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NAS CECIL FIELD, FL
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PROPOSED PLAN FOR OPERABLE UNIT 9 (OU 9) SITE 57 AND SITE 58 NAS CECIL FIELD
FL
7/1/2003
TETRA TECH NUS INC



Installation Restoration Program July 2003



Proposed Plan for Operable Unit 9, Sites 57 and 58 Naval Air Station Cecil Field Jacksonville, Florida

Facility Description

Naval Air Station (NAS) Cecil Field (see Figure 1) was established in 1941 and provided facilities, services, and material support for naval operations. NAS Cecil Field was added to the **National Priorities List (NPL)** in 1989. In July 1993, the Base Realignment and Closure (BRAC) Commission recommended the closure of the Air Station. On September 30, 1999, NAS Cecil Field was closed and the majority of the flightline was transferred to the Jacksonville Airport Authority. In September 2000, most of the remainder of NAS Cecil Field was transferred to the City of Jacksonville.

Site Description

Operable Unit (OU) 9, Sites 57 and 58, is located in the central portion of the Main Base, west of the north-south runway. Both sites are flat and mostly paved. Site 57 includes Buildings 293, 817, 824, 824A, 824ALS, 825, 825LS, 841, 846, 852, 870, and 1848, all of which were used for aircraft maintenance (see Figure 2). Site 57 also includes the Day Tank 1 area where a 200,000-gallon above-ground jet fuel storage tank and 24,000 tons of surrounding petroleum contaminated soil were removed in 1999. Although it is physically located within Site 57, the Day Tank 1 area is currently being investigated and remediated as part of the Petroleum Program and is thus not included in this Proposed Plan. Site 58 includes Building 312, which was a corrosion control facility with a wash rack, an oil-water separator, and an underground storage tank (UST) and Building 312LS, which was a sanitary wastewater lift station (see Figure 3). Currently, Sites 57 and 58 are used for commercial aviation-related activities. In the future, Sites 57 and 58 will be used for commercial and industrial purposes. Current and future site uses were taken into consideration in the remedy selection process.

Site 57 activities have resulted in contamination of the **surficial aquifer** groundwater with chlorinated **volatile organic compounds (VOCs)** [1,1-dichloroethane (1,1-DCA), 1,1-dichloroethene (1,1-DCE), cis-1,2-DCE, and trichloroethene (TCE)]; benzene, toluene, ethylbenzene, and xylenes (BTEX); **polynuclear aromatic hydrocarbons (PAHs)** (naphthalene, and 1- and 2-methylnaphthalene); and **total recoverable hydrocarbons (TRPH)**. Two discrete and partially overlapping groundwater **contaminant plumes** have been identified at Site 57 as the Petroleum Plume and the TCE Plume (see Figure 2). The volumes of these two plumes have been estimated at approximately 7,900,000 and 5,000,000 gallons, respectively.

Site 58 activities have resulted in contamination of soil with **PAHs** that were evaluated collectively as benzo(a)pyrene equivalents (BaPEq) to estimate site risks. Approximately 180 cubic yards (yd³) of contaminated Site 58 soil will be remediated as part of the Petroleum Program. Site activities have also resulted in contamination of the **surficial aquifer** groundwater with several **VOCs** [1,1-DCA, 1,1-DCE, 1,1,1-trichloroethane (1,1,1-TCA), and xylenes], one **PAH** (naphthalene), and **TRPH**. A single groundwater **contaminant plume** has been identified at Site 58 as the Naphthalene Plume (see Figure 3). The volume of this plume has been estimated at approximately 500,000 gallons.

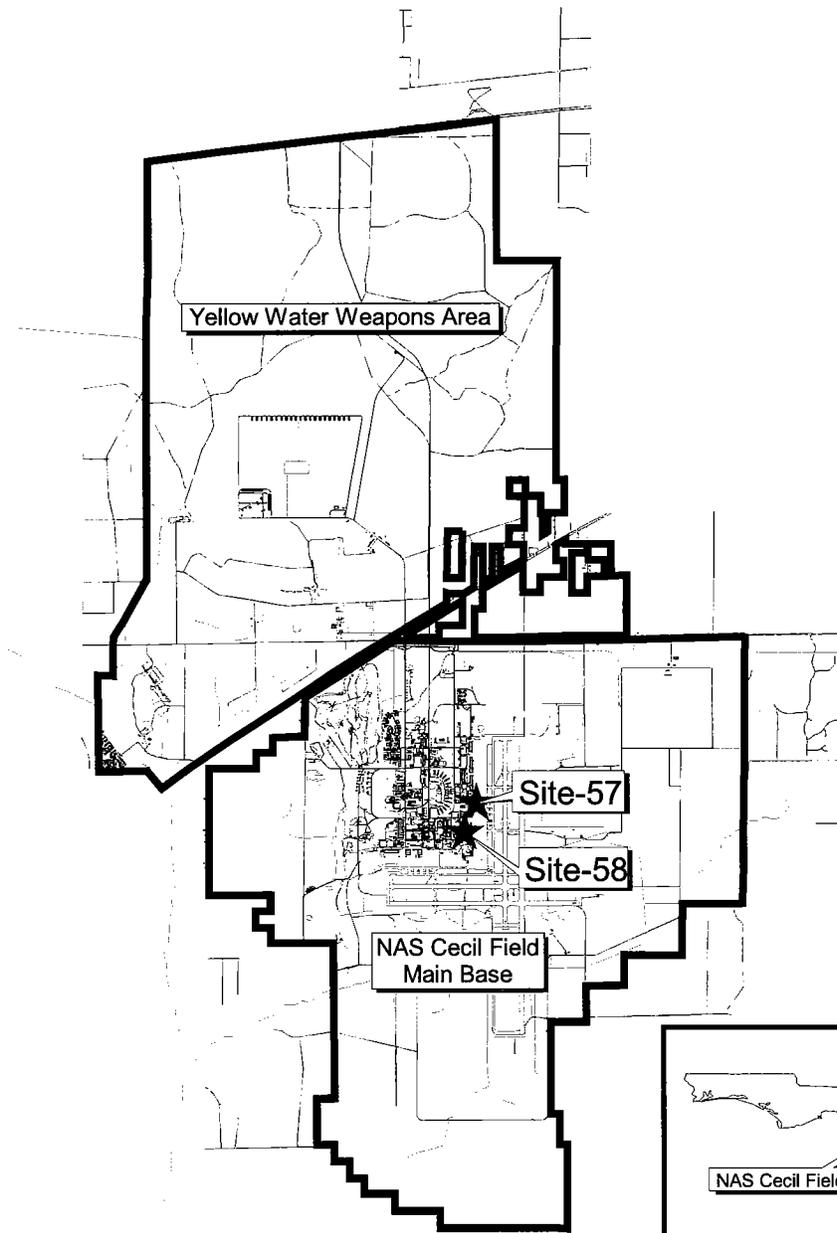
The Proposed Cleanup Plan

To address contaminated groundwater at Sites 57 and 58, the Navy and United States Environmental Protection Agency (U.S. EPA), in consultation with the Florida Department of Environmental Protection (FDEP), propose the following:

- Implementation of **land use controls (LUCs)** to restrict use of the **surficial aquifer** groundwater at Sites 57 and 58. Continued implementation of these controls would be verified by annual site inspections.
- Monitoring of groundwater quality to evaluate decreases in contaminant concentrations through naturally-occurring processes and to verify that contamination is not migrating past selected compliance wells.
- Performance of a site review every 5 years to verify the continued adequacy of the proposed remedy. If this is not the case, another cleanup approach may be implemented.

*This document summarizes the cleanup plan proposed by the Navy and U.S. EPA in consultation with FDEP. For detailed information on the options evaluated for OU 9, Sites 57 and 58, consult the documents contained within the **Administrative Record**, which is available for review at the Information Repository located at Building 907, 13357 Lake Newman Street, Cecil Commerce Center, Jacksonville, Florida, 32252, Tel (904) 573-0336.*

Bolded terms throughout this Proposed Plan are explained in the Glossary of Terms presented on pages 11 and 12.



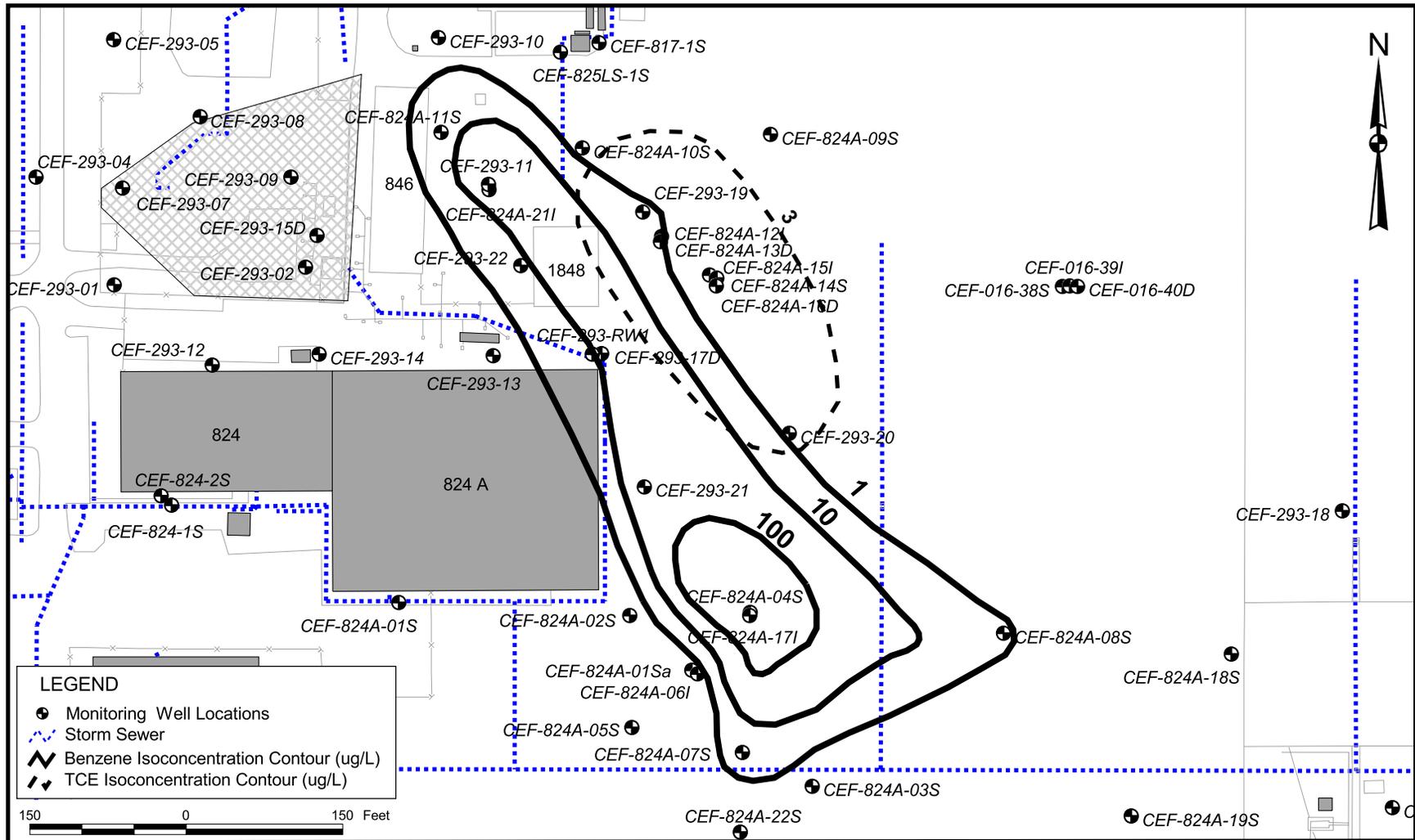
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SITE LOCATION MAP, SITES 57 AND 58
OU 9, SITES 57 & 58 - PROPOSED PLAN
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

CONTRACT NUMBER 0039	
APPROVED BY <i>[Signature]</i>	DATE 04/15/03
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LEGEND

- Monitoring Well Locations
- Storm Sewer
- ~ Benzene Isoconcentration Contour (ug/L)
- ~ TCE Isoconcentration Contour (ug/L)



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SITE 57
 OU 9, SITES 57 & 58 - PROPOSED PLAN
 NAVAL AIR STATION CECIL FIELD
 JACKSONVILLE, FLORIDA

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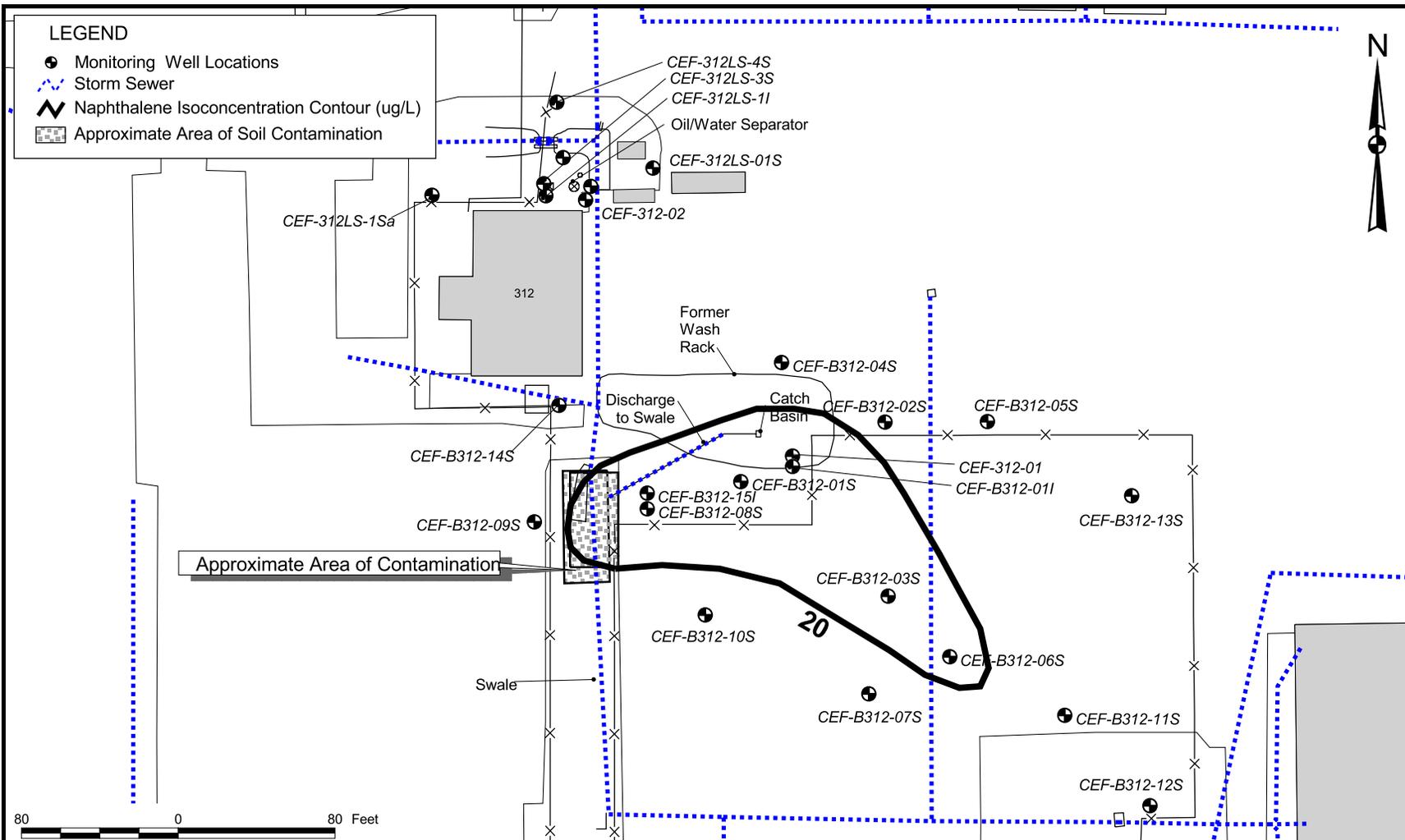
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LEGEND

- Monitoring Well Locations
- Storm Sewer
- ~ Naphthalene Isoconcentration Contour (ug/L)
- ▨ Approximate Area of Soil Contamination



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COST/SCHEDULE-AREA	
SCALE	
AS NOTED	



SITE 58
 OU 9, SITES 57 & 58 - PROPOSED PLAN
 NAVAL AIR STATION CECIL FIELD
 JACKSONVILLE, FLORIDA

CONTRACT NUMBER	
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FIGURE 3	0

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July 2003

About This Document

In accordance with Section 117(a) of the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)**, and Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), this document summarizes the Navy's proposal for site cleanup to help the public understand and comment on the proposed alternatives. This Proposed Plan has been developed by the Navy and U.S. EPA in consultation with FDEP. These agencies, in consultation with the **Restoration Advisory Board (RAB)** will select final remedies for **OU 9**, Sites 57 and 58 after public comments have been addressed. One of the purposes of this Proposed Plan is to solicit the public's views and comments on the alternatives described. The Navy and U.S. EPA in consultation with FDEP may modify the Preferred Alternative that constitutes the proposed cleanup plan or select another response action presented in this Proposed Plan based on new information or public comments. Therefore the public is encouraged to review and comment on all alternatives presented in this Proposed Plan. This Proposed Plan highlights the key information from the **Remedial Investigation (RI)** and **Feasibility Study (FS)** reports, but is not a substitute for these documents. More complete information can be found in the **RI** and **FS** reports and other documents within the **Administrative Record** located at the Information Repository (see Page 13 for details).

What do you think?

The Navy, as the lead agency, is accepting formal public comments on this Proposed Plan from July 14, 2003 to August 13, 2003. You don't have to be a technical expert to comment. If you have a concern or preference, the Navy, U.S. EPA, and FDEP want to hear it before making a final decision on how to protect your community. To comment formally:

Offer oral comments during the comment portion of the public hearing, if such a hearing is requested (see page 13 for details).

Send written comments postmarked no later than August 13, 2003 to:

Commander
Department of the Navy
Southern Division
Naval Facilities Engineering Command
Attn: Jeffrey Meyers, P.E., CHMM (Code ES3)
2155 Eagle Drive
North Charleston, SC 29406
Tel: 843-820-5609

E-mail comments by August 13, 2003 to:

meyersjg@efdsouth.navfac.navy.mil

Site History

Following is a brief history of environmental investigations and remediation at Sites 57 and 58:

- 1996 to 1997 – A contamination assessment documented soil and groundwater contamination, and a Remedial Action Plan (RAP) was prepared for removal of Day Tank 1 and installation of a biosparging system.
- 1999 to 2000 – Day Tank 1 and 24,000 tons of surrounding contaminated soil were removed in November 1999, and a biosparging system was installed and started in that area in February 2000.
- 1998 to 2002 – Several groundwater investigations were conducted to define the nature and extent of groundwater contamination at Sites 57 and 58. An ongoing quarterly groundwater monitoring program was established to evaluate the performance of the Day Tank 1 biosparging system.
- 2001 to 2002 – Sites 57 and 58 **RI**. Additional groundwater investigations were conducted to fully delineate the horizontal and vertical extent of groundwater contamination. A **preliminary risk evaluation (PRE)** was performed to assess human health and ecological risks. An investigation was also conducted to delineate an area of free floating product previously detected at Site 57 in the vicinity of Building 846, and which will be remediated under the Petroleum Program. Several wells at Sites 57 and 58 were also tested to estimate hydraulic conductivity and transmissivity in the shallow zone of the **surficial aquifer**.
- 2002 – Sites 57 and 58 **FS**. Based on the results of previous investigations, soil and groundwater **chemicals of concern (COCs)** were identified and **cleanup goals** were established. Soil and groundwater remedial technologies were screened and, remedial alternatives were assembled, analyzed, and compared against each other.

Summary of Site Risks

The **RI** indicated that the only soil contamination present at Site 57, was associated with Day Tank 1 and is being evaluated under the Petroleum Program. The **PRE** indicated that adverse human health effects could result from exposure to the soil at Site 58 under a hypothetical residential land use scenario. These adverse effects are associated with soil concentrations of **PAHs** greater than FDEP residential Soil Cleanup Target Levels (SCTLs).

Ingestion of groundwater from the **surficial aquifer** beneath Sites 57 and 58 could result in adverse human health effects. These adverse effects are associated with Site 57 concentrations of chlorinated **VOCs**, **BTEX**, **PAHs**, and **TRPH** and Site 58 concentrations of **VOCs**, **PAHs**, and **TRPH** greater than FDEP Groundwater Cleanup Target Levels (GCTLs). The proposed cleanup plan would prevent exposure to contaminated groundwater that could result in adverse human health effects by implementing **land use controls (LUCs)** to prevent the use of the surficial aquifer as a source of potable water and by monitoring naturally occurring decreases in concentrations of **COCs**.

The ecological risk assessment performed as part of the **RI** established that Sites 57 and 58 consist primarily of buildings and parking lots that provide an ecological habitat of very marginal quality of little use to terrestrial wildlife. Therefore, the **RI** concluded that contamination at Sites 57 and 58 does not present any significant ecological risk.

Why is Cleanup Needed?

The Navy's studies of **OU 9**, Sites 57 and 58 have resulted in the following conclusion:

- As a result of past activities, several chemicals are present in the groundwater of the **surficial aquifer** at both Sites 57 and 58 that could result in unacceptable human health risk in the case of a hypothetical future use of that aquifer for drinking purposes.

It is the judgement of the Navy and U.S. EPA, in consultation with FDEP, that the preferred cleanup plan identified in this Proposed Plan is necessary to protect public health and welfare from actual or threatened releases of hazardous substances into the environment.

Final **RODs** have been approved for **OU 1** through **OU 4**; **OU 5**, Site 14; **OU 6** through **OU 8**; **OU 9**, Sites 36 and 37; and **OU 12**, Sites 32, 42, 44 and Old Golf Course. An **RI**, Baseline Risk Assessment (BRA), and **FS** have also been prepared for **OU 5**, Site 15, but the **FS** is currently being re-evaluated. **RI** and **FS** reports were finalized for **OU 9**, Sites 57 and 58 in August and October 2002, respectively. **RI** reports for **OU 10**, Sites 21 and 25 were finalized in October 2001. The **FS** report

for Site 21 was finalized in September 2002, and the **FS** for Site 25 was finalized in October 2001. **RI** and **FS** reports were finalized for **OU 11**, Site 45 in August 2001. An interim action has been completed for **OU 12**, Site 32. Decision documents are forthcoming for Sites 21, 25, 32, and 45.

What are the Cleanup Objectives and Goals?

Using the information gathered during the site investigations and the results of the **PRE**, the Navy and U.S. EPA, in consultation with FDEP, have identified the following **Remedial Action Objectives (RAOs)** for **OU 9**, Sites 57 and 58:

- Prevent unacceptable risk from ingestion of Site 57 groundwater with concentrations of chlorinated **VOCs**, **BTEX**, **PAHs**, and **TRPH** greater than FDEP GCTLs.
- Prevent unacceptable risk from ingestion of Site 58 groundwater with concentrations of **VOCs**, naphthalene, and **TRPH** greater than the FDEP GCTLs.
- Restore groundwater quality at Sites 57 and 58.

Table 1 shows the **COCs**, the concentrations found during the **RI**, and the **cleanup goals**.

Cleanup Alternatives for OU 9, Sites 57 and 58 Groundwater

The **OU 9**, Sites 57 and 58 **FS** report reviews the options that the Navy and U.S. EPA in consultation with FDEP considered for cleanup of these sites. These options, referred to as

TABLE 1 COCs and Cleanup Goals Operable Unit 9, Sites 57 and 58 – NAS Cecil Field			
COCs	Range of Detections	Cleanup Goals ⁽¹⁾	Federal MCLs
Site 57 Groundwater (µg/L)			
Benzene	0.87 – 248	1	5
cis-1,2-DCE	0.94 – 825	70	70
1,1-DCA	1.1 – 97.2	70	NL
1,1-DCE	5 – 33.8	7	7
Ethylbenzene	1 – 150	30	700
Toluene	1 – 63	40	1,000
TCE	1 – 43	3	5
Xylenes	1.9 – 560	20	10,000
1-Methylnaphthalene	1.2 – 160	20	NL
2-Methylnaphthalene	1.6 – 184	20	NL
Naphthalene	1.2 – 396	20	NL
TRPH	203 – 14,300	5,000	NL
Site 58 Groundwater (µg/L)			
1,1-DCA	1 – 421	70	NL
1,1-DCE	1.6 – 130	7	7
1,1,1-TCA	841	200	200
Xylenes	0.6 - 65	20	10,000
Naphthalene	1.3 – 156	20	NL
TRPH	587 – 9,000	5,000	NL

NOTES:

µg/L Micrograms per liter

(1) FDEP residential SCTL for BaPEq in soil and GCTLs for groundwater COCs

NL Not listed

“cleanup alternatives,” are different combinations of plans to restrict access and to contain, remove, or treat contamination in order to protect public health and the environment. The Preferred Alternative is Alternative 2: Natural Attenuation **LUCs** and Monitoring.

No Action

Alternative 1: No Action

No remedial action would be conducted to reduce risks to human health and the environment and no restrictions would be imposed to prevent access to groundwater contamination. Concentrations of **COCs** in groundwater might eventually be reduced to their **cleanup goals** through natural attenuation processes, but no monitoring would be performed that would verify and quantify this reduction.

Limited Action

Alternative 2: Natural Attenuation, LUCs, and Monitoring

Natural attenuation would consist of letting concentrations of groundwater **COCs** decrease through naturally occurring processes such as biodegradation, dispersion, and dilution. **LUCs** would consist of preventing the use of groundwater for drinking purposes until the **cleanup goals** have been met. Also, no intrusive activities, such as drilling, that could result in exposure to contaminated groundwater would be allowed. Monitoring would consist of regularly sampling and analyzing groundwater to evaluate the decrease in **COC** concentrations and to verify that **contaminant plumes** are not expanding and **COCs** are not migrating. Every 5 years, a site review would be conducted to evaluate the continued effectiveness of this alternative. If it is determined that natural attenuation and **institutional controls** have failed to adequately protect human health, additional remedial measures would be evaluated and implemented.

In-Situ Treatment

Alternative 3: In-Situ Biological Treatment (ORC®/HRC®), LUCs, and Monitoring

In-situ biological treatment would consist of injecting oxygen release compounds (ORC®) and/or hydrogen release compounds (HRC®) in the **contaminant plumes** to accelerate biodegradation of **COCs**. ORC® would be used to promote aerobic degradation of BTEX, **PAHs**, and **TRPH** in the Site 57 Petroleum Plume (ORC® System No. 1) and Site 58 Naphthalene Plume (ORC® System No. 2). HRC® would be used to promote the anaerobic degradation of chlorinated **VOCs** in the Site 57 TCE Plume (HRC System). Conceptually, the ORC® System No. 1 would consist of injecting approximately 16,500 pounds of ORC® through an estimated 138 injection points. Conceptually, the ORC® System No. 2 would consist of injecting 10,200 pounds of ORC® through 60 injection points. Conceptually, the HRC® System would consist of injecting approximately 19,800 pounds of HRC® through an estimated 120 injection points. **LUCs** and monitoring would be the similar to Alternative 2.

Alternative 4: In-Situ Air Sparging (AS) Treatment, LUCs, and Monitoring

In-situ AS treatment would consist of injecting air into the **contaminant plumes** to promote the volatilization of BTEX and chlorinated **VOCs** and the aerobic degradation of BTEX, **PAHs**, and **TRPH**. There would be one AS system for each **contaminant plume**. AS System No. 1 would treat the Site 57 Petroleum Plume and consist of injecting approximately 1,050 cubic feet per minute (cfm) of air through an estimated 97 wells. AS System No. 2 would treat the Site 57 TCE Plume and consist of injecting approximately 200 cfm of air through an estimated 19 wells. AS System No. 3 would treat the Site 58 Naphthalene Plume and consist of injecting approximately 200 cfm of air through an estimated 16 wells. **LUCs** and monitoring would be the similar to Alternative 2.

Removal, Ex-Situ Treatment, and Disposal

Groundwater Alternative 5: Extraction, On-Site Treatment, Surface Water Discharge, LUCs, and Monitoring

This alternative would consist of removing contaminated groundwater through extraction wells and treating the extracted groundwater in an on-site system prior to discharge to local drainage ditches. Separate extraction and on-site treatment systems would be installed and operated for Sites 57 and 58. Conceptually, the Site 57 system would have a design capacity of approximately 37.5 gallons per minute (gpm) and would feature an estimated five extraction wells and an on-site treatment system consisting of air stripping and liquid-phase granular activated carbon (GAC) adsorption. Conceptually, the Site 58 system would have a design capacity of approximately 22.5 gpm and feature an estimated three extraction wells and an on-site treatment system consisting of liquid-phase GAC adsorption. **LUCs** and monitoring would be similar to Alternative 2.

Use of ARARs in Evaluation Process

Applicable or relevant and appropriate requirements (ARARs) are federal and State environmental requirements used to evaluate the appropriate extent of site cleanup, scope and formulate remedial alternatives, and control the implementation and operation of a selected remedial action. Chemical-, location-, and action-specific **ARARs** that apply to **OU 9**, Sites 57 and 58 are presented in Section 2.0 of the **FS** report. Each alternative has been evaluated to determine its compliance with **ARARs**.

Detailed Analysis of Cleanup Alternatives

In accordance with **CERCLA**, a detailed analysis of each cleanup alternative must be performed using nine evaluation criteria. These include two threshold criteria (Overall Protection of Human Health and the Environment and Compliance with **ARARs**), five balancing criteria (Long-Term Effectiveness and Permanence; Reduction of Toxicity, Mobility, and Volume Through Treatment; Short-Term Effectiveness; Implementability; and Cost) and two modifying criteria (State Acceptance and Community Acceptance). An analysis of

these criteria was performed for each cleanup alternative, and summary comparisons of these analyses are presented on Table 2. Please consult the **OU 9, Sites 57 and 58 FS** report for more detailed information.

Based on information currently available, the preferred cleanup alternative, Alternative 2, provides the best balance among alternatives with respect to the evaluation criteria.

State acceptance was secured during the **FS** review. As part of the community acceptance process, the Navy, U.S. EPA, and FDEP briefed the **RAB** on October 15, 2002. During the upcoming public comment period, the Navy, U.S. EPA, and FDEP also welcome your comments on the proposed cleanup plan and on the other technical approaches that were evaluated.

A Closer Look at the Proposed Cleanup Plan

1 LUCs

LUCs such as deed restrictions would be prepared and implemented to prevent use of the **surficial aquifer** groundwater. Formal notice would be given to the St. Johns River Water Management District not to issue permits for the installation of wells at Sites 57 and 58 that draw water from the **surficial aquifer**. Annual site inspections would be conducted to verify the continued implementation of these **LUCs**. The Navy would be responsible for the continued enforcement of the institutional controls, including the performance of the annual site inspections.

2 Long-Term Monitoring

Groundwater samples would be regularly collected and analyzed from several wells located within the **contaminant plumes** to evaluate any decrease in the concentrations of these **COCs** that may result from naturally occurring processes such as biodegradation, dispersion, and dilution. As agreed by the Navy and U.S. EPA in consultation with FDEP, if the results of two consecutive sampling events indicate that the cleanup goals have been met, the site would be considered as remediated.

Groundwater samples would also be collected and analyzed from several wells located downgradient of the leading edge of the **contaminant plumes** including one well at each site designated as a "sentinel" well to verify that these plumes are not expanding and that **COCs** are not migrating. If analysis of the groundwater collected from these two sentinel wells indicates that the groundwater **cleanup goals** have been exceeded, the following step-by-step actions would be taken as agreed by the Navy, U.S. EPA, and FDEP:

- a. The sentinel well(s) where the exceedance(s) was(were) detected would be re-sampled to verify the exceedance(s).
- b. If the exceedance(s) is(are) verified, additional hydrogeological modeling would be performed to determine a revised predicted expansion of the **contaminant plume** based upon the new monitoring data.
- c. The additional modeling data will be used to develop and evaluate contingency remedies as discussed below.

3 Five-Year Reviews

Every 5 years, a site review would be performed to evaluate the continued adequacy of the remedy.

4 Contingency Remedy

If the results of the long-term monitoring and five-year reviews show that **LUCs** and natural attenuation have failed to provide proper protection from groundwater contamination, additional active remedial measures would be evaluated and might be implemented. Potential contingency remedial measures could include extraction, on-site treatment, and surface discharge of contaminated groundwater.

Based on the information currently available, the Navy, U.S. EPA, and FDEP believe that the above proposed cleanup plan meets the threshold criteria and provides the best balance of tradeoffs with respect to the balancing and modifying criteria. The Navy, U.S. EPA, and FDEP expect the proposed cleanup plan to satisfy the following statutory requirements of **CERCLA §121(b)**: (1) be protective of human health and the environment; (2) comply with **ARARs**, specifically the Safe Drinking Water Act and the Florida Administrative Code Chapter 62-520; (3) be cost effective; (4) utilize permanent solutions to the maximum extent practical; and (5) satisfy the preference for treatment as a principal element.

What Impacts Would the Cleanup Have on the Local Community?

- Alternatives that involve the treatment and handling of groundwater during construction and/or operation (Alternative 5) could pose a limited risk to construction workers or operating personnel. However, measures would be taken to minimize and control these risks.
- Alternatives that involve the transportation of treatment residue for offsite disposal (Alternative 5) would pose a risk to nearby communities. However, measures would be taken to minimize and control these risks.
- Alternatives that do not immediately achieve **cleanup goals** (Alternatives 2, 3, 4, and 5) include administrative action to restrict land and groundwater use until these **cleanup goals** have been reached.

TABLE 2

**SUMMARY OF COMPARATIVE ANALYSIS OF SITES 57 AND 58 GROUNDWATER REMEDIAL ALTERNATIVES
OPERABLE UNIT 9, SITES 57 AND 58
PROPOSED PLAN
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA
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Evaluation Criteria	Alternative 1: No Action	Alternative 2: Natural Attenuation, LUCs and Monitoring	Alternative 3: In-Situ Biological Treatment (ORC[®]/HRC[®]), LUCs, and Monitoring	Alternative 4: In-Situ AS Treatment, LUCs, and Monitoring	Alternative 5: Extraction, On-Site Treatment, & Surface Discharge, LUCs, and Monitoring
Overall Protection of Human Health and Environment	Would not be protective of human health and the environment because no action would occur. Migration of COCs would continue and remain undetected.	Would be protective of human health and the environment because natural attenuation would reduce COC concentrations to cleanup goals within a reasonable timeframe. LUCs and monitoring would provide immediate protection until the cleanup goals are met by restricting use of the aquifer for drinking purposes and checking for potential migration of COCs .	Would be more protective of human health and the environment than Alternative 2 because, in addition to LUCs and monitoring, it would feature active treatment that would accelerate the removal of COCs .	Would be as protective of human health and the environment as Alternative 3 because it would provide most of the same protective components (i.e., LUCs , and monitoring) and would also accelerate the removal of COCs but through in-situ AS treatment rather than in-situ bioremediation.	Would be as protective of human health and the environment as Alternatives 3 and 4 because it would provide most of the same protective components (i.e., LUCs , and monitoring) and also accelerate the removal of COCs but through extraction and on-site treatment rather than in-situ bioremediation or in-situ AS treatment.
Compliance with ARARs and TBCs : Chemical-Specific Cleanup Criteria Location-Specific Action-Specific	Would not comply Would not comply Not applicable	Would comply Would comply Would comply	Would comply Would comply Would comply	Would comply Would comply Would comply	Would comply Would comply Would comply
Long-Term Effectiveness and Permanence	Would have very limited long-term effectiveness and permanence because no action would occur. Contaminant reduction or migration would remain undetected because no monitoring would occur.	Would be long-term effective and permanent. Natural attenuation would eventually reduce COC concentrations to cleanup goals . LUCs would effectively prevent unacceptable human health risk from exposure to contaminated groundwater. Monitoring would effectively evaluate the progress of remediation and detect potential migration of COCs .	Would be more long-term effective and permanent than Alternative 2 by significantly accelerating the removal of COCs through in-situ bioremediation. However, the effectiveness of HRC [®] injection would have to be verified through treatability testing. The long-term effectiveness and permanence of the LUCs , and monitoring would be the same as for Alternative 2.	Would be more long-term effective and permanent than Alternative 3 because it would provide the same accelerated removal of COCs , but through in-situ AS treatment that does not need to be tested. The long-term effectiveness and permanence of the LUCs and monitoring would be the same as for Alternative 2.	Would be slightly less long-term effective and permanent than Alternative 4 but more so than Alternative 3. Would provide the same accelerated removal of COCs through extraction and on-site-treatment, which is as well-proven as in-situ AS treatment but somewhat slower. The long-term effectiveness and permanence of the LUCs and monitoring would be the same as for Alternative 2.
Reduction of Contaminant Toxicity, Mobility, or Volume through Treatment	Would not reduce contaminant toxicity, mobility, or volume through treatment because no treatment would occur.	Would not reduce contaminant toxicity, mobility, or volume through treatment because no treatment would occur.	Would irreversibly and permanently reduce contaminant toxicity, mobility, and volume by removing an estimated 525 pounds of COCs through in-situ bioremediation.	Would irreversibly and permanently reduce contaminant toxicity, mobility, and volume by removing an estimated 525 pounds of COCs through in-situ AS treatment.	Would irreversibly and permanently reduce contaminant toxicity, mobility, and volume by removing an estimated 525 pounds of COCs through extraction and on-site treatment.
Short-Term Effectiveness	Would not result in any short-term risk to site workers or adversely impact the surrounding community or environment because no action would occur. Achievement of RAOs and compliance with cleanup goals would not be verified.	Would result in a slight possibility of exposing site workers to contaminated groundwater as a result of monitoring activities. This risk would be reduced through compliance with appropriate site-specific health and safety procedures. There would be no risk to the surrounding community and environment. The first two RAOs would be achieved immediately upon implementation of the LUCs and monitoring. The third RAO and the cleanup goals would be met within 18 years at Site 57 and 3 years at Site 58.	Would result in a possibility of exposing site workers to contaminated groundwater as a result of bioremediation and monitoring activities. This risk would be reduced through compliance with appropriate site-specific health and safety procedures. There would be no risk to the surrounding community and environment. The first two RAOs would be achieved immediately upon implementation of the LUCs and monitoring. The third RAO and the cleanup goals would be met within 3 years at Site 57 and within 2 years at Site 58.	Would result in a possibility of exposing site workers to contaminated groundwater as a result of the installation and O&M of the in-situ AS treatment system and of monitoring activities. This risk would be reduced through compliance with appropriate site-specific health and safety procedures. There would be no risk to the surrounding community and environment. The first two RAOs would be achieved immediately upon implementation of the LUCs and monitoring. The third RAO and the cleanup goals would be met within 3 years at Site 57 and within 2 years at Site 58.	Would result in a possibility of exposing site workers to contaminated groundwater as a result of extraction and treatment and monitoring activities. This risk would be reduced through compliance with appropriate site-specific health and safety procedures. There would be minimal risk to the surrounding community and environment from the off-site transportation of treatment residue. The first two RAOs would be achieved immediately upon implementation of the LUCs and monitoring. The third RAO and the cleanup goals would be met within an estimated 12 years at Site 57 and within 3 years at Site 58.

TABLE 2
SUMMARY OF COMPARATIVE ANALYSIS OF SITES 57 AND 58 GROUNDWATER REMEDIAL ALTERNATIVES
OPERABLE UNIT 9, SITES 57 AND 58
PROPOSED PLAN
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA
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Evaluation Criteria	Alternative 1: No Action	Alternative 2: Natural Attenuation, LUCs and Monitoring	Alternative 3: In-Situ Biological Treatment (ORC[®]/HRC[®]), LUCs, and Monitoring	Alternative 4: In-Situ AS Treatment, LUCs, and Monitoring	Alternative 5: Extraction, On-Site Treatment, & Surface Discharge, LUCs, and Monitoring
Implementability	Technical and administrative implementation would be extremely simple because there would be no action to implement.	Technical implementation of the monitoring would be simple. Administrative implementation of the LUCs would be simple.	Technical implementation of the in-situ bioremediation would be simple although it would create temporary site disruptions, and the number of qualified contractors is limited. Technical implementation of the monitoring would be simple. Administrative implementation of the LUCs would be simple. A construction permit might be required for installation of the ORC [®] /HRC [®] injection points.	Technical implementation of the in-situ AS treatment would be significantly more complex than that of in-situ bioremediation and create much greater site disruptions. However, implementation would still be technically possible and site disruptions would be acceptable. Technical implementation of the monitoring would be simple. Administrative implementation of the LUCs would be simple. Construction permits would be required for the installation of the in-situ AS treatment systems.	Technical implementation of the extraction and on-site treatment would be simpler than that of the in-situ AS treatment. Installation and O&M of the limited number of extraction wells and small on-site treatment systems would be simple and would not create significant site disruptions. Implementation of surface discharge, disposal of treatment residues, and monitoring would be simple. Administrative implementation of the LUCs would be simple. A construction permit would be required, and the substantive requirements of an NPDES permit would have to be met.
Costs:					
Capital	\$0	\$5,000	\$1,265,000	\$1,666,000	\$1,109,000
NPW of O&M	\$0	\$519,000 (20 Years)	\$352,000 (5 Years)	\$564,000 (5 Years)	\$1,542,000 (15 Years)
NPW	\$0	\$524,000 (20 Years)	\$1,617,000 (5 Years)	\$2,200,000 (5 Years)	\$2,651,000 (15 Years)
State Acceptance	FDEP concurs with the selection of Alternative 2 as the Preferred Alternative.				
Public Acceptance	Public acceptance of the Alternative 2 as the Preferred Alternative will be determined following the period of public comment.				

NOTES:

ARARs	Applicable or Relevant and Appropriate Requirements
AS	Air sparging
COCs	Chemicals of concern
HRC[®]	Hydrogen release compound
NPDES	National Pollutant Discharge Elimination System
LUCs	Land use controls
NPW	Net present worth
O&M	Operation and maintenance
ORC[®]	Oxygen release compound
RAO	Remedial Action Objective
TBC	To-be-considered (criterion)

- Alternatives that involve on-site treatment and/or site construction activities (Alternatives 3, 4, and 5) would occupy the site. This would limit use and/or development of the site for the duration of the cleanup.
- The No-Action Alternative (Alternative 1) would not prevent exposure to site contaminants and would result in unacceptable human health risks if residential development occurs and/or groundwater from the **surficial aquifer** is used.

Why Do the Navy and U.S. EPA in Consultation with FDEP Recommend this Cleanup Plan?

The proposed cleanup plan is recommended for the following reasons:

- Although several chemicals exceeded FDEP GCTLs in the **surficial aquifer** groundwater at Sites 57 and 58, detected concentrations of these **COCs** were relatively low and do not present an unacceptable threat to human health or the environment under the current and foreseeable future site use scenario.
- There is no evidence of ongoing migration of any of the three groundwater **contaminant plumes** identified at Sites 57 and 58.
- This cleanup plan will achieve risk reduction through natural attenuation for groundwater and by imposing restrictions on access to contaminated groundwater until cleanup goals are met.

Next Steps?

By September 2003, the Navy and U.S. EPA expect to have reviewed comments in consultation with FDEP and signed the **Record of Decision (ROD)** describing the chosen cleanup plan. The **ROD**, which includes a summary of responses to public comments, will then be made available to the public at the Information Repository at Building 907, 13357 Lake Newman Street, Cecil Commerce Center, Jacksonville, Florida. The Navy and U.S. EPA, in consultation with FDEP, will also announce its decision through the local news media and the community mailing list.

Glossary of Terms

This glossary defines the bolded terms used in this Proposed Plan. The definitions in this glossary apply specifically to this Proposed Plan and may have other meanings when used in different circumstances.

Administrative Record: The complete body of documents pertaining to the investigation and restoration of an environmental site. This body of documents is kept at a location where it can be accessed by the general public.

Applicable or relevant and appropriate requirements (ARARs): The Federal, State, and local environmental rules, regulations, and criteria that must be met by the selected remedy under **CERCLA**.

Chemical of concern (COC): A substance detected at a concentration and/or in a location where it could have an adverse effect on human health and the environment.

Cleanup goal: A numerical concentration agreed upon by the Navy and U.S. EPA, in consultation with FDEP, as having to be reached for a certain **COC** in order to meet one or more of the **RAOs**. A **cleanup goal** may be a regulatory-based criterion, a risk-based concentration, or even a background value.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): A Federal law also known as "Superfund". This law was passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act (SARA). This law created a special tax that goes into a trust fund to investigate and cleanup abandoned or uncontrolled hazardous waste sites.

Contaminant plume: An area of groundwater with concentrations of one or more **COCs** greater than its **cleanup goal**.

Feasibility Study (FS): A report that presents the development, analysis, and comparison of cleanup alternatives.

Land Use controls (LUCs): Administrative measures taken to restrict site access, current land use or future development, or groundwater use. Typical **LUCs** consist of deed restrictions.

National Priorities List (NPL): The list of national Superfund sites.

Net present worth: A costing technique that expresses the total of initial capital expenditure and long-term operation and maintenance (O&M) costs in terms of present day dollars.

Operable Unit (OU): A discrete entity that comprises an incremental step toward the comprehensive cleanup of one or more environmental sites. An **OU** may address a specific medium within a site (e.g., soil or groundwater), a geographical portion of the site, a specific site environmental concern, or the initial phases of an action. At NAS Cecil Field, **OUs** have often been organized to group multiple sites with similar characteristics and environmental concerns.

Polynuclear aromatic hydrocarbons (PAHs): High molecular weight, relatively immobile, and moderately toxic solid organic chemicals that feature multiple benzenic (aromatic) rings in their chemical formula. **PAHs** are normally formed during the incomplete combustion of coal, oil, gas, garbage, or other organic substances. Typical **PAHs** include anthracene, phenanthrene, and benzopyrene.

Preliminary risk evaluation (PRE): A streamlined evaluation of current and future potential for adverse human health or environmental effects from exposure to site contaminants. This evaluation typically uses standard conservative criteria rather than site-specific evaluation parameters.

Record of Decision (ROD): An official document that describes the selected Superfund remedy for a specific site. The **ROD** documents the remedy selection process and is issued by the Navy and U.S. EPA following the public comment period.

Remedial Action Objective (RAO): A cleanup objective agreed upon by the Navy and U.S. EPA, in consultation with FDEP. One or more **RAOs** are typically formulated for each environmental site.

Remedial Investigation (RI): A report that describes the site, documents the type and distribution of environmental contaminants detected, and present the results of the risk assessment or **PRE**.

Restoration Advisory Board (RAB): A body of representatives from the general public that meets on a regular basis to be briefed by the Navy and their contractors on the progress of environmental investigations and cleanup activities for a given facility. The **RAB** provides the opportunity for the community to give input into the cleanup program before final decisions are made.

Surficial aquifer: A layer of groundwater that is separated from deeper groundwater by a confining formation. At NAS Cecil Field, the **surficial aquifer** typically extends from approximately 5 feet below ground surface to approximately 90 feet below ground surface

Total recoverable petroleum hydrocarbons (TRPH): A measurement of petroleum contamination in soil and water as defined by the State of Florida environmental regulations. This method measures the amount of petroleum compounds that have 8 to 40 carbon atoms.

Volatile organic compounds (VOCs): Organic compounds that evaporate readily at normal ambient temperatures. Typical **VOCs** include light-fraction components of gasoline, such as benzene, toluene, ethylbenzene, and xylenes, and low molecular weight chlorinated solvents, such as DCA, DCE, and TCE.



What's a Formal Comment?

Formal comments are used to improve the cleanup plan. During the 30-day formal comment period, the Navy and U.S. EPA in consultation with FDEP will accept formal written comments and hold a hearing, if requested, to accept formal verbal comments.

To make a formal comment, you need to present your views during the public hearing or submit a written comment during the comment period. A request for a public hearing to present your formal comments must be made in writing. The request must be postmarked no later than August 13, 2003. Written comments and requests for a public hearing should be sent to:

Commander
Department of the Navy
Southern Division
Naval Facilities Engineering Command
Attn: Mr. Jeffrey Meyers, P.E., CHMM(Code ES3)
2155 Eagle Drive
North Charleston, SC 29406



Federal regulations require the Navy and U.S. EPA to distinguish between "formal" and "informal" comments. Although the Navy and U.S. EPA, in consultation with FDEP, use both your comments and **RAB** comments throughout site investigation and cleanup activities, they are only required to respond in writing to formal comments on the Proposed Plan. If a public hearing is requested, there will be no verbal response to your comments during the formal hearing portion of the meeting. Once the formal hearing portion of the public meeting is closed, the Navy and U.S. EPA may respond to informal questions in consultation with FDEP .

The Navy and U.S. EPA in consultation with FDEP, will review the transcript of all formal comments received at the hearing and all written comments received during the formal comment period before making a final cleanup decision. They will then prepare a written response to all formal comments. The transcript of formal comments and the written responses of the Navy and U.S. EPA will then be issued in the Responsiveness Summary included in the final **ROD**.

For More Detailed Information

To help the public understand and comment on the proposal for the site, this publication summarizes a number of reports and studies. All the technical and public information publications prepared to date for the site are available at the following Information Repository:

Building 907
13357 Lake Newman Street
Cecil Commerce Center
Jacksonville, Florida 32252
904-573-0336



