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NAS CECIL FIELD, FL
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U S EPA REGION IV COMMENTS AND TRANSMITTAL OF ANNOTATED COPY OF DRAFT RECORD OF DECISION FOR OPERABLE UNIT 12 (OU 12) SITE 32 NAS CECIL FIELD FL
10/3/2003
U S EPA REGION IV

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

4WD/FFB

Commander
Department of the Navy
SOUTHNAVFACENGCOM
Attn: Mark Davidson
Code: ES33
P.O. Box 190010
North Charleston, SC 29419-9010

Subject: Draft Record of Decision (ROD), Operable Unit 12, Site 32, DRMO Asphalt Storage Yard, NAS Cecil Field, Jacksonville, FL

Dear Mr. Davidson:

The U.S. Environmental Protection Agency (EPA) has completed the review of the subject document. Attached is an annotated copy of the draft ROD which includes specific recommended changes. Other comments follow:

1. Section 1.4, Description of the Selected Remedy. The remedy selected in this ROD utilizes LUCs to prohibit residential use and to require proper maintenance of the asphalt pavement by the property owner. First, please supplement the described LUCs to include a prohibition against excavation of the asphalt or any surface with soil contamination in excess of health-based levels without prior written consent by the Navy, EPA and FDEP. This restriction is different than a requirement to "maintain" the asphalt surface, as noted in Section 2.10.2. Second, the ROD states that institutional controls and deed restrictions will be implemented to accomplish the restricted use goals. Please provide a brief summary of the specific institutional controls and/or deed restrictions that will be used. In addition, EPA guidance[1] states that the remedy selection description in the Declaration should include a description of the entities responsible for implementing and enforcing the institutional controls and provides an example: land use zoning restrictions enforced by town planning board. Please provide a description of the entity(ies) responsible.
2. Section 2.6.2, Ecological Risks. This section contains the statement that "Terrestrial receptors consist of species acclimated to urban and industrial conditions." This statement is confusing since the section seems to conclude

[1] *A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents*, July 30, 1999.

that PAHs (1) present risk only to terrestrial invertebrates, such as earthworms, but that (2) due to the small size of the site, pose minimal ecological risk. The risk posed by the surface water in the aquatic portion of the retention pond is not discussed. Please clarify.

3. Section 2.8.2, Alternative 2: LUCs and Monitoring: See comment 1 about the need for a restrictive covenant to prevent excavation through the asphalt.
4. Section 2.11.2, Protection of Human Health and the Environment: See comment 1 about the need for a restrictive covenant to prevent excavation through the asphalt.
5. Section 2.11.2, Compliance with Applicable or Relevant and Appropriate Requirements. This section states that the selected remedy will not comply with chemical-specific ARARs because COC concentrations would not be actively reduced. There does not appear to be a chemical-specific ARAR for soils listed. The remedy must either comply with ARARs or seek a waiver. Please clarify how the selected remedy complies with this requirement.

EPA appreciates the opportunity to work with the Navy on this project at Cecil Field. If you have any questions regarding these comments please contact me at 404/562-8539 or at Vaughn-wright.Debbie@epa.gov.

Sincerely,

Deborah a Vaughn-Wright

Deborah a. Vaughn-Wright
Remedial Project Manager
Fl-AL-MS Federal Oversight Section

Enclosure

Cc: Jeff Meyers, SOUTHDIV
David Grabka, FDEP
Mark Speranza, TTNUS
Mark Halil, J.A. Jones

1.0 DECLARATION OF THE RECORD OF DECISION

1.1 SITE NAME AND LOCATION

Operable Unit (OU) 12, Site 32 consists of the contaminated soil in both the paved and unpaved areas of the Defense Reutilization and Marketing Office (DRMO) Asphalt Storage Yard at Naval Air Station (NAS) Cecil Field, Jacksonville, Florida [United States Environmental Protection Agency (U.S. EPA) ID FL5 170 022 474]. Site 32 is located in the central portion of the Main Base.

1.2 STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) presents the selected remedy for contaminated soil at OU 12, Site 32 at NAS Cecil Field. The selected remedial actions were 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 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 the Navy (Navy) and U.S. EPA Region 4 issue this ROD (jointly).

1.3 ASSESSMENT OF THE SITE

The response actions selected in this ROD are necessary to protect the public health, 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.

1.4 DESCRIPTION OF THE SELECTED REMEDY

OU 12, Site 32 is part of a comprehensive environmental investigation and cleanup currently being performed at NAS Cecil Field under the CERCLA program. This ROD addresses only OU 12, Site 32. The selected remedy ~~eliminates~~ limits unacceptable exposures to chemicals of concern (COCs) in soil. The selected remedy for OU 12, Site 32 includes monitoring of groundwater and soil and land use controls (LUCs) that will limit exposure to soil and prevent any residential reuse activities. 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 12, Site 32. Final RODS have been approved for OU 1 through 4; OU 5, site 14; OU 6 through OU 8, OU 9, sites 36/37; and OU 12 sites 42, 44 and the Old Golf Course.

Baseline Risk Assessment (BRA) and Feasibility Study (FS) have been completed for OU 5, Site 15, but he FS is currently being reevaluated. RI/FS reports have been completed and the proposed plans issued for OU 10, site 21 and 25; OU 10, site 45; and OU 9, site 57/58.

The major components of the selected remedy are as follows:

- LUCs, including institutional controls and deed restrictions, will be implemented to prevent residential development of Site 32 and to require that proper maintenance of the asphalt pavement is provided by the property owner.

- Long-term monitoring will be performed by collecting and analyzing soil and groundwater samples to verify that no unacceptable contaminant migration is occurring.

- Site conditions will be reviewed every 5 years. If monitoring and LUCs are shown to be insufficient to meet the cleanup goals and RAOs, 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 a Land Use Control Remedial Design), Remedial Action Work Plans, Final Remedial Action Completion Report, and a Five-Year Review Report. 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.

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 12, Site 32 is such that ARARs could eventually be met through natural attenuation of the soil. The selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be used in a practicable manner at this site. 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 soil contaminant concentrations are expected over time due to dispersion, advection, and adsorption processes. Because this remedy would result in soil with contaminant concentrations greater than health-based levels remaining on site, a review will be

conducted every 5 years to ensure that the remedy continues to provide adequate protection of human health and the environment.

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 12, Site 32.

1.7 SIGNATURE AND SUPPORT AGENCY ACCEPTANCE OF REMEDY

Jeffrey G. Meyers, P.E., CHMM Base Realignment and Closure Environmental Coordinator	Date
Winston A. Smith Director Waste Management Division U.S. EPA Region 4	Date

2.0 DECISION SUMMARY

2.1 SITE NAME, LOCATION, AND DESCRIPTION

OU 12, Site 32 is situated within the boundaries of the former NAS Cecil Field (U.S. EPA ID FL5 170 022 474), which is located 14 miles southwest of Jacksonville, Florida (See 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 Port Authority (now Jacksonville Airport Authority) and the City of Jacksonville. According to the City's reuse plan, Cecil Field will have multiple uses but will be used primarily for aviation-related activities.

OU 12, Site 32 consists of the contaminated soil identified at the DRMO Asphalt Storage Yard at NAS Cecil Field. As shown in Figures 2-1 and 2-2, Site 32 is located in the Main Base Area of NAS Cecil Field, just north of the western end of Crossover Street (formerly 2nd Street) and west of New World Avenue (formerly "D" Avenue) in the area north of the east-west flightline. As shown on Figure 2-3, the site includes Buildings 325 and 335 and the adjacent areas. The portion of the site in the vicinity of Building 325 (approximately 1.4 acres) is paved and includes a fenced storage area, and the remaining portion of the 2.3-acre site, located east of the fenced storage area and north of Building 335, is unpaved. Site 32 is bordered by paved parking lots to the north and south, by another DRMO Storage Yard to the west, and by Building 68 to the east (Figure 2-3). The site is an industrial area, and the reuse plan identifies that this area will continue to be used in that manner.

Site 32 was referred to in the Base Realignment and Closure (BRAC) NAS Cecil Field Environmental Baseline Survey (EBS) (ABB-ES, 1994) as Area of Interest (AOI) 32, the Hazardous Material Warehouse Storage Area. It was used for initial storage and warehousing of materials as they arrived at the Base. The site was color-coded gray in the EBS (ABB-ES, 1994) because of hazardous material storage and reported hazardous material releases at the site. Historical usage of the property for unpermitted storage of hazardous materials and first-hand accounts of leaking and poorly maintained drums has been documented. ABB Environmental Services, Inc. (ABB-ES) performed a field investigation for the assessment of sediment, surface soil, and groundwater at AOI 32 in 1996 (ABB-ES, 1996). Based on soil contamination detected during this investigation, the site was renamed Potential Source of Contamination (PSC) 32 in February, 1999.

Between May 1999 and April 2000, Tetra Tech NUS, Inc. (TtNUS) conducted field investigations at PSC 32 to delineate the extent of surface and subsurface soil contamination (TtNUS, 1999b, 2000a). In May, 2001, following soil excavation activities, the BRAC Cleanup Team (BCT) redesignated the area as Installation Restoration (IR) Site 32 within OU 12.

2.2 SITE HISTORY 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 [Geraghty and Miller (G&M), 1983] and 1985 (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 (HLA, 1988).

NAS Cecil Field was placed on the National Priorities List (NPL) by the U.S. EPA in December 1989. A Federal Facility Agreement (FFA) for NAS Cecil Field was signed by 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 12 is one of 12 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 Site 32 History

Buildings 325 and 335 and the open storage area adjacent to these buildings had always been used for the initial storage and warehousing of hazardous materials as they arrived at the Base. Following NAS Cecil Field closure in September 1999 and transfer of the Base to civilian ownership, the two buildings and the open storage area, collectively referred to as Site 32, were deactivated.

2.2.2 Site Investigations

The following investigations and studies have been conducted in and around Site 32:

- As part of the Sampling and Analysis Outline (SAO) for AOIs 32 and 33 (ABB-ES, 1995), a Phase II investigation was proposed for AOI 32 to assess the presence or absence of contamination in surface soil, surface water, sediment, and groundwater. A full Contract Laboratory Program suite of Target Compound List (TCL) organics [including volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, and polychlorinated biphenyls (PCBs)] and Target Analyte List (TAL) inorganics was recommended.

- As part of the Phase II investigation associated with the Sampling and Analysis Report (SAR), one groundwater sample, one sediment sample, and five surface soil samples were collected and analyzed for TCL VOCs, SVOCs, pesticides, and PCBs, and TAL inorganics (ABB-ES, 1996). The groundwater sample was collected from a well installed in the west-central section of AOI 32. The sediment sample was collected from the stormwater retention basin north of Building 335, and the five surface soil samples were collected at locations near the four corners and the center of the paved area surrounding Building 325. Aluminum, iron, and manganese were detected in groundwater samples at concentrations greater than Secondary Maximum Contaminant Levels (SMCLs); however, these concentrations were less than Inorganic Background Data Set (IBDS) levels and no groundwater pathway to human or ecological receptors was identified at AOI 32. Chromium, lead, manganese, selenium, tin, and vanadium were detected at concentrations in excess of human health screening criteria in surface soil samples beneath the asphalt paved area. No hexavalent chromium was detected in the sample with the highest total chromium concentration, and no exposure pathways to soil beneath the asphalt were identified for human or ecological receptors. No human health or ecological screening criteria were exceeded in the sediment collected from the stormwater retention basin. Based on the information obtained from the SAR Phase II investigation, it was concluded that concentrations of analytes detected in surface soil in the study area may represent a hazard to human health or the environment if deterioration of the asphalt pavement results in an exposure pathway.

- Between May 1999 and April 2000, seven soil sampling and analysis events were conducted at PSC 32 to delineate the extent of polynuclear aromatic hydrocarbon (PAH)-and inorganic contamination in surface and subsurface soil. Thirty-six surface soil samples and three subsurface soil samples were collected during the seven events. Typically, samples were analyzed for PAHs and Toxicity Characteristic Leaching Procedure (TCLP) and TAL inorganics. The results were used to delineate soil contamination for excavation and disposal (TtNUS, 1999b and 2000a).

- In May 2000, an Action Memorandum for PSC 32 was prepared to identify the need for an Interim Removal Action (IRA) and to estimate the associated costs (TtNUS, 2000b). In August 2000, this IRA for the excavation and disposal of 78 cubic yards (141 tons) of soil adjacent to Building 335 in the unpaved section of the site was conducted to address potential exposures and hazardous substances that posed a threat of release and to comply with the reuse planned for this area (CH2M Hill, 2001).

- May 2001 through August 2002 – OU 12, Site 32 Engineering Evaluation/Cost Analysis (EE/CA). Based on the results of previous investigations, RAOs were developed, soil COCs were identified, and cleanup goals were established for the unpaved area of the site. Remedial alternatives for soil

were then assembled, analyzed, and compared, and a preferred alternative was recommended (TtNUS, 2002b).

- June 2003 – A Proposed Plan (TtNUS, 2003) was prepared based on the findings of the EE/CA. This Proposed Plan identified implementation of LUCs and monitoring of groundwater and soil as the proposed remedial alternative for the Site 32 soil. The Proposed Plan also presented a rationale for the selection of the proposed remedy.

2.3 HIGHLIGHTS OF COMMUNITY PARTICIPATION

Public notices of the availability of the Proposed Plan (TtNUS, 2003) were placed in the Metro section of the *Florida Times-Union* on _____, 2003. A 30-day comment period was held from _____ through _____, 2003. The results of the previous investigations, the remedial alternatives of the EE/CA (TtNUS, 2002), and the preferred alternative in the Proposed Plan (TtNUS, 2003) were also presented and discussed at a Restoration Advisory Board (RAB) meeting held in _____ 2003 during which comments were solicited from the community. Public comments and the responses to these comments are presented in the Responsiveness Summary provided in Appendix A.

Documents pertaining to OU 12, Site 32 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 12, Site 32. Final RODs have been approved for OU 1 through OU 4; OU 5, Site 14; OU 6 through OU 8; OU 9, Sites 36/37; OU 11, and OU 12, Sites 42, 44 and Old Golf Course. 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. An EE/CA report for OU 9, Site 49 was finalized in February 2002. RI and FS reports were finalized for OU 9, Sites 57 and 58 in August and October 2002, respectively. RI reports for OU 10, Sites 21 and 25 were finalized in October 2001. The FS report for Site 25 was finalized in October 2001. Decision documents are forthcoming for Sites 21, 25, 49, and 57/58.

Investigations at OU 12, Site 32 indicated the presence of soil contamination from past operating practices. This contamination could pose an unacceptable human health risk if residential development occurred at the site or if the asphalt pavement on the western portion of the site is allowed to deteriorate.

The following RAOs were established for soil at OU 12, Site 32:

- Prevent unacceptable risk from exposure to soil with concentrations of PAHs greater than FDEP residential Soil Cleanup Target Levels (SCTLs) (FDEP, 1999) and concentrations of inorganics greater than FDEP residential SCTLs and/or IBDS values (HLA, 1998).

- Address the potential risk of migration of organic and inorganic contamination from soil to groundwater from soils with concentrations that exceed the FDEP SCTL for leachability.

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 12, Site 32 are discussed in Sections 2.0 of the OU 12, Site 32 EE/CA Report (TtNUS, 2002b). These site characteristics are summarized in the following paragraphs. Please include the approximate size of OU 12, site 32.

2.5.1 Geology and Hydrogeology

Site 32 is located between OU 3, Site 7 and OU 9, Site 37. No site-specific subsurface geologic investigation was performed at the DRMO Asphalt Storage Yard. The geological and hydrogeological characteristics of the site are assumed to be similar to those described in the RI Reports for OU 3, Sites 7 and 8 (ABB-ES, 1997) and OU 9, Sites 36 and 37 (TtNUS, 1999a).

2.5.2 Nature and Extent of Contamination

2.5.2.1 Soil

Tables 2-1 and 2-2 present summaries of soil analytical data from the unpaved areas of the site (collected prior to the IRA) and from beneath the asphalt pavement, respectively. The tables include minimum and maximum detected concentrations, frequencies of detection, and comparisons of the analytical data to the FDEP SCTLs for direct residential exposure, direct industrial exposure, and leachability to groundwater and to site-specific IBDS values. Table 2-1 indicates that only PAHs, including

1-methylnaphthalene, acenaphthene, benzo(a)anthracene, benzo(a)pyrene (BaP), benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene were detected in soil in the unpaved portions of the site, prior to the IRA, at concentrations in excess of FDEP SCTLs for direct residential or industrial exposure or leachability to groundwater.

Table 2-2 indicates that 4-methylphenol, BaP, antimony, arsenic, barium, cadmium, lead, manganese, nickel, selenium, and vanadium were detected in soil beneath the asphalt pavement at concentrations in excess of the FDEP SCTLs for direct residential or industrial exposure, leachability to groundwater or NAS Cecil Field site-specific IBDS values. Of these nine COCs, only lead and arsenic exceeded the FDEP SCTL for direct industrial exposure. The Phase II investigation determined that concentrations of these contaminants beneath the asphalt pavement at Site 32 could represent a hazard to human health or the environment if deterioration of the asphalt pavement would result in an exposure pathway.

Accordingly, PAHs, 4-methylphenol, antimony, arsenic, barium, cadmium, lead, manganese, nickel, selenium, and vanadium were retained as soil COCs for Site 32. Post-IRA exceedances of industrial or leachability to groundwater SCTLs or site-specific IBDS values for soil are illustrated on Figure 2-4.

2.5.2.2 Groundwater

A groundwater sample was collected from Well CEF-1032-01 and analyzed for TCL organics and TAL inorganics during the Phase II investigation. Concentrations of aluminum, iron, and manganese exceeded FDEP GCTLs and U.S. EPA contaminant levels (MCLs) (both secondary criteria) but were less than NAS Cecil Field site-specific IBDS values (ABB-ES, 1996). In addition, no exposure pathways to human or ecological receptors were identified for groundwater, provided that the asphalt pavement is properly maintained. Therefore, there are no COCs for Site 32 groundwater.

Table 2-3 summarizes the groundwater analytical data and compares the results to Federal MCLs, FDEP Groundwater Cleanup Target Levels (GCTLs), and the NAS Cecil Field site-specific IBDS values for groundwater.

2.5.2.3 Sediment

Also during the Phase II investigation, one sediment sample was collected from the stormwater retention basin north of Building 335. The sample was collected at a depth of 0 to 6 inches below the water-sediment interface. No human health or ecological screening criteria were exceeded in this sample.

2.5.3 Current and Potential Future Site Uses

Site 32 is currently located within the military activities portion of the Jacksonville Economic Development Commission (JEDC) Parcel. The JEDC Reuse Plan provides for continued military- and industrial-related uses of the site. Site RAOs support industrial risk exposure; therefore, potential future uses for Site 32 are limited to military, commercial, or industrial land use.

2.6 SUMMARY OF SITE RISKS

2.6.1 Human Health Risks

During the Phase II investigation, carcinogenic PAHs (cPAHs) were detected in soil in the unpaved area within Site 32 at concentrations in excess of FDEP SCTLs for direct industrial exposure and leachability to groundwater. A statistical evaluation was conducted to determine the areas of soil requiring removal so that the site-wide 95-percent upper confidence level (UCL) of the remaining concentrations of each contaminant was equal to or less than the SCTLs for direct industrial exposure. The results of this statistical evaluation are presented in the Action Memorandum for PSC 32 (TtNUS, 2000b).

The BCT decided that soil samples with BaP concentrations greater than three times the FDEP industrial SCTL of 500 μg/kg would be excavated. Excavation of these soils ensures protection of human health and groundwater under an industrial land use scenario. Protection of groundwater is also ensured because the leachability SCTL for BaP is greater than three times the industrial SCTL for BaP. Some soil samples remaining on site after excavation activities were completed may have concentrations in excess of the industrial SCTL, but the post-excavation exposure concentration over the entire site was determined to be less than the industrial SCTL. If the 95-percent UCL of the mean is less than the industrial SCTL, protection of human health is ensured.

Because BaP was the principal cPAH detected in the Site 32 soil, the BCT agreed that cPAHs detected in soil at the site should be regarded as a family of compounds and that their concentrations should be expressed in terms of BaP equivalents (BaPEqs). To ensure protection of human health, the post-excavation exposure concentration of BaPEqs also should be less than the industrial SCTL for BaP. For a given soil sample, a total BaPEq concentration was derived using detected concentrations of individual cPAHs and toxicity equivalent factors (U.S. EPA, 1995). If a cPAH was not detected in a particular sample, a concentration of one-half of the analytical detection limit for that cPAH was used to compute the total BaPEq concentration of that sample.

An IRA was conducted in August 2000 (CH2M Hill, 2001). During this removal action, approximately 78 cubic yards (141 tons) of soil were excavated and disposed off site so that the 95-percent UCLs of the

residual concentrations of BaPEqs in soil were equal to or less than the direct industrial SCTL for BaP. Samples with BaPEq concentrations in excess of 1,500 μg/kg (three times the BaP industrial SCTL of 500 μg/kg) were excavated and disposed in a permitted solid waste disposal facility. The excavated soil was replaced with clean fill from the North Fuel Farm (NFF). BaP was not detected in this soil. Therefore, to calculate the post-excavation exposure concentration for BaP, the removed samples were replaced with a BaP concentration of 19 μg/kg, a value equal to one-half its detection limit in the fill samples. To calculate the post-excavation exposure concentration for BaPEqs, the BaPEq concentrations of removed samples were replaced with a BaPEq concentration of 124 μg/kg, based on data collected from the NFF. The removal of these samples, in combination with other samples that were excavated, resulted in post-IRA concentrations of 279 μg/kg for BaP and 379 μg/kg for BaPEqs, which is less than the industrial SCTL for BaP and corresponds to a post-IRA risk of 7.6×10^{-7}. Therefore, soil in the unpaved portion of the site no longer represents a human health risk under an industrial scenario.

Following the removal action, only BaP remained in the Site 32 soil in the unpaved areas at concentrations in excess of the FDEP SCTLs for direct industrial exposure. Table 2-4 summarizes the minimum and maximum detected post-removal action concentrations, arithmetic means of detected concentrations, and 95-percent UCL concentrations for BaP and BaPEqs, and compares these post-removal action soil data to the FDEP SCTLs for direct residential exposure, direct industrial exposure, and leachability to groundwater, and to the site-specific IBDS values. As can be seen from Table 2-4, although the site-wide 95-percent UCL concentrations of BaP and BaPEqs remaining in the soil in the unpaved area of the site following the removal action are less than the FDEP SCTL for direct industrial exposure, these UCLs still exceed the FDEP SCTL for direct residential exposure.

Concentrations of inorganic contaminants beneath the asphalt pavement exceed FDEP residential and industrial SCTLs. Exceedances of these risk-based criteria result in hazard indices greater than 1.0. These unacceptable noncarcinogenic risks will be mitigated by maintenance of the asphalt pavement as required by LUCs to be implemented at this site as part of the selected remedy. Soil beneath the asphalt pavement at Site 32 does not represent a human health risk provided that the asphalt cap is properly maintained by the property owner.

2.6.2 Ecological Risks

Site 32 is located in a highly developed portion of Cecil Field. The site consists largely of the asphalt storage yard and Buildings 325 and 335. Parking lots, paved streets, and other buildings surround the site. Ecological habitat consists of an area of turf grass north of Building 335 and a retention pond. The retention pond is approximately 110 feet in length and 30 feet wide. The northern two-thirds of the pond are normally dry except immediately following rain events. There is no aquatic vegetation in this portion of the pond; instead, it is gravel covered. The southern one-third of the pond is vegetated by a thick

growth of cattails. Water in the southern portion of the pond is generally shallow. The turf grass area is utilized by receptors typically found in urban and industrial areas, such as various terrestrial invertebrates, lizards, songbirds, and exotic rodents such as the Norway rat, black rat, and house mouse. Aquatic invertebrates, minnows, reptiles, and amphibians probably utilize the retention pond. Wading birds probably forage occasionally in the pond.

Ecological risks to receptors in the retention pond were previously investigated, and sediment analytes did not exceed ecological screening criteria (ABB-ES, 1996). Therefore, no further investigation of ecological risk associated with the retention pond was conducted.

A drainage ditch (Site 44) is located west of the paved DRMO Storage Yard. At its closest point to Site 32, approximately 150 feet from the western edge of the paved yard, the ditch flows north to south. South of the site, the ditch bends to the west and after several hundred feet eventually proceeds past the wastewater treatment plant and into Lake Fretwell. Runoff from the paved storage yard could proceed to the drainage ditch; however, this runoff does not contact the impacted soil beneath the asphalt pavement.

Groundwater beneath the site could enter the ditch during seasonal high water table levels; however, samples collected from two Site 44 monitoring wells located between the paved storage yard and the drainage ditch did not exceed FDEP GCTLs or IBDS values. An extensive ecological risk evaluation was performed on the ditch from the DRMO to the wastewater treatment plant, and the results of this evaluation can be found in the Technical Memorandum for No Further Action for PSC 44 (TtNUS, 2002a).

Post-IRA soil data collected from the unpaved portion of Site 32 indicated that concentrations of several PAHs exceeded Region IV ecological screening values. Contaminants generally fall into two classes: chemicals for which the exposure route of concern is direct contact, and chemicals for which the exposure route of concern is the food chain (U.S. EPA, 2000b). PAHs fall in the first category, because PAHs do not biomagnify in the food web and PAHs present at the concentrations measured at Site 32 would not bioaccumulate. Thus, toxicity through direct contact is the only applicable exposure route for PAHs at the site. Based on the limited terrestrial habitat at Site 32 and on measured PAH concentrations, potential risks of PAHs at Site 32 are limited to soil invertebrates such as earthworms. Extensive use of the site by larger receptors such as birds and mammals is negligible due to the industrial character of the site.

In summary, Site 32 and the adjacent areas provide only limited terrestrial habitat of poor quality in an industrial setting. Terrestrial receptors consist of species acclimated to urban and industrial conditions. Based on analytical data from surface soil samples, potential risks are minor and are limited to soil invertebrates from PAHs. The area of contamination is relatively small (approximately 100 feet by 40 feet). With the above factors in mind, ecological risks appear to be negligible.

2.7 CLEANUP GOALS

The COCs identified for the Site 32 soil are PAHs in the unpaved area and 4-methylphenol and inorganics in the paved areas of the site.

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

For Site 32, soil cleanup goals for PAHs and inorganics were determined based on the following criteria:

- Protection of human health from direct exposure to contaminated soil in excess of industrial criteria
- Compliance with ARARs and ~~To Be Considered criteria (TBCs)~~ to the extent practicable, to-be-considered TBC criteria.

The following COCs were established for Site 32 soil:

COC	SCTL[1] (μg/kg)		Cleanup Goal (μg/kg)	Applicable Area
	Industrial Exposure	Leachability to Groundwater		
BaP	500	8,000	500	Unpaved
BaPEq	500	8,000	500	Unpaved
4-Methylphenol	3,000,000	30	30	Paved
Antimony	240,000	5,000	9,440[2]	Paved
Arsenic	3,700	29,000	3,700	Paved
Barium	87,000,000	1,600,000	1,600,000	Paved
Cadmium	1,300,000	8,000	8,000	Paved
Lead	920,000	NA	920,000	Paved
Nickel	28,000,000	130,000	130,000	Paved
Selenium	10,000,000	5,000	5,000	Paved
Vanadium	7,400,000	980,000	980,000	Paved

1 FDEP SCTL (FDEP, 1999).
2 NAS Cecil Field site-specific IBDS value (HLA, 1998).

2.8 DESCRIPTION OF REMEDIAL ALTERNATIVES

This section provides a narrative of each alternative evaluated for the remediation of soil at OU 12, Site 32. For further information on the remedial alternatives, refer to the EE/CA (TtNUS, 2002b) and the Proposed Plan (TtNUS, 2003). Summaries of the treatment alternatives evaluated in the EE/CA are

described in the following sections. The remedy selected for this ROD is presented in Section 2.10. As part of the EE/CA (TtNUS, 2002b), each of the following alternatives was evaluated for compliance with related ARARs, and Section 3.2 of the EE/CA presents a complete list of these ARARs. It should be noted that the ARARs presented in Section 2.11 and Tables 2-7 through 2-12 of this ROD are specific to the selected remedy.

Three remedial alternatives were analyzed for OU 12, Site 32 soil. This ROD has selected Alternative 2: LUCs and Monitoring to address contaminants remaining in soil following excavation activities.

2.8.1 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 prevent exposure by human receptors. Although PAHs and 4-methylphenol would attenuate naturally, the inorganic COCs probably would not, and 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 exist. This alternative would not achieve the 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 immediate risks to on-site receptors or the surrounding community and would be very easy to implement. There would be no cost associated with this alternative.

2.8.2 Alternative 2: LUCs and Monitoring

LUCs would consist of ~~limiting~~ restricting current land use to industrial or military purposes, preventing future residential development, and ensuring that the asphalt pavement is maintained by the property owner. Monitoring would consist of long-term soil and groundwater sampling and analysis to verify that no contaminants are migrating from soil to groundwater and to evaluate natural attenuation of contaminants in soils. Regular site inspections would be conducted to verify the continued application of LUCs. A site review would be performed at the end of 5 years to confirm the adequacy of the remedy.

This alternative would protect human health because it would reduce the risk from direct exposure to contaminated soil by properly maintaining the asphalt pavement and by preventing residential development. This alternative would achieve the soil RAO but would not comply with chemical-specific ARARs or TBCs because the 95-percent UCL for BaPEqs and the concentrations of several inorganic

COCs exceed the residential SCTLs. However, for the intended future land use (industrial), the site would be protective as long as LUCs are maintained. 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 monitoring activities that would be addressed through appropriate health and safety procedures. The activities for this alternative would be easy to implement. The capital, 30-year operating and maintenance (O&M) and net present worth (NPW) costs of this alternative are estimated at $11,000, $105,000, and $50,000, respectively.

2.8.3 Alternative 3: Excavation and Off-Base Disposal

This alternative would consist of excavating approximately 1,165 cubic yards of asphalt and 2,630 cubic yards of contaminated soil to reduce the site-wide 95-percent UCLs of remaining concentrations of BaPEq, in the unpaved areas and concentrations of 4-methylphenol, arsenic, barium, cadmium, lead, nickel, manganese, selenium, and vanadium to less than FDEP residential SCTLs and concentrations of antimony to less than the IBDS value in the paved areas. Excavated areas would be backfilled with clean soil, and the site would be restored to pre-excavation conditions. The excavated soil would be transported off base to a permitted facility for disposal by secure landfilling. Prior to landfilling, the excavated asphalt might require screening, crushing, and grinding to reduce particle size to less than 3 inches. Also, the excavated soil might be treated, if required, by such technologies as chemical fixation/solidification and/or low-temperature thermal desorption (LTTD). However, based on experiences from recent soil removal actions at similar NAS Cecil Field sites, it is not anticipated that such soil 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 2,630 cubic yards of soil containing approximately 10,000 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 to 3 months. The activities for this alternative would be easy to implement. The capital and NPW costs of this alternative are estimated at $676,000. There are no O&M costs associated with this alternative.

2.9 SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

This section evaluates and compares each of the remedial alternatives with respect to the nine criteria outlined in §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, and Table 2-6 presents a summary comparison of these analyses.

2.10 SELECTED REMEDY

2.10.1 Summary of Rationale for Remedy Selection

The goals of the selected remedy are to protect human health and the environment by eliminating, reducing, or controlling hazards posed by the site and to meet ARARs. Based on consideration of the requirements of CERCLA, the NCP, the detailed analysis of alternatives, and U.S. EPA, FDEP, and public comments, Alternative 2 was selected to address contamination at OU 12, Site 32.

This remedy was selected for the following reasons:

- Although concentrations of COCs remaining in soil exceed FDEP residential SCTLs or IBDS values, they do not present an unacceptable threat to human health or the environment assuming that only military, commercial, or industrial uses are permitted at Site 32 and that the asphalt pavement is maintained. This plan will achieve risk reduction by imposing restrictions (LUCs) on site land usage and by requiring the owner of the site to properly maintain the asphalt cover.

- To date, there is no evidence of ongoing contaminant migration from the soil to the surficial aquifer beneath Site 32. Studies have shown that the concentrations of COCs in the groundwater beneath Site 32 are less than FDEP GCTLs, U.S. EPA MCLs, and/or IBDS values.

2.10.2 Remedy Description

The remedy is illustrated on Figure 2-5 and consists of three major components: (1) LUCs, (2) long-term monitoring of soil and groundwater, and (3) contingency remedy.

Component 1: Land Use Controls

Soil contamination remains at Site 32 at concentrations that preclude unrestricted reuse; therefore, the remedy includes LUCs to prevent unacceptable risk. These LUCs will be implemented to prohibit residential development at Site 32 and thereby preclude unacceptable risks from exposure to

contaminated soil. The LUCs, by way of annual inspections, will also ensure that the owner of the site is properly maintaining the asphalt cover. The boundaries of OU 12, Site 32 and the area to be covered by the soil LUCs are shown in Figure 2-3. The following are the LUC performance objectives for OU 12, Site 32, and these objectives will also be incorporated into the deed and other LUCs mechanisms:

- Prohibit residential reuse of the site.
- Prohibit the excavation and uncontrolled removal of soil with contaminant concentrations greater than FDEP residential SCTLs unless prior written approval is obtained from the Navy, U.S. EPA, and FDEP.
- Maintain the integrity of the 63,000 square feet of asphalt cover that surrounds Building 325.
- Maintain the integrity of any existing or future monitoring or remediation system(s).

The LUCs shall be implemented for as long as they are required to prevent unacceptable exposure to contaminated soil 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 LUCs shall be maintained until the concentrations of hazardous substances in the soils beneath Site 32 have been reduced to levels that allow for unlimited exposure.

The Navy is responsible for implementing, inspecting, reporting, and enforcing the LUCs described in this ROD in accordance with the approved LUC Remedial Design. Although the Navy retains ultimate responsibility for the performance of these obligations, the Navy may arrange, by contract or otherwise, for another party(ies) to carry them out. Should any LUC remedy fail, the Navy will ensure that appropriate actions are taken to reestablish the remedy's protectiveness and may initiate legal action to either compel action by a third party(ies) and/or to recover the Navy's costs for remedying any discovered LUC violation(s).

The LUC Remedial Design will be prepared as the LUC component of the Remedial Design. Within 90 days of 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.

Component 2: Long-Term Monitoring

Long-term monitoring will consist of the periodic collection and analysis of soil and groundwater samples to verify that no contaminant migration is occurring either from soil to groundwater. Long-term monitoring will also be used to assess natural attenuation of soil contamination.

Monitoring will be conducted for as long as contamination at Site 32 remains above residential SCTLs, and sampling will be on a 5-year basis. Four soil samples will be collected and analyzed for VOCs, SVOCs, and inorganics. Groundwater samples will be collected from one existing and one proposed monitoring well and analyzed for VOCs, SVOCs, and inorganics. Site conditions will be evaluated every 5 years because this remedial alternative would allow COCs to remain in soils at concentrations that exceed cleanup goals.

Component 3: Contingency Remedy

If the results of any Five-Year Review show that (1) the implemented LUCs have failed to prevent unacceptable risks from exposure to on-site soil contamination; (2) soil contaminants have migrated at unacceptable concentrations past the site boundary; or (3) groundwater analytical results indicate that contaminants have migrated from soil to groundwater at unacceptable concentrations, then additional active remedial measures would need to be evaluated and possibly implemented. Potential contingency remedial measures could include excavation and off-base disposal of contaminated soil and groundwater treatment.

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: $ 11,000
- 30-year O&M Costs: $105,000
- 30-Year NPW of Capital, LUC, and O&M Costs: $ 50,000

The above cost figures have been rounded to the nearest $1,000 to reflect the preliminary nature of the estimates. A detailed breakdown of the above estimates is provided in Appendix B.

2.10.4 Expected Outcomes of the Selected Remedy

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

- Immediately upon implementation of the remedy, Site 32 will be environmentally safe for its intended use as a military/commercial/industrial facility as long as the LUCs are in place and observed.

- Soil will require LUCs to prevent residential development of Site 32 and to ensure that the asphalt pavement in the former storage yard is properly maintained. These controls will be required for as long as soil contaminant concentrations preclude unrestricted reuse.

- Site 32 is currently used for military reserve functions within the industrial facility. The JEDC Reuse Plan prescribes commercial/military-related reuse for this area, although a specific activity has not yet been identified. It is anticipated that the reuse of NAS Cecil Field, including Site 32, will be beneficial to the Jacksonville area and expand the tax base of Duval County.

2.11 STATUTORY DETERMINATIONS

Under CERCLA Section 121 and the NCP, the selected remedy must be protective of human health and the environment, comply with ARARs (unless a statutory waiver is justified), be 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 disposal of untreated wastes. The following sections discuss how the selected remedy meets these statutory requirements.

2.11.1 Protection of Human Health and the Environment

The selected remedy, Alternative 2, will protect human health and the environment. LUCs will prevent the future residential development of the site. Consequently, the reduced frequency of exposure associated with an industrial scenario results in a reduced intake of constituents of concern and therefore, a reduced risk. Post-excavation soil concentrations of BaP and BaPEqs in the unpaved area of the site were less than the industrial SCTL for BaP. Therefore, risks from exposure to these soils are acceptable under an industrial land use scenario. Concentrations of inorganics exceeding FDEP residential and industrial SCTLs in soil beneath the paved area of the site result in hazard indices greater than 1.0. LUCs enforcing maintenance of the asphalt pavement over this area of the site precludes exposure that could cause unacceptable risks. In addition, maintenance of the asphalt cap integrity will minimize migration of COCs in the soil beneath the paved areas to the surficial aquifer beneath the site.

2.11.2 Compliance with Applicable or Relevant and Appropriate Requirements

The selected remedy, Alternative 2, will not comply with Chemical-Specific ARARs because COC concentrations would not be actively reduced. However, Chemical-Specific ARARs ~~might~~ will eventually be achieved through natural attenuation. Alternative 2 would comply with all location- and action-specific

ARARs. The ARARs that the selected remedy complies with are presented below and in more detail in Table 2-7 through Table 2-12. There are no location-specific ARARs.

The Chemical- and Action-Specific ARARs include the following:

- Safe Drinking Water Act (SWDA) MCLs (40 CFR Part 141), This is a Chemical-Specific ARAR that specifies acceptable concentration levels in groundwater that serves as a potential drinking water aquifer.

- Groundwater Classes, Standards, and Exemptions [Florida Administrative Code (FAC) Chapter 62-520]. This is a Chemical-Specific ARAR that 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 Part 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 Safety and Health Regulations (29 CFR Part 1910). 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 (FAC 62-532). 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 (FAC 62-736). 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 Chemical-Specific ARAR provides primary and secondary drinking water quality criteria.

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

In implementing the selected remedy, the Navy, U.S. 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-Secondary Maximum Contaminant Levels (SMCLs), (40 CFR 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 noncarcinogenic 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.

- U.S. EPA Monitored Natural Attenuation Guidance. This provides guidance on evaluation of monitored natural attenuation.

2.11.4 Cost-Effectiveness

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 30-year NPW costs of the selected remedy are $50,000.

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 Site 32. Of those alternatives that are protective of human health and the environment and comply with ARARs, the Navy and U.S. EPA, in consultation with FDEP, have 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 principal 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

Although the selected remedy does not meet the statutory preference for treatment as a principal element, reduction of soil contaminant concentrations are expected over time due to such naturally occurring processes as biological degradation.

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 unlimited use and unrestricted exposure, a statutory review will be conducted within 5 years after initiation of remedial action to ensure that the remedy is, or will be, protective of human health and the environment.

2.12 DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan for OU 12, Site 32 (TtNUS, 2003) was released for public comment on _____, 2003. The Proposed Plan identified Alternative 2, LUCs and Monitoring, as the preferred alternative. The public was invited to comment during a 30-day period extending from _____ to _____, 2003. No changes to the proposed remedy, as originally identified in the Proposed Plan, have been made as a result of public comments.