90-12-0	99	ug/L	10
2-Methylnaphthalene	91-57-6	87	ug/L	10
Acenaphthene	83-32-9	10 U	ug/L	10
Acenaphthylene	208-96-8	10 U	ug/L	10
Anthracene	120-12-7	10 U	ug/L	10
Benzo(a)anthracene	56-55-3	10 U	ug/L	10
Benzo(a)pyrene	50-32-8	10 U	ug/L	10
Benzo(b)fluoranthene	205-99-2	10 U	ug/L	10
Benzo(g,h,i)perylene	191-24-2	10 U	ug/L	10
Benzo(k)fluoranthene	207-08-9	10 U	ug/L	10
Chrysene	218-01-9	10 U	ug/L	10
Dibenzo(a,h)anthracene	53-70-3	10 U	ug/L	10
Fluoranthene	206-44-0	10 U	ug/L	10
Fluorene	86-73-7	10 U	ug/L	10
Indeno(1,2,3-cd)pyrene	193-39-5	10 U	ug/L	10
Naphthalene	91-20-3	190	ug/L	10
Phenanthrene	85-01-8	10 U	ug/L	10
Pyrene	129-00-0	10 U	ug/L	10
2-Fluorobiphenyl - SS	321-60-8	102	%rec	10

Report of Analytical Results
610(MOD)-PNA W/CLEANUP, STD LIST, GC, W/WW

Date Collected: 07/13/95
Date Received: 07/14/95
Date Extracted: 07/17/95
Date Analyzed: 07/19/95

Client Sample ID: KTG00401
Lab ReferenceNum: G8017

Sample ID: G8017004
Sample Matrix: Water
Sample Description: JAX-873-1-2R
Dilution: 1.00

Analytical Parameter	CAS/Storet Number	Result	Units	Reporting Level
GC SEMI-VOLATILES				
1-Methylnaphthalene	90-12-0	5.5	ug/L	2.0
2-Methylnaphthalene	91-57-6	2.8	ug/L	2.0
Acenaphthene	83-32-9	2.0 U	ug/L	2.0
Acenaphthylene	208-96-8	2.0 U	ug/L	2.0
Anthracene	120-12-7	2.0 U	ug/L	2.0
Benzo(a)anthracene	56-55-3	2.0 U	ug/L	2.0
Benzo(a)pyrene	50-32-8	2.0 U	ug/L	2.0
Benzo(b)fluoranthene	205-99-2	2.0 U	ug/L	2.0
Benzo(g,h,i)perylene	191-24-2	2.0 U	ug/L	2.0
Benzo(k)fluoranthene	207-08-9	2.0 U	ug/L	2.0
Chrysene	218-01-9	2.0 U	ug/L	2.0
Dibenzo(a,h)anthracene	53-70-3	2.0 U	ug/L	2.0
Fluoranthene	206-44-0	2.0 U	ug/L	2.0
Fluorene	86-73-7	2.0 U	ug/L	2.0
Indeno(1,2,3-cd)pyrene	193-39-5	2.0 U	ug/L	2.0
Naphthalene	91-20-3	2.7	ug/L	2.0
Phenanthrene	85-01-8	2.0 U	ug/L	2.0
Pyrene	129-00-0	2.0 U	ug/L	2.0
2-Fluorobiphenyl - SS	321-60-8	83	%rec	

Report of Analytical Results
 610(MOD)-PNA W/CLEANUP,STD LIST,GC,W/WW

Date Collected: None
 Date Received: None
 Date Extracted: 07/17/95
 Date Analyzed: 07/19/95

Client Sample ID: WPNA5G171
 Lab ReferenceNum: LABQC

Sample ID: WPNA5G171
 Sample Matrix: Water
 Sample Description:
 Dilution: 1.00

Analytical Parameter	CAS/Storet Number	Result	Units	Reporting Level
GC SEMI-VOLATILES				
1-Methylnaphthalene	90-12-0	2.0 U	ug/L	2.0
2-Methylnaphthalene	91-57-6	2.0 U	ug/L	2.0
Acenaphthene	83-32-9	2.0 U	ug/L	2.0
Acenaphthylene	208-96-8	2.0 U	ug/L	2.0
Anthracene	120-12-7	2.0 U	ug/L	2.0
Benzo(a)anthracene	56-55-3	2.0 U	ug/L	2.0
Benzo(a)pyrene	50-32-8	2.0 U	ug/L	2.0
Benzo(b)fluoranthene	205-99-2	2.0 U	ug/L	2.0
Benzo(g,h,i)perylene	191-24-2	2.0 U	ug/L	2.0
Benzo(k)fluoranthene	207-08-9	2.0 U	ug/L	2.0
Chrysene	218-01-9	2.0 U	ug/L	2.0
Dibenzo(a,h)anthracene	53-70-3	2.0 U	ug/L	2.0
Fluoranthene	206-44-0	2.0 U	ug/L	2.0
Fluorene	86-73-7	2.0 U	ug/L	2.0
Indeno(1,2,3-cd)pyrene	193-39-5	2.0 U	ug/L	2.0
Naphthalene	91-20-3	2.0 U	ug/L	2.0
Phenanthrene	85-01-8	2.0 U	ug/L	2.0
Pyrene	129-00-0	2.0 U	ug/L	2.0
2-Fluorobiphenyl - SS	321-60-8	85	%rec	

CONTROL CHARTS

CHAIN OF CUSTODY DOCUMENTATION

CH2M HILL Project #		Purchase Order #		# OF CONTAINERS										LAB TEST CODES					SHADED AREA - FOR LAB USE ONLY											
Project Name Kemen Test Cell Quarterly Monitoring		Company Name/CH2M HILL Office ABB Environmental Services, Inc.												Project #					Lab 1 # G8017		Lab 2 #			Quote #		KII Request #				
Project Manager & Phone # Mr. <input checked="" type="checkbox"/> Jesse Tremaine Ms. <input type="checkbox"/> Elizabeth Messer Dr. <input type="checkbox"/> Ann-Marie Weaver - DPR		Report Copy to: Elizabeth Messer Orange Park, FL Ann-Marie Weaver - DPR		ANALYSES REQUESTED															Project #											
Requested Completion Date: 30 TAT Standard		Sampling Requirements SOWA NPDES RCRA OTHER <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> NESSA		Sample Disposal: Dispose <input checked="" type="checkbox"/> Return <input type="checkbox"/>		# OF CONTAINERS					No. of Samples 5		Page 1		of 1															
Sampling		Type		Matrix							CLIENT SAMPLE ID (9 CHARACTERS)									COC Rev		Login		LIMS Ver		Ack Gen				
Date		Time		C O M P		G R A B		W A T E R		S O I L										REMARKS		LAB 1 ID		LAB 2 ID						
7-13-95 1400		XX		KTG		<div style="border: 1px solid black; border-radius: 50%; width: 100px; height: 100px; display: flex; align-items: center; justify-content: center; margin: 0 auto;"> 3/9 </div>									VOC w/HCL		PAH w/HCL		TPH w/H2SO4		Pb w/HNO3		EDB		Jax-873-11		1			
7-13-95 1500		XX		KTG											WW		-		-		-		WW		Jax-873-1-3		2			
7-13-95 1530		XX		KTG											WW		-		-		-		WW		Jax-873-1-1R		3			
7-13-95 1600		XX		KTG											WW		-		-		-		WW		Jax-873-1-2R		4			
7-13-95 -		XX		KT											T		O		O		O		O				5			
Sampled By & Title <i>Kelly Murray, EOL</i>		Date/Time 7-13-95 1600		Relinquished By <i>K Murray</i>		Date/Time 7-14-95 0730		HAZWRAP/NESSA: Y N																						
Received By <i>[Signature]</i>		Date/Time 7-14-95 0730		Relinquished By		Date/Time		QC Level: 1 2 3 Other: _____																						
Received By <i>Ann North, B. NORTH</i>		Date/Time 7-14-95 1020		Relinquished By		Date/Time		COC Rec <input checked="" type="checkbox"/> ICE <input checked="" type="checkbox"/>																						
Received By		Date/Time		Relinquished By		Date/Time		Ana Req <input checked="" type="checkbox"/> TEMPR <input checked="" type="checkbox"/>																						
Received By		Date/Time		Shipped Via UPS BUS Fed-Ex Hand Other		Shipping # 88573		Cust Seal <input checked="" type="checkbox"/> Ph <input checked="" type="checkbox"/>																						
Work Authorized By		Date/Time		Remarks																										

Instructions and / ment Provisions on Reverse Side



Sample Receipt Record

Batch Number: G507

Date received: 7.14.95

Client/Project: ABB-Kemen Test Cell

VERIFICATION OF SAMPLE CONDITIONS (verify all items)

Observation	YES	NO
Were custody seals intact and on the outside of the cooler?	✓	
Was the Chain of Custody inside the cooler?	✓	
Was the Chain of Custody properly filled out?	✓	
Were the sample containers in good condition?	✓	
Was there ice in the cooler? Enter temperature of temperature blank or icewater: <u>4 °C</u>	✓	

If the answer to any of the questions above is NO, a Sample Receipt Exceptions Report must be written.

VERIFICATION OF SAMPLE PRESERVATION (verify all preserved samples)

Sample No	Nutrients (TPH)	Metals	Volatiles	Cyanide	Other (specify)	Other (specify)
1	< 2	< 2	< 2			
2	< 2	< 2	< 2			
3	< 2	< 2	< 2			
4	< 2	< 2	< 2			
5			< 2			

pH VERIFICATIONS PERFORMED BY

Ben North 7.14.95 _____
Date Date

CATIONS ALIQUOTS

Ben North 7.14.95 1155 Jenni Atwood 7/14/95 1155
Relinquished by: Date/Time Received by: Date/Time

WET CHEMISTRY ALIQUOTS

Ben North 7.14.95 1200 Walk-in cold room (A)
Relinquished by: Date/Time Received by: Date

EXTRACTIONS ALIQUOTS

Ben North 7.14.95 1130 W. Parsons 7-14-95 1130
Relinquished by: Date/Time Received by: Date/Time

VOA ALIQUOTS

Ben North 7.14.95 1155 M. Cook 7-14-95 11:55
Relinquished by: Date/Time Received by: Date/Time

Relinquished by: Date/Time Received by: Date/Time

SUBCONTRACTOR ALIQUOTS

Relinquished by: Date Subcontractor Aliquot

APPENDIX C

QUARTERLY MONITORING

Addendum 1 - Second Quarter Monitoring Event

Addendum 2 - Third Quarter Monitoring Event

Addendum 3 - Fourth Quarter Monitoring Event

FINAL DRAFT

ADDENDUM 1

SECOND QUARTER MONITORING EVENT

C.0 ANALYTICAL RESULTS AND CONCLUSIONS

C.1 LABORATORY ANALYSIS. All groundwater samples collected during the second quarter monitoring event conducted by ABB-ES in October 1995 were analyzed for kerosene analytical group parameters specified in Chapter 62-770.600(8), FAC. This analytical group consists of the following:

- volatile organic halocarbons (USEPA Method 601),
- total volatile organic aromatics (USEPA Method 602),
- polynuclear aromatic hydrocarbons (USEPA Method 610),
- total recoverable petroleum hydrocarbons (USEPA Method 418.1),
- 1,2-dibromomethane (USEPA Method 601), and
- lead (USEPA Method 239.2).

These USEPA analytical methods are described in detail in USEPA SW-846 (USEPA, 1986).

Groundwater samples collected for the first quarter monitoring event were analyzed by QAL Laboratories, Alachua, Florida. Groundwater samples collected for the second quarter monitoring event were analyzed by EA Laboratories, Sparks, Maryland.

C.2 DATA EVALUATION AND CONCLUSIONS. A baseline evaluation of groundwater contamination was performed by Rust Environmental and Infrastructure, Inc., in January 1992 as part of the RAP. The first quarter monitoring event was conducted by ABB-ES in July 1995. A summary of the analytes detected during the January 1992, July 1995 (immediately following soil removal), and October 1995 sampling events is presented in Table C-1.

Groundwater contaminant concentrations were evaluated against the baseline values and the G-II groundwater target levels for the kerosene analytical group specified in Chapter 62-770.730(5), FAC. Total naphthalene concentrations were detected at levels below the 100 micrograms per liter ($\mu\text{g}/\ell$) target level in the samples collected from JAX873-1-11 (3.2 $\mu\text{g}/\ell$), JAX 873-1-1R (57 $\mu\text{g}/\ell$), and JAX873-1-2R (45 $\mu\text{g}/\ell$). Total naphthalene concentrations did not exceed the target concentration level in any sample collected. Total lead concentrations were detected at levels below the 50 mg/l target level in the samples collected from JAX873-1-11 (5.2 mg/l), JAX873-1-3 (29.2 mg/l), JAX873-1-1R (2.0 mg/l), and JAX873-1-2R (1.0 mg/l). Total lead concentrations did not exceed the target concentration level in any sample collected. All other analyte concentrations were below reporting levels in the four samples.

A complete evaluation of site conditions and the effectiveness of the remedial action will be made upon the completion of the 1-year monitoring period.

FINAL DRAFT

Table C-1
Groundwater Analytes Detected in Reportable Quantities for
Monitoring Wells JAX873-1-11 and JAX873-1-3

Quarterly Groundwater Monitoring Activity Report
 Kernen Test Cell
 Naval Air Station, Jacksonville, Florida

Parameter	Target Compound	JAX873-1-11			JAX873-1-3	
		February 1993	July 1995	October 1995	July 1995	October 1995
Free Product, inches	NA	NP	NP	NP	NP	NP
Total Lead, mg/l	50	NA	bdl	5.2	bdl	29.2
Acenaphthene, µg/l	NA	bdl	bdl	bdl	bdl	bdl
Acenaphthylene, µg/l	NA	bdl	bdl	bdl	bdl	bdl
Fluoranthene, µg/l	NA	bdl	bdl	bdl	bdl	bdl
Fluorene, µg/l	NA	bdl	bdl	bdl	bdl	bdl
Phenanthrene + Anthracene, µg/l	NA	bdl	bdl	bdl	bdl	bdl
1-Methylnaphthalene, µg/l	NA	NA	43	bdl	5.1	bdl
2-Methylnaphthalene, µg/l	NA	NA	8.8	2.1	2.4	bdl
Naphthalene, µg/l	NA	bdl	18	1.1	bdl	bdl
Total Naphthalene, µg/l	100	bdl	70	3.2	7.5	bdl

See notes at end of table.

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Table C-1, (Continued)
Groundwater Analytes Detected in Reportable Quantities for
Monitoring Wells JAX873-1-1 and JAX873-1-1R

Quarterly Groundwater Monitoring Activity Report
 Kemen Test Cell
 Naval Air Station, Jacksonville, Florida

Parameter	Target Compound	JAX873-1-1			JAX873-1-1R	
		January 1992	June 1992	November 1993	July 1995	October 1995
Free Product, inches	NA	3.5	0.19	NP	NP	NP
Total Lead, mg/l	50	NA	NA	0.093	bdl	2.0
Acenaphthene, µg/l	NA	NA	NA	bdl	bdl	bdl
Acenaphthylene, µg/l	NA	NA	NA	bdl	bdl	bdl
Fluoranthene, µg/l	NA	NA	NA	bdl	bdl	bdl
Fluorene, µg/l	NA	NA	NA	bdl	bdl	bdl
Phenanthrene + Anthracene, µg/l	NA	NA	NA	bdl	bdl	3.1
1-Methylnaphthalene, µg/l	NA	NA	NA	130	99	bdl
2-Methylnaphthalene, µg/l	NA	NA	NA	170	87	26
Naphthalene, µg/l	NA	NA	NA	170	190	28
Total Naphthalene, µg/l	100	NA	NA	470	376	57

See notes at end of table.

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**Table C-1, (Continued)
Groundwater Analytes Detected in Reportable Quantities for
Monitoring Wells JAX873-1-2 and JAX873-1-2R**

Quarterly Groundwater Monitoring Activity Report
Kemen Test Cell
Naval Air Station, Jacksonville, Florida

Parameter	Target Compound	JAX873-1-2	JAX873-1-2R	
		January 1992	July 1995	October 1995
Free Product, inches	NA	NP	NP	NP
Total Lead, mg/l	50	0.029	bdl	1.0
Acenaphthene, µg/l	NA	14	bdl	2.4
Acenaphthylene, µg/l	NA	13	bdl	4.5
Fluoranthene, µg/l	NA	10	bdl	bdl
Fluorene, µg/l	NA	32	bdl	31
Phenanthrene + Anthracene, µg/l	NA	26	bdl	12.9
1-Methylnaphthalene, µg/l	NA	70	5.5	4.3
2-Methylnaphthalene, µg/l	NA	96	2.8	18
Naphthalene, µg/l	NA	NA	2.7	9.9
Total Naphthalene, µg/l	100	192	11	45

Notes: JAX873-1-2R = replacement well for JAX873-1-2.
 JAX873-1-1R = replacement well for JAX873-1-1.
 NA = not available.
 NP = none present.
 mg/l = milligrams per liter.
 bdl = below detection limits.
 µg/l = micrograms per liter.

Note that Table 3-2 incorrectly reported the July 1995 first quarter monitoring event data as January 1995. This table reflects the corrected information.

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ADDENDUM 2

THIRD QUARTER MONITORING EVENT

C.0 ANALYTICAL RESULTS AND CONCLUSIONS

C.1 LABORATORY ANALYSIS. All groundwater samples collected during the third quarter monitoring event conducted by ABB-ES in January 1996 were analyzed for kerosene analytical group parameters specified in Chapter 62-770.600(8), FAC. This analytical group consists of the following:

- volatile organic halocarbons (USEPA Method 601),
- total volatile organic aromatics (USEPA Method 602),
- polynuclear aromatic hydrocarbons (USEPA Method 610),
- total recoverable petroleum hydrocarbons (USEPA Method 418.1),
- 1,2-dibromomethane (USEPA Method 601), and
- lead (USEPA Method 239.2).

These USEPA analytical methods are described in detail in USEPA SW-846 (USEPA, 1986).

Groundwater samples collected for the first quarter monitoring event were analyzed by QAL Laboratories, Alachua, Florida. Groundwater samples collected for the second and third quarter monitoring events were analyzed by EA Laboratories, Sparks, Maryland.

C.2 DATA EVALUATION AND CONCLUSIONS. A baseline evaluation of groundwater contamination was performed by Rust Environmental and Infrastructure, Inc., in January 1992 as part of the RAP. The first quarter monitoring event was conducted by ABB-ES in July 1995. The second quarter monitoring event was conducted by ABB-ES in October 1995. A summary of the analytes detected during the January 1992, July 1995 (immediately following soil removal), October 1995, and January 1996 sampling events is presented in Table C-2.

Groundwater contaminant concentrations were evaluated against the baseline values and the G-II groundwater target levels for the kerosene analytical group specified in Chapter 62-770.730(5), FAC. Total naphthalene concentrations exceeded the 100 micrograms per liter ($\mu\text{g}/\ell$) target level in the sample collected from JAX873-1-1R (265 $\mu\text{g}/\ell$). Total naphthalene concentrations were detected at levels below 100 $\mu\text{g}/\ell$ in the samples collected from JAX 873-1-11 (7.9 $\mu\text{g}/\ell$), JAX873-1-3 (below detection levels), and JAX873-1-2R (8.2 $\mu\text{g}/\ell$). Total lead concentrations were detected at levels below the 50 milligrams per liter (mg/ ℓ) target level in the samples collected from JAX873-1-11 (3.7 mg/ ℓ), JAX873-1-3 (10.2 mg/ ℓ), JAX873-1-1R (6.2 mg/ ℓ), and JAX873-1-2R (1.4 mg/ ℓ). Total lead concentrations did not exceed the target concentration level in any sample collected.

A complete evaluation of site conditions and the effectiveness of the remedial action will be made upon the completion of the 1-year monitoring period.

FINAL DRAFT

Table C-2
Groundwater Analytes Detected in Reportable Quantities for
Monitoring Wells JAX873-1-11 and JAX873-1-3

Quarterly Groundwater Monitoring Activity Report
 Kernen Test Cell
 Naval Air Station, Jacksonville, Florida

Parameter	Target Compound	JAX873-1-11				JAX873-1-3		
		February 1993	July 1995	October 1995	January 1996	July 1995	October 1995	January 1996
Free Product, inches	NA	NP	NP	NP	NP	NP	NP	NP
Total Lead, mg/ℓ	50	NA	bdl	5.2	3.7	bdl	29.2	10.2
Acenaphthene, μg/ℓ	NA	bdl	bdl	bdl	2.5	bdl	bdl	bdl
Acenaphthylene, μg/ℓ	NA	bdl	bdl	bdl	1.6	bdl	bdl	bdl
Fluoranthene, μg/ℓ	NA	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Fluorene, μg/ℓ	NA	bdl	bdl	bdl	2.1	bdl	bdl	bdl
Phenanthrene + Anthracene, μg/ℓ	NA	bdl	bdl	bdl	bdl	bdl	bdl	bdl
1-Methylnaphthalene, μg/ℓ	NA	NA	43	bdl	1.6	5.1	bdl	bdl
2-Methylnaphthalene, μg/ℓ	NA	NA	8.8	2.1	4.7	2.4	bdl	bdl
Naphthalene, μg/ℓ	NA	bdl	18	1.1	1.6	bdl	bdl	bdl
Total Naphthalene, μg/ℓ	100	bdl	70	3.2	7.9	7.5	bdl	bdl
See notes at end of table.								

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Table C-2 (continued)
Groundwater Analytes Detected in Reportable Quantities for
Monitoring Wells JAX873-1-1 and JAX873-1-1R

Quarterly Groundwater Monitoring Activity Report
 Kernen Test Cell
 Naval Air Station, Jacksonville, Florida

Parameter	Target Compound	JAX873-1-1			JAX873-1-1R		
		January 1992	June 1992	November 1993	July 1995	October 1995	January 1996
Free Product, inches	NA	3.5	0.19	NP	NP	NP	NP
Total Lead, mg/l	50	NA	NA	0.093	bdl	2.0	6.2
Acenaphthene, µg/l	NA	NA	NA	bdl	bdl	bdl	bdl
Acenaphthylene, µg/l	NA	NA	NA	bdl	bdl	bdl	bdl
Fluoranthene, µg/l	NA	NA	NA	bdl	bdl	bdl	bdl
Fluorene, µg/l	NA	NA	NA	bdl	bdl	bdl	bdl
Phenanthrene + Anthracene, µg/l	NA	NA	NA	bdl	bdl	3.1	2.5
1-Methylnaphthalene, µg/l	NA	NA	NA	130	99	bdl	12
2-Methylnaphthalene, µg/l	NA	NA	NA	170	87	26	100
Naphthalene, µg/l	NA	NA	NA	170	190	28	150
Total Naphthalene, µg/l	100	NA	NA	470	376	57	265
See notes at end of table.							

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Table C-2 (continued)
Groundwater Analytes Detected in Reportable Quantities for
Monitoring Wells JAX873-1-2 and JAX873-1-2R

Quarterly Groundwater Monitoring Activity Report
 Kernen Test Cell
 Naval Air Station, Jacksonville, Florida

Parameter	Target Compound	JAX873-1-2	JAX873-1-2R		
		January 1992	July 1995	October 1995	January 1996
Free Product, inches	NA	NP	NP	NP	NP
Total Lead, mg/l	50	0.029	bdl	1.0	1.4
Acenaphthene, µg/l	NA	14	bdl	2.4	bdl
Acenaphthylene, µg/l	NA	13	bdl	4.5	bdl
Benzo(a)pyrene, µg/l	NA	bdl	bdl	bdl	1.4
Fluoranthene, µg/l	NA	10	bdl	bdl	bdl
Fluorene, µg/l	NA	32	bdl	31	bdl
Phenanthrene + Anthracene, µg/l	NA	26	bdl	12.9	1.3
1-Methylnaphthalene, µg/l	NA	70	5.5	4.3	bdl
2-Methylnaphthalene, µg/l	NA	96	2.8	18	2.9
Naphthalene, µg/l	NA	NA	2.7	9.9	4.0
Total Naphthalene, µg/l	100	192	11	45	8.2

Notes: JAX873-1-1R = Replacement well for JAX873-1-1.
 JAX873-1-2R = Replacement well for JAX873-1-2.

NA = not available.
 NP = none present.
 mg/l = milligrams per liter.
 bdl = below detection limits.
 µg/l = micrograms per liter.

Note that Table 3-2 incorrectly reported the July 1995 first quarter monitoring event data as January 1995. This table reflects the corrected information.

ADDENDUM 3
FOURTH QUARTER MONITORING EVENT

FINAL DRAFT

ADDENDUM 3

FOURTH QUARTER MONITORING EVENT

C.0 ANALYTICAL RESULTS AND CONCLUSIONS

C.1 LABORATORY ANALYSIS. All groundwater samples collected during the fourth quarter monitoring event conducted by ABB-ES in April 1996 were analyzed for kerosene analytical group parameters specified in Chapter 62-770.600(8), Florida Administrative Code (FAC). This analytical group consists of the following:

- volatile organic halocarbons (U.S. Environmental Protection Agency [USEPA] Method 601),
- total volatile organic aromatics (USEPA Method 602),
- polynuclear aromatic hydrocarbons (USEPA Method 610),
- total recoverable petroleum hydrocarbons (USEPA Method 418.1),
- 1,2-dibromomethane (USEPA Method 601), and
- lead (USEPA Method 239.2).

These USEPA analytical methods are described in detail in USEPA SW-846 (USEPA, 1986).

Groundwater samples collected for the first quarter monitoring event were analyzed by QAL Laboratories, Alachua, Florida. Groundwater samples collected for the second, third, and fourth quarter monitoring events were analyzed by EA Laboratories, Sparks, Maryland.

C.2 DATA EVALUATION AND CONCLUSIONS. A baseline evaluation of groundwater contamination was performed by Rust Environmental and Infrastructure, Inc., in January 1992 as part of the remedial action plan. The first quarter monitoring event was conducted by ABB-ES in July 1995. The second quarter monitoring event was conducted by ABB-ES in October 1995. The third quarter monitoring event was conducted by ABB-ES in January 1996. A summary of the analytes detected during the January 1992, July 1995 (immediately following soil removal), October 1995, January 1996, and April 1996 sampling events is presented in Table C-2.

Groundwater contaminant concentrations were evaluated against the baseline values and the G-II groundwater target levels for the kerosene analytical group specified in Chapter 62-770.730(5), FAC. Total naphthalene concentrations did not exceed the 100 micrograms per liter ($\mu\text{g}/\ell$) target level in any samples. Total naphthalene concentrations were detected at levels below 100 $\mu\text{g}/\ell$ in the sample collected from JAX873-1-1R (4.9 $\mu\text{g}/\ell$). Total lead concentrations were detected at levels below the 50 mg/ℓ target level in the samples collected from JAX873-1-2R (1.1 mg/ℓ), JAX873-1-3 (2.6 mg/ℓ), JAX873-1-1R (1.9 mg/ℓ), and JAX873-1-11 (2.1 mg/ℓ). Total lead concentrations did not exceed the target concentration level in any sample collected.

Table C-2
Groundwater Analytes Detected in Reportable Quantities for Monitoring Wells

Quarterly Groundwater Monitoring Activity Report
Kemen Test Cell
Naval Air Station, Jacksonville, Florida

Parameter	Target Compound	JAX873-1-11					JAX873-1-3			
		February 1993	July 1995	October 1995	January 1996	April 1996	July 1995	October 1995	January 1996	April 1996
Free Product, inches	NA	NP	NP	NP	NP	NP	NP	NP	NP	NP
Total Lead, mg/l	50	NA	bdl	5.2	3.7	2.1	bdl	29.2	10.2	2.6
Acenaphthens, µg/l	NA	bdl	bdl	bdl	2.5	bdl	bdl	bdl	bdl	bdl
Acenaphthylene, µg/l	NA	bdl	bdl	bdl	1.6	bdl	bdl	bdl	bdl	bdl
Fluoranthene, µg/l	NA	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
Fluorene, µg/l	NA	bdl	bdl	bdl	2.1	bdl	bdl	bdl	bdl	bdl
Phenanthrene + Anthracene, µg/l	NA	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl	bdl
1-Methylnaphthalene, µg/l	NA	NA	43	bdl	1.6	bdl	5.1	bdl	bdl	bdl
2-Methylnaphthalene, µg/l	NA	NA	8.8	2.1	4.7	bdl	2.4	bdl	bdl	bdl
Naphthalene, µg/l	NA	bdl	18	1.1	1.6	bdl	bdl	bdl	bdl	bdl
Total Naphthalene, µg/l	100	bdl	70	3.2	7.9	bdl	7.5	bdl	bdl	bdl
See notes at end of table.										

Table C-2 (continued)
Groundwater Analytes Detected in Reportable Quantities for Monitoring Wells

Quarterly Groundwater Monitoring Activity Report
Kemen Test Cell
Naval Air Station, Jacksonville, Florida

Parameter	Target Compound	JAX873-1-1			JAX873-1-1R			
		January 1992	June 1992	November 1993	July 1995	October 1995	January 1996	April 1996
Free Product, inches	NA	3.5	0.19	NP	NP	NP	NP	NP
Total Lead, mg/l	50	NA	NA	0.093	bdl	2.0	6.2	1.9
Acenaphthene, µg/l	NA	NA	NA	bdl	bdl	bdl	bdl	bdl
Acenaphthylene, µg/l	NA	NA	NA	bdl	bdl	bdl	bdl	bdl
Fluoranthene, µg/l	NA	NA	NA	bdl	bdl	bdl	bdl	bdl
Fluorene, µg/l	NA	NA	NA	bdl	bdl	bdl	bdl	bdl
Phenanthrene + Anthracene, µg/l	NA	NA	NA	bdl	bdl	3.1	2.5	bdl
1-Methylnaphthalene, µg/l	NA	NA	NA	130	99	bdl	12	bdl
2-Methylnaphthalene, µg/l	NA	NA	NA	170	87	26	100	3.4
Naphthalene, µg/l	NA	NA	NA	170	190	28	150	1.5
Total Naphthalene, µg/l	100	NA	NA	470	376	57	265	4.9
See notes at end of table.								

Table C-2 (continued)
Groundwater Analytes Detected in Reportable Quantities for Monitoring Wells

Quarterly Groundwater Monitoring Activity Report
Kemen Test Cell
Naval Air Station, Jacksonville, Florida

Parameter	Target Compound	JAX873-1-2	JAX873-1-2R			
		January 1992	July 1995	October 1995	January 1996	April 1996
Free Product, inches	NA	NP	NP	NP	NP	NP
Total Lead, mg/l	50	0.029	bdl	1.0	1.4	1.1
Acenaphthene, µg/l	NA	14	bdl	2.4	bdl	bdl
Acenaphthylene, µg/l	NA	13	bdl	4.5	bdl	bdl
Benzo(a)pyrene, µg/l	NA	bdl	bdl	bdl	1.4	bdl
Fluoranthene, µg/l	NA	10	bdl	bdl	bdl	bdl
Fluorene, µg/l	NA	32	bdl	31	bdl	bdl
Phenanthrene + Anthracene, µg/l	NA	26	bdl	12.9	1.3	bdl
1-Methylnaphthalene, µg/l	NA	70	5.5	4.3	bdl	bdl
2-Methylnaphthalene, µg/l	NA	96	2.8	18	2.9	bdl
Naphthalene, µg/l	NA	NA	2.7	9.9	4.0	bdl
Total Naphthalene, µg/l	100	192	11	45	8.2	bdl

Notes: JAX873-1-1R = Replacement well for JAX873-1-1.
JAX873-1-2R = Replacement well for JAX873-1-2.

NA = not available.
NP = none present.
mg/l = milligrams per liter.
bdl = below detection limits.
µg/l = micrograms per liter.

Note that Table 3-2 incorrectly reported the July 1995 first quarter monitoring event data as January 1995. This table reflects the corrected information.