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NAS CECIL FIELD, FL
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LETTER OF TRANSMITTAL AND ANNOTATED COPY OF RECORD OF DECISION FOR OPERABLE UNIT 9 (OU 9) SITE 57 AND SITE 58 WITH U S EPA REGION IV COMMENTS
NAS CECIL FIELD FL
9/4/2003
U S EPA REGION IV

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

September 4, 2003

4WD/FFB

Commander
Department of the Navy
SOUTHNAVFACENGCOM
Attn: Mark Davidson, Code ES339
P.O. Box 190010
North Charleston, South Carolina 29419-9010

Subject: Draft Record of Decision (ROD) for Operable Unit 9, Sites 57 and 58
Naval Air Station Cecil Field, Jacksonville, Florida

Dear Mr. Davidson:

The U.S. Environmental Protection Agency has completed its review of the subject draft ROD dated October 2002. Attached is an annotated copy of the ROD with our comments. Our comments reflect many of the agreed upon changes that were part of the OU 11, Site 45 draft ROD.

The OU 9, Sites 57 and 58 Draft ROD was reviewed using the "Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents", dated July 1999 (http://www.epa.gov/superfund/resources/remedy.rods/index.htm) and the "Principles and Procedures for Specifying, Monitoring and Enforcement of Land Use Controls and Other Post-ROD Action", dated 26 Feb. 2003, v6.0.

Should you have any questions with regard to this letter, please contact me at 404/562-8539 or at vaughn-wright.debbie@epa.gov.

Sincerely,

Deborah A. Vaughn-Wright
Remedial Project Manager

cc: David Grabka, FDEP
Mark Speranza, TTNUS
Jeff Meyers, SOUTHDIV

1.0 DECLARATION OF THE RECORD OF DECISION

1.1 SITE NAME AND LOCATION

Operable Unit (OU) 9, Sites 57 and 58 consists ~~of the contaminated soil identified at Site 58 and the~~ contaminated groundwater identified at Sites 57 and 58 at Naval Air Station (NAS) Cecil Field, Jacksonville, Florida [United States Environmental Protection Agency (U.S. EPA) ID FL5 170 022 474]. Sites 57 and 58 are located in the central portion of the Main Base.

1.2 STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) presents the selected remedial action for contaminated groundwater at OU 9, Sites 57 and 58 at NAS Cecil Field. The remedial action was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) [40 Code of Federal Regulations (CFR) §300]. This decision document was prepared in accordance with the U.S. EPA decision document guidance (U.S. EPA, 1999). This decision is based on the Administrative Record for the site. The United States Department of Navy (Navy) and the U.S. EPA Region 4 issue this ROD (jointly).

~~The U.S. EPA and the Florida Department of Environmental Protection (FDEP) concur with the selected remedy [Base Realignment and Closure (BRAC) Cleanup Team (BCT), 2002].~~

1.3 ASSESSMENT OF THE SITES

The response action selected by this ROD is necessary to protect the public health, ~~and~~ welfare or the environment from actual or threatened releases of hazardous substances into the environment or of pollutants or contaminants from this site that may present an imminent and substantial endangerment to public health or welfare. ~~Releases of several polynuclear aromatic hydrocarbons (PAHs) evaluated collectively as benzo(a)pyrene equivalents (BaPEq) have been identified in the Site 58 soil. Releases of several chlorinated volatile organic compounds (VOCs); benzene, ethylbenzene, toluene, and xylenes (BTEX), PAHs, and total recoverable petroleum hydrocarbons (TRPH) have been identified in the Site 57 groundwater. Releases of several chlorinated VOCs, one PAH (naphthalene), and TRPH have been identified in the Site 58 groundwater. If not addressed by implementing the response actions selected in this ROD, these releases may present an imminent and substantial endangerment to public health, welfare, or the environment. Unacceptable human health risks could result from exposure to the soil at Site 58 and to the groundwater of the surficial aquifer at OU 9, Sites 57 and 58.~~

1.4 DESCRIPTION OF THE SELECTED REMEDY

OU 9, Sites 57 and 58 are part of a comprehensive environmental investigation and cleanup currently being performed at NAS Cecil Field under the CERCLA program. This ROD addresses only OU 9, Sites 57 and 58. The selected remedy eliminates unacceptable exposures to several chlorinated volatile organic compounds (VOCs), naphthalene, and total recoverable petroleum hydrocarbons (TRPH) in the groundwater. The selected remedy for OU 9, Sites 57 and 58 includes monitored natural attenuation for groundwater and land use controls that will limit prevent extraction or consumption of groundwater from taking place at this location. The selected remedy was determined based on evaluation of the site conditions, site-related risks, future land use, applicable or relevant and appropriate requirements (ARARs), and Remedial Action Objectives (RAOs).This ROD is the final action for OU 9, Sites 57 and 58. 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 11, Site 45. A Remedial Investigation (RI), Baseline Risk Assessment (BRA), and Feasibility Study (FS) have also been prepared for OU 5, Site 15, but the FS is currently being re-evaluated. RI and FS reports have been completed and the Proposed Plans and RODs are on hold for OU 10, Site 21 and OU 10, Site 25. Interim actions have been completed for OU 12, Sites 32, 42, 44, and Old Golf Course, and decisions documents will be forthcoming for these sites.

~~The selected remedy addresses reduction of BaPEq in soil and reduction of chlorinated VOCs, BTEX, PAHs, and TRPH in groundwater. The remedial alternatives selected for OU 9, Sites 57 and 58 include excavation and off-base disposal for Site 58 contaminated soil and monitored natural attenuation and institutional controls for Sites 57 and 58 contaminated groundwater.~~

The major components of the selected remedy are as follows:

- ~~Approximately 180 cubic yards (yd^3) of contaminated soil will be excavated from Site 58 and disposed of at a permitted off-base facility. Prior to excavation, additional soil sampling will be performed to verify the extent of contaminated soil. Following excavation, the site will be restored.~~ Contaminated soils from site 58 were removed from the CERCLA program and will now be addressed under the States Petroleum Program. Please add language similar to what we used for OU9 Sites 36/37 soils.

- Land Use Controls, including ~~i~~Institutional controls and deed restrictions, ~~including land use controls (LUCs) and deed restrictions,~~ will be implemented to restrict the use of the groundwater from the surficial aquifer until the cleanup goals have been met. ~~A formal notice will be issued to the St. Johns River Water Management District to prohibit the issuance of permits for the installation of drinking water wells that would draw water from the surficial aquifer at Sites 57 and 58. Annual site inspections will be conducted to verify the continued implementation of institutional controls.~~

- Long-term monitoring will be performed by collecting and analyzing groundwater samples to evaluate reduction in contaminant concentrations through naturally occurring processes such as biodegradation, dispersion, and dilution and to verify that no unacceptable contaminant migration is occurring.

- Site conditions will be reviewed every 5 years. If it is determined that natural attenuation and institutional controls are not achieving the cleanup goals consistent ~~shown to be insufficient~~ with the objectives and timberline of this ROD, another remedial approach will be evaluated and may be implemented.

The Navy shall prepare in accordance with U.S. EPA Guidance and submit to the U.S. EPA and Florida Department of Environmental Protection (FDEP) for review and approval a Remedial Design [including Land Use Control Remedial Design], Remedial Action Work Plans, Interim Remedial Action Report for Groundwater, Final Remedial Action Completion Report, and Five-Year Review Reports. The Five-Year Review Report shall contain the findings and conclusions of the review, including recommendations, follow-up actions to issues, and a protectiveness determination.

~~By a separate Memorandum of Agreement (MOA) dated September 7, 1999 with U.S. EPA and FDEP, NAS Cecil Field, on behalf of the Department of the Navy, agreed to implement base-wide, certain periodic site inspection, condition certification, and agency notification procedures designed to ensure the maintenance by Navy personnel of any site-specific LUCs deemed necessary for future protection of human health and the environment. A fundamental premise underlying execution of that agreement was that, through the Navy's substantial good-faith compliance with the procedures called for therein, reasonable assurances would be provided to U.S. EPA and FDEP as to the permanency of those remedies that included the use of specific LUCs.~~

~~Although the terms and conditions of the MOA are not specifically incorporated or made enforceable herein by reference, it is understood and agreed by the Navy, U.S. EPA and FDEP that the contemplated permanence of the remedy reflected herein shall be dependent upon the Navy's substantial good-faith compliance with the specific LUC maintenance commitments reflected therein. Should such compliance not occur or should the MOA be terminated, it is understood that the protectiveness of the remedy may be reconsidered and that additional measures may need to be taken to adequately ensure necessary future protection of human health and the environment.~~

1.5 STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, is cost effective, and complies with Federal and State requirements that are legally applicable or relevant and appropriate to remedial

action. The nature of the selected remedy for OU 9, Sites 57 and 58 is such that applicable or relevant and appropriate requirements (ARARs) for groundwater will ~~eventually~~ be met through monitored natural attenuation. The remedy utilizes permanent solutions and satisfies the statutory preference for remedies that employ treatment to reduce toxicity, mobility, or volume as a principal element. Of those alternatives that are protective of human health and the environment and comply with ARARs, the selected remedy provides the best balance of trade-offs in terms of the five balancing criteria, while also considering the statutory preference for treatment. Although the selected remedy does not provide for treatment as a principal element, reduction of groundwater contaminant concentrations are expected over time due to dispersion, advection, and adsorption processes. Because this remedy would result in hazardous substances remaining onsite above health-based levels, a review will be conducted every 5 years to ensure that the remedy continues to provide adequate protection of human health.

1.6 DATA CERTIFICATION CHECKLIST

The information required to be included in the ROD is summarized on Table 1-1. These data are presented in Section 2.0: Decision Summary of this ROD. Additional information, if required, can be found in the Administrative Record for OU 9, Sites 57 and 58.

1.7 SIGNATURES AND SUPPORT AGENCY ACCEPTANCE OF REMEDY

_____ _____

Jeffery Meyers ~~Scott A. Glass~~, P.E. Date
BRAC Environmental Coordinator
Southern Division Naval Facilities Engineering Command

_____ _____

Winston A. Smith ~~Richard D. Green~~ Date
Director, Waste Management Division
U.S. EPA Region ~~IV~~ 4

TABLE 1-1

DATA CERTIFICATION CHECKLIST
OU 9, SITES 57 AND 58 RECORD OF DECISION
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Information	ROD Reference
Chemicals of Concern (COCs) and their concentrations	Section 2.5.2; Tables 2-1, 2-3; & 2-4 Figures 2-4 through 2-10
Baseline risk represented by the COCs	Section 2.6
Cleanup Goals established for the COCs	Section 2.7
Disposition of source materials constituting principal threat	Section 2.2.2.1, 1st bullet
Current and reasonably anticipated future land and groundwater use scenarios used for risk assessment	Section 2.5.3
Potential land and groundwater uses available at the sites as a result of the selected remedy	Section 2.10.4
Estimated capital, operating and maintenance (O&M), and net present worth (NPW) costs of selected remedy. Discount rate used and timeframe over which these costs are projected	Section 2.10.3 Appendix C
Key factors which lead to the selection of the remedy	Section 2.10.1

2.0 DECISION SUMMARY

2.1 SITE NAMES, LOCATIONS, AND DESCRIPTIONS

NAS Cecil Field (U.S. EPA ID No. FL5 170 022 474) is located 14 miles southwest of Jacksonville, Florida, as shown on Figure 2-1. The majority of Cecil Field is located within Duval County and the southernmost part of the Facility is located in Clay County. NAS Cecil Field was established in 1941 and provided facilities, services, and material support for the operation and maintenance of naval weapons, aircraft, and other units of the operation forces as designated by the Chief of Naval Operations. Since the closure of NAS Cecil Field in September 1999, most of the Facility has been transferred to the Jacksonville Airport Authority and the City of Jacksonville. According to the reuse plan, the Facility will have multiple uses but will be used primarily for aviation-related activities.

OU 9, Sites 57 and 58 consists of ~~the contaminated soil identified at Site 58 and~~ the contaminated groundwater identified at Sites 57 and 58. As shown on Figure 2-1, Sites 57 and 58 are located in the central portion of the Main Base, west of the north-south runway. At Site 58, there is also an area of soil contaminated with PAHs. This area is being cleaned up under the FDEP Petroleum Contaminated Site regulation and will not be addressed in this ROD. No other contaminated soil was identified at OU 9, Sites 57 and 58.

2.1.1 Site 57

As shown on Figure 2-2, Site 57 includes Buildings 293, 817, 824, 824A, 824ALS, 825, 825LS, 841, 846, 852, 870, and 1848, and the adjacent land areas. These buildings were used for aircraft maintenance and/or aircraft and aircraft parts storage. Also located at Site 57 is the Day Tank 1 area. Day Tank 1 was a 200,000-gallon jet fuel aboveground storage tank (AST) that was removed in 1999 along with 24,000 tons of petroleum-contaminated soil. Following this removal action, a biosparge and vapor collection system was installed and started in 2000 and groundwater contamination was monitored for progress of biosparging and natural attenuation. Although the Day Tank 1 area is physically located within Site 57, the soil in this area is currently being investigated and remediated as part of the Petroleum Program and is thus not covered by this ROD.

2.1.2 Site 58

As shown on Figure 2-3, Site 58 includes Buildings 312 and 312LS and the adjacent land areas. Building 312 was a corrosion control Facility that housed two paint booths and administrative offices. Structures associated with Building 312 included a hydraulic lift, an aircraft wash rack, an oil-water separator, and a waste oil underground storage tank (UST), that have been removed. Building 312LS is a sanitary sewer lift station that serves Building 312 and used to serve the adjacent wash rack.

2.2 SITE HISTORIES AND ENFORCEMENT ACTIVITIES

The first environmental studies for the investigation of waste handling and/or disposal sites at NAS Cecil Field were conducted between 1983 and 1985 [Geraghty and Miller (G&M), 1985]. These studies were followed in 1985 by an Initial Assessment Study (IAS) [Envirodyne Engineers (EE), 1985]. A Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) was completed in 1988 [Harding Lawson Associates (HLA), 1988].

NAS Cecil Field was placed on the National Priorities List (NPL) by the U.S. EPA ~~and the Office of Management and Budget~~ in December 1989. A Federal Facility Agreement (FFA) for NAS Cecil Field was signed by the FDEP, U.S. EPA, and the Navy in 1990. Following the listing of NAS Cecil Field on the NPL and the signing of the FFA, remedial response activities at the Facility have been completed under CERCLA authority. OU 9 is one of twelve OUs that have been identified. A Hazardous and Solid Waste Amendments (HSWA) permit was issued on October 13, 1996. The HSWA permit was renewed on August 25, 2000 and is still in effect.

2.2.1 Sites 57 and 58 Histories

2.2.1.1 Site 57

Building 824, built in 1957, and Building 824A, annexed in 1988, were used as an electronics maintenance and support Facility for jet aircraft. The buildings were used for testing and repair of electrical equipment including activities such as welding, painting, sandblasting, hydraulics repair, corrosion control, and parts cleaning. Floor drains in various areas of the building reportedly discharged to the sanitary sewer system. Wastewater from parts cleaning activities outside the building reportedly drained into the storm sewer system. Building 293, the Day Tank 1 administrative office building, was constructed in 1955.

Building 817, constructed in 1971, housed diesel-powered generators for use at Building 825, an aircraft hangar, if Main Base power was unavailable. Buildings 824ALS and 825LS are sanitary sewer lift stations that received discharges for over 20 years from Building 824/824A and outside aircraft wash racks, respectively. Building 825 was built in 1966 and was used as an aircraft storage and maintenance area and also as a hazardous waste satellite accumulation point. Building 841, constructed in 1993, was a flammable ~~materials~~material locker used for the storage of hazardous materials and petroleum products. The locker was located on a raised grassy area next to the paved aircraft wash rack between Buildings 824 and 825. Wash water from the rack discharged to storm drains in the pavement and eventually to storm sewers.

Building 846, the ground support equipment storage Facility, was constructed in 1974 and was used to temporarily store equipment and materials until they were transferred to Building 1846. Hazardous materials reportedly stored at this Facility included hydraulic fluid, jet fuel, compressed gas, epoxy resin,

and petroleum naphtha. Buildings 852 and 870, constructed in 1988 and 1980, respectively, were used as hazardous materials storage lockers. Materials stored in these lockers may have included paint, floor adhesive, epoxy resin, polyamide epoxy, aliphatic naphtha, paint thinner, polyurethane coating, hydraulic fluid, and insulating oil. Building 1848 was built in 1985 and was used to store ground support equipment before it was issued for use on the runway [ABB Environmental Services, Inc. (ABB-ES), 1994].

The Day Tank 1 site is the former location of a 200,000-gallon AST that received jet fuel from the North Fuel Farm and supplied it to high-speed refuelers along the flightline. A retention pond north of the tank received wastewater and drained to the storm sewer system. Numerous spills were reported over the course of site operations.

2.2.1.2 Site 58

Building 312, a corrosion control hangar, was built in 1957 and previously housed administrative offices and two paint booths. Activities conducted in this building included sanding, priming, and corrosion control for jet aircraft and equipment. Associated structures included an abandoned hydraulic lift, an aircraft wash rack, an oil-water separator, and a waste oil UST. Wastewater from the wash rack appears to have discharged to the storm sewer and sanitary sewer systems. Building 312LS, a sanitary sewer lift station built in 1957, served Building 312 and the wash rack. A small unnumbered building to the northeast of Building 312 was used as a hazardous waste satellite accumulation point (ABB-ES, 1994).

2.2.2 Site Investigations

Several environmental investigations were performed at Site 57 and 58 starting with an Environmental Baseline Survey (EBS) (ABB-ES, 1994) through an RI [Tetra Tech NUS, Inc. (TtNUS), 2002a], an FS (TtNUS, 2002b), and a Proposed Plan (TtNUS, 2002c). These investigations showed that the Site 58 soil is contaminated with PAHs. These investigations also showed that groundwater at Site 57 and 58 is contaminated with VOCs, PAHs, and TRPH.

2.2.2.1 Site 57

The following investigations and studies have been conducted in and around Site 57:

- A contamination assessment conducted in 1996 documented soil and groundwater contamination at the site, and a Remedial Action Plan (RAP) was subsequently developed for the excavation of 20,000 tons of soil and installation of a biosparging/vapor collection groundwater remediation system (ABB-ES, 1997). In November 1999, the AST and approximately 24,000 tons of petroleum-contaminated soil were removed. Startup of the biosparge/vapor collection system was on February 29, 2000.

- As part of the Sampling and Analysis Outline and Report (SAOR) at Main Base Area 18 (MB-18), trichloroethene (TCE) and 1,1-dichloroethane (DCA) were detected in a direct-push technology (DPT)

groundwater sample (85Q01301) collected from 13 feet below ground surface (bgs) in a temporary well located southeast of Building 824A (HLA, 1999). The concentration of TCE detected was greater than the FDEP Groundwater Cleanup Target Level (GCTL). A permanent monitoring well, CEF-824A-01Sa, was installed at this location, and analytical results from the sample identified as 85G01801 showed naphthalene and 2-methylnaphthalene at concentrations in excess of their GCTLs, and 1,1-DCA at a concentration less than its GCTL. TCE was not detected in this sample. This permanent well was re-sampled in May 2000, and analytical data indicated TCE and 2-methylnaphthalene at concentrations in excess of their GCTLs and naphthalene at a concentration less than its GCTL (TtNUS, 2000).

- Because of the proximity of existing wells installed and sampled as part of the Day Tank 1 investigation to the 824A wells and because of the presence of common groundwater contaminants (petroleum-related and chlorinated), it was decided that a more comprehensive evaluation of groundwater in the area was necessary. Four additional shallow monitoring wells (CEF-824A-02S through CEF-824A-05S) were installed to delineate groundwater contamination detected during the previous sampling and were sampled along with CEF-824A-01Sa in July 2000. In September 2000, an intermediate well (CEF-824A-06I) was installed at the CEF-824A-01Sa location, and a shallow well (CEF-824A-07S) was installed downgradient (southeast) of CEF-824A-01Sa to the north of the storm sewer running east-west through the area (TtNUS, 2000). The intermediate well was installed to investigate potential vertical migration of contamination, and CEF-824A-07S was installed to investigate potential impacts of the storm sewer on contaminant migration. These wells, along with six wells from the Day Tank 1 monitoring program (CEF-293-10, -11, -19, -20, -21, and -22) and CEF-825LS-1S, were sampled in January 2001. In addition, a round of synoptic water level measurements was obtained to investigate groundwater flow conditions.

- A quarterly groundwater monitoring program is ongoing for the biosparging and soil vapor extraction system at Day Tank 1. This program includes sampling of wells CEF-293-4, -9, -13, -20, and -21, and eight vapor extraction wells (VEW-1 through VEW-8) and analysis for VOCs and semivolatile organic compounds (SVOCs). VEW-1 was not sampled during the quarterly events, and VEW-2 was not sampled during the third quarterly event due to the presence of free product in these wells. VEW-1 has been bailed weekly since October 2000, and as of February 2001, approximately 10 gallons of free product had been recovered. The thickness of free product did not significantly decrease in VEW-1 during this time period. Free product was minimal in VEW-2 after June 2000, and no recovery has been conducted at this well (CH2MHill, 2001).

- A groundwater investigation was performed as part of the RI (TtNUS, 2002a). The objective of this investigation was to evaluate the nature and extent of groundwater contaminated with chlorinated VOCs and BTEX in the Building 824A/Day Tank 1 area. Ten new permanent wells, including five shallow, three intermediate, and two deep wells, were installed in the shallow surficial aquifer to delineate the horizontal and vertical extent of groundwater contamination. Shallow wells were

installed to a depth of 15 feet bgs, intermediate wells were installed to 40 feet bgs, and deep wells were set at the bottom of the surficial sand unit. One round of groundwater level measurements and sampling were performed in September 2001 on the 10 new wells and 31 existing wells. Two of the new wells and four of the existing wells were re-sampled in December 2001. Samples were analyzed for VOCs, PAHs, and TRPH. In addition, samples collected from nine selected wells were analyzed for natural attenuation parameters.

- A free product investigation was performed as part of the RI. The objective of this investigation was to delineate the extent of the area of floating free product previously detected in well CEF-293-VEW-1. Thirteen temporary wells were installed to a depth of 15 feet bgs using DPT. Depth to groundwater and depth to free product were measured in these wells (TtNUS, 2002a).

- As part of the RI, one surface water sample was collected at the discharge of the storm sewer in the area of wells CEF-824A-03S and -07S to investigate the potential impact of infiltration of contaminated groundwater into the storm sewers. Specific capacity (SPECAP) tests were performed in one shallow and one intermediate well to determine the hydrogeological characteristics of the surficial aquifer in the Site 57 area. Also as part of the RI, a soil sample was collected from the 36 to 38 feet bgs interval in well CEF-824A-15I and analyzed for geotechnical characteristics (grain size, porosity, specific gravity, and bulk density).

- The results of site investigations were used to prepare an FS (TtNUS, 2002b). This FS identified chemicals of concern (COCs) and established cleanup goals. As part of the FS, remedial technologies were screened and remedial alternatives were assembled, analyzed, and compared.

- A Proposed Plan (TtNUS, 2002c) was prepared based on the findings of the FS. This Proposed Plan identified a proposed remedy for the Site 57 groundwater and presented a rationale for the selection of this proposed remedy.

2.2.2.2 Site 58

The following investigations and studies have been conducted in and around Site 58:

- As part of field activities associated with the Sampling and Analysis Report (SAR), two groundwater samples, two sediment samples, and one subsurface soil sample were collected (ABB-ES, 1996). Sediment and subsurface soil samples were analyzed for SVOCs, pesticides, and inorganic compounds, and groundwater samples were analyzed for VOCs, SVOCs, and inorganic compounds. Groundwater samples were collected from wells CEF-312-01, located southeast of the wash rack catch basin, and CEF-312-02, located at the northeast corner of Building 312. Sediment samples were collected from a drainage swale south of Building 312 that received discharge from the wash rack. The subsurface soil sample was collected from 2 to 3 feet bgs at a location adjacent to the

subsurface hydraulic lift cylinder housing. Naphthalene, aluminum, arsenic, iron, and manganese were detected in unfiltered groundwater samples at concentrations greater than screening criteria. Arsenic was detected in sediment in excess of screening criteria. No analytes were detected in subsurface soil in excess of screening criteria. Based on human health and ecological Preliminary Risk Evaluations (PREs) performed as part of the SAR investigation, it was concluded that concentrations of analytes in groundwater, sediment, and subsurface soil did not pose risks to human health or the environment.

- To investigate previous exccedances of groundwater criteria, monitoring well CEF-312-01 was resampled in 1999 for total and dissolved iron and manganese and naphthalene. Total and dissolved manganese concentrations were less than the FDEP GCTL and NAS Cecil Field Inorganic Background Data Set (IBDS) value (HLA, 1998). Total and dissolved iron concentrations were greater than their GCTL and IBDS values, and the naphthalene concentration was greater than its GCTL. Based on the SAR Addendum issued with these results, it was decided that the groundwater at the site would be evaluated under the Petroleum Program (TtNUS, 1999).

- The Phase I Groundwater Assessment included the installation and sampling three shallow monitoring wells at the site. CEF-B312-1S was installed west of existing well CEF-312-01, and CEF-B312-02S and CEF-B312-03S were installed northeast and southeast, respectively, of CEF-312-01. Groundwater samples from these wells were analyzed for constituents of the FDEP Kerosene Analytical Group (KAG) including VOCs, PAHs, and lead. Naphthalene and TRPH concentrations exceeded their GCTLs in the three wells, and the vinyl chloride concentration detected in well CEF-B312-03S exceeded its GCTL.

- The Phase II Groundwater Assessment included installation of five additional shallow wells (CEF-B312-04S, -05S, -06S, -07S, and -08S) and one intermediate well (CEF-B312-01I). Groundwater samples were collected from CEF-312-01 and the nine new and existing Phase I and Phase II wells and analyzed for KAG parameters. Exceedances of GCTLs in Phase II sampling included:

  - CEF-312-01 – Naphthalene
  - CEF-B312-01S – 1-Methylnaphthalene, 2-methylnaphthalene, naphthalene, and TRPH
  - CEF-B312-02S – Naphthalene
  - CEF-B312-03S – Naphthalene, vinyl chloride, and 1,1-dichloroethene (DCE)
  - CEF-B312-06S – Naphthalene
  - CEF-B312-08S – 1,1-DCE, 1,1-DCA, naphthalene

Based on the results of the Phase I and Phase II Groundwater Assessments, it was decided that groundwater in the Building 312 area would be addressed under the Installation Restoration (IR) program.

- A groundwater investigation was performed as part of the RI (TtNUS, 2002a). The objective of this investigation was to evaluate the nature and extent of groundwater contaminated with chlorinated compounds, naphthalene, and BTEX in the Building 312 area. A total of seven new permanent wells, including six shallow and one intermediate well, were installed to delineate the horizontal and vertical extent of groundwater contamination. Shallow wells were installed to approximately 15 feet bgs, and the intermediate well was installed to a depth of 40 feet bgs. One round of groundwater level measurements and sampling was performed in September 2001 on the 7 new and 11 existing wells. In December 2001, a second round of groundwater level measurements was performed, and one well (CEF-B312-08S) was re-sampled. Samples were analyzed for VOCs, PAHs, and TRPH. In addition, samples collected from five selected wells were analyzed for natural attenuation parameters. Three chlorinated VOCs [1,1,1-trichloroethane (TCA), 1,1-DCA, and 1,1-DCE] and xylenes were detected in well CEF-B312-08S at concentrations greater than the GCTLs in September 2001, but not in December 2001. Naphthalene and TRPH were detected at concentrations greater than GCTLs both in September and December 2001.

- As part of the RI, a SPECAP test was performed in one shallow well to determine the hydrogeological characteristics of the surficial aquifer in the Building 312 area. Three sediment samples were collected from the drainage ditch south of Building 312 to investigate potential migration of contaminants. These samples were analyzed for VOCs, PAHs, and TRPH. Also as part of the RI, a soil sample was collected from the 6 to 8 feet bgs interval in well CEF-B312-10S and analyzed for geotechnical characteristics (grain size, porosity, specific gravity, and bulk density).

- The results of site investigations were used to prepare an FS (TtNUS, 2002b). This FS identified COCs and established cleanup goals. As part of the FS, remedial technologies were screened and remedial alternatives were assembled, analyzed, and compared.

- A Proposed Plan (TtNUS, 2002c) was prepared based on the findings of the FS. This Proposed Plan identified a proposed remedy for the Site 58 soil and groundwater and presented a rationale for the selection of this proposed remedy.

2.3 HIGHLIGHTS OF COMMUNITY PARTICIPATION

Public notices of the availability of the Proposed Plan (TtNUS, 2002c) were placed in the Metro section of the *Florida Times-Union* on ~~October __, 2002~~ revise date. A 30-day comment period was held from ~~October __ through November __, 2002~~revise dates. The results of the RI (TtNUS, 2002a) and PRE, the remedial alternatives of the FS (TtNUS, 2002b), and the preferred alternatives of the Proposed Plan (TtNUS, 2002c) were also presented and discussed at a Restoration Advisory Board (RAB) meeting held on October 15, 2002, during which comments were solicited from the community. Public comments and the responses to these comments are presented in the Responsiveness Summary that is provided in Appendix A.

Documents pertaining to OU 9, Sites 57 and 58 are available to the public at the Information Repository located at Building 907, 13357 Lake Newman Street, Cecil Commerce Center, Jacksonville, Florida 32252 [Telephone (904) 573-0336]. This ROD will become part of the Administrative Record File [NCP §300.825(a)(2)].

2.4 SCOPE AND ROLE OF OPERABLE UNIT

The environmental concerns at NAS Cecil Field are complex. As a result, work at the 24 sites in the IR Program has been organized into 12 OUs. More than 200 other areas have undergone or are undergoing evaluation in the BRAC and Petroleum Programs.

This ROD is the final action for OU 9, Sites 57 and 58. 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 11, Site 45. An RI, BRA, and FS have also been prepared for OU 5, Site 15, but the FS is currently being ~~re-~~evaluated. RI and FS reports have been completed and Proposed Plans and RODs are on hold for OU 10, Sites 21 and 25. Interim actions have been completed for OU 12, Sites 32, 42, 44, and Old Golf Course, and decision documents will be forthcoming for these sites.

Investigations at OU 9, Sites 57 and 58 indicated the presence of soil and groundwater contamination from past operating practices. This contamination could pose an unacceptable human health risk if residential development occurred at Site 58 or if the groundwater was used as a potable water source at Sites 57 and 58.

The following Remedial Action Objectives (RAOs) were established for soil and groundwater at OU 9, Sites 57 and 58:

- Prevent unacceptable risk from exposure to Site 58 soil with concentrations of PAHs greater than the FDEP SCTLs for residential exposure. This should be deleted since PAHs will be handled under FDEP Petroleum Program.

- Prevent unacceptable risk from exposure to Site 57 groundwater with concentrations of chlorinated VOCs, BTEX, PAHs, and TRPH greater than the FDEP GCTLs and Federal MCLs~~.~~

- Prevent unacceptable risk from exposure to Site 58 groundwater with concentrations of naphthalene, VOCs, ~~and~~ TRPH greater than the FDEP GCTLs and Federal MCLs.~~.~~

- Return the surficial aquifer to future beneficial use. ~~Restore groundwater quality at Sites 57 and 58.~~

The remedy documented in this ROD will achieve these RAOs.

2.5 SUMMARY OF SITE CHARACTERISTICS

Contaminant sources, detected concentrations, fate and transport, contaminated media, and geologic and hydrogeologic conditions of OU 9, Sites 57 and 58 are discussed in Sections 4.0, 5.0, and 6.0 of the RI Report (TtNUS, 2002a). These site characteristics are summarized in the following paragraphs.

2.5.1 Geology and Hydrogeology

Soils at Site 57 and 58 and the surrounding areas are classified as Urban land as a result of disturbances to natural soils by construction activities. Urban land soils are areas that are 85 percent or more covered by streets, buildings, parking lots, and other man-made structures.

Surficial sediments encountered during drilling at both sites included fine to very fine sands with varying minor amounts of silt and clay. Sieve analyses indicated that the sample from the shallow screened interval (6 to 8 feet bgs) of Site 58 was composed of approximately 91 percent fine to very fine sand and approximately 9 percent silt and/or clay. The United Soil Classification System (USCS) soil classification for soil with this composition is well sorted to silty sand (SP/SM). The sample from the intermediate screened interval (36 to 38 feet bgs) of Site 57 was composed of approximately 96 percent fine to very fine sand and 4 percent silt and/or clay and has a USCS classification of well sorted sand (SP).

Three main hydrogeologic units underlie the site. These units, in ascending order, are the Floridan aquifer system, the intermediate aquifer system or confining unit, and the surficial aquifer.

Depth to groundwater at Site 57, as measured in September 2001, ranged from approximately 3 to 8 feet bgs. In December 2001, depth to groundwater ranged from 7 to 9 feet bgs at Site 57. At Site 58, depth to groundwater in September 2001 ranged from approximately 4 to 7 feet bgs. The surficial aquifer system in which the wells are installed is approximately 85 to 100 feet thick at NAS Cecil Field.

The calculated hydraulic conductivity values are 13.6 feet per day (ft/day) for the shallow well and 40.1 ft/day for the intermediate well at Site 57 and 14.1 ft/day for the shallow well at Site 58. These are similar to Sites 36 and 37 hydraulic conductivity values of 1 to 4 ft/day for the shallow zone and 25 to 36 ft/day in the intermediate zone.

The direction of groundwater flow at Site 57 is to the southeast, consistent with nearby sites such as Sites 36 and 37. The groundwater gradient changes across Site 57 from approximately 0.01 in the northwest (in the open area associated with the Day Tank 1 excavation) to 0.003 in the southeast (beneath the concrete apron). The average gradient across all of Site 57 is approximately 0.005, similar to the gradients measured at Sites 36 and 37 (0.001 to 0.007). At Site 58, groundwater flow appears to be influenced by the storm sewer system. Flow is to the southeast in the western portion of Site 58, but in

the eastern portion of the site, groundwater appears to move to the west toward a portion of the storm sewer. The groundwater gradient at the site averages approximately 0.01.

The velocity of groundwater flow can be calculated from a modified form of Darcy's equation:

$$V_h = K_h \times i/n_e$$

Where

V_h is horizontal velocity, ft/day
K_h is horizontal hydraulic conductivity, ft/day
i is hydraulic gradient, dimensionless
n_e is effective porosity, dimensionless (assumed at 0.15 for fine sands)

For Site 57, values used to calculate groundwater velocity in the shallow zone were as below:

K_h = 13.6 ft/day
i = 0.005
n_e = 0.15.

The resulting V_h is 0.45 ft/day or 165 ft/year.

For Site 58, values used to calculate groundwater velocity in the shallow zone were as below:

K_h = 14.1 ft/day
i = 0.01
n_e = 0.15.

The resulting V_h is 0.94 ft/day or 343 ft/year.

2.5.2 Nature and Extent of Contamination

2.5.2.1 Soil

Analytical results for soil samples collected at Site 58 are summarized on Table 2-1 and illustrated on Figure 2-4. Although these samples were collected in a drainage ditch and were therefore classified during the RI as sediment samples, this ditch is almost always dry and these samples are now considered as soil. As indicated by the results of the RI, a small area in the vicinity of sampling location CEF-B312-SD-001 that received discharges from the aircraft wash rack had concentrations of PAHs in excess of the FDEP SCTLs for direct residential exposure (FDEP, 1999a). Samples collected downstream did not have PAH exceedances.

Because benzo(a)pyrene was the principal carcinogenic PAH detected in the Site 58 soil, the BCT agreed that carcinogenic PAHs detected in the soil of that site should be regarded as a family of compounds and that their concentrations should be expressed in terms of BaPEq. For a given soil sample, a total BaPEq concentration was derived using detected concentrations of individual carcinogenic PAHs and toxicity equivalent factors (U.S. EPA, 1995). If a carcinogenic PAH was not detected in a particular sample, a concentration of one-half of the analytical detection limit for that PAH was used to compute the total BaPEq concentration of that sample.

2.5.2.2 Groundwater

Site 57

Analytical results for the groundwater samples collected at Site 57 are summarized on Table 2-2 and illustrated on Figures 2-5 through 2-7. As indicated by these results, a Site 57 Petroleum Plume, defined by benzene concentrations greater than the GCTL of 1.0 microgram per liter (μg/L), extends from the eastern side of Building 846 toward the southeast to the area east of Building 824A. This plume outline also generally encompasses exceedances of toluene, ethylbenzene, xylenes, PAHs, and TRPH. Just east of Building 846, the Site 57 Petroleum Plume is limited to the shallow portion of the surficial aquifer, but extends into the intermediate zone to the west (CEF-824A-12I). The Site 57 Petroleum Plume extends approximately 750 feet to the southeast and has an average width of approximately 225 feet.

A Site 57 TCE Plume, defined by TCE concentrations greater than the GCTL of 3 μg/L, is centered to the east of the Site 57 Petroleum Plume and partially overlaps that plume. The Site 57 TCE Plume extends to the intermediate zone of the surficial aquifer and, with the exception of the 1,1-DCE exceedance at CEF-824A-08S, the outline of this plume encompasses other chlorinated exceedances at Site 57. The Site 57 TCE Plume extends approximately 250 feet to the southeast and has and average width of approximately 180 feet.

Chlorinated VOCs detected during the RI and in previous investigations in wells to the southeast of the Site 57 TCE Plume (CEF-824A-01Sa, CEF-824A-07S, CEF-824A-08S) do not appear to be associated with that plume as defined by current data. The lack of detections of chlorinated VOCs in wells CEF-293-20, CEF-293-21, and CEF-824A-04S, located between the downgradient edge of the plume and these wells, supports this conclusion. No potential sources of chlorinated VOCs were identified in either area and the presence of this type of contamination is likely a result of past spills, leaks, and/or poor materials handling practices. Solvents were reportedly used and stored in several buildings associated with Site 57.

Analytical results from a surface water sample collected from the storm sewer outfall that receives discharge from Site 57 indicated that surface water quality is not being affected by contaminated

groundwater potentially infiltrating into the storm sewer. Surface water analytical data are summarized on Table 2-3.

An area of floating free product, approximately 400 square feet (ft^2) in size, was also delineated during the RI. This area is located east of the Day Tank 1 excavation area and extends beneath Building 846. The suspected source of the free product is a pipeline that transported fuel from Day Tank 1 to the north-south high-speed refueler. The line was capped, but not purged, during Day Tank 1 excavation activities. Because the BCT decided to address this area of floating free product under the Petroleum Program as part of the ongoing remedial activities for Day Tank 1, it will not be covered by this ROD.

Site 58

Analytical results for the groundwater samples collected at Site 58 are summarized on Table 2-4 and illustrated on Figures 2-8 through 2-10. As indicated by these results, naphthalene was detected in excess of its FDEP GCTL in four shallow wells, and the Site 58 Naphthalene Plume is delineated by naphthalene concentrations greater than the GCTL of 20 μg/L. This plume is located southeast of Building 312 and is approximately 100 feet by 60 feet in size. This Site 58 Naphthalene Plume encompasses the TRPH exceedance at CEF-B312-01S, which is the only other confirmed GCTL exceedance detected during the RI. The outline of the Site 58 Naphtahlene Plume also encompasses well CEF-B312-08S where three chlorinated VOCs (1,1-DCA, 1,1-DCE, 1,1,1-TCA) and xylenes were detected at concentrations greater than their GCTLs during the September 2001 sampling but not during the December 2001 sampling.

2.5.3 Current and Potential Future Site Uses

Sites 57 and 58 are currently used for aviation-maintenance activities and will probably continue to be used for this purpose under civilian ownership. The Jacksonville Economic Development Commission (JEDC) Reuse Plan provides for continues aviation reuse by the Jacksonville Aviation Authority. Potential future uses for that site are limited to commercial or industrial land use.

2.6 SUMMARY OF SITE RISKS

2.6.1 ~~2.6.1~~ Human Health Risk Assessments

Expand this section to include a description of the PRE-screening. Provide cumulative HQ and risk values.

2.6.1.1 Site 57

The PRE performed as part of the RI for Site 57 indicated that exposure to soil and groundwater could potentially result in adverse health effects (TtNUS, 2002a). Constituents resulting in incremental cancer risks (ICRs) exceeding the U.S. EPA's risk range of 1.0E-06 to 1.0E-04 and the FDEP's target risk of

1.0E-06 included benzene, 1,1-DCE, and TCE. Constituents resulting in non-carcinogenic risks exceeding the allowable Hazard Quotient (HQ) of 1.0 included cis-1, 2-DCE and naphthalene.

2.6.1.2 Site 58

The PRE performed as part of the RI for Site 58 indicated that exposure to groundwater could potentially result in adverse health effects (TtNUS, 2002a). Some naphthalene concentrations could result in non-carcinogenic risks exceeding an HQ of 1.0. The PRE also established that adverse effects would be expected as a result of direct residential exposure to soil from the drainage ditch.

2.6.2 Ecological Risk Assessments

Sites 57 and 58 consist primarily of buildings and parking lots. Most areas are either paved or consist of buildings. The limited terrestrial habitat is of marginal quality and results in little use of the site by terrestrial wildlife; therefore, the soil exposure pathway is negligible~~,~~ There is not a complete exposure pathway to receptors from groundwater. ~~and n~~ No ecological risk assessment was performed.

2.7 CLEANUP GOALS

A cleanup goal is the target concentration that a COC must be reduced to within a particular medium of concern to achieve one or more of the established RAOs. Cleanup goals are developed to ensure that contaminant concentrations left on site are protective of human and ecological receptors.

For OU 9, Sites 57 and 58, cleanup goals were established based on the following criteria:

- Protection of human health from direct exposure to contaminated soil and groundwater
- Compliance with ARARs and ~~to-be-considered (TBC) criteria~~ to the extent practicable, to-be-considered (TBC) criteria.

2.7.1 Site 58 Soil Cleanup Goals This section may be deleted since soils will be handled under FDEP Petroleum Program.

The Site 58 soil cleanup goals are summarized as follows:

Chemical of Concern	Frequency of Detection	Range of Concentrations	Location of Maximum	Cleanup Goal[1]
PAHs [micrograms per kilogram (μg/kg)]				
Benzo(a)anthracene	1 / 3	1,433	CEF-B312-SD001	1,400
Benzo(a)pyrene	2 / 3	78.3 J – 1,569	CEF-B312-SD001	100
Dibenzo(a,h)anthracene	1 / 3	172	CEF-B312-SD001	100

1 FDEP SCTL for residential exposure (FDEP, 1999a)
J Estimated concentration

2.7.2 Site 57 Groundwater Cleanup Goals Cleanup goals should be to Federal MCLs (if available) as well as GCTLs. Please include a statement as such in the key to the table below.

The Site 57 groundwater cleanup goals are summarized as follows:

Chemical of Concern	Frequency of Detection	Range of Concentrations	Location of Maximum	Cleanup Goal[1]
VOCs (µg/L)				
Benzene	11 / 41	0.87 – 248	CEF-824A-4S	1
cis-1,2-DCE	5 / 39	0.94 - 825	CEF-293-19	70
1,1-DCA	7 / 41	1.1 – 97.2	CEF-824A-14S	70
1,1-DCE	2 / 41	5 – 33.8	CEF-824A-8S	7
Ethylbenzene	11 / 41	1 - 150	CEF-293-11	30
Toluene	7 / 41	1 - 63	CEF-293-11	40
TCE	4 / 41	1 - 43	CEF-293-19	3
Xylenes	12 / 41	1.9 - 560	CEF-293-11	20
PAHs (µg/L)				
1-Methylnaphthalene	13 / 41	1.2 - 160	CEF-824A-11S	20
2-Methylnaphthalene	12 / 41	1.6 - 184	CEF-824A-11S	20
Naphthalene	15 / 41	1.2 - 396	CEF-824A-11S	20
TRPH (µg/L)				
TRPH	21 / 41	203 – 14,300	CEF-824A-11S	5,000

1 FDEP GCTL (FDEP, 1999a)

2.7.3 Site 58 Groundwater Cleanup Goals See comment above.

The Site 58 groundwater cleanup goals are summarized as follows:

Chemical of Concern	Frequency of Detection	Range of Concentrations	Location of Maximum	Cleanup Goal[1]
VOCs (µg/L)				
1,1-DCA	10/18	1.0 –421	CEF-B312-08S	70
1,1-DCE	2/18	1.6 – 130	CEF-B312-08S	7
1,1,1-TCA	1/18	841	CEF-B312-08S	200
Xylenes	4/18	0.6 - 65	CEF-B312-08S	20
PAHs (µg/L)				
Naphthalene	9 / 18	1.3 – 156	CEF-B312-01S	20
TRPH (µg/L)				
TRPH	9 / 18	587 – 9,000	CEF-B312-01S	5,000

1 FDEP GCTL (FDEP, 1999a)

2.8 DESCRIPTION OF REMEDIAL ALTERNATIVES

This section provides a narrative of each alternative evaluated for the remediation of soil and groundwater at OU 9, Sites 57 and 58. For further information on the remedial alternatives, refer to the FS (TtNUS, 2002b) and the Proposed Plan (TtNUS, 2002c). Summaries of the treatment alternatives that were evaluated in the FS are described in the following sections. The remedy selected for this ROD is presented in Section 2.10. As part of the FS, each of the following alternatives was evaluated for compliance with related ARARs, and Section 2.0 of the FS presents a complete list of these ARARs. The ARARs presented in Section 2.11 of this ROD are specific to the selected remedy.

~~2.8.1 Site 58 Soil Remedial Alternatives~~

~~The three remedial alternatives analyzed for OU 9, Site 58 soil (as described in the FS) are summarized as follows. This ROD has selected Soil Alternative 3: Excavation and Off-Base Disposal to address COCs in soil.~~

~~2.8.1.1 Soil Alternative 1: No Action~~

~~Evaluation of the No Action alternative is required by law to provide a baseline for comparison with other alternatives. Under this alternative, no remedial activities would occur to remove soil contamination, and no controls would be implemented to reduce exposure of human receptors. Although PAH concentrations would eventually attenuate naturally, no periodic monitoring would be performed to evaluate contamination reduction or to verify that no contaminant migration is occurring.~~

~~This alternative would not protect human health because risks from exposure to contaminated soil would continue to exist. This alternative would not achieve the soil RAO or comply with ARARs. There would be no reduction of contaminant mobility, and reduction in toxicity and volume would occur only through long-term natural attenuation and would not be monitored. Because no remedial action would take place, this alternative would not result in any short-term risks and would be very easy to implement. There would be no cost associated with this alternative.~~

~~2.8.1.2 Soil Alternative 2: Institutional Controls and Monitoring~~

~~Institutional controls would consist of implementing LUCs to prevent future residential development of the site. Monitoring would consist of long-term soil and groundwater sampling and analysis to verify that no COCs are migrating from soil to groundwater and to evaluate natural attenuation. Annual site inspections would be conducted to verify the continued application of institutional controls, and site reviews would be performed every 5 years to verify the continued adequacy of this alternative.~~

~~This alternative would protect human health because it would reduce the potential for unacceptable risk from direct exposure to contaminated soil by preventing residential development. This alternative would~~

~~achieve the soil RAO but would not comply with chemical-specific ARARs. There would be no reduction of contaminant toxicity, mobility, or volume through active treatment, but contaminant toxicity and volume would be reduced through long-term natural attenuation. Minimal short-term risks associated with the performance of monitoring activities would be addressed through appropriate health and safety procedures. The activities for this alternative would be easy to implement. The capital cost, net present worth (NPW) of operation and maintenance (O&M) costs, and 30-year NPW cost for this alternative are estimated at $20,000, $54,000, and $74,000, respectively.~~

~~2.8.1.3 Soil Alternative 3: Excavation and Off-Base Disposal~~

~~This alternative would consist of excavating approximately 180 yd^3 of contaminated soil to reduce the site-wide concentrations of BaPEq below the FDEP Soil Cleanup Target Levels (SCTLs) for residential exposure. Excavated areas would be backfilled with clean soil. The excavated soil would be transported off-base to a permitted Facility for disposal by secure landfilling. Prior to landfilling, the excavated material might be treated, if required, by such technologies as chemical fixation/solidification and/or low-temperature thermal desorption (LTTD). However, based upon the experience of recent soil removal actions at similar NAS Cecil Field sites, it is not anticipated that such treatment would be required.~~

~~This alternative would protect human health because it would permanently remove contaminated soil from the site and thus prevent unacceptable risk from exposure under any current or future land use scenario. This alternative would achieve the soil RAO and comply with ARARs through removal, treatment, and disposal. There would be a significant reduction of contaminant toxicity, mobility, or volume through treatment, and an estimated 180 yd^3 of soil containing 1.2 pounds of COCs would be irreversibly and permanently removed from the site. There would be significant short-term risks associated with excavation of the contaminated soil and the off-base transportation of the excavated soil. However, these risks would be addressed through appropriate engineering controls and health and safety procedures. This alternative would achieve the soil cleanup goals within an estimated 2 months. The activities for this alternative would be easy to implement. The capital and NPW costs for this alternative are estimated at $32,000. There are no O&M costs associated with this alternative.~~

2.8.2 Sites 57 and 58 Groundwater Remedial Alternatives

The five remedial alternatives analyzed for OU 9, Sites 57 and 58 groundwater are summarized as follows. This ROD has selected Groundwater Alternative 2: Natural Attenuation, Institutional Controls, and Monitoring to address COCs in groundwater.

2.8.2.1 Groundwater Alternative 1: No Action

Under this alternative, no remedial activities would occur to remove groundwater contamination, and no controls would be implemented to reduce exposure of human receptors. Although COCs would

eventually attenuate naturally, no periodic monitoring would be performed to evaluate the effectiveness of the No Action alternative in meeting the cleanup goals and preventing the potential migration of COCs.

This alternative would not protect human health because risks from direct exposure to contaminated groundwater would continue to exist. This alternative would not achieve the groundwater RAOs or comply with ARARs. There would be no reduction of contaminant mobility, and reductions in toxicity and volume would occur only through long-term natural attenuation and would not be monitored. Because no remedial action would take place, this alternative would not result in any short-term risks and would be very easy to implement. There would be no cost associated with this alternative.

2.8.2.2 Groundwater Alternative 2: Natural Attenuation, Institutional Controls, and Monitoring

Natural processes, such as biodegradation, dispersion, advection, and adsorption would eventually reduce the groundwater concentrations of COCs to their cleanup goals. A long-term groundwater monitoring program would be implemented to evaluate the decrease of COC concentrations in groundwater. Groundwater monitoring would also be used to verify that COCs are not migrating. Sentinel monitoring wells located downgradient of the contaminant plumes would be sampled to verify that the plumes are not expanding. Institutional controls would consist of preventing the use of groundwater. Annual site inspections would be conducted to verify the continued application of institutional controls, and site reviews would be performed every 5 years to verify the adequacy of this alternative.

This alternative would protect human health because it would reduce the risk from direct exposure to contaminated groundwater. This alternative would achieve the groundwater RAOs, and monitoring would establish eventual compliance with ARARs through natural attenuation. There would be no reduction of contaminant toxicity, mobility, or volume through active treatment, but contaminant toxicity and volume would be reduced through long-term natural attenuation. There would be minimal short-term risks associated with the performance of groundwater monitoring activities, that would be addressed through appropriate health and safety procedures. Based on modeling results, the cleanup goals would be attained within 18 years at Site 57 and 3 years at Site 58. The activities for this alternative would be easy to implement. The capital cost, NPW of O&M costs, and 20-year NPW cost for this alternative are estimated at $5,000, $519,000, and $524,000, respectively.

2.8.2.3 Groundwater Alternative 3: In-Situ Biological Treatment (ORC®/HRC®), Institutional Controls, and Monitoring

This alternative would consist of injecting oxygen release compounds (ORC®) and/or hydrogen release compounds (HRC®) in the groundwater to accelerate biodegradation of COCs. ORC® would be used to promote the aerobic biodegradation of the BTEX, PAHs, and TRPH in the Site 57 Petroleum Plume (ORC® System No. 1) and of the naphthalene and TRPH in the Site 58 Naphthalene Plume (ORC®

System No. 2). HRC® would be used to promote the anaerobic biodegradation of chlorinated VOCs in the Site 57 TCE Plume (HRC® System). ORC® System No. 1 would consist of injecting a total of 16,500 pounds of ORC® through 138 DPT injection points. The HRC® System would consist of injecting a total of 19,800 pounds of HRC® through 120 DPT injection points. ORC® System No. 2 would consist of injecting a total of 10,200 pounds of ORC® through 60 DPT injection points. Institutional controls and monitoring would be similar to those of Alternative 2.

This alternative would protect human health because it would actively reduce groundwater contamination in the surficial aquifer and thus reduce the risk from direct exposure. This alternative would achieve the groundwater RAOs and comply with ARARs through treatment. There would be a significant reduction of contaminant toxicity, mobility, or volume through treatment, and an estimated 525 pounds of COCs would be irreversibly and permanently removed from the groundwater. There would be some short-term risks associated with the installation and O&M of the ORC®/HRC® injection systems and with the performance of groundwater monitoring activities. However, these risks would be addressed through appropriate health and safety procedures. Based on information provided by the technology vendor (REGENESIS) and experience with similar installations, the cleanup goals would be attained within approximately 3 years at Site 57 and 2 years at Site 58. The activities for this alternative would be relatively easy to implement. The capital cost, NPW of O&M costs, and 5-year NPW cost for this alternative are estimated at $1,265,000, $352,000, and $1,617,000, respectively.

2.8.2.4 Groundwater Alternative 4: In-Situ AS Treatment, Institutional Controls, and Monitoring

This alternative would consist of injecting air in the groundwater to promote the volatilization of BTEX and chlorinated VOCs and the aerobic biodegradation of BTEX, PAHs, and TRPH. There would be one air sparging (AS) system for each of the three contaminant plumes. AS System No. 1 would treat the Site 57 Petroleum Plume and include 97 sparging wells, one 750 cubic feet per minute (cfm) compressor, and one 300 cfm compressor. AS System No. 2 would treat the Site 57 TCE Plume and include 19 sparging wells and one 200 cfm compressor. AS System No. 3 would treat the Site 58 Naphthalene Plume and include 16 sparging wells and one 200 cfm compressor. Institutional controls and monitoring would be similar to those of Alternative 2.

This alternative would protect human health because it would actively reduce groundwater contamination in the surficial aquifer and thus reduce the risk from direct exposure. This alternative would achieve the groundwater RAOs and comply with ARARs through treatment. There would be a significant reduction of contaminant toxicity, mobility, or volume through treatment, and an estimated 525 pounds of COCs would be irreversibly and permanently removed from the groundwater. There would be some short-term risks associated with the installation and O&M of the AS systems and with the performance of groundwater monitoring activities. However, these risks would be addressed through appropriate health and safety procedures. Based on the performance of similar AS systems currently operating at NAS Cecil Field, the cleanup goals would be attained within approximately 3 years at Site 57 and 2 years at Site 58. The

activities for this alternative would be relatively easy to implement. The capital cost, NPW of O&M costs, and 5-year NPW cost for this alternative are estimated at $1,636,000, $564,000, and $2,200,000, respectively.

2.8.2.5 Groundwater Alternative 5: Extraction, On-Site Treatment, Surface Water Discharge, Institutional Controls, and Monitoring

This alternative would consist of removing the 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. The Site 57 system would have a design capacity of 37.5 gallons per minute (gpm) and would feature five extraction wells and an on-site treatment system consisting of equalization, filtration, air stripping, and liquid-phase granular activated carbon (GAC) adsorption. The Site 58 system would have a design capacity of 22.5 gpm and would include three extraction wells and an on-site treatment system consisting of equalization, filtration, and liquid-phase GAC adsorption. Institutional controls and monitoring would be similar to those for Alternative 2.

This alternative would protect human health because it would actively remove contaminated groundwater from the surficial aquifer and thus reduce the risk from direct exposure. This alternative would achieve the groundwater RAOs and comply with ARARs through treatment. There would be a significant reduction of contaminant toxicity, mobility, or volume through treatment, and an estimated 525 pounds of COCs would be irreversibly and permanently removed from the groundwater. There would be some short-term risks associated with the installation and O&M of the groundwater extraction and treatment system and with the performance of groundwater monitoring activities. However, these risks would be addressed through appropriate health and safety procedures. Based on modeling results, the cleanup goals would be attained within approximately 12 years at Site 57 and 3 years at Site 58. The activities for this alternative would be relatively easy to implement. The capital cost, NPW of O&M costs, and 15-year NPW cost for this alternative are estimated at $1,109,000, $1,542,000, and $2,651,000, respectively.

2.9 SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

This section evaluates and compares each of the ~~soil and~~ groundwater remedial alternatives with respect to the nine criteria outlined in Section 300.430(e) of the NCP. These criteria are categorized as threshold, primary balancing, and modifying and are further explained in Table 2-5. A detailed analysis was performed for each alternative using the nine criteria to select a site remedy. Tables 2-6 and 2-7 present a summary comparison of these analyses for soil and groundwater, respectively.

EPA COMMENTS
09/03/2003

2.10 SELECTED REMEDY

2.10.1 Summary of Rationale For Remedy Selection

The goals of the selected remedies are to protect human health and the environment by eliminating, reducing, or controlling hazards posed by the site and to meet applicable or relevant and appropriate requirements (ARAR). Based on consideration of the requirements of CERCLA, the NCP, the detailed analysis of alternatives, and U.S. EPA, FDEP, and public comments, ~~Site 58 Soil Alternative 3 and~~ Sites 57 and 58 Groundwater Alternative 2 was~~ere~~ selected to address contamination at OU 9, Sites 57 and 58.

This remedy was selected for the following reasons:

- ~~Excavation and off-base disposal constitute the most effective and permanent remedy for the Site 58 soil with concentrations of PAHs greater than the FDEP residential SCTL. Given the relatively small quantity of that soil, this approach is also the most cost-effective.~~

- Although several chemicals exceeded the 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.~~ This statement is not accurate. Expand this section: are any levels above MCLs?; above DW criteria? Cumulative Risk?

  - There is no evidence of ongoing migration of either of the three groundwater contaminant plumes identified at Sites 57 and 58. How can we say this with only one year of monitoring?

2.10.2 Remedy Description

The remedy is illustrated on Figure 2-11 and consists of ~~6~~ 3 major components: (1) ~~excavation of Site 58 contaminated soil, (2) off-base transportation and disposal of Site 58 excavated soil, (3)~~ groundwater institutional controls, (~~4~~2) long-term groundwater monitoring, ~~(5) five-year reviews~~, and (~~6~~3) contingency remedy.

2.10.2.1 ~~Component 1: Excavation of Site 58 Contaminated Soil~~

~~Soil contaminated with concentrations of PAHs in excess of the FDEP SCTLs for direct residential exposure will be excavated. Pre-excavation sampling will be conducted to verify the exact extent of the contamination. An area approximately 2,400 ft^2 in size will be excavated to a depth of 2 feet. This corresponds to a volume of approximately 180 yd^3 of excavated material.~~

~~Following excavation, the excavated area will be backfilled with clean soil and the site would be restored to its original condition.~~

~~**2.10.2.2 Component 2: Off-Base Transportation and Disposal of Site 58 Excavated Soil**~~

~~The excavated soil will be transported to an off-base permitted treatment, storage, and disposal facility (TSDF) for disposal. Based on experience with the disposal of similarly contaminated soil from other NAS Cecil Field sites, it is assumed that excavated soil will not require treatment prior to disposal in a solid waste RCRA Subtitle D type landfill.~~

2.10.2.3 Component ~~3~~1: Groundwater Land Use Controls ~~Institutional Controls~~

Groundwater contamination at Sites 57 and 58 preclude unrestricted reuse, therefore the remedy includes Land Use Controls to prevent unacceptable risk. Types of controls to be utilized include deed restrictions and notification of groundwater permitting agencies. LUCs will prohibit usage of the surficial aquifer ~~Groundwater institutional controls will consist of prohibiting usage of the surficial aquifer~~ at Sites 57 and 58. These controls will eliminate or reduce unacceptable risk from exposure to contaminated groundwater. The boundaries of OU 9, Sites 57 and 58 and the area to be covered by the land use controls are shown inFigure 2-X. The land use controls only cover groundwater. The following are the LUC performance objectives for OU 9, Sites 57 and 58, and these objectives will also be incorporated into the deed and other land use control mechanisms:

- Prohibit the consumption of groundwater that exceeds Federal Maximum Contaminant Levels (MCLs) or State GCTLs.
- Prohibit all use of the groundwater from the surficial aquifer underlying the site (including, but not limited to, dewatering, irrigation, heating/cooling purposes, and other industrial purposes) without prior written approval from the Navy, FDEP and the EPA.
- Maintain the integrity of any existing or future monitoring or remediation system(s).

~~Groundwater use will be controlled through LUCs such as deed restrictions. A formal notice will also be issued to the St. Johns River Water Management District not to issue permits for installation of drinking water wells that would draw from the surficial aquifer at Sites 57 and 58. Regular site inspections will be conducted to verify the continued implementation of the institutional controls.~~

~~The frequency of these inspections is typically based on the allowable time of exposure before an unacceptable human health risk associated with residential exposure would develop. Based on the results of the risk analysis provided in Appendix B, this frequency should be less than 1 year. However, at a minimum, the planning and construction phases for a residence is expected to be 1 year considering the sites are located on or near the flightline. Consequently the frequency of site inspections will be annual.~~

The LUCs shall be maintained for as long as they are required to prevent unacceptable exposures to contaminated groundwater or to preserve the integrity of the remedy. The Navy or any subsequent owners shall not modify, delete, or terminate any LUC without U.S. EPA and FDEP concurrence. The

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LUCs shall be maintained util the concentrations of hazardous substances in the groundwater beneath sites 57 and 58 have been reduced to levels that allow for unlimited exposure.

The Navy will be responsible for implementing, inspecting, reporting, and enforcing the LUCs described in this ROD in accordance with the approved LUC Remedial Design. Although the Navy may transfer these procedural responsibilities to another party by contract, property transfer agreement, or through other means, the Navy shall retain ultimate responsibility for remedy integrity. Should this LUC remedy fail, the Navy will ensure that appropriate actions are taken to reestablish its protectiveness and may initiate legal action to either compel action by a third party(ies) and/or recover the Navy's costs for remedying and discovered LUC violation(s).

The LUC Remedial Design will be prepared as the LUC component of the Remedial Design. Within 90 days of the ROD signature, the Navy shall prepare and submit to U.S. EPA and FDEP for review and approval, a LUC Remedial Design that shall contain implementation and maintenance actions, including periodic inspections. The Navy will implement, maintain, monitor and enforce the LUCs according to the Remedial Design.

2.10.2.4 Component 4: Long-Term Groundwater Monitoring

Monitoring will consist of regularly collecting and analyzing groundwater samples both from within the contaminant plume to assess performance of the natural attenuation processes and downgradient of the leading edge of the contaminant plumes to verify that these plumes are not expanding and that COCs are not migrating.

Based on the results of groundwater modeling, performance monitoring will take place over a period of 20 years at Site 57 and 5 years at Site 58. This monitoring will consist of collecting groundwater samples from 8 existing monitoring wells at Site 57 and 4 existing wells at Site 58. Samples will be analyzed for VOCs, PAHs, and TRPH. In addition, during the first 5 years, samples will also be analyzed for natural attenuation indicator parameters such as oxidation/reduction potential (ORP), dissolved oxygen (DO), pH, alkalinity, temperature, conductivity, total organic carbon (TOC), ferrous and total iron, sulfur compounds (sulfates, sulfides), nitrogen compounds (nitrate, nitrite), orthophosphate, chloride, and metabolic gases (methane, ethane, ethene, and carbon dioxide). Sampling frequency will be quarterly for the first year, semi-annually for the next two years, and annually thereafter. The number of wells to be sampled and the parameters to be analyzed may change over time dependent upon sample results and with approval by the Navy, EPA and FDEP.

As agreed by the BCT, if the results of two consecutive sampling events indicate that the cleanup goals have been met, the site will be considered remediated.

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Monitoring to verify that contaminant plumes are not expanding and COCs are not migrating will take place over a period of 20 years at Site 57 and 5 years at Site 58. This monitoring will consist of collecting groundwater samples from 8 existing Site 57 monitoring wells including "sentinel" well CEF-0824A-19S and 3 existing Site 58 monitoring wells including "sentinel" well CEF-B312-12S. Samples will be analyzed for VOCs, PAHs, and TRPH. Sampling frequency will be quarterly for the first year, semi-annually for the next two years, and annually thereafter. . The number of wells to be sampled and the parameters to be analyzed may change over time dependent upon sample results and with approval by the Navy, EPA and FDEP.

If analysis of the groundwater collected from the two "sentinel" wells (CEF-0824A-19S and CEF-B312-12S) indicates that the groundwater cleanup goals have been exceeded, the following step-by-step actions will be taken as agreed by the BCT:

1. The sentinel well(s) where the exceedance(s) was(were) detected will be re-sampled to verify the exceedance(s).

2. If the exceedance(s) is(are) verified, additional hydrogeological modeling will be performed to determine a revised predicted expansion of the contaminant plume based on the new monitoring data.

3. If the revised contaminant plume expansion predicted by the additional modeling is such that it would be of concern, contingency remedies will be developed.

The monitoring component includes the maintenance of the existing wells that are sampled. As part of the change in the ownership of Sites 57 and 58 from the military to the private sector, provisions will be incorporated into the property transfer documents to ensure that monitoring will continue.

~~**2.10.2.5 Component 5: Five-Year Reviews**~~

~~Site conditions will be reviewed every 5 years to evaluate the continued adequacy of the remedy. Also, if as noted above, the results of two consecutive sampling events indicate that the cleanup goals have been met, the site will be considered remediated.~~

This section may be deleted since it is covered under section 2.11

2.10.2.6 Component 6: Contingency Remedy

If the results of long-term groundwater monitoring and five-year reviews show that natural attenuation and institutional controls have failed to provide proper protection from groundwater contamination, additional active remedial measures will be evaluated and may be implemented. Potential contingency remedial measures could include implementation of one of the other groundwater alternatives evaluated as part of the FS and summarized in Section 2.8.2 of this ROD.

2.10.3 Summary of Estimated Remedy Costs

The estimated capital, O&M, and NPW costs of the selected remedy are as follows:

- Capital cost: $38,000
- 20-Year NPW of O&M costs: $519,000
- 20-Year NPW Capital, LUC and O&M Costs~~cost~~: $557,000

The above cost figures have been rounded to the nearest $1,000 to reflect the preliminary nature of the estimates. The NPW is based upon an annual discount rate of 7 percent A detailed breakdown of the above estimates is provided in Appendix C.

2.10.4 Expected Outcomes of the Selected Remedy

The expected outcomes of the selected remedy may be summarized as follows:

~~Immediately upon completion of the soil excavation component, Site 58 will be available for unrestricted use including residential development.~~

- Within 20 years for Site 57 and 5 years for Site 58, the groundwater cleanup goals will be attained, and the surficial aquifer will become available for unrestricted use.

2.11 STATUTORY DETERMINATIONS

Under CERCLA §121 and the NCP, the lead agency must select remedies that are protective of human health and the environment, comply with applicable or relevant and appropriate requirements (unless a statutory waiver is justified), are cost effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. In addition, CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduces the volume, toxicity, or mobility of hazardous wastes as a principal element and a bias against off-site disosal of untreated wastes The following sections discuss how the Selected Remedy meets these statutory requirements.

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2.11.1 Protection of Human Health and the Environment

The Selected Remedy, Groundwater Alternative 2, will protect human health and the environment. Institutional controls prevent the future exposure to contaminated groundwater. Subsequently, the reduced frequency of exposure results in a reduced intake of constituents of concern and consequently, a reduced risk.

The PRE indicates that exposure to groundwater associated with Sites 57 and 58 results in incremental cancer risks that fall *[utilize content/format similar to what was used for the Site 45 ROD].*

2.11.2 Compliance with Applicable or Relevant and Appropriate Requirements

The selected remedy, Groundwater Alternative 2, will comply with all ARARs. The ARARs that the selected remedy complies with are presented below and in more detail in Table 2-x through Table 2-x. There are no Location-Specific ARARs.

The Chemical and Action-Specific ARARs include the following:

- Safe Drinking Water Act MCLs (40 CFR part 141). This is a Chemical Specific ARAR which specifies acceptable concentration levels in groundwater that serves as a potential drinking water aquifer;
- Groundwater Classes, Standards, and Exemptions (FAC Chapter 62-520). This is a State Chemical- Specific ARAR which designates the groundwater of the state into five classes and establishes minimum "free from" criteria (i.e., what contaminants are prohibited from being present in a particular class of aquifer).
- Occupational Safety and Health Act (OSHA), General Industry Standards (29 CFR Par 1910). This is an Action-Specific ARAR that requires the establishment of programs to assure worker health and safety at hazardous waste sites.
- OSHA Occupational Health and Safety Regulations (29 CFR Part 1910, Subpart Z). This is an Action-Specific ARAR that establishes permissible exposure limits for workplace exposure to specific chemicals.
- OSHA Recordkeeping, Reporting, and Related Regulations (29 CFR Part 1904). This is an Action-Specific ARAR that dictates recordkeeping and reporting requirement for remedial activities.
- OSHA, Health and Safety Standards (29 CFR Part 1926). This is an Action-Specific ARAR that specifies the type of safety training, equipment, and procedures to be used during remediation.
- Florida Water Well Permitting and Construction Requirement – March 1992. This is an Action-Specific ARAR that establishes minimum standard for location, construction, repair, and abandonment of water wells.

- Florida Rules on Hazardous Waste Warning Signs – July 1991. This is an Action Specific ARAR that requires appropriate warning signs for public protection at NPL and FDEP hazardous waste sites.
- Drinking Water Criteria (FAC Chapter 62-550). This State Chemical-Specific ARAR provides primary and secondary drinking water quality criteria.

2.11.3 Other Criteria, Advisories, or Guidance To Be Considered (TBCs) for This Remedial Action

In implementing the Selected Remedy, The Navy, EPA and the State have agreed to consider a number of non-binding criteria that are TBCs. These include:

- SDWA Regulations, National Secondary Drinking Water Standards (SMCLs), (40 CAR 143). This Chemical-Specific TBC establishes welfare-based standards for public water systems.
- Cancer Slope Factors (Integrated Risk Information System). This Chemical-Specific TBC provides guidance values used to evaluate the potential carcinogenic hazard caused by exposure to contaminants.
- Reference Dose Factors (Integrated Risk Information System). This Chemical-Specific TBC provides guidance values used to evaluate the potential non-carcinogenic hazard caused by exposure to contaminants.
- Contaminant Cleanup Target Levels Rule (FAC Chapter 62-777). This Chemical-Specific TBC provides values for soil, groundwater, and surface water cleanup.
- EPA Monitored Natural Attenuation Guidance. This provides guidance on evaluation of monitored natural attenuation.

2.11.4 Cost-Effectiveness

In the lead agency's judgment, the Selected Remedy is cost-effective and represents a reasonable value for the money to be spent. In making this determination, the following definition was used: " A remedy shall be cost-effective if it costs are proportional to its overall effectiveness." (NCP §300.430(f)(1)(ii)(D)). This was accomplished by evaluating the "overall effectiveness" of those alternatives that satisfied the threshold criteria (i.e., both were protective of human health and the environment and ARAR-compliant). Overall effectiveness was evaluated by assessing three of the five balancing criteria in combination (long-term effectiveness and permanence; reduction in toxicity, mobility, and volume through treatment; and short-term effectiveness. The relationship of the overall effectiveness of this remedial alternative was determined to be proportional to its costs and hence this alternative represents a reasonable value for the money spent.

The estimated 20-year present worth of the selected remedy is $557,000. Table 2-? Provides a summary of comparative analysis of sites 57 and 58 groundwater remedial alternatives and projected costs.

2.11.5 Utilization of Permanent Solutions and Alternative Treatment Technologies

The Navy and U.S. EPA, in conjunction with FDEP, have determined that the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a practicable manner at this site. Of those alternatives that are protective of human health and the environment and comply with ARARs, the Navy and U.S. EPA, in conjunction with FDEP, has determined that the selected remedy provides the best balance of trade-offs in terms of the five balancing criteria, while also considering the statutory preference for treatment as a principle element and bias against off-site treatment and disposal and considering State and Community acceptance.

2.11.6 Preference for Treatment as a Principal Element

[Add sites 57/58 specific language. This discussion should summarize the source materials constituting principal threats and the treatment methods used to reduce their toxicity, mobility, or volume. If the Selected Remedy does not satisfy the statutory preference for treatment as a principal element, this discussion must explain why it does not do so.]

2.11.7 Five-Year Review Requirement

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

~~2.11 STATUTORY DETERMINATIONS~~

~~The remedy selected for OU 9, Sites 57 and 58 is consistent with CERCLA and the NCP, provides protection of human health and the environment, attains ARARs, and is cost-effective. Tables 2-8 through 2-13 list and describe Federal and State chemical-, location-, and action-specific ARARs to which the selected remedy must comply. The selected remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable, and satisfies the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element. The selected remedy also provides flexibility to implement additional remedial measures, if necessary, to achieve the RAOs or to address unforeseen issues.~~

2.12 DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan for OU 9, Sites 57 and 58 (TtNUS, 2002c) was released for public comment on ~~October __,~~ 2002~~2~~3. The Proposed Plan identified ~~Site 58 Soil Alternative 3 and~~ Sites 57 and 58 Groundwater Alternative 2 as the preferred alternatives. The public was invited to comment during a 30-day period from ~~October __ to November __~~, 2003~~2~~. No changes to the proposed remedy, as originally identified in the Proposed Plan, have been made as a result of public comments.