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FINAL PROPOSED PLAN FOR SITE 43 NAS PENSACOLA FL

7/1/2009

NAVFAC SOUTHERN

ENVIRONMENTAL RESTORATION PROGRAM

July 2009

Proposed Plan for Site 43

Naval Air Station Pensacola
Pensacola, Florida

INTRODUCTION

As required by Section 117 of the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)**, as amended, this Proposed Plan identifies the Navy's preferred alternative for cleaning up contaminated soil and groundwater at Site 43 – Demolition Debris Disposal Area at Naval Air Station (NAS) Pensacola to assist and involve the community in the decision-making process. This plan has been developed by the Navy (the lead agency), in consultation with the United States Environmental Protection Agency (USEPA) and Florida Department of Environmental Protection (FDEP), as part of its public participation responsibilities under Section 300.430(f)(2) of the **National Oil and Hazardous Substances Pollution Contingency Plan (NCP)**.

The purpose and function of this Proposed Plan is to:

- Provide the public with basic background information about NAS Pensacola, including Site 43, which is known as the Demolition Debris Disposal Area.
- Identify the Preferred Alternative for remedial action at Site 43 and explain the reasons for the preference.
- Describe the other remedial options that were considered for cleanup of Site 43.
- Solicit public review of and comment on all the alternatives presented in this document.
- Provide information on how the public can be involved in the remedy selection process.

This Proposed Plan highlights information that is contained in the **Remedial Investigation (RI)** report completed in 2006 and in the **Feasibility Study (FS)** completed in 2008, but does not contain all of the information contained in these documents. The **RI** and **FS** and other documents are maintained at the **Information Repository**, which is located in the University of West Florida, John C. Pace Library (see page 10 for location).

The public is invited to comment on this Proposed Plan during the public comment period beginning on July 20, 2009, and ending on August 18, 2009. The public is encouraged to participate in the remedy selection process, considering all of the alternatives. Public comments will be considered in the selection of the final remedy and will be addressed in the **Record of Decision (ROD)** for the site. Any new information or expressed concerns the Navy may receive during the public comment period could result in the selection of a remedial action that differs from the Preferred Alternative.

SITE BACKGROUND

NAS Pensacola is located in Escambia County in Florida's northwest coastal area, approximately 5 miles west of the Pensacola City limits. The approximately 5,000-acre installation, shown on Figure 1, was constructed in the 1800s. Currently, land use at NAS Pensacola consists of various military housing, training, and support facilities as well as a large industrial complex for major repairs and refurbishment of aircraft engines and frames. The shallow groundwater underlying the site is classified as a G-1 aquifer, meaning it is suitable for potable water uses including drinking, bathing, and irrigation. However, the facility receives all potable water from Corry Station, located 4 miles from the facility.

SITE CHARACTERISTICS AND INVESTIGATIONS

Site 43 is located in a developed area of the base, at the southwestern corner of Murray and Taylor Roads and north of Road Q, which provides access to the NAS Pensacola Officer's Quarters, as shown on Figure 2. The Site 43 area covers approximately 40,000 square feet (0.92 acres), and the site elevation is approximately 20 feet above mean sea level. Approximately 31,000 square feet of the site area is covered by a paved parking lot. The rest of the site is grass-covered, with oak trees scattered throughout the site. No wetlands are located in Site 43, which previously contained a tennis court and a building foundation/basketball court. However, in 2003, the tennis and basketball courts were removed by the facility.

The investigation of the site started in 1992 with the discovery of a partially buried drum. The precise locations of the debris disposal and contaminated areas were unknown; however, the approximate locations of the disposal areas were determined based on an electronic instrument geophysical survey. Subsequent investigations determined

Date to Remember
Public Comment Period:
July 20 – August 18, 2009
The Navy will accept written comments on the Proposed Plan during the public comment period.

*This document summarizes the Navy's preferred alternative. For detailed information on the options evaluated for **Site 43**, the documents are available for review at the **Information Repository** located at John C. Pace Library, University of West Florida, 11000 University Parkway Pensacola,* Florida 32514.

*__Bolded terms__ are defined in the glossary on page 12.

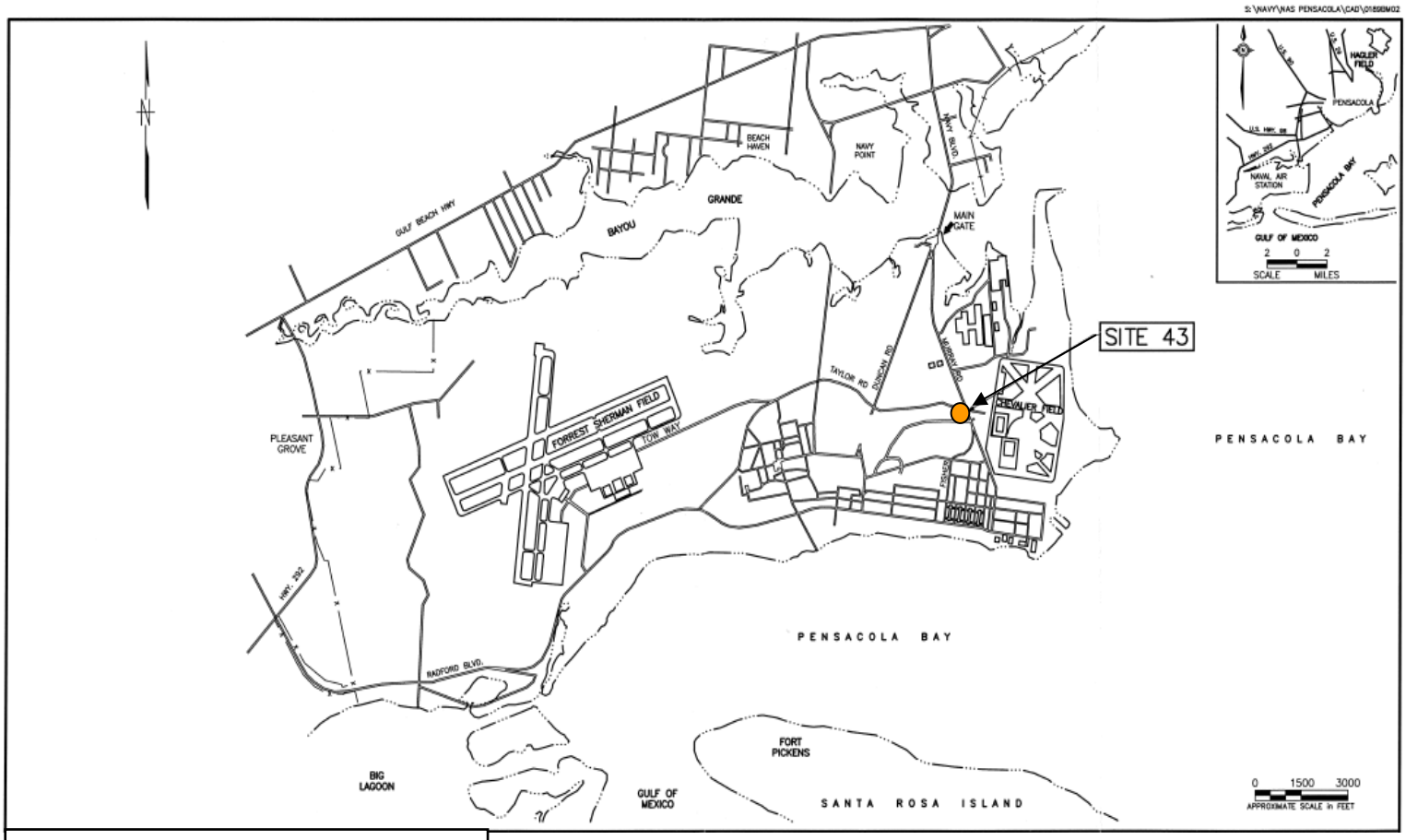


Figure 1 General Location Map

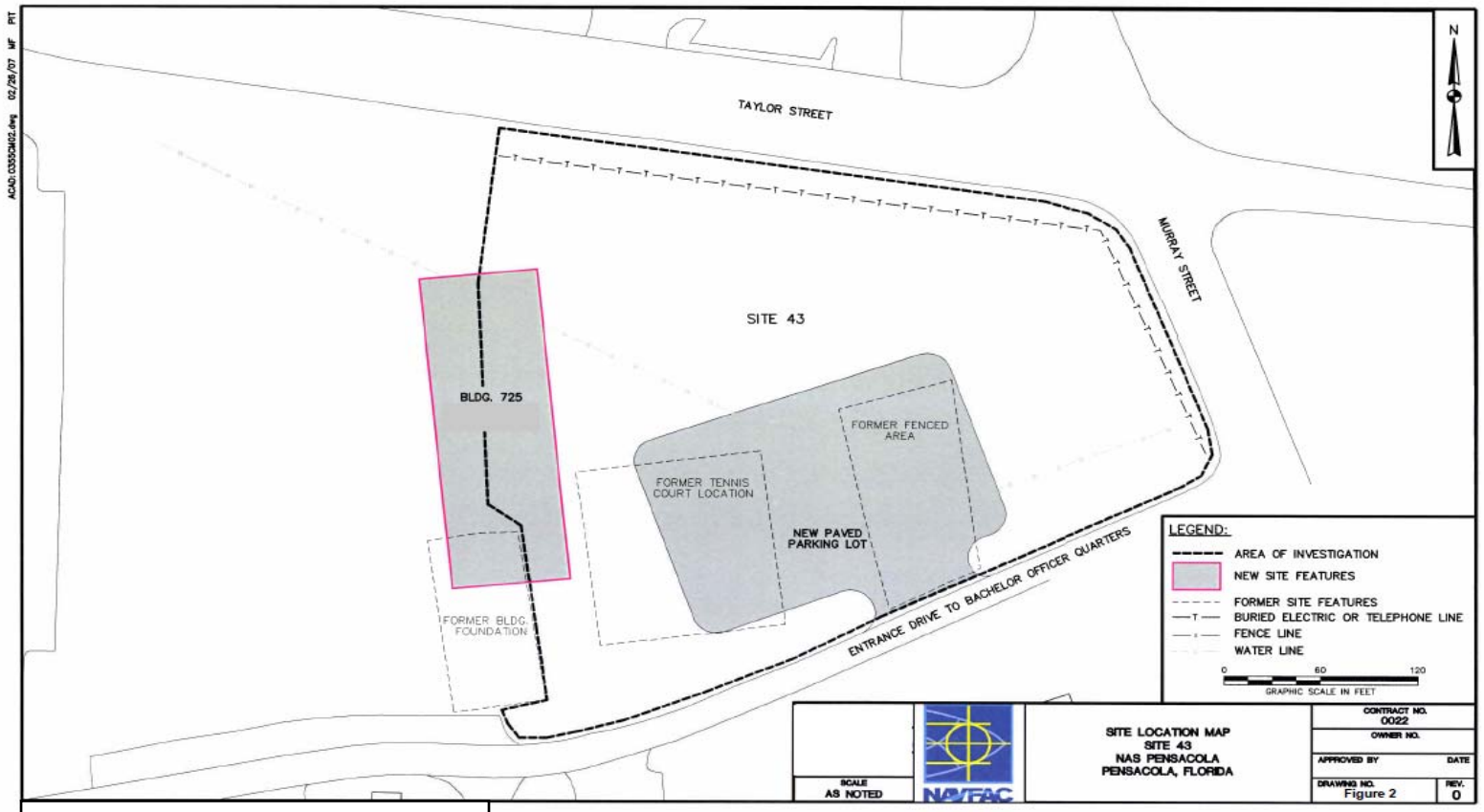


Figure 2 Site 43 Location Map

the existence of several areas where buried objects were suspected to be present. Later, during a site characterization field event (October 1999), field excavator digging revealed the presence of several drums, which were removed. An interim **removal action** followed, during which debris and contaminated soil to a depth of 2 feet below ground surface was removed. However, the determination of how much soil was contaminated and needed to be removed (cleanup criteria) was revised to be more protective, and the **RI** in 2005 and 2006 provided data indicating the presence of some remaining surface soil and shallow subsurface soil contamination to a depth not exceeding 4 feet below ground surface and very limited groundwater contamination.

View of Site 43

The following constituents were detected during the **RI** and were retained as **chemicals of concern** (**COCs)** for Site 43 because their maximum concentrations exceeded one or more of the following screening values: FDEP **Soil Cleanup Target Levels (SCTLs),** FDEP **Groundwater Cleanup Target Levels (GCTLs**), USEPA Region 9 Preliminary Remediation Goals for Residential Soil, USEPA generic Soil Screening Levels, USEPA Region 9 Preliminary Remediation Goals for Tap Water, and USEPA Maximum Contaminant Levels:

- Surface soil
  - **Polynuclear aromatic hydrocarbons (PAHs)**
  - Metals including arsenic, barium, copper, lead and vanadium
- Subsurface soil
  - PAHs
  - Metals including arsenic, barium, copper, lead and vanadium
- Groundwater
  - Lead

Additionally, iron and manganese were identified as **COCs** for groundwater, but they were not included in the final list of **COCs** because iron and manganese are considered secondary standards and do not pose a significant risk, according to USEPA and FDEP. FDEP has published risk-based criteria for secondary standards as Table A included in Chapter 62-785, Florida Administrative Code (F.A.C.), which indicates the lack of risk.

CURRENT AND FUTURE LAND USE

The current and reasonably anticipated future land use at Site 43 is non-residential and/or recreational.

SCOPE AND ROLE OF RESPONSE ACTION

This is the second and final proposed action for this site. The first action addressed remediation of source area contaminated soil to reduce the risks to human health and the environment. However, all the contaminated soil was not removed at that time and potential risk still exists on site. This second and final proposed action will address the remaining source areas including contaminated soils and groundwater.

SUMMARY OF SITE RISKS

The data collected during the **RI** at Site 43 was used to prepare two risk assessments, a **human health risk assessment (HHRA)** and a **screening-level ecological risk assessment (SLERA)**, to determine if the soil and groundwater contamination at the site results in unacceptable risks to human health or the environment.

Metals and carcinogenic **PAHs** were detected in surface soil and subsurface soil samples at concentrations exceeding the initial risk screening criteria. Lead, in one groundwater sample, exceeded risk-based screening criteria. The **HHRA** and **SLERA** identified potential risks to human and ecological receptors, respectively, by exceeding USEPA and FDEP benchmarks.

Human Health Risks:
The **HHRA** was conducted using chemical concentrations detected in surface soil, subsurface soil, and groundwater samples. Because of differing evaluation criteria offered by the USEPA and FDEP the **HHRA** was conducted using both USEPA and State of Florida regulations and guidelines.

The risk assessment using USEPA methodology considered five receptors, the hypothetical future resident, typical industrial worker, construction worker, maintenance worker, and trespasser/recreational user and assumed exposure via the ingestion, dermal contact, and inhalation exposure routes. Based on the evaluation using USEPA criteria, lead was determined to be the predominant contaminant detected in soil and groundwater at Site 43. Because published toxicity criteria are not available for lead, the detected concentrations were initially screened against the Office of Solid Waste and Emergency Response soil screening level and two technical modeling programs that characterize the risk for residential and non-residential exposure scenarios. Based on the models, it was determined that exposure to average lead concentrations in surface and subsurface soil and to the maximum detected concentration of lead in groundwater would result in risks exceeding USEPA benchmarks.

The risk assessment conducted per the State of Florida regulations and guidelines evaluated risks to a hypothetical future resident and typical industrial worker using the **SCTLs** for the residential and industrial land use scenarios, respectively. Risks to a hypothetical future recreational user were evaluated using **SCTLs** specifically developed for the Site 43 risk assessment as stipulated in the State of Florida regulations and guidelines. The risk assessment determined

that elevated risks were present in soils due to **PAHs** (recreational, industrial, and residential **SCTLs**); lead (industrial and residential **SCTLs**); and arsenic, barium, copper, and vanadium (residential **SCTLs**). For groundwater, elevated risks were identified for iron, lead, and manganese.

Ecological Risks:
The **SLERA** identified that surface soil concentrations of barium, copper, and lead may pose risks to invertebrates and plants, especially from the combined toxic effects of multiple metals. Potential risks to insect eating, small mammals and birds from copper and lead were evaluated. Based on food-chain modeling results, lead concentrations in eight soil samples pose potential risks to insect-eating, small mammals and birds that forage exclusively at Site 43. However, the precise extent to which these animals forage at Site 43 is uncertain and due to the poor habitat at the site, birds and mammals probably do not forage to a significant extent there.

Summary:
The site characterization and risk assessments indicate that there are potential risks to human health from exposure to concentrations of **PAHs** and metals in surface and shallow subsurface soil at the site. The presence of contaminants in groundwater does not pose a threat to human health because of the presence of a potable water supply at the base and because of the unlikelihood of the surficial groundwater being used as a source of drinking water. However, the contamination in groundwater needs to be addressed because of **Applicable or Relevant and Appropriate Requirements (ARARs**) governing the protection of drinking water.

It is the lead agency's current judgment that the Preferred Alternative identified in this Proposed Plan, or one of the other active measures considered in the Proposed Plan, is necessary to protect public health or welfare or the environment from the actual or threatened releases of pollutants or contaminants at or from this site.

REMEDIAL ACTION OBJECTIVES

The Site 43 **FS** identified the following **Remedial Action Objectives (RAOs)** to describe what the cleanup is expected to accomplish at Site 43:

- Prevent unacceptable human health risk associated with exposure to soil containing arsenic, barium, copper, lead, vanadium and, **PAHs** at concentrations greater than FDEP **SCTLs**.
- Prevent unacceptable human health risk associated with exposure to groundwater containing lead concentrations greater than the FDEP **GCTL** and USEPA Maximum Contaminant Levels.

This proposed action will reduce the incremental lifetime cancer risk associated with exposure to contaminated soils and groundwater to less than one in one million (1×10^6) and reduce the hazard index to less than one. This will be achieved by reducing the exposure to soils containing arsenic barium, copper, lead, vanadium and, **PAHs**, to less than the concentrations specified in the FDEP **SCTLs** and reducing the lead concentration in groundwater to less than the FDEP **GCTL** and USEPA maximum contaminant level of 15 micrograms per liter (µg/L). The FDEP **SCTLs** and **GCTLs** are based on calculations of a risk exposure of one in one million (1×10^6).

SUMMARY OF ALTERNATIVES

The **RAOs** for Site 43 were detailed and evaluated in the **FS**, and a summary is presented below. These alternatives are different combinations of plans to restrict access and to contain, remove, or treat contamination to protect human health and the environment.

Alternative S-0/G-0: No Action.
No action alternatives are required by **CERCLA** to establish a baseline for comparison with other alternatives. Under this alternative, the Navy would take no action at the site to prevent exposure to the soil and groundwater.

Soil Cleanup Alternatives

Alternative S-1: Excavation and Off-site Disposal to meet Florida Industrial/Commercial SCTLs and Land Use Controls (LUCs).

This alternative was developed to address the "hotspot" areas of soil contamination exceeding industrial **SCTLs**. All "hotspots" or locations with soil contamination exceeding industrial **SCTLs** would be removed including locations underlying paved parking areas and sidewalks. Industrial **SCTLs** are concentrations protective of human health based on a lower exposure frequency because a person is not residing or living on the site all the time. This would be the minimum soil volume required to allow continued use of the site as an industrial area without placing health and safety restrictions on the NAS Pensacola's employees. However, the site would still require **LUCs** preventing residential land use because the remaining contaminant concentrations would exceed residential **SCTLs**. This alternative would require excavation and disposal of approximately 123 cubic yards of soil. It is assumed that all of the excavated soil would need to be treated and disposed at a hazardous waste treatment and/or disposal facility because of the presence of high concentrations of lead that could cause continual risks.

Alternative S-2: Excavation and Off-site Disposal to meet Florida Residential SCTLs.

This alternative was developed to address all of the contamination exceeding residential **SCTLs**, thus allowing unrestricted site use. Because all of the soil associated with unacceptable human health risks would be removed from the site under this alternative, no **LUCs** would be required after completion of the soil removal. This alternative would require excavation and disposal of approximately 1,199 cubic yards of soil. A portion of the soil containing high concentrations of lead may fail analytical testing requirements and require treatment or disposal at a hazardous waste treatment and/or disposal facility, and the remaining soil that passes the analytical testing requirements would be disposed at a non-hazardous waste treatment and/or disposal facility.

Alternative S-3: Limited Excavation and Off-site Disposal and Maintenance of Pavement to meet Florida Industrial/Commercial SCTLs and LUCs.

This alternative as developed to address the highest soil contamination areas or "hot spots" exceeding FDEP's industrial/commercial SCTLs**.** By using the existing paved parking areas, sidewalks and building foundations as a barrier to prevent direct contact with soil to current

Summary of Remedial Alternatives for Site 43		
Medium	**FS Designation**	**Description**
Soil	S-0	No Action
	S-1	Excavation and Off-site Disposal to meet Florida Industrial/Commercial **SCTLs** and **LUCs**
	S-2	Excavation and Off-site Disposal to meet Florida Residential **SCTLs**
	S-3	Limited Excavation and Off-site Disposal and Maintenance of Pavements to meet Florida Industrial/Commercial **SCTLs** and **LUCs**
Groundwater	G-0	No Action
	G-1	**LUCs** (groundwater restrictions) and Monitoring
	G-2	In-Situ Groundwater Treatment and Short-Term **LUCs** (groundwater restrictions) and Monitoring

and potential future site users, only a smaller, limited contaminated soil area would need to be removed and disposed of offsite at a hazardous waste treatment and/or disposal facility. **LUCs** would be required to restrict the site to non-residential use and to make sure that the paved parking areas, sidewalks, and foundations remain in place. The **LUCs** for the existing paved parking areas, sidewalks and building foundations would be required because contamination would continue to exceed both industrial and residential **SCTLs**. This alternative would require excavation and disposal of approximately 33 cubic yards of soil.

Groundwater Cleanup Alternatives

Alternative G-1: LUCs (groundwater use restrictions) and Monitoring.

This alternative was developed to address the minimum requirements to meet the groundwater **RAO**. Groundwater concentrations would be monitored in the monitoring well with the exceedance as well as up-gradient and down-gradient monitoring wells for any changes or decreases and potential migration of the contamination area for a period of 1 year or until concentrations are below regulatory standards. **LUCs** would be used to prohibit groundwater use, thus eliminating any potential risk associated with direct exposure to groundwater. This satisfies the requirement for protection of public health and the environment. The localized lead contamination would not significantly impact down-gradient surface water bodies.

After 1 year or if concentrations are less than regulatory standards sooner, the groundwater monitoring would be re-evaluated.

Alternative G-2: In-Situ Groundwater Treatment and Short-Term LUCs (groundwater use restrictions) and Monitoring

This alternative was developed to eliminate long-term groundwater use controls and monitoring by chemically changing the groundwater to cause the lead concentrations to precipitate or change from a solution to a solid. "**In-situ** precipitation" is a process wherein a metal analyte is made less soluble by the use of precipitating agents. To do this a chemical would be injected in the groundwater to react with the dissolved metal contamination. The metal would change to a solid and attach with the soil particles to make the metal immobile and, therefore, pose less of a risk. The chemicals that work best for lead include: hydroxides/oxyhydroxides, sulfides, and phosphates. The process would be completed by adding the chemicals as a liquid through Direct Push Technology boring equipment at several locations within the area of contamination. If the concentrations of lead can be shown to have decreased to less than the **cleanup goal**, then the groundwater use controls and monitoring would be terminated.

EVALUATION OF ALTERNATIVES

Nine criteria are used to evaluate the different remedial alternatives individually and against each other to select a remedy. This section of the Proposed Plan explains and compares each of the evaluated alternatives to the nine criteria. The nine evaluation criteria are described below and presented in table format on the following page. The detailed analysis of alternatives can be found in the **FS**.

Soil Cleanup Alternatives

Overall Protection of Human Health and the Environment
Alternative S-0 would not be protective (see the following table). Alternatives S-1, S-2, and S-3 would be protective; however, because of their dependence on **LUCs** to be protective of human health, S-1 and S-3 are not as protective as S-2. Alternative S-3 is somewhat less protective than S-1 because of the additional need for long-term maintenance of pavement to protect human health.

Compliance with ARARs and to be considered (TBC)
There are no Federal chemical-specific **ARARs** for Site 43 soil; however, Florida **SCTLs** from Chapter 62-777, F.A.C., which are chemical-specific criteria, need to be considered. Alternative S-0 would not comply with the chemical-specific TBCs, and action-specific **ARARs** do not apply to this alternative. Alternatives S-1, S-2, and S-3 would comply with chemical-specific TBCs and location- and action-specific **ARARs**.

What are ARARs?

ARARs stands for **Applicable or Relevant and Appropriate Requirements**. These are the legal requirements that must be met to clean up the site. Three types of legal requirements are addressed in a cleanup action:

- Chemical-specific **ARARs** address concentrations of contaminants that must be cleaned up.
- Action-specific **ARARs** regulate how a cleanup remedy is implemented. Regulations define where and how contaminants are managed.
- Location-specific **ARARs** address legal issues for special locations such as wetlands and tribal lands. There are no location-specific **ARARs** for Site 43.

SUMMARY OF COMPARATIVE ANALYSIS OF SOIL REMEDIAL ALTERNATIVES
SOURCE: SITE 43 FEASIBILITY STUDY REPORT
NAS PENSACOLA
PENSACOLA, FLORIDA

Evaluation Criteria	Alternative S-0: No Action	Alternative S-1: Excavation and Off-site Disposal to Meet Florida Industrial/Commercial SCTLs and LUCs	Alternative S-2: Excavation and Off-site Disposal to Meet Florida Residential SCTLs	Alternative S-3: Limited Excavation and Off-site Disposal and Maintenance of Pavement to Meet Florida Industrial/ Commercial SCTLs; and LUCs
Threshold Criteria				
Overall Protection of Human Health and Environment	Not protective	Protective	More protective than Alternative S-1	Would be somewhat less protective than Alternative S-1
Compliance with **ARARs** and TBCs	Would not comply	Would comply	Would comply	Would comply
Primary Balancing Criteria				
Long-Term Effectiveness and Permanence	Not effective	Effective	More effective than Alternative S-1	Somewhat less effective than Alternative S-1
Reduction of Contaminant Toxicity, Mobility, or Volume through Treatment	None	Treatment of a portion of soil determined to be hazardous	Treatment of a potentially greater volume of hazardous soil	Treatment of a smaller portion of soil determined to be hazardous compared to Alternative S-1
Short-Term Effectiveness	Not effective	Would be effective. Minimum potential for short-term risks. Would attain RAOs in 6 months.	Would be effective. Greater potential for short-term risks than Alternative S-1. Would attain RAOs in 6 months.	Would be effective. Least potential for short-term risks among all alternatives. Would attain RAOs in 6 months
Implementability	Nothing to implement	Poses long-term administrative concerns	Poses short-term technical concerns	Poses long-term administrative and maintenance concern
Costs:				
Capital	$0	$348,000	$706,000	$180,000
NPW of O&M	$0	$77,000	NA	$96,000
NPW	$0	$425,000	NA	$276,000
Modifying Criteria				
State Agency Acceptance	To be determined after public comment period			
Community Acceptance	To be determined after public comment period			

NOTES:

ARARs Applicable or Relevant and Appropriate Requirements
LUCs Land use controls
NPW Net present worth
O&M Operation and maintenance
RAOs Remedial Action Objectives
TBCs To Be Considered (criteria)

SUMMARY OF COMPARATIVE ANALYSIS OF GROUNDWATER REMEDIAL ALTERNATIVES
SOURCE: SITE 43 FEASIBILITY STUDY REPORT
NAS PENSACOLA
PENSACOLA, FLORIDA

Evaluation Criteria	Alternative GW-0: No Action	Alternative G-1: Land Use Controls (groundwater use restrictions) and Long-Term Monitoring	Alternative G-2: In-situ Groundwater Treatment and Short-Term Land Use Controls (groundwater use restrictions) with Monitoring
Threshold Criteria			
Overall Protection of Human Health and Environment	Not protective	Protective	More protective
Compliance with **ARARs** and TBCs	Would not comply	Would comply	Would comply
Primary Balancing Criteria			
Long-Term Effectiveness and Permanence	Not effective	Effective	More effective than G-1
Reduction of Contaminant Toxicity, Mobility, or Volume through Treatment	None	None	Reduces toxicity
Short-Term Effectiveness	No relevant issues to address	Would be effective. Minimum potential for short-term risks. The RAO would be met immediately and eventual compliance with the cleanup goal would be determined by monitoring.	Would be effective. Short-term risks can be adequately addressed. The RAO would be met immediately. Treatment goals would be attained within 2 years.
Implementability	Nothing to implement	Readily implementable, although long-term administrative controls would be required.	Somewhat more difficult to implement technically compared to G-1. However, no long-term administrative concerns exist.
Costs: Capital NPW of O&M NPW	 $0 $0 $0	 $ 114,000 $92,000 $206,000	 $ 286,000 $21,000 $327,000
Modifying Criteria			
State Agency Acceptance	To be determined after public comment period		
Community Acceptance	To be determined after public comment period		

NOTES:

O&M	Operation and maintenance	LUCs	Land use controls	NPW	Net present worth
ARARs	Applicable or Relevant and Appropriate Requirements	TBCs	To be considered (criteria)		

NINE EVALUATION CRITERIA FOR CLEANUP ALTERNATIVES

Threshold Criteria (The selected remedy must satisfy these criteria):

Overall Protectiveness of Human Health and the Environment determines whether an alternative eliminates, reduces, or controls threats to public health and the environment.

Compliance with ARARs evaluates whether the alternative meets federal and state environmental statutes, regulations, and other requirements that pertain to the site, or whether a waiver is justified.

Balancing Criteria (These criteria are used to weigh the relative merits of the alternatives):

Long-Term Effectiveness and Permanence considers the ability of an alternative to maintain protection of human health and the environment over time.

Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.

Short-Term Effectiveness considers the length of time needed to implement an alternative and the risk the alternative poses to workers, residents, and the environment during implementation.

Implementability considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.

Cost includes estimated capital and annual operation and maintenance costs, as well as present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.

Modifying Criteria (These criteria are also considered during remedy selection and incorporated into the ROD):

State/Support Agency Acceptance considers whether the state agrees with the Navy's analyses and recommendations, as detailed in the **RI**, **FS**, and Proposed Plan.

Community Acceptance considers whether the local community agrees with the Navy's analyses and Preferred Alternative. Comments received on the Proposed Plan are an important indicator of community acceptance.

Long-Term Effectiveness and Permanence
Alternative S-0 would not be effective in the long term and offers no permanent risk reduction. Alternatives S-1, S-2, and S-3 offer different degrees of long-term effectiveness and permanence. Unlike Alternatives S-1 and S-3, Alternative S-2 would remove all contaminated soil without the need for **LUCs** to prevent unacceptable human health risks from residual contaminants. Therefore, Alternative S-2 has better long-term effectiveness and permanence than Alternatives S-1 and S-3. Alternative S-3 has less long-term effectiveness and permanence than S-1, because its permanence in addressing the contamination would be dependent on the effectiveness of the long-term maintenance of the pavement.

Reduction of Toxicity, Mobility, or Volume through Treatment
No treatment would occur under Alternative S-0. Alternatives S-1, S-2, and S-3 would employ off-site treatment of hazardous soil that fails **Toxicity Characteristics Leaching Procedure (TCLP)** criteria prior to land disposal. Although it is assumed that the portion of soil containing the highest concentrations of lead in each alternative would fail **TCLP** and require treatment, because Alternative S-3 does not removes soil under an existing cover, it is likely that less soil would be found to require treatment then under Alternative S-2.

Short-Term Effectiveness
All of the alternatives would be effective in terms of short-term risks to on-site workers, the community, and the environment, except Alternative S-0, for which there are no relevant issues to address. A greater potential for release of contaminants exists under Alternative S-2. Alternative S-1 also has some potential for release of contaminants because of the larger volume of soil being excavated and transported. However, none of these alternatives pose the concern for the potential for release of contaminants that cannot be addressed. Short-term risks would be properly addressed by applying proper methods and equipment and following Federal Safety rules including OSHA regulations. Alternative S-0 would not achieve the soil **RAOs**. The approximate time frame for implementation and attainment of **RAOs** would be within 6 months for Alternatives S-1, S-2, and S-3.

Implementability
Alternative S-0 would be readily implementable because there is no action to implement. Alternative S-2 would involve the excavation and transportation of a significantly larger volume of soil compared to Alternatives S-1 and S-3; however, the need to maintain **LUCs** indefinitely under the latter two alternatives would add to their implementation burden. The need for excavation and screening of a larger volume of soil under Alternative S-2 would pose a greater implementability burden than Alternatives S-1 and S-3. Alternative S-1 poses different implementability concerns compared to Alternative S-2. Alternative S-3 would pose a long-term maintenance burden associated with the pavement and a long-term administrative burden associated with the greater number of **LUC** provisions compared to Alternative S-1.

Cost

Alternative	Capital	Total (including Net Present Worth and Operations & Maintenance
S-0	$0	$0
S-1	$348,000	$425,000
S-2	$706,000	$706,000
S-3	$180,000	$276,000

Groundwater Cleanup Alternatives

Overall Protection of Human Health and the Environment
Alternative G-0 would not be protective. Alternatives G-1 and G-2 would be protective. Alternative G-2 would be more protective than G-1, because it would employ treatment and would not depend on long-term controls prohibiting groundwater use.

Compliance with ARARs and TBCs
Alternatives G-0 and G-1 might eventually attain compliance with groundwater **cleanup goals** because of **natural attenuation**; however, only G-1 would employ controls until the **cleanup goals** are achieved and would provide monitoring to verify that the **cleanup goals** have been achieved. G-2 would employ treatment to achieve the **cleanup goals**. Therefore, the chemical-specific **ARARs** and **TBCs** (USEPA Action Level and **GCTL)** that are the groundwater **cleanup goals** for lead would be complied with under Alternatives G-1 and G-2 but not under Alternative G-0. Alternatives G-1 and G-2 would also comply with action-specific **ARARs**.

Long-Term Effectiveness and Permanence
Alternative G-0 would not be effective in the long term and offers no permanent solution. Alternatives G-1 and G-2 offer long-term effectiveness of different degrees. Alternative G-2 has the potential to permanently attain the **cleanup goal**; however, Alternative G-1 would depend on groundwater use controls for its long-term effectiveness. Therefore, Alternative G-2 has a better long-term effectiveness and permanence than G-1.

Reduction of Toxicity, Mobility, or Volume through Treatment
Alternatives G-0 and G-1 would not employ any treatment; however, there would most likely be a limited reduction in toxicity (i.e., concentrations) of lead over time due to natural weathering and environmental processes, but this process would only be assessed via monitoring under Alternative G-1. Alternative G-2 would employ active treatment to reduce the lead present in the groundwater to achieve a reduction in toxicity.

Short-Term Effectiveness
Alternative G-0 would not be effective in the short-term. Alternative G-1 would be effective in terms of short-term risks to on-site workers, the community, and the environment. These risks would be adequately mitigated through adherence to OSHA regulations and site-specific health and safety procedures. Alternative G-2 would pose slightly more short-term concerns to workers involved in the active treatment process; however, these concerns could also be adequately addressed with proper health and safety procedures. Alternative G-1 would achieve the groundwater **RAO** immediately upon implementation of groundwater use controls. Eventual compliance of Alternative G-1 with the groundwater **cleanup goal** would be determined through monitoring. Alternative G-2 would also achieve the groundwater **RAO** immediately upon implementation of groundwater use controls. Alternative G-2 should attain the groundwater **cleanup goal**.

Implementability
Alternative G-0 would be readily implementable because there is no action to implement. Alternative G-1 would involve more administrative implementability requirements (because of the need to indefinitely maintain groundwater use controls), whereas, Alternative G-2 would involve more technical implementability requirements associated with in-situ treatment.

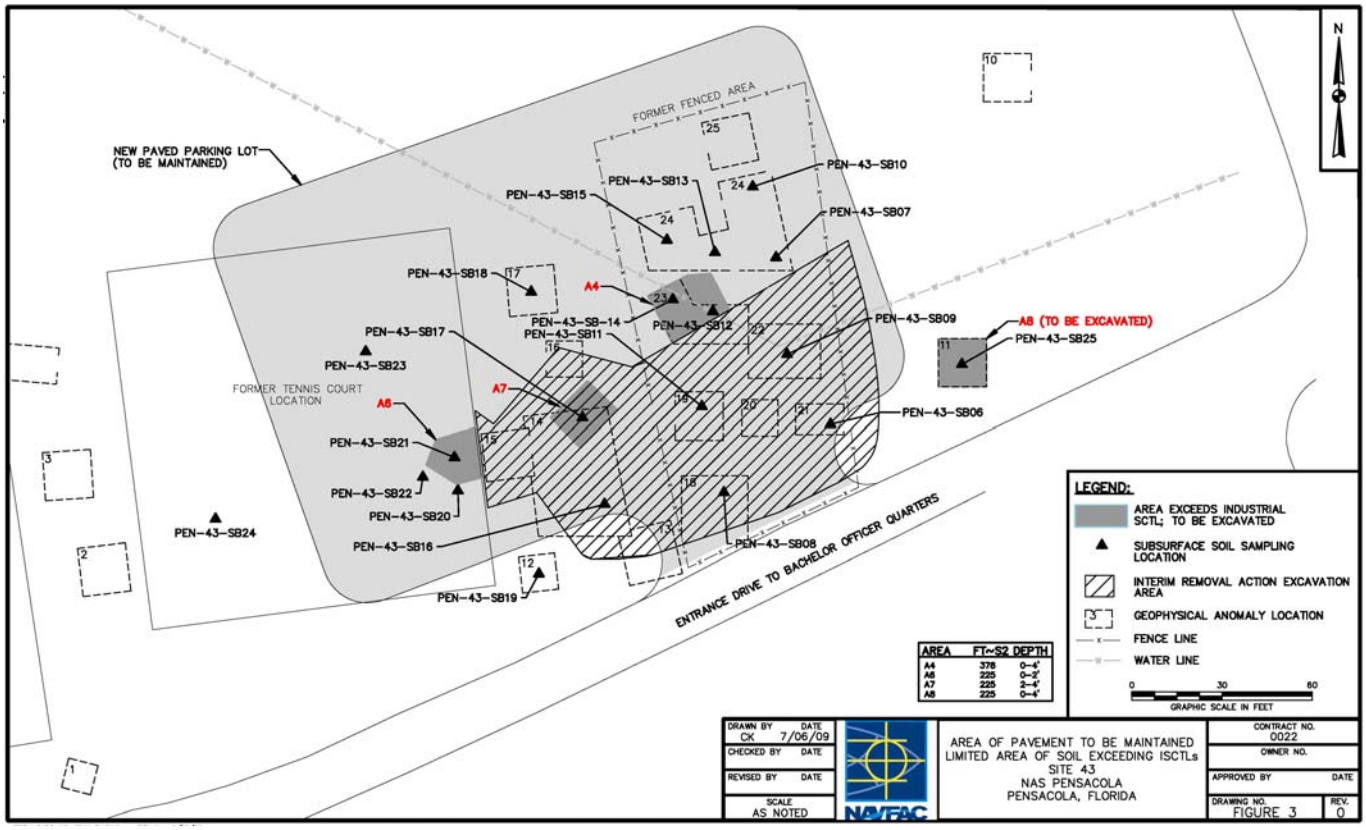
Cost

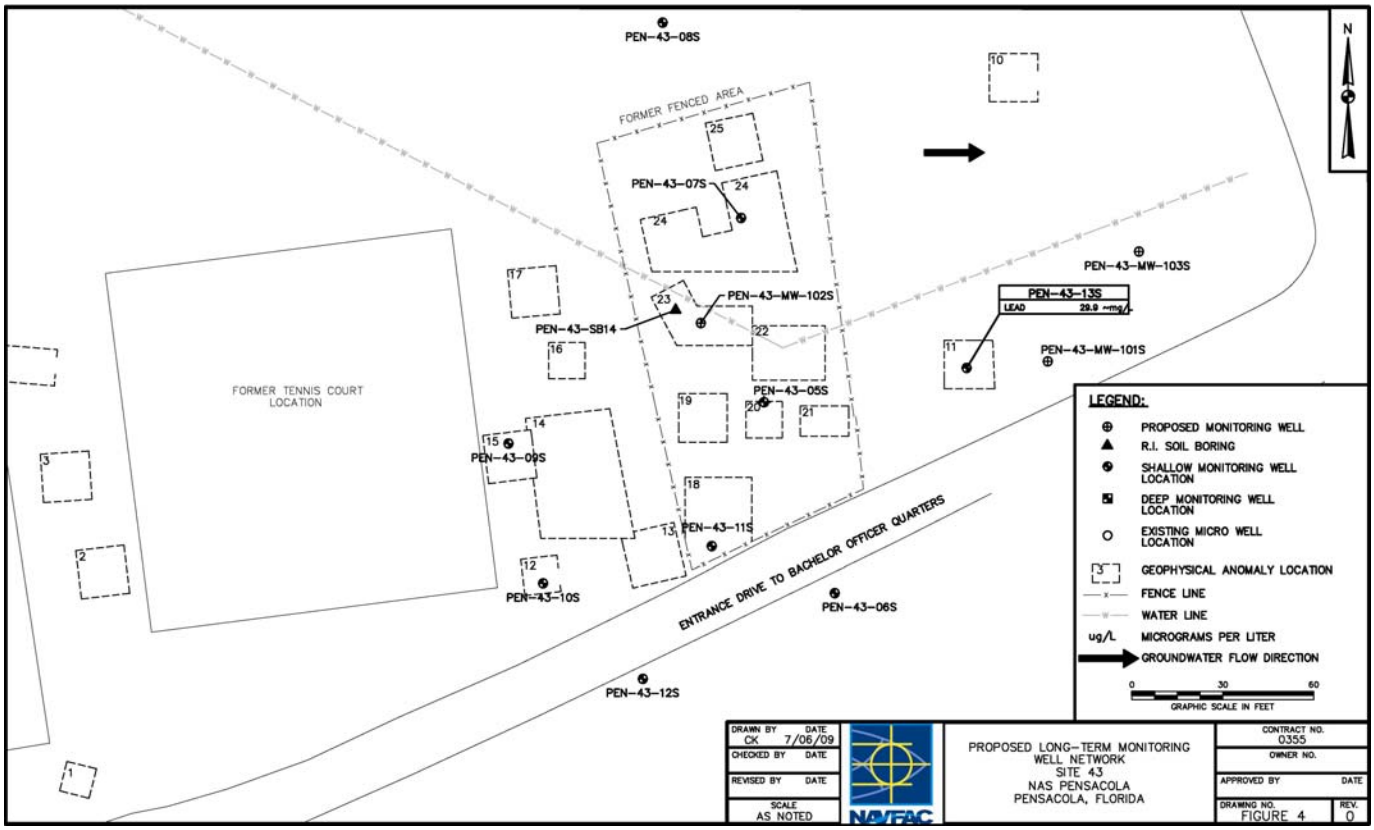
Alternative	Capital	Total (including Net Present Worth and Operations & Maintenance
G-0	$0	$0
G-1	$114,000	$206,000
G-2	$286,000	$327,000

SUMMARY OF THE PREFERRED ALTERNATIVE

The Preferred Alternative for the remediation of Site 43 is a combination of S-3: Limited Excavation and Off-site Disposal and Maintenance of Pavements to Meet Florida industrial/commercial **SCTLs** and **LUCs** and G-1: **LUCs** (groundwater restrictions) and Monitoring. Figure 3 shows the proposed excavation and LUC area for soils and Figure 4 shows the proposed monitoring wells to be installed to supplement the groundwater sampling locations. Final groundwater sampling locations will be determined in the Remedial Design following the completion of the **ROD**.

The preferred soil alternative was selected based on a balance of the nine **CERCLA** criteria previously discussed. It was selected because it complies with all criteria and is expected to achieve substantial and long-term risk reduction, is expected to allow the property to be used for the reasonably anticipated future land use, which is non-residential and recreational, and is cost effective. The preferred groundwater alternative was selected based on a balance of the nine **CERCLA** criteria previously discussed. It was selected because it would be protective of human health


FORMER FENCED AREA
NEW PAVED PARKING LOT (TO BE MAINTAINED)
PEN-43-SB10
PEN-43-SB13
PEN-43-SB15
PEN-43-SB07
PEN-43-SB18
A4
PEN-43-SB-14
PEN-43-SB12
PEN-43-SB09
A8 (TO BE EXCAVATED)
PEN-43-SB17
PEN-43-SB11
PEN-43-SB25
PEN-43-SB23
FORMER TENNIS COURT LOCATION
A7
A6
PEN-43-SB06
PEN-43-SB21
PEN-43-SB22
PEN-43-SB20
PEN-43-SB24
PEN-43-SB16
PEN-43-SB08
PEN-43-SB19
ENTRANCE DRIVE TO BACHELOR OFFICER QUARTERS
AREA FT~S2 DEPTH
A4 378 0-4'
A6 225 0-2'
A7 225 2-4'
A8 225 0-4'
LEGEND:
AREA EXCEEDS INDUSTRIAL SCTL; TO BE EXCAVATED
SUBSURFACE SOIL SAMPLING LOCATION
INTERIM REMOVAL ACTION EXCAVATION AREA
GEOPHYSICAL ANOMALY LOCATION
FENCE LINE
WATER LINE
0 30 60
GRAPHIC SCALE IN FEET
DRAWN BY CK DATE 7/06/09
CHECKED BY DATE
REVISED BY DATE
SCALE AS NOTED
NAVFAC
AREA OF PAVEMENT TO BE MAINTAINED
LIMITED AREA OF SOIL EXCEEDING ISCTLs
SITE 43
NAS PENSACOLA
PENSACOLA, FLORIDA
CONTRACT NO. 0022
OWNER NO.
APPROVED BY DATE
DRAWING NO. FIGURE 3
REV. 0


PEN-43-08S
FORMER FENCED AREA
PEN-43-07S
PEN-43-MW-103S
PEN-43-13S
LEAD 29.0 ~mg/L
PEN-43-MW-102S
PEN-43-SB14
PEN-43-MW-101S
PEN-43-05S
FORMER TENNIS COURT LOCATION
PEN-43-09S
PEN-43-11S
PEN-43-10S
ENTRANCE DRIVE TO BACHELOR OFFICER QUARTERS
PEN-43-06S
PEN-43-12S
LEGEND:
PROPOSED MONITORING WELL
R.I. SOIL BORING
SHALLOW MONITORING WELL LOCATION
DEEP MONITORING WELL LOCATION
EXISTING MICRO WELL LOCATION
GEOPHYSICAL ANOMALY LOCATION
FENCE LINE
WATER LINE
ug/L MICROGRAMS PER LITER
GROUNDWATER FLOW DIRECTION
0 30 60
GRAPHIC SCALE IN FEET
DRAWN BY CK DATE 7/06/09
CHECKED BY DATE
REVISED BY DATE
SCALE AS NOTED
NAVFAC
PROPOSED LONG-TERM MONITORING WELL NETWORK
SITE 43
NAS PENSACOLA
PENSACOLA, FLORIDA
CONTRACT NO. 0355
OWNER NO.
APPROVED BY DATE
DRAWING NO. FIGURE 4
REV. 0

and the environment, it would comply with **ARARs** and TBCs, would have short-term and long-term effectiveness, would be readily implementable, and cost effective. In addition, it is expected that, with the removal of the soil areas indicated, the lead concentrations in groundwater may no longer have a continuing source and may quickly decrease below regulatory standards; therefore, with **LUCs**, the site will not represent unacceptable risks for human health or the environment.

The LUC implementation actions, including monitoring and enforcement requirements, will be provided in a LUC Remedial Design that will be prepared by the Navy after the ROD has been finalized. The Navy will then submit the LUC Remedial Design to USEPA and FDEP for review and approval. The Navy will maintain, monitor (including conducting periodic inspections), and enforce the LUCs according to the LUC Remedial Design and ROD.

The Navy expects the Preferred Alternative to satisfy the following statutory requirements of **CERCLA** Section 121(b): (1) be protective of human health and the environment; (2) comply with **ARARs**; (3) be cost effective; and (4) utilize permanent solutions to the maximum extent practical.

The Navy and USEPA, in concurrence with FDEP, have selected the preferred cleanup alternative for Site 43. However, formal acceptance by FDEP will be made after the public comment period process. As part of the community acceptance process, the NAS Pensacola Partnering Team will brief the Restoration Advisory Board (RAB) at the next RAB meeting, date yet to be determined.

The preferred cleanup alternative for soil is S-3, with an estimated capital cost of $180,000, and a **Net Present Worth (NPW)** equaling $276,000.

The preferred cleanup alternative for groundwater is G-1, with an estimated capital cost of $114,000 and an **NPW** equaling $206,000.

5-YEAR REVIEW REQUIREMENTS

Because this remedy will result in hazardous substances and contaminants remaining on site in excess of levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted within 5 years after the initiation of the remedial action and at 5-year intervals to ensure that the remedy is, or will be, protective of human health and the environment.

COMMUNITY PARTICIPATION

The public is encouraged to participate in the decision-making process for the cleanup of Site 43 by reviewing and commenting on this Proposed Plan during the public comment period, which is during July 20 to August 18, 2009.

Additional information on this site can be found in the **RI** and **FS** and other Site 43 documents. These documents are available at the NAS Pensacola **Information Repository** at the University of West Florida, John C. Pace Library at the address below.

Next Steps

The Navy will consider and address all significant public comments received during the comment period. The responses to written comments will be included in the Responsiveness Summary, included in the **ROD**. The **ROD** will reflect the final **CERCLA** remedy selected by the Navy and USEPA for Site 43. After the **ROD** is signed, it will be made available to the public at the **Information Repository** located at John C. Pace Library, University of West Florida, 11000 University Parkway, Pensacola, Florida 32514.

What do you think?

The Navy, as the lead agency, is accepting formal public comments on this proposal from July 20 to August 18, 2009. You don't have to be a technical expert to comment. If you have a comment, the Navy wants to hear it before beginning the cleanup. To comment formally:

Send written comments postmarked no later than August 18, 2009, to:

Mr. Greg Campbell
Remedial Project Manager
Naval Air Station Pensacola
Navy Public Works Department
Building 3560, 310 John Tower Road
Pensacola, Florida 32508-5000
Fax: (850) 452-3146

E-mail comments by August 18, 2009, to:

Gregory.Campbell@navy.mil

If requested, a public meeting will be held. The Navy will review comments received at the meeting and written comments received during the comment period before making a final cleanup decision. Written comments will be included in the Responsiveness Summary contained in the **ROD**.

For More Detailed Information

To help the public understand and comment on the preferred cleanup alternatives for this site, this document summarizes a number of reports and studies. The technical and public information documents prepared to date for this site are available at the following **Information Repository**:

John C. Pace Library, University of West Florida
11000 University Parkway
Pensacola, Florida 32514

Glossary of Terms

Applicable or Relevant and Appropriate Requirements (ARARs): The federal, state, and local environmental rules, regulations, and criteria that must be met by the selected cleanup action under **CERCLA**.

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

Cleanup Goals: A numerical concentration agreed upon by the Navy and USEPA, 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. This law created a tax on the chemical and petroleum industries and provided broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment.

Feasibility Study (FS): A report that presents the description and analysis or evaluation of potential cleanup alternatives for a site.

Groundwater Cleanup Target Level (GCTL): Groundwater quality levels established by the Florida Administrative Code. Contaminant levels are based on a one in one million risk evaluation.

Human Health Risk Assessment (HHRA): An evaluation of current and future potential for adverse human health effects from exposure to site contaminants.

Information Repository: The public location for community access of documents regarding the installation cleanup activities. The NAS Pensacola **Information Repository** is located at the John C. Pace Library, University of West Florida 11000 University Parkway, Pensacola, Florida 32514.

In-situ: a term meaning "in place" with no change in location.

Land use controls (LUCs): Engineered and non-engineered measures formulated and enforced to regulate current and future land use options. Engineered measures include fencing and posting. Non-engineered measures typically consist of administrative restrictions that prohibit residential development and/or groundwater use.

National Oil and Hazardous Substances Pollution Contingency Plan (NCP): More commonly called the National Contingency Plan, is the federal government's blueprint for responding to both oil spills and hazardous substance releases. The **NCP** is the result of our country's efforts to develop a national response capability and promote overall coordination among hierarchy of responders and contingency plans.

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

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 benzo(a)pyrene.

Record of Decision (ROD): An official document that describes the selected cleanup action for a specific site. The **ROD** documents the cleanup selection process and is issued by the Navy following the pubic comment period.

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

Remedial Investigation (RI): An in-depth study designed to gather data needed to determine the nature and extent of contamination at a Superfund site, establish site cleanup criteria, identify preliminary alternatives for remedial action, and support technical and cost analyses of alternatives.

Removal action: A short-term immediate action taken to address releases of hazardous substances that require expedited response.

Screening-level ecological risk assessment (SLERA): Evaluates the likelihood that adverse ecological effects may occur or are occurring as a result of exposure to one or more chemicals. The process is simplified, and involves comparisons with sample results from the **RI**.

Soil Cleanup Target Level (SCTL): Soil quality levels established by the Florida Administrative Code. Contaminant levels are based on a one in one million risk evaluation.

Toxicity Characteristics Leaching Procedure (**TCLP**): A laboratory procedure developed by USEPA to determine the potential of soil/waste in a landfill to leach dangerous concentrations of toxic chemicals into groundwater. Soil and waste materials are assessed using the **TCLP** to estimate how much of their toxic contents would be released into landfill leachate under ordinary conditions. If the amount of a particular chemical released under test conditions exceeds regulatory limits, the waste qualifies as hazardous and must be handled according to regulations governing the proper treatment and/or disposal of hazardous waste.

Use This Space to Write Your Comments
Or to Be Added to the Mailing List

Please use this form for your written comments and mail to the address below. Your comments must be postmarked no later than August 18, 2009.

Mr. Greg Campbell
Remedial Project Manager
Naval Air Station Pensacola
Navy Public Works Department
Building 3560
310 John Tower Road
Pensacola, Florida 32508-5000
Fax: (850) 452-2893
E-mail: Gregory.Campbell@navy.mil

(Attach additional sheets as needed)

Comments submitted by: _____

Mailing List Additions, Deletions, or Changes

I would like to:

- ☐ Join the site mailing list. Name: _____
- ☐ Note a change of address. Address: _____
- ☐ Unsubscribe from the mailing list. _____
- ☐ Obtain additional information _____

*****Please check the appropriate box and fill in the correct address information above.*****

Naval Air Station Pensacola
Site 43
Public Comment Sheet (Continued)

Fold, staple, stamp, and mail

Place Stamp Here

MR. GREG CAMPBELL
REMEDIAL PROJECT MANAGER
NAVAL AIR STATION PENSACOLA
BUILDING 3560, 310 JOHN TOWER ROAD
PENSACOLA, FL 32508-5000