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NAS CECIL FIELD
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SITE SPECIFIC HEALTH AND SAFETY PLAN CONTAMINATION ASSESSMENT PLAN FOR
BRAC OIL-WATER SEPERATOR AND MISCELLANEOUS TANK SITES NAS CECIL FIELD FL

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HARDING LAWSON ASSOCIATES

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**SITE-SPECIFIC HEALTH AND SAFETY PLAN
CONTAMINATION ASSESSMENT PLAN, BRAC OIL-WATER
SEPARATOR AND MISCELLANEOUS TANK SITES**

**NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA**

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Naval Air Station Cecil Field
Jacksonville, Florida

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REFERENCES

The following chapters of the Comprehensive Long-term Environmental Action, Navy (CLEAN) Program District I Generic Health and Safety Plan are applicable for the work anticipated at the site:

- 2.0 AUTHORITY AND RESPONSIBILITY OF HEALTH AND SAFETY PERSONNEL
- 3.0 TRAINING PROGRAM
- 4.0 MEDICAL SURVEILLANCE PROGRAM
- 5.0 ENGINEERING CONTROLS
- 6.0 PERSONAL PROTECTIVE LEVEL DETERMINATION
- 7.0 MONITORING EQUIPMENT
- 8.0 ZONATION
- 9.0 WORK PRACTICES
- 10.0 CONFINED SPACE ENTRY PROCEDURES
- 11.0 EXCAVATION AND TRENCHING
- 12.0 TEMPERATURE EXTREMES
 - HEAT STRESS
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 - HEALTH AND SAFETY AUDIT FORM
 - ACCIDENT REPORT FORM
 - HEALTH AND SAFETY OFFICER CHECKLIST FOR FIELD OPERATIONS
 - MATERIAL SAFETY DATA SHEETS
 - LIQUI-NOX
 - ETHYL ALCOHOL (denatured)
 - TRISODIUM PHOSPHATE
 - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION POSTER
 - DAILY HEALTH AND SAFETY AUDIT FORM
- 16.0 RESPIRATORY PROTECTION PROGRAM
- 17.0 OTHER
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Site-Specific Health and Safety Plan
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GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
BRAC	Base Realignment and Closure
CFR	Code of Federal Regulations
CLEAN	Comprehensive Long-Term Environmental Action, Navy
HASP	health and safety plan
HLA	Harding Lawson Associates
HSM	health and safety manager
HSO	health and safety officer
HSS	health and safety supervisor
NAS	Naval Air Station
OSHA	Occupational Safety and Health Administration
PAH	polynuclear aromatic hydrocarbons
PM	project manager
TM	trademark
USEPA	U.S. Environmental Protection Agency

1.0 INTRODUCTION

1.1 SCOPE AND PURPOSE. This Health and Safety Plan (HASP) has been prepared in conformance with the Comprehensive Long-Term Environmental Action, Navy (CLEAN) program District I HASP and is intended to meet the requirements of 29 Code of Federal Regulations (CFR) 1910.120. As such, the HASP addresses those activities associated with field operations for this project. Compliance with this HASP is required for all Harding Lawson Associates (HLA) personnel, contractor personnel, or third parties entering the site.

1.2 PROJECT PERSONNEL.

1.2.1 Project Manager The project manager (PM) is the individual with overall project management responsibilities. Those responsibilities as they relate to health and safety include provision for the development of this site-specific HASP, the necessary resources to meet requirements of this HASP, the coordination of staff assignments to ensure that personnel assigned to the project meet medical and training requirements, and the means and materials necessary to resolve any health and safety issues that are identified or that develop on the project.

1.2.2 General Site Supervisor The general site supervisor is either the PM or the PM's designee who is on site and vested with the authority by the PM to carry out day-to-day site operations, including interfacing with the site health and safety officer (HSO).

1.2.3 Health and Safety Officer The HSO for this project has been designated by the PM with concurrence of the health and safety supervisor (HSS) or health and safety manager (HSM). The HSO will have at least an indirect line of reporting to the HSM through the HSS for the duration of his or her assignment as project HSO. The HSO is responsible for developing and implementing this site-specific HASP in accordance with the CLEAN HASP. The HSO will investigate all accidents, illnesses, and incidents occurring on site. The HSO will also conduct safety briefings and site-specific training for on-site personnel. As necessary, the HSO will accompany all U.S. Environmental Protection Agency (USEPA), Occupational Safety and Health Administration (OSHA), or other governmental agency personnel visiting an HLA site in response to health and safety issues. The HSO, in consultation with the HSS or HSM, is responsible for updating and modifying this HASP as site or environmental conditions change.

1.3 TRAINING. Training is defined under the CLEAN HASP. All personnel entering potentially contaminated areas of this site must complete a 40-hour training program and meet the requirements set by OSHA in standard 29 CFR 1910.120. Personnel without the required training **will not be permitted** in any area with potential for exposure to toxic substances or harmful physical agents (i.e., downrange). Refer to Chapter 3.0 of the CLEAN HASP for further information.

All personnel assigned to an HLA site must participate in the site-specific training presentation, which will cover major elements of the site HASP, as well as health and safety procedures regarding an individual's specific job responsibilities and tasks. The site HSO or health and safety designee will

provide this training before an individual is permitted to work in a downrange position.

1.4 MEDICAL SURVEILLANCE. All personnel entering potentially contaminated areas of this site will be medically qualified for site assignment through a medical surveillance program outlined in the CLEAN HASP. Personnel who have not received medical clearance **will not be permitted** in any area with potential for exposure to toxic substances or harmful physical agents (i.e., downrange). Refer to Chapter 4.0 of the CLEAN HASP for further information.

2.0 FACILITY SITE CHARACTERIZATION AND ANALYSIS

2.1 SITE NAME AND LOCATION. The Base Realignment and Closure (BRAC) oil-water separator and miscellaneous tank sites are located throughout Naval Air Station (NAS) Cecil Field in Jacksonville, Florida.

2.2 SITE HISTORY AND LAYOUT. Site history and layout are presented in the Environmental Baseline Survey Report.

2.3 SCOPE OF WORK (WORKPLAN). HLA will conduct a contamination assessment at the site to evaluate the release of petroleum contamination in soil and groundwater at the BRAC oil-water separator and miscellaneous tank sites. The field investigation will consist of advancing soil borings and installing shallow monitoring wells.

3.0 TASK ANALYSIS

3.1 TASK ONE.

3.1.1 Hazardous Substances The contaminants of concern known or suspected to be present on site, along with established exposure limits for those substances, are listed in Table 3-1.

**Table 3-1
Contaminants of Concern**

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Chemical	Approximate Odor Threshold (ppm)	Permissible Exposure Limits (ppm)	Threshold Limit Value (ppm)	Physical Characteristics	Dermal Toxicity	Remarks
Benzene	4.7	1	1	Colorless liquid, pleasant aromatic odor.	Moderate skin irritant.	Inhalation of large amounts attacks central nervous system; chronic poisoning causes leukemia.
Ethylbenzene	140	100	100	Colorless liquid, aromatic odor.	Moderate skin irritant.	Liquid blisters skin; inhalation results in dizziness, depression.
Toluene	0.17	100	100	Colorless liquid, pleasant aromatic odor.	Mild skin irritant.	Ingestion or aspiration can cause pulmonary edema, depressed respiration, kidney and liver damage.
Xylene	0.05	100	100	Colorless liquid, aromatic odor.	Moderate skin irritant.	Inhalation causes headache and dizziness; vapors irritate eyes; can be fatal if ingested.
Naphthalene (PAHs)	--	10	10	Colorless to brown solid with an odor of moth-balls.	Moderate skin irritant.	Inhalation causes headache and confusion; vapors irritate eyes.

Notes: ppm = parts per million.
-- = not applicable.
PAH = polynuclear aromatic hydrocarbon.

3.1.2 Site Risks Listed below are the health hazards and safety hazards that are expected to be encountered at the site.

3.1.2.1 Health Hazards Petroleum substances to which personnel may be exposed include heating oil, gasoline, diesel fuel, lube oil, and waste oil. The primary constituents of these substances that represent potential health hazards are described below and summarized in Table 3-1.

BENZENE is a colorless liquid with a pleasant aromatic odor. It is a moderate irritant in small amounts both as a gas and as a liquid. If inhaled in large

amounts, it attacks the central nervous system, possibly resulting in coma and/or respiratory arrest. Chronic poisoning causes leukemia.

ETHYLBENZENE is a colorless aromatic liquid. It is a moderate skin irritant in gaseous form. Inhalation of high concentrations of the gas may cause temporary irritation of the nose, dizziness, and depression. The liquid form can blister the skin if not washed off immediately.

TOLUENE is a colorless liquid with a pleasant aromatic odor. It is a mild skin irritant. Inhalation of high concentrations of the gas can cause temporary smarting of the eyes or irritation of the respiratory system. If the liquid form is allowed to remain on the skin for a long period of time, smarting and reddening of the skin may occur. Ingestion or aspiration of the liquid causes depressed respiration and pulmonary edema and can result in kidney or liver damage.

XYLENE is a colorless liquid with a sweet odor. It is a moderate skin irritant. When present as a gas in high concentrations, it can cause temporary slight smarting of the eyes or irritation of the respiratory system, headache, and dizziness. The liquid form may cause smarting or reddening of the skin if not washed off immediately. If the liquid is aspirated into the lungs, it can result in severe coughing, distress, and rapidly developing pulmonary edema. If ingested, nausea, vomiting, cramps, headache, and coma can occur and may be fatal. Ingestion may also result in kidney and liver damage.

POLYNUCLEAR AROMATIC HYDROCARBONS (PAHs), for the purposes of this plan and study, include those listed as parameters for USEPA Method 610. Some of the more notable PAHs from this method include acenaphthene, anthracene, chrysene, fluorene, naphthalene, phenanthrene, and pyrene. Details of these compounds are listed in Chapter 4.0.

All activities at this site will be conducted in unconfined areas. This will minimize the chances of exposure of on-site personnel to either high vapor concentrations or strong liquid concentrations of any of the substances described above.

3.1.2.2 Safety Hazards Safety hazards include those hazards to which personnel may be exposed that are unrelated to hazardous wastes. These include hazards such as heat stress, snake bites, alligator and wild boar attacks, operation of and presence around heavy equipment, lifting of objects, and vehicle traffic. Extreme caution should be practiced by all personnel while conducting work around drill rigs, backhoes, and other heavy equipment. During hot days, personnel should take time to drink fluids and cool off to avoid overheating and symptoms related to heat stress.

Lifting of heavy objects should be done with caution. Personnel should assist one another with moving heavy objects or use the appropriate equipment to accomplish these tasks. During all site activities, personnel should be aware of the possibility of an encounter with poisonous snakes, particularly rattlesnakes in pine woods.

Power substations, power lines, underground utilities, and underground pipelines are to be avoided during drilling operations. Necessary work permits for

activities at the naval facilities will be obtained from the Public Works Department or the appropriate department (e.g., fire department, etc.).

3.1.2.3 Conclusions and Risk Assessment Based on all of the available information (nature of the work, potential on-site chemicals and their properties, exposure limits, etc.), hazards associated with conducting the described field- work are considered to be low, assuming appropriate health and safety practices are maintained.

3.1.3 Protective Measures The protective measures that will be used at the site are described below.

3.1.3.1 Engineering Controls Whenever needed, engineering controls (i.e., fans to blow volatilized chemicals away from the work area) will be used.

3.1.3.2 Levels of Protection A Level D work uniform will be used at the site. Level D protection should only be used when the atmosphere contains no known hazard; all potential airborne contaminants can be monitored; and work functions preclude splash, immersion, or the potential for unexpected inhalation or contact with hazardous levels of any chemical.

3.1.4 Monitoring It is intended that real-time monitoring instrumentation will be used to monitor the work environment in order to ensure the appropriate level of protection for the site team.

3.1.4.1 Air Sampling To the extent feasible, the presence of airborne contaminants will be evaluated through the use of direct reading instrumentation. Information gathered will be used to ensure the adequacy of the levels of protection being used at the site, and may be used as the basis for upgrading or downgrading the levels of protection in conformance with action levels provided in this HASP and at the direction of the site HSO.

The following sampling equipment will be used at the site. Refer to Chapter 7.0 of the CLEAN HASP for information on the calibration and maintenance of the equipment.

- Heath PORTA-FID II (flame ionization detector)

If the FID detects a steady measurable quantity of organic vapors greater than 5 parts per million (above background conditions) in the breathing zone, the field team will withdraw from the site until health and safety conditions at the site are reevaluated.

3.1.4.2 Personal Monitoring Personal monitoring will be undertaken to characterize the personal exposure of high-risk employees to the hazardous substances they may encounter on site. Personal monitoring will be conducted on a representative basis. Personnel who are represented by the sampling will be noted in field logs.

The following personal monitoring equipment will be used at the site. Refer to Chapter 7.0 of the CLEAN HASP for information on the maintenance and calibration of the equipment.

- Thermoluminescent Dosimetry Body Badge



4.0 DATA SHEETS

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Common Symptoms	Watery liquid	Colorless	Gasoline-like odor
Benzol Benzole	Floats on water. Flammable, irritating vapor is produced. Freezing point is 42°F.		
<p>Avoid contact with liquid and vapor. Keep people away. Wear goggles and self-contained breathing apparatus. Shut off ignition sources and call fire department. Stop discharge if possible. Stay upwind and use water spray to "knock down" vapor. Isolate and remove discharged material. Notify local health and pollution control agencies.</p>			
Fire	<p>FLAMMABLE. Flashback along vapor trail may occur. Vapor may explode if ignited in an enclosed area. Wear goggles and self-contained breathing apparatus. Extinguish with dry chemical, foam, or carbon dioxide. Water may be ineffective on fire. Cool exposed containers with water.</p>		
Exposure	<p>CALL FOR MEDICAL AID.</p> <p>VAPOR Irritating to eyes, nose, and throat. If inhaled, will cause headache, difficult breathing, or loss of consciousness. Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.</p> <p>LIQUID Irritating to skin and eyes. Harmful if swallowed. Remove contaminated clothing and shoes. Flush affected area with plenty of water. IF IN EYES, hold eyelids open and flush with plenty of water. IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.</p>		
Water Pollution	<p>HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.</p>		
1. RESPONSE TO DISCHARGE		2. LABEL	
(See Response Methods Handbook) Issue warning-high flammability Restrict access		2.1 Category: Flammable liquid 2.2 Class: 3	
3. CHEMICAL DESIGNATIONS		4. OBSERVABLE CHARACTERISTICS	
3.1 CG Compatibility Class: Aromatic Hydrocarbon 3.2 Formula: C ₆ H ₆ 3.3 IMO/UN Designation: 3.2/1114 3.4 DOT ID No.: 1114 3.5 CAS Registry No.: 71-43-2		4.1 Physical State (as shipped): Liquid 4.2 Color: Colorless 4.3 Odor: Aromatic; rather pleasant aromatic odor; characteristic odor	
5. HEALTH HAZARDS			
6.1 Personal Protective Equipment: Hydrocarbon vapor canister, supplied air or a hose mask; hydrocarbon-insoluble rubber or plastic gloves; chemical goggles or face splash shield; hydrocarbon-insoluble apron such as neoprene.			
6.2 Symptoms Following Exposure: Dizziness, excitation, pallor, followed by flushing, weakness, headache, breathlessness, chest constriction. Coma and possible death.			
6.3 Treatment of Exposure: SKIN: flush with water followed by soap and water; remove contaminated clothing and wash skin. EYES: flush with plenty of water until irritation subsides. INHALATION: remove from exposure immediately. Call a physician. IF breathing is irregular or stopped, start resuscitation, administer oxygen.			
6.4 Threshold Limit Value: 10 ppm			
6.5 Short Term Inhalation Limits: 75 ppm for 30 min.			
6.6 Toxicity by Ingestion: Grade 3; LD ₅₀ = 50 to 500 mg/kg			
6.7 Late Toxicity: Leukemia			
6.8 Vapor (Gas) Irritant Characteristics: If present in high concentrations, vapors may cause irritation of eyes or respiratory system. The effect is temporary.			
6.9 Liquid or Solid Irritant Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.			
6.10 Odor Threshold: 4.88 ppm			
6.11 IDLH Value: 2,000 ppm			

<p style="text-align: center;">6. FIRE HAZARDS</p> <p>6.1 Flash Point: 12°F C.C. 6.2 Flammable Limits in Air: 1.3%-7.9% 6.3 Fire Extinguishing Agents: Dry chemical, foam, or carbon dioxide 6.4 Fire Extinguishing Agents Not to be Used: Water may be ineffective 6.5 Special Hazards of Combustion Products: Not pertinent 6.6 Behavior in Fire: Vapor is heavier than air and may travel considerable distance to a source of ignition and flashback 6.7 Ignition Temperature: 1097°F 6.8 Electrical Hazard: Class I, Group D 6.9 Burning Rate: 6.0 mm/min 6.10 Adiabatic Flame Temperature: Data not available 6.11 Stoichiometric Air to Fuel Ratio: Data not available 6.12 Flame Temperature: Data not available</p> <p style="text-align: center;">7. CHEMICAL REACTIVITY</p> <p>7.1 Reactivity with Water: No reaction 7.2 Reactivity with Common Materials: No reaction 7.3 Stability During Transport: Stable 7.4 Neutralizing Agents for Acids and Caustics: Not pertinent 7.5 Polymerization: Not pertinent 7.6 Inhibitor of Polymerization: Not pertinent 7.7 Molar Ratio (Reactant to Product): Data not available 7.8 Reactivity Group: 32</p> <p style="text-align: center;">8. WATER POLLUTION</p> <p>8.1 Aquatic Toxicity: 5 ppm/6 hr/minnow/lethal/distilled water 20 ppm/24 hr/sunfish/TL_m/tap water 8.2 Waterfowl Toxicity: Data not available 8.3 Biological Oxygen Demand (BOD): 1.2 lb/lb, 10 days 8.4 Food Concentration Potential: None</p> <p style="text-align: center;">9. SHIPPING INFORMATION</p> <p>9.1 Grades of Purity: Industrial pure 99 + % Thiophene-free 99 + % Nitration 99 + % Industrial 90% 85 + % Reagent 99 + % 9.2 Storage Temperature: Open 9.3 Inert Atmosphere: No requirement 9.4 Venting: Pressure-vacuum</p>	<p style="text-align: center;">10. HAZARD ASSESSMENT CODE (See Hazard Assessment Handbook)</p> <p style="text-align: center;">A-T-U-V-W</p> <p style="text-align: center;">11. HAZARD CLASSIFICATIONS</p> <p>11.1 Code of Federal Regulations: Flammable liquid 11.2 NAS Hazard Rating for Bulk Water Transportation:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Category</th> <th style="text-align: right;">Rating</th> </tr> </thead> <tbody> <tr> <td>Fire</td> <td style="text-align: right;">3</td> </tr> <tr> <td>Health</td> <td></td> </tr> <tr> <td style="padding-left: 20px;">Vapor Irritant</td> <td style="text-align: right;">1</td> </tr> <tr> <td style="padding-left: 20px;">Liquid or Solid Irritant</td> <td style="text-align: right;">1</td> </tr> <tr> <td style="padding-left: 20px;">Poisons</td> <td style="text-align: right;">3</td> </tr> <tr> <td>Water Pollution</td> <td></td> </tr> <tr> <td style="padding-left: 20px;">Human Toxicity</td> <td style="text-align: right;">3</td> </tr> <tr> <td style="padding-left: 20px;">Aquatic Toxicity</td> <td style="text-align: right;">1</td> </tr> <tr> <td style="padding-left: 20px;">Aesthetic Affect</td> <td style="text-align: right;">3</td> </tr> <tr> <td>Reactivity</td> <td></td> </tr> <tr> <td style="padding-left: 20px;">Other Chemicals</td> <td style="text-align: right;">2</td> </tr> <tr> <td style="padding-left: 20px;">Water</td> <td style="text-align: right;">1</td> </tr> <tr> <td style="padding-left: 20px;">Self Reaction</td> <td style="text-align: right;">0</td> </tr> </tbody> </table> <p>11.3 NFPA Hazard Classification:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Category</th> <th style="text-align: right;">Classification</th> </tr> </thead> <tbody> <tr> <td>Health Hazard (Blue)</td> <td style="text-align: right;">2</td> </tr> <tr> <td>Flammability (Red)</td> <td style="text-align: right;">3</td> </tr> <tr> <td>Reactivity (Yellow)</td> <td style="text-align: right;">0</td> </tr> </tbody> </table> <p style="text-align: center;">12. PHYSICAL AND CHEMICAL PROPERTIES</p> <p>12.1 Physical State at 16°C and 1 atm: Liquid 12.2 Molecular Weight: 78.11 12.3 Boiling Point at 1 atm: 176°F = 80.1°C = 363.3°K 12.4 Freezing Point: 42.0°F = 5.6°C = 278.7°K 12.5 Critical Temperature: 562.0°F = 288.9°C = 562.1°K 12.6 Critical Pressure: 710 psia = 48.3 atm = 4.89 MN/m² 12.7 Specific Gravity: 0.879 at 20°C (liquid) 12.8 Liquid Surface Tension: 28.9 dynes/cm = 0.289 N/m at 20°C 12.9 Liquid Water Interfacial Tension: 35 dynes/cm = 0.035 N/m at 20°C 12.10 Vapor (Gas) Specific Gravity: 2.7 12.11 Ratio of Specific Heats of Vapor (Gas): 1.061 12.12 Latent Heat of Vaporization: 169 Btu/lb = 94.1 cal/g = 3.94 X 10⁶ J/kg 12.13 Heat of Combustion: -17,460 Btu/lb = -9698 cal/g = -406.0 X 10⁶ J/kg 12.14 Heat of Decomposition: Not pertinent 12.15 Heat of Solution: Not pertinent 12.16 Heat of Polymerization: Not pertinent 12.25 Heat of Fusion: 30.45 cal/g 12.26 Limiting Value: Data not available 12.27 Reid Vapor Pressure: 3.22 psia</p> <p style="text-align: center;">NOTES</p>	Category	Rating	Fire	3	Health		Vapor Irritant	1	Liquid or Solid Irritant	1	Poisons	3	Water Pollution		Human Toxicity	3	Aquatic Toxicity	1	Aesthetic Affect	3	Reactivity		Other Chemicals	2	Water	1	Self Reaction	0	Category	Classification	Health Hazard (Blue)	2	Flammability (Red)	3	Reactivity (Yellow)	0
Category	Rating																																				
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12.17 SATURATED LIQUID DENSITY		12.18 LIQUID HEAT CAPACITY		12.19 LIQUID THERMAL CONDUCTIVITY		12.20 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit- inch per hour- square foot-F	Temperature (degrees F)	Centipoise
55	55.330	45	.394	75	.988	55	.724
60	55.140	50	.396	80	.981	60	.693
65	54.960	55	.398	85	.975	65	.665
70	54.770	60	.400	90	.969	70	.638
75	54.580	65	.403	95	.962	75	.612
80	54.400	70	.405	100	.956	80	.588
85	54.210	75	.407	105	.950	85	.566
90	54.030	80	.409	110	.944	90	.544
95	53.840	85	.411	115	.937	95	.524
100	53.660	90	.414	120	.931	100	.505
105	53.470	95	.416	125	.925	105	.487
110	53.290	100	.418	130	.919	110	.470
115	53.100			135	.912	115	.453
120	52.920			140	.906	120	.438
125	52.730			145	.900		
130	52.540			150	.893		
135	52.360			155	.887		
140	52.170			160	.881		
145	51.990			165	.875		
150	51.800			170	.868		
155	51.620						
160	51.430						
165	51.250						
170	51.060						
175	50.870						

12.21 SOLUBILITY IN WATER		12.22 SATURATED VAPOR PRESSURE		12.23 SATURATED VAPOR DENSITY		12.24 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
77.02	.180	50	.881	50	.01258	0	.204
		60	1.171	60	.01639	25	.219
		70	1.535	70	.02109	50	.234
		80	1.989	80	.02681	75	.248
		90	2.547	90	.03371	100	.261
		100	3.227	100	.04196	125	.275
		110	4.049	110	.05172	150	.288
		120	5.033	120	.06317	175	.301
		130	6.201	130	.07652	200	.313
		140	7.577	140	.09194	225	.325
		150	9.187	150	.10960	250	.337
		160	11.060	160	.12980	275	.349
		170	13.220	170	.15270	300	.360
		180	15.700	180	.17850	325	.371
		190	18.520	190	.20750	350	.381
		200	21.740	200	.23970	375	.392
		210	25.360	210	.27560	400	.402
						425	.412
						450	.421
						475	.431
						500	.440
						525	.449
						550	.457
						575	.465
						600	.474

ETHYLBENZENE

ETB

<p>Common Symptoms</p> <p>Phenylethane EB</p>	<p>Liquid</p> <p>Colorless</p> <p>Sweet, gasoline-like odor</p>	<p>Floats on water. Flammable, irritating vapor is produced.</p>
<p>Avoid contact with liquid and vapor. Wear goggles, self-contained breathing apparatus, and rubber overclothing (including gloves). Shut off ignition sources and call fire department. Stop discharge if possible. Keep people away. Stay upwind and use water spray to "knock down" vapor. Isolate and remove discharged material. Notify local health and pollution control agencies.</p>		
Fire	<p>FLAMMABLE Flashback along vapor trail may occur. Vapor may explode if ignited in an enclosed area. Wear goggles, self-contained breathing apparatus and rubber overclothing (including gloves). Extinguish with dry chemical, foam, or carbon dioxide. Water may be ineffective on fire. Cook exposed containers with water.</p>	
Exposure	<p>CALL FOR MEDICAL AID.</p> <p>VAPOR Irritating to eyes, nose, and throat. If inhaled, will cause dizziness and/or difficult breathing. Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.</p> <p>LIQUID Will burn skin and eyes. Harmful if swallowed. Remove contaminated clothing and shoes. Flush affected areas with plenty of water. IF IN EYES, hold eyelids open and flush with plenty of water. IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk. DO NOT INDUCE VOMITING.</p>	
Water Pollution	<p>HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS. Fouling to shoreline. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.</p>	
<p>1. RESPONSE TO DISCHARGE (See Response Methods Handbook) Mechanical containment Should be removed Chemical and physical treatment</p>		<p>2. LABEL</p> <p>2.1 Category: Flammable liquid 2.2 Class: 3</p>
<p>3. CHEMICAL DESIGNATIONS</p> <p>3.1 CG Compatibility Class: Aromatic Hydrocarbon 3.2 Formula: C₈H₁₀ 3.3 IMO/UN Designation: 3.3/1176 3.4 DOT ID No.: 1176 3.5 CAS Registry No.: 100-41-4</p>		<p>4. OBSERVABLE CHARACTERISTICS</p> <p>4.1 Physical State (as shipped): Liquid 4.2 Color: Colorless 4.3 Odor: Aromatic</p>
<p style="text-align: center;">5. HEALTH HAZARDS</p> <p>5.1 Personal Protective Equipment: Self-contained breathing apparatus; safety goggles. 5.2 Symptoms Following Exposure: Inhalation may cause irritation of nose, dizziness, depression. Moderate irritation of eye with corneal injury possible. Irritates skin and may cause blisters. 5.3 Treatment of Exposure: INHALATION: If ill effects occur, remove to fresh air, keep him warm and quiet, and get medical help promptly; if breathing stops, give artificial respiration. INGESTION: induce vomiting only upon physician's approval; material in lung may cause chemical pneumonia. SKIN AND EYES: promptly flush with plenty of water (15 min. for eyes) and get medical attention; remove and wash contaminated clothing before reuse. 5.4 Threshold Limit Value: 100 ppm 5.5 Short Term Inhalation Limit: 200 ppm for 30 min. 5.6 Toxicity by Ingestion: Grade 2; LD₅₀ = 0.5 to 5 g/kg (rat) 5.7 Late Toxicity: Data not available 5.8 Vapor (Gas) Irritant Characteristics: Vapors cause moderate irritation such that personnel will find high concentrations unpleasant. The effect is temporary. 5.9 Liquid or Solid Irritant Characteristics: Causes smarting of the skin and first-degree burns on short exposure; may cause secondary burns on long exposure. 5.10 Odor Threshold: 140 ppm 5.11 IDLH Value: 2,000 ppm</p>		

<p style="text-align: center;">6. FIRE HAZARDS</p> <p>6.1 Flash Point: 80°F O.C.; 59°F C.C. 6.2 Flammable Limits in Air: 1.0%-6.7% 6.3 Fire Extinguishing Agents: Foam (most effective), water fog, carbon dioxide or dry chemical. 6.4 Fire Extinguishing Agents Not to be Used: Not pertinent 6.5 Special Hazards of Combustion Products: Irritating vapors are generated when heated. 6.6 Behavior in Fire: Vapor is heavier than air and may travel considerable distance to the source of ignition and flash back. 6.7 Ignition Temperature: 860°F 6.8 Electrical Hazard: Not pertinent 6.9 Burning Rate: 5.8 mm/min. 6.10 Adiabatic Flame Temperature: Data not available 6.11 Stoichiometric Air to Fuel Ratio: Data not available 6.12 Flame Temperature: Data not available</p>	<p style="text-align: center;">10. HAZARD ASSESSMENT CODE (See Hazard Assessment Handbook)</p> <p style="text-align: center;">A-T-U</p>
<p style="text-align: center;">7. CHEMICAL REACTIVITY</p> <p>7.1 Reactivity with Water: No reaction 7.2 Reactivity with Common Materials: No reaction 7.3 Stability During Transport: Stable 7.4 Neutralizing Agents for Acids and Caustics: Not pertinent 7.5 Polymerization: Not pertinent 7.6 Inhibitor of Polymerization: Not pertinent 7.7 Molar Ratio (Reactant to Product): Data not available 7.8 Reactivity Group: 32</p>	<p style="text-align: center;">11. HAZARD CLASSIFICATIONS</p> <p>11.1 Code of Federal Regulations: Flammable liquid. 11.2 NAS Hazard Rating for Bulk Water Transportation: Category Rating Fire 3 Health 2 Vapor Irritant 2 Liquid or Solid Irritant 2 Poisons 2 Water Pollution Human Toxicity 1 Aquatic Toxicity 3 Aesthetic Affect 2 Reactivity Other Chemicals 1 Water 0 Self Reaction 0 11.3 NFPA Hazard Classification: Category Classification Health Hazard (Blue) 2 Flammability (Red) 3 Reactivity (Yellow) 0</p>
<p style="text-align: center;">8. WATER POLLUTION</p> <p>8.1 Aquatic Toxicity: 29 ppm/96 hr/bluegill/TL₁₀₀/fresh water 8.2 Waterfowl Toxicity: Data not available 8.3 Biological Oxygen Demand (BOD): 2.8% (theor.), 5 days 8.4 Food Concentration Potential: None</p>	<p style="text-align: center;">12. PHYSICAL AND CHEMICAL PROPERTIES</p> <p>12.1 Physical State at 15°C and 1 atm: Liquid 12.2 Molecular Weight: 106.17 12.3 Boiling Point at 1 atm: 277.2°F = 136.2°C = 409.4°K 12.4 Freezing Point: -139°F = -95.0°C = 178°K 12.5 Critical Temperature: 651.0°F = 343.9°C = 617.1°K 12.6 Critical Pressure: 523 psia = 35.6 atm = 3.81 MN/m² 12.7 Specific Gravity: 0.867 at 20°C (liquid) 12.8 Liquid Surface Tension: 29.2 dynes/cm = 0.0292 N/m at 20°C 12.9 Liquid Water Interfacial Tension: 35.48 dynes/cm = 0.03548 N/m at 20°C 12.10 Vapor (Gas) Specific Gravity: Not pertinent 12.11 Ratio of Specific Heats of Vapor (Gas): 1.071 12.12 Latent Heat of Vaporization: 144 Btu/lb = 80.1 cal/g = 3.35 X 10³ J/kg 12.13 Heat of Combustion: -17,780 Btu/lb = -9877 cal/g = -413.5 X 10³ J/kg 12.14 Heat of Decomposition: Not pertinent 12.15 Heat of Solution: Not pertinent 12.16 Heat of Polymerization: Not pertinent 12.25 Heat of Fusion: Data not available 12.26 Limiting Value: Data not available 12.27 Reid Vapor Pressure: 0.4 psia</p>
<p style="text-align: center;">9. SHIPPING INFORMATION</p> <p>9.1 Grades of Purity: Research grade: 99.98%; pure grade: 99.5%; technical grade: 99.0% 9.2 Storage Temperature: Ambient 9.3 Inert Atmosphere: No requirement 9.4 Venting: Open (flame arrester) or pressure-vacuum.</p>	
<p>NOTES</p>	

ETB

ETHYLBENZENE

12.17 SATURATED LIQUID DENSITY		12.18 LIQUID HEAT CAPACITY		12.19 LIQUID THERMAL CONDUCTIVITY		12.20 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit- inch per hour- square foot-F	Temperature (degrees F)	Centipoise
40	54.990	40	.402	-90	1.065	40	.835
50	54.680	50	.404	-80	1.056	50	.774
60	54.370	60	.407	-70	1.047	60	.719
70	54.060	70	.409	-60	1.037	70	.670
80	53.750	80	.412	-50	1.028	80	.626
90	53.430	90	.414	-40	1.018	90	.586
100	53.120	100	.417	-30	1.009	100	.550
110	52.610	110	.419	-20	1.000	110	.518
120	52.500	120	.421	-10	.990	120	.488
130	52.190	130	.424	0	.981	130	.461
140	51.870	140	.426	10	.971	140	.436
150	51.560	150	.429	20	.962	150	.414
160	51.250	160	.431	30	.953	160	.393
170	50.940	170	.434	40	.943	170	.374
180	50.620	180	.436	50	.934	180	.356
190	50.310	190	.439	60	.924	190	.340
200	50.000	200	.441	70	.915	200	.325
210	49.690	210	.443	80	.906	210	.311
				90	.896		
				100	.887		
				110	.877		
				120	.868		
				130	.859		
				140	.849		
				150	.840		
				160	.830		

12.21 SOLUBILITY IN WATER		12.22 SATURATED VAPOR PRESSURE		12.23 SATURATED VAPOR DENSITY		12.24 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
68.02	.020	80	.202	80	.00370	-400	-.007
		100	.370	100	.00654	-350	.026
		120	.644	120	.01099	-300	.060
		140	1.071	140	.01767	-250	.093
		160	1.713	160	.02734	-200	.125
		180	2.643	180	.04087	-150	.157
		200	3.953	200	.05926	-100	.187
		220	5.747	220	.08363	-50	.217
		240	8.147	240	.11520	0	.246
		260	11.290	260	.15510	50	.274
		280	15.320	280	.20490	100	.301
		300	20.410	300	.26570	150	.327
		320	26.730	320	.33910	200	.353
		340	34.460	340	.42620	250	.377
		360	43.800	360	.52850	300	.401
		380	54.950	380	.64720	350	.424
						400	.446
						450	.467
						500	.487
						550	.507
						600	.525

p-XYLENE

XLP

Common Symptoms	Watery liquid	Colorless	Sweet odor
1,4-Dimethylbenzene Xylol	Floats on water. Flammable, irritating vapor is produced. Freezing point is 56°F.		
<p>Stop discharge if possible. Keep people away. Call fire department. Avoid contact with liquid and vapor. Isolate and remove discharged material. Notify local health and pollution control agencies.</p>			
Fire	<p>FLAMMABLE Flashback along vapor trail may occur. Vapor may explode if ignited in an enclosed area. Wear self-contained breathing apparatus. Extinguish with foam, dry chemical, or carbon dioxide. Water may be ineffective on fire. Cool exposed containers with water.</p>		
Exposure	<p>CALL FOR MEDICAL AID.</p> <p>VAPOR Irritating to eyes, nose, and throat. If inhaled, will cause dizziness, difficult breathing, or loss of consciousness. Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.</p> <p>LIQUID Irritating to skin and eyes. If swallowed, will cause nausea, vomiting, loss of consciousness. Remove contaminated clothing and shoes. Flush affected areas with plenty of water. IF IN EYES, hold eyelids open and flush with plenty of water. IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk. DO NOT INDUCE VOMITING.</p>		
Water Pollution	<p>HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS. Fouling to shoreline. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.</p>		
1. RESPONSE TO DISCHARGE		2. LABEL	
<p>(See Response Methods Handbook) Issue warning-high flammability Evacuate area Should be removed Chemical and physical treatment</p>		<p>2.1 Category: Flammable liquid 2.2 Class: 3</p>	
3. CHEMICAL DESIGNATIONS		4. OBSERVABLE CHARACTERISTICS	
<p>3.1 CG Compatibility Class: Aromatic Hydrocarbon 3.2 Formula: p-C₆H₄(CH₃)₂ 3.3 IMO/UN Designation: 3.2/1307 3.4 DOT ID No.: 1307 3.5 CAS Registry No.: 106-42-3</p>		<p>4.1 Physical State (as shipped): Liquid 4.2 Color: Colorless 4.3 Odor: Like benzene; characteristic aromatic</p>	
5. HEALTH HAZARDS			
<p>5.1 Personal Protective Equipment: Approved canister or air-supplied mask; goggles or face shield; plastic gloves and boots. 5.2 Symptoms Following Exposure: Vapors cause headache and dizziness. Liquid irritates eyes and skin. If taken into lungs, causes severe coughing, distress, and rapidly developing pulmonary edema. If ingested, causes nausea, vomiting, cramps, headache, and coma. Can be fatal. Kidney and liver damage can occur. 5.3 Treatment of Exposure: INHALATION: remove to fresh air; administer artificial respiration and oxygen if required; call a doctor. INGESTION: do NOT induce vomiting; call a doctor. EYES: flush with water for at least 15 min. SKIN: wipe off; wash with soap and water. 5.4 Threshold Limit Value: 100 ppm 5.5 Short Term Inhalation Limits: 300 ppm for 30 min. 5.6 Toxicity by Ingestion: Grade 3; LD50 = 50 to 500 mg/kg 5.7 Late Toxicity: Kidney and liver damage. 5.8 Vapor (Gas) Irritant Characteristics: Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary. 5.9 Liquid or Solid Irritant Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin. 5.10 Odor Threshold: 0.05 ppm 5.11 IDLH Value: 10,000 ppm</p>			

<p style="text-align: center;">6. FIRE HAZARDS</p> <p>6.1 Flash Point: 81°F C.C. 6.2 Flammable Limits in Air: 1.1%-8.8% 6.3 Fire Extinguishing Agents: Foam, dry chemical, or carbon dioxide. 6.4 Fire Extinguishing Agents Not to be Used: Water may be ineffective. 6.5 Special Hazards of Combustion Products: Not pertinent 6.6 Behavior in Fire: Vapor is heavier than air and may travel considerable distance to a source of ignition and flash back. 6.7 Ignition Temperature: 870°F 6.8 Electrical Hazard: Class I, Group D 6.9 Burning Rate: 5.8 mm/min. 6.10 Adiabatic Flame Temperature: Data not available 6.11 Stoichiometric Air to Fuel Ratio: Data not available 6.12 Flame Temperature: Data not available</p>	<p style="text-align: center;">10. HAZARD ASSESSMENT CODE (See Hazard Assessment Handbook)</p> <p style="text-align: center;">A-T-U</p> <p style="text-align: center;">11. HAZARD CLASSIFICATIONS</p> <p>11.1 Code of Federal Regulations: Flammable liquid 11.2 NAS Hazard Rating for Bulk Water Transportation:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Category</th> <th style="text-align: left;">Rating</th> </tr> </thead> <tbody> <tr> <td>Fire</td> <td>3</td> </tr> <tr> <td>Health</td> <td></td> </tr> <tr> <td> Vapor Irritant</td> <td>1</td> </tr> <tr> <td> Liquid or Solid Irritant</td> <td>1</td> </tr> <tr> <td> Poisons</td> <td>2</td> </tr> <tr> <td>Water Pollution</td> <td></td> </tr> <tr> <td> Human Toxicity</td> <td>1</td> </tr> <tr> <td> Aquatic Toxicity</td> <td>3</td> </tr> <tr> <td> Aesthetic Affect</td> <td>2</td> </tr> <tr> <td>Reactivity</td> <td></td> </tr> <tr> <td> Other Chemicals</td> <td>1</td> </tr> <tr> <td> Water</td> <td>0</td> </tr> <tr> <td> Self Reaction</td> <td>0</td> </tr> <tr> <td>11.3 NFPA Hazard Classification:</td> <td></td> </tr> <tr> <td> Category</td> <td>Classification</td> </tr> <tr> <td> Health Hazard (Blue)</td> <td>2</td> </tr> <tr> <td> Flammability (Red)</td> <td>3</td> </tr> <tr> <td> Reactivity (Yellow)</td> <td>0</td> </tr> </tbody> </table>	Category	Rating	Fire	3	Health		Vapor Irritant	1	Liquid or Solid Irritant	1	Poisons	2	Water Pollution		Human Toxicity	1	Aquatic Toxicity	3	Aesthetic Affect	2	Reactivity		Other Chemicals	1	Water	0	Self Reaction	0	11.3 NFPA Hazard Classification:		Category	Classification	Health Hazard (Blue)	2	Flammability (Red)	3	Reactivity (Yellow)	0
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<p style="text-align: center;">7. CHEMICAL REACTIVITY</p> <p>7.1 Reactivity with Water: No reaction 7.2 Reactivity with Common Materials: No reaction 7.3 Stability During Transport: Stable 7.4 Neutralizing Agents for Acids and Caustics: Not pertinent 7.5 Polymerization: Not pertinent 7.6 Inhibitor of Polymerization: Not pertinent 7.7 Molar Ratio (Reactant to Product): Data not available 7.8 Reactivity Group: 32</p>	<p style="text-align: center;">12. PHYSICAL AND CHEMICAL PROPERTIES</p> <p>12.1 Physical State at 16°C and 1 atm: Liquid 12.2 Molecular Weight: 106.16 12.3 Boiling Point at 1 atm: 280.9°F = 138.3°C = 411.5°F 12.4 Freezing Point: 55.9°F = 13.3°C = 286.6°F 12.5 Critical Temperature: 649.4°F = 343.0°C = 618.2°F 12.6 Critical Pressure: 509.4 atm = 34.65 psia = 3.510 MN/m² 12.7 Specific Gravity: 0.861 at 20°C (liquid) 12.8 Liquid Surface Tension: 28.3 dynes/cm = 0.0283 N/m at 20°C 12.9 Liquid Water Interfacial Tension: 37.8 dynes/cm = 0.0378 N/m at 20°C 12.10 Vapor (Gas) Specific Gravity: Not pertinent 12.11 Ratio of Specific Heats of Vapor (Gas): 1.071 12.12 Latent Heat of Vaporization: 150 Btu/lb = 81 cal/g = 3.4 x 10⁶ J/kg 12.13 Heat of Combustion: -17,559 Btu/lb = -9754.7 cal/g = -406.41 x 10⁶ J/kg 12.14 Heat of Decomposition: Not pertinent 12.15 Heat of Solution: Not pertinent 12.16 Heat of Polymerization: Not pertinent 12.25 Heat of Fusion: 37.63 cal/g 12.26 Limiting Value: Data not available 12.27 Reid Vapor Pressure: 0.34 psia</p>																																						
<p style="text-align: center;">8. WATER POLLUTION</p> <p>8.1 Aquatic Toxicity: 22 ppm/96/hr/bluegill/TL /fresh water 8.2 Waterfowl Toxicity: Data not available 8.3 Biological Oxygen Demand (BOD): 0 lb/lb in 5 days 8.4 Food Concentration Potential: Data not available</p>	<p style="text-align: center;">9. SHIPPING INFORMATION</p> <p>9.1 Grades of Purity: Research: 99.99%; Pure: 99.8%; Technical: 99.0% 9.2 Storage Temperature: Ambient 9.3 Inert Atmosphere: No requirement 9.4 Venting: Open (flame arrester) or pressure-vacuum</p>																																						
NOTES																																							

XLP

p-XYLENE

12.17 SATURATED LIQUID DENSITY		12.18 LIQUID HEAT CAPACITY		12.19 LIQUID THERMAL CONDUCTIVITY		12.20 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit- inch per hour- square foot-F	Temperature (degrees F)	Centipoise
60	53.970	60	.412	60	.935	60	.678
65	53.830	70	.418	65	.928	65	.654
70	53.690	80	.424	70	.921	70	.631
75	53.550	90	.429	75	.914	75	.610
80	53.410	100	.435	80	.907	80	.590
85	53.270	110	.440	85	.900	85	.571
90	53.140	120	.446	90	.892	90	.552
95	53.000	130	.451	95	.885	95	.535
100	52.860	140	.457	100	.878	100	.519
105	52.720	150	.462			105	.503
110	52.580	160	.468			110	.488
115	52.440	170	.474			115	.474
120	52.300	180	.479			120	.460
		190	.485				
		200	.490				
		210	.496				
		220	.501				
		230	.507				
		240	.512				
		250	.518				
		260	.524				
		270	.529				
		280	.535				

12.21 SOLUBILITY IN WATER		12.22 SATURATED VAPOR PRESSURE		12.23 SATURATED VAPOR DENSITY		12.24 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
	I	60	.096	60	.00183	0	.246
	N	70	.135	70	.00252	25	.259
	S	80	.187	80	.00343	50	.272
	O	90	.255	90	.00459	75	.285
	L	100	.343	100	.00607	100	.297
	U	110	.456	110	.00792	125	.309
	B	120	.599	120	.01022	150	.321
	L	130	.777	130	.01303	175	.333
	E	140	.998	140	.01646	200	.345
		150	1.270	150	.02059	225	.357
		160	1.600	160	.02553	250	.368
		170	1.998	170	.03138	275	.380
		180	2.475	180	.03826	300	.391
		190	3.041	190	.04629	325	.402
		200	3.710	200	.05561	350	.413
		210	4.493	210	.06636	375	.424
		220	5.407	220	.07867	400	.435
		230	6.465	230	.09270	425	.445
		240	7.683	240	.10860	450	.456
		250	9.080	250	.12650	475	.466
		260	10.670	260	.14670	500	.476
						525	.486
						550	.496
						575	.505
						600	.515

TOLUENE

TOL

Common Symptoms Toluol Methylbenzene Methylbenzol	Watery liquid Colorless Pleasant odor Floats on water. Flammable, irritating vapor is produced.
Stop discharge if possible. Keep people away. Shut off ignition sources and call fire department. Stay upwind and use water spray to "knock down" vapor. Avoid contact with liquid and vapor. Isolate and remove discharged material. Notify local health and pollution control agencies.	
Fire	FLAMMABLE Flashback along vapor trail may occur. Vapor may explode if ignited in an enclosed area. Wear goggles and self-contained breathing apparatus. Extinguish with dry chemical, foam, or carbon dioxide. Water may be ineffective on fire. Cook exposed containers with water.
Exposure	CALL FOR MEDICAL AID. VAPOR Irritating to eyes, nose, and throat. If inhaled, will cause nausea, vomiting, headache, dizziness, difficult breathing, or loss of consciousness. Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. LIQUID Irritating to skin and eyes. If swallowed, will cause nausea, vomiting, or loss of consciousness. Remove contaminated clothing and shoes. Flush affected areas with plenty of water. IF IN EYES, hold eyelids open and flush with plenty of water. IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk. DO NOT INDUCE VOMITING.
Water Pollution	Dangerous to aquatic life in high concentrations. Fouling to shoreline. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.
1. RESPONSE TO DISCHARGE (See Response Methods Handbook) Issue warning-high flammability Evacuate area	2. LABEL 2.1 Category: Flammable liquid 2.2 Class: 3
3. CHEMICAL DESIGNATIONS 3.1 CG Compatibility Class: Aromatic Hydrocarbon 3.2 Formula: C ₆ H ₅ CH ₃ 3.3 IMO/UN Designation: 3.2/1294 3.4 DOT ID No.: 1294 3.5 CAS Registry No.: 108-88-3	4. OBSERVABLE CHARACTERISTICS 4.1 Physical State (as shipped): Liquid 4.2 Color: Colorless 4.3 Odor: Pungent, aromatic, benzene-like; distinct, pleasant
5. HEALTH HAZARDS 5.1 Personal Protective Equipment: Air-supplied mask; goggles or face shield; plastic gloves. 5.2 Symptoms Following Exposure: Vapors irritate eyes and upper respiratory tract; cause dizziness, headache, anaesthesia, respiratory arrest. Liquid irritates eyes and causes drying of skin. If aspirated, causes coughing, gagging, distress, and rapidly developing pulmonary edema. If ingested, causes vomiting, griping, diarrhea, depressed respiration. 5.3 Treatment of Exposure: INHALATION: remove to fresh air, give artificial respiration and oxygen if needed; call a doctor. INGESTION: do NOT induce vomiting; call a doctor. EYES: flush with water for at least 15 min. SKIN: wipe off, wash with soap and water. 5.4 Threshold Limit Value: 100 ppm 5.5 Short Term Inhalation Limits: 800 ppm for 30 min. 5.6 Toxicity by Ingestion: Grade 2; LD50 = 0.6 to 5 g/kg 5.7 Late Toxicity: Kidney and liver damage may follow ingestion. 5.8 Vapor (Gas) Irritant Characteristics: Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary. 5.9 Liquid or Solid Irritant Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin. 5.10 Odor Threshold: 0.17 ppm 5.11 IDLH Value: 2,000 ppm	

6. FIRE HAZARDS 6.1 Flash Point: 40°F C.C.; 55° F. O.C. 6.2 Flammable Limits in Air: 1.27%-7% 6.3 Fire Extinguishing Agents: Carbon dioxide or dry chemical for small fires, ordinary foam for large fires. 6.4 Fire Extinguishing Agents Not to be Used: Water may be ineffective. 6.5 Special Hazards of Combustion Products: Not pertinent 6.6 Behavior in Fire: Vapor is heavier than air and may travel a considerable distance to a source of ignition and flash back. 6.7 Ignition Temperature: 997°F 6.8 Electrical Hazard: Class I, Group D 6.9 Burning Rate: 6.7 mm/min. 6.10 Adiabatic Flame Temperature: Data not available. 6.11 Stoichiometric Air to Fuel Ratio: Data not available. 6.12 Flame Temperature: Data not available.	10. HAZARD ASSESSMENT CODE (See Hazard Assessment Handbook) A-T-U																																				
7. CHEMICAL REACTIVITY 7.1 Reactivity with Water: No reaction 7.2 Reactivity with Common Materials: No reaction 7.3 Stability During Transport: Stable 7.4 Neutralizing Agents for Acids and Caustics: Not pertinent 7.5 Polymerization: Not pertinent 7.6 Inhibitor of Polymerization: Not pertinent 7.7 Molar Ratio (Reactant to Product): Data not available 7.8 Reactivity Group: 32	11. HAZARD CLASSIFICATIONS 11.1 Code of Federal Regulations: Flammable liquid. 11.2 NAS Hazard Rating for Bulk Water Transportation: <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Category</th> <th style="text-align: left;">Rating</th> </tr> </thead> <tbody> <tr> <td>Fire</td> <td>3</td> </tr> <tr> <td>Health</td> <td></td> </tr> <tr> <td> Vapor Irritant</td> <td>1</td> </tr> <tr> <td> Liquid or Solid Irritant</td> <td>1</td> </tr> <tr> <td> Poisons</td> <td>2</td> </tr> <tr> <td>Water Pollution</td> <td></td> </tr> <tr> <td> Human Toxicity</td> <td>1</td> </tr> <tr> <td> Aquatic Toxicity</td> <td>3</td> </tr> <tr> <td> Aesthetic Affect</td> <td>2</td> </tr> <tr> <td>Reactivity</td> <td></td> </tr> <tr> <td> Other Chemicals</td> <td>1</td> </tr> <tr> <td> Water</td> <td>0</td> </tr> <tr> <td> Self Reaction</td> <td>0</td> </tr> </tbody> </table> 11.3 NFPA Hazard Classification: <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Category</th> <th style="text-align: left;">Classification</th> </tr> </thead> <tbody> <tr> <td>Health Hazard (Blue)</td> <td>2</td> </tr> <tr> <td>Flammability (Red)</td> <td>3</td> </tr> <tr> <td>Reactivity (Yellow)</td> <td>0</td> </tr> </tbody> </table>	Category	Rating	Fire	3	Health		Vapor Irritant	1	Liquid or Solid Irritant	1	Poisons	2	Water Pollution		Human Toxicity	1	Aquatic Toxicity	3	Aesthetic Affect	2	Reactivity		Other Chemicals	1	Water	0	Self Reaction	0	Category	Classification	Health Hazard (Blue)	2	Flammability (Red)	3	Reactivity (Yellow)	0
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8. WATER POLLUTION 8.1 Aquatic Toxicity: 1180 mg/l/96 hr/sunfish/TL _m /fresh water 8.2 Waterfowl Toxicity: Data not available 8.3 Biological Oxygen Demand (BOD): 0%, 5 days; 38% (theor.), 8 days 8.4 Food Concentration Potential: None	12. PHYSICAL AND CHEMICAL PROPERTIES 12.1 Physical State at 15°C and 1 atm: Liquid 12.2 Molecular Weight: 92.14 12.3 Boiling Point at 1 atm: 231.1°F = 110.6°C = 383.8°K 12.4 Freezing Point: -139°F = -95.0°C = 178.2°K 12.5 Critical Temperature: 605.4°F = 318.8°C = 591.8°K 12.6 Critical Pressure: 598.1 psia = 40.56 atm = 4.108 MN/m ² 12.7 Specific Gravity: 0.867 at 20°C (liquid) 12.8 Liquid Surface Tension: 29.0 dynes/cm = 0.0290 N/m at 20°C 12.9 Liquid Water Interfacial Tension: 36.1 dynes/cm = 0.0361 N/m at 26°C 12.10 Vapor (Gas) Specific Gravity: Not pertinent 12.11 Ratio of Specific Heats of Vapor (Gas): 1.088 12.12 Latent Heat of Vaporization: 156 Btu/lb = 86.1 cal/g = 3.61 X 10 ⁶ J/kg 12.13 Heat of Combustion: -17,430 Btu/lb = 8688 cal/g = -4.05.6 X 10 ⁶ J/kg 12.14 Heat of Decomposition: Not pertinent 12.15 Heat of Solution: Not pertinent 12.16 Heat of Polymerization: Not pertinent 12.25 Heat of Fusion: 17.17 cal/g 12.26 Limiting Value: Data not available 12.27 Reid Vapor Pressure: 1.1 psia																																				
9. SHIPPING INFORMATION 9.1 Grades of Purity: Research, reagent, nitration-all 99.8 + %; industrial: contains 94 + %, with 5% xylene and small amounts of benzene and nonaromatic hydrocarbons; 90/120: less pure than industrial. 9.2 Storage Temperature: Ambient 9.3 Inert Atmosphere: No requirement 9.4 Venting: Open (flame arrester) or pressure-vacuum.	NOTES																																				

TOL	TOLUENE
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12.17 SATURATED LIQUID DENSITY		12.18 LIQUID HEAT CAPACITY		12.19 LIQUID THERMAL CONDUCTIVITY		12.20 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit- inch per hour- square foot-F	Temperature (degrees F)	Centipoise
-30	57.180	0	.396	0	1.026	0	1.024
-20	56.870	5	.397	10	1.015	5	.978
-10	56.550	10	.399	20	1.005	10	.935
0	56.240	15	.400	30	.994	15	.894
10	55.930	20	.402	40	.983	20	.857
20	55.620	25	.403	50	.972	25	.821
30	55.310	30	.404	60	.962	30	.788
40	54.990	35	.406	70	.951	35	.757
50	54.680	40	.407	80	.940	40	.727
60	54.370	45	.409	90	.929	45	.700
70	54.060	50	.410	100	.919	50	.673
80	53.750	55	.411	110	.908	55	.649
90	53.430	60	.413	120	.897	60	.625
100	53.120	65	.414	130	.886	65	.603
110	52.810	70	.415	140	.876	70	.582
120	52.500	75	.417	150	.865	75	.562
		80	.418	160	.854	80	.544
		85	.420	170	.843	85	.526
		90	.421	180	.833	90	.509
		95	.422	190	.822	95	.493
		100	.424	200	.811	100	.477
		105	.425	210	.800		
		110	.427				
		115	.428				
		120	.429				
		125	.431				

12.21 SOLUBILITY IN WATER		12.22 SATURATED VAPOR PRESSURE		12.23 SATURATED VAPOR DENSITY		12.24 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
68.02	.050	0	.038	0	.00070	0	.228
		10	.057	10	.00103	25	.241
		20	.084	20	.00150	50	.255
		30	.121	30	.00212	75	.268
		40	.172	40	.00296	100	.281
		50	.241	50	.00405	125	.294
		60	.331	60	.00547	150	.306
		70	.449	70	.00727	175	.319
		80	.600	80	.00954	200	.331
		90	.792	90	.01237	225	.343
		100	1.033	100	.01584	250	.355
		110	1.332	110	.02007	275	.367
		120	1.700	120	.02518	300	.378
		130	2.148	130	.03127	325	.389
		140	2.690	140	.03850	350	.400
		150	3.338	150	.04700	375	.411
		160	4.109	160	.05691	400	.422
		170	5.018	170	.06840	425	.432
		180	6.083	180	.08162	450	.443
		190	7.323	190	.09675	475	.453
		200	8.758	200	.11400	500	.462
		210	10.410	210	.13340	525	.472
						550	.482
						575	.491
						600	.500

5.0 SITE CONTROL

5.1 ZONATION. Due to the nature of the work (multiple soil borings and monitoring well sampling throughout the study area) and the properties of the potential chemicals found on site, typical exclusion, contamination reduction, and support zones are not necessary or practical at the site. Therefore, where appropriate, a floating exclusion zone in the perimeter of the sampling site will be established to eliminate access to the area by individuals not working on the project or involved in the assessment work. The perimeter will be at least 20 feet in radius and moved accordingly as the assessment points are moved.

5.2 COMMUNICATIONS. When radio communication is not used, the following air horn signals will be employed:

HELP three short blasts (. . .)

EVACUATION three long blasts (_ _ _)

ALL CLEAR alternating long and short blasts (_ . _ .)

5.3 WORK PRACTICES. General work practices to be used during HLA projects are described in Chapter 9.0 of the CLEAN HASP. Work at the site will be conducted according to these established protocols and guidelines for the safety and health of all involved. Specific work practices necessary for this project or those that are of significant concern are described below.

- Work and sampling will be conducted in Level D clothing and equipment.
- While working in a boat or wading in a stream, all personnel will wear a life vest.



6.0 DECONTAMINATION AND DISPOSAL

All personnel and/or equipment leaving contaminated areas of the site will be subject to decontamination, which will take place in the contamination reduction zone. General decontamination practices used during HLA projects are described in Chapter 13.0 of the CLEAN HASP.

6.1 PERSONNEL DECONTAMINATION. All personnel leaving the study area are subject to decontamination (as necessary). The decontamination procedure required will be determined by the nature and level of contamination found at the sites. At a minimum, site personnel will remove loose soil from boots and clothing before leaving the site. More thorough decontamination procedures will be observed as dictated by site conditions. These procedures are described in Chapter 13.0 of the CLEAN HASP.

6.1.1 Small Equipment Decontamination Small equipment will be protected from contamination as much as possible by keeping the equipment covered when at the site and placing the equipment on plastic sheeting, not on the ground. Sampling equipment used at the site will be used only once or will be field cleaned between samples with soapy water (Alconox), rinsed with clean water, rinsed with an approved quality assurance and quality control solvent, and final rinsed with organic-free water.

6.1.2 Heavy Equipment Decontamination Drilling equipment will be protected from contamination as much as possible by placing the equipment on plastic sheeting, not on the ground. The drill rig and associated drilling equipment will be cleaned with high-pressure water or high-pressure steam followed by a soap and water wash and rinse. Loose material will be removed by brush. The person performing this activity will be at the level of protection used during the field investigation.

6.2 COLLECTION AND DISPOSAL OF DECONTAMINATION PRODUCTS. All disposable protective gear, decontamination fluids (for both personnel and equipment), and other disposable materials will be disposed of at the site. Decontamination fluids (e.g., isopropanol from split spoons and groundwater sampling pumps) will be stored in amber glass bottles. Disposable materials (e.g., gloves and Tyveks™) will be bagged and disposed of properly.

7.0 EMERGENCY AND CONTINGENCY PLANNING

This section identifies emergency and contingency planning that has been undertaken for operations at this site. Most sections of the CLEAN HASP provide information that would be used under emergency conditions. General emergency planning information is addressed in Chapter 14.0 of the CLEAN HASP. The sections below present site-specific emergency and contingency planning information.

7.1 PERSONNEL ROLES, LINES OF AUTHORITY, AND COMMUNICATIONS. The site HSO or the health and safety designee is the primary authority for directing operations at the site under emergency conditions. All communications both on site and off site will be directed through the HSO or designee.

7.2 EVACUATION. Evacuation procedures at the site will follow those procedures discussed in Chapter 14.5 of the CLEAN HASP for upwind withdrawal, site evacuation, and evacuation of the surrounding area. Evacuation from the base will be conducted by travelling to the Avenue A gate or the main gate at Avenue D and exiting the base onto 103rd Street (County Road 29).

7.3 EMERGENCY MEDICAL TREATMENT AND FIRST AID. Any personnel injured on site will be rendered first aid as appropriate and transported to competent medical facilities for further examination and/or treatment. The preferred method of transport would be through professional emergency transportation means; however, when this is not readily available or would result in excessive delay, other transport will be authorized. Under no circumstances will injured persons transport themselves to a medical facility for emergency treatment.



8.0 ADMINISTRATION

8.1 PERSONNEL AUTHORIZED DOWNRANGE. Personnel authorized to participate in downrange activities at this site have been reviewed and certified for site operations by the PM and the HSS. Certification involves the completion of appropriate training, a medical examination, and a review of this site-specific HASP. All persons entering the site must use the buddy system and check in with the site manager and/or HSO before going downrange.

CERTIFIED HARDING LAWSON ASSOCIATES TEAM PERSONNEL:

- *+ Rao Angara
- *+ Jim Williams
- *+ Eric Blomberg
- *+ Jerry Girardot
- *+ Mike Jaynes
- *+ Harry Hooper
- *+ Joe Ullo

OTHER CERTIFIED PERSONNEL:

_____	_____
_____	_____
_____	_____
_____	_____

- * FIRST-AID TRAINED
- + CPR-TRAINED

8.2 HASP APPROVALS. By their signatures, the undersigned certify that this HASP will be used for the protection of the health and safety of all persons entering this site.

Health and Safety Officer

Date

Project Manager

Date

Health and Safety Manager/Supervisor

Date

8.3 FIELD TEAM REVIEW. I have read and reviewed the health and safety information in the HASP. I understand the information and will comply with the requirements of the HASP.

NAME: _____

DATE: _____

SITE/PROJECT: _____

8.4 MEDICAL DATA SHEET. This Medical Data Sheet will be completed by all on-site personnel and kept in the support zone during site operations. It is not a substitute for the Medical Surveillance Program requirements consistent with the CLEAN HASP. This data sheet will accompany any personnel when medical assistance or transport to hospital facilities is required. If more space is required, use the back of this sheet.

Project: _____

Name: _____

Address: _____

Home Telephone: Area Code (____) _____

Age: _____ Height: _____ Weight: _____

In case of emergency, contact: _____

Address: _____

Telephone: Area Code (____) _____

Do you wear contact lenses? Yes () No ()

Allergies: _____

List medication(s) taken regularly: _____

Particular sensitivities: _____

Previous/current medical conditions or exposures to hazardous chemicals:

Name of personal physician: _____

Telephone: Area Code (____) _____

8.5 EMERGENCY TELEPHONE NUMBERS.

(On base) Security	(904) 778-5381
(On base) Rescue	(904) 778-5212
Primary Hospital (St. Vincent's Hospital)	(904) 387-7395
Alternate Hospital (Riverside Hospital)	(904) 387-7070
Base Fire Department	(904) 778-5333
Poison Control Center	(800) 962-1253
National Response Center	(800) 424-8802
Regional USEPA Emergency Response	(800) 414-8802
Site HSO: <u>Mike Jaynes</u>	(850) 779-0077
General Site Supervisor: <u>Eric Blomberg</u>	(850) 656-1293
Project Manager: <u>Rao Angara</u>	(850) 656-1293
Harding Lawson HSM: <u>C.E. Sundquist</u>	(207) 775-5401 x 101

8.6 ROUTES TO EMERGENCY MEDICAL FACILITIES. The primary source of medical assistance for the site is the following:

St. Vincent's Hospital
1800 Barrs Road
Jacksonville, Florida

DIRECTIONS TO PRIMARY HOSPITAL: Exit NAS Cecil Field via the main gate and travel northeast on Highway 228 approximately 12.5 miles to Barrs Road; turn right; travel 0.05 mile on Barrs Road. The hospital is on the right side of the road (see Figure 8-1).

The alternate source of medical assistance for the site is the following:

Riverside Hospital
2033 Riverside Avenue
Jacksonville, Florida

DIRECTIONS TO ALTERNATE HOSPITAL: Exit NAS Cecil Field via the main gate and travel northeast on Highway 228 approximately 13 miles to Margaret Street; turn right; travel 0.03 mile on Margaret Street. The hospital is on the right side of the street (see Figure 8-1).

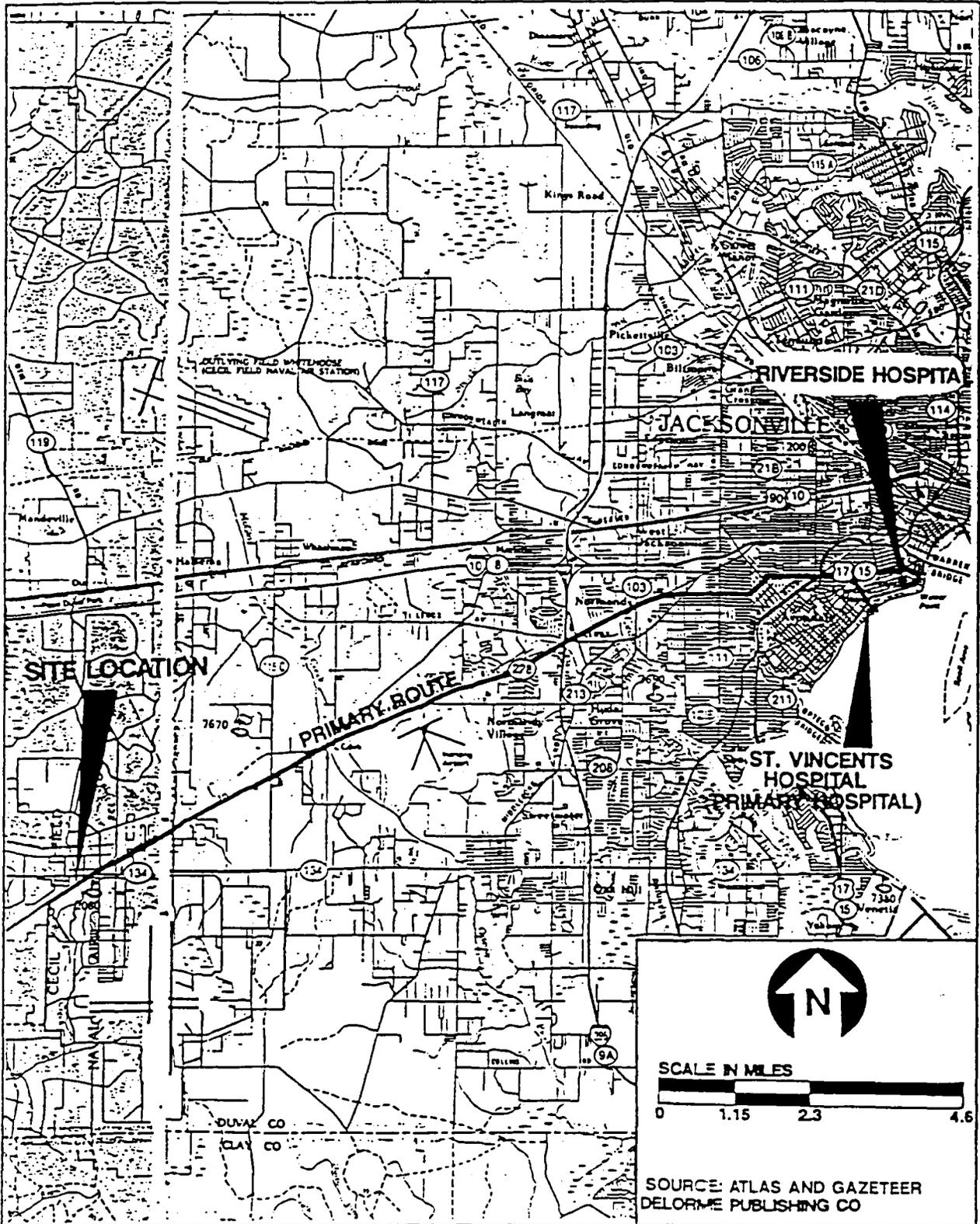


FIGURE 8-1
 ROUTE TO ST. VINCENTS HOSPITAL
 AND RIVER SIDE HOSPITAL



HEALTH AND SAFETY PLAN

NAS CECIL FIELD
 JACKSONVILLE, FLORIDA

NEW DOCUMENT

**CONTAMINATION ASSESSMENT PLAN
BASE REALIGNMENT AND CLOSURE
OIL-WATER SEPARATOR AND MISCELLANEOUS TANK SITES**

**NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA**

Unit Identification Code: N60200

Contract No.: N62467-89-D-0317/149

Prepared by:

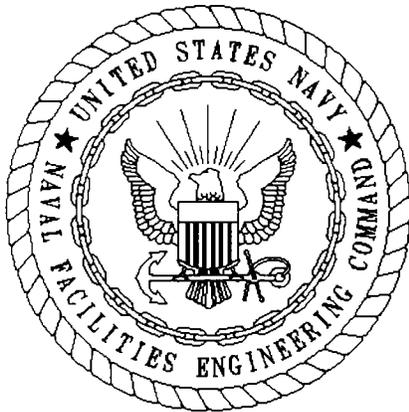
**Harding Lawson Associates
2590 Executive Center Circle, East
Tallahassee, Florida 32301**

Prepared for:

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

Bryan Kizer, Code 1842, Engineer-in-Charge

August 1998



CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

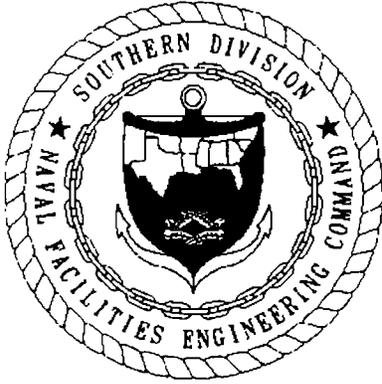
The Contractor, Harding Lawson Associates, hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0317/149 are complete and accurate and comply with all requirements of this contract.

DATE: August 11, 1998

NAME AND TITLE OF CERTIFYING OFFICIAL: Rao Angara
Task Order Manager

NAME AND TITLE OF CERTIFYING OFFICIAL: Eric Blomberg, P.G.
Project Technical Lead

(DFAR 252.227-7036)



FOREWORD

To meet its mission objectives, the U.S. Navy performs a variety of operations, some requiring the use, handling, storage, and/or disposal of hazardous materials. Through accidental spills or leaks, or as a result of conventional methods of past disposal, hazardous materials may have entered the environment in ways unacceptable by current standards. With growing knowledge of the long-term effects of hazardous materials on the environment, the Department of Defense initiated various programs to investigate and remediate conditions related to suspected past releases of hazardous materials at their facilities.

One of these programs is the Comprehensive Long-Term Environmental Action, Navy Underground Storage Tank (UST) program. This program complies with Subtitle I of the Resource Conservation and Recovery Act and the Hazardous and Solid Waste Amendment of 1984. In addition, the UST program complies with all appropriate State and local storage tank regulations as they pertain to each naval facility.

The UST program includes the following activities:

- registration and management of Navy and Marine Corps storage tank systems,
- contamination assessment planning,
- site field investigations,
- preparation of contamination assessment reports,
- remedial (corrective) action planning,
- implementation of the remedial action plans, and
- tank and pipeline closures.

The Southern Division, Naval Facilities Engineering Command manages the Navy UST program, and the Florida Department of Environmental Protection oversees the Navy UST program at Naval Air Station (NAS) Cecil Field.

Questions regarding the UST program at NAS Cecil Field should be addressed to Mr. Bryan Kizer, Code 1842, at (803) 820-5896.

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Contamination Assessment Plan
Base Realignment and Closure, Oil-Water Separator
and Miscellaneous Tank Sites
Naval Air Station Cecil Field, Jacksonville, Florida

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2.0	SITE DESCRIPTION AND HISTORY	1
3.0	FIELD INVESTIGATION	1
4.0	REPORT WRITING	4

REFERENCE

APPENDIX

Appendix A: Site-Specific Health and Safety Plan, Contamination Assessment Plan, BRAC Oil-Water Separator and Miscellaneous Tank Sites

LIST OF TABLES

Contamination Assessment Plan
Base Realignment and Closure, Oil-Water Separator
and Miscellaneous Tank Sites
Naval Air Station Cecil Field, Jacksonville, Florida

<u>Table</u>	<u>Title</u>	<u>Page No.</u>
1	Oil-Water Separator, Underground Storage Tank, Aboveground Storage Tank Sites Summary	2

GLOSSARY

BRAC	Base Realignment and Closure
CA	contamination assessment
CAP	contamination assessment plan
CSR	confirmatory sampling report
FAC	Florida Administrative Code
HLA	Harding Lawson Associates
NAS	Naval Air Station
SAR	sampling and analysis report
UST	underground storage tank

CONTAMINATION ASSESSMENT PLAN - BASE REALIGNMENT AND CLOSURE
OIL-WATER SEPARATOR AND MISCELLANEOUS TANK SITES

1.0 INTRODUCTION

Harding Lawson Associates (HLA), has been contracted by Southern Division, Naval Facilities Engineering Command to prepare a contamination assessment plan (CAP) and a health and safety plan for the Base Realignment and Closure (BRAC) oil-water separator and miscellaneous tank sites at U.S. Naval Air Station (NAS) Cecil Field, Jacksonville, Florida. The objective of this investigation is to determine the extent of contamination at each site.

The BRAC oil-water separator and miscellaneous tank sites are listed in Table 1. The sites are located throughout NAS Cecil Field. The CAP outlines a strategy for the contamination assessment (CA) field investigation and sampling program that will identify any release of petroleum products from the underground storage tanks (USTs) and aboveground storage tank. The CAP includes a list of sites to be investigated, proposed field investigation and methodologies, and a health and safety plan.

2.0 SITE DESCRIPTION AND HISTORY

A list of the sites with site-specific oil-water separator and tank information is presented in Table 1. Due to the large number of oil-water separators and tanks, individual site descriptions and histories will not be presented.

3.0 FIELD INVESTIGATION

A field investigation will be conducted at each site to assess the presence of petroleum contamination in soil and groundwater (if necessary). Investigations at the BRAC oil-water separator tank sites will be conducted following the protocols presented in the NAS Cecil Field Tank Management Plan (ABB Environmental Services, Inc., 1997). Soil borings will be completed at each site to assess the presence of petroleum-contaminated soil. Soil samples will be collected and analyzed for Used Oil Analytical Group or Kerosene Analytical Group parameters. If excessively contaminated soil is detected or the UST is in contact with the groundwater, a temporary monitoring well will be installed at the site to assess the presence of groundwater contamination.

Soil Borings. Soil samples will be collected every 2 feet from the ground surface until the water table is reached. Soil samples will be screened for total hydrocarbon response by using an organic vapor analyzer equipped with a flame ionization detector, following the headspace analysis method as described in Chapter 62-770 of the Florida Administrative Code (FAC).

Monitoring Well Installation. The information gathered during the soil assessment will be used to aid in the placement of monitoring wells. Monitoring wells will be installed using hollow-stem auger techniques.

Table 1
Oil-Water Separator, Underground Storage Tank,
Aboveground Storage Tank Sites Summary

Contamination Assessment Plan
Base Realignment and Closure, Oil-Water Separator
and Miscellaneous Tank Sites
Naval Air Station Cecil Field, Jacksonville, Florida

Site	Building	Facility	Year Installed	Year Removed	Tank Contents	Tank Capacity (Gallons)	OW/UST/AST
Oil-Water Separators							
11-OW	11	Steam Plant	UNK	NA	L	UNK	OW
80-OW1	80	Transportation Fuel Management	UNK	NA	L	UNK	OW
80-OW3	80	Transportation Fuel Management	UNK	NA	L	UNK	OW
80-OW4	80	Transportation Fuel Management	UNK	NA	L	UNK	OW
80-OW5	80	Transportation Fuel Management	UNK	NA	L	900	OW
178-OW	178	Refuel Vehicle Maintenance Shelter	UNK	NA	L	UNK	OW
200-OW	200	Auto Hobby Shop	UNK	NA	L	UNK	OW
271S-OW	271	Base Gas Station	UNK	NA	L	540	OW
271SE-OW	271	Base Gas Station	UNK	NA	L	160	OW
274-OW	274	Car Wash	UNK	NA	L	900	OW
312-OW	312	Corrosion Control Hangar	UNK	NA	L	UNK	OW
334-OW	334	Jet Engine Test Cell	UNK	NA	L	900	OW
339-OW	339	Jet Engine Test Cell	UNK	NA	L	2,000	OW
818-OW	818	Aircraft Acoustical Enclosure	UNK	NA	L	UNK	OW
823-OW	823	Fuel Operations Test Building	UNK	NA	L	UNK	OW
824A-OW	824	Avionics Shop	UNK	NA	L	UNK	OW
824A-OW	824	Avionics Shop	UNK	NA	L	UNK	OW
825-OW	825	Hangar 825	UNK	NA	L	250	OW
858-OW	858	Operational Training Building	UNK	NA	L	UNK	OW
See notes at end of table.							

The monitoring wells will be constructed of 2-inch inside diameter, schedule 40 polyvinyl chloride pipe with a 10-foot screen. The monitoring wells will be installed in accordance with Southern Division's "Specifications for Groundwater Monitoring Well Installation and Sampling." Monitoring wells will be completed flush with surface grade and equipped with bolted manhole covers and locking caps. All monitoring wells will be surveyed by a Florida-registered land surveyor.

Groundwater Sampling. Prior to groundwater sampling, monitoring wells will be purged using low-flow techniques. Low-flow purging techniques will be used to minimize excessive turbidity, eliminate the need for filtration, and decrease volumes of contaminated purge water. All groundwater samples collected during the CA will be analyzed for the Kerosene Analytical Group, or Used Oil Analytical Group parameters outlined in Chapter 62-770, FAC.

4.0 REPORT WRITING

Upon completion of the field investigations, HLA will analyze the data collected in the field and prepare a confirmatory sampling report (CSR) or site assessment report (SAR) for the BRAC oil-water separator and tank sites. The CSR and SAR will include a discussion of site background information, methodologies used during the investigation, the field and laboratory data in tabular and figure format, an evaluation and discussion of the presence the soil and groundwater contamination at the site, a summary, conclusions, and recommendations for further action at the site.

REFERENCE

ABB Environmental Services, Inc. 1997. *Base Realignment and Closure Tank Management Plan, Naval Air Station Cecil Field, Jacksonville, Florida.* Prepared for Southern Division, Naval Facilities Engineering Command, Charleston, South Carolina (January).

APPENDIX A

**SITE-SPECIFIC HEALTH AND SAFETY PLAN
CONTAMINATION ASSESSMENT PLAN, BRAC OIL-WATER
SEPARATOR AND MISCELLANEOUS TANK SITES**

NEW DOCUMENT



Harding Lawson Associates



2565-1001

August 14, 1998

Commanding Officer
Souther Division Naval Facilities Engineering Command
1255 Eagle Drive
North Charleston, SC 29418
Attention: Mr. Bryan Kizer, Code 1842

**Subject: Contamination Assessment Plan
Oil-Water Separator and Miscellaneous Tank Sites
NAS Cecil Field, Jacksonville, Florida
Contract No. N62467-89-D-0317/149**

Dear Bryan:

Enclosed please find two copies of the Contamination Assessment Plan (CAP) for the subject sites at Naval Air Station (NAS) Cecil Field, Jacksonville, Florida. The health and safety plan has been included as an attachment to the CAP. Two copies of the subject document have also been provided to Mr. Dave Kruzicki, NAS Cecil Field.

If you have any questions or comments please call me at 850-656-1293 (x 314). Thank you.

Very truly yours,

HARDING LAWSON ASSOCIATES ES, INC.


Rao Angara
Task Order Manager

cc: David Kruzicki, NASCF
File



NEW DOCUMENT

CONFIRMATORY SAMPLING REPORT
BUILDING 339, OIL-WATER SEPARATOR 339-OW
BASE REALIGNMENT AND CLOSURE
UNDERGROUND STORAGE TANK AND
ABOVEGROUND STORAGE TANK GRAY SITES
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Unit Identification Code: N60200

Contract No.: N62467-89-D-0317/149

Prepared by:

Harding Lawson Associates
2590 Executive Center Circle, East
Tallahassee, Florida 32301

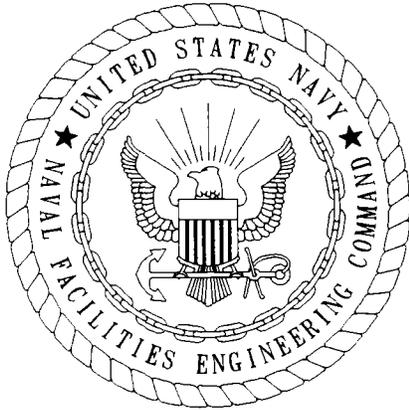
Prepared for:

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

Bryan Kizer, Code 1842, Engineer-in-Charge

February 1999

Revision 0.0



CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

The Contractor, Harding Lawson Associates, hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0317/149 are complete and accurate and comply with all requirements of this contract.

DATE: February 16, 1999

NAME AND TITLE OF CERTIFYING OFFICIAL: Rao Angara
Task Order Manager

NAME AND TITLE OF CERTIFYING OFFICIAL: Eric A. Blomberg, P.G.
Project Technical Lead

(DFAR 252.227-7036)



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Naval Air Station Cecil Field
Jacksonville, Florida

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Confirmatory Sampling Report
Building 339, Oil-Water Separator 339-OW
Naval Air Station Cecil Field
Jacksonville, Florida

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GLOSSARY

bls	below land surface
FDEP	Florida Department of Environmental Protection
NAS	Naval Air Station
OVA	organic vapor analyzer
ppm	parts per million

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1.0 INTRODUCTION

Harding Lawson Associates, under contract to the Southern Division, Naval Facilities Engineering Command, has completed confirmatory sampling for oil-water separator 339-OW at Naval Air Station (NAS) Cecil Field in Jacksonville, Florida. This report summarizes the related field operations, results, conclusions, and recommendations.

Oil-water separator 339-OW is located at the northeast corner of Building 339, the jet engine test cell (ABB Environmental Services, Inc., 1994) (Figure 1). The oil-water separator was taken out of service in 1982 when the test cell was expanded. There are no surface structures at the Site 339-OW location and it is not known if the oil-water separator was removed. Facility drawings found at NAS Cecil Field Public Works Center show the location of the former oil-water separator (Figure 1). Subsurface structures that may be the oil-water separator were encountered several times during subsurface investigations at the site. The installation date and capacity of the oil-water separator are unknown.

2.0 FIELD INVESTIGATION

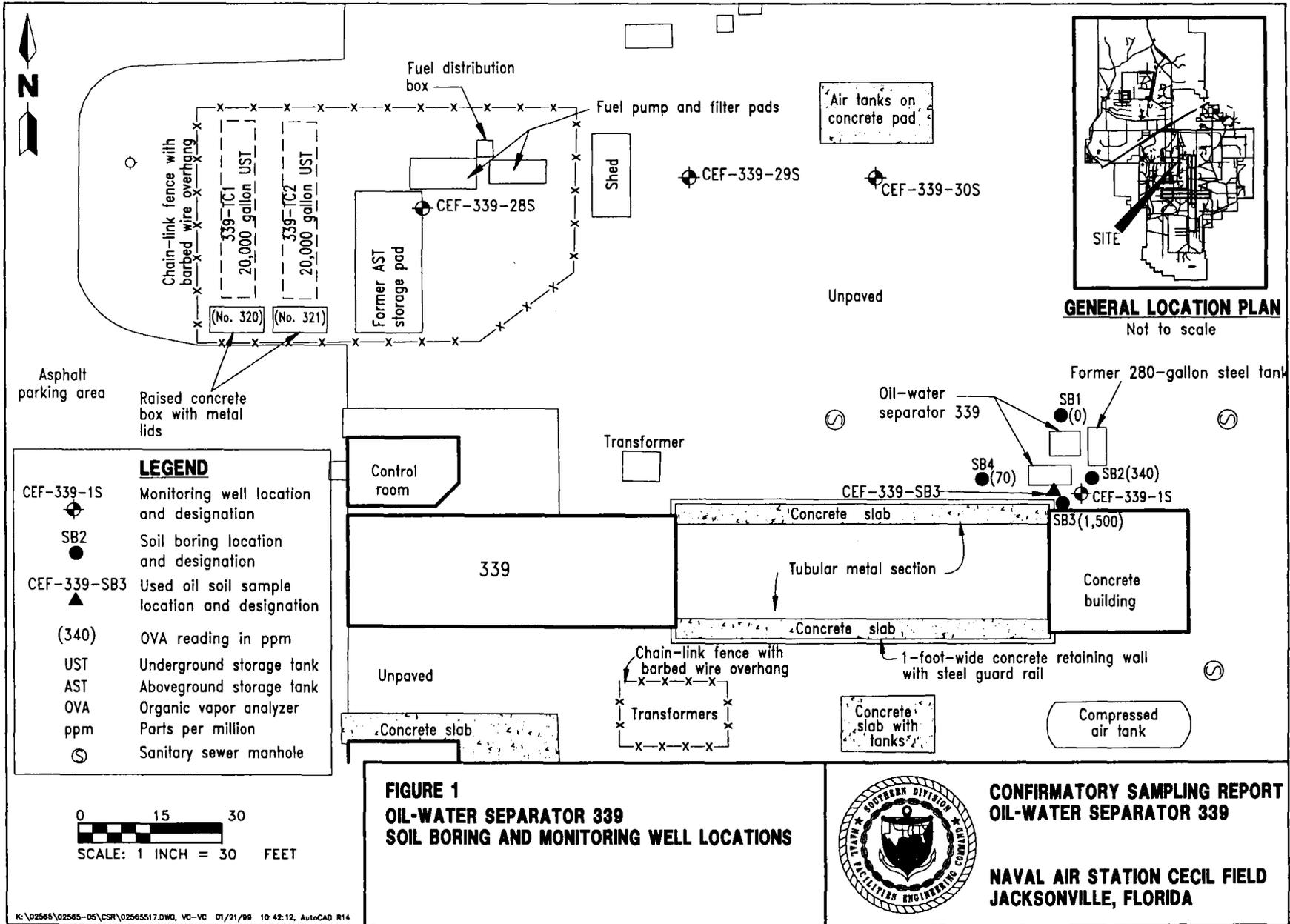
The confirmatory sampling for oil-water separator 339-OW was initiated in July 1998 and included

- the advancement of four soil borings to the water table,
- the installation of one monitoring well, and
- collection and analysis of one groundwater sample and one subsurface soil sample.

Soil samples were collected from each boring at depth intervals of 1 foot below land surface (bls) and every 2 feet thereafter to the water table. These samples were screened for hydrocarbon vapors with an organic vapor analyzer (OVA).

One subsurface soil sample was collected on October 14, 1998, and analyzed for the used oil group parameters. Sample CEF-339-SB3 was collected from 3 feet bls at the location of soil screening sample SB3, which had the highest OVA concentration.

One monitoring well, CEF-339-1S, was installed to a depth of 12.7 feet bls. The monitoring well was installed near the location of the soil boring (SB3) with the highest OVA reading. A groundwater sample was collected from this well and analyzed for the used oil group parameters. A general site plan indicating the location of the soil borings and monitoring wells is presented on Figure 1. The monitoring well installation detail is included in Appendix A.



3.0 SCREENING AND ANALYTICAL RESULTS

Excessively contaminated soil (greater than 50 parts per million [ppm] on an OVA) was detected in three of the four soil borings advanced during the confirmatory sampling. Soil boring SB3 had the highest OVA concentration (1,500 ppm) at a depth of 3 feet bls. The soil OVA data are summarized in Table 1 and presented on Figure 2.

No contaminants were detected above Florida Department of Environmental Protection (FDEP) soil cleanup target levels in the subsurface soil sample collected for used oil analysis. Subsurface soil analytical results are summarized in Table 2 and presented in Appendix A. No contaminants were detected above FDEP groundwater cleanup target levels in the groundwater samples collected from monitoring well CEF-339-1S during the confirmatory sampling. A summary of the groundwater analytical results is presented in Table 3. The complete analytical data set is presented in Appendix B.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Data obtained during the confirmatory sampling of oil-water separator 339-OW did not indicate the presence of contaminated soil and groundwater at levels above cleanup target levels.

It is recommended that no further action take place at the oil-water separator site until it is removed.

**Table 1
Soil Screening Results**

Confirmatory Sampling Report
Building 339, Oil-Water Separator 339-OW
Naval Air Station Cecil Field
Jacksonville, Florida

Location	OVA Concentration (ppm)			
	Depth (feet bls)	Unfiltered	Filtered	Actual
SB1	1	0	0	0
	3	0	0	0
	5 (wet)	0	0	0
SB2	1	2	0	2
	3	190	0	190
	5	340	0	340
	7	150	1	149
	8	100	0	100
SB3	1	0	0	0
	3	1,500	0	1,500
	5 (wet)	320	0	320
SB4	1	NC	--	NC
	3	70	0	70
	5 (wet)	80	0	80

Notes: Soil samples were filtered with carbon to determine the methane concentration.

OVA = organic vapor analyzer.
ppm = parts per million.
bls = below land surface.
wet = soil sample was completely saturated when analyzed.
NC = not collected.
-- = filtered readings were not collected.

Table 2
Summary of Subsurface Soil Analytical Detections

Confirmatory Sampling Report
 Building 339, Oil-Water Separator 339-OW
 Naval Air Station Cecil Field
 Jacksonville, Florida

Compound	CEF-339-SB3	Soil Cleanup Target Levels ¹
<u>Volatile Organic Aromatics (USEPA Method 8020) (mg/kg)</u>		
No compounds detected		
<u>Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (mg/kg)</u>		
bis(2-Ethylhexyl)phthalate	0.660	NA
<u>Total Recoverable Petroleum Hydrocarbons (TRPH) (FL-PRO) (mg/kg)</u>		
TRPH	280	350/340
<u>Inorganic Analytes (mg/kg)</u>		
Chromium	6.7	290/TCLP
Lead	9 J	500/TCLP
Mercury	0.036	3.7/TCLP
¹ Chapter 62-770, Florida Administrative Code: Direct Exposure 1/Leachability, Table V. Notes: USEPA = U.S. Environmental Protection Agency. mg/kg = milligrams per kilogram. NA = not applicable. FL-PRO = Florida-Petroleum Residual Organics. J = estimated value. TCLP = toxicity characteristic leaching procedure.		

Table 3
Summary of Groundwater Analytical Results

Confirmatory Sampling Report
Building 339, Oil-Water Separator 339-OW
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	CEF-339-1S	Groundwater Cleanup Target Levels ¹
<u>Volatile Organic Aromatics (USEPA Method 601/602) (µg/l)</u>		
Ethylbenzene	1	30
<u>Polynuclear Aromatic Hydrocarbons (USEPA Method 625) (µg/l)</u>		
Anthracene	5.5	2,100
Phenanthrene	0.35	210
Chrysene	0.07 J	5
1-Methylnaphthalene	16	NA
2-Methylnaphthalene	10	NA
<u>Total Recoverable Petroleum Hydrocarbons (FL-PRO) (mg/l)</u>		
Not detected		
<u>Inorganic Analytes (µg/l)</u>		
No analytes detected		
¹ Chapter 62-770, Florida Administrative Code. Notes: USEPA = U.S. Environmental Protection Agency. µg/l = micrograms per liter. J = estimated value. NA = not applicable. FL-PRO = Florida-Petroleum Residual Organics. mg/l = milligrams per liter.		

REFERENCE

ABB Environmental Services, Inc. 1994. *Base Realignment and Closure Environmental Baseline Survey Report, Naval Air Station Cecil Field, Jacksonville, Florida*. Prepared for Southern Division, Naval Facilities Engineering Command, North Charleston, South Carolina (November).

APPENDIX A
MONITORING WELL INSTALLATION DETAIL

TITLE: NAS Cecil Field, Bldg. 339 Site Assessment Report		LOG of WELL: CEF-339o/w-1S	BORING NO. CEF-339o/w-1S
CLIENT: SOUTH DIV NAV FAC ENG COM		PROJECT NO: 02565.03	
CONTRACTOR: U.S. Probe and Drill		DATE STARTED: 11-02-98	COMPLTD: 11-02-98
METHOD: HSA	CASE SIZE: 2in.	SCREEN INT.: 3-13 ft.	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: FID	TOT DPTH: 13.5FT.	DPTH TO ∇ 6.38 FT.
LOGGED BY: H.Hooper	WELL DEVELOPMENT DATE: 11-05-98		SITE: Building 339

DEPTH F.T.	LABORATORY SAMPLE ID.	RECOVERY HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
1			<> See Note		SM		posthole
2							
3							
4			SILTY SAND: dark brown silty fine sand to 7'bis.				posthole
5							
6						*	
7						**	
8							
9							
10			SILTY SAND: tan silty fine sand.				
11							
12			<> Soil description taken from posthole and auger				
13			* no split spoon samples taken				
13			** no OVA readings taken				
14							
15							

APPENDIX B
ANALYTICAL DATA

NAS CECIL FIELD -- OIL/WATER SEPARATOR AT FACILITY 339
 SUBSURFACE SOIL -- ANALYTICAL DATA -- REPORT REQUEST NO. 10548

Lab Sample Number: JR36668
 Site: UST GREY
 Locator: CEF-339-SB3
 Collect Date: 14-OCT-98

VALUE QUAL UNITS DL

BRAC VOLATILES

1,1,1-Trichloroethane	1 U	ug/kg	1
1,1,2,2-Tetrachloroethane	1 U	ug/kg	1
1,1,2-Trichloroethane	1 U	ug/kg	1
1,1-Dichloroethane	1 U	ug/kg	1
1,1-Dichloroethene	1 U	ug/kg	1
1,2-Dichlorobenzene	390 U	ug/kg	390
1,2-Dichloroethane	1 U	ug/kg	1
1,2-Dichloropropane	1 U	ug/kg	1
1,3-Dichlorobenzene	390 U	ug/kg	390
1,4-Dichlorobenzene	390 U	ug/kg	390
Benzene	1 U	ug/kg	1
Bromodichloromethane	1 U	ug/kg	1
Bromoform	1 U	ug/kg	1
Bromomethane	1 U	ug/kg	1
Carbon tetrachloride	1 U	ug/kg	1
Chlorobenzene	1 U	ug/kg	1
Chloroethane	1 U	ug/kg	1
Chloroform	1 U	ug/kg	1
Chloromethane	1 U	ug/kg	1
Dibromochloromethane	1 U	ug/kg	1
Ethyl benzene	1 U	ug/kg	1
Methyl chloride	1 U	ug/kg	1
Tetrachloroethene	4 U	ug/kg	4
Toluene	1 U	ug/kg	1
Trichloroethane	1 U	ug/kg	1
Vinyl chloride	1 U	ug/kg	1
cis-1,3-Dichloropropene	1 U	ug/kg	1
m,p-Xylene	1 U	ug/kg	1
o-Xylene	1 U	ug/kg	1
trans-1,2-Dichloroethene	1 U	ug/kg	1
trans-1,3-Dichloropropene	1 U	ug/kg	1

BRAC SEMIVOLATILES

Phenol	390 U	ug/kg	390
bis(2-Chloroethyl)ether	390 U	ug/kg	390
1,3-Dichlorobenzene	390 U	ug/kg	390
1,4-Dichlorobenzene	390 U	ug/kg	390
1,2-Dichlorobenzene	390 U	ug/kg	390
N-Nitroso-di-n-propylamine	390 U	ug/kg	390
Hexachloroethane	390 U	ug/kg	390
Nitrobenzene	390 U	ug/kg	390
Isophorone	390 U	ug/kg	390
2-Nitrophenol	390 U	ug/kg	390
2,4-Dimethylphenol	390 U	ug/kg	390
bis(2-Chloroethoxy) methane	390 U	ug/kg	390
2,4-Dichlorophenol	390 U	ug/kg	390
1,2,4-Trichlorobenzene	390 U	ug/kg	390
Naphthalene	390 U	ug/kg	390
Hexachlorobutadiene	390 U	ug/kg	390
4-Chloro-3-methylphenol	390 U	ug/kg	390

NAS CECIL FIELD -- OIL/WATER SEPARATOR AT FACILITY 339
 SUBSURFACE SOIL -- ANALYTICAL DATA -- REPORT REQUEST NO. 10548

Lab Sample Number: JR36668
 Site: UST GREY
 Locator: CEF-339-SB3
 Collect Date: 14-OCT-98

VALUE QUAL UNITS DL

2-Methylnaphthalene	390 U	ug/kg	390
2,4,6-Trichlorophenol	390 U	ug/kg	390
2-Chloronaphthalene	390 U	ug/kg	390
Dimethylphthalate	390 U	ug/kg	390
Acenaphthylene	390 U	ug/kg	390
2,4-Dinitrophenol	1900 U	ug/kg	1900
3- & 4-Methylphenol (2)	390 U	ug/kg	390
4-Nitrophenol	390 U	ug/kg	390
2,4-Dinitrotoluene	390 U	ug/kg	390
Diethylphthalate	390 U	ug/kg	390
4-Chlorophenyl-phenylether	390 U	ug/kg	390
Fluorene	390 U	ug/kg	390
4,6-Dinitro-2-methylphenol	1200 U	ug/kg	1200
4-Bromophenyl-phenylether	390 U	ug/kg	390
Hexachlorobenzene	390 U	ug/kg	390
Pentachlorophenol	390 U	ug/kg	390
Phenanthrene	390 U	ug/kg	390
Anthracene	390 U	ug/kg	390
Di-n-butylphthalate	390 U	ug/kg	390
Fluoranthene	390 U	ug/kg	390
Pyrene	390 U	ug/kg	390
3,3-Dichlorobenzidine	780 U	ug/kg	780
Benzo (a) anthracene	390 U	ug/kg	390
Chrysene	390 U	ug/kg	390
bis(2-Ethylhexyl) phthalate	660 U	ug/kg	390
Di-n-octylphthalate	390 U	ug/kg	390
Benzo (b) fluoranthene	390 U	ug/kg	390
Benzo (k) fluoranthene	390 U	ug/kg	390
Benzo (a) pyrene	390 U	ug/kg	390
Indeno (1,2,3-cd) pyrene	390 U	ug/kg	390
Dibenzo (a,h) anthracene	390 U	ug/kg	390
Benzo (g,h,i) perylene	390 U	ug/kg	390
FLA PRO			
TPH C8-C40	280	mg/kg	7.8
Arsenic	.6 U	mg/kg	.6
Barium	24 U	mg/kg	24
Cadmium	1 U	mg/kg	1
Chromium	6.7	mg/kg	1
Lead	9 J	mg/kg	8
Mercury	.036	mg/kg	.01
Selenium	2 U	mg/kg	2
Silver	2 U	mg/kg	2

U = NOT DETECTED J = ESTIMATED VALUE
 UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
 R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- OIL/WATER SEPARATOR AT FACILITY 339
GROUNDWATER -- ANALYTICAL DATA -- REPORT REQUEST NO. 10576

Lab Sample Number: JR41594
Site: UST GREY
Locator: CF339-OW1S
Collect Date: 17-NOV-98

VALUE QUAL UNITS DL

BRAC VOLATILES

1,1,1-Trichloroethane	1 U	ug/l	1
1,1,2,2-Tetrachloroethane	1 U	ug/l	1
1,1,2-Trichloroethane	1 U	ug/l	1
1,1-Dichloroethane	1 U	ug/l	1
1,1-Dichloroethene	1 U	ug/l	1
1,2-Dichlorobenzene	1 U	ug/l	1
1,2-Dichloroethane	1 U	ug/l	1
1,2-Dichloropropane	1 U	ug/l	1
1,3-Dichlorobenzene	1 U	ug/l	1
1,4-Dichlorobenzene	1 U	ug/l	1
Benzene	1 U	ug/l	1
Bromodichloromethane	1 U	ug/l	1
Bromoform	1 U	ug/l	1
Bromomethane	1 U	ug/l	1
Carbon tetrachloride	1 U	ug/l	1
Chlorobenzene	1 U	ug/l	1
Chloroethane	2 U	ug/l	2
Chloroform	1 U	ug/l	1
Chloromethane	2 U	ug/l	2
Dibromochloromethane	1 U	ug/l	1
Ethyl benzene	1 U	ug/l	1
Methyl chloride	2 U	ug/l	2
Tetrachloroethene	1 U	ug/l	1
Toluene	1 U	ug/l	1
Trichloroethene	1 U	ug/l	1
Vinyl chloride	1 U	ug/l	1
cis-1,3-Dichloropropene	1 U	ug/l	1
m,p-Xylene	1 U	ug/l	1
o-Xylene	1 U	ug/l	1
trans-1,2-Dichloroethene	1 U	ug/l	1
trans-1,3-Dichloropropene	1 U	ug/l	1

PAHs

Acenaphthene	.5 U	ug/l	.5
Acenaphthylene	1 U	ug/l	1
Anthracene	5.5 U	ug/l	.05
Benzo (a) anthracene	.05 U	ug/l	.05
Benzo (b) fluoranthene	.1 U	ug/l	.1
Benzo (k) fluoranthene	.05 U	ug/l	.05
Benzo (a) pyrene	.05 U	ug/l	.05
Chrysene	.07 J	ug/l	.05
Dibenzo (a,h) anthracene	.1 U	ug/l	.1
Fluoranthene	.1 U	ug/l	.1
Fluorene	.1 U	ug/l	.1
Indeno (1,2,3-cd) pyrene	.05 U	ug/l	.05
Benzo (g,h,i) perylene	.1 U	ug/l	.1
Naphthalene	.5 U	ug/l	.5
Phenanthrene	.35 U	ug/l	.05
Pyrene	.05 U	ug/l	.05

NAS CECIL FIELD -- OIL/WATER SEPARATOR AT FACILITY 339
GROUNDWATER -- ANALYTICAL DATA -- REPORT REQUEST NO. 10576

Lab Sample Number: JR41594
Site: UST GREY
Locator: CF339-OW1S
Collect Date: 17-NOV-98

	VALUE	QUAL	UNITS	DL
1-Methylnaphthalene	16		ug/l	.5
2-Methylnaphthalene	10		ug/l	.5
FLA PRO				
TPH C8-C40	.2 U		mg/l	.2
Arsenic	.01 U		mg/l	.01
Barium	.1 U		mg/l	.1
Cadmium	.001 U		mg/l	.001
Chromium	.01 U		mg/l	.01
Lead	.005 U		mg/l	.005
Mercury	.0002 U		mg/l	.0002
Selenium	.01 U		mg/l	.01
Silver	.01 U		mg/l	.01

U = NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NEW DOCUMENT

CONFIRMATORY SAMPLING REPORT
BUILDING 80, TANKS 80-132, 80-133, 80-134, and 80-135
BASE REALIGNMENT AND CLOSURE
UNDERGROUND STORAGE TANK AND
ABOVEGROUND STORAGE TANK GREY SITES
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Unit Identification No. N60200

Contract No. N62467-89-D-0317/149

Prepared by:

Harding Lawson Associates
2590 Executive Center Circle, East
Tallahassee, Florida 32301

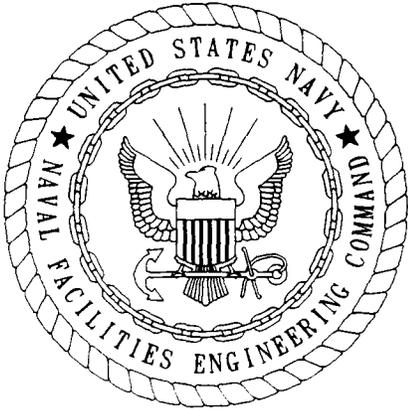
Prepared for:

Department of the Navy, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29419

Bryan Kizer, Code 1842, Engineer-in-Charge

April 1999

Revision 0.0



CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

The Contractor, Harding Lawson Associates, hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0317/090 are complete and accurate and comply with all requirements of this contract.

DATE: April 7, 1999

NAME AND TITLE OF CERTIFYING OFFICIAL: Rao Angara
Task Order Manager

NAME AND TITLE OF CERTIFYING OFFICIAL: Eric A. Blomberg, P.G.
Project Technical Lead

(DFAR 252.227-7036)



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Building 80, Tanks 80-132, 80-133,80-134, and 80-135
Naval Air Station Cecil Field
Jacksonville, Florida

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Building 80, Tanks 80-132, 80-133, 80-134, and 80-135
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Jacksonville, Florida

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GLOSSARY

bls	below land surface
FDEP	Florida Department of Environmental Protection
OVA	organic vapor analyzer
ppm	parts per million

1.0 INTRODUCTION

Harding Lawson Associates, under contract to the Southern Division, Naval Facilities Engineering Command, has completed confirmatory sampling for Tanks 80-132, 80-133, 80-134, and 80-135 at Naval Air Station Cecil Field in Jacksonville, Florida. This report summarizes the related field operations, results, conclusions, and recommendations.

Tanks 80-132, 80-133, 80-134, and 80-135 are used oil aboveground storage tanks (ASTs) and are located east of Building 80, the Transportation Fuel Management Building (ABB Environmental Services, Inc., 1994) (Figure 1). The ASTs have a capacity of 10,000 gallons each and were installed in 1989. The ASTs are located inside a bermed concrete containment area which drains to another concrete containment area and then to oil-water separator 80-OW4 (Figure 1).

2.0 FIELD INVESTIGATION

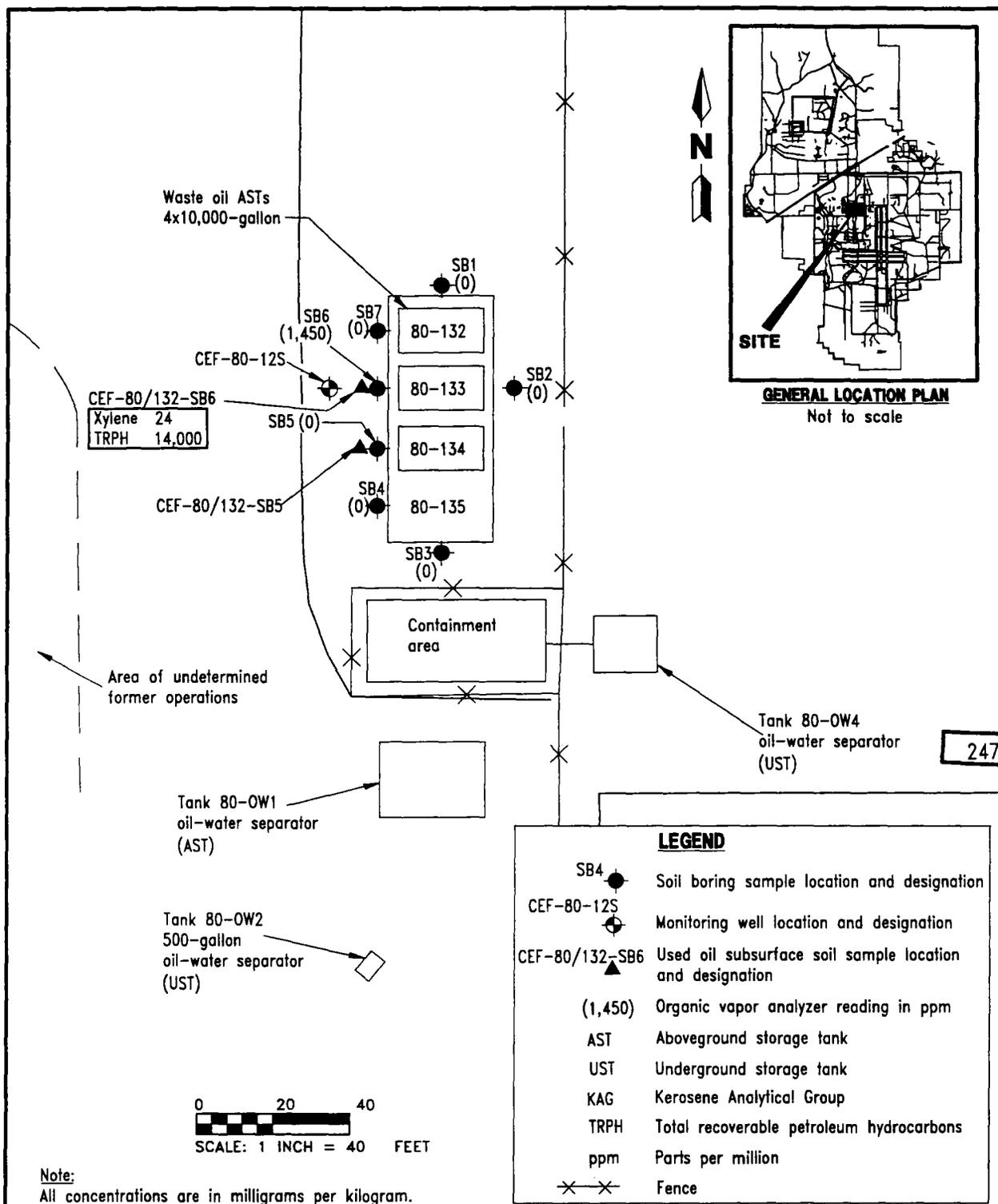
The confirmatory sampling for Tanks 80-132, 80-133, 80-134, and 80-135 was initiated in January 1999 and included

- the advancement of seven soil borings to the water table,
- the installation of one monitoring well, and
- collection and analysis of one groundwater and two subsurface soil samples.

Soil samples were collected from each boring at depth intervals of 1 foot below land surface (bls) and every 2 feet thereafter to the water table. These samples were screened for hydrocarbon vapors with an organic vapor analyzer (OVA).

Two subsurface soil samples were collected on January 21, 1999 and analyzed for the Used Oil Group parameters. Sample CEF-80/132-SB6 was collected from 3 feet bls at the location of soil screening boring SB6 which had the highest OVA concentration. Sample CEF-80/132-SB5 was collected from 0 to 1 feet bls. Stained soil and stressed vegetation were observed at both sampling locations. The stained soil appeared to be the result of leaking valves at the base of the ASTs which extend beyond the concrete containment area. Metal catch basins which drain into the concrete containment area have recently been installed to prevent subsequent releases to the soil.

One monitoring well, CEF-80-12S, was installed downgradient (west) of the used oil ASTs. The downgradient location was selected based previous investigation of Buildings 80 and 81. A groundwater sample was collected from this well and analyzed for the Used Oil Group parameters. A general site plan indicating the location of the soil borings and monitoring wells is presented on Figure 1. The monitoring well installation detail is included in Appendix A.



**FIGURE 1
MONITORING WELL AND SOIL BORING LOCATIONS**



**CONFIRMATORY SAMPLING REPORT
TANKS 80-132, 80-133, 80-134
AND 80-135**

**NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA**

K:\02523\02523-13\CSR\02523394.DWG, -VC 04/05/99 15:40:58, AutoCAD R14

3.0 SCREENING AND ANALYTICAL RESULTS

Excessively contaminated soil (greater than 50 parts per million [ppm] on an OVA) was detected in one of the seven soil borings advanced during the confirmatory sampling. Soil boring SB6 had the highest OVA concentration (1,450 ppm) at a depth of 3 feet bls. The soil OVA data are summarized in Table 1 and presented on Figure 1. It is anticipated that the soil contamination is localized in the area of soil boring SB6 as the contamination emanated from a leaking valve.

Total recoverable petroleum hydrocarbons was the only contaminant that was detected above Florida Department of Environmental Protection (FDEP) soil cleanup target levels in the subsurface soil samples collected for used oil analysis. Subsurface soil analytical results are summarized in Table 2 and presented in Appendix A.

No contaminants were detected above FDEP groundwater cleanup target levels in the groundwater samples collected from monitoring well CEF-80-12S. A summary of the groundwater analytical results is presented in Table 3. The complete analytical data set is presented in Appendix B.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Data obtained during the confirmatory sampling of Tanks 80-132, 80-133, 80-134, and 80-135 indicated the presence of soil contamination at levels above cleanup target levels. No contaminants were detected in groundwater sample CEF-80-12S above cleanup target levels.

It is recommended that a contaminated soil source removal take place to remove soil in excess of cleanup target levels.

**Table 1
Soil Screening Results**

Confirmatory Sampling Report
Building 80, Tanks 80-132, 80-133, 80-134, and 80-135
Naval Air Station Cecil Field
Jacksonville, Florida

Location	OVA Concentration (ppm)			
	Depth (feet bls)	Unfiltered	Filtered	Actual
SB1	1	0	--	0
	3	0	--	0
SB2	1	0	--	0
	3	0	--	0
SB3	1	0	--	0
	3	0	--	0
SB4	1	0	--	0
	3	0	--	0
SB5	1	0	--	0
	3	2	--	2
SB6	1	1,400	--	1,400
	3	1,450	--	1,450
	4 (moist)	1,000	--	1,000
SB7	1	9	--	9
	3	4	--	4
	4 (moist)	7	--	7

Notes: Soil samples were filtered with carbon to determine the methane concentration.

OVA = organic vapor analyzer.

ppm = parts per million.

bls = below land surface.

-- = filtered readings were not collected.

moist = soil sample was partially saturated when analyzed.

Table 2
Summary of Subsurface Soil Analytical Detections

Confirmatory Sampling Report
 Building 80, Tanks 80-132, 80-133, 80-134, and 80-135
 Naval Air Station Cecil Field
 Jacksonville, Florida

Compound	CEF-80/132-SB5	CEF-80/132-SB6	Soil Cleanup Target Levels ¹
<u>Volatile Organic Aromatics (USEPA Method 8020) (mg/kg)</u>			
Xylenes	ND	24	290/0.3
<u>Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (mg/kg)</u>			
2-Methylnaphthalene	ND	39	NA
<u>Total Recoverable Petroleum Hydrocarbons (TRPH) (FL-PRO) (mg/kg)</u>			
TRPH	ND	14,000	350/340
<u>Inorganic Analytes (mg/kg)</u>			
Chromium	4.4	2.4	290/TCLP
Lead	4	2.1	500/TCLP
Mercury	0.051	ND	3.7/TCLP
¹ Chapter 62-770, Florida Administrative Code: Direct Exposure, 1/Leachability, Table V. Notes: Bold indicates concentration exceeds cleanup target level. USEPA = U.S. Environmental Protection Agency. mg/kg = milligrams per kilogram. ND = not detected. FL-PRO = Florida-Petroleum Residual Organics.			

**Table 3
Summary of Groundwater Analytical Results**

Confirmatory Sampling Report
Building 80, Tanks 80-132, 80-133, 80-134, and 80-135
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	CEF-80-12S	Groundwater Cleanup Target Levels ¹
<p><u>Volatile Organic Aromatics (USEPA Method 601/602) (µg/l)</u> No compounds detected</p> <p><u>Polynuclear Aromatic Hydrocarbons (USEPA Method 625) (µg/l)</u> No compounds detected</p> <p><u>Total Recoverable Petroleum Hydrocarbons (FL-PRO) (mg/l)</u> Not detected</p> <p><u>Inorganic Analytes (µg/l)</u> No analytes detected</p>		
<p>¹ Chapter 62-770, Florida Administrative Code.</p> <p>Notes: USEPA = U.S. Environmental Protection Agency. µg/l = micrograms per liter. NA = not applicable. FL-PRO = Florida Petroleum Residual Organics. mg/l = milligrams per liter.</p>		

REFERENCE

ABB Environmental Services, Inc. 1994. *Base Realignment and Closure Environmental Baseline Survey Report, Naval Air Station Cecil Field, Jacksonville, Florida*. Prepared for Southern Division, Naval Facilities Engineering Command, North Charleston, South Carolina (November).



APPENDIX A
MONITORING WELL INSTALLATION DETAIL



TITLE: NAS Cecil Field, Bldg.80-132/135 ASSESSMENT RPT.		LOG of WELL: CEF-80-12S	BORING NO. CEF-80-12S
CLIENT: SOUTHDIIVNAVFACENCOM			PROJECT NO: 02523-13
CONTRACTOR: U.S. Probe and Drill		DATE STARTED: 01-26-99	COMPLTD: 01-26-99
METHOD: HSA	CASE SIZE: 2in.	SCREEN INT.: 2.0-12.0 FT.	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: FID	TOT DPTH: 12.5FT.	DPTH TO ∇ 4.79 FT.
LOGGED BY: H.Hooper	WELL DEVELOPMENT DATE: 02-04-99		SITE: Building 80-132/135

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
1			0	<> See Note		SM		posthole
2				SILTY SAND: dark brown silty fine sand.				
3								
4			0			SC		posthole
5			0					
6				CLAYEY SAND: dark tan slightly clayey silty fine sand.				* **
7								
8			0			SM		
9								
10			0	SILTY SAND: tan silty fine sand.				
11								
12			0	<> Soil description taken from posthole and auger				
13				* no spll spoon samples taken				
14				** OVA readings taken at borehole				
15								

APPENDIX B
ANALYTICAL DATA

NAS CECIL FIELD -- FACILITY 80 / TANKS 80-132, 80-133, 80-134, & 80-135
 SUBSURFACE SOIL -- VOLATILES -- REPORT REQUEST NO. 10942

Lab Sample Number:	JR50724	JR50723
Site	UST GREY	UST GREY
Locator	CEF-80/132-SB5	CEF-80/132-SB6
Collect Date:	21-JAN-99	21-JAN-99

VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
-------	------	-------	----	-------	------	-------	----

EPA METHOD 8260 (VOLATILES)

Chloromethane	5	U	ug/kg	5	2900	U	ug/kg	2900
Vinyl chloride	5	U	ug/kg	5	2900	U	ug/kg	2900
Bromomethane	11	U	ug/kg	11	5700	U	ug/kg	5700
Chloroethane	11	U	ug/kg	11	5700	U	ug/kg	5700
1,2-Dichloroethane	5	U	ug/kg	5	2900	U	ug/kg	2900
Acetone	270	U	ug/kg	270	140000	U	ug/kg	140000
Methylene chloride	26	U	ug/kg	26	14000	U	ug/kg	14000
trans-1,2-dichloroethene	5	U	ug/kg	5	2900	U	ug/kg	2900
1,1-Dichloroethane	5	U	ug/kg	5	2900	U	ug/kg	2900
cis-1,2-dichloroethene	5	U	ug/kg	5	2900	U	ug/kg	2900
2-Butanone	110	U	ug/kg	110	57000	U	ug/kg	57000
Chloroform	5	U	ug/kg	5	2900	U	ug/kg	2900
1,1,1-Trichloroethane	5	U	ug/kg	5	2900	U	ug/kg	2900
Carbon tetrachloride	5	U	ug/kg	5	2900	U	ug/kg	2900
Benzene	5	U	ug/kg	5	2900	U	ug/kg	2900
1,2-Dichloropropane	5	U	ug/kg	5	2900	U	ug/kg	2900
Trichloroethene	5	U	ug/kg	5	2900	U	ug/kg	2900
Bromodichloromethane	5	U	ug/kg	5	2900	U	ug/kg	2900
cis-1,3-Dichloropropene	5	U	ug/kg	5	2900	U	ug/kg	2900
4-Methyl-2-Pentanone	110	U	ug/kg	110	57000	U	ug/kg	57000
Toluene	5	U	ug/kg	5	2900	U	ug/kg	2900
trans-1,3-Dichloropropene	5	U	ug/kg	5	2900	U	ug/kg	2900
1,1,2-Trichloroethane	5	U	ug/kg	5	2900	U	ug/kg	2900
Tetrachloroethene	16	U	ug/kg	16	8600	U	ug/kg	8600
2-Hexanone	110	U	ug/kg	110	57000	U	ug/kg	57000
Dibromochloromethane	5	U	ug/kg	5	2900	U	ug/kg	2900
Chlorobenzene	5	U	ug/kg	5	2900	U	ug/kg	2900
Ethylbenzene	5	U	ug/kg	5	2900	U	ug/kg	2900
m,p-Xylene	11	U	ug/kg	11	13000	U	ug/kg	5700
o-Xylene	5	U	ug/kg	5	11000	U	ug/kg	2900
Styrene	5	U	ug/kg	5	2900	U	ug/kg	2900
Bromoform	5	U	ug/kg	5	2900	U	ug/kg	2900
1,1,2,2-Tetrachloroethane	5	U	ug/kg	5	2900	U	ug/kg	2900
1,1-Dichloroethene	5	U	ug/kg	5	2900	U	ug/kg	2900
1,1,1-Trichloroethane	5	U	ug/kg	5	2900	U	ug/kg	2900
1,1-Dichloroethane	5	U	ug/kg	5	2900	U	ug/kg	2900
Bromoform	5	U	ug/kg	5	2900	U	ug/kg	2900
1,1,2,2-Tetrachloroethane	5	U	ug/kg	5	2900	U	ug/kg	2900
Bromomethane	11	U	ug/kg	11	5700	U	ug/kg	5700

U = NOT DETECTED J = ESTIMATED VALUE
 UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
 R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- FACILITY 80 / TANKS 80-132, 80-133, 80-134, & 80-135
 SUBSURFACE SOIL -- SEMIVOLATILES -- REPORT REQUEST NO. 10943

Lab Sample Number:	JR50724	JR50723
Site	UST GREY	UST GREY
Locator	CEF-80/132-SB5	CEF-80/132-SB6
Collect Date:	21-JAN-99	21-JAN-99
	VALUE QUAL UNITS DL	VALUE QUAL UNITS DL

EPA METHOD 8270 - SEMVOLATILES

Acenaphthene	350 U	ug/kg	350	7600 U	ug/kg	7600
Acenaphthylene	350 U	ug/kg	350	7600 U	ug/kg	7600
Anthracene	350 U	ug/kg	350	7600 U	ug/kg	7600
Benzo (a) anthracene	350 U	ug/kg	350	7600 U	ug/kg	7600
Benzo (b) fluoranthene	350 U	ug/kg	350	7600 U	ug/kg	7600
Benzo (k) fluoranthene	350 U	ug/kg	350	7600 U	ug/kg	7600
Benzo (g,h,i) perylene	350 U	ug/kg	350	7600 U	ug/kg	7600
Benzo (a) pyrene	350 U	ug/kg	350	7600 U	ug/kg	7600
Benzylbutylphthalate	350 U	ug/kg	350	7600 U	ug/kg	7600
bis (2-chloroethoxy) methane	350 U	ug/kg	350	7600 U	ug/kg	7600
bis (2-chloroethyl) ether	350 U	ug/kg	350	7600 U	ug/kg	7600
bis (2-chloroisopropyl) ether	350 U	ug/kg	350	7600 U	ug/kg	7600
bis (2-ethylhexyl) phthalate	350 U	ug/kg	350	7600 U	ug/kg	7600
4-Bromophenylphenyl ether	350 U	ug/kg	350	7600 U	ug/kg	7600
2-Chloronaphthalene	350 U	ug/kg	350	7600 U	ug/kg	7600
4-Chlorophenyl-phenylether	350 U	ug/kg	350	7600 U	ug/kg	7600
Chrysene	350 U	ug/kg	350	7600 U	ug/kg	7600
Dibenzo (a,h) anthracene	350 U	ug/kg	350	7600 U	ug/kg	7600
1,2-Dichlorobenzene	350 U	ug/kg	350	7600 U	ug/kg	7600
1,3-Dichlorobenzene	350 U	ug/kg	350	7600 U	ug/kg	7600
1,4-Dichlorobenzene	350 U	ug/kg	350	7600 U	ug/kg	7600
3,3'-Dichlorobenzidine	700 U	ug/kg	700	15000 U	ug/kg	15000
Dimethyl phthalate	350 U	ug/kg	350	7600 U	ug/kg	7600
Diethyl phthalate	350 U	ug/kg	350	7600 U	ug/kg	7600
Di-n-octyl phthalate	350 U	ug/kg	350	7600 U	ug/kg	7600
2,4-Dinitrotoluene	350 U	ug/kg	350	7600 U	ug/kg	7600
2,6-Dinitrotoluene	350 U	ug/kg	350	7600 U	ug/kg	7600
Fluoranthene	350 U	ug/kg	350	7600 U	ug/kg	7600
Fluorene	350 U	ug/kg	350	7600 U	ug/kg	7600
Hexachlorobenzene	350 U	ug/kg	350	7600 U	ug/kg	7600
Hexachlorobutadiene	350 U	ug/kg	350	7600 U	ug/kg	7600
Hexachlorocyclopentadiene	350 U	ug/kg	350	7600 U	ug/kg	7600
Hexachloroethane	350 U	ug/kg	350	7600 U	ug/kg	7600
Indeno (1,2,3-cd) pyrene	350 U	ug/kg	350	7600 U	ug/kg	7600
Isophorone	350 U	ug/kg	350	7600 U	ug/kg	7600
1-Methylnaphthalene	-		-	-		-
2-Methylnaphthalene	350 U	ug/kg	350	39000	ug/kg	7600
Naphthalene	350 U	ug/kg	350	7600 U	ug/kg	7600
Nitrobenzene	350 U	ug/kg	350	7600 U	ug/kg	7600
N-Nitrosodi-n-propylamine	350 U	ug/kg	350	7600 U	ug/kg	7600
N-Nitrosodiphenylamine	350 U	ug/kg	350	7600 U	ug/kg	7600
Phenanthrene	350 U	ug/kg	350	7600 U	ug/kg	7600
Pyrene	350 U	ug/kg	350	7600 U	ug/kg	7600
1,2,4-Trichlorobenzene	350 U	ug/kg	350	7600 U	ug/kg	7600
4-Chloroaniline	350 U	ug/kg	350	7600 U	ug/kg	7600
2-Nitroaniline	350 U	ug/kg	350	7600 U	ug/kg	7600
3-Nitroaniline	350 U	ug/kg	350	7600 U	ug/kg	7600
4-Nitroaniline	350 U	ug/kg	350	7600 U	ug/kg	7600
Dibenzofuran	350 U	ug/kg	350	7600 U	ug/kg	7600
4-Chloro-3-methylphenol	350 U	ug/kg	350	7600 U	ug/kg	7600

NAS CECIL FIELD -- FACILITY 80 / TANKS 80-132, 80-133, 80-134, & 80-135
 SUBSURFACE SOIL -- SEMIVOLATILES -- REPORT REQUEST NO. 10943

Lab Sample Number:	JR50724	JR50723
Site	UST GREY	UST GREY
Locator	CEF-80/132-SB5	CEF-80/132-SB6
Collect Date:	21-JAN-99	21-JAN-99

	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
2-Chlorophenol	350	U	ug/kg	350	7600	U	ug/kg	7600
2,4-Dichlorophenol	350	U	ug/kg	350	7600	U	ug/kg	7600
2,4-Dimethylphenol	350	U	ug/kg	350	7600	U	ug/kg	7600
2,4-Dinitrophenol	1800	U	ug/kg	1800	38000	U	ug/kg	38000
2-Methyl-4,6-dinitrophenol	1000	U	ug/kg	1000	23000	U	ug/kg	23000
2-Nitrophenol	350	U	ug/kg	350	7600	U	ug/kg	7600
4-Nitrophenol	350	U	ug/kg	350	7600	U	ug/kg	7600
Pentachlorophenol	350	U	ug/kg	350	7600	U	ug/kg	7600
Phenol	350	U	ug/kg	350	7600	U	ug/kg	7600
2,4,6-Trichlorophenol	350	U	ug/kg	350	7600	U	ug/kg	7600
2-Methylphenol	350	U	ug/kg	350	7600	U	ug/kg	7600
3- & 4-Methylphenol (2)	350	U	ug/kg	350	7600	U	ug/kg	7600
2,4,5-Trichlorophenol	350	U	ug/kg	350	7600	U	ug/kg	7600
Pyridine	-				-			

U = NOT DETECTED J = ESTIMATED VALUE
 UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
 R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- FACILITY 80 / TANKS 80-132, 80-133, 80-134, & 80-135
 SUBSURFACE SOIL -- INORGANICS -- REPORT REQUEST NO. 10944

Lab Sample Number:	JR50724		JR50723			
Site	UST GREY		UST GREY			
Locator	CEF-80/132-SB5		CEF-80/132-SB6			
Collect Date:	21-JAN-99		21-JAN-99			
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

RCRA 8

Arsenic	.5 U	mg/kg	.5	.6 U	mg/kg	.6
Barium	21 U	mg/kg	21	23 U	mg/kg	23
Cadmium	1 U	mg/kg	1	1 U	mg/kg	1
Chromium	4.4	mg/kg	1	2.4	mg/kg	1
Lead	4	mg/kg	1	2.1	mg/kg	1
Mercury	.051	mg/kg	.01	.01 U	mg/kg	.01
Selenium	2 U	mg/kg	2	2 U	mg/kg	2
Silver	2 U	mg/kg	2	2 U	mg/kg	2

U = NOT DETECTED J = ESTIMATED VALUE
 UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
 R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- FACILITY 80 / TANKS 80-132, 80-133, 80-134, & 80-135
 SUBSURFACE SOIL -- TPH -- REPORT REQUEST NO. 10945

Lab Sample Number:	JR50724		JR50723		
Site	UST GREY		UST GREY		
Locator	CEF-80/132-SB5		CEF-80/132-SB6		
Collect Date:	21-JAN-99		21-JAN-99		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS
					DL

FLA PRO						
TPH C8-C40	7	U	mg/kg	7	14000	mg/kg
						150

U = NOT DETECTED J = ESTIMATED VALUE
 UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
 R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- FACILITY 80 / TANKS 80-132, 80-133, 80-134, & 80-135
GROUNDWATER -- VOLATILES -- REPORT REQUEST NO. 10946

Lab Sample Number: JR54132
Site: UST GREY
Locator: CEF-80-12S
Collect Date: 11-FEB-99

VALUE QUAL UNITS DL

EPA METHOD 8260 (VOLATILES)

Chloromethane	1 U	ug/l	1
Vinyl chloride	1 U	ug/l	1
Bromomethane	2 U	ug/l	2
Chloroethane	2 U	ug/l	2
1,2-Dichloroethane	1 U	ug/l	1
Acetone	50 U	ug/l	50
Methylene chloride	5 U	ug/l	5
trans-1,2-dichloroethene	1 U	ug/l	1
1,1-Dichloroethane	1 U	ug/l	1
cis-1,2-dichloroethene	1 U	ug/l	1
2-Butanone	20 U	ug/l	20
Chloroform	1 U	ug/l	1
1,1,1-Trichloroethane	1 U	ug/l	1
Carbon tetrachloride	1 U	ug/l	1
Benzene	1 U	ug/l	1
1,2-Dichloropropane	1 U	ug/l	1
Trichloroethene	1 U	ug/l	1
Bromodichloromethane	1 U	ug/l	1
cis-1,3-Dichloropropene	1 U	ug/l	1
4-Methyl-2-Pentanone	20 U	ug/l	20
Toluene	1 U	ug/l	1
trans-1,3-Dichloropropene	1 U	ug/l	1
1,1,2-Trichloroethane	1 U	ug/l	1
Tetrachloroethene	3 U	ug/l	3
2-Hexanone	20 U	ug/l	20
Dibromochloromethane	1 U	ug/l	1
Chlorobenzene	1 U	ug/l	1
Ethylbenzene	1 U	ug/l	1
m,p-Xylene	2 U	ug/l	2
o-Xylene	1 U	ug/l	1
Styrene	1 U	ug/l	1
Bromoform	1 U	ug/l	1
1,1,2,2-Tetrachloroethane	1 U	ug/l	1
1,1-Dichloroethene	1 U	ug/l	1
1,1,1-Trichloroethane	1 U	ug/l	1
1,1-Dichloroethane	1 U	ug/l	1
Bromoform	1 U	ug/l	1
1,1,2,2-Tetrachloroethane	1 U	ug/l	1
Bromomethane	2 U	ug/l	2

U = NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- FACILITY 80 / TANKS 80-132, 80-133, 80-134, & 80-135
 GROUNDWATER -- SEMIVOLATILES -- REPORT REQUEST NO. 10947

Lab Sample Number: JR54132
 Site: UST GREY
 Locator: CEF-80-12S
 Collect Date: 11-FEB-99

VALUE QUAL UNITS DL

EPA METHOD 8270 - SEMVOLATILES

Acenaphthene	10 U	ug/l	10
Acenaphthylene	10 U	ug/l	10
Anthracene	10 U	ug/l	10
Benzo (a) anthracene	10 U	ug/l	10
Benzo (b) fluoranthene	10 U	ug/l	10
Benzo (k) fluoranthene	10 U	ug/l	10
Benzo (g,h,i) perylene	10 U	ug/l	10
Benzo (a) pyrene	10 U	ug/l	10
Benzylbutylphthalate	10 U	ug/l	10
bis (2-chloroethoxy) methane	10 U	ug/l	10
bis (2-chloroethyl) ether	10 U	ug/l	10
bis (2-chloroisopropyl) ether	10 U	ug/l	10
bis (2-ethylhexyl) phthalate	10 U	ug/l	10
4-Bromophenylphenyl ether	10 U	ug/l	10
2-Chloronaphthalene	10 U	ug/l	10
4-Chlorophenyl-phenylether	10 U	ug/l	10
Chrysene	10 U	ug/l	10
Dibenzo (a,h) anthracene	10 U	ug/l	10
1,2-Dichlorobenzene	10 U	ug/l	10
1,3-Dichlorobenzene	10 U	ug/l	10
1,4-Dichlorobenzene	10 U	ug/l	10
3,3'-Dichlorobenzidine	20 U	ug/l	20
Dimethyl phthalate	10 U	ug/l	10
Diethyl phthalate	10 U	ug/l	10
Di-n-octyl phthalate	10 U	ug/l	10
2,4-Dinitrotoluene	10 U	ug/l	10
2,6-Dinitrotoluene	10 U	ug/l	10
Fluoranthene	10 U	ug/l	10
Fluorene	10 U	ug/l	10
Hexachlorobenzene	10 U	ug/l	10
Hexachlorobutadiene	10 U	ug/l	10
Hexachlorocyclopentadiene	10 U	ug/l	10
Hexachloroethane	10 U	ug/l	10
Indeno (1,2,3-cd) pyrene	10 U	ug/l	10
Isophorone	10 U	ug/l	10
1-Methylnaphthalene	-		
2-Methylnaphthalene	10 U	ug/l	10
Naphthalene	10 U	ug/l	10
Nitrobenzene	10 U	ug/l	10
N-Nitrosodi-n-propylamine	10 U	ug/l	10
N-Nitrosodiphenylamine	10 U	ug/l	10
Phenanthrene	10 U	ug/l	10
Pyrene	10 U	ug/l	10
1,2,4-Trichlorobenzene	10 U	ug/l	10
4-Chloroaniline	10 U	ug/l	10
2-Nitroaniline	10 U	ug/l	10
3-Nitroaniline	10 U	ug/l	10
4-Nitroaniline	10 U	ug/l	10
Dibenzofuran	10 U	ug/l	10
4-Chloro-3-methylphenol	10 U	ug/l	10

NAS CECIL FIELD -- FACILITY 80 / TANKS 80-132, 80-133, 80-134, & 80-135
 GROUNDWATER -- SEMIVOLATILES -- REPORT REQUEST NO. 10947

Lab Sample Number: JR54132
 Site: UST GREY
 Locator: CEF-80-12S
 Collect Date: 11-FEB-99

VALUE QUAL UNITS DL

	VALUE	QUAL UNITS	DL
2-Chlorophenol	10 U	ug/l	10
2,4-Dichlorophenol	10 U	ug/l	10
2,4-Dimethylphenol	10 U	ug/l	10
2,4-Dinitrophenol	50 U	ug/l	50
2-Methyl-4,6-dinitrophenol	30 U	ug/l	30
2-Nitrophenol	10 U	ug/l	10
4-Nitrophenol	10 U	ug/l	10
Pentachlorophenol	10 U	ug/l	10
Phenol	10 U	ug/l	10
2,4,6-Trichlorophenol	10 U	ug/l	10
2-Methylphenol	10 U	ug/l	10
3- & 4-Methylphenol (2)	10 U	ug/l	10
2,4,5-Trichlorophenol	10 U	ug/l	10
Pyridine	-		

U = NOT DETECTED J = ESTIMATED VALUE
 UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
 R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- FACILITY 80 / TANKS 80-132, 80-133, 80-134, & 80-135
GROUNDWATER -- INORGANICS -- REPORT REQUEST NO. 10948

Lab Sample Number: JR54132
Site: UST GREY
Locator: CEF-80-12S
Collect Date: 11-FEB-99

VALUE QUAL UNITS DL

RCRA 8

Arsenic	.01 U	mg/l	.01
Barium	.1 U	mg/l	.1
Cadmium	.002 U	mg/l	.002
Chromium	.01 U	mg/l	.01
Lead	.005 U	mg/l	.005
Mercury	.0002 U	mg/l	.0002
Selenium	.01 U	mg/l	.01
Silver	.01 U	mg/l	.01

U = NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- FACILITY 80 / TANKS 80-132, 80-133, 80-134, & 80-135
GROUNDWATER -- TPH -- REPORT REQUEST NO. 10949

Lab Sample Number: JR54132
Site: UST GREY
Locator: CEF-80-12S
Collect Date: 11-FEB-99

VALUE	QUAL	UNITS	DL
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FLA PRO			
TPH C8-C40	.2	U mg/l	.2

U = NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NEW DOCUMENT

CONFIRMATORY SAMPLING REPORT
BUILDING 11, OIL-WATER SEPARATOR 11-OW
BASE REALIGNMENT AND CLOSURE
UNDERGROUND STORAGE TANK AND
ABOVEGROUND STORAGE TANK GRAY SITES
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Unit Identification Code: N60200

Contract No.: N62467-89-D-0317/149

Prepared by:

Harding Lawson Associates
2590 Executive Center Circle, East
Tallahassee, Florida 32301

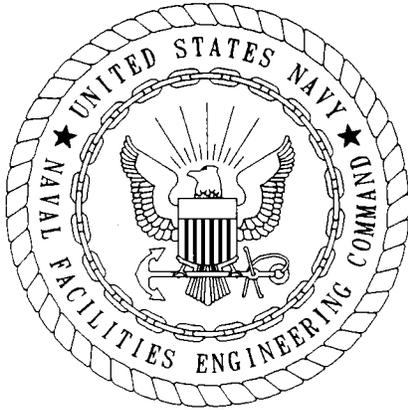
Prepared for:

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

Bryan Kizer, Code 1842, Engineer-in-Charge

March 1999

Revision 0.0



CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

The Contractor, Harding Lawson Associates, hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0317/149 are complete and accurate and comply with all requirements of this contract.

DATE: March 8, 1999

NAME AND TITLE OF CERTIFYING OFFICIAL: Rao Angara
Task Order Manager

NAME AND TITLE OF CERTIFYING OFFICIAL: Eric A. Blomberg, P.G.
Project Technical Lead

(DFAR 252.227-7036)

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Building 11, Oil-Water Separator 11-OW
Naval Air Station Cecil Field
Jacksonville, Florida

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- Appendix B: Analytical Data

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Confirmatory Sampling Report
Building 11, Oil-Water Separator 11-OW
Naval Air Station Cecil Field
Jacksonville, Florida

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GLOSSARY

bls	below land surface
BRAC	Base Realignment and Closure (Act)
FDEP	Florida Department of Environmental Protection
KAG	Kerosene Analytical Group
OVA	organic vapor analyzer



1.0 INTRODUCTION

Harding Lawson Associates, under contract to the Southern Division, Naval Facilities Engineering Command, has completed confirmatory sampling for oil-water separator 11-OW at Naval Air Station Cecil Field in Jacksonville, Florida. This report summarizes the related field operations, results, conclusions, and recommendations.

Oil-water separator 11-OW is located on the east side of Building 11, the base steam plant (ABB Environmental Services, Inc., 1994) (Figure 1). The installation date and capacity of the oil-water separator are unknown.

2.0 FIELD INVESTIGATION

The confirmatory sampling for oil-water separator 11-OW was initiated in July 1998 and included

- the advancement of four soil borings to the water table,
- collection and analysis of one groundwater sample and one subsurface soil sample.

Soil samples were collected from each boring at depth intervals of 1 foot below land surface (bls) and every 2 feet thereafter to the water table. These samples were screened for hydrocarbon vapors with an organic vapor analyzer (OVA).

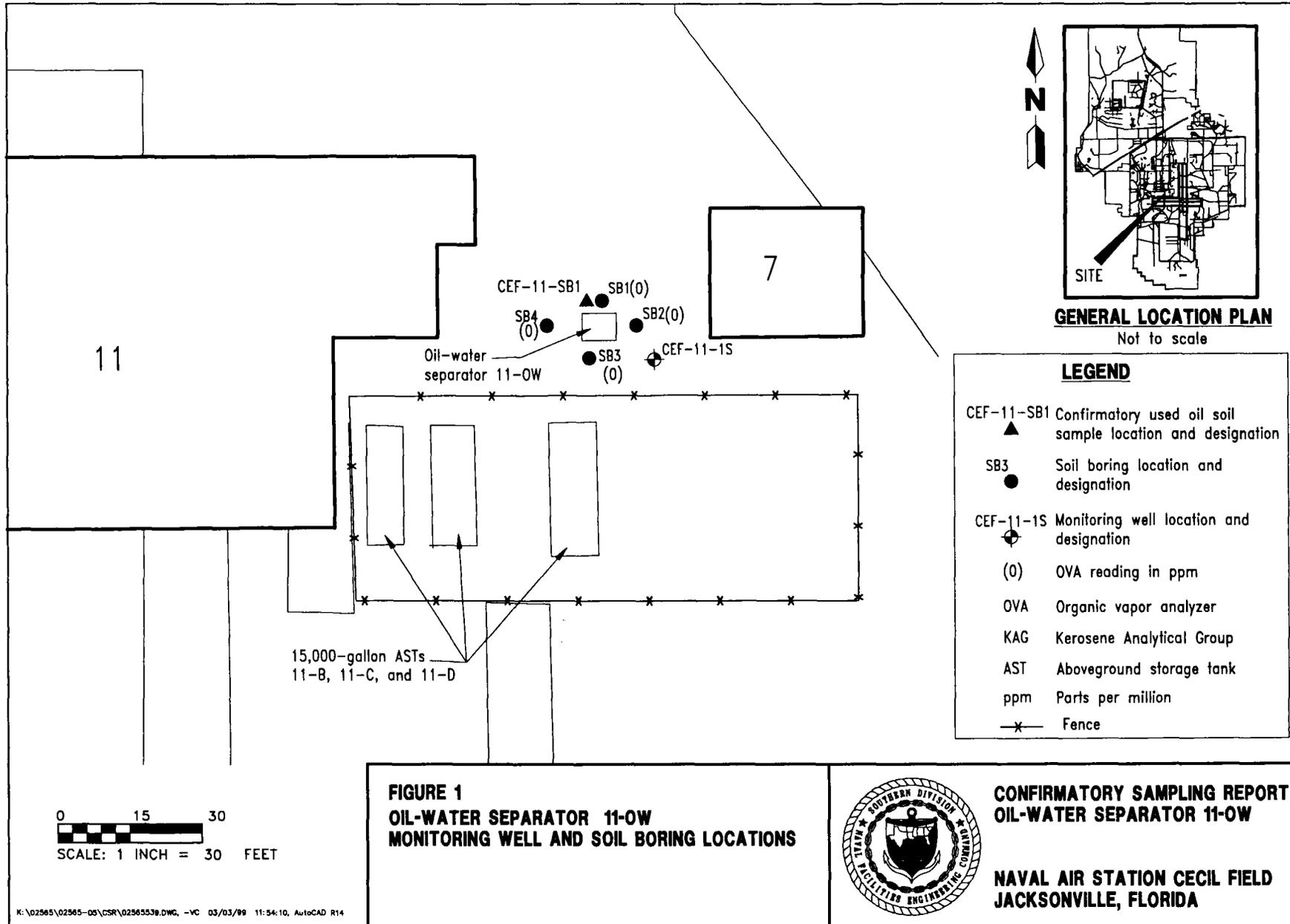
One subsurface soil sample was collected on October 14, 1998, and analyzed for the ~~Kerosene Analytical Group (KAG)~~ parameters. Sample CEF-11OW-SB1 was collected from 3 feet bls. *Used Oil Group*

One monitoring well, CEF-11-1S, was previously installed and sampled during the Base Realignment and Closure (BRAC) investigation of Building 11. The groundwater data from the BRAC investigation will be used for comparison to cleanup target levels in this report. A general site plan indicating the location of the soil borings and monitoring wells is presented on Figure 1. The monitoring well installation detail is included in Appendix A.

3.0 SCREENING AND ANALYTICAL RESULTS

Excessively contaminated soil (greater than 50 parts per million on an OVA) was not detected in the soil borings advanced during the confirmatory sampling. The soil OVA data are summarized in Table 1 and presented on Figure 1.

No contaminants were detected above Florida Department of Environmental Protection (FDEP) soil cleanup target levels in the subsurface soil sample collected for used oil analysis. Subsurface soil analytical results are summarized in Table 2 and presented in Appendix B. No contaminants were detected above FDEP groundwater cleanup target levels in the groundwater samples collected from monitoring well CEF-11-1S. A summary of the groundwater analytical results is presented in Table 3. The complete analytical data set is presented in Appendix B.



**Table 1
Soil Screening Results**

Confirmatory Sampling Report
Building 11, Oil-Water Separator 11-OW
Naval Air Station Cecil Field
Jacksonville, Florida

Location	OVA Concentration (ppm)			
	Depth (feet bls)	Unfiltered	Filtered	Actual
SB1	1	0	--	0
	3	0	--	0
	4 (wet)	13	--	13
SB2	1	0	--	0
	3	0	--	0
	5 (wet)	0	--	0
SB3	1	0	--	0
	3	0	--	0
	4 (wet)	0	--	0
SB4	1	0	--	0
	3	0	--	0
	5 (wet)	0	--	0

Notes: Soil samples were filtered with carbon to determine the methane concentration.

OVA = organic vapor analyzer.
ppm = parts per million.
bls = below land surface.
wet = soil sample was completely saturated when analyzed.
-- = filtered readings were not collected.

Table 2
Summary of Subsurface Soil Analytical Detections

Confirmatory Sampling Report
Building 11, Oil-Water Separator 11-OW
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	CEF-11-SB1 (3 feet bls; OVA = 0 ppm)	Soil Cleanup Target Levels ¹
<u>Volatile Organic Aromatics (USEPA Method 8020) (mg/kg)</u>		
1,1-Dichloroethane	0.002	NA
Tetrachloroethane	0.019	NA
Trichloroethene	0.001 J	NA
Toluene	0.0018 J	300/0.4
<u>Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (mg/kg)</u>		
No compounds detected		
<u>Total Recoverable Petroleum Hydrocarbons (TRPH) (FL-PRO) (mg/kg)</u>		
TRPH	110	350/340
<u>Inorganic Analytes (mg/kg)</u>		
Chromium	2	290/TCLP
Lead	11	500/TCLP
Mercury	0.083	3.7/TCLP
¹ Chapter 62-770, Florida Administrative Code: Direct Exposure I/Leachability, Table V. Notes: bls = below land surface. ppm = parts per million. USEPA = U.S. Environmental Protection Agency. mg/kg = milligrams per kilogram. NA = not applicable. J = estimated value. FL-PRO = Florida-Petroleum Residual Organics. TCLP = toxicity characteristic leaching procedure.		

**Table 3
Summary of Groundwater Analytical Results**

Confirmatory Sampling Report
Building 11, Oil-Water Separator 11-OW
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	CEF-11-1S	Groundwater Cleanup Target Levels ¹
<u>Volatile Organic Aromatics (USEPA Method 601/602) (µg/l)</u>		
No compounds detected		
<u>Polynuclear Aromatic Hydrocarbons (USEPA Method 625) (µg/l)</u>		
No compounds detected		
<u>Total Recoverable Petroleum Hydrocarbons (FL-PRO) (mg/l)</u>		
Not detected		
<u>Inorganic Analytes (µg/l)²</u>		
Barium	13.8 J	2,000
Chromium	29.7	100
Lead	9.7	15
Selenium	5.8	50
¹ Chapter 62-770, Florida Administrative Code. ² Used oil group analytes. All other detected analytes were addressed in the BRAC investigation of Building 11. Notes: USEPA = U.S. Environmental Protection Agency. µg/l = micrograms per liter. FL-PRO = Florida-Petroleum Residual Organics. mg/l = milligrams per liter. J = estimated value. BRAC = Base Realignment and Closure.		

4.0 CONCLUSIONS AND RECOMMENDATIONS

Data obtained during the confirmatory sampling of oil-water separator 11-OW did not indicate the presence of contaminated soil and groundwater at levels above cleanup target levels.

It is recommended that no further action take place at the oil-water separator site until it is removed.

REFERENCE

ABB Environmental Services, Inc. 1994. *Base Realignment and Closure Environmental Baseline Survey Report, Naval Air Station Cecil Field, Jacksonville, Florida*. Prepared for Southern Division, Naval Facilities Engineering Command, North Charleston, South Carolina (November).



APPENDIX A
MONITORING WELL INSTALLATION DETAIL



TITLE: NAS Cecil Field BRAC		LOG of WELL: CEF-11-1S	BORING NO. CEF-11-1S
CLIENT: SOUTH DIVNAVFACENCOM		PROJECT NO: 08520-85	
CONTRACTOR: Alliance Environmental, Inc.		DATE STARTED: 12-2-95	COMPLTD: 12-2-95
METHOD: Auger	CASE SIZE: 2 in.	SCREEN INT.: 4 - 14 ft.	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: PID	TOT DPTH: 15.0 FT.	DPTH TO ∇ 6.0 FT.
LOGGED BY: R. Holloway	WELL DEVELOPMENT DATE:		SITE: 45 - 11 Steam Plant

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
1			27	SILTY SAND (SM): 100%, very dark grayish brown, quartz, fine- to very fine-grained, subrounded to subangular, well sorted.		SM	posthole	
2			32				posthole	
3								
4								
5			1.1				2,2,3,2	
6								
7			5.7				5,5,3,5	
8								
9								
10								
11								
12								
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14								
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25								
26								
27								
28								
29								
30								

APPENDIX B
ANALYTICAL DATA

NAS CECIL FIELD -- OIL/WATER SEPARATOR AT FACILITY 11
 SUBSURFACE SOIL -- ANALYTICAL DATA -- REPORT REQUEST NO. 10549

Lab Sample Number: JR366610
 Site: UST GREY
 Locator: CEF-110W-SB1
 Collect Date: 14-OCT-98

VALUE QUAL UNITS DL

BRAC VOLATILES

1,1,1-Trichloroethane	1 U	ug/kg	1
1,1,2,2-Tetrachloroethane	1 U	ug/kg	1
1,1,2-Trichloroethane	1 U	ug/kg	1
1,1-Dichloroethane	2	ug/kg	1
1,1-Dichloroethene	1 U	ug/kg	1
1,2-Dichlorobenzene	370 U	ug/kg	370
1,2-Dichloroethane	1 U	ug/kg	1
1,2-Dichloropropane	1 U	ug/kg	1
1,3-Dichlorobenzene	370 U	ug/kg	370
1,4-Dichlorobenzene	370 U	ug/kg	370
Benzene	1 U	ug/kg	1
Bromodichloromethane	1 U	ug/kg	1
Bromoform	1 U	ug/kg	1
Bromomethane	1 U	ug/kg	1
Carbon tetrachloride	1 U	ug/kg	1
Chlorobenzene	1 U	ug/kg	1
Chloroethane	1 U	ug/kg	1
Chloroform	1 U	ug/kg	1
Chloromethane	1 U	ug/kg	1
Dibromochloromethane	1 U	ug/kg	1
Ethyl benzene	1 U	ug/kg	1
Methyl chloride	1 U	ug/kg	1
Tetrachloroethene	19	ug/kg	1
Toluene	1.8 J	ug/kg	1
Trichloroethene	1 J	ug/kg	1
Vinyl chloride	1 U	ug/kg	1
cis-1,3-Dichloropropene	1 U	ug/kg	1
m,p-Xylene	1 U	ug/kg	1
o-Xylene	1 U	ug/kg	1
trans-1,2-Dichloroethene	1 U	ug/kg	1
trans-1,3-Dichloropropene	1 U	ug/kg	1

BRAC SEMIVOLATILES

Phenol	370 U	ug/kg	370
bis(2-Chloroethyl)ether	370 U	ug/kg	370
1,3-Dichlorobenzene	370 U	ug/kg	370
1,4-Dichlorobenzene	370 U	ug/kg	370
1,2-Dichlorobenzene	370 U	ug/kg	370
N-Nitroso-di-n-propylamine	370 U	ug/kg	370
Hexachloroethane	370 U	ug/kg	370
Nitrobenzene	370 U	ug/kg	370
Isophorone	370 U	ug/kg	370
2-Nitrophenol	370 U	ug/kg	370
2,4-Dimethylphenol	370 U	ug/kg	370
bis(2-Chloroethoxy) methane	370 U	ug/kg	370
2,4-Dichlorophenol	370 U	ug/kg	370
1,2,4-Trichlorobenzene	370 U	ug/kg	370
Naphthalene	370 U	ug/kg	370
Hexachlorobutadiene	370 U	ug/kg	370
4-Chloro-3-methylphenol	370 U	ug/kg	370

NAS CECIL FIELD -- OIL/WATER SEPARATOR AT FACILITY 11
 SUBSURFACE SOIL -- ANALYTICAL DATA -- REPORT REQUEST NO. 10549

Lab Sample Number: JR366610
 Site: UST GREY
 Locator: CEF-110W-SB1
 Collect Date: 14-OCT-98

VALUE QUAL UNITS DL

2-Methylnaphthalene	370 U	ug/kg	370
2,4,6-Trichlorophenol	370 U	ug/kg	370
2-Chloronaphthalene	370 U	ug/kg	370
Dimethylphthalate	370 U	ug/kg	370
Acenaphthylene	370 U	ug/kg	370
2,4-Dinitrophenol	1800 U	ug/kg	1800
3- & 4-Methylphenol (2)	370 U	ug/kg	370
4-Nitrophenol	370 U	ug/kg	370
2,4-Dinitrotoluene	370 U	ug/kg	370
Diethylphthalate	370 U	ug/kg	370
4-Chlorophenyl-phenylether	370 U	ug/kg	370
Fluorene	370 U	ug/kg	370
4,6-Dinitro-2-methylphenol	1100 U	ug/kg	1100
4-Bromophenyl-phenylether	370 U	ug/kg	370
Hexachlorobenzene	370 U	ug/kg	370
Pentachlorophenol	370 U	ug/kg	370
Phenanthrene	370 U	ug/kg	370
Anthracene	370 U	ug/kg	370
Di-n-butylphthalate	370 U	ug/kg	370
Fluoranthene	370 U	ug/kg	370
Pyrene	370 U	ug/kg	370
3,3-Dichlorobenzidine	740 U	ug/kg	740
Benzo (a) anthracene	370 U	ug/kg	370
Chrysene	370 U	ug/kg	370
bis(2-Ethylhexyl) phthalate	370 U	ug/kg	370
Di-n-octylphthalate	370 U	ug/kg	370
Benzo (b) fluoranthene	370 U	ug/kg	370
Benzo (k) fluoranthene	370 U	ug/kg	370
Benzo (a) pyrene	370 U	ug/kg	370
Indeno (1,2,3-cd) pyrene	370 U	ug/kg	370
Dibenzo (a,h) anthracene	370 U	ug/kg	370
Benzo (g,h,i) perylene	370 U	ug/kg	370
FLA PRO			
TPH C8-C40	110	mg/kg	37
Arsenic	.6 U	mg/kg	.6
Barium	22 U	mg/kg	22
Cadmium	1 U	mg/kg	1
Chromium	2	mg/kg	1
Lead	11	mg/kg	1
Mercury	.083	mg/kg	.01
Selenium	2 U	mg/kg	2
Silver	2 U	mg/kg	2

U = NOT DETECTED J = ESTIMATED VALUE
 UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
 R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- FACILITY 11 - STEAM GENERATING PLANT
GROUNDWATER ANALYTICAL DATA -- REPORT REQUEST NO. 10534

Lab Sample Number: C33C9
Site: CECILBRAC2
Locator: 45G00101
Collect Date: 22-FEB-96

VALUE QUAL UNITS DL

CLP VOLATILES 90-SOW

Chloromethane	2 U	ug/l	2
Bromomethane	2 U	ug/l	2
Vinyl chloride	2 U	ug/l	2
Chloroethane	2 U	ug/l	2
Methylene chloride	1 U	ug/l	1
Acetone	2 U	ug/l	2
Carbon disulfide	1 U	ug/l	1
1,1-Dichloroethene	1 U	ug/l	1
1,1-Dichloroethane	1 U	ug/l	1
1,2-Dichloroethene (total)	2	ug/l	2
Chloroform	1 U	ug/l	1
1,2-Dichloroethane	1 U	ug/l	1
2-Butanone	2 U	ug/l	2
1,1,1-Trichloroethane	1 U	ug/l	1
Carbon tetrachloride	1 U	ug/l	1
Bromodichloromethane	1 U	ug/l	1
1,2-Dichloropropane	1 U	ug/l	1
cis-1,3-Dichloropropene	1 U	ug/l	1
Trichloroethene	1	ug/l	2
Dibromochloromethane	1 U	ug/l	1
1,1,2-Trichloroethane	1 U	ug/l	1
Benzene	1 U	ug/l	1
trans-1,3-Dichloropropene	1 U	ug/l	1
Bromoform	1 U	ug/l	1
4-Methyl-2-pentanone	2 U	ug/l	2
2-Hexanone	2 U	ug/l	2
Tetrachloroethene	1 U	ug/l	1
Toluene	1 U	ug/l	1
1,1,2,2-Tetrachloroethane	1 U	ug/l	1
Chlorobenzene	1 U	ug/l	1
Ethylbenzene	1 U	ug/l	1
Styrene	1 U	ug/l	1
Xylenes (total)	1 U	ug/l	1

CLP SEMIVOLATILES 90-SOW

Phenol	10 U	ug/l	10
bis(2-Chloroethyl) ether	10 U	ug/l	10
2-Chlorophenol	10 U	ug/l	10
1,3-Dichlorobenzene	10 U	ug/l	10
1,4-Dichlorobenzene	10 U	ug/l	10
1,2-Dichlorobenzene	10 U	ug/l	10
2-Methylphenol	10 U	ug/l	10
2,2-oxybis(1-Chloropropane)	10 U	ug/l	10
4-Methylphenol	10 U	ug/l	10
N-Nitroso-di-n-propylamine	10 U	ug/l	10
Hexachloroethane	10 U	ug/l	10
Nitrobenzene	10 U	ug/l	10
Isophorone	10 U	ug/l	10
2-Nitrophenol	10 U	ug/l	10
2,4-Dimethylphenol	10 U	ug/l	10

NAS CECIL FIELD -- FACILITY 11 - STEAM GENERATING PLANT
GROUNDWATER ANALYTICAL DATA -- REPORT REQUEST NO. 10534

Lab Sample Number: C33C9
Site CECILBRAC2
Locator 45G00101
Collect Date: 22-FEB-96

VALUE QUAL UNITS DL

	VALUE	QUAL	UNITS	DL
bis(2-Chloroethoxy) methane	10	U	ug/l	10
2,4-Dichlorophenol	10	U	ug/l	10
1,2,4-Trichlorobenzene	10	U	ug/l	10
Naphthalene	10	U	ug/l	10
4-Chloroaniline	10	U	ug/l	10
Hexachlorobutadiene	10	U	ug/l	10
4-Chloro-3-methylphenol	10	U	ug/l	10
2-Methylnaphthalene	10	U	ug/l	10
Hexachlorocyclopentadiene	10	U	ug/l	10
2,4,6-Trichlorophenol	10	U	ug/l	10
2,4,5-Trichlorophenol	25	U	ug/l	25
2-Chloronaphthalene	10	U	ug/l	10
2-Nitroaniline	25	U	ug/l	25
Dimethylphthalate	10	U	ug/l	10
Acenaphthylene	10	U	ug/l	10
2,6-Dinitrotoluene	10	U	ug/l	10
3-Nitroaniline	25	U	ug/l	25
Acenaphthene	10	U	ug/l	10
2,4-Dinitrophenol	25	U	ug/l	25
4-Nitrophenol	25	U	ug/l	25
Dibenzofuran	10	U	ug/l	10
2,4-Dinitrotoluene	10	U	ug/l	10
Diethylphthalate	10	U	ug/l	10
4-Chlorophenyl-phenylether	10	U	ug/l	10
Fluorene	10	U	ug/l	10
4-Nitroaniline	25	U	ug/l	25
4,6-Dinitro-2-methylphenol	25	U	ug/l	25
N-Nitrosodiphenylamine	10	U	ug/l	10
4-Bromophenyl-phenylether	10	U	ug/l	10
Hexachlorobenzene	10	U	ug/l	10
Pentachlorophenol	25	U	ug/l	25
Phenanthrene	10	U	ug/l	10
Anthracene	10	U	ug/l	10
Carbazole	10	U	ug/l	10
Di-n-butylphthalate	10	U	ug/l	10
Fluoranthene	10	U	ug/l	10
Pyrene	10	U	ug/l	10
Butylbenzylphthalate	10	U	ug/l	10
3,3-Dichlorobenzidine	10	U	ug/l	10
Benzo (a) anthracene	10	U	ug/l	10
Chrysene	10	U	ug/l	10
bis(2-Ethylhexyl) phthalate	10	U	ug/l	10
Di-n-octylphthalate	10	U	ug/l	10
Benzo (b) fluoranthene	10	U	ug/l	10
Benzo (k) fluoranthene	10	U	ug/l	10
Benzo (a) pyrene	10	U	ug/l	10
Indeno (1,2,3-cd) pyrene	10	U	ug/l	10
Dibenzo (a,h) anthracene	10	U	ug/l	10
Benzo (g,h,i) perylene	10	U	ug/l	10
CLP PESTICIDES/PCBS 90-SOW alpha-BHC	.05	U	ug/l	.05

NAS CECIL FIELD -- FACILITY 11 - STEAM GENERATING PLANT
GROUNDWATER ANALYTICAL DATA -- REPORT REQUEST NO. 10534

Lab Sample Number: C33C9
Site: CECILBRAC2
Locator: 45G00101
Collect Date: 22-FEB-96

VALUE QUAL UNITS DL

beta-BHC	.05	U	ug/l	.05
delta-BHC	.05	U	ug/l	.05
gamma-BHC (Lindane)	.05	U	ug/l	.05
Heptachlor	.05	U	ug/l	.05
Aldrin	.05	U	ug/l	.05
Heptachlor epoxide	.05	U	ug/l	.05
Endosulfan I	.05	U	ug/l	.05
Dieldrin	.1	U	ug/l	.1
4,4-DDE	.1	U	ug/l	.1
Endrin	.1	U	ug/l	.1
Endosulfan II	.1	U	ug/l	.1
4,4-DDD	.1	U	ug/l	.1
Endosulfan sulfate	.1	U	ug/l	.1
4,4-DDT	.1	U	ug/l	.1
Methoxychlor	.5	U	ug/l	.5
Endrin ketone	.1	U	ug/l	.1
Endrin aldehyde	.1	U	ug/l	.1
alpha-Chlordane	.05	U	ug/l	.05
gamma-Chlordane	.05	U	ug/l	.05
Toxaphene	5	U	ug/l	5
Aroclor-1016	1	U	ug/l	1
Aroclor-1221	2	U	ug/l	2
Aroclor-1232	1	U	ug/l	1
Aroclor-1242	1	U	ug/l	1
Aroclor-1248	1	U	ug/l	1
Aroclor-1254	1	U	ug/l	1
Aroclor-1260	1	U	ug/l	1
CLP METALS AND CYANIDE				
Aluminum	14300	J	ug/l	40
Antimony	2.2	J	ug/l	12
Arsenic	3	U	ug/l	2
Barium	13.8	J	ug/l	40
Beryllium	1	U	ug/l	1
Cadmium	1	U	ug/l	1
Calcium	28700		ug/l	1000
Chromium	29.7		ug/l	2
Cobalt	2	U	ug/l	10
Copper	18.4	J	ug/l	5
Iron	1470	J	ug/l	20
Lead	9.7		ug/l	.6
Magnesium	3100	J	ug/l	1000
Manganese	101		ug/l	3
Mercury	.2	U	ug/l	.1
Nickel	16.5	J	ug/l	8
Potassium	3140	J	ug/l	1000
Selenium	5.8		ug/l	1
Silver	1	U	ug/l	2
Sodium	235000		ug/l	1000
Thallium	4	U	ug/l	2
Vanadium	195		ug/l	10
Zinc	40.3	J	ug/l	4

NAS CECIL FIELD -- FACILITY 11 - STEAM GENERATING PLANT
GROUNDWATER ANALYTICAL DATA -- REPORT REQUEST NO. 10534

Lab Sample Number: C33C9
Site: CECILBRAC2
Locator: 45G00101
Collect Date: 22-FEB-96

VALUE	QUAL	UNITS	DL
-------	------	-------	----

Cyanide	2.2	J	ug/l	.5
---------	-----	---	------	----

U = NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- FACILITY 11 - STEAM GENERATING PLANT
GROUNDWATER ANALYTICAL DATA -- REPORT REQUEST NO. 10538

Lab Sample Number: A682301240
Site: CECILBRAC2
Locator: 45G00101
Collect Date: 22-FEB-96

VALUE	QUAL	UNITS	DL
-------	------	-------	----

Total petroleum hydrocarbons	.5 U	mg/l	.5
------------------------------	------	------	----

U = NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- FACILITY 11 - STEAM GENERATING PLANT
GROUNDWATER ANALYTICAL DATA -- REPORT REQUEST NO. 10533

Lab Sample Number: JR38613
Site: BRAC
Locator: 45G00102
Collect Date: 28-OCT-98

VALUE QUAL UNITS DL

	VALUE	QUAL UNITS	DL
Aluminum	.26	mg/l	.05
Aluminum-DISS	.31	mg/l	.05
Manganese	.059	mg/l	.01
Manganese-DISS	.062	mg/l	.01
Sodium	44	mg/l	5
Sodium-DISS	35	mg/l	5.4
Vanadium	.74	mg/l	.01
Vanadium-DISS	.72	mg/l	.01

U = NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
? = RESULT IS REJECTED AND UNUSABLE

NEW DOCUMENT



April 16, 1999

Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
Attention: Mr. Mike Deliz

**Subject: Confirmatory Sampling Reports
 Naval Air Station Cecil Field
 Jacksonville, Florida
 Contract No. N62467-89-D-0317/149**

Dear Mr. Deliz:

On behalf of Southern Division, Naval Facilities Engineering Command, Harding Lawson Associates is pleased to submit two copies of the subject report for Tank sites 80-132 (includes 80-133, 80-134, and 80-135) and the JP-5 pipeline (North Fuel Farm to South Fuel Farm).

Comments or questions you may have concerning this submittal should be directed to Mr. Bryan Kizer at SOUTHNAVFACENCOM (843-820-5896).

Sincerely,

HARDING LAWSON ASSOCIATES

A handwritten signature in black ink, appearing to read 'Rao Angara', written in a cursive style.

Rao Angara
Task Order Manager

- cc: B. Kizer, SDIV (1 copy)
 S. Glass, SDIV (1 copy)
 D. Vaughn-Wright, USEPA (2 copies)
 D. Kruzicki, NASCF (1 copy)
 S. Pratt, TiNUS (2 copies)
 D. Ferris, TiNUS (1 copy)
 N. Hatch, CH2M Hill (1 copy)
 J. Flowe, City of Jacksonville (1 copy)
 file



NEW DOCUMENT

Harding Lawson Associates



2565-0009

April 22, 1999

Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
Attention: Mr. Mike Deliz

**Subject: Confirmatory Sampling Report
 Naval Air Station Cecil Field
 Jacksonville, Florida
 Contract No. N62467-89-D-0317/149**

Dear Mr. Deliz:

On behalf of Southern Division, Naval Facilities Engineering Command, Harding Lawson Associates is pleased to submit two copies of the subject report for Tank site 334-OW.

Comments or questions you may have concerning this submittal should be directed to Mr. Bryan Kizer at SOUTHNAVFACENCOM (843-820-5896).

Sincerely,

HARDING LAWSON ASSOCIATES


Rao Angara
Task Order Manager

cc: B. Kizer, SDIV (1 copy)
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 D. Vaughn-Wright, USEPA (2 copies)
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 D. Ferris, TtNUS (1 copy)
 N. Hatch, CH2M Hill (1 copy)
 J. Flowe, City of Jacksonville (1 copy)
 file

NEW DOCUMENT



Harding Lawson Associates



2565-0007

April 7, 1999

Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
Attention: Mr. Mike Deliz

**Subject: Confirmatory Sampling Report
 Naval Air Station Cecil Field
 Jacksonville, Florida
 Contract No. N62467-89-D-0317/149**

Dear Mr. Deliz:

On behalf of Southern Division, Naval Facilities Engineering Command, Harding Lawson Associates is pleased to submit two copies of the subject report for Oil-Water Separator sites 824-OW and 824A-OW.

Comments or questions you may have concerning this submittal should be directed to Mr. Bryan Kizer at SOUTHNAVFACENCOM (843-820-5896).

Sincerely,

HARDING LAWSON ASSOCIATES

A handwritten signature in cursive script, appearing to read "Rao Angara", is written over a light-colored background.

Rao Angara
Task Order Manager

cc: B. Kizer, SDIV (1 copy)
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 D. Vaughn-Wright, USEPA (2 copies)
 D. Kruzicki, NASCF (1 copy)
 S. Pratt, TtNUS (2 copies)
 D. Ferris, TtNUS (1 copy)
 N. Hatch, CH2M Hill (1 copy)
 J. Flowe, City of Jacksonville (1 copy)
 file



NEW DOCUMENT





May 12, 1999

Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
Attention: Mr. Mike Deliz

Subject: Errata Pages
Confirmatory Sampling Report, G16-U
Naval Air Station Cecil Field
Jacksonville, Florida
Contract No. N62467-89-D-0317149

Dear Mr. Deliz:

While conducting an internal review of the subject report submitted on April 7, 1999, we found that page 1 of the report was incomplete. Please insert the errata pages 1 and 2 and discard the original pages from the earlier submittal. I apologize for the error and the inconvenience in replacing these pages.

Comments or questions you may have concerning this submittal should be directed to Mr. Bryan Kizer at SOUTHNAVFACENCOM (843-820-5896).

Sincerely,

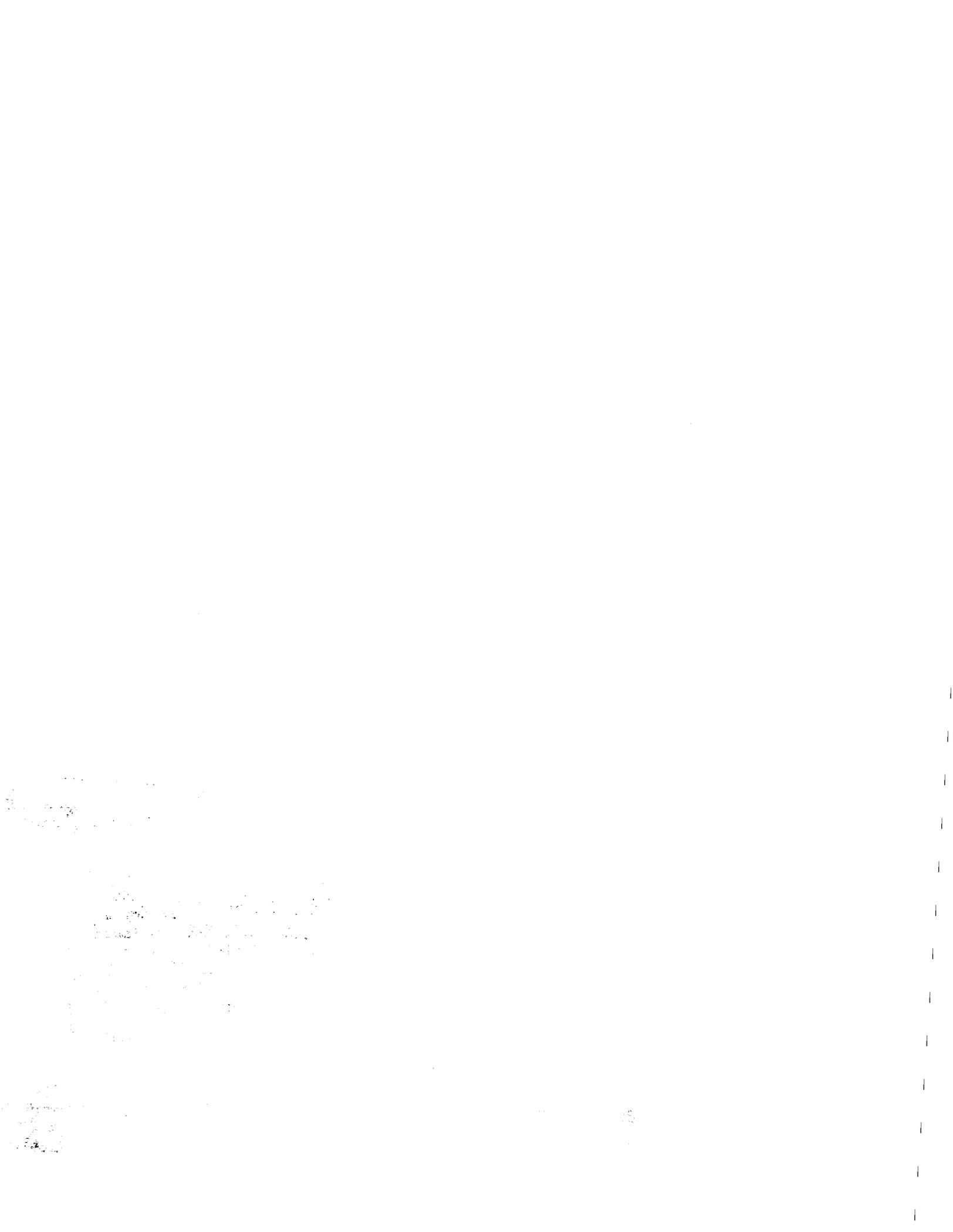
HARDING LAWSON ASSOCIATES

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Rao Angara
Task Order Manager

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 S. Pratt, TtNUS (2 copies)
 D. Ferris, TtNUS (1 copy)
 N. Hatch, CH2M Hill (1 copy)
 J. Flowe, City of Jacksonville (1 copy)
 file





NEW DOCUMENT



January 29, 1999

Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
Attention: Mr. Mike Deliz

**Subject: Confirmatory Sampling Report
 Naval Air Station Cecil Field
 Jacksonville, Florida
 Contract No. N62467-89-D-0317/149**

Dear Mr. Deliz:

On behalf of Southern Division, Naval Facilities Engineering Command, Harding Lawson Associates is pleased to submit two copies of the Confirmatory Sampling Reports for Facility 818-OW, Facility 823-OW, Facility 858-OW, and Facility 1821-OW.

Comments or questions you may have concerning this submittal should be directed to Mr. Bryan Kizer at SOUTHNAVFACENGCOM (843-820-5896).

Sincerely,

HARDING LAWSON ASSOCIATES


Rao Angara
Task Order Manager

cc: B. Kizer, SDIV (1 copy)
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 D. Kruzicki, NASCF (1 copy)
 S. Pratt, TtNUS (2 copies)
 D. Ferris, TtNUS (1 copy)
 N. Hatch, CH2M Hill (1 copy)
 J. Flowe, City of Jacksonville (1 copy)
 file



NEW DOCUMENT



February 4, 1999

Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
Attention: Mr. Mike Deliz

**Subject: Confirmatory Sampling Report
 Naval Air Station Cecil Field
 Jacksonville, Florida
 Contract No. N62467-89-D-0317/149**

Dear Mr. Deliz:

On behalf of Southern Division, Naval Facilities Engineering Command, Harding Lawson Associates is pleased to submit two copies of the Confirmatory Sampling Reports for Facility 1845S-OW.

Comments or questions you may have concerning this submittal should be directed to Mr. Bryan Kizer at SOUTHNAVFACENCOM (843-820-5896).

Sincerely,

HARDING LAWSON ASSOCIATES

A handwritten signature in black ink, appearing to read "Rao Angara", written in a cursive style.

Rao Angara
Task Order Manager

cc: B. Kizer, SDIV (1 copy)
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 S. Pratt, TtNUS (2 copies)
 D. Ferris, TtNUS (1 copy)
 N. Hatch, CH2M Hill (1 copy)
 J. Flowe, City of Jacksonville (1 copy)
 file



NEW DOCUMENT



Harding Lawson Associates



2565-0006

March 8, 1999

Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
Attention: Mr. Mike Deliz

**Subject: Confirmatory Sampling Report
 Naval Air Station Cecil Field
 Jacksonville, Florida
 Contract No. N62467-89-D-0317/149**

Dear Mr. Deliz:

On behalf of Southern Division, Naval Facilities Engineering Command, Harding Lawson Associates is pleased to submit two copies of the subject report for Oil-Water Separator 11-OW.

Comments or questions you may have concerning this submittal should be directed to Mr. Bryan Kizer at SOUTHNAVFACENCOM (843-820-5896).

Sincerely,

HARDING LAWSON ASSOCIATES

A handwritten signature in black ink that reads 'Rao Angara'.

Rao Angara
Task Order Manager

cc: B. Kizer, SDIV (1 copy)
 S. Glass, SDIV (1 copy)
 D. Vaughn-Wright, USEPA (2 copies)
 D. Kruzicki, NASCF (1 copy)
 S. Pratt, TtNUS (2 copies)
 D. Ferris, TtNUS (1 copy)
 N. Hatch, CH2M Hill (1 copy)
 J. Flowe, City of Jacksonville (1 copy)
 file



NEW DOCUMENT





February 19, 1999

Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
Attention: Mr. Mike Deliz

**Subject: Confirmatory Sampling Reports
 Naval Air Station Cecil Field
 Jacksonville, Florida
 Contract No. N62467-89-D-0317/149**

Dear Mr. Deliz:

On behalf of Southern Division, Naval Facilities Engineering Command, Harding Lawson Associates is pleased to submit two copies of the Confirmatory Sampling Reports for Facility 1845N-OW and 339-OW.

Comments or questions you may have concerning this submittal should be directed to Mr. Bryan Kizer at SOUTHNAVFACENCOM (843-820-5896).

Sincerely,

HARDING LAWSON ASSOCIATES

A handwritten signature in black ink, appearing to read 'Rao Angara', is written over the typed name.

Rao Angara
Task Order Manager

cc: B. Kizer, SDIV (1 copy)
 S. Glass, SDIV (1 copy)
 D. Vaughn-Wright, USEPA (2 copies)
 D. Kruzicki, NASCF (1 copy)
 S. Pratt, TtNUS (2 copies)
 D. Ferris, TtNUS (1 copy)
 N. Hatch, CH2M Hill (1 copy)
 J. Flowe, City of Jacksonville (1 copy)
 file



NEW DOCUMENT



May 14, 1999

Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
Attention: Mr. Mike Deliz

**Subject: Confirmatory Sampling Report
 Naval Air Station Cecil Field
 Jacksonville, Florida
 Contract No. N62467-89-D-0317149**

Dear Mr. Deliz:

On behalf of Southern Division, Naval Facilities Engineering Command, Harding Lawson Associates is pleased to submit two copies of the subject report for Oil-Water Separator 200-OW (Revision 1.0) and SFF-OW.

Comments or questions you may have concerning this submittal should be directed to Mr. Bryan Kizer at SOUTHNAVFACENGCOM (843-820-5896).

Sincerely,

HARDING LAWSON ASSOCIATES

A handwritten signature in cursive script, appearing to read "Rao Angara", is written over the typed name.

Rao Angara
Task Order Manager

cc: B. Kizer, SDIV (1 copy)
 S. Glass, SDIV (1 copy)
 D. Vaughn-Wright, USEPA (2 copies)
 D. Kruzicki, NASCF (1 copy)
 S. Pratt, TtNUS (2 copies)
 D. Ferris, TtNUS (1 copy)
 N. Hatch, CH2M Hill (1 copy)
 J. Flowe, City of Jacksonville (1 copy)
 file



NEW DOCUMENT

Harding Lawson Associates



2565-0010

May 6, 1999

Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
Attention: Mr. Mike Deliz

**Subject: Confirmatory Sampling Report
 Naval Air Station Cecil Field
 Jacksonville, Florida
 Contract No. N62467-89-D-0317149**

Dear Mr. Deliz:

On behalf of Southern Division, Naval Facilities Engineering Command, Harding Lawson Associates is pleased to submit two copies of the subject report for Oil-Water Separator 860-OW.

Comments or questions you may have concerning this submittal should be directed to Mr. Bryan Kizer at SOUTHNAVFACENGCOM (843-820-5896).

Sincerely,

HARDING LAWSON ASSOCIATES

A handwritten signature in black ink, appearing to read "Rao Angara", written in a cursive style.

Rao Angara
Task Order Manager

cc: B. Kizer, SDIV (1 copy)
 S. Glass, SDIV (1 copy)
 D. Vaughn-Wright, USEPA (2 copies)
 D. Kruzicki, NASCF (1 copy)
 S. Pratt, TtNUS (2 copies)
 D. Ferris, TtNUS (1 copy)
 N. Hatch, CH2M Hill (1 copy)
 J. Flowe, City of Jacksonville (1 copy)
 file



NEW DOCUMENT



CONFIRMATORY SAMPLING REPORT
BUILDING 1845, OIL-WATER SEPARATOR 1845N-OW
BASE REALIGNMENT AND CLOSURE
UNDERGROUND STORAGE TANK AND
ABOVEGROUND STORAGE TANK GRAY SITES
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Unit Identification Code: N60200

Contract No.: N62467-89-D-0317/149

Prepared by:

**Harding Lawson Associates
2590 Executive Center Circle, East
Tallahassee, Florida 32301**

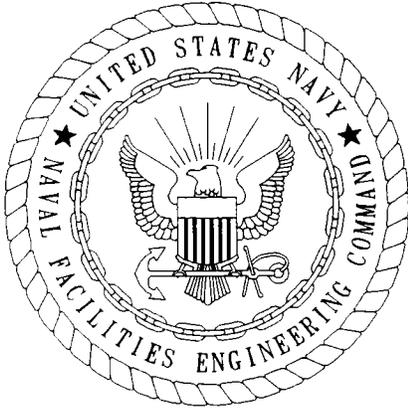
Prepared for:

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

Bryan Kizer, Code 1842, Engineer-in-Charge

February 1999

Revision 0.0



CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

The Contractor, Harding Lawson Associates, hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0317/149 are complete and accurate and comply with all requirements of this contract.

DATE: February 16, 1999

NAME AND TITLE OF CERTIFYING OFFICIAL: Rao Angara
Task Order Manager

NAME AND TITLE OF CERTIFYING OFFICIAL: Eric A. Blomberg, P.G.
Project Technical Lead

(DFAR 252.227-7036)

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Building 1845, Oil-Water Separator 1845N-OW
Naval Air Station Cecil Field
Jacksonville, Florida

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2.0	FIELD INVESTIGATION	1
3.0	SCREENING AND ANALYTICAL RESULTS	1
4.0	CONCLUSIONS AND RECOMMENDATIONS	6

REFERENCE

APPENDICES

- Appendix A: Monitoring Well Installation Detail
- Appendix B: Analytical Data

LIST OF FIGURES

Confirmatory Sampling Report
Building 1845, Oil-Water Separator 1845N-OW
Naval Air Station Cecil Field
Jacksonville, Florida

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2	Oil-Water Separator 1845N, Soil Boring and Monitoring Well Locations	3

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2	Summary of Subsurface Soil Analytical Detections	5
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GLOSSARY

bls	below land surface
FDEP	Florida Department of Environmental Protection
OVA	organic vapor analyzer



1.0 INTRODUCTION

Harding Lawson Associates, under contract to the Southern Division, Naval Facilities Engineering Command, has completed confirmatory sampling for oil-water separator 1845-OW at Naval Air Station Cecil Field in Jacksonville, Florida. This report summarizes the related field operations, results, conclusions, and recommendations.

Oil-water separator 1845N-OW is located on the west side of Building 1845, the maintenance hangar (ABB Environmental Services, Inc., 1994) (Figure 1). The installation date and capacity of the oil-water separator are unknown.

2.0 FIELD INVESTIGATION

The confirmatory sampling for oil-water separator 1845N-OW was initiated in September 1998 and included

- the advancement of four soil borings to the water table,
- the installation of one monitoring well, and
- collection and analysis of one groundwater sample and one subsurface soil sample.

Soil samples were collected from each boring at depth intervals of 1 foot below land surface (bls) and every 2 feet thereafter to the water table. These samples were screened for hydrocarbon vapors with an organic vapor analyzer (OVA).

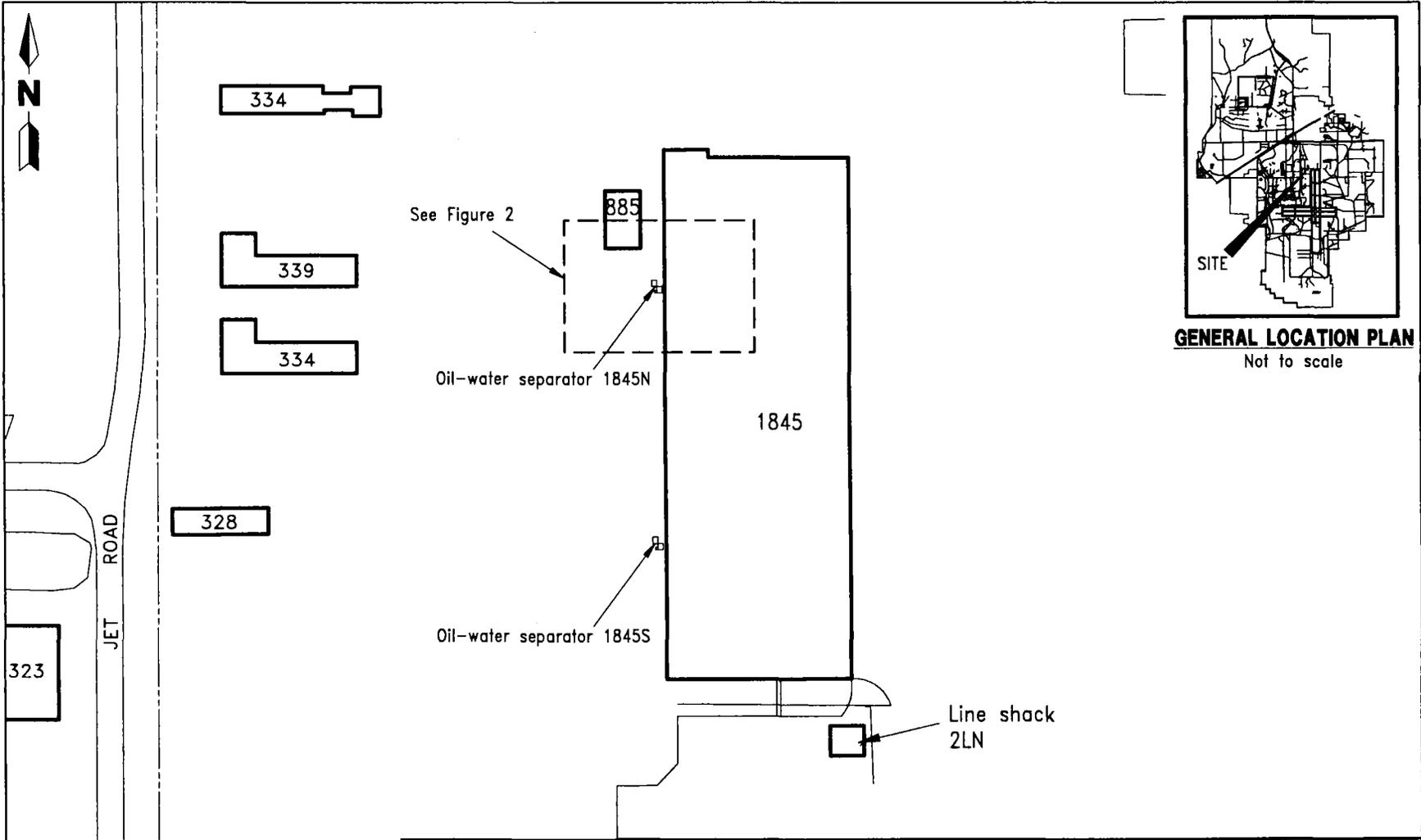
One subsurface soil sample was collected on October 13, 1998, and analyzed for the used oil group parameters. Sample CEF-1845N-SB3 was collected from 4 to 5 feet bls.

One monitoring well, CEF-1845N-1S, was installed to a depth of 13.1 feet bls. A groundwater sample was collected from this well and analyzed for the used oil group parameters. A general site plan indicating the location of the soil borings and monitoring wells is presented on Figure 2. The monitoring well installation detail is included in Appendix A.

3.0 SCREENING AND ANALYTICAL RESULTS

Excessively contaminated soil (greater than 50 parts per million on an OVA) was not detected in the four soil borings advanced during the confirmatory sampling. The soil OVA data are summarized in Table 1 and presented on Figure 2.

No contaminants were detected above Florida Department of Environmental Protection (FDEP) soil cleanup target levels in the subsurface soil sample collected for used oil analysis. Subsurface soil analytical results are summarized in Table 2 and presented in Appendix B. No contaminants were detected above FDEP groundwater cleanup target levels in the groundwater samples collected from monitoring well



**FIGURE 1
OIL-WATER SEPARATORS 1845N AND 1845S
SITE PLAN**



**CONFIRMATORY SAMPLING REPORT
OIL-WATER SEPARATOR 1845N**

**NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA**

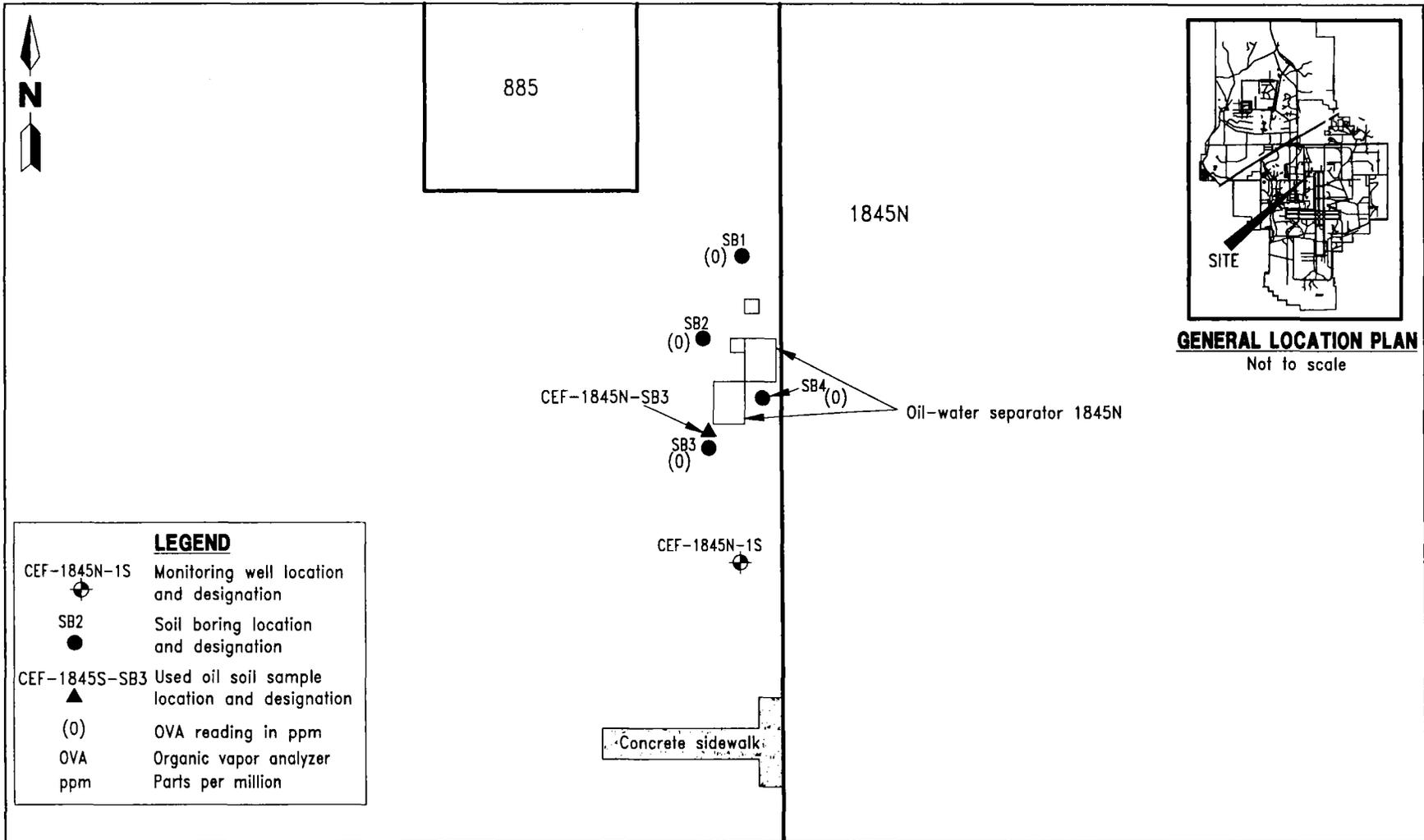


FIGURE 2
OIL-WATER SEPARATOR 1845N
SOIL BORING AND MONITORING WELL LOCATIONS



CONFIRMATORY SAMPLING REPORT
OIL-WATER SEPARATOR 1845N

NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

**Table 1
Soil Screening Results**

Confirmatory Sampling Report
Building 1845, Oil-Water Separator 1845N-OW
Naval Air Station Cecil Field
Jacksonville, Florida

Location	OVA Concentration (ppm)			
	Depth (feet bls)	Unfiltered	Filtered	Actual
SB1	1	0	0	0
	3	0	0	0
	5	0	0	0
SB2	1	0	0	0
	3	0	0	0
	5 (refusal)	--	--	--
SB3	1	0	0	0
	3	0	0	0
	4.5	0	0	0
SB4	1	0	--	0
	3	0	--	0
	5 (wet)	0	0	0

Notes: Soil samples were filtered with carbon to determine the methane concentration.

OVA = organic vapor analyzer.

ppm = parts per million.

bls = below land surface.

refusal = subsurface obstruction encountered during boring advancement; no further samples collected at this location.

-- = filtered readings were not collected.

wet = soil sample was completely saturated when analyzed.

**Table 2
Summary of Subsurface Soil Analytical Detections**

Confirmatory Sampling Report
Building 1845, Oil-Water Separator 1845N-OW
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	CEF-1845N-SB3 (4 to 5 feet bls; OVA = 0 ppm)	Soil Cleanup Target Levels ¹
<u>Volatile Organic Aromatics (USEPA Method 8020) (mg/kg)</u>		
Tetrachloroethene	0.006	NA/NA
<u>Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (mg/kg)</u>		
No compounds detected		
<u>Total Recoverable Petroleum Hydrocarbons (TRPH) (FL-PRO) (mg/kg)</u>		
TRPH	28	350/340
<u>Inorganic Analytes (mg/kg)</u>		
Chromium	8	290/TCLP
Mercury	0.02	3.7/TCLP
¹ Chapter 62-770, Florida Administrative Code: Direct Exposure I/Leachability, Table V. Notes: Soil sample was collected on April 16, 1998. bls = below land surface. OVA = organic vapor analyzer. ppm = parts per million. USEPA = U.S. Environmental Protection Agency. mg/kg = milligrams per kilogram. NA = not applicable. FL-PRO = Florida-Petroleum Residual Organics. TCLP = toxicity characteristic leaching procedure.		

CEF-1845N-1S during the confirmatory sampling. A summary of the groundwater analytical results is presented in Table 3. The complete analytical data set is presented in Appendix B.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Data obtained during the confirmatory sampling of oil-water separator 1845N-OW did not indicate the presence of contaminated soil and groundwater at levels above cleanup target levels.

It is recommended that no further action take place at the oil-water separator site until it is removed.

Table 3
Summary of Groundwater Analytical Results

Confirmatory Sampling Report
Building 1845, Oil-Water Separator 1845N-OW
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	CEF-1845N-1S	Groundwater Cleanup Target Levels ¹
<u>Volatile Organic Aromatics (USEPA Method 601/602) ($\mu\text{g}/\ell$)</u>		
Toluene	1 J	40
Xylenes	2 J	20
<u>Polynuclear Aromatic Hydrocarbons (USEPA Method 625) ($\mu\text{g}/\ell$)</u>		
No compounds detected		
<u>Total Recoverable Petroleum Hydrocarbons (TRPH) (FL-PRO) (mg/l)</u>		
TRPH	1.2	5
<u>Inorganic Analytes ($\mu\text{g}/\ell$)</u>		
No analytes detected		
¹ Chapter 62-770, Florida Administrative Code. Notes: USEPA = U.S. Environmental Protection Agency. $\mu\text{g}/\ell$ = micrograms per liter. J = estimated value. FL-PRO = Florida-Petroleum Residual Organics. mg/ℓ = milligrams per liter.		



REFERENCE

ABB Environmental Services, Inc. 1994. *Base Realignment and Closure Environmental Baseline Survey Report, Naval Air Station Cecil Field, Jacksonville, Florida*. Prepared for Southern Division, Naval Facilities Engineering Command, North Charleston, South Carolina (November).

APPENDIX A

MONITORING WELL INSTALLATION DETAIL

TITLE: NAS Cecil Field, Bldg. 1845 Site Assessment Report		LOG of WELL: CEF-1845No/w-1S	BORING NO. CEF-1845No/w-1S
CLIENT: SOUTH DIV NAV FAC ENG COM			PROJECT NO: 02565.03
CONTRACTOR: U.S. Probe and Drill		DATE STARTED: 10-30-98	COMPLTD: 10-30-98
METHOD: HSA	CASE SIZE: 2in.	SCREEN INT.: 3-13 ft.	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: FID	TOT DPTH: 13.5 FT.	DPTH TO ∇ 5.51 FT.
LOGGED BY: H.Hooper	WELL DEVELOPMENT DATE: 11-05-98		SITE: Building 1845

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
1				<> See Note		SM		
2								
3								
4								
5								
6				SILTY SAND: dark to light tan slightly silty fine sand.			*	
7							**	
8								
9								
10								
11								
12				<> Soil description taken from posthole and auger				
13				* no split spoon samples taken				
14				** no OVA readings taken				
15								

APPENDIX B
ANALYTICAL DATA

NAS CECIL FIELD -- OIL/WATER SEPARATOR AT FACILITY 1845N
 SUBSURFACE SOIL -- ANALYTICAL DATA -- REPORT REQUEST NO. 10559

Lab Sample Number: JR36652
 Site: UST GREY
 Locator: CEF-1845N-SB3
 Collect Date: 13-OCT-98

VALUE QUAL UNITS DL

BRAC VOLATILES

1,1,1-Trichloroethane	1 U	ug/kg	1
1,1,2,2-Tetrachloroethane	1 U	ug/kg	1
1,1,2-Trichloroethane	1 U	ug/kg	1
1,1-Dichloroethane	1 U	ug/kg	1
1,1-Dichloroethene	1 U	ug/kg	1
1,2-Dichlorobenzene	400 U	ug/kg	400
1,2-Dichloroethane	1 U	ug/kg	1
1,2-Dichloropropane	1 U	ug/kg	1
1,3-Dichlorobenzene	400 U	ug/kg	400
1,4-Dichlorobenzene	400 U	ug/kg	400
Benzene	1 U	ug/kg	1
Bromodichloromethane	1 U	ug/kg	1
Bromoform	1 U	ug/kg	1
Bromomethane	1 U	ug/kg	1
Carbon tetrachloride	1 U	ug/kg	1
Chlorobenzene	1 U	ug/kg	1
Chloroethane	1 U	ug/kg	1
Chloroform	1 U	ug/kg	1
Chloromethane	1 U	ug/kg	1
Dibromochloromethane	1 U	ug/kg	1
Ethyl benzene	1 U	ug/kg	1
Methyl chloride	1 U	ug/kg	1
Tetrachloroethene	6	ug/kg	1
Toluene	1 U	ug/kg	1
Trichloroethane	1 U	ug/kg	1
Vinyl chloride	1 U	ug/kg	1
cis-1,3-Dichloropropene	1 U	ug/kg	1
m,p-Xylene	1 U	ug/kg	1
o-Xylene	1 U	ug/kg	1
trans-1,2-Dichloroethene	1 U	ug/kg	1
trans-1,3-Dichloropropene	1 U	ug/kg	1

BRAC SEMIVOLATILES

Phenol	400 U	ug/kg	400
bis(2-Chloroethyl)ether	400 U	ug/kg	400
1,3-Dichlorobenzene	400 U	ug/kg	400
1,4-Dichlorobenzene	400 U	ug/kg	400
1,2-Dichlorobenzene	400 U	ug/kg	400
N-Nitroso-di-n-propylamine	400 U	ug/kg	400
Hexachloroethane	400 U	ug/kg	400
Nitrobenzene	400 U	ug/kg	400
Isophorone	400 U	ug/kg	400
2-Nitrophenol	400 U	ug/kg	400
2,4-Dimethylphenol	400 U	ug/kg	400
bis(2-Chloroethoxy) methane	400 U	ug/kg	400
2,4-Dichlorophenol	400 U	ug/kg	400
1,2,4-Trichlorobenzene	400 U	ug/kg	400
Naphthalene	400 U	ug/kg	400
Hexachlorobutadiene	400 U	ug/kg	400
4-Chloro-3-methylphenol	400 U	ug/kg	400

NAS CECIL FIELD -- OIL/WATER SEPARATOR AT FACILITY 1845N
 SUBSURFACE SOIL -- ANALYTICAL DATA -- REPORT REQUEST NO. 10559

Lab Sample Number: JR36652
 Site: UST GREY
 Locator: CEF-1845N-SB3
 Collect Date: 13-OCT-98

VALUE QUAL UNITS DL

	VALUE	QUAL	UNITS	DL
2-Methylnaphthalene	400	U	ug/kg	400
2,4,6-Trichlorophenol	400	U	ug/kg	400
2-Chloronaphthalene	400	U	ug/kg	400
Dimethylphthalate	400	U	ug/kg	400
Acenaphthylene	400	U	ug/kg	400
2,4-Dinitrophenol	2000	U	ug/kg	2000
3- & 4-Methylphenol (2)	400	U	ug/kg	400
4-Nitrophenol	400	U	ug/kg	400
2,4-Dinitrotoluene	400	U	ug/kg	400
Diethylphthalate	400	U	ug/kg	400
4-Chlorophenyl-phenylether	400	U	ug/kg	400
Fluorene	400	U	ug/kg	400
4,6-Dinitro-2-methylphenol	1200	U	ug/kg	1200
4-Bromophenyl-phenylether	400	U	ug/kg	400
Hexachlorobenzene	400	U	ug/kg	400
Pentachlorophenol	400	U	ug/kg	400
Phenanthrene	400	U	ug/kg	400
Anthracene	400	U	ug/kg	400
Di-n-butylphthalate	400	U	ug/kg	400
Fluoranthene	400	U	ug/kg	400
Pyrene	400	U	ug/kg	400
3,3-Dichlorobenzidine	800	U	ug/kg	800
Benzo (a) anthracene	400	U	ug/kg	400
Chrysene	400	U	ug/kg	400
bis(2-Ethylhexyl) phthalate	400	U	ug/kg	400
Di-n-octylphthalate	400	U	ug/kg	400
Benzo (b) fluoranthene	400	U	ug/kg	400
Benzo (k) fluoranthene	400	U	ug/kg	400
Benzo (a) pyrene	400	U	ug/kg	400
Indeno (1,2,3-cd) pyrene	400	U	ug/kg	400
Dibenzo (a,h) anthracene	400	U	ug/kg	400
Benzo (g,h,i) perylene	400	U	ug/kg	400
FLA PRO				
TPH C8-C40	28		mg/kg	8
Arsenic	.6	U	mg/kg	.6
Barium	24	U	mg/kg	24
Cadmium	1	U	mg/kg	1
Chromium	8		mg/kg	1
Lead	8	U	mg/kg	8
Mercury	.02		mg/kg	.01
Selenium	2	U	mg/kg	2
Silver	2	U	mg/kg	2

U = NOT DETECTED J = ESTIMATED VALUE
 UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
 R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- OIL/WATER SEPARATOR AT FACILITY 1845N
GROUNDWATER -- ANALYTICAL DATA -- REPORT REQUEST NO. 10567

Lab Sample Number: JR41591
Site: UST GREY
Locator: CF1845N-OW1S
Collect Date: 17-NOV-98

VALUE QUAL UNITS DL

BRAC VOLATILES

1,1,1-Trichloroethane	1 U	ug/l	1
1,1,2,2-Tetrachloroethane	1 U	ug/l	1
1,1,2-Trichloroethane	1 U	ug/l	1
1,1-Dichloroethane	1 U	ug/l	1
1,1-Dichloroethene	1 U	ug/l	1
1,2-Dichlorobenzene	1 U	ug/l	1
1,2-Dichloroethane	1 U	ug/l	1
1,2-Dichloropropane	1 U	ug/l	1
1,3-Dichlorobenzene	1 U	ug/l	1
1,4-Dichlorobenzene	1 U	ug/l	1
Benzene	1 U	ug/l	1
Bromodichloromethane	1 U	ug/l	1
Bromoform	1 U	ug/l	1
Bromomethane	1 U	ug/l	1
Carbon tetrachloride	1 U	ug/l	1
Chlorobenzene	1 U	ug/l	1
Chloroethane	2 U	ug/l	2
Chloroform	1 U	ug/l	1
Chloromethane	2 U	ug/l	2
Dibromochloromethane	1 U	ug/l	1
Ethyl benzene	1 U	ug/l	1
Methyl chloride	2 U	ug/l	2
Tetrachloroethene	1 U	ug/l	1
Toluene	1 J	ug/l	1
Trichloroethene	1 U	ug/l	1
Vinyl chloride	1 U	ug/l	1
cis-1,3-Dichloropropene	1 U	ug/l	1
m,p-Xylene	1 J	ug/l	1
o-Xylene	1	ug/l	1
trans-1,2-Dichloroethene	1 U	ug/l	1
trans-1,3-Dichloropropene	1 U	ug/l	1

PAHs

Acenaphthene	.5 U	ug/l	.5
Acenaphthylene	1 U	ug/l	1
Anthracene	.05 U	ug/l	.05
Benzo (a) anthracene	.05 U	ug/l	.05
Benzo (b) fluoranthene	.1 U	ug/l	.1
Benzo (k) fluoranthene	.05 U	ug/l	.05
Benzo (a) pyrene	.05 U	ug/l	.05
Chrysene	.05 U	ug/l	.05
Dibenzo (a,h) anthracene	.1 U	ug/l	.1
Fluoranthene	.1 U	ug/l	.1
Fluorene	.1 U	ug/l	.1
Indeno (1,2,3-cd) pyrene	.05 U	ug/l	.05
Benzo (g,h,i) perylene	.1 U	ug/l	.1
Naphthalene	.5 U	ug/l	.5
Phenanthrene	.05 U	ug/l	.05
Pyrene	.05 U	ug/l	.05

NAS CECIL FIELD -- OIL/WATER SEPARATOR AT FACILITY 1845N
GROUNDWATER -- ANALYTICAL DATA -- REPORT REQUEST NO. 10567

Lab Sample Number: JR41591
Site: UST GREY
Locator: CF1845N-OW1S
Collect Date: 17-NOV-98

VALUE QUAL UNITS DL

FLA PRO	VALUE	QUAL UNITS	DL
TPH C8-C40	1.2	mg/l	.2
Arsenic	.01 U	mg/l	.01
Barium	.1 U	mg/l	.1
Cadmium	.001 U	mg/l	.001
Chromium	.01 U	mg/l	.01
Lead	.005 U	mg/l	.005
Mercury	.0002 U	mg/l	.0002
Selenium	.01 U	mg/l	.01
Silver	.01 U	mg/l	.01

U = NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NEW DOCUMENT



CONFIRMATORY SAMPLING REPORT

JP-5 PIPELINE: NORTH FUEL FARM TO SOUTH FUEL FARM

BASE REALIGNMENT AND CLOSURE

UNDERGROUND STORAGE TANK AND
ABOVEGROUND STORAGE TANK GREY SITES

NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Unit Identification No. N60200

Contract No. N62467-89-D-0317/149

Prepared by:

Harding Lawson Associates
2590 Executive Center Circle, East
Tallahassee, Florida 32301

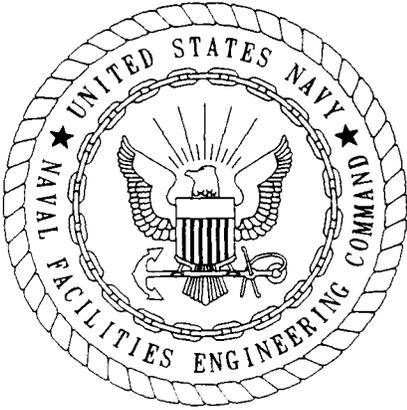
Prepared for:

Department of the Navy, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29419

Bryan Kizer, Code 1842, Engineer-in-Charge

April 1999

Revision 0.0



CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

The Contractor, Harding Lawson Associates, hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0317/090 are complete and accurate and comply with all requirements of this contract.

DATE: April 6, 1999

NAME AND TITLE OF CERTIFYING OFFICIAL: Rao Angara
Task Order Manager

NAME AND TITLE OF CERTIFYING OFFICIAL: Eric A. Blomberg, P.G.
Project Technical Lead

(DFAR 252.227-7036)

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JP-5 Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

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- Appendix A: Monitoring Well Installation Detail
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Confirmatory Sampling Report
JP-5 Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

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GLOSSARY

bls	below land surface
FDEP	Florida Department of Environmental Protection
JP-5	jet propellant 5
KAG	Kerosene Analytical Group
OVA	organic vapor analyzer
NAS	Naval Air Station
NFF	North Fuel Farm
SFF	South Fuel Farm
TRPH	total recoverable petroleum hydrocarbons



1.0 INTRODUCTION

Harding Lawson Associates, under contract to the Southern Division, Naval Facilities Engineering Command, has completed the confirmatory sampling for the Jet Propellant 5 (JP-5) Pipeline between the North Fuel Farm (NFF) and the South Fuel Farm (SFF) at Naval Air Station (NAS) Cecil Field in Jacksonville, Florida. This report summarizes the related field operations, results, conclusions, and recommendations of the confirmatory sampling.

The JP-5 Pipeline originates at NAS Jacksonville and travels along 103rd Street to the NFF at NAS Cecil Field. From the NFF, the pipeline runs south along A Avenue to the SFF (Figure 1). The pipeline branches out at two locations along the main pipeline to serve the Jet Engine Test Cell and the Day Tank 1. The entire pipeline is no longer in use but is still in place. The portion of the pipeline that was investigated during the confirmatory sampling runs from the NFF to the SFF (Figure 1).

2.0 FIELD INVESTIGATION

The confirmatory sampling for the JP-5 Pipeline was initiated in July 1998 and included

- the advancement of 38 soil borings to the water table,
- the installation of three shallow monitoring wells, and
- collection and analysis of three groundwater samples and six subsurface soil samples.

Soil samples were collected from each boring at depth intervals of 1 foot below land surface (bls) and every 2 feet thereafter to the water table. These samples were screened for hydrocarbon vapors with an organic vapor analyzer (OVA).

Subsurface soil samples were collected on January 20, 1999 and February 2, 1999, at soil boring locations along the pipeline with varying levels of contamination and analyzed for the Kerosene Analytical Group (KAG) parameters. Samples CEF-PIPE-SB15 and CEF-PIPE-SB19 were collected from 5 and 4 feet bls, respectively. Sample CEF-VB-SB4 was collected from 5 feet bls, and CEF-826-SB5, CEF-826-SB6, and CEF-826-SB7 were collected from 3 feet bls (see Figure 2).

One monitoring well, CEF-PIPE-1S, was installed downgradient and near the southeast corner of the valve box near the location of soil boring SB3 to a depth of 11.9 feet bls. Two additional monitoring wells, CEF-PIPE-2S and CEF-PIPE-3S were hand installed at soil boring locations SB15 and SB19, which had elevated OVA readings. These wells were hand installed due to the presence of many underground utility lines to depths of 8.3 (CEF-PIPE-2S) and 7.15 (CEF-PIPE-3S) feet bls. Groundwater samples were collected from the wells and analyzed for the KAG parameters. A general site plan indicating the location of the soil borings and monitoring wells is presented on Figures 1 and 2. The monitoring well installation detail is included in Appendix A.

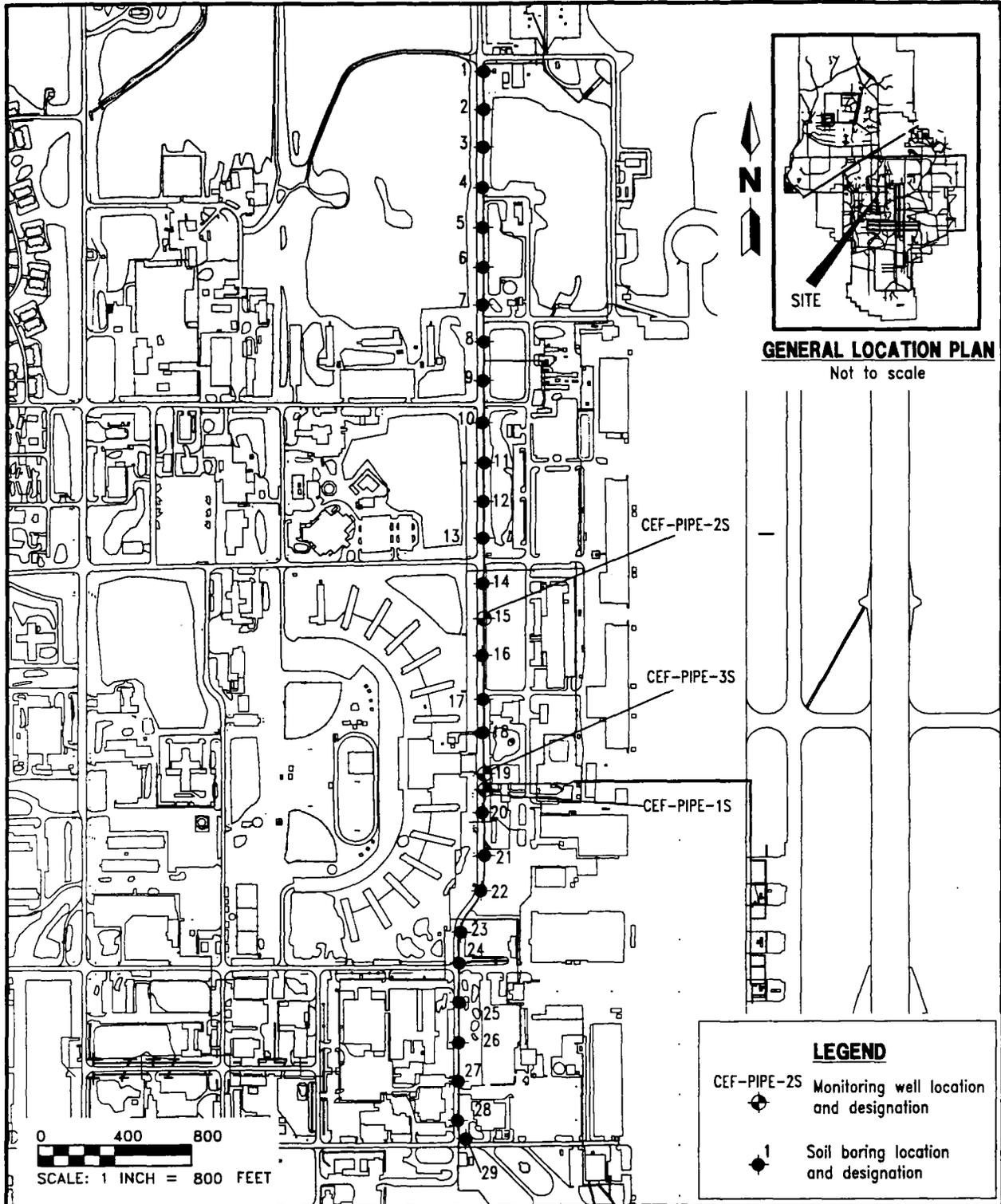


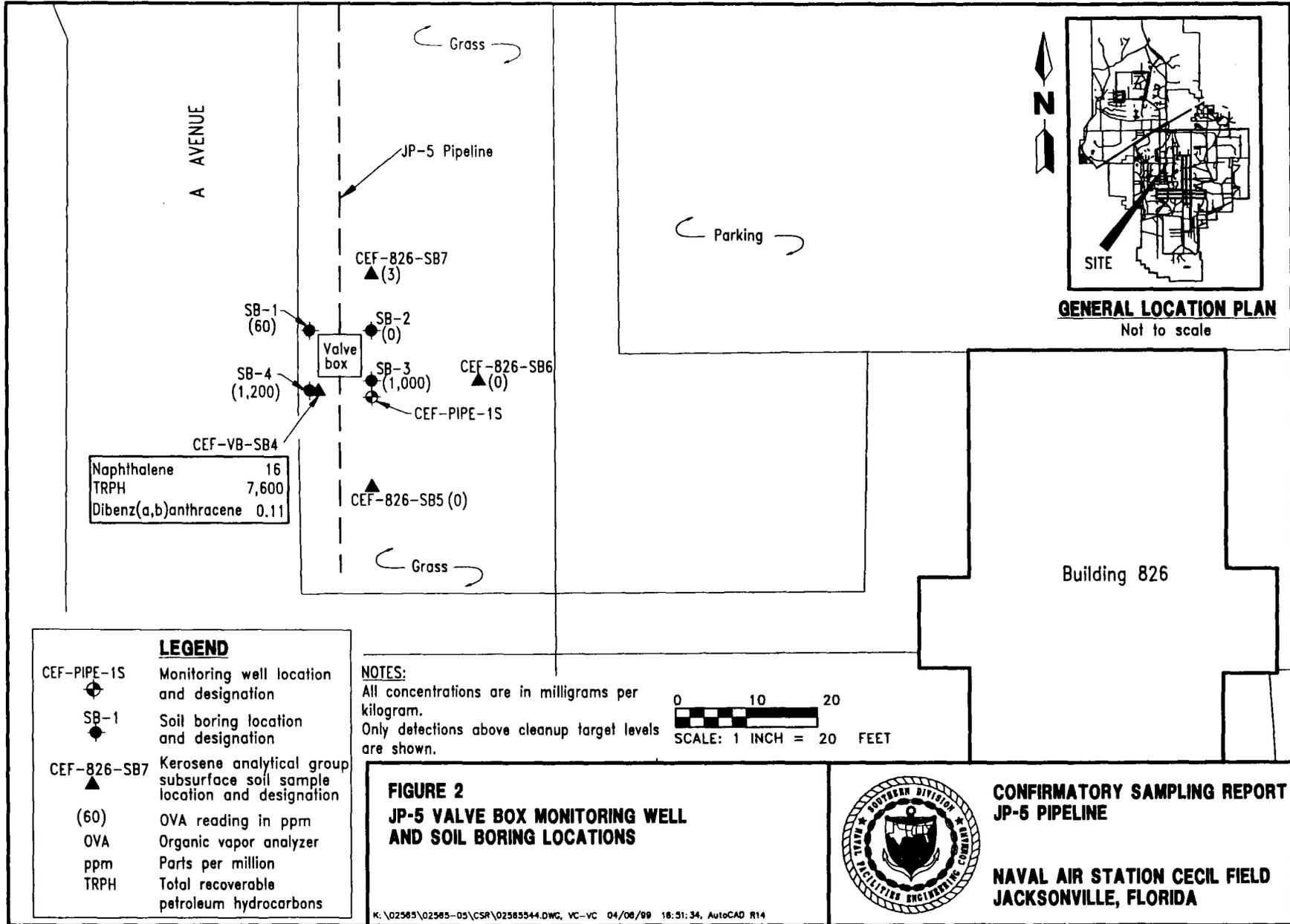
FIGURE 1
JP-5 PIPELINE MONITORING WELL
AND SOIL BORING LOCATIONS



CONFIRMATORY SAMPLING REPORT
JP-5 PIPELINE

NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

K:\02565\02565-05\CSR\02565550.DWG, VC-VC 04/06/99 16:38:59, AutoCAD R14



3.0 SCREENING AND ANALYTICAL RESULTS

Excessively contaminated soil (greater than 50 parts per million on an OVA) was detected in four soil borings advanced during the confirmatory sampling. The soil OVA data are summarized in Table 1 and presented on Figure 2.

Dibenzo(a,h)anthracene, naphthalene, and total recoverable petroleum hydrocarbons (TRPH) were detected at concentrations above Florida Department of Environmental Protection (FDEP) soil cleanup target levels in the subsurface soil samples collected for KAG analysis. Subsurface soil analytical results are summarized in Table 2 and presented in Appendix A. No contaminants were detected above FDEP groundwater cleanup target levels in the groundwater samples collected during the confirmatory sampling. A summary of the groundwater analytical results is presented in Table 3. The complete analytical data set is presented in Appendix B.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Data obtained during the confirmatory sampling of the JP-5 Pipeline provided an adequate assessment of the horizontal and vertical extent of excessively contaminated soil and contaminated groundwater.

Dibenzo(a,h)anthracene, naphthalene, and TRPH were detected at concentrations that exceed FDEP soil cleanup target levels. The concentration of dibenzo(a,h)-anthracene in subsurface soil sample CEF-PIPE-SB15, however, was below the Direct Exposure II concentration of 0.5 mg/kg and does not warrant further investigation.

No contaminants were detected in groundwater at concentrations above FDEP cleanup target levels.

It is recommended that further action take place at the Day Tank 1 valve box because soil contaminants exceeded cleanup target levels. No further action is recommended for the remainder of the pipeline between the NFF and the SFF.

Table 1
Soil Screening Results

Confirmatory Sampling Report
JP-5 Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Location	OVA Concentration (ppm)			
	Depth (feet bls)	Unfiltered	Filtered	Actual
<u>JP-5 Pipeline</u>				
SB1	1	5	0	5
	3	7	0	7
	5	5	0	5
SB2	1	0	-	0
	3	0	-	0
	5	0	-	0
SB3	1	1	-	1
	3	0	-	0
	5	0	-	0
SB4	1	0	-	0
	3	0	-	0
	5	0	-	0
SB-5	1	0	-	0
	3	0	-	0
	5	0	-	0
SB6	1	0	-	0
	3	0	-	0
	5	25	-	25
SB7	1	0	-	0
	3	0	-	0
	5	0	-	0
SB8	1	2	-	2
	3	1	-	1
	5	0	-	0
SB9	1	0	-	0
	3	0	-	0
	5	0	-	0
SB10	1	0	-	0
	3	0	-	0
	5	0	-	0
See notes at end of table.				

**Table 1 (Continued)
Soil Screening Results**

Confirmatory Sampling Report
JP-5 Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Location	OVA Concentration (ppm)			
	Depth (feet bls)	Unfiltered	Filtered	Actual
JP-5 Pipeline—continued				
SB11	1	0	--	0
	3	0	--	0
	5	0	--	0
SB12	1	0	--	0
	3	0	--	0
	5	0	--	0
SB13	1	0	--	0
	3	0	--	0
	5	0	--	0
SB14	1	0	--	0
	3	0	--	0
	5	0	--	0
SB15	1	0	--	0
	3	0	--	0
	5	1,200	700	500
SB16	1	0	--	0
	3	0	--	0
	5	0	--	0
SB17	1	0	--	0
	3	0	--	0
	5	0	--	0
SB18	1	0	--	0
	3	0	--	0
	5 (wet)	15	--	15
SB19	1	0	--	0
	3	0	--	0
	5 (wet)	500	0	500
SB20	1	0	--	0
	3	0	--	0
	5	15	--	15
See notes at end of table.				

**Table 1 (Continued)
Soil Screening Results**

Confirmatory Sampling Report
JP-5 Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Location	OVA Concentration (ppm)			Actual
	Depth (feet bls)	Unfiltered	Filtered	
SB21	1	0	--	0
	3	0	--	0
	5	0	--	0
SB22	1	3	--	3
	3	1	--	1
	5	2	--	2
SB23	1	0	--	0
	3	0	--	0
	5	0	--	0
SB24	1	0	--	0
	3	0	--	0
	5	5	--	5
SB25	1	0	--	0
	3	0	--	0
	5	0	--	0
SB26	1	1	--	1
	3	2	--	2
	5	2	--	2
SB27	1	0	--	0
	3	0	--	0
	5	0	--	0
SB28	1	0	--	0
	3	0	--	0
	5	1	--	1
SB29	1	0	--	0
	3	0	--	0
	5	0	--	0
<u>Day Tank 1 Value Box</u>				
SB1	1	0	--	0
	3	60	0	60
	5 (wet)	240	0	240
SB2	1	0	--	0
	3	0	--	0
	5 (wet)	0	--	0
SB3	1	0	--	0
	3	1,000	0	1,000
	3.5 (wet)	1,400	0	1,400

See notes at end of table.

**Table 1 (Continued)
Soil Screening Results**

Confirmatory Sampling Report
JP-5 Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Location	OVA Concentration (ppm)			
	Depth (feet bls)	Unfiltered	Filtered	Actual
Day Tank 1 Value Box—continued				
SB4	1	0	-	0
	3	1,000	0	1,000
	5	1,200	0	1,200
	7 (wet)	450	0	450

Notes: Soil samples were filtered with carbon to determine the methane concentration.

OVA = organic vapor analyzer.

ppm = parts per million.

bls = below land surface.

- = filtered readings were not collected.

wet = soil sample was completely saturated when analyzed.

Table 2
Summary of Subsurface Soil Analytical Detections

Confirmatory Sampling Report
 JP-5 Pipeline
 Naval Air Station Cecil Field
 Jacksonville, Florida

Compound	CEF-PIPE-SB15 5 feet bls; OVA = 1,200 ppm	CEF-PIPE-SB19 4 feet bls; OVA = 0 ppm	CEF-VB-SB4 5 feet bls; OVA = 1,200 ppm	CEF-826-SB5 3 feet bls; OVA = 0 ppm	CEF-826-SB6 3 feet bls; OVA = 0 ppm	CEF-826-SB7 3 feet bls; OVA = 3 ppm	Soil Cleanup Target Levels ¹
Volatile Organic Aromatics (USEPA Method 8020) (mg/kg)							
Methylene chloride	0.012	0.006	ND	ND	ND	ND	NA
Trichloroethene	ND	ND	ND	22	230	ND	NA
Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (mg/kg)							
Acenaphthene	ND	ND	3.4 J	ND	0.052	ND	2,300/4
Benzo(a)anthracene	0.0055	ND	ND	ND	ND	ND	1.4/2.9
Benzo(a)pyrene	ND	ND	ND	0.004 J	ND	ND	0.1/7.8
Chrysene	0.018	0.0033	ND	0.002 J	ND	ND	140/80
Dibenzo(a,h)anthracene	0.110	ND	ND	ND	ND	ND	0.1/14
Benzo(g,h,i)perylene	0.005 J	ND	ND	ND	ND	ND	2,300/13,000
Fluoranthene	ND	0.007	6.1	ND	0.17	ND	2,800/550
Phenanthrene	ND	0.006 J	2.0	0.002 J	ND	ND	1,900/120
Pyrene	ND	ND	3.6	ND	0.026	ND	2,200/570
Anthracene	ND	ND	0.960	ND	ND	ND	19,000/2,000
Fluorene	ND	ND	2.3	ND	ND	ND	2,100/87
Naphthalene	ND	ND	16	ND	ND	ND	1,000/1
1-Methylnaphthalene	ND	ND	48	ND	ND	ND	NA
2-Methylnaphthalene	ND	ND	60	ND	ND	ND	NA
Total Recoverable Petroleum Hydrocarbons (TRPH) (FL-PRO) (mg/kg)							
TRPH	19	41	7,600	14	140	ND	340

¹ Chapter 62-770, Florida Administrative Code for Direct Exposure I/Leachability, Table V.

Notes: Bold indicates detection exceeded cleanup target level.

USEPA = U.S. Environmental Protection Agency.
 mg/kg = milligrams per kilogram.
 ND = not detected.

NA = not applicable.
 J = estimated value.
 FL-PRO = Florida-Petroleum Residual Organics.

**Table 3
Summary of Groundwater Analytical Results**

Confirmatory Sampling Report
JP-5 Pipeline
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	CEF-PIPE-1S	CEF-PIPE-2S	CEF-PIPE-3S	Groundwater Cleanup Target Levels ¹
<u>Volatile Organic Aromatics (USEPA Method 601/602) (µg/l)</u>				
No compounds detected				
<u>Polynuclear Aromatic Hydrocarbons (USEPA Method 625) (µg/l)</u>				
Acenaphthene	4.8	ND	ND	20
1-Methylnaphthalene	ND	ND	ND	NA
2-Methylnaphthalene	ND	ND	ND	NA
Naphthalene	ND	ND	ND	20
Fluorene	0.37	ND	ND	280
Phenanthrene	0.09 J	0.18	ND	210
<u>Total Recoverable Petroleum Hydrocarbons (TRPH) (FL-PRO) (mg/l)</u>				
TRPH	3	ND	ND	5
¹ Chapter 62-770, Florida Administrative Code.				
Notes: USEPA = U.S. Environmental Protection Agency. µg/l = micrograms per liter. ND = not detected. NA = not applicable. FL-PRO = Florida-Petroleum Residual Organics. mg/l = milligrams per liter.				

APPENDIX A
MONITORING WELL INSTALLATION DETAIL

TITLE: NAS Cecil Field, Pipeline "B" Site Assessment Report		LOG of WELL: CEF-PIPE-IS	BORING NO. CEF-PIPE-IS
CLIENT: SOUTHDIYNAVACENCOM			PROJECT NO: 02523-13
CONTRACTOR: U.S. Probe and Drill		DATE STARTED: 01-27-99	COMPLTD: 01-27-99
METHOD: HSA	CASE SIZE: 2in.	SCREEN INT.: 1.5-11.5 FT.	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: FID	TOT DPTH: 12.0FT.	DPTH TO ∇ 6.34 FT.
LOGGED BY: H.Hooper	WELL DEVELOPMENT DATE: 02-04-99		SITE: Day Tank 1 Valve Box

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
1				<> See Note		SM		posthole
2				SILTY SAND: brown to dark brown silty fine sand.				
3								
4			1300					posthole
5								
6			420					* **
7				SILTY SAND: dark brown to brown silty fine sand.				
8								
9			80					
10								
11			80					
12				<> Soil description taken from posthole and auger * no split spoon samples taken ** OVA readings taken at borehole (0-3') and bagged samples below 3'				
13								
14								
15								

TITLE: NAS Cecil Field, Pipeline "B" Site Assessment Report		LOG of WELL: CEF-PIPE-2S	BORING NO. CEF-PIPE-2S
CLIENT: SOUTH DIV NAVFAC ENG COM			PROJECT NO: 02523-13
CONTRACTOR: U.S. Probe and Drill		DATE STARTED: 01-27-99	COMPLTD: 01-27-99
METHOD: HA	CASE SIZE: 2in.	SCREEN INT.: 3.3-8.3 FT.	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: FID	TOT DPTH: 9.0 FT.	DPTH TO ∇ 4.98 FT.
LOGGED BY: H.Hooper	WELL DEVELOPMENT DATE: 02-04-99		SITE: Pipeline "B" DPT location 15

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA	
1				<> See Note		SM			
2			0	SILTY SAND: dark brown to brown silty fine sand.					posthole
3									
4									posthole
5									
6			0	SILTY SAND: dark brown to brown silty fine sand.					x xx
7			0						
8									
9				<> Soil description taken from posthole and auger * no split spoon samples taken ** OVA readings taken at borehole					
10									
11									
12									

TITLE: NAS Cecil Field, Pipeline "B" Site Assessment Report		LOG of WELL: CEF-PIPE-3S	BORING NO. CEF-PIPE-3S
CLIENT: SOUTH DIVNAVFACENCOM		PROJECT NO: 02523-13	
CONTRACTOR: U.S. Probe and Drill		DATE STARTED: 01-27-99	COMPLTD: 01-27-99
METHOD: HA	CASE SIZE: 2in.	SCREEN INT.: 2.2-7.2 FT.	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: FID	TOT DPTH: 8.0 FT.	DPTH TO ∇ 2.67 FT.
LOGGED BY: H.Hooper	WELL DEVELOPMENT DATE: 02-04-99		SITE: Pipeline "B" DPT location 19

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
1				<> See Note		SM		posthole
2			0	SILTY SAND: dark brown to brown silty fine sand.				
3								
4			0					posthole
5								
6			0	SILTY SAND: dark brown to brown silty fine sand.				* **
7				<> Soil description taken from posthole and auger * no split spoon samples taken				
8				** OVA readings taken at borehole				
9								
10								
11								
12								



APPENDIX B
ANALYTICAL DATA

NAS CECIL FIELD -- JP-5 PIPELINE
SUBSURFACE SOIL -- VOLATILES -- REPORT REQUEST NO. 10950

Lab Sample Number:	JR50539	JR52723	JR52722	JR52721								
Site	UST GREY	UST GREY	UST GREY	UST GREY								
Locator	CEF-VB-SB4	CEF-826-SB5	CEF-826-SB6	CEF-826-SB7								
Collect Date:	20-JAN-99	02-FEB-99	02-FEB-99	02-FEB-99								
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

601/602												
1,1,1-Trichloroethane	360 U	ug/kg	360	6 U	ug/kg	6	8 U	ug/kg	8	6 U	ug/kg	6
1,1,2,2-Tetrachloroethane	710 U	ug/kg	710	6 U	ug/kg	6	8 U	ug/kg	8	6 U	ug/kg	6
1,1,2-Trichloroethane	360 U	ug/kg	360	6 U	ug/kg	6	8 U	ug/kg	8	6 U	ug/kg	6
1,1-Dichloroethane	360 U	ug/kg	360	6 U	ug/kg	6	8 U	ug/kg	8	6 U	ug/kg	6
1,1-Dichloroethene	360 U	ug/kg	360	6 U	ug/kg	6	8 U	ug/kg	8	6 U	ug/kg	6
1,2-Dichloroethane	360 U	ug/kg	360	6 U	ug/kg	6	8 U	ug/kg	8	6 U	ug/kg	6
1,2-Dichloropropane	360 U	ug/kg	360	6 U	ug/kg	6	8 U	ug/kg	8	6 U	ug/kg	6
1,2-Dichlorobenzene	360 U	ug/kg	360	-			-			-		
1,3-Dichlorobenzene	360 U	ug/kg	360	-			-			-		
1,4-Dichlorobenzene	360 U	ug/kg	360	-			-			-		
Benzene	360 U	ug/kg	360	6 U	ug/kg	6	8 U	ug/kg	8	6 U	ug/kg	6
Bromodichloromethane	360 U	ug/kg	360	6 U	ug/kg	6	8 U	ug/kg	8	6 U	ug/kg	6
Bromoform	360 U	ug/kg	360	6 U	ug/kg	6	8 U	ug/kg	8	6 U	ug/kg	6
Bromomethane	360 U	ug/kg	360	12 U	ug/kg	12	16 U	ug/kg	16	12 U	ug/kg	12
Carbon tetrachloride	360 U	ug/kg	360	6 U	ug/kg	6	8 U	ug/kg	8	6 U	ug/kg	6
Chlorobenzene	360 U	ug/kg	360	6 U	ug/kg	6	8 U	ug/kg	8	6 U	ug/kg	6
Chloromethane	360 U	ug/kg	360	6 U	ug/kg	6	8 U	ug/kg	8	6 U	ug/kg	6
Chloroform	360 U	ug/kg	360	6 U	ug/kg	6	8 U	ug/kg	8	6 U	ug/kg	6
Dibromochloromethane	360 U	ug/kg	360	6 U	ug/kg	6	8 U	ug/kg	8	6 U	ug/kg	6
Dichlorodifluoromethane	360 U	ug/kg	360	-			-			-		
Ethylbenzene	360 U	ug/kg	360	6 U	ug/kg	6	8 U	ug/kg	8	6 U	ug/kg	6
Methylene chloride	1100 U	ug/kg	1100	30 U	ug/kg	30	40 U	ug/kg	40	29 U	ug/kg	29
Tetrachloroethene	360 U	ug/kg	360	18 U	ug/kg	18	24 U	ug/kg	24	18 U	ug/kg	18
Toluene	360 U	ug/kg	360	6 U	ug/kg	6	8 U	ug/kg	8	6 U	ug/kg	6
Trichloroethene	360 U	ug/kg	360	22 U	ug/kg	22	230 U	ug/kg	230	6 U	ug/kg	6
Trichlorofluoromethane	360 U	ug/kg	360	-			-			-		
Vinyl chloride	360 U	ug/kg	360	6 U	ug/kg	6	8 U	ug/kg	8	6 U	ug/kg	6
m,p-Xylene	710 U	ug/kg	710	12 U	ug/kg	12	16 U	ug/kg	16	12 U	ug/kg	12
o-Xylene	360 U	ug/kg	360	6 U	ug/kg	6	8 U	ug/kg	8	6 U	ug/kg	6
cis-1,2-Dichloroethene	360 U	ug/kg	360	6 U	ug/kg	6	8 U	ug/kg	8	6 U	ug/kg	6
cis-1,3-Dichloropropene	360 U	ug/kg	360	6 U	ug/kg	6	8 U	ug/kg	8	6 U	ug/kg	6
trans-1,2-Dichloroethene	360 U	ug/kg	360	6 U	ug/kg	6	8 U	ug/kg	8	6 U	ug/kg	6
trans-1,3-Dichloropropene	360 U	ug/kg	360	6 U	ug/kg	6	8 U	ug/kg	8	6 U	ug/kg	6

U = NOT DETECTED J = ESTIMATED VALUE
 UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
 R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- JP-5 PIPELINE
 SUBSURFACE SOIL -- VOLATILES -- REPORT REQUEST NO. 10950

Lab Sample Number:	JR50537	JR50538
Site	UST GREY	UST GREY
Locator	CEF-PIPE-SB15	CEF-PIPE-SB19
Collect Date:	20-JAN-99	20-JAN-99

	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
601/602								
1,1,1-Trichloroethane	1	U	ug/kg	1	1	U	ug/kg	1
1,1,2,2-Tetrachloroethane	2	U	ug/kg	2	2	U	ug/kg	2
1,1,2-Trichloroethane	1	U	ug/kg	1	1	U	ug/kg	1
1,1-Dichloroethane	1	U	ug/kg	1	1	U	ug/kg	1
1,1-Dichloroethene	1	U	ug/kg	1	1	U	ug/kg	1
1,2-Dichloroethane	1	U	ug/kg	1	1	U	ug/kg	1
1,2-Dichloropropane	1	U	ug/kg	1	1	U	ug/kg	1
1,2-Dichlorobenzene	1	U	ug/kg	1	1	U	ug/kg	1
1,3-Dichlorobenzene	1	U	ug/kg	1	1	U	ug/kg	1
1,4-Dichlorobenzene	1	U	ug/kg	1	1	U	ug/kg	1
Benzene	1	U	ug/kg	1	1	U	ug/kg	1
Bromodichloromethane	1	U	ug/kg	1	1	U	ug/kg	1
Bromoform	1	U	ug/kg	1	1	U	ug/kg	1
Bromomethane	1	U	ug/kg	1	1	U	ug/kg	1
Carbon tetrachloride	1	U	ug/kg	1	1	U	ug/kg	1
Chlorobenzene	1	U	ug/kg	1	1	U	ug/kg	1
Chloromethane	1	U	ug/kg	1	1	U	ug/kg	1
Chloroform	1	U	ug/kg	1	1	U	ug/kg	1
Dibromochloromethane	1	U	ug/kg	1	1	U	ug/kg	1
Dichlorodifluoromethane	1	U	ug/kg	1	1	U	ug/kg	1
Ethylbenzene	1	U	ug/kg	1	1	U	ug/kg	1
Methylene chloride	12	U	ug/kg	4	6	U	ug/kg	4
Tetrachloroethene	1	U	ug/kg	1	1	U	ug/kg	1
Toluene	1	U	ug/kg	1	1	U	ug/kg	1
Trichloroethene	1	U	ug/kg	1	1	U	ug/kg	1
Trichlorofluoromethane	1	U	ug/kg	1	1	U	ug/kg	1
Vinyl chloride	1	U	ug/kg	1	1	U	ug/kg	1
m,p-Xylene	2	U	ug/kg	2	2	U	ug/kg	2
o-Xylene	1	U	ug/kg	1	1	U	ug/kg	1
cis-1,2-Dichloroethene	1	U	ug/kg	1	1	U	ug/kg	1
cis-1,3-Dichloropropene	1	U	ug/kg	1	1	U	ug/kg	1
trans-1,2-Dichloroethene	1	U	ug/kg	1	1	U	ug/kg	1
trans-1,3-Dichloropropene	1	U	ug/kg	1	1	U	ug/kg	1

U = NOT DETECTED J = ESTIMATED VALUE
 UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
 R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- JP-5 PIPELINE
 SUBSURFACE SOIL-- POLYNUCLEAR AROMATIC HYDROCARBONS -- REPORT NO. 10951

Lab Sample Number:	JR50539	JR52723	JR52722	JR52721								
Site	UST GREY	UST GREY	UST GREY	UST GREY								
Locator	CEF-VB-SB4	CEF-826-SB5	CEF-826-SB6	CEF-826-SB7								
Collect Date:	20-JAN-99	02-FEB-99	02-FEB-99	02-FEB-99								
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

METHOD 8310	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
Naphthalene	16000	ug/kg	2400	20 U	ug/kg	20	27 U	ug/kg	27	20 U	ug/kg	20
Acenaphthylene	4800 U	ug/kg	4800	40 U	ug/kg	40	54 U	ug/kg	54	39 U	ug/kg	39
1-Methylnaphthalene	48000	ug/kg	2400	20 U	ug/kg	20	27 U	ug/kg	27	20 U	ug/kg	20
2-Methylnaphthalene	60000	ug/kg	2400	20 U	ug/kg	20	27 U	ug/kg	27	20 U	ug/kg	20
Acenaphthene	3400 J	ug/kg	2400	20 U	ug/kg	20	52	ug/kg	27	20 U	ug/kg	20
Fluorene	2300	ug/kg	480	4 U	ug/kg	4	5.4 U	ug/kg	5.4	3.9 U	ug/kg	3.9
Phenanthrene	2000	ug/kg	240	2 J	ug/kg	2	2.7 U	ug/kg	2.7	2 U	ug/kg	2
Anthracene	960	ug/kg	240	2 U	ug/kg	2	3 U	ug/kg	3	2 U	ug/kg	2
Fluoranthene	6100	ug/kg	480	4 U	ug/kg	4	170	ug/kg	5.4	3.9 U	ug/kg	3.9
Pyrene	3600	ug/kg	240	2 U	ug/kg	2	26	ug/kg	2.7	2 U	ug/kg	2
Benzo (a) anthracene	240 U	ug/kg	240	2 U	ug/kg	2	2.7 U	ug/kg	2.7	2 U	ug/kg	2
Benzo (b) fluoranthene	480 U	ug/kg	480	4 U	ug/kg	4	42 U	ug/kg	42	4 U	ug/kg	4
Benzo (k) fluoranthene	240 U	ug/kg	240	2 U	ug/kg	2	3 U	ug/kg	3	2 U	ug/kg	2
Chrysene	240 U	ug/kg	240	2 J	ug/kg	2	2.7 U	ug/kg	2.7	2 U	ug/kg	2
Benzo (a) pyrene	240 U	ug/kg	240	4 J	ug/kg	2	24 U	ug/kg	24	2 U	ug/kg	2
Dibenzo (a,h) anthracene	480 U	ug/kg	480	4 U	ug/kg	4	5.4 U	ug/kg	5.4	3.9 U	ug/kg	3.9
Benzo (g,h,i) perylene	480 U	ug/kg	480	4 U	ug/kg	4	5.4 U	ug/kg	5.4	3.9 U	ug/kg	3.9
Indeno (1,2,3-cd) pyrene	240 U	ug/kg	240	2 U	ug/kg	2	2.7 U	ug/kg	2.7	2 U	ug/kg	2

U = NOT DETECTED J = ESTIMATED VALUE
 UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
 R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- JP-5 PIPELINE
 SUBSURFACE SOIL-- POLYNUCLEAR AROMATIC HYDROCARBONS -- REPORT NO. 10951

Lab Sample Number:	JR50537	JR50538			
Site	UST GREY	UST GREY			
Locator	CEF-PIPE-SB15	CEF-PIPE-SB19			
Collect Date:	20-JAN-99	20-JAN-99			
VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

METHOD 8310

Naphthalene	20 U	ug/kg	20	20 U	ug/kg	20
Acenaphthylene	39 U	ug/kg	39	41 U	ug/kg	41
1-Methylnaphthalene	20 U	ug/kg	20	20 U	ug/kg	20
2-Methylnaphthalene	20 U	ug/kg	20	20 U	ug/kg	20
Acenaphthene	20 U	ug/kg	20	20 U	ug/kg	20
Fluorene	3.9 U	ug/kg	3.9	4.1 U	ug/kg	4.1
Phenanthrene	2 U	ug/kg	2	6 J	ug/kg	2
Anthracene	2 U	ug/kg	2	2 U	ug/kg	2
Fluoranthene	3.9 U	ug/kg	3.9	7	ug/kg	4.1
Pyrene	2 U	ug/kg	2	2 U	ug/kg	2
Benzo (a) anthracene	5.5	ug/kg	2	2 U	ug/kg	2
Benzo (b) fluoranthene	4 U	ug/kg	4	4 U	ug/kg	4
Benzo (k) fluoranthene	2 U	ug/kg	2	2 U	ug/kg	2
Chrysene	18	ug/kg	2	3.3	ug/kg	2
Benzo (a) pyrene	2 U	ug/kg	2	2 U	ug/kg	2
Dibenzo (a,h) anthracene	110	ug/kg	3.9	4.1 U	ug/kg	4.1
Benzo (g,h,i) perylene	5 J	ug/kg	3.9	4.1 U	ug/kg	4.1
Indeno (1,2,3-cd) pyrene	2 U	ug/kg	2	2 U	ug/kg	2

U = NOT DETECTED J = ESTIMATED VALUE
 UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
 R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- JP-5 PIPELINE
 SUBSURFACE SOIL -- TPH -- REPORT NO. 10952

Lab Sample Number:	JR50539	JR52723	JR52722	JR52721					
Site	UST GREY	UST GREY	UST GREY	UST GREY					
Locator	CEF-VB-SB4	CEF-826-SB5	CEF-826-SB6	CEF-826-SB7					
Collect Date:	20-JAN-99	02-FEB-99	02-FEB-99	02-FEB-99					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

FLA PRO												
TPH C8-C40	7600	mg/kg	470	14	mg/kg	8	140	mg/kg	11	7.8 U	mg/kg	7.8

U = NOT DETECTED J = ESTIMATED VALUE
 UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
 R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- JP-5 PIPELINE
SUBSURFACE SOIL -- TPH -- REPORT NO. 10952

Lab Sample Number:	JR50537		JR50538			
Site	UST GREY		UST GREY			
Locator	CEF-PIPE-SB15		CEF-PIPE-SB19			
Collect Date:	20-JAN-99		20-JAN-99			
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

FLA PRO						
TPH C8-C40	19	mg/kg	7.8	41	mg/kg	8

U = NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- JP-5 PIPELINE
GROUNDWATER -- VOLATILES -- REPORT REQUEST NO. 10953

Lab Sample Number:	JR54141			JR54143			JR54142		
Site	UST GREY			UST GREY			UST GREY		
Locator	CEF-PIPE-1S			CEF-PIPE-2S			CEF-PIPE-3S		
Collect Date:	11-FEB-99			11-FEB-99			11-FEB-99		
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE

601/602												
1,1,1-Trichloroethane	1 U	ug/l		1	1 U	ug/l		1	1 U	ug/l		1
1,1,2,2-Tetrachloroethane	1 U	ug/l		1	1 U	ug/l		1	1 U	ug/l		1
1,1,2-Trichloroethane	1 U	ug/l		1	1 U	ug/l		1	1 U	ug/l		1
1,1-Dichloroethane	1 U	ug/l		1	1 U	ug/l		1	1 U	ug/l		1
1,1-Dichloroethene	1 U	ug/l		1	1 U	ug/l		1	1 U	ug/l		1
1,2-Dichloroethane	1 U	ug/l		1	1 U	ug/l		1	1 U	ug/l		1
1,2-Dichloropropane	1 U	ug/l		1	1 U	ug/l		1	1 U	ug/l		1
1,2-Dichlorobenzene	1 U	ug/l		1	1 U	ug/l		1	1 U	ug/l		1
1,3-Dichlorobenzene	1 U	ug/l		1	1 U	ug/l		1	1 U	ug/l		1
1,4-Dichlorobenzene	1 U	ug/l		1	1 U	ug/l		1	1 U	ug/l		1
Benzene	1 U	ug/l		1	1 U	ug/l		1	1 U	ug/l		1
Bromodichloromethane	1 U	ug/l		1	1 U	ug/l		1	1 U	ug/l		1
Bromoform	1 U	ug/l		1	1 U	ug/l		1	1 U	ug/l		1
Bromomethane	1 U	ug/l		1	1 U	ug/l		1	1 U	ug/l		1
Carbon tetrachloride	1 U	ug/l		1	1 U	ug/l		1	1 U	ug/l		1
Chlorobenzene	1 U	ug/l		1	1 U	ug/l		1	1 U	ug/l		1
Chloromethane	2 U	ug/l		2	2 U	ug/l		2	2 U	ug/l		2
Chloroform	1 U	ug/l		1	1 U	ug/l		1	1 U	ug/l		1
Dibromochloromethane	1 U	ug/l		1	1 U	ug/l		1	1 U	ug/l		1
Dichlorodifluoromethane	1 U	ug/l		1	1 U	ug/l		1	1 U	ug/l		1
Ethylbenzene	1 U	ug/l		1	1 U	ug/l		1	1 U	ug/l		1
Methylene chloride	2 U	ug/l		2	2 U	ug/l		2	2 U	ug/l		2
Tetrachloroethene	1 U	ug/l		1	1 U	ug/l		1	1 U	ug/l		1
Toluene	1 U	ug/l		1	1 U	ug/l		1	1 U	ug/l		1
Trichloroethene	1 U	ug/l		1	1 U	ug/l		1	1 U	ug/l		1
Trichlorofluoromethane	2 U	ug/l		2	2 U	ug/l		2	2 U	ug/l		2
Vinyl chloride	1 U	ug/l		1	1 U	ug/l		1	1 U	ug/l		1
m,p-Xylene	1 U	ug/l		1	1 U	ug/l		1	1 U	ug/l		1
o-Xylene	1 U	ug/l		1	1 U	ug/l		1	1 U	ug/l		1
cis-1,2-Dichloroethene	1 U	ug/l		1	1 U	ug/l		1	1 U	ug/l		1
cis-1,3-Dichloropropene	1 U	ug/l		1	1 U	ug/l		1	1 U	ug/l		1
trans-1,2-Dichloroethene	1 U	ug/l		1	1 U	ug/l		1	1 U	ug/l		1
trans-1,3-Dichloropropene	1 U	ug/l		1	1 U	ug/l		1	1 U	ug/l		1

U = NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- JP-5 PIPELINE
GROUNDWATER -- POLYNUCLEAR AROMATIC HYDROCARBONS -- REPORT NO. 10954

Lab Sample Number:	JR54141	JR54143	JR54142
Site	UST GREY	UST GREY	UST GREY
Locator	CEF-PIPE-1S	CEF-PIPE-2S	CEF-PIPE-3S
Collect Date:	11-FEB-99	11-FEB-99	11-FEB-99

METHOD 8310

	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
Naphthalene	8.1	ug/l	.5	.5 U	ug/l	.5	.5 U	ug/l	.5
Acenaphthylene	1 U	ug/l	1	1 U	ug/l	1	1 U	ug/l	1
1-Methylnaphthalene	13	ug/l	.5	.6	ug/l	.5	.5 U	ug/l	.5
2-Methylnaphthalene	8.5	ug/l	.5	.5 U	ug/l	.5	.5 U	ug/l	.5
Acenaphthene	4.8	ug/l	.5	.5 U	ug/l	.5	.5 U	ug/l	.5
Fluorene	.37	ug/l	.1	.1 U	ug/l	.1	.1 U	ug/l	.1
Phenanthrene	.09 J	ug/l	.05	.18	ug/l	.05	.05 U	ug/l	.05
Anthracene	.05 U	ug/l	.05	.05 U	ug/l	.05	.05 U	ug/l	.05
Fluoranthene	.1 U	ug/l	.1	.1 U	ug/l	.1	.1 U	ug/l	.1
Pyrene	.05 U	ug/l	.05	.05 U	ug/l	.05	.05 U	ug/l	.05
Benzo (a) anthracene	.05 U	ug/l	.05	.05 U	ug/l	.05	.05 U	ug/l	.05
Benzo (b) fluoranthene	.1 U	ug/l	.1	.1 U	ug/l	.1	.1 U	ug/l	.1
Benzo (k) fluoranthene	.05 U	ug/l	.05	.05 U	ug/l	.05	.05 U	ug/l	.05
Chrysene	.05 U	ug/l	.05	.05 U	ug/l	.05	.05 U	ug/l	.05
Benzo (a) pyrene	.05 U	ug/l	.05	.05 U	ug/l	.05	.05 U	ug/l	.05
Dibenzo (a,h) anthracene	.1 U	ug/l	.1	.1 U	ug/l	.1	.1 U	ug/l	.1
Benzo (g,h,i) perylene	.1 U	ug/l	.1	.1 U	ug/l	.1	.1 U	ug/l	.1
Indeno (1,2,3-cd) pyrene	.05 U	ug/l	.05	.05 U	ug/l	.05	.05 U	ug/l	.05

U = NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- JP-5 PIPELINE
GROUNDWATER -- TPH -- REPORT NO. 10955

Lab Sample Number:	JR54141	JR54143	JR54142					
Site	UST GREY	UST GREY	UST GREY					
Locator	CEF-PIPE-1S	CEF-PIPE-2S	CEF-PIPE-3S					
Collect Date:	11-FEB-99	11-FEB-99	11-FEB-99					
VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

FLA PRO									
TPH C8-C40	3	mg/l	.2	.2 U	mg/l	.2	.2 U	mg/l	.2

U = NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE



NEW DOCUMENT



CONFIRMATORY SAMPLING REPORT
SOUTH FUEL FARM OIL-WATER SEPARATOR, SFF-OW
BASE REALIGNMENT AND CLOSURE
UNDERGROUND STORAGE TANK AND
ABOVEGROUND STORAGE TANK GRAY SITES
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Unit Identification Code: N60200

Contract No.: N62467-89-D-0317/149

Prepared by:

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2590 Executive Center Circle, East
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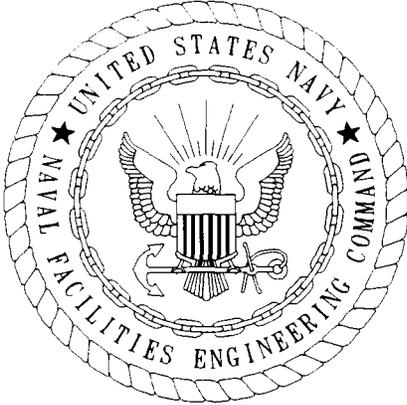
Prepared for:

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

Bryan Kizer, Code 1842, Engineer-in-Charge

May 1999

Revision 0.0



CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

The Contractor, Harding Lawson Associates, hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0317/149 are complete and accurate and comply with all requirements of this contract.

DATE: May 14, 1999

NAME AND TITLE OF CERTIFYING OFFICIAL: Rao Angara
Task Order Manager

NAME AND TITLE OF CERTIFYING OFFICIAL: Eric A. Blomberg, P.G.
Project Technical Lead

(DFAR 252.227-7036)



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Naval Air Station Cecil Field
Jacksonville, Florida

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Confirmatory Sampling Report
South Fuel Farm Oil-Water Separator, SFF-OW
Naval Air Station Cecil Field
Jacksonville, Florida

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GLOSSARY

bls	below land surface
FDEP	Florida Department of Environmental Protection
OVA	organic vapor analyzer
TRPH	total recoverable petroleum hydrocarbons

1.0 INTRODUCTION

Harding Lawson Associates, under contract to the Southern Division, Naval Facilities Engineering Command, has completed confirmatory sampling for oil-water separator, SFF-OW at Naval Air Station Cecil Field in Jacksonville, Florida. This report summarizes the related field operations, results, conclusions, and recommendations.

Oil-water separator, SFF-OW was located at the north end of the South Fuel Farm (Figure 1). The location of the former oil-water separator is also within the area of ongoing remediation of the South Fuel Farm (Figure 1). The remediation system is biosparging and bioventing and is treating contaminated soil and groundwater. The oil-water separator was installed in 1989 and had a 1,000-gallon capacity.

Oil-water separator, SFF-OW was removed by Bechtel Environmental, Inc. on April 30, 1997. A Closure Report was prepared and submitted to Florida Department of Environmental Protection (FDEP) in July 1997. No contaminated soil was detected during removal of the oil-water separator.

2.0 FIELD INVESTIGATION

The confirmatory sampling for oil-water separator, SFF-OW was initiated in July, 1998 and included

- the advancement of four soil borings to the water table,
- the installation of one monitoring well, and
- collection and analysis of one groundwater sample and one subsurface soil sample.

Soil samples were collected from each boring at depth intervals of 1 foot below land surface (bls) and every 2 feet thereafter to the water table. These samples were screened for hydrocarbon vapors with an organic vapor analyzer (OVA).

One subsurface soil sample was collected on October 13, 1998 and analyzed for the Used Oil Group parameters. Sample CEF-SFF-SB1 was collected from 7 feet bls at the location of soil screening boring SB1.

One monitoring well, CEF-SFFOW-1S, was installed at the location of soil boring SB1 which had the highest OVA reading (greater than 5,000 ppm at the water table). A groundwater sample was collected from this well and analyzed for the Used Oil Group parameters. A general site plan indicating the location of the soil borings and monitoring wells is presented on Figure 1. The monitoring well installation detail is included in Appendix A.

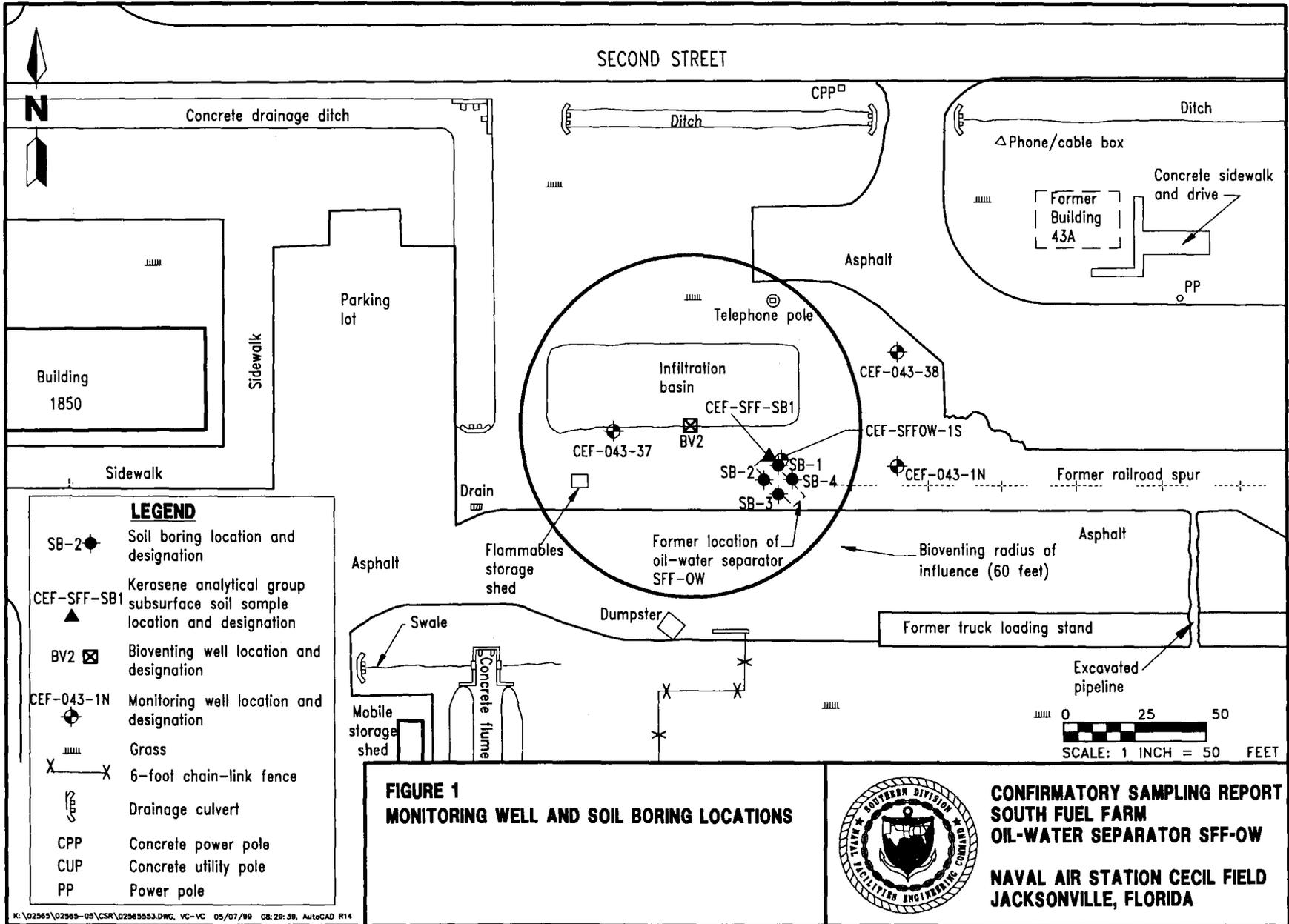


Table 2
Summary of Subsurface Soil Analytical Detections

Confirmatory Sampling Report
Oil-Water Separator, SFF-OW
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	CEF-SFF-SB1 (7 ft bls; OVA = 3,000 ppm)	Soil Cleanup Target Levels ¹
<u>Volatile Organic Aromatics (USEPA Method 8020) (mg/kg)</u>		
Not detected.		
<u>Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (mg/kg)</u>		
2-Methylnaphthalene	2.1	NA
<u>Total Recoverable Petroleum Hydrocarbons (TRPH) (FL-PRO) (mg/kg)</u>		
TRPH	1,400	350/340
<u>Inorganic Analytes (mg/kg)</u>		
Chromium	6.4	290/TCLP
Lead	14 J	500/TCLP
Mercury	0.016 J	3.7/TCLP

¹ Chapter 62-770, Florida Administrative Code: Direct Exposure 1/Leachability, Table V.

Notes: **Bold** indicates concentration exceeds cleanup target level.

- ft = feet.
- bls = below land surface.
- OVA = organic vapor analyzer.
- ppm = parts per million.
- USEPA = U.S. Environmental Protection Agency.
- mg/kg = milligrams per kilogram.
- NA = not applicable.
- FL=PRO = Florida-Petroleum Residual Organics.
- TCLP = toxicity characteristic leaching procedure.
- J = estimated value.

**Table 3
Summary of Groundwater Analytical Results**

Confirmatory Sampling Report
Oil-Water Separator, SFF-OW
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	CEF-SFFOW-1S	Groundwater Cleanup Target Levels ¹
<u>Volatile Organic Aromatics (USEPA Method 601/602) (µg/l)</u>		
Ethylbenzene	92	30
Xylenes	176	20
<u>Polynuclear Aromatic Hydrocarbons (USEPA Method 625) (µg/l)</u>		
Acenaphthene	22	20
Anthracene	0.5	2,100
Benzo(a)anthracene	0.06 J	0.2
Benzo(a)pyrene	0.05 J	0.2
Chrysene	0.1	5
Fluorene	5	280
Benzo(g,h,i)perylene	0.15 J	210
Naphthalene	170	20
Phenanthrene	3	210
1-Methylnaphthalene	220	NA
2-Methylnaphthalene	150	NA
<u>Total Recoverable Petroleum Hydrocarbons (TRPH) (FL-PRO) (mg/l)</u>		
TRPH	0.4	5
<u>Inorganic Analytes (µg/l)</u>		
Not detected.		
¹ Chapter 62-770, Florida Administrative Code.		
Notes: USEPA = U.S. Environmental Protection Agency. µg/l = micrograms per liter. J = estimated value. NA = not applicable. FL-PRO = Florida Petroleum Residual Organics. mg/l = milligrams per liter.		

APPENDIX A

MONITORING WELL INSTALLATION DETAIL

TITLE: NAS Cecil Field, SFF Site Assessment Report		LOG of WELL: CEF-SFF ₀ /w-1S	BORING NO. CEF-SFF ₀ /w-1S
CLIENT: SOUTHDIVNAVFACENCOM		PROJECT NO: 02565.03	
CONTRACTOR: U.S. Probe and Drill		DATE STARTED: 09-23-98	COMPLTD: 09-23-98
METHOD: HSA	CASE SIZE: 2in.	SCREEN INT.: 4-14 ft.	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: FID	TOT DPTH: 14.5FT.	DPTH TO ∇ 5.34 FT.
LOGGED BY: H.Hooper	WELL DEVELOPMENT DATE: 09-25-98		SITE: SFF

DEPTH F.T.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
1				<> See Note		SM	posthole	
2								
3								
4				SILTY SAND: brown, silty fine sand.			posthole	
5								
6								
7							*	
8							**	
9								
10								
11								
12								
13				<> Soil description taken from posthole and auger.				
14				* no split spoon samples taken				
15				** no OVA readings taken				

APPENDIX B
ANALYTICAL DATA

NAS CECIL FIELD -- OIL/WATER SEPARATOR AT SFF
 SUBSURFACE SOIL -- ANALYTICAL DATA -- REPORT REQUEST NO. 10550

Lab Sample Number: JR36657
 Site: UST GREY
 Locator: CEF-SFF-SB1
 Collect Date: 13-OCT-98

VALUE QUAL UNITS DL

BRAC VOLATILES

1,1,1-Trichloroethane	120 U	ug/kg	120
1,1,2,2-Tetrachloroethane	120 U	ug/kg	120
1,1,2-Trichloroethane	120 U	ug/kg	120
1,1-Dichloroethane	120 U	ug/kg	120
1,1-Dichloroethene	120 U	ug/kg	120
1,2-Dichlorobenzene	390 U	ug/kg	390
1,2-Dichloroethane	120 U	ug/kg	120
1,2-Dichloropropane	120 U	ug/kg	120
1,3-Dichlorobenzene	390 U	ug/kg	390
1,4-Dichlorobenzene	390 U	ug/kg	390
Benzene	120 U	ug/kg	120
Bromodichloromethane	120 U	ug/kg	120
Bromoform	120 U	ug/kg	120
Bromomethane	120 U	ug/kg	120
Carbon tetrachloride	120 U	ug/kg	120
Chlorobenzene	120 U	ug/kg	120
Chloroethane	120 U	ug/kg	120
Chloroform	120 U	ug/kg	120
Chloromethane	120 U	ug/kg	120
Dibromochloromethane	120 U	ug/kg	120
Ethyl benzene	120 U	ug/kg	120
Methyl chloride	120 U	ug/kg	120
Tetrachloroethene	120 U	ug/kg	120
Toluene	120 U	ug/kg	120
Trichloroethene	120 U	ug/kg	120
Vinyl chloride	120 U	ug/kg	120
cis-1,3-Dichloropropene	120 U	ug/kg	120
m,p-Xylene	120 U	ug/kg	120
o-Xylene	120 U	ug/kg	120
trans-1,2-Dichloroethene	120 U	ug/kg	120
trans-1,3-Dichloropropene	120 U	ug/kg	120

BRAC SEMIVOLATILES

Phenol	390 U	ug/kg	390
bis(2-Chloroethyl) ether	390 U	ug/kg	390
1,3-Dichlorobenzene	390 U	ug/kg	390
1,4-Dichlorobenzene	390 U	ug/kg	390
1,2-Dichlorobenzene	390 U	ug/kg	390
N-Nitroso-di-n-propylamine	390 U	ug/kg	390
Hexachloroethane	390 U	ug/kg	390
Nitrobenzene	390 U	ug/kg	390
Isophorone	390 U	ug/kg	390
2-Nitrophenol	390 U	ug/kg	390
2,4-Dimethylphenol	390 U	ug/kg	390
bis(2-Chloroethoxy) methane	390 U	ug/kg	390
2,4-Dichlorophenol	390 U	ug/kg	390
1,2,4-Trichlorobenzene	390 U	ug/kg	390
Naphthalene	390 U	ug/kg	390
Hexachlorobutadiene	390 U	ug/kg	390
4-Chloro-3-methylphenol	390 U	ug/kg	390

NAS CECIL FIELD -- OIL/WATER SEPARATOR AT SFF
 SUBSURFACE SOIL -- ANALYTICAL DATA -- REPORT REQUEST NO. 10550

Lab Sample Number: JR36657
 Site: UST GREY
 Locator: CEF-SFF-SB1
 Collect Date: 13-OCT-98

VALUE QUAL UNITS DL

2-Methylnaphthalene	2100	ug/kg	390
2,4,6-Trichlorophenol	390 U	ug/kg	390
2-Chloronaphthalene	390 U	ug/kg	390
Dimethylphthalate	390 U	ug/kg	390
Acenaphthylene	390 U	ug/kg	390
2,4-Dinitrophenol	1900 U	ug/kg	1900
3- & 4-Methylphenol (2)	390 U	ug/kg	390
4-Nitrophenol	390 U	ug/kg	390
2,4-Dinitrotoluene	390 U	ug/kg	390
Diethylphthalate	390 U	ug/kg	390
4-Chlorophenyl-phenylether	390 U	ug/kg	390
Fluorene	390 U	ug/kg	390
4,6-Dinitro-2-methylphenol	1200 U	ug/kg	1200
4-Bromophenyl-phenylether	390 U	ug/kg	390
Hexachlorobenzene	390 U	ug/kg	390
Pentachlorophenol	390 U	ug/kg	390
Phenanthrene	390 U	ug/kg	390
Anthracene	390 U	ug/kg	390
Di-n-butylphthalate	390 U	ug/kg	390
Fluoranthene	390 U	ug/kg	390
Pyrene	390 U	ug/kg	390
3,3-Dichlorobenzidine	780 U	ug/kg	780
Benzo (a) anthracene	390 U	ug/kg	390
Chrysene	390 U	ug/kg	390
bis(2-Ethylhexyl) phthalate	390 U	ug/kg	390
Di-n-octylphthalate	390 U	ug/kg	390
Benzo (b) fluoranthene	390 U	ug/kg	390
Benzo (k) fluoranthene	390 U	ug/kg	390
Benzo (a) pyrene	390 U	ug/kg	390
Indeno (1,2,3-cd) pyrene	390 U	ug/kg	390
Dibenzo (a,h) anthracene	390 U	ug/kg	390
Benzo (g,h,i) perylene	390 U	ug/kg	390

FLA PRO
 TPH C8-C40 1400 mg/kg 39

Arsenic	1 U	mg/kg	1
Barium	47 U	mg/kg	47
Cadmium	2 U	mg/kg	2
Chromium	6.4	mg/kg	2
Lead	14 J	mg/kg	8
Mercury	.016 J	mg/kg	.01
Selenium	5 U	mg/kg	5
Silver	5 U	mg/kg	5

U = NOT DETECTED J = ESTIMATED VALUE
 UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
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NAS CECIL FIELD -- OIL/WATER SEPARATOR AT SFF
GROUNDWATER -- ANALYTICAL DATA -- REPORT REQUEST NO. 10577

Lab Sample Number: JR42212
Site: UST GREY
Locator: CEF-SFF-OW1S
Collect Date: 18-NOV-98

VALUE QUAL UNITS DL

BRAC VOLATILES

1,1,1-Trichloroethane	1 U	ug/l	1
1,1,2,2-Tetrachloroethane	1 U	ug/l	1
1,1,2-Trichloroethane	1 U	ug/l	1
1,1-Dichloroethane	1 U	ug/l	1
1,1-Dichloroethene	1 U	ug/l	1
1,2-Dichlorobenzene	1 U	ug/l	1
1,2-Dichloroethane	1 U	ug/l	1
1,2-Dichloropropane	1 U	ug/l	1
1,3-Dichlorobenzene	1 U	ug/l	1
1,4-Dichlorobenzene	1 U	ug/l	1
Benzene	1 U	ug/l	1
Bromodichloromethane	1 U	ug/l	1
Bromoform	1 U	ug/l	1
Bromomethane	1 U	ug/l	1
Carbon tetrachloride	1 U	ug/l	1
Chlorobenzene	1 U	ug/l	1
Chloroethane	2 U	ug/l	2
Chloroform	1 U	ug/l	1
Chloromethane	2 U	ug/l	2
Dibromochloromethane	1 U	ug/l	1
Ethyl benzene	92	ug/l	1
Methyl chloride	2 U	ug/l	2
Tetrachloroethene	1 U	ug/l	1
Toluene	2	ug/l	1
Trichloroethene	1 U	ug/l	1
Vinyl chloride	1 U	ug/l	1
cis-1,3-Dichloropropene	1 U	ug/l	1
m,p-Xylene	130	ug/l	1
o-Xylene	46	ug/l	1
trans-1,2-Dichloroethene	1 U	ug/l	1
trans-1,3-Dichloropropene	1 U	ug/l	1

PAHs

Acenaphthene	22	ug/l	.5
Acenaphthylene	1 U	ug/l	1
Anthracene	.5	ug/l	.05
Benzo (a) anthracene	.06 J	ug/l	.05
Benzo (b) fluoranthene	.1 U	ug/l	.1
Benzo (k) fluoranthene	.05 U	ug/l	.05
Benzo (a) pyrene	.05 J	ug/l	.05
Chrysene	.1	ug/l	.05
Dibenzo (a,h) anthracene	.1 U	ug/l	.1
Fluoranthene	.1 U	ug/l	.1
Fluorene	5	ug/l	.1
Indeno (1,2,3-cd) pyrene	.05 U	ug/l	.05
Benzo (g,h,i) perylene	.15 J	ug/l	.1
Naphthalene	170	ug/l	.5
Phenanthrene	3	ug/l	.05
Pyrene	.05 U	ug/l	.05

NAS CECIL FIELD -- OIL/WATER SEPARATOR AT SFF
GROUNDWATER -- ANALYTICAL DATA -- REPORT REQUEST NO. 10577

Lab Sample Number: JR42212
Site: UST GREY
Locator: CEF-SFF-OW1S
Collect Date: 18-NOV-98

	VALUE	QUAL UNITS	DL
1-Methylnaphthalene	220	ug/l	.5
2-Methylnaphthalene	150	ug/l	.5
FLA PRO			
TPH C8-C40	.4	mg/l	.2
Arsenic	.01 U	mg/l	.01
Barium	.1 U	mg/l	.1
Cadmium	.001 U	mg/l	.001
Chromium	.01 U	mg/l	.01
Lead	.005 U	mg/l	.005
Mercury	.0002 U	mg/l	.0002
Selenium	.01 U	mg/l	.01
Silver	.01 U	mg/l	.01

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NEW DOCUMENT

CONFIRMATORY SAMPLING REPORT
BUILDING 824, OIL-WATER SEPARATOR 824-OW
BASE REALIGNMENT AND CLOSURE
UNDERGROUND STORAGE TANK AND
ABOVEGROUND STORAGE TANK GRAY SITES
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Unit Identification Code: N60200

Contract No.: N62467-89-D-0317/149

Prepared by:

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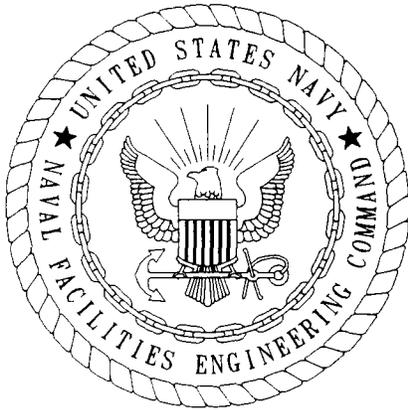
Prepared for:

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

Bryan Kizer, Code 1842, Engineer-in-Charge

April 1999

Revision 0.0



CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

The Contractor, Harding Lawson Associates, hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0317/149 are complete and accurate and comply with all requirements of this contract.

DATE: April 6, 1999

NAME AND TITLE OF CERTIFYING OFFICIAL: Rao Angara
Task Order Manager

NAME AND TITLE OF CERTIFYING OFFICIAL: Eric A. Blomberg, P.G.
Project Technical Lead

(DFAR 252.227-7036)



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Building 824, Oil-Water Separator 824-OW
Naval Air Station Cecil Field
Jacksonville, Florida

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GLOSSARY

bls	below land surface
FDEP	Florida Department of Environmental Protection
NAS	Naval Air Station
OVA	organic vapor analyzer
ppm	parts per million
TRPH	total recoverable petroleum hydrocarbons

1.0 INTRODUCTION

Harding Lawson Associates, under contract to the Southern Division, Naval Facilities Engineering Command, has completed confirmatory sampling for oil-water separator 824-OW at Naval Air Station (NAS) Cecil Field in Jacksonville, Florida. This report summarizes the related field operations, results, conclusions, and recommendations.

Oil-water separator 824-OW is located on the south side of Building 824, the avionics shop (ABB Environmental Services, Inc., 1994) (Figure 1). The installation date and capacity of the oil-water separator are unknown.

2.0 FIELD INVESTIGATION

The confirmatory sampling for oil-water separator 824-OW was initiated in September 1998 and included

- the advancement of four soil borings to the water table,
- the installation of one monitoring well,
- collection and analysis of one groundwater sample and one subsurface soil sample, and
- collection and analysis of three subsurface soil samples to delineate the extent of contaminated soil above cleanup target levels.

Soil samples were collected from each boring at depth intervals of 1 foot below land surface (bls) and every 2 feet thereafter to the water table. These samples were screened for hydrocarbon vapors with an organic vapor analyzer (OVA).

One subsurface soil sample was collected on October 14, 1998, and analyzed for the used oil group parameters. Sample CEF-824-SB4 was collected from 7 feet bls at the location of soil screening boring SB4, which had the highest OVA concentration.

Three subsurface soil samples, CEF-824-SB5, CEF-824-SB6, and CEF-824-SB7, were collected on February 3, 1999, and analyzed for total recoverable petroleum hydrocarbons (TRPH) to delineate the extent of contaminated soil. The samples were collected just above the water table at 4 feet bls.

One monitoring well, CEF-824-1S, was installed downgradient of the oil-water separator during the Base Realignment and Closure investigation of Building 824. The downgradient location was selected based on the U.S. Geological Survey groundwater model for NAS Cecil Field. A groundwater sample was collected from this well and analyzed for the used oil group parameters. A general site plan indicating the location of the soil borings and monitoring wells is presented on Figure 2. The monitoring well installation detail is included in Appendix A.

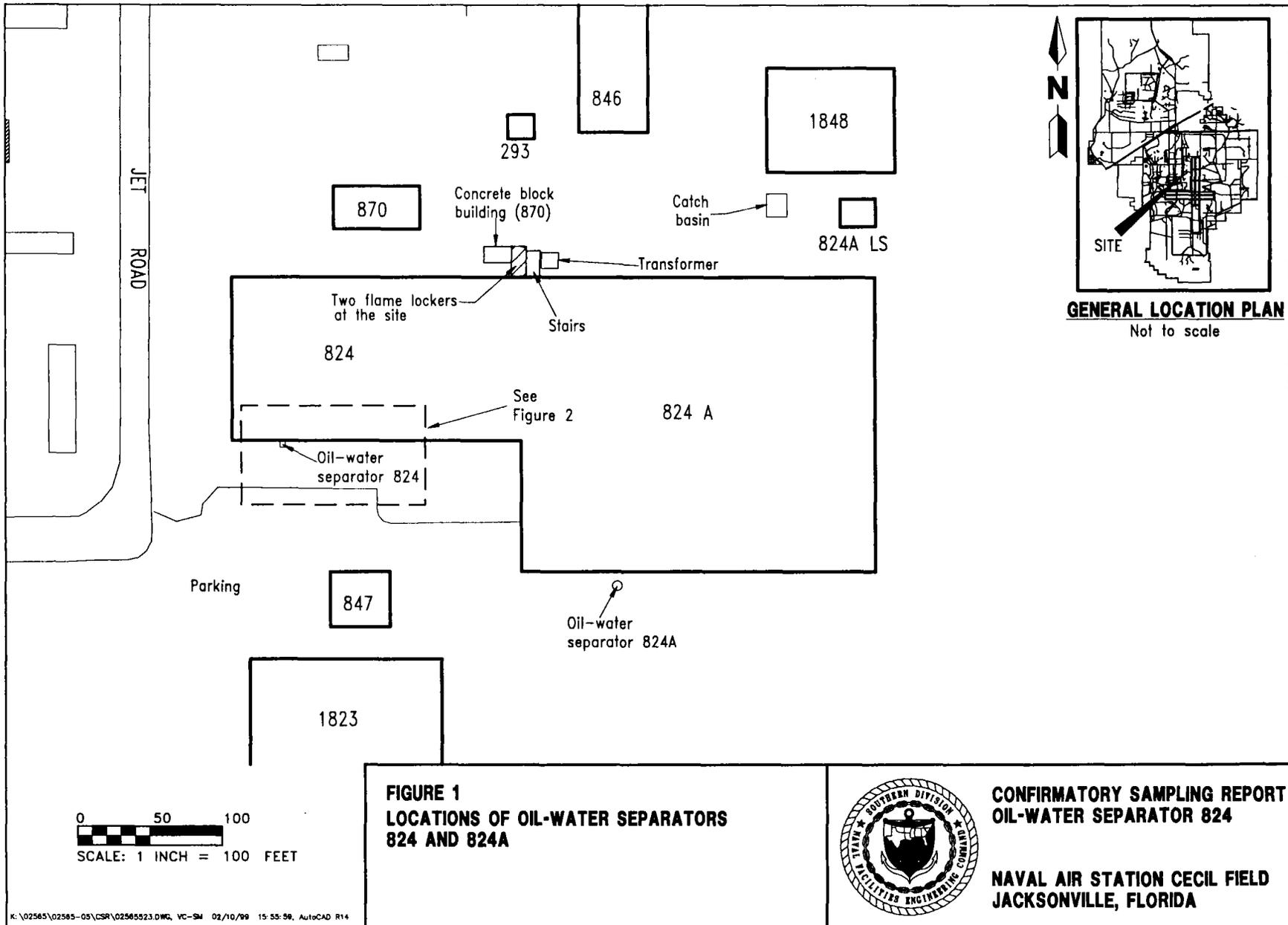
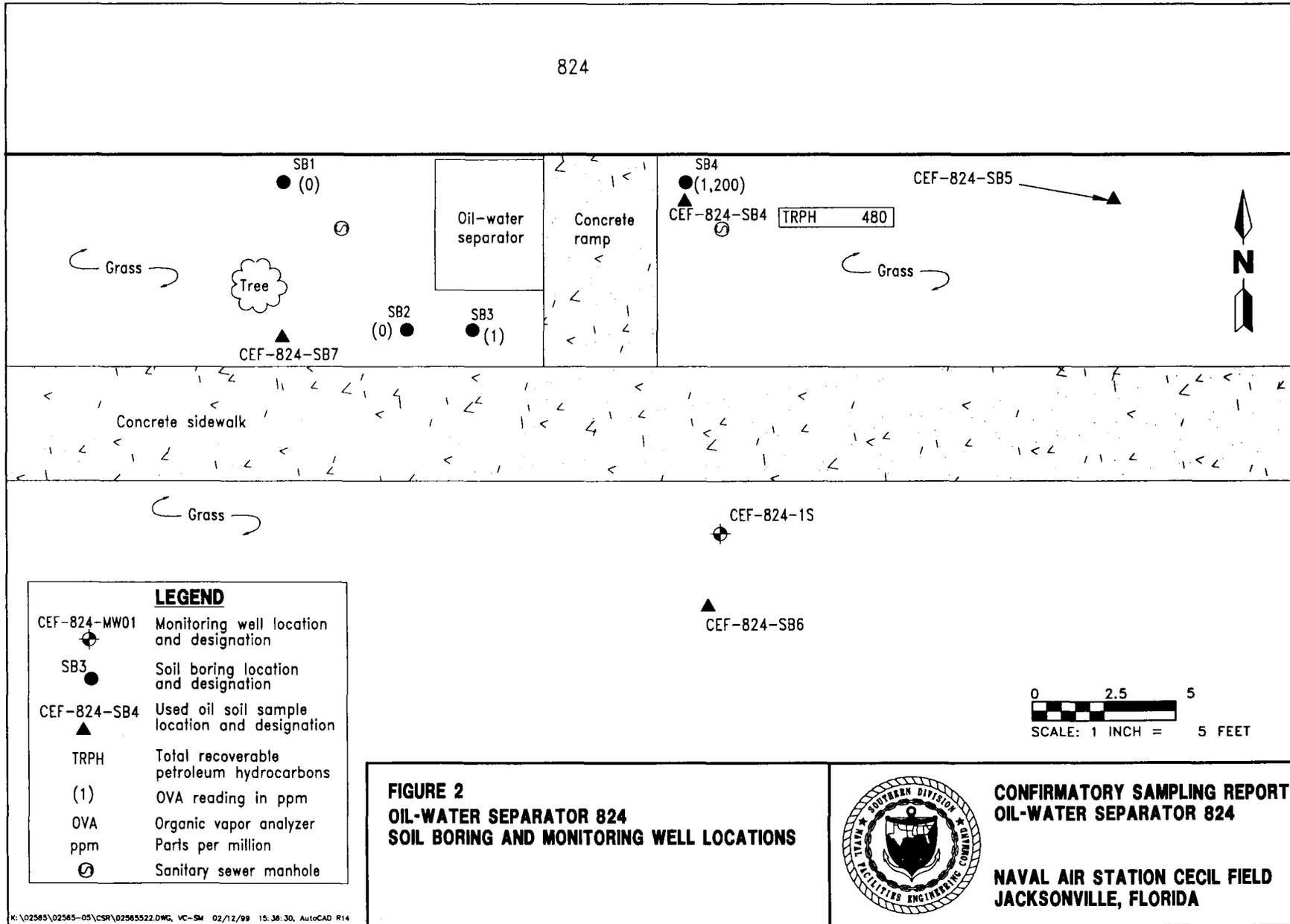


FIGURE 1
LOCATIONS OF OIL-WATER SEPARATORS
824 AND 824A



CONFIRMATORY SAMPLING REPORT
OIL-WATER SEPARATOR 824

NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA



3.0 SCREENING AND ANALYTICAL RESULTS

Excessively contaminated soil (greater than 50 parts per million [ppm] on an OVA) was detected in one of the four soil borings advanced during the confirmatory sampling. Soil boring SB4 had the highest OVA concentration (1,200 ppm) at a depth of 7 feet bls. The soil OVA data are summarized in Table 1 and presented on Figure 2.

TRPH was the only contaminant that was detected above Florida Department of Environmental Protection (FDEP) soil cleanup target levels in the subsurface soil samples collected for used oil analysis. Subsurface soil analytical results are summarized in Table 2 and presented in Appendix A. No contaminants were detected above FDEP groundwater cleanup target levels in the groundwater samples collected from monitoring well CEF-824-1S during the confirmatory sampling. A summary of the groundwater analytical results is presented in Table 3. The complete analytical data set is presented in Appendix B.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Data obtained during the confirmatory sampling of oil-water separator 824-OW indicated the presence of soil contamination at levels above cleanup target levels. The extent of TRPH soil contamination has been delineated at the site. No contaminants were detected in groundwater sample CEF-824-1S above cleanup target levels.

Based on the presence of soil contamination above cleanup target levels, it is recommended that additional action take place at the oil-water separator site.

**Table 1
Soil Screening Results**

Confirmatory Sampling Report
Building 824, Oil-Water Separator 824-OW
Naval Air Station Cecil Field
Jacksonville, Florida

Location	OVA Concentration (ppm)			
	Depth (feet bls)	Unfiltered	Filtered	Actual
SB1	1	0	--	0
	3	0	--	0
	5	0	--	0
	7 (wet)	2	0	0
SB2	1	0	--	0
	3	0	--	0
	5	0	--	0
	7 (moist)	0	--	0
	8 (wet)	0	--	0
SB3	1	0	0	0
	3	0	0	0
	5	1	0	1
	7	1	0	1
	7.5 (wet)	0	--	0
SB4	1	0	--	0
	3	0	--	0
	5 (moist)	2	0	2
	7 (moist)	1,200	0	1,200
	7.5 (wet)	450	0	450

Notes: Soil samples were filtered with carbon to determine the methane concentration.

OVA = organic vapor analyzer.

ppm = parts per million.

bls = below land surface.

-- = filtered readings were not collected.

wet = soil sample was completely saturated when analyzed.

moist = soil sample was partially saturated when analyzed.

Table 2
Summary of Subsurface Soil Analytical Detections

Confirmatory Sampling Report
Building 824, Oil-Water Separator 824-OW
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	CEF-824-SB4 (OVA = 1,200 ppm; 7 feet bls)	CEF-824-SB5 (OVA = 0 ppm; 4 feet bls)	CEF-824-SB6 (OVA = 0 ppm; 4 feet bls)	CEF-824-SB7 (OVA = 0 ppm; 4 feet bls)	Soil Cleanup Target Levels ¹
<u>Volatile Organic Aromatics (USEPA Method 8020) (mg/kg)</u>					
1,1-Dichloroethane	0.0017	NC	NC	NC	NA
Ethylbenzene	0.020	NC	NC	NC	240/0.4
Tetrachloroethene	0.017	NC	NC	NC	NA
Xylenes	0.105	NC	NC	NC	290/0.3
<u>Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (mg/kg)</u>					
Naphthalene	0.660	NC	NC	NC	1,000/1
2-Methylnaphthalene	3.1	NC	NC	NC	NA
<u>Total Recoverable Petroleum Hydrocarbons (TRPH) (FL-PRO) (mg/kg)</u>					
TRPH	480	ND	ND	ND	350/340
<u>Inorganic Analytes (mg/kg)</u>					
Chromium	12	NC	NC	NC	290/TCLP
Lead	12 J	NC	NC	NC	500/TCLP
Mercury	0.019	NC	NC	NC	3.7/TCLP

¹ Chapter 62-770, Florida Administrative Code: Direct Exposure 1/Leachability, Table V.

Notes: Bold indicates exceedance of soil cleanup target level.

OVA = organic vapor analyzer.
ppm = parts per million.
bls = below land surface.
USEPA = U.S. Environmental Protection Agency.
mg/kg = milligrams per kilogram.
NC = not collected.
NA = not applicable.
FL-PRO = Florida-Petroleum Residual Organics.
ND = not detected.
TCLP = toxicity characteristic leaching procedure.

**Table 3
Summary of Groundwater Analytical Results**

Confirmatory Sampling Report
Building 824, Oil-Water Separator 824-OW
Naval Air Station Cecil Field
Jacksonville, Florida

Compound	CEF-824-1S	Groundwater Cleanup Target Levels ¹
<u>Volatile Organic Aromatics (USEPA Method 601/602) (µg/l)</u>		
Not detected		
<u>Polynuclear Aromatic Hydrocarbons (USEPA Method 625) (µg/l)</u>		
Not detected		
<u>Total Recoverable Petroleum Hydrocarbons (FL-PRO) (mg/l)</u>		
Not detected		
<u>Inorganic Analytes (µg/l)</u>		
Barium	24.5	2,000
Chromium	8.6 J	100
Lead	4.9	15
¹ Chapter 62-770, Florida Administrative Code.		
Notes: USEPA = U.S. Environmental Protection Agency. µg/l = micrograms per liter. FL-PRO = Florida Petroleum Residual Organics. mg/l = milligrams per liter. J = estimated value.		

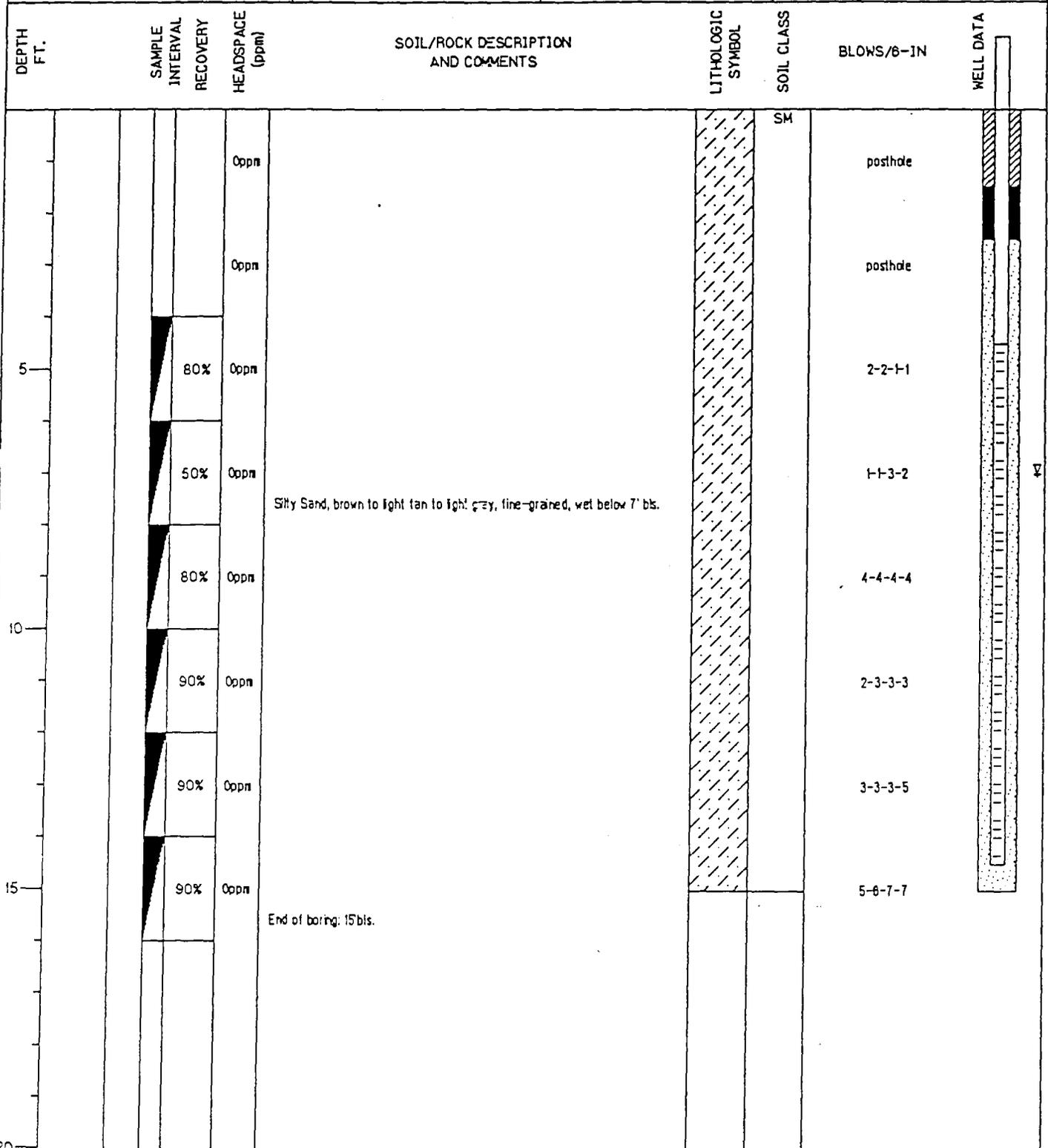
REFERENCE

ABB Environmental Services, Inc. 1994. *Base Realignment and Closure Environmental Baseline Survey Report, Naval Air Station Cecil Field, Jacksonville, Florida*. Prepared for Southern Division, Naval Facilities Engineering Command, North Charleston, South Carolina (November).



APPENDIX A
MONITORING WELL INSTALLATION DETAIL

PROJECT: NAS Cecil Field BRAC Group I & II		LOG of WELL: CEF-0824-01	BORING NO. CEF-0824-01
CLIENT: SOUTH DIV NAV FAC ENG COM	PROJECT NO: 8520.B1	DATE STARTED: 04-12-95	COMPLETED: 04-12-95
DRILLING SUBCONTRACTOR: Groundwater Protection Inc.		SITE: Building 824	MONITOR INST. Microtip-PID
METHOD: Mobil Drill B-52 w/8.25"HSA	WELL CASE DIAM.: 2"	SCREEN INT.: 4.5-14.5 FT.	SCREEN SLOT SIZE: 0.010"
TOC ELEVATION: 78.70 FT. NGVD	GROUND ELEV.: 78.8 FT. NGVD	NORTHING: 2143715.78	EASTING: 377847.99
WELL DEVELOP. DATE: 04-12-95	TOTAL DEPTH: 15 FT. BLS	DEPTH TO ∇ 7 FT. BLS	LOGGED BY: R. Holloway



APPENDIX B
ANALYTICAL DATA

NAS CECIL FIELD -- OIL/WATER SEPARATOR AT FACILITY 824
 SUBSURFACE SOIL -- VOLATILES -- REPORT REQUEST NO. 10554

Lab Sample Number: JR36663
 Site: UST GREY
 Locator: CEF-824-SB4
 Collect Date: 14-OCT-98

VALUE QUAL UNITS DL

BRAC VOLATILES

1,1,1-Trichloroethane	1 U	ug/kg	1
1,1,2,2-Tetrachloroethane	1 U	ug/kg	1
1,1,2-Trichloroethane	1 U	ug/kg	1
1,1-Dichloroethane	1.7	ug/kg	1
1,1-Dichloroethene	1 U	ug/kg	1
1,2-Dichloroethane	1 U	ug/kg	1
1,2-Dichloropropane	1 U	ug/kg	1
Benzene	1 U	ug/kg	1
Bromodichloromethane	1 U	ug/kg	1
Bromoform	1 U	ug/kg	1
Bromomethane	1 U	ug/kg	1
Carbon tetrachloride	1 U	ug/kg	1
Chlorobenzene	1 U	ug/kg	1
Chloroethane	1 U	ug/kg	1
Chloroform	1 U	ug/kg	1
Chloromethane	1 U	ug/kg	1
Dibromochloromethane	1 U	ug/kg	1
Ethyl benzene	20	ug/kg	1
Methylene chloride	30 U	ug/kg	30
Tetrachloroethene	17	ug/kg	1
Toluene	1 U	ug/kg	1
Trichloroethene	1 U	ug/kg	1
Vinyl chloride	1 U	ug/kg	1
cis-1,3-Dichloropropene	1 U	ug/kg	1
m,p-Xylene	69	ug/kg	1
o-Xylene	36	ug/kg	1
trans-1,2-Dichloroethene	1 U	ug/kg	1
trans-1,3-Dichloropropene	1 U	ug/kg	1

U = NOT DETECTED J = ESTIMATED VALUE
 UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
 R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- OIL/WATER SEPARATOR AT FACILITY 824
 SUBSURFACE SOIL -- SEMIVOLATILES -- REPORT REQUEST NO. 10911

Lab Sample Number: JR36663
 Site: UST GREY
 Locator: CEF-824-SB4
 Collect Date: 14-OCT-98

VALUE QUAL UNITS DL

BRAC SEMIVOLATILES

Phenol	390 U	ug/kg	390
bis(2-Chloroethyl)ether	390 U	ug/kg	390
1,3-Dichlorobenzene	390 U	ug/kg	390
1,4-Dichlorobenzene	390 U	ug/kg	390
1,2-Dichlorobenzene	390 U	ug/kg	390
N-Nitroso-di-n-propylamine	390 U	ug/kg	390
Nitrobenzene	390 U	ug/kg	390
Isophorone	390 U	ug/kg	390
2-Methylphenol	390 U	ug/kg	390
2-Nitrophenol	390 U	ug/kg	390
2,4-Dimethylphenol	390 U	ug/kg	390
bis(2-Chloroethoxy) methane	390 U	ug/kg	390
2,4-Dichlorophenol	390 U	ug/kg	390
1,2,4-Trichlorobenzene	390 U	ug/kg	390
Naphthalene	660	ug/kg	390
Hexachlorobutadiene	390 U	ug/kg	390
Hexachlorocyclopentadiene	390 U	ug/kg	390
Hexachloroethane	390 U	ug/kg	390
4-Chloro-3-methylphenol	390 U	ug/kg	390
2-Methylnaphthalene	3100	ug/kg	390
2,4,6-Trichlorophenol	390 U	ug/kg	390
2-Chloronaphthalene	390 U	ug/kg	390
Dimethylphthalate	390 U	ug/kg	390
Acenaphthylene	390 U	ug/kg	390
2,4-Dinitrophenol	2000 U	ug/kg	2000
3- & 4-Methylphenol (2)	390 U	ug/kg	390
4-Nitrophenol	390 U	ug/kg	390
2,4-Dinitrotoluene	390 U	ug/kg	390
Diethylphthalate	390 U	ug/kg	390
4-Chlorophenyl-phenylether	390 U	ug/kg	390
Fluorene	390 U	ug/kg	390
4,6-Dinitro-2-methylphenol	1200 U	ug/kg	1200
4-Bromophenyl-phenylether	390 U	ug/kg	390
Hexachlorobenzene	390 U	ug/kg	390
Pentachlorophenol	390 U	ug/kg	390
Phenanthrene	390 U	ug/kg	390
Pyrene	390 U	ug/kg	390
Anthracene	390 U	ug/kg	390
Acenaphthene	390 U	ug/kg	390
Di-n-butylphthalate	390 U	ug/kg	390
Fluoranthene	390 U	ug/kg	390
3,3-Dichlorobenzidine	790 U	ug/kg	790
Benzo (a) anthracene	390 U	ug/kg	390
Carbazole	390 U	ug/kg	390
Chrysene	390 U	ug/kg	390
bis(2-Ethylhexyl) phthalate	390 U	ug/kg	390
Di-n-octylphthalate	390 U	ug/kg	390
Benzo (b) fluoranthene	390 U	ug/kg	390
Benzo (k) fluoranthene	390 U	ug/kg	390
Benzo (a) pyrene	390 U	ug/kg	390

NAS CECIL FIELD -- OIL/WATER SEPARATOR AT FACILITY 824
SUBSURFACE SOIL -- SEMIVOLATILES -- REPORT REQUEST NO. 10911

Lab Sample Number: JR36663
Site: UST GREY
Locator: CEF-824-SB4
Collect Date: 14-OCT-98

VALUE QUAL UNITS DL

Indeno (1,2,3-cd) pyrene	390 U	ug/kg	390
Dibenzo (a,h) anthracene	390 U	ug/kg	390
Benzo (g,h,i) perylene	390 U	ug/kg	390
2,6-Dinitrotoluene	390 U	ug/kg	390
4-Chloroaniline	390 U	ug/kg	390
2-Nitroaniline	390 U	ug/kg	390
3-Nitroaniline	390 U	ug/kg	390
4-Nitroaniline	390 U	ug/kg	390

U = NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- OIL/WATER SEPARATOR AT FACILITY 824
SUBSURFACE SOIL -- INORGANICS -- REPORT REQUEST NO. 10910

Lab Sample Number: JR36663
Site: UST GREY
Locator: CEF-824-SB4
Collect Date: 14-OCT-98

VALUE QUAL UNITS DL

RCRA 8

Arsenic	.6 U	mg/kg	.6
Barium	24 U	mg/kg	24
Cadmium	1 U	mg/kg	1
Chromium	12	mg/kg	1
Lead	12 J	mg/kg	8
Mercury	.019	mg/kg	.01
Selenium	2 U	mg/kg	2
Silver	2 U	mg/kg	2

U = NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- OIL/WATER SEPARATOR AT FACILITY 824
 SUBSURFACE SOIL -- TPH -- REPORT REQUEST NO. 10908

Lab Sample Number:	JR36663	JR52911	JR52912	JR52913								
Site	UST GREY	UST GREY	UST GREY	UST GREY								
Locator	CEF-824-SB4	CEF-824-SB5	CEF-824-SB6	CEF-824-SB7								
Collect Date:	14-OCT-98	03-FEB-99	03-FEB-99	03-FEB-99								
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

FLA PRO												
TPH C8-C40	480	mg/kg	78	71	mg/kg	8.4	7.6 U	mg/kg	7.6	7.7 U	mg/kg	7.7

U = NOT DETECTED J = ESTIMATED VALUE
 UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
 R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- OIL/WATER SEPARATOR 8240W
GROUNDWATER -- ANALYTICAL DATA -- REPORT REQUEST NO. 10700

Lab Sample Number: 713782
Site: CECILBRAC1
Locator: 09G00101
Collect Date: 05-MAY-95

VALUE QUAL UNITS DL

beta-BHC	.05 U	ug/l	.05
delta-BHC	.05 U	ug/l	.05
gamma-BHC (Lindane)	.05 U	ug/l	.05
Heptachlor	.05 U	ug/l	.05
Aldrin	.05 U	ug/l	.05
Heptachlor epoxide	.0059 J	ug/l	.05
Endosulfan I	.05 U	ug/l	.05
Dieldrin	.0034 J	ug/l	.1
4,4-DDE	.1 U	ug/l	.1
Endrin	.1 U	ug/l	.1
Endosulfan II	.1 U	ug/l	.1
4,4-DDD	.1 U	ug/l	.1
Endosulfan sulfate	.1 U	ug/l	.1
4,4-DDT	.1 U	ug/l	.1
Methoxychlor	.5 U	ug/l	.5
Endrin ketone	.1 U	ug/l	.1
Endrin aldehyde	.1 U	ug/l	.1
alpha-Chlordane	.05 U	ug/l	.05
gamma-Chlordane	.0016 J	ug/l	.05
Toxaphene	5 U	ug/l	5
Aroclor-1016	1 U	ug/l	1
Aroclor-1221	2 U	ug/l	2
Aroclor-1232	1 U	ug/l	1
Aroclor-1242	1 U	ug/l	1
Aroclor-1248	1 U	ug/l	1
Aroclor-1254	1 U	ug/l	1
Aroclor-1260	1 U	ug/l	1
CLP METALS AND CYANIDE			
Aluminum	10200	ug/l	200
Antimony	1.9 U	ug/l	1.9
Arsenic	3.2 U	ug/l	3.2
Barium	24.5 J	ug/l	200
Beryllium	.2 U	ug/l	.2
Cadmium	.3 U	ug/l	.3
Calcium	76800	ug/l	5000
Chromium	8.6 J	ug/l	10
Cobalt	.6 U	ug/l	.6
Copper	1.9 J	ug/l	25
Iron	5850	ug/l	100
Lead	4.9	ug/l	3
Magnesium	5130	ug/l	5000
Manganese	72.4	ug/l	15
Mercury	.2 U	ug/l	.2
Nickel	3.2 J	ug/l	40
Potassium	712 J	ug/l	5000
Selenium	4.4 U	ug/l	4.4
Silver	.5 U	ug/l	.5
Sodium	3440 J	ug/l	5000
Thallium	4.5 U	ug/l	4.5
Vanadium	8.9 J	ug/l	50
Zinc	13.4 UJ	ug/l	13.4

NAS CECIL FIELD -- OIL/WATER SEPARATOR 8240W
GROUNDWATER -- ANALYTICAL DATA -- REPORT REQUEST NO. 10700

Lab Sample Number: 713782
Site CECILBRAC1
Locator 09G00101
Collect Date: 05-MAY-95
VALUE QUAL UNITS DL

Cyanide 10 U ug/l 10

U = NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- OIL/WATER SEPARATOR AT FACILITY 824
GROUNDWATER -- TPH -- REPORT REQUEST NO. 10909

Lab Sample Number: JR505313
Site: UST GREY
Locator: CEF-824-1S
Collect Date: 20-JAN-99

VALUE	QUAL	UNITS	DL
-------	------	-------	----

FLA PRO			
TPH C8-C40	.2 U	mg/l	.2

U = NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NEW DOCUMENT



CONFIRMATORY SAMPLING REPORT
BUILDING 824A, OIL-WATER SEPARATOR 824A-OW
BASE REALIGNMENT AND CLOSURE
UNDERGROUND STORAGE TANK AND
ABOVEGROUND STORAGE TANK GRAY SITES
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Unit Identification Code: N60200

Contract No.: N62467-89-D-0317/149

Prepared by:

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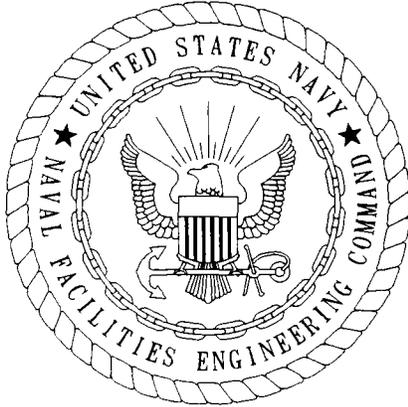
Prepared for:

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

Bryan Kizer, Code 1842, Engineer-in-Charge

April 1999

Revision 0.0



CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

The Contractor, Harding Lawson Associates, hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0317/149 are complete and accurate and comply with all requirements of this contract.

DATE: April 6, 1999

NAME AND TITLE OF CERTIFYING OFFICIAL: Rao Angara
Task Order Manager

NAME AND TITLE OF CERTIFYING OFFICIAL: Eric A. Blomberg, P.G.
Project Technical Lead

(DFAR 252.227-7036)

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Building 824A, Oil-Water Separator 824A-OW
Naval Air Station Cecil Field
Jacksonville, Florida

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- Appendix B: Analytical Data

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Building 824A, Oil-Water Separator 824A-OW
Naval Air Station Cecil Field
Jacksonville, Florida

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GLOSSARY

bls	below land surface
FDEP	Florida Department of Environmental Protection
NAS	Naval Air Station
OVA	organic vapor analyzer



1.0 INTRODUCTION

Harding Lawson Associates, under contract to the Southern Division, Naval Facilities Engineering Command, has completed confirmatory sampling for oil-water separator 824A-OW at Naval Air Station (NAS) Cecil Field in Jacksonville, Florida. This report summarizes the related field operations, results, conclusions, and recommendations.

Oil-water separator 824A-OW is located on the south side of Building 824A, the avionics shop (ABB Environmental Services, Inc., 1994) (Figure 1). The installation date and capacity of the oil-water separator are unknown.

2.0 FIELD INVESTIGATION

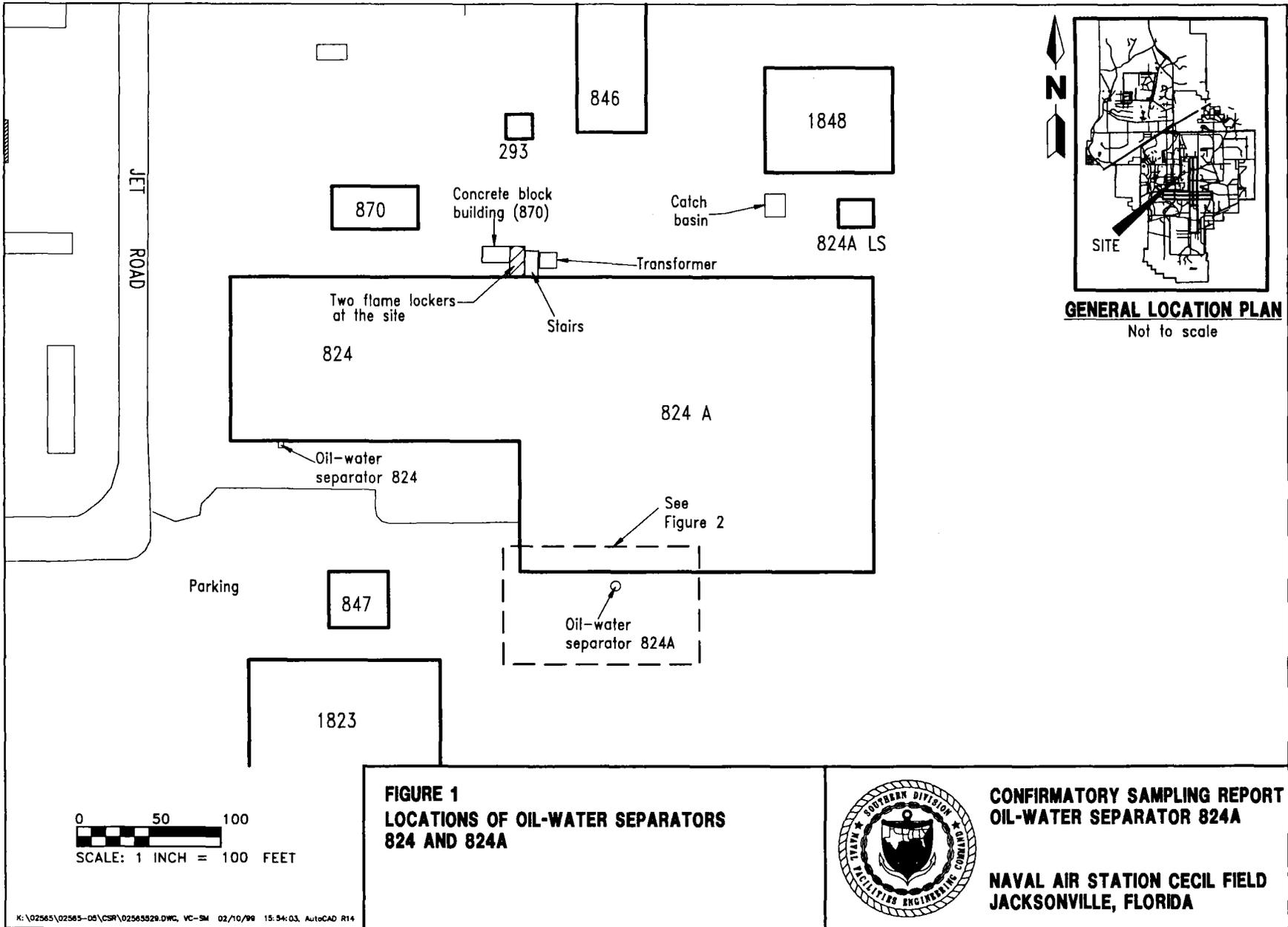
The confirmatory sampling for oil-water separator 824A-OW was initiated in September 1998 and included

- the advancement of four soil borings to the water table,
- the installation of one monitoring well, and
- collection and analysis of one groundwater sample and one subsurface soil sample.

Soil samples were collected from each boring at depth intervals of 1 foot below land surface (bls) and every 2 feet thereafter to the water table. These samples were screened for hydrocarbon vapors with an organic vapor analyzer (OVA).

One subsurface soil sample was collected on October 14, 1998, and analyzed for the used oil group parameters. Sample CEF-824A-SB2 was collected from 3 feet bls at the location of soil screening boring SB2.

One monitoring well, CEF-824A-1S, was hand-installed downgradient of the oil-water separator. Too many underground utilities were present at Site 824A-OW to install the monitoring well with a drill rig. The downgradient location was selected based on the U.S. Geological Survey groundwater model for NAS Cecil Field. A groundwater sample was collected from this well and analyzed for the used oil group parameters. A filtered sample (for inorganics) was also collected because the well could not produce enough water even with the low-flow purging technique. A general site plan indicating the location of the soil borings and monitoring wells is presented on Figure 2. The monitoring well installation detail is included in Appendix A.



**FIGURE 1
LOCATIONS OF OIL-WATER SEPARATORS
824 AND 824A**



**CONFIRMATORY SAMPLING REPORT
OIL-WATER SEPARATOR 824A**

**NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA**

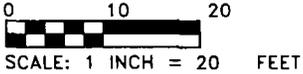
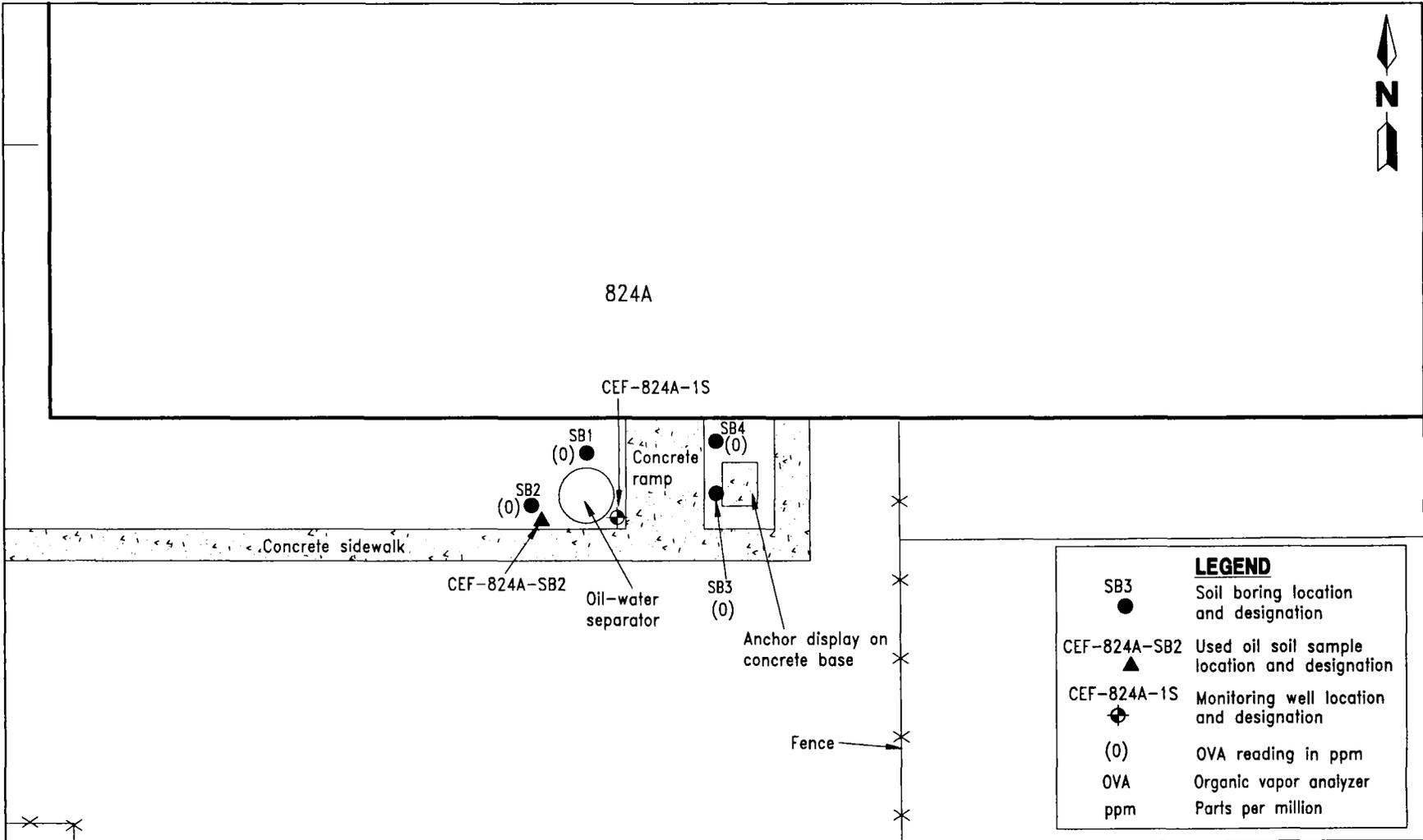


FIGURE 2
OIL-WATER SEPARATOR 824A
SOIL BORING AND MONITORING WELL LOCATIONS



CONFIRMATORY SAMPLING REPORT
OIL-WATER SEPARATOR 824A

NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

3.0 SCREENING AND ANALYTICAL RESULTS

Excessively contaminated soil (greater than 50 parts per million on an OVA) was not detected in any of the four soil borings advanced during the confirmatory sampling. The soil OVA data are summarized in Table 1 and presented on Figure 2.

No contaminants were detected above Florida Department of Environmental Protection (FDEP) soil cleanup target levels in the subsurface soil sample collected for used oil analysis. Subsurface soil analytical results are summarized in Table 2 and presented in Appendix A. No contaminants (with the exception of lead) were detected above FDEP groundwater cleanup target levels in the groundwater samples collected from monitoring well CEF-824A-1S during the confirmatory sampling. However, lead was not detected in the filtered groundwater sample. A summary of the groundwater analytical results is presented in Table 3. The complete analytical data set is presented in Appendix B.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Data obtained during the confirmatory sampling of oil-water separator 824A-OW did not indicate the presence of soil or groundwater contamination (with the exception of lead in groundwater) at levels above cleanup target levels.

It is recommended that no further action take place at the 824A-OW oil-water separator site until it is removed.

**Table 1
Soil Screening Results**

Confirmatory Sampling Report
Building 824A, Oil-Water Separator 824A-OW
Naval Air Station Cecil Field
Jacksonville, Florida

Location	OVA Concentration (ppm)			
	Depth (feet bls)	Unfiltered	Filtered	Actual
SB1	1	0	--	0
	3	0	--	0
	3.5 (wet)	0	--	0
SB2	1	0	--	0
	3	0	--	0
	4.5 (refusal)	0	--	0
SB3	1	0	--	0
	3	0	--	0
	4 (wet)	0	--	0
SB4	1	0	--	0
	3	0	--	0
	4 (moist)	0	--	0
	5.5 (moist)	0	0	0
	6 (wet)	0	0	0

Notes: Soil samples were filtered with carbon to determine the methane concentration.

OVA = organic vapor analyzer.

ppm = parts per million.

bls = below land surface.

-- = filtered readings were not collected.

wet = soil sample was completely saturated when analyzed.

refusal = subsurface obstruction encountered during boring advancement; no further samples collected at this location.

moist = soil sample was partially saturated when analyzed.

Table 2
Summary of Subsurface Soil Analytical Detections

Confirmatory Sampling Report
 Building 824A, Oil-Water Separator 824A-OW
 Naval Air Station Cecil Field
 Jacksonville, Florida

Compound	CEF-824A-SB2 (OVA = 0 ppm; 3 feet bls)	Soil Cleanup Target Levels ¹
<u>Volatile Organic Aromatics (USEPA Method 8020) (mg/kg)</u>		
1,1-Dichloroethane	0.0022	NA
Tetrachloroethene	0.013	NA
<u>Polynuclear Aromatic Hydrocarbons (USEPA Method 8310) (mg/kg)</u>		
Not detected		
<u>Total Recoverable Petroleum Hydrocarbons (FL-PRO) (mg/kg)</u>		
Not detected		
<u>Inorganic Analytes (mg/kg)</u>		
Chromium	9	290/TCLP
Lead	9 J	500/TCLP
Mercury	0.06	3.7/TCLP

¹ Chapter 62-770, Florida Administrative Code: Direct Exposure 1/Leachability, Table V.

Notes: OVA = organic vapor analyzer.
 ppm = parts per million.
 bls = below land surface.
 USEPA = U.S. Environmental Protection Agency.
 mg/kg = milligrams per kilogram.
 NA = not applicable.
 FL-PRO = Florida-Petroleum Residual Organics.
 TCLP = toxicity characteristic leaching procedure.

Table 3
Summary of Groundwater Analytical Results

Confirmatory Sampling Report
 Building 824A, Oil-Water Separator 824A-OW
 Naval Air Station Cecil Field
 Jacksonville, Florida

Compound	CEF-824A-1S	Groundwater Cleanup Target Levels ¹
<u>Volatile Organic Aromatics (USEPA Method 601/602) (µg/l)</u>		
Not detected		
<u>Polynuclear Aromatic Hydrocarbons (USEPA Method 625) (µg/l)</u>		
Not detected		
<u>Total Recoverable Petroleum Hydrocarbons (FL-PRO) (mg/l)</u>		
Not detected		
<u>Inorganic Analytes (µg/l)</u>		
Arsenic	17/ND	50
Barium	120/ND	2,000
Cadmium	2.2/ND	5
Chromium	64/ND	100
Lead	81/ND	15
¹ Chapter 62-770, Florida Administrative Code. Notes: USEPA = U.S. Environmental Protection Agency. µg/l = micrograms per liter. NA = not applicable. FL-PRO = Florida-Petroleum Residual Organics. mg/l = milligrams per liter. bold = exceeds cleanup target level.		

REFERENCE

ABB Environmental Services, Inc. 1994. *Base Realignment and Closure Environmental Baseline Survey Report, Naval Air Station Cecil Field, Jacksonville, Florida*. Prepared for Southern Division, Naval Facilities Engineering Command, North Charleston, South Carolina (November).

APPENDIX A
MONITORING WELL INSTALLATION DETAIL

TITLE: NAS Cecil Field, Bldg. 824A Site Assessment Report		LOG of WELL: CEF-824A-IS	BORING NO. CEF-824A-IS
CLIENT: SOUTHVIETNAMVAFACENCOM		PROJECT NO: 02523-13	
CONTRACTOR: U.S. Probe and Drill		DATE STARTED: 01-27-99	COMPLTD: 01-27-99
METHOD: HA	CASE SIZE: 2in.	SCREEN INT.: 4.4-9.4 FT.	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: FID	TOT DPTH: 10.0FT.	DPTH TO ∇ 7.75 FT.
LOGGED BY: H.Hooper	WELL DEVELOPMENT DATE: 02-05-99		SITE: Building 824A

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
1				<> See Note		SM		posthole
2			0	SILTY SAND: light brown to brown silty fine sand.				
3								
4								posthole
5								
6			0	SILTY SAND: light brown to brown silty fine sand.				* **
7			60					
8								
9			0					
10				<> Soil description taken from posthole and auger * no split spoon samples taken ** OVA readings taken at borehole				
11								
12								

APPENDIX B
ANALYTICAL DATA

NAS CECIL FIELD -- OIL/WATER SEPARATOR AT FACILITY 824A
 SUBSURFACE SOIL -- ANALYTICAL DATA -- REPORT REQUEST NO. 10569

Lab Sample Number: JR36662
 Site: UST GREY
 Locator: CEF-824A-SB2
 Collect Date: 14-OCT-98

VALUE QUAL UNITS DL

BRAC VOLATILES

1,1,1-Trichloroethane	1 U	ug/kg	1
1,1,2,2-Tetrachloroethane	1 U	ug/kg	1
1,1,2-Trichloroethane	1 U	ug/kg	1
1,1-Dichloroethane	2.2	ug/kg	1
1,1-Dichloroethene	1 U	ug/kg	1
1,2-Dichlorobenzene	390 U	ug/kg	390
1,2-Dichloroethane	1 U	ug/kg	1
1,2-Dichloropropane	1 U	ug/kg	1
1,3-Dichlorobenzene	390 U	ug/kg	390
1,4-Dichlorobenzene	390 U	ug/kg	390
Benzene	1 U	ug/kg	1
Bromodichloromethane	1 U	ug/kg	1
Bromoform	1 U	ug/kg	1
Bromomethane	1 U	ug/kg	1
Carbon tetrachloride	1 U	ug/kg	1
Chlorobenzene	1 U	ug/kg	1
Chloroethane	1 U	ug/kg	1
Chloroform	1 U	ug/kg	1
Chloromethane	1 U	ug/kg	1
Dibromochloromethane	1 U	ug/kg	1
Ethyl benzene	1 U	ug/kg	1
Methyl chloride	1 U	ug/kg	1
Tetrachloroethene	13	ug/kg	1
Toluene	1 U	ug/kg	1
Trichloroethene	1 U	ug/kg	1
Vinyl chloride	1 U	ug/kg	1
cis-1,3-Dichloropropene	1 U	ug/kg	1
m,p-Xylene	1 U	ug/kg	1
o-Xylene	1 U	ug/kg	1
trans-1,2-Dichloroethene	1 U	ug/kg	1
trans-1,3-Dichloropropene	1 U	ug/kg	1

BRAC SEMIVOLATILES

Phenol	390 U	ug/kg	390
bis(2-Chloroethyl)ether	390 U	ug/kg	390
1,3-Dichlorobenzene	390 U	ug/kg	390
1,4-Dichlorobenzene	390 U	ug/kg	390
1,2-Dichlorobenzene	390 U	ug/kg	390
N-Nitroso-di-n-propylamine	390 U	ug/kg	390
Hexachloroethane	390 U	ug/kg	390
Nitrobenzene	390 U	ug/kg	390
Isophorone	390 U	ug/kg	390
2-Nitrophenol	390 U	ug/kg	390
2,4-Dimethylphenol	390 U	ug/kg	390
bis(2-Chloroethoxy) methane	390 U	ug/kg	390
2,4-Dichlorophenol	390 U	ug/kg	390
1,2,4-Trichlorobenzene	390 U	ug/kg	390
Naphthalene	390 U	ug/kg	390
Hexachlorobutadiene	390 U	ug/kg	390
4-Chloro-3-methylphenol	390 U	ug/kg	390

NAS CECIL FIELD -- OIL/WATER SEPARATOR AT FACILITY 824A
 SUBSURFACE SOIL -- ANALYTICAL DATA -- REPORT REQUEST NO. 10569

Lab Sample Number: JR36662
 Site: UST GREY
 Locator: CEF-824A-SB2
 Collect Date: 14-OCT-98

VALUE QUAL UNITS DL

	VALUE	QUAL UNITS	DL
2-Methylnaphthalene	390 U	ug/kg	390
2,4,6-Trichlorophenol	390 U	ug/kg	390
2-Chloronaphthalene	390 U	ug/kg	390
Dimethylphthalate	390 U	ug/kg	390
Acenaphthylene	390 U	ug/kg	390
2,4-Dinitrophenol	1900 U	ug/kg	1900
3- & 4-Methylphenol (2)	390 U	ug/kg	390
4-Nitrophenol	390 U	ug/kg	390
2,4-Dinitrotoluene	390 U	ug/kg	390
Diethylphthalate	390 U	ug/kg	390
4-Chlorophenyl-phenylether	390 U	ug/kg	390
Fluorene	390 U	ug/kg	390
4,6-Dinitro-2-methylphenol	1200 U	ug/kg	1200
4-Bromophenyl-phenylether	390 U	ug/kg	390
Hexachlorobenzene	390 U	ug/kg	390
Pentachlorophenol	390 U	ug/kg	390
Phenanthrene	390 U	ug/kg	390
Anthracene	390 U	ug/kg	390
Di-n-butylphthalate	390 U	ug/kg	390
Fluoranthene	390 U	ug/kg	390
Pyrene	390 U	ug/kg	390
3,3-Dichlorobenzidine	780 U	ug/kg	780
Benzo (a) anthracene	390 U	ug/kg	390
Chrysene	390 U	ug/kg	390
bis(2-Ethylhexyl) phthalate	390 U	ug/kg	390
Di-n-octylphthalate	390 U	ug/kg	390
Benzo (b) fluoranthene	390 U	ug/kg	390
Benzo (k) fluoranthene	390 U	ug/kg	390
Benzo (a) pyrene	390 U	ug/kg	390
Indeno (1,2,3-cd) pyrene	390 U	ug/kg	390
Dibenzo (a,h) anthracene	390 U	ug/kg	390
Benzo (g,h,i) perylene	390 U	ug/kg	390
FLA PRO			
TPH C8-C40	78 U	mg/kg	78
Arsenic	.6 U	mg/kg	.6
Barium	24 U	mg/kg	24
Cadmium	1 U	mg/kg	1
Chromium	9	mg/kg	1
Lead	9 J	mg/kg	8
Mercury	.06	mg/kg	.01
Selenium	2 U	mg/kg	2
Silver	2 U	mg/kg	2

U = NOT DETECTED J = ESTIMATED VALUE
 UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
 R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- OIL/WATER SEPARATOR 824A
GROUNDWATER -- VOLATILES -- REPORT REQUEST NO. 10916

Lab Sample Number: JR54131
Site: UST GREY
Locator: CEF-824A-1S
Collect Date: 11-FEB-99

VALUE QUAL UNITS DL

BRAC VOLATILES

1,1,1-Trichloroethane	1 U	ug/l	1
1,1,2,2-Tetrachloroethane	1 U	ug/l	1
1,1,2-Trichloroethane	1 U	ug/l	1
1,1-Dichloroethane	1 U	ug/l	1
1,1-Dichloroethene	1 U	ug/l	1
1,2-Dichloroethane	1 U	ug/l	1
1,2-Dichloropropane	1 U	ug/l	1
Benzene	1 U	ug/l	1
Bromodichloromethane	1 U	ug/l	1
Bromoform	1 U	ug/l	1
Bromomethane	2 U	ug/l	2
Carbon tetrachloride	1 U	ug/l	1
Chlorobenzene	1 U	ug/l	1
Chloroethane	2 U	ug/l	2
Chloroform	1 U	ug/l	1
Chloromethane	1 U	ug/l	1
Dibromochloromethane	1 U	ug/l	1
Ethyl benzene	1 U	ug/l	1
Methylene chloride	5 U	ug/l	5
Tetrachloroethene	3 U	ug/l	3
Toluene	1 U	ug/l	1
Trichloroethene	1 U	ug/l	1
Vinyl chloride	1 U	ug/l	1
cis-1,3-Dichloropropene	1 U	ug/l	1
m,p-Xylene	2 U	ug/l	2
o-Xylene	1 U	ug/l	1
trans-1,2-Dichloroethene	1 U	ug/l	1
trans-1,3-Dichloropropene	1 U	ug/l	1

U = NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- OIL/WATER SEPARATOR 824A
 GROUNDWATER -- SEMIVOLATILES -- REPORT REQUEST NO. 10917

Lab Sample Number: JR54131
 Site: UST GREY
 Locator: CEF-824A-1S
 Collect Date: 11-FEB-99

VALUE QUAL UNITS DL

BRAC SEMIVOLATILES

Phenol	10 U	ug/l	10
bis(2-Chloroethyl)ether	10 U	ug/l	10
1,3-Dichlorobenzene	10 U	ug/l	10
1,4-Dichlorobenzene	10 U	ug/l	10
1,2-Dichlorobenzene	10 U	ug/l	10
N-Nitroso-di-n-propylamine	10 U	ug/l	10
Nitrobenzene	10 U	ug/l	10
Isophorone	10 U	ug/l	10
2-Methylphenol	10 U	ug/l	10
2-Nitrophenol	10 U	ug/l	10
2,4-Dimethylphenol	10 U	ug/l	10
bis(2-Chloroethoxy) methane	10 U	ug/l	10
2,4-Dichlorophenol	10 U	ug/l	10
1,2,4-Trichlorobenzene	10 U	ug/t	10
Naphthalene	10 U	ug/l	10
Hexachlorobutadiene	10 U	ug/l	10
Hexachlorocyclopentadiene	10 U	ug/l	10
Hexachloroethane	10 U	ug/l	10
4-Chloro-3-methylphenol	10 U	ug/l	10
2-Methylnaphthalene	10 U	ug/l	10
2,4,6-Trichlorophenol	10 U	ug/l	10
2-Chloronaphthalene	10 U	ug/l	10
Dimethylphthalate	10 U	ug/l	10
Acenaphthylene	10 U	ug/l	10
2,4-Dinitrophenol	50 U	ug/l	50
3- & 4-Methylphenol (2)	10 U	ug/l	10
4-Nitrophenol	10 U	ug/l	10
2,4-Dinitrotoluene	10 U	ug/l	10
Diethylphthalate	10 U	ug/l	10
4-Chlorophenyl-phenylether	10 U	ug/l	10
Fluorene	10 U	ug/l	10
4,6-Dinitro-2-methylphenol	30 U	ug/l	30
4-Bromophenyl-phenylether	10 U	ug/l	10
Hexachlorobenzene	10 U	ug/l	10
Pentachlorophenol	10 U	ug/l	10
Phenanthrene	10 U	ug/l	10
Pyrene	10 U	ug/t	10
Anthracene	10 U	ug/l	10
Acenaphthene	10 U	ug/l	10
Di-n-butylphthalate	10 U	ug/l	10
Fluoranthene	10 U	ug/l	10
3,3-Dichlorobenzidine	20 U	ug/l	20
Benzo (a) anthracene	10 U	ug/l	10
Carbazole	10 U	ug/l	10
Chrysene	10 U	ug/l	10
bis(2-Ethylhexyl) phthalate	10 U	ug/l	10
Di-n-octylphthalate	10 U	ug/l	10
Benzo (b) fluoranthene	10 U	ug/l	10
Benzo (k) fluoranthene	10 U	ug/l	10
Benzo (a) pyrene	10 U	ug/l	10

NAS CECIL FIELD -- OIL/WATER SEPARATOR 824A
GROUNDWATER -- SEMIVOLATILES -- REPORT REQUEST NO. 10917

Lab Sample Number: JR54131
Site: UST GREY
Locator: CEF-824A-1S
Collect Date: 11-FEB-99

VALUE	QUAL	UNITS	DL
10 U	ug/l		10
10 U	ug/l		10
10 U	ug/l		10
10 U	ug/l		10
10 U	ug/l		10
10 U	ug/l		10
10 U	ug/l		10
10 U	ug/l		10

Indeno (1,2,3-cd) pyrene
Dibenzo (a,h) anthracene
Benzo (g,h,i) perylene
2,6-Dinitrotoluene
4-Chloroaniline
2-Nitroaniline
3-Nitroaniline
4-Nitroaniline

U = NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- OIL/WATER SEPARATOR 824A
GROUNDWATER -- INORGANICS -- REPORT REQUEST NO. 10918

Lab Sample Number: JR54131
Site: UST GREY
Locator: CEF-824A-1S
Collect Date: 11-FEB-99

VALUE QUAL UNITS DL

RCRA 8

Arsenic	.017	mg/l	.01
Barium	.12	mg/l	.1
Cadmium	.0022	mg/l	.002
Chromium	.064	mg/l	.01
Lead	.081	mg/l	.005
Mercury	.0002 U	mg/l	.0002
Selenium	.02 U	mg/l	.02
Silver	.01 U	mg/l	.01

U = NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- OIL/WATER SEPARATOR 824A
GROUNDWATER -- TPH -- REPORT REQUEST NO. 10919

Lab Sample Number: JR54131
Site: UST GREY
Locator: CEF-824A-1S
Collect Date: 11-FEB-99

VALUE	QUAL	UNITS	DL
-------	------	-------	----

FLA PRO			
TPH C8-C40	.2 U	mg/l	.2

U = NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE

NAS CECIL FIELD -- UST GREY SITES
GROUNDWATER -- ANALYTICAL DATA -- REQUEST NO. 10802

Lab Sample Number: JR54351
Site: UST GREY
Locator: CEF-824A-1SF
Collect Date: 12-FEB-99

VALUE QUAL UNITS DL

RCRA 8

Arsenic	.01 U	mg/l	.01
Barium	.1 U	mg/l	.1
Cadmium	.001 U	mg/l	.001
Chromium	.01 U	mg/l	.01
Lead	.005 U	mg/l	.005
Mercury	.0002 U	mg/l	.0002
Selenium	.01 U	mg/l	.01
Silver	.01 U	mg/l	.01

U = NOT DETECTED J = ESTIMATED VALUE
UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
R = RESULT IS REJECTED AND UNUSABLE