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PRELIMINARY SITE CHARACTERIZATION REPORT
SITE 4
NAVAL AIR STATION PENSACOLA, FLORIDA

SOUTHNAVFACENGCOM
CONTRACT NUMBER
N62467-89-D-0318
CTO - **970**

Prepared for:

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION **NAVY** *(CLEAN)*
NAVAL *AIR* STATION
PENSACOLA, FLORIDA

Prepared by:

EnSafe/Allen & Hoshall
5720 Summer Trees Drive, Suite 8
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(901) 383-9115

July 31, 1997

Release of this **document requires prior notification of** the *commanding* **Officer of the** Naval **Air** Station, **Pensacola, Florida.**

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CHARACTERIZATION REPORT
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NAVAL AIR STATION
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The Contractor, EnSafe/Allen & Hoshall, hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0318 are complete, accurate, and comply with all requirements of the contract.

Date: July 31, 1997
Signature: Allison J Dennen
Name: Allison Dennen
Title: Task Order Manager

July 31, 1997

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19. Abstract

A preliminary site characterization was conducted for Category VII — Site 4 (the Army Rubble Disposal Area) to determine whether any contaminants wen present in site soil or groundwater above surface soil, subsurface soil, and groundwater preliminary remediation goals (PRGs).

To confirm the absence or presence of contaminants, three borings were advanced to the water table. with surface and subsurface soil samples collected fo full Target Analyte List/Target Compound List analyses. The three borings were convened into shallow groundwater monitoring wells. Groundwatei samples were collected from all three wells.

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One organic and three inorganic parameters were detected in laboratory-analyzed samples. The analytical data were compared to risk-based, surface soil subsurface soil, and groundwater PRGs. Parameters detected above PRGs consisted of metals and a single high-molecular-weight polynuclear aromatic hydrocarbon (PAH).

Arsenic appears to be the prevalent inorganic constituent detected above PRGs in surface soil in the Site 4 area, present above the risk-based concentratioi (RBC) at all three borings advanced onsite. Iron also exceeded its PRG in two locations. Aluminum exceeds its PRG in only one location. A single surface soil benzo(a)pyrene concentration detected above the PRG was the lone organic contaminant detected.

The arsenic may be related to the use of arsenate-bad pesticides, which is common at Naval Air Station (NAS) Pensacola. and the concentration may hav(been elevated even further by storm water runoff from the adjacent parking lot. The surface soil PAH contamination is likely associated with cultural activitie! and/or development (automobile traffic/leaks, and/or runoff from the asphalt-paved parking lot).

The groundwater evaluation identified aluminum and iron above secondary standards in site groundwater. However, these concentrations did not exceed NAS Pensacola reference concentrations, indicating they are likely representative of ambient conditions. No organics were present in groundwater samples. Th(primary receiving aquifer within the Site 4 area is the surficial zone of the Sand-and-Gravel Aquifer, which is currently not used at NAS Pensacola as a potabl(water supply due to the availability of municiple water, the ambient concentrations of some metals. and the potential for saltwater intrusion that could be induced by pumping. Given that the upper surficial zone is not used. no remedial action to address the aluminum or iron exceedances is recommended. Th(primary surface water body receptor is Bayou Grande. No wetlands exist in the vicinity of Site 4.

No further action is recommended with respect to Site 4 soil due to the absence of any major contamination onsite. A comparison of other constituents tc applicable and relevant or appropriate requirements supports a conclusion of no further action for soil and groundwater based on the following analyses: (1) The arsenic and PAH contamination in surface soil may have resulted from the use of arsenate-based pesticides, automobile traffic and/or leaks. and storm water runoff from the adjacent paved parking lot: (2) the aluminum and iron detections in groundwater, although above PRGs. were below their respective NAS Pensacola reference concentrations; and (3) the absence of soil constituents arsenic and benzo(a)pyrene in groundwater supports that leaching of soi contaminants is not significant.

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List of Acronyms and Abbreviations

µg/kg	Micrograms per kilogram
ARARs	Applicable and Relevant or Appropriate Requirements
bls	Below land surface
CG	Cleanup Goal
CLP	Contract Laboratory Program
CSAP	Comprehensive Sampling and Analysis Plan
DQO	Data Quality Objective
E/A&H	EnSafe/Allen & Hoshall
E&E	Ecology and Environment, Inc.
FDEP	Florida Department of Environmental Protection
FNAI	Florida Natural Areas Inventory
ft/day	Feet per day
G&M	Geraghty & Miller, Inc.
GPS	Global Positioning System
GS	Grain Size
IS	Internal Standard
IAS	Initial Assessment Study
ICP	Inductively Coupled Plasma
ICS	Interference Check Sample
IRP	Installation Restoration Program
IPA	Isopropanol alcohol
LCS	Laboratory Control Sample
mg/kg	Milligrams per kilogram
MS	Matrix Spike
MSD	Matrix Spike Duplicate
msl	Mean sea level
NAS	Naval Air Station
NEESA	Naval Energy and Environmental Support Activity
NFESC	Naval Facilities Engineering Services Center
OSWER	Office of Solid Waste and Emergency Response
OU	Operable Unit
PAH	Polynuclear Aromatic Hydrocarbon
PCBs	Polychlorinated Biphenyls
PPS	Physical Parameter — Soil
PRG	Preliminary Remediation Goal
PSC	Preliminary Site Characterization
QA/QC	Quality Assurance/Quality Control
RBC	Risk-based Concentration
SAP	Sampling and Analysis Plan
SDG	Sample delivery group
SEGS	Southeastern Geological Society
SMCL	Secondary Maximum Contaminant Level

SMP	Site Management Plan
SOW	Statement of Work
SQUAGs	Sediment Quality Assessment Guidelines
SSL	Soil Screening Level
SSV	Sediment Screening Value
SOUTHNAVFACENGCOM	Southern Division Naval Facilities Engineering Command
TAL	Target Analyte List
TCL	Target Compound List
TEL	Threshold Effects Level
TRPH	Total Recoverable Petroleum Hydrocarbons
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

SITE 4 EXECUTIVE SUMMARY

A preliminary site characterization was conducted for Category VII – Site 4 (the Army Rubble Disposal Area) to determine whether any contaminants were present in site soil or groundwater above surface soil, subsurface soil, and groundwater preliminary remediation goals (PRGs).

To confirm the absence or presence of contaminants, three borings were advanced to the water table, with surface and subsurface soil samples collected for full Target Analyte List/Target Compound List analyses. The three borings were converted into shallow groundwater monitoring wells. Groundwater samples were collected from all three wells.

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1.0 INTRODUCTION

Under the authority of the U.S. Navy Comprehensive Long-term Environmental Action Navy program, a Preliminary Site Characterization (PSC) was recently completed at Site 4 — the Army Rubble Disposal Area at Naval Air Station (NAS) Pensacola. This screening site is listed under Category VII of the Site Management Plan (SMP) of the Installation Restoration Program (IRP) for NAS Pensacola (SOUTHNAVFACENGCOM, 1995). Site 4 is immediately north of Building 3260 and, includes parts of Buildings 3581 and 3578 and a large concrete pad near the airfield operations department at Sherman Field.

The investigation was undertaken by EnSafe/Allen & Hoshall (E/A&H) to meet the requirements of the federal Comprehensive Environmental Response, Compensation, and Liability Act of 1980, which administers the investigation and cleanup of hazardous waste sites. This Preliminary Site Characterization (PSC) report summarizes the investigation activities and presents findings and conclusions.

Investigation Objectives

The objectives of this investigation were to determine whether there is a source(s) of soil or groundwater contamination onsite and, if so, to determine its nature, magnitude, and extent using validated sample data. An additional objective of this investigation was to make an appropriate recommendation as to the need for further action based on this information.

The investigation was conducted in phases to allow for real-time data input from the Tier One team before proceeding. Thus, the investigation incorporated periodic input from the U.S. Environmental Protection Agency (USEPA) and the Florida Department of Environmental Protection (FDEP).

The investigation included:

- A review of the site's history, background, and previous investigations.
- A preliminary field survey to characterize the study area.
- A geophysical survey to identify potential anomalous subsurface features.
- The advancement of soil borings and collection of soil samples for chemical analysis.
- The installation of groundwater monitoring wells and collection of groundwater samples for chemical analysis.

Purpose of the Report

This PSC report summarizes the activities, results, and conclusions of the overall investigation, and documents the data collection and analytical methods used.

2.0 SITE DESCRIPTION AND HISTORY

2.1 Site Description

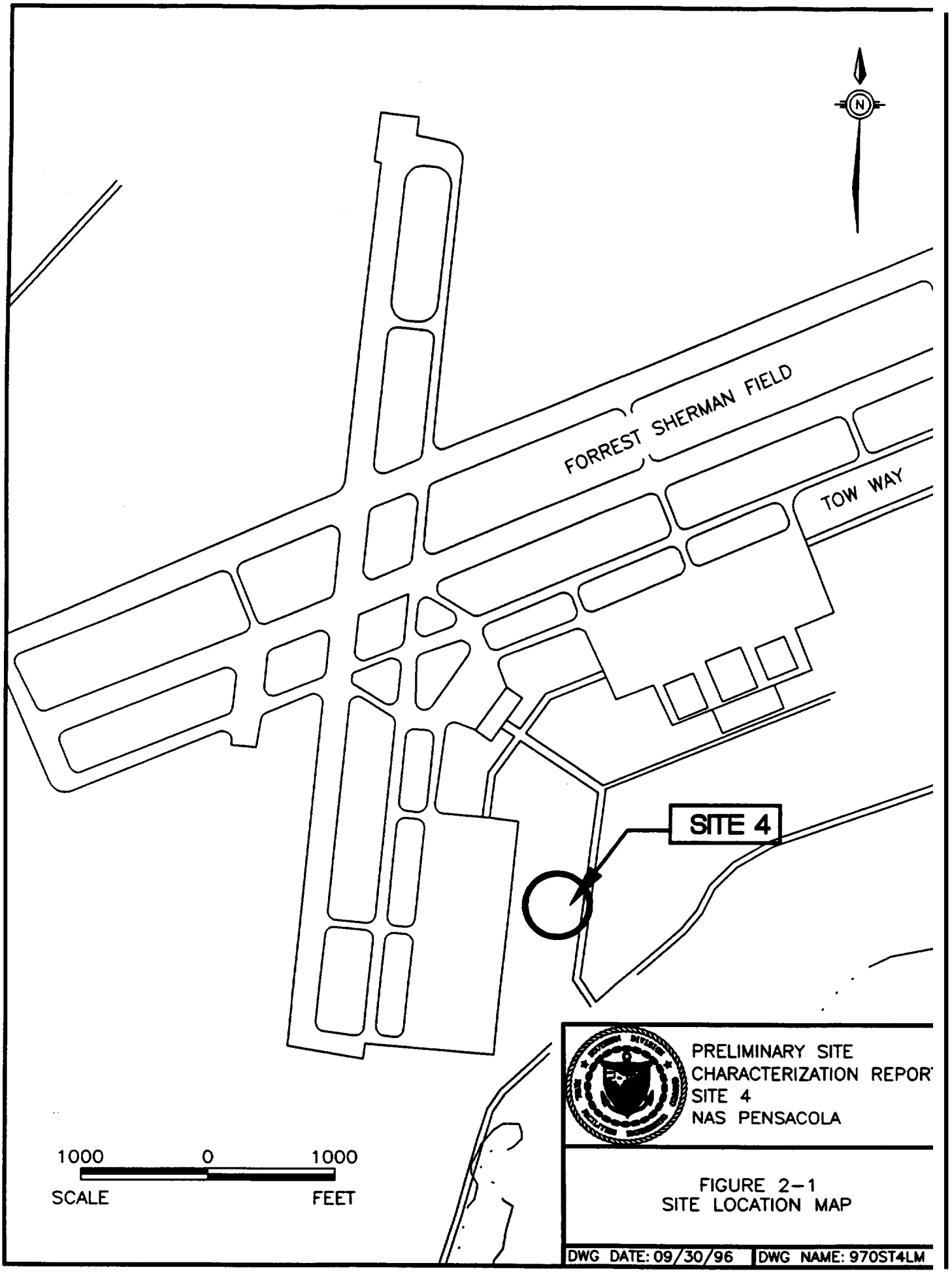
Site 4 is located immediately north of Building 3260, near the airfield operations department at Forrest Sherman Field. Site 4 is generally flat with land surface elevation averaging 30 feet above mean sea level (msl) (E&E 1992). Pensacola Bay is approximately 2,500 feet south of Site 4. The nearest IRP monitoring wells are about 2,000 feet west of the site (Site 3 wells). Figure 2-1 shows the site's location with respect to surrounding points.

Site 4 is an area approximately 150 feet by 800 feet, as shown on Figure 2-2. The southern portion is developed and includes part of Buildings 3581 and 3578, and a large concrete pad. The northern portion is a generally undeveloped grassy area with two small buildings (1994 and 2657) at its eastern extent.

2.2 Site History

In the early 1950s, rubble from the demolition of the old U.S. Army barracks at Fort Barrancas was disposed of at Site 4. An Initial Assessment Study (IAS) was performed by the Naval Energy and Environmental Support Activity (NEESA) in June 1983. Based upon field inspection, review of historical records, and interviews with NAS Pensacola personnel, NEESA concluded that no hazardous waste had been disposed of at Site 4, and that the site posed no threat to human health or the environment.

Other than the IAS, no previous environmental investigations performed at NAS Pensacola have studied Site 4.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NAS PENSACOLA
FIGURE 2-1
SITE LOCATION MAP
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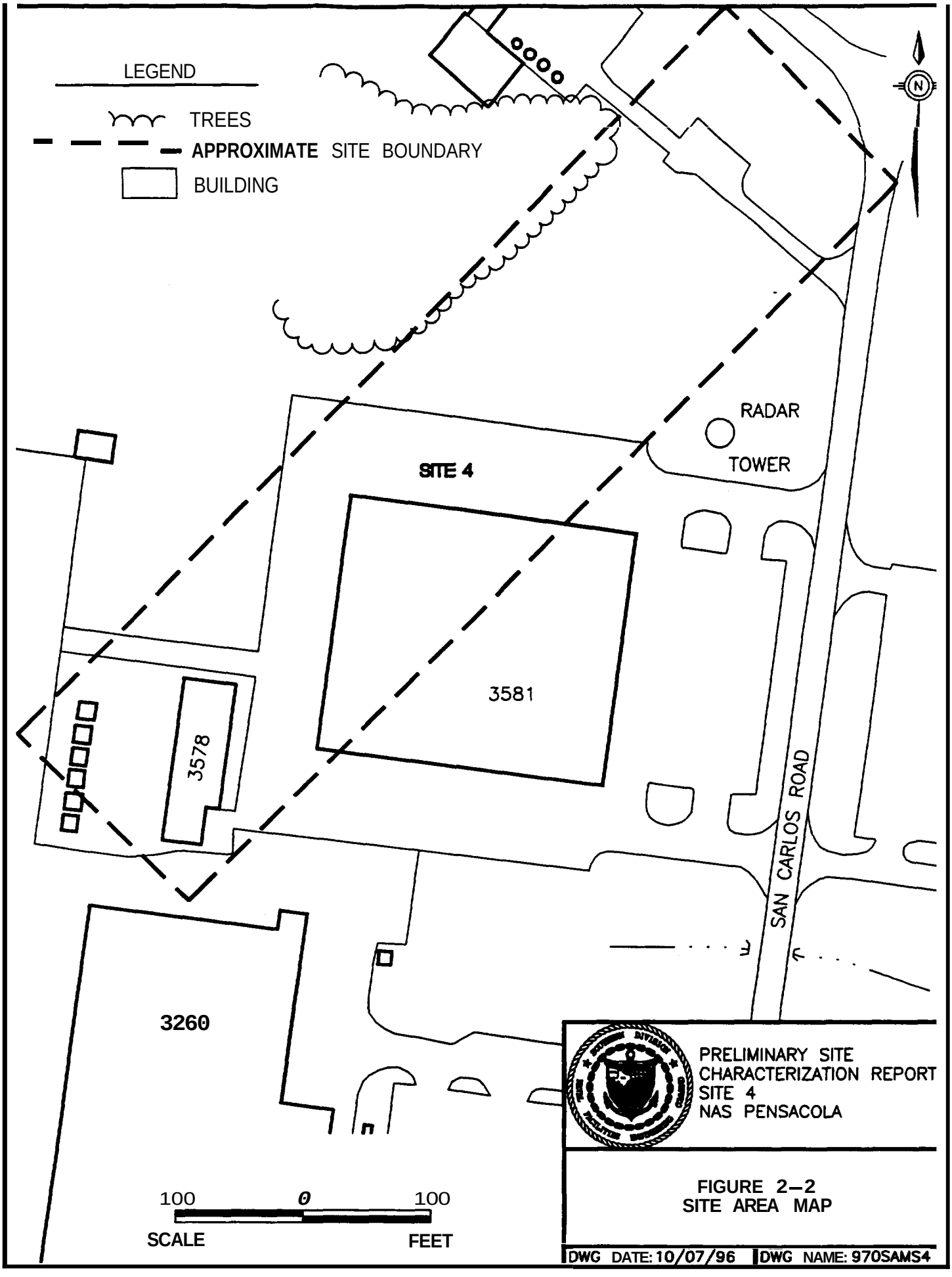
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BUILDING
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CHARACTERIZATION REPORT
SITE 4
NAS PENSACOLA
FIGURE 2–2
SITE AREA MAP
DWG DATE: 10/07/96
DWG NAME: 970SAMS4

3.0 ENVIRONMENTAL SETTING

3.1 Physiography

NAS Pensacola is in the Gulf Coast lowlands on a peninsula bounded by Pensacola Bay to the south and east and Bayou Grande to the north. The main topographic feature is a bluff paralleling the southern and eastern shorelines of the peninsula. Landward of the bluff is a gently rolling upland with elevations up to 40 feet above msl (USGS, 1970ab). In the eastern part of the base, a low and nearly level marine terrace lies east of the bluff with elevations of approximately 5 feet or less above msl, constituting the areas of the former Chevalier Field and Magazine Point.

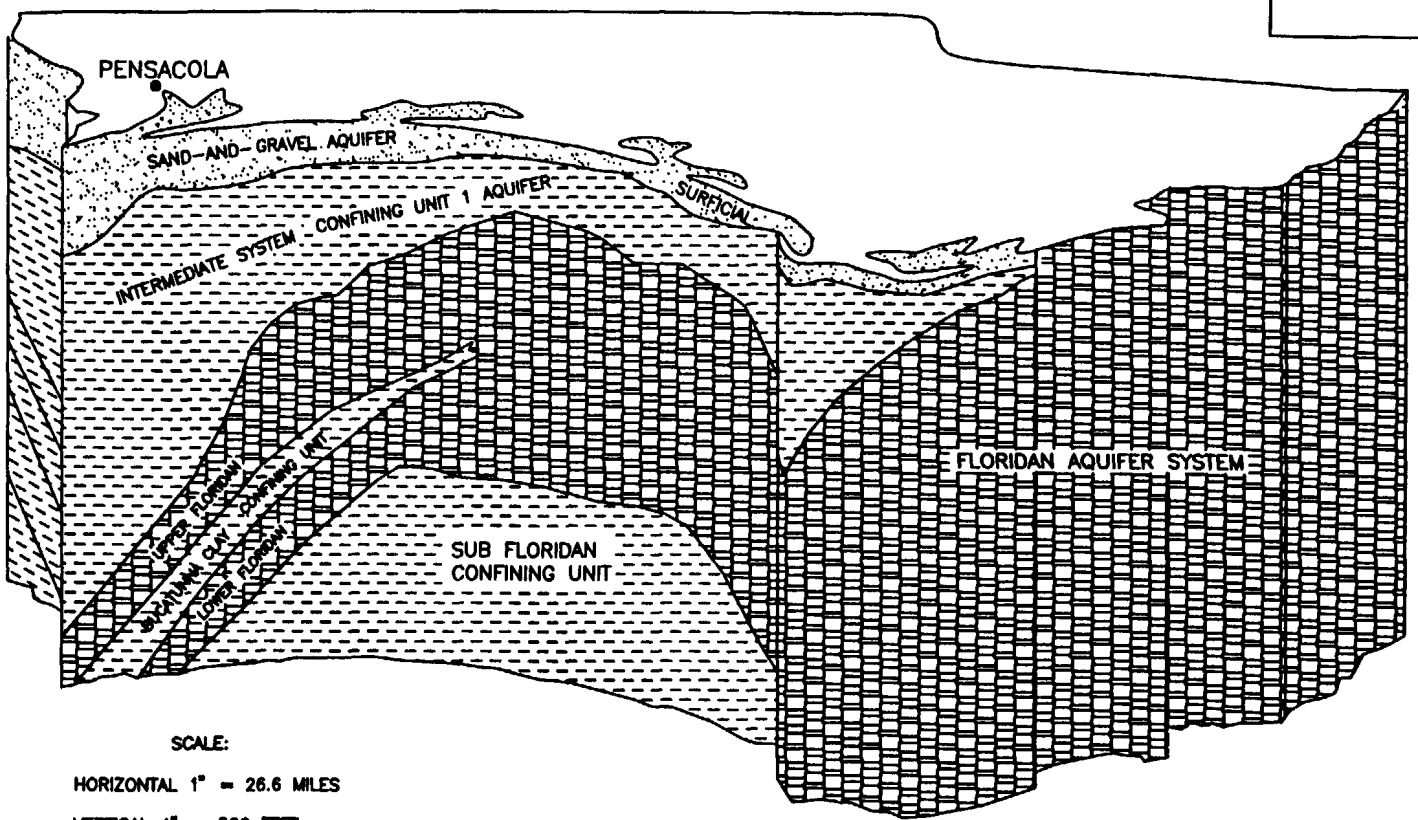
Sandy soils typify the NAS Pensacola area. Consequently, most rainfall infiltrates directly into the subsurface, resulting in few natural streams. Streams on base generally are man-made and channelized. Numerous natural wetlands occur in low-lying areas.

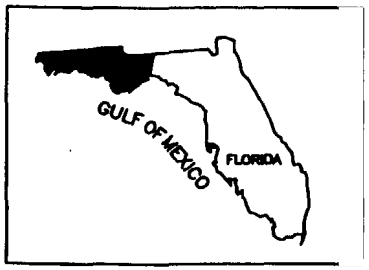
3.2 Stratigraphy and Hydrogeology

Stratigraphy beneath the Florida Panhandle generally consists of Quaternary marine terrace and fluvial deposits, underlain by a thick sequence of interlayered fine-grained clastic deposits and carbonate strata of Tertiary age (SEGS, 1986). Three main regional hydrogeologic units have been described within this stratigraphic column (in descending order): the Surficial/Sand-and-Gravel Aquifer, the Intermediate System, and the Floridan Aquifer System. Figure 3-1 provides a generalized cross section of these hydrogeologic units in northwest Florida.

Surficial/Sand-and-Gravel Aquifer

The Surficial Aquifer, comprising primarily unconsolidated siliciclastic sediments, is approximately 300 feet thick at NAS Pensacola. These sediments belong to undifferentiated





SCALE:

HORIZONTAL 1" = 26.6 MILES

VERTICAL 1" = 500 FEET

VERTICAL EXAGGERATION = 281

SOURCE: E&E 1992c.

PRELIMINARY SITE
CHARACTERIZATION REPORT
SITE 4
NAS PENSACOLA

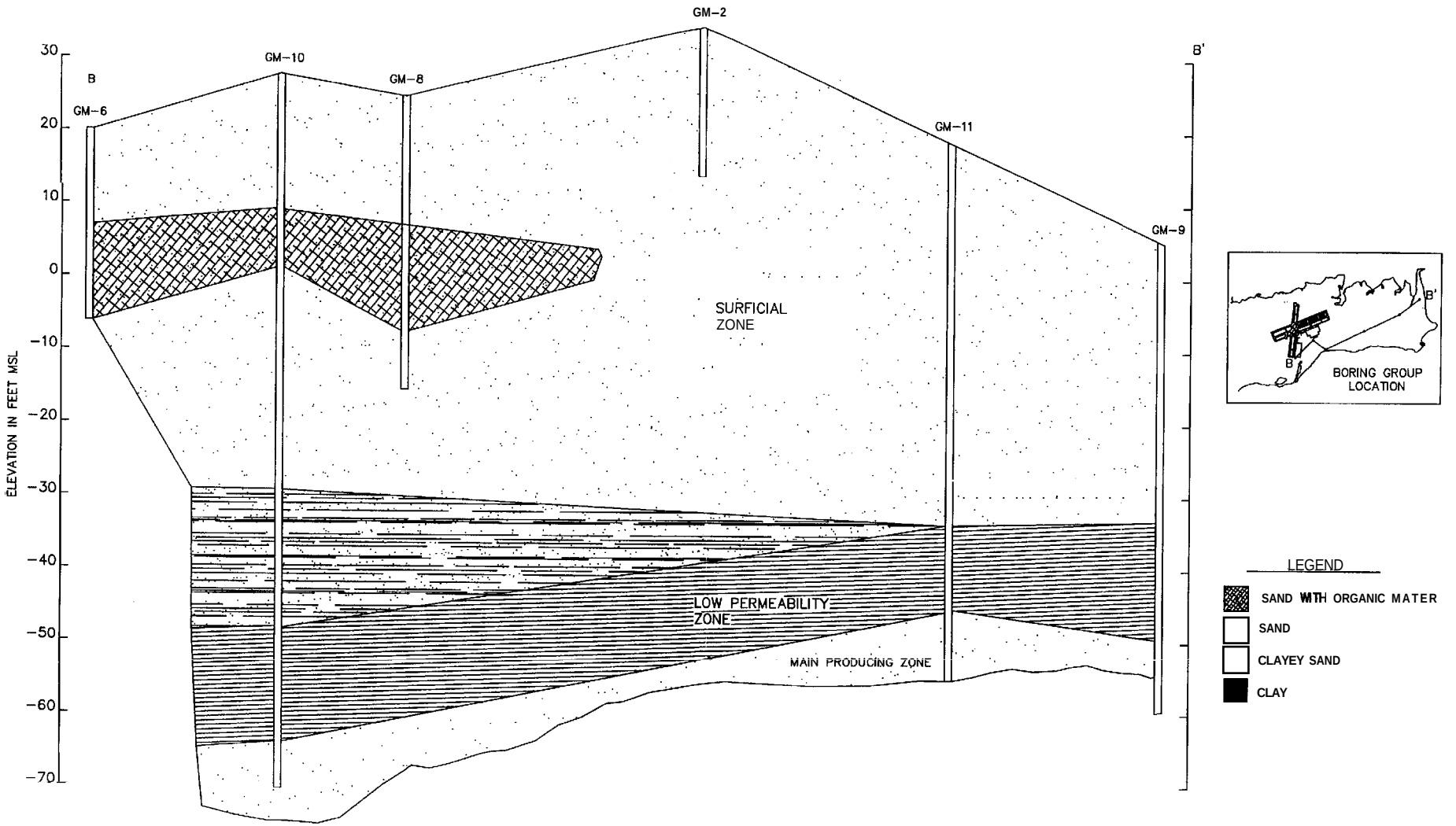
FIGURE 3-1
GENERALIZED GEOLOGIC CROSS-SECTION OF
HYDROGEOLOGIC UNITS IN
NORTHWEST FLORIDA

DATE: 01/09/97 | DWG NAME: 970ST4GC

Pleistocene-Holocene terrace deposits, the Pliocene Citronelle formation, and underlying Miocene coarse clastics (Wilkins et al., 1985). West of the Choctawhatchee River in northwest Florida, the Surficial Aquifer is referred to as the Sand-and-Gravel Aquifer, and is a major source of drinking water (SEGS, 1986). The FDEP classification of the surficial aquifer is G-1 with a USEPA classification of IIA. Because the Sand-and-Gravel Aquifer is the uppermost unit contiguous with land surface and receives recharge through direct infiltration, it is susceptible to contamination from surface activities. Near NAS Pensacola, the unit has been subdivided into three distinct zones based on hydrogeologic differences (in descending order): *the surficial* zone, the *low permeability zone*, and *the main* producing *zone* (Wilkins et al., 1985). This investigation focuses on the upper (shallow depth) and basal (intermediate depth) portions of the surficial zone. A generalized cross section of the Sand-and-Gravel Aquifer produced by Geraghty & Miller, Inc. (G&M) in 1984, as shown in Figure 3-2, illustrates the stratigraphic relationship of these zones.

Surficial Zone

The surficial zone is contiguous with land surface and contains groundwater under water table or perched conditions. At NAS Pensacola, the surficial zone is approximately 40 to 60 feet thick and is generally composed of a poorly graded quartz sand (G&M, 1984 and 1986). Beneath the western side of the base, a substantial stratum of sand with abundant organic matter occurs within the zone and pinches out to the east. Depth to groundwater ranges from 0 to 20 feet depending on ground surface elevation. Aquifer tests have yielded high hydraulic conductivities, on the order of 10^{+1} to 10^{+2} feet/day (ft/day) (E&E, 1990). The lower contact with the low permeability zone is transitional, resulting in a fining downward sequence in the lower portion of the surficial zone proper. Generally, the low permeability zone is thicker to the west, and thins to the east. This increased clay content in the transition from surficial to the low permeability zone is responsible for lower hydraulic conductivities that have been measured in the base of the surficial zone. Shallow groundwater flow in the surficial zone is generally influenced by topography, usually flowing toward and discharging to the nearest surface water body.



SOURCE GERAGHM & MILLER, 1986

PRELIMINARY SITE CHARACTERIZATION REPORT
SITE 4
NAS PENSACOLA

FIGURE 3-2
GEOLOGICAL CROSS-SECTION OF THE SURFICIAL AQUIFER AT NAS PENSACOLA

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Low Permeability Zone

The low permeability zone underlies the surficial zone and is characterized by clay and silt-sized sediments. At NAS Pensacola, this zone comprises gray to blue-gray sandy and silty marine clay with some shell fragments and clayey sands, with total thickness ranging from 8 to 40 feet (G&M, 1984 and 1986). The upper contact is transitional with the overlying surficial zone; however, the top of the low permeability zone is marked by the first occurrence of a stiff blue-gray clay. Studies at NAS Pensacola indicate the low permeability zone is continuous beneath the air station. Hydraulic conductivities of the low permeability zone are much lower than the overlying surficial zone, ranging between the orders of 10^{-4} ft/day for clays and 10^{+0} ft/day for clayey sands (G&M, 1986). Hence, the low permeability zone acts as a confining or semiconfining layer to inhibit groundwater flow between the overlying surficial and underlying main producing zone.

Main Producing Zone

The main producing zone underlies the low permeability zone and constitutes the bottom portion of the Sand-and-Gravel Aquifer. Regionally, depth to the top of the zone ranges from 60 to 120 feet. The zone is composed of sand and gravel with thin beds of silt and clay, and is estimated to be approximately 300 feet thick at NAS Pensacola. Of the three zones in the Sand-and-Gravel Aquifer, this one is generally the most permeable and is the principal water supply for the Pensacola area (Wilkins et al., 1985). Groundwater in this zone generally is confined. It recharges primarily north of southern Escambia County and is supplemented by leakage in the northern parts of the county where it is present at the surface. Regional groundwater flows generally east toward Pensacola Bay and south toward the Gulf of Mexico. Three supply wells at NAS Pensacola produce water from this zone. However, the water produced has a high iron content so the wells are used only to supplement the base water supply, to irrigate the base golf course, and for fire protection (G&M, 1984 and 1986). For potable water, NAS Pensacola depends on main producing zone wells at Corry Field, approximately three miles to the north.

Intermediate System

The Intermediate System, a regionally and vertically extensive, laterally persistent hydrologic unit, underlies the Surficial/Sand-and-Gravel Aquifer. The system comprises fine-grained clastic units of Miocene age (Pensacola Clay, Alum Bluff Group) that lie beneath coarse clastics of the overlying Sand-and-Gravel Aquifer. In the NAS Pensacola vicinity, depth to the top of the unit is approximately 300 feet, with a thickness of approximately 1,100 feet (Wilkins et al., 1985; SEGS, 1986). The system is regionally characterized by poor to non-water-bearing conditions. Permeabilities are much lower than those of the overlying Sand-and-Gravel Aquifer and the underlying Floridan Aquifer System, and consequently the system functions as a confining unit for the underlying Floridan Aquifer System (SEGS, 1986).

Floridan Aquifer System

The Floridan Aquifer System underlies the Intermediate System at an approximate depth of 1,400 feet in the NAS Pensacola am. The unit is predominantly limestone, but is separated into upper and lower units by a significant clay layer called the Bucatunna Clay (see Figure 3-1). Groundwater within the Floridan System is highly mineralized in the area of NAS Pensacola and is not used for water supply (Wagner et al., 1984). However, groundwater from the Upper Floridan Aquifer is used for water supply approximately 25 miles east of NAS Pensacola.

3.3 Ecological Setting

3.3.1 Regional Ecological Setting

According to Wolfe et al. (1988), the Florida Panhandle has a wide variety of surface waters and physiographic regions, leading to an ecological diversity found in few other areas of the United States. Watersheds of the panhandle support a diverse array of habitats and vegetative communities. Bottom land hardwoods predominate in river floodplains and pines, mixed with a variety of shrubs, prevail in upland areas. Wetlands are prevalent along the coastal fringe and

river floodplains. Barrier islands support dune vegetation communities and salt marshes. Bays supporting seagrass meadows and oyster reefs are present in intertidal and subtidal areas.

Seven major rivers in the region discharge into seven bar-built estuaries formed at the mouths of the rivers. The Florida Panhandle is a crossroads where animals and plants from the Gulf Coastal Plain reach their eastward distributional limits, and where many northern species reach their southern limits. Many peninsular Florida species are also distributed there. Due to the wet temperate climate of the region, the panhandle area may support the highest diversity of species of any other similar-size territory in the U.S.

The high annual rainfall and low, gently sloping terrain create numerous wetlands in the region. Bogs, swamps, marshes, wet prairies, and wet flatwoods provide a diversity of wetland types supporting a wide variety of flora and fauna. Terrestrial vegetation includes open pine woods and hardwood forests; most are second-growth forests of pines and encroaching hardwoods.

The Florida Panhandle's estuaries and nearshore marine habitats are some of the greatest natural and economic assets of the region. Important commercial organisms (such as oysters and fish) abound in these areas and contribute to the region's economy. Coastal saltmarsh habitats provide critical nursery, feeding, and refuge for these important commercial species. Seagrass beds within estuaries also are vital to the seafood industry.

3.3.2 Ecological Setting at NAS Pensacola

NAS Pensacola, which occupies approximately 5,800 acres, is bounded by Bayou Grande to the north and Pensacola Bay to the east and south. To the west, the installation transitions to less developed swampy lowlands. NAS Pensacola's eastern portion is largely developed, with military and industrial facilities and historical/cultural sites. Most of the installation's activities are on the

eastern side of the base. The less developed west side of the base has approximately 3,500 acres of natural or seminatural beach areas, forests, and wetlands.

NAS Pensacola is the setting for numerous aquatic and terrestrial habitats, from coastal strand and estuarine environments along the bay and bayou to inland pine flatwood communities. Wetland environments include a broad spectrum of both estuarine and palustrine wetlands, as well as various disturbed habitats, many in states of recovery as they undergo reforestation or return to their natural condition.

Vegetation Communities

NAS Pensacola natural vegetation communities fall into several broad categories: (1) coastal dune scrub communities, (2) pine flatwoods communities, (3) hardwood/pine communities, (4) sand pine scrub communities, (5) bay swamps, (6) freshwater marshes, and (7) estuarine coastal marshes (USFWS, 1987). Coastal dune scrub communities are associated with shorelines subject to high-energy waves. The vegetation consists of salt-tolerant plants able to establish themselves in shifting sands. Pine flatwood communities in coastal lowlands are characterized by trees that can tolerate various soil moisture conditions. Tree species in flatwood communities are short, with a wide variety of small shrubs and herbaceous plants in the understory. Hardwood/pine communities are a highly diverse mixture of those varieties. Sand pine scrub communities on well-drained sandy soil contain sand pines, oaks, and various shrubs. Bay swamps are wetlands with titi and cypress swamps known to contain permanent standing water and high accumulations of organic peat. Freshwater marshes occur as grass/sedge/rush/herb communities in areas with high soil saturation or standing water. Estuarine coastal marshes, including salt marshes, occur along low-energy shorelines and in tidal bayous (USFWS, 1987).

Wildlife

NAS Pensacola habitats provide potential ranges for a wide variety of animal life such as deer, squirrel, opossum, raccoon, fox, beaver, and bobcat. The station's beaches serve as resting, feeding, and nesting areas for various shorebirds. Ospreys have been observed nesting along undeveloped shoreline areas of the Big Lagoon, southeast of the Forrest Sherman Airfield. Numerous small mammals, amphibians, and reptiles also inhabit the base. The coastal marsh, submerged grass bed, and shallow water habitats at NAS Pensacola help support fishery communities within the Pensacola Bay estuarine complex. Approximately 180 species of bony fishes form the basis of the Pensacola Bay fish community (USFWS, 1987).

Threatened and Endangered Species

Appendix A of the ***Comprehensive Natural Resources Management Plan for NAS Pensacola and Outlying Field Bronson*** (USFWS, 1987) lists the rare, threatened, and endangered species that may be found within NAS Pensacola boundaries. E/A&H investigations of different areas of NAS Pensacola have identified osprey, great blue heron (as well as other shorebirds), alligator snapping turtle, Godfrey's golden aster, Carolina lilaeopsis, white-top pitcher plant, and narrow-leaved sundew. All are considered rare or endangered for Escambia County, Florida, by the Florida Natural Areas Inventory (FNAI, 1995).

3.3.3 Site-Specific Setting

Site 4 is in a developed area containing no natural plant and animal habitats. The southwest part of the site encompasses a portion of a concrete aircraft parking apron on the flight line adjacent the airfield's north/south runway. The northeast portion of the site encompasses a field landscaped with grassy turf that is periodically mowed by base landscaping contractors. Scattered pines grow in a grassy area on the west side of this field. The site area likely hosts insects and perhaps small animals, such as rodents. No rare or endangered species were noted within the area of investigation. The nearest natural habitats exist in a forested wetland area approximately

1,600 feet southwest of the site area, and along the seashore environment of the Intercostal Waterway, 2,800 feet to the south.

3.4 *Area* Climate

The Pensacola area has a mild, subtropical climate with average annual temperature ranging from 55°F in the winter to 81°F in the summer. Daily temperatures *can* be more extreme, ranging from less than 7°F in the winter to more than 102°F in the summer. Thunderstorms, which occur on approximately half the summer days, *can* cause a precipitous drop in temperature of 10" to 20" in a matter of minutes (E&E, 1992a).

November is the driest month of the year, with an average rainfall of 3.2 inches, based on climatological data from 1962 to 1991. Rainfall averages approximately 60 inches a year, with the highest amounts in July and August when thunderstorms occur almost daily. Thunderstorms resulting in 3 to 4 inches of rain in an hour are common. Rainfall is lowest during spring and fall (4 inches average per month). In general, spring and fall rains are less intense, last longer, and produce less surface runoff, but higher rates of infiltration and net recharge (E&E, 1992a).

Winds, which prevail from the north during the winter and the south during the summer, are generally moderate in velocity, except during thunderstorms. A difference in the ocean-land temperature produces the sea-breeze effect, a daily clockwise rotation in the surface wind direction near the coast. Humcanes and tornadoes *can* substantially damage the nearshore environment. Since 1980, eight hurricanes have passed within *50* miles of Pensacola, the most recent being Hurricanes Erin and Opal in August and October 1995, respectively.

4.0 FIELD INVESTIGATION AND METHODS

The field investigation took place in March, April, and May 1996, in conjunction with preliminary work on other Category VII sites identified in the NAS Pensacola SMP (SOUTHNAVFACENGCOM, 1995). Work was performed in accordance with the Work Plan for Sites 4, 6, 7, 8, 16, and 22 (E&E, 1992), the Sampling and Analysis Plan (SAP) for Sites 4, 6, 7, 8, 16, and 22 (E/A&H, 1995a), the Final Comprehensive Sampling and Analysis Plan (CSAP) (E/A&H, 1994b), and the USEPA Region IV Standard Operating Procedures and Quality Assurance Manual (USEPA, 1991). Field methods followed guidelines set forth in these documents. Where warranted by field conditions, deviations from the approved procedures were carried out and appropriately documented. The investigation was carried out to identify any potential soil or groundwater contaminants onsite, comparing identified constituents to previously established preliminary remediation goals (PRGs). The intent was to identify the soil and groundwater parameters above PRGs, and their sources.

All samples were analyzed for the full Target Analyte List/Target Compound List (TAL/TCL) in accordance with the Contract Laboratory Program (CLP), including inorganics, pesticides/polychlorinated biphenyls (PCBs), and semivolatile/volatile organic compounds. Additional samples were collected for grain size (GS) analysis. All chemical and physical parameters analyses were performed by the S-Cubed Division of Maxwell Environmental Laboratories in San Diego, California.

4.1 Contaminant Source Survey

The site was surveyed preliminarily to determine the best possible placement of soil borings and monitoring wells, based on current and historical knowledge of the site and surrounding areas. Aerial photographs were closely evaluated to detect changes in the site area over time. Surface features (i.e., storm drains, etc.) were noted to identify potential pathways of contaminant migration. The current use of the area also was noted.

Aerial photo analyses show that surface features on Site 4 changed dramatically between the 1960s and the present. The most notable changes include part of the site being used as a parking area for Building 3260, built in the mid-1960s and the subsequent construction of Buildings 3578 and 3581 in the late 1970s on the site. No nearby sites or outfalls were noted which might be sources of site contamination.

4.2 Geophysical Survey

A geophysical survey was conducted as part of the Contaminant Source Survey. There were no well-defined anomalies identified from data collected during the survey. Therefore, no anomaly-specific follow-up investigation was recommended nor conducted. A summary of the geophysical methods used and results for Sites 4, 7, and 16 is presented in Appendix A.

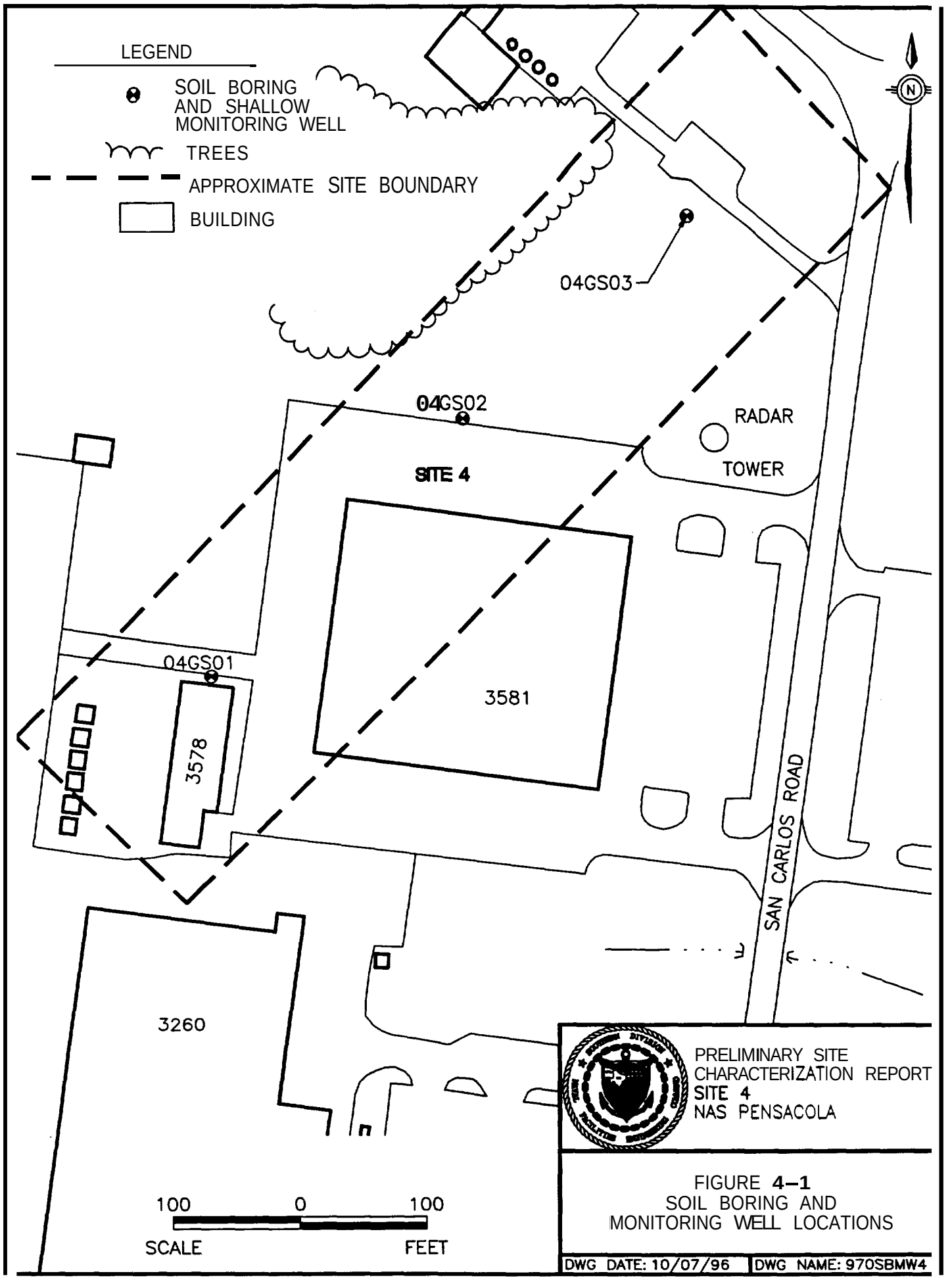
4.3 Soil Boring and Sampling Methodology

Table 4-1 outlines the Site 4 soil samples and analytical parameters. Figure 4-1 depicts the Site 4 soil boring and monitoring well locations. Three soil borings were advanced across the center of the approximate site area specified in the *SAP*. Six soil samples were collected from these borings. Boring logs are presented in Appendix B. Samples were collected in accordance with Section 4 of the *CSAP*. Sampling intervals included the surface interval (0 to 1' below land surface [bls]) and the lower 2 feet of each subsequent 5-foot interval until the water table was reached. Saturated soil was reached at roughly 7 feet bls, hence a single subsurface interval was collected from each boring location.

4.4 Groundwater Monitoring

4.4.1 Monitoring Well Construction

Table 4-2 lists the construction details for the Site 4 monitoring wells. Three permanent shallow monitoring wells were constructed onsite in accordance with procedures outlined in Section 5.3 of the *CSAP*. These wells were constructed of flush-threaded, 2-inch polyvinyl chloride well


LEGEND
SOIL BORING AND SHALLOW MONITORING WELL
TREES
APPROXIMATE SITE BOUNDARY
BUILDING
N
04GS03
04GS02
RADAR TOWER
SITE 4
3581
04GS01
3578
SAN CARLOS ROAD
3260
100 0 100
SCALE FEET
PRELIMINARY SITE CHARACTERIZATION REPORT
SITE 4
NAS PENSACOLA
FIGURE 4-1
SOIL BORING AND MONITORING WELL LOCATIONS
DWG DATE: 10/07/96
DWG NAME: 970SBMW4

casing terminating with a 10-foot length of 0.1 factory-slotted well screen. Boreholes were advanced deep enough for the screened interval to intersect the water table. Wells were completed with an approximate 2-foot, locking, steel protective casing. Monitoring well construction logs are in Appendix B.

Table 4-1
Site 4 Soil Samples and *Analytical* Parameters

Sample Location	Sample Identifier	Sample Interval	Date Sampled	Analyses
04S01	004S000101	0-1 ft	4/05/96	TAL/TCL
	004S000107	5-7 ft		PPS
04S02	004S000201	0-1 ft	4/05/96	TAL/TCL
	004S000207	5-7 ft		
04S03	004S000301	0-1 ft	4/05/96	TAL/TCL
	004S000307	5-7 ft		PPS

Note:
ft = feet below land surface

Table 4-2
Site 4 Groundwater Samples and Analytical Parameters

Well Location	Sample Identifier	Analytical Parameters
04GS01	004GGS0101	TAL/TCL
		PPS
04GS02	004GGS0201[a]	TAL/TCL
04GS03	004GGS0301	TAL/TCL
		PPS

Notes:
[a] = Duplicate Sample
Wells *Sampled* 5/7/96.

4.4.2 Monitoring Well Development

Wells were developed in accordance with Section 5.4 of the *CSAP* using a centrifugal pump until the water was clear of measurable turbidity and water quality parameters (pH, specific conductance, temperature, and turbidity) stabilized within 10% for three consecutive readings. Table 4-3 presents the water quality parameter measurements collected at the end of well development activities for each well.

Table 4-3
Final Water Quality Parameter Details
Site 4 Monitoring Well Development

Well Designation	Final Development Volume	pH	Specific Conductance	Temperature	Turbidity
04GS01	165	6.99	0.195	20.9	169
04GS02	110	6.78	0.105	21.2	62
04GS03	165	6.70	0.112	22.3	197

Notes:
Well Development volume is in gallons.
pH measured in pH units.
Specific Conductance measured in micromhos.
Temperature measured in degrees Centigrade.
Turbidity measured in Nephelometric Turbidity Units (NTUs).

4.4.3 Groundwater Contamination Assessment Sampling

Table 4-4 lists details for the Site 4 groundwater sampling. The "quiescent" vacuum/transfer groundwater sampling method was used as outlined in Section 6.3 of the *CSAP*.

4.5 Fieldwork and Sampling Protocols

Sample Handling and Management

Soil and groundwater samples were collected in accordance with the appropriate section of the CSAP. Clean plastic sheeting was placed at each sampling location to minimize the potential for

sample contamination. Clean latex gloves were donned each time a new sample was collected. Decontaminated sampling devices were kept wrapped until the samples were collected. Samples were managed in accordance with Chapter 12 of the CSAP. Labeling, preservation, packing, chain-of-custody, and shipping carefully followed procedures in that section.

Table 4-4
Construction Details/Potentiometric Information
Site 4 Monitoring Wells

Well Location	Top of Casing Elevation'	Total Depth[b]	Screened Interval[b]	Depth to Water[b]	Groundwater Elevation'
04GS01	28.03	15.0	5.0-15.0	6.77	21.27
04GS02	28.85	16.0	6.0-16.0	6.62	22.23
04GS03	29.75	16.0	6.0-16.0	7.84	21.91

Notes:
• = Top of casing and groundwater elevations in feet mean sea level.
= Total depth, screen interval, and depth to water in feet below land surface.
The datum is mean sea level (North American Datum-89).
Depths to water measured 5/7/96.

Sample Containers and Preservation

All laboratory-provided containers were precleaned and certified as specified in Chapter 12 of the *CSAP*.

Field Data

Auxiliary field data pertinent to the investigation were collected in accordance with Chapter 14 of the *CSAP*.

Decontamination

All exploration and sampling equipment used in the field investigation was decontaminated in accordance with Chapter 11 of the *CSAP*.

Investigation-Derived Wastes

Wastes derived from the field investigation were handled in accordance with Chapter 13 of the CSAP and the Investigation-Derived Waste Plan for NAS Pensacola (E/A&H, 1994b).

4.6 Site Area Land Survey

The site soil borings, and monitoring wells were surveyed by E/A&H personnel using Global Positioning System (GPS) surveying equipment, per Section 3.4 of the CSAP.

4.7 Site Area Hydrologic Investigation

A hydrologic investigation was conducted in accordance with Section 9.6 of the CSAP. Static water levels measured from each monitoring well were normalized to elevation data gathered during the GPS survey. These data were used to develop and analyze the piezometric surface across the site.

5.0 GEOLOGIC ASSESSMENT RESULTS

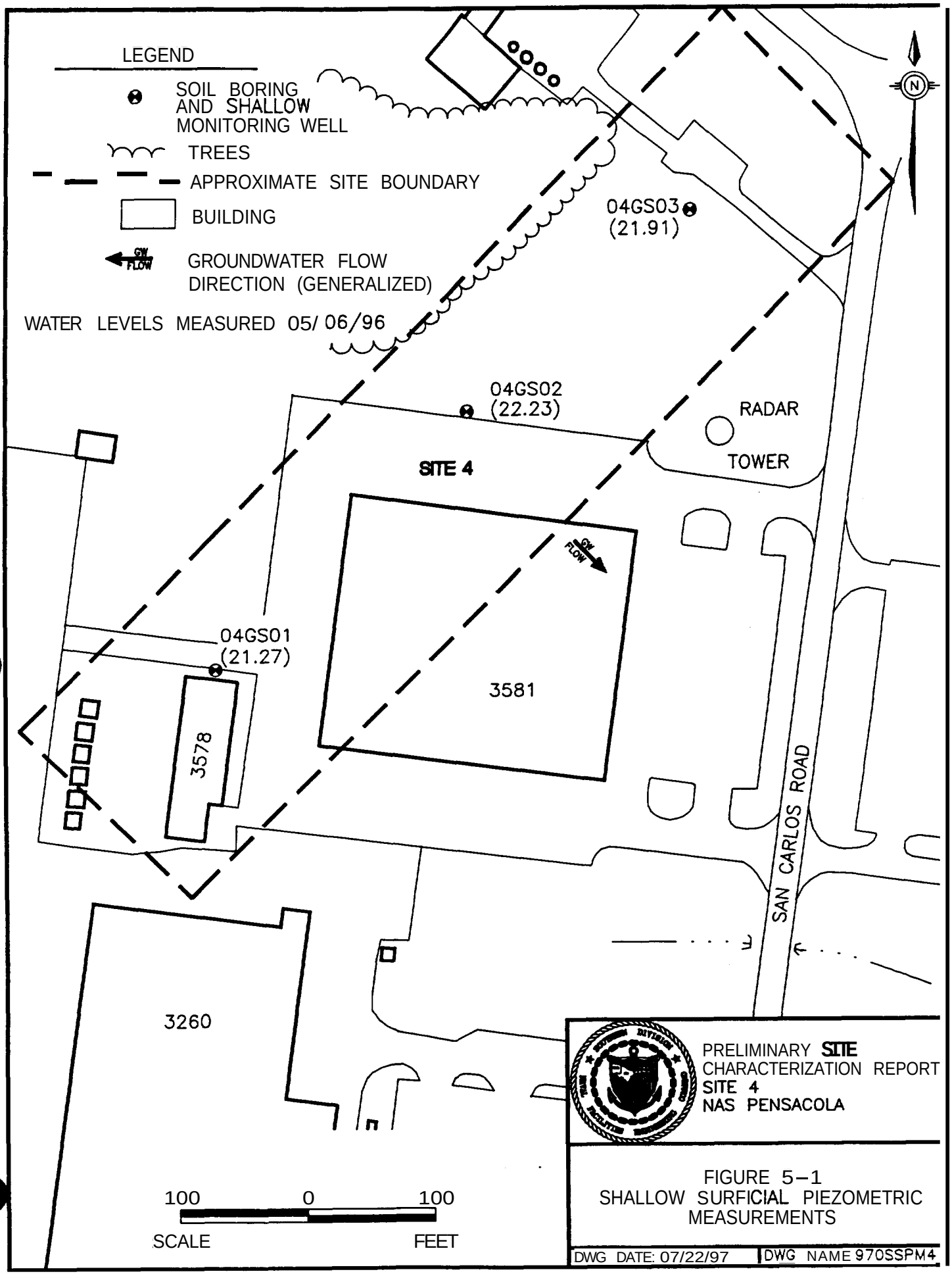
5.1 Site Hydrogeological Setting

The subsurface stratigraphy across the Site 4 area is consistent with previous NAS Pensacola studies. All borings were limited to the uppermost portion of the surficial zone of the Sand-and-Gravel Aquifer (see Appendix B). The surface soil layer consists of about 1.5 to 2 feet of road base material composed of tan clayey sand mixed with minor amounts of gravel. Beginning at approximately 5.5 feet bls is a natural white to buff colored fine- to coarse-grained quartz sand that extends to the water table encountered at approximately 8 feet bls. From 8 to 12 feet bls the sand turns tan. In one boring (004GS0002) the sand became white at 14 feet bls. Lithologies from the three borings advanced beneath Site 4 were similar. Borings were terminated at the water table; therefore, no information on deeper stratigraphy was collected. At all boring locations, shallow groundwater monitoring wells were installed.

5.2 Water Level Elevations and Piezometric Results

Figure 5-1 displays the shallow surficial piezometric surface measurements for Site 4. Water levels were measured in the three site monitoring wells. Groundwater elevations are listed in Section 4 of this report, along with other relevant monitoring well information. The groundwater elevation is roughly 22 feet msl at Site 4.

The generalized groundwater flow direction is to the southeast. This is based upon (1) The surface topography sloping gently in that direction, and that the surficial groundwater surface typically is a subdued reflection of topography; (2) this is the direction of the nearest discharge area (Pensacola Bay) for the surficial aquifer; and (3) groundwater elevations measured basewide support this as the general direction of groundwater flow in this portion of the base. These measurements will be included in the upcoming report detailing basewide groundwater modeling.


LEGEND
SOIL BORING AND SHALLOW MONITORING WELL
TREES
APPROXIMATE SITE BOUNDARY
BUILDING
GW FLOW
GROUNDWATER FLOW DIRECTION (GENERALIZED)
WATER LEVELS MEASURED 05/06/96
04GS03 (21.91)
04GS02 (22.23)
04GS01 (21.27)
RADAR TOWER
SITE 4
3581
3578
3260
SAN CARLOS ROAD
N
100 0 100
SCALE FEET
PRELIMINARY SITE CHARACTERIZATION REPORT
SITE 4
NAS PENSACOLA
FIGURE 5-1
SHALLOW SURFICIAL PIEZOMETRIC MEASUREMENTS
DWG DATE: 07/22/97
DWG NAME 970SSPM4

Due to the lack of specific synoptic upgradient nor downgradient measurements, no effort is made in this report to quantify the horizontal hydraulic gradient or the calculated average pore velocity of groundwater movement across and emanating from Site 4. However, typical values for velocity in the shallow surficial zone calculated on other sites on NAS Pensacola are of the 10E+1 ft/day magnitude. Given the hydrogeolgic similarity of Site 4 to other NAS Pensacola sites, there is no reason to expect Site 4 velocity to be markedly different.

6.0 NATURE AND EXTENT OF CONTAMINATION

The sampling approach, methods, and sample locations for this investigation were discussed in Sections 4.1 through 4.4 of this report. The analytical results were compared to the following general and site-specific PRGs.

soil

- Risk-based concentrations (RBCs) soil ingestion scenario for residential soil (surface soil) and soil screening levels transfer scenario from soil to groundwater (subsurface soil) (USEPA, 1996a).

- Selected Cleanup Goals residential scenario (surface soils)/leaching scenario (subsurface soils) (FDEP, 1995 and 1996a).

- USEPA, Office of Solid Waste and Emergency Response (OSWER) draft revised *Interim Soil Lead Guidance* (USEPA, 1994a).

- USEPA, OSWER *Soil Screening Guidance* (USEPA, 1994).

Groundwater

- USEPA Maximum Contaminant Levels and Secondary Maximum Contaminan Levels (SMCLs) (USEPA, 1996b).

- Florida Primary/Secondary Drinking Water Standards (FDEP, 1994).

- Florida Groundwater Guidance Concentrations (FDEP, 1994).

In addition to the soil and groundwater PRGs, inorganic results for both soil and groundwater were compared to NAS Pensacola-specific reference concentrations, developed by the Navy during the Site 1 investigation. These are equal to two times the detected mean for any given parameter (E/A&H, 1996a).

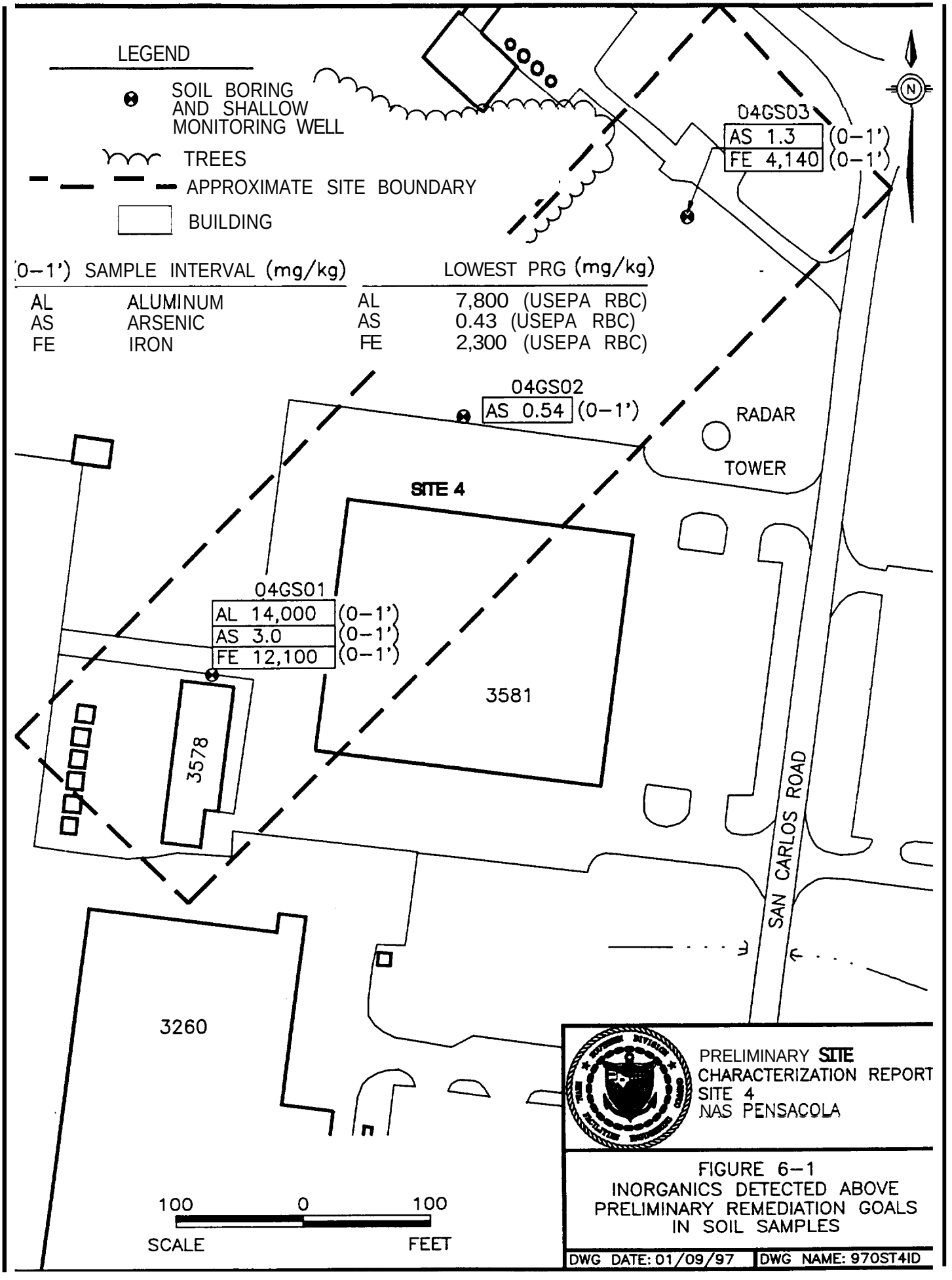
The soil and groundwater PRGs are listed in Appendix C. Sample values exceeding PRGs, to include a reference concentration comparison where applicable, are tabulated in Appendix D. A tabulated summary of analytical data is in Appendix E. Grain size data is presented in Appendix F. Additionally, this section's maps illustrate the distribution of inorganic and organic parameters detected in soil and groundwater samples exceeding PRGs within the area of investigation. These figures display the highest concentration between samples, where applicable. For the soil contamination assessment, surface soil is defined as the 0 to 1 foot bls, while subsurface soil is defined as the interval from 1 foot bls to the water table.

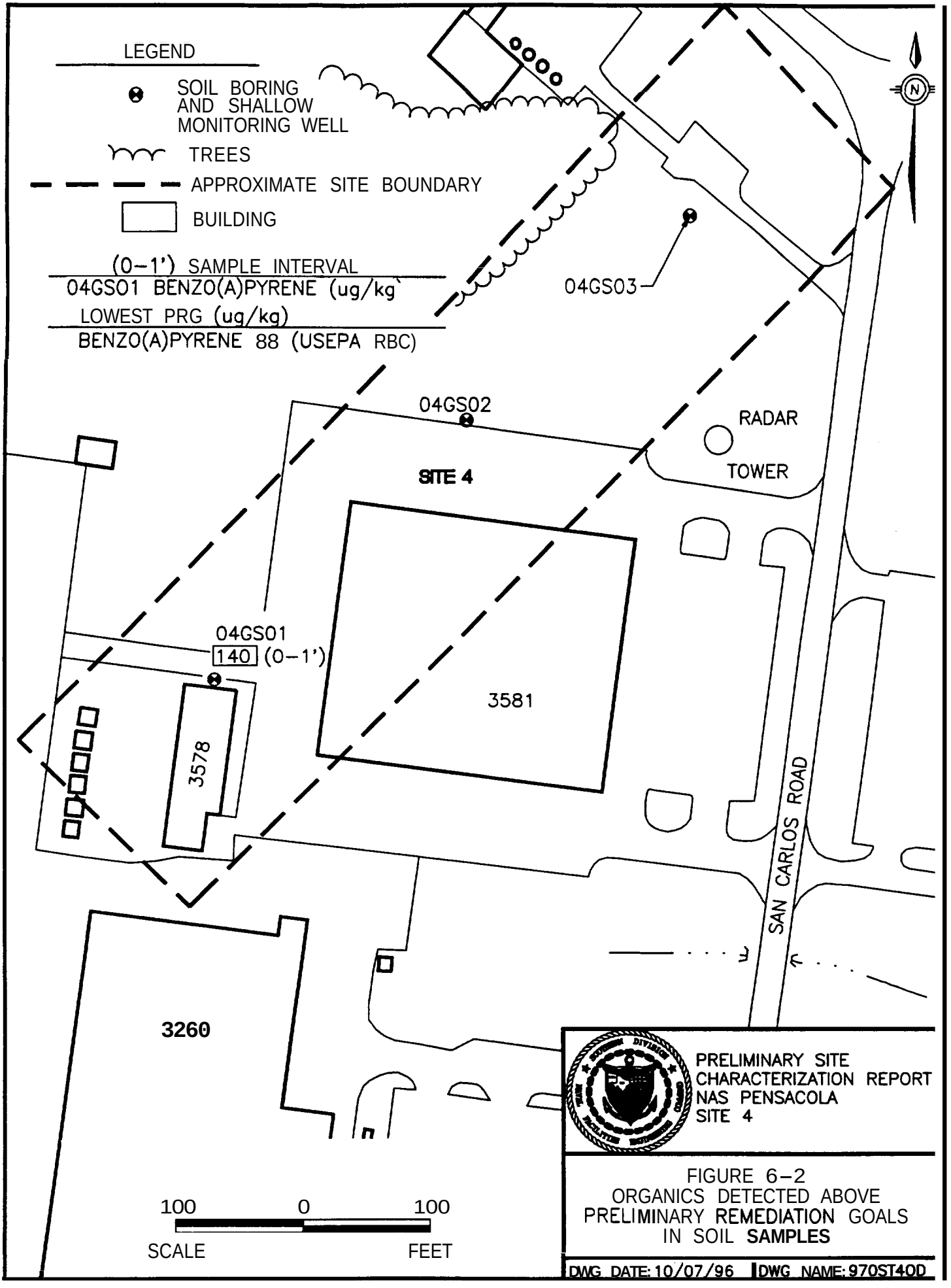
6.1 Soil Assessment

Figures 6-1 and 6-2 illustrate Site 4 inorganics and organics detected above PRGs in soil samples. Several parameters were detected in Site 4 soil above their respective PRGs. Metals in surface soils exceeding PRGs included aluminum, arsenic, and iron. Arsenic was detected above the RBC in surface soil samples collected at all three boring locations (04S01, 04S02, 04S03). Surface soil samples containing iron above the RBC were identified in borings 04S01 and 04S03. A single surface soil sample contained aluminum above the PRG (soil boring 04S01).

Only one organic parameter was detected at a concentration exceeding a PRG. The semi-volatile benzo(a)pyrene exceeded its PRG in a surface soil sample from soil boring 04S01.

No inorganic or organic parameter PRG exceedances were detected in subsurface soil samples.


LEGEND
SOIL BORING AND SHALLOW MONITORING WELL
TREES
APPROXIMATE SITE BOUNDARY
BUILDING
(0–1') SAMPLE INTERVAL (mg/kg)
AL ALUMINUM
AS ARSENIC
FE IRON
LOWEST PRG (mg/kg)
AL 7,800 (USEPA RBC)
AS 0.43 (USEPA RBC)
FE 2,300 (USEPA RBC)
04GS03
AS 1.3 (0–1')
FE 4,140 (0–1')
04GS02
AS 0.54 (0–1')
04GS01
AL 14,000 (0–1')
AS 3.0 (0–1')
FE 12,100 (0–1')
RADAR TOWER
SITE 4
3581
3578
3260
SAN CARLOS ROAD
N
100 0 100
SCALE FEET
PRELIMINARY SITE CHARACTERIZATION REPORT
SITE 4
NAS PENSACOLA
FIGURE 6–1
INORGANICS DETECTED ABOVE PRELIMINARY REMEDIATION GOALS IN SOIL SAMPLES
DWG DATE: 01/09/97
DWG NAME: 970ST4ID


LEGEND
SOIL BORING AND SHALLOW MONITORING WELL
TREES
APPROXIMATE SITE BOUNDARY
BUILDING
(0-1') SAMPLE INTERVAL
04GS01 BENZO(A)PYRENE (ug/kg)
LOWEST PRG (ug/kg)
BENZO(A)PYRENE 88 (USEPA RBC)
04GS03
04GS02
RADAR
TOWER
SITE 4
04GS01
140 (0-1')
3581
3578
SAN CARLOS ROAD
3260
100 0 100
SCALE FEET
PRELIMINARY SITE CHARACTERIZATION REPORT
NAS PENSACOLA
SITE 4
FIGURE 6-2
ORGANICS DETECTED ABOVE PRELIMINARY REMEDIATION GOALS IN SOIL SAMPLES
DWG DATE: 10/07/96
DWG NAME: 970ST4OD

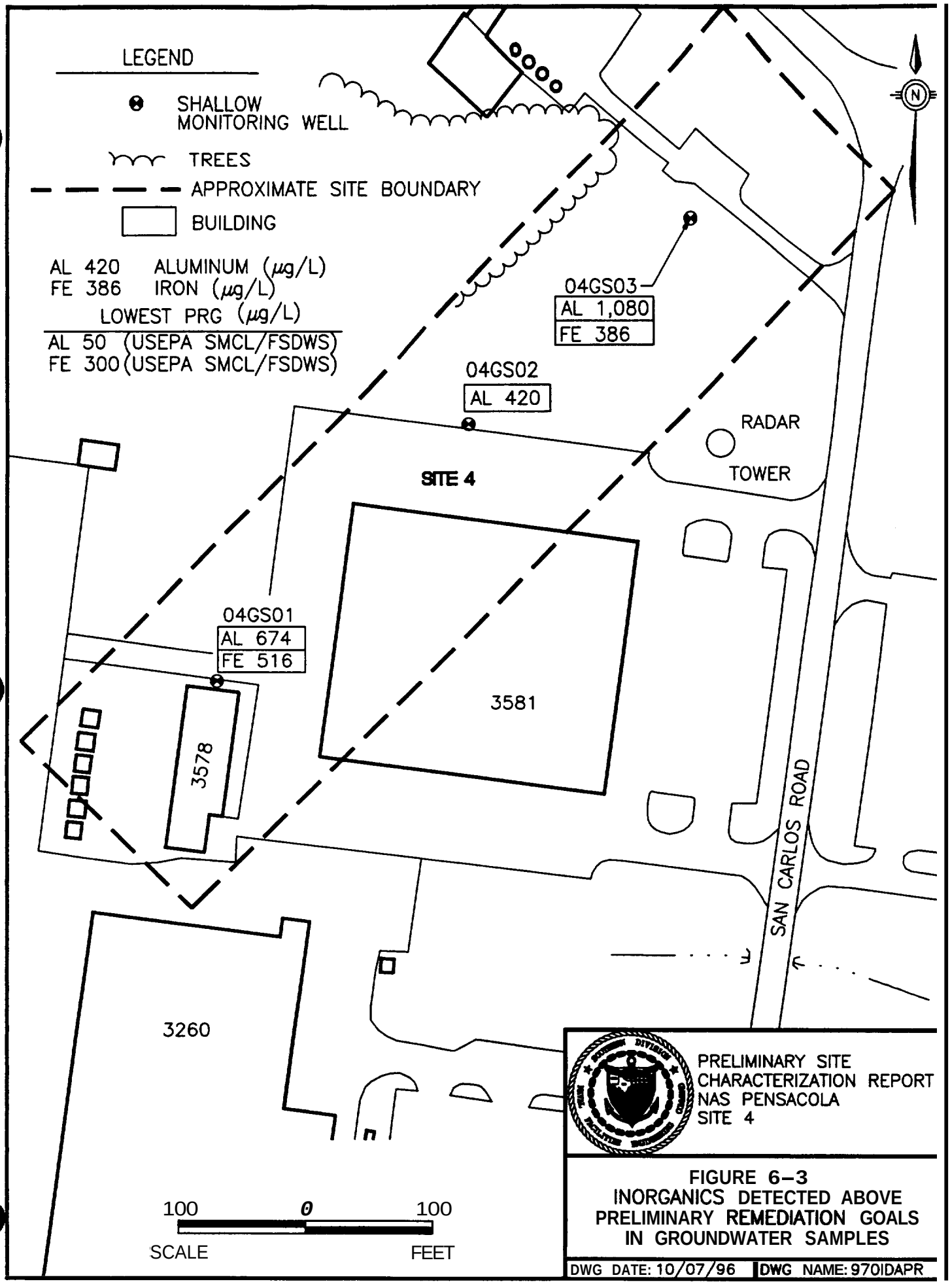
6.2 Groundwater Assessment

Figure 6-3 illustrates Site 4 inorganics detected above PRGs in groundwater samples. Only two parameters were detected above their respective PRGs. These included the metals aluminum and iron. Aluminum above the SMCL was detected in groundwater samples from all three wells (04GS01, 04GS02, and 04GS03). Groundwater samples from wells 04GS01 and 04GS03 contained iron above the SMCL. However, these inorganic concentrations did not exceed the respective NAS Pensacola reference concentrations for these parameters.

No organic parameters were detected exceeding PRGs in groundwater samples.

6.3 Summary and Conclusions

Arsenic is the prevalent inorganic parameter in surface soil. It was detected in samples collected from all three borings advanced onsite. Only the arsenic concentration in 04S01 exceeds the NAS Pensacola reference concentration. Iron exceeds its PRG in two soil borings. Both iron results also exceed the reference concentration. Aluminum also exceeds the PRG and the reference concentration in one soil sample. Benzo(a)pyrene was the lone organic parameter detected above its surface soil PRG, at boring location 04S01. The source for contamination in soil at location 04S01 is probably associated with storm water runoff and routine pesticide application. The location is in a grassy area adjacent to a parking lot. PAH compounds associated with asphalt and automobile leaks can be easily mobilized via runoff from paved areas, while arsenic may be associated with arsenate-based pesticides used routinely at NAS Pensacola in maintained areas.


LEGEND
SHALLOW MONITORING WELL
TREES
APPROXIMATE SITE BOUNDARY
BUILDING
AL 420 ALUMINUM (µg/L)
FE 386 IRON (µg/L)
LOWEST PRG (µg/L)
AL 50 (USEPA SMCL/FSDWS)
FE 300 (USEPA SMCL/FSDWS)
04GS03
AL 1,080
FE 386
04GS02
AL 420
04GS01
AL 674
FE 516
SITE 4
RADAR TOWER
3581
3578
3260
SAN CARLOS ROAD
N
100 0 100
SCALE FEET
PRELIMINARY SITE CHARACTERIZATION REPORT
NAS PENSACOLA
SITE 4
FIGURE 6-3
INORGANICS DETECTED ABOVE PRELIMINARY REMEDIATION GOALS IN GROUNDWATER SAMPLES
DWG DATE: 10/07/96
DWG NAME: 970IDAPR

Aluminum and iron exceeded secondary standards in shallow groundwater at Site 4. However, these detected concentrations were below the reference concentrations for NAS Pensacola, indicating they are likely representative of ambient conditions. No organic parameters above PRGs were detected in site groundwater samples.

7.0 DATA VALIDATION

Data validation is the systematic and independent verification of data quality, and is performed independent of the laboratory. It requires defined acceptable criteria to provide assurance that the data are adequate for the intended use. The certification process consists of data screening, checking, verification, and flagging. Field and analytical data from the PSC of Site 4 were validated by Heartland Environmental Services, Inc., of St. Charles, Missouri to verify the QC requirements of the Site 4 data set and to characterize any questionable findings.

Six soil samples were collected at Site 4 on April 5, 1996. Three groundwater samples were collected at Site 4 on May 6 and 7, 1996. The investigative samples used to characterize the nature and extent of contamination were submitted to Maxwell Laboratories, S-Cubed Division, San Diego, California, and were reported using NEESA Data Quality Objectives (DQO) Level D (USEPA DQO Level IV). The analytical protocols were perfomed in accordance with the following guidance documents:

- USEPA CLP, *Statement of Work (SOW) for Organic Analyses, OLM01.0* (CLP 3/90).
- USEPA CLP, *SOW for Inorganic Analyses, ILM03.0* (CLP 3/90).
- USEPA Superfund Analytical Methods for Low *Concentration Water for Organics Analysis* (10/92).
- NEESA Level D QA/QC guidelines as stated in: *Sampling* and *chemical Analysis Quality Assurance Requirements for the Navy Installation and Restoration Program* 1988, (NEESA 20.2-047B).

- Naval Facilities Engineering Service Center (NFESC), ***Navy Installation Restoration Laboratory Quality Assurance Guide,*** Interim Document, February **1996.**

Data validation was performed using the following documents:

- ***USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review,*** February **1994 (EPA-540/R-94/012)** (Organic Functional Guidelines).

- ***USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review,*** February **1994 (EPA-540/R-94/013)** (Inorganic Functional Guidelines).

Data validation qualifiers are listed at the end of this section.

7.1 Data Quality

Six soil and four water samples were collected April **5** through May **7, 1996.** These totals do not include field QC samples. All samples were received by the laboratory in **good** condition and with the proper custody documents and seals intact. The organic and inorganic results for these samples were reported in two Sample Delivery Groups (SDGs): **5606** and **5646.** Tables **7-1** through **7-4** summarize the QC parameters used for the data validation of each SDG. The analytical data were acceptable for use in the PSC of Site **4** at NAS Pensacola.

Table 7-1
Site 4 Volatile SDG Summary

SDG	Holding Times	GC/MS Tunes	ICal	CCal	IS	Blanks	Surr.	MS/ MSD	LCS	Overall
5606					X	X				OK
5646										OK

Table 7-2
Site 4 Semivolatile SDG Summary

SDG	Holding Times	GC/MS Tunes	ICal	CCal	IS	Blanks	Surr.	MS/ MSD	LCS	Overall
5606										OK
5646										OK

Table 7-3
S i 4 Pesticide/PCB SDG Summary

SDG	Holding Times	IP	ICal	CCal	CC	Blanks	Sum.	MS/ MSD	LCS	Overall
5606			X				X			OK
5646										OK

Notes:
Ical = Initial Calibration
Ccal = Continuing Calibration
Surr. = Surrogates
I.S. = Internal Standards
I.P. = Pesticide Instrument Performance
C.C. = Pesticide Cleanup Checks
MS/MSD = Matrix Spike/Matrix Spike Duplicate
LCS = Laboratory Control Sample
An 'X" in a column means that one or more QC criteria were not met; one or more samples were qualified.
An 'OK" in the Overall column means the data were acceptable with minor qualifications. No positive results were rejected; however, non-detections may have been rejected and flagged 'UR."

Table 7-4
Site 4 Inorganic SDG Summary

SDG	Holding Times	Cal.	Blanks	Serial Dil.	ICP Check	LCS	MS	Lab Dup	Overall
5606			X	X			X		OK
5646			X	X			X	X	OK

Notes:
Cal. = Calibrations
Serial Dil. = Serial dilutions
ICP. Check = ICP interference check
LCS = Laboratory Control Sample
Lab Dup. = Laboratory Duplicate
ICP = Inductively Coupled Plasma
MS = Matrix Spike
An 'X' in a column means that one or more QC criteria were not met.
An 'OK" in the Overall column means the data were acceptable with minor qualifications. No positive results were rejected; however, non-detections may have been rejected and flagged 'UR."

7.2 Organic Analysis

7.2.1 Holding Times

All technical and contractual holding times were within QC requirements.

7.2.2 Calibrations

All QC criteria for volatile and semivolatile gas chromatograph/mass spectrometer (GC/MS) tuning were met in both SDGs. The calibration QC criteria were met for the semivolatile fraction. The volatile QC criteria for the continuing calibration were not met for SDG ***5646.*** Undetected acetone, 2-butanone, and **1,2-dibromo-3-chloropropane** were rejected and flagged "UR" in samples 004GGS0101, 004GGS0201, 004HGS0201, and 004GGS0301. In the pesticide fraction, methoxychlor was slightly outside the initial calibration QC criteria on March 28, 1996, in SDG **5606.**

Methoxychlor and alpha-BHC were outside the initial calibration QC criteria on May 5, 1996, in SDG ***5646.*** Affected sample results were estimated. These QC deficiencies represent common laboratory practices and occurred at a rate consistent with instruments that are calibrated correctly. Sample results were qualified for these calibration outliers per the Organic Functional Guidelines.

7.2.3 Blanks

Acetone and methylene chloride were detected in the blanks associated with the investigation of Site **4.** These compounds are considered common laboratory artifacts and were qualified as recommended by the Organic Functional Guidelines. Action levels are based on the highest concentration of any laboratory artifact found in associated method blank(s) or QC sample(s). No positive sample result for a common laboratory artifact was reported unless that particular artifact's concentration exceeded the action level of 10 times the amount found in any blank(s).

In most cases following data validation, these common laboratory contaminants were deemed to be undetected in the investigative samples due to their presence in associated laboratory and field blanks. The presence of acetone in samples 004S000101, 004S000107, 004S000206, and 004S000307 could not be directly related to blank contamination. Acetone concentrations ranged from 25 micrograms per kilogram (μg/kg) to 40 μg/kg in these samples. This does not mean acetone detected in these samples should be considered a site constituent. The usability of the data must be based on historical evidence at the site, as well as other data results. Volatile constituents used in laboratory analysis and other processes are particularly common sources of potential cross-contamination. The solvents acetone, methylene chloride, and methyl ethyl ketone are used for extractions and cleaning in commercial laboratories, but are usually separated from the volatile analysis section. Although in theory these solvents are not spread from one part of the laboratory to the other, this is not always true in day-to-day laboratory operations and analyses. These volatile compounds can easily be transported from one place to another via air ducts, clothing, glassware, shoes, paperwork, and writing instruments. Acetone found in the investigative samples may also be attributed to isopropanol alcohol (IPA) used for decontamination. IPA is used for manufacturing acetone and its derivatives.[1] Oxidation of IPA may yield acetone contamination. Based on potential field and laboratory sources, the presence of acetone in investigative samples may be questionable and should be used with extreme caution.

7.2.4 Matrix Spike/Matrix Spike Duplicates

In each analytical method used to analyze environmental samples, variations in the reported results may be due to the random differences in the handling and analysis of the matrix. These variations are referred to as the *precision* or the *reproducibility* of results. To demonstrate reproducibility, known quantities of several compounds are added to two separate aliquots of each sample matrix type. The "spiked" aliquots are referred to as the matrix spike (MS) and the matrix spike

[1] *Hawley's Condensed Chemical Dictionary*, Revised by Richard Lewis, Sr., 12th Edition, Van Nostrand Reinhold Co., New York, 1993, p660.

duplicate (MSD). These samples can then be analyzed by applying the same preparation techniques and analytical methods used for all the samples of similar matrix types. This enables the MS and MSD to be used to detect matrix effects caused by contaminants that interfere with the compounds of interest that may also be present. No specific requirements have been established for qualifying MS/MSD data. However, guidelines to aid in applying professional judgment *are* discussed in Organic Functional Guidelines.

The volatile MS/MSD met QC requirements. The semivolatile and pesticide MS/MSD results were outside QC criteria due to low percent recoveries for spiked compounds. No samples were qualified due to professional judgement allowed by the Organic Functional Guidelines.

7.2.5 Laboratory Control Samples

The CLP Low Concentration SOW requires that an laboratory Control Sample (LCS) be analyzed for organic parameters. LCSs are used to demonstrate that the laboratory process for sample preparation and analysis is in control. The LCS is similar to the MS/MSD except American Society for Testing and Materials (ASTM) *Type* II water is spiked with known amounts of specific analytes and is carried through the entire analytical procedure with the samples. All LCS criteria were met for SDGs analyzed during the Site 4 investigation.

7.2.6 Surrogates

Accuracy is the degree to which a given result agrees with the *true* value. To check the accuracy in a volatile, semivolatile, and pesticide analysis, the CLP Organic SOW requires the addition of known amounts of surrogate *compounds*. If the surrogate percent recoveries are close to the known concentrations as defined within the limits set by the CLP, the reported target compound concentrations are assumed to be accurate. All Site 4 samples were analyzed with surrogate recoveries within control limits.

7.2.7 Internal Standards

Internal standards (IS) are added to volatile and semivolatile samples and used to calculate the concentrations of target compounds. Two IS QC criteria must be met when a sample is analyzed. The retention time of the IS must not vary more than 30 seconds and the IS area counts must not vary more than a factor of two (-50% to +100%) from the associated calibration standard. All volatile and semivolatile SDGs met the retention time QC criterion. Samples 004S000101, 004S000201, 004S000301, 004S000101RE, 004S000201RE, and 004S000301RE exhibited low IS areas for the volatile fraction in SDG 5606. All positive and undetected results associated with the IS were estimated per the Organic Functional Guidelines.

7.2.8 Field Duplicates

Representativeness expresses the degree to which sample data accurately and precisely represent the characteristic of a population, parameter variations at a sampling point, or an environmental condition. The duplicate samples assist in indicating overall field and laboratory precision. A greater variance should be expected for the soil sample duplicates compared to water sample duplicates due to the differences in matrix. The field duplicates associated with Site 4 indicated acceptable precision. The actual duplicate sample for Site 4 data validation was collected from Site 7 because samples for both sites were submitted under one SDG.

7.2.9 Compound Quantitation

Volatile samples 004S000101, 004S000201, and 004S000301 were reanalyzed due to noncompliant IS areas. Upon reanalysis, the IS areas did not improve, indicating matrix interference. The original sample analyses were reported, and appropriately qualified, because of preferable holding times.

Two columns and two separate detectors are used in pesticides analysis. Target analytes and surrogates are generally quantitated and reported on both columns; however, only the lower of

the two concentrations is reported. The lower of the two concentrations is used because if present, co-eluting interferences are likely to increase the calculated concentration of any target compound. For detected analytes, the percent difference between the two columns are calculated. If the percent difference between the calculated concentrations is greater than 25%, the laboratory flags the value with a "P" qualifier. This flag alerts the data user of the potential problems in quantitating the analyte.

During the validation process, the laboratory's "P" flags are dropped. The values are flagged "J" when the percent difference between the calculated concentrations is greater than 25%. The validation flag alerts the data user that the pesticide value is an estimated concentration.

7.3 Inorganic Analysis

7.3.1 Holding Times

All samples were received by the laboratory in good condition with the proper custody documents and seals intact. From the date of collection to the date of sample analysis, holding times were within method and contractual requirements.

7.3.2 Calibration

Initial and continuing calibration is conducted to ensure that the instrument is capable of acceptable and quantitative performance at the beginning and throughout each analytical run. Initial and continuing calibrations were performed for the analysis of inorganics within the criteria established by the USEPA CLP Inorganics SOW.

7.3.3 Blanks

Blank results are used to determine the presence and magnitude of any contamination problems. According to Inorganic Functional Guidelines, a sample result should not be considered positive unless the concentration of the compound in the sample exceeds five times the amount in *any*

associated blank. As to be expected, contamination was identified in the blanks of both inorganic SDGs. Action levels were set for each affected element based on the highest concentration in any associated blank. Elements attributed to blank contamination were flagged undetected ("U"). No positive sample result was reported for an element detected in any blank unless that particular artifact's concentration exceeded the action level of five times the amount found in any blank per the CLP Inorganic SOW.

7.3.4 ICP Interference Check Sample Analyses

The inductively coupled plasma Interference Check Sample (ICP/ICS) analysis is performed to check the laboratory's instrument and the background correction factors. An ICS was analyzed for each SDG without any indication of interferences.

7.3.5 ICP Serial Dilutions

ICP serial dilutions are used to assess matrix interference. One sample from each set of similar matrix type is diluted by a factor of five. For an analyte concentration that is at least 50 times above the instrument detection limit, the measured concentrations of the undiluted sample and the diluted sample should agree within 10%. Calcium and sodium in SDG 5606 and aluminum in SDG 5646 were outside QC criteria. All affected sample results for these elements that were outside the QC criteria in that SDG were qualified as recommended by the Inorganic Functional Guidelines.

7.3.6 Laboratory Control Sample

LCSs are used to monitor the overall performance or accuracy of all steps in the analysis, including the sample preparation. All LCS criteria were met for both SDGs.

7.3.7 Laboratory Duplicates/Spikes

Laboratory duplicate samples are used to determine the precision of analytical methods for each parameter. Laboratory spiked samples are designed to provide information about the effects of the sample matrix on the digestion and measurement methodology. In SDG 5606, the spike result for antimony was outside the QC limit. In SDG 5646, the spike results for aluminum, selenium, and copper were outside control limits. In addition, the duplicate result for aluminum was outside QC criteria in SDG 5646. All analytes were qualified that did not meet the laboratory duplicate and/or spike QC criteria as specified in CLP Inorganic SOW.

7.3.8 Field Duplicates

Representativeness expresses the degree to which sample data accurately and precisely represent the characteristic of a population, parameter variations at a sampling point, or an environmental condition. The duplicate samples assist in indicating overall field and laboratory precision. A greater variance should be expected for the soil sample duplicates compared to water sample duplicates due to matrix differences. The field duplicates associated with Site 4 indicated acceptable precision. The actual duplicate sample for Site 4 data validation was collected from Site 7 because samples for both sites were submitted under one SDG.

7.4 Summary

7.4.1 Completeness

Completeness is defined as the percentage of measurements made which are judged to be valid. All of the samples analyzed for the investigation of Site 4 were determined to be valid with some qualification, except for the results flagged "UR." Of 1,530 total measurements made (number of unique sample and parameter pairs), 12 were flagged "UR" (greater than 99% completeness). Therefore, the data met the 95% completeness goal.

7.4.2 Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared to another. Comparability is assured through the use of established methods of field sampling by experienced field personnel and laboratory analysis as specified by USEPA protocols. All samples for Site 4 were collected using the USEPA Region IV Standard Operating Procedures and analyzed according to CLP SOW protocols.

7.5 Conclusion

The overall data quality of the analytical work done for Site 4 at NAS Pensacola, except for the undetected sample results that were qualified as unusable, were considered to be satisfactory and usable for site remediation and risk assessment. The data validation summary reports submitted by Heartland Environmental Services for Site 4 will be provided upon quest or otherwise will become a part of the NAS Pensacola Site 4 *Final Report Reference File.*

Validation Qualifiers

U Undetected — The analyte was analyzed for but not detected or was also found in an associated blank, but at a concentration less than 10 times the blank concentration for common constituents or five times the blank concentration for other constituents; the associated value shown is the quantitation limit.

J Estimated Value — One or more QC parameters were outside control limits.

UJ Undetected and Estimated — The analyte was analyzed for but not detected above the listed estimated quantitation limit; the quantitation limit is estimated because one or more QC parameters was outside control limits.

D Diluted Result — The compound was reanalyzed at a secondary dilution factor. If one or more compounds are outside the calibration range during an initial analysis, the laboratory flags the analyte "E." When diluted, the sample results will be flagged "D." Generally, values from the initial analysis will be used except where the value exceeded the calibration range. Values exceeding the calibration range in the initial analysis will be substituted by the diluted value to ensure the most representative data. The "D" flag will remain on the value to alert the data user that a secondary dilution value was used.

R/UR Unusable Data — One or more QC parameters grossly exceeded control limits.

8.0 FATE AND TRANSPORT

8.1 Detected Constituents

Parameters identified in site soil include metals and a high molecular weight PAH compound. Surface soil metals above PRGs included aluminum, arsenic, and iron. The PAH benzo(a)pyrene was present above its PRG in only one surface soil sample.

8.2 Contaminant Migration

Leaching from Soil to Groundwater

Soil constituents may be leached to groundwater primarily by downward percolation of rainwater. The absence of most analyzed parameters in groundwater indicates no significant partioning or leaching of soil constituents to groundwater is occuring. Soil within the site area is very permeable, resulting in quick infiltration and minimal contact time between percolating water and soil above the water table. Leaching is also limited, at least in the western portion of the site, by the extensive impervious surfaces (asphalt pavement and buildings) which limit the percolation of precipitation by causing rain to run off or pool and evaporate.

Site groundwater parameters above PRGs include aluminum and iron. No organic constituents were detected in site groundwater samples.

Surface Water Transport

Potential surface transport of constituents is limited over the site's eastern portion by the highly permeable soil. The impervious asphalt parking lots over the western part of the site limit precipitation's contact with site soil by causing it to pool and evaporate, or run off. The contaminant source survey identified no nearby storm drains which may conduct contaminated surface water away from the site.

Groundwater Transport

Groundwater flows to the north-northwest across Site 4 at an average calculated velocity of 1.53 ft/day. Pensacola Bay is approximately 1,875 feet southeast of the site. Assuming only advective transport for groundwater PRG exceedances, equal to the rate of groundwater flow, travel time for constituents to the bay would be about 3.3 years. This very conservative determination does not account for dispersion or retardation of parameters while enroute toward the bay.

Current and Potential Receptors

The current and potential receptors for parameters associated with site groundwater are Bayou Grande. No wetlands exist in the vicinity of Site 4. Potential effects to Pensacola Bay will be further addressed in the investigation for Site 40 – Bayou Grande.

9.0 CONCLUSIONS AND RECOMMENDATIONS

No further action is recommended with respect to Site **4** due to the absence of extensive exceedances above regulatory standards in soil and groundwater samples collected onsite. **A** comparison of other constituents to applicable and relevant or appropriate requirements supports a conclusion of no further action for soil and groundwater based on the following analyses:

- Aluminum, iron, and arsenic exceeded their respective PRGs and RCs in site surface soil. Given the nature of **NAS** Pensacola soil, in which high concentrations of aluminum and iron are not uncommon, arsenic poses the most concern for potential exposure. Benzo(a)pyrene was the only organic parameter detected above its PRG in site soil.

- The arsenic may be related to the use of arsenate-based pesticides, which is common at **NAS** Pensacola. The concentration may have been further elevated by storm water runoff from the adjacent parking lot. The surface soil PAH concentration detected above the PRG is likely associated with cultural activities and/or development (automobile traffic leaks or runoff from the asphalt paved parking lot).

- Two metals, aluminum and iron, exceeded their respective PRG concentrations in wells onsite. However, the detected concentrations of both aluminum and iron were below their respective **NAS** Pensacola reference concentrations. Given that the shallow groundwater is not used, nor is it anticipated to be used, as a source of drinking water, no action to address these secondary exceedances is recommended. The absence of soil constituents arsenic and benzo(a)pyrene in groundwater supports that leaching of soil constituents is insignificant.

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11.0 FLORIDA PROFESSIONAL GEOLOGIST SEAL

I have read and approve of this Preliminary Site Characterization Report, NAS Pensacola Site 4 and seal it in accordance with Chapter 492 of the Florida Statutes. In sealing this document, I certify the geological information contained in it is true to the best of my knowledge and the geological methods and procedures included herein are consistent with currently accepted geological practices.

Name:	Brian E. Caldwell
License Number:	#1330
State:	Florida
Expiration Date:	July 31, 1997

B E Caldwell

Brian E. Caldwell

7/31/97

Date

Appendix A

Geophysical Report for Sites 4, 7, and 16 for NAS Pensacola

GEOPHYSICAL REPORT FOR SITES 4, 7, and 16 NAVAL AIR STATION PENSACOLA, FLORIDA

SOUTHNAVFACENGCOM
CONTRACT NUMBER:
N62467-89-D-0318
CTO - 970

Prepared for:

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN)
NAVAL AIR STATION
PENSACOLA, FLORIDA

Prepared by:

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January 17,1997

Release of this document requires prior notification of the Commanding Officer of the Naval Air Station, Pensacola, Florida.

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EXECUTIVE SUMMARY

In support of environmental investigations at Naval Air Station (NAS) Pensacola, EnSafe/Allen & Hoshall of Memphis, Tennessee, conducted geophysical surveys at Sites 4, 7, and 16 to characterize the extent of buried material and map features of possible environmental concern.

The anomalies were identified according to the likelihood for being of environmental concern: Type A anomalies are well-defined features needing further investigation, Type B are weaker anomalies, Type C are anomalies not related to buried features.

Two strong Type A anomalies were identified at Site 7 along the southwestern margin of the survey area. These large responses may be related to past bum activities reported onsite. Three lesser Type B anomalies were also identified onsite, one near Building 1713 and two adjacent the southwestern site boundary. The rest of the surveyed area was anomaly-free.

Geophysics data for Site 4 identified three less-significant Type B anomalies. Most site anomalies were directly linked to surface or subsurface culture. Follow-up investigations for the Type B anomalies are not recommended.

Five significant Type A anomalies were identified in the active landfill at Site 16. In addition to the Type A responses, numerous Type B anomalies were scattered across the landfill. The investigation in the southwestern section of Site 16 identified no significant anomalous activity. One linear feature in the conductivity data set was classified Type B. No further investigation is recommended.

Follow-up investigations may be needed at Type A sites to ascertain whether the anomalies are due to innocuous, minor buried rubble or are of genuine environmental concern. The geophysics data indicate specific locations at which to conduct follow-up investigations.

1.0 INTRODUCTION

EnSafe/Allen&Hoshall (E/A&H) recently performed geophysical surveys at NAS Pensacola to characterized subsurface conditions within Sites 4, 7, and 16. Survey results will be used to evaluate site environmental conditions, and identify potential areas for subsequent invasive environmental investigations

The investigations used the frequency domain electromagnetics (FDEM) technique to detect buried metals and disturbed soil. FDEM provides rapid and high-density data coverage of conductive features within approximately 6 meters of the surface.

2.0 FIELD IMPLEMENTATION

To ensure accurate and reliable data collection, and reproduction of anomaly source locations, an orthogonal reference grid was used over the investigation area. Grid baselines were marked first using a compass and then back-sighting from a fixed position on the grid. The fixed position for the grid was referenced as 1000N/1000E. Wood stakes were placed every 10 feet along key east-west grid lines. Data were collected along north-south lines by careful pacing, using the wood stakes to maintain the correct east-west alignment. Conductivity and in-phase data were obtained using a vertical dipole configuration at an elevation of 1 meter above ground surface, using the shoulder sling supplied with the instrument.

3.0 GEOPHYSICAL APPLICATION

Description of FDEM

Frequency domain electromagnetics (FDEM) is a geophysical technique useful for mapping buried drums, tanks, utility lines, old trenches, construction rubble, extent of landfills, etc. Typically the instrument is an EM-31, manufactured by Geonics, Ltd. The EM-31 consists of a 2-meter long boom with a transmitting antenna at one end and a receiving antenna at the other. The transmitting antenna is energized by a current pulse, which propagates into the ground as an

electromagnetic field. As it encounters electrically responsive materials in the ground, the signal received at the surface in the receiving antenna is distorted. These distortions can then be interpreted to develop a graphical image of the subsurface.

The signal can penetrate to 6 meters below ground surface. FDEM is primarily a profiling method that does not yield detailed vertical resolution, although it can perform some limited sounding capability by varying the instrument height and dipole orientation. Resolution in plan view is often within a meter or so. Signals are sensed by the instrument's electronics and the data are sent to a field data recorder, whose contents are downloaded to a second computer for processing and plotting.

Two parameters are measured: conductivity and in-phase. Conductivity measures how well the earth conducts electrical current. Dry materials yield low conductivities, while wet materials yield high conductivities. Saturated clays are particularly conductive. Buried metals may also increase the effective conductivity. Conductivity data have units of milliSiemens per meter (mS/m).

The in-phase component is a ratio of the secondary-to-primary field strengths (the primary field is the generated signal and the secondary is the ground's response). The in-phase component is primarily sensitive to metals, not soil moisture, and can be negative or positive over metallic objects, depending on the relative geometries of the conductor and instrument. In-phase has units of parts per thousand (ppt) of the secondary field strength.

FDEM was used on this project to detect disturbed soil and buried metals related to excavation and to identify any potential underground storage tanks onsite.

4.0 QUALITY ASSURANCE PROCEDURES

Equipment was calibrated according to the manufacturer's instructions each morning prior to data acquisition.

Two items of chief concern in any data set are precision and biasing; both can influence the interpretability of a data set. A standard set of tests was used to investigate both types of effects.

4.1 Data Precision

A base station is normally established in a background area to determine short- and long-term measurement precision. Periodically during data acquisition, the instrument is returned to the base station and 10 to 20 successive readings are measured. The base station for Site 4, 7, and 16 were position at 1000N/1000E, 1000N/1120E, and 1000N/1000E, respectively.

Short-term precision shows how closely a measurement can be repeated in a short range of time, and thus is a function of inherent instrument noise. Short-term precision is estimated by statistically analyzing the base station burst measurements. The results are as follows:

Data Precision Tests

Test	Conductivity (mS/m)	In-Phase (ppt)
Instrument Precision Error		
Base Station Site 4	f0.06167	±0.01403
Base Station Site 7	±0.06056	f0.00616
Base Station Site 16	f0.06377	f0.01552
Benchmarks		
Desired Minimum Resolution	fl.0	fl.0
Typical Drum Response	±5	±5

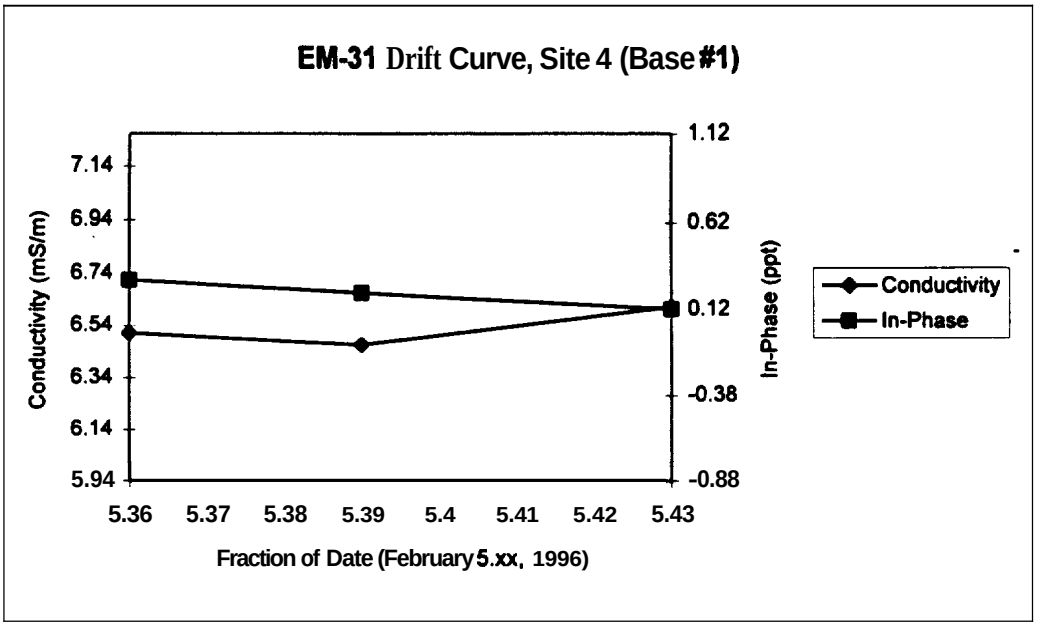
The precision is acceptable, judged by benchmarks set by the survey objectives, and hence does not influence the interpretability of the data set. The precision level is better than average for **EM-3**1 surveys.

Long-term precision is primarily controlled by instrument drift, due to slight response changes in the its electronics. Figures 1 and 2 show the instrument drift recorded for Base Station 1 at each site. The minimum and maximum vertical scales are adjusted to represent 10%of the conductivity value and 1 ppt of in-phase, considered to be "high drift" bounds which, when exceeded, suggest that drift corrections may need to be considered. The drift is smaller than usual for **EM-31** measurements and does not exceed the desired minimum resolution benchmarks for Sites **4** and **7.** No correction is required for the magnitude of drift observed at these sites. Slightly greater variability occurs within the base station readings for Site 16. The primary cause is the extended number of days the survey required. **A** drift correction should be applied **to** the raw data set from Site **16.**

4.2 Data Biasing Effects

Spatial aliasing is an undersampling effect that occurs when searching for small, subtle targets, such **as** deeply buried single drums. The key to a successful survey is to optimize the grid spacing or data density to the smallest target being investigated. In this case, a single drum is the smallest object sought. Experience has shown that a 10 foot by **10** foot grid is a good compromise between effectiveness of detection and survey speed for drum-size objects. Most objects of this size within the penetration range of the instrument will be detected in a 10 foot by 10 foot data **grid.**

Instrument response time/nonreciprocity effects can occur on large-scale surveys, when the instrument is advanced quickly/rapidly along lines and reverses direction on each line. This procedure produces a wavy pattern at the edges of high-amplitude anomalies due to a finite instrument response time and due to nonreciprocity when the receiver and transmitter antennas reverse positions. Effects of this nature do not compromise data quality or interpretability.


EM-31 Drift Curve, Site 4 (Base #1)
Conductivity (mS/m)
7.14
6.94
6.74
6.54
6.34
6.14
5.94
1.12
0.62
0.12
-0.38
-0.88
In-Phase (ppt)
5.36
5.37
5.38
5.39
5.4
5.41
5.42
5.43
Fraction of Date (February 5.xx, 1996)
Conductivity
In-Phase

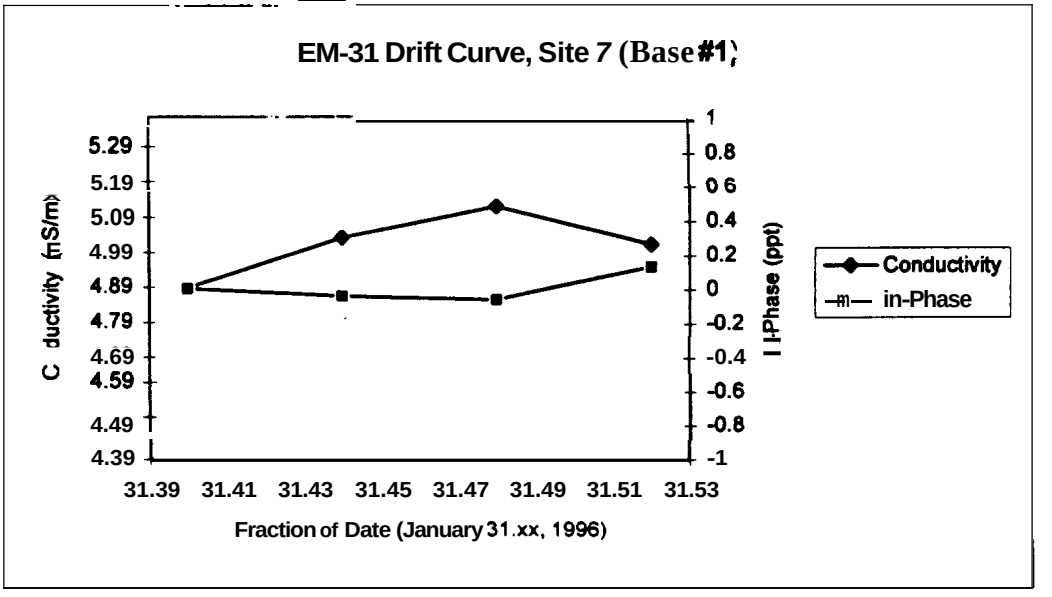
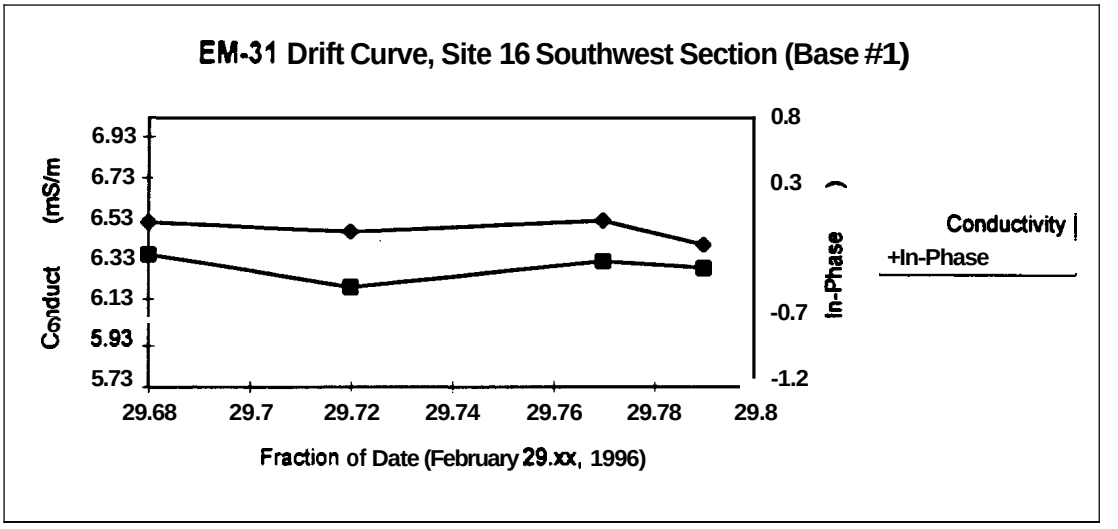

EM-31 Drift Curve, Site 7 (Base #1)
5.29
5.19
5.09
4.99
4.89
4.79
4.69
4.59
4.49
4.39
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
31.39
31.41
31.43
31.45
31.47
31.49
31.51
31.53
Fraction of Date (January 31.xx, 1996)
Conductivity
in-Phase

Figure 1


EM-31 Drift Curve, Site 16 Southwest Section (Base #1)
Conduct (mS/m)
6.93
6.73
6.53
6.33
6.13
5.93
5.73
0.8
0.3
-0.7
-1.2
In-Phase
29.68
29.7
29.72
29.74
29.76
29.78
29.8
Fraction of Date (February 29.xx, 1996)
Conductivity
In-Phase

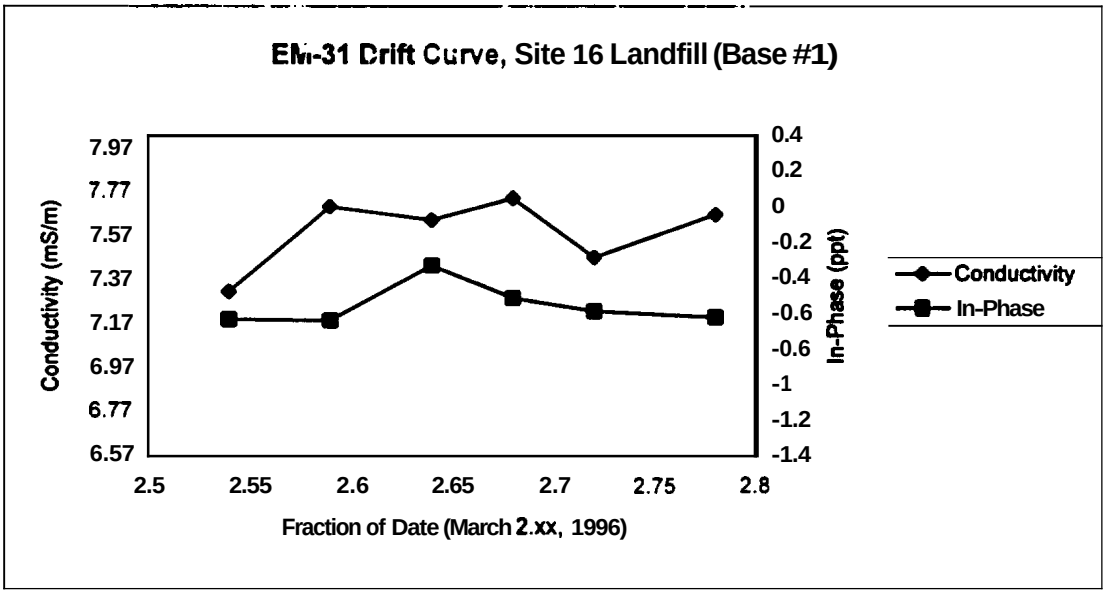

EM-31 Drift Curve, Site 16 Landfill (Base #1)
Conductivity (mS/m)
7.97
7.77
7.57
7.37
7.17
6.97
6.77
6.57
0.4
0.2
0
-0.2
-0.4
-0.6
-0.6
-1
-1.2
-1.4
In-Phase (ppt)
2.5
2.55
2.6
2.65
2.7
2.75
2.8
Fraction of Date (March 2.xx, 1996)
Conductivity
In-Phase

Figure 2

5.0 DATA INTERPRETATION

Each investigation created plan-view maps taken from conductivity and in-phase data sets. Site features are superimposed to aid the interpretation.

The conductivity maps identify subtle soil moisture changes across the site. The data are depicted in color according to the color bar on the right side of each map. Both large and small conductivity values (compared to background) may be significant, although they do not necessarily indicate separate features but may be edge effects from a single feature. Extremely large and small values, sometimes with distinct linear appearance, are often associated with fences and underground utilities. Other anomalies not related to culture are observed, ranging from broad changes over several hundred feet to very small, isolated ones.

In-phase data maps usually indicate metal. The nominal response in a metal-free area should be nearly zero. Large positive and negative values generally indicate metal features associated with buried objects, or aboveground culture such as fences, road signs, buildings, etc. As with conductivity data, in-phase data clearly indicate buried utilities, and also show numerous small, scattered anomalies.

The anomalies identified onsite are classified according to their interpretational significance with respect to the individual project objectives:

Type A: Strong, well-defined anomaly characteristic of a buried object, for which some follow-up (site walkover, soil boring, trench, etc.) is recommended.

Type B: Weaker or more poorly defined anomaly due to a buried object, but less likely to be of environmental concern. Follow-up is deemed less critical, but depends on Type A anomaly investigation results.

Type C: Anomaly not believed to be caused by buried material of environmental concern. Examples are ditches, culture, metal objects at the surface, etc. Follow-up is not recommended.

Type D: Anomaly-free in light of the stated objectives.

Tables for these three sites describe the anomalies and recommendations for follow-up. If a follow-up investigation conducted, the best locations for doing so are indicated for Type A anomalies in the second column of the tables. Note that follow-up will first be a site walkover to determine if the anomaly is due to some nonenvironmental object, such as buried construction debris or topography. Most of these explanations were eliminated during the geophysics survey, but a second site walkover is still recommended. Invasive work may be planned based upon the site walkover.

5.1 Site 7

5.1.1 Setting and Regional Geology

Site 7 is on the southern side of NAS Pensacola, adjacent to Building 1713, and approximately 400 feet southeast of Fort Redoubt. The site was previously a fire-fighting training area using several surface structures and bum pits. Surface topography is generally flat, sandy terrain with several scattered minor depressions. Surface vegetation ranges from primarily wooded to grass and weeds. An unmaintained asphalt road to Redoubt Road bisects the site generally north to south. A mobile home park is southeast and adjacent to the site. Local military personnel indicated the southeastern section of the site was the most likely area for bum and burial activity while serving as a training area.

5.1.2 Field Procedures

A 10-foot grid interval for Site 7 was used as a compromise for sampling potentially large footprint sources (i.e., bum pits), along with smaller sources such as drums. Key east-west cross

lines staked every 100 feet were marked with high-visibility paint. Data were obtained walking north on even-numbered lines and south on odd-numbered lines. The receiver antenna was pointed north on even lines and south on odd lines. Fieldwork for this site was completed January 31, 1996.

5.1.3 Data Interpretation

Figures 3 and 4 show the plan-view maps, consisting of conductivity and in-phase field data, respectively. Both data sets show regional effects which characterize the inherent subsurface background conductivity levels. The data collection method minimized the "wavy" nonreciprocity effects caused by reversing the antenna orientation.

5.1.4 Anomaly Description

Table 1 lists the anomalies identified at Site 7. Most are near-surface, localized features likely related to previous training activities occurring onsite. Two high-amplitude responses were identified along the southwest site boundary, adjacent to the trailer park. These responses were classified as Type A based on their strength and their spatial map position to previous bum activities identified onsite (Figure 5). Possible sources for these anomalies may be the bum pits, metal containers used in fire training, reinforced building materials, or some other nondescript ferrous material buried onsite. Type C anomalies, attributed to surface and subsurface culture, are quite prevalent; the most noticeable example is the linear feature leading to Building 1713. The probable source for this anomaly may be a water or gas line. The strong signature of this cultural response is due to frequency coupling along the north-south traverses. Culture can mask meaningful anomalies; however, at this site, the culture is in areas that do not obscure site interpretation.

Figure 3 Conductivity – Site 7

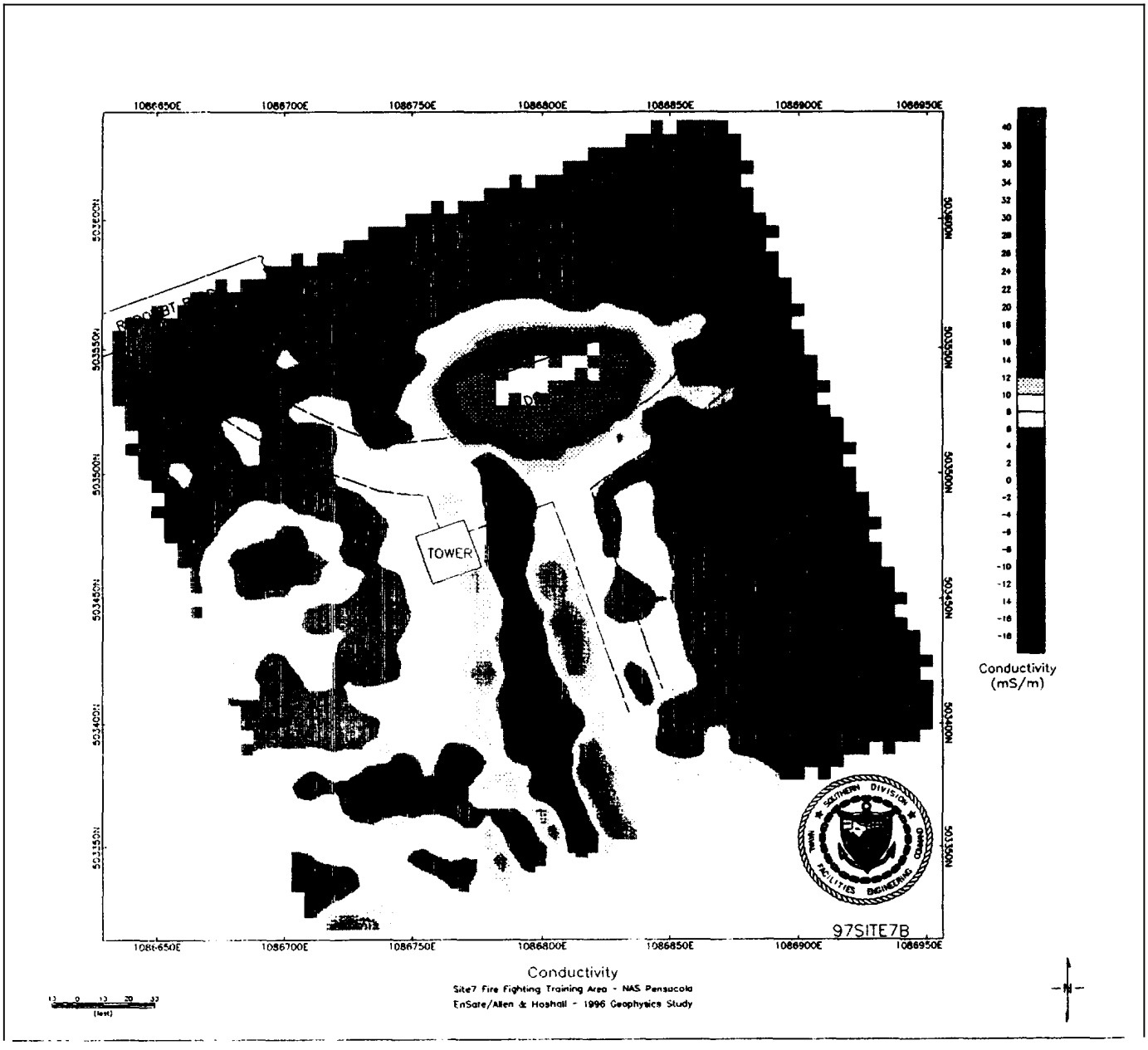


Figure 4 In-Phase – Site 7

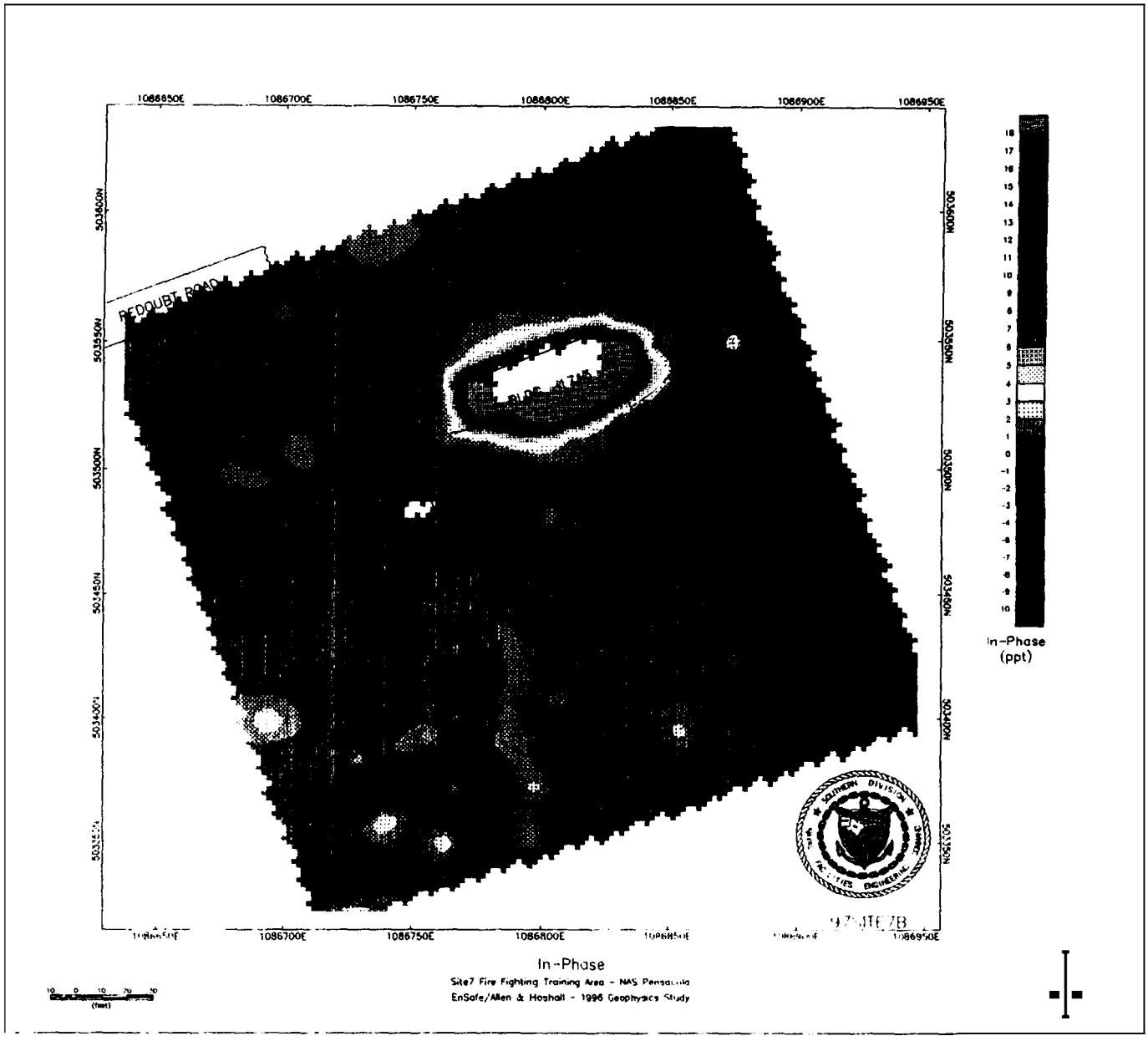


Figure 5 Geophysical Anomaly Map – Site 7

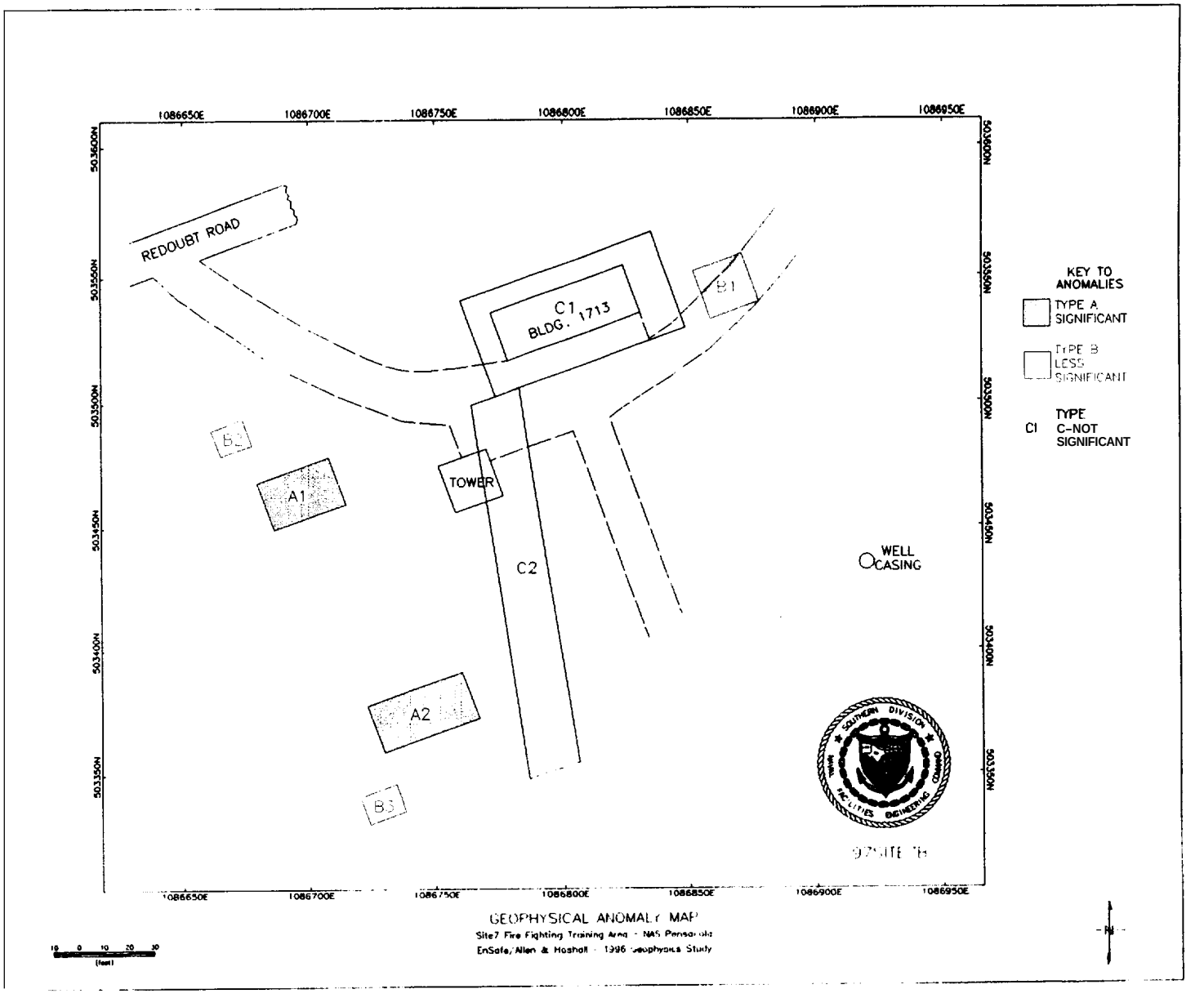


Table 1
Anomaly Interpretations, Site 7 Fire Fighting Training Area

No.	Best Position to Investigate	Notes
TYPE A ANOMALIES: RECOMMENDED FOR FOLLOW-UP		
A1 A2	1086700E/503450N 1086750E/503350N	Strong response in both conductive and in-phase data sets. The highly focused nature of the response footprint, in both data sets, would indicate a concentrated metal source recorded in one or two station readings. These anomalies are classified Type A due to their size and strength; follow-up is recommended.
TYPE B ANOMALIES: SECONDARY FEATURES OF LOWER PRIORITY		
B1	1086870E/503350N	Moderate anomaly. Investigation recommended only if anomalies AI and A2 show material of concern.
B2	1086655E/503480N	Minor anomaly.
B3	1086725E/503345N	Minor anomaly.
TYPE C ANOMALIES: NOT RELATED TO SUBSURFACE FEATURES		
C1	-	Building.
c 2	-	Buried utilities.

5.2 Site 4

5.2.1 Setting and Regional Geology

Site 4 is an open field adjacent to Building 3581 and southwest of San Carlos Road. Site history indicates previous usage may have supported flight-line activities or Building 3581. Site topography is generally flat excluding a small drainage depression adjacent to Building 3581 parking lot. Several small piles of metal tubing were discarded along the parking lot boundary. Near the middle of the field, a slightly rectangle outline of a buried feature, possibly an abandoned foundation, is evident. During grid installation, cement was identified 4 to 5 inches below the surface. Site vegetation consists mainly of grass and weeds, with occasional bare soil or stressed grass. The northwestern portion of the site has a small stand of pine trees. A second smaller parking lot for another facility is nearby.

5.2.2 Field Procedures

Site 4 data were collected on a 12-foot grid interval with each node marked with either a wood stake or high-visibility paint. All data were collected walking north on even-numbered lines and south on odd-numbered lines. Data were acquired over two days, mostly the first day, February 5, 1996. The next day's effort focused on collecting data along the airfield southwest of Building 3581.

5.2.3 Data Interpretation

Figures 6 and 7 show plan-view maps of conductivity and in-phase field data, respectively. Most of the recorded response onsite could be characterized as nominal. Moderate anomalous responses occur in localized areas near surface and subsurface culture. The site is generally clear of significant anomalous activity not easily tied to known culture.

5.2.4 Anomaly Description

Table 2 lists the anomalies identified at Site 4. Most of the anomalous activity can be linked to cultural source bodies. Only three minor responses went unmatched to known culture during data interpretation. These anomalies are classified as Type B based on their minimal frequency signature and response footprint (Figure 8). The probable source for these anomalies is most likely nondescript metal debris associated with past site activities. The most likely source for anomaly B3 may be an abandoned drainage feature. Numerous Type C anomalies are present across the site. One interesting anomaly not linked to a surface source is labeled C2. This response appears to be of an underground utility servicing either the tower or Building 3581.

Figure 6 Conductivity – Site 4

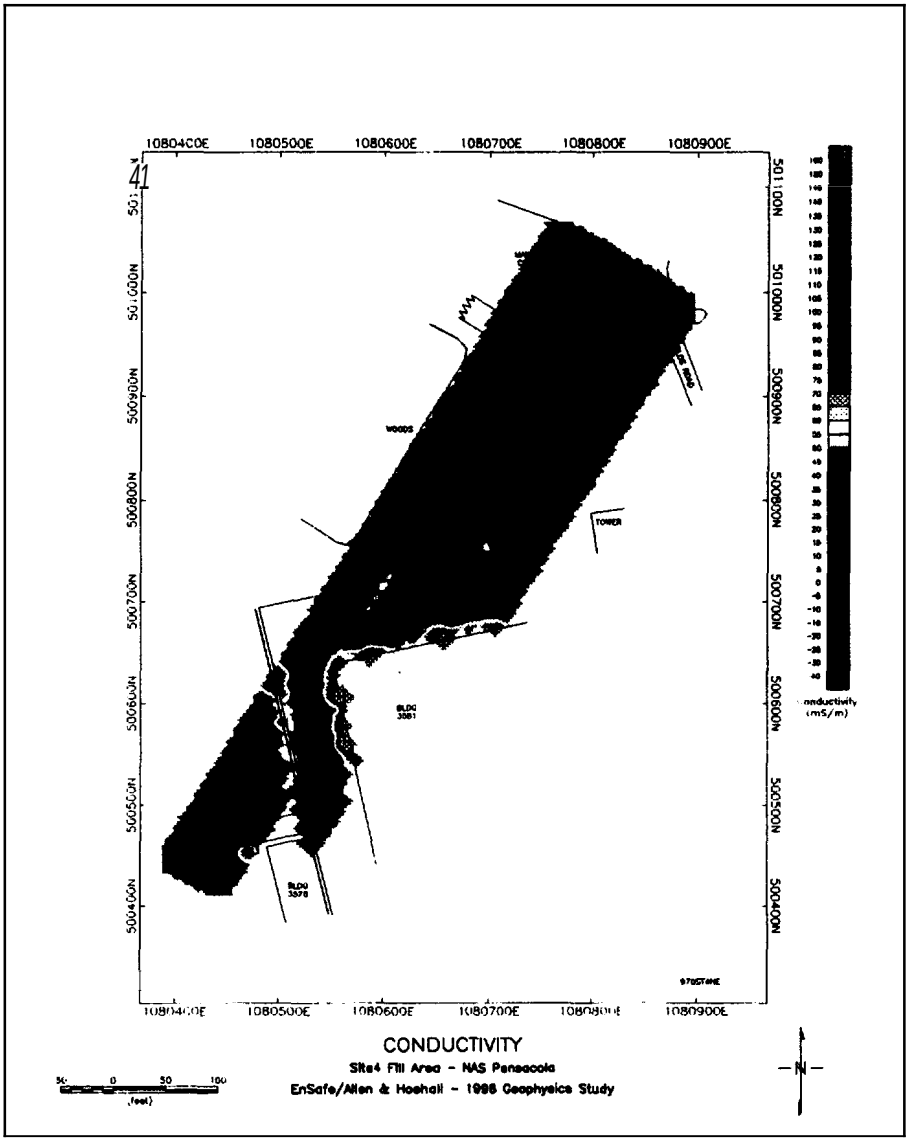


Figure 7 In-Phase – Site 4

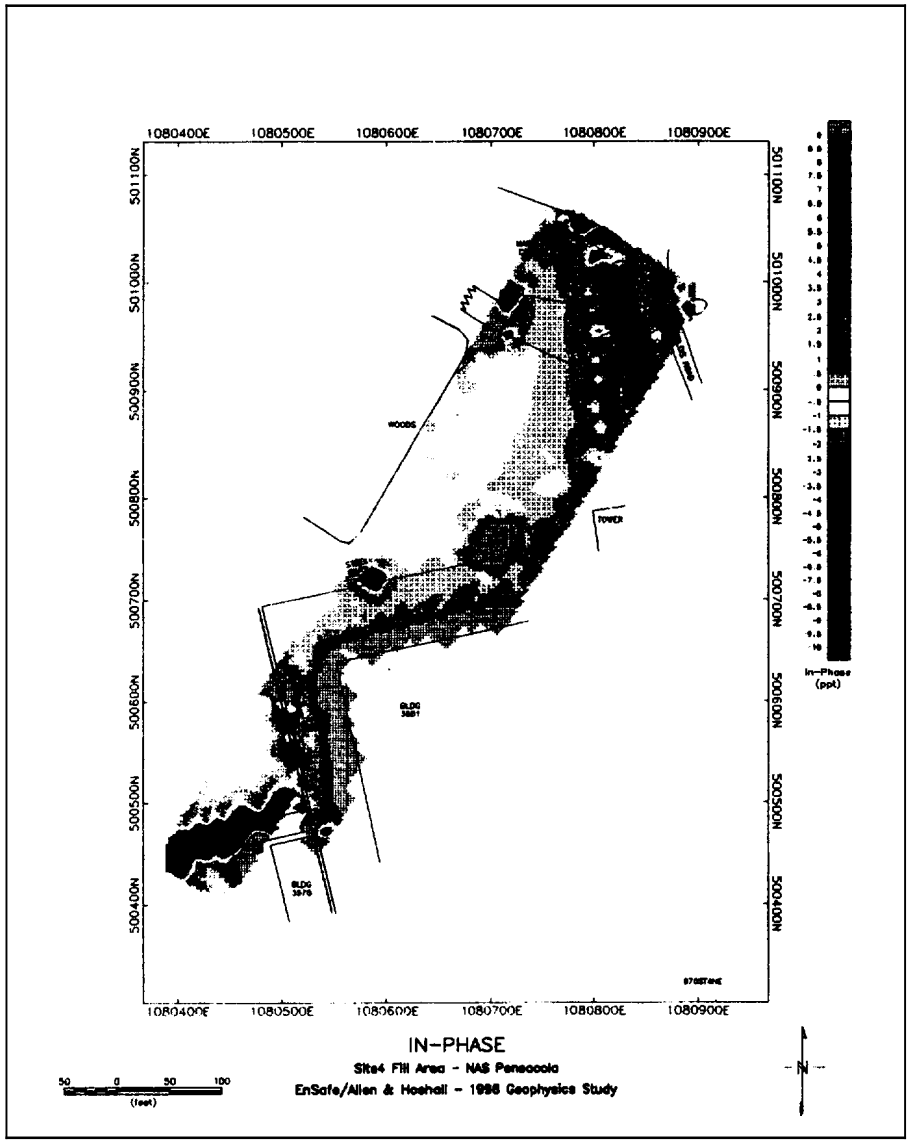


Figure 8 Geophysical Anomaly Map – Site 4

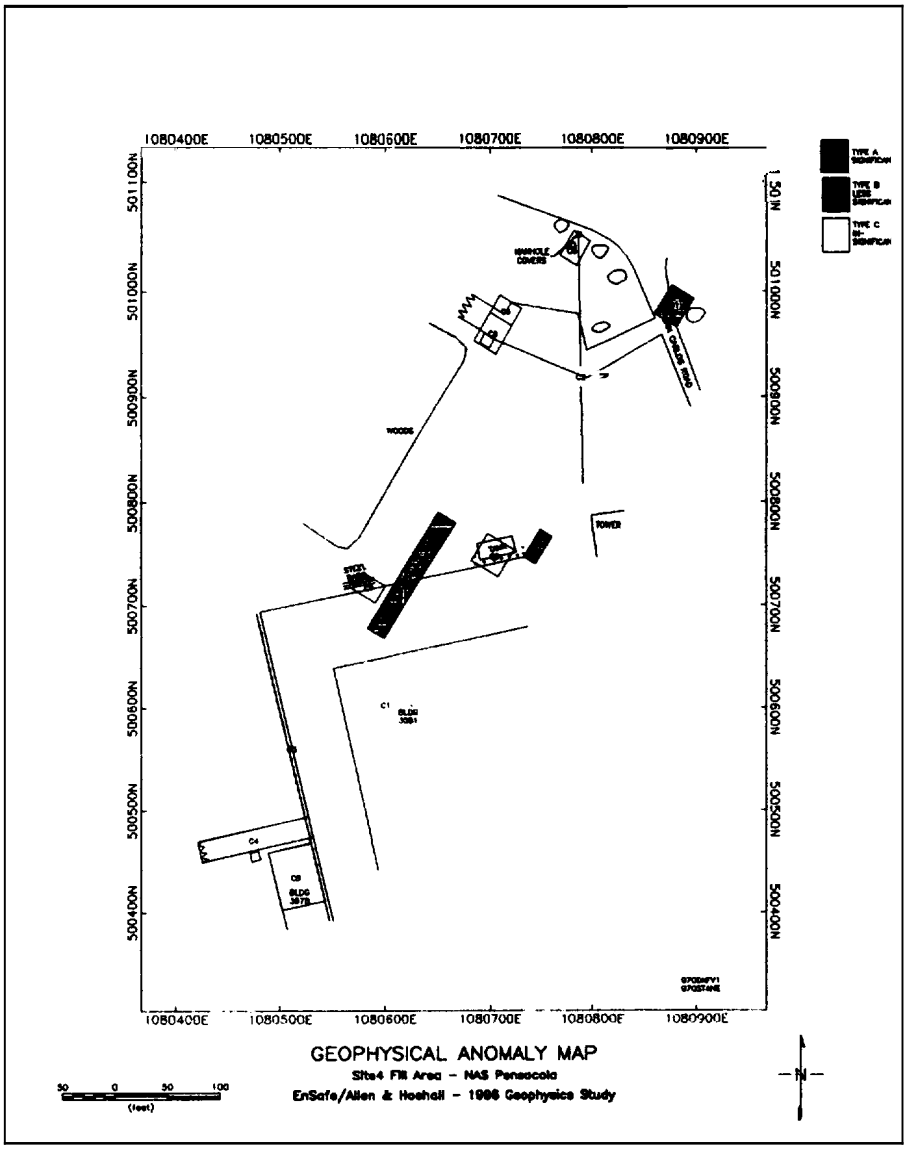


Table 2
Anomaly Interpretations, Site 4

No.	Best Position to Investigate	Notes
TYPE A ANOMALIES: RECOMMENDED FOR FOLLOW-UP		
-	-	No Type A anomalies were found.
TYPE B ANOMALIES: SECONDARY FEATURES OF LOWER PRIORITY		
B1	1080900E/500990N	Moderate anomaly; representative of several small anomalies in the area. Not recommended for follow-up based on the geophysics data.
B2	1080750E/500750N	Strong anomaly; buried metal indicated. Source may be related to nearby surface culture. Follow-up not recommended.
B3	1080600E/500700N	Moderate anomaly in the conductive data set. Absence of in-phase signature would eliminate metal as response source. Drainage feature most likely source for anomaly.
TYPE C ANOMALIES: NOT RELATED TO SUBSURFACE FEATURES		
C1	-	Building 3581.
C2	-	Utilities and other culture, producing linear feature..
c 3	-	Fence.
c 4	-	Reinforced concrete.
c 5	-	Reinforced concrete and Building 3578.
C6	-	Manhole covers to utilities.
c 7	-	Surface metals.
C8	-	Surface fuel tank.
c 9	-	Trash dumpster.
C10		Vehicle in parking lot.

5.3 Site 16

5.3.1 Setting and Regional Geology

The third geophysics survey was conducted at Site 16 on the south side of NAS Pensacola, northeast of Forrest Sherman Field. Due to the area's size, the geophysics survey was divided into two investigations. The first investigation was conducted southeast of Bayou Grande. This portion of Site 16 is a mix of dense pine forests and cleared unvegetated beach sand. The cleared section is an active Navy landfill for low-grade scrap metal, trash, and hurricane debris. Numerous piles of scrap metal and fallen timber collected from around the base were visible across the site. Navy practice was to excavate pits for burial debris, and then to fill the

excavations with beach sand. The oldest portion of the landfill was in the wooded section immediately southeast of Bayou Grande. A walkthrough investigation with military personal identified numerous debris piles in the forest.

The second investigation was conducted in the southwestern comer of the site. This portion of Site 16 is isolated by a drainage ditch that flows into Bayou Grande. The area has mixed vegetation of light pine forest, beach grass, and weeds. This section also showed evidence of excavation with numerous earthen piles and pits scattered across the site.

5.3.2 Field Procedures

The grids at Site 16 were placed on a 10-foot grid interval, selected based on the small target size of the source bodies expected in the landfill. Acquisition began in the southwest section on February 29, 1996, and was completed in two days. Data were collected walking north on even-numbered lines and south on odd-numbered lines. The receiver antenna was pointed north on even lines and south on odd lines. Fieldwork for this site was completed on March 1, 1996.

Data acquisition in the active landfill began March 2. This area was considerably larger and required four days to complete. Data were collected along north-south traverses on grid locations with flagged east-west cross lines. Fieldwork was completed March 6, 1996.

5.3.3 Data Interpretation

Figures 9, 10, 11, and 12 show the plan-view maps, consisting of conductivity and in-phase field data. The two sets show moderate broad-band regional effects which characterize the inherent background conductivity levels of the subsurface. Due to the prolonged period of data acquisition in the active landfill, several time-dependent features were introduced into the data presentation. The most evident feature is a banding of colors across several sections of the site. These patterns are the visual artifacts of long-term drift during the course of the survey. If a survey lasts more

Figure 9 Conductivity Map – Site 16

Figure 10 In-Phase Anomaly Map – Site 16

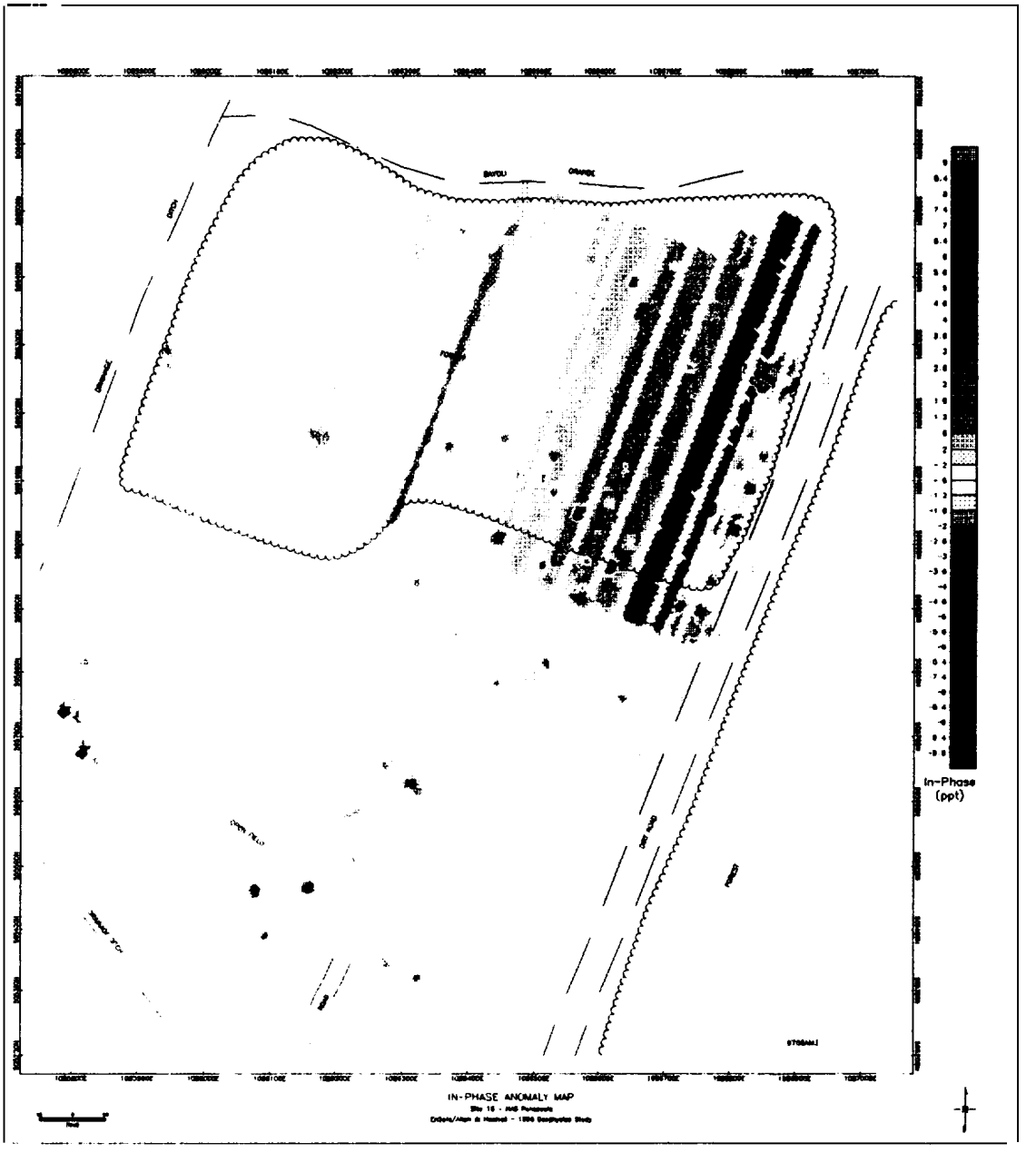


Figure 11 Conductivity – Site 16 SW

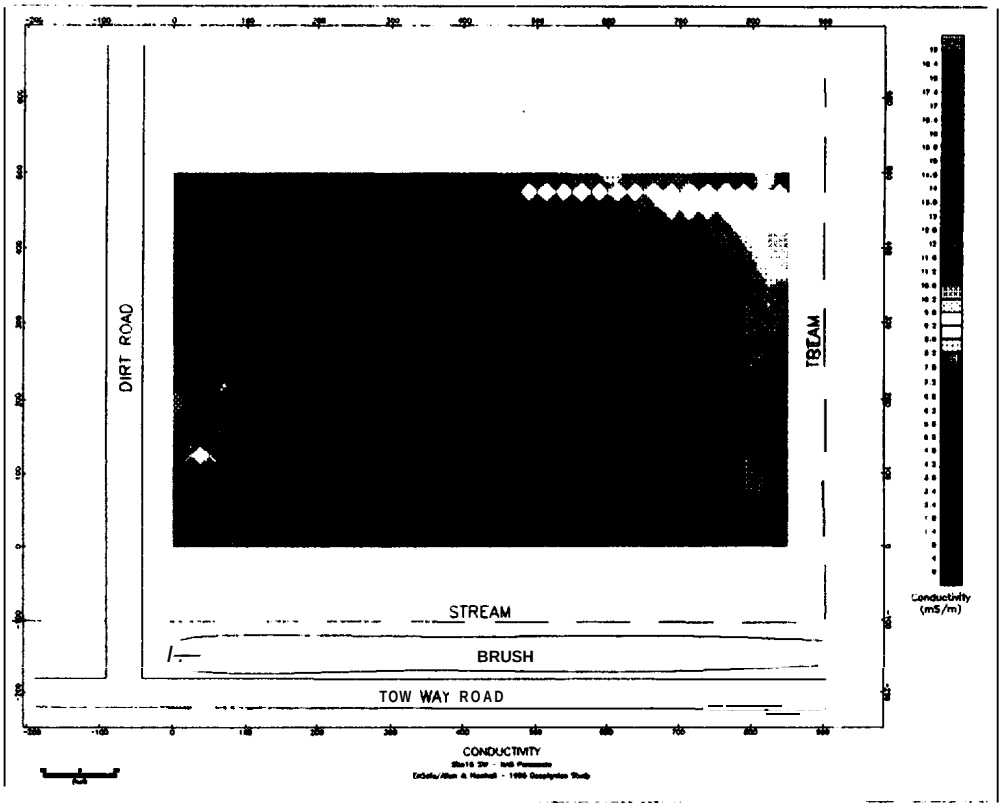
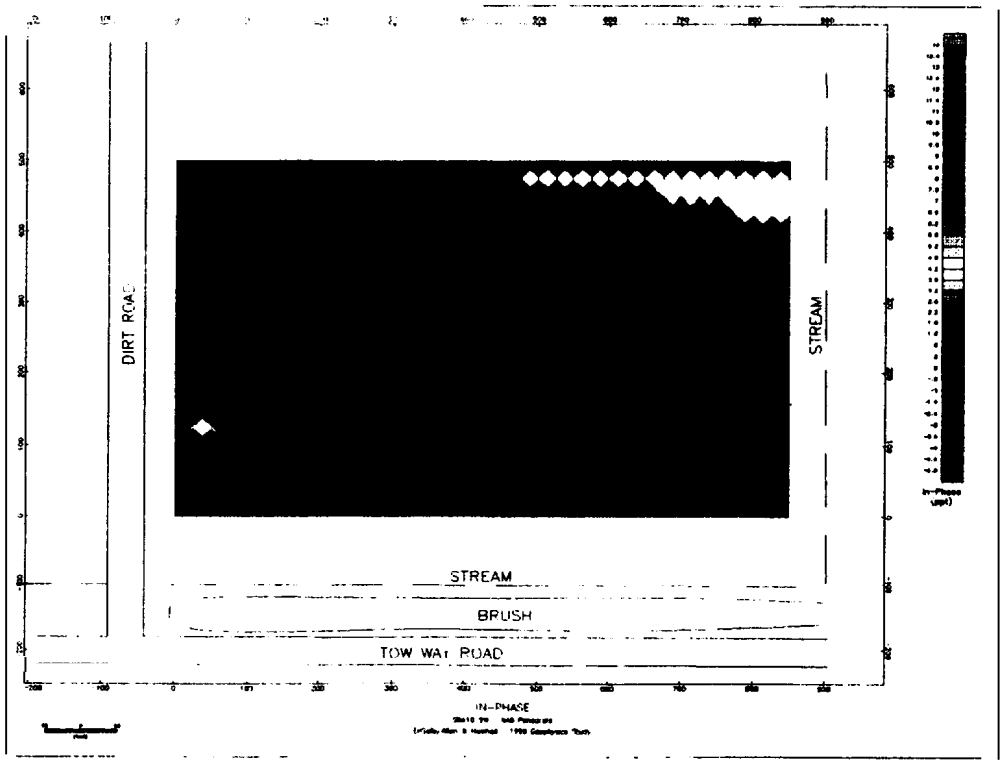


Figure 12 In-Phase – Site 16 SW



than several hours, instrument drift may introduce a subtle shift in the recorded data. In most cases, the instruments are calibrated finely enough to minimize this error. In this survey, however, a drift correction was required because data were collected over four days. The net result of the correction was to equate all the field data back to the first base station reading from March 2. The correction was effective for most of the data set. For areas still retaining the banding artifact, the data quality is degraded, but still remains reliable for interpretation.

5.3.4 Anomaly Description

Tables 3 and 4 list the anomalies identified at Site 16. Five anomalies in the active landfill were classified Type A based on their high-frequency content and broad response footprint. (Figure 13) The relatively large response of these anomalies would indicate a significant source body. The rest of the anomalies identified in the landfill were classified as Type B. In general, the Type B responses exhibited narrowly focused, low-frequency signatures typical for nondescript metal debris. Segmented metal tubing, siding, and general shop metal waste were identified during the walkthrough of the landfill. It is likely that most of these Type B anomalies have source bodies similar to what was observed on the surface.

The southwest section is generally free of significant anomalous activity. Only one feature was identified as significant and classified as a Type B. (Figure 14) This anomaly has a well-defined conductivity signature, which often indicates soil disturbance. The linear nature of the anomaly may imply a history of excavation or dumping onsite; the absence of an in-phase component would tend to support past excavation as the anomaly's cause.

Figure 13 **Geophysical Anomaly Map – Site 16**

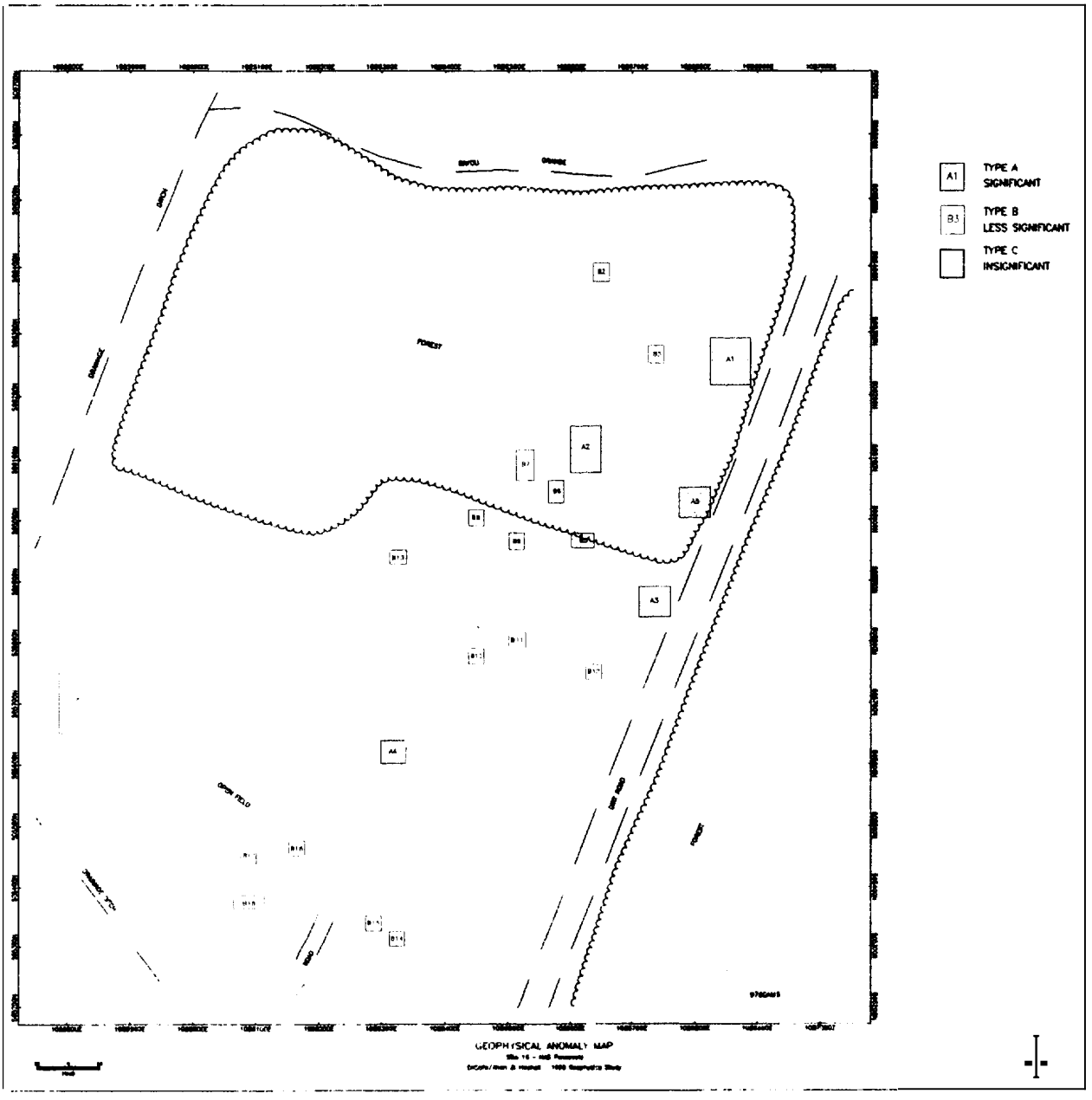


Figure 14 Geophysical Anomaly Map – Site 16 SW

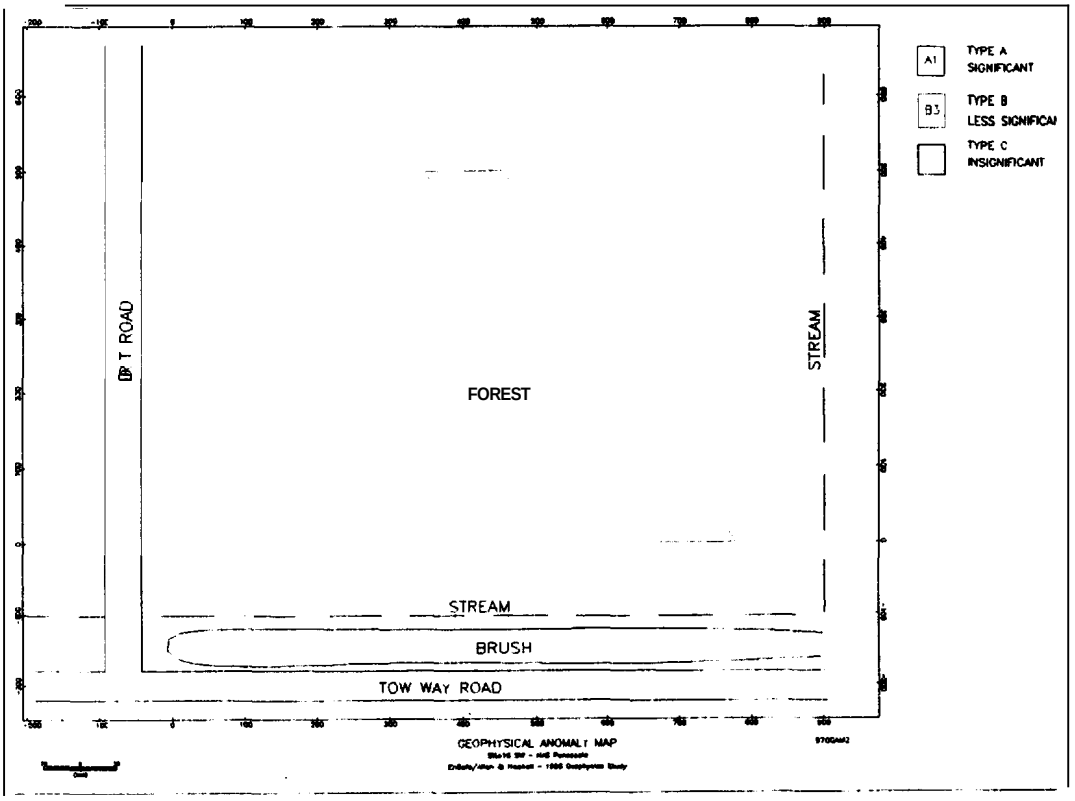


Table 3
Anomaly Interpretations, Site 16 Active Landfill Section

No.	Best Position to Investigate	Notes
TYPE A ANOMALIES: RECOMMENDED FOR FOLLOW-UP		
AI	1086800E/506250N	Strong anomaly; buried metal indicated. Complex anomaly pattern could indicate several small metal objects. A high priority for follow-up. Moderately well-defined zone of higher soil moisture and metal content.
A2	1086600E/506100N	Strong anomalous zone; buried metals indicated. Demolition debris was observed buried nearby and this may due to the same. but the strength and size of the anomaly suggests further investigation. If material of environmental concern is found, other anomalies in the area should be upgraded to Type A status.
A3	1086700E/505880N	Same as A2.
A4	1086300E/505630N	Moderate Type A anomaly; buried metal indicated.
A5	1086770E/506040N	Strong anomaly; buried metals indicated. Demolition debris observed nearby.
PRIORITY		
B1	1085800E/505700N	Moderate anomaly in area of stressed grass.
B2	1086600E/506400N	Minor anomaly near soil pile.
B3	1086730E/506270N	Minor anomaly near soil pile.
B5	1086550E/505950N	Strong anomaly. Investigation recommended if anomaly A2 shows material of concern. Moderate anomaly.
B6	1086570E/506070N	Minor anomaly.
B7	1086510E/506090N	Minor anomaly.
B8	1086430E/506010N	Minor anomaly.
B9	1086580E/505990N	Minor anomaly.
B10	1086620E/505740N	Minor anomaly.
B11	1086500E/505790N	Minor anomaly.
B12	1086435E/505750N	Moderate anomaly.
B13	1086310E/505945N	Minor anomaly.
B14	1086330E/505300N	Minor anomaly.
B15	1086290E/505330N	Moderate anomaly possible associated with gravel service road.
B16	1086165E/505475N	Moderate anomaly.
B17	1086090E/505460N	Moderate anomaly.
B18	1086075E/505375N	

Table 4
Anomaly Interpretations, Site 16 Southwestern Section

No.	Best Position to Investigate	Notes
TYPE A ANOMALIES: RECOMMENDED FOR FOLLOW-UP		
-	-	No Type A anomalies were found.
TYPE B ANOMALIES: SECONDARY FEATURES OF LOWER PRIORITY		
0	600E/250N	Strong conductive anomaly. It is unclear if this is due to pervasive culture in the area or if it represents an area of construction rubble or fill.

6.0 CONCLUSIONS

The geophysical surveys performed at NAS Pensacola sufficiently defined the surveyed areas to support the following conclusions. Site 4 is generally free of significant anomalous activity related to environmental concern. Three minor Type B anomalies were scattered across the site. The frequency signatures and response footprints of these anomalies do not suggest sites for concern. Further invasive investigation is not recommended.

The survey results from Site 7 identified two strong Type A anomalies along the southwestern site boundary. Information from local military personnel indicates several burn pits were in this section of the site. Several smaller, less-significant Type B anomalies were also identified onsite.

The geophysics survey at Site 16 identified five strong Type A anomalies in the active landfill area. The high-frequency signatures and large response footprints of these anomalies indicate significant buried material. Numerous Type B anomalies were also identified in the landfill. Survey results from the southwest section indicate that area generally is free of anomalous activity. One Type B anomaly was identified in the conductivity data set. No further investigation in the southwest section is recommended.

A site walkover, possibly followed by invasive investigation, is recommended for Type A anomalies identified at Sites 7 and 16.

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Appendix B

Soil Boring Logs and

Monitoring Well Construction Diagrams

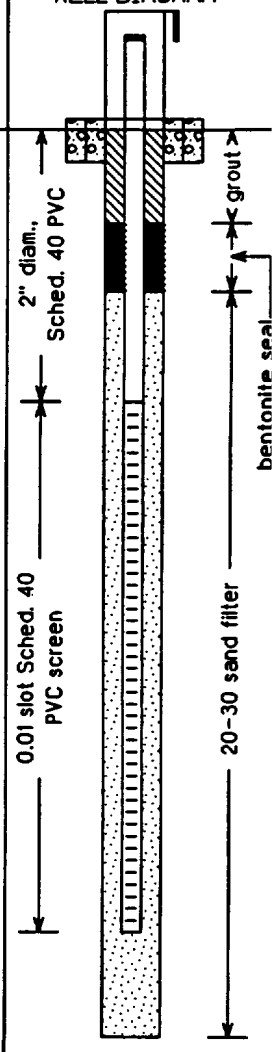
EnSafe/Allen & Hoshall

Monitoring Well 004GGS001

Project: *Site 04*	Location: *NAS Pensacola*
Project No.: *0970-00030*	Surface Elevation: *feet msl*
Started at *1355 on 3-19-96*	TOC Elevation: *28.03 feet msl*
Completed at *1446 on 3-19-96*	Depth to Groundwater: *670 feet* Measured: *5-7-96*
Drilling Method: *4.25-inch I.D. Hollow Stem Auger*	Groundwater Elevation: *21.33 feet msl*
Drilling Company: *GZA*	Total Depth: *17.0 feet*
Geologist: *C. Smith*	Well Screen: *5 to 15 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
					0		CL	Surface Conditions: Grass Clay, Silt, minor Gravel, (Fill), reddish-brown.	
					0			Sand, some Silt, trace Clay, tan, fine, moist.	
5					0				
					0				
					0				
10					0		SW	Sand, trace Silt, trace Clay, buff white, fine, moist.	
					0				
15					0			End of boring at 17.0' bls.	
					0				
20								Notes: Samples Collected: 004S000101 004S000107	
25									

WELL DIAGRAM



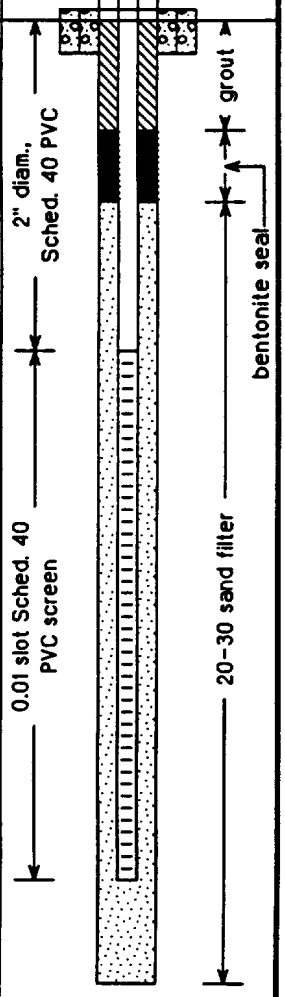
EnSafe/Allen & Hoshall

Monitoring Well 004GGS002

Project: *Site 04*	Location: *NAS Pensacola*
Project No.: *0970-00030*	Surface Elevation: *feet msl*
Started at *1100 on 3-19-96*	TOC Elevation: *28.85 feet msl*
Completed at *1200 on 3-19-96*	Depth to Groundwater: *6.62 feet* Measured: *5-6-96*
Drilling Method: *4.25-inch I.D. Hollow Stem Auger*	Groundwater Elevation: *22.23 feet msl*
Drilling Company: *GZA*	Total Depth: *18.0 feet*
Geologist: *C. Smith*	Well Screen: *6 to 16 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
					0		FILL	Surface Conditions: Grass Silty Sand, minor Gravel, (Fill), brown, fine to coarse.	
							OL	Silty Clay, black, (topsoil).	
					0		SW	Sand, trace Silt, trace Clay, tan, fine to coarse, moist.	
5					0				
					0		SP	Sand, trace Silt, white/buff, fine to medium, moist.	
					0				
10					0			Sand, little Silt, tan, fine to medium, moist to saturated below 8 feet bls.	
					0				
15					0		SW	Sand, little Silt. white. fine to coarse, saturated. End of boring at 18.0' bls.	
					0				
20								Notes: Samples Collected: 004S000201 0048000208 plus grain size	
25									

WELL DIAGRAM



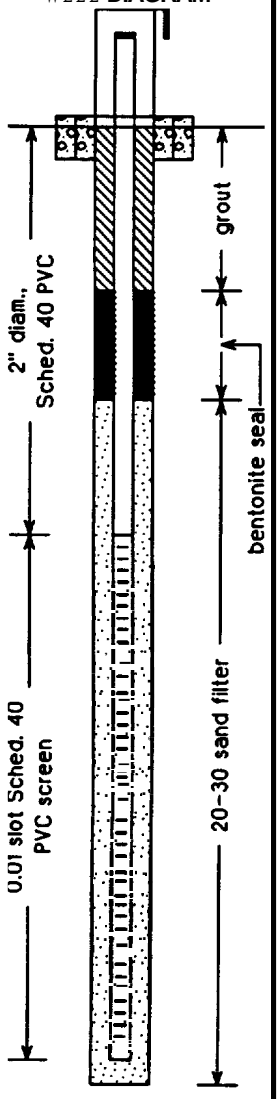
EnSafe/Allen & Hoshall

Monitoring Well 004GGS003

Project: *Site 04*	Location: *NAS Pensacola*
Project No.: *0970-00030*	Surface Elevation: *feet msl*
Stated at *1000 on 3-19-96*	TOC Elevation: *29.75 feet msl*
Completed at *1040 on 3-19-96*	Depth to Groundwater: *7.84 feet* Measured: *5-6-96*
Drilling Method: *4.25-inch I.D. Hollow Stem Auger*	Groundwater Elevation: *21.91* feet *msl*
Drilling Company: *GZA*	Total Depth: *20.0 feet*
Geologist: *C. Smith*	Well Screen: *6 to 16 feet*

DEPTH IN FEET	LITHOLOGIC SAMPLE	ANALYTICAL SAMPLE	SAMPLE NO.	% RECOVERY	PID (ppm)	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	ELEV. (ft-msl)
					0		SM SW	Surface Conditions: Grass Silty Sand, brown, moist.	
					0		SM SW	Sand, little Clay, tan, fine to coarse, moist.	
5					0				
					0			Sand, trace Silt, trace Clay, white/buff, fine to coarse, moist.	
10					0				
					0		SW	Sand, trace Silt, tan, fine to coarse, saturated.	
15					0				
					0 0			Sand, little Silt, dark brown. fine to coarse, saturated. End of boring at 20.0' bls.	
20					0				
25								Notes: Samples Collected: **004S000301** **004S000307**	

WELL DIAGRAM



Appendix C

Preliminary Remediation Goals

Preliminary Remediation Goals (PRGs) for Groundwater Contaminants

CAS #	Parameter	EPA MCLs	FPDWS	EPA SMCL	FSDWS	FCCG	WSP Reference Concentration
Volatiles (µg/l)							
106-93-4	1, 2-Dibromoethane C	0.02	0.02	NA			
630-20-6	1,1,1,2-Tetrachloroethane C	NA	NA	NA	NA	1	NA
811-97-2	1,1,1,2-Tetrafluoroethane	NA	NA	NA	NA	NA	NA
71-55-6	1,1,1-Trichloroethane N	200	200	NA	NA	NA	MA
354-58-5	1,1,1-trichlora-2,2,2-triflorom	NA	NA	NA	NA	NA	NA
79-34-5	1,1,2,2-Tetrachloroethane C	NA	NA	NA	NA	NA	NA
76-13-1	1,1,2-Trichloro-1,2,2- trifluor N	NA	NA	NA	NA	NA	NA
79-00-5	1,1,2-Trichloroethane C	5	5	NA	NA	NA	NA
598-77-6	1,1,2-Trichloropropane N	NA	NA	NA	NA	NA	NA
75-34-3	1,1-Dichloroethane N	NA	NA	NA	NA	700	NA
75-35-4	1,1-Dichloroethene C	7	7	NA	NA	NA	NA
75-37-6	1,1-Difluoroethane	NA	NA	NA	NA	NA	NA
96-18-4	1,2,3-Trichloropropane C	NA	NA	NA	NA	42	NA
96-19-5	1,2,3-Trichloropropene N	NA	NA	NA	NA	NA	NA
615-54-3	1,2,4-Tribromobenzene N	NA	NA	NA	NA	NA	NA
120-82-1	1,2,4-Trichlorobenzene N	70	70	NA	NA	NA	NA
96-12-8	1,2-Dibromo-3-Chloropropane C	0.2	0.2	NA	NA	NA	NA
107-06-2	1,2-Dichloroethane C	5	3	NA	NA	NA	NA
540-59-0	1,2-Dichloroethene (total) N	70	70	NA	NA	NA	NA
78-87-5	1,2-Dichloropropane C	5	5	NA	NA	NA	NA

Preliminary Remediation Goals (PRGs) for Groundwater Contaminants

CAS #	Parameter	EPA MCLs	FPDWS	EPA SMCL	FSDWS	FCCG	NASP Reference Concentration
Volatiles (µg/l)							
106-99-0	1,3-Butadiene	NA	NA	NA	NA	NA	NA
542-75-6	1,3-Dichloropropene [C]	NA	NA	NA	NA	1	NA
106-37-6	1,4-Dibromobenzene [N]	NA	NA	NA	NA	NA	NA
764-41-0	1,4-Dichloro-2-butene	NA	NA	NA	NA	NA	NA
123-91-1	1,4-Dioxane [C]	NA	NA	NA	NA	5	NA
75-68-3	1-Chloro-1,1-difluoroethane	NA	NA	NA	NA	NA	NA
109-69-3	1-Chlorobutane [N]	NA	NA	NA	NA	NA	NA
78-93-3	2-Butanone (MEK) [R]	NA	NA	NA	NA	4,200	NA
126-99-8	2-Chloro-1,3-butadiene [N]	NA	NA	NA	NA	NA	NA
110-75-8	2-Chloroethyl vinyl ether [N]	NA	NA	NA	NA	1	NA
75-29-6	2-Chloropropanc	NA	NA	NA	NA	NA	NA
591-78-6	2-Hexanone	NA	NA	NA	NA	NA	NA
101-68-8	4,4'-Methylenediphenyl isocyana	NA	NA	NA	NA	NA	NA
108-10-1	4-Methyl-2-Pentanone (MIBK) [N]	NA	NA	NA	NA	350	NA
67-64-1	Acetone [N]	NA	NA	NA	NA	700	NA
75-05-8	Acetonitrile [N]	NA	NA	NA	NA	500	NA
107-02-8	Acrolein [N]	NA	NA	NA	NA	110	NA
107-13-1	Acrylonitrile [C]	NA	NA	NA	NA	8	NA
107-05-1	Allyl chloride [N]	NA	NA	NA	NA	NA	NA
100-52-7	Benzaldehyde [N]	NA	NA	NA	NA	700	NA

Preliminary Remediation Goals (PRGs) for Groundwater Contaminants

CAS #	Parameter	EPA MCLs	FPDWS	EPA SMCL	FSDWS	FCCG	NASP Reference Concentration
Volatiles (µg/l)							
71-43-2	Benzene [C]	5	1	NA	NA	1	NA
95-63-6	Benzene, 1,2,4-trimethyl [N]	NA	NA	NA	NA	10	NA
108-67-8	Benzene, 1,3,5-trimethyl- [N]	NA	NA	NA	NA	10	NA
100-44-7	Benzyl chloride [C]	NA	NA	NA	NA	0.5	NA
542-88-1	Bis(chloromethyl)ether [C]	NA	NA	NA	NA	10	NA
75-27-4	Bromodichloromethane [C]	100	NA	NA	NA	0.6	NA
593-60-2	Eromoethene	NA	NA	NA	NA	NA	NA
75-25-2	Bromoform [C]	100	NA	NA	NA	4	NA
74-83-9	Eromomethane [N]	NA	NA	NA	NA	10	NA
75-15-0	Carbon disulfide [N]	NA	NA	NA	NA	700	NA
56-23-5	Carbon tetrachloride [C]	5	3	NA	NA	3	NA
108-90-7	Chlorobenzene [N]	NA	NA	NA	NA	NA	NA
75-45-6	Chlorodifluoromethane	NA	NA	NA	NA	NA	NA
75-00-3	Chloroethane [N]	NA	NA	NA	NA	140	NA
67-66-3	Chloroform [C]	100	NA	NA	NA	6	NA
74-87-3	Chloromethane [C]	NA	NA	NA	NA	2.7	NA
1476-11-5	Cis-1,4-Dichloro-2-butene	NA	NA	NA	NA	NA	NA
4170-30-3	Crotonaldehyde	NA	NA	NA	NA	NA	NA
108-94-1	Cyclohexanone [N]	NA	NA	NA	NA	35,000	NA
1163-19-5	Decabromodiphenyl ether	NA	NA	NA	NA	NA	NA

Preliminary Remediation Goals (PRGs) for Groundwater Contaminants

CAS #	Parameter	EPA MCLs	FPDWS	EPA SMCL	FSDWS	FCCG	NASP Reference Concentration
Volatiles (µg/l)							
124-48-1	Dibromochloromethane C	NA	NA	NA	NA	1	NA
75-71-8	Oichlorodifluoromethane N	NA	NA	NA	NA	1,400	NA
77-73-6	Dicyclopentadiene N	NA	NA	NA	NA	NA	NA
60-29-7	Diethyl ether N	NA	NA	NA	NA	750	NA
107-12-0	Ethyl cyanide	NA	NA	NA	NA	WA	NA
100-41-4	Ethylbenzene N	700	700	NA	30	NA	NA
87-82-1	Hexabromobenzene N	NA	NA	NA	NA	WA	NA
78-83-1	Isobutyl alcohol N	NA	NA	NA	NA	2,100	NA
126-98-7	Methacrylonitrile N	WA	NA	NA	NA	50	NA
74-88-4	Methyl iodide	NA	NA	NA	NA	NA	NA
98-83-9	Methyl styrene (alpha) N	NA	NA	NA	NA	WA	WA
25013-15-4	Methyl styrene (mixture) N	NA	NA	NA	NA	NA	NA
1634-04-4	Methyl tert-butyl ether N	NA	NA	NA	NA	50	NA
74-95-3	Methylene bromide N	NA	NA	NA	NA	NA	NA
75-09-2	Methylene chloride C	5	5	NA	NA	WA	NA
100-42-5	Styrene N	100	100	NA	NA	WA	NA
127-18-4	Tetrachloroethene	5	3	NA	WA	WA	NA
109-99-9	Tetrahydrofuran	WA	NA	NA	NA	NA	NA
108-88-3	Toluene N	1,000	1,000	NA	40	NA	NA
79-01-6	Trichloroethene C	5	3	NA	NA	WA	NA

Preliminary Remediation Goals (PRGs) for Groundwater Contaminants

US #	Parameter	EPA MCLs	FPDWS	EPA SMCL	FSDWS	FCCG	WASP Reference Concentration
Volatile8 (µg/l)							
75-69-4	Trichlorofluoromethane [N]	NA	NA	NA	NA	2,100	NA
108-05-4	Vinyl acetate [N]	NA	NA	NA	NA	250	NA
75-01-4	Vinyl chloride [C]	2	1	NA	NA	NA	NA
1330-20-7	Xylene (Total) [N]	10,000	10,000	NA	20	NA	NA
156-59-2	cis-1,2-Dichloroethene [N]	70	70	NA	NA	NA	NA
10061-01-5	cis-1,3-Dichloropropene [C]	NA	NA	NA	NA	1	NA
99-08-1	m-Nitrotoluene [N]	NA	NA	NA	NA	NA	NA
108-38-3	m-Xylene	10,000	10,000	NA	20	NA	NA
110-54-3	n-Hexane [N]	NA	NA	NA	NA	10	NA
95-49-8	o-chlorotoluene [N]	NA	WA	NA	MA	140	NA
88-72-2	o-Nitrotoluene [N]	NA	NA	NA	MA	NA	NA
95-47-6	o-Xylene [N]	10,000	10,000	NA	20	NA	NA
5216-25-1	p,a,a,a-Tetrachlorotoluene [C]	NA	NA	NA	NA	NA	NA
99-99-0	p-Nitrotoluene [N]	NA	NA	NA	NA	NA	NA
106-42-3	p-Xylene	10,000	10,000	NA	20	NA	NA
135-98-8	sec-Butylbenzene [N]	NA	NA	NA	NA	NA	NA
104-51-8	tert-Butylbenzene [N]	NA	NA	NA	NA	NA	NA
156-60-5	trans-1,2-Dichloroethene [N]	100	100	NA	NA	NA	NA
10061-02-6	trans-1,3-Dichloropropene [C]	NA	NA	NA	NA	1	NA
110-57-6	trans-1,4-Dichloro-2-butene	NA	NA	NA	NA	NA	NA

Preliminary Remediation Goals (PRGs) for Groundwater Contaminants

CAS #	Parameter	EPA MCLs	FPDWS	EPA SMCL	FSDWS	FCCC	NASP Reference Concentration
Semivolatiles (µg/l)							
634-66-2	1,2,3,4-Tetrachlorobenrene	NA	NA	NA	NA	NA	NA
634-90-2	1,2,3,5-Tetrachlorobenzene	NA	NA	NA	NA	NA	NA
87-61-6	1,2,3-Trichlorobenzene	NA	NA	NA	NA	NA	NA
95-94-3	1,2,4,5-Tetrachlorobenzene N	NA	NA	NA	NA	4	NA
120-82-1	1,2,4-Trichlorobenzene	70	70	NA	NA	NA	NA
95-50-1	1,2-Dichlorobenzene N	600	600	NA	NA	NA	NA
108-70-3	1,3,5-Trichlorobenzene	NA	NA	NA	NA	NA	NA
99-35-4	1,3,5-Trinitrobenzene N	NA	NA	NA	NA	60	NA
541-73-1	1,3-Dichlorobenzene N	600	NA	NA	NA	10	NA
99-65-0	1,3-Dinitrobenzene N	NA	NA	NA	NA	50	NA
106-46-7	1,4-Dichlorobenzene C	75	75	NA	NA	NA	NA
130-15-4	1,4-Naphthoquinone	NA	NA	NA	NA	NA	NA
90-13-1	1-Chloronapthalene	NA	NA	NA	NA	NA	NA
90-12-0	1-Methylnaphtha1ene N	NA	NA	NA	NA	NA	NA
134-32-7	1-Naphthylamine	NA	NA	NA	NA	NA	NA
108-60-1	2,2'-oxybis(1-Ch1oropropane)	NA	NA	NA	NA	NA	NA
58-90-2	2,3,4,6-Tetrachlorophenol N	NA	NA	NA	NA	210	NA
95-95-4	2,4,5-Trich1orophenol N	NA	NA	NA	NA	4	NA
88-06-2	2,4,6-Trich1orophenol C	NA	NA	NA	NA	10	NA
120-83-2	2,4-Dichlorophenol N	NA	NA	NA	NA	4	NA

Preliminary Remediation Goals (PRGs) for Groundwater Contaminants

CAS #	Parameter	EPA MCLs	FPDWS	EPA SMCL	FSDWS	FCCG	NASP Reference Concentration
Semivolatiles (µg/l)							
105-67-9	2,4-Dimethylphenol [N]	NA	NA	NA	NA	400	NA
51-28-5	2,4-Dinitrophenol [N]	NA	NA	NA	NA	30	NA
121-14-2	2,4-Dinitrotoluene [N]	NA	NA	NA	NA	0.2	NA
87-65-0	2,6-Dichlorophenol [N]	NA	NA	NA	NA	4	NA
606-20-2	2,6-Dinitrotoluene [N]	NA	NA	NA	NA	0.2	NA
91-58-7	2-Chloronaphthalene [N]	NA	NA	NA	NA	560	NA
95-57-8	2-Chlorophenol [N]	NA	NA	NA	NA	35	NA
99-55-8	2-Methyl-5-nitroaniline [C]	NA	NA	NA	NA	NA	NA
636-21-5	2-Methylaniline hydrochloride [C]	NA	NA	NA	NA	NA	NA
91-57-6	2-Methylnaphthalene [N]	NA	NA	NA	NA	NA	NA
95-48-7	2-Methylphenol (0-Cresol) [N]	NA	NA	NA	NA	350	NA
91-59-8	2-Naphthylamine [C]	NA	NA	NA	NA	NA	NA
88-74-4	2-Nitroaniline [N]	NA	NA	NA	NA	7.5	NA
88-75-5	2-Nitrophenol [N]	NA	NA	NA	NA	20	NA
109-06-8	2-Picoline	NA	NA	NA	NA	NA	NA
91-94-1	3,3'-Dichlorobenzidine [C]	NA	NA	NA	NA	7.5	NA
119-90-4	3,3'-Dimethoxybenzidine [C]	NA	NA	NA	NA	250	NA
119-93-7	3,3-Dimethylbenzidine [C]	NA	NA	NA	NA	250	NA
56-49-5	3-Methylcholanthrene	NA	NA	NA	NA	NA	NA
108-39-4	13-Methylphenol (m-Cresol)	NA	NA	NA	NA	350	NA

Preliminary Remediation Goals (PRGs) for Groundwater Contaminants

CAS #	Parameter	EPA MCLs	FPDWS	EPA SMCL	FSDWS	FCCG	NASP Reference Concentration
Semivolatiles (µg/l)							
99-09-2	3-Nitroaniline [N]	NA	NA	NA	NA	NA	NA
534-52-1	4,6-Dinitro-2-methylphenol	NA	NA	NA	NA	NA	NA
92-67-1	4-Aminobiphenyl	NA	NA	NA	NA	NA	NA
101-55-3	4-Bromophenyl-phenylether [N]	NA	NA	NA	NA	NA	NA
59-50-7	4-Chloro-3-methylphenol	NA	NA	NA	NA	3,000	NA
106-47-8	4-Chloroaniline [N]	NA	NA	NA	NA	28	NA
7005-72-3	4-Chlorophenylphenylether	NA	NA	NA	NA	10	NA
106-44-5	4-Methylphenol (p-Cresol) [N]	NA	NA	NA	NA	35	NA
100-01-6	4-Nitroaniline [N]	NA	NA	NA	NA	NA	NA
100-02-7	4-Nitrophenol [N]	NA	NA	NA	NA	15	NA
56-57-5	4-Nitroquinoline 1-oxide	NA	NA	NA	NA	NA	NA
57-97-6	7,12-Dimethybenr(a)anthracene [C]	NA	NA	NA	NA	NA	NA
83-32-9	Acenaphthene [N]	NA	NA	NA	NA	20	NA
208-96-8	Acenaphthylene [N]	NA	NA	NA	NA	10	NA
53-96-3	Acetamidofluorene	NA	NA	NA	NA	NA	NA
98-86-2	Acetophenone [N]	NA	NA	NA	NA	700	NA
62-53-3	Aniline [C]	NA	NA	NA	NA	6	NA
120-12-7	Anthracene [N]	NA	NA	NA	NA	2,100	NA
140-57-8	Aramite [C]	NA	NA	NA	NA	NA	NA
103-33-3	Azobenzene [C]	NA	NA	NA	NA	4	NA

Preliminary Remediation Goals (PRGs) for Groundwater Contaminants

U S #	Parameter	EPA MCLs	FPDWS	EPA SMCL	FSDWS	FCCC	WASP Reference Concentretion
Semivolatiles (µg/l)							
98-87-3	Benzal chloride	NA	NA	NA	NA	NA	NA
101-14-4	Benzenamine, 4,4'-methylenebis[C	NA	NA	NA	NA	50	NA
92-87-5	Benzidine C	NA	NA	NA	NA	250	NA
56-55-3	Benzo(a)anthracene	NA	NA	NA	NA	4	NA
50-32-8	Benzo(a)pyrene	2	0.2	NA	NA	NA	NA
205-99-2	Benzo(b)fluoranthene	NA	NA	NA	NA	4	NA
191-24-2	Benzo(g,h,i)perylene N	NA	NA	NA	NA	10	NA
207-08-9	Benzo(k)fluoranthene	NA	NA	NA	NA	4	NA
65-85-0	Benzoic acid N	NA	NA	NA	NA	28,000	NA
98-07-7	Benzotrichloride C	NA	NA	NA	NA	NA	NA
100-51-6	Benzyl alcohol N	NA	NA	NA	NA	2,100	NA
39638-32-9	Bis(2-Chloroisopropyl)Ether C	NA	NA	NA	NA	7.5	NA
85-68-7	Butylbenzylphthalate N	NA	NA	NA	NA	1,400	NA
86-74-8	Carbazole	NA	NA	NA	NA	7.5	NA
218-01-9	Chrysene	NA	NA	NA	NA	5	NA
6055-19-2	Cyclophosphamide	NA	NA	NA	NA	NA	NA
84-74-2	Di-n-butylphthalate N	NA	NA	NA	NA	700	NA
117-84-0	Di-n-octyl phthalate N	NA	NA	NA	NA	140	NA
53-70-3	Dibenz(a,h)anthracene	NA	NA	NA	NA	7.5	NA
224-42-0	Dibenzo(a,j)acridine	NA	NA	NA	NA	NA	NA

Preliminary Remediation Goals (PRGs) for Groundwater Contaminants

US #	Parameter	EPA MCLs	FPDWS	EPA SMCL	FSDWS	FCCG	YASP Reference Concentration
Semivolatiles (µg/l)							
132-64-9	Dibenzofuran [N]	NA	NA	NA	NA	NA	NA
84-66-2	Diethylphthalate [N]	NA	NA	NA	NA	5,600	NA
131-11-3	Dimethyl phthalate [N]	NA	NA	NA	NA	70,000	NA
122-39-4	Diphenylamine [T]	NA	NA	NA	NA	175	NA
97-63-2	Ethyl methacrylate [N]	NA	NA	NA	NA	630	NA
62-50-0	Ethyl methanesulfonate	NA	NA	NA	NA	NA	NA
206-44-0	Fluoranthene [N]	NA	NA	NA	NA	280	NA
86-73-7	Fiuorene [N]	NA	NA	NA	NA	280	NA
118-74-1	Hexachlorobenzene [C]	1	1	NA	NA	NA	NA
87-68-3	Hexachlorobutadicnc [C]	NA	NA	NA	NA	15	NA
77-47-4	Hexach lorocyclopentadienc [N]	50	50	NA	NA	NA	NA
67-72-1	Hexachloroethane [C]	NA	NA	NA	NA	10	NA
70-30-4	Hexachlorophene [N]	NA	NA	NA	NA	6	NA
1888-71-7	Hexachloropropene	NA	NA	NA	NA	NA	NA
122-66-7	Hydrazine, 1,2-diphenyl [C]	NA	NA	NA	NA	10	NA
193-39-5	Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	7.5	NA
78-59-1	Isophorone [C]	NA	NA	NA	NA	40	NA
120-58-1	lsosafrole	NA	NA	NA	NA	NA	NA
91-80-5	Methapyrilene	NA	NA	NA	NA	NA	NA
80-62-6	Methyl methacrylate	NA	NA	NA	NA	25	NA

Preliminary Remediation Goals (PRGs) for Groundwater Contaminants

CAS #	Parameter	EPA MCLs	FPDWS	EPA SMCL	FSDWS	FCCG	NASP Reference Concentration
Semivolatiles (µg/l)							
66-27-3	Methyl methanesulfonate	NA	NA	NA	NA	NA	NA
924-16-3	N-Nitroso-di-n-butylamine C	NA	NA	NA	NA	4	NA
621-64-7	N-Nitroso-di-n-propylamine C	NA	NA	NA	NA	4	NA
55-18-5	N-Nitrosodiethylamine C	NA	NA	NA	NA	4	NA
62-75-9	N-Nitrosodimethylamine C	NA	NA	NA	NA	7.5	NA
86-30-6	N-Nitrosodiphenylamine C	NA	NA	NA	NA	7	NA
10595-95-6	N-Nitrosomethylethylamine C	NA	NA	NA	NA	7.5	NA
59-89-2	N-Nitrosomorpholine	NA	NA	NA	NA	NA	NA
100-75-4	N-Nitrosopiperidine	NA	NA	NA	NA	NA	NA
930-55-2	N-Nitrosopyrrolidine C	NA	NA	NA	NA	4	NA
91-20-3	Naphthalene N	NA	NA	NA	NA	6.8	NA
98-95-3	Nitrobenzene N	NA	NA	NA	NA	9.5	NA
123-63-7	Paraldehyde	NA	NA	NA	NA	NA	NA
608-93-5	Pentachlorobenzene N	NA	NA	NA	NA	5.6	NA
76-01-7	Pentachloroethane	NA	NA	NA	NA	NA	NA
82-68-8	Pentachloronitrobenzene C	NA	NA	NA	NA	15	NA
87-86-5	Pentachlorophenol C	1	1	NA	NA	NA	NA
62-44-2	Phenacetin	NA	NA	NA	NA	NA	NA
85-01-8	Phenanthrene N	NA	NA	NA	NA	10	NA
108-95-2	Phenol N	NA	NA	NA	NA	10	NA

Preliminary Remediation Goals (PRGs) for Groundwater Contaminants

CAS #	Parameter	EPA MCLs	FPDWS	EPA SMCL	FSDWS	FCCG	NASP Reference Concentration
Semivolatiles (µg/l)							
23950-58-5	Pronamide [N]	NA	NA	NA	NA	525	NA
129-00-0	Pyrene [N]	NA	NA	NA	NA	210	NA
110-86-1	Pyridine [N]	NA	NA	NA	NA	7	NA
94-59-7	Safrole	NA	NA	NA	NA	NA	NA
122-09-8	alpha, alpha-Dimethylphenethyla	NA	NA	NA	NA	NA	NA
111-91-1	bis(2-Chloroethoxy)methane	NA	NA	NA	NA	10	NA
111-44-4	bis(2-Chloroethyl)ether [C]	NA	NA	NA	NA	1.5	NA
117-81-7	bis(2-Ethylhexyl)phthalate (BEH [1]	NA	NA	NA	NA	NA	NA
95-53-4	o-Toluidine [C]	NA	NA	NA	NA	50	NA
60-11-7	p-Dimethylaminoazobentene	NA	NA	NA	NA	NA	MA
106-50-3	p-Phenylenediamine [N]	NA	NA	NA	NA	1,330	NA

Preliminary Remediation Goals (PRGs) for Groundwater Contaminants

CAS #	Parameter	EPA MCLs	FPDWS	EPA SMCL	FSDWS	FCCG	WASP Reference Concentration
Pesticides (µg/l)							
93-72-1	2,4,5-TP (Silvex) N	50	50	NA	NA	NA	NA
93-76-5	2,4,5-Trichlorophenoxyacetic ac N	NA	NA	NA	NA	NA	NA
94-75-7	2,4-Dichlorophenoxyacetic Acid N	NA	NA	NA	NA	NA	NA
72-54-8	4,4'-DDD C	NA	NA	NA	NA	0.1	NA
72-55-9	4,4'-DDE C	NA	NA	NA	NA	0.1	NA
50-29-3	4,4'-DDT C	NA	NA	NA	NA	0.1	NA
94-82-6	4-(2,4-Dichlorophenoxy)butyric N	NA	NA	NA	NA	NA	NA
309-00-2	Aldrin C	NA	NA	NA	NA	0.05	NA
12674-11-2	Aroclor-1016 N	0.5	0.5	NA	NA	NA	NA
11104-28-2	Aroclor-1221 C	0.5	0.5	NA	NA	NA	NA
11141-16-5	Aroclor-1232 C	0.5	0.5	NA	NA	NA	NA
53469-21-9	Aroclor-1242 C	0.5	0.5	NA	NA	NA	NA
12672-29-6	Aroclor-1268 C	0.5	0.5	NA	NA	NA	NA
11097-69-1	Aroclor-1254 C	0.5	0.5	NA	NA	NA	NA
11096-82-5	Aroclor-1260 C	0.5	0.5	NA	NA	NA	NA
57-74-9	Chlordane C	2	2	NA	NA	NA	NA
510-15-6	Chlorobenzilate C	NA	NA	NA	NA	0.13	NA
2303-16-4	Diallate C	NA	NA	NA	NA	0.57	NA
60-57-1	Dieldrin C	NA	NA	NA	NA	0.1	NA
60-51-5	Dimethoate N	NA	NA	NA	NA	5	NA

Preliminary Remediation Goals (PRGs) for Groundwater Contaminants

CAS #	Parameter	EPA MCLs	FPDWS	EPA SMCL	FSDWS	FCCG	NASP Reference Concentration
Pesticides (µg/l)							
88-85-7	Dinoseb N	7	7	NA	NA	NA	NA
298-04-4	Disulfoton N	NA	NA	NA	NA	0.5	NA
959-98-8	Endosulfan I	NA	NA	NA	NA	0.35	NA
33213-65-9	Endosulfan II N	NA	NA	NA	NA	0.35	NA
1031-07-8	Endosulfan sulfate N	NA	NA	NA	NA	0.3	NA
72-20-8	Endrin N	2	2	NA	NA	NA	NA
7421-93-4	Endrin aldehyde N	NA	NA	NA	NA	0.1	NA
53494-70-5	Endrin ketone N	NA	NA	NA	NA	NA	NA
52-85-7	Famphur	NA	NA	NA	NA	NA	NA
76-44-8	Heptachlor C	0.4	0.4	NA	NA	NA	NA
1024-57-3	Heptachlor epoxide C	0.2	0.2	NA	NA	NA	NA
465-73-6	Isodrin P	NA	NA	NA	NA	NA	NA
143-50-0	Kepone C	NA	NA	NA	NA	NA	NA
72-43-5	Methoxychlor N	40	40	NA	NA	NA	NA
298-00-0	Methyl parathion N	NA	NA	NA	NA	10	NA
126-68-1	O,O,O-Triethylphosphorothioate	NA	NA	NA	NA	NA	NA
56-38-2	Parathion N	NA	NA	NA	NA	42	NA
298-02-2	Phorate N	NA	NA	NA	NA	1.4	NA
3689-24-5	Sulfotep N	NA	NA	NA	NA	3.5	NA
297-97-2	Thionazin	NA	NA	NA	NA	NA	NA

Preliminary Remediation Goals (PRGs) for Groundwater Contaminants

CAS #	Parameter	EPA MCLs	FPDWS	EPA SMCL	FSDWS	FCCG	NASP Reference Concentration
Pesticides (µg/l)							
8001-35-2	Toxaphene [C]	3	3	NA	NA	NA	NA
319-84-6	alpha-BHC [C]	NA	NA	NA	NA	0.05	NA
5103-71-9	alpha-Chlordane [C]	2	2	NA	NA	NA	NA
319-85-7	beta-BHC [C]	NA	NA	NA	NA	0.1	NA
319-86-8	delta-BHC [C]	NA	NA	NA	NA	0.05	NA
58-89-9	gamma-BHC (Lindane) [C]	0.2	0.2	NA	NA	NA	NA
5103-74-2	gamma-Chlordane [C]	2	2	NA	NA	NA	NA

Preliminary Remediation Goals (PRGs) for Groundwater Contaminants

CAS #	Parameter	EPA MCLs	FPDWS	EPA SMCL	FSDWS	FCCG	NASP Reference Concentration
Inorganics (µg/l)							
7429-90-5	Aluminum (Al) [N]	NA	NA	50	200	NA	3,882.8
7440-36-0	Antimony (Sb) [N]	6	6	NA	NA	NA	30.2
7440-38-2	Arsenic (As) [N]	50	50	NA	NA	NA	2.8
7440-39-3	Barium (Ba) [N]	2,000	2,000	NA	NA	NA	13.2
7440-41-7	Beryllium (Be) [C]	4	4	NA	NA	NA	1.1
7440-43-9	Cadmium (Cd) [N]	5	5	NA	NA	NA	3.4
7440-70-2	Calcium (Ca)	NA	NA	NA	NA	NA	17,560
7440-47-3	Chromium (Cr) [N]	100	100	NA	NA	NA	35
18540-29-9	Chromium (Hexavalent) [N]	NA	NA	NA	NA	NA	NA
7440-48-4	Cobalt (Co) [N]	NA	NA	NA	NA	NA	4.1
7440-50-8	Copper (Cu) [N]	1,300	NA	1,000	1,000	NA	16.2
57-12-5	Cyanide (CN) [N]	200	200	NA	NA	NA	NA
7439-89-6	Iron (Fe) [N]	NA	NA	300	300	NA	1,707.8
7439-92-1	Lead (Pb)	15	15	NA	NA	NA	1.6
7439-95-4	Magnesium (Mg)	NA	NA	NA	NA	NA	2,872.6
7439-96-5	Manganese (Mn) [N]	NA	NA	50	50	NA	22
7439-97-6	Mercury (Hg) [N]	2	2	NA	NA	NA	0.2
7440-02-0	Nickel (Ni) [N]	100	100	NA	NA	NA	39.9
7440-09-7	Potassium (K)	NA	NA	NA	NA	NA	12,167.6
7782-49-2	Selenium (Se) [N]	50	50	NA	NA	NA	3.9

Preliminary Remediation Goals (PRGs) for Groundwater Contaminants

CAS #	Parameter	EPA MCLs	FPDWS	EPA SMCL	FSDWS	FCCG	NASP Reference Concentration
Inorganics (µg/l)							
7440-22-4	Silver (Ag) N	NA	NA	100	100	NA	4
7440-23-5	Sodium (Na)	NA	160,000	NA	NA	NA	18,345
7440-28-0	Thallium (Tl)	2	2	NA	NA	NA	3.6
7440-31-5	Tin (Sn) N	NA	NA	NA	NA	NA	NA
7440-62-2	Vsnadiun (V) N	NA	NA	NA	NA	49	9.6
7440-66-6	Zinc (Zn) N	NA	NA	5,000	5,000	NA	153.2

Preliminary Remediation Goals (PRGs) for Sediment Contaminants

U S 1	Parameter	EPA SSVs	FDEP SQAGs	NASP Reference Concentration
Volatiles (µg/kg)				
630-20-6	1,1,1,2-Tetrachloroethane C	NA	NA	NA
811-97-2	1,1,1,2-Tetrafluoroethane	NA	NA	NA
71-55-6	1,1,1-Trichloroethane N	NA	NA	NA
354-58-5	1,1,1-trichlora-2,2,2-triflorom	NA	NA	NA
79-34-5	1,1,2,2-Tetrachloroethane C	NA	NA	NA
76-13-1	1,1,2-Trichloro-1,2,2- trifluor N	NA	NA	NA
79-00-5	1,1,2-Trichloroethane C	NA	NA	NA
598-77-6	1,1,2-Trichloropropane N	NA	NA	NA
75-34-3	1,1-Dichloroethane N	NA	NA	NA
75-35-4	1,1-Dichloroethylene C	NA	NA	NA
75-37-6	1,l-Difluoroethane	NA	NA	NA
96-18-4	1,2,3-Trichloropropane C	NA	NA	NA
96-19-5	1,2,3-Trichloropropene N	NA	NA	NA
615-54-3	1,2,4-Tribromobenzene N	NA	NA	NA
120-82-1	1,2,4-Trichlorobenzene N	NA	NA	NA
95-63-6	1,2,4-Trimethylbenzene N	NA	NA	NA
96-12-8	1,2-Dibromo-3-chloropropane C	NA	NA	NA
106-93-4	1,2-Dibromoethane C	NA	NA	NA
107-06-2	1,2-Dichloroethane C	NA	NA	NA
540-59-0	1,2-Dichloroethene (total) N	NA	NA	NA

Preliminary Remediation Goals (PRGs) for Sediment Contaminants

U S #	Parameter	EPA SSVs	FDEP SQAGs	NASP Reference Concentration
Volatiles (µg/kg)				
156-59-2	1,2-Dichloroethylene (cis) [N]	NA	NA	NA
156-60-5	1,2-Dichloroethylene (trans) [N]	NA	NA	NA
78-87-5	1,2-Dichloropropane [C]	NA	NA	NA
108-67-8	1,3,5-Trimethylbenzene [N]	NA	NA	NA
106-99-0	1,3-Butadiene	NA	NA	NA
542-75-6	1,3-Dichloropropene [C]	NA	NA	NA
106-37-6	1,4-Dibromobenzene [N]	NA	NA	NA
764-41-0	1,4-Dichloro-2-butene	NA	NA	NA
123-91-1	1,4-Dioxane [C]	NA	NA	NA
75-68-3	1-Chloro-1,1-difluoroethane	NA	NA	NA
109-69-3	1-Chlorobutane [N]	NA	NA	NA
78-93-3	2-Butanone (MEK) [N]	NA	NA	NA
126-99-8	2-Chloro-1,3-butadiene [N]	NA	NA	NA
110-75-8	2-Chloroethyl vinyl ether [N]	NA	NA	NA
75-29-6	2-Chloropropane	NA	NA	NA
591-78-6	2-Hexanone	NA	NA	NA
101-68-8	4,4'-Methylenediphenyl isocyana	NA	NA	NA
108-10-1	4-Methyl-2-Pentanone (MIBK) [N]	NA	NA	NA
67-64-1	Acetone [N]	NA	NA	NA
75-05-8	Acetonitrile [N]	NA	NA	NA

Preliminary Remediation Goals (PRGs) for Sediment Contaminants

CAS #	Parameter	EPA SSVs	FDEP SQAGs	NASP Reference Concentration
Volatiles (µg/kg)				
107-02-8	Acrolein N	NA	NA	NA
107-13-1	Acrylonitrile C	NA	NA	NA
107-05-1	Allyl chloride N	NA	NA	NA
100-52-7	Benraldehyde N	NA	NA	NA
71-43-2	Benzene C	NA	NA	NA
100-44-7	Benzyl chloride C	NA	NA	NA
542-88-1	Bis(chloromethyl)ether C	NA	NA	NA
75-27-4	Bromodichloromethane C	NA	NA	NA
593-60-2	Bromoethene	NA	NA	NA
75-25-2	Bromoform C	NA	NA	NA
74-83-9	Bromomethane N	NA	NA	NA
56-23-5	Carbon Tetrachloride C	NA	NA	NA
75-15-0	Carbon disulfide N	NA	NA	NA
108-90-7	Chlorobenzene N	NA	NA	NA
75-45-6	Chlorodifluoromethane	NA	NA	NA
75-00-3	Chloroethane N	NA	NA	NA
67-66-3	Chloroform C	NA	NA	NA
74-87-3	Chloromethane C	NA	NA	NA
1476-11-5	Cis-1,4-Dichloro-2-butene	NA	NA	NA
4170-30-3	Crotoneldehyde	NA	NA	NA

Preliminary Remediation Goals (PRGs) for Sediment Contaminants

U S #	Parameter	EPA SSVs	FDEP SQAGs	WASP Reference Concentration
Volatiles (µg/kg)				
108-94-1	Cyclohexanone [N]	NA	NA	NA
1163-19-5	Decabromodiphenyl ether [N]	NA	NA	NA
124-48-1	Dibromochloromethane [C]	NA	NA	NA
75-71-8	Dichlorodifluoromethane [N]	NA	NA	NA
77-73-6	Dicyclopentadiene [N]	NA	NA	NA
107-12-0	Ethyl cyanide	NA	NA	NA
60-29-7	Ethyl ether [N]	NA	NA	NA
100-41-4	Ethylbenzene [N]	NA	NA	NA
87-82-1	Hexabromobenzene	NA	NA	NA
78-83-1	Isobutanol	NA	NA	NA
126-98-7	Methacrylonitrile [N]	NA	NA	NA
74-88-4	Methyl iodide	NA	NA	NA
98-83-9	Methyl styrene (alpha) [N]	NA	NA	NA
25013-15-4	Methyl styrene (mixture) [N]	NA	NA	NA
1634-04-4	Methyl tertbutyl ether (MTBE) [N]	NA	NA	NA
74-95-3	Methylene bromide [N]	NA	NA	NA
75-09-2	Methylene chloride [C]	NA	NA	NA
100-42-5	Styrene [N]	NA	NA	NA
127-18-4	Tetrrchloroethene [C]	NA	NA	NA
109-99-9	Tetrahydrofuran	NA	NA	NA

Preliminary Remediation Goals (PRGs) for Sediment Contaminants

CAS #	Parameter	EPA SSVs	FDEP SQAGs	MSP Reference Concentration
Volatiles (µg/kg)				
108-88-3	Toluene [N]	NA	NA	NA
79-01-6	Trichloroethene [C]	NA	NA	NA
75-69-4	Trichlorofluoromethane [N]	NA	NA	NA
108-05-4	Vinyl acetate [N]	NA	NA	NA
75-01-4	Vinyl chloride [C]	NA	NA	NA
1330-20-7	Xylene (Total) [N]	NA	NA	NA
10061-01-5	cis-1,3-Dichloropropene [C]	NA	NA	NA
99-08-1	m-Nitrotoluene [N]	NA	NA	NA
108-38-3	m-Xylene [N]	NA	NA	NA
110-54-3	n-Hexane [N]	NA	NA	NA
88-73-3	o-Chloronitrobenrene [C]	NA	NA	NA
95-49-8	o-Chlorotoluene [N]	NA	NA	NA
88-72-2	o-Nitrotoluene [N]	NA	NA	NA
95-47-6	o-Xylene [N]	NA	NA	NA
5216-25-1	p,a,a,a-Tetrachlorotoluene [C]	NA	NA	NA
100-00-5	p-Chloronitrobenzene [C]	NA	NA	NA
99-99-0	p-Nitrotoluene [N]	NA	NA	NA
106-42-3	p-Xylene	NA	NA	NA
135-98-8	sec-Butylbenzene [N]	NA	NA	NA
104-51-8	tert-Butylbenzene [N]	NA	NA	NA

Preliminary Remediation Goals (PRGs) for Sediment Contaminants

CAS #	Parameter	EPA SSVs	FDEP SQAGs	NASP Reference Concentration
Volatiles (µg/kg)				
10061-02-6	trans-1,3-Dichloropropene [C]	NA	NA	NA
110-57-6	trans-1,4-Dichloro-2-butene	NA	NA	NA

Preliminary Remediation Goals (PRGs) for Sediment Contaminants

CAS #	Parameter	EPA SSVs	FDEP SQAGs	NASP Reference Concentration
Semivolatiles (µg/kg)				
634-66-2	1,2,3,4-Tetrachlorobenzene	NA	NA	NA
634-90-2	1,2,3,5-Tetrachlorobenzene	NA	NA	NA
87-61-6	1,2,3-Trichlorobenzene	NA	NA	NA
95-94-3	1,2,4,5-Tetrachlorobenzene N	NA	NA	NA
120-82-1	1,2,4-Trichlorobenzene	NA	NA	NA
95-50-1	1,2-Dichlorobenzene N	NA	NA	NA
122-66-7	1,2-Diphenylhydrazine C	NA	NA	NA
108-70-3	1,3,5-Trichlorobenzene	NA	NA	NA
99-35-4	1,3,5-Trinitrobenzene N	NA	NA	NA
541-73-1	1,3-Dichlorobenzene N	NA	NA	NA
99-65-0	1,3-Dinitrobenzene N	NA	NA	NA
106-46-7	1,4-Dichlorobenrene C	NA	NA	NA
90-12-0	1-Methylnaphthalene N	NA	NA	NA
134-32-7	1-Naphthylamine	NA	NA	NA
108-60-1	2,2'-oxybis(1-Chloropropane)	NA	NA	NA
58-90-2	2,3,4,6-Tetrachlorophenol N	NA	NA	NA
88-06-2	2,4,6-Trichlorophenol C	NA	NA	NA

Preliminary Remediation Goals (PRGs) for Sediment Contaminants

CAS #	Parameter	EPA SSVs	FDEP SQAGs	NASP Reference Concentration
Semivolatiles (µg/kg)				
120-83-2	2,4-Dichlorophenol [N]	NA	NA	NA
105-67-9	2,4-Dimethylphenol [N]	NA	NA	NA
51-28-5	2,4-Dinitrophenol [N]	NA	NA	NA
121-14-2	2,4-Dinitrotoluene [N]	NA	NA	NA
87-65-0	2,6-Dichlorophenol [N]	NA	NA	NA
606-20-2	2,6-Dinitrotoluene [N]	NA	NA	NA
91-58-7	2-Chloronaphthalene [N]	NA	NA	NA
95-57-8	2-Chlorophenol [N]	NA	NA	NA
99-55-8	2-Methyl-5-nitroaniline [C]	NA	NA	NA
95-53-4	2-Methylaniline [C]	NA	NA	NA
636-21-5	2-Methylaniline hydrochloride [C]	NA	NA	NA
91-57-6	2-Methylnaphthalene [N]	330	20.2	NA
95-48-7	2-Methylphenol (o-Cresol) [N]	NA	NA	NA
91-59-8	2-Naphthylamine [C]	NA	NA	NA
88-74-4	2-Nitroaniline [N]	NA	NA	NA
88-75-5	2-Nitrophenol [N]	NA	NA	NA
109-06-8	2-Picoline	NA	NA	NA
91-94-1	3,3'-Dichlorobenzidine [C]	NA	NA	NA
119-90-4	3,3'-Dimethoxybenzidine [C]	NA	NA	NA
119-93-7	3,3'-Dimethylbenzidine [C]	NA	NA	NA

Preliminary Remediation Goals (PRGs) for Sediment Contaminants

US #	Parameter	EPA SSVs	FDEP SQAGs	NASP Reference Concentration
Semivolatiles (µg/kg)				
56-49-5	3-Methylcholanthrene	NA	NA	NA
108-39-4	3-Methylphenol (m-Cresol)	NA	NA	NA
99-09-2	3-Nitroaniline N	NA	NA	NA
101-14-4	4,4'-Methylene bis(2-chloroanil C	NA	NA	NA
534-52-1	4,6-Dinitro-2-methylphenol	NA	NA	NA
92-67-1	4-Aminobiphenyl	NA	NA	NA
101-55-3	4-Bromophenyl-phenylether N	NA	NA	NA
59-50-7	4-Chloro-3-nwthylphenol	NA	NA	NA
106-47-8	4-Chlorosniline	NA	NA	NA
7005-72-3	4-Chlorophenyl-phenylether	NA	NA	NA
106-44-5	4-Methylphenol (p-Cresol) N	NA	NA	NA
100-01-6	4-Nitroaniline N	NA	NA	NA
100-02-7	4-Mitrophenol N	NA	NA	NA
56-57-5	4-Nitroquinoline 1-oxide	NA	NA	NA
57-97-6	7,12-Dimethybenz(a)anthracene C	NA	NA	NA
83-32-9	Acenaphthene N	330	6.71	NA
208-96-8	Acenephthylene N	330	5.87	NA
53-96-3	Acetamidofluorene	NA	NA	NA
98-86-2	Acetophenone N	NA	NA	NA
62-53-3	Aniline C	NA	NA	NA

Preliminary Remediation Goals (PRGs) for Sediment Contaminants

CAS #	Parameter	EPA SSVs	FDEP SQAGs	NASP Reference Concentration
Semivolatiles (µg/kg)				
120-12-7	Anthracene [N]	330	46.9	NA
140-57-8	Aramite [C]	NA	NA	NA
103-33-3	Azobenzene [C]	NA	NA	NA
98-87-3	Benzal chloride	NA	NA	NA
92-87-5	Benzidine [C]	NA	NA	NA
56-55-3	Benzo(a)anthracene	330	74.8	NA
50-32-8	Benzo(a)pyrene	330	88.8	NA
205-99-2	Benzo(b)fluoranthene	NA	NA	NA
191-24-2	Benzo(g,h,i)perylene [N]	NA	NA	NA
207-08-9	Benzo(k)fluoranthene	NA	NA	NA
65-85-0	Benzoic acid [N]	NA	NA	NA
98-07-7	Benzotrichloride [C]	NA	NA	NA
100-51-6	Benzyl alcohol [N]	NA	NA	NA
39638-32-9	Bis(2-Chloroisopropyl)Ether [C]	NA	NA	NA
85-68-7	Butylbenzylphthalate [N]	NA	NA	NA
86-74-8	Carbazole	NA	NA	NA
218-01-9	Chrysene	330	108	NA
6055-19-2	Cyclophosphamide	NA	NA	NA
84-74-2	Di-n-butylphthalate [N]	NA	NA	NA
117-84-0	Di-n-octyl phthalate [N]	NA	NA	NA

Preliminary Remediation Goals (PRGs) for Sediment Contaminants

CAS #	Parameter	EPA SSVs	FDEP SQAGs	NASP Reference Concentration
Semivolatiles (µg/kg)				
53-70-3	Dibenz(a,h)anthracene	330	6.22	NA
224-42-0	Dibenzo(a,j)acridine	NA	NA	NA
132-64-9	Dibenzofuran [N]	NA	NA	NA
84-66-2	Diethylphthalate [N]	NA	NA	NA
131-11-3	Dimethyl phthalate [N]	NA	NA	NA
122-39-4	Diphenylamine [N]	NA	NA	NA
97-63-2	Ethyl methacrylate [N]	NA	NA	NA
62-50-0	Ethyl methanesulfonate	NA	NA	NA
206-44-0	Fluoranthene [N]	330	113	NA
86-73-7	Fluorene [N]	330	21.2	NA
118-74-1	Hexachlorobenzene [C]	NA	NA	NA
87-68-3	Hexachlorobutadiene [C]	NA	NA	NA
77-47-4	Hexachlorocyclopentadiene [N]	NA	NA	NA
67-72-1	Hexachloroethane [C]	NA	NA	NA
70-30-4	Hexachlorophene [N]	NA	NA	NA
1888-71-7	Hexachloropropene	NA	NA	NA
193-39-5	Indeno(1,2,3-cd)pyrene	NA	NA	NA
78-59-1	Isophorone [C]	NA	NA	NA
120-58-1	Isosafrole	NA	NA	NA
91-80-5	Methapyrilene	NA	NA	NA

Preliminary Remediation Goals (PRGs) for Sediment Contaminants

U S #	Parameter	EPA SSVs	FDEP SQAGs	MSP Reference Concentration
Semivolatiles (µg/kg)				
80-62-6	Methyl methacrylate [N]	NA	NA	NA
66-27-3	Methyl methanesulfonate	NA	NA	NA
10595-95-6	N-Nitroso-N-methylethylamine [C]	NA	NA	NA
621-64-7	N-Mitroso-di-n-propylamine [C]	NA	NA	NA
924-16-3	N-Nitrosodi-n-butylamine [C]	NA	NA	NA
55-18-5	N-Nitrosodiethylamine [C]	NA	NA	NA
62-75-9	N-Nitrosodimethylamine [C]	NA	NA	NA
86-30-6	N-Nitrosodiphenylamine [C]	NA	NA	NA
59-89-2	N-Nitrosomorpholine	NA	NA	NA
100-75-4	N-Nitrosopiperidine	NA	NA	NA
930-55-2	N-Nitrosopyrrolidine [C]	NA	NA	NA
91-20-3	Naphthalene [N]	330	34.6	NA
98-95-3	Nitrobenzene [N]	NA	NA	NA
123-63-7	Paraldehyde	NA	NA	NA
608-93-5	Pentachlorobenzene [N]	NA	NA	NA
76-01-7	Pentachloroethane	NA	NA	NA
82-68-8	Pentachloronitrobenrene [C]	NA	NA	NA
87-86-5	Pentachlorophenol [C]	NA	NA	NA
62-44-2	Phenacetin	NA	NA	NA
85-01-8	Phenanthrene [N]	330	86.7	NA

Preliminary Remediation Goals (PRGs) for Sediment Contaminants

U S #	Parameter	EPA SSVs	FDEP SQAGs	WASP Reference Concentration
Semivolatiles (µg/kg)				
108-95-2	Phenol [N]	NA	NA	NA
23950-58-5	Pronamide [N]	NA	NA	NA
129-00-0	Pyrene [N]	330	153	NA
110-86-1	Pyridine [N]	NA	NA	NA
94-59-7	Safrole	NA	NA	NA
122-09-8	alpha, alpha-Dimethylphenethyla	NA	NA	NA
111-91-1	bis(2-Chloroethoxy)methane	NA	NA	NA
111-44-4	bis(2-Chloroethyl)ether [C]	NA	NA	NA
117-81-7	bis(2-Ethylhexyl)phthalate (BEH [C]	182	182	NA
60-11-7	p-Dimethylaminoazobenzene	NA	NA	NA
106-50-3	p-Phenylenediamine [N]	NA	NA	NA

Preliminary Remediation Goals (PRGs) for Sediment Contaminants

U S #	Parameter	EPA SSVs	FDEP SQAGs	NASP Reference Concentration
Pesticides (µg/kg)				
93-76-5	2,4,5-Trichlorophenoxyacetic ac [N]	NA	NA	NA
94-75-7	2,4-Dichlorophenoxyacetic Acid [N]	NA	NA	NA
93-72-1	2-(2,4,5-Trichlorophenoxy)propi [N]	NA	NA	NA
72-54-8	4,4'-DDD [C]	3.3	1.22	NA
72-55-9	4,4'-DDE [C]	3.3	2.07	NA
50-29-3	4,4'-DDT [C]	3.3	1.19	NA
94-82-6	4-(2,4-Dichlorophenoxy)butyric [N]	NA	NA	NA
309-00-2	Aldrin [C]	NA	NA	NA
12674-11-2	Aroclor-1016 [N]	33	21.6	NA
11104-28-2	Aroclor-1221 [C]	21.6	67	NA
11141-16-5	Aroclor-1232 [C]	21.6	33	NA
53469-21-9	Aroclor-1242 [C]	21.6	33	NA
12672-29-6	Aroclor-1248 [C]	21.6	33	NA
11097-69-1	Aroclor-1254 [N]	21.6	33	NA
11096-82-5	Aroclor-1260 [C]	21.6	33	NA
57-74-9	Chlordane [C]	1.7	2.26	NA
510-15-6	Chlorobenzilate [C]	NA	NA	NA
2303-16-4	Diallate [C]	NA	NA	NA
60-57-1	Dieldrin [C]	3.3	0.715	NA
60-51-5	Dimethoate [N]	NA	NA	NA

Preliminary Remediation Goals (PRGs) for Sediment Contaminants

CAS #	Parameter	EPA SSVs	FDEP SQAGs	NASP Reference Concentration
Pesticides (µg/kg)				
88-85-7	Dinoseb [N]	NA	NA	NA
298-04-4	Disulfoton [N]	NA	NA	NA
959-98-8	Endosulfan I [N]	NA	NA	NA
33213-65-9	Endosulfan II [N]	NA	NA	NA
1031-07-8	Endosulfan sulfate [N]	NA	NA	NA
72-20-8	Endrin [N]	3.3	NA	NA
7421-93-4	Endrin aldehyde [N]	3.3	NA	NA
53494-70-5	Endrin ketone [N]	3.3	NA	NA
52-85-7	Famphur	NA	NA	NA
76-44-8	Heptachlor [C]	NA	NA	NA
1024-57-3	Heptachlor epoxide [C]	NA	NA	NA
465-73-6	Isodrin [P]	NA	NA	NA
143-50-0	Kepone [C]	NA	NA	NA
72-43-5	Methoxychlor [N]	NA	NA	NA
298-00-0	Methyl parathion [N]	NA	NA	NA
126-68-1	O,O,O-Triethylphosphorothioate	NA	NA	NA
56-38-2	Parathion [N]	NA	NA	NA
298-02-2	Phorate [N]	NA	NA	NA
3689-24-5	Tetraethyldithiopyrophosphate [N]	NA	NA	NA
297-97-2	Thionazin	NA	NA	NA

Preliminary Remediation Goals (PRGs) for Sediment Contaminants

CAS #	Par — ter	EPA SSVs	FOEP SQAGs	NASP Reference Concentration
Pesticides (µg/kg)				
8001-35-2	Toxaphene [C]	NA	NA	NA
319-84-6	alpha-BHC [C]	NA	NA	WA
5103-71-9	alpha-Chlordane [C]	NA	NA	WA
319-85-7	beta-BHC [C]	NA	NA	NA
319-86-8	delta-BHC [C]	NA	NA	NA
58-89-9	gamma-BHC (Lindane) [C]	3.3	0.32	NA
5103-74-2	gamma-Chlordane [C]	NA	NA	WA

Preliminary Remediation Goals (PRGs) for Sediment Contaminants

CAS #	Parameter	EPA SSVs	FDEP SQAGs	NASP Reference Concentration
Inorganics (mg/kg)				
7429-90-5	Aluminum (Al) [N]	NA	NA	NA
7440-36-0	Antimony (Sb) [N]	12	NA	NA
7440-38-2	Arsenic (As) [N]	7.24	7.24	NA
7440-39-3	Barium (Ba) [N]	NA	NA	NA
7440-41-7	Beryllium (Be) [C]	NA	NA	NA
7440-43-9	Cadmium (Cd) [N]	1	0.676	NA
7440-70-2	Calcium (Ca)	NA	NA	NA
7440-47-3	Chromium (Cr) [N]	52.3	52.3	NA
18540-29-9	Chromium (Hexavalent) [N]	NA	NA	NA
7440-48-4	Cobalt (Co) [N]	NA	NA	NA
7440-50-8	Copper (Cu) [N]	18.7	18.7	NA
57-12-5	Cyanide (CN) [N]	NA	NA	NA
7439-89-6	Iron (Fe) [N]	NA	NA	NA
7439-92-1	Lead (Pb)	30.2	30.2	NA
7439-95-4	Hagnesium (Mg)	NA	NA	NA
7439-96-5	Manganese (Mn) [N]	NA	NA	NA
7439-97-6	Mercury (Hg) [N]	0.13	0.13	NA
7440-02-0	Nickel (Ni) [N]	15.9	15.9	NA
7440-09-7	Potassium (K)	NA	NA	NA
7782-49-2	Selenium (Se) [N]	NA	NA	NA

Preliminary Remediation Goals (PRGs) for Sediment Contaminants

CAS #	Parameter	EPA SSVs	FDEP SQAGs	NASP Reference Concentration
Inorganics (mg/kg)				
7440-22-4	Silver (Ag) [N]	2	0.733	NA
7440-23-5	Sodium (Na)	NA	NA	NA
7440-28-0	Thallium (Tl)	NA	NA	NA
7440-31-5	Tin (Sn) [N]	NA	NA	NA
7440-62-2	Vanadium (V) [N]	NA	NA	NA
7440-66-6	Zinc (Zn) [N]	124	124	NA

Preliminary Remediation Goals (PRGs) for Soil Contaminants

CAS #	Parameter	USEPA - RBCs	USEPA - SSLs		FDEP CGs for Leaching	NASP Reference Concentration
Volatiles (µg/kg)						
106-93-4	1, 2-Dibromoethane C	7.5	0.18	10	0.06	NA
630-20-6	1,1,1,2-Tetrachloroethane C	25,000	NA	5,900	3	NA
811-97-2	1,1,1,2-Tetrafluoroethane	WA	NA	NA	NA	NA
71-55-6	1,1,1-Trichloroethane N	270,000	900	610,000	900	NA
354-58-5	1,1,1-trichlora-2,2,2-trifloromethane	NA	NA	WA	NA	NA
79-34-5	1,1,2,2-Tetrachloroethane	3,200	1	900	0.7	NA
79-00-5	1,1,2-Trichloroethane C	11,000	10	2,000	20	NA
75-34-3	1,1-Dichloroethane N	780,000	11,000	310,000	2,100	HA
75-35-4	1, I-Dichlorocthcna C	1,100	30	100	30	NA
96-18-4	1,2,3-Trichloropropene	91	0.006	NA	NA	NA
96-19-5	1,2,3-Trichloropropene N	19,000	NA	NA	NA	HA
615-54-3	1,2,4-Tribromobenzene N	19,000	NA	NA	NA	NA
120-82-1	1,2,4-Trichlorobenzene N	78,000	*2,000*	590,000	2,300	HA
96-12-8	1,2-Dibromo-3-Chloropropane	460	0.61	HA	NA	NA
107-06-2	1,2-Dichloroethane	7,000	10	700	8	NA
540-59-0	1,2-Dichloroethene (total) N	70,000	WA	NA	HA	NA
78-87-5	1,2-Dichloropropane C	9,400	20	800	20	NA
106-99-0	1,3-Butadiene	NA	0.072	NA	NA	NA
542-75-6	1,3-Dichloropropene C	3,700	1	300	3	NA
106-37-6	1,4-Dibromobenzene N	78,000	NA	NA	NA	NA

Preliminary Remediation Goals (PRGs) for soil Contaminants

CAS #	Parameter	USEPA - RBCs	USEPA - SSLs	FDEP - CGs	FDEP for Leaching	NASP Refer — Concentration
Volatiles (µg/kg)						
764-41-0	1,4-Dichloro-2-butene	HA	NA	MA	NA	NA
123-91-1	1,4-Dioxane C	58,000	NA	NA	HA	NA
75-68-3	1-Chloro-1,1-difluoroethane	HA	YA	NA	HA	HA
109-69-3	1-Chlorobutane N	3,100,000	HA	HA	NA	NA
78-93-3	2-Butanone (MEK) N	6,700,000	HA	2,200,000	8,700	HA
126-99-8	2-Chloro-1,3-butadiene N	160,000	NA	NA	NA	NA
110-75-8	2-Chloroethyl vinyl ether N	200,000	NA	100,000	2	NA
591-78-6	2-Hexanone	HA	HA	MA	HA	NA
101-68-8	4,4'-Methylenediphenyl isocyanate	HA	MA	NA	NA	NA
108-10-1	4-Methyl-2-Pentanone (MIBK) N	630,000	NA	520,000	1,100	NA
67-64-1	Acetone N	780,000	8,000	260,000	1,400	HA
75-05-8	Acetonitrile N	47,000	MA	NA	WA	MA
107-02-8	Acrolein N	160,000	HA	400	300	MA
107-13-1	Acrylonitrile	1,200	NA	100	20	NA
107-05-1	Allyl chloride N	390,000	NA	HA	YA	NA
100-52-7	Benzaldehyde H	7110,000	HA	NA	NA	NA
71-43-2	Benzene C	22,000	20	1,400	3	NA
95-63-6	Benzene, 1,2,4-trimethyl N	590,000	NA	6,ZOO	200	NA
108-67-8	Benzene, 1,3,5-trimethyl- N	590,000	YA	3,700	100	NA
100-44-7	Benzyl chloride C	3.800	0.36	NA	HA	MA

Preliminary Remediation Goals (PRGs) for Soil Contaminants

CAS #	Parameter	USEPA - RBCs	USEPA - SSLs	FDEP - CGs	FDEP CGs for Leaching	NASP Reference Concentration
Volatiles (µg/kg)						
542-88-1	Bis(chloromethyl)ether C	2.9	0.0001	NA	NA	NA
75-27-4	Bromodichloromethane C	10,000	300	700	2	NA
593-60-2	Bromoethene	NA	NA	NA	NA	NA
75-25-2	Bromoform C	81,000	500	65,000	20	NA
74-83-9	Bromomethane N	11,000	100	NA	NA	NA
75-15-0	Carbon disulfide N	780,000	14,000	5,200	2,500	NA
56-23-5	Carbon tetrachloride C	4,900	30	600	20	NA
108-90-7	chlorobenzene H	160,000	600	44,000	600	NA
75-45-6	Chloradifluoromethane	NA	NA	NA	NA	MA
75-00-3	Chloroethane N	3,100,000	33,000	NA	WA	MA
67-66-3	Chloroform C	100,000	300	600	20	NA
74-87-3	Chloromethane C	49,000	6.6	200	10	NA
1476-11-5	Cis-1,4-Dichloro-2-butene	NA	NA	NA	NA	NA
123-73-9	Crotonaldehyde, (E) C	340	NA	NA	NA	NA
108-94-1	Cyclohexanone N	39,000,000	NA	NA	WA	NA
1163-19-5	Decabromodiphenyl ether N	78,000	HA	NA	NA	NA
124-48-1	Dibromochloromethane C	NA	NA	1,200	4	NA
75-71-8	Dichlorodifluoromethane N	1,600,000	7,500	NA	NA	NA
77-73-6	Dicyclopentadiene N	230,000	NA	NA	HA	HA
107-12-0	Ethyl cyanide	NA	NA	WA	NA	NA

CAS #	Parameter	USEPA - RBCs	USEPA - SSLs	FDEP - CGs	FDEP CGs for Leaching	NASP Reference Concentration
Volatiles (µg/kg)						
60-29-7	Ethyl ether [N]	1,600,000	NA	NA	NA	NA
100-41-4	Ethylbenzene [N]	780,000	5,000	1,400,000	200	NA
87-82-1	Hexabromobenzene [N]	16,000	NA	NA	NA	NA
78-83-1	Isobutanol [N]	2,300,000	NA	NA	NA	NA
[illegible]	[illegible] [N]					NA
1634-04-4	Methyl tert-butyl ether [N]	39,000	NA	3,800,000	100	NA
74-95-3	Methylene bromide	78,000	NA	HA	NA	HA
75-09-2	Methylene chloride	85,000	10	16,000	10	NA
100-42-5	Styrene [N]	1,600,000	2,000	4,100,000	2,000	NA
127-18-4	Tetrachloroethene	12,000	40	12,000	30	NA
109-99-9	Tetrahydrofuran	NA	NA	HA	WA	NA
108-88-3	Toluene	1,600,000	5,000	520,000	200	HA
79-01-6	Trichloroethene [C]	58,000	20	6,500	10	HA
75-69-4	Trichlorofluoromethane [N]	2,300,000	13,000	6,600	400,000	NA
598-77-6	Trichloropropane, 1,1,2- [N]	39,000	140	NA	NA	NA
76-13-1	Trichlorotrifluoroethane (Freon 113) [N]	100,000,000	3,100,000	NA	NA	NA
108-05-4	vinyl acetate [N]	7,800,000	84,000	180,000	500	HA
3-01-4	Vinyl chloride [C]	340	10	5	5	NA
1330-20-7	Xylene (Total) [N]	16,000,000	74,000	13,000,000	100	WA

Preliminary Remediation Goals (PRGs) for Soil Contaminants

CAS #	Parameter	USEPA - RBCs	USEPA - SSLs	FDEP - CGs	FDEP CGs for Leaching	NASP Reference Concentration
Volatiles (µg/kg)						
98-83-9	alpha-Methylstyrene N	550,000	7,500	NA	NA	YA
156-59-2	cis-1,2-Dichloroethene N	78,000	200	26,000	200	NA
10061-01-5	cis-1,3-Dichloropropene C	3,700	1	300	3	HA
99-08-1	m-Nitrotoluene N	78,040	420	NA	NA	NA
108-38-3	m-Xylene	16,000,000	210,000	NA	NA	NA
104-51-8	n-Butylbenzene N	78,000	270	NA	NA	MA
110-54-3	n-Hexane N	670,000	13,000	76,000	1,000	NA
88-73-3	o-Chloronitrobenzene C	26,000	NA	NA	NA	NA
95-49-8	o-Chlorotoluene N	160,000	5,600	HA	NA	NA
88-72-2	o-Nitrotoluene N	78,000	420	NA	NA	NA
95-47-6	o-Xylene N	16,000,000	150,000	NA	NA	NA
5216-25-1	p,a,a,a-Tetrachlorotoluene C	32	NA	NA	NA	NA
100-00-5	p-Chloronitrobenzene C	35,000	NA	NA	NA	NA
99-99-0	p-Nitrotoluene N	78,000	420	NA	NA	NA
106-42-3	p-Xylene	NA	220,000	NA	WA	WA
135-98-8	sec-Butylbenzene N	78,000	270	HA	WA	NA
156-60-5	trans-1,2-03 chloroethcm N	160,000	300	62,000	300	NA
10061-02-6	trans-1,3-Dichloropropene C	3,700	1	300	3	NA
110-57-6	trans-1,4-Dichloro-2-butene	NA	NA	NA	NA	HA

Preliminary Remediation Goals (PRGs) for Soil Contaminants

Semivolatiles (µg/kg)						
634-66-2	1,2,3,4-Tetrachlorobenzene [N]	2,300	690	NA	NA	NA
634-90-2	1,2,3,5-Tetrachlorobenzene [N]	2,300	690	NA	NA	NA
87-61-6	1,2,3-Trichlorobenzene [N]	78,000	2,000	NA	NA	NA
95-94-3	1,2,4,5-Tetrachlorobenzene [N]	2,300	690	NA	NA	NA
120-82-1	1,2,4-Trichlorobenzene [N]	78,000	2,000	590,000	2,300	NA
95-50-1	1,2-Dichlorobenzene [N]	700,000	6,000	820,000	5,800	NA
122-66-7	1,2-Diphenylhydrazine [C]	800	NA	NA	NA	NA
108-70-3	1,3,5-Trichlorobenzene [N]	78,000	2,000	590,000	2,300	NA
99-35-4	1,3,5-Trinitrobenzene [N]	390	NA	NA	NA	NA
541-73-1	1,3-Dichlorobenzene [N]	700,000	NA	1,700,000	400	NA
99-65-0	1,3-Dinitrobenzene [N]	780	NA	NA	NA	NA
106-46-7	1,4-Dichlorobenzene [C]	27,000	1,000	7,500	900	NA
130-15-4	1,4-Naphthoquinone	NA	NA	NA	NA	NA
90-13-1	1-Chloronaphthalene [N]	630,000	140,000	560,000	57,000	NA
134-32-7	1-Naphthylamine	WA	NA	HA	NA	WA
108-60-1	2,2'-oxybis(1-Chloropropane)	WA	NA	NA	NA	WA
58-90-2	2,3,4,6-Tetrachlorophenol [N]	230,000	NA	NA	NA	WA
95-95-4	2,4,5-Trichlorophenol [N]	780,000	120,000	7,100,000	100	NA

Preliminary Remediation Goals (PRGs) for Soil Contaminants

CAS #	Parameter	USEPA - RBCs	USEPA - SSLs	FDEP - CGs	FDEP CGs for Leaching	NASP Reference Concentration
Semivolatiles (µg/kg)						
120-83-2	2,4-Dichlorophenol [N]	23,000	500	220,000	20	NA
105-67-9	2,4-Dimethylphenol [N]	160,000	3,000	1,200,000	1,000	NA
51-28-5	2,4-Dinitrophenol [N]	16,000	100	NA	NA	NA
121-14-2	2,4-Dinitrotoluene [N]	16,000	200	150,000	0.6	NA
87-65-0	2,6-Dichlorophcnol [N]	23,000	500	220,000	20	MA
606-20-2	2,6-Dinitrotoluene [N]	7,800	100	71,000	0.6	NA
91-58-7	2-Chloronaphthalene [N]	630,000	140,000	560,000	57,000	NA
95-57-8	2-Chlorophenol [N]	39,000	2,000	280,000	300	NA
99-55-8	2-Methyl-5-nitroaniline [C]	19,000	NA	NA	NA	NA
95-53-4	2-Methylaniline [C]	2,700	HA	HA	NA	NA
636-21-5	2-Methylaniline hydrochloride [C]	3,500	NA	NA	NA	NA
91-57-6	2-Methylnaphthalene [N]	NA	NA	960,000	NA	NA
95-48-7	2-Methylphenol (o-Cresol) [N]	390,000	6,000	2,600,000	1,100	MA
91-59-8	2-Naphthylamine [C]	4.9	NA	NA	NA	NA
88-74-4	2-Nitrotniline [N]	470	NA	4,000	20	NA
88-75-5	2-Nitrophenol [N]	480	NA	NA	NA	PA
109-06-8	2-Picoline	HA	NA	NA	NA	NA
91-94-1	3,3'-Dichlorobenzidine [C]	1,400	10	NA	NA	NA
119-90-4	3,3'-Dimethoxybenzidine [C]	46,000	NA	NA	NA	NA
119-93-7	3,3-Dimethylbenzidine [C]	69	0.39	NA	MA	NA

Preliminary Remediation Goals (PRGs) for Soil Contaminants

CAS #	Parameter	USEPA - RBCs	USEPA - SSLs	FDEP - CGs	FDEP CGs for Leaching	NASP Reference Concentration
Semivolatiles (µg/kg)						
56-49-5	3-Methylcholanthrene	NA	HA	NA	WA	NA
108-39-4	3-Methylphenol (m-Cresol) N	*390,000*	HA	3,400,000	4,200	NA
99-09-2	3-Nitroaniline N	23,000	NA	MA	NA	NA
101-14-4	4,4'-Methylene bis(2-chloroaniline) C	*4,900*	NA	MA	WA	HA
534-52-1	4,6-Dinitro-2-methylphenol	NA	NA	NA	NA	NA
92-67-1	4-Aminobiphenyl	NA	NA	NA	WA	NA
101-55-3	4-Bromophenyl-phenylether N	*450,000*	NA	NA	NA	NA
59-50-7	4-Chloro-3-methylphenol	HA	HA	*146,000,000*	*42,000*	NA
106-47-8	4-Chloroaniline N	31,000	300	240,000	80	NA
7005-72-3	4-Chlorophenyl-phenylether	NA	NA	HA	NA	NA
106-44-5	4-Methylphenol (p-Cresol) N	39,000	NA	*340,000*	400	NA
100-01-6	4-Nitroaniline N	23,000	NA	230,000	NA	NA
100-02-7	4-Nitrophenol H	480,000	NA	NA	HA	NA
56-57-5	4-Nitroquinoline 1-oxide	NA	HA	NA	NA	NA
57-97-6	7,12-Dimethylbenz(a)anthracene C	NA	HA	*WA*	HA	NA
83-32-9	Acenaphthene N	470,000	200,000	2,800,000	2,000	NA
208-96-8	Acenaphthylene N	470,000	200,000	670,000	11,000	NA
53-96-3	Acetamidofluorene	HA	NA	NA	NA	NA
98-86-2	Acetophenone A	780,000	NA	WA	NA	NA
62-53-3	Aniline C	110,000	31	NA	NA	NA

Preliminary Remediation Goals (PRGs) for Soil Contaminants

US #	Parameter	USEPA - RBCs	USEPA - EELs	FDEP - CGs	FDEP CGs for Leaching	NASP Reference Concentration
Semivolatiles (µg/kg)						
120-12-7	Anthracene N	2,300,000	4,300,000	20,000,000	690,000	HA
140-57-8	Aramite C	26,000	NA	HA	NA	HA
103-33-3	Azobenzene C	5,800	NA	NA	NA	WA
98-87-3	Benzal chloride	NA	HA	NA	NA	HA
92-87-5	Benzidine C	2.8	0.0011	NA	NA	HA
56-55-3	Benzo(a)anthracene C	880	700	1,400	29,000	NA
50-32-8	Benzo(a)pyrene C	88	4,000	100	3,700	HA
205-99-2	Benzo(b)fluoranthene C	880	4,000	1,400	71,000	NA
191-24-2	Benzo(g,h,i)perylene N	230,000	1,400,000	14,000	320,000	HA
207-08-9	Benzo(k)fluoranthene C	8,800	4,000	14,000	*44,000*	NA
65-85-0	Benzoic acid N	51,000,000	280,000	130,000,000	56,000	WA
98-07-7	Benzotrichloride C	49	0.073	HA	WA	NA
100-51-6	Benzyl alcohol N	2,300,000	NA	HA	NA	NA
39638-32-9	Bis(2-Chloroisopropyl)Ethcr C	9,100	NA	NA	NA	WA
85-68-7	Butylbenzylphthalate N	1,600,000	68,000	15,000,000	960,000	WA
86-74-8	Carbazole C	32,000	500	*42,000*	*400*	NA
218-01-9	Chrysene E	88,000	1,000	140,000	51,000	HA
6055-19-2	Cyclophosphamide	NA	NA	NA	NA	NA
84-74-2	Di-n-butylphthalate N	780,000	120,000	7,300,000	23,000	NA
117-84-0	Di-n-octyl phthalate N	160,000	1,000,000,000	1,500,000	NA	NA

Preliminary Remediation Goals (PRGs) for Soil Contaminants

CAS #	Parameter	USEPA - RBCs	USEPA - SSLs	FDEP - CGs	FDEP CGs for Leaching	NASP Reference Concentration
Semivolatiles (µg/kg)						
53-70-3	Dibenz(a,h)anthracene [C]	88	11,000	100	7,200	NA
224-42-0	Dibenzo(a,j)acridine	NA	NA	NA	NA	NA
132-64-9	Dibenzofuran [N]	31,000	120,000	240,000	NA	NA
84-66-2	Diethylphthalate [N]	6,300,000	110,000	56,000,000	20,000	NA
131-11-3	Dimethyl phthalate [N]	78,000,000	1,200,000	630,000,000	200,000	NA
122-39-4	Diphenylamine [N]	200,000	NA	NA	WA	NA
97-63-2	Ethyl methacrylate [N]	700,000	WA	NA	WA	WA
62-50-0	Ethyl methanesulfonate	HA	NA	WA	WA	NA
206-44-0	Fluormthene [N]	310,000	980,000	2,900,000	280,000	NA
86-73-7	Fluorene [N]	310,000	160,000	2,400,000	45,000	WA
118-74-1	Hexachlorobenzene [C]	400	800	600	800	NA
87-68-3	Hexachlorobutadiene	8,200	100	3,100	2,100	NA
77-47-4	Hexachlorocyclopentadiene	55,000	10,000	NA	NA	WA
67-72-1	Hexachloroethane	46,000	200	27,000	400	MA
70-30-4	Hexachlorophene	2,300	HA	NA	WA	MA
1888-71-7	Hexachloropropene	NA	NA	NA	HA	NA
193-39-5	Indeno(1,2,3-cd)pyrene	880	35,000	1,400	17,000	NA
78-59-1	Isophorone [C]	670,000	200	NA	NA	NA
120-58-1	Isosafrole	NA	NA	NA	NA	NA
91-80-5	Methapyrilene	WA	NA	NA	NA	MA

Preliminary Remediation Goals (PRGs) for soil Contaminants

CAS #	Parameter	USEPA - RBCs	USEPA - SSLs	FDEP - CGs	FDEP CGs for Leaching	NASP Reference Concentration
Semivolatiles (µg/kg)						
80-62-6	Methyl methacrylate ti	630,000	WA	MA	NA	NA
66-27-3	ncthyl methanesulfonate	NA	NA	MA	NA	HA
10595-95-6	N-Nitroso-N-methylethylamine C	29	NA	MA	NA	NA
621-64-7	N-Nitroso-di-n-propylamine C	91	0.02	20	9	NA
924-16-3	N-Nitrosodi-n-butylamine C	120	WA	NA	NA	NA
55-18-5	N-Nitrosodiethylamine C	1.3	NA	HA	NA	NA
62-75-9	N-Nitrosodimethylamine C	13	NA	3	20	NA
86-30-6	N-Nitrosodiphenylamine C	130,000	200	73,000	60	NA
59-89-2	N-Nitrosomorpholine	HA	NA	tin	NA	NA
100-75-4	N-Hitrosopiperidine	NA	NA	NA	NA	NA
930-55-2	N-Nitrosopyrrolidine C	300	NA	WA	MA	NA
91-20-3	Naphthalene N	310,000	10,000	1,300,000	100	NA
98-95-3	Nitrobenzene	3,900	90	22,000	*40*	NA
123-63-7	Parrldehyde	NA	NA	WA	MA	NA
608-93-5	Pentachlorobenzene N	6,300	*48,000*	NA	HA	NA
76-01-7	Pentachlorocthane	NA	NA	NA	NA	NA
82-68-8	Pentachloronitrobenzene C	2,500	NA	MA	HA	NA
87-86-5	Pentachlorophenol C	5,300	200	*5,400*	10	NA
62-44-2	Phenacetin	MA	MA	NA	NA	NA
85-01-8	Phenanthrene N	230,000	1,600,000	1,700,000	2,800	WA

Preliminary Remediation Goals (PRGs) for Soil contaminants

U S 8	Parameter	USEPA - RBCs	USEPA - SSLs	FDEP - CGs	FDEP CGs for Leaching	NASP Reference Concentration
Semivolatiles (µg/kg)						
108-95-2	Phenol [N]	4,700,000	*49,000*	34,000,000	20	HA
23950-58-5	Pronamide [N]	590,000	NA	NA	NA	HA
129-00-0	Pyrene [N]	230,000	1,400,000	2,200,000	*290,000*	NA
110-86-1	Pyridine [N]	7,800	NA	500	20	NA
94-59-7	Safrole	NA	NA	NA	NA	NA
122-09-6	rlphr, a1phr-Dimethylphenethylamine	NA	NA	*HA*	NA	NA
111-91-1	bis(2-Chloroethoxy)methane	HA	NA	170,000	30	NA
111-44-4	bis(2-Chloroethyl)ether	580	0.3	500	5	NA
117-81-7	bis(2-Ethylhexyl)phthatate (BEHP) [C]	*46,000*	11,000	*48,000*	11,000	HA
60-11-7	p-Dimethylaminoazobenzene	NA	NA	HA	NA	NA
106-50-3	p-Phenylenediamine [N]	1,500,000	NA	HA	NA	NA

Preliminary Remediation Goals (PRGs) for Soil Contaminants

CAS #	Parameter	USEPA - RBCs	USEPA - SSLs	FDEP - CGs	FDEP CGs for Leaching	NASP Reference Concentration
Pesticides (µg/kg)						
93-76-5	2,4,5-T [H]	78,000	NA	NA	WA	NA
93-72-1	2,4,5-TP (Silvex) [N]	63,000	NA	NA	NA	NA
94-75-7	2,4-D [N]	78,000	1,700	NA	NA	NA
94-82-6	2,4-DB [N]	63,000	WA	HA	WA	NA
72-54-8	4,4'-DDD [C]	2,700	700	4,500	200	NA
72-55-9	4,4'-DDE [C]	1,900	500	3,000	200	NA
50-29-3	4,4'-DDT [C]	1,900	1,000	3,100	500	NA
309-00-2	Aldrin [C]	38	5	60	50	HA
12674-11-2	Aroclor-1016 [N]	550	HA	NA	NA	NA
11104-28-2	Aroclor-1221	83	NA	900	44,000	NA
11141-16-5	Aroclor-1232	a3	NA	900	44,000	NA
53469-21-9	Aroclor-1242	83	NA	900	44,000	NA
12672-29-6	Aroclor-1248	83	NA	900	44,000	WA
11097-69-1	Aroclor-1254 [N]	83	NA	900	44,000	NA
11096-82-5	Aroclor- 1260	83	WA	900	44,000	NA
57-74-9	Chlordane [C]	490	2,000	800	2,100	NA
510-15-6	Chlorobenzilate [C]	2,400	NA	NA	NA	NA
2303-16-4	Diallate [C]	10,000	NA	NA	NA	NA
60-57-1	Dieldrin [C]	40	1	70	20	NA
60-51-5	Dimethoate [N]	1,600	NA	NA	NA	NA

Preliminary Remediation Goals (PRGs) for Soil Contaminants

CAS #	Parameter	USEPA - RBCs	USEPA - SSLs	FDEP - CGs	FDEP CGs for Leaching	NASP Reference Concentration
Pesticides (µg/kg)						
88-85-7	Dinoseb N	7,800	NA	63,000	400	NA
298-04-4	Disulfoton N	310	MA	2,800	10	HA
959-98-8	Endosulfan I N	47,000	3,000	390,000	700	WA
33213-65-9	Endosulfan It	47,000	3,000	390,000	70D	WA
1031-07-8	Endosulfan sulfate N	47,000	3,000	390,000	700	NA
72-20-8	Endrin 1	2,300	400	23,000	COO	WA
7421-93-4	Endrin aldehyde N	2,300	400	23,000	SO	NA
53494-70-5	Endrln ketone N	2,300	400	23,000	400	NA
52-85-7	Famphur	NA	WA	NA	NA	NA
76-44-8	Heptachlor C	140	60	200	60	MA
1024-57-3	Heptachlor epoxide C	70	30	100	30	NA
465-73-6	Isodrin	NA	NA	NA	NA	NA
143-50-0	Kepone C	35	NA	NA	NA	NA
72-43-5	Methoxychlor N	39,000	62,000	380,000	62,000	NA
298-00-0	Methyl parathion N	2,000	41	19,000	100	NA
126-68-1	O,O,O-Triethylphosphorothioate	NA	NA	WA	NA	NA
56-38-2	Parathion N	47,000	3,900	450,000	3,900	NA
298-02-2	Phorate N	1,600	NA	14,000	50	NA
3689-24-5	Sulfotep N	3,900	HA	NA	NA	MA
297-97-2	Thionazin	NA	NA	NA	NA	NA

Preliminary Remediation Goals (PRGs) for Soil Contaminants

CAS #	Parameter	USEPA - RBCs	USEPA - SSLs	FDEP - CGs	FDEP CGs for Leaching	NASP Reference Concentration
Pesticides (µg/kg)						
8001-35-2	Toxaphene [C]	580	40	900	40	NA
319-84-6	alpha-BHC [C]	100	0.4	200	2	NA
5103-71-9	alpha-Chlordane [C]	490	2,000	600	2,100	NA
319-85-7	beta-BHC [C]	350	2	600	5	NA
319-86-8	delta-BHC [C]	NA	NA	23,000	7	NA
58-89-9	gamma-BHC (Lindane) [C]	490	6	800	6	NA
5103-74-2	gam-Chlordane [C]	490	2,000	800	2,100	NA

Preliminary Remediation Goals (PRGs) for Soil Contaminants

CAS #	Parameter	USEPA - RBCs	USEPA - SSLs	FDEP - CGs	FDEP CGs for Leaching	NASP Reference Concentration
Inorganics (mg/kg)						
7429-90-5	Aluminum (Al) N	7,800	WA	75,000	NA	3,833.36
7440-36-0	Antimony (Sb) N	3.1	WA	26	NA	9.49
7440-38-2	Arsenic (As) C	0.43	15	0.7	NA	1.56
7440-39-3	Barium (Ba) N	550	32	5,200	MA	4.65
7440-41-7	Beryllium (Be) C	0.15	180	0.2	NA	0.41
7440-42-8	Boron N	700	NA	7,000	NA	WA
7440-43-9	Cadmium (Cd) N	3.9	6	37	NA	1
7440-70-2	Calcium (Ca)	NA	WA	NA	NA	912.37
7440-47-3	Chromium (Cr) N	7,800	NA	66,000	NA	6.15
18540-29-9	Chromium (Hexavalent) N	39	19	290	NA	NA
7440-48-4	Cobalt (Co) N	470	NA	4,700	NA	1.87
7440-50-8	Copper (Cu) N	310	NA	NA	NA	5.74
57-12-5	Cyanide (CN) N	160	NA	1,600	NA	0.52
7439-89-6	Iron (Fe) N	2,300	NA	HA	NA	2,745
7439-92-1	Lead (Pb) C	400	NA	500	NA	7.32
7439-95-4	Magnesium (Mg)	NA	NA	NA	WA	153.53
7439-96-5	Manganese (Mn) N	180	NA	370	NA	21.36
7439-97-6	Mercury (Hg) N	2.3	3	23	NA	0.1
7439-98-7	Molybdenum (Mo)	39	NA	390	NA	NA
7440-02-0	Nickel (Ni) N	160	21	1,500	WA	6.38

CAS #	Parameter			FDEP - CGs	FDEP CGs for Leaching	NASP Reference Concentration
Inorganics (mg/kg)						
7440-09-7	Potassium (K) N	NA	NA	NA	NA	460.67
7782-49-2	Selenium (Se) N	39	3	390	NA	0.62
7440-22-4	Silver (Ag) N	39	NA	390	NA	2.07
7440-23-5	Sodium (Na) N	NA	NA	NA	NA	107.85
7440-24-6	Strontium	4,700	NA	47,000	NA	NA
7440-28-0	Thallium (Tl) N	0.63	0.4	NA	NA	0.82
7440-31-5	Tin (Sn)	4,700	NA	44,000	HA	NA
7440-62-2	Vanadium (V) N	55	NA	490	NA	5.83
	N	2,300				

Appendix D

Sample Values Exceeding PRGs

Exceeds Preliminary Remediation Goals (PRGs) for Soil Contaminants
PENSACOLA, SITE 04

		Sample ID	Date	Result	VQual	PRG	Reason	NASP Reference Concentration
Inorganics (mg/kg)								
7429-90-5	Aluminum (Al) N							
		004-s-0001-01	04/05/96	14,000.		7,800.	USEPA-RBC	3,833.36
7440-38-2	Arsenic (As) C							
		004-S-0001-01	04/05/96	3.		0.43	USEPA-RBC	1.56
		004-s-0002-01	04/05/96	0.54		0.43	USEPA-RBC	1.56
		004-S-0003-01	04/05/96	1.3		0.43	USEPA-RBC	1.56
7439-89-6	Iron (Fe) N							
		004-S-0001-01	04/05/96	12,100.		2,300.	USEPA-RBC	2,745.
		004-S-0003-01	04/05/96	4,140.		2,300.	USEPA-RBC	2,745.

Exceeds Preliminary Remediation Goals (PRGs) for Soil Contaminants
PENSACOLA, SITE 04

	Sample ID	Date	Result	VQual	PRG	Reason	NASP Reference Concentration
Pesticides (µg/kg)							
No Exceedances Found							

Exceeds Preliminary Remediation Goals (PRGs) for Soil Contaminants
PENSACOLA, SITE 04

		Sample ID	Date	Result	VQual	PRG	Reason	NASP Reference Concentration
Semivolatiles (µg/kg)								
50-32-8	Benzo(a)pyrene C	004-S-0001-01	04/05/96	140.		88.	USEPA-RBC	NA

Exceeds Preliminary Remediation Goals (PRGs) for Soil Contaminants
PENSACOLA, SITE 04

	Sample ID	Date	Result	VQual	PRG	Reason	NASP Reference Concentration
Volatiles (µg/kg)							

No Exceedances Found

Exceeds Preliminary Remediation Goals (PRGs) for Groundwater Contaminants
PENSACOLA, SITE 04

		Sample ID	Date	Result	VQual	PRC	Reason	NASP Reference Concentration
Inorganics (µg/l)								
7429-90-5	Aluminum (Al) N							
		004-G-GS01-01	05/07/96	674.	J	50.	EPA SMCL	3,882.8
		004-G-GS02-01	04/06/96	420.	J	50.	EPA SHCL	3,882.8
		004-G-GS03-01	04/06/96	1,080.	J	50.	EPA SMCL	3,882.8
7439-89-6	Iron (Fe) N							
		004-G-GS01-01	05/07/96	516.		300.	FSDWS	1,707.8
		004-G-GS03-01	04/06/96	386.		300.	FSDWS	1,707.8

Exceeds Preliminary Remediation Goals (PRGs) for Groundwater Contaminants
PENSACOLA, SITE 04

	Sample ID	Date	Result	VQual	PRG	Reason	NASP Reference Concentration
Pesticides (µg/l)							
No Exceedances Found							

Exceeds Preliminary Remediation Goals (PRGs) for Groundwater Contaminants

PENSACOLA, SITE 04

	Sample ID	Date	Result	VQual	PRC	Reason	NASP Reference Concentration
Semivolatiles (µg/l)							
No Exceedances Found							

Exceeds Preliminary Remediation Goals (PRGs) for Groundwater Contaminants PENSACOLA, SITE 04

	Sample ID	Date	Result	VQual	PRG	Reason	NASP Reference Concentration
Volatiles (µg/l)							
No Exccedances Found							

Appendix E

Database Summary of Analytical Data

NAVAL AIR STATION PENSACOLA
CATEGORY 7, SITE 4
Army Rubble Disposal Area

METAL																	
	SAMPLE ID ------->	004-S-0001-01		004-S-0001-07		004-S-0002-01		004-S-0002-06		004-S-0003-01		004-S-0003-07	
	ORIGINAL ID ----->	004S000101		004S000107		004S000201		004S000206		004S000301		0048000307	
	LAB SAMPLE ID --->	5606-01		5606-02		5606-03		5606-04		5606-05		5606-06	
	ID FROM REPORT -->	004S000101		004S000107		004S000201		004S000206		004S000301		004S000307	
	SAMPLE DATE ----->	04/05/96		06/05/96		04/05/96		04/05/96		04/05/96		04/05/96	
	DATE EXTRACTED -->	04/15/96		04/15/96		04/15/96		04/15/96		04/15/96		04/15/96	
	DATE ANALYZED --->	04/16/96		04/16/96		04/16/96		04/16/96		04/16/96		04/16/96	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG	A	MG/KG	A	MG/KG	A	MG/KG	A	MG/KG	A	MG/KG	A
CAS #	Parameter	SITE04	VAL	SITE04	VAL	SITE04	VAL	SITE04	VAL	SITE04	VAL	SITE04	VAL
7429-90-5	Aluminum (Al)	14000.		114.		2230.		102.		7690.		453.	
7440-36-0	Antimony (Sb)	0.28	UJ	0.19	UJ	0.18	UJ	0.19	UJ	0.28	UJ	0.19	UJ
7440-38-2	Arsenic (As)	3.		0.27	U	0.54		0.27	U	1.3		0.27	U
7440-39-3	Barium (Ba)	9.4		0.29	U	5.8		0.26	U	6.2		0.58	U
7440-41-7	Beryllium (Be)	0.08	J	0.04	U	0.05	J	0.04	U	0.07	J	0.04	U
7440-43-9	Cadmium (Cd)	0.91		0.03	U	0.41		0.03	U	0.15		0.03	U
7440-70-2	Calcium (Ca)	16500.	J	20.3	U	422.	J	18.6	U	38100.	J	48.3	J
7440-47-3	Chromium (Cr)	16.4		0.13	UJ	2.5	J	0.13	UJ	7.8		0.15	J
7440-48-4	Cobalt (Co)	0.23	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
7440-50-8	Copper (Cu)	6.9		0.13	U	1.6		0.27	J	3.2		0.37	J
7439-89-6	Iron (Fe)	12100.		51.4		1530.		55.7		4140.		337.	
7439-92-1	Lead (Pb)	29.9		0.47	U	6.3		0.28	U	11.2		0.71	U
7439-95-4	Magnesium (Mg)	222.		6.2	J	80.9		5.5	U	377.		15.	J
7439-96-5	Manganese (Mn)	44.8		0.23	J	16.		0.23	J	66.2		0.67	J
7439-97-6	Mercury (Hg)	0.36		0.31		0.29		0.25		0.35		0.31	
7440-02-0	Nickel (Ni)	1.9	J	0.19	U	0.75	J	0.39	J	1.6	J	0.5	J
7440-09-7	Potassium (K)	96.1		6.9	J	46.4	J	5.	J	125.		11.2	J
7782-49-2	Selenium (Se)	0.41	U	0.4	U	0.39	U	0.4	U	0.39	U	0.4	U
7440-22-4	Silver (Ag)	0.15	U	0.15	U	0.14	U	0.15	U	0.14	U	0.15	U
7440-23-5	Sodium (Na)	205.	J	21.6	U	29.2	U	22.6	U	418.	J	17.7	U
7440-28-0	Thallium (Tl)	0.41	U	0.4	U	0.39	U	0.4	U	0.39	U	0.4	U
7440-62-2	Vanadium (V)	22.6		0.17	J	3.7		0.18	J	11.5		0.66	J
7440-66-6	Zinc (Zn)	16.5		0.24	U	12.6		1.4	J	11.8		1.9	J

*** Validation Complete ***

NAVAL AIR STATION PENSACOLA
CATEGORY 7, SITE 4
Army Rubble Disposal Area

METAL													
	SAMPLE ID ------->	004-G-GS01-01		004-G-GS02-01		004-H-GS02-01		004-G-GS03-01			
	ORIGINAL ID ----->	004GGS0101		004GGS0201		004HGS0201		004GGS0301			
	LAB SAMPLE ID --->	5646-01		5643-01		5643-03		5643-02			
	ID FROM REPORT -->	004GGS0101		004GGS0201		004HGS0201		004GGS0301			
	SAMPLE DATE ----->	05/07/96		05/06/96		05/06/96		05/06/96			
	DATE EXTRACTED -->	05/09/96		05/09/96		05/09/96		05/09/96			
	DATE ANALYZED --->	05/21/96		05/21/96		05/21/96		05/21/96			
	MATRIX ---------->	Water		Water		Water		Water			
	UNITS ---------->	UG/L	A	UG/L	A	UG/L	A	UG/L	A		
CAS #	Parameter	SITE4W	VAL	SITE4W	VAL	SITE4W	VAL	SITE4W	VAL		
7429-90-5	Aluminum (Al)	674.	J	420.	J	520.	J	1080.	J		
7440-36-0	Antimony (Sb)	1.6	U	1.6	U	1.6	U	1.6	U		
7440-38-2	Arsenic (As)	4.	U	4.	U	4.	U	4.	U		
7440-39-3	Barium (Ba)	4.1	U	3.9	U	4.	U	6.	U		
7440-41-7	Beryllium (Be)	0.22	U	0.22	U	0.22	U	0.22	U		
7440-43-9	Cadmium (Cd)	0.33	U	0.33	U	0.37	J	0.33	U		
7440-70-2	Calcium (Ca)	30600.		14800.		14800.		15700.			
7440-47-3	Chromium (Cr)	4.	U	4.	U	4.	U	4.	U		
7440-48-4	Cobalt (Co)	0.67	UJ	0.67	UJ	0.67	UJ	0.67	UJ		
7440-50-8	Copper (Cu)	0.44	UJ	2.4	J	0.44	UJ	2.1	J		
7439-89-6	Iron (Fe)	516.		108.	J	163.	J	386.			
7439-92-1	Lead (Pb)	2.4	U	2.9		2.6		2.4	U		
7439-95-4	Magnesium (Mg)	1490.		1010.		1020.		870.			
7439-96-5	Manganese (Mn)	2.7	UJ	1.2	UJ	1.2	UJ	1.3	UJ		
7439-97-6	Mercury (Hg)	0.2	U	0.2	U	0.2	U	0.2	U		
7440-02-0	Nickel (Ni)	0.67	UJ	0.67	UJ	0.67	UJ	0.67	UJ		
7440-09-7	Potassium (K)	1440.		1010.		1010.		1170.			
7782-49-2	Selenium (Se)	4.3	UJ	4.3	UJ	4.3	UJ	4.3	UJ		
7440-22-4	Silver (Ag)	0.67	UJ	0.67	UJ	0.67	UJ	0.67	UJ		
7440-23-5	Sodium (Na)	3270.		3470.		3480.		3880.			
7440-28-0	Thallium (Tl)	5.3	U	5.3	U	5.3	U	5.3	U		
7440-62-2	Vanadium (V)	1.6	J	0.88	J	1.2	J	2.	J		
7440-66-6	Zinc (Zn)	0.99	UJ	15.9	U	9.6	U	5.4	U		

*** Validation Complete ***

NAVAL AIR STATION **PENSACOLA**
CATEGORY 7, SITE 4
Army Rubble Disposal Area

METAL-CN																	
	SAMPLE ID ------->	004-S-0001-01		004-S-0001-07		004-S-0002-01		004-S-0002-06		004-S-0003-01		004-S-0003-07	
	ORIGINAL ID ----->	004S000101		004S000107		004S000201		0045000206		004S000301		004S000307	
	LAB SAMPLE ID --->	5606-01		5606-02		5606-03		5606-04		5606-05		5606-06	
	ID FROM REPORT -->	004S000101		004S000107		004S000201		004S000206		004S000301		004S000307	
	SAMPLE DATE ----->	04/05/96		04/05/96		04/05/96		04/05/96		04/05/96		04/05/96	
	DATE EXTRACTED -->	04/13/96		04/13/96		04/13/96		04/13/96		04/13/96		04/13/96	
	DATE ANALYZED --->	04/16/96		04/16/96		04/16/96		04/16/96		04/16/96		04/16/96	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	MG/KG	A	MG/KG	A	MG/KG	A	MG/KG	A	MG/KG	A	MG/KG	A
CAS #	Parameter	SITE04	VAL	SITE04	VAL	SITE04	VAL	SITE04	VAL	SITE04	VAL	SITE04	VAL
57-12-5	Cyanide (CN)	0.54	U	0.53	U	0.62	U	2.		0.52	U	0.9	U

*** Validation Complete ***

NAVAL AIR STATION PENSACOLA
CATEGORY 7, SITE 4
Army Rubble Disposal Area

METAL-CN											
	SAMPLE ID ------->	004-G-GS01-01		004-G-GS02-01		004-H-GS02-01		004-G-GS03-01			
	ORIGINAL ID ----->	004GGS0101		004GGS0201		004HGS0201		004GGS0301			
	LAB SAMPLE ID --->	5646-01		5643-01		5643-03		5643-02			
	ID FROM REPORT -->	004GGS0101		004GGS0201		004HGS0201		004GGS0301			
	SAMPLE DATE ----->	05/07/96		05/06/96		05/06/96		05/06/96			
	DATE ANALYZED --->	05/13/96		05/13/96		05/13/96		05/13/96			
	MATRIX ---------->	Water		Water		Water		Water			
	UNITS ---------->	UG/L	A	UG/L	A	UG/L	A	UG/L	A		
CAS #	Parameter	SITE4W	VAL	SITE4W	VAL	SITE4W	VAL	SITE4W	VAL		
57-12-5	Cyanide (CN)	10.	U	10.	U	10.	U	10.	U		

*** Validation Complete ***

NAVAL AIR STATION PENSACOLA
CATEGORY 7, SITE 4
Army Rubble Disposal Area

PEST															
		SAMPLE ID ------->	004-S-0001-01		004-S-0001-07		004-S-0002-01		004-S-0002-06		004-S-0003-01		004-S-0003-07		
		ORIGINAL ID ----->	004S000101		004S000107		004S000201		004S000206		004S000301		0043000307		
		LAB SAMPLE ID --->	5606-01		5606-02		5606-03		5606-04		5606-05		5606-06		
		ID FROM REPORT -->	004S000101		004S000107		004S000201		004S000206		004S000301		004S000307		
		SAMPLE DATE ----->	04/05/96		04/05/96		04/05/96		04/05/96		04/05/96		04/05/96		
		DATE EXTRACTED -->	04/11/96		04/11/96		04/11/96		04/11/96		04/11/96		04/11/96		
		DATE ANALYZED --->	04/15/96		04/15/96		04/15/96		04/15/96		04/15/96		04/15/96		
		MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		soil		
		UNITS ---------->	UG/KG	A	UG/KG	A	UG/KG	A	UG/KG	J	UG/KG	A	UG/KG	A	
CAS #	Parameter		SITE04	VAL	SITE04	VAL	SITE04	VAL	SITE04	VAL	SITE04	VAL	SITE04	VAL	
319-84-6	alpha-BHC		0.779	U	0.763	U	0.754	U	0.772	U	0.749	U	0.749	U	
319-85-7	beta-BHC		0.627	U	0.615	U	0.607	U	0.622	U	0.603	U	0.603	U	
319-86-8	delta-BHC		0.746	U	0.732	U	0.722	U	0.74	U	0.717	U	0.718	U	
58-89-9	gamma-BHC (Lindane)		0.854	U	0.838	U	0.827	U	0.848	U	0.821	U	0.822	U	
76-44-8	Heptachlor		0.736	U	0.721	U	0.712	U	0.73	U	0.707	U	0.707	U	
309-00-2	Aldrin		0.785	J	0.732	U	0.722	U	0.74	U	0.717	U	0.718	U	
1024-57-3	Heptachlor epoxide		1.06	U	1.04	U	1.03	U	1.05	U	1.02	U	1.02	U	
959-98-8	Endosulfan I		0.984	U	0.965	U	0.952	U	0.976	U	0.946	U	0.947	U	
60-57-1	Dieldrin		1.82	U	1.78	U	1.76	U	1.8	U	1.75	U	1.75	U	
72-55-9	4,4'-DDE		1.42	U	1.39	U	1.37	U	1.41	U	1.96	J	1.36	U	
72-20-8	Endrin		1.76	U	1.73	U	1.71	U	1.75	U	1.69	U	1.7	U	
33213-65-9	Endosulfan II		1.63	U	1.6	U	1.63	J	1.62	U	1.57	U	1.57	U	
72-54-8	4,4'-DDD		1.8	U	1.76	U	1.74	U	1.78	U	1.73	U	1.73	U	
1031-07-8	Endosulfan sulfate		1.42	U	1.39	U	1.37	U	1.41	U	1.36	U	1.36	U	
50-29-3	4,4'-DDT		1.82	U	1.78	U	1.76	U	1.8	U	1.75	U	1.75	U	
72-43-5	Methoxychlor		21.1	UJ	20.7	UJ	20.4	UJ	20.9	UJ	20.3	UJ	20.3	UJ	
53494-70-5	Endrin ketone		1.44	U	1.41	U	1.39	U	1.43	U	1.38	U	1.38	U	
7421-93-4	Endrin aldehyde		2.86	U	2.8	U	2.76	U	2.83	U	2.74	U	2.75	U	
5103-71-9	alpha-Chlordane		0.714	U	0.7	U	0.691	U	0.708	U	0.686	U	0.687	U	
5103-74-2	gamma-Chlordane		0.692	U	0.679	U	1.3		0.687	U	0.665	U	0.666	U	
8001-35-2	Toxaphene		165.	U	162.	U	160.	U	164.	U	159.	U	159.	U	
12674-11-2	Aroclor-1016		35.7	U	35.	U	34.5	U	35.4	U	34.3	U	34.3	U	
11104-28-2	Aroclor-1221		71.4	U	70.	U	69.1	U	70.8	U	68.6	U	68.7	U	
11141-16-5	Aroclor-1232		35.7	U	35.	U	34.5	U	35.4	U	34.3	U	34.3	U	
53469-21-9	Aroclor-1242		35.7	U	35.	U	34.5	U	35.4	U	34.3	U	34.3	U	
12672-29-6	Aroclor-1248		35.7	U	35.	U	34.5	U	35.4	U	34.3	U	34.3	U	
11097-69-1	Aroclor-1254		35.7	U	35.	U	34.5	U	35.4	U	34.3	U	34.3	U	
11096-82-5	Aroclor-1260		35.7	U	35.	U	40.3		35.4	U	34.3	U	34.3	U	

*** Validation Complete ***

NAVAL AIR STATION PENSACOLA
CATEGORY 7, SITE 4
Army Rubble Disposal Area

PEST															
	SAMPLE ID ------->	004-G-GS01-01		004-G-GS02-01		004-G-GS02-01 RE		004-H-GS02-01		004-H-GS02-01 RE		004-G-GS03-01	
	ORIGINAL ID ----->	004GGS0101		004GGS0201		004GGS0201		004HGS0201		004HGS0201		004GGS0301	
	LAB SAMPLE ID --->	5646-01		5643-01		5643-01RX		5643-03		5643-03RX		5643-02	
	ID FROM REPORT -->	004GGS0101		004GGS0201		004GGS0201		004HGS0201		004HGS0201		004GGS0301	
	SAMPLE DATE ----->	05/07/96		05/06/96		05/06/96		05/06/96		05/06/96		05/06/96	
	DATE EXTRACTED -->	05/08/96		05/07/96		05/15/96		05/07/96		05/15/96		05/07/96	
	DATE ANALYZED --->	05/13/96		05/13/96		05/21/96		05/13/96		05/21/96		05/13/96	
	MATRIX ---------->	Water		Water		Water		Water		Water		Water	
	UNITS ---------->	UG/L	A	UG/L	C	UG/L	A	UG/L	C	UG/L	A	UG/L	C
CAS #	Parameter	SITE4W	VAL	SITE4W	VAL	SITE4W	VAL	SITE4W	VAL	SITE4W	VAL	SITE4W	VAL
319-84-6	alpha-BHC	0.04	U	0.04	UR	0.04	UJ	0.04	UR	0.04	UJ	0.04	UR
319-85-7	beta-BHC	0.03	U	0.03	UR	0.03	U	0.03	UR	0.03	U	0.03	UR
319-86-8	delta-BHC	0.03	U	0.03	UR	0.03	U	0.03	UR	0.03	U	0.03	UR
58-89-9	gamma-BHC (Lindane)	0.04	U	0.04	UR	0.04	U	0.04	UR	0.04	U	0.06	UR
76-44-8	Heptachlor	0.04	U	0.04	UR	0.04	U	0.04	UR	0.04	U	0.04	UR
309-00-2	Aldrin	0.05	U	0.05	UR	0.05	U	0.05	UR	0.05	U	0.05	UR
1024-57-3	Heptachlor epoxide	0.03	U	0.03	UR	0.03	U	0.03	UR	0.03	U	0.03	UR
959-98-8	Endosulfan I	0.04	U	0.04	UR	0.04	U	0.04	UR	0.04	U	0.04	UR
60-57-1	Dieldrin	0.08	U	0.08	UR	0.08	U	0.08	UR	0.08	U	0.08	UR
72-55-9	4,4'-DDE	0.06	U	0.06	UR	0.06	U	0.06	UR	0.06	U	0.06	UR
72-20-8	Endrin	0.1	U	0.1	UR	0.1	U	0.1	UR	0.1	U	0.1	UR
33213-65-9	Endosulfan II	0.06	U	0.06	UR	0.06	U	0.06	UR	0.06	U	0.06	UR
72-54-8	4,4'-DDD	0.08	U	0.08	UR	0.08	U	0.08	UR	0.08	U	0.08	UR
1031-07-8	Endosulfan sulfate	0.06	U	0.06	UR	0.06	U	0.06	UR	0.06	U	0.06	UR
50-29-3	4,4'-DDT	0.08	U	0.08	UR	0.08	U	0.08	UR	0.08	U	0.08	UR
72-43-5	Methoxychlor	0.35	U	0.35	UR	0.35	UJ	0.35	UR	0.35	UJ	0.35	UR
53494-70-5	Endrin ketone	0.06	U	0.06	UR	0.06	U	0.06	UR	0.06	U	0.06	UR
7421-93-4	Endrin aldehyde	0.1	U	0.1	UR	0.1	U	0.1	UR	0.1	U	0.1	UR
5103-71-9	alpha-Chlordane	0.03	U	0.03	UR	0.03	U	0.03	UR	0.03	U	0.03	UR
5103-74-2	gamma-Chlordane	0.03	U	0.03	UR	0.03	U	0.03	UR	0.03	U	0.03	UR
8001-35-2	Toxaphene	4.8	U	4.8	UR	4.8	U	4.8	UR	4.8	U	4.8	UR
12674-11-2	Aroclor-1016	0.2	U	0.2	UR	0.2	U	0.2	UR	0.2	U	0.2	UR
11104-28-2	Aroclor-1221	0.4	U	0.4	UR	0.4	U	0.4	UR	0.4	U	0.4	UR
11141-16-5	Aroclor-1232	0.2	U	0.2	UR	0.2	U	0.2	UR	0.2	U	0.2	UR
53469-21-9	Aroclor-1242	1.	U	1.	UR	1.	U	1.	UR	1.	U	1.	UR
12672-29-6	Aroclor-1248	0.2	U	0.2	UR	0.2	U	0.2	UR	0.2	U	0.2	UR
11097-69-1	Aroclor-1254	0.2	U	0.2	UR	0.2	U	0.2	UR	0.2	U	0.2	UR
11096-82-5	Aroclor-1260	0.2	U	0.2	UR	0.2	U	0.2	UR	0.2	U	0.2	UR

*** Validation Complete ***

NAVAL AIR STATION PENSACOLA
CATEGORY 7, SITE 4
Army Rubble Disposal Area

PEST

SAMPLE ID -------:	004-G-GS03-01 RE
ORIGINAL ID -----:	004GGS0301
LAB SAMPLE ID ---:	5643-02RX
ID FROM REPORT --:	004GGS0301
SAMPLE DATE -----:	05/06/96
DATE EXTRACTED --:	05/15/96
DATE ANALYZED ---:	05/21/96
MATRIX ----------:	Water
UNITS ----------:	UG/L A

CAS #	Parameter	SITE4W	VAL
319-84-6	alpha-BHC	0.04	UJ
319-85-7	beta-BHC	0.03	U
319-86-8	delta-BHC	0.03	U
58-89-9	gamma-BHC (Lindane)	0.04	U
76-44-8	Heptachlor	0.04	U
309-00-2	Aldrin	0.05	U
1024-57-3	Heptachlor epoxide	0.03	U
959-98-8	Endosulfan I	0.04	U
60-57-1	Dieldrin	0.08	U
72-55-9	4,4'-DDE	0.06	U
72-20-8	Endrin	0.1	U
33213-65-9	Endosulfan II	0.06	U
72-54-8	4,4'-DDD	0.08	U
1031-07-8	Endosulfan sulfate	0.06	U
50-29-3	4,4'-DDT	0.08	U
72-43-5	Methoxychlor	0.35	UJ
53494-70-5	Endrin ketone	0.06	U
7421-93-4	Endrin aldehyde	0.1	U
5103-71-9	alpha-Chlordane	0.03	U
5103-74-2	gamma-Chlordane	0.03	U
8001-35-2	Toxaphene	4.8	U
12674-11-2	Aroclor-1016	0.2	U
11104-28-2	Aroclor-1221	0.4	U
11141-16-5	Aroclor-1232	0.2	U
53469-21-9	Aroclor-1242	1.	U
12672-29-6	Aroclor-1248	0.2	U
11097-69-1	Aroclor-1254	0.2	U
11096-82-5	Aroclor-1260	0.2	U

*** Validation Complete ***

NAVAL AIR STATION PENSACOLA
CATEGORY 7, SITE 4
Army Rubble Disposal Area

SVOA													
	SAMPLE ID ------->	004-S-0001-01		004-S-0001-07		004-S-0002-01		004-S-0002-06		004-S-0003-01		304-S-0003-07	
	ORIGINAL ID ----->	004S000101		004S000107		004S000201		004S000206		004S000301		004S000307	
	LAB SAMPLE ID --->	5606-01		5606-02		5606-03		5606-04		5606-05		5606-06	
	ID FROM REPORT -->	004S000101		004S000107		004S000201		004S000206		004S000301		004S000307	
	SAMPLE DATE ----->	04/05/96		04/05/96		04/05/96		04/05/96		04/05/96		04/05/96	
	DATE EXTRACTED -->	04/11/96		04/11/96		04/11/96		04/11/96		04/11/96		04/11/96	
	DATE ANALYZED --->	04/12/96		04/12/96		04/12/96		04/12/96		04/12/96		04/12/96	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG	A	UG/KG	A	UG/KG	A	UG/KG	A	UG/KG	A	UG/KG	A
CAS #	Parameter	SITE04	VAL	SITE04	VAL	SITE04	VAL	SITE04	VAL	SITE04	VAL	SITE04	VAL
108-95-2	Phenol	37.	U	37.	U	36.	U	37.	U	36.	U	36.	U
111-44-4	bis(2-Chloroethyl)ether	55.	U	54.	U	53.	U	55.	U	53.	U	53.	U
95-57-8	2-Chlorophenol	37.	U	37.	U	36.	U	37.	U	36.	U	36.	U
95-48-7	2-Methylphenol (o-Cresol)	34.	U	34.	U	33.	U	34.	U	33.	U	33.	U
108-60-1	2,2'-oxybis(1-Chloropropane)	31.	U	30.	U	30.	U	31.	U	30.	U	30.	U
106-44-5	4-Methylphenol (p-Cresol)	38.	U	37.	U	37.	U	38.	U	36.	U	36.	U
621-64-7	N-Nitroso-di-n-propylamine	62.	U	61.	U	60.	U	62.	U	60.	U	60.	U
67-72-1	Hexachloroethane	80.	U	78.	U	77.	U	79.	U	77.	U	77.	U
98-95-3	Nitrobenzene	39.	U	38.	U	37.	U	38.	U	37.	U	37.	U
78-59-1	Isophorone	36.	U	36.	U	35.	U	36.	U	35.	U	35.	U
88-75-5	2-Nitrophenol	35.	U	34.	U	34.	U	34.	U	33.	U	33.	U
105-67-9	2,4-Dimethylphenol	41.	U	40.	U	39.	U	40.	U	39.	U	39.	U
111-91-1	bis(2-Chloroethoxy)methane	37.	U	37.	U	36.	U	37.	U	36.	U	36.	U
120-83-2	2,4-Dichlorophenol	68.	U	66.	U	65.	U	67.	U	65.	U	65.	U
120-82-1	1,2,4-Trichlorobenzene	37.	U	36.	U	36.	U	36.	U	35.	U	35.	U
91-20-3	Naphthalene	37.	U	36.	U	36.	U	36.	U	35.	U	35.	U
106-47-8	4-Chloroaniline	45.	U	44.	U	43.	U	45.	U	43.	U	43.	U
87-68-3	Hexachlorobutadiene	42.	U	41.	U	40.	U	42.	U	40.	U	40.	U
59-50-7	4-Chloro-3-methylphenol	30.	U	30.	U	29.	U	30.	U	29.	U	29.	U
91-57-6	2-Methylnaphthalene	36.	U	35.	U	34.	U	35.	U	34.	U	34.	U
77-47-4	Hexachlorocyclopentadiene	130.	U	130.	U	120.	U	130.	U	120.	U	120.	U
88-06-2	2,4,6-Trichlorophenol	32.	U	31.	U	30.	U	31.	U	30.	U	30.	U
95-95-4	2,4,5-Trichlorophenol	44.	U	44.	U	43.	U	44.	U	43.	U	43.	U
91-58-7	2-Chloronaphthalene	39.	U	38.	U	38.	U	38.	U	37.	U	37.	U
88-74-4	2-Nitroaniline	31.	U	30.	U	30.	U	31.	U	30.	U	30.	U
131-11-3	Dimethyl phthalate	37.	U	36.	U	35.	U	36.	U	35.	U	35.	U
208-96-8	Acenaphthylene	38.	U	38.	U	37.	U	38.	U	37.	U	37.	U
606-20-2	2,6-Dinitrotoluene	39.	U	39.	U	38.	U	39.	U	38.	U	38.	U
99-09-2	3-Nitroaniline	42.	U	41.	U	40.	U	42.	U	40.	U	40.	U
83-32-9	Acenaphthene	25.	U	24,	U	24.	U	25.	U	24.	U	24.	U
51-28-5	2,4-Dinitrophenol	170.	U	160.	U	160.	U	170.	U	160.	U	160.	U
100-02-7	4-Nitrophenol	200.	U	200.	U	200.	U	200.	U	190.	U	200.	U
132-64-9	Dibenzofuran	27	U	26.	U	26.	U	27.	U	26.	U	26.	U
121-14-2	2,4-Dinitrotoluene	28.	U	28.	U	27.	U	28.	U	27.	U	27.	U
84-66-2	Diethylphthalate	33.	U	32.	U	32.	U	32.	U	31.	U	31.	U
7005-72-3	4-Chlorophenylphenylether	38.	U	37.	U	36.	U	37.	U	36.	U	36.	U

*** Validation Complete ***

NAVAL AIR STATION PENSACOLA
CATEGORY 7, SITE 4
Army Rubble Disposal Area

SVOA													
	SAMPLE ID ------->	004-S-0001-01		004-S-0001-07		004-S-0002-01		004-S-0002-06		004-S-0003-01		004-S-0003-07	
	ORIGINAL ID ----->	004S000101		004S000107		004S000201		004S000206		004S000301		004S000307	
	LAB SAMPLE ID --->	5606-01		5606-02		5606-03		5606-04		5606-05		5606-06	
	ID FROM REPORT -->	004S000101		004S000107		004S000201		004S000206		004S000301		004S000307	
	SAMPLE DATE ----->	04/05/96		04/05/96		04/05/96		04/05/96		04/05/96		04/05/96	
	DATE EXTRACTED -->	04/11/96		04/11/96		04/11/96		04/11/96		04/11/96			
	DATE ANALYZED --->	04/12/96		04/12/96		04/12/96		04/12/96		04/12/96		04/12/96	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG	A	UG/KG	A	UG/KG	A	UG/KG	A	UG/KG	A	UG/KG	A
CAS #	Parameter	SITE04	VAL	SITE04	VAL	SITE04	VAL	SITE04	VAL	SITE04	VAL	SITE04	VAL
86-73-7	Fluorene	36.	U	36.	U	35.	U	36.	U	35.	U	35.	U
100-01-6	4-Nitroaniline	47.	U	46.	U	46.	U	47.	U	45.	U	45.	U
534-52-1	2-Methyl-4,6-Dinitrophenol	180.	U	180.	U	180.	U	180.	U	180.	U	180.	U
86-30-6	N-Nitrosodiphenylamine	38.	U	37.	U	36.	U	37.	U	36.	U	36.	U
101-55-3	4-Bromophenyl-phenylether	62.	U	60.	U	60.	U	61.	U	59.	U	59.	U
118-74-1	Hexachlorobenzene	51.	U	50.	U	49.	U	50.	U	49.	U	49.	U
87-86-5	Pentachlorophenol	140.	U	130.	U	130.	U	140.	U	130.	U	130.	U
85-01-8	Phenanthrene	35.	U	34.	U	34.	U	35.	U	34.	U	34.	U
120-12-7	Anthracene	37.	U	36.	U	36.	U	37.	U	36.	U	36.	U
86-74-8	Carbazole	42.	U	41.	U	41.	U	42.	U	40.	U	40.	U
84-74-2	Di-n-butylphthalate	41.	U	40.	U	40.	U	41.	U	39.	U	40.	U
206-44-0	Fluoranthene	39.	U	38.	U	38.	U	39.	U	38.	U	38.	U
129-00-0	Pyrene	64.		38.	U	38.	U	39.	U	37.	U	38.	U
85-68-7	Butylbenzylphthalate	140.		34.	U	33.	U	34.	U	33.	U	33.	U
91-94-1	3,3'-Dichlorobenzidine	110.	U	100.	U	100.	U	110.	U	100.	U	100.	U
56-55-3	Benzo(a)anthracene	28.	J	50.	U	49.	U	50.	U	49.	U	49.	U
218-01-9	Chrysene	68.		40.	U	39.	U	40.	U	39.	U	39.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	71.		52.	U	51.	U	52.	U	51.	U	51.	U
117-84-0	Di-n-octyl phthalate	42.	U	42.	U	41.	U	42.	U	41.	U	41.	U
205-99-2	Benzo(b)fluoranthene	150.		83.	U	81.	U	84.	U	81.	U	81.	U
207-08-9	Benzo(k)fluoranthene	94.		54.	U	53.	U	54.	U	53.	U	53.	U
50-32-8	Benzo(a)pyrene	140.		50.	U	50.	U	51.	U	49.	U	50.	U
193-39-5	Indeno(1,2,3-cd)pyrene	52.	U	51.	U	50.	U	51.	U	50.	U	50.	U
53-70-3	Dibenz(a,h)anthracene	43.	U	42.	U	41.	U	42.	U	41.	U	41.	U
191-24-2	Benzo(g,h,i)perylene	42.	U	41.	U	41.	U	42.	U	41.	U	41.	U

*** Validation Complete ***

NAVAL AIR STATION PENSACOLA
CATEGORY 7, SITE 4
Army Rubble Disposal Area

SVOA													
	SAMPLE ID ------->	004-G-GS01-01		004-G-GS02-01		004-H-GS02-01		004-G-GS03-01					
	ORIGINAL ID ----->	004GGS0101		004GGS0201		004HGS0201		004GGS0301					
	LAB SAMPLE ID --->	5646-01		5643-01		5643-03		5643-02					
	ID FROM REPORT -->	004GGS0101		004GGS0201		004HGS0201		004GGS0301					
	SAMPLE DATE ----->	05/07/96		05/06/96		05/06/96		05/06/96					
	DATE EXTRACTED -->	05/08/96		05/07/96		05/07/96		05/07/96					
	DATE ANALYZED --->	05/13/96		05/10/96		05/10/96		05/10/96					
	MATRIX ---------->	Water		Water		Water		Water					
	UNITS ---------->	UG/L	A	UG/L	A	UG/L	A	UG/L	A				
CAS #	Parameter	SITE4W	VAL	SITE4W	VAL	SITE4W	VAL	SITE4W	VAL				
108-95-2	Phenol	1.	U	1.	U	1.	U	1.	U				
111-44-4	bis(2-Chloroethyl)ether	0.7	U	0.7	U	0.7	U	0.7	U				
95-57-8	2-Chlorophenol	1.	U	1.	U	1.	U	1.	U				
95-48-7	2-Methylphenol (o-Cresol)	0.9	U	0.9	U	0.9	U	0.9	U				
108-60-1	2,2'-oxybis(1-Chloropropane)	0.8	U	0.8	U	0.8	U	0.8	U				
106-44-5	4-Methylphenol (p-Cresol)	1.	U	1.	U	1.	U	1.	U				
621-64-7	N-Nitroso-di-n-propylamine	0.9	U	0.9	U	0.9	U	0.9	U				
67-72-1	Hexachloroethane	1.	U	1.	U	1.	U	1.	U				
98-95-3	Nitrobenzene	1.	U	1.	U	1.	U	1.	U				
78-59-1	Isophorone	0.8	U	0.8	U	0.8	U	0.8	U				
88-75-5	2-Nitrophenol	1.	U	1.	U	1.	U	1.	U				
105-67-9	2,4-Dimethylphenol	2.	U	2.	U	2.	U	2.	U				
111-91-1	bis(2-Chloroethoxy)methane	1.	U	1.	U	1.	U	1.	U				
120-83-2	2,4-Dichlorophenol	1.	U	1.	U	1.	U	1.	U				
120-82-1	1,2,4-Trichlorobenzene	0.8	U	0.8	U	0.8	U	0.8	U				
91-20-3	Naphthalene	0.9	U	0.9	U	0.9	U	0.9	U				
106-47-8	4-Chloroaniline	9.	U	9.	U	9.	U	9.	U				
87-68-3	Hexachlorobutadiene	1.	U	1.	U	1.	U	1.	U				
59-50-7	4-Chloro-3-methylphenol	1.	U	1.	U	1.	U	1.	U				
91-57-6	2-Methylnaphthalene	1.	U	1.	U	1.	U	1.	U				
77-47-4	Hexachlorocyclopentadiene	1.	U	1.	U	1.	U	1.	U				
88-06-2	2,4,6-Trichlorophenol	1.	U	1.	U	1.	U	1.	U				
95-95-4	2,4,5-Trichlorophenol	1.	U	1.	U	1.	U	1.	U				
91-58-7	2-Chloronaphthalene	1.	U	1.	U	1.	U	1.	U				
88-74-4	2-Nitroaniline	1.	U	1.	U	1.	U	1.	U				
131-11-3	Dimethyl phthalate	1.	U	1.	U	1.	U	1.	U				
208-96-8	Acenaphthylene	1.	U	1.	U	1.	U	1.	U				
606-20-2	2,6-Dinitrotoluene	1.	U	1.	U	1.	U	1.	U				
99-09-2	3-Nitroaniline	4.	U	4.	U	4.	U	4.	U				
83-32-9	Acenaphthene	1.	U	1.	U	1.	U	1.	U				
51-28-5	2,4-Dinitrophenol	15.	U	15.	U	15.	U	15.	U				
100-02-7	4-Nitrophenol	2.	U	2.	U	2.	U	2.	U				
132-64-9	Dibenzofuran	1.	U	1.	U	1.	U	1.	U				
121-14-2	2,4-Dinitrotoluene	2.	U	2.	U	2.	U	2.	U				
84-66-2	Diethylphthalate	2.	U	2.	U	2.	U	2.	U				
7005-72-3	4-Chlorophenylphenylether	1.	U	1.	U	1.	U	1.	U				

*** Validation Complete ***

NAVAL AIR STATION PENSACOLA
CATEGORY 7, SITE 4
Army Rubble Disposal Area

SVOA									
	SAMPLE ID ------->	004-G-GSO1-01		004-G-GS02-01		004-H-GS02-01		004-G-GS03-01	
	ORIGINAL ID ----->	004GGS0101		004GGS0201		004HGS0201		004GGS0301	
	LAB SAMPLE ID --->	5646-01		5643-01		5643-03		5643-02	
	ID FROM REPORT -->	004GGS0101		004GGS0201		004HGS0201		004GGS0301	
	SAMPLE DATE ----->	05/07/96		05/06/96		05/06/96		05/06/96	
	DATE EXTRACTED -->	05/08/96		05/07/96		05/07/96		05/07/96	
	DATE ANALYZED --->	05/ 13/96		05/10/96		05/10/96		05/10/96	
	MATRIX ---------->	Water		Uater		Water		Water	
	UNITS ---------->	UG/L	A	UG/L	A	UG/L	A	UG/L	A
CAS #	Parameter	SITE4W	VAL	SITE4W	VAL	SITE4W	VAL	SITE4W	VAL
86-73-7	Fluorene	2.	U	2.	U	2.	U	2.	U
100-01-6	4-Nitroaniline	2.	U	2.	U	2.	U	2.	U
534-52-1	2-Methyl-4,6-Dinitrophenol	2.	U	2.	U	2.	U	2.	U
86-30-6	N-Nitrosodiphenylamine	2.	U	2.	U	2.	U	2.	U
101-55-3	4-Bromophenyl-phenylether	2.	U	2.	U	2.	U	2.	U
118-74-1	Hexachlorobenzene	2.	U	2.	U	2.	U	2.	U
87-86-5	Pentachlorophenol	2.	U	2.	U	2.	U	2.	U
85-01-8	Phenanthrene	1.	U	1.	U	1.	U	1.	U
120-12-7	Anthracene	1.	U	1.	U	1.	U	1.	U
86-74-8	Carbazole	2.	U	2.	U	2.	U	2.	U
84-74-2	Di-n-butylphthalate	2.	U	2.	U	2.	U	2.	U
206-44-0	Fluoranthene	1.	U	1.	U	1.	U	1.	U
129-00-0	Pyrene	1.	U	1.	U	1.	U	1.	U
85-68-7	Butylbenzylphthalate	0.8	J	3.	U	4.		3.	U
91-94-1	3,3'-Dichlorobenzidine	9.	U	9.	U	9.	U	9.	U
56-55-3	Benzo(a)anthracene	1.	U	1.	U	1.	U	1.	U
218-01-9	Chrysene	1.	U	1.	U	1.	U	1.	U
117-81-7	bis(2-Ethylhexyl)phthalate (BEHP)	2.	U	2.	U	2.	U	2.	U
117-84-0	Di-n-octyl phthalate	2.	U	2.	U	2.	U	2.	U
205-99-2	Benzo(b)fluoranthene	2.	U	2.	U	2.	U	2.	U
207-08-9	Benzo(k)fluoranthene	4.	U	4.	U	4.	U	4.	U
50-32-8	Benzo(a)pyrene	1.	U	1.	U	1.	U	1.	U
193-39-5	Indeno(1,2,3-cd)pyrene	1.	U	1.	U	1.	U	1.	U
53-70-3	Dibenz(a,h)anthracene	1.	U	1.	U	1.	U	1.	U
191-24-2	Benzo(g,h,i)perylene	1.	U	1.	U	1.	U	1.	U

+ Validation Complete ***

NAVAL AIR STATION PENSACOLA
CATEGORY 7, SITE 4
Army Rubble Disposal Area

VOA																	
	SAMPLE ID ------->	004-S-0001-01		004-S-0001-01 RE		004-S-0001-07		004-S-0002-01		004-S-0002-01 RE		004-S-0002-06	
	ORIGINAL ID ----->	004S000101		004S000101		004S000107		004S000201		004S000201		004S000206	
	LAB SAMPLE ID --->	5606-01		5606-01RE		5606-02		5606-03		5606-03RE		5606-04	
	ID FROM REPORT -->	004S000101		004S000101		004S000107		004S000201		004S000201		004S000206	
	SAMPLE DATE ---->	04/05/96		04/05/96		04/05/96		04/05/96		04/05/96		04/05/96	
	DATE EXTRACTED -->			04/11/96		04/11/96		04/11/96		04/11/96		04/11/96	
	DATE ANALYZED --->	04/09/96		04/10/96		04/09/96		04/10/96		04/10/96		04/10/96	
	MATRIX ---------->	Soil		Soil		Soil		Soil		Soil		Soil	
	UNITS ---------->	UG/KG	A	UG/KG	C	UG/KG	A	UG/KG	A	UG/KG	C	UG/KG	A
CAS #	Parameter	SITE04	VAL	SITE04	VAL	SITE04	VAL	SITE04	VAL	SITE04	VAL	SITE04	VAL
74-97-5	Chlorobromomethane	0.1	UJ	0.1	UR	0.1	U	0.1	UJ	0.1	UR	0.1	U
74-87-3	Chloromethane	0.6	UJ	0.6	UR	0.6	U	0.6	UJ	0.6	UR	0.6	U
74-83-9	Bromomethane	1.	UJ	1.	UR	1.	U	1.	UJ	1.	UR	1.	U
75-01-4	Vinyl chloride	0.9	UJ	0.9	UR	0.9	U	0.9	UJ	0.9	UR	0.9	U
75-00-3	Chloroethane	0.3	UJ	0.3	UR	0.3	U	0.3	UJ	0.3	UR	0.3	U
75-09-2	Methylene chloride	0.9	UJ	0.9	UR	0.9	U	0.9	UJ	0.9	UR	0.9	U
67-64-1	Acetone	40.	J	1.	UR	35.		1.	UJ	1.	UR	25.	
75-15-0	Carbon disulfide	0.7	UJ	0.7	UR	0.7	U	0.7	UJ	0.7	UR	0.7	U
75-35-4	1,1-Dichloroethene	1.	UJ	1.	UR	1.	U	1.	UJ	1.	UR	1.	U
75-34-3	1,1-Dichloroethane	0.4	UJ	0.4	UR	0.4	U	0.4	UJ	0.4	UR	0.4	U
156-59-2	cis-1,2-Dichloroethene	0.3	UJ	0.3	UR	0.3	U	0.3	UJ	0.3	UR	0.3	U
156-60-5	trans-1,2-Dichloroethene	0.3	UJ	0.3	UR	0.3	U	0.3	UJ	0.3	UR	0.3	U
67-66-3	Chloroform	0.4	UJ	0.4	UR	0.4	U	0.3	UJ	0.3	UR	0.4	U
107-06-2	1,2-Dichloroethane	0.5	UJ	0.5	UR	0.5	U	0.5	UJ	0.5	UR	0.5	U
78-93-3	2-Butanone (MEK)	2.	UJ	2.	UR	2.	U	2.	UJ	2.	UR	2.	U
71-55-6	1,1,1-Trichloroethane	0.4	U	0.4	UR	0.4	U	0.4	U	0.4	UR	0.4	U
56-23-5	Carbon tetrachloride	0.5	U	0.5	UR	0.5	U	0.5	U	0.5	UR	0.5	U
75-27-4	Bromodichloromethane	1.	U	1.	UR	1.	U	1.	U	1.	UR	1.	U
78-87-5	1,2-Dichloropropane	0.2	U	0.2	UR	0.2	U	0.2	U	0.2	UR	0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.3	U	0.3	UR	0.3	U	0.3	U	0.3	UR	0.3	U
79-01-6	Trichloroethene	0.8	U	0.8	UR	0.8	U	0.8	U	0.8	UR	0.8	U
124-48-1	Dibromochloromethane	0.5	U	0.5	UR	0.5	U	0.5	U	0.5	UR	0.5	U
79-00-5	1,1,2-Trichloroethane	0.3	U	0.3	UR	0.3	U	0.3	U	0.3	UR	0.3	U
71-43-2	Benzene	0.8	U	0.8	UR	0.8	U	0.8	U	0.8	UR	0.8	U
10061-02-6	trans-1,3-Dichloropropene	0.7	U	0.7	UR	0.6	U	0.6	U	0.6	UR	0.7	U
75-25-2	Bromoform	0.4	U	0.5	UR	0.4	U	0.4	U	0.4	UR	0.4	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	1.	U	1.	UR	1.	U			1.	UR	1.	U
591-78-6	2-Hexanone	2.	UJ	2.	UR	2.	U	2.	UJ	2.	UR	2.	U
127-18-4	Tetrachloroethene	0.9	UJ	0.9	UR	0.8	U	0.8	UJ	0.8	UR	0.9	U
79-34-5	1,1,2,2-Tetrachloroethane	0.8	UJ	0.8	UR	0.8	U	0.8	UJ	0.8	UR	0.8	U
106-93-4	1,2-Dibromoethane	1.	UJ	1.	UR	1.	U	1.	UJ	1.	UR	1.	U
108-88-3	Toluene	0.3	UJ	0.3	UR	0.3	U	0.3	UJ	0.3	UR	0.3	U
108-90-7	Chlorobenzene	0.2	UJ	0.2	UR	0.2	U	0.2	UJ	0.2	UR	0.2	U
100-41-4	Ethylbenzene	0.3	UJ	0.3	UR	0.3	U	0.3	UJ	0.3	UR	0.3	U
100-42-5	Styrene	0.2	UJ	0.2	UR	0.2	U	0.2	UJ	0.2	UR	0.2	U
1330-20-7	Xylene (Total)	0.2	UJ	0.2	UR	0.2	U	0.2	UJ	0.2	UR	0.2	U

*** Validation Complete ***

NAVAL AIR STATION PENSACOLA
CATEGORY 7, SITE 4
Army Rubble Disposal Area

VOA						
SAMPLE ID ------->	004-S-0001-01	004-S-0001-01 RE	004-S-0001-07	004-S-0002-01	004-S-0002-01 RE	064-S-0002-06
ORIGINAL ID ----->	004S000101	004S000101	004S000107	004S000201	004S000201	004S000206
LAB SAMPLE ID --->	5606-01	5606-01RE	5606-02	5606-03	5606-03RE	5606-04
ID FROM REPORT -->	004S000101	004S000101	004S000107	004S000201	004S000201	0045000206
SAMPLE DATE ----->	04/05/96	04/05/96	04/05/96	04/05/96	04/05/96	04/05/96
DATE EXTRACTED -->		04/11/96	04/11/96	04/11/96	04/11/96	64/11 /96
DATE ANALYZED --->	04/09/96	04/10/96	04/09/96	04/10/96	04/10/96	04/10/96
MATRIX ---------->	Soil	Soil	Soil	Soil	Soil	Soil
UNITS ---------->	UG/KG A	UG/KG C	UG/KG A	UG/KG A	UG/KG C	UG/KG A

CAS #	Parameter	SITE04	VAL	SITE04	VAL	SITE04	VAL	SITE04	VAL	SITE04	VAL	SITE04	VAL
541-73-1	1,3-Dichlorobenzene	0.5	UJ	0.5	UR	0.5	U	0.4	UJ	0.4	UR	0.5	U
106-46-7	1,4-Dichlorobenzene	0.2	UJ	0.2	UR	0.2	U	2.	J	0.2	UR	0.2	U
95-50-1	1,2-Dichlorobenzene	0.4	UJ	0.4	UR	0.4	U	0.4	UJ	0.4	UR	0.4	U
96-12-8	1,2-Dibromo-3-Chloropropane	1.	UJ	1.	UR	1.	U	1.	UJ	1.	UR	1.	U

*** Validation Complete ***

NAVAL AIR STATION PENSACOLA
CATEGORY 7, SITE 4
Army Rubble Disposal Area

VOA													
	SAMPLE ID ------->	004-S-0003-01		004-S-0003-01 RE		004-S-0003-07		004-T-G001-01		004-G-GS01-01		004-G-GS02-01	
	ORIGINAL ID ----->	004S000301		004S000301		004S000307		004TG00101		004GGS0101		004GGS0201	
	LAB SAMPLE ID --->	5606-05		5606-05RE		5606-06		5646-02		5646-01		5643-01	
	ID FROM REPORT -->	004S000301		004S000301		004S000307		004TG00101		004GGS0101		004GGS0201	
	SAMPLE DATE ----->	04/05/96		04/05/96		04/05/96		05/07/96		05/07/96		05/06/96	
	DATE EXTRACTED -->	04/11/96		04/11/96		04/11/96							
	DATE ANALYZED --->	04/10/96		04/10/96		04/10/96		05/08/96		05/08/96		05/07/96	
	MATRIX ---------->	Soil		Soil		Soil		Water		Water		Water	
	UNITS ---------->	UG/KG	A	UG/KG		UG/KG	A	UG/L	B	UG/L	A	UG/L	A
CAS #	Parameter	SITE04	VAL	SITE04	VAL	SITE04	VAL	SITE4W	VAL	SITE4W	VAL	SITE4W	VAL
74-97-5	Chlorobromomethane	0.1	U	0.1	UR	0.1	U	0.1	U	0.1	U	0.1	U
74-87-3	Chloromethane	0.6	U	0.6	UR	0.6	U	0.2	U	0.2	U	0.2	U
74-83-9	Bromomethane	1.	U	1.	UR	1.	U	0.2	U	0.2	U	0.2	U
75-01-4	Vinyl chloride	0.9	U	0.9	UR	0.9	U	0.2	U	0.2	U	0.2	U
75-00-3	Chloroethane	0.3	U	0.3	UR	0.3	U	0.2	U	0.2	U	0.2	U
75-09-2	Methylene chloride	0.8	U	0.8	UR	0.9	U	0.8	J	1.	U	1.	U
67-64-1	Acetone	1.	U	1.	UR	30.		0.3	U	0.3	UR	0.3	UR
75-15-0	Carbon disulfide	0.7	U	0.7	UR	0.7	U	0.2	U	0.2	U	0.2	U
75-35-4	1,1-Dichloroethene	1.	U	1.	UR	1.	U	0.2	U	0.2	U	0.2	U
75-34-3	1,1-Dichloroethane	0.4	U	0.4	UR	0.4	U	0.1	U	0.1	U	0.1	U
156-59-2	cis-1,2-Dichloroethene	0.3	U	0.3	UR	0.3	U	0.3	U	0.3	U	0.3	U
156-60-5	trans-1,2-Dichloroethene	0.3	U	0.3	UR	0.3	U	0.3	U	0.3	U	0.3	U
67-66-3	Chloroform	0.3	U	0.3	UR	0.3	U	0.1	U	0.1	U	0.1	U
107-06-2	1,2-Dichloroethane	0.5	U	0.5	UR	0.5	U	0.1	U	0.1	U	0.1	U
78-93-3	2-Butanone (MEK)	2.	U	2.	UR	2.	U	0.2	U	0.2	UR	0.2	UR
71-55-6	1,1,1-Trichloroethane	0.4	U	0.4	UR	0.4	U	0.1	U	0.1	U	0.1	U
56-23-5	Carbon tetrachloride	0.5	U	0.5	UR	0.5	U	0.2	U	0.2	U	0.2	U
75-27-4	Bromodichloromethane	1.	U	1.	UR	1.	U	0.1	U	0.1	U	0.1	U
78-87-5	1,2-Dichloropropane	0.2	U	0.2	UR	0.2	U	0.2	U	0.2	U	0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.3	U	0.3	UR	0.3	U	0.1	U	0.1	U	0.1	U
79-01-6	Trichloroethene	0.8	U	0.8	UR	0.8	U	0.1	U	0.1	U	0.1	U
124-48-1	Dibromochloromethane	0.5	U	0.5	UR	0.5	U	0.3	U	0.3	U	0.3	U
79-00-5	1,1,2-Trichloroethane	0.3	U	0.3	UR	0.3	U	0.3	U	0.3	U	0.3	U
71-43-2	Benzene	0.7	U	0.7	UR	0.8	U	0.1	U	0.1	U	0.1	U
10061-02-6	trans-1,3-Dichloropropene	0.6	U	0.6	UR	0.6	U	0.2	U	0.2	U	0.2	U
75-25-2	Bromoform	0.4	U	0.4	UR	0.4	U	0.2	U	0.2	U	0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	1.	U	1.	UR	1.	U	0.2	U	0.2	U	0.2	U
591-78-6	2-Hexanone	2.	UJ	2.	UR	2.	UJ	0.4	U	0.4	U	0.4	U
127-18-4	Tetrachloroethene	0.8	UJ	0.8	UR	0.8	UJ	0.2	U	0.2	U	0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.8	UJ	0.8	UR	0.8	UJ	0.2	U	0.2	U	0.2	U
106-93-4	1,2-Dibromoethane	0.9	UJ	0.9	UR	0.9	UJ	0.6	U	0.6	U	0.6	U
108-88-3	Toluene	0.3	UJ	0.3	UR	0.3	UJ	0.1		0.1	U	0.1	U
108-90-7	Chlorobenzene	0.2	UJ	0.2	UR	0.2	UJ	0.1	U	0.1	U	0.1	U
100-41-4	Ethylbenzene	0.3	UJ	0.3	UR	0.3	UJ	0.1	U	0.1	U	0.1	U
100-42-5	Styrene	0.2	UJ	0.2	UR	0.2	UJ	0.1	U	0.1	U	0.1	U
1330-20-7	Xylene (Total)	0.2	UJ	0.2	UR	0.2	UJ	0.1	U	0.1	U	0.1	U

*** Validation Complete ***

NAVAL AIR STATION PENSACOLA
CATEGORY 7, SITE 4
Army Rubble Disposal Area

VOA																	
	SAMPLE ID ------->	004-S-0003-01		004-S-0003-01 RE		004-S-0003-07		004-T-G001-01		004-G-GS01-01		004-G-GS02-01	
	ORIGINAL ID ----->	004S000301		004S000301		004S000307		004TG00101		004GGS0101		004GGS0201	
	LAB SAMPLE ID --->	5606-05		5606-05RE		5606-06		5646-02		5646-01		5643-01	
	ID FROM REPORT -->	004S000301		004S000301		004S000307		004TG00101		004GGS0101		004GGS0201	
	SAMPLE DATE ----->	04/05/96		04/05/96		04/05/96		05/07/96		05/07/96		05/06/96	
	DATE EXTRACTED -->	04/11/96		04/11/96		04/11/96		05/08/96		05/08/96		05/07/96	
	DATE ANALYZED --->	04/10/96		04/10/96		04/10/96		Water		Water		Water	
	MATRIX ---------->	Soil		Soil		Soil		UG/L	B	UG/L	A	UG/L	A
	UNITS ---------->	UG/KG	A	UG/KG	C	UG/KG	A						
CAS #	Parameter	SITE04	VAL	SITE04	VAL	SITE04	VAL	SITE4W	VAL	SITE4W	VAL	SITE4W	VAL
541-73-1	,3-Dich Lorobenrene	0.4	UJ	0.4	UR	0.4	UJ	0.3	U	0.3	U	0.3	U
106-46-7	,4-Dichlorobenzene	0.2	UJ	0.2	UR	0.2	UJ	0.4	U	0.4	U	0.4	U
95-50-1	,2-Dichlorobenzene	0.4	UJ	0.4	UR	0.4	UJ	0.4	U	0.4	U	0.4	U
96-12-I	,2-Dibromo-3-Chloropropane	0.9	UJ	0.9	UR	0.9	UJ	0.8	U	0.8	UR	0.8	UR

*** Validation Complete ***

NAVAL AIR STATION PENSACOLA
CATEGORY 7, SITE 4
Army Rubble Disposal Area

VOA											
	SAMPLE ID ------->	004-H-GS02-01		004-G-GS03-01		004-T-S001-01					
	ORIGINAL ID ----->	004HGS0201		004GGS0301		004TS00101					
	LAB SAMPLE ID --->	5643-03		5643-02		5606-07					
	ID FROM REPORT -->	004HGS0201		004GGS0301		004TS00101					
	SAMPLE DATE ----->	05/06/96		05/06/96		04/08/96					
	DATE EXTRACTED -->					04/11/96					
	DATE ANALYZED --->	05/07/96		05/07/96		04/10/96					
	MATRIX ---------->	Water		Water		Water					
	UNITS ---------->	UG/L	/	UG/L	/	UG/L	B				
CAS #	Parameter	SITE4W	VAL	SITE4W	VAL	SITE04	VAL				
74-97-5	Chlorobromomethane	0.1	U	0.1	U	0.1	U				
74-87-3	Chloromethane	0.2	U	0.2	U	0.2	U				
74-83-9	Bromomethane	0.2	U	0.2	U	0.2	U				
75-01-4	Vinyl chloride	0.2	U	0.2	U	0.2	U				
75-00-3	Chloroethane	0.2	U	0.2	U	0.2	U				
75-09-2	Methylene chloride	1.	U	1.	U	1.					
67-64-1	Acetone	0.3	UR	0.3	UR	0.3	U				
75-15-0	Carbon disulfide	0.2	U	0.2	U	0.4					
75-35-4	1,1-Dichloroethene	0.2	U	0.2	U	0.2	U				
75-34-3	1,1-Dichloroethane	0.1	U	0.1	U	0.1	U				
156-59-2	cis-1,2-Dichloroethene	0.3	U	0.3	U	0.3	U				
156-60-5	trans-1,2-Dichloroethene	0.3	U	0.3	U	0.3	U				
67-66-3	Chloroform	0.1	U	0.1	U	0.1					
107-06-2	1,2-Dichloroethane	0.1	U	0.1	U	0.1	U				
78-93-3	2-Butanone (MEK)	0.2	UR	0.2	UR	0.2	U				
71-55-6	1,1,1-Trichloroethane	0.1	U	0.1	U	0.1	U				
56-23-5	Carbon tetrachloride	0.2	U	0.2	U	0.2	U				
75-27-4	Bromodichloromethane	0.1	U	0.1	U	0.1	U				
78-87-5	1,2-Dichloropropane	0.2	U	0.2	U	0.2	U				
10061-01-5	cis-1,3-Dichloropropene	0.1	U	0.1	U	0.1	U				
79-01-6	Trichloroethene	0.1	U	0.1	U	0.1	U				
124-48-1	Dibromochloromethane	0.3	U	0.3	U	0.3	U				
79-00-5	1,1,2-Trichloroethane	0.3	U	0.3	U	0.3	U				
71-43-2	Benzene	0.1	U	0.1	U	0.1	U				
10061-02-6	trans-1,3-Dichloropropene	0.2	U	0.2	U	0.2	U				
75-25-2	Bromoform	0.2	U	0.2	U	0.2	U				
108-10-1	4-Methyl-2-Pentanone (MIBK)	0.2	U	0.2	U	0.2	U				
591-78-6	2-Hexanone	0.4	U	0.4	U	0.4	U				
127-18-4	Tetrachloroethene	0.2	U	0.2	U	0.2	U				
79-34-5	1,1,2,2-Tetrachloroethane	0.2	U	0.2	U	0.2	U				
106-93-4	1,2-Dibromoethane	0.6	U	0.6	U	0.6	U				
108-88-3	Toluene	0.1	U	0.1	U	0.1	U				
108-90-7	Chlorobenzene	0.1	U	0.1	U	0.1	U				
100-41-4	Ethylbenzene	0.1	U	0.1	U	0.1	U				
100-42-5	Styrene	0.1	U	0.1	U	0.1	U				
1330-20-7	Xylene (Total)	0.1	U	0.1	U	0.1	U				

*** Validation Complete ***

NAVAL AIR STATION PENSACOLA
CATEGORY 7, SITE 4
Army Rubble Disposal Area

VOA										
	SAMPLE ID ------->	004-H-GS02-01		004-G-GS03-01		004-T-S001-01				
	ORIGINAL ID ----->	004HGS0201		004GGS0301		004TS00101				
	LAB SAMPLE ID --->	5643-03		5643-02		5606-07				
	ID FROM REPORT -->	004HGS0201		004GGS0301		004TS00101				
	SAMPLE DATE ----->	05/06/96		05/06/96		04/08/96				
	DATE EXTRACTED -->					04/11/96				
	DATE ANALYZED --->	05/07/96		05/07/96		04/10/96				
	MATRIX ---------->	Water		Water		Water				
	UNITS ---------->	UG/L	A	UG/L	A	UG/L	B			
CAS #	Parameter	SITE4W	VAL	SITE4W	VAL	SITE04	VAL			
541-73-1	1,3-Dichlorobenzene	0.3	U	0.3	U	0.3	U			
106-46-7	1,4-Dichlorobenzene	0.4	U	0.4	U	0.4	U			
95-50-1	1,2-Dichlorobenzene	0.4	U	0.4	U	0.4	U			
96-12-8	1,2-Dibromo-3-Chloropropane	0.8	UR	0.8	UR	0.8	U			

*** Validation Complete ***

Appendix F

Grain Sue Analysis Results

1

MISC. INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

004S000206

Lab Name S-CUBED Contract:

Lab Code s3 Case No.: 0070-00038 SAS No.: SDG No.: SITE4/7

Matrix (soil/water): SOIL Lab Sample ID: 5606-04

Level (low/med): LOW Date Received: 04/09/96

% Solids: NA

CAS No.	Analyte	Dil Fact.	Concentration	C	Q	M	Units
S-100	> 4.75mm	1.0		U		NA	%
s-101	4.75mm to 2.00mm	1.0		U		NA	%
s-102	2.00mm to 425um	1.0	22.5			G	%
S-103	425um to 75um	1.0	76.4			G	%
S-104	c 75 um	1.0	0.71			G	%
S-105	% Recovery	1.0	99.6			G	%

Comments:

MAXWELL
S-CUBED

PROJECT: 0070-00038
ANALYST: LC
DATE: 4/18/96

GRAINSIZE
(D422)

SAMPLE ID	%Recovery Greater than 4.75mm	%Recovery Between 4.75 & 2.00mm	%Recovery Between 2.00mm & 425um	%Recovery Between 425 & 75um	%Recovery Smaller than 75um	client sample ID
5602-03	0.00	0.00	29.59	69.67	.53	008S000407
5602-07	1.39	3.11	25.50	68.95	0.72	008S000707
5606-04	0.00	0.00	22.52	76.39	0.71	004S000206
5606-21	0.00	0.00	43.94	55.76	0.17	007S000207
5606-25	0.00	0.14	44.72	54.51	0.36	~078000407
5610-03	0.00	0.00	43.28	54.66	1.93	0168000104
5610-11	0.00	0.00	19.98	78.80	0.94	016S000607

4

MAXWELL
S-CUBED

PROJECT: 0070-00038
ANALYST: LC
DATE : 4/19/96

GRAINSIZE
(0422)

SAMPLE ID	%Recovery Greater than 4.75mm	\Recovery Between 4.75 & 2.00mm	%Recovery Between .00mm & 425u	%Recovery Between 425 & 75um	%Recovery Smaller than 75um	client Sample ID
5613-05	0.00	0.24	37.52	58151	3.51	016S001004
5613-05REP	0.00	0.48	37.14	58.47	3.57	0166001004REP
5614-03	0.00	1.09	48.31	50.17	0.33	022S000107
5614-06	0.31	0.11	39.34	59.a4	0.30	022S000207

035

MAXWELL
S-CUBED

PROJECT: 0070-00038
ANALYST: LC
DATE: 4/18/96

GRAIN SIZE
(D422)

SAMPLE ID	SAMPLE WT. (g)	REATER THA 4.75mm	BETWEEN	BETWEEN	BETWEEN 425 & 75um	MALLER THA 75um	TOTAL WT. ECOVERED(	CLIENT SAMPLE ID
56 [illegible]	186.26	0	0	55.11	129.76	0.98	185.85	0085000407
5602-07	184.46	2.57	5.74	47.04	127.19	1.33	183.87	0086000707
5606-94	178.99	0	0	40.31	136.73	1.27	178.31	0045000206
5606-21	185.65	0	0	81.57	103.51	0.32	185.40	0075000207
5606-25	186.69	0	0.26	83.48	101.76	0.67	186.17	0076000407
5610-03	182.85	0	0	79.14	99.94	3.52	182.60	0168000104
5610-11	186.63	0	0	31.28	147.06	1.76	186.10	0165000607

MAXWELL
S-CUBED

PROJECT: 0070-00038
ANALYST: LC
DATE: 4/19/96

GRAIN SIZE
(D422)

SAMPLE ID	SAMPLE WT. g)	REATER THA 4.75mm	BETWEEN .75 & 2.00m	BETWEEN 00mm & 425	BETWEEN 425 & 75um	MALLER THA 75um	TOTAL WT. ECOVERED(	CLIENT SAMPLE ID
5613-	172.15	0	0.41	64.59	100.72	6.05	171.77	016S001004
5613-05REP	170.93	0	0.82	63.48	99.95	6.11	170.36	016S001004REP
5614-03	189.71	0	2.06	91.65	95.17	0.62	189.50	022S000107
5614-06	188.78	0.59	0.20	74.26	112.97	0.57	188.59	022S000207

037 17

MAXWELL
S-CUBED

PROJBCT: 0070-00030
ANALYST: MM,CC
DATE: 4/8/96

GRAIN SIZE (0422)

SAMPLE ID.	INITIAL TARE	WET WT. (g)	DRY WT. (g)	INITIAL WT.(g)	TOTAL WT. RECOVERY(g)	%REC (g)	CLIBNT SAMPLE ID
5602-03		200.04	191.72	186.26	185.85	99.78	008S000407
5602-07	5.54	201.13	190.00	184.46	183.87	99.68	0085000707
5606-04	5.52	200.14	184.51	178.99	178.31	99.62	0045000206
5606-21	5.53	200.11	191.4	185.65	185.40	99.87	007S000207
5606-25	5.49	200.05	192.18	186.69	186.17	99.72	0078000407
5610-03	5.49	200.06	188.34	182.85	182.60	99.86	016S000104
5610-11	5.53	200.08	192.16	186.63	186.10	99.72	0165000607

038/18

MAXWELL
S-CUBBD

PROJECT: 0070-00038
ANALYST: LC
DATE: 4/18/96

GRAIN SIZE (D422)

SAMPLE ID.	INITIAL TARE (g)	WET WT. (g)	DRY WT. (g)	INITIAL WT.(g)	TOTAL WT. RECOVERY(g)	%REC (g)	CLIENT SAMPLE ID
5613-05	5.29	200.38	177.44	172.15	171.77	99.78	016S001004
5613-05REP	5.55	200.54	176.48	170.93	170.36	99.67	016S001004REP
5614-03	5.49	200.86	195.20	189.71	189.50	99.89	022S000107
5614-06	5.34	200.46	194.12	168.78	188.59	99.90	0228000207

JAN 10 / 08:44 CELLULOSE CORPORATION