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NAS WHITING FIELD  
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FINAL RECORD OF DECISION FOR SITE 6 NAS WHITING FIELD FL  
9/3/2004  
TETRA TECH NUS

**RECORD OF DECISION  
FOR  
SURFACE AND SUBSURFACE SOILS AT  
SITE 6, SOUTH TRANSFORMER OIL DISPOSAL AREA**

**NAVAL AIR STATION WHITING FIELD  
MILTON, FLORIDA  
USEPA ID No. FL2170023244**

**COMPREHENSIVE LONG-TERM  
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT**

**Submitted to:**

**Southern Division  
Naval Facilities Engineering Command  
2155 Eagle Drive  
North Charleston, South Carolina 29406**

**Submitted by:**

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**CONTRACT NO. N62467-94-D-0888  
CONTRACT TASK ORDER 0028**

**SEPTEMBER 2004**

**PREPARED UNDER THE SUPERVISION OF:**

  
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### CERTIFICATION OF TECHNICAL DATA CONFORMITY

The Contractor, Tetra Tech NUS, Inc., hereby certifies, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-94-D-0888 are complete, accurate, and comply with all requirements of this contract. The work and professional opinions rendered in this report were conducted or developed in accordance with commonly accepted procedures consistent with applicable standards of practice.

DATE: 3 September 2004

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## ACRONYMS

bls	below land surface
CCI	CH2M Hill Constructors, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	constituent of concern
COPC	constituents of potential concern
ECOPC	ecological constituent of potential concern
ELCR	excess lifetime cancer risk
ERA	ecological risk assessment
FDEP	Florida Department of Environmental Protection
FS	Feasibility Study
FSA	Feasibility Study Addendum
HHRA	human health risk assessment
HI	Hazard Index
HQ	Hazard Quotient
IR	installation restoration
IRA	Interim Removal Action
LUCs	land use controls
mg/kg	milligrams per kilograms
NAS	Naval Air Station
NAVFAC EFD SOUTH	Southern Division, Naval Facilities Engineering Command
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
PAHs	polynuclear aromatic hydrocarbons
PCB	polychlorinated biphenyl
PRGs	preliminary remediation goals
RA	remedial action
RBCs	risk-based concentrations
RI	Remedial Investigation
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
SCTL	soil cleanup target level
SVOC	semivolatile organic compound
TRPH	total recoverable petroleum hydrocarbons
TINUS	Tetra Tech, NUS, Inc.
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound

## **1.0 DECLARATION OF THE RECORD OF DECISION**

### **1.1 SITE NAME AND LOCATION**

Naval Air Station (NAS) Whiting Field is located approximately 5.5 miles north of the town of Milton, Florida in Santa Rosa County, about 25 miles northeast of Pensacola (Figure 1-1). Site 6, South Transformer Oil Disposal Area, is a parcel of land approximately 1.1-acres in size located southeast of the Midfield Maintenance Hangar, Building 1454, at NAS Whiting Field, Milton, Florida.

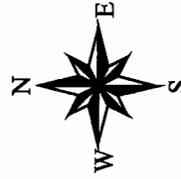
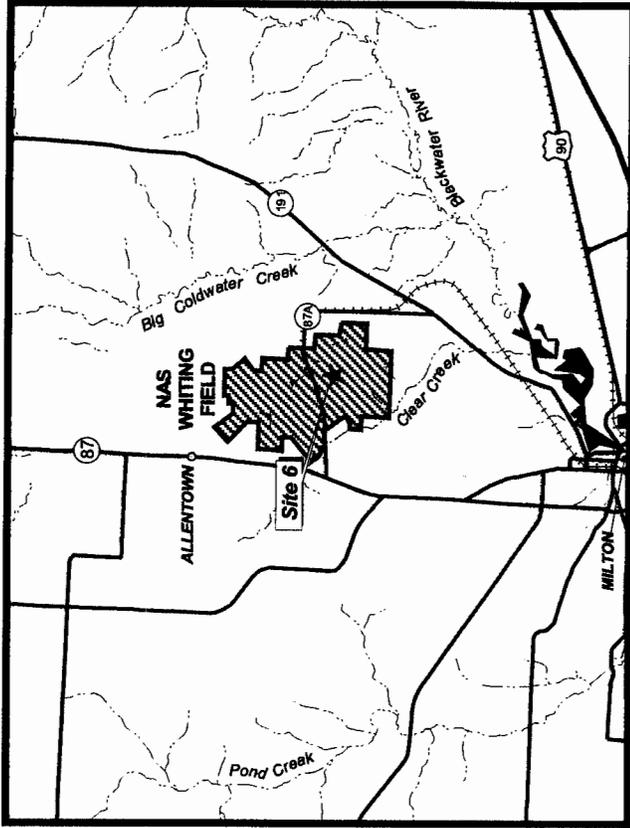
### **1.2 STATEMENT OF BASIS AND PURPOSE**

This decision document proposes No Further Action for surface and subsurface soils at Site 6, NAS Whiting Field. Groundwater at NAS Whiting Field has been identified as a separate site (Site 40, Basewide Groundwater) and will be addressed in a future decision document. The selected action was chosen by the Navy and the United States Environmental Protection Agency (USEPA) in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). Information supporting the selection of this action is contained in the Administrative Record for this site. The NAS Whiting Field Information Repository, including the Administrative Record, is located at the West Florida Regional Library, Milton Branch, 805 Alabama Street, Milton, Florida 32570, (850) 623-5565.

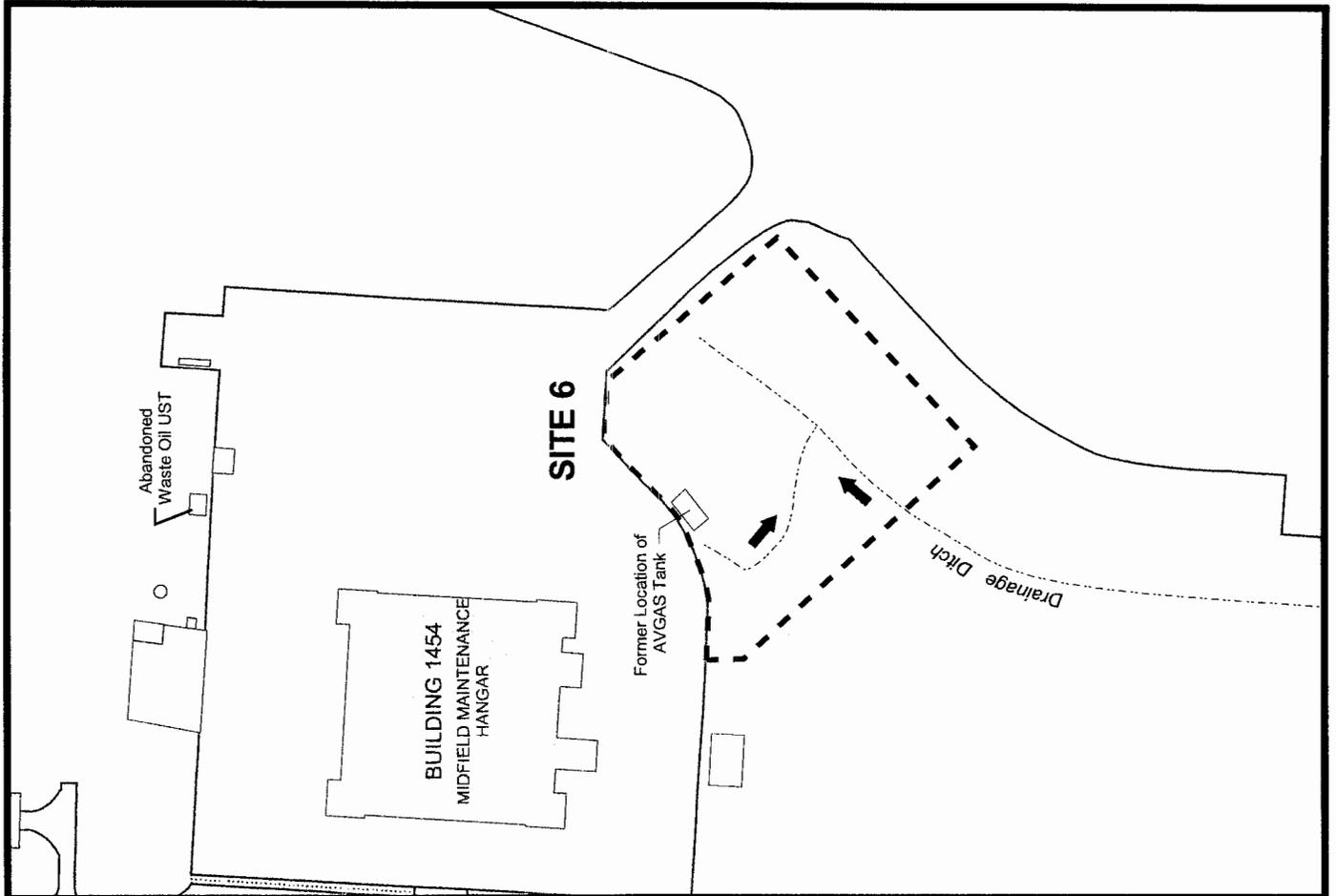
The Florida Department of Environmental Protection (FDEP) concurs with the selected remedy.

### **1.3 ASSESSMENT OF THE SITE**

Prior to an Interim Removal Action (IRA) in May 2002 [CH2M Hill Constructors, Inc., (CCI), 2002], investigation and evaluation of constituents present in the surface and subsurface soils at Site 6 identified seven semivolatile organic compounds (SVOCs), one polychlorinated biphenyl (PCB), five inorganic analytes, and total recoverable petroleum hydrocarbons (TRPH) exceeding State of Florida (FDEP, 1999) or USEPA (USEPA, 1999) risk-based screening values for residential land-use. Approximately 37 cubic yards of contaminated soil was excavated and disposed of off-site during the IRA. Post-IRA soil sampling results, status of selected inorganic analytes, and changed USEPA screening criteria were evaluated in a Feasibility Study (FS) Addendum (FSA) [Tetra Tech NUS, Inc. (TtNUS), 2004]. No constituents were identified exceeding the FDEP or USEPA risk-based screening values for residential land-use. No constituents of potential concern (COPCs) were identified in the FSA and no human health risks were



**FIGURE 1-1**  
**SITE 6 LOCATION AND AREA MAP**  
**RECORD OF DECISION**  
**NAS WHITING FIELD, MILTON, FLORIDA**



identified for exposure to surface and subsurface soils at Site 6. A summary of site risks is provided in Section 2.6 of this ROD. The results of the ecological risk assessment (ERA) presented in the RI indicate potential ecological risks at the site are acceptable, and further ecological study is unwarranted because the site is heavily industrialized and severely limited in the quantity and quality of habitat. Site 6 is characterized by mowed turfgrass surfaces, heavy human activity, and high vehicle/aircraft traffic. As a result of the heavy human activity and vehicle and aircraft noise, terrestrial wildlife is deterred from using the site. Most importantly, the site comprises only a small portion of the home ranges of most of the terrestrial wildlife species found on the base. A discussion of the potential ecological risk is presented in Section 2.6.2.

#### **1.4 DESCRIPTION OF THE SELECTED REMEDY**

This Record of Decision (ROD) presents the final action for surface and subsurface soils at Site 6 and is based on results of the Remedial Investigation (RI) (TtNUS, 1999), the FS (TtNUS, 2001a) and the FSA (TtNUS, 2004a). The selected remedy for Site 6 is No Further Action for surface and subsurface soils and ensures protection of human health and the environment. Previous responses at the site have eliminated the need to conduct further remedial action.

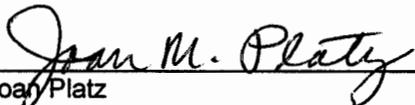
This ROD only addresses surface and subsurface soil at Site 6. Consequently, this ROD does not address actual or potential groundwater contamination at the site. Groundwater at NAS Whiting Field has been identified as a separate site (Site 40, Basewide Groundwater) and will be addressed in a future decision document. Sediment and surface water are not present at Site 6. Current soil conditions at Site 6 are protective of human health and the environment under an unrestricted use scenario; therefore, no further CERCLA action for surface and subsurface soils is necessary.

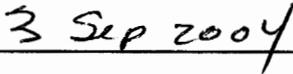
#### **1.5 STATUTORY DETERMINATIONS**

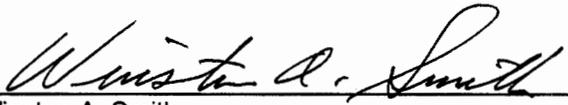
The No Further Action remedy selected for surface and subsurface soils at Site 6 is protective of human health and the environment, complies with federal and state requirements legally applicable or relevant and appropriate, and is cost effective. Consequently, no active treatment or monitoring will be conducted at Site 6.

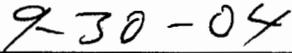
1.6

**AUTHORIZING SIGNATURES AND SUPPORT AGENCY ACCEPTANCE OF THE  
REMEDY**

  
\_\_\_\_\_  
Joan Platz  
Captain, United States Navy  
Commanding Officer, NAS Whiting Field

  
\_\_\_\_\_  
Date

  
\_\_\_\_\_  
Winston A. Smith  
Director, Waste Management Division  
USEPA, Region IV

  
\_\_\_\_\_  
Date

## 2.0 DECISION SUMMARY

### 2.1 SITE NAME, LOCATION, AND DESCRIPTION

Site 6, South Transformer Oil Disposal Area, is a parcel of land approximately 1.1 acres in size located southeast of the Midfield Maintenance Hangar, Building 1454, at NAS Whiting Field (Figure 2-1). At Site 6, from the 1940s until 1964, transformer fluids were reportedly drained into the grassed ditch east of Building 1454.

### 2.2 SITE HISTORY AND ENFORCEMENT ACTIVITIES

#### 2.2.1 NAS Whiting Field History

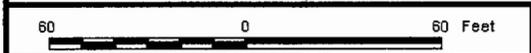
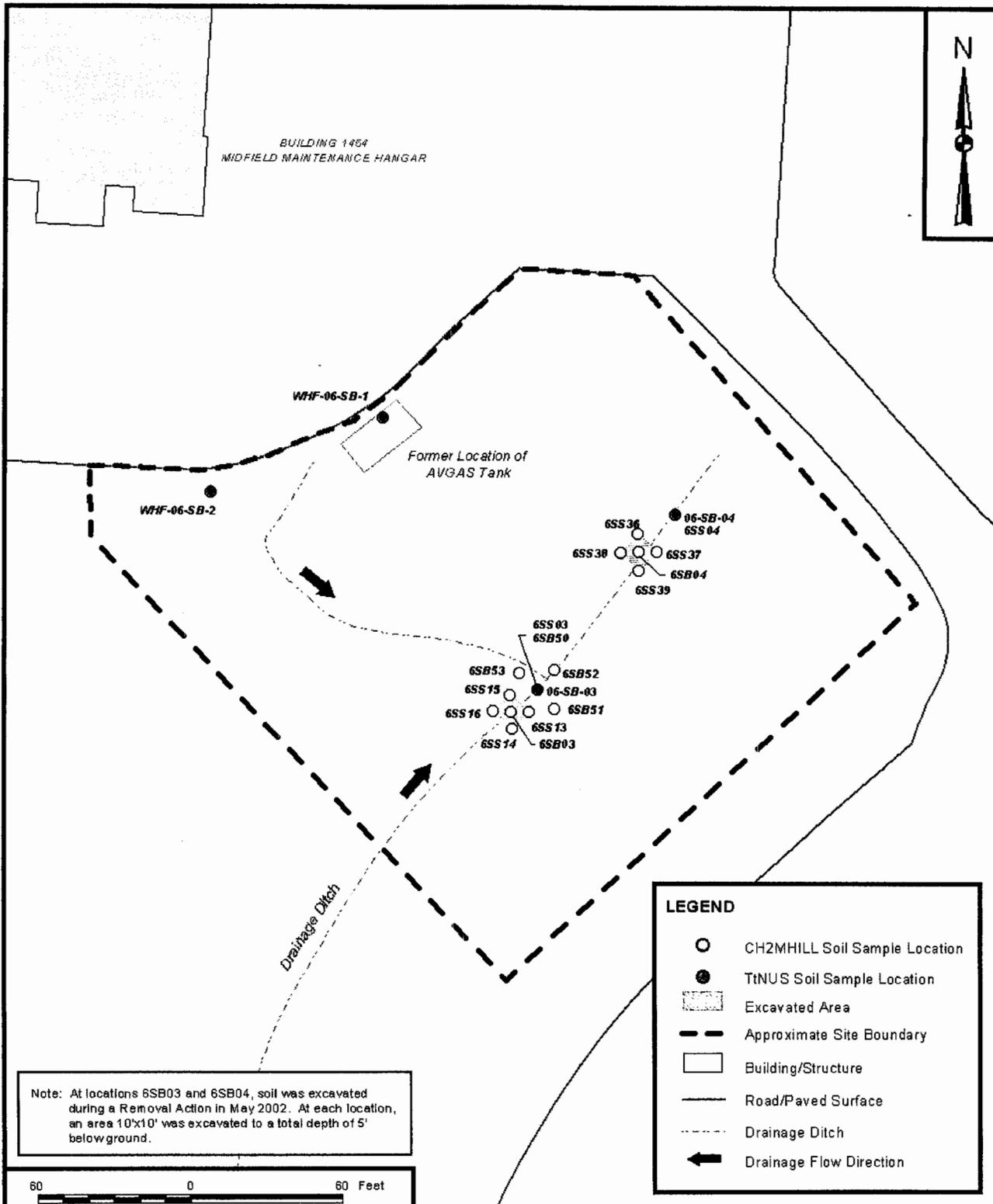
NAS Whiting Field was placed on the National Priorities List (NPL) by the USEPA in June 1994. Following the listing of NAS Whiting Field on the NPL, remedial response activities have been conducted pursuant to CERCLA authority.

The first environmental studies for the investigations of waste handling and/or disposal sites at NAS Whiting Field were conducted during the Initial Assessment Study (Envirodyne Engineers, Inc., 1985). The record search indicated that throughout its years of operation, NAS Whiting Field generated a variety of wastes related to pilot training, operation and maintenance of aircraft and ground support equipment, and facility maintenance programs.

#### 2.2.2 Site 6 History

The dielectric fluid reportedly drained from the transformers at Site 6 likely contained PCBs. Runoff from the grassed ditch drains in a northeasterly direction and eventually into Big Coldwater Creek, approximately 2.3 miles east of the disposal site (Geraghty & Miller, 1986).

Elevated concentrations of organic and inorganic analytes were identified during the RI at the site as presented in Section 2.5. The source of elevated inorganic analytes (aluminum, iron, and vanadium) present at Site 6 is not known, as there are no documented uses of these constituents at the site. Elevated organic compound concentrations are most prevalent in the shallow soil in the area adjacent to the Midfield Hangar apron. Runoff from the apron is directed to this area; therefore, the source of the organic compound concentrations may be from hangar activities, as well as from the discharge of transformer oil to the ditch. The Midfield Maintenance Hangar is located within the boundaries of Site 33, and is being addressed in a separate ROD.



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SITE 6 SOIL SAMPLE LOCATIONS  
RECORD OF DECISION  
NAS WHITING FIELD, MILTON, FLORIDA

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FIGURE 2-1	0

P:\G\WHITING FIELD\_NAS\APPROV D\_SITE6\APR SOIL SAMPLE LOCATIONS - 8.5X11 9/3/04 JAL

An FS (TtNUS, 2001a) was conducted to identify the best approach to address soil contamination at Site 6. An FSA (TtNUS, 2004a) was conducted to address the following activities undertaken and determination made since the original FS was submitted:

- Arsenic was determined to be naturally occurring at Site 6 - Based on additional review of inorganic data from the facility and surrounding area in April 2001, the observed arsenic values were determined to represent naturally occurring levels (FDEP, 2001). In Section 4.1.2 of the FS (TtNUS, 2001a), arsenic was identified as one of the primary risk drivers for all receptors. Because the identified human health risks associated with arsenic are now considered to be due to naturally occurring levels, arsenic is not considered a COPC for Site 6 surface and subsurface soils and remediation of arsenic in soil is not required at Site 6.
- Soil Excavation and Removal - On 15 May 2002, an IRA was conducted at Site 6 (CCI, 2002). Contaminated soil from two areas was excavated (Figure 2-1). Each area had been predetermined through source delineation sampling and analysis performed in August 2001 (CCI, 2001). Each area measured 10 feet by 10 feet and was approximately 5 feet deep. Approximately 37 cubic yards of nonhazardous soil were removed from the combined areas. The objective of the remedial activities was to perform excavation of soil exceeding residential cleanup goals for benzo(a)pyrene and TRPH.
- Additional Soil Data- Two post-removal action sampling events were conducted by CCI. Because of discrepancies in sample coordinates, two additional surface soil samples (plus a duplicate) were collected from the site in September 2003 (CCI, 2003). The sample from the 6SB03 area was analyzed for the full suite of polynuclear aromatic hydrocarbons (PAHs). The sample from the 6SB04 area was analyzed for TRPH and PCBs. The results of the September 2003 sampling event indicated no exceedences of the residential cleanup goals for PAHs in the 6SB03 area sample, and no exceedences of the residential cleanup goals for TRPH or the PCB Arochlor-1260 in the 6SB04 area sample. To confirm subsurface soil did not exceed the residential cleanup goals for PAHs, additional soil samples were collected from the area of the 6SB03 soil boring location in January 2004 (CCI, 2004) and analyzed for the full suite of PAHs. Four samples (plus a duplicate) were collected from 5 to 7 feet below land surface (bls) in the area of 6SB03 soil boring location. The results indicated no exceedences of the residential cleanup goals for PAHs.
- USEPA Region IX Preliminary Remediation Goals (PRGs) used as Screening Criteria - Over the course of the investigations at this site, USEPA Region IV changed its screening criteria for evaluation of hazardous waste-related sites from USEPA Region III risk-based concentrations (RBCs) (USEPA, 1999) to USEPA Region IX PRGs (USEPA, 2002). Therefore, analytical results are now

compared to the USEPA Region IX PRGs and FDEP soil cleanup target levels (SCTLs) (FDEP, 1999).

- The individual metal constituents, aluminum, iron, manganese and vanadium, have no direct evidence of site-related use at Site 6 and the process and procedures at this site did not likely contribute to the presence of these inorganic analytes in surface or subsurface soil. Additionally, the site-specific values for these inorganics are within the range of levels found at NAS Whiting Field and of naturally occurring levels throughout the southeastern United States. The RI for NAS Whiting Field Site 40, Basewide Groundwater, contains the appendix "Inorganics in Soil at NAS Whiting Field" presenting the technical basis for this determination. Considering the information presented above, aluminum, iron, manganese and vanadium are not considered chemicals of potential concern (COPCs) for Site 6 surface and subsurface soils.

Table 2-1 summarizes the Site 6 investigative history.

NAS Whiting Field presently consists of two airfields (North and South Fields) and serves as a naval aviation training facility providing support facilities for flight and academic training. No change is anticipated in the future land use for Site 6.

### **2.3 HIGHLIGHTS OF COMMUNITY PARTICIPATION**

The RI Report (TtNUS, 1999), FS (TtNUS, 2001a), Proposed Plan (TtNUS, 2001b), FSA (TtNUS, 2004a) and the revised Proposed Plan (TtNUS, 2004b) for Site 6 were made available to the public for review in July 2004. These documents, and other Installation Restoration (IR) program information, are contained within the Administrative Record in the Information Repository at the West Florida Regional Library, Milton, Florida.

The notice of availability of all site-related documents was published in the Pensacola News Journal and Santa Rosa Press Gazette on 25 July and 26 July 2004, respectively, and targeted the communities closest to NAS Whiting Field. The availability notice presented information on the RI, FS, and FSA at Site 6 and invited community members to submit written comments on the Proposed Plan.

A public comment period was held from 30 July through 30 August 2004, to solicit comments on the revised Proposed Plan. The comment period included an opportunity for the public to request a public meeting; however, a public meeting was not held because one was not requested. The site-related documents were placed in the Information Repository and made available for the public to review. Comments received during the public comment period are presented in the Responsiveness Summary in Appendix A.

**TABLE 2-1**  
**INVESTIGATIVE HISTORY**  
**RECORD OF DECISION**  
**SITE 6, SOUTH TRANSFORMER OIL DISPOSAL AREA**  
**NAVAL AIR STATION WHITING FIELD**  
**MILTON, FLORIDA**

PAGE 1 OF 2

Date	Investigation Title	Activities	Findings
1985	Initial Assessment Study, NAS Whiting Field, Milton, Florida (Envirodyne Engineers, Inc., 1985)	<ul style="list-style-type: none"> <li>• Review of historical records and aerial photographs</li> <li>• Field inspections and personal interviews</li> </ul>	<ul style="list-style-type: none"> <li>• From the 1940s until 1964, transformers were reportedly drained into the grassed ditch east of Building 1454. It is likely the dielectric fluid from the transformers contained PCBs. Runoff from the grassed ditch drains in a northeasterly direction and eventually into Big Coldwater Creek, approximately 2.3 miles east of the disposal site.</li> <li>• Collection and analysis of 10 surface soil samples along the grassed ditch was recommended.</li> <li>• No PCBs were detected above the laboratory detection limit of 0.2 mg/kg.</li> </ul>
1986	Verification Study, Assessment of Potential Groundwater Pollution at NAS Whiting Field, Florida (Geraghty & Miller, Inc., 1986)	<ul style="list-style-type: none"> <li>• 10 surface soil samples were collected along the ditch in the suspected transformer oil disposal area. These samples were analyzed for PCBs.</li> </ul>	<ul style="list-style-type: none"> <li>• The HHRA determined the carcinogenic risk from exposure to surface soil was within USEPA's acceptable risk range for current and future receptors at Site 6.</li> </ul>
1990 - 1999	Remedial Investigation Report for Surface and Subsurface Soil, Sites 3, 4, 6, 30, 32, and 33, NAS Whiting Field, Milton, Florida (TINUS, 1999)	<ul style="list-style-type: none"> <li>• Soil gas survey</li> <li>• Installation of four soil borings</li> <li>• Collection and analysis of surface soil samples</li> <li>• Collection and analysis of subsurface soil samples</li> <li>• HHRA</li> <li>• ERA</li> </ul>	<ul style="list-style-type: none"> <li>• The ELRCR associated with exposure to surface soil by a hypothetical future resident (5.7E-05), older child trespasser (1.8E-06), adult trespasser (2.5E-06), and occupational worker (7.9E-06) exceeded FDEP's target level of 1.0E-06, due primarily to the presence of arsenic and benzo(a)pyrene.</li> <li>• The non-cancer HIs associated with ingestion and direct contact of soil under current and hypothetical future land-uses are below USEPA's and FDEP's target of 1.0 except for the child resident, having an HI of 1.06.</li> <li>• The ERA does not predict unacceptable risks to plants or animals from chemicals present in surface soil at Site 6, due to the limited quantity and quality of habitat present at the site.</li> </ul>
2001	Feasibility Study for Surface and Subsurface Soil at Sites 3, 4, 6, 30, 32, and 33, NAS Whiting Field, Milton, Florida (TINUS, 2001a).	<ul style="list-style-type: none"> <li>• Determined COCs and area and volume of contaminated soil.</li> <li>• Evaluated remedial alternatives for site cleanup of COCs.</li> </ul>	<ul style="list-style-type: none"> <li>• Benzo(a)pyrene and TRPH identified as surface soil COCs. No subsurface COCs identified.</li> </ul>
2001	Proposed Plan, Site 6, South Transformer Oil Disposal Area, NAS Whiting Field, Milton, Florida, (TINUS, 2001b)	<ul style="list-style-type: none"> <li>• Established public comment period from July 2 through August 1, 2001.</li> </ul>	<ul style="list-style-type: none"> <li>• LUCs proposed for soil remedial action.</li> <li>• No comments received.</li> <li>• Arsenic no longer identified as a COPC.</li> </ul>
2001 -2002	Project Completion Report, Interim Removal Actions at Sites 6, 16, and 38, NAS Whiting Field (CCI, 2002)	<ul style="list-style-type: none"> <li>• Excavate contaminated soil from two areas in the vicinity of 6SB03 and 6SB04</li> </ul>	<ul style="list-style-type: none"> <li>• Approximately 37 cubic yards of nonhazardous soil excavated</li> </ul>

**TABLE 2-1**  
**INVESTIGATIVE HISTORY**  
**RECORD OF DECISION**  
**SITE 6, SOUTH TRANSFORMER OIL DISPOSAL AREA**  
**NAVAL AIR STATION WHITING FIELD**  
**MILTON, FLORIDA**

PAGE 2 OF 2

Date	Investigation Title	Activities	Findings
2003	<i>Results of Additional Soil Sampling, Site 6, NAS Whiting Field (CCI, 2003)</i>	<ul style="list-style-type: none"> <li>• Collected surface soil sample from 6SB03 area; analyzed for PAHs.</li> <li>• Collected surface soil sample from 6SB04 area; analyzed for TRPH and PCBs (Arochlor-1260).</li> </ul>	<ul style="list-style-type: none"> <li>• No exceedences of residential cleanup goals in soil samples</li> </ul>
2004	<i>Results of January 2004 Additional Soil Sampling, Site 6, NAS Whiting Field (CCI, 2004)</i>	<ul style="list-style-type: none"> <li>• Collected four subsurface samples plus a duplicate (5 to 7 feet bis) in area of 6SB03; analyzed for PAHs.</li> </ul>	<ul style="list-style-type: none"> <li>• No exceedences of residential cleanup goals in soil samples.</li> </ul>
2004	<i>Feasibility Study Addendum for Site 6, South Transformer Oil Disposal Area, Surface and Subsurface Soil, NAS Whiting Field (TINUS, 2004a)</i>	<ul style="list-style-type: none"> <li>• Revise COPCs</li> <li>• Conduct revised HHRA</li> </ul>	<ul style="list-style-type: none"> <li>• No COPCs identified for surface and subsurface soils.</li> <li>• Recommends No Further Action for surface and subsurface soils.</li> </ul>
2004	<i>Revised Proposed Plan, Site 6, South Transformer Oil Disposal Area, NAS Whiting Field, Milton, Florida (TINUS, 2004b)</i>	<ul style="list-style-type: none"> <li>• Established public comment period for proposed remedy</li> </ul>	<ul style="list-style-type: none"> <li>• Proposed remedy: No Further Action for surface and subsurface soils.</li> </ul>

Notes:

- bis = below land surface
- ELCR = excess lifetime cancer risk
- HHRA = human health risk assessment
- HI = hazard index
- LUCs = land use controls
- mg/kg = milligrams per kilogram
- CCI = CH2M Hill Constructors, Inc.
- COC = constituent of concern
- COPC = constituents of potential concern
- FDEP = Florida Department of Environmental Protection
- PCB = polychlorinated biphenyl
- PAHs = polynuclear aromatic hydrocarbons
- TRPH = total recoverable petroleum hydrocarbons
- TINUS = Tetra Tech, NUS, Inc.
- USEPA = United States Environmental Protection Agency

## **2.4 SCOPE AND ROLE OF REMEDIAL ACTION SELECTED FOR SITE 6**

As with many Superfund sites, the problems are complex at NAS Whiting Field. Site 6, the subject of this ROD, addresses surface and subsurface soil contamination and presents the final response action as No Further Action. The groundwater at NAS Whiting Field has been designated as a separate site (Site 40, Basewide Groundwater) and is not addressed in this ROD.

## **2.5 SITE CHARACTERISTICS**

Site 6 is approximately 1.1 acres in size and is characterized by mowed turfgrass surfaces and heavy human activity. The site is relatively flat, with a drainage ditch bisecting it.

### **2.5.1 Nature and Extent of Contamination**

Historical aerial photographs and engineering drawings, provided by the Navy, were evaluated during the planning phases of the RI. The objective of the evaluation was to determine the operational history of Site 6 and to verify earlier historical accounts.

As part of the RI conducted for Site 6, data were collected to determine the nature and extent of releases of site-derived contaminants in surface and subsurface soil, to identify potential pathways of migration in surface and subsurface soil, and to evaluate risks to human and ecological receptors. Investigations prior to the IRA at Site 6 indicated contamination at the site posed unacceptable risks to human receptors from exposure to surface soil for both commercial/industrial and residential land-use scenarios. Arsenic and benzo(a)pyrene were identified as the primary risk drivers. However, the FSA re-evaluated the human health risks based on changed conditions at the site and changes in risk screening criteria. A summary of those changed conditions and risk criteria presented in Section 2.2 of this ROD is listed below.

- Observed arsenic, aluminum, iron, manganese, and vanadium values were determined to represent naturally occurring levels at Site 6.
- Approximately 37 cubic yards of contaminated soil was removed during the IRA in May 2002.
- USEPA Region IX PRGs required as screening criteria.

Based upon activities undertaken and determinations made since the original FS was prepared as discussed in Section 2.2, a revised HHRA was conducted. Based on the results of the revised HHRA, the FSA recommended No Further Action for surface and subsurface soils at Site 6. Therefore, this ROD

documents the selected remedial action (RA) for Site 6 as a No Further Action for surface and subsurface soils. The groundwater at NAS Whiting Field has been designated as a separate site (Site 40, Basewide Groundwater) and is not addressed in this ROD.

#### **2.5.1.1 Surface Soil**

Surface soil sampling was conducted at Site 6 to determine the nature and extent of contamination at the site and to assess whether or not surface soil could potentially serve as an exposure pathway to human or ecological receptors. Constituents detected in surface soil at Site 6 prior to the IRA included volatile organic compounds (VOCs), SVOCs, TRPH, pesticides, PCBs, and inorganic analytes. A complete list of all constituents sampled and their detected concentrations in surface soil is available in the RI report (TtNUS, 1999). Post-removal soil analytical results from the September 2003 and January 2004 sampling events are summarized in the FSA.

The FSA conducted a re-evaluation of the constituents in the surface soil using the recent post-removal analytical data and the RI data. The screening criteria used included the FDEP SCTLs and the USEPA Region IX PRGs.

Post-removal evaluation of the constituents present in the surface soil at Site 6 identified no constituents present at levels exceeding residential land use criteria.

#### **2.5.1.2 Subsurface Soil**

Subsurface soil sampling was conducted at Site 6 to determine the vertical extent of contamination and to assess whether or not subsurface soil could potentially serve as an exposure pathway to human or ecological receptors. Constituents detected in subsurface soil at Site 6 include SVOCs, TRPH, pesticides, and inorganic analytes. A complete list of all constituents sampled and their detected concentrations in surface and subsurface soil is available in the RI Report (TtNUS, 1999). Post-removal soil analytical results are summarized in the FSA.

For the RI, the evaluation of the constituents present in the subsurface soil at Site 6 did not identify any constituents exceeding FDEP (FDEP, 1999) or USEPA Region III (USEPA, 1999) risk-based human health screening values for commercial/industrial land use. The FSA conducted a re-evaluation of the constituents in the subsurface soil using the recent post-removal analytical data and the RI data. The screening criteria used included the FDEP SCTLs and the USEPA Region IX PRGs (USEPA, 2002).

Post-removal evaluation of the constituents present in the subsurface soil at Site 6 identified no constituents present at levels exceeding residential land use criteria.

### **2.5.2 Ecological Habitat**

Site 6 is severely limited in the quantity and quality of habitat for ecological receptors because it is heavily industrialized, characterized by mowed turfgrass surfaces and heavy human and aircraft activity. Most importantly, the site comprises only a small portion of the home ranges of most of the terrestrial wildlife species found on the base.

### **2.5.3 Migration Pathways**

Removal of soil during the IRA removed a source and migration pathway. The FSA did not identify any COPCs at Site 6.

The transport of soil by water via the mechanisms of physical transport of soil, or the leaching of constituents from the soil to groundwater, is a potential concern. Leaching of constituents from soil to groundwater will be evaluated as part of the RI/FS for Site 40, Basewide Groundwater.

## **2.6 SUMMARY OF SITE RISKS**

A risk assessment was completed for Site 6 to predict whether the site would pose current or future threats to human health or the environment. Both an HHRA and an ERA were performed for Site 6. These risk assessments evaluated the constituents detected in site soil during the RI. These risk assessments evaluated the COPCs before the IRA was completed. A revised HHRA was conducted to evaluate the changed conditions at the site and changes in risk screening criteria.

The ERA and the revised HHRA provided the basis for selecting the RA. This section of the ROD summarizes the results of the ERA and the revised HHRA.

### **2.6.1 HHRA**

An HHRA was conducted at Site 6 to characterize the risks associated with potential exposures to site-related contaminants for human receptors. The HHRA is provided in Chapter 6.0 of the RI Report (TtNUS, 1999). Due to changed conditions at the site and changes in regulatory risk screening criteria, a revised HHRA was conducted. Details of the revised HHRA are provided in Section 2.0 of the FSA (TtNUS, 2004a).

The revised HHRA conservatively estimates the potential risk to human health considering historical data, recent post-IRA soil analytical data, and arsenic, aluminum, iron, manganese, and vanadium being present at naturally occurring concentrations at Site 6.

Typically, the major sections of an HHRA include the following: (1) identification of COPCs, (2) exposure assessment, (3) toxicity assessment, and (4) risk characterization. In the revised HHRA presented in the FSA, no COPCs were selected for surface and subsurface soils at Site 6; therefore, an exposure assessment, a toxicity assessment and a risk characterization were not required. No human health risks have been identified for surface or subsurface soils at Site 6.

#### **2.6.1.1            Uncertainty Analysis**

General uncertainties associated with the risk estimation process and site-specific uncertainties are discussed or referenced in the RI.

#### **2.6.2            ERA**

The ERA was conducted prior to the IRA activities. A summary of the ERA presented in the RI Report is provided below.

The purpose of the ERA for Site 6 was to evaluate the potential for adverse effects to ecological receptors at the South Transformer Oil Disposal Area. A conservative screening level ERA was performed according to the most recent USEPA guidance. Components of the screening level ERA included (1) preliminary problem formulation, (2) preliminary ecological effects evaluation, (3) preliminary exposure estimate, and (4) preliminary risk calculation. In addition, Step 3A (Refinement of COPCs) was also performed in accordance with USEPA and Navy ERA guidance. The ERA completed for Site 6 considered exposure of terrestrial plants, terrestrial invertebrates, and wildlife receptors to chemicals in surface soil at the site. All constituents detected in surface soil at Site 6, including VOCs, SVOCs, TRPH, pesticides, PCBs, and inorganic analytes were evaluated during the screening level assessment. A complete list of all constituents sampled and their detected concentrations in surface soil is available in the RI Report (TtNUS, 1999).

After considering the relevant factors, chromium and lead were the only chemicals present in the surface soil at Site 6 in concentrations appearing to pose potential risks to terrestrial receptors. None of the VOCs, SVOCs, or other inorganic ECOPCs appeared to pose potential risks. However, the quantity and quality of habitat at Site 6 are limited and of poor quality because the site is characterized by mowed turfgrass, heavy human activity, and high vehicle/aircraft traffic. As a result of the heavy human activity

and vehicle and aircraft noise, terrestrial wildlife is deterred from using the site. Most importantly, the site comprises only a small portion of the home ranges of most of the terrestrial wildlife species found on the Base. Therefore, reduction in growth, survival, and reproduction of small mammal and bird populations at and near Site 6 due to chromium, lead, or other chemicals evaluated in the ERA is unlikely. For these reasons, potential risks are acceptable and further ecological study at Site 6 is unwarranted.

### **2.6.3 Risk Summary**

Actual or threatened releases of hazardous substances from this site, addressed by implementing the IRA (CCI, 2002), no longer present a current or future potential threat to public health and welfare. No unacceptable human health risks have been identified for Site 6 surface and subsurface soils, and potential risks to ecological receptors are acceptable.

## **2.7 DOCUMENTATION OF SIGNIFICANT CHANGES**

The original HHRA conducted during the RI indicated the carcinogenic risk drivers for Site 6 were benzo(a)pyrene and arsenic. Based on commercial/industrial land use, the original FS (TtNUS, 2001a) identified benzo(a)pyrene and TRPH as COCs for Site 6. After the FS was submitted in March 2001, observed arsenic values were determined to represent naturally occurring levels (FDEP, 2001).

In July 2001, a Proposed Plan was published and a public comment period was established. The proposed remedy, surface soil removal and LUCs, was one of the remedial alternatives evaluated in the original FS. No public comments were received.

In May 2002, an IRA was conducted with the objective of removing surface and subsurface soil at Site 6 with concentrations of benzo(a)pyrene and TRPH exceeding industrial SCTLs. Approximately 37 cubic yards of contaminated soil was excavated and transported to an approved off-site disposal facility (CCI, 2002). Clean soil was brought in from an off-site, on-base source and the excavation was backfilled to the same elevation as the surrounding surface, seeded, and fertilized. Post-removal soil sampling events in September 2003 and January 2004 indicated no exceedances of residential standards.

In October 2002, USEPA Region IV changed the screening criteria requirement for selection of COPCs and now requires the use of USEPA Region IX PRGs. The original FS and the original Proposed Plan used the USEPA Region III RBCs for screening criteria. Due to changed conditions at the site and changes in regulatory risk screening criteria, as discussed in Section 2.2 of this ROD, a revised HHRA was conducted and presented in the FSA (TtNUS, 2004a). Based on residential land-use criteria, the FSA concluded No Further Action was necessary for surface and subsurface soils at Site 6. The

proposed remedy for Site 6 changed from surface soil removal and LUCs to No Further Action for surface and subsurface soils; therefore, a revised Proposed Plan was published in 2004.

There are no significant changes in the selected alternative, as described in the FSA and the revised Proposed Plan (TtNUS, 2004b).

## REFERENCES

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**APPENDIX A**

**COMMUNITY RELATIONS  
RESPONSIVENESS SUMMARY**

**Responsiveness Summary  
Site 6, South Transformer Oil Disposal Area  
Naval Air Station Whiting Field  
Milton, Florida**

A public comment period on the Site 6 Proposed Plan was held from 30 July, 2004 through 30 August, 2004. No public comments were received, and because a public meeting was not requested one was not held.