

N60508.AR.001083
NAS WHITING FIELD
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REMEDIAL INVESTIGATION REPORT SITE 15, SOUTHWEST LANDFILL NAS WHITING
FIELD FL
12/1/1999
HARDING LAWSON ASSOCIATES

REMEDIAL INVESTIGATION REPORT

SITE 15, SOUTHWEST LANDFILL

**NAVAL AIR STATION WHITING FIELD
MILTON, FLORIDA**

Unit Identification Code: N60508

Contract No.: N62467-89-D-0317/116

Prepared by:

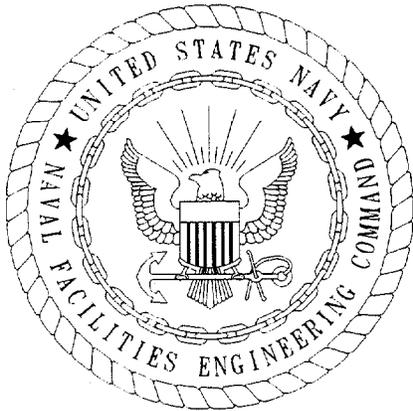
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December 1999



CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

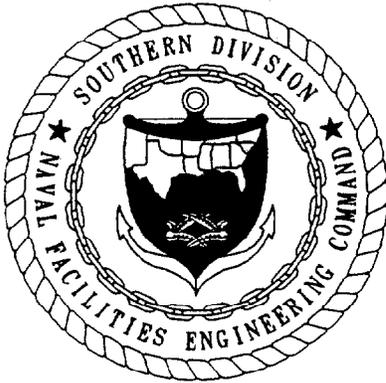
The Contractor, Harding Lawson Associates (formerly ABB Environmental Services, Inc.), hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0317/116 are complete and accurate and comply with all requirements of this contract.

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(DFAR 252.227-7036)



FOREWORD

To meet its mission objectives, the U.S. Navy performs a variety of operations, some requiring the use, handling, storage, or disposal of hazardous materials. Through accidental spills and leaks and conventional methods of past disposal, hazardous materials may have entered the environment in ways unacceptable by today's standards. With growing knowledge of the long-term effects of hazardous materials on the environment, the Department of Defense (DOD) initiated various programs to investigate and remediate conditions related to suspected past releases of hazardous materials at their facilities.

One of these programs is the Installation Restoration (IR) program. This program complies with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act, the Resource Conservation and Recovery Act and the Hazardous and Solid Waste Amendments of 1984. These acts establish the means to assess and clean up hazardous waste sites for both private-sector and Federal facilities. The CERCLA and SARA acts form the basis for what is commonly known as the Superfund program.

Originally, the Navy's part of this program was called the Naval Assessment and Control of Installation Pollutants (NACIP) program. Early reports reflect the NACIP process and terminology. The Navy eventually adopted the program structure and terminology of the standard IR program.

The IR program is conducted in several stages as follows:

- preliminary assessment (PA),
- site inspection (SI) (formerly the PA and SI steps were called the initial assessment study under the NACIP program),
- remedial investigation and feasibility study, and
- remedial design and remedial action.

The Southern Division, Naval Facilities Engineering Command manages and the U.S. Environmental Protection Agency and the Florida Department of Environmental

Protection (formerly Florida Department of Environmental Regulation) oversee the Navy environmental program at NAS Whiting Field. All aspects of the program are conducted in compliance with State and Federal regulations, as ensured by the participation of these regulatory agencies.

Questions regarding the CERCLA program at NAS Whiting Field should be addressed to Ms. Linda Martin, Code 1859, at (843) 820-5574.

EXECUTIVE SUMMARY

A remedial investigation and feasibility study (RI/FS) is being conducted at Naval Air Station (NAS) Whiting Field in Milton, Florida, by Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) as part of the Department of Defense Installation Restoration (IR) program. The IR program was designed to identify and abate or control contaminant migration resulting from past operations at naval installations.

A phased approach was implemented to conduct the RI. Phase I was completed in August 1992. The subsequent phases of the RI were designated as Phase IIA and Phase IIB. Fieldwork for Phase IIA was completed in March 1994. RI Phase IIB was completed in November 1996.

This RI report contains the results of assessment activities used to characterize site-specific chemicals detected in environmental media (surface soil, subsurface soil, and groundwater) at Site 15, Southwest Landfill at NAS Whiting Field. Data obtained from these activities were used to evaluate the nature and extent of contamination at the site and support feasibility studies (if required) and baseline risk assessments. Human health and ecological baseline risk assessments are included with the RI report.

The fieldwork conducted during the RI included the following tasks:

- geophysical survey,
- soil gas survey,
- test pit investigations,
- surface soil sampling,
- subsurface soil sampling,
- monitoring well installation,
- groundwater sampling, and
- hydrogeologic investigations.

Soil gas samples were analyzed for methane and other volatile organic compounds (VOCs). Soil and groundwater samples were analyzed for target compound list organic analytes, and target analyte list inorganic analytes.

The following conclusions are based on results of the RI investigation activities at Site 15, Southwest Landfill, NAS Whiting Field.

- Geophysical surveys results suggested the presence of geophysical anomalies indicating buried ferromagnetic debris in a series of trenches covering approximately 15 of the 21 acres of the site.
- Ten test pits were excavated at the locations of geophysical anomalies at Site 15. Materials encountered during test pit excavations include construction debris, metallic debris, and aircraft parts.
- Methane and VOCs were detected during the soil gas survey conducted at Site 15. The highest soil gas concentrations (exceeding 5,000 parts per million [ppm] total VOCs and 5,000 ppm methane) were reported near the western boundary of the site.

- Three VOCs, three semivolatile organic compound (SVOCs), and three pesticide compounds were detected in Site 15 surface soil samples. Detected concentrations in all VOCs, SVOCs, and pesticides are lower than the U.S. Environmental Protection Agency (USEPA) Region III risk-based concentrations (RBCs) and Florida residential cleanup target levels for surface soil.
- Twenty inorganic analytes and cyanide were detected in the 30 surface soil samples. Ten inorganic analytes exceeded the background screening values for surface soil. Arsenic exceeded the USEPA Region III RBC and the Florida residential soil cleanup target level in 28 surface soil samples. The detected concentrations of arsenic also exceeded the Florida Department of Environmental Protection (FDEP)-approved site-specific nonresidential soil cleanup target level of 4.62 $\mu\text{g}/\ell$ in one sample. The arsenic concentration exceeded the USEPA Region III industrial RBC screening criterion in one surface soil sample.
- Three VOCs, seven SVOCs, and one pesticide compound were detected in Site 15 subsurface soil samples. None of the detected concentrations of VOCs, SVOCs, or pesticides exceeded the USEPA Region III RBCs for industrial-use soils. The polychlorinated biphenyl Aroclor-1242 was detected in one subsurface sample. Aroclor-1242 exceeded the Florida industrial-use soil cleanup target level and the USEPA Region III RBC industrial soil screening criterion in this sample. Phenol and 4-methylphenol were detected at concentrations exceeding the Florida cleanup target level for leaching to groundwater.
- Twenty inorganic analytes were detected in the five subsurface soil samples. Eight analytes (calcium, chromium, iron, manganese, potassium, vanadium, zinc, and cyanide) were detected at concentrations exceeding the background screening values. None of the detected concentrations exceeded industrial standards for either the Florida soil cleanup target levels or USEPA Region III RBCs.
- The pH values of the groundwater samples collected from monitoring wells were below the lower range for the Federal and State secondary MCLs of 6.5 Standard Units but were within the range of pH values observed in background groundwater samples collected at NAS Whiting Field.
- Five VOCs and four SVOCs were detected in groundwater samples collected from the shallow monitoring wells at Site 15. None of the compounds with the exception of bis(2-ethylhexyl)phthalate, were detected in the background groundwater samples and none of the detected concentrations exceeded their Federal or Florida MCLs. The pesticide compound 4,4'-DDT was detected at a concentration exceeding the Florida groundwater guidance concentration.
- Eighteen inorganic analytes were detected in groundwater samples from shallow monitoring wells. Nine inorganic analytes, (aluminum, arsenic, cyanide, iron, magnesium, potassium, thallium, vanadium, and zinc) were detected at concentrations exceeding the background

screening concentration. Concentrations of aluminum, iron, and manganese were reported to exceed Federal MCLs and Florida groundwater guidance concentrations.

- Five VOCs (1,1-dichloroethene, 1,2-dichloroethene, trichloroethene, benzene, and xylene) and one SVOC (bis(2-ethylhexyl)phthalate) were detected in groundwater samples collected from intermediate depth monitoring wells. Bis(2-ethylhexyl)phthalate was the only compound detected in the background sample. Trichloroethene and benzene were both detected at concentrations exceeding Federal MCLs and Florida groundwater guidance concentrations.
- Fifteen inorganic analytes were detected in groundwater samples from intermediate depth wells. Seven analytes (arsenic, calcium, iron, lead, manganese, sodium, and zinc) were detected at concentrations exceeding the background screening criteria. Aluminum, iron, and manganese were detected at concentrations exceeding Federal MCLs and the Florida groundwater guidance concentrations.
- Five VOCs, two SVOCs, and one pesticide compound were detected in groundwater samples collected from the deep monitoring wells at Site 15. One SVOC (bis[2-ethylhexyl]phthalate) was the only organic compound detected in the background groundwater samples. Two compounds (1,1-dichloroethene and trichloroethene) were detected at concentrations that either equaled or exceeded Federal MCLs and Florida groundwater guidance concentrations.
- Sixteen inorganic analytes were detected in the groundwater samples from the Site 15 deep monitoring wells. Nine of the compounds including: antimony, arsenic, calcium, cobalt, copper, lead, manganese, potassium, and sodium were detected at concentrations exceeding the background screening concentration (Table 5-21). Three of the analytes, antimony, iron, and manganese, were detected at concentrations exceeding the Federal MCLs and Florida groundwater guidance concentrations.
- The extent of groundwater contamination downgradient of Site 15 has not been defined. Benzene and trichloroethene were detected in groundwater at concentrations above cleanup target levels and Federal MCLs between Site 15 and the base boundary.
- The groundwater flow direction is toward the southwest and likely discharges to Clear Creek. Clear Creek is located approximately 1,200 feet southwest of the site. The average horizontal hydraulic gradient for the site is 0.0066 feet per foot. The geometric mean for the hydraulic conductivity data for monitoring wells in the site area is 10.8 feet per day (ft/day) and the average seepage velocity value is 0.38 ft/day.
- The human health risk assessment identified three inorganic analytes as human health chemical of potential concern (HHCCPs) for surface soils at Site 15. Aroclor-1260 was identified as an HHCCP for subsurface soil. Thirteen analytes including 1,1-dichloroethene, 1,2-dichloroethene, benzene, chlorobenzene, trichloroethene, 1,4-

dichlorobenzene, bis(2-ethylhexyl)phthalate, 4,4'-DDT, aluminum, arsenic, iron, manganese, and thallium were identified as HHCPs for groundwater at Site 15.

- The HHCPs detected in surface soil do not pose unacceptable carcinogenic risks to the receptors evaluated based on evaluation of the samples using USEPA guidelines and target risk range.
- The total ELCR of 4×10^{-6} at Site 15, associated with exposure to soil by a hypothetical future resident, exceeds Florida's target risk level of concern 1×10^{-6} due to arsenic. The background levels of arsenic at Site 15 exceed the Florida residential soil cleanup target level and may result in an unacceptable carcinogenic risk. It is likely that naturally occurring arsenic contributes to the FDEP target risk-level exceedance.
- The ELCR for groundwater exceeds the USEPA acceptable risk range and the FDEP cancer level of concern due to 1,1-dichloroethene, arsenic, benzene, trichlorobenzene, and 1,4-dichlorobenzene; however, groundwater contamination is being addressed as a separate RI site under a facilitywide investigation.
- The ecological risk assessment (ERA) selected three VOCs (acetone, methylene chloride, and xylene) two SVOCs (di-n-butylphthalate and bis[2-ethylhexyl]phthalate) and five inorganic analytes (cyanide, lead, silver, vanadium, and zinc) as ecological chemicals of potential concern (ECPCs) for surface soil at Site 15. In addition, four VOCs (acetone, benzene, trichloroethene, xylene), two SVOCs (1,4-dichlorobenzene and bis[2-ethylhexyl]phthalate), one pesticide (4,4'-DDT), and nine inorganic analytes (aluminum, cobalt, iron, lead, manganese, mercury, silver, vanadium, and zinc) were identified as ECPCs in groundwater at the site.
- Risks were not identified for terrestrial wildlife resulting from exposure to ECPCs in surface soil; therefore, reductions in the survivability, growth, and reproduction of wildlife receptor populations at Site 15 are not expected to occur.
- Reduction in terrestrial plant and soil invertebrate biomass used as forage material was evaluated by comparing exposure concentrations for surface soil with toxicity benchmarks. Based on this comparison it is unlikely that plant and invertebrate biomass or plant cover availability would be reduced such that small mammal and bird populations at Site 15 would be affected.
- Potential risks for aquatic receptors were evaluated for exposures to ECPCs in groundwater. The concentrations of ECPCs in groundwater as they discharge to Clear Creek 1,200 feet downgradient of Site 15 were estimated based on application of a 10-fold attenuation factor to the RME concentration. Based on the screening evaluation of groundwater, risks to aquatic receptors in Clear Creek associated with exposure to groundwater ECPCs from Site 15 are not expected. The ERA for Site 39, Clear Creek Flood Plain, will provide additional information regarding potential risks to aquatic receptors in Clear Creek based on actual site-related surface water and sediment data.

- In summary, the results of the ERA suggest that risks are not predicted for ecological receptor populations at Site 15.

Based upon the interpretation of findings from the RI activities, a FS is recommended for Site 15 to evaluate potential strategies for the reduction in human health risks associated with surface and subsurface soil at the site. In addition, the presence of organic and inorganic analytes in Site 15 groundwater samples at concentration exceeding Florida's target risk levels indicates that additional sampling and remedial measures may be required. Leaching of contaminants phenol and 4-methylphenol from subsurface soil to groundwater will also need to be addressed. However, all groundwater contamination issues will be addressed as part of the ongoing RI for the Site 40, facilitywide groundwater study.

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GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
AQUIRE	Aquatic Information Retrieval
ATSDR	Agency for Toxic Substances and Disease Registry
AWQC	ambient water quality criteria
BAF	bioaccumulation factor
BAT	Bengt-Arne-Torstensson
bls	below land surface
°C	degrees Celsius
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CLP	Contract Laboratory Program
cm/sec	centimeters per second
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethene
DDT	dichlorodiphenyltrichloroethane
DQO	data quality objective
ECPC	ecological chemical of potential concern
ELCR	excess lifetime cancer risk
EM	electromagnetic
EPC	exposure point concentration
ERA	ecological risk assessment
ft/day	feet per day
ft/ft	feet per foot
ft/yr	feet per year
FS	feasibility study
GIR	General Information Report
HHPCP	human health chemical of potential concern
HHRA	human health risk assessment
HI	hazard index
HQ	hazard quotient
HRS	Hazard Ranking System
IAS	initial assessment study
IDL	instrument detection limit
IR	installation restoration
k_{oc}	carbon partitioning coefficient
LD ₅₀	lethal dose to 50 percent of test population
LDC	Laboratory Data Consultants, Inc.
LOAEL	lowest observed adverse effects level

GLOSSARY (Continued)

MAG	magnetometer
MCL	maximum contaminant level
mm Hg	millimeters mercury
MS/MSD	matrix spike and matrix spike duplicate
mg/kg	milligrams per kilogram
µg/kg	micrograms per kilogram
µg/l	micrograms per liter
NAS	Naval Air Station
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEESA	Naval Energy and Environmental Support Activity
NOAEL	no observable adverse effects level
NPL	National Priority List
NTU	nephelometric turbidity unit
OVA	organic vapor analyzer
PA	preliminary assessment
PARCC	precision, accuracy, representativeness, completeness, and comparability
PCB	polychlorinated biphenyl
PCPT	piezocone penetrometer test
PDE	potential dietary exposure
ppm	parts per million
PVC	polyvinyl chloride
%D	percent difference
%RPD	relative percent difference
%RSD	relative standard deviation
QA/QC	quality assurance and quality control
QAPP	quality assurance project plan
RBC	risk-based concentration
RG0	remedial goal option
RI	remedial investigation
RI/FS	remedial investigation and feasibility study
RME	reasonable maximum exposure
RRF	relative response factor
RTV	reference toxicity value
SARA	Superfund Amendment and Reauthorization Act
SDG	sample delivery group
SFF	site foraging frequency
SOUTHNAV- FACENCOM	Southern Division, Naval Facilities Engineering Command
SPCCs	system performance check compounds
SQL	sample quantitation limit
SU	standard unit
SVOC	semivolatile organic compound

GLOSSARY (Continued)

TAL target analyte list
TCL target compound list
TM trademark
TRPH total recoverable petroleum hydrocarbons

UCL upper confidence limit
USDA U.S. Department of Agriculture
USEPA U.S. Environmental Protection Agency
UST underground storage tank
UXB UXB International, Inc.

VOC volatile organic compound

1.0 INTRODUCTION

Harding Lawson Associates (HLA) (formerly ABB Environmental Services, Inc. [ABB-ES]), under contract to the Department of Navy, Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) is submitting the Remedial Investigation (RI) Report for Site 15, Southwest Landfill, at Naval Air Station (NAS) Whiting Field located in Milton, Florida. The RI Report for Site 15 is one in a series of site-specific reports being completed in conjunction with the NAS Whiting Field General Information Report (GIR) (ABB-ES, 1998) to summarize the previous investigations and to present the results of the RI.

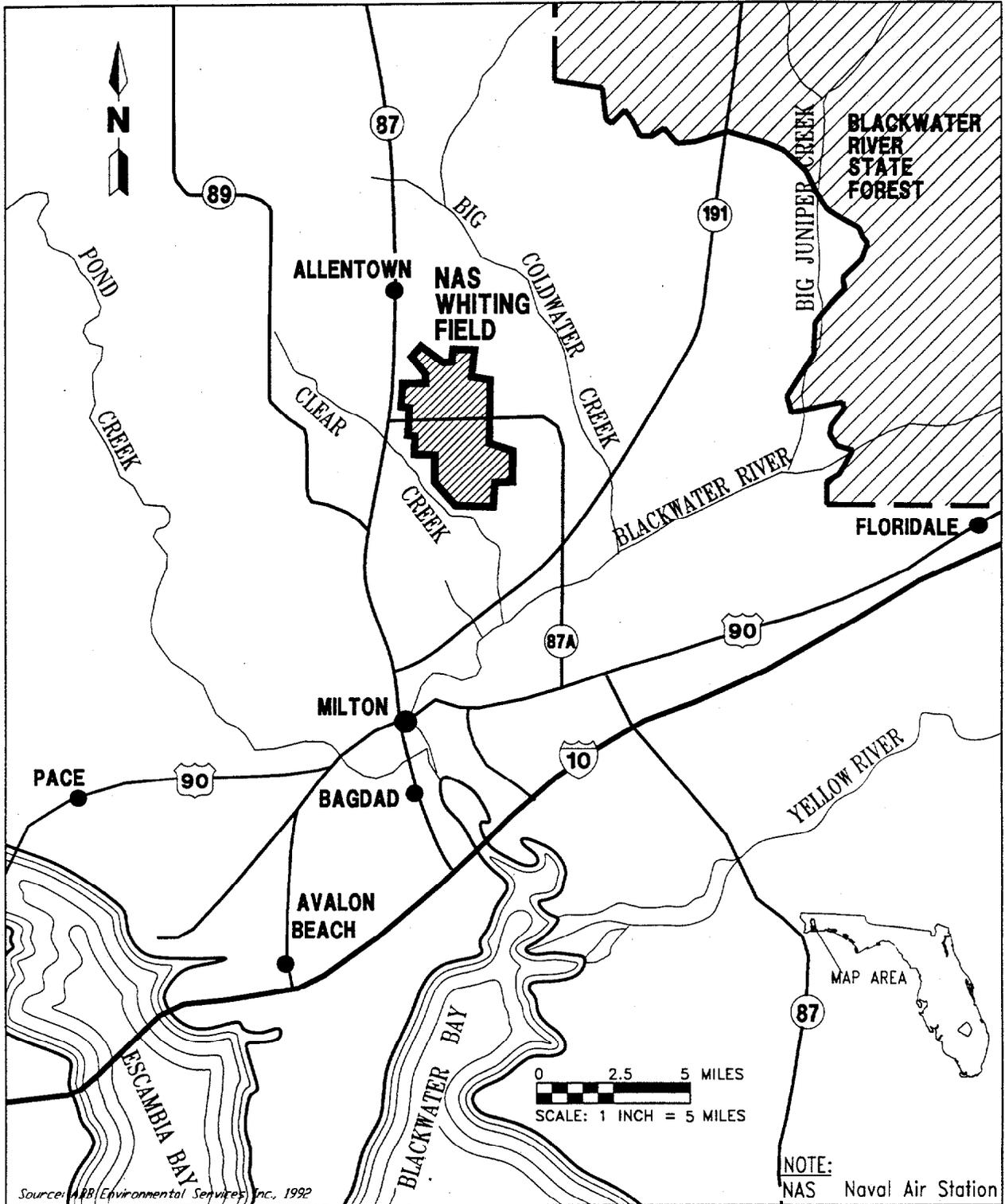
The Remedial Investigation and Feasibility Study (RI/FS) is being conducted on behalf of the Navy at NAS Whiting Field under contract No. N62467-89-D-0317. The RI was conducted in three phases. The Phase I RI field program was completed in May 1992. The Phase IIA RI field program was conducted between May 1992 and March 1994. The Phase IIB RI field program was completed in November 1996.

Installation Location and Description. NAS Whiting Field is located in Santa Rosa County, in Florida's northwest coastal area, approximately 5.5 miles north of Milton and 25 miles northeast of Pensacola (Figure 1-1). NAS Whiting Field presently consists of two air fields separated by an industrial area. The installation is approximately 3,842 acres. Figure 1-2 presents the installation layout and locations of RI/FS sites at NAS Whiting Field. A complete description of historic operations at the facility is presented in Section 1.3 and Appendix A of the NAS Whiting Field GIR (ABB-ES, 1998).

1.1 PURPOSE OF THE RI/FS. The purpose of the NAS Whiting Field RI is to identify and characterize the nature and extent of chemicals in environmental media and potential risks to human and ecological receptors that might be posed by toxic or hazardous chemicals present on site. The chemicals were potentially released to the environment during past waste disposal practices or spills. The data collected during the RI field program will also be used in an feasibility study (FS) (if necessary) to screen, evaluate, and select remedial alternatives to provide permanent, feasible solutions to environmental impacts that may be a result of past waste disposal practices or spills.

1.2 SITE DESCRIPTION. Site 15 is a 21-acre parcel located along the southwestern facility boundary near the South Air Field (Figure 1-2). The site is currently forested with pine trees that exceed 20 feet in height and is surrounded by taller pine trees. The site topography slopes at about 5 percent to the southwest towards Clear Creek, which is located approximately 1,200 feet southwest of the site. The initial assessment study (IAS) report indicated that erosion had uncovered numerous areas where buried waste were exposed (Envirodyne Engineers, Inc., 1985).

Site 15 was an operational landfill from 1965 to 1979 and consisted of approximately seven trenches trending north-northeast, which covered 15 of the 21 acres. The landfill reportedly received the majority of waste generated at NAS Whiting Field, which included general refuse, waste paints, oils, solvents, thinner, hydraulic fluid, bagged asbestos, and potentially polychlorinated biphenyl (PCB)-contaminated transformer oil (Envirodyne Engineers, Inc., 1985).



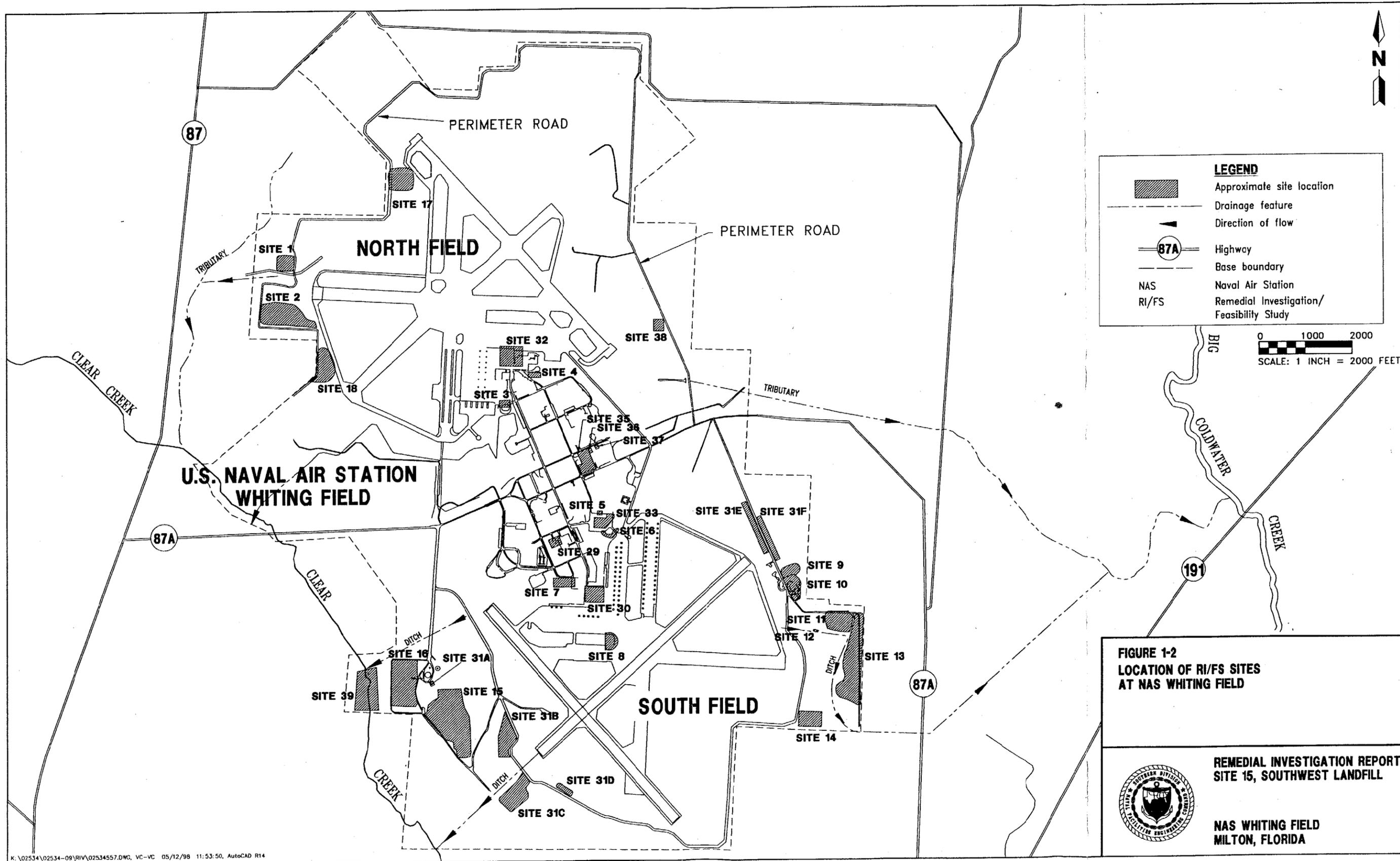
**FIGURE 1-1
FACILITY LOCATION MAP**



**REMEDIAL INVESTIGATION REPORT
SITE 15, SOUTHWEST LANDFILL**

**NAS WHITING FIELD
MILTON, FLORIDA**

K:\02534\02534-09\RV\02534556.DWG, VC-VC 05/11/98 17:35:38, AutoCAD R14



LEGEND

-  Approximate site location
-  Drainage feature
-  Direction of flow
-  Highway
-  Base boundary
- NAS Naval Air Station
- RI/FS Remedial Investigation/Feasibility Study

0 1000 2000
SCALE: 1 INCH = 2000 FEET

**FIGURE 1-2
LOCATION OF RI/FS SITES
AT NAS WHITING FIELD**



**REMEDIAL INVESTIGATION REPORT
SITE 15, SOUTHWEST LANDFILL**

**NAS WHITING FIELD
MILTON, FLORIDA**

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It was estimated that approximately 3,000 to 4,500 tons of waste were disposed of at the site annually. Burning of waste material was not conducted and waste was covered on a daily basis (Envirodyne Engineers, Inc., 1985). Buried wastes are not typically exposed at the land surface nor are there indications (e.g., stained soil or stressed vegetation) of other past waste disposal practices.

According to the U.S. Department of Agriculture (USDA) (USDA, 1980), the soil at Site 15 is classified as Troup loamy sand and Dothan/Lucy/Bonifay soil types (ABB-ES, 1998). There is no evidence of a clay soil cap over the site area. Because the soil at the site is predominantly silty sand, much of the on-site rainfall directly infiltrates the soil.

1.3 REGULATORY SETTING. The Navy Installation Restoration (IR) program was designed to identify and abate or control contaminant migration resulting from past operations at naval installations. The IR program is the Navy response authority under Section 120 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986 and Executive Order 12580. CERCLA requires that Federal facilities comply with the act, both procedurally and substantively. SOUTHNAVFACENGCOM is the agency responsible for the Navy IR program in the southeastern United States. Therefore, SOUTHNAVFACENGCOM has the responsibility to process NAS Whiting Field through preliminary assessment, site inspection, RI/FS, and remedial response selection in compliance with the guidelines of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 Code of Federal Regulations [CFR] 300).

Section 105(a)(8)(A) of SARA requires the U.S. Environmental Protection Agency (USEPA) to develop criteria to set priorities for remedial action for chemicals detected in environmental media based on relative risk to human health and the environment. To meet this requirement, USEPA has established the Hazard Ranking System (HRS) as Appendix A to the NCP. First promulgated in 1982, the HRS was amended in December 1990, effective March 14, 1991 (55 Federal Register No. 241:51532-51667), to comply with requirements of Section 105(c)(1) of SARA to increase the accuracy of the assessment of relative risk. The HRS has been substantially revised and is designed to prioritize sites after the SI phase of the CERCLA process.

The HRS score for NAS Whiting Field was generated in 1993. The score was sufficient to place NAS Whiting Field on the National Priority List (NPL).

In January 1994, the USEPA placed NAS Whiting Field on a proposed list of sites to be included on the NPL (40 CFR 300, Federal Register, January 18, 1994), and on May 31, 1994, NAS Whiting Field was placed on the NPL effective June 30, 1994 (40 CFR 300, Federal Register, May 31, 1994). As a result, the RI/FS for NAS Whiting Field must follow the requirements of the NCP, as amended by SARA, and regulatory guidance for conducting RI/FS programs under CERCLA.

1.4 REPORT ORGANIZATION. The RI Report is organized into ten chapters (Chapters 1.0 to 10.0). Chapter 1.0 presents the purpose, site description, and regulatory setting for the RI at NAS Whiting Field. Chapter 2.0 summarizes previous investigations. Chapter 3.0 presents the investigative methodology for conducting the assessment. Chapter 4.0 presents the site-specific data quality assessment. Chapter 5.0 discusses the investigative results of the assessment. Chapter 6.0 presents the Human Health Risk Assessment (HHRA), and Chapter 7.0

presents the Ecological Risk Assessment (ERA). Chapter 8.0 discusses the fate and transport of chemicals determined to be human and/or ecological chemicals of potential concern (ECPC). Chapter 9.0 provides a summary of the conclusions and recommendations. Chapter 10.0 presents professional review certification.

2.0 PREVIOUS INVESTIGATIONS

This chapter summarizes the previous investigations at Site 15, Southwest Landfill, at NAS Whiting Field.

2.1 INITIAL ASSESSMENT STUDY. Background information was gathered for the IAS (Envirodyne Engineers, Inc., 1985) by conducting a record search, performing an on-site survey, and conducting interviews with long-time employees and retired personnel familiar with the site.

From 1965 until 1979, general refuse and wastes associated with operation and maintenance of aircraft may have been disposed of at this site. Anecdotal evidence suggests this may include unknown quantities of waste paints, paint thinners, solvents, waste oils, hydraulic fluids, and asbestos. Access to the site was uncontrolled, and there were no available written records of the types of wastes disposed of at the site (Envirodyne Engineers, Inc., 1985).

Envirodyne Engineers, Inc., recommended in the IAS that a confirmation study be completed based on the types of wastes possibly disposed of at the site, the potential for off-site migration, and the presence of human and ecological receptors. The confirmation study would typically consist of two parts: verification and characterization; however, only the verification phase was conducted.

2.2 VERIFICATION STUDY. The Verification Study (Geraghty & Miller, 1986) at Site 15 included installing one monitoring well (WHF-15-1) and collecting a groundwater sample. The monitoring well was installed to a depth of 72.5 feet below land surface (bls) along the southwestern edge of the site.

Groundwater elevation data collected in 1993 and 1994 (ABB-ES, 1995a) for the area suggest that the well was located hydraulically downgradient from the site. The groundwater sample was analyzed for USEPA priority pollutants, which includes volatile organic compound (VOCs), semivolatile organic compound (SVOCs), pesticides, and inorganic analytes. No organic compounds were detected. One inorganic analyte (lead) was detected.

3.0 FIELD INVESTIGATIVE METHODS

Field investigative techniques used during the RI to collect the data are described in the RI/FS Sampling and Analysis Plan, Volume II (E.C. Jordan, 1990), which provides descriptions of sampling methods, field personnel responsibilities, sample management, chain of custody, project documentation, change in field methods, protocols on corrective actions, decontamination procedures, waste management handling, and other general project standards and procedures in Section 3.1, General Site Operations.

Field and laboratory quality assurance and quality control (QA/QC) requirements for the RI activities comply with the RI/FS Quality Assurance Project Plan (QAPP) located in Appendix A of the RI/FS Work Plan, Volume II (E.C. Jordan, 1990). Health and safety requirements were in general accordance with the Health and Safety Plan, Volume III (E.C. Jordan, 1990).

Field investigative methods not covered in the documents identified above are described in Technical Memorandum No. 7, RI Phase IIB Workplan (ABB-ES, 1995b) and in the NAS Whiting Field GIR (ABB-ES, 1998).

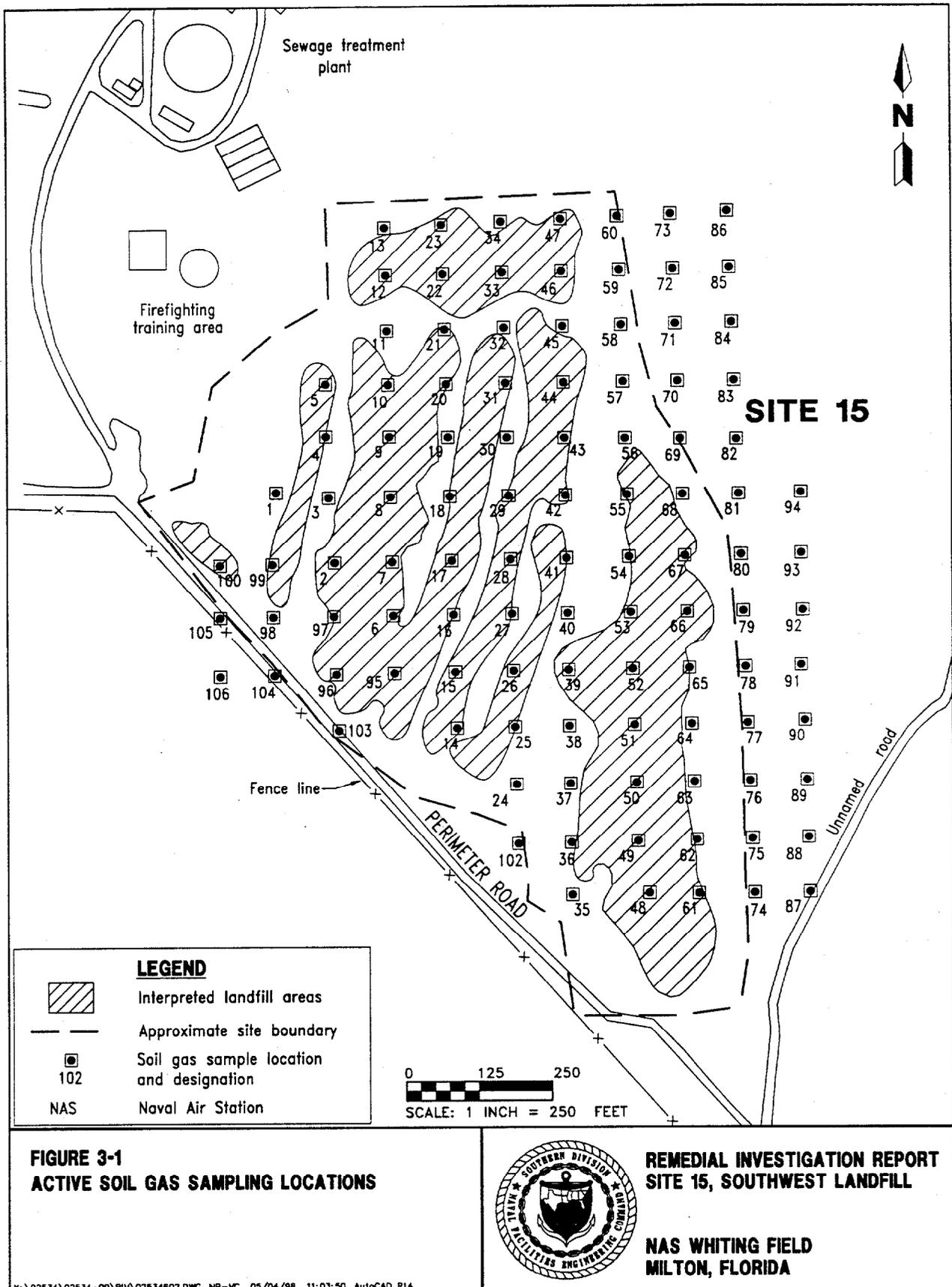
These field and laboratory investigation techniques are in general conformance with USEPA standard operating procedure (USEPA, 1991a and 1996a) and were followed during the RI sampling and analysis program.

The RI Phase I investigation at Site 15 consisted of generating lithologic logs and collecting four groundwater samples using a piezocone penetrometer (PCPT) and Bengt-Arne Torstensson (BAT) sampler (ABB-ES, 1992a). The Phase IIA investigation included completion of a geophysical survey, collection of five surface soil samples and five subsurface soil samples from five test pits, installation of 10 additional monitoring wells, and collection of 11 groundwater samples (ABB-ES, 1995a, 1995b, and 1995c). The Phase IIB investigation consisted an active soil gas survey, collection of twenty-five additional surface soil samples, collecting five groundwater screening samples using a hydrocone penetrometer (similar to a BAT device), installation of six additional monitoring wells, and collection of two rounds of groundwater samples from the 16 monitoring wells.

The samples collected during Phase IIA and IIB were analyzed for target compound list (TCL) VOCs, SVOCs, pesticides and PCBs, and target analyte list (TAL) inorganic analytes. Additional sampling events during 1997 were limited to analyses for TCL, VOCs, and TAL inorganic analytes.

The following provides a brief description of the number and types of environmental samples and the analytical methodology for the RI for Site 15, Southwest Landfill.

3.1 SOIL GAS FIELD SCREENING. Soil gas field screening was conducted in September 1995 at Site 15 to assess the presence of VOCs or methane in soil gas potentially emanating from the site. Soil gas samples were collected throughout the site and up to 300 feet beyond the site boundary. Sample locations were determined based on an approximate 100- by 100-foot grid. Figure 3-1 presents the locations of the active soil gas sample points.



At each location, an open-ended stainless-steel tube was pushed or manually driven to the proposed sampling depths of 1.5 feet and 3.0 feet bls. Organic vapor measurements were made at the two sampling depths. The air within the stainless-steel tube was purged with a vacuum pump to obtain a representative sample of soil gas. The soil gas sample was analyzed for total VOCs and methane. Organic vapor concentrations were measured in the field with either a Portafid II™ or a Foxboro 128™ organic vapor analyzer (OVA) and recorded. Total VOCs readings were a direct measure of soil gas, however, methane analysis required filtration of VOCs by granulated charcoal filter, which adsorbs the VOCs allowing only the methane to pass through to the detector. A comparison of the two measurements allowed for a qualitative analysis of the presence of methane gas. Soil gas samples were not submitted for laboratory analysis.

Soil gas sample results are typically contoured to evaluate the soil gas measurements. The results of the soil gas survey are presented in Section 5.1.

3.2 GEOPHYSICAL SURVEY. Geophysical surveys at Site 15 were conducted between May 26, 1992, and June 14, 1992. The purpose of the geophysical surveys was to assess the lateral and vertical extent of the waste disposal area and locate buried metallic or nonmetallic objects that may indicate a potential waste disposal area.

Geophysical methods used at the site include electromagnetic (EM) induction and magnetometry (MAG). Blackhawk Geosciences, Inc., Golden, Colorado, was subcontracted by ABB-ES (presently HLA) to conduct the geophysical tasks. A technical report describing the methodology, results, and conclusions of the geophysical survey was prepared in February 1993 (ABB-ES, 1993). The following paragraph presents a brief description of the geophysical field program.

Data from the EM and MAG surveys were collected along parallel east to west lines spaced 40 feet apart. The survey lines were oriented with a magnetic compass and measuring tape. Data were collected at stations located along each survey line at 10-foot intervals. These lines were later surveyed by a Florida-licensed surveyor. The location of the lines and the plotted geophysical data are presented on Figures A-1 through A-4 in Appendix A. The results of the geophysical survey are presented in Section 5.3.

3.3 SURFACE SOIL ASSESSMENT. The surface soil assessment included the collection of five surface soil samples during Phase IIA and twenty-five surface soil samples during Phase IIB of the RI.

The five Phase I soil samples (15-SL-01 through 15-SL-05) were collected in August 1992 at locations where surface geophysical anomalies were interpreted to be present (Figure 3-2). Because these surface soil sample locations were biased locations based on geophysical anomalies, additional surface soil samples (Phase IIB) from other random locations were required to confirm the presence or absence of chemicals detected during Phase IIB and to characterize the nature and extent of contamination.

Twenty-five Phase IIB surface soil samples (15S001 through 15S025) were collected in December 1995 at locations shown on Figure 3-2. In addition to providing unbiased sampling locations, these samples also support the ecological (potential

exposure to terrestrial wildlife) and human health (exposure of transient persons to site soil) risk assessments. Locations were determined using the systematic sampling method where a point is chosen at random along a transect, and then samples are collected at equidistant intervals thereafter (Gilbert, 1987; USEPA, 1989a). Surface soil samples were collected from the land surface to a maximum depth of 12 inches bls using a decontaminated stainless-steel auger. Soil samples were described using the Unified Soil Classification System and recorded in a bound field logbook by ABB-ES (presently HLA) personnel.

The surface soil samples were analyzed for Contract Laboratory Program (CLP) (Naval Energy and Environmental Support Activity [NEESA] Level D) TCL VOCs, SVOCs, pesticides and PCBs, and TAL inorganic analytes.

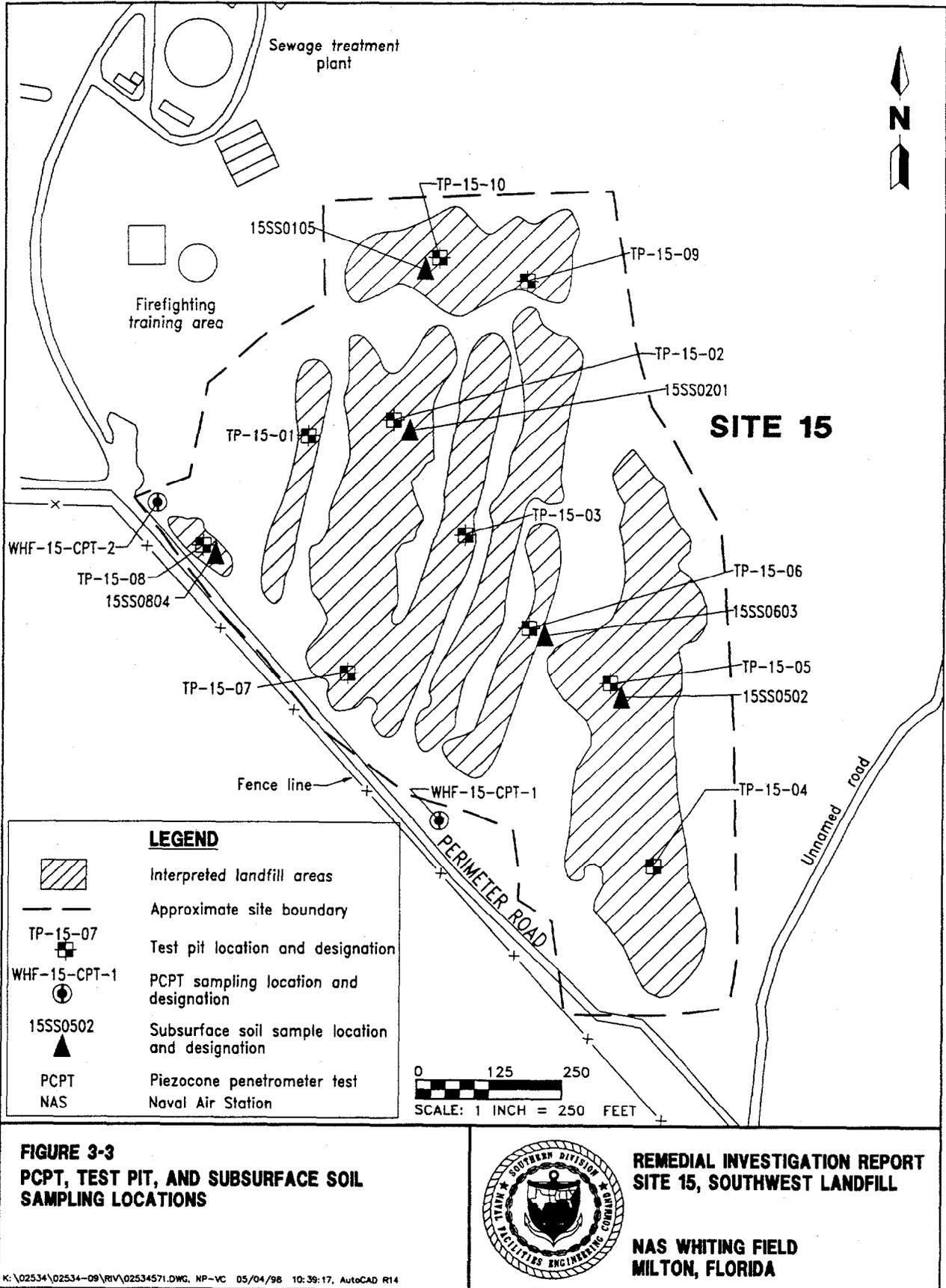
Background screening criteria were established by collecting background surface soil samples across the installation from each USDA soil type identified at NAS Whiting Field. These surface soil background data are presented in Subsection 3.3.1 of the GIR (ABB-ES, 1998). The arithmetic mean of analytes detected in the background soil samples was calculated by summing individual analyte concentrations and then dividing the sum by the number of samples from which the analytes were detected. Samples were then compared to twice the arithmetic mean of analyte concentrations detected in background surface soil samples associated with the Troup loamy sand soil type. The surface soil sampling results are discussed in Section 5.3 of this report.

3.4 SUBSURFACE SOIL ASSESSMENT. The subsurface RI at Site 15 included a PCPT investigation, split-spoon sampling conducted during monitoring well installations, and test pit excavation and sampling. Lithologic descriptions for the PCPT soundings are presented in Phase I Technical Memorandum No. 1, Geological Assessment (ABB-ES, 1992c). Lithologic descriptions generated during the installation of monitoring wells during Phase IIA are presented in Phase IIA Technical Memorandum No. 2, Geological Assessment (ABB-ES, 1995a). Additional lithologic descriptions for selected monitoring wells generated during Phase IIB, as well as all lithologic data described above and the monitoring well associated with Site 16, are presented in Appendix D of this report. A summary of the Site 15 lithology is presented in Section 5.6 of this report.

3.4.1 PCPT Screening Two PCPT explorations (1991 and 1995) were performed at Site 15. The location of the PCPT explorations are presented on Figure 3-3.

The PCPT exploration conducted in April 1991 consisted of using a stainless-steel cone tip (equipped with electronic sensors) connected to stainless-steel rods that was hydraulically pressed into the ground. Measurements of end-bearing resistance, friction resistance, and pore pressure were recorded from the sensors throughout each exploration. The analog signals from the cone tip sensors were digitized for data logging, and analysis of the digital data was completed in the field using a data acquisition software system. Based on the cone readings, a lithologic description of the soil was computed with the aid of the software package.

The cone tip was advanced until the friction resistance of the soil exceeded the power of the hydraulic system (refusal); the exploration was then terminated. The primary purpose of extending the boring explorations was to collect *in situ*



groundwater samples as described in Phase I Technical Memorandum No. 5, Groundwater Assessment (ABB-ES, 1992a). A summary of the exploration designations, completion dates, proposed and actual depths, and the lithologic descriptions for the explorations are presented in Phase IIA Technical Memorandum No. 2, Geological Assessment (ABB-ES, 1995a).

3.4.2 Split-Spoon Sampling Lithologic data were also recorded during monitoring well installation. A 2-foot split-spoon sample was collected for visual inspection by an ABB-ES (presently HLA) geologist. All data were entered into a bound logbook. Detailed soil descriptions and other pertinent data are presented in the boring logs for the soil boring investigation located in Phase IIA Technical Memorandum No. 2, Geological Assessment (ABB-ES, 1995a) and Appendix D of this report. Split-spoon samples were generally collected at 5-foot intervals during drilling of the monitoring wells. Monitoring well installations for Phase IIB were conducted in conjunction with the previous hydrogeologic and groundwater investigations (summarized in Phase IIA Technical Memoranda Nos. 4 [ABB-ES, 1995d] and 5 [ABB-ES, 1995c], respectively).

3.4.3 Test Pitting Ten test pits were excavated at Site 15 during the period of September 31 through August 4, 1992, following the completion of the geophysical survey. UXB International, Inc. (UXB), from Chantilly, Virginia, was subcontracted by ABB-ES (presently HLA) to conduct the test pit excavation.

The test pits were excavated at locations where a geophysical anomaly indicated the potential for buried materials (Figure 3-3). The purpose of conducting the test pits was to characterize waste materials, if present, by description of the waste present, and chemical analysis of subsurface soil samples. Test pit logs are located in Appendix D of this report.

Prior to excavating the test pits, vegetation was cleared, then the proposed test pit area was surveyed by UXB with a hand-held MAG, a terrain conductivity meter (FEREX™ 4.021), and a metal detector. The four corners of each test pit were staked. The staked locations were referenced to grid coordinates defined for the geophysical survey. A backhoe was used to excavate a rectangular pit. During the excavation the physical description of each soil layer and waste type was recorded in the field logbook. A subsurface soil sample was collected directly from the backhoe bucket during the excavation. Following sample collection, the test pit was backfilled with the excavated soil.

Five subsurface soil samples (15SS0201, 15SS0502, 15SS0603, 15SS0804, and 15SS1005) were collected from five of the ten test pits excavated. Sample depths ranged from 5 to 6 feet bls to deeper 10 to 12 feet bls intervals within the test pits. The locations of the test pits are presented on Figure 3-3. Sampling results are discussed in Section 5.6 of this report.

3.5 HYDROGEOLOGIC ASSESSMENT. The hydrogeologic assessment of Southwest Disposal Area included Site 15 (Southwest Landfill), Site 16 (Open Disposal and Burning Area), an adjacent site, and utilized groundwater monitoring wells associated with underground storage tank (UST) Site 1466, the South Aviation Gasoline Tank Sludge Disposal Area (identified in IR program as Site 7), an upgradient UST site. Sites 31A (Sludge Drying Beds) and 31B (Sludge Disposal Area) are also adjacent sites; however, hydrologic data from these sites have not been included. Hydrogeologic data from Sites 15, 16, and 1466 were combined to provide a larger data set for a better understanding of the hydrogeologic conditions at Site 15 and other sites in the area.

The hydrogeologic field investigation activities included collecting water-level data from 42 monitoring wells (Figure 3-4) and conducting slug test analyses on seven monitoring wells. Monitoring well construction details for these sites are presented in Table 3-1. Results of the hydrogeologic assessment are presented in Section 5.2 of this report.

3.6 GROUNDWATER ASSESSMENT. Groundwater assessment activities included collecting groundwater samples with a PCPT sampler during Phases I and IIB as well as collecting groundwater samples from monitoring wells installed in Phases IIA and IIB.

The PCPT groundwater sampling program for Site 15 was conducted in April 1991 during the Phase I investigation in conjunction with the PCPT subsurface exploration to verify the potential contamination of groundwater downgradient of the site. Four groundwater samples were collected from locations WHF-15-CPT-01, WHF-15-CPT-02, WHF-15-CPT-03, and WHF-15-CPT-04 using the PCPT sampling technique (ABB-ES, 1995c). Groundwater sample depth was determined based on subsurface exploration data (lithology and pore pressure) collected from the PCPT soundings. The PCPT groundwater sample was analyzed for VOCs and TAL metals.

In September of 1995, an *in situ* groundwater sampling program using PCPT technology was conducted to screen for contaminants hydrogeologically down-gradient of Site 15 to aid in the placement of additional monitoring wells to be installed during the Phase IIB field program. Five locations were investigated at Site 15 (Figure 3-4). The PCPT exploration consisted of pushing a hollow stainless-steel rod to depth to collect groundwater samples in an integral sampling chamber. The sample chamber was hermetically sealed at depth and brought to the surface where the sample was transferred to appropriate sample containers placed on ice and shipped to an off-site analytical laboratory.

Groundwater samples were collected from four intervals at each location. The initial sample was collected near the potentiometric surface of groundwater and subsequent samples were collected at 20-foot intervals below the initial sample point. Samples were collected and analyzed for selected VOCs. The location of the PCPT sample is presented on Figure 3-3, and the analytical results of the PCPT sampling are presented in Section 5.7 of this report and in the Phase I Technical Memorandum No. 1, Geological Assessment (ABB-ES, 1992c).

The groundwater monitoring well WHF-15-1 was installed during the Verification Study (Geraghty & Miller, 1986). During the Phase IIA investigation (in 1993), ten additional groundwater monitoring wells (WHF-15-2I, WHF-15-2S, WHF-15-2D, WHF-15-3D, WHF-15-3I, WHF-15-3S, WHF-15-4S, WHF-15-5S, WHF-15-6D, and WHF-15-6S) were installed. Groundwater samples were collected from the 11 existing monitoring wells at Site 15 between November 3 and December 3, 1993. Based on the analytical results from these groundwater samples, eight additional monitoring wells (WHF-15-5I, WHF-15-5D, WHF-15-7S, WHF-15-7I, WHF-15-7D, WHF-15-8S, WHF-15-8I, and WHF-15-8D) were installed. The monitoring well locations are presented on Figure 3-4, and the groundwater analytical data are discussed in Section 5.7.

Generally, shallow monitoring wells are identified with an "S" at the end of the well number (e.g., WHF-15-7S). These wells have been screened at the water table and well vary in depth from 30 to 107 feet deep. The intermediate monitoring wells, identified with an "I" at the end of the well number, are clustered with the shallow and deep wells and are screened from 63 to 121 feet

**Table 3-1
Summary of Monitoring Well Construction Details**

Remedial Investigation Report
Site 15, Southwest Landfill
Naval Air Station Whiting Field
Milton, Florida

Monitoring Well Designation	RI Phase of Well Completion	Well Size (inches)	Land Surface Elevation (feet msl)	TOC Elevation (feet msl)	Total Well Depth (feet BTOC)	Approximate Screen Interval (feet BTOC)
Southwest Landfill and Adjacent Areas						
Site 15, Southwest Landfill						
WHF-15-1	VS	4	64.17	66.35	73.60	63 to 73
WHF-15-2S	IIA	2	57.18	59.58	32.90	17 to 32
WHF-15-2I	IIA	2	57.24	60.10	63.20	53 to 63
WHF-15-2D	IIA	2	57.05	59.39	112.44	107 to 112
WHF-15-3S	IIA	2	67.35	69.29	37.94	22 to 37
WHF-15-3I	IIA	2	67.26	69.69	87.83	77 to 87
WHF-15-3D	IIA	2	67.84	69.44	119.48	109 to 119
WHF-15-4S	IIA	2	140.62	143.29	109.15	94 to 109
WHF-15-5S	IIA	2	101.73	104.14	68.18	58 to 68
WHF-15-5I	IIA	2	102.05	105.17	98	88 to 98
WHF-15-5D	IIA	2	102.81	106.11	128.38	118 to 128
WHF-15-6S	IIA	2	71.87	74.29	43.73	28 to 43
WHF-15-6D	IIA	2	72.56	75.08	123.36	113 to 123
WHF-15-7S	IIB	2	116.96	120.18	88.85	73 to 88
WHF-15-7I	IIB	2	116.59	119.85	121.5	111 to 121
WHF-15-7D	IIB	2	116.36	119.49	147.53	137 to 147
WHF-15-8S	IIB	2	77.03	79.67	55	40 to 55
WHF-15-8I	IIB	2	76.69	79.48	85.2	75 to 85
WHF-15-8D	IIB	2	76.19	79.08	115	105 to 115
Site 16, Open Disposal Burning Area						
WHF-16-1	VS	4	47.47	50.04	43.00	33 to 43
WHF-16-2	I	4	79.38	82.19	74.20	69 to 74
WHF-16-2S	IIA	2	80.77	83.66	49.80	34 to 49
WHF-16-2I	IIA	2	78.02	80.60	130.14	120 to 130
WHF-16-3S	IIA	2	48.60	51.69	23.25	8 to 23
WHF-16-3I	IIA	2	48.73	51.31	52.87	47 to 52
WHF-16-3II	IIA	2	48.60	51.22	78.91	73 to 78
WHF-16-3D	IIA	2	48.64	51.40	118.08	108 to 118
WHF-16-4S	IIA	2	52.19	54.79	22.38	7 to 22
WHF-16-4II	IIA	2	50.62	53.01	64.80	54 to 64
WHF-16-4D	IIA	2	49.88	52.87	122.54	112 to 122
WHF-16-5	IIA	2	-	37.54	13.50	3 to 13
WHF-16-6S	IIB	2	53.67	56.57	26	11 to 26
See notes at end of table.						

Table 3-1 (Continued)
Summary of Monitoring Well Construction Details

Remedial Investigation Report
 Site 15, Southwest Landfill
 Naval Air Station Whiting Field
 Milton, Florida

Monitoring Well Designation	RI Phase of Well Completion	Well Size (inches)	Land Surface Elevation (feet msl)	TOC Elevation (feet msl)	Total Well Depth (feet BTOC)	Approximate Screen Interval (feet BTOC)
Southwest Landfill and Adjacent Areas						
Site 16, Open Disposal Burning Area (Continued)						
WHF-16-6D	IIB	2	53.58	56.77	62.1	52 to 62
WHF-16-7S	IIB	2	35.05	38.27	14	4 to 14
WHF-16-7I	IIB	2	35.14	38.17	46.5	36 to 46
WHF-16-7D	IIB	2	35.19	38.05	75.2	65 to 75
Site 1466						
WHF-1466-6S	IIB	2	173.40	173.09	131	121 to 131
WHF-1466-6I	IIB	2	173.01	173.06	160	150 to 160
WHF-1466-6D	IIB	2	173.21	173.05	190.5	180 to 190
WHF-1466-6DD	IIB	2	172.86	172.90	220	210 to 220
Notes: RI = remedial investigation. msl = mean sea level. TOC = top of casing. BTOC = below top of casing. VS = Verification Study. I = Remedial Investigation Phase I. IIA = Remedial Investigation Phase IIA. IIB = Remedial Investigation Phase IIB. -- = not available.						

bls. The deep wells identified with a "D" at the end of the well number are the deepest wells in the cluster and range from 112 to 147 feet bls. A summary of the monitoring well classification is presented in Table 3-2.

**Table 3-2
Classification of Monitoring Wells**

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	Location Identifier	Total Depth
Shallow	WHF-15-2S	32
	WHF-15-3S	37
	WHF-15-4S	109
	WHF-15-5S	68
	WHF-15-6S	43
	WHF-15-7S	88
	WHF-15-8S	55
Intermediate	WHF-15-2I	6
	WHF-15-3I	87
	WHF-15-5I	98
	WHF-15-7I	121
	WHF-15-8I	85
Deep	WHF-15-2D	112
	WHF-15-3D	119
	WHF-15-5D	128
	WHF-15-6D	123
	WHF-15-7D	147
	WHF-15-8D	115

During the Phase IIA investigation, groundwater samples were collected from monitoring wells using a Teflon™ bailer after purging the monitoring wells with either a submersible or bladder pump. The groundwater samples were analyzed for CLP (NEESA Level C) TCL VOCs, SVOCs, pesticides and PCBs, and TAL inorganics.

Groundwater samples were collected during Phase IIB of the RI (July 31 and November 20, 1996) from 18 monitoring wells at Site 15. The groundwater samples were collected using low-flow sampling techniques and were analyzed for CLP (NEESA Level D) TCL VOCs, SVOCs, pesticides and PCBs, and TAL inorganic analytes. Samples for TAL inorganic analysis were unfiltered (total analysis) if turbidity was below 10 nephelometric turbidity units (NTUs). If turbidity was greater than 10 NTUs, an additional groundwater sample was collected and filtered (dissolved-phase inorganics) using a 45-micron filter. The purpose of the additional groundwater sample was to assess uncertainty associated with a turbid unfiltered groundwater sample.

Analyses were also conducted to assess secondary water quality parameters and provide data for assessing remedial alternatives in the FS. The analyses included alkalinity, chloride, sulfates, color, hardness, ammonia nitrates, total Kjeldahl nitrogen, nitrate and nitrite, pH, phosphorous, total dissolved solids, and sulfides.

4.0 SITE-SPECIFIC DATA QUALITY ASSESSMENT

This chapter describes how the data generated during Phase IIB of the RI at Site 15 were managed and evaluated. Section 4.1 describes the analytical program and data management for the RI at Site 15. Section 4.2 summarizes the precision, accuracy, representativeness, comparability, and completeness (PARCC) report on the data. Section 4.3 presents a summary of the Data Quality Assessment.

The soil and groundwater samples collected during Phase IIA of the RI were qualified according to USEPA functional guidelines for evaluation of organic (USEPA, 1991b) and inorganic (USEPA, 1988) analytical data analyzed using USEPA CLP protocol. The Data Quality Objective (DQO) assessment for the Phase IIA soil samples is presented in detail in RI Phase IIA Technical Memorandum No. 3 (ABB-ES, 1994). The DQO assessment for the Phase IIA groundwater samples is presented in detail in RI Phase IIA Technical Memorandum No. 5 (ABB-ES, 1995c).

4.1 ANALYTICAL PROGRAM. Environmental and quality control samples collected during the Phase IIB of the RI at Site 15 were analyzed using field screening methods and laboratory analytical methods. Site 15 analytical results and quality control data is included with sample delivery groups (SDGs) WF008, WF009, WF024, WF025, WF026, WF037, WF053, and WF054. The field QC data are presented in Appendix B of this report. Sampling locations are presented in Chapter 3.0 and sample results are presented in Chapter 5.0 of this report. The analytical data are presented in Appendix E (soil data) and Appendix F (groundwater data).

Environmental samples (surface soil and groundwater) were collected and analyzed at an off-site laboratory using CLP methodology (USEPA, 1986a) for analysis of VOCs, SVOCs, pesticides and PCBs, total recoverable petroleum hydrocarbons (TRPH), metals and cyanide. Some groundwater samples were also analyzed for wet chemistry analyses. The laboratory analytical program is described in more detail in Section 2.2 of the NAS Whiting Field GIR (ABB-ES, 1998).

Analytical results obtained for all environmental samples during the RI sampling events were submitted as NEESA Level D (USEPA Level IV) analytical packages for VOCs, SVOCs, pesticides, PCBs, TRPH, metals, cyanide, and wet chemistry.

4.2 DATA REVIEW. Data validation is the technical review of individual analytical results relative to the following criteria:

- DQOs and the QAPP in the NAS Whiting Field Work Plan (E. C. Jordan Co., Inc., 1990 and ABB-ES, 1995b).
- NEESA guidance document 20.2-047B, Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Program (NEESA, 1988).
- USEPA, CLP National Functional Guidelines for Organic Data Review, February 1994 (USEPA, 1994a).
- USEPA, CLP National Functional Guidelines for Inorganic Data Review, February 1994 (USEPA, 1994b).

The data validation process is described in Section 2.3 of the NAS Whiting Field GIR (ABB-ES, 1998).

The data were reviewed, validated, and evaluated using the PARCC criteria specified in the DQOs. PARCC criteria are described in Section 2.3 of the NAS Whiting Field GIR (ABB-ES, 1998). The Site 15 Phase IIB soil and groundwater analytical data was validated by Laboratory Data Consultants, Inc. (LDC), of Carlsbad, California, in 1996-97. The subsections below summarize the PARCC criteria evaluation of the analytical data.

4.2.1 Precision Precision is a measure of the agreement or repeatability of a set of replicate results (relative percent difference [RPD]) obtained from duplicate laboratory analyses of samples collected from the same location and depth interval. Precision for analytical data collected during the RI sampling events was evaluated using results of field duplicate samples, laboratory duplicate samples, matrix spike and matrix spike duplicate (MS/MSD) samples, and/or consecutive laboratory control samples. The evaluation of precision for the field duplicate samples at Site 15 are presented in Table 4-1 and summarized below.

Organic Analytes. The RPD criteria for four organic analytes (acetone, bis(2-ethylhexyl)phthalate, 4,4'-dichlorodiphenyltrichloroethane [DDT], and 1,2-trichloroethene) did not meet the 30 percent control limit for at least one SDG as shown in Table 4-1. All other organic analytes were within the control limit for RPD. Since acetone is widely recognized as a laboratory contaminant, the acetone spike in the sample and duplicate may not have been introduced in the field. Furthermore, the high imprecision of acetone (as high as 133 percent RPD) may be the result of poor laboratory instrument stability rather than improper sample collection and handling.

Inorganic Analytes. The RPD criteria for six inorganic analytes (chromium, copper, iron, lead, and nickel) in at least one groundwater SDG did not meet the 30 percent control limit (Table 4-1). The RPD criteria for one inorganic analyte (nickel) in one surface soil sample (15S02001) did not meet the 50 percent control limit (Table 4-1). According to the data validation (LDC, 1996), the exceedances in the inorganic analytes are considered moderately imprecise. Exceedances of RPD values may have been due to sample heterogeneity or poor laboratory instrument stability.

4.2.2 Accuracy Accuracy is a measure of the agreement between the true value and the value measured using an analytical method (percent recovery). Accuracy also is evaluated during data validation by assessing initial and continuing calibration data for the analytical instrument. Accuracy for analytical data collected during the RI sampling events was assessed by evaluating percentage recoveries for MS/MSD samples, surrogate recoveries, laboratory control samples, and initial and continuing calibration standard results. A summary of accuracy exceedances for MS/MSD samples at Site 15 is presented in Table 4-2 and summarized below.

The percent recovery for some of the MS/MSD samples was above or below the target range; therefore, some analytical results may be biased high or low. Some of the analytical results for SVOCs and inorganic analytes were qualified based on the evaluation of percent recovery. According to the data validation (LDC, 1996), the results of organic and inorganic MS/MSD analyses indicate that an acceptable level of accuracy was attained.

**Table 4-1
Precision Summary for Soil and Groundwater Field Duplicate Samples**

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SDG Number	Sample ID	Compound	Sample Concentration (D ₁)	Duplicate Concentration (D ₂)	RPD (%)	Control Limit (%)
Soil						
WF008						
Organics (µg/kg)	15S02001	Acetone	5	ND	NC	50
		Methylene chloride	ND	5	NC	50
TAL Metals (mg/kg)	15S02001	Aluminum	4,630	5,470	17	50
		Arsenic	1.2	1.1	9	50
		Barium	5.6	6.6	16	30
		Beryllium	0.13	0.13	0	50
		Calcium	22.2	25.2	13	50
		Chromium	3.0	3.7	21	50
		Copper	1.9	2.4	23	50
		Iron	2,500	2,950	17	50
		Lead	5.9	5.9	0	50
		Magnesium	85.0	107	23	50
		Manganese	75.2	87.1	15	50
		Mercury	0.02	0.02	0	50
		Nickel	2.4	9.1	117	50
		Selenium	0.33	ND	NC	50
		Vanadium	5.7	7.1	22	50
		Zinc	3.0	4.1	31	50
		Cyanide	ND	ND	NC	50
		TRPH	ND	ND	NC	50
Organics (µg/kg)	15S01701	Acetone	6	4	40	50
TAL Metals (mg/kg)	15S01701	Aluminum	13,700	9,290	38	50
		Arsenic	3.7	4.3	15	50
		Barium	4.4	3.8	15	50
		Beryllium	0.11	0.11	0	50
		Calcium	23.7	20.4	15	50
		Chromium	14.8	14.0	6	50
		Copper	2.6	2.5	4	50
		Iron	11,900	10,400	13	50
See notes at end of table.						

Table 4-1 (Continued)
Precision Summary for Soil and Groundwater Field Duplicate Samples

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 Site 15, Southwest Landfill
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SDG Number	Sample ID	Compound	Sample Concentration (D ₁)	Duplicate Concentration (D ₂)	RPD (%)	Control Limit (%)
TAL Metals (mg/kg) (Continued)						
		Lead	4.7	4.1	14	50
		Magnesium	51.2	41.8	20	50
		Manganese	10.8	6.8	45	50
		Nickel	ND	3.0	NC	50
		Selenium	ND	0.25	NC	50
		Vanadium	35.9	31.8	12	50
		Zinc	1.5	1.1	31	50
WF009						
Organics (µg/kg)	15S00101	Acetone	6	7	15	50
		bis(2-Ethylhexyl)phthalate	ND	1,700	NC	50
TAL Metals (mg/kg)	15S00101	Aluminum	9,280	10,800	15	50
		Arsenic	2.0	1.9	5	50
		Barium	6.6	7.8	17	50
		Beryllium	0.12	0.13	8	50
		Calcium	21.6	23.9	10	50
		Chromium	8.4	8.0	5	50
		Copper	3.4	3.9	14	50
		Iron	5,120	5,700	11	50
		Lead	4.7	3.6	26	50
		Magnesium	109	132	19	50
		Manganese	36.4	39.9	9	50
		Mercury	0.02	0.02	0	50
		Nickel	5.0	2.4	70	50
		Potassium	169	ND	NC	50
		Vanadium	13.3	15.1	13	50
		Zinc	4.1	5.0	22	50
		Cyanide	ND	ND	NC	50
See notes at end of table.						

Table 4-1 (Continued)
Precision Summary for Soil and Groundwater Field Duplicate Samples

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SDG Number	Sample ID	Compound	Sample Concentration (D ₁)	Duplicate Concentration (D ₂)	RPD (%)	Control Limit (%)
Groundwater						
WF024						
Organics (µg/kg)	15G00701	Acetone	2	ND	NC	30
TAL Metals (mg/kg)	15G00701	Aluminum	161	173	7	30
		Barium	15.6	19.3	21	30
		Calcium	356	360	1	30
		Chromium	2.9	2.0	37	30
		Iron	183	202	10	30
		Lead	0.70	0.60	15	30
		Magnesium	433	422	3	30
		Manganese	2.8	2.6	7	30
		Sodium	1,530	1,610	5	30
		Vanadium	ND	1.2	NC	30
		Zinc	3.4	3.6	6	30
		Cyanide	2.6	3.2	21	30
WF025						
Organics (µg/kg)	15G00601	Acetone	5	8	46	30
		1,2-Dichloroethene	1	1	0	30
		Chlorobenzene	5	5	0	30
		Ethylbenzene	ND	1	NC	30
		1,4-Dichlorobenzene	12	12	0	30
		Naphthalene	4	4	0	30
		Diethylphthalate	1	1	0	30
TAL Metals (mg/kg)	15G00601	Aluminum	89.4	55.8	46	30
		Arsenic	8.0	7.8	2	30
		Barium	67.6	63.7	6	30
		Calcium	3,690	3,620	2	30
		Iron	31,000	30,500	2	30
		Lead	0.90	ND	NC	30
		Magnesium	1,940	1900	2	30
		Manganese	139	136	2	30
		Potassium	2460	2340	5	30

See notes at end of table.

Table 4-1 (Continued)
Precision Summary for Soil and Groundwater Field Duplicate Samples

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SDG Number	Sample ID	Compound	Sample Concentration (D ₁)	Duplicate Concentration (D ₂)	RPD (%)	Control Limit (%)
TAL Metals (mg/kg) (Continued)						
		Sodium	2,630	2,590	2	30
		Zinc	3.4	3.3	3	30
		Cyanide	ND	8.1	NC	30
WF026						
Organics (µg/kg)	15G00803	Acetone	25	5	133	30
		2-Butanone	7	ND	NC	30
		Trichloroethene	4	4	0	30
		bis(2-Ethylhexyl)phthalate	2	1	67	30
		4,4'-DDT	0.16	0.079	68	30
TAL Metals (mg/kg)	15G00803	Aluminum	187	146	25	30
		Barium	10.6	10.8	2	30
		Calcium	1,440	1,170	21	30
		Chromium	2.9	ND	NC	30
		Cobalt	ND	2.4	NC	30
		Copper	4.0	2.4	50	30
		Iron	194	175	10	30
		Lead	0.80	0.50	46	30
		Magnesium	322	296	8	30
		Manganese	33.1	32.9	0.6	30
		Potassium	522	ND	NC	30
		Sodium	5,350	5,380	0.6	30
		Vanadium	2.0	1.5	29	30
		Zinc	176	178	1	30
		Cyanide	1.6	4.2	90	30
WF037						
Organics (µg/kg)	15G00803	Trichloroethene	5	5	0	30
See notes at end of table.						

Table 4-1 (Continued)
Precision Summary for Soil and Groundwater Field Duplicate Samples

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SDG Number	Sample ID	Compound	Sample Concentration (D ₁)	Duplicate Concentration (D ₂)	RPD (%)	Control Limit (%)
WF053						
Organics (µg/kg)	15G00602	Trichloroethene	2	2	0	30
TAL Metals (mg/kg)	15G00602	Aluminum	ND	29.9	NC	30
		Barium	13.0	13.0	0	30
		Calcium	676	675	0.1	30
		Chromium	3.3	4.2	24	30
		Iron	33.8	92.6	93	30
		Magnesium	504	490	3	30
		Manganese	2.3	2.7	16	30
		Sodium	2,870	2,740	5	30
		Zinc	3.1	3.4	9	30
Organics (µg/kg)	15G00703	1,2-Trichloroethene	1	2	67	30
		Trichloroethene	36	38	5	30
		1,1-Dichloroethene	2	ND	NC	30
TAL Metals (mg/kg)	15G00703	Aluminum	43.6	108	14	30
		Antimony	ND	21.2	NC	30
		Barium	6.6	6.2	6	30
		Calcium	587	549	7	30
		Chromium	10.6	13.4	23	30
		Copper	2.9	4.5	43	30
		Iron	107	115	7	30
		Lead	ND	5.1	NC	30
		Magnesium	280	266	5	30
		Manganese	6.9	6.5	6	30
		Nickel	10.9	20.3	60	30
		Sodium	2,040	1,820	11	30
		Zinc	5.2	6.1	16	30

See notes at end of table.

Table 4-1 (Continued)
Precision Summary for Soil and Groundwater Field Duplicate Samples

Remedial Investigation Report
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SDG Number	Sample ID	Compound	Sample Concentration (D ₁)	Duplicate Concentration (D ₂)	RPD (%)	Control Limit (%)
WF054						
Organics (µg/kg)	15G00801	Chlorobenzene	4	4	0	30
TAL Metals (mg/kg)	15G00801	Aluminum	143	116	21	30
		Arsenic	2.0	ND	NC	30
		Barium	34.7	37.3	7	30
		Calcium	1,870	2,010	7	30
		Copper	5.2	2.6	67	30
		Iron	4,760	4,940	4	30
		Magnesium	1,370	1,470	7	30
		Manganese	84.6	91.4	8	30
		Mercury	ND	0.07	NC	30
		Sodium	1,830	1,960	7	30
		Thallium	ND	0.90	NC	30
		Zinc	8.5	6.6	25	30

Notes: SDG = sample delivery group.
 ID = identification.
 RPD = relative percent difference.
 % = percent.
 µg/kg = micrograms per kilogram.
 ND = not detected.
 NC = not calculable.
 TAL = target analyte list.
 mg/kg = milligrams per kilogram.
 TRPH = total recoverable petroleum hydrocarbons.

$$RPD = 100 \times \frac{|D_1 - D_2|}{0.5 (D_1 + D_2)} \quad (1)$$

**Table 4-2
Accuracy Exceedances for MS/MSD Samples**

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SDG Number	MS/MSD Sample ID	Analyte	% Recovery MS/MSD	Control Limits (%)
Surface Soil				
WF008				
Organics (µg/kg)	15S02001	1,4-Dichlorobenzene	-/14	28 to 104
		1,2,4-Trichlorobenzene	-/12	38 to 107
		Acenaphthene	-/-	--
		2,4-Dinitrotoluene	100/94	28 to 89
		Pyrene	-/6	35 to 142
WF009				
Organics (µg/kg)	15S00101	2-Chlorophenol	16/-	25 to 102
		1,4-Dichlorobenzene	0/0	28 to 104
		1,2,4-Trichlorobenzene	0/3	38 to 107
		Acenaphthene	0/9	31 to 137
		Pentachlorophenol	10/-	17 to 109
		Pyrene	0/0	35 to 142
Groundwater				
WF024	15G00701	4-Nitrophenol	100/102	10 to 80
		2,4-Dinitrotoluene	102/106	24 to 96
		Pentachlorophenol	9/103	9 to 103
WF025	15G00601	4-Nitrophenol	99/102	10 to 80
		2,4-Dinitrotoluene	101/103	24 to 96
		Pentachlorophenol	124/130	9 to 103
WF026	15G00803	4-Chloro-3-methylphenol	99/-	23 to 97
		4-Nitrophenol	108/114	10 to 80
		Pentachlorophenol	104/104	9 to 103
		2,4-Dinitrotoluene	-/100	24 to 96
WF037	15G00803	--	--	--
WF053	15G00602	--	--	--
WF054	15G00801	--	--	--
Notes: MS/MSD = matrix spike and matrix spike duplicate. SDG = sample delivery group. ID = identification. % = percent. -- = not detected.				

A summary of the surrogate spike samples and the surrogate compounds that were outside control limits for the Phase IIB samples collected at Site 15 is presented in Table 4-3. The required control limits were also identified for each surrogate compound. All the samples associated with these surrogates were qualified in accordance with the USEPA functional guidelines as presented in Subsection 3.3.4 of the GIR (ABB-ES, 1998).

Initial calibrations were performed to ensure that the instrument was capable of producing acceptable qualitative and quantitative data for TCL VOCs. Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run and of producing a linear calibration curve. Continuing calibrations were performed to ensure that the instrument was capable of reproducing acceptable qualitative and quantitative data.

Continuing calibration establishes the 12-hour relative response factor (RRF) on which the quantitations are based and checks satisfactory performance of the instrument on a day-to-day basis. Initial and continuing calibrations for organic analytes are measured by the percent relative standard deviation (%RSD) for initial calibrations and the percent difference (%D) for continuing calibrations. Table 4-4 summarizes the organic compounds that exceeded the initial or continuing calibrations for surface soil and groundwater samples collected at Sites 15.

The evaluation of the %RSD for the initial calibrations and the %D for the continuing calibrations indicate that the response factors for the system performance check compounds generally met the required criteria for VOCs, SVOCs, pesticides, and PCBs. Samples associated with those SDGs in which certain VOCs, SVOCs, pesticides, and PCBs exhibiting an RRF which does not meet the minimum requirements were qualified as J/UJ.

4.2.3 Representativeness Representativeness is the degree to which the data obtained from an environmental sample accurately reflects the presence or absence of contamination at a site. Field quality control samples (including source water blanks, equipment rinse blanks, and trip blanks) and laboratory quality control samples (including method blanks [organic analyses] and preparation blanks [inorganic analysis]) were used to assess representativeness. Representativeness also is assessed by review of the adherence to extraction and analysis holding times. The evaluation of representativeness in field quality control samples for Site 15 SDGs is presented in Table 4-5 and summarized below.

Trip Blanks. Acetone and methylene chloride were detected in trip blanks with a concentration ranging from 2 to 19 micrograms per liter ($\mu\text{g}/\ell$) for acetone and 1 to 2 $\mu\text{g}/\ell$ for methylene chloride. Both acetone and methylene chloride are widely recognized as laboratory contaminants commonly introduced during the calibration or cleaning of equipment.

Environmental samples associated with the trip blanks with results greater than the instrument detection limit (IDL) but less than 10 times the amount detected in the trip blank were appropriately annotated with a J or UJ qualifier (LDC, 1996).

Rinsate Blanks. One VOC (acetone) was detected at concentrations ranging from 6-12 $\mu\text{g}/\ell$ in surface soil and groundwater rinsate blanks. One SVOC (di-*n*-butylphthalate) was detected at concentrations ranging from 3 to 6 $\mu\text{g}/\ell$.

Table 4-3
Accuracy Summary for Surrogate Recoveries Outside QC Criteria

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SDG Number	Sample ID	Spiked Analyte	Surrogate Recovery (%R)	QC Limits (percent)
WF008	15S02501	Decachlorobiphenyl	54	60 to 150
WF024	BKG00203	Decachlorobiphenyl	52/48	60 to 150
WF025	15G00101	Decachlorobiphenyl	21/20	60 to 150
	15G00303	Tetrachloro-m-xylene	57/58	60 to 150
	15G00502	Tetrachloro-m-xylene	155/162	60 to 150
	15R01301	Decachlorobiphenyl	59	60 to 150
	15G00502RE	Decachlorobiphenyl	53/54	60 to 150
	WF026	15G00802	2-Fluorobiphenyl	161
		Terphenyl-d14	163	33 to 141
15G00802R		2-Fluorobiphenyl	182	43 to 116
		Terphenyl-d14	153	33 to 141
15G00201		Decachlorobiphenyl	52/50	60 to 150
15G00202		Decachlorobiphenyl	58/58	60 to 150
15G00801		Decachlorobiphenyl	43/38	60 to 150
15G00803		Decachlorobiphenyl	58/58	60 to 150
16G00201		Decachlorobiphenyl	43/37	60 to 150
16G00203		Decachlorobiphenyl	44/43	60 to 150
16G00403		Decachlorobiphenyl	40/39	60 to 150
16G00403D		Decachlorobiphenyl	47/46	60 to 150
16G00601		Decachlorobiphenyl	25/25	60 to 150

Notes: QC = quality control.
 % = percent recovery.
 SDG = sample delivery group.
 ID = identification.

Table 4-4
Summary of Compounds Exceeding Instrument Calibration for Site 15 SDGs

Remedial Investigation Report
 Site 15, Southwest Landfill
 Naval Air Station Whiting Field
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SDG	Compound	Initial Calibration (%RSD)	Continuing Calibration (%D)	Qualifier
WF008	Nitrobenzene	--	25.6	UJ
	Pentachlorophenol	--	29.6	UJ
	2,4-Dinitrophenol	--	42.0	UJ
	4-Nitrophenol	--	27.3	UJ
	Pentachlorophenol	--	34.8	UJ
	3,3'-Dichlorobenzidine	--	25.9	UJ
	Benzo(b)fluoranthene	--	27.7	UJ
	Delta-BHC	21.7	--	UJ
	Alpha-BHC	20.3	--	UJ
WF009	Nitrobenzene	--	25.6	UJ
	Pentachlorophenol	--	29.6	UJ
	2,4-Dinitrophenol	--	42.0	UJ
	4-Nitrophenol	--	27.3	UJ
	Pentachlorophenol	--	34.8	UJ
	3,3'-Dichlorobenzidine	--	25.9	UJ
	Benzo(b)fluoranthene	--	27.7	UJ
WF024	Acetone	30.2	--	J
	Acetone	33.8	--	J
	Chloroethane	--	29.5	J
	Carbon disulfide	--	30.8	J
	Methylene chloride	--	41.0	J
	4-Nitroaniline	--	28.7	J
	Chrysene	--	29.5	J
	Indeno(1,2,3-cd)pyrene	--	28.1	J
	Dibenz(a,h)anthracene	--	34.0	J
Benzo(g,h,i)perylene	--	37.6	J	
WF025	Acetone	33.8	--	J
	Chloromethane	26.7	--	J
	Chloroethane	28.5	--	J

See notes at end of table.

Table 4-4 (Continued)
Summary of Compounds Exceeding Instrument Calibration for Site 15 SDGs

Remedial Investigation Report
 Site 15, Southwest Landfill
 Naval Air Station Whiting Field
 Milton, Florida

SDG	Compound	Initial Calibration (%RSD)	Continuing Calibration (%D)	Qualifier
WF025 (Continued)				
	Acetone	29.7	--	J
	2,4-Dinitrophenol	--	29.9	J
	4-Nitroaniline	--	27.6	J
	4,6-Dinitro-2-methylphenol	--	30.7	J
	Pyrene	--	30.0	J
	3,3'-Dichlorobenzidine	--	37.0	J
	2,4-Dinitrophenol	--	35.6	J
	4-Nitroaniline	--	29.4	J
	4,6-Dinitro-2-methylphenol	--	32.0	J
	Pentachlorophenol	--	27.8	J
	3,3'-Dichlorobenzidine	--	27.8	J
	4,4'-DDT	23.6	--	J
WF026	Acetone	33.8	--	J
	Chloromethane	--	46.5	J
	Chloroethane	--	77.1	J
	1,1-Dichloroethane	--	28.6	J
	2-Butanone	--	30.3	J
	Chloromethane	--	32.5	J
	Chloroethane	--	32.4	J
	Acetone	--	37.9	J
	Carbon disulfide	--	28.0	J
	2-Butanone	--	27.8	J
	2,4-Dinitrophenol	--	35.6	J
	4-Nitroaniline	--	29.4	J
	4,6-Dinitro-2-methylphenol	--	32.0	J
	Pentachlorophenol	--	27.8	J
	3,3'-Dichlorobenzidine	--	27.8	J
	4-Chloroaniline	--	36.8	J
See notes at end of table.				

Table 4-4 (Continued)
Summary of Compounds Exceeding Instrument Calibration for Site 15 SDGs

Remedial Investigation Report
 Site 15, Southwest Landfill
 Naval Air Station Whiting Field
 Milton, Florida

SDG	Compound	Initial Calibration (%RSD)	Continuing Calibration (%D)	Qualifier
WF026 (Continued)				
	3-Nitroaniline	--	37.9	J
	2,4-Dinitrophenol	--	29.3	J
	4-Nitroaniline	--	49.5	J
	4,6-Dinitro-2-methylphenol	--	29.4	J
	Pentachlorophenol	--	29.6	J
	3,3'-Dichlorobenzidine	--	54.1	J
	alpha-BHC	22.2	--	J
	delta-BHC	22.1	--	J
WF037	Di- <i>n</i> -octylphthalate	--	25.3	J
	alpha-BHC	23.9	--	J
WF053	Acetone	--	36.4	J
	Acetone	39.1	--	J
	Acetone	--	36.4	J
	Acetone	--	30.3	J

Notes: SDG = sample delivery group.
 %RSD = percent relative standard deviation for initial calibrations.
 %D = percent difference for continuing calibrations.
 -- = not detected.
 UJ = analyte was not detected above the reported sample instrument detection limit (IDL); however, the reported concentration is approximate and may not reliably be presumed to be less than the IDL value.
 BHC = benzene hexachloride.
 J = analyte was positively identified and is reported as an approximate concentration.
 DDT = dichlorodiphenyltrichloroethane.

Table 4-5
Representativeness Summary for Field QC Samples for Site 15 SDGs

Remedial Investigation Report
Site 15, Southwest Landfill
Naval Air Station Whiting Field
Milton, Florida

SDG:	WF008		WF009		WF024	WF025			WF026	
Sample ID:	15T00101	15R00101	15T00201	15R00201	15R01201	15T01501	15T01601	15R01301	15T01701	15R01401
Collect Date:	12-09-95	12-11-95	12-11-95	12-11-95	7-31-96	8-5-96	8-8-96	8-7-96	8-12-96	8-14-96
Sample Type:	Trip Blank	Rinsate Blank	Trip Blank	Rinsate Blank	Rinsate Blank	Trip Blank	Trip Blank	Rinsate Blank	Trip Blank	Rinsate Blank
Volatile Organic Compounds (µg/l)										
Acetone	8	--	19	12	6	4	2	--	--	6
Xylene (total)	--	--	--	--	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	2	1	--	1	--
Semivolatile Organic Compounds (µg/l)										
Di-n-butylphthalate	NA	3	NA	4	6	NA	NA	6	NA	6
bis(2-Ethylhexyl)phthalate	NA	--	NA	--	--	NA	NA	--	NA	--
Pesticides and PCBs (µg/l)										
None detected										
Inorganic Analytes (µg/l)										
Aluminum	NA	54.6 UJ	NA	69.8 UJ	13.8 U	NA	NA	--	NA	--
Barium	NA	1.0 J	NA	1.0 J	--	NA	NA	--	NA	--
Beryllium	NA	0.21 UJ	NA	0.29 UJ	--	NA	NA	--	NA	--
Calcium	NA	22.6 UJ	NA	58.5 UJ	--	NA	NA	--	NA	--
Cadmium	--	--	--	--	--	--	--	--	--	--
Chromium	--	--	--	--	--	--	--	--	--	--
Copper	NA	5.0 UJ	NA	6.5 UJ	--	NA	NA	--	NA	--
Iron	NA	45.4 UJ	NA	29.2 UJ	10.5 U	NA	NA	5.3 U	NA	14.8 U
Lead	--	--	--	--	--	--	--	--	--	--
Manganese	NA	--	NA	--	--	NA	NA	--	NA	--
Mercury	--	--	--	--	--	--	--	--	--	--
Nickel	NA	--	NA	48.7 U	--	NA	NA	--	NA	--
Sodium	NA	--	NA	--	55.4 U	NA	NA	26.6	NA	--
Zinc	NA	1.5 UJ	NA	2.7 J	--	NA	NA	1.8 U	NA	1.1
TRPH	NA	--	NA	--	--	NA	NA	--	NA	--
Cyanide	NA	--	NA	--	2.6	NA	NA	--	NA	1.8

See notes at end of table.

Table 4-5 (Continued)
Representativeness Summary for Field QC Samples for Site 15 SDGs

Remedial Investigation Report
Site 15, Southwest Landfill
Naval Air Station Whiting Field
Milton, Florida

SDG:	WF037	WF053					WF054	
Sample ID:	15F00201	15T07201	15T07301	15T07401	15T07501	15R03701	15T07601	15R03801
Collect Date:	11-20-96	7-27-97	7-28-97	7-29-97	7-30-97	7-27-97	8-4-96	8-5-97
Sample Type:	Field Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Rinsate Blank	Trip Blank	Rinsate Blank
<u>Volatile Organic Compounds (µg/l)</u>								
Acetone	--	--	--	--	--	--	--	--
Xylene (total)	2	--	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--	--	--
<u>Semivolatile Organic Compounds (µg/l)</u>								
Di-n-butylphthalate	4	--	--	--	--	--	--	--
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	--	--
<u>Pesticides and PCBs (µg/l)</u>								
None detected								
<u>Inorganic Analytes (µg/l)</u>								
Aluminum	--	--	--	--	--	--	--	--
Barium	1.2	NA	NA	NA	NA	1.6	NA	--
Beryllium	--	--	--	--	--	--	--	--
Cadmium	--	NA	NA	NA	NA	--	NA	4.7
Calcium	111	NA	NA	NA	NA	134	NA	159
Chromium	--	NA	NA	NA	NA	4.2	NA	--
Copper	6.8	NA	NA	NA	NA	2.1	NA	1.3
Iron	--	NA	NA	NA	NA	18.4	NA	13.3
Lead	--	NA	NA	NA	NA	--	NA	--
Manganese	0.43	NA	NA	NA	NA	0.69	NA	0.48
Mercury	--	NA	NA	NA	NA	--	NA	0.05
Nickel	--	NA	NA	NA	NA	--	NA	--
Sodium	2.6	NA	NA	NA	NA	83.0	NA	20.0

See notes at end of table.

Table 4-5 (Continued)
Representativeness Summary for Field QC Samples for Site 15 SDGs

Remedial Investigation Report
Site 15, Southwest Landfill
Naval Air Station Whiting Field
Milton, Florida

SDG:	WF037	WF053					WF054	
Sample ID:	15F00201	15T07201	15T07301	15T07401	15T07501	15R03701	15T07601	15R03801
Collect Date:	11-20-96	7-27-97	7-28-97	7-29-97	7-30-97	7-27-97	8-4-96	8-5-97
Sample Type:	Field Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Rinsate Blank	Trip Blank	Rinsate Blank
Inorganic Analytes (Continued)								
Zinc	2.6	NA	NA	NA	NA	5.0	NA	1.8
TRPH	--	--	--	--	--	--	--	--
Cyanide	--	NA	NA	NA	NA	--	NA	--
<p>Notes: QC = quality control. PCB = polychlorinated biphenyl. SDG = sample delivery group. UJ = estimated detection value. ID = identification. J = estimated value. µg/l = microgram per kilogram. U = instrument detection value. -- = analyte not detected. TRPH = total recoverable petroleum hydrocarbons. NA = not analyzed.</p>								

Inorganics detected at concentrations exceeding the IDL but less than the contract-required detection limits are aluminum, beryllium, calcium, copper, iron, and zinc. Barium was detected at an estimated 1.0 $\mu\text{g}/\ell$ in two rinsate blanks. Cyanide was detected in two groundwater rinsate blanks at concentrations of 1.8 and 2.6 $\mu\text{g}/\ell$. TRPH was not detected in any of the rinsate blanks.

Field Blank. One VOC (xylene) was detected in field blank (15F00201) at a concentration of 2 $\mu\text{g}/\ell$. One SVOC (di-*n*-butylphthalate) was detected at a concentration of 4 $\mu\text{g}/\ell$ in field blank 15F00201). Environmental samples associated with the field blank that reported results greater than the IDL but less than 10 times the amount detected in the field blank were appropriately annotated with a UJ qualifier.

Six inorganic analytes (barium, calcium, copper, manganese, sodium, and zinc) were detected in field blank 15F00201. TRPH and cyanide were not detected in the Site 15 field blank.

Laboratory Method and Preparation Blanks. Concentrations of VOCs, SVOCs and metals were detected in the laboratory method blanks associated with SDGs WFO08, WFO09, WFO24, WFO25, WFO26, WFO37, WFO53, and WFO54.

Environmental samples associated with method blanks that contained methylene chloride and acetone with results greater than IDL but less than 10 times the amount detected in the laboratory preparation blanks were annotated with UJ qualifier (LDC, 1996). For metals, sample results greater than IDL but less than 5 times the amount detected in the laboratory preparation blanks were appropriately annotated with a J or UJ qualifier (LDC, 1996).

Sampling and analysis holding times for each analytical fraction were met in all samples.

Qualification of the environmental samples were required because of the detection of target analytes in laboratory and field blanks. Qualification of the RI data, based on blank contamination, were performed according to USEPA data validation guidelines (USEPA, 1994a and 1994b). According to the data validation (LDC, 1996), the analytes detected in the QA/QC blanks are considered common contaminants and were found at typical concentrations; therefore, the analytical results are considered to be representative.

4.2.4 Comparability Comparability is the confidence with which one data set can be compared with another and the degree to which the environmental data from each sampling event are considered equivalent. Comparability of the analytical data was assured by using standard operating procedures for sample collection, by using standard chemical analytical methods, and by reporting the analytical results in standard units (SUs). The sampling, shipment, and analytical protocols were consistent with USEPA standard operation procedures and methodologies described in workplans for NAS Whiting Field throughout the period of the RI.

4.2.5 Completeness Completeness is the percentage of useable data reported and validated compared with the total number of measurements made. Useable data are those measurements that were not rejected (qualified with an "R") during the

validation process. None of the analytical data were rejected. The goal for analytical completeness for the RI sampling event was 85 percent useable data. The completeness goal of 85 percent was met for all matrices and all parameters.

4.3 SUMMARY. Based on the results of the QC sample analyses, the established precision, accuracy, and representativeness goals of the project were achieved (Table 4-6). Some field and/or laboratory-derived contamination was present in some of the QC samples, which required the results of some environmental samples to be amended. QC sample results and data validation criteria indicate that a 99 - 100 percent completeness goal was achieved; thus, satisfying the 85 percent goal. Standard methods of analyses and units of measure were used throughout the project; therefore, the QC criteria and the DQOs presented in the workplan were achieved.

**Table 4-6
Summary of DQO Assessment - PARCC Parameters**

Remedial Investigation Report
Site 15, Southwest Landfill
Naval Air Station Whiting Field
Milton, Florida

Sample Type	Precision ¹	Accuracy ²	Representativeness	Completeness (%)	Comparability
Surface Soil Samples - Site 15					
<u>SDG WF008 and WF009</u>					
TCL VOC	Acceptable	Acceptable	Acceptable	100	Acceptable
TCL SVOCs	Acceptable	Acceptable	Acceptable	99.5	Acceptable
Pesticides and PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
TAL metals and total cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
TRPH	Acceptable	Acceptable	Acceptable	100	Acceptable
Groundwater Samples - Site 15					
<u>SDG WF024, WF025, WF026, WF037, WF053, and WF054</u>					
TCL VOC	Acceptable	Acceptable	Acceptable	100	Acceptable
TCL SVOCs	Acceptable	Acceptable	Acceptable	100	Acceptable
Pesticides and PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
TAL metals and total cyanides	Acceptable	Acceptable ³	Acceptable	100	Acceptable

¹ Cumulative of sampling and analytical components.

² Analytical component.

³ The accuracy for cyanide measurements associated with SDG WF037 was found to be unacceptable.

⁴ A few samples have results whose concentrations were rejected.

Notes: All the units are expressed as the ratio of number of analytes meeting the quality control criteria to the total number of analytes.

DQO = data quality objective.

PARCC = precision, accuracy, reproducibility, completeness, and comparability.

% = percent.

SDG = sample delivery group.

TCL VOCs = target compound list volatile organic compounds.

TCL SVOCs = target compound list semivolatile organic compounds.

PCB = polychlorinated biphenyl.

TAL = target analyte list.

TRPH = total recoverable petroleum hydrocarbons.

5.0 INVESTIGATIVE RESULTS

The following sections present the interpretation of geology and hydrogeology for the southwest disposal area, which includes Sites 15 and 16. Geophysical survey data, as well as analytical results of soil gas, surface soil, subsurface soil, and groundwater sampling events are presented for Site 15.

5.1 GEOLOGIC RESULTS. This section presents the summarized results of the Phase IIA and IIB geologic investigations of Sites 15 and 16, which are in close proximity and share similar geologic characteristics.

Surface soil at the sites is generally described in test pit logs (Appendix D-1) as red-orange to yellowish orange (fine- to very fine-grained) clayey sand or light tan (fine- to very fine-grained) silty sand. The shallow soil (2 to 7 feet bls) tended to be red-orange to light tan in color and contained thin interbedded sand silt and clay layers.

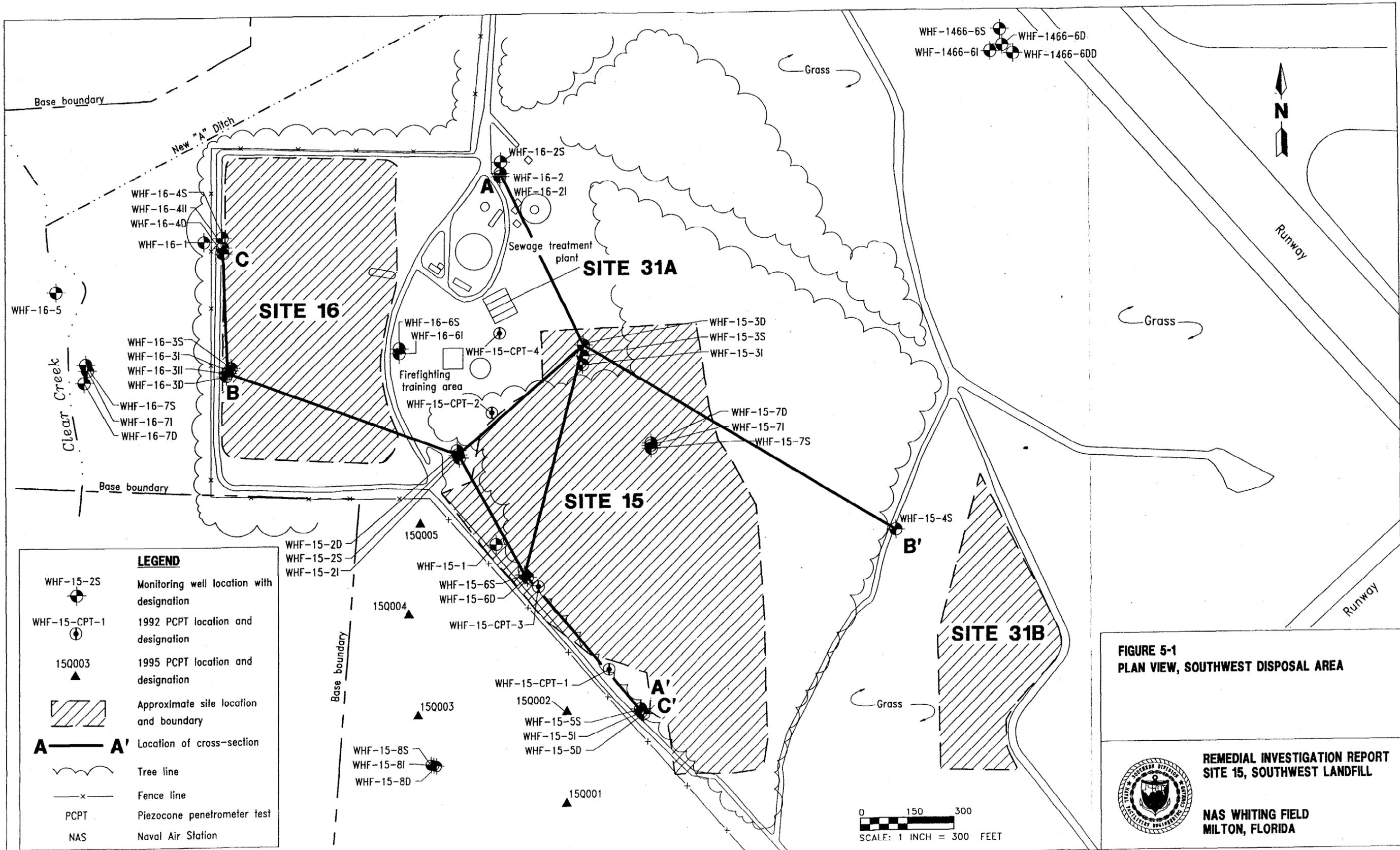
The subsurface lithology (greater than 7 feet bls) of Sites 15 and 16 consists of poorly graded (very fine- to fine- to medium-grained) sand displaying various shades of yellow, brown, and gray. Layers of well-graded sand, clay, and silt are common to the deep borings at both sites (Appendix D). The soil from shallow depths (referred to as interbedded sands, silts, and clays on cross sections) tends to be darker in color and contain significant amounts of clay and silt.

A plan view of Site 15 and 16 is provided on Figure 5-1 and a description of the geology of the two sites is depicted in cross sections shown on Figures 5-2, 5-3, and 5-4. These cross sections show that a continuous clay layer is not present immediately beneath the southwest disposal area. A 3-foot-thick clay layer was encountered sporadically during drilling but is likely discontinuous across the area. Clay was detected at Site 15 in monitoring wells WHF-15-3D and WHF-15-5. These layers are relatively thin and discontinuous. Clay detected at Site 16 occurs beneath the northern area of the landfill (WHF-16-4D) and is not found in the southern area of the landfill. Clay exceeding 30 feet in thickness is present at a depth of approximately 65 feet bls at monitoring well WHF-16-2D (ABB-ES, 1995e). The horizontal extent of this layer is not known.

Detailed lithologic descriptions can be found in the boring and monitoring well logs included in Appendix D of this report. A general discussion of the geology at NAS Whiting Field is presented in Subsection 1.4.5 of the GIR (ABB-ES, 1998).

5.2 HYDROGEOLOGIC RESULTS. The hydrogeologic assessment included determining horizontal and vertical hydraulic gradients, hydraulic conductivities, and seepage velocities.

Water table elevations were measured twice, September 30 through October 1, 1993, and February 8 through 9, 1994, during the RI Phase IIA investigation. Beginning in June 1994, quarterly water table elevations were measured as part the RI Phase IIB investigation. Groundwater measurements were recorded in all available monitoring wells, and the measured water elevation data through January 1996 are provided in Appendix E of the GIR. Measurements recorded since January 1996 are included in this report. Because the groundwater measurement data between the



LEGEND	
WHF-15-2S	Monitoring well location with designation
WHF-15-CPT-1	1992 PCPT location and designation
15Q003	1995 PCPT location and designation
	Approximate site location and boundary
A—A'	Location of cross-section
	Tree line
	Fence line
PCPT	Piezcone penetrometer test
NAS	Naval Air Station

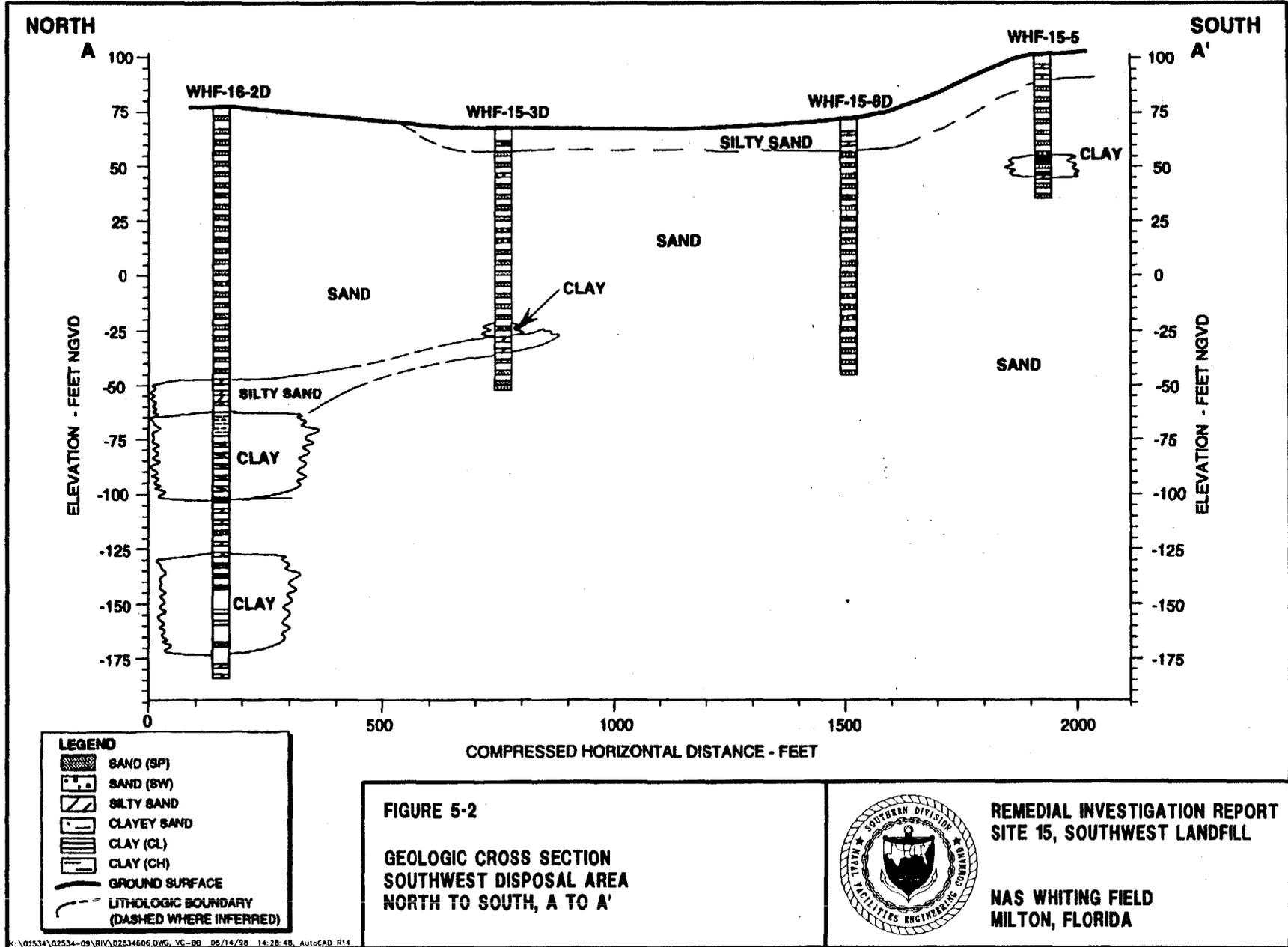
**FIGURE 5-1
PLAN VIEW, SOUTHWEST DISPOSAL AREA**

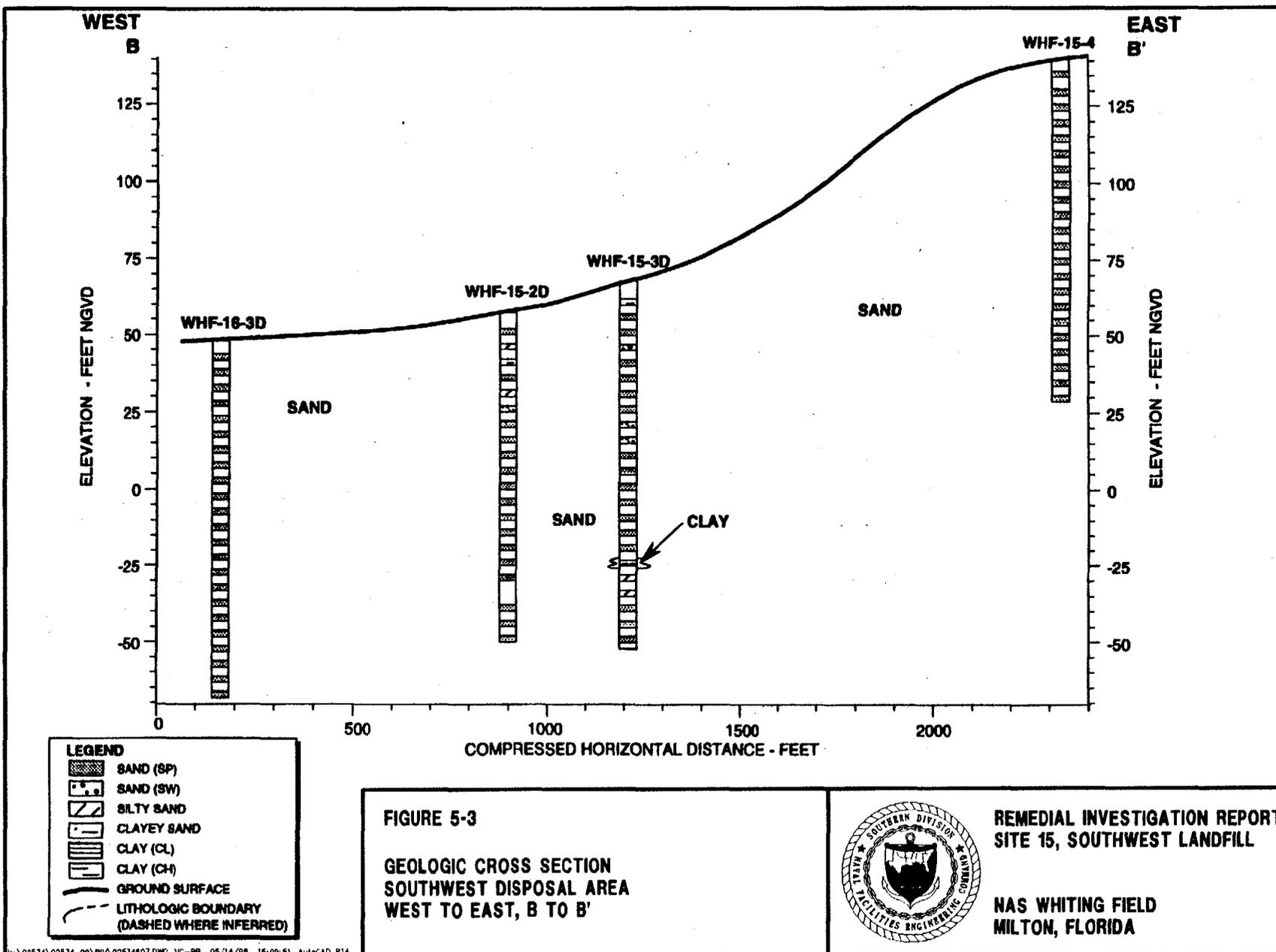
**REMEDIAL INVESTIGATION REPORT
SITE 15, SOUTHWEST LANDFILL**

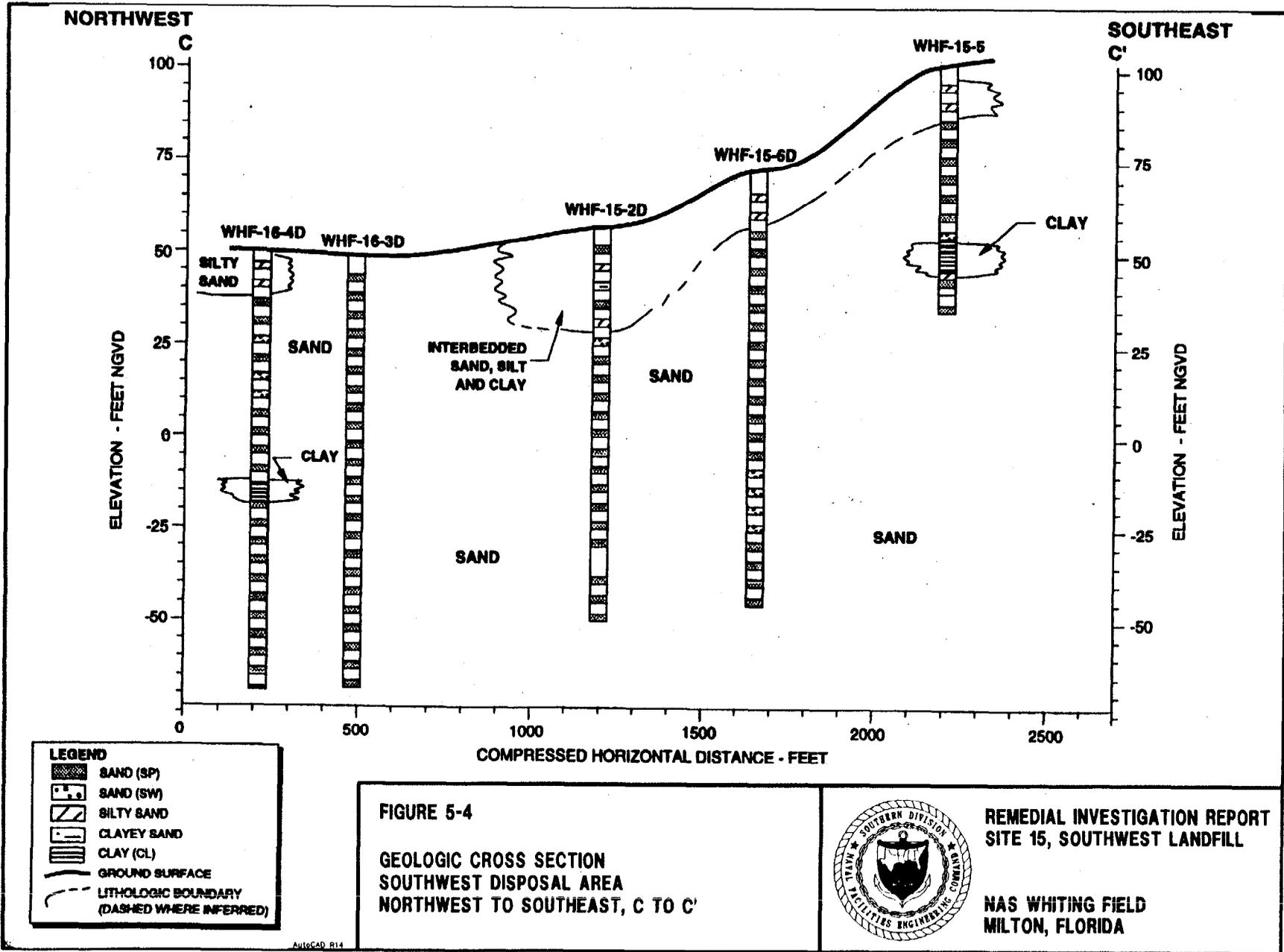
**NAS WHITING FIELD
MILTON, FLORIDA**

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multiple measurement events are similar, a discussion and figures for only the two most recent events (January 16 and 18, 1997, and August 7 and 9, 1997) are presented in this report.

The hydrogeologic assessment results are used to evaluate the transport of human health and ECPC from the site by groundwater flow. Chapter 8.0 of this report covers contaminant fate and transport for human health and ECPC at Site 15.

Groundwater Flow Direction. Table 5-1 summarizes the results of the water-level measurements recorded for the RI/FS sites in the southwest disposal area (i.e., Sites 15 and 16) during the RI field program. Figures 5-5 and 5-6 show groundwater flow patterns as potentiometric surface maps for the periods of January 16 through 18, 1997, and August 7 through 9, 1997. The data from the measurement events indicated a groundwater flow direction to the southwest. Facilitywide water table elevation data are provided in Appendix D of the GIR (ABB-ES, 1998).

Horizontal and Vertical Gradients. Table 5-2 provides a summary of the horizontal hydraulic gradients calculated for the southwest disposal area in January and August 1997. The horizontal hydraulic gradients at Site 15 ranged from 0.0057 foot per foot (ft/ft) (monitoring wells WHF-16-3S and WHF-15-2S) to 0.0082 ft/ft (monitoring wells WHF-15-7S and WHF-15-6S). The horizontal hydraulic gradients at Site 16 ranged from 0.0063 ft/ft (monitoring wells WHF-16-6S and WHF-16-3S) to 0.0069 ft/ft (monitoring wells WHF-16-2S and WHF-16-4S). The average hydraulic gradients for the southwest disposal area in each measurement event were 0.0067 ft/ft for January 1997 and 0.0064 ft/ft for August 1997. The overall average horizontal hydraulic gradient for all measurement events was 0.0066 ft/ft.

Table 5-3 presents a summary of the vertical hydraulic gradients calculated for the southwest disposal area. The vertical hydraulic gradients were calculated using nine well pairs at Site 15 and six well pairs at Site 16 in January and August of 1997. Values calculated for the paired monitoring wells in January ranged from -0.0015 ft/ft (upward movement) to 0.023 ft/ft (downward movement). Vertical hydraulic gradients were mostly in a downward direction.

Hydraulic Conductivity and Seepage Velocity. Slug tests were conducted on 13 monitoring wells during the RI and the hydraulic conductivity values calculated from slug test data are summarized in Table 5-4. A minimum of three trials of rising head slug tests were conducted for each monitoring well in the southwest disposal area. A more detailed presentation of the evaluation of hydraulic conductivity data is presented in Section 2.3 (Table 2-2) of Technical Memorandum No. 4, Hydrogeologic Assessment, January 1995 (ABB-ES, 1995d).

The average hydraulic conductivity values for individual monitoring wells at Site 15 ranged from 0.73 feet per day (ft/day) (2.58×10^{-3} centimeters per second [cm/sec]) for WHF-15-2D to 28 ft/day (9.88×10^{-4} cm/sec) for WHF-15-2I. The geometric mean of the hydraulic conductivity values for Site 15 is 10.8 ft/day (3.81×10^{-4} cm/sec) or approximately 4,000 feet per year (ft/yr).

The average hydraulic conductivity values for individual monitoring wells at Site 16 ranged from 0.27 ft/day (9.5×10^{-2} cm/sec) for WHF-16-3D to 46.5 ft/day

**Table 5-1
Summary of Water-Level Elevations**

Remedial Investigation Report
Site 15, Southwest Disposal Area
Naval Air Station Whiting Field
Milton, Florida

Monitoring Well Designation	Well TOC Elevation (feet msl)	Well Depth (feet BTOC)	April 25 to 27, 1996		July 25 to 27, 1996	
			Depth to Groundwater (feet BTOC)	Groundwater Elevation (feet above msl)	Depth to Groundwater (feet BTOC)	Groundwater Elevation (feet above msl)
Southwest Disposal Area						
Site 15, Southwest Landfill						
WHF-15-1	66.35	73.60	21.82	44.53	--	--
WHF-15-2S	59.58	32.90	13.45	46.13	14.39	45.19
WHF-15-2I	60.10	63.20	15.33	44.77	16.19	43.91
WHF-15-2D	59.39	112.44	14.68	44.71	15.52	43.87
WHF-15-3S	69.29	37.94	20.17	49.12	21.39	47.90
WHF-15-3I	69.69	87.83	21.41	48.28	22.16	47.53
WHF-15-3D	69.44	119.48	20.68	48.76	21.36	48.08
WHF-15-4S	143.29	109.15	92.11	51.18	92.53	50.76
WHF-15-5S	104.14	68.18	59.38	44.76	60.22	43.92
WHF-15-5I	105.17	98	--	--	61.28	43.89
WHF-15-5D	106.11	128.38	--	--	62.22	43.89
WHF-15-6S	74.29	43.73	29.23	45.06	30.15	44.14
WHF-15-6D	75.08	123.36	30.37	44.71	31.27	43.81
WHF-15-7S	120.18	88.85	--	--	70.76	49.69
WHF-15-7I	119.85	121.5	--	--	70.46	49.71
WHF-15-7D	119.49	147.53	--	--	70.03	49.15
WHF-15-8S	79.67	55	--	--	40.15	39.52
WHF-15-8I	79.48	85.2	--	--	39.98	39.50
WHF-15-8D	79.08	115	--	--	39.57	39.51
Site 16, Open Disposal Burning Area						
WHF-16-1	50.04	43.00	8.94	41.10	9.29	40.75
WHF-16-2	82.19	74.20	33.93	49.73	33.20	48.99
WHF-16-2S	83.66	49.80	32.53	49.66	34.63	49.03
WHF-16-2I	80.60	130.14	31.23	49.37	31.89	48.71
WHF-16-3S	51.69	23.25	10.83	40.86	11.14	40.55
WHF-16-3I	51.31	52.87	10.49	40.82	10.93	40.38
WHF-16-3II	51.22	78.91	10.60	40.62	11.04	40.18
WHF-16-3D	51.40	118.08	6.57	44.83	6.92	44.48
WHF-16-4S	54.79	22.38	10.67	44.12	12.74	42.05
WHF-16-4II	53.01	64.80	11.58	41.43	11.75	41.26
WHF-16-4D	52.87	122.54	11.43	41.44	11.75	41.12
WHF-16-5	37.54	10.00	3.09	34.45	3.16	34.38
See notes at end of table.						

**Table 5-1 (Continued)
Summary of Water-Level Elevations**

Remedial Investigation Report
Site 15, Southwest Disposal Area
Naval Air Station Whiting Field
Milton, Florida

Monitoring Well Designation	Well TOC Elevation (feet msl)	Well Depth (feet BTOC)	April 25 to 27, 1996		July 25 to 27, 1996	
			Depth to Groundwater (feet BTOC)	Groundwater Elevation (feet above msl)	Depth to Groundwater (feet BTOC)	Groundwater Elevation (feet above msl)
Site 16, Open Disposal Burning Area (Continued)						
WHF-16-6S	56.57	26	--	--	12.16	44.41
WHF-16-6D	56.77	62.1	--	--	--	--
WHF-16-7S	38.27	14	--	--	2.96	35.31
WHF-16-7I	38.17	46.5	--	--	1.44	36.73
WHF-16-7D	38.05	75.2	--	--	1.31	36.74
Site 1466, Aviation Gas Disposal Area						
WHF-1466-6S	173.09	131	115.54	57.55	115.54	57.55
WHF-1466-6I	173.06	160	115.52	57.54	115.52	57.54
WHF-1466-6D	173.05	190.5	115.58	57.47	115.58	57.47
WHF-1466-6DD	173.90	220	--	--	--	--
See notes at end of table.						

Table 5-1 (Continued)
Summary of Water-Level Elevations

Remedial Investigation Report
 Site 15, Southwest Disposal Area
 Naval Air Station Whiting Field
 Milton, Florida

Monitoring Well Designation	Well TOC Elevation (feet msl)	Well Depth (feet BTOC)	November 7 to 9, 1996	
			Depth to Groundwater (feet BTOC)	Groundwater Elevation (feet above msl)
Southwest Disposal Area				
Site 15, Southwest Landfill				
WHF-15-1	66.35	73.60	23.90	42.45
WHF-15-2S	59.58	32.90	16.10	43.48
WHF-15-2I	60.10	63.20	17.37	42.73
WHF-15-2D	59.39	112.44	15.70	43.69
WHF-15-3S	69.29	37.94	22.77	46.52
WHF-15-3I	69.69	87.83	23.53	46.12
WHF-15-3D	69.44	119.48	22.75	46.69
WHF-15-4S	143.29	109.15	94.45	48.84
WHF-15-5S	104.14	68.18	61.54	42.60
WHF-15-5I	105.17	98	62.63	42.54
WHF-15-5D	106.11	128.38	63.54	42.57
WHF-15-6S	74.29	43.73	31.40	42.89
WHF-15-6D	75.08	123.36	32.45	42.63
WHF-15-7S	120.18	88.85	72.35	48.10
WHF-15-7I	119.85	121.5	72.03	48.14
WHF-15-7D	119.49	147.53	71.63	47.55
WHF-15-8S	79.67	55	41.11	38.56
WHF-15-8I	79.48	85.2	40.95	38.53
WHF-15-8D	79.08	115	40.54	38.54
Site 16, Open Disposal Burning Area				
WHF-16-1	50.04	43.00	9.06	40.98
WHF-16-2	82.19	74.20	34.47	47.72
WHF-16-2S	83.66	49.80	35.87	47.79
WHF-16-2I	80.60	130.14	33.13	47.47
WHF-16-3S	51.69	23.25	12.01	39.68
WHF-16-3I	51.31	52.87	11.71	39.60
WHF-16-3II	51.22	78.91	11.80	39.42
WHF-16-3D	51.40	118.08	7.86	43.54
WHF-16-4S	54.79	22.38	13.81	40.98
WHF-16-4II	53.01	64.80	12.48	40.53
WHF-16-4D	52.87	122.54	12.46	40.41
WHF-16-5	37.54	10.00	3.35	34.19
See notes at end of table.				

**Table 5-1 (Continued)
Summary of Water-Level Elevations**

Remedial Investigation Report
Site 15, Southwest Disposal Area
Naval Air Station Whiting Field
Milton, Florida

Monitoring Well Designation	Well TOC Elevation (feet msl)	Well Depth (feet BTOC)	November 7 to 9, 1996	
			Depth to Groundwater (feet BTOC)	Groundwater Elevation (feet above msl)
Site 16, Open Disposal Burning Area (Continued)				
WHF-16-6S	56.57	26	13.46	43.11
WHF-16-6D	56.77	62.1	13.59	43.18
WHF-16-7S	38.27	14	3.68	34.59
WHF-16-7I	38.17	46.5	1.93	36.24
WHF-16-7D	38.05	75.2	1.79	36.26
Site 1466, Aviation Gas Disposal Area				
WHF-1466-6S	173.09	131	117.20	55.89
WHF-1466-6I	173.06	160.06	117.20	55.86
WHF-1466-6D	173.05	190.5	117.22	55.83
WHF-1466-6DD	172.90	220	117.09	55.77
See notes at end of table.				

Table 5-1 (Continued)
Summary of Water-Level Elevations

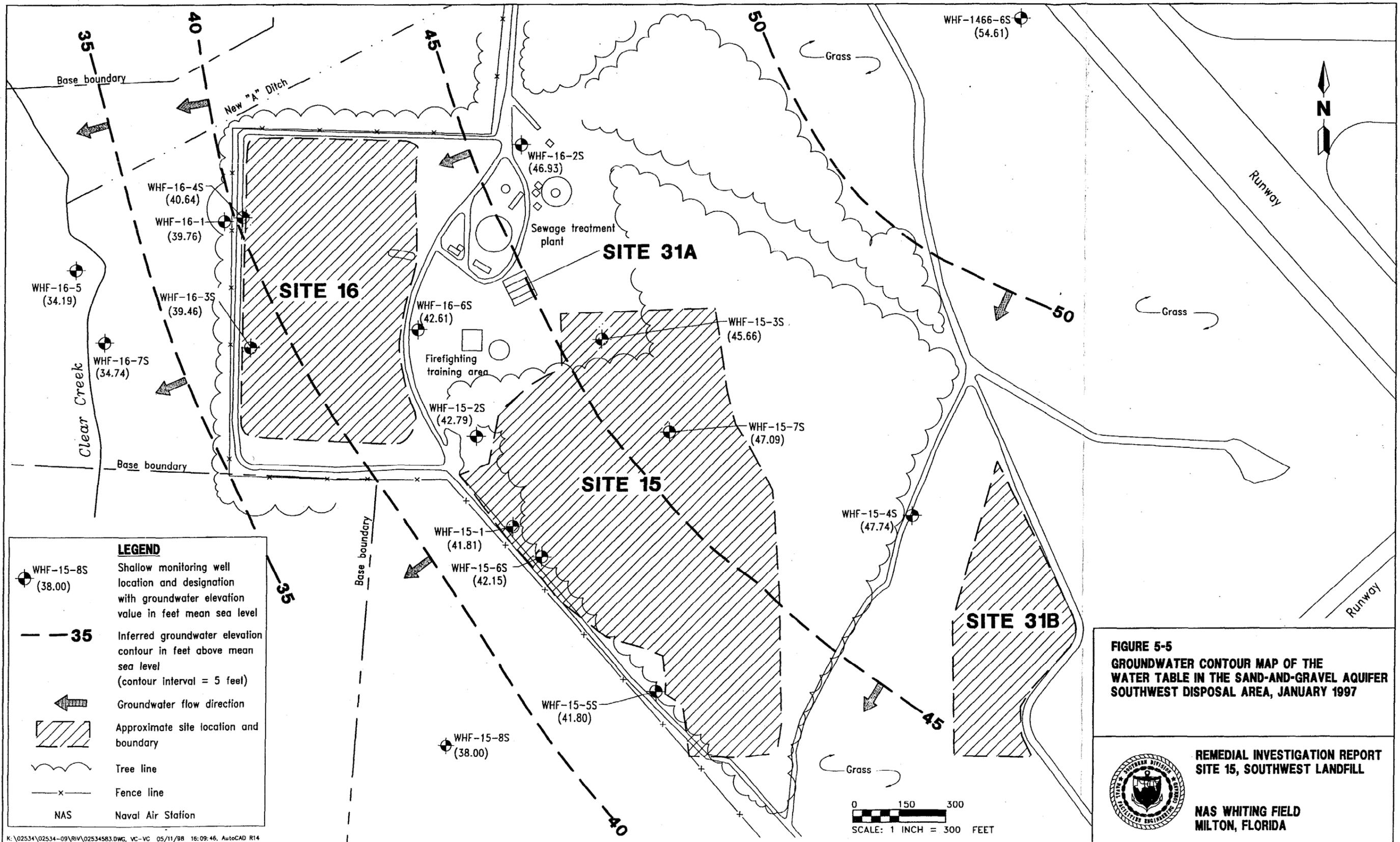
Remedial Investigation Report
Site 15, Southwest Disposal Area
Naval Air Station Whiting Field
Milton, Florida

Monitoring Well Designation	Well TOC Elevation (msl)	Well Depth (feet BTOC)	January 16 to 18, 1997		August 7 to 9, 1997	
			Depth to Groundwater (feet BTOC)	Groundwater Elevation (feet above msl)	Depth to Groundwater (feet BTOC)	Groundwater Elevation (feet above msl)
Southwest Disposal Area						
Site 15, Southwest Landfill						
WHF-15-1	66.35	73.60	24.54	41.81	25.51	40.84
WHF-15-2S	59.58	32.90	16.79	42.79	18.09	41.49
WHF-15-2I	60.10	63.20	18.01	42.09	18.93	41.17
WHF-15-2D	59.39	112.44	17.33	42.06	18.24	41.15
WHF-15-3S	69.29	37.94	23.63	45.66	24.80	44.49
WHF-15-3I	69.69	87.83	24.25	45.44	25.57	44.12
WHF-15-3D	69.44	119.48	23.59	45.85	24.85	44.59
WHF-15-4S	143.29	109.15	95.55	47.74	97.24	46.05
WHF-15-5S	104.14	68.18	62.34	41.80	63.40	40.74
WHF-15-5I	105.17	98	63.40	41.77	64.46	40.71
WHF-15-5D	106.11	128.38	64.34	41.77	65.40	40.71
WHF-15-6S	74.29	43.73	32.14	42.15	33.12	41.17
WHF-15-6D	75.08	123.36	33.19	41.89	34.15	40.93
WHF-15-7S	120.18	88.85	73.36	47.09	74.90	45.55
WHF-15-7I	119.85	121.5	73.03	47.14	74.56	45.61
WHF-15-7D	119.49	147.53	72.63	47.18	74.17	45.64
WHF-15-8S	79.67	55	41.67	38.00	41.79	37.88
WHF-15-8I	79.48	85.2	41.48	38.00	42.24	37.24
WHF-15-8D	79.08	115	41.09	37.99	42.35	36.73
Site 16, Open Disposal Burning Area						
WHF-16-1	50.04	43.00	10.26	39.76	10.87	39.17
WHF-16-2	82.19	74.20	--	--	--	--
WHF-16-2S	83.66	49.80	35.26	46.93	36.49	45.70
WHF-16-2I	80.60	130.14	33.88	46.72	35.11	45.49
WHF-16-3S	51.69	23.25	12.23	39.46	12.92	38.77
WHF-16-3I	51.31	52.87	12.04	39.27	12.67	38.64
WHF-16-3II	51.22	78.91	12.12	39.10	12.75	38.47
WHF-16-3D	51.40	118.08	8.34	43.06	9.28	42.12
WHF-16-4S	54.79	22.38	14.15	40.64	14.86	39.93
WHF-16-4I	53.01	64.80	12.81	40.20	13.47	39.54
WHF-16-4D	52.87	122.54	12.80	40.07	13.45	39.42
WHF-16-5	37.54	13.5	3.35	34.19	3.67	33.87
See notes at end of table.						

**Table 5-1 (Continued)
Summary of Water-Level Elevations**

Remedial Investigation Report
Site 15, Southwest Disposal Area
Naval Air Station Whiting Field
Milton, Florida

Monitoring Well Designation	Well TOC Elevation (msl)	Well Depth (feet BTOC)	January 16 to 18, 1997		August 7 to 9, 1997	
			Depth to Groundwater (feet BTOC)	Groundwater Elevation (feet above msl)	Depth to Groundwater (feet BTOC)	Groundwater Elevation (feet above msl)
Site 16, Open Disposal Burning Area (Continued)						
WHF-16-6S	56.57	26	13.96	42.61	14.73	41.84
WHF-16-6D	56.77	62.1	14.18	42.61	15.09	41.68
WHF-16-7S	38.27	14	3.53	34.74	4.00	34.27
WHF-16-7I	38.17	46.5	2.11	36.06	2.50	35.67
WHF-16-7D	38.05	75.2	1.99	36.06	2.39	35.66
Site 1466, Aviation Gas Disposal Area						
WHF-1466-6S	173.09	131	118.48	54.61	120.63	52.46
WHF-1466-6I	173.06	160	118.43	54.63	120.61	52.45
WHF-1466-6D	173.05	190.5	118.50	54.55	120.62	52.43
WHF-1466-6DD	172.90	220	118.37	54.49	120.49	52.37
Notes: TOC = top of casing. msl = mean sea level. BTOC = below top of casing. -- = not available.						



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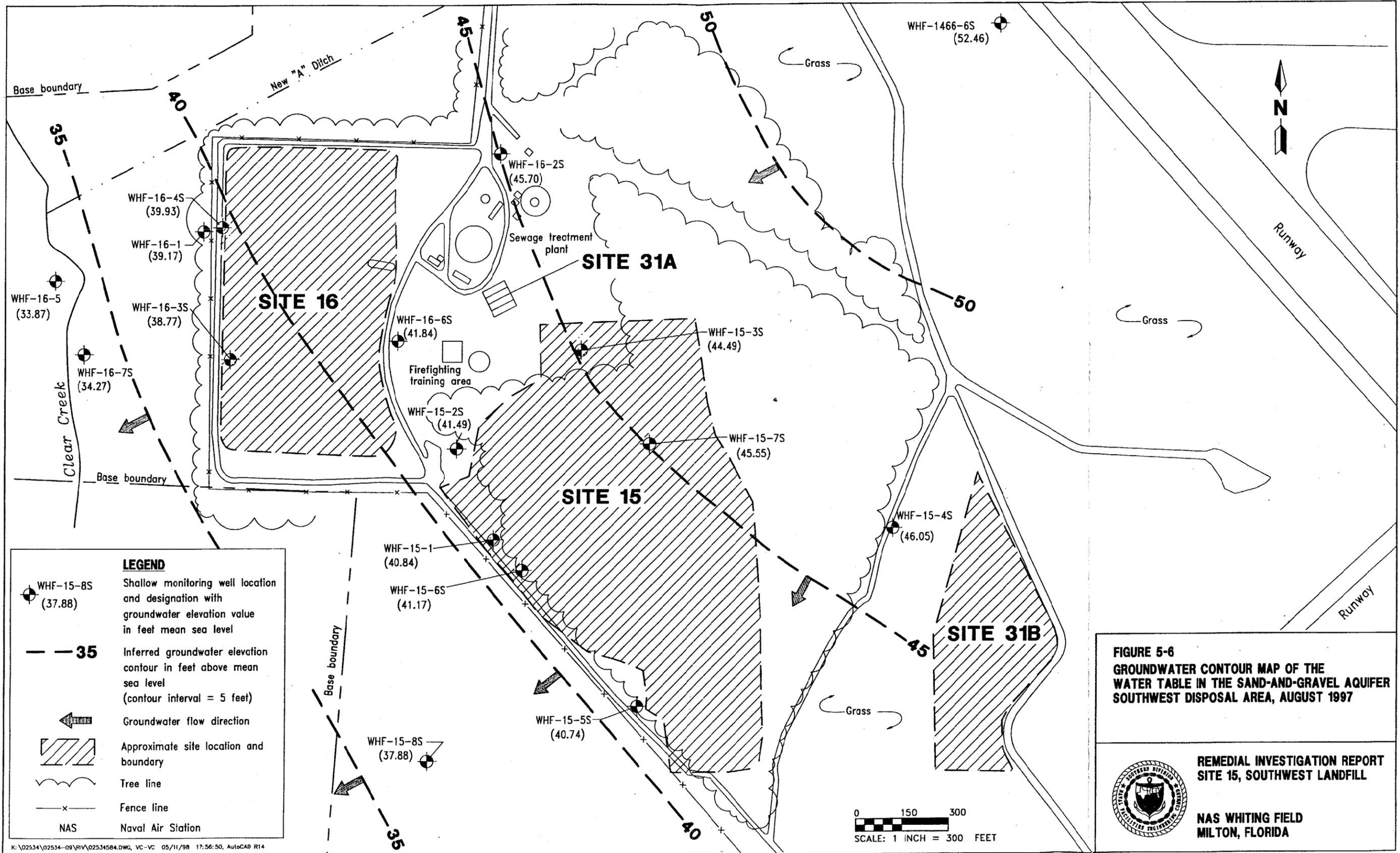


FIGURE 5-6
GROUNDWATER CONTOUR MAP OF THE
WATER TABLE IN THE SAND-AND-GRAVEL AQUIFER
SOUTHWEST DISPOSAL AREA, AUGUST 1997

REMEDIAL INVESTIGATION REPORT
SITE 15, SOUTHWEST LANDFILL

NAS WHITING FIELD
MILTON, FLORIDA

**Table 5-2
Summary of Horizontal Hydraulic Gradients**

Remedial Investigation Report
Site 15, Southwest Disposal Area
Naval Air Station Whiting Field
Milton, Florida

Well Designation	Distance Between Wells (feet)	January 16 to 18, 1997		August 7 to 9, 1997	
		Water Level (msl)	Horizontal Gradient (ft/ft)	Water Level (msl)	Horizontal Gradient (ft/ft)
Southwest Disposal Area					
Site 16, Open Disposal Burning Area					
WHF-16-2S	900	46.93	0.0069	45.70	0.0064
WHF-16-4S		40.64		39.93	
WHF-16-6S	495	42.61	0.0063	41.84	0.0062
WHF-16-3S		39.46		38.77	
Site 15, Southwest Landfill					
WHF-15-3S	500	45.66	0.0057	44.49	0.0061
WHF-15-2S		42.79		41.44	
WHF-15-7S	600	47.09	0.0082	45.55	0.0073
WHF-15-6S		42.15		41.17	
WHF-15-4S	900	47.74	0.0066	46.05	0.0059
WHF-15-5S		41.80		40.74	
		Average gradient			0.0064
Notes: msl = mean sea level. ft/ft = feet per foot.					

Table 5-3
Summary of Vertical Hydraulic Gradients

Remedial Investigation Report
Site 15, Southwest Disposal Area
Naval Air Station Whiting Field
Milton, Florida

Well Number	Bottom of Well Elevation (msl)	Vertical Distance Between Screens (feet)	January 16 to 18, 1997			August 7 and 9, 1997		
			Groundwater Elevation (msl)	Vertical Gradient (ft/ft) ¹	Vertical Flow Direction	Groundwater Elevation (msl)	Vertical Gradient (ft/ft)	Vertical Flow Direction
Southwest Disposal Area								
Site 15, Southwest Landfill								
WHF-15-2S	32.90	30.3	42.79	0.023	Downward	41.49	0.0106	Downward
WHF-15-2I	63.20	49.74	42.09	0.0006	Downward	41.17	-0.056	Upward
WHF-15-2D	112.44		42.06			44.15		
WHF-15-3S	37.94	49.89	45.66	0.004	Downward	44.49	0.0074	Downward
WHF-15-3I	87.83	31.6	45.44	-0.013	Upward	44.12	0.1117	Downward
WHF-15-3D	119.48		45.85			40.59		
WHF-15-5S	68.18	29.82	41.80	0.001	Downward	40.74	0.001	Downward
WHF-15-5I	98	30.38	41.77	0.0	Stagnant	40.71	0.0009	Downward
WHF-15-5D	128.38		41.77			40.71		
WHF-15-6S	43.73	79.63	42.15	0.003	Downward	41.17	0.003	Downward
WHF-15-6D	123.36		41.89			40.93		
WHF-15-7S	88.85	32.65	47.09	-0.0015	Upward	45.55	-0.0018	Upward
WHF-15-7I	121.5	26.03	47.14	-0.0015	Upward	45.61	-0.0011	Upward
WHF-15-7D	147.53		47.18			45.64		
WHF-15-8S	55	32.5	38.00	0	Stagnant	37.88	0.0197	Downward
WHF-15-8I	85	30	38.00	0.003	Downward	37.24	0.017	Downward
WHF-15-8D	115		37.99			36.73		
Site 16, Open Disposal Burning Area								
WHF-16-3S	23.25	29.12	39.46	0.006	Downward	38.77	0.0045	Downward
WHF-16-3I	52.87	26.54	39.27	0.006	Downward	38.64	0.006	Downward
WHF-16-3II	78.91	39.17	39.10	0.101	Upward	38.47	-0.093	Upward
WHF-16-3D	118.08		43.06			42.12		
See notes at end of table.								

Table 5-3 (Continued)
Summary of Vertical Hydraulic Gradients

Remedial Investigation Report
Site 15, Southwest Disposal Area
Naval Air Station Whiting Field
Milton, Florida

Well Number	Bottom of Well Elevation (msl)	Vertical Distance Between Screens (feet)	January 16 to 18, 1997			August 7 and 9, 1997		
			Groundwater Elevation (msl)	Vertical Gradient (ft/ft) ¹	Vertical Flow Direction	Groundwater Elevation (msl)	Vertical Gradient (ft/ft)	Vertical Flow Direction
Site 16, Open Disposal Burning Area (Continued)								
WHF-16-4S	22.38	41.42	40.64	0.0106	Downward	39.93	0.009	Downward
WHF-16-4II	64.80	47.74	40.20	0.0027	Downward	39.54	0.0025	Downward
WHF-16-4D	122.54		40.07			39.42		
WHF-16-6S	26	36.1	42.61	0.0	Stagnant	41.84	0.0044	Downward
WHF-16-6D	62.1		42.61			41.68		
WHF-16-7S	15	29.8	34.74	0.0443	Upward	34.27	0.047	Upward
WHF-16-7I	45	29.2	36.06	0	Stagnant	35.67	0.00034	Downward
WHF-16-7D	75		36.06			35.66		
¹ Vertical gradients are computed as follows: the difference between groundwater elevations of associated monitoring wells is divided by the vertical distance between screened intervals. Notes: msl = mean sea level. ft/ft = feet per foot.								

**Table 5-4
Summary of Hydraulic Conductivity (K) Data from Slug Tests**

Remedial Investigation Report
Site 15, Southwest Disposal Area
Naval Air Station Whiting Field
Milton, Florida

Well Number	Range of K (ft/day)	Number of Usable Runs	Average K (ft/min)	Average K (ft/day)	Average K (cm/sec)
Site 15, Southwest Landfill					
WHF-15-2S	6.65 to 6.86	3	0.00469	6.75	2.38x10 ⁻⁴
WHF-15-2I	22.4 to 28.87	5	0.01938	28	9.88x10 ⁻⁴
WHF-15-2D	0.96 to 1.04	6	0.00051	0.73	2.58x10 ⁻³
WHF-15-3S	8.88 to 8.95	3	0.0062	8.9	3.14x10 ⁻⁴
WHF-15-3I	20.28 to 23.44	4	0.01533	22	7.76x10 ⁻⁴
WHF-15-3D	4.80 to 5.13	6	0.00393	5.66	1.9x10 ⁻⁴
WHF-15-6S	3.5 to 3.79	3	0.00255	3.6	1.27x10 ⁻⁴
			Geometric Mean	10.8	3.81x10 ⁻⁴
Site 16, Open Disposal Burning Area					
WHF-16-2S	27.20 to 30.96	4	0.020015	28.8	1.01x10 ⁻⁵
WHF-16-2I	9.18 to 10.39	4	0.00676	9.7	3.4x10 ⁻⁴
WHF-16-3S	3.99 to 4.55	3	0.0298	42.9	1.51x10 ⁻⁵
WHF-16-3I	4.92 to 5.28	5	0.00352	5.06	1.78x10 ⁻⁴
WHF-16-3II	43.9 to 49.1	3	0.03228	46.5	1.64x10 ⁻⁵
WHF-16-3D	0.27 to 0.29	3	0.00019	0.27	9.5x10 ⁻²
			Geometric Mean	22.2	7.8x10 ⁻⁴

Notes: Average is the arithmetic mean.

ft/day = feet per day.

ft/min = feet per minute.

cm/sec = centimeters per second.

(1.64×10^{-5} cm/sec) for WHF-16-3II. The geometric mean of the hydraulic conductivity values for Site 16 is 22.2 ft/day (7.8×10^{-4} cm/sec) or approximately 8,000 ft/yr.

Seepage Velocity. Table 5-5 summarizes the average linear pore water velocity (seepage velocities) for the water table zone of the sand-and-gravel aquifer for sites in the southwest disposal area. The calculations used an assumed effective porosity (n) of 0.35 for the site. The value represents silty through poorly graded sands (Fetter, 1988). Seepage velocities for Site 15 ranged from 0.02 to 0.08 ft/day and at Site 16 from 0.56 to 0.77 ft/day. The average of the seepage velocity values for the two sites was 0.38 ft/day or approximately 139 (ft/yr).

5.3 GEOPHYSICAL SURVEY. A geophysical survey was conducted of Site 15 by Blackhawk Geosciences in the summer of 1992 (ABB-ES, 1993). Maps of the survey results referred to below are presented as figures and are located in Appendix A. Anomalies observed during the Site 15 survey are described below.

The Site 15 geophysical survey identified five major features: (1) seven linear anomalies oriented north-northeast located centrally in the landfill that appear to be parallel landfill trenches (Figure C-2), (2) three possible anomalies are interpreted to be present at the northern boundary of the site that appear to be buried metal(s) (Figure C-2), (3) an 80-by-40-foot oval shaped area that appears to be buried metal(s) (Figure C-2), (4) an area at the western edge of the site appears to be buried metal(s) (Figure C-3), and (5) two anomalies on the eastern and western perimeters near the southern perimeter that coincide with large steel drainage culverts (Figure C-2). Corresponding anomalies are observed in the EM-31 quadrature (Figure C-3) or in-phase (Figure C-4) conductivity data. The geophysical survey results support evidence of a general disposal area at Site 15. Landfill materials were encountered within the explored depths in 9 of the 10 test pits excavated at or near various geophysical anomalies described above.

5.4 SOIL GAS SCREENING RESULTS. The soil gas screening program consisted of sampling 106 locations at Site 15 to determine if measurable concentrations of total VOCs or methane were present (Figure 3-1). The soil gas samples were measured in the field with either a Portafid II™ or a Foxboro OVA-128™ OVA and recorded. The methodology is described in Section 3.1 of this report. Table 5-6 presents the analytical results obtained from the soil gas survey including total VOCs and methane (filtered reading) from depths of 1.5 and 3.0 feet bls. Figures 5-7 through 5-10 present these analytical results as isopleth maps that were prepared using the data generated by the soil gas screening event. These figures show that soil gas samples collected near the western boundary of the site have measurable concentrations of total VOCs and methane. This suggests that landfilled materials are generating the organic vapors.

5.5 SURFACE SOIL ANALYTICAL RESULTS. Tables 5-7 and 5-8 summarize the analytical results for organic and inorganic analytes respectively detected in 30 surface soil samples and three duplicates at Site 15. Table 5-9 and 5-10 summarize the frequency of detection, range of detection limits, range of detection concentrations, and a comparison to background screening values obtained from the USEPA Region III risk-based concentrations (RBCs) (USEPA, 1998)

**Table 5-5
 Summary of Seepage Velocities**

Remedial Investigation Report
 Site 15, Southwest Landfill
 Naval Air Station Whiting Field
 Milton, Florida

Investigation Area	Monitoring Well Pair	Horizontal Gradient (ft/ft) ¹	K (ft/day) ²	Effective Porosity (n)	Seepage Velocity (ft/day) ³
Site 15, Southwest Landfill	WHF-15-3S and WHF-15-2S	0.0057	7.82	0.35	0.02
	WHF-15-7S and WHF-15-6S	0.0082	3.6	0.35	0.08
Site 16, Open Disposal Burning Area	WHF-16-4S and WHF-16-2S	0.0069	28.8	0.35	0.56
	WHF-16-6S and WHF-16-3S	0.0063	42.9	0.35	0.77
Arithmetic average					0.38
¹ Horizontal gradients are the average value for all groundwater measurements performed between September 30, 1993, and November 9, 1996. ² The K is averaged where values are available for both wells in the well pair. ³ The seepage velocity is computed as follows: seepage velocity = (horizontal gradient) X (K)/(effective porosity). Notes: ft/ft = feet per foot. K = hydraulic conductivity. ft/day = feet per day.					

**Table 5-6
Summary of Active Soil Gas Survey, August 9 and 26, 1995**

Remedial Investigation Report
Site 15, Southwest Disposal Area
Naval Air Station Whiting Field
Milton, Florida

Sample ID	Depth (feet)	Total VOC (ppm)	Methane (ppm)	Methane/VOC (percent)	Rinsate Blank (ppm)
15V001	1.5	0	0	NA	1
	3.0	0	0	NA	
15V002	1.5	>1,000	>1,000	NA	0
	3.0	>1,000	>1,000	NA	
15V003	1.5	0	0	NA	0
	3.0	W	W	NA	
15V004	1.5	97	83	86	0
	3.0	120	98	82	
15V005	1.5	0	0	NA	0
	3.0	0	0	NA	
15V006	1.5	>5,000	>5,000	NA	0
	3.0	>5,000	>5,000	NA	
15V007	1.5	>1,000	>1,000	NA	1
	3.0	>1,000	>1,000	NA	
15V008	1.5	>1,000	>1,000	NA	1
	3.0	>1,000	>1,000	NA	
15V009	1.5	0	0	NA	0
	3.0	0	0	NA	
15V010	1.5	0	0	NA	0
	3.0	0	0	NA	
15V011	1.5	0	0	NA	0
	3.0	0	0	NA	
15V012	1.5	0	0	NA	0
	3.0	0	0	NA	
15V013	1.5	0	0	NA	0
	3.0	0	0	NA	
15V014	1.5	0	0	NA	2.5
	3.0	0	0	NA	
15V015	1.5	0	0	NA	0
	3.0	0	0	NA	

See notes at end of table.

Table 5-6 (Continued)
Summary of Active Soil Gas Survey, August 9 and 26, 1995

Remedial Investigation Report
 Site 15, Southwest Disposal Area
 Naval Air Station Whiting Field
 Milton, Florida

Sample ID	Depth (feet)	Total VOC (ppm)	Methane (ppm)	Methane/VOC (percent)	Rinsate Blank (ppm)
15V016	1.5	0	0	NA	0
	3.0	W	W	NA	
	4.5	>5,000	>5,000	NA	0
	6.0	>5,000	>1,800	NA	
15V017	1.5	>5,000	>5,000	NA	0
	3.0	>3,000	>3,000	NA	
15V018	1.5	4	4	100	0
	3.0	>1,000	>1,000	NA	
15V019	1.5	>1,000	>1,000	NA	0
	3.0	>1,000	>1,000	NA	
15V020	1.5	0	0	NA	0
	3.0	0	0	NA	
15V021	1.5	0	0	NA	0
	3.0	0	0	NA	
15V022	1.5	3	3	100	0
	3.0	3	3	NA	
15V023	1.5	0	0	NA	0
	3.0	0	0	NA	
15V024	1.5	0	0	NA	3
	3.0	0	0	NA	
15V025	1.5	0	0	NA	2
	3.0	0	0	NA	
15V026	1.5	0	0	NA	2
	3.0	0	0	NA	
15V027	1.5	0	0	NA	2
	3.0	>1,000	>1,000	NA	
15V027D	1.5	300	300	97	0
	3.0	>1,000	>5,000	NA	
15V028	1.5	0	0	NA	0
	3.0	35	18	NA	

See notes at end of table.

Table 5-6 (Continued)
Summary of Active Soil Gas Survey, August 9 and 26, 1995

Remedial Investigation Report
 Site 15, Southwest Disposal Area
 Naval Air Station Whiting Field
 Milton, Florida

Sample ID	Depth (feet)	Total VOC (ppm)	Methane (ppm)	Methane/VOC (percent)	Rinsate Blank (ppm)
15V029	1.5	35	28	80	0
	3.0	0	0	NA	
15V030	1.5	W	W	NA	0
	3.0	W	W	NA	
15V031	1.5	W	W	NA	2
	3.0	NS	NS	NA	
15V032	1.5	0	0	NA	0
	3.0	0	0	NA	
15V033	1.5	0	0	NA	0
	3.0	0	0	NA	
15V034	1.5	0	0	NA	0
	3.0	0	0	NA	
15V035	1.5	0	0	NA	0
	3.0	0	0	NA	
15V036	1.5	W	W	NA	2
	3.0	NS	NS	NA	
15V037	1.5	0	0	NA	0
	3.0	0	0	NA	
15V038	1.5	0	0	NA	0
	3.0	0	0	NA	
15V039	1.5	0	0	NA	0
	3.0	0	0	NA	
15V040	1.5	0	0	NA	2.4
	3.0	0	0	NA	
15V041	1.5	0	0	NA	0
	3.0	0	NS	NA	
15V042	1.5	0	0	NA	2
	3.0	0	0	NA	
15V043	1.5	W	W	NA	0
	3.0	W	W	NA	

See notes at end of table.

Table 5-6 (Continued)
Summary of Active Soil Gas Survey, August 9 and 26, 1995

Remedial Investigation Report
 Site 15, Southwest Disposal Area
 Naval Air Station Whiting Field
 Milton, Florida

Sample ID	Depth (feet)	Total VOC (ppm)	Methane (ppm)	Methane/VOC (percent)	Rinsate Blank (ppm)
15V043D	1.5	4	0	87	0
	3.0	W	W	NA	
15V044	1.5	0	0	NA	1
	3.0	NA	NA	NA	
15V045	1.5	0	0	NA	0
	3.0	0	0	NA	
15V046	1.5	0	0	NA	1
	3.0	0	0	NA	
15V047	1.5	0	0	NA	0
	3.0	0	0	NA	
15V048	1.5	0	0	NA	2
	3.0	NA	NA	NA	
15V049	1.5	0	0	NA	1
	3.0	0	0	NA	
15V050	1.5	0	0	NA	2
	3.0	0	0	NA	
15V051	1.5	0	0	NA	4
	3.0	0	0	NA	
15V052	1.5	3,000	2,600	87	0
	3.0	>5,000	>5,000	NA	
15V053	1.5	0	0	NA	2
	3.0	1	1	NA	
15V054	1.5	0	0	NA	0
	3.0	0	0	NA	
15V055	1.5	450	400	89	0
	3.0	>1,000	>1,000	NA	
15V056	1.5	0	0	NA	0
	3.0	0	0	NA	
15V057	1.5	0	0	NA	0
	3.0	0	0	NA	

See notes at end of table.

Table 5-6 (Continued)
Summary of Active Soil Gas Survey, August 9 and 26, 1995

Remedial Investigation Report
 Site 15, Southwest Disposal Area
 Naval Air Station Whiting Field
 Milton, Florida

Sample ID	Depth (feet)	Total VOC (ppm)	Methane (ppm)	Methane/VOC (percent)	Rinsate Blank (ppm)
15V058	1.5	0	0	NA	0
	3.0	0	0	NA	
15V059	1.5	0	0	NA	1
	3.0	0	0	NA	
15V060	1.5	0	0	NA	0
	3.0	0	0	NA	
15V061	1.5	0	0	NA	2
	3.0	0	0	NA	
15V062	1.5	0	0	NA	3
	3.0	NA	NA	NA	
15V063	1.5	0	0	NA	2
	3.0	0	0	NA	
15V064	1.5	0	0	NA	2
	3.0	0	0	NA	
15V065	1.5	0	0	NA	0
	3.0	0	0	NA	
15V066	1.5	0	0	NA	2
	3.0	0	0	NA	
15V067	1.5	0	0	NA	0
	3.0	0	0	NA	
15V068	1.5	0	0	NA	0
	3.0	0	0	NA	
15V069	1.5	0	0	NA	0
	3.0	0	0	NA	
15V070	1.5	0	0	NA	1
	3.0	0	0	NA	
15V071	1.5	0	0	NA	1
	3.0	0	0	NA	
15V072	1.5	0	0	NA	0
	3.0	0	0	NA	

See notes at end of table.

Table 5-6 (Continued)
Summary of Active Soil Gas Survey, August 9 and 26, 1995

Remedial Investigation Report
 Site 15, Southwest Disposal Area
 Naval Air Station Whiting Field
 Milton, Florida

Sample ID	Depth (feet)	Total VOC (ppm)	Methane (ppm)	Methane/VOC (percent)	Rinsate Blank (ppm)
15V073	1.5	0	0	NA	0
	3.0	0	0	NA	
15V074	1.5	0	0	NA	2
	3.0	0	0	NA	
15V075	1.5	0	0	NA	2
	3.0	0	0	NA	
15V076	1.5	0	0	NA	1
	3.0	0	0	NA	
15V077	1.5	0	0	NA	2
	3.0	0	0	NA	
15V078	1.5	0	0	NA	2
	3.0	0	0	NA	
15V079	1.5	0	0	NA	2
	3.0	0	0	NA	
15V080	1.5	0	0	NA	2
	3.0	0	0	NA	
15V081	1.5	0	0	NA	3
	3.0	0	0	NA	
15V082	1.5	0	0	NA	0
	3.0	0	0	NA	
15V083	1.5	0	0	NA	0
	3.0	0	0	NA	
15V084	1.5	0	0	NA	0
	3.0	0	0	NA	
15V085	1.5	0	0	NA	0
	3.0	0	0	NA	
15V086	1.5	0	0	NA	1
	3.0	0	0	NA	
15V087	1.5	0	0	NA	1
	3.0	0	0	NA	

See notes at end of table.

Table 5-6 (Continued)
Summary of Active Soil Gas Survey, August 9 and 26, 1995

Remedial Investigation Report
 Site 15, Southwest Disposal Area
 Naval Air Station Whiting Field
 Milton, Florida

Sample ID	Depth (feet)	Total VOC (ppm)	Methane (ppm)	Methane/VOC (percent)	Rinsate Blank (ppm)
15V088	1.5	0	0	NA	0
	3.0	0	0	NA	
15V089	1.5	0	0	NA	2
	3.0	0	0	NA	
15V090	1.5	0	0	NA	0
	3.0	0	0	NA	
15V091	1.5	0	0	NA	2
	3.0	0	0	NA	
15V092	1.5	0	0	NA	3
	3.0	0	0	NA	
15V093	1.5	0	0	NA	7
	3.0	0	0	NA	
15V094	1.5	0	0	NA	2
	3.0	0	0	NA	
15V095	1.5	0	0	NA	0
	3.0	W	W	NA	
15V096	1.5	>1,000	>1,000	NA	0
	3.0	>1,000	>1,000	NA	
15V097	1.5	>5,000	>5,000	NA	0
	3.0	>5,000	>5,000	NA	
15V098	1.5	>5,000	>5,000	NA	0
	3.0	>5,000	>5,000	NA	
15V099	1.5	1	W	NA	0
	3.0	NA	NA	NA	
15V100	1.5	0	0	NA	0
	3.0	0	0	NA	
15V101	1.5	0	0	NA	0
	3.0	0	0	NA	
15V102	1.5	0	0	NA	0
	3.0	0	0	NA	

See notes at end of table.

Table 5-6 (Continued)
Summary of Active Soil Gas Survey, August 9 and 26, 1995

Remedial Investigation Report
 Site 15, Southwest Disposal Area
 Naval Air Station Whiting Field
 Milton, Florida

Sample ID	Depth (feet)	Total VOC (ppm)	Methane (ppm)	Methane/VOC (percent)	Rinsate Blank (ppm)
15V103	1.5	0	0	NA	0
	3.0	0	0	NA	
15V104	1.5	0	NA	NA	0
	3.0	> 1,000	> 1,000	NA	
15V105	1.5	0	0	NA	0
	3.0	0	0	NA	
15V106	1.5	0	0	NA	0
	3.0	0	0	NA	

Notes: ID = identification.
 VOC = volatile organic compound.
 ppm = parts per million.
 NA = not available; calculation cannot be made.
 > = greater than.
 W = water-saturated soil.
 NS = not sampled.

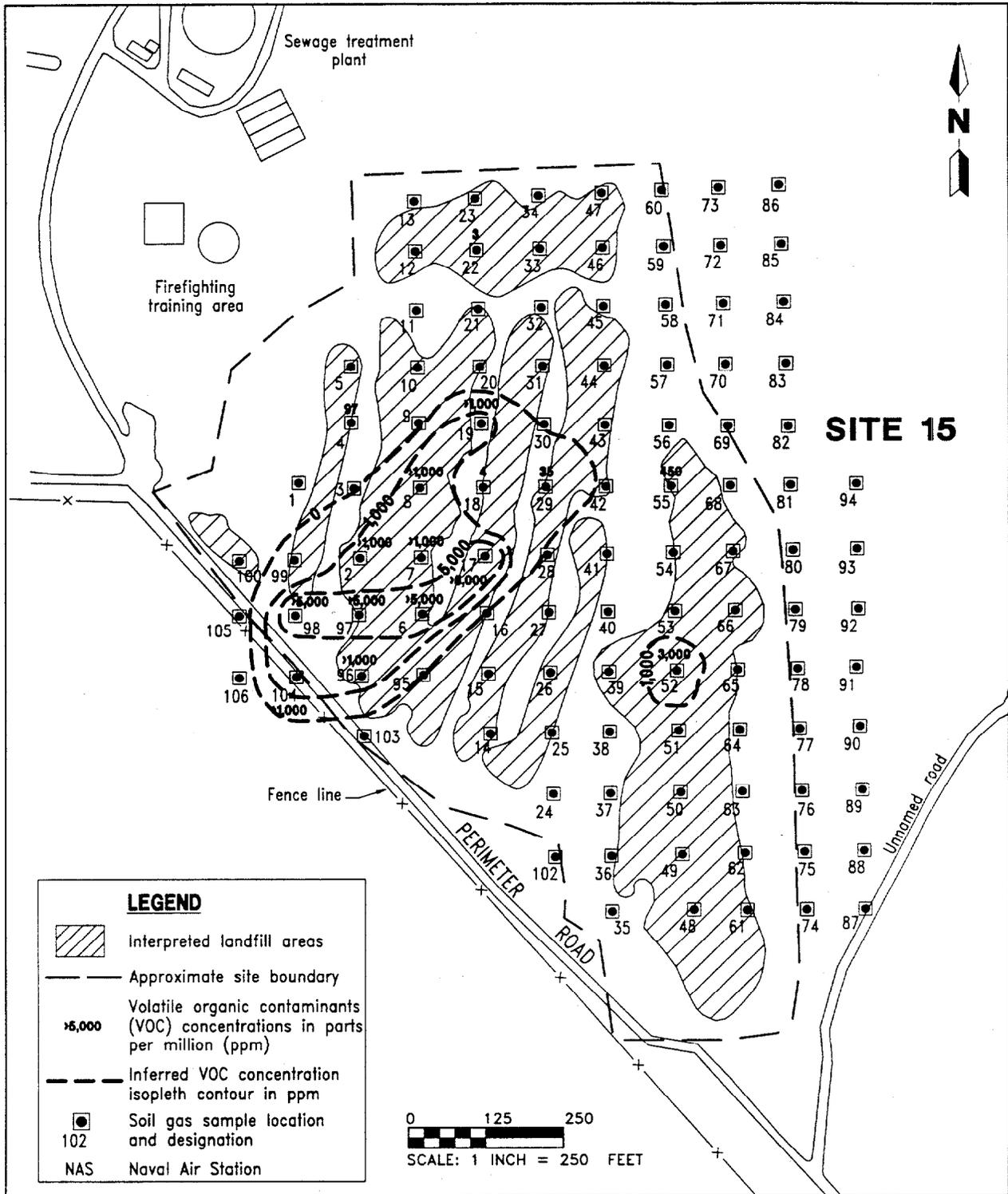


FIGURE 5-7
DISTRIBUTION OF INTERPRETED TOTAL VOC
CONCENTRATIONS DETECTED AT 1.5 FEET BELOW
LAND SURFACE IN SOIL GAS FIELD SCREENING
SAMPLES



REMEDIAL INVESTIGATION REPORT
SITE 15, SOUTHWEST LANDFILL

NAS WHITING FIELD
MILTON, FLORIDA

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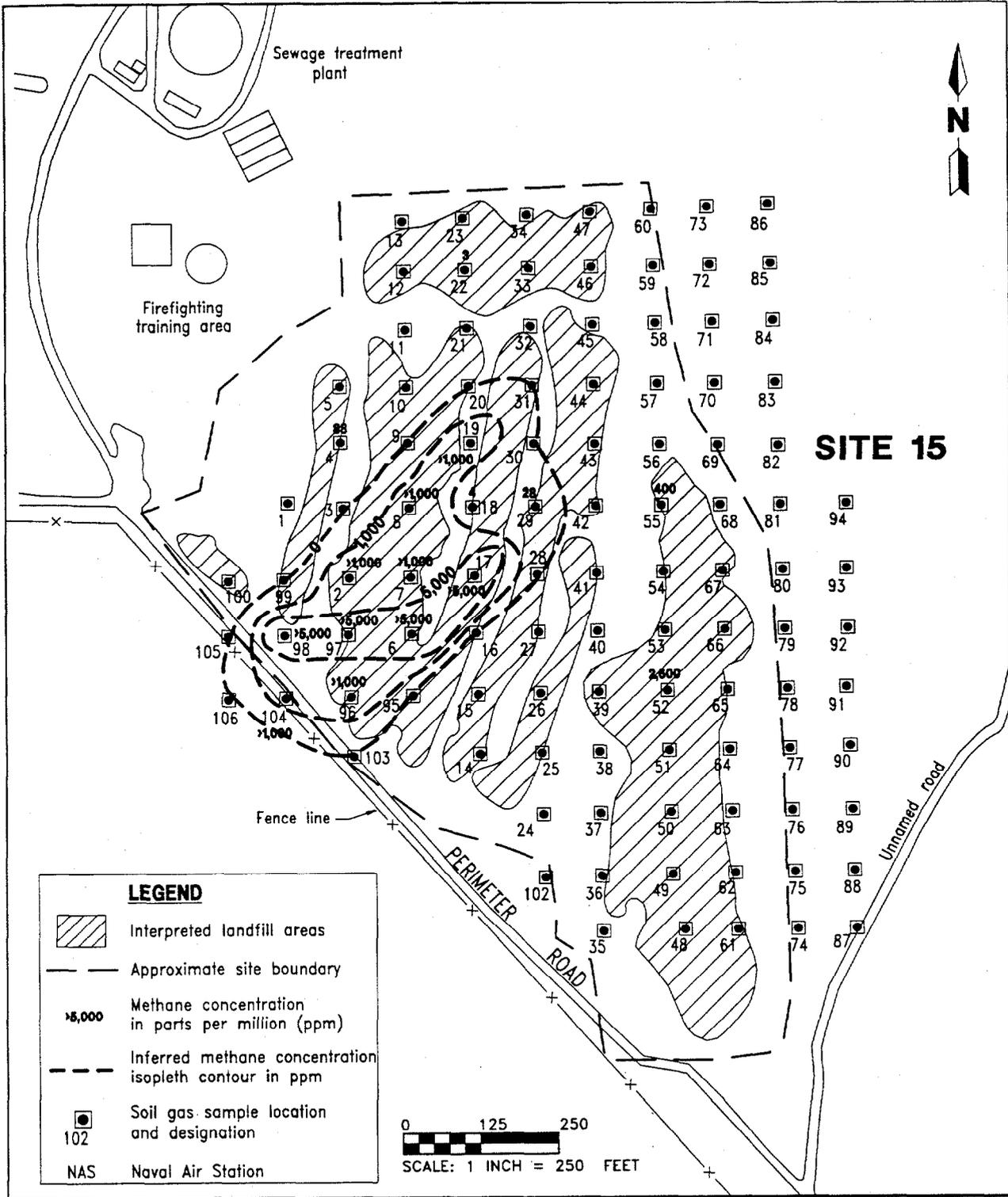


FIGURE 5-8
DISTRIBUTION OF INTERPRETED METHANE
CONCENTRATIONS DETECTED AT 1.5 FEET BELOW
LAND SURFACE IN SOIL GAS FIELD SCREENING
SAMPLES



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NAS WHITING FIELD
MILTON, FLORIDA

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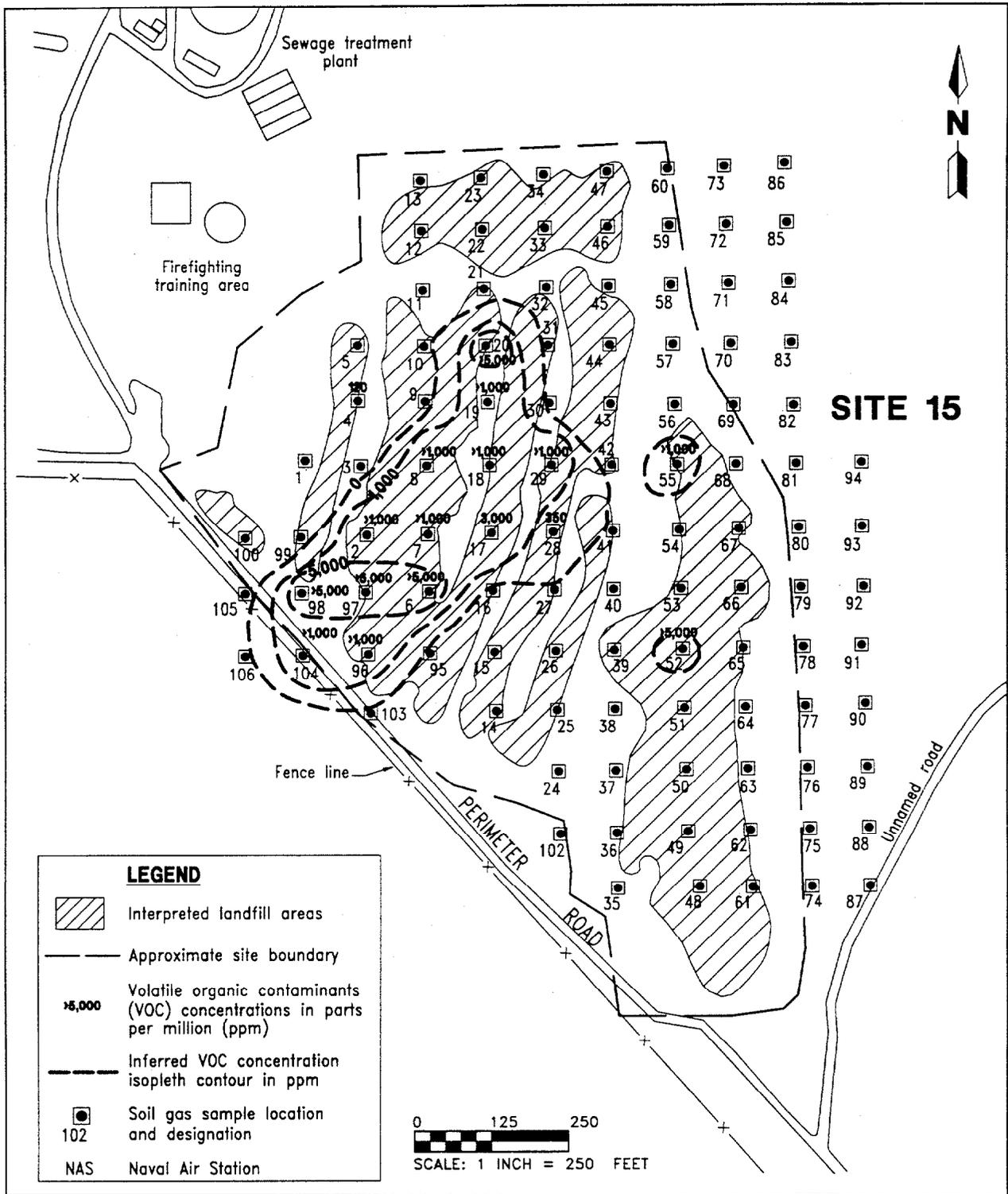


FIGURE 5-9
DISTRIBUTION OF INTERPRETED TOTAL VOC CONCENTRATIONS DETECTED AT 3.0 FEET BELOW LAND SURFACE IN SOIL GAS FIELD SCREENING SAMPLES



REMEDIAL INVESTIGATION REPORT
SITE 15, SOUTHWEST LANDFILL

NAS WHITING FIELD
MILTON, FLORIDA

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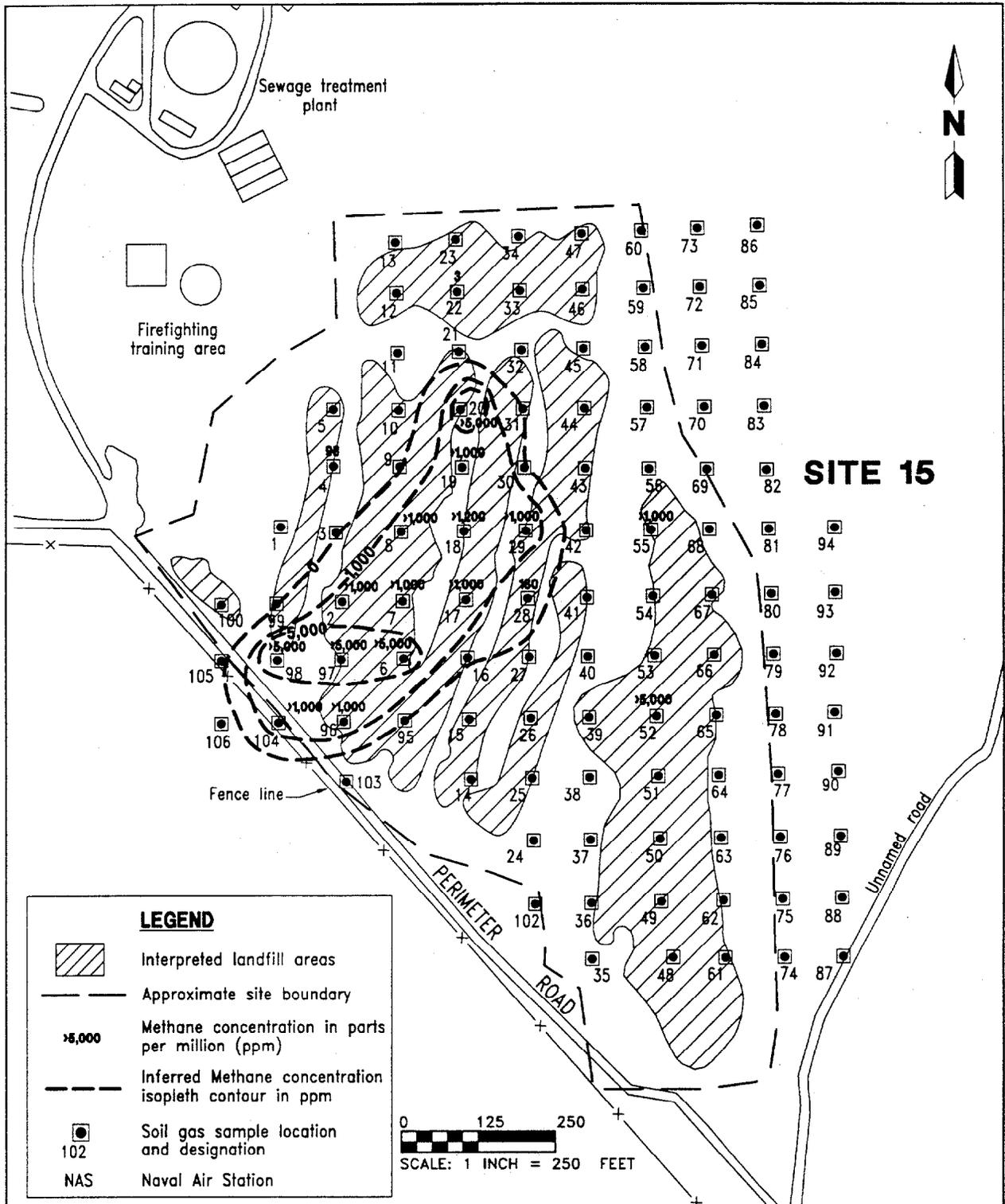


FIGURE 5-10
DISTRIBUTION OF INTERPRETED METHANE CONCENTRATIONS DETECTED AT 3.0 FEET BELOW LAND SURFACE IN SOIL GAS FIELD SCREENING SAMPLES



REMEDIAL INVESTIGATION REPORT
SITE 15, SOUTHWEST LANDFILL

NAS WHITING FIELD
MILTON, FLORIDA

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Table 5-7
Summary of Analytical Results for Organic Compounds Detected
in Site 15 Surface Soil Samples

Remedial Investigation Report
Site 15, Southwest Landfill
Naval Air Station Whiting Field
Milton, Florida

Sample Identifier:	15-SL-01	15-SL-02	15-SL-03	15-SL-04	15-SL-05	15S00101	15S00101(DUP)	15S00201
Laboratory Sample No:	S22454005	S22454006	S22454007	S22454008	S22454009	G8914002	G8914003	G8914004
Collection Date:	11-AUG-92	11-AUG-92	11-AUG-92	11-AUG-92	11-AUG-92	11-DEC-95	11-DEC-95	11-DEC-95
Sample Depth (inches bls):	0 to 12	0 to 12						
<u>Volatile Organic Compounds (µg/kg)</u>								
Acetone	--	--	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--	--	--
Xylenes (total)	--	1.0 J	2.0 J	4 J	--	--	--	--
<u>Semivolatile Organic Compounds (µg/kg)</u>								
Di- <i>n</i> -butylphthalate	--	--	--	--	--	--	--	1,100
Butylbenzylphthalate	--	--	--	--	--	--	--	240 J
bis(2-Ethylhexyl)phthalate	39 J	--	41 J	--	--	--	1,700	--
<u>Pesticides and PCBs (µg/kg)</u>								
4,4'-DDE	--	--	--	--	--	--	--	--
4,4'-DDD	--	--	--	--	--	--	--	--
4,4'-DDT	--	--	--	--	--	--	--	--
See notes at end of table.								

Table 5-7 (Continued)
Summary of Analytical Results for Organic Compounds Detected
in Site 15 Surface Soil Samples

Remedial Investigation Report
Site 15, Southwest Landfill
Naval Air Station Whiting Field
Milton, Florida

Sample Identifier:	15S00301	15S00401	15S00501	15S00601	15S00701	15S00801	15S00901	15S01001
Laboratory Sample No:	G8914005	G8914007	G8914006	G8914008	G8914009	G8914010	G8913017	G8914014
Collection Date:	11-DEC-95	10-DEC-95						
Sample Depth (inches bls):	0 to 12							
<u>Volatile Organic Compounds (µg/kg)</u>								
Acetone	--	--	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--	--	--
Xylenes (total)	--	--	--	--	--	--	--	--
<u>Semivolatile Organic Compounds (µg/kg)</u>								
Di- <i>n</i> -butylphthalate	790	730	770	850	560	--	--	--
Butylbenzylphthalate	--	--	--	--	--	--	--	--
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	--	--
<u>Pesticides and PCBs (µg/kg)</u>								
4,4'-DDE	--	--	--	--	--	--	--	3.1 J
4,4'-DDD	--	--	--	--	--	--	--	--
4,4'-DDT	--	--	--	--	--	--	--	--
See notes at end of table.								

Table 5-7 (Continued)
Summary of Analytical Results for Organic Compounds Detected
in Site 15 Surface Soil Samples

Remedial Investigation Report
 Site 15, Southwest Landfill
 Naval Air Station Whiting Field
 Milton, Florida

Sample Identifier:	15S01101	15S01201	15S01301	15S01401	15S01501	15S01601	15S01701	15S01701(DUP)
Laboratory Sample No:	G8914013	G8914011	G8913011	G8913010	G8913009	G8913012	G8913013	G8913014
Collection Date:	10-DEC-95	10-DEC-95	09-DEC-95	09-DEC-95	09-DEC-95	09-DEC-92	10-DEC-92	10-DEC-92
Sample Depth (inches bls):	0 to 12							
<u>Volatile Organic Compounds (µg/kg)</u>								
Acetone	--	--	--	--	--	--	--	--
Methylene chloride	3.0 J	4.0 J	--	--	--	--	--	--
Xylenes (total)	--	--	--	--	--	--	--	--
<u>Semivolatile Organic Compounds (µg/kg)</u>								
Di- <i>n</i> -butylphthalate	--	--	--	--	--	--	--	--
Butylbenzylphthalate	--	--	--	--	--	--	--	--
bis(2-Ethylhexyl)phthalate	--	--	--	170 J	--	--	--	--
<u>Pesticides and PCBs (µg/kg)</u>								
4,4'-DDE	50	--	--	--	--	--	--	--
4,4'-DDD	3.8	--	--	--	--	--	--	--
4,4'-DDT	14	--	4.4	--	--	--	--	--

See notes at end of table.

Table 5-7 (Continued)
Summary of Analytical Results for Organic Compounds Detected
in Site 15 Surface Soil Samples

Remedial Investigation Report
Site 15, Southwest Landfill
Naval Air Station Whiting Field
Milton, Florida

Sample Identifier:	15S01801	15S01901	15S02001	15S02001(DUP)	15S02101	15S02201	15S02301	15S02401	15S02501
Laboratory Sample No:	G8913015	G8913016	G8913002	G8913003	G8913004	G8913005	G8913006	G8913007	G8913008
Collection Date:	10-DEC-92	10-DEC-92	09-DEC-92	09-DEC-92	09-DEC-95	09-DEC-95	09-DEC-95	09-DEC-95	09-DEC-95
Sample Depth (inches bls):	0 to 12	0 to 12	0 to 12	0 to 12	0 to 12	0 to 12	0 to 12	0 to 12	0 to 12
<u>Volatile Organic Compounds (µg/kg)</u>									
Acetone	--	--	--	--	11 J	--	--	--	--
Methylene chloride	--	--	--	5.0 J	9.0	--	--	--	--
Xylenes (total)	--	--	--	--	--	--	--	--	--
<u>Semivolatile Organic Compounds (µg/kg)</u>									
Di- <i>n</i> -butylphthalate	--	--	--	--	--	--	--	--	--
Butylbenzylphthalate	--	--	--	--	--	--	--	--	--
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	--	--	--
<u>Pesticides and PCBs (µg/kg)</u>									
4,4'-DDE	--	--	--	--	1.9 J	--	--	--	--
4,4'-DDD	--	--	--	--	--	--	--	--	--
4,4'-DDT	--	--	--	--	--	--	--	--	--

Notes: DUP = duplicate.
bls = below land surface.
µg/kg = microgram per kilogram.
-- = Concentration of analyte, if present, was less than detection limit.
J = estimated value.
PCB = polychlorinated biphenyl.
DDE = dichlorodiphenyldichloroethene.
DDD = dichlorodiphenyldichloroethane.
DDT = dichlorodiphenyltrichloroethane.

**Table 5-8
Summary of Analytical Results for Inorganic Analytes Detected
in Site 15 Surface Soil Samples**

Remedial Investigation Report
Site 15, Southwest Landfill
Naval Air Station Whiting Field
Milton, Florida

Sample Identifier:	15-SL-01	15-SL-02	15-SL-03	15-SL-04	15-SL-05	15S00101	15S00101(DUP)	15S00201
Laboratory Sample No:	S22454005	S22454006	S22454007	S22454008	S22454009	G8914002	G8914003	G8914004
Collection Date:	11-AUG-92	11-AUG-92	11-AUG-92	11-AUG-92	11-AUG-92	11-DEC-95	11-DEC-95	11-DEC-95
Sample Depth (inches bls):	0 to 12	0 to 12						
Inorganic Analytes (mg/kg)								
Aluminum	11,800	5,160	7,450	6,790	4,940	9,280	10,800	6,210
Arsenic	1.6 J	0.93 J	2.2 J	1.0 J	0.98 J	2.0 J	1.9 J	1.3 J
Barium	5.3 J	7.0 J	4.3 J	9.0 J	3.2 J	6.6 J	7.8 J	4.7 J
Beryllium	0.07 J	--	0.08 J	0.09 J	--	--	--	--
Calcium	75.6 J	137 J	79.6 J	78.9 J	136 J	--	--	--
Chromium	10.8	3.3	6.3	3.9	3.8	8.4	8.0	8.1
Cobalt	1.2 J	0.73 J	0.85 J	1.0 J	--	--	--	--
Copper	4.1 J	4.2 J	1.6 J	5.1 J	12.5	--	--	--
Iron	7,760	3,040	4,980	3,460	2,810	5,120	5,700	3,760
Lead	2.8 J	4.4 J	4.4 J	10.7 J	59.9	4.7	3.6	2.8
Magnesium	54.3 J	74.3 J	43 J	93.9 J	57.8 J	109 J	132 J	72.2 J
Manganese	23.1	25.7	9.3	143	13.7	36.4	39.9	35.7
Mercury	--	--	--	--	--	0.02 J	0.02 J	0.01 J
Nickel	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	169 J	--	--
Selenium	--	--	--	--	--	--	--	--
Silver	--	--	--	--	--	--	--	0.74 J
Sodium	170 J	174 J	172 J	174 J	179 J	--	--	--
Vanadium	20.6	6.8 J	12.6	8.3 J	7.2 J	13.3	15.1	9.6 J
Zinc	11.3	6.8 J	5.4 J	7.4 J	8.8	4.1 J	5.0	2.8 J
Cyanide	--	--	--	--	--	--	--	0.16 J

See notes at end of table.

Table 5-8 (Continued)
Summary of Analytical Results for Inorganic Analytes Detected
in Site 15 Surface Soil Samples

Remedial Investigation Report
 Site 15, Southwest Landfill
 Naval Air Station Whiting Field
 Milton, Florida

Sample Identifier:	15S00301	15S00401	15S00501	15S00601	15S00701	15S00801	15S00901	15S01001
Laboratory Sample No:	G8914005	G8914007	G8914006	G8914008	G8914009	G8914010	G8913017	G8914014
Collection Date:	11-DEC-95	10-DEC-95						
Sample Depth (inches bls):	0 to 12							
Inorganic Analytes (mg/kg)								
Aluminum	10,200	12,400	5,290	11,900	5,590	10,200	8,400	5,810
Arsenic	2.0 J	2.7	1.2 J	2.1 J	1.0 J	1.8 J	1.7 J	1.5 J
Barium	6.9 J	7.4 J	5.5 J	7.3 J	8.1 J	9.2 J	9.4 J	6.5 J
Beryllium	--	--	--	--	--	--	--	--
Calcium	--	--	--	--	--	89 J	--	--
Chromium	6.9	9.1	4.6	8.5	5.8	8.8	6.1	5.2
Cobalt	--	--	0.55 J	0.49 J	0.58 J	--	0.56 J	--
Copper	--	--	--	--	--	--	--	--
Iron	5,100	6,570	3,490	6,400	2,900	6,700	4,510 J	3,440
Lead	6.0	3.6	3.2	5.5	3.3	4.9	4.4	4.7
Magnesium	133 J	121 J	84.9 J	135 J	121 J	124 J	156 J	85.7 J
Manganese	12.9	34.4	43.3	30.8	112	53.2	35.3	10.9
Mercury	0.01	0.01 J	0.01 J	0.01 J	0.02 J	0.01 J	--	0.01 J
Nickel	--	--	--	--	--	--	--	--
Potassium	131	--	--	--	--	--	137 J	--
Selenium	--	--	--	--	--	0.27 J	--	--
Silver	--	--	0.66 J	--	--	--	--	--
Sodium	--	--	--	--	--	--	--	--
Vanadium	14.5	17.8	7.5 J	17	7.2 J	17.5	11.5	8.6 J
Zinc	6.3	4.9	3.7 J	7.1	3.9 J	5.5	5.4	3.3 J
Cyanide	--	--	--	--	0.31 J	--	--	--

See notes at end of table.

Table 5-8 (Continued)
Summary of Analytical Results for Inorganic Analytes Detected
in Site 15 Surface Soil Samples

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Sample Identifier:	15S01101	15S01201	15S01301	15S01401	15S01501	15S01601	15S01701	15S01701(DUP)
Laboratory Sample No:	G8914013	G8914011	G8913011	G8913010	G8913009	G8913012	G8913013	G8913014
Collection Date:	10-DEC-95	10-DEC-95	09-DEC-95	09-DEC-95	09-DEC-95	09-DEC-92	10-DEC-92	10-DEC-92
Sample Depth (inches bls):	0 to 12							
Inorganic Analytes (mg/kg)								
Aluminum	5,060	4,190	5,860	6,220	13,400	7,190	13,700	9,290
Arsenic	0.75 J	0.84 J	1.6 J	1.5 J	6.8	1.5 J	3.7	4.3
Barium	7.4 J	11.4 J	5.5 J	7.0 J	11.8 J	4.9 J	4.4 J	3.8 J
Beryllium	--	--	--	--	--	--	--	--
Calcium	--	115 J	29.3 J	23.3 J	189 J	25.1 J	23.7 J	20.4 J
Chromium	3.7	4.7	4.3	10.2	12.4	5.4	14.8	14
Cobalt	--	0.57 J	--	--	--	--	--	--
Copper	--	7.1	--	--	4.2 J	--	--	--
Iron	2,780	2,500	3,520 J	3,620 J	9,790 J	4,610 J	11,900 J	10,400 J
Lead	3.0	13.8	3.6	3.2	9.7	3.6	4.7	4.1
Magnesium	94.4 J	99 J	74.8 J	84.2 J	114 J	63.6 J	51.2 J	41.8 J
Manganese	52.4	55.3	51.9	56.3	44.3	23.1	10.8	6.8
Mercury	0.02 J	0.19	0.01 J	0.01 J	0.02 J	--	--	--
Nickel	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--	--
Selenium	--	--	--	--	0.41 J	--	--	0.25 J
Silver	--	2.0 J	--	--	--	--	--	--
Sodium	--	--	--	--	--	--	--	--
Vanadium	6.8 J	5.6 J	8.5 J	8.6 J	26.2	11.4	35.9	31.8
Zinc	3.2 J	15.9	3.1 J	11.2	5.3	2.7 J	--	--
Cyanide	--	--	--	--	0.09 J	--	--	--

See notes at end of table.

Table 5-8 (Continued)
Summary of Analytical Results for Inorganic Analytes Detected
in Site 15 Surface Soil Samples

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Sample Identifier:	15S01801	15S01901	15S02001	15S02001(DUP)	15S02101	15S02201	15S02301	15S02401	15S02501
Laboratory Sample No:	G8913015	G8913016	G8913002	G8913003	G8913004	G8913005	G8913006	G8913007	G8913008
Collection Date:	10-DEC-92	10-DEC-92	09-DEC-92	09-DEC-92	09-DEC-92	09-DEC-92	09-DEC-92	09-DEC-92	09-DEC-92
Sample Depth (inches bls):	0 to 12	0 to 12	0 to 12	0 to 12	0 to 12	0 to 12	0 to 12	0 to 12	0 to 12
Inorganic Analytes (mg/kg)									
Aluminum	6,020	6,040	4,630	5,470	4,050	3,910	3,280	5,410	5,420
Arsenic	1.0 J	1.2 J	1.2 J	1.1 J	1.1 J	0.85 J	0.77 J	1.1 J	1.1 J
Barium	7.7 J	8.4 J	5.6 J	6.6 J	4.4 J	5.2 J	4.5 J	7.3 J	6.9 J
Beryllium	--	--	--	--	--	--	--	--	--
Calcium	--	40.3 J	--	25.2 J	--	27.3 J	27.9 J	36.9 J	36.9 J
Chromium	3.8	5.2	3.0	3.7	2.8	2.8	4.4	3.9	3.3
Cobalt	0.53	0.88 J	--	--	--	--	--	--	--
Copper	--	--	--	--	--	--	--	4.4 J	--
Iron	3,040 J	3,220 J	2,500 J	2,950 J	2,090 J	1,940 J	1,610 J	2,620 J	2,800 J
Lead	3.9	4.2	5.9	5.9	2.8	2.7	2.3	3.7	6.1
Magnesium	108 J	99.1 J	85 J	107 J	74.3 J	81.1 J	65.7 J	106 J	85.7 J
Manganese	116	139	75.2	87.1	43.3	52.1	52.8	86.3	122
Mercury	0.01 J	0.04 J	0.02 J	0.02 J	0.01 J	0.01 J	0.01 J	0.02 J	0.02 J
Nickel	--	--	--	--	--	3.3 J	--	--	--
Potassium	201 J	--	--	--	146 J	--	--	--	--
Selenium	0.24 J	0.3 J	0.26 J	--	--	--	--	--	--
Silver	--	--	--	--	0.67 J	--	--	--	--
Sodium	--	--	--	--	--	--	--	--	--
Vanadium	7.4 J	7.7 J	5.7 J	7.1 J	4.8 J	4.7 J	4.1 J	6.7 J	6.6 J
Zinc	3.5 J	3.7 J	3.0 J	4.1 J	2.7 J	--	2.4 J	4.0 J	3.6 J
Cyanide	--	--	--	--	--	--	--	--	--

Notes: DUP = duplicate sample.
 bls = below land surface.
 mg/kg = milligrams per kilogram.
 J = estimated value.
 -- = concentration of analyte, if present, was less than detection limit.

**Table 5-9
 Summary of Organic Analytes Detected
 in Surface Soil Samples**

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Analyte	Frequency of Detection ¹	Reporting Limit Range	Detected Concentration Range ²	Background Screening Concentration ³	USEPA Region III RBCs ⁴ Residential/Industrial	Soil Cleanup Target Levels for Florida Residential/Industrial/Leachability ⁵
<u>Volatile Organic Compounds (µg/kg)</u>						
Acetone	1/30	10 to 22	11	NA	⁷ 780,000/20,000,000	780,000/5,500,000/2,800
Methylene chloride	4/30	5 to 12	3 to 9	NA	⁶ 85,000/760,000	16,000/23,000/20
Xylenes (total)	3/30	5 to 12	1 to 4	NA	⁷ 16,000,000/410,000,000	5,900,000/40,000,000/200
<u>Semivolatile Organic Compounds (µg/kg)</u>						
Butylbenzylphthalate	1/30	350 to 430	240	NA	⁷ 1,600,000/410,000,000	15,000,000/320,000,000/310,000
Dibutylphthalate	6/30	350 to 420	560 to 1,100	NA	⁷ 780,000/200,000,000	7,300,000/140,000,000/47,000
bis(2-Ethylhexyl)phthalate	4/30	350 to 430	39 to 947.5*	NA	⁶ 46,000/410,000	76,000/280,000/3,600,000
<u>Pesticides and PCBs (µg/kg)</u>						
4,4'-DDD	1/30	3.5 to 18	3.8	NA	⁶ 2,700/24,000	4,600/18,000/4,000
4,4'-DDE	3/30	3.5 to 18	1.9 to 50	NA	⁶ 1,900/17,000	3,300/13,000/18,000
4,4'-DDT	2/30	3.5 to 18	4.4 to 14	NA	⁶ 1,900/17,000	3,300/13,000/11,000

¹ Frequency of detection is the number of samples in which the analyte was detected over the total number of samples analyzed (excluding rejected values).

² The value indicated by an asterisk is the average of a sample and its duplicate. For duplicate samples having one nondetect value, one-half of the contract-required quantification limit/contract-required detection limit is used as a surrogate concentration for the nondetected concentration.

³ The background screening value is twice the average of detected concentrations for inorganic analytes in background samples. Organic values are one times the mean of the detected concentration. Organic values are included for comparison purposes only.

⁴ USEPA Region III RBC Table (October 1, 1998).

⁵ Chapter 62-777, Florida Administrative Code, June 1999.

⁶ The values correspond to a human cancer risk level of 1 in 1,000,000.

⁷ The values correspond to a noncancer hazard quotient of 0.1.

Notes: Samples: 15-SL-01 through 15-SL-05 and 15S00101 through 15S02501.

Duplicate samples: 15S00101D, 15S01701D, and 15S02001D.

Background samples: BKG-SL-02, BKG-SL-06, BKG-SL-07, BKG-SL-08, BKS00101, BKS00201, BKS00301, BKS00401, and BKS00501.

Background duplicate samples: BKS00201D.

µg/kg = micrograms per kilogram.

NA = not applicable.

* = average of sample and duplicate.

PCB = polychlorinated biphenyl.

DDD = dichlorodiphenyldichloroethane.

DDE = dichlorodiphenyldichloroethene.

DDT = dichlorodiphenyltrichloroethane.

<p align="center">Table 5-10 Summary of Inorganic Analytes Detected in Surface Soil Samples</p>						
<p align="center">Remedial Investigation Report Site 15, Southwest Landfill Naval Air Station Whiting Field Milton, Florida</p>						
Analyte	Frequency of Detection ¹	Reporting Limit Range	Detected Concentration Range ²	Background Screening Concentration ³	USEPA Region III RBCs ⁴ Residential/ Industrial	Soil Cleanup Target Levels for Florida Residential/Industrial/Leachability ⁵
Inorganic Analytes (mg/kg)						
Aluminum	30/30	40	3,280 to 13,400	15,334	⁹ 7,800/200,000	72,000/--/SPLP ¹¹
Arsenic	30/30	2	0.75 to 6.8	4.6	⁸ 0.43/3.8	0.8/ ¹⁰ 4.62/29
Barium	30/30	40	3.2 to 11.8	23.8	⁸ 550/14,000	110/87,000/1,600
Beryllium	3/30	0.5 to 1	0.07 to 0.09	0.36	⁸ 16/410	120/800/63
Calcium	18/30	1,000	22.05* to 262.6*	402	--/--	--/--/--
Chromium ⁶	30/30	2	2.8 to 14.4*	10.8	23/610	⁸ 210/420/38
Cobalt	11/30	0.33 to 10	0.49 to 1.2	3.0	⁹ 470/12,000	4,700/110,000/SPLP ¹¹
Copper	8/30	5	1.6 to 12.5	9.4	⁹ 310/8,200	110/76,000/SPLP ¹¹
Iron	30/30	20	1,610 to 11,150*	8,588	⁹ 2,300/61,000	23,000/480,000/SPLP ¹¹
Lead	30/30	0.6 to 1	2.3 to 59.9	11.4	⁷ 400	400/920/SPLP ¹¹
Magnesium	30/30	1,000	43 to 156	258	--/--	--/--/--
Manganese	30/30	3	8.8* to 143	404	⁹ 160/4,100	1,600/22,000/SPLP ¹¹
Mercury	22/30	0.06 to 0.1	0.01 to 0.19	0.12	⁹ 2.3/61	3.4/26/2.1
Nickel	1/30	2.3 to 8	3.3	7.2	⁹ 160/4,100	110/28,000/130
Potassium	5/30	128 to 1,000	131 to 334.5*	177	--/--	--/--/--
Selenium	6/30	0.39 to 1	0.24 to 0.41	0.44	⁹ 39/1,000	390/10,000/5
Silver	4/30	0.32 to 2	0.66 to 2	0.7	⁹ 39/1,000	390/9,100/17
Sodium	5/30	1,000	170 to 179	388	--/--	--/--/--
Vanadium	30/30	10	4.1 to 33.85*	21.2	⁹ 55/1,400	15/7,400/980
Zinc	28/30	4	2.4 to 15.9	15.4	⁹ 2,300/61,000	23,000/560,000/6,000
Cyanide	3/30	0.24 to 0.5	0.09 to 0.31	0.26	⁹ 160/4,100	30/28,000/40
See notes at end of table.						

Table 5-10
Summary of Inorganic Analytes Detected in Surface Soil Samples

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- ¹ Frequency of detection is the number of samples in which the analyte was detected over the total number of samples analyzed (excluding rejected values).
- ² The value indicated by an asterisk is the average of a sample and its duplicate. For duplicate samples having one nondetect value, one-half of the contract-required quantification limit/contract-required detection limit is used as a surrogate concentration for the nondetected concentration.
- ³ The background screening value is twice the average of detected concentrations for inorganic analytes in background samples.
- ⁴ USEPA Region III RBC Table (October 1, 1998).
- ⁵ Chapter 62-777, Florida Administrative Code, June 1999.
- ⁶ The value is based on hexavalent chromium form.
- ⁷ The value for lead is based on the USEPA Office of Solid Waste and Emergency Response Directive No. 9355.4-12, "Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities" (USEPA, 1994c).
- ⁸ The values correspond to a human cancer risk level of 1 in 1,000,000
- ⁹ The values correspond to a noncancer hazard quotient of 0.1.
- ¹⁰ Value is an FDEP-approved site-specific soil cleanup target level for arsenic at covered landfill sites (ABB-ES, 1998, Appendix I; FDEP, 1998)
- ¹¹ Leachability values may be derived using the SPLP test to calculate site-specific target levels or may be determined using toxicity characteristic leaching procedure in the event oily wastes are present.

Notes: The average of a sample and its duplicate is used for all table calculations.

Samples: 15-SL-01, 15-SL-02, 15-SL-03, 15-SL-04, 15-SL-05, 15S00101, 15S00201, 15S00301, 15S00401, 15S00501, 15S00601, 15S00701, 15S00801, 15S00901, 15S01001, 15S01101, 15S01201, 15S01301, 15S01401, 15S01501, 15S01601, 15S01701, 15S01801, 15S01901, 15S02001, 15S02101, 15S02201, 15S02301, 15S02401, and 15S02501.

Duplicate samples: 15S00101D, 15S01701D, and 15S02001D.

Background samples: BKG-SL-02, BKG-SL06, BKG-SL-07, BKG-SL-08, BKS00101, BKS00201, BKS00301, BKS00401, and BKS00501.

Background duplicate samples: BKS00201D.

Bold indicates analyte exceeded screening criteria.

mg/kg = milligrams per kilogram.

-- = not applicable.

* = average of sample and duplicate.

and residential, industrial, and leachability soil Cleanup Target Levels (Florida Department of Environmental Protection [FDEP], 1999) for Site 15 surface soil samples. The sample locations are shown on Figure 3-2.

VOCs. Acetone, methylene chloride, and xylenes (total) were the only VOCs detected in the 30 surface soil samples (and three duplicates) collected at Site 15. Detected concentrations of the three VOCs are lower than the USEPA Region III RBCs and the Florida cleanup target levels.

TCL SVOCs. Bis(2-ethylhexyl)phthalate, butylbenzylphthalate, and dibutylphthalate were detected in surface soil samples. Detected concentrations of all three SVOCs are lower than the USEPA Region III RBCs and the Florida soil cleanup target levels.

Pesticides and PCBs. Three pesticides 4,4'-dichlorodiphenyldichloroethene (4,4'-DDE), 4,4'-dichlorodiphenyldichloroethane (4,4'-DDD), and 4,4'-DDT, were detected in surface soil samples. Detected concentrations of all three pesticides are lower than the USEPA Region III RBCs and the Florida soil cleanup target levels. No PCBs were detected in the surface soil samples.

Inorganic Analytes. Twenty-one inorganic analytes were detected in the surface soil samples. Eleven analytes (arsenic, chromium, copper, iron, lead, mercury, potassium, silver, vanadium, zinc, and cyanide) exceeded the background screening values in one or more samples (Table 5-10). Arsenic and vanadium were the only inorganic analytes detected at concentrations exceeding the Florida residential soil cleanup target levels and USEPA Region III RBC residential soil screening criteria, as described below.

Arsenic was detected at concentrations exceeding the Florida residential soil cleanup target level of 0.8 milligrams per kilogram (mg/kg) in 28 surface soil samples and three duplicate samples. Arsenic exceeded the USEPA Region III residential soil screening criteria (0.43 mg/kg) in all surface soil samples and duplicate samples. Arsenic exceeded the USEPA Region III industrial soil screening criteria (3.8 mg/kg) and the FDEP-approved site-specific soil cleanup target level of 4.62 mg/kg (FDEP, 1998) in surface soil sample 15S01501.

Vanadium was detected at concentrations exceeding the Florida residential soil cleanup target level of 15 mg/kg in six surface soil samples and two duplicate samples.

5.6 SUBSURFACE SOIL ANALYTICAL RESULTS. Five subsurface soil samples were collected from 10 of the test pits excavated at Site 15. Samples 15SS0201, 15SS0502, 15SS0603, and 15SS0804 were collected from depths ranging from 10 to 12 feet bls and sample 15SS1005 was collected from a depth of 5 to 6 feet bls. Tables 5-11 and 5-12 summarize the analytical results for organic and inorganic analytes detected in the five subsurface soil samples. Tables 5-13 and 5-14 summarize the frequency of detection, range of detection limits, range of detected concentrations, and comparison to background screening values, USEPA Region III RBCs for industrial-use screening criteria (USEPA, 1998), and FDEP residential, industrial, and leachability soil cleanup target levels (FDEP, 1999). The location of the subsurface soil samples are shown on Figure 3-3.

**Table 5-11
Summary of Analytical Results for Organic Compounds Detected
in Site 15 Subsurface Soil Samples**

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Sample Identifier:	15SS0201	15SS0502	15SS0603	15SS0804	15SS1005
Laboratory Sample No:	22883001	22889004	22889005	228891002	22883001
Collection Date:	02-OCT-92	03-OCT-92	03-OCT-92	04-OCT-92	02-OCT-92
Sample Depth (ft bls):	10 to 11	10 to 12	10 to 12	10 to 11	5 to 6
<u>Volatile Organic Compounds (µg/kg)</u>					
2-Hexanone	3.0 J	--	--	--	--
Chlorobenzene	--	--	--	2.0 J	--
Xylenes (total)	4.0 J	--	5.0 J	5.0 J	6.0 J
<u>Semivolatile Organic Compounds (µg/kg)</u>					
Phenol	53 J	--	--	--	--
1,4-Dichlorobenzene	--	--	--	110 J	--
4-Methylphenol	42 J	--	77 J	--	--
Naphthalene	--	--	140 J	92 J	--
2-Methylnaphthalene	--	--	68 J	76 J	--
Diethylphthalate	41 J	--	--	--	--
bis(2-Ethylhexyl)phthalate	42 J	--	230 J	--	--
<u>Pesticides and PCBs (µg/kg)</u>					
4,4'-DDE	--	--	--	--	2.3 J
Aroclor-1242	--	--	--	2,200	--
Notes: ft bls = feet below land surface. µg/kg = micrograms per kilogram. J = estimated value. -- = concentration of analyte, if present, was less than detection limit. PCB = polychlorinated biphenyl. DDE = dichlorodiphenyldichloroethene.					

**Table 5-12
Summary of Analytical Results for Inorganic Analytes
Detected in Site 15 Subsurface Soil Samples**

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Site 15, Southwest Landfill
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Milton, Florida

Sample Identifier:	15SS0201	15SS0502	15SS0603	15SS0804	15SS1005
Laboratory Sample No:	22883001	22889004	22889005	228891002	22883001
Collection Date:	02-OCT-92	03-OCT-92	03-OCT-92	04-OCT-92	02-OCT-92
Sample Depth (ft bls):	10 to 11	10 to 12	10 to 12	10 to 11	5 to 6
<u>Inorganic Analytes (mg/kg)</u>					
Aluminum	13,900	3,520	7,250	15,100	7,760
Arsenic	2.6	0.63 J	1.5 J	2.6	1.9 J
Barium	5.0 J	1.6 J	9.6 J	13.2 J	6.5 J
Beryllium	0.17 J	--	0.11 J	0.16 J	0.09 J
Cadmium	--	--	2.1	--	--
Calcium	131 J	72.7 J	148 J	267 J	264 J
Chromium	11	3.8	6.6	12.7	6.5
Cobalt	0.71 J	--	--	--	--
Copper	5.9	0.86 J	3.5 J	6.8	3.6 J
Iron	7,520	2,100	3,650	9,640	4,530
Lead	4.3	2.8	5.7	8.4	86.2
Magnesium	78.9 J	18.8 J	109 J	96 J	70.7 J
Manganese	21.4	10	22.9	44.2	28.1
Mercury	0.44 J	0.09 J	0.44 J	0.59	0.43 J
Nickel	2.3 J	--	2.1 J	--	3.0 J
Potassium	137 J	--	157 J	154 J	--
Silver	0.51 J	--	0.48 J	0.62 J	--
Sodium	175 J	165 J	175 J	191 J	182 J
Vanadium	22.5	6.5 J	11.1	25	13.9
Zinc	9.9 J	3.1 J	12.9	19.1	7.4 J
Cyanide	--	0.53 J	0.55 J	--	--
Notes: ft bls = feet below land surface. mg/kg = milligrams per kilogram. J = estimated value. -- = concentration of analyte, if present, was less than detection limit.					

Table 5-13
Summary of Organic Subsurface Soil Analytical Results

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Analyte	Frequency of Detection ¹	Reporting Limit Range	Detected Concentration Range ²	Background Screening Concentration ³	USEPA Region III RBCs (Industrial) ⁴	Florida Soil Cleanup Target Levels Residential/Industrial/Leachability ⁵
Volatile Organic Compounds (µg/kg)						
2-Hexanone	1/5	11	3	ND	⁷ 8,200,000	5,100/34,000/1,400
Chlorobenzene	1/5	11	2	ND	⁷ 4,100,000	30,000/200,000/1,300
Xylenes (total)	4/5	11	4 to 6	ND	⁷ 410,000,000	5,900,000/40,000,000/200
Semivolatile Organic Compounds (µg/kg)						
Phenol	1/5	350 to 370	53	ND	⁷ 120,000,000	900,000/390,000,000/50
1,4-Dichlorobenzene	1/5	350 to 370	110	ND	⁶ 240,000	6,000/9,000/2,200
4-Methylphenol	2/5	350 to 370	42 to 77	ND	⁷ 1,000,000	250,000/3,000,000/30
Naphthalene	2/5	350 to 370	92 to 140	ND	⁷ 4,100,000	40,000/270,000/1,700
2-Methylnaphthalene	2/5	350 to 370	68 to 76	ND	⁷ 4,100,000	80,000/560,000/6,100
Diethylphthalate	1/5	350 to 370	41	ND	160,000,000	54,000,000/920,000,000/86,000
bis(2-Ethylhexyl) phthalate	2/5	350 to 370	42 to 230	80.3	⁶ 410,000	76,000/280,000/3,600,000
Pesticides and PCBs (µg/kg)						
4,4'-DDE	1/5	3.5 to 37	2.3	ND	⁶ 17,000	3,300/13,000/18,000
Aroclor-1242	1/5	35 to 370	2,200	ND	⁶ 2,900	500/2,100/17,000
See notes at end of table.						

Table 5-13 (Continued)
Summary of Organic Subsurface Soil Analytical Results

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- ¹ Frequency of detection is the number of samples in which the analyte was detected over the total number of samples analyzed (excluding rejected values).
² The value indicated by an asterisk is the average of a sample and its duplicate. For duplicate samples having one nondetect value, one-half of the contract-required quantification limit/contract-required detection limit is used as a surrogate concentration for the nondetected concentration.
³ The background screening value is twice the average of detected concentrations for inorganic analytes in background samples. Organic values are one times the mean of detected concentration. Organic values are included for comparison purposes only.
⁴ USEPA Region III RBC Table (October 1, 1998).
⁵ Chapter 62-777, Florida Administrative Code, June 1999.
⁶ The values correspond to a human cancer risk level of 1 in 1,000,000.
⁷ The values correspond to a noncancer hazard quotient of 0.1.

Notes: The average of a sample and its duplicate is used for all table calculations.

Samples: 15-SL-01, 15-SL-02, 15-SL-03, 15-SL-04, 15-SL-05, 15S00101, 15S00201, 15S00301, 15S00401, 15S00501, 15S00601, 15S00701, 15S00801, 15S00901, 15S01001, 15S01101, 15S01201, 15S01301, 15S01401, 15S01501, 15S01601, 15S01701, 15S01801, 15S01901, 15S02001, 15S02101, 15S02201, 15S02301, 15S02401, and 15S02501.

Duplicate samples: 15S00101D, 15S01701D, and 15S02001D.

Background samples: BKG-SL-02, BKG-SL06, BKG-SL-07, BKG-SL-08, BKS00101, BKS00201, BKS00301, BKS00401, and BKS00501.

Background duplicate samples: BKS00201D.

Bold indicates analyte exceeded screening criteria.

µg/kg = micrograms per kilogram.

PCB = polychlorinated biphenyl.

DDE = dichlorodiphenyldichloroethene.

Table 5-14
Summary of Inorganic Analytes Detected
in Subsurface Soil Samples

Remedial Investigation Report
 Site 15, Southwest Landfill
 Naval Air Station Whiting Field
 Milton, Florida

Analyte	Frequency of Detection ¹	Reporting Limit Range	Detected Concentration Range	Background Screening Concentration ²	USEPA Region III RBCs (Industrial) ³	Florida Soil Cleanup Target Levels Residential/Industrial/Leachability ⁴
Inorganic Analytes (mg/kg)						
Aluminum	5/5	40	3,520 to 15,100	27,834	⁹ 200,000	72,000/--/SPLP ¹⁰
Arsenic	5/5	2	0.63 to 2.6	6.2	⁸ 3.8	0.8/ ⁵ 4.62/29
Barium	5/5	40	1.6 to 13.2	15.8	⁹ 14,000	110/87,000/1,600
Beryllium	4/5	1	0.09 to 0.17	0.26	⁸ 410	120/800/63
Cadmium	1/5	1	2.1 to 2.1	0.92	⁹ 100	75/1,300/8
Calcium	5/5	1,000	72.7 to 267	444	--	--/--/--
Chromium ⁵	5/5	2	3.8 to 12.7	22.8	⁹ 610	210/420/38
Cobalt	1/5	10	0.71 to 0.71	1.5	⁹ 12,000	4,700/110,000/SPLP ¹⁰
Copper	5/5	5	0.86 to 6.8	8.8	⁹ 8,200	110/76,000/SPLP ¹⁰
Iron	5/5	20	2,100 to 9,640	18,100	⁹ 61,000	23,000/480,000/SPLP ¹⁰
Lead	5/5	1	2.8 to 86.2	8.4	⁷ 400	400/920/SPLP ¹⁰
Magnesium	5/5	1,000	18.8 to 109	272	--	--/--/--
Manganese	5/5	3	10 to 44.2	42.6	⁹ 4,100	1,600/22,000/SPLP ¹⁰
Mercury	5/5	0.1	0.09 to 0.59	ND	⁹ 61	3.4/26/2.1
Nickel	3/5	8	2.1 to 3	5.0	⁹ 4,100	110/28,000/130
Potassium	3/5	1,000	137 to 157	181	--	--/--/--
Silver	3/5	2	0.48 to 0.62	1.2	⁹ 1,000	390/9,100/17
Sodium	5/5	1,000	165 to 191	ND	--	--/--/--
Vanadium	5/5	10	6.5 to 25	45	⁹ 1,400	15/7,400/980
Zinc	5/5	4	3.1 to 19.1	15.6	⁹ 61,000	23,000/560,000/6,000
Cyanide	2/5	1	0.53 to 0.55	ND	⁹ 4,100	30/28,000/40

See notes at end of table.

Table 5-14 (Continued)
Summary of Inorganic Analytes Detected
in Subsurface Soil Samples

Remedial Investigation Report
Site 15, Southwest Landfill
Naval Air Station Whiting Field
Milton, Florida

- ¹ Frequency of detection is the number of samples in which the analyte was detected over the total number of samples analyzed (excluding rejected values).
² The background screening value is twice the average of detected concentrations for inorganic analytes in background samples. Organic values are one times the mean of detected concentration. Organic values are included for comparison purposes only.
³ USEPA Region III RBC Table (October 1, 1998).
⁴ Chapter 62-777, Florida Administrative Code, June 1999.
⁵ The value is based on hexavalent chromium form.
⁶ Value is an FDEP-approved site-specific soil cleanup target level for arsenic at covered landfill sites (ABB-ES, 1998; FDEP, 1998).
⁷ The value for lead is based on the USEPA Office of Solid Waste and Emergency Response Directive No. 9355.4-12 "Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities" (USEPA, 1994c).
⁸ Values correspond to a human cancer risk level of 1 in 1,000,000.
⁹ The calculated values correspond to a noncancer hazard quotient of 1.
¹⁰ Leachability values may be derived using the SPLP test to calculate site specific target levels or may be determined using toxicity characteristic leaching procedure in the event oily wastes are present.

Notes: The average of a sample and its duplicate is used for all table calculations.

Samples: 15-SL-01, 15-SL-02, 15-SL-03, 15-SL-04, 15-SL-05, 15S00101, 15S00201, 15S00301, 15S00401, 15S00501, 15S00601, 15S00701, 15S00801, 15S00901, 15S01001, 15S01101, 15S01201, 15S01301, 15S01401, 15S01501, 15S01601, 15S01701, 15S01801, 15S01901, 15S02001, 15S02101, 15S02201, 15S02301, 15S02401, and 15S02501.

Duplicate samples: 15S00101D, 15S01701D, and 15S02001D.

Background samples: BKG-SL-02, BKG-SL06, BKG-SL-07, BKG-SL-08, BKS00101, BKS00201, BKS00301, BKS00401, and BKS00501.

Background duplicate samples: BKS00201D.

mg/kg = milligrams per kilogram.

NA = not applicable.

Organic analytes detected in subsurface soil samples include three VOCs, seven SVOCs, one pesticide, and one PCB. No TRPH were detected above IDLs in the subsurface soil samples collected from Site 15.

VOCs. Three VOCs including 2-hexanone, chlorobenzene, and xylenes (total) were detected in the five subsurface soil samples collected at Site 15. Detected concentrations of 2-hexanone, chlorobenzene and xylenes (total) are below the Florida soil cleanup target levels and USEPA Region III industrial RBC.

SVOCs. Seven SVOCs including phenol, 1,4-dichlorobenzene, 4-methylphenol, naphthalene, 2-methylnaphthalene, diethylphthalate, and bis(2-ethylhexyl)phthalate were detected in subsurface soil samples. Phenol and 4-Methylphenol were detected at concentrations above the Florida soil cleanup target level for leaching. Detected concentrations of all other SVOCs were below the Florida soil cleanup target levels and USEPA Region III industrial RBC.

Pesticides and PCBs. The pesticides 4,4'-DDE and Aroclor-1242 were detected in subsurface soil samples. The detected concentration of 4,4'-DDE was less than the Florida soil cleanup target levels and USEPA Region III industrial RBC. Aroclor-1242 was detected in sample 15SS0804 at a concentration of 2,200 $\mu\text{g}/\text{kg}$. The detected concentration of Aroclor-1242 exceeded the Florida residential and industrial soil cleanup target levels of 500 and 2,100 $\mu\text{g}/\text{kg}$, respectively, but was below the USEPA Region III industrial-use RBC of 2,900 $\mu\text{g}/\text{kg}$. TRPH was not detected in the subsurface soil samples.

Inorganics and Cyanide. Twenty inorganic analytes were detected in the five subsurface soil samples collected at Site 15. Eight of the analytes (calcium, chromium, iron, manganese, potassium, vanadium, zinc, and cyanide) were detected at concentrations exceeding the background screening concentrations (Table 5-14). Arsenic and vanadium were detected at concentrations above the Florida residential soil cleanup target levels. No other inorganic detections in the Site 15 subsurface soil samples exceeded either the Florida soil cleanup target levels or the USEPA Region III RBCs.

5.7 GROUNDWATER ANALYTICAL RESULTS. The groundwater assessment at Site 15 consisted of collecting groundwater screening samples using PCPT during Phases I and IIA as well as sampling of all on-site monitoring wells installed at Site 15.

5.7.1 Phase I Groundwater Samples The RI Phase I investigation at Site 15 consisted of an initial series of PCPT soundings to better define lithology in the interpreted hydrogeologically downgradient southern perimeter (Figure 5-1) and collecting groundwater samples for screening purposes. The VOCs detected in the groundwater screening samples included benzene, 1,1-dichloroethane, 1,2-dichloroethane, 1,2-dichloroethene, toluene, trichloroethene, and xylenes. Trichloroethene was detected in at least one sample from each PCPT sounding location. The highest detected concentration of trichloroethene (161 $\mu\text{g}/\ell$) was at location 15Q001. Daughter products of trichloroethene including 1,1-dichloroethane, 1,2-dichloroethane, and 1,2-dichloroethene were detected in groundwater samples from all of the Site 15 locations. Groundwater samples collected using the PCPT or BAT samplers are considered appropriate for preliminary screening but are not used to support risk assessment conclusions or decision making relative to response actions.

5.7.2 Phase II Groundwater Samples Groundwater samples were collected at Site 15 during the Phase IIA event (November to December 1993) and two Phase IIB events in July to November 1996 and July to August 1997. The locations of the Site 15 monitoring wells are shown on Figure 3-4.

Concentrations of inorganic analytes detected in groundwater samples collected during the Phase IIB sampling event (1996 and 1997) are generally lower than the corresponding samples collected during the Phase IIA sampling event (1993). This change is attributed to a modification in the sampling method. Phase IIB groundwater samples were collected using the low-flow sampling process. The low-flow sampling method produces less turbid samples that are more representative of the surficial aquifer. Because the samples are less turbid and more representative of the groundwater conditions, they represent the preferred data set. Therefore, only the Phase IIB groundwater sample data are summarized in this section and used in the HHRAs. It should be noted that reporting limit ranges for 1,1-dichloroethene, 1,2-dichloroethane, benzene, trichloroethene, naphthalene, and bis(2-ethylhexyl)phthalate exceeded the screening criteria.

Field Parameters. Groundwater field parameter results are presented in Table 5-15. The pH values for groundwater samples collected at Site 15 ranged from 3.68 to 6.62 SUs. With the exception of one monitoring well (WHF-15-3D), all of the pH values reported were below the lower range for the Florida secondary drinking water requirements of 6.5 SUs. However, the values were within the range observed in background samples collected at NAS Whiting Field (ABB-ES, 1998).

The temperature measurements ranged from 21.7 to 26.8 degrees Celsius (°C), and the specific conductance ranged from 17 to 177 micromhos per centimeter.

Turbidity measurements for the Site 15 Phase IIA groundwater sampling event ranged from 1.05 NTUs to 1,348 NTUs. Turbidity measurements for Site 15 Phase IIB groundwater samples ranged from 0.13 to 98.6 NTUs. With one exception (WHF-15-5S that was measured at 98.6 NTU), all the Phase IIB groundwater samples collected at Site 15 had turbidity measurements below 10 NTUs.

Phase IIA Sampling Event. Tables 5-16 and 5-17 present organic and inorganic analytical results for groundwater samples collected from 11 monitoring wells located at Site 15 during the Phase IIA (1993) sampling event. Five VOCs including chloromethane, 1,2-dichloroethene, toluene, chlorobenzene, and ethylbenzene were detected in the Phase IIA groundwater samples. None of the detected VOCs exceeded the Federal or State maximum contaminant levels (MCLs). Four SVOCs including 1,4-dichlorobenzene, naphthalene, diethylphthalate, and bis(2-ethylhexyl)phthalate were detected in the groundwater samples. All detected concentrations were below the Federal and State MCLs. No pesticides, PCBs, or TRPH were detected (Table 5-16) in the groundwater samples.

Twenty-one inorganic analytes and cyanide were detected in groundwater samples from Site 15 monitoring wells (Table 5-17). Five of the analytes (aluminum, cadmium, iron, manganese, and vanadium) were detected at concentrations exceeding either the Federal or State MCLs.

Phase IIB Sampling Events. Tables 5-18 and 5-19 present organic and inorganic analytical results, respectively for groundwater samples collected at Site 15

Table 5-15
Summary of Groundwater Quality Field Parameters

Remedial Investigation Report
Site 15, Southwest Landfill
Naval Air Station Whiting Field
Milton, Florida

Monitoring Well Identification	Date	pH (SU)	Temperature (°C)	Specific Conductance (µmhos/cm)	Turbidity (NTUs)	Dissolved Oxygen (mg/ℓ) (¹)(²)	Hydrogen Sulfide (mg/ℓ)	Ferrous Iron (mg/ℓ)	Redox (mV)
Phase IIA									
WHF-15-1	12-03-93	4.87	22.5	33	1.81	NA	NA	NA	NA
WHF-15-2D	11-09-93	5.67	22.1	34	17.1	NA	NA	NA	NA
WHF-15-21	11-09-93	4.92	21.1	22	6.53	NA	NA	NA	NA
WHF-15-2S	11-09-93	5.39	21.5	40	1,348	NA	NA	NA	NA
WHF-15-3D	11-03-93	6.15	22.9	81	1.79	NA	NA	NA	NA
WHF-15-31	11-03-93	4.80	23.4	20	10.6	NA	NA	NA	NA
WHF-15-3S	11-04-93	5.15	22.4	27	1,025	NA	NA	NA	NA
WHF-15-4	11-03-93	6.07	22.7	36.5	534	NA	NA	NA	NA
WHF-15-5	12-03-93	4.94	24.8	34	44.2	NA	NA	NA	NA
WHF-15-6D	11-10-93	5.04	22.1	24	1.05	NA	NA	NA	NA
WHF-15-6S	11-10-93	6.06	22.2	270	7.86	NA	NA	NA	NA
Phase IIB									
WHF-15-1	8-8-96	5.25	23.2	30	2.2	0.77/NA	NA	NA	NA
	7-28-97	5.07	25.0	30	0.13	1.8/5	0	0	375.4
WHF-15-2S	8-13-96	4.92	25.6	21	21	0.12/NA	NA	NA	NA
	7-28-97	5.14	25.0	32	9.42	1.2/3.6	0	0.67	337.4
WHF-15-2I	8-12-96	4.86	26.4	25	12	8.4/NA	NA	NA	NA
	7-28-97	4.91	23.0	31	1.23	2.7/7.6	0	0	408.9
WHF-15-2D	8-9-96	5.53	25.2	35	25	2.56/NA	NA	NA	NA
	7-29-97	5.88	24.0	42	5.77	2.0/5.5	0	0.02	350.2
WHF-15-3S	8-8-96	5.24	25.4	25	11.9	5.24/NA	NA	NA	NA
	7-29-97	5.19	25.0	27	5.20	1.9/5.2	0	0.01	368.9
WHF-15-3I	8-8-96	5.01	24.8	22	2.6	3.21/NA	NA	NA	NA
	7-29-97	5.02	25.0	28	1.16	3.0/7.5	0	0.03	382.5
WHF-15-3D	8-8-96	6.59	23.1	100	14	5.84/NR	NR	NR	NR
	8-4-97	6.62	25.0	92	5.0	2.0/3.1	0	0	277.3

See notes at end of table.

Table 5-15 (Continued)
Summary of Groundwater Quality Field Parameters

Remedial Investigation Report
Site 15, Southwest Landfill
Naval Air Station Whiting Field
Milton, Florida

Monitoring Well Identification	Date	pH (SU)	Temperature (°C)	Specific Conductance (µmhos/cm)	Turbidity (NTUs)	Dissolved Oxygen (mg/l) ^{(1)/(2)}	Hydrogen Sulfide (mg/l)	Ferrous Iron (mg/l)	Redox (mV)
Phase IIB (Continued)									
WHF-15-4	7-30-96	5.25	26.8	28	6	4.5/NR	NR	NR	NR
	7-30-97	5.81	26.0	29	4.91	3.5/7.8	0	0	411.9
WHF-15-5S	8-6-96	5.06	25.5	37	.07	2.35/NR	NR	NR	NR
	7-31-97	5.21	22.0	57	48.6	0.4/3.6	0	4.51	212.5
WHF-15-5I	8-6-96	5.38	21.7	41	14	2.54/NA	NA	NA	NA
	7-31-97	5.05	23.0	20	5.00	0.5/2.9	0	0.12	333.8
WHF-15-5D	8-6-96	5.35	24.3	29	1	2.36/NA	NA	NA	NA
	7-31-97	4.86	24.0	23	3.48	1.6/4.3	0	0.04	392.3
WHF-15-6S	8-6-96	6.37	22.7	177	10	3.91/NA	NA	NA	NA
	7-27-97	6.13	27.0	170	0.63	0.8/4.5	0.7	5.10	-70.8
WHF-15-6D	8-7-96	5.11	26.3	21	8	3.57/NA	NA	NA	NA
	7-27-97	5.11	25.5	27	4.00	3.2/7.2	0	0	376.3
WHF-15-7S	7-31-96	5.92	23.9	17	2.2	5.70/NA	NA	NA	NA
	7-30-97	4.79	22.0	19	0.64	4.4/9.7	0	0	441.7
WHF-15-7I	7-31-96	3.68	23.1	30	3.7	2.9/NA	NA	NA	NA
	7-30-97	5.14	23.0	30	7.76	0.7/3.6	0	0.20	366.6
WHF-15-7D	8-5-96	3.95	24.3	24	6	7.62/NA	NA	NA	NA
	7-30-97	5.23	25.0	20	7.31	3.6/8.2	0	0	422.5
WHF-15-8S	8-13-96	5.42	24.3	100	7.0	0.02/NA	NA	NA	NA
	8-4-97	5.50	23.5	40	3.31	2.0/4.8	0	3.44	176.8
WHF-15-8I	8-13-96	6.02	24.4	96	3.4	0.05/NA	NA	NA	NA
	8-4-97	5.34	23.0	34	9.63	0.9/4.4	0	0.06	272.8
WHF-15-8D	8-14-96	5.58	25.7	26	123	0.20/NA	NA	NA	NA
	8-4-97	5.34	26.0	20	0.35	7.3/8.0	0	0	338.9

¹ Dissolved oxygen measured with a Horiba U10™.

² Dissolved oxygen measured with a Hach DR/700 Colorimeter 0-10 mg/l ± 0.1.

Notes: SU = standard units.
°C = degrees Celsius.
µmhos/cm = micromhos per centimeter.
NTU = nephelometric turbidity units.
mg/l = milligrams per liter.

mV = millivolt.
NA = not analyzed.
± = plus or minus.
™ = trademark.

Table 5-16
Summary of Analytical Results for Organic Compounds Detected
in Site 15 Groundwater Samples - Phase IIA

Remedial Investigation Report
 Site 15, Southwest Landfill
 Naval Air Station Whiting Field
 Milton, Florida

Location Identifier:	WHF-15-1	WHF-15-2S	WHF-15-2S	WHF-15-2I	WHF-15-2D	WHF-15-3S
Sample Identifier:	WHF-15-1	WHF-15-2B	WHF-15-2BDUP	WHF-15-2C	WHF-15-2D	WHF-15-3B
Laboratory Sample Number:	90271002	90271003	90271004	90210002	90210001	90203001
Date Sampled:	03-DEC-93	09-NOV-93	09-NOV-93	09-NOV-93	09-NOV-93	14-NOV-93

Volatile Organic Compounds ($\mu\text{g}/\ell$)

Chloromethane	--	1.0 J	--	--	--	--
1,2-Dichloroethene (total)	--	--	--	--	--	--
Toluene	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--
Ethylbenzene	--	--	--	--	--	--

Semivolatile Organic Compounds ($\mu\text{g}/\ell$)

1,4-Dichlorobenzene	--	--	--	--	--	--
Naphthalene	--	--	--	--	--	--
Diethylphthalate	--	--	--	--	--	--
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--

See notes at end of table.

Table 5-16 (Continued)
Summary of Analytical Results for Organic Compounds Detected
in Site 15 Groundwater Samples - Phase IIA

Remedial Investigation Report
 Site 15, Southwest Landfill
 Naval Air Station Whiting Field
 Milton, Florida

Location Identifier:	WHF-15-3I	WHF-15-3D	WHF-15-4S	WHF-15-5S	WHF-15-6S	WHF-15-6D
Sample Identifier:	WHF-15-3C	WHF-15-3D	WHF-15-4	WHF-15-5	WHF-15-6B	WHF-15-6D
Laboratory Sample Number:	90199005	90199004	90199003	90271001	90214004	90214004
Date Sampled:	03-NOV-93	03-NOV-93	03-NOV-93	03-DEC-93	24-NOV-93	24-NOV-93
<u>Volatile Organic Compounds ($\mu\text{g}/\text{L}$)</u>						
Chloromethane	--	--	--	--	--	--
1,2-Dichloroethene (total)	--	--	--	--	3.0 J	--
Toluene	--	--	7.0 J	--	--	--
Chlorobenzene	--	--	--	--	5.0 J	--
Ethylbenzene	--	--	--	--	7.0 J	--
<u>Semivolatile Organic Compounds ($\mu\text{g}/\text{L}$)</u>						
1,4-Dichlorobenzene	--	--	--	--	42	--
Naphthalene	--	--	--	--	7.0 J	--
Diethylphthalate	--	--	--	--	2.0 J	--
bis(2-Ethylhexyl)phthalate	--	--	10	21	--	--
Notes: $\mu\text{g}/\text{L}$ = micrograms per liter. -- = concentration of analyte, if present, was less than detection limit. J = estimated value.						

Table 5-17
Summary of Analytical Results for Inorganic Analytes Detected
in Site 15 Groundwater Samples - Phase IIA

Remedial Investigation Report
 Site 15, Southwest Landfill
 Naval Air Station Whiting Field
 Milton, Florida

Location Identifier:	WHF-15-1	WHF-15-2S	WHF-15-2S	WHF-15-2I	WHF-15-2D	WHF-15-3S
Sample Identifier:	WHF-15-1	WHF-15-2B	WHF-15-2BDUP	WHF-15-2C	WHF-15-2D	WHF-15-3B
Laboratory Sample Number:	90271002	90271003	90271004	90210002	90210001	90203001
Date Sampled:	03-DEC-93	09-NOV-93	09-NOV-93	09-NOV-93	09-NOV-93	14-NOV-93

Inorganic Analytes (µg/l)

Aluminum	24.5 J	76,400	45,600	39.2 J	77.2	10,600
Arsenic	--	--	--	--	--	2.1 J
Barium	24.3 J	75.8 J	56.1 J	15.9 J	8.5 J	--
Beryllium	--	0.71 J	0.52 J	--	--	--
Cadmium	7.6	--	5.0	--	23.3	--
Calcium	8,710	2,430 J	2,570 J	801 J	2,090 J	1,080 J
Chromium	3.4 J	71.5	46.9	--	--	22.1
Cobalt	4.3 J	--	--	--	--	--
Copper	2.2 J	30.6	23.2 J	--	2.6 J	13.3 J
Iron	22.6 J	94,500	78,000	46 J	180	33,000
Lead	--	12	6.8	--	--	6.0
Magnesium	670 J	1,240 J	1,070 J	581 J	491 J	1,010 J
Manganese	2.5 J	1,270	1,260	14.1 J	11.6 J	39.6
Mercury	1.0	--	0.16 J	--	0.17 J	0.15 J
Nickel	--	20.5 J	--	--	10.0 J	--
Potassium	870 J	1,110 J	1,020 J	--	2,240 J	916 J
Silver	--	3.8 J	2.7 J	--	--	--
Sodium	4,850	1,080 J	1,040 J	2,670 J	3,860 J	1,810 J
Thallium	--	1.0 J	--	0.93 J	--	--
Vanadium	--	136	102	--	--	69
Zinc	4.9 J	51.6	39.5	14.7 J	16.8 J	48.4
Cyanide	--	1.9 J	2.5 J	--	--	--

See notes at end of table.

Table 5-17 (Continued)
Summary of Analytical Results for Inorganic Analytes Detected
in Site 15 Groundwater Samples - Phase IIA

Remedial Investigation Report
 Site 15, Southwest Landfill
 Naval Air Station Whiting Field
 Milton, Florida

Location Identifier:	WHF-15-3I	WHF-15-3D	WHF-15-4	WHF-15-5	WHF-15-6S	WHF-15-6D
Sample Identifier:	WHF-15-3C	WHF-15-3D	WHF-15-4	WHF-15-5	WHF-15-6B	WHF-15-6D
Laboratory Sample Number:	90199005	90199004	90199003	90271001	90214004	90214004
Date Sampled:	03-NOV-93	03-NOV-93	03-NOV-93	03-DEC-93	24-NOV-93	24-NOV-93

<u>Inorganic Analytes</u> ($\mu\text{g}/\ell$)						
Aluminum	--	--	3,350	519	9,990	43 J
Arsenic	--	--	--	2.3 J	2.1 J	--
Barium	8.4 J	7.8 J	23 J	34.4 J	126 J	14.2 J
Beryllium	--	--	--	--	0.39 J	0.26 J
Cadmium	--	--	--	--	--	12.7
Calcium	605 J	2,280 J	4,360 J	1,320 J	7,430	802 J
Chromium	--	--	32.2	11.2	13	--
Cobalt	--	--	--	--	--	--
Copper	8.8 J	--	5.0 J	7.6 J	19.9 J	2.6 J
Iron	75.2 J	66 J	4,700	3,390	65,600	198
Lead	--	--	--	3.6	3.9 J	1.1 J
Magnesium	423 J	1,430 J	628 J	1,340 J	3,590 J	540 J
Manganese	8.0 J	1.6 J	16.5	41	291	10.8 J
Mercury	--	--	--	--	--	--
Nickel	--	--	14 J	--	11.7 J	--
Potassium	--	1,100 J	3,250 J	949 J	2,680 J	641 J
Silver	--	--	--	4.6 J	--	--
Sodium	2,360 J	13,300	3,540 J	1,540 J	3,800 J	2,890 J
Thallium	--	--	--	--	0.92 J	0.91 J
Vanadium	--	--	29.1 J	--	17.6 J	--
Zinc	35.9	10.8 J	16.9 J	52.7	43.7	17.1 J
Cyanide	--	--	--	--	2.1 J	--

Notes: $\mu\text{g}/\ell$ = micrograms per liter.
 J = estimated value.
 -- = concentration of analyte, if present, was less than detection limit.
 DUP = duplicate

Table 5-18
Summary of Analytical Results for Organic Compounds Detected
in Site 15 Groundwater Samples - Phase IIB

Remedial Investigation Report
 Site 15, Southwest Landfill
 Naval Air Station Whiting Field
 Milton, Florida

Location Identifier:	Shallow Monitoring Wells									
	WHF-15-1S	WHF-15-1S	WHF-15-2S	WHF-15-2S	WHF-15-3S	WHF-15-3S	WHF-15-4	WHF-15-4	WHF-15-5S	WHF-15-5S
Sample Identifier:	15G00101	15G00101	15G00201	15G00201	15G00301	15G00301	15G00401	15G00401	15G00501	15G00501
Laboratory Sample Number:	RB956016	ME377003	RB980003	ME377002	RB956013	ME390002	RB920003	ME404002	RB956005	ME404005
Date Sampled:	08-AUG-96	28-JUL-97	13-AUG-96	28-JUL-97	08-AUG-96	29-JUL-97	30-JUL-96	30-JUL-97	06-AUG-96	31-JUL-97
<u>Volatile Organic Compounds (µg/l)</u>										
1,1-Dichloroethene	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethene (total)	--	--	--	--	--	--	--	--	2.0 J	--
Acetone	--	--	--	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--	--	--	--
2-Butanone	--	--	--	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	--	--	--	--	--	--	--	--	--	--
Trichloroethene	2.0 J	3.0 J	--	--	--	--	--	--	--	--
Xylenes (total)	--	--	--	--	--	--	--	--	--	--
<u>Semivolatile Organic Compounds (µg/l)</u>										
1,4-Dichlorobenzene	--	NA	--	NA	--	NA	--	NA	1.0 J	--
Diethylphthalate	--	NA	--	NA	--	NA	--	NA	--	--
Naphthalene	--	NA	--	NA	--	NA	--	NA	1.0 J	--
bis(2-Ethylhexyl)phthalate	--	NA	2.0 J	NA	--	NA	--	NA	2.0 J	--
<u>Pesticides and PCBs (µg/l)</u>										
4,4'-DDT	--	NA	0.12 J	NA	--	NA	--	NA	--	--

See notes at end of table.

Table 5-18 (Continued)
Summary of Analytical Results for Organic Compounds Detected
in Site 15 Groundwater Samples - Phase IIB

Remedial Investigation Report
Site 15, Southwest Landfill
Naval Air Station Whiting Field
Milton, Florida

Location Identifier:	Shallow Monitoring Wells									
	WHF-15-6S	WHF-15-6S	WHF-15-6S	WHF-15-7S	WHF-15-7S	WHF-15-7S	WHF-15-8S	WHF-15-8S	WHF-15-8S	
Sample Identifier:	15G00601	15G00601D <i>Duplicate</i>	15G00601	15G00701	15G00701D <i>Duplicate</i>	15G00701	15G00801	15G00801	15G00801D <i>Duplicate</i>	
Laboratory Sample Number:	RB956006	RB956008	ME367003	RB920009	RB920010	ME390004	RB980005	ME441002	ME441003	
Date Sampled:	07-AUG-96	07-AUG-96	27-JUL-97	31-JUL-96	31-JUL-96	30-JUL-97	13-AUG-96	04-AUG-97	04-AUG-97	
<u>Volatile Organic Compounds (µg/l)</u>										
1,1-Dichloroethene	--	--	--	--	--	--	--	--	--	
1,2-Dichloroethane	--	--	--	--	--	--	--	--	--	
1,2-Dichloroethene (total)	1.0 J	1.0 J	3.0 J	--	--	--	1.0 J	--	--	
Acetone	--	--	--	--	--	--	--	--	--	
Benzene	--	--	1.0 J	--	--	--	--	--	--	
2-Butanone	--	--	--	--	--	--	--	--	--	
Chlorobenzene	5.0 J	5.0 J	12	--	--	--	3.0 J	4.0 J	4.0 J	
Ethylbenzene	--	1.0 J	2.0 J	--	--	--	--	--	--	
Trichloroethene	--	--	--	--	--	--	--	--	--	
Xylenes (total)	--	--	--	--	--	--	--	--	--	
<u>Semivolatile Organic Compounds (µg/l)</u>										
1,4-Dichlorobenzene	12	12	NA	--	--	NA	8.0 J	NA	NA	
Diethylphthalate	1.0 J	1.0 J	NA	--	--	NA	1.0 J	NA	NA	
Naphthalene	4.0 J	4.0 J	NA	--	--	NA	--	NA	NA	
bis(2-Ethylhexyl)phthalate	--	--	NA	--	--	NA	--	NA	NA	
<u>Pesticides and PCBs (µg/l)</u>										
4,4'-DDT	--	--	NA	--	--	NA	--	NA	NA	
See notes at end of table.										

Table 5-18 (Continued)
Summary of Analytical Results for Organic Compounds Detected
in Site 15 Groundwater Samples - Phase IIB

Remedial Investigation Report
 Site 15, Southwest Landfill
 Naval Air Station Whiting Field
 Milton, Florida

Location Identifier:	Intermediate Monitoring Wells							
	WHF-15-2I	WHF-15-2I	WHF-15-3I	WHF-15-3I	WHF-15-5I	WHF-15-5I	WHF-15-5I	WHF-15-6I
Sample Identifier:	15G00202	15G00202	15G00302	15G00302	15G00502	15G00502	15G00502	15G00602
Laboratory Sample Number:	RB98002	ME377004	RB956014	ME390003	RB956004	MC424002	ME404007	ME367004
Date Sampled:	12-AUG-96	29-JUL-97	08-AUG-96	29-JUL-97	06-AUG-96	18-NOV-96	31-JUL-97	27-JUL-97
<u>Volatile Organic Compounds (µg/l)</u>								
1,1-Dichloroethene	--	--	--	--	2.0 J	--	--	--
1,2-Dichloroethane	--	--	--	--	--	--	--	--
1,2-Dichloroethene (total)	--	--	--	--	38	21	7.0 J	--
Acetone	--	--	--	--	--	--	--	--
Benzene	--	--	--	--	130	66	9.0 J	--
2-Butanone	--	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--	--
Ethylbenzene	--	--	--	--	--	--	--	--
Trichloroethene	1.0 J	2.0 J	1.0 J	3.0 J	29	21	7.0 J	2.0 J
Xylenes (total)	--	--	--	--	--	--	--	--
<u>Semivolatile Organic Compounds (µg/l)</u>								
1,4-Dichlorobenzene	--	NA	--	NA	--	NA	NA	NA
Diethylphthalate	--	NA	--	NA	--	NA	NA	NA
Naphthalene	--	NA	--	NA	--	NA	NA	NA
bis(2-Ethylhexyl)phthalate	2.0 J	NA	3.0 J	NA	--	NA	NA	NA
<u>Pesticides and PCBs (µg/l)</u>								
4,4'-DDT	--	NA	--	NA	--	NA	NA	NA
See notes at end of table.								

Table 5-18 (Continued)
Summary of Analytical Results for Organic Compounds Detected
in Site 15 Groundwater Samples - Phase IIB

Remedial Investigation Report
 Site 15, Southwest Landfill
 Naval Air Station Whiting Field
 Milton, Florida

Location Identifier:	Intermediate Monitoring Wells						Deep Monitoring Wells	
	WHF-15-6I	WHF-15-7I	WHF-15-7I	WHF-15-8I	WHF-15-8I	WHF-15-8I	WHF-15-2D	WHF-15-2D
Sample Identifier:	15G00602D Duplicate	15G00702	15G00702	15G00802	15G00802	15G00802	15G00203	15G00203
Laboratory Sample Number:	ME367005	RB920007	ME390005	RB980004	MC424006	ME441004	RB956017	ME377005
Date Sampled:	27-JUL-97	31-JUL-96	30-JUL-97	13-AUG-96	20-NOV-96	04-AUG-97	09-AUG-96	29-JUL-97
<u>Volatile Organic Compounds (µg/l)</u>								
1,1-Dichloroethene	--	--	--	--	--	--	--	--
1,2-Dichloroethane	--	--	--	--	--	--	--	--
1,2-Dichloroethene (total)	--	--	14	--	--	1.0 J	--	--
Acetone	--	--	--	--	--	--	--	--
Benzene	--	--	100	5.0 J	84	19	--	--
2-Butanone	--	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--	--
Ethylbenzene	--	--	--	--	--	--	--	--
Trichloroethene	2.0 J	1.0 J	5.0 J	5.0 J	15	11	--	1.0 J
Xylenes (total)	--	--	1.0 J	--	--	--	--	--
<u>Semivolatile Organic Compounds (µg/l)</u>								
1,4-Dichlorobenzene	NA	--	NA	--	NA	NA	--	NA
Diethylphthalate	NA	--	NA	--	NA	NA	2.0 J	NA
Naphthalene	NA	--	NA	--	NA	NA	--	NA
bis(2-Ethylhexyl)phthalate	NA	--	NA	5.0 J	NA	NA	1.0 J	NA
<u>Pesticides and PCBs (µg/l)</u>								
4,4'-DDT	NA	--	NA	--	NA	NA	--	NA
See notes at end of table.								

Table 5-18 (Continued)
Summary of Analytical Results for Organic Compounds Detected
in Site 15 Groundwater Samples - Phase IIB

Remedial Investigation Report
 Site 15, Southwest Landfill
 Naval Air Station Whiting Field
 Milton, Florida

Location Identifier:	Deep Monitoring Wells						
	WHF-15-3D	WHF-15-3D	WHF-15-5D	WHF-15-5D	WHF-15-5D	WHF-15-6D	WHF-15-7D
Sample Identifier:	15G00303	15G00303	15G00503	15G00503	15G00503	15G00603	15G00703
Laboratory Sample Number:	RB956015	ME441007	RB956003	MC424003	ME404008	RB956007	RB956002
Date Sampled:	09-AUG-96	05-AUG-97	06-AUG-96	18-NOV-96	31-JUL-97	07-AUG-96	05-AUG-96
<u>Volatile Organic Compounds (µg/l)</u>							
1,1-Dichloroethene	--	--	11	10 J	10 J	--	5.0 J
1,2-Dichloroethane	--	--	2.0 J	--	--	--	4.0 J
1,2-Dichloroethene (total)	--	--	16	22 J	14 J	--	--
Acetone	--	--	170 J	--	--	--	140 J
Benzene	--	--	--	--	--	--	--
2-Butanone	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Ethylbenzene	--	--	--	--	--	--	--
Trichloroethene	--	--	230	350	330	--	150
Xylenes (total)	--	--	--	--	--	--	--
<u>Semivolatile Organic Compounds (µg/l)</u>							
1,4-Dichlorobenzene	--	NA	--	NA	NA	--	NA
Diethylphthalate	--	NA	--	NA	NA	--	NA
Naphthalene	--	NA	--	NA	NA	--	NA
bis(2-Ethylhexyl)phthalate	--	NA	--	NA	NA	--	NA
<u>Pesticides and PCBs (µg/l)</u>							
4,4'-DDT	--	NA	--	NA	NA	--	NA
See notes at end of table.							

Table 5-18 (Continued)
Summary of Analytical Results for Organic Compounds Detected
in Site 15 Groundwater Samples - Phase IIB

Remedial Investigation Report
 Site 15, Southwest Landfill
 Naval Air Station Whiting Field
 Milton, Florida

Location Identifier:	Deep Monitoring Wells						
	WHF-15-7D	WHF-15-7D	WHF-15-8D	WHF-15-8D	WHF-15-8D	WHF-15-8D	WHF-15-8D
Sample Identifier:	15G00703	15G00703D Duplicate	15G00803	15G00803D Duplicate	15G00803	15G00803D Duplicate	15G00803
Laboratory Sample Number:	ME404003	ME404004	RB980007	RB980008	MC424007	MC424008	ME441006
Date Sampled:	30-JUL-97	30-JUL-97	14-AUG-96	14-AUG-96	20-NOV-96	20-NOV-96	05-AUG-97
<u>Volatile Organic Compounds (µg/l)</u>							
1,1-Dichloroethene	2.0 J	--	--	--	--	--	--
1,2-Dichloroethane	1.0 J	2.0 J	--	--	--	--	--
1,2-Dichloroethene (total)	--	--	--	--	--	--	--
Acetone	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--
2-Butanone	--	--	7.0 J	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--
Ethylbenzene	--	--	--	--	--	--	--
Trichloroethene	36	38	4.0 J	4.0 J	5.0 J	5.0 J	7.0 J
Xylenes (total)	--	--	--	--	--	--	--
<u>Semivolatile Organic Compounds (µg/l)</u>							
1,4-Dichlorobenzene	NA	NA	--	--	NA	NA	NA
Diethylphthalate	NA	NA	--	--	NA	NA	NA
Naphthalene	NA	NA	--	--	NA	NA	NA
bis(2-Ethylhexyl)phthalate	NA	NA	2.0 J	1.0 J	NA	NA	NA
<u>Pesticides and PCBs (µg/l)</u>							
4,4'-DDT	NA	NA	0.16 J	0.79 J	NA	NA	NA
Notes: µg/l = micrograms per liter. -- = concentration of analyte, if present, was less than detection limit. J = estimated value. NA = not analyzed.				PCB = polychlorinated biphenyl. DDT = dichlorodiphenyltrichloroethene. DUP = duplicate sample.			

Table 5-19
Summary of Analytical Results for Inorganic Analytes Detected
in Site 15 Groundwater Samples - Phase IIB

Remedial Investigation Report
Site 15, Southwest Landfill
Naval Air Station Whiting Field
Milton, Florida

Location Identifier:	Shallow Monitoring Wells							
	WHF-15-1S	WHF-15-1S	WHF-15-2S	WHF-15-2S	WHF-15-2S	WHF-15-3S	WHF-15-3S	WHF-15-3S
Sample Identifier:	15G00101	15G00101	15G00201	15G00201F	15G00201	15G00301	15G00301F	15G00301
				Filtered Sample			Filtered Sample	
Laboratory Sample Number:	RB956016	ME377003	RB980003	RB980010	ME377002	RB956013	RB956018	ME390002
Date Sampled:	08-AUG-96	28-JUL-97	13-AUG-96	13-AUG-96	28-JUL-97	08-AUG-96	08-AUG-96	29-JUL-97
Inorganic Analytes (µg/l)								
Aluminum	153 J	--	1,030	--	--	--	--	--
Antimony	--	--	--	--	--	--	--	--
Arsenic	--	--	2.2 J	--	--	--	--	--
Barium	26 J	16.7 J	34.6 J	30.2 J	27.1 J	21.7 J	21.2 J	14.2 J
Cadmium	--	--	--	1.3 J	--	--	--	--
Calcium	15,000	--	1,470 J	1,480 J	1,810 J	830 J	795 J	2,240 J
Chromium	--	--	2.8 J	--	--	--	--	--
Cobalt	--	--	--	--	--	--	--	--
Copper	--	--	1.3 J	--	--	--	--	--
Iron	--	--	4,250	98.8 J	923	447	331	324
Lead	1.1 J	--	1.5 J	--	--	1.2 J	0.9 J	0.98 J
Magnesium	612 J	506 J	283 J	283 J	533 J	606 J	603 J	404 J
Manganese	8.1 J	--	141	131	553	9.0 J	9.8 J	9.0 J
Mercury	--	--	--	--	--	--	--	--
Nickel	--	--	--	--	--	--	--	--
Potassium	1,680 J	--	1,600 J	1,440 J	1,080 J	946 J	743 J	--
Silver	--	--	--	--	--	--	--	--
Sodium	3,420 J	4,370 J	978 J	969 J	1,390 J	1,800 J	1,790 J	2,080 J
Thallium	--	--	--	--	--	--	--	--
Vanadium	--	--	5.2 J	--	--	--	--	--
Zinc	--	--	--	--	--	--	--	--
Cyanide	2.5 J	--	--	NA	NA	1.9 J	NA	NA
See notes at end of table.								

Table 5-19 (Continued)
Summary of Analytical Results for Inorganic Analytes Detected
in Site 15 Groundwater Samples - Phase IIB

Remedial Investigation Report
 Site 15, Southwest Landfill
 Naval Air Station Whiting Field
 Milton, Florida

Location Identifier: Sample Identifier: Laboratory Sample Number: Date Sampled:	Shallow Monitoring Wells							
	WHF-15-4S 15G00401 RB920003 30-JUL-96	WHF-14-4S 15G00401 ME404002 30-JUL-97	WHF-15-5S 15G00501 RB956005 06-AUG-96	WHF-15-5S 15G00501F Filtered Sample RB956010 06-AUG-96	WHF-15-5S 15G00501 ME404005 31-JUL-97	WHF-15-5S 15G00501F Filtered Sample ME404006 31-JUL-97	WHF-15-6S 15G00601 RB956006 07-AUG-96	WHF-15-6S 15G00601 ME367003 27-JUL-97
Inorganic Analytes (µg/l)								
Aluminum	102 J	--	174 J	--	481	--	89.4	--
Antimony	--	--	--	--	--	--	--	--
Arsenic	--	--	1.8 J	1.7 J	--	--	8.0 J	14.2
Barium	11.5 J	14.2 J	31.9 J	37.3 J	41.5 J	36.9 J	67.6 J	68.3 J
Cadmium	--	--	--	--	--	--	--	--
Calcium	936 J	2,640 J	1,110 J	1,480 J	2,650 J	2,510 J	3,690 J	4,170 J
Chromium	--	--	2.1 J	--	--	--	--	--
Cobalt	--	--	--	--	--	--	--	--
Copper	--	--	--	--	--	--	--	--
Iron	--	--	3,730	2,180	5,150	3,550	31,000	40,200
Lead	--	--	0.6 J	0.8 J	1.7 J	--	0.9 J	--
Magnesium	354 J	--	1,160 J	1,190 J	1,470 J	1,450 J	1,940 J	2,140 J
Manganese	1.8 J	--	38.1	61.5	92.2	83	139	164
Mercury	--	--	--	--	--	--	--	--
Nickel	--	--	--	7.8 J	--	--	--	--
Potassium	978 J	--	792 J	630 J	--	--	2,460 J	2,190 J
Silver	2.9 J	--	--	--	--	--	--	--
Sodium	3,280 J	2,000 J	1,480 J	1,500 J	1,070 J	1,300 J	2,630 J	2,210 J
Thallium	--	--	--	--	0.98 J	--	--	--
Vanadium	--	1.7 J	1.9 J	--	--	--	--	--
Zinc	1.6 J	--	306	112	--	--	--	--
Cyanide	--	NA	5.0 J	NA	--	NA	--	NA

See notes at end of table.

Table 5-19 (Continued)
Summary of Analytical Results for Inorganic Analytes Detected
in Site 15 Groundwater Samples - Phase IIB

Remedial Investigation Report
 Site 15, Southwest Landfill
 Naval Air Station Whiting Field
 Milton, Florida

Location Identifier:	Shallow Monitoring Wells						
	WHF15-6S	WHF-15-7S	WHF-15-7S	WHF-15-7S	WHF-15-8S	WHF-15-8S	WHF-15-8S
Sample Identifier:	15G00601D Duplicate	15G00701	15G00701D Duplicate	15G00701	15G00801	15G00801	15G00801D Duplicate
Laboratory Sample Number:	RB956008	RB920009	RB92001	ME390004	RB980005	ME441002	ME441003
Date Sampled:	07-AUG-96	31-JUL-96	31-JUL-96	30-JUL-97	13-AUG-96	04-AUG-97	04-AUG-97
Inorganic Analytes (µg/l)							
Aluminum	--	162 J	173 J	--	--	143 J	116 J
Antimony	--	--	--	--	--	--	--
Arsenic	7.8 J	--	--	--	1.2 J	2.0 J	--
Barium	63.7 J	15.6 J	19.3 J	20.4 J	69.8 J	34.7 J	37.3 J
Cadmium	--	--	--	--	--	--	--
Calcium	3,620 J	356 J	360 J	--	2,570 J	1,870 J	2,010 J
Chromium	--	2.9 J	2.0 J	--	--	--	--
Cobalt	--	--	--	--	--	--	--
Copper	--	--	--	--	--	--	--
Iron	30,500	183	20	155	22,100	4,760	4,940
Lead	--	--	--	--	--	--	--
Magnesium	1,900 J	433 J	422 J	482 J	2,330 J	1,370 J	1,470 J
Manganese	136	2.8 J	2.6 J	--	150	84.6	91.4
Mercury	--	--	--	--	--	--	--
Nickel	--	--	--	--	--	--	--
Potassium	2,340 J	--	--	--	1,080 J	--	--
Silver	--	--	--	--	--	--	--
Sodium	2,590 J	1,530 J	1,610 J	1,840 J	2,160 J	1,830 J	1,960 J
Thallium	--	--	--	--	--	--	0.9 J
Vanadium	--	--	1.2 J	--	--	--	--
Zinc	--	3.4 J	3.6 J	--	--	--	--
Cyanide	8.1 J	--	--	NA	--	NA	NA
See notes at end of table.							

Table 5-19 (Continued)
Summary of Analytical Results for Inorganic Analytes Detected
in Site 15 Groundwater Samples - Phase IIB

Remedial Investigation Report
 Site 15, Southwest Landfill
 Naval Air Station Whiting Field
 Milton, Florida

Location Identifier: Sample Identifier: Laboratory Sample Number: Date Sampled:	Intermediate Monitoring Wells							
	WHF-15-2I 15G00202 RB980002 12-AUG-96	WHF-15-2I 15G00202F Filtered Sample RB980009 12-AUG-96	WHF-15-2I 15G00202 ME377004 29-JUL-97	WHF-15-3I 15G00302 RB956014 08-AUG-96	WHF-15-3I 15G00302 ME390003 29-JUL-97	WHF-15-5I 15G00502 RB956004 06-AUG-96	WHF-15-5I 15G00502 ME404007 31-JUL-97	WHF-15-6I 15G00602 ME367004 27-JUL-97
Inorganic Analytes (µg/l)								
Aluminum	204	--	--	--	--	--	--	--
Antimony	--	--	--	--	--	--	--	--
Arsenic	--	--	--	--	--	--	--	--
Barium	23.2 J	17.4 J	24.6 J	15.1 J	17.3 J	28.5 J	14.3 J	13 J
Cadmium	--	1.3 J	--	2.3 J	--	--	--	--
Calcium	892 J	1,370 J	--	735 J	--	2,260 J	--	--
Chromium	--	--	--	2.2 J	--	--	--	--
Cobalt	--	--	--	--	--	--	--	--
Copper	1.5 J	1.1 J	--	--	--	--	--	--
Iron	462	--	--	67.7 J	--	2,190	1,060	--
Lead	0.5 J	--	--	0.5 J	--	1.8 J	--	--
Magnesium	751 J	695 J	758 J	508 J	598 J	1,130 J	516 J	504 J
Manganese	6.1 J	7.0 J	5.4 J	3.4 J	--	114	29.9	--
Mercury	--	--	--	--	--	--	--	--
Nickel	--	--	--	--	--	--	--	--
Potassium	431 J	--	--	338 J	--	--	--	--
Silver	--	--	--	--	--	--	--	--
Sodium	3,500 J	3,510 J	4,030 J	2,300 J	3,150 J	2,120 J	1,700 J	2,870 J
Thallium	--	--	--	--	--	--	--	--
Vanadium	--	--	--	--	--	--	--	--
Zinc	86.6	123	--	127	--	--	--	--
Cyanide	--	NA	NA	2.5 J	NA	--	NA	NA

See notes at end of table.

Table 5-19 (Continued)
Summary Analytical Results for Inorganic Analytes Detected
in Site 15 Groundwater Samples - Phase IIB

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Location Identifier:	Intermediate Monitoring Wells						
	WHF-15-6I	WHF-15-7I	WHF-15-7I	WHF-15-7I	WHF-15-8I	WHF-15-8I	WHF-15-8I
Sample Identifier:	15G00602D Duplicate	15G00702	15G00702F Filtered Sample	15G00702	15G00802	15G00802F Filtered Sample	15G00802
Laboratory Sample Number:	ME367005	RB920007	RB920008	ME390005	RB980004	RB980011	ME441004
Date Sampled:	27-JUL-97	31-JUL-96	31-JUL-96	30-JUL-97	13-AUG-96	13-AUG-96	04-AUG-97
Inorganic Analytes (µg/l)							
Aluminum	--	500	--	538	127 J	--	--
Antimony	--	--	--	--	--	--	--
Arsenic	--	0.6 J	--	--	--	--	--
Barium	13 J	15.5 J	11.8 J	15.4 J	21.9	22.8 J	9.3 J
Cadmium	--	--	--	--	--	--	--
Calcium	--	2,460 J	1,900 J	1,350 J	5,760	6,270	1,760 J
Chromium	--	--	--	--	--	--	--
Cobalt	--	--	--	--	--	--	--
Copper	--	3.3 J	1.5 J	--	1.8 J	1.5 J	--
Iron	92.6 J	380	--	388	118	--	75 J
Lead	--	--	--	--	--	--	--
Magnesium	490 J	474 J	386 J	501 J	796 J	839 J	381 J
Manganese	--	70.4	62.3	50.7	215	226	106
Mercury	--	--	--	--	--	--	--
Nickel	--	--	--	--	--	--	--
Potassium	--	698 J	714 J	--	649 J	740 J	--
Silver	--	--	--	--	--	--	--
Sodium	2,740 J	9,090	7,340	4,130 J	18,600	19,800	4,890 J
Thallium	--	--	--	--	--	--	--
Vanadium	--	1.9 J	--	--	--	--	--
Zinc	--	65.1	38.6	--	197	232	--
Cyanide	NA	--	NA	NA	--	NA	NA
See notes at end of table.							

Table 5-19 (Continued)
Summary Analytical Results for Inorganic Analytes Detected
in Site 15 Groundwater Samples - Phase IIB

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 Site 15, Southwest Landfill
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Location Identifier:	Deep Monitoring Wells							
	WHF-15-2D	WHF-15-2D	WHF-15-2D	WHF-15-3D	WHF-15-3D	WHF-15-3D	WHF-15-5D	WHF-15-5D
Sample Identifier:	15G00203	15G00203F Filtered Sample	15G00203	15G00303	15G00303	15G00503	15G00503F Filtered Sample	15G00503
Laboratory Sample Number:	RB956017	RB956019	ME377005	RB956015	ME441007	RB956003	RB956009	ME404008
Date Sampled:	09-AUG-96	09-AUG-96	29-JUL-97	09-AUG-96	05-AUG-97	06-AUG-96	06-AUG-96	31-JUL-97
Inorganic Analytes (µg/l)								
Aluminum	156 J	193 J	--	--	171 J	103 J	--	--
Antimony	--	9.4 J	--	--	--	--	--	--
Arsenic	--	--	--	--	--	--	--	17.2
Barium	8.2 J	8.0 J	--	13.7 J	13.3 J	10.2 J	8.7 J	9.8 J
Cadmium	--	--	--	--	--	--	--	--
Calcium	1,600 J	1,660 J	1,760 J	3,470 J	3,570 J	2,000 J	2,080 J	--
Chromium	--	--	--	--	--	--	--	--
Cobalt	--	--	--	--	--	--	--	--
Copper	--	--	--	--	--	2.0 J	1.7 J	--
Iron	314	321	111	43.8 J	136	134	--	--
Lead	--	0.7 J	--	--	--	--	0.7 J	--
Magnesium	651 J	695 J	840 J	1,720 J	1,810 J	232 J	227 J	361 J
Manganese	25.9	23	12.4 J	--	--	71	69.3	18.5
Mercury	--	--	--	--	--	--	--	0.06 J
Nickel	--	--	--	--	--	--	--	--
Potassium	1,250 J	1,600 J	--	1,550 J	1,280 J	460 J	403 J	--
Silver	--	--	--	--	--	--	--	--
Sodium	5,750	6,610	6,310 J	16,800	18,300 J	3250 J	3,260 J	2,480 J
Thallium	--	--	--	--	--	--	--	--
Vanadium	--	1.4 J	--	--	--	1.7 J	--	--
Zinc	30.5	30.5	--	--	--	49	88.3	--
Cyanide	1.9 J	NA	NA	2.5 J	NA	--	NA	NA
See notes at end of table.								

during the Phase IIB sampling events (1996 and 1997). Tables 5-20 and 5-21 summarize the frequency of detection, reporting range limits, detected concentration range, background screening concentrations and Federal and State regulatory limits of the 1997 sampling event for the organic and inorganic analytes, respectively. The distribution of organic contaminants exceeding Florida cleanup target levels and Federal MCLs is shown in Figure 5-11.

Shallow Groundwater Samples. Five VOCs (1,2-dichloroethene, trichloroethene, benzene, chlorobenzene, and ethylbenzene) were detected in groundwater samples collected from the shallow monitoring wells at Site 15. None of the detected VOCs were identified in the facility background groundwater samples. None of the detected concentrations exceeded either the Federal MCLs or Florida groundwater cleanup target levels. However, the detected concentrations of benzene in sample 15G00601 and trichloroethene in sample 15G00101 equaled the Florida cleanup target levels of 1 $\mu\text{g}/\ell$ and 3.0 $\mu\text{g}/\ell$, respectively.

Four SVOCs, including 1,4-dichlorobenzene, diethylphthalate, naphthalene, and bis(2-ethylhexyl)phthalate, were detected in groundwater samples from the shallow depth monitoring wells. The SVOCs were only detected in the groundwater samples from four of the shallow monitoring wells (WHF-15-2S, WHF-15-5S, WHF-15-6S and WHF-15-8S) at the site. All of the detected concentrations of SVOCs were below the Federal MCLs and the Florida groundwater cleanup target levels.

One pesticide compound, 4,4'-DDT, was detected in the groundwater samples from the shallow monitoring wells at Site 15. 4,4'-DDT was detected in the groundwater sample from monitoring well WHF-14-2S at a concentration of 0.12 $\mu\text{g}/\ell$, which exceeded the Florida groundwater guidance concentration of 0.1 $\mu\text{g}/\ell$. Currently, there is no Federal MCL for this compound.

Eighteen inorganic analytes were detected in the groundwater samples from shallow monitoring wells. Nine of the inorganic analytes including aluminum, arsenic, cyanide, iron, magnesium, potassium, thallium, vanadium, and zinc were detected at concentrations exceeding the background screening concentration (Table 5-21). Concentrations of aluminum, iron, and manganese were reported to exceed the Federal MCLs and Florida groundwater guidance concentrations.

Intermediate Groundwater Samples. Five VOCs (1,1-dichloroethene, 1,2-dichloroethene, trichloroethene, benzene, and xylene) were detected in groundwater samples collected from intermediate depth monitoring wells.

Trichloroethene was detected in every monitoring well sampled at concentrations ranging from an estimated 1 $\mu\text{g}/\ell$ to 29 $\mu\text{g}/\ell$. The concentrations detected in groundwater samples from three monitoring wells (WHF-15-5I, WHF-15-7I, and WHF-15-8I) exceeded the Florida groundwater guidance concentration of 3 $\mu\text{g}/\ell$ and either met or exceeded the Federal MCL of 5 $\mu\text{g}/\ell$.

Benzene was detected in the groundwater samples from intermediate depth wells WHF-15-5I, WHF-15-7I, and WHF-15-8I at concentrations ranging from 5 $\mu\text{g}/\ell$ to 130 $\mu\text{g}/\ell$. All of the detected concentrations exceeded the Florida groundwater guidance concentration of 1 $\mu\text{g}/\ell$ and either met or exceeded the Federal MCL of 5 $\mu\text{g}/\ell$.

None of the remaining VOCs were detected at concentrations exceeding the Federal or State regulatory limits.

Table 5-20
Summary of Groundwater Analytical Results for Organic Compounds - 1997 Data

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Analyte	Frequency of Detection ¹	Reporting Limit Range	Detected Concentration Range	Background Screening Concentration ²	Federal MCLs ³	Florida Groundwater Cleanup Target Levels ⁴
<u>Volatile Organic Compounds (µg/l)</u>						
1,1-Dichloroethene	2/20	10 to 25	3.5 to 10	ND	7	7
1,2-Dichloroethane	1/20	10 to 25	2	ND	⁵ 5	3
1,2-Dichloroethene (total)	8/20	10 to 25	1 to 14	ND	70	⁵ 70
Acetone	1/20	10 to 25	140	ND	NA	700
Benzene	4/20	10 to 25	1 to 100	ND	5	1
2-Butanone	1/20	10 to 25	7	ND	NA	4,200
Chlorobenzene	2/20	10 to 25	4 to 12	ND	100	100
Ethylbenzene	1/20	10 to 25	2	ND	700	30
Trichloroethene	11/20	10 to 25	1 to 330	ND	5	3
Xylenes (total)	1/20	10 to 25	1	ND	10,000	20
<u>Semivolatile Organic Compounds (µg/l)</u>						
1,4-Dichlorobenzene	3/19	10 to 10	1 to 12	ND	76	75
Diethylphthalate	3/19	10 to 10	1 to 2	ND	NA	5,600
Naphthalene	2/19	10 to 10	1 to 4	ND	NA	20
bis(2-Ethylhexyl)phthalate	8/19	10 to 10	1 to 5	4	6	6
<u>Pesticides and PCBs (µg/l)</u>						
4,4'-DDT	2/19	0.1 to 0.1	0.16 to 0.79	ND	NA	0.1

¹ Frequency of detection is the number of samples in which the analyte was detected divided by the total number of samples analyzed (excluding rejected values).

² The background screening value is twice the average of detected concentrations for inorganic analytes in background samples. Background screening values for organic analyte values are one times the average of detected concentrations. Organic values are included for comparison purposes only (i.e., not used to select ECPCs).

³ Federal MCLs are the maximum permissible concentration of contaminants in the water that are delivered to a user by a public water system.

⁴ Chapter 62-777, Florida Administrative Code, Groundwater Cleanup Target Levels.

⁵ Value is for cis-1,2-dichloroethene.

Notes: The average of a sample and its duplicate is used for all table calculations.

Bold indicates analyte exceeded screening criteria.

Samples: 15G00101, 15G00201, 15G00202, 15G00203, 15G00301, 15G00302, 15G00303, 15G00401, 15G00501, 15G00502, 15G00503, 15G00601, 15G00602, 15G00603, 15G00701, 15G00702, 15G00703, 15G00801, 15G00802, and 15G00803.

Duplicate samples: 15G00601D, 15G00602D, 15G00701D, 15G00703D, 15G00703D, 15G00801D, 15G00803D.

Background samples: BKG00101 through BKG00103, BKG00201 through BKG00203, and BKG00301.

Background duplicate samples: BKG00101D.

MCL = maximum contaminant level.

ND = not detected in any background sample.

PCB = polychlorinated biphenyl.

µg/l = micrograms per liter.

NA = not available.

DDT = dichlorodiphenyltrichloroethane.

Table 5-21
Summary of Groundwater Analytical Results for Inorganic Analytes - 1997 Data

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Analyte	Frequency of Detection ¹	Reporting Limit Range ²	Detected Concentration Range	Background Screening Concentration ³	Federal MCLs ⁴	Florida Groundwater Cleanup Target Levels ⁵
<u>Inorganic Analytes (mg/l)</u>						
Aluminum	14/20	35.8 to 200	58.65 to 1,030	654	⁶ 200	⁸ 200
Antimony	1/20	8.6 to 60	25.6	20.4	6	⁷ 6
Arsenic	6/20	0.5 to 10	0.6 to 17.2	ND	50	⁷ 50
Barium	20/20	200 to 200	7.8 to 68.3	72.6	2,000	⁷ 2,000
Cadmium	1/20	1.2 to 5	2.3	4.4	5	⁷ 5
Calcium	19/20	5,000 to 5,000	358 to 15,000	3,316	NA	NA
Chromium	6/20	2 to 10	1.95 to 2.8	30	100	⁷ 100
Cobalt	1/20	2.3 to 50	1.78	ND	NA	420
Copper	6/20	1.1 to 25	1.3 to 3.3	10.8	⁶ 1,000	⁸ 1,000
Cyanide	7/19	1.5 to 7.6	1.9 to 5	7	200	⁷ 200
Iron	18/20	100 to 100	56.7 to 40,200	964	⁶ 300	⁸ 300
Lead	10/20	0.5 to 3	0.5 to 4.05	ND	¹⁰ 15	⁷ 15
Magnesium	20/20	5,000 to 5,000	273 to 2,140	2,426	NA	NA
Manganese	18/20	15 to 15	1.8 to 553	42.8	⁶ 50	⁸ 50
Mercury	1/20	0.1 to 0.2	0.06	ND	2	⁷ 2
Nickel	1/20	7.3 to 40	7.4	42.8	100	⁷ 100
Potassium	17/20	5,000 to 5,000	338 to 2,190	1,528	NA	NA
Silver	1/20	2.5 to 10	2.9	ND	⁶ 100	⁸ 100
Sodium	20/20	5,000 to 5,000	1,070 to 18,300	4,772	⁷ NA	⁷ 160,000
Thallium	2/20	0.6 to 10	0.98 to 2.95	ND	2	⁷ 2
Vanadium	7/20	1.2 to 50	0.9 to 5.2	3.8	NA	⁹ 49
Zinc	12/20	20 to 20	1.6 to 306	200	⁶ 5,000	⁸ 5,000

See notes on following page.

Table 5-21 (Continued)
Summary of Groundwater Analytical Results for Inorganic Analytes - 1997 Data

Remedial Investigation Report
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- ¹ Frequency of detection is the number of samples in which the analyte was detected divided by the total number of samples analyzed (excluding rejected values).
- ² For duplicate samples having one nondetect value, one-half of the detection limit is used as a surrogate for the nondetect value.
- ³ The background screening value is twice the average of detected concentrations for inorganic analytes in background samples. Background screening values for organic analyte values are one times the average of detected concentrations. Organic values are included for comparison purposes only (i.e., not used to select ecological contaminant of potential concerns).
- ⁴ Federal MCLs are maximum permissible concentration of contaminants in the water that are delivered to a user by a public water system.
- ⁵ Chapter 62-777, Florida Administrative Code, Groundwater Cleanup Target Levels.
- ⁶ Secondary MCL.
- ⁷ Primary drinking water standard based on Florida Administrative Code (FAC) Rule 17-550.310.320.
- ⁸ Secondary drinking water standard based on FAC Rule 17-550.310.320.
- ⁹ Systemic toxicants based on FAC rule 17-520.400(1)d.
- ¹⁰ Treatment technique.

Notes: The average of a sample and its duplicate is used for all table calculations.

Bold indicates analyte exceeded screening criteria.

Samples: 15G00101, 15G00201, 15G00202, 15G00203, 15G00301, 15G00302, 15G00303, 15G00401, 15G00501, 15G00502, 15G00503, 15G00601, 15G00602, 15G00603, 15G00701, 15G00702, 15G00703, 15G00801, 15G00802, and 15G00803.

Duplicate samples: 15G00601D, 15G00602D, 15G00701D, 15G00703D, 15G00801D, 15G00803D.

Background samples: BKG00101 through BKG00103, BKG00201 through BKG00203, and BKG00301.

Background duplicate samples: BKG00101D.

MCL = maximum contaminant level.

mg/l = milligrams per liter.

ND = not detected in any background sample.

NA = not available.

Bis(2-ethylhexyl)phthalate was the only SVOC detected in the groundwater samples from intermediate depth monitoring wells at Site 15. The compound was detected in samples from monitoring wells WHF-15-2I, WHF-15-3I, and WHF-15-8I at concentrations ranging from an estimated 2.0 to 5.0 $\mu\text{g}/\ell$. All detected concentrations were below the Federal MCL and Florida groundwater guidance concentration of 6 $\mu\text{g}/\ell$.

No pesticides or PCB compounds were detected in the groundwater samples from the intermediate depth monitoring wells.

Fifteen inorganic analytes were detected in the groundwater samples from intermediate monitoring wells at Site 15. Seven of the analytes (arsenic, calcium, iron, lead, manganese, sodium, and zinc) were detected at concentrations exceeding the background water screening criteria. Concentrations of aluminum, iron, and manganese were detected in one or more samples at levels exceeding the Federal MCLs and Florida groundwater guidance concentrations.

Deep Groundwater Samples. Five VOCs (acetone, 1,1-dichloroethene, 1,2-dichloroethene, 1,2-dichloroethane, and trichloroethene) were detected in groundwater samples collected from deep monitoring wells. 1,1-Dichloroethene exceeded the Federal and State MCLs (3 $\mu\text{g}/\ell$ and 5 $\mu\text{g}/\ell$ respectively) in groundwater samples from monitoring well 15G00503 where concentrations ranged from 10 to 11 $\mu\text{g}/\ell$. Trichloroethene either equals or exceeds the Federal and State MCLs (5 and 3 $\mu\text{g}/\ell$ respectively) in groundwater samples from three monitoring wells (15G00503 [230 to 350 $\mu\text{g}/\ell$], 15G00703 [36 to 150 $\mu\text{g}/\ell$], and 15G00803 [4 to 7 $\mu\text{g}/\ell$]).

Two SVOCs (diethylphthalate and bis(2-ethylhexyl)phthalate) were detected in the groundwater samples from the deep monitoring wells at Site 15. The compounds were detected in groundwater samples from monitoring wells WHF-15-2D, WHF-15-7D, and WHF-15-8D. All detected concentrations were less than the Federal MCLs and Florida groundwater guidance concentrations.

4,4'-DDT, which was detected at estimated concentrations of 0.16 and 0.79 $\mu\text{g}/\ell$ in the groundwater samples from monitoring well WHF-15-8D, was the only pesticide compound reported in the deep monitoring wells. The detected concentrations exceeded the Florida groundwater guidance concentration of 0.1 $\mu\text{g}/\ell$. There is currently no Federal MCL for this compound.

Sixteen inorganic analytes were detected in the groundwater samples from the Site 15 deep monitoring wells. Nine of the compounds including antimony, arsenic, calcium, cobalt, copper, lead, manganese, potassium, and sodium were detected at concentrations exceeding the background screening concentration (Table 5-21). Three of the analytes antimony, iron, and manganese, were detected at concentrations exceeding the Federal MCLs and Florida groundwater guidance concentrations.

Filtered Groundwater Samples. Filtered samples for inorganics (metals only) were collected from monitoring wells WHF-15-2S, WHF-15-2I, WHF-15-2D, WHF-15-3S, WHF-15-5S, WHF-15-5D, WHF-15-7I, WHF-15-8I, and WHF-15-8D, for comparison purposes only during the Phase IIB RI (denoted with "F" suffix, Table 5-19). Comparison of the analytical results between the filtered sample and the corresponding unfiltered sample indicates that, in general, fewer analytes are detected in the filtered samples. In addition, analyte concentrations in the filtered sample are typically lower than the corresponding concentrations in the unfiltered sample.

However, there were several filtered samples which contained higher concentrations of analytes than in the unfiltered samples. It should be noted that only unfiltered sample data was used in the RI decision making process, including the risk assessment.

6.0 HUMAN HEALTH RISK ASSESSMENT

An HHRA has been conducted as part of the RI for Site 15 at NAS Whiting Field. The purpose of the HHRA is to characterize the risks associated with the hypothetical exposures to site-related chemicals. This HHRA is conducted in accordance with the following guidance documents:

- USEPA's Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A) (USEPA, 1989b),
- Guidance for Data Useability in Risk Assessment (Part A), Final (USEPA, 1992a), and
- Region IV Risk Assessment Guidance (USEPA, 1995a).

Additionally, the HHRA will consider the following FDEP guidance:

- Soil and Groundwater Cleanup Target Levels for Florida (FDEP, 1999).

The methodology for the HHRA is described in Chapter 2.0 of the GIR (ABB-ES, 1998). The HHRA methodology presented in the GIR (ABB-ES, 1998) consists of the following steps:

- data evaluation,
- selection of chemicals of potential concern,
- exposure assessment,
- toxicity assessment, and
- risk characterization.

Site 15 is a 21-acre parcel located along the southwestern facility bound near the South Air Field at NAS Whiting Field. The location, physical description, and history associated with Site 15 are described in Chapter 1.0 of this report. Surface soil, subsurface soil, and groundwater were collected from Site 15 during the RI. Sampling locations and the sampling rationale are presented in Chapters 3.0 and 5.0 of this report.

6.1 DATA EVALUATION. The data evaluation involves numerous activities, including sorting data by medium, evaluating sample quantitation limits (SQLs), and evaluating quality of data with respect to qualifiers.

The data for Site 15 was categorized into surface soil, subsurface soil, groundwater, and background for each medium.

SQLs are compared to USEPA Region III RBCs (USEPA, 1998), and Florida screening values (FDEP, 1999). Surface soil and subsurface soil SQLs were compared to USEPA Region III RBCs (USEPA, 1998) and Florida Soil Cleanup Target Levels (FDEP, 1999) for residential and industrial use, respectively. Groundwater SQLs were compared to Florida Groundwater Cleanup Target Levels (FDEP, 1999) and USEPA Region III Tap Water RBCs (USEPA, 1998). Analyte-specific SQLs that are above RBCs and Florida screening values are identified and discussed in the uncertainty analysis.

The quality of the data was evaluated with respect to the data qualifiers. Only data of sufficient quality were retained for evaluation in the HHRA. The HHRA considers data with "J", "U", and "UJ" qualifiers as well as data with no qualifier.

6.2 SELECTION OF HUMAN HEALTH CHEMICALS OF POTENTIAL CONCERN (HHPCs). The HHPCs were selected per the methodology described in Section 2.5 of the GIR (ABB-ES, 1998). This HHPC methodology considers (1) frequency of detection, (2) consistency with background conditions, (3) a comparison with regulatory and risk-based screening values (screening values are presented in Appendix C, Tables C-1 through C-3), and (4) a comparison to essential nutrient levels.

USEPA Region IV criteria were used in selecting HHPCs (USEPA, 1995a). For each medium, the following criteria were employed to exclude detected analytes from the list of HHPCs. Each criterion by itself is justification for excluding the analyte.

Less than 5 Percent Frequency of Detection. An analyte is not selected as a HHPC if it has a frequency of detection (number of samples in which the analyte is detected divided by the number of samples analyzed for that analyte) less than 5 percent (USEPA, 1995a) and is not selected as an HHPC in another medium. This criterion is not used if there are less than 20 environmental samples for a specific media.

Less than Background Screening Concentrations. If the maximum detected concentration of an analyte is less than twice the arithmetic mean of the background concentration (inorganics only), the analyte is not selected as an HHPC (USEPA, 1995a). Development of background screening values for surface soil, groundwater, and subsurface soil are discussed below.

- A representative surface soil background data set consisting of Troup loamy sand and Dothan/Lucy/Bonifay soil is used for background screening of Site 15 surface soil samples. Sample locations are identified on Figure 3-10 and are discussed in Subsection 3.3.1 of the GIR (ABB-ES, 1998). The background surface soil data used for screening Site 15 surface soil are presented in Tables 3-9 and 3-14 of the GIR (ABB-ES, 1998).
- Background subsurface soil locations are identified on Figure 3-10 and discussed in Subsection 3.3.2 of the GIR (ABB-ES, 1998). Tables 3-15 through 3-17 in the GIR present background sample data for various types of subsurface soil. Table 3-18 of the GIR (ABB-ES, 1998) presents summary statistics and background screening data value used in the Site 15 HHRA subsurface soil evaluation.
- Background groundwater sample locations are identified on Figure 3-12 and discussed in Subsection 3.3.3 of the GIR (ABB-ES, 1998). Tables 3-21 through 3-23 of the GIR (ABB-ES, 1998) presents background screening data for groundwater. Table 3-24 of the GIR (ABB-ES, 1998) present the summary statistics used for screening the groundwater at Site 15.

Less than Risk-Based Screening Concentrations, Standards, and Guidelines. If the maximum detected concentration of the analyte in a medium is less than its corresponding adjusted USEPA Region III RBC (USEPA, 1998), and less than FDEP standards and guidelines, the analyte is not selected as a HHCP (USEPA, 1995a). The target hazard quotient (HQ) in the USEPA Region III RBC table is 1 and the target cancer risk is 1×10^{-6} . All RBCs based on noncarcinogenic effects are adjusted for a target HQ of 0.1 per Region IV guidance (USEPA, 1995a).

The residential soil RBCs are used for screening surface soil. The industrial soil RBCs are used for screening subsurface soil. No RBC is available for lead in soil due to a lack of toxicity data. Based on an USEPA recommendation, a screening level of 400 mg/kg for lead under residential land use is used as the RBC for lead in soil (USEPA, 1994c). The maximum detected concentrations of analytes in surface soil and subsurface soil are also compared to residential and industrial Florida Soil Cleanup Target Levels (FDEP, 1999), respectively.

Tap water RBCs (USEPA, 1998), Federal MCLs (USEPA, 1996c) and Florida Cleanup Target Levels (FDEP, 1999) are used for screening HHCPs in groundwater.

Less than Essential Nutrient Screening Values. If the maximum detected concentration of an essential nutrient in a medium is below a toxic level and consistent with or only slightly above its background concentration, the essential nutrient is not selected as an HHCP. The derivation of essential nutrient screening values is presented in the GIR (Appendix C).

HHCPs were not screened using the essential nutrient value for iron; the RBC for iron was used instead. However, if iron is determined to be a risk driver, a comparison of the exposure concentrations against the essential nutrient level for iron will be presented in the uncertainty analysis section for that medium.

If the analyte meets any of the above criteria, is not a member of the same chemical class as other HHCPs in the medium, and is not a breakdown product of other HHCPs in the medium, then the analyte is not selected as a HHCP. In situations where multiple screening values are available, a chemical is excluded only if its maximum screening concentration is less than all of the corresponding screening values. Appendix C of this report presents the RBCs, regulatory guidance values, and ARARs that are used in HHCP selection. After applying these criteria with professional judgment, HHCPs are identified for each medium. HHCP selection for each medium is presented below in Subsections 6.2.1 through 6.2.3.

6.2.1 Surface Soil Thirty samples (15-SL-01 through 15-SL-05, 15S00101, 15S00201, 15S00301, 15S00401, 15S00501, 15S00601, 15S00701, 15S00801, 15S00901 [and a reanalysis, 15S00901RE], 15S01001, 15S01101, 15S01201, 15S01301, 15S01401, 15S01501, 15S01601, 15S01701, 15S01801, 15S01901 [and a reanalysis, 15S01901RE], 15S02001, 15S02101, 15S02201, 15S02301, 15S02401, and 15S02501 as well as three duplicates 15S00101D, 15S01701D, and 15S02001D) were considered in the Site 15 HHRA. Sample 15S00901RE only had data for SVOCs. The SVOC data for 15S00901 was all rejected. Samples 15-SL-01, 15-SL-02, 15-SL-03, 15-SL-04, and 15-SL-05 did not have data for endrin aldehyde and carbazole.

VOCs, SVOCs, pesticides, PCBs, and inorganic analyte data from all of these samples are evaluated in this HHRA. Tables 5-9 and 5-10 present the analytes and concentrations detected in surface soil samples. Table 6-1 presents summary

Table 6-1
Selection of Human Health Chemicals of Potential Concern
for Surface Soil

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Site 15, Southwest Landfill
Naval Air Station Whiting Field
Milton, Florida

Analyte	Frequency of Detection ¹	Range of Reporting Limit	Range of Detected Concentrations ²	Mean of Detected Concentrations ³	Background Screening Concentration ⁴	Selected Screening Concentration ⁵	Analyte HHCP? (Yes/No)	Reason ⁶
<u>Volatile Organic Compounds (µg/kg)</u>								
Acetone	1/30	10 to 22	11	11	NA	780,000	No	S, F
Methylene chloride	4/30	5 to 12	3 to 9	5.3	NA	16,000	No	S
Xylenes (total)	3/30	5 to 12	1 to 4	2.3	NA	5,900,000	No	S
<u>Semivolatile Organic Compounds (µg/kg)</u>								
Butylbenzylphthalate	1/30	350 to 430	240	240	NA	1,600,000	No	S, F
Di- <i>n</i> -butylphthalate	6/30	350 to 420	560 to 1,100	800	NA	780,000	No	S
bis(2-Ethylhexyl)phthalate	4/30	350 to 430	39 to 947.5*	299	80.3	46,000	No	S
<u>Pesticides and PCBs (µg/kg)</u>								
4,4'-DDD	1/30	3.5 to 18	3.8	3.8	NA	2,700	No	S, F
4,4'-DDE	3/30	3.5 to 18	1.9 to 50	18.3	NA	1,900	No	S
4,4'-DDT	2/30	3.5 to 18	4.4 to 14	9.2	NA	1,900	No	S
<u>Inorganic Analytes (mg/kg)</u>								
Aluminum	30/30	40	3,280 to 13,400	7,159	15,300	7,800	No	B
Arsenic	30/30	2	0.75 to 6.8	1.6	74.6	0.43	Yes	
Barium	30/30	40	3.2 to 11.8	6.8	23.8	110	No	B, S
Beryllium	3/30	0.05 to 1	0.07 to 0.09	0.08	0.36	16	No	B, S
Calcium	18/30	1,000	22.05* to 263*	79.5	402	1,000,000	No	B, S
Chromium	30/30	2	2.8 to 14.4*	6.1	10.8	23	No	S
Cobalt	11/30	0.33 to 10	0.49 to 1.2	0.72	3	470	No	B, S
Copper	8/30	5	1.6 to 12.5	5.4	9.4	110	No	B, S
See notes at end of table.								

Table 6-1 (Continued)
Selection of Human Health Chemicals of Potential Concern
for Surface Soil

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Site 15, Southwest Landfill
Naval Air Station Whiting Field
Milton, Florida

Analyte	Frequency of Detection ¹	Range of Reporting Limits	Range of Detected Concentrations ²	Mean of Detected Concentrations ³	Background Screening Concentration ⁴	Selected Screening Concentration ⁵	Analyte HHPCP? (Yes/No)	Reason ⁶
Inorganic Analytes (mg/kg) (Continued)								
Cyanide	3/30	0.24 to 0.5	0.09 to 0.31	0.19	0.26	30	No	S
Iron	30/30	20	1,610 to 11,150*	4,278	8,588	2,300	Yes	
Lead	30/30	0.6 to 1	2.3 to 59.9	6.6	11.4	400	No	S
Magnesium	30/30	1,000	43 to 156	92.3	258	460,468	No	B, S
Manganese	30/30	3	8.08 to 143	53.5	404	160	No	B, S
Mercury	22/30	0.06 to 0.1	0.01 to 0.19	0.02	0.12	2.3	No	S
Nickel	1/30	2.3 to 8	3.3	3.3	7.2	110	No	B, S, F
Potassium	5/30	128 to 1,000	131 to 334.5*	190	177	1,000,000	No	S
Selenium	6/30	0.39 to 1	0.24 to 0.41	0.33	0.44	39	No	B, S
Silver	4/30	0.32 to 2	0.66 to 2	1	0.7	39	No	S
Sodium	5/30	1,000	170 to 179	174	388	1,000,000	No	B, S
Vanadium	30/30	10	4.1 to 33.85*	11	21.2	15	Yes	S
Zinc	28/30	4	2.4 to 15.9	5.4	15.4	2,300	No	S

See notes at end of table.

Table 6-1 (Continued)
Selection of Human Health Chemicals of Potential Concern
for Surface Soil

Remedial Investigation Report
 Site 15, Southwest Landfill
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- ¹ Frequency of detection is the number of samples in which the analyte was detected over the total number of samples analyzed (excluding rejected values).
- ² A value indicated by an asterisk is the average of a sample and its duplicate. For duplicate samples having one nondetect, one-half of the contract-required quantification limit/contract-required detection limit is used as a surrogate concentration for the nondetect.
- ³ The mean of detected concentrations is the arithmetic mean of all samples in which the analyte was detected. It does not include those samples with "R", "U", or "UJ" validation qualifiers.
- ⁴ The background screening value is twice the average of detected concentrations for inorganic analytes in background samples.
- ⁵ For all chemicals except the essential nutrients (calcium, magnesium, potassium, and sodium), the lesser of the U.S. Environmental Protection Agency (USEPA) Region III Risk-Based Concentration (RBC) table for residential soil exposure per January 1993 guidance (*Selecting Exposure Routes and Contaminants of Concern by Risk-Based Screening*, EPA/903/R-93-001 [USEPA, 1993a]) or the Florida Soil Cleanup Target Levels (FDEP, 1999) was used for screening. Values from the USEPA Region III RBC Tables, dated October 1, 1998, are based on an excess lifetime cancer risk of 1×10^{-6} or an adjusted hazard quotient of 0.1 (USEPA, 1998). For the essential nutrients, screening values were derived based on recommended daily allowances. Lead value is from the Revised Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites (OSWER Directive 9355.4-12 [USEPA, 1994c]). Values are presented in Appendix G of this report.
- ⁶ Analyte was excluded from the risk assessment for the following reasons:
- B = the maximum detected concentration did not exceed the background screening concentration; therefore the analyte will not be considered further.
 - S = the maximum detected concentration did not exceed the screening concentration; therefore, the analyte will not be considered further.
 - F = the frequency of detected concentrations was less than five percent; therefore, the analyte will not be considered further.
- ⁷ Arsenic background number is presented in Appendix I of the GIR (ABB-ES, 1998).

Notes: The average of a sample and its duplicate is used for all table calculations.

Samples: 15-SL-01, 15-SL-02, 15-SL-03, 15-SL-04, 15-SL-05, 15S00101, 15S00201, 15S00301, 15S00401, 15S00501, 15S00601, 15S00701, 15S00801, 15S00901 (all analytes except semivolatiles), 15S00901RE (only semivolatiles), 15S01001, 15S01101, 15S01201, 15S01301, 15S01401, 15S01501, 15S01601, 15S01701, 15S01801, 15S01901, 15S01901RE, 15S02001, 15S2101, 15S02201, 15S02301, 15S02401, 15S02501.

Sample duplicates: 15S00101D, 15S01701D, 15S02001D.

Background samples: BKG-SL-02, BKG-SL-06, BKG-SL-07, BKG-SL-08, BKS00101, BKS00201, BKS00301, BKS00401, and BKS00501.

Background duplicate sample: BKS00201D.

HHPCP = human health chemical of potential concern.

µg/kg = micrograms per kilogram.

NA = not applicable.

* = average of sample and duplicate.

PCB = polychlorinated biphenyl.

DDD = dichlorodiphenyldichloroethane.

DDE = dichlorodiphenyldichloroethene.

DDT = dichlorodiphenyltrichloroethane.

mg/kg = milligrams per kilogram.

statistics for the detected analytes and identifies three inorganic analytes (arsenic, iron, and vanadium) as HHCPs for surface soil at Site 15.

Vanadium was recently added as an HHCP because the Florida residential cleanup target level was lowered to 15 mg/kg in Chapter 62-777, FAC. However, all detections of vanadium were below the USEPA Region III RBC of 55 mg/kg. Vanadium was not carried through the remainder of the HHRA, but it will be addressed in the feasibility study as an HHCP along with arsenic.

6.2.2 Subsurface Soil Five samples (15SS0201, 15SS0502, 15SS0603, 15SS0804, and 15SS1005) were collected from Site 15. VOCs, SVOCs, pesticides, PCBs and inorganic analyte data from all of these samples are evaluated in this HHRA (Table 5-12). Table 6-2 presents the HHCPs selection for subsurface soil at Site 15. Aroclor-1242 was the only compound selected as an HHCP in the subsurface soil.

Aroclor-1242 was recently added as an HHCP because the Florida industrial soil cleanup target level was lowered to 2,100 $\mu\text{g}/\text{kg}$ in Chapter 62-777, FAC. Aroclor-1242 was detected in only one sample at a concentration of 2,200 $\mu\text{g}/\text{kg}$ which was below the USEPA Region III RBC of 2,900 $\mu\text{g}/\text{kg}$. Aroclor-1242 was not carried through the remainder of the HHRA, but it will be addressed in the feasibility study as an HHCP.

6.2.3 Groundwater Twenty groundwater samples (15G00101, 15G00201, 15G00202, 15G00203, 15G00301, 15G00302, 15G00303, 15G00401, 15G00501, 15G00502, 15G00503 [which includes a dilution sample for trichloroethene, 15G00503DL], 15G00601, 15G00602, 15G00603, 15G00701, 15G00702, 15G00703, 15G00801, 15G00802, and 15G00803) as well as duplicate samples (15G00601D, 15G00602D, 15G00701D, 15G00703D, 15G00801D, and 15G00803D) was collected from Site 15. The most recent data (July 1997) for groundwater were used. Only the Phase IIB groundwater sampling data, which were collected using low-flow sampling techniques, were used in the HHRA.

VOCs, SVOCs, pesticides, PCBs, and inorganic data from these samples are evaluated in this HHRA (Table 5-19). Table 6-3 presents the summary statistics for the detected analytes and identifies 1,1-dichloroethene, 1,2-dichloroethene, benzene, chlorobenzene, trichloroethene, 1,4-dichlorobenzene, bis(2-ethylhexyl)-phthalate, 4,4'-DDT, and five inorganics (aluminum, arsenic, iron, manganese, and thallium) as HHCPs for groundwater at Site 15.

6.3 EXPOSURE ASSESSMENT. The exposure assessment methodology is described in Subsection 2.5.3 of the GIR (ABB-ES, 1998). This process involves several steps including

- characterization of the exposure setting in terms of physical characteristics and the populations that may hypothetically be exposed to site-related chemicals;
- identification of potential exposure pathways and receptors; and

Table 6-2
Selection of Human Health Chemicals of Potential Concern
for Subsurface Soil

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Analyte	Frequency of Detection ¹	Range of Reporting Limit	Range of Detected Concentrations	Mean of Detected Concentrations ²	Background Screening Concentration ³	Selected Screening Concentration ⁴	Analyte HHCP? (Yes/No)	Reason ⁵
<u>Volatile Organic Compounds (µg/kg)</u>								
2-Hexanone	1/5	11	3	3	NA	34,000	No	S
Chlorobenzene	1/5	11	2	2	NA	200,000	No	S
Xylenes (total)	4/5	11	4 to 6	5	NA	40,000,000	No	S
<u>Semivolatile Organic Compounds (µg/kg)</u>								
1,4-Dichlorobenzene	1/5	350 to 370	110	110	NA	9,000	No	S
2-Methylnaphthalene	2/5	350 to 370	68 to 76	72	NA	560,000	No	S
4-Methylphenol	2/5	350 to 370	42 to 77	59.5	NA	1,000,000	No	S
Diethylphthalate	1/5	350 to 370	41	41	NA	160,000,000	No	S
Naphthalene	2/5	350 to 370	92 to 140	116	NA	270,000	No	S
Phenol	1/5	350 to 370	53	53	NA	120,000,000	No	S
bis(2-Ethylhexyl)phthalate	2/5	350 to 370	42 to 230	136	NA	280,000	No	S
<u>Pesticides and PCBs (µg/kg)</u>								
4,4'-DDE	1/5	3.5 to 37	2.3	2.3	NA	13,000	No	S
Aroclor-1242	1/5	35 to 370	2,200	2,200	NA	2,100	Yes	S
<u>Inorganic Analytes (mg/kg)</u>								
Aluminum	5/5	40	3,520 to 15,100	9,506	27,834	200,000	No	B, S
Arsenic	5/5	2	0.63 to 2.6	1.8	6.2	3.8	No	B, S
Barium	5/5	40	1.6 to 13.2	7.2	15.8	14,000	No	B, S
Beryllium	4/5	0.05 to 1	0.09 to 0.17	0.13	0.26	410	No	B, S
Cadmium	1/5	0.63 to 1	2.1	2.1	0.92	100	No	S
Calcium	5/5	NA	72.7 to 267	177	444	1,000,000	No	B, S

See notes at end of table.

Table 6-2 (Continued)
Selection of Human Health Chemicals of Potential Concern
for Subsurface Soil

Remedial Investigation Report
Site 15, Southwest Landfill
Naval Air Station Whiting Field
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Analyte	Frequency of Detection ¹	Range of Reporting Limit	Range of Detected Concentrations	Mean of Detected Concentrations ²	Background Screening Concentration ³	Selected Screening Concentration ⁴	Analyte HHCP? (Yes/No)	Reason ⁵
Inorganic Analytes (mg/kg) (Continued)								
Chromium	5/5	NA	3.8 to 12.7	8.1	22.8	420	No	B, S
Cobalt	1/5	0.71 to 10	0.71	0.71	1.5	12,000	No	B, S
Copper	5/5	NA	0.86 to 6.8	4.1	8.8	8,200	No	B, S
Cyanide	2/5	0.09 to 1	0.53 to 0.55	0.54	ND	4,100	No	S
Iron	5/5	NA	2,100 to 9,640	5,490	18,100	61,000	No	B, S
Lead	5/5	NA	2.8 to 86.2	21.5	8.4	400	No	S
Magnesium	5/5	NA	18.8 to 109	74.7	272	460,468	No	B, S
Manganese	5/5	NA	10 to 44.2	25.3	42.6	4,100	No	S
Mercury	5/5	NA	0.09 to 0.59	0.4	ND	26	No	S
Nickel	3/5	1.1 to 8	2.1 to 3	2.5	5	4,100	No	B, S
Potassium	3/5	145 to 1,000	137 to 157	149	181	1,000,000	No	B, S
Silver	3/5	0.43 to 2	0.48 to 0.62	0.54	0.3	1,000	No	S
Sodium	5/5	NA	165 to 191	178	1.1	1,000,000	No	S
Vanadium	5/5	NA	6.5 to 25	15.8	45	1,400	No	B, S
Zinc	5/5	NA	3.1 to 19.1	10.5	15.6	61,000	No	S
See notes at end of table.								

Table 6-2 (Continued)
Selection of Human Health Chemicals of Potential Concern
for Subsurface Soil

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Site 15, Southwest Landfill
Naval Air Station Whiting Field
Milton, Florida

¹ Frequency of detection is the number of samples in which the analyte was detected over the total number of samples analyzed (excluding rejected values).

² The mean of detected concentrations is the arithmetic mean of all samples in which the analyte was detected. It does not include those samples with "R", "U", or "UJ" validation qualifiers.

³ The background screening value is twice the average of detected concentrations for inorganic analytes in background samples.

⁴ The lesser of the U.S. Environmental Protection Agency (USEPA) Region III Risk-Based Concentration (RBC) table for industrial soil exposure per January 1993 guidance (*Selecting Exposure Routes and Contaminants of Concern by Risk-Based Screening*, EPA/903/R-93-001 [USEPA, 1993a]) or Florida Soil Cleanup Target Levels (FDEP, 1999) were used for screening. Actual values are taken from the USEPA Region III RBC Tables dated October 1, 1998, and are based on an excess lifetime cancer risk of 1×10^{-6} or an adjusted hazard quotient of 0.1 (USEPA, 1998). Values are presented in Appendix G of this report.

⁵ Analyte was included or excluded from the risk assessment for the following reasons:

B = the maximum detected concentration did not exceed the background; therefore the analyte will not be considered further.

S = the maximum detected concentration did not exceed the screening concentration; therefore, the analyte will not be considered further.

Notes: The average of a sample and its duplicate is used for all table calculations.

Samples: 15SS0201, 15SS0502, 15SS0603, 15SS0804, 15SS1005.

Background samples: BKB00101, BKB00102, BKB00201, BKB00202, BKB00301, BKB00302, BKB00401, BKB00402, BKB00501, BKB00502, BKB00601, BKB00602, BKB00701, BKB00702.

Background duplicate samples: BKB00401D and BKB00602D.

HHPC = human health chemical of potential concern.

$\mu\text{g}/\text{kg}$ = micrograms per kilogram.

NA = not applicable.

PCB = polychlorinated biphenyl.

DDE = dichlorodiphenyldichloroethene.

mg/kg = milligrams per kilogram.

ND = not detected in any background sample.

**Table 6-3
Selection of Human Health Chemicals of Potential Concern
for Unfiltered Groundwater**

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Site 15, Southwest Landfill
Naval Air Station Whiting Field
Milton, Florida

Analyte	Frequency of Detection ¹	Reporting Limit Range	Detected Concentrations Range ²	Mean of Detected Concentrations ³	Background Screening Concentration ⁴	Selected Screening Concentration ⁵	Analyte HHCP? (Yes/No)	Reason ⁶
<u>Volatile Organic Compounds (µg/l)</u>								
1,1-Dichloroethene	2/20	10 to 25	3.5 to 10	6.8	NA	0.044	Yes	
1,2-Dichloroethane	1/20	10 to 25	2	2	NA			
1,2-Dichloroethene (total)	8/20	10 to 25	1 to 14	5.4	NA	5.5	Yes	
Acetone	1/20	10 to 25	140	140	NA	370	No	S, F
Benzene	4/20	10 to 25	1 to 100	32.3	NA	0.36	Yes	
2 Butanone	1/20	10 to 25	7	7	NA	190	No	S, F
Chlorobenzene	2/20	10 to 25	4 to 12	8	NA	3.5	Yes	
Ethylbenzene	1/20	10 to 25	2	2	NA	30	No	S, F
Trichloroethene	11/20	10 to 25	1 to 330	37.1	NA	1.6	Yes	
Xylene (total)	1/20	10 to 25	1	1	NA	20	No	S, F
<u>Semivolatile Organic Compounds (µg/l)</u>								
1,4-Dichlorobenzene	3/19	10	1 to 12	7	NA	0.47	Yes	
Diethylphthalate	3/19	10	1 to 2	1.3	NA	2,900	No	S
Naphthalene	2/19	10	1 to 4	2.5	NA	20	No	S
bis(2-Ethylhexyl)phthalate	8/19	10	1 to 5	2.3	NA	4.8	Yes	
<u>Pesticides and PCBs (µg/l)</u>								
4,4'-DDT	2/19	0.1	0.12	0.12	NA	0.1	Yes	
<u>Inorganic Analytes (µg/l)</u>								
Aluminum	14/20	35.8 to 200	58.65 to 1,030	252	654	200	Yes	
Antimony	1/20	8.6 to 60	25.6	25.6	20.4	1.5	No	F

See notes at end of table.

Table 6-3 (Continued)
Selection of Human Health Chemicals of Potential Concern
for Unfiltered Groundwater

Remedial Investigation Report
Site 15, Southwest Landfill
Naval Air Station Whiting Field
Milton, Florida

Analyte	Frequency of Detection ¹	Reporting Limit Range	Detected Concentrations Range ²	Mean of Detected Concentrations ³	Background Screening Concentration ⁴	Selected Screening Concentration ⁵	Analyte HHCP? (Yes/No)	Reason ⁶
Inorganic Analytes (µg/l) (Continued)								
Arsenic	6/20	0.5 to 10	0.6 to 17.2	6.6	ND	0.045	Yes	
Barium	20/20	200	7.8 to 68.3	19.7	72.6	260	No	B, S
Cadmium	1/20	1.2 to 5	2.3	2.3	4.4	1.8	No	B, F
Calcium	19/20	5,000	358 to 15,000	2,529	3,316	1,055,398	No	S
Chromium	6/20	2 to 10	1.95 to 2.8	2.4	30	18	No	B, S
Cobalt	1/20	2.3 to 50	1.78	1.8	ND	220	No	S, F
Copper	6/20	1.1 to 25	1.3 to 3.3	2.2	10.8	150	No	B, S
Cyanide	7/19	1.5 to 7.6	1.9 to 5	3	7	73	No	B, S
Iron	18/20	100	56.7 to 40,200	3,020	964	300	Yes	
Lead	10/20	0.5 to 3	0.5 to 4.05	1.3	ND	15	No	S
Magnesium	20/20	5,000	273 to 2,140	735	2,426	118,807	No	B, S
Manganese	18/20	15	1.8 to 553	65	42.8	73	Yes	
Mercury	1/20	0.1 to 0.2	0.06	0.06	ND	1.1	No	S, F
Nickel	1/20	7.3 to 40	7.4	7.4	42.8	73	No	B, S, F
Potassium	17/20	5,000	338 to 2,190	882	1,528	297,016	No	S
Silver	1/20	2.5 to 10	2.9	2.9	ND	18	No	S, F
Sodium	20/20	5,000	1,070 to 18,300	3,570	4,772	160,000	No	S
Thallium	2/20	0.6 to 10	0.98 to 2.95	2	ND	0.26	Yes	
Vanadium	7/20	1.2 to 50	0.9 to 5.2	2.2	3.8	26	No	S
Zinc	12/20	20	1.6 to 306	107	200	1,100	No	S

See notes at end of table.

Table 6-3 (Continued)
Selection of Human Health Chemicals of Potential Concern
for Unfiltered Groundwater

Remedial Investigation Report
Site 15, Southwest Landfill
Naval Air Station Whiting Field
Milton, Florida

¹ Frequency of detection is the number of samples in which the analyte was detected over the total number of samples analyzed (excluding rejected values).

² For duplicate samples having one nondetect, one-half of the contract-required quantification limit/contract-required detection limit is used as a surrogate concentration for the nondetect.

³ The mean of detected concentrations is the arithmetic mean of all samples in which the analyte was detected. It does not include those samples with "R", "U", or "UJ" validation qualifiers.

⁴ The background screening value is twice the average of detected concentrations for inorganic analytes in background samples.

⁵ For all chemicals except the essential nutrients (calcium, magnesium, potassium, and sodium), the lesser of the U.S. Environmental Protection Agency (USEPA), Region III Risk-Based Concentration (RBC) table for tap water exposure per January 1993 guidance (*Selecting Exposure Routes and Contaminants of Concern by Risk-Based Screening*, EPA/903/R-93-001 [USEPA, 1993a]) or the Florida Groundwater Cleanup Target Levels (FDEP, 1999) was used for screening. Actual values are taken from the USEPA Region III RBC Tables dated October 1, 1998, and are based on a excess lifetime cancer risk of 1×10^{-6} or an adjusted hazard quotient of 0.1 (USEPA, 1998). For the essential nutrients, screening values were derived based on recommended daily allowances. Values are presented in Appendix G of the report.

⁶ Analyte was included or excluded from the risk assessment for the following reasons:

B = the maximum detected concentration did not exceed the background screening concentration; therefore, the analyte will not be considered further.

S = the maximum detected concentration did not exceed the screening concentration; therefore, the analyte will not be considered further.

F = the frequency of detected concentrations was less than five percent; therefore, the analyte will not be considered further.

Notes: The average of a sample and its duplicate is used for all table calculations.

Samples: 15G00101, 15G00201, 15G00202, 15G00203, 15G00301, 15G00302, 15G00303, 15G00401, 15G00501, 15G00502, 15G00503 (all analytes except trichloroethene), 15G00503DL (trichloroethene only), 15G00601, 15G00602, 15G00603, 15G00701, 15G00702, 15G00703, 15G00801, 15G00802, 15G00803.

Duplicate sample: 15G00602D.

Background samples: BKG00101 through BKG00103, BKG00201 through BKG00203, and BKG00301.

Background duplicate sample: BKG00101D.

HHCP = human health chemical of potential concern.

$\mu\text{g}/\text{l}$ = micrograms per liter.

NA = not applicable.

PCB = polychlorinated biphenyl.

DDT = dichlorodiphenyltrichloroethane.

ND = not detected in any background samples.

- quantification of exposure for each population in terms of the amount of chemical either ingested, inhaled, or absorbed through the skin from all complete or hypothetically complete (potential future) exposure pathways.

Summaries of hypothetical exposure pathways to chemicals detected at Site 15 are presented on Figure 6-1.

The hypothetical pathways including medium and route of exposure, the hypothetical exposed population, and the rationale for pathway selection or exclusion, are presented in Table 6-4 and are described in more detail in Subsections 6.3.1 through 6.3.3. Receptor-specific exposure parameters for each exposure scenario are presented in Appendix G to the GIR (ABB-ES, 1998). Risk calculation spreadsheets in Appendix G to this RI report also contain the assumed exposure parameters and quantitation of exposures.

6.3.1 Surface Soil No humans currently reside or work at Site 15. Currently there are no buildings present at the site; therefore, exposure of occupational workers will be only considered as part of the future land-use scenario. Site 15 may be eventually developed for residential land use; therefore, the residential receptor will be evaluated as part of the hypothetical future land-use scenario. Other possible future exposure scenarios include excavation activities, such as installation of utility lines, and site maintenance, such as mowing the grass.

Exposures of hypothetical future residents (adult and child), hypothetical future occupational workers, current and future site maintenance workers, future excavation workers, and current and future trespassers (adult and child) to surface soil contaminants through ingestion, dermal contact, and inhalation of particulates are evaluated in this HHRA.

6.3.2 Subsurface Soil There are no current exposures to subsurface soil because no excavation or construction activities are ongoing at Site 15. Therefore, subsurface soil exposure pathways are not evaluated as current or potential future (hypothetical) exposure pathways in this HHRA. The presence of Aroclor-1242 above the Florida industrial cleanup target level will be addressed in the feasibility study.

6.3.3 Groundwater Currently, groundwater at Site 15 is not used for any potable or nonpotable purpose. There are no plans to use the water resource in the foreseeable future. In the event that Site 15 or areas hydraulically downgradient of Site 15 are developed for residential use, the exposure pathway to chemicals in groundwater could become complete. Therefore, hypothetical future domestic use (adult and child ingestion) has been evaluated in this HHRA as a worst-case estimate of hypothetical future receptors.

6.3.4 Exposure Point Concentrations (EPCs) EPCs for all HHCPs in surface soil and groundwater were calculated according to Paragraph 2.5.3.3 of the GIR (ABB-ES, 1998). This quantification process involves developing assumptions regarding exposure conditions and exposure scenarios for each receptor to estimate the total amount of contaminants that a hypothetical receptor may ingest, dermally absorb, or inhale from each exposure pathway. The ultimate goal of this step, as defined in USEPA guidance, is to identify the combination of these exposure variables or parameters that result in the most intense level of exposure that may "reasonably" be expected to occur under current and future site

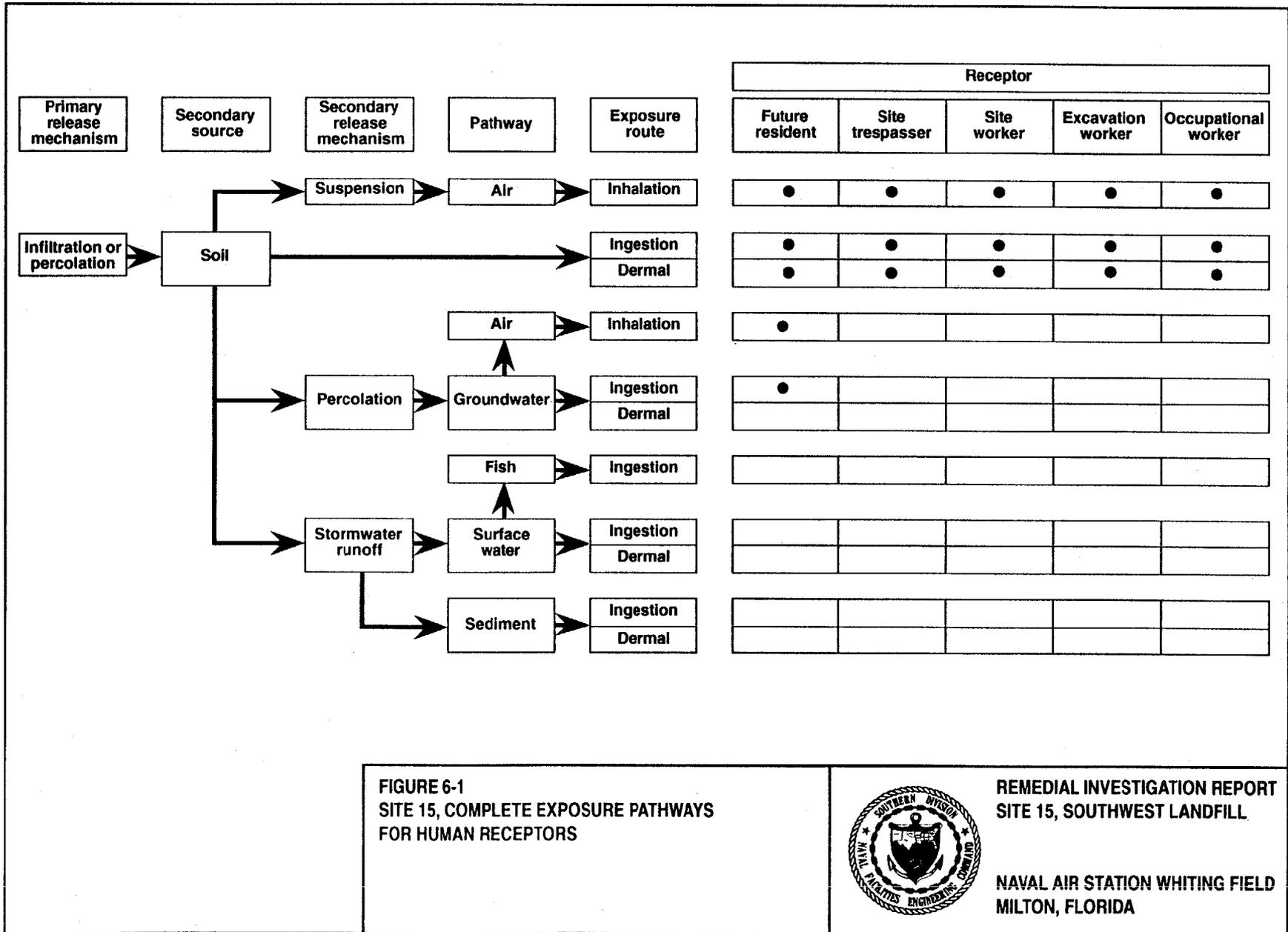


FIGURE 6-1
 SITE 15, COMPLETE EXPOSURE PATHWAYS
 FOR HUMAN RECEPTORS



REMEDIAL INVESTIGATION REPORT
 SITE 15, SOUTHWEST LANDFILL
 NAVAL AIR STATION WHITING FIELD
 MILTON, FLORIDA

Table 6-4
Summary of Potential Exposure Pathways

Remedial Investigation Report
Site 15, Southwest Landfill
Naval Air Station Whiting Field
Milton, Florida

Medium of Exposure	Route of Exposure	Potentially Exposed Population	Selected for Evaluation?	Reason for Selection or Evaluation
<u>Current Land Use</u>				
Surface soil	Dermal contact with soil, ingestion of soil, and inhalation of fugitive dust.	Resident (adult and child)	No	No humans currently reside or work at Site 15. Adolescents and adults may be exposed to contaminants in the surface soil while trespassing. The site maintenance workers may be exposed to contaminants in surface soil while performing routine site activities.
		Trespasser (adult and adolescent)	Yes	
		Occupational worker (adult)	No	
		Site maintenance worker (adult)	Yes	
		Excavation worker (adult)	No	
Subsurface soil	Dermal contact with soil, ingestion of soil, and inhalation of fugitive dust.	Excavation worker	No	There are no excavation activities currently at Site 15. Additionally, there are no HHCPs selected for subsurface soil.
Groundwater	Ingestion of groundwater as drinking water	Resident (adult)	No	There are no current exposures to groundwater.
<u>Future Land Use</u>				
Surface soil	Dermal contact with soil, ingestion of soil, and inhalation of fugitive dust.	Resident (child and adult)	Yes	If Site 15 is developed for residential use, residents could be exposed to chemicals in surface soil. Exposure of trespasser, occupational worker, site maintenance worker, and excavation worker to chemicals in surface soil is possible.
		Trespasser (adolescent and adult)	Yes	
		Occupational worker (adult)	Yes	
		Site maintenance worker (adult)	Yes	
		Excavation worker (adult)	Yes	
Subsurface soil	Dermal contact with soil, ingestion of soil, and inhalation of fugitive dust.	Excavation worker	No	Although it is possible that an excavation worker could be exposed to subsurface soil in the future if the site is developed, there were no HHCPs identified; therefore, this hypothetical exposure pathway is not evaluated in this human health risk assessment.
Groundwater	Ingestion of groundwater as drinking water and inhalation of volatiles while showering	Resident (adult and child)	Yes	If Site 15 is developed for residential use, drinking water wells in the surficial aquifer could be influenced by contaminants in the groundwater associated with Site 15. Therefore, future residents could be exposed to contaminants in the surficial aquifer.

conditions (USEPA, 1989b). The EPCs for HHCPs in surface soil for Site 15 are presented in Table 6-5. The EPCs for HHCPs in groundwater for Site 15 are presented in Table 6-6. The EPCs were used with receptor-specific exposure parameters to quantify exposures to the HHCPs. Risk calculation spreadsheets and exposure assumptions are in Appendix C to this report.

6.4 TOXICITY ASSESSMENT. The toxicity assessment methodology is described in Subsection 2.5.4 of the GIR (ABB-ES, 1998). The toxicity assessment evaluates the available evidence on the hypothetical adverse effects associated with exposure to each HHCP. This information is used to develop a relationship between the extent of exposure and the likelihood or severity of adverse human health effects. Two steps are typically associated with toxicity assessment: hazard identification and dose-response assessment.

- Hazard identification is the process of determining if exposure to an agent can cause a particular adverse health effect and, more importantly, if that effect will occur in humans. The objectives of the hazard identification in the HHRA are to (1) identify which of the contaminants detected at the site are hypothetical hazards, and (2) summarize their potential toxicity in brief nontechnical language.
- A dose-response assessment is conducted to characterize and quantify the relationship between intake, or dose, of an HHCP and the likelihood of a toxic effect or response. There are two categories of toxic effects evaluated in this HHRA: carcinogenic and noncarcinogenic. Following USEPA guidance for HHRA (USEPA, 1989b), these two endpoints (cancer and noncancer) are evaluated separately. As a result of the dose-response assessment, identified toxicity values are used to estimate the incidence of adverse effects as a function of human exposure to a chemical.

Appendix G to this report contains brief toxicity profiles for HHCPs identified in the surface soil and groundwater at Site 15. Appendix G to this report also contains dose-response information for the HHCPs (Tables G-4 through G-9). Toxicity values used in this HHRA were current as of February 1998 for Integrated Risk Information System (USEPA, 1998a) and July 1997 for Health Effects Assessment Summary Tables (USEPA, 1997b).

6.5 RISK CHARACTERIZATION. Risk characterization is the final step in the risk assessment process. This step involves the integration of the exposure and toxicity assessments into a qualitative or quantitative expression of potential human health risks associated with contaminant exposure. Quantitative estimates of both carcinogenic and noncarcinogenic risks are made for each HHCP and each complete exposure pathway identified in the exposure assessment. The risk characterization methodology is described in Subsection 2.5.5 of the GIR (ABB-ES, 1998).

Risk estimates for hypothetical exposures to surface soil and groundwater under current and hypothetical future land-use scenarios are discussed below in Sections 6.5.1 and 6.5.2. These risk estimates are then compared to Federal USEPA and FDEP carcinogenic and noncarcinogenic target levels.

Table 6-5
Exposure Point Concentrations for
Human Health Chemicals of Potential Concern
for Surface Soil

Remedial Investigation Report
 Site 15, Southwest Landfill
 Naval Air Station Whiting Field
 Milton, Florida

Analyte	Frequency of Detection ¹	Maximum Detected Concentration	95% UCL ²	Exposure Point Concentration ³
<u>Inorganic Analytes (mg/kg)</u>				
Arsenic	30/30	6.8	1.9	1.9
Iron	30/30	11,200	5,060	5,060
<p>¹ Frequency of detection is the number of samples in which the analyte was detected over the total number of samples analyzed (excluding rejected values).</p> <p>² 95% UCL of the arithmetic mean is calculated using all samples. One-half the contract-required quantitation limit/contract-required detection limit is used as a surrogate for nondetects.</p> <p>³ Exposure point concentration is the lower of either the 95% UCL concentration or maximum detected concentration.</p> <p>Notes: % = percent. UCL = upper confidence limit. mg/kg = milligrams per kilogram.</p>				

Table 6-6
Exposure Point Concentrations for Human Health Chemicals
of Potential Concern for Groundwater

Remedial Investigation Report
 Site 15, Southwest Landfill
 Naval Air Station Whiting Field
 Milton, Florida

Analyte	Frequency of Detection ¹	Maximum Detected Concentration	Arithmetic Mean ²	Exposure Point Concentration ³
<u>Volatile Organic Compounds (µg/l)</u>				
1,1-Dichloroethene	2/20	10	5.2	5.2
1,2-Dichloroethene (total)	8/20	14	5.2	5.2
Benzene	4/20	100	10.8	10.8
Chlorobenzene	2/20	12	5.7	5.7
Trichloroethene	11/20	330	22.7	22.7
<u>Semivolatile Organic Compounds (µg/l)</u>				
1,4-Dichlorobenzene	3/19	12	5.3	5.3
bis(2-Ethylhexyl)phthalate	8/19	5	3.9	3.9
<u>Pesticides and PCBs (µg/l)</u>				
4,4'-DDT	2/19	0.12	0.06	0.06
<u>Inorganic Analytes (µg/l)</u>				
Aluminum	14/20	1,030	202	202
Arsenic	6/20	17.2	5.2	5.2
Iron	18/20	40,200	2,720	2,720
Manganese	18/20	553	59.2	59.2
Thallium	2/20	2.95	4.5	2.95

¹ Frequency of detection is the number of samples in which the analyte was detected over the total number of samples analyzed (excluding rejected values).

² Arithmetic mean of all samples calculated using one-half the contract-required quantitation limit and contract-required detection limit for nondetects.

³ Exposure point concentration is the lower of either the mean concentration or maximum detected concentration.

Notes: µg/l = micrograms per liter.

PCB = polychlorinated biphenyl.

DDT = dichlorodiphenyltrichloroethane.

The USEPA guidelines, established in the NCP, indicate that the total excess lifetime cancer risk (ELCR) due to exposure to the HHCPs at a site should not exceed a range of 1 in 1,000,000 (1×10^{-6}) to 1 in 10,000 (1×10^{-4}) (USEPA, 1990). FDEP has indicated that chemical-specific risks greater than one in one million (1×10^{-6}) warrant further consideration.

An HQ less than 1 indicates that noncarcinogenic toxic effects are not expected to occur due to HHCP exposure. HIs greater than 1 may be indicative of a possible noncarcinogenic toxic effect, but the circumstances must be evaluated on a case-by-case basis (USEPA, 1989b). As the hazard index (HI) increases, so does the likelihood that adverse effects might be associated with exposure. Both USEPA and FDEP consider that chemicals with HIs greater than 1 warrant further evaluation and require an evaluation of the noncarcinogenic effects.

Table 6-7 summarizes the cancer and noncancer risk under a current land-use scenario for Site 15. Table 6-8 summarizes the cancer and noncancer risk under a hypothetical future land-use scenario for Site 15.

6.5.1 Surface Soil The risk calculations for surface soil exposure are shown in Tables G-10 through G-23 in Appendix G to this report. For the current land-use scenario, the cancer risks associated with exposure to surface soil (ingestion, dermal contact, and fugitive dust inhalation) are 2×10^{-6} for an aggregate (combined adult and adolescent) trespasser and 7×10^{-8} for a site maintenance worker. Both receptors cancer risk values are below or within the USEPA acceptable cancer risk range of 1 in 10,000 to 1 in 1,000,000. However, the level for the aggregate trespasser exceeds the FDEP level of concern. The noncancer risks associated with surface soil ingestion, dermal contact, and fugitive dust inhalation for all receptors under current land use are below USEPA's and FDEP's target HI of 1. Figures 6-2 and 6-3 present summaries of cancer risks and HIs, respectively, associated with exposure scenarios under potential current land-use exposure scenario.

The cancer risks associated with exposure to surface soil ingestion, dermal contact, and fugitive dust inhalation under hypothetical future land use are 4×10^{-6} for an aggregate resident (combined adult and child), 2×10^{-6} for an aggregate trespasser (combined adult and adolescent), 5×10^{-7} for an occupational worker, 7×10^{-8} for a site maintenance worker, and 3×10^{-8} for an excavation worker under hypothetical future land use. Figure 6-4 presents a summary of cancer risk associated with exposure scenarios under future land use. All of these hypothetical future receptor risks are within or below the USEPA acceptable cancer risk range; however, the hypothetical future residential risk and aggregate trespasser exceed the Florida level of concern of 1×10^{-6} (due to arsenic).

The noncancer risks associated with surface soil ingestion, dermal contact, and fugitive dust inhalation under future land use for all hypothetical future receptors are below USEPA's and FDEP's target HI of 1. Figure 6-5 presents a summary of HIs associated with exposure scenarios under future land-use.

6.5.2 Groundwater The risk calculations for groundwater exposure are shown in Tables G-24 through G-27 in Appendix G to this report. Currently, there are no potable supply wells at the site; thus, there is no human exposure to groundwater. Therefore, risk was not evaluated for the current land-use scenario.

**Table 6-7
Risk Summary, Current Land Use**

Remedial Investigation Report
Site 15, Southwest Landfill
Naval Air Station Whiting Field
Milton, Florida

Land Use	Exposure Route	HI	ELCR
Current Land Use			
Surface Soil:			
Adult Trespasser:	Incidental ingestion	0.004	1×10^{-7}
	Dermal contact	0.01	8×10^{-9}
	Inhalation of particulates	ND	4×10^{-11}
	Total Adult Trespasser:	0.01	1×10^{-7}
Adolescent Trespasser:	Incidental ingestion	0.006	2×10^{-8}
	Dermal contact	0.01	7×10^{-8}
	Inhalation of particulates	ND	2×10^{-11}
	Total Adolescent Trespasser:	0.02	2×10^{-6}
	Total Risk to Trespasser (Adult and Adolescent) Exposed to Surface Soil:	NC	2×10^{-6}
Site Maintenance Worker:	Incidental ingestion	0.001	6×10^{-8}
	Dermal contact	0.006	7×10^{-9}
	Inhalation of particulates	ND	2×10^{-10}
	Total Site Maintenance Worker:	0.007	7×10^{-8}
Notes: HI = hazard index. ELCR = excess lifetime cancer risk. NC = not calculated because child and adult HIs are not additive. ND = no dose-response data for this exposure route were available for human health chemicals of potential concern in this medium.			

**Table 6-8
Risk Summary, Future Land Use**

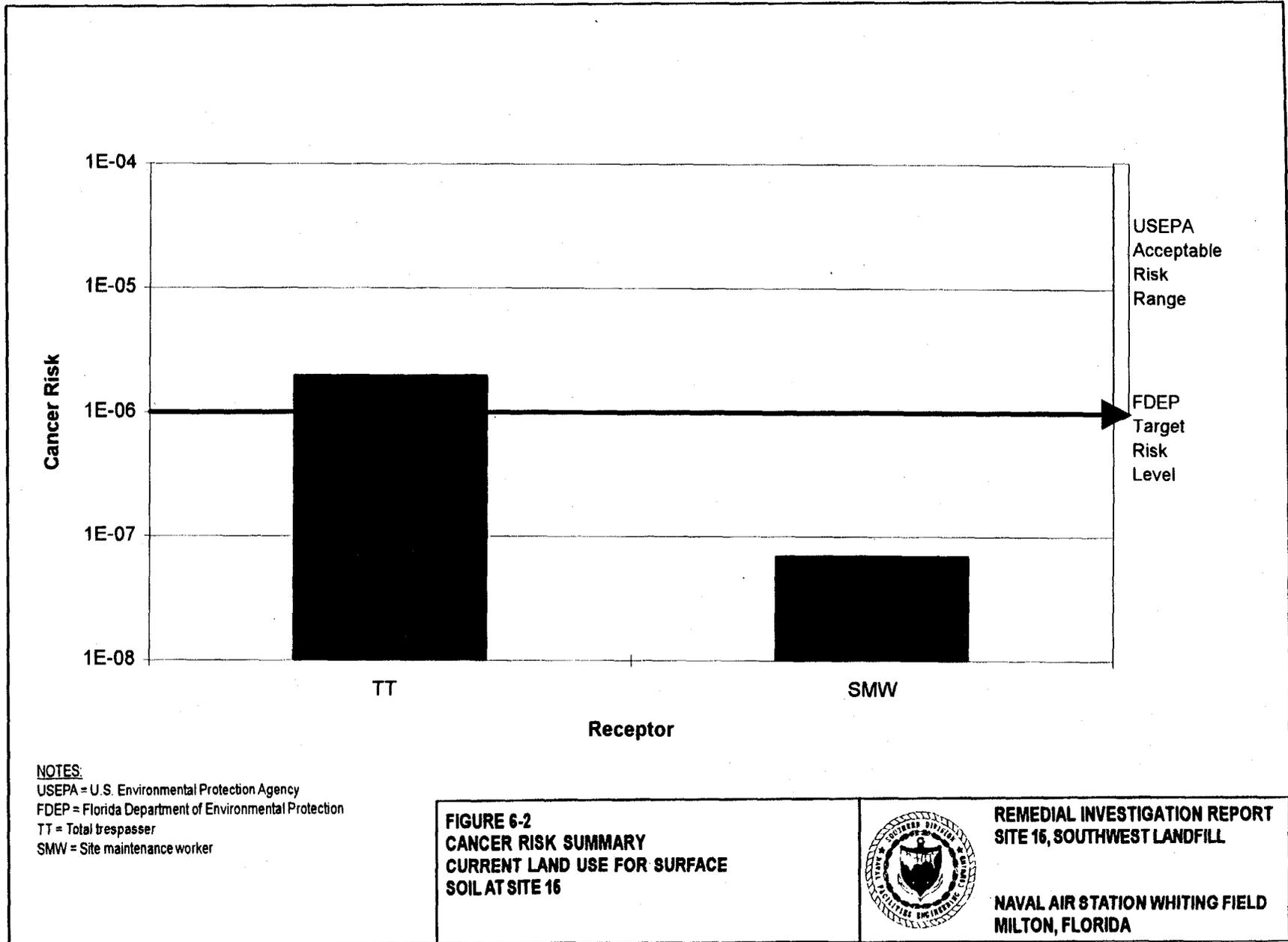
Remedial Investigation Report
Site 15, Southwest Landfill
Naval Air Station Whiting Field
Milton, Florida

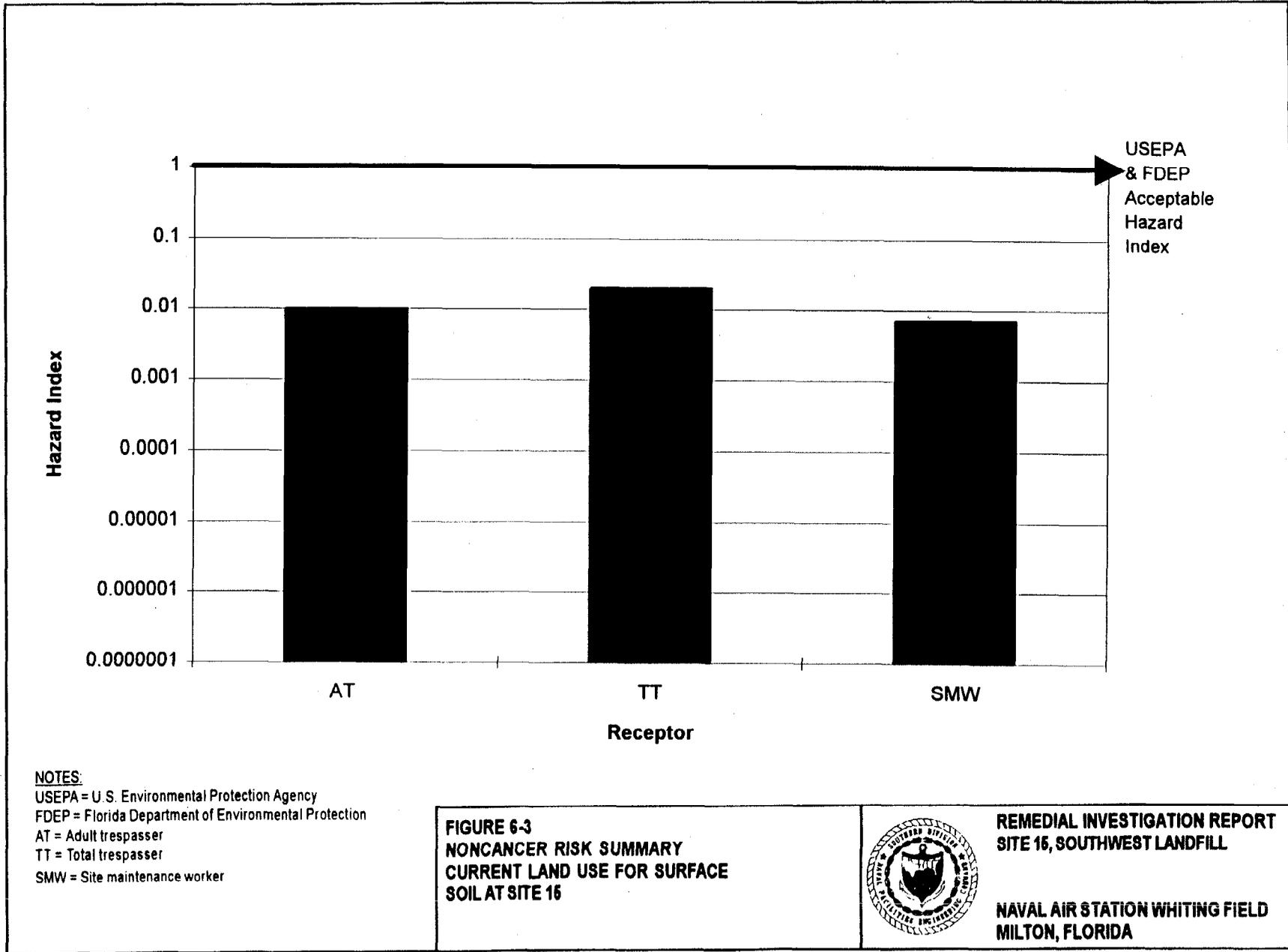
Land Use	Exposure Route	HI	ELCR
Future Land Use			
Surface Soil:			
Adult Trespasser:	Incidental ingestion	0.004	1×10^{-7}
	Dermal contact	0.01	8×10^{-9}
	Inhalation of particulates	ND	4×10^{-11}
	Total Adult Trespasser:	0.01	1×10^{-7}
Adolescent Trespasser:	Incidental ingestion	0.006	2×10^{-6}
	Dermal contact	0.01	7×10^{-8}
	Inhalation of particulates	ND	2×10^{-11}
	Total Adolescent Trespasser:	0.02	2×10^{-6}
Total Risk to Trespasser (Adult and Adolescent) Exposed to Surface Soil:		NC	2×10^{-6}
Adult Resident:	Incidental ingestion	0.03	1×10^{-6}
	Dermal contact	0.07	8×10^{-8}
	Inhalation of particulates	ND	1×10^{-9}
	Total Adult Resident:	0.1	1×10^{-6}
Child Resident:	Incidental ingestion	0.3	3×10^{-6}
	Dermal contact	0.1	3×10^{-8}
	Inhalation of particulates	ND	2×10^{-9}
	Total Child Resident:	0.4	3×10^{-6}
Total Risk to Resident (Adult and Child) Exposed to Surface Soil:		NC	4×10^{-6}
Occupational Worker:	Incidental ingestion	0.06	5×10^{-7}
	Dermal contact	0.003	2×10^{-8}
	Inhalation of particulates	ND	5×10^{-10}
	Total Occupational Worker:	0.07	5×10^{-7}
Site Maintenance Worker:	Incidental ingestion	0.001	6×10^{-8}
	Dermal contact	0.006	7×10^{-9}
	Inhalation of particulates	ND	2×10^{-10}
	Total Site Maintenance Worker:	0.007	7×10^{-8}
See notes at end of table.			

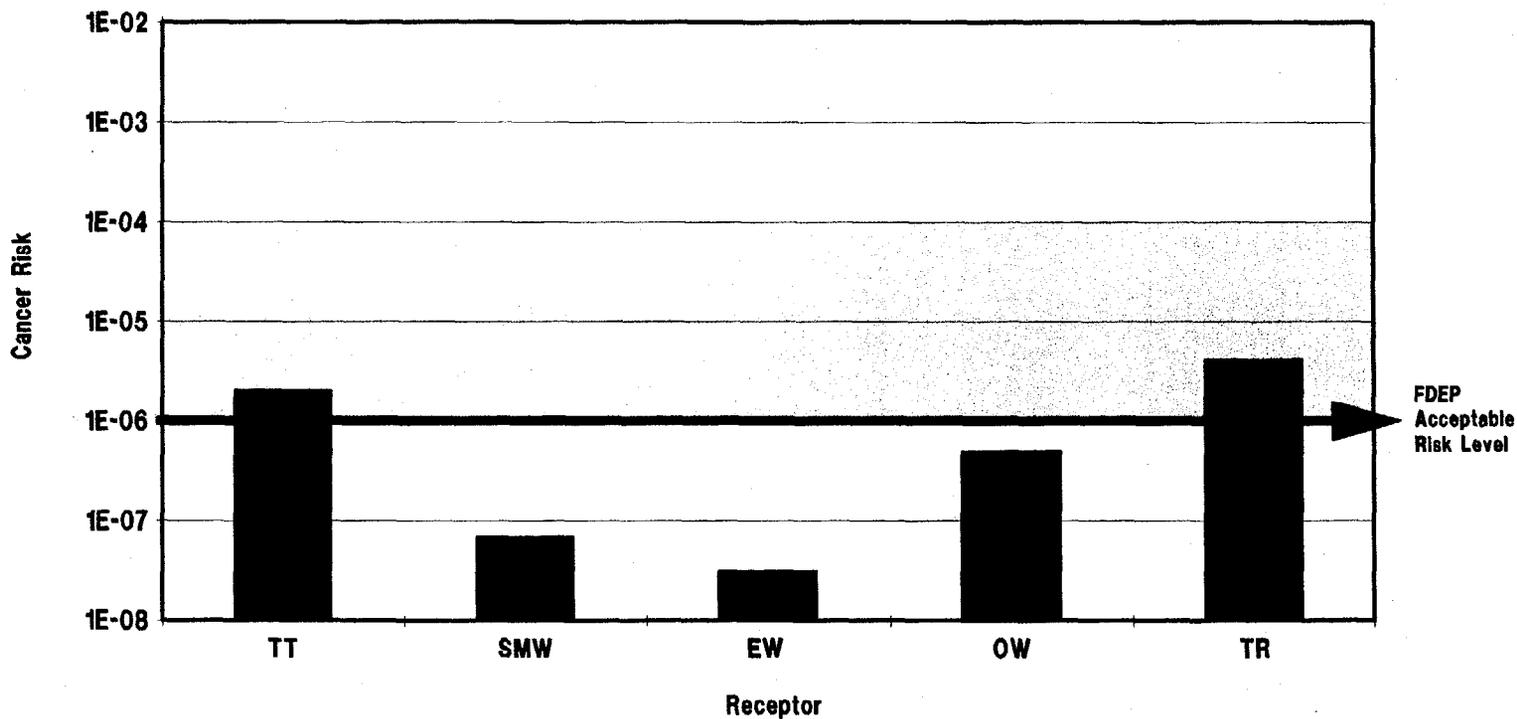
Table 6-8 (Continued)
Risk Summary, Future Land Use

Remedial Investigation Report
 Site 15, Southwest Landfill
 Naval Air Station Whiting Field
 Milton, Florida

Land Use	Exposure Route	HI	ELCR
Future Land Use (Continued)			
Excavation Worker:	Incidental ingestion	0.01	3×10^{-8}
	Dermal contact	0.01	4×10^{-10}
	Inhalation of particulates	ND	8×10^{-12}
	Total Excavation Worker:	0.02	3×10^{-8}
Groundwater:			
Adult Resident:	Ingestion of groundwater as drinking water	4	1×10^{-4}
	Inhalation of volatiles while showering	0.01	5×10^{-6}
	Total Adult Resident:	4	1×10^{-4}
Child Resident:	Ingestion of groundwater as drinking water	8	6×10^{-5}
	Total Child Resident:	8	6×10^{-5}
	Total Risk to Resident (Adult and Child) Exposed to Groundwater:	NC	2×10^{-4}
	Total Risk to Resident (Adult and Child) Exposed to Surface Soil, Groundwater:	NC	2×10^{-4}
Notes: HI = hazard index. ELCR = excess lifetime cancer risk. ND = no dose-response data for this exposure route were available for human health chemicals of potential concern in this medium. NC = not calculated because child and adult HIs are not additive.			







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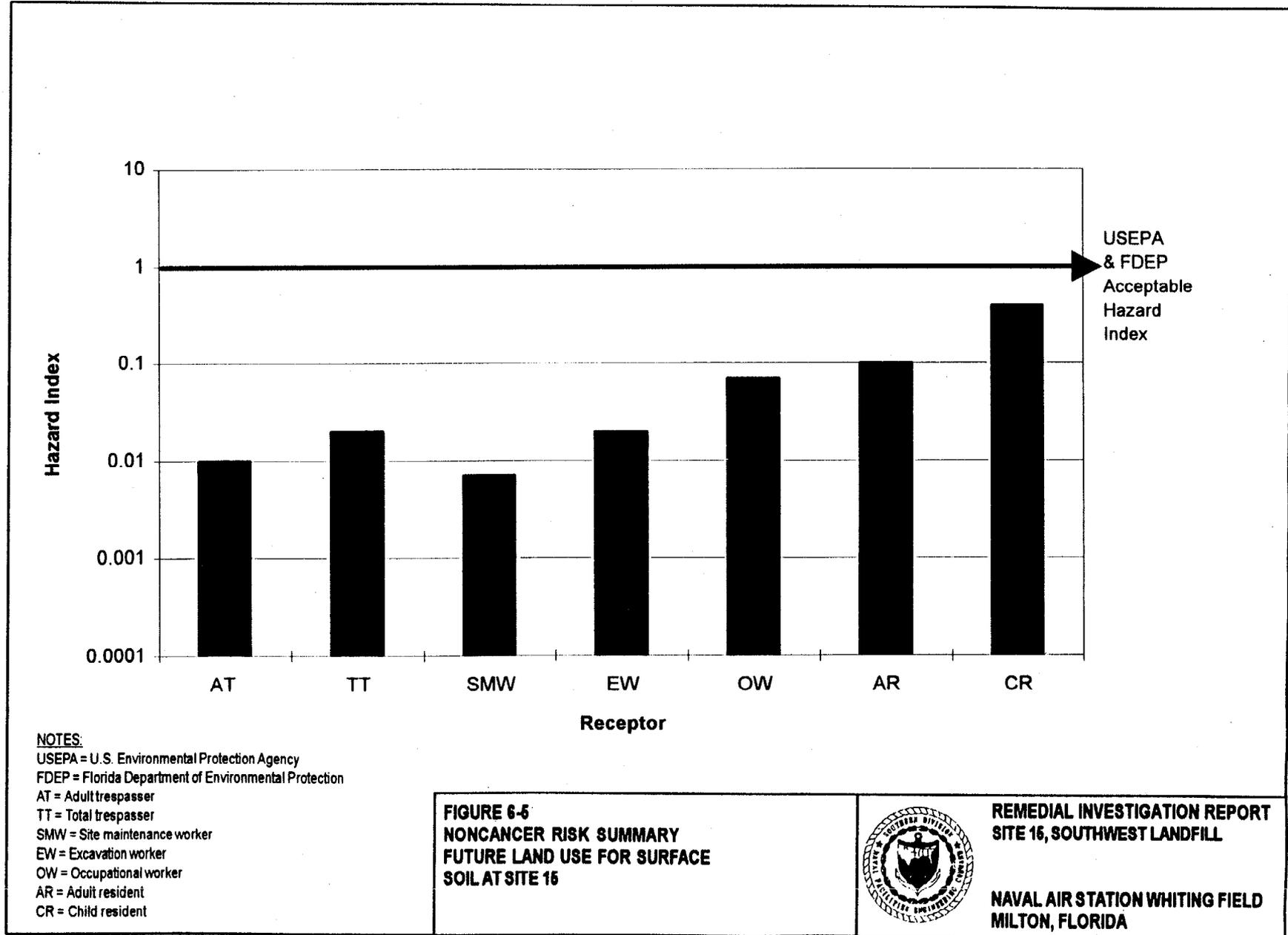
- USEPA acceptable risk range
- USEPA U.S. Environmental Protection Agency
- FDEP Florida Department of Environmental Protection
- TT Total trespasser
- SMW Site maintenance worker
- EW Excavation worker
- OW Occupational worker
- TR Total resident

FIGURE 6-4
CANCER RISK SUMMARY
FUTURE LAND USE FOR SURFACE SOIL AT
SITE 15



REMEDIAL INVESTIGATION REPORT
SITE 15, SOUTHWEST LANDFILL

NAVAL AIR STATION WHITING FIELD
MILTON, FLORIDA

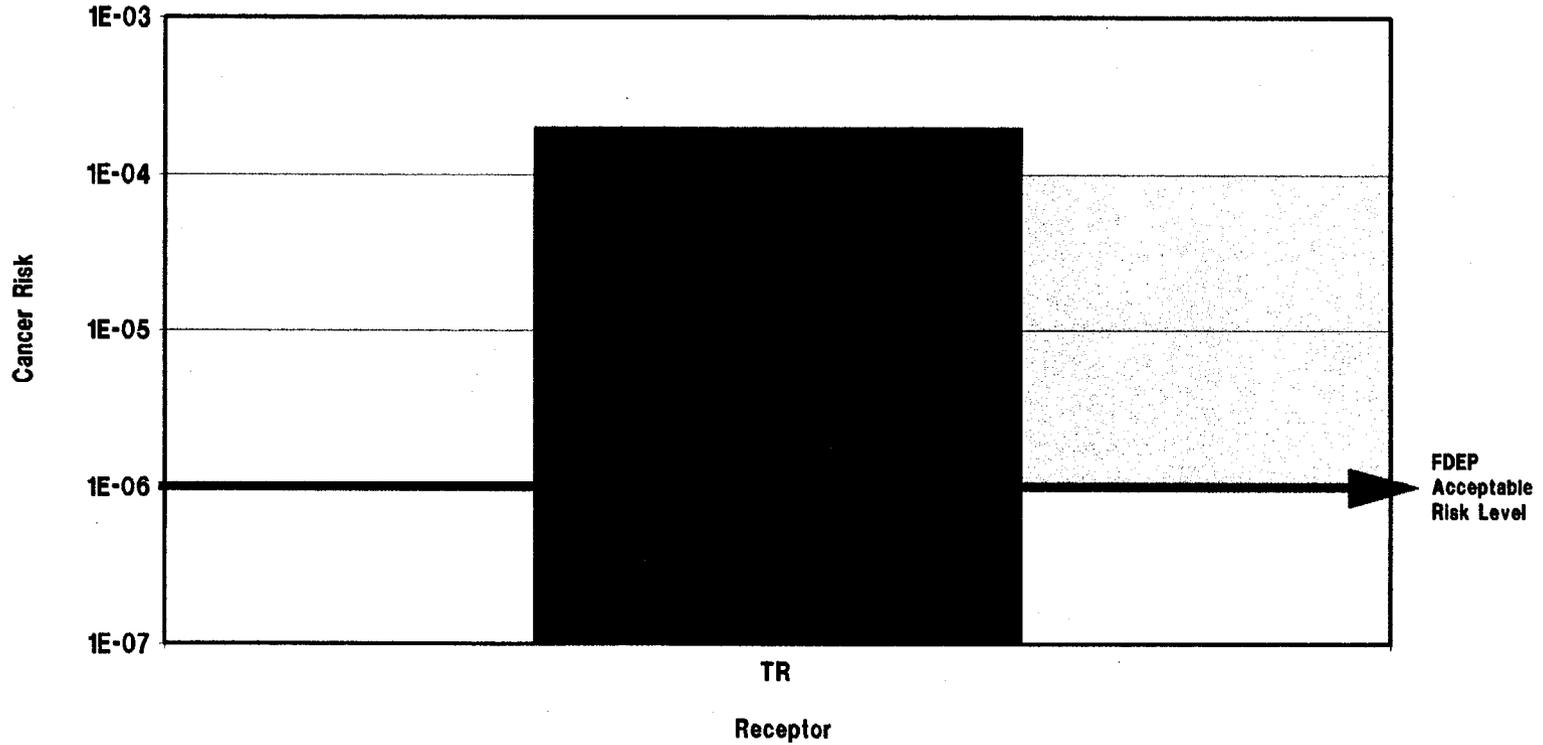


The cancer risks associated with exposure to groundwater ingestion and inhalation of volatiles while showering under hypothetical future land use are 2×10^{-4} for an aggregate resident (combined adult and child). Figure 6-6 presents a summary of cancer risk associated with exposure scenarios under future land use. The hypothetical future residential receptor risks exceed the Florida level of concern of 1×10^{-6} mainly due to 1,1-dichloroethene and arsenic, although benzene, trichlorobenzene, and 1,4-dichlorobenzene also contribute ELCRs greater than 1×10^{-6} . Figure 6-6 presents a summary of the cancer risk to potential future residents.

Under hypothetical future land use, the noncancer risks associated with groundwater ingestion for both the adult resident (HI of 3) and child resident (HI of 7) exceed the USEPA's and the FDEP's target HI of 1. The major contributors to this HI are benzene, arsenic, iron, and thallium. Figure 6-5 presents a summary of HIs associated with exposure scenarios under future land use. Figure 6-7 presents a summary of the noncancer risk to potential future residents.

6.6 UNCERTAINTY ANALYSIS. General uncertainties associated with the collection, analysis, and evaluation of data; exposure assessment; toxicity assessment; and the risk estimation process are discussed in Paragraph 2.5.5.1 of the GIR (ABB-ES, 1998). Site-specific uncertainties that are important for the interpretation of the calculated risk estimates for surface soil and groundwater at Site 15 are discussed below.

- The surface soil carcinogenic risk at Site 15 is driven by a naturally occurring metal, arsenic. It is uncertain whether or not this risk to hypothetical future residents is actually due to past site operations. Detected arsenic concentrations may actually be at naturally occurring levels or due to other anthropogenic activities such as pesticide application. This is especially noteworthy because the risk from arsenic at background conditions is 7×10^{-6} . Therefore, the risk from arsenic at Site 15 is likely to be an overestimate.
- The lack of inhalation reference doses for the HHCPs in surface soil may have resulted in underestimates of the HIs associated with exposure to surface soil at Site 15; however, these noncancer risks are not likely to be significant when compared to oral and dermal risks that are fully characterized.
- Groundwater samples at Site 15 were collected at different intervals (shallow, intermediate, and deep). Samples were collected at different intervals to determine if contamination is concentrated at one interval. Groundwater HHCPs were identified from each of the intervals. It does not appear that the risks can be isolated at one interval; therefore, the groundwater risks from each aquifer were characterized together.
- According to the methodology described in the GIR (ABB-ES, 1998) (Paragraph 2.5.3.3), central tendency carcinogenic risk to hypothetical future receptors that have risks exceeding Florida or USEPA levels of concern was evaluated. The central tendency evaluation is designed to provide a probable risk level (USEPA, 1995a).



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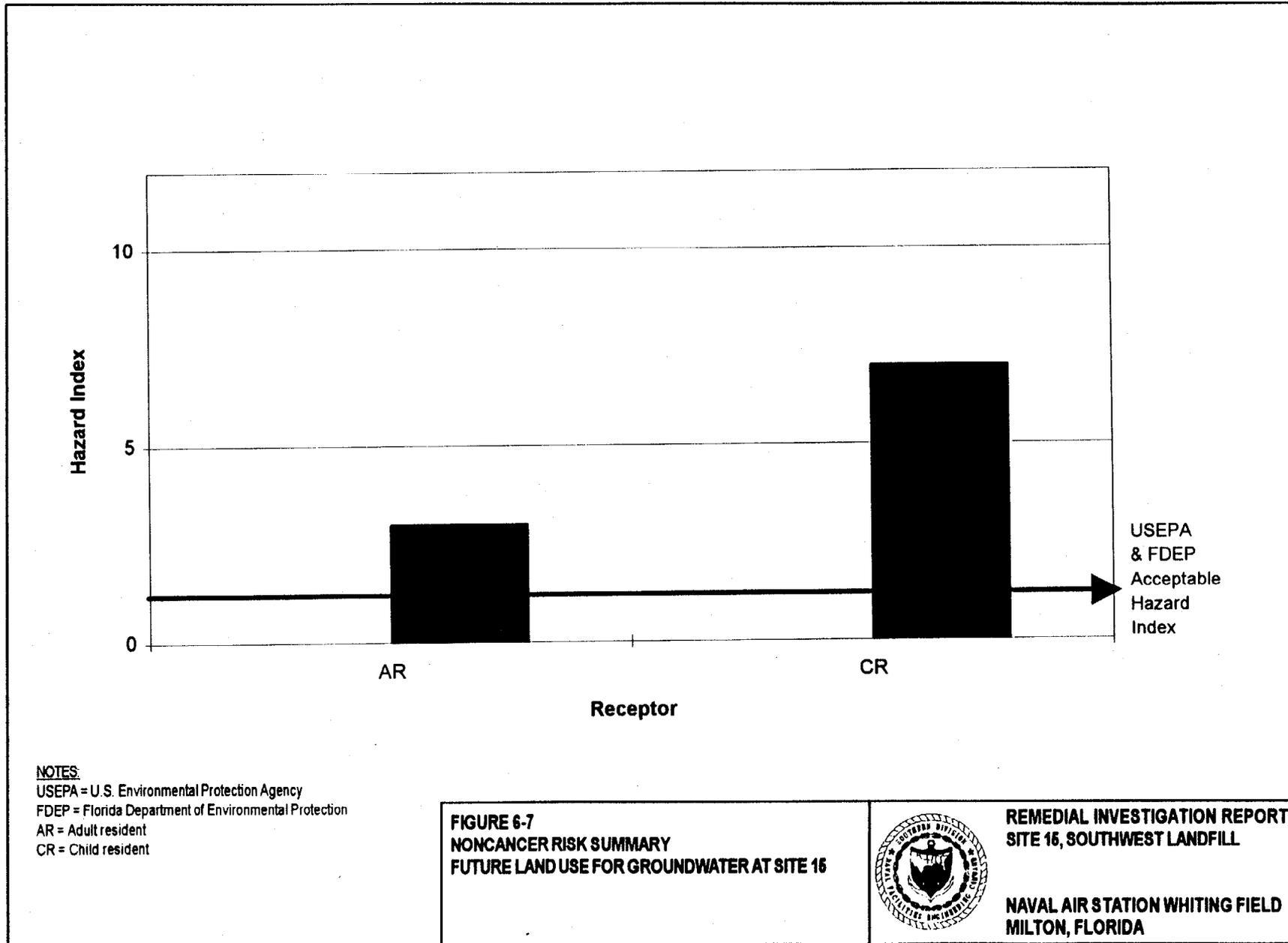
-  USEPA acceptable risk range
- USEPA U.S. Environmental Protection Agency
- FDEP Florida Department of Environmental Protection
- TR Total resident

FIGURE 6-6
CANCER RISK SUMMARY
FUTURE LAND USE FOR GROUNDWATER AT
SITE 15



REMEDIAL INVESTIGATION REPORT
SITE 15, SOUTHWEST LANDFILL

NAVAL AIR STATION WHITING FIELD
MILTON, FLORIDA



The hypothetical future resident's reasonable maximum exposure (RME) carcinogenic risk exceeded its target of 1×10^{-6} . The central tendency carcinogenic risk results for hypothetical trespasser, and future residential and central tendency exposure parameters are presented in Table C-28 through C-33 in Appendix C of this report. Only central tendency ingestion and dermal exposures were characterized because the contribution from inhalation was insignificant compared to the total risk.

The central tendency aggregate residential and trespasser risks exposed to surface soil are 4×10^{-8} and 7×10^{-7} . These central tendency results are below the USEPA and FDEP target risk levels.

The central tendency aggregate residential risk exposed to groundwater is 3×10^{-5} . This central tendency groundwater risk remains above the FDEP target level. The noncancer central tendency risks also remain above the USEPA and FDEP target level of 1.

The risk range presented by the RME and central tendency exposure scenarios for hypothetical future residential receptors are useful information to provide perspective for the risk manager and compliance with Agency guidance (USEPA, 1995a).

- The SQLs were compared to the risk-based screening criteria and Florida and State regulatory guidelines for all analytes not selected as HHCPs to assess whether the detection limits were adequate to detect analytes at levels of concern (SQLs of analytes with 100 percent frequency of detection were not evaluated). The analytes with a SQL that exceeds it's screening criteria is beryllium in surface soil and naphthalene, antimony, thallium, and vanadium in groundwater because the laboratory equipment was able to detect the below the SQL for beryllium, the SQL was considered adequate for this HHRA.

6.7 REMEDIAL GOAL OPTIONS (RGOs). RGO tables are presented for each medium with a total ELCR greater than 1×10^{-6} or an HI greater than 1 per USEPA guidance, and for media with chemicals whose EPCs exceed Florida standards. The RGO concentrations are calculated using the scenario representing the highest estimated risk for a given medium. Based on the above criteria, RGOs are developed for each chemical with a total ELCR greater than 1×10^{-6} or an HQ greater than 0.1. Analytes whose EPCs exceed Florida standards are also presented in the RGO tables.

RGOs and available Federal and FDEP risk-based criteria are intended to provide the basis for the development of remedial alternatives in the FS. The RGOs are not actual or proposed cleanup levels, but are provided to assist risk management decision making in the FS.

Table 6-9 presents the RGOs for surface soil at Site 15. RGOs are presented for arsenic based on cancer risks for the adult and child resident at Site 15.

Table 6-10 presents the RGOs for groundwater at Site 15. RGO is presented for 1,1-dichloroethene, benzene, trichloroethene, antimony, arsenic, iron, and thallium based on cancer and noncancer risks for the adult and child resident at

Table 6-9
Summary of Remedial Goal Options for Surface Soil

Remedial Investigation Report
 Site 15, Southwest Landfill
 Naval Air Station Whiting Field
 Milton, Florida

Analyte	Range of Detected Concentrations	Exposure Point Concentration	Total Excess Lifetime Cancer Risk (Based on Risk to Resident (adult and child))			Total Hazard Index (Based on Risk to Child Resident)			Florida Soil Cleanup Target Level (Residential) ¹	Florida Soil Cleanup Target Level (Leaching) ¹	Background Screening Concentration
			10 ⁻⁴	10 ⁻⁵	10 ⁻⁶	3	1	0.1			
Inorganic Analytes (mg/kg)											
Arsenic	0.75 to 6.8	1.9	NR	NR	0.42	NA	NA	NA	0.8	29	4.62
¹ Values are from Chapter 62-777, Florida Administrative Code, June 1999. Notes: mg/kg = milligrams per kilogram. NR = not reported because the calculated remedial goal option exceeds the exposure point concentration. NA = not applicable.											

Table 6-10
Summary of Remedial Goal Options for Groundwater

Remedial Investigation Report
Site 15, Southwest Landfill
Naval Air Station Whiting Field
Milton, Florida

Analyte	Range of Detected Concentrations	Exposure Point Concentration	Total Excess Lifetime Cancer Risk (Based on Risk to Resident (adult and child))			Total Hazard Index (Based on Risk to Child Resident)			Florida Groundwater Guidance Concentration ¹	Federal MCL ²	Background Screening Concentration
			10 ⁻⁴	10 ⁻⁵	10 ⁻⁶	3	1	0.1			
Volatile Organic Compounds (µg/l)											
1,1-Dichloroethene	3.5 to 10	5.2	NR	1.0	0.1	NA	NA	NA	7	7	NA
Benzene	1 to 100	10.8	NR	NR	1.8	NA	NA	NA	1	5	NA
Trichloroethene	1 to 330	22.7	NR	NR	5.3	NA	NA	NA	3	5	NA
Semivolatile Organic Compounds (µg/l)											
1,4-Dichlorobenzene	1 to 12	5.3	NR	NR	2.8	NA	NA	NA	75	75	NA
Pesticides (µg/l)											
4-4'DDT	0.12	0.06	NA	NA	NA	NA	NA	NA	0.1	NSC	NA
Inorganic Analytes (µg/l)											
Aluminum	35.8 to 200	202	NA	NA	NA	NA	NA	NA	200	50	654
Antimony	25.6	25.6	NA	NA	NA	18.7	6.2	0.62	6	6	20.4
Arsenic	0.6 to 17.2	5.2	4	0.4	0.04	NR	4.7	0.47	50	50	ND
Iron	56.7 to 40,200	2,720	NA	NA	NA	NR	NR	469	300	300	964
Manganese	15	59.2	NA	NA	NA	NA	NA	NA	50	50	42.8
Thallium	0.98 to 2.95	2.95	NA	NA	NA	NR	1.2	0.12	2	2	ND

¹ Values are from Chapter 62-777, Florida Administrative Code, June 1999.

² Federal MCLs are taken from USEPA Drinking Water Regulations and Health Advisories from October 1996.

Notes: MCL = maximum contaminant level.

µg/l = micrograms per liter.

NR = not reported because the calculated remedial goal option exceeds the exposure point concentration.

NA = not applicable.

NSC = no screening criteria.

ND = not detected in any background sample.

Site 15. Aluminum, manganese, and 4,4'-DDT are presented because they exceed the FDEP groundwater guidance concentration values. It should be noted that the EPC for arsenic is an order of magnitude less than the Federal drinking water standard and Florida groundwater guidance concentration.

6.8 SUMMARY OF HHRA FOR SITE 15. HHPCs were identified and risks were estimated for surface soil and groundwater associated with Site 15.

The following conclusions were drawn based on this HHRA:

- The HHPCs detected in surface soil do not pose unacceptable carcinogenic risks to the receptors evaluated based on evaluation of the samples using USEPA guidelines and target risk range.
- The total ELCR of 4×10^{-6} at Site 15, associated with exposure to soil by a hypothetical future resident, exceeds Florida's target risk level of concern 1×10^{-6} due to arsenic. The background levels of arsenic at Site 15 exceed the Florida soil cleanup target level for residential soil and may result in an unacceptable carcinogenic risk. It is likely that naturally occurring arsenic contributes to the FDEP target risk-level exceedance.
- Aroclor-1260 was detected above the Florida cleanup target level in one subsurface soil sample. Aroclor-1260 will be addressed in the feasibility study as an HHPC.
- The ELCR for groundwater exceeds the USEPA acceptable risk range and the FDEP cancer level of concern due to 1,1-dichloroethene, arsenic benzene, trichlorobenzene, and 1,4-dichlorobenzene; however, facility-wide groundwater has been designated as a separate site (Site 40) and is being addressed under a facilitywide investigation.

7.0 ECOLOGICAL RISK ASSESSMENT

The ERA evaluates actual and potential adverse effects to ecological receptors associated with exposure to chemicals from Site 15, the Southwest Landfill, at NAS Whiting Field. The ERA for Site 15 follows the methodologies described in the NAS Whiting Field GIR (ABB-ES, 1998), and current guidance materials for ERAs at Superfund sites including the following:

- *Risk Assessment Guidance for Superfund Environmental Evaluation Manual* (USEPA, 1989c)
- *Ecological Assessment of Hazardous Waste Sites: A Field and Laboratory Reference* (USEPA, 1989d)
- *Framework for Ecological Risk Assessment* (USEPA, 1992b)
- *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments* (USEPA, 1997a)
- *Supplemental Guidance to RAGS: Region IV Bulletins on Ecological Risk Assessment* (USEPA, 1995b)
- *Proposed Guidelines for Ecological Risk Assessment* (USEPA, 1996b)

Risk assessment guidance included in the USEPA "Eco Update" bulletins (1991d and 1992d) and recent publications (e.g., Maughan, 1993; Suter, 1993) were also consulted.

This ERA was conducted to determine if ecological receptors are potentially exposed to contaminants from Site 15 at concentrations that could cause adverse ecological effects. The Site 15 ERA consists of the following eight subsections:

- Site Characterization (Section 7.1) describes current ecological conditions at the site;
- Problem Formulation (Section 7.2) establishes the goals and focus of the assessment and identifies major factors to be considered;
- Hazard Assessment and Selection of ECPCs (Section 7.3) reviews the analytical data and identifies chemicals present at the site that may pose ecological risks;
- Exposure Assessment (Section 7.4) identifies complete exposure pathways and quantifies the magnitude and frequency of exposure;
- Ecological Effects Assessment (Section 7.5) identifies potential adverse effects to ecological receptors associated with the chemicals of concern identified in Section 7.3;
- Risk Characterization (Section 7.6) integrates exposure and concentration-toxicity response information to derive a likely estimate of adverse effects;

- Uncertainties (Section 7.7) identifies assumptions of the ERA process that may influence the risk assessment conclusions; and
- Summary of Ecological Risk (Section 7.8).

7.1 SITE CHARACTERIZATION. NAS Whiting Field Site 15 is approximately 21 acres and is located along the southwestern boundary of the facility near the South Air Field (see Figure 1-2). The site was used as an operational landfill from 1965 to 1979 and consisted of seven trenches covering approximately 15 of the 21 acres of the site area. The landfill reportedly received the majority of waste generated at NAS Whiting Field including general refuse, waste paints, oils, solvents, paint thinner, hydraulic fluid, bagged asbestos, and potentially PCB-contaminated transformer oil (Envirodyne Engineers, Inc., 1985). It is estimated that approximately 3,000 to 4,500 tons of waste per year were disposed of at Site 15. Although buried wastes were reportedly covered on a daily basis, Envirodyne Engineers reported in 1985 that erosion of the soil had uncovered numerous areas where buried waste was exposed at the land surface. Currently, there are few, if any, areas of exposed soil, and no buried waste appears near the surface.

The site has a surface slope of approximately 5 percent to the southwest toward Clear Creek, which is located 1,200 feet southwest of the site. Although overland transport of surface water runoff toward Clear Creek is possible, most of the on-site rainfall infiltrates directly into the soil due to the silty sand type at Site 15.

As shown in the Site 15 vegetative cover map (Figure 7-1), the landfill area of Site 15 is characterized as planted pine forest. In addition to slash pine (*Pinus elliottii*) and long-leaf pine (*Pinus palustris*), other saplings and shrubs commonly found in the planted pine area and herbaceous layer of Site 15 include ragweed (*Ambrosia* sp.), broomsedge (*Andropogon* sp.), persimmon (*Diospyros virginia*), St. Andrew's cross (*Hypericum hypericoides*), hairy indigo (*Indigofera hirsuta*), blazing star (*Liatris chapmanii*), staggerbush (*Lyonia fruticosa*), prickly-pear cactus (*Opuntia* sp.), yellow wood sorrel (*Oxalis stricta*), rustweed (*Polypremum procumbens*), cherry tree (*Prunus* sp.), oaks (*Quercus* sp.), winged sumac (*Rhus copallina*), blackberry vine (*Rubus* sp.), poison ivy (*Toxicodendron radicans*), blueberry (*Vaccinium* sp.), dog fennel (*Eupatorium capillifolium*), yaupon holly (*Ilex vomitoria*), goldenaster (*Pityopsis graminifolia*), and greenbriar (*Smilax* sp.). A complete list of vegetative species occurring at Site 15 is provided in Appendix G of the GIR (ABB-ES, 1998).

NAS Whiting Field maintains a program for planting and harvesting of pine trees, primarily long-leaf and slash pines. The planted pine area of Site 15 is subject to controlled burns and timber harvesting activities. As part of the ecosystem management plan, planted pine forests undergo periodic burning, usually once every four years, and selective thinning of long-leaf and slash pines, every eight to ten years. These forestry management activities provide a variety of habitats and food sources for wildlife and other ecological receptors. The planted pine area of Site 15 has reached a mature status with a well-developed canopy and an open understory typical of uplands pine forests of the southeastern United States. The forested area at Site 15 is contiguous with a mature planted pine forest that surrounds the site. The pine forest canopy is over 40 feet

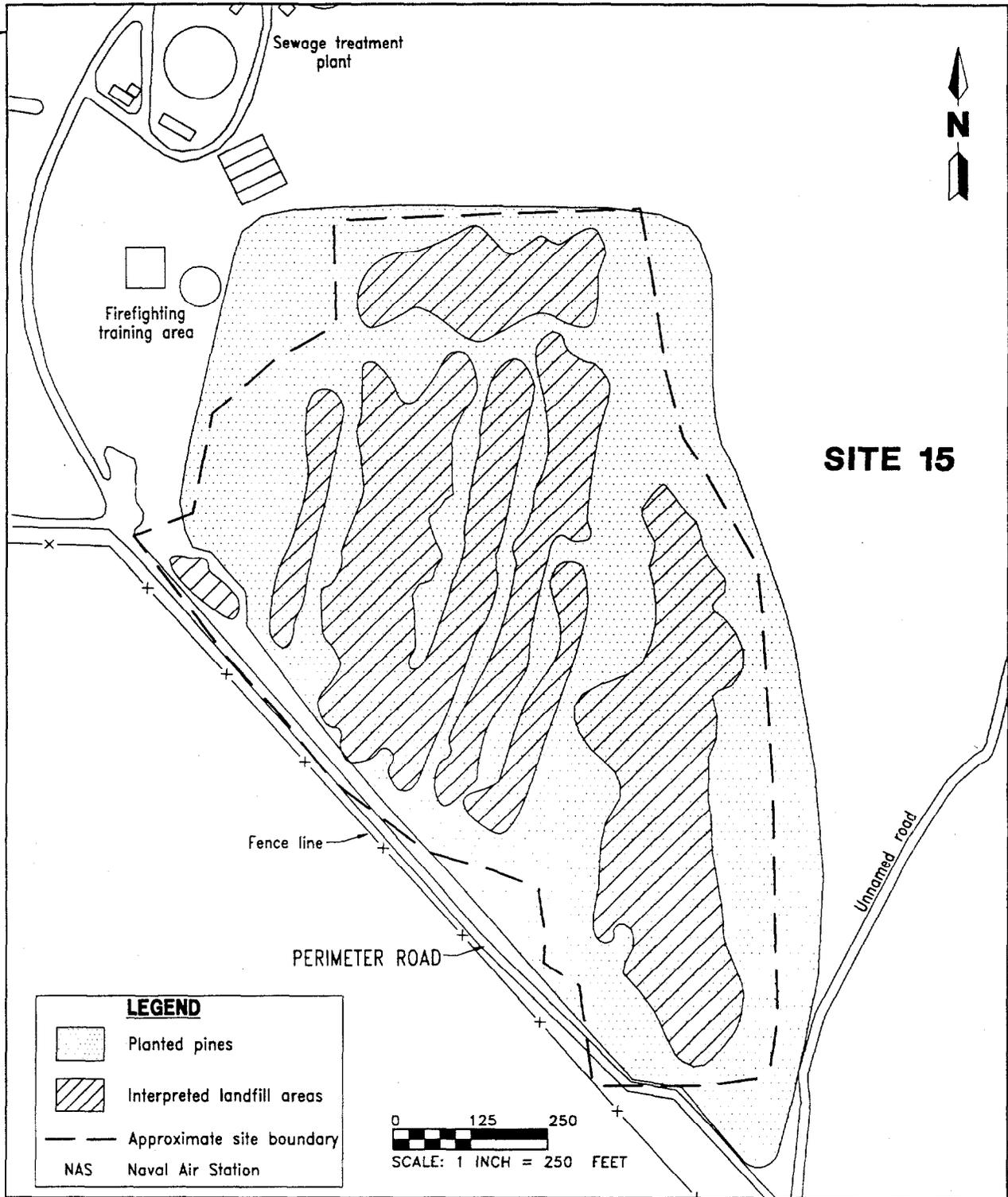


FIGURE 7-1
SITE 15, VEGETATIVE COVER MAP



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MILTON, FLORIDA

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high, typical tree diameter is approximately 8 inches, and spacing between planted pines is about 6 to 10 feet.

Southeastern pine forests provide habitat for a diverse array of birds, including insectivorous gleaners of pine needles and bark, flycatchers, seed-eaters, and nocturnal and diurnal aerial predators (Wolfe et al., 1988). The pine flatwoods at and surrounding Site 15 are likely to host such an assemblage of species. Birds of prey, such as owls and hawks, may also nest in these wooded areas.

It is likely that the terrestrial invertebrate biomass at Site 15 serves as a forage base for a variety of wildlife species, including adult amphibians, reptiles, small birds, and small mammals. Small reptiles, mammals, and birds may use the forested pine area for protection. Predatory birds and mammals inhabiting the pine flatwood areas may also be attracted to the site.

Mammals and birds that may occur in the planted pine area of Site 15 include the hispid cotton rat (*Sigmodon hispidus*), cotton mouse (*Peromyscus gossypinus*), short-tailed shrew (*Blarina brevicauda*), American robin (*Turdus migratorius*), and Eastern meadowlark (*Sturnella magna*). Predatory mammals and birds such as the red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), great horned owl (*Bubo virginianus*), and the red-tailed hawk (*Buteo jamaicensis*) may also forage in the area of Site 15.

Although no aquatic habitat is present at Site 15, groundwater from Site 15 may discharge off site to Clear Creek, which is located approximately 1,200 feet downgradient and the southwest of the site. Clear Creek, which is classified by the FDEP as Class III surface waters, is a tributary to Blackwater River, located to the south. Florida Class III surface waters are suitable for the propagation of fish and aquatic life. Blackwater River is classified as an Outstanding Florida River, which is considered to be of exceptional ecological significance.

Groundwater discharge to the surface water of Clear Creek is qualitatively evaluated as part of the ERA for Site 15 because Clear Creek receives groundwater discharge from Site 15. However, the section of Clear Creek that receives groundwater from Site 15 is included as part of NAS Whiting Field Site 39, Clear Creek Flood Plain. The ERA for Site 39 will present the results of surface water and sediment sampling in Clear Creek and provide further information on whether or not Site 15 is a potential source of contamination to Clear Creek.

7.2 PROBLEM FORMULATION. The problem formulation is the initial step of the ERA process. Problem formulation is composed of identification of receptors, identification of exposure pathways for those receptors, and selection of assessment and measurement endpoints based on information gathered from the site characterization.

7.2.1 Identification of Receptors Ecological receptors that may potentially utilize the available planted pine forest habitat at Site 15 include terrestrial wildlife (i.e., mammals, birds, reptiles, and adult amphibians), terrestrial plants, and soil invertebrates. Terrestrial flora and fauna potentially using NAS Whiting Field are identified in the GIR (ABB-ES, 1998). Freshwater aquatic receptors in Clear Creek downgradient of Site 15 are evaluated in the ERA because groundwater from Site 15 may potentially migrate to the surface water of Clear Creek.

Certain species that potentially reside at NAS Whiting Field are protected by Federal and/or State laws. A list of State and federally protected species is provided in the GIR (ABB-ES, 1998). No State or federally listed rare, threatened, or endangered species or species of concern are known or likely to inhabit Site 15.

7.2.2 Identification of Exposure Pathways Exposure pathways are identified for four groups of receptors (terrestrial wildlife, terrestrial plants, soil invertebrates, and aquatic receptors). A complete exposure pathway includes a source of contamination, an exposure route, and a receptor. A conceptual model of the exposure pathways from source to ecological receptors is depicted in the contaminant pathway model on Figure 7-2.

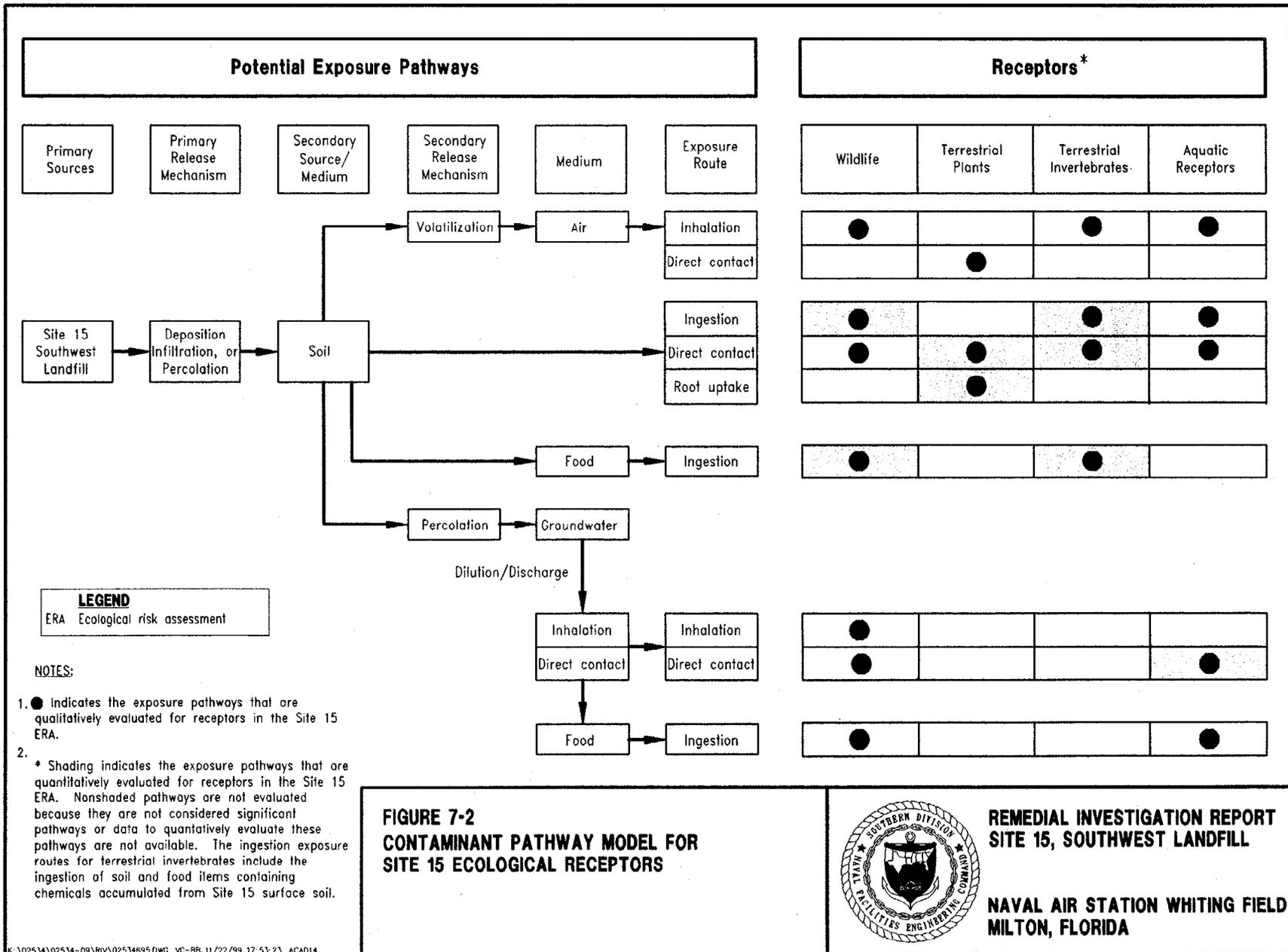
All potential routes of exposure are considered in the ERA and are presented in the contaminant pathway model. The model differentiates between those exposure routes that are quantitatively evaluated and those that are qualitatively discussed. This limitation is necessary to focus the risk evaluation on those pathways for which contaminant exposures are the highest and most likely to occur. Those pathways that cannot be quantitatively evaluated due to a lack of toxicological information are qualitatively discussed and addressed as uncertainties. The general approach used to identify exposure pathways for the four groups of receptors is explained below.

Terrestrial Wildlife. Terrestrial wildlife may be exposed to contaminants in surface soil and food items that are contaminated as a result of ingestion, dermal adsorption, and inhalation of fugitive dust and volatile emissions. Because surface water is not present at Site 15, only terrestrial wildlife exposures associated with ingestion of surface soil and potentially contaminated food are evaluated in the Site 15 ERA. Although ingestion of surface water from Clear Creek downgradient of Site 15 is possible, these exposures will be evaluated as part of the ERA for Site 39.

Dermal adsorption is considered to be a negligible exposure pathway because the presence of fur, feathers, or a chitinous exoskeleton is likely to prevent contamination from coming in direct contact with the skin (personal communication with Ted Simon, USEPA Region IV, September 1997). In addition, soil trapped in the fur or feathers is likely to be ingested during grooming or preening activities, which are evaluated as part of the indirect ingestion exposure pathway.

Exposure via inhalation of fugitive dust is also not likely to be a significant exposure pathway because the vegetation at Site 15 would limit the release of fugitive dust. Although volatile constituents were detected in the surface soil of Site 15, exposures associated with VOCs are not evaluated in the ERA because of the low frequency and detection of VOCs in the surface soil. In addition, no evidence of burrowing animals and/or burrows was noted at Site 15 during the October 1995 biological field investigation conducted by ABB-ES (presently HLA) ecologists.

Potential contaminant exposures for reptiles and adult amphibians exist at NAS Whiting Field; however, ingestion toxicity data and bioaccumulation factors (BAF) are generally not available for these receptors. Therefore, potential risks associated with ingestion of affected surface soil and food to these reptiles and amphibians will be qualitatively addressed in the Uncertainties Section of the ERA.



**FIGURE 7-2
CONTAMINANT PATHWAY MODEL FOR
SITE 15 ECOLOGICAL RECEPTORS**



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Terrestrial Plants and Invertebrates. Terrestrial plants and soil invertebrates may be exposed to contamination in surface soil by direct contact with and root uptake (plants) or ingestion (invertebrates) of soil. The ingestion exposure routes include the ingestion of soil and food items containing chemicals accumulated from Site 15 surface soil. The inhalation exposure route is not evaluated for terrestrial plants and invertebrates due to the reasons discussed above for terrestrial wildlife. Because the depth to groundwater is approximately 35 to 40 feet bls, well below the root zone of Site 15 plants, it is unlikely that terrestrial plants will be exposed to potential groundwater contamination.

Aquatic Receptors. Exposure pathways evaluated for aquatic receptors in Clear Creek downgradient of Site 15 (including invertebrates, plants, amphibians, and fish) include direct contact with groundwater (as it discharges to the surface water of Clear Creek). Although direct contact with the surface water and sediment and ingestion of sediment and food items is possible, these pathways will be evaluated as part of the ERA for Site 39, Clear Creek Flood Plain.

A qualitative screening evaluation of Site 15 groundwater migration to surface water and potential adverse effects to aquatic receptors in Clear Creek will be completed as part of this ERA. It should be noted that the purpose of this evaluation is not to predict actual surface water and sediment conditions in Clear Creek. Surface water and sediment data from Clear Creek downgradient of Site 15 will be evaluated as part of the ERA for Site 39, Clear Creek Flood Plain.

7.2.3 Identification of Endpoints The assessment and measurement endpoints selected for the Site 15 ERA are listed in Table 7-1. Assessment endpoints represent the ecological component to be protected, whereas the measurement endpoints approximate or provide a measure of the achievement of the assessment endpoint. One of the assessment endpoints selected for the Site 15 ERA is the survival and maintenance of receptor populations and communities at Site 15. The measurement endpoints used to gauge the likelihood of population- and community-level effects are chemical-specific toxicological benchmark values derived from the literature that are based on laboratory-measured survival, growth, and reproductive effects. Table 7-1 presents the assessment endpoint, endpoint species, measurement endpoint, and decision point (i.e., the outcome at which additional evaluation may be warranted).

Four questions were developed to gauge potential risks associated with exposure to Site 15 surface soil and groundwater. These questions are designed for multiple species and trophic levels and represent both individual and community dynamics. Questions for the Site 15 ERA include the following:

1. ECPCs present in the surface soil are not at concentrations sufficiently high enough to reduce plant or soil invertebrate biomass or plant cover availability such that small mammal and bird populations would be affected.
2. ECPCs in plants and invertebrates are not sufficiently high enough to adversely affect foraging small mammal or bird populations following consumption of contaminated prey.

Table 7-1
Endpoints Selected for
Ecological Risk Assessment, Site 15

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Assessment Endpoint	Receptor	Measurement Endpoint	Decision Point
Reduction in the biomass of terrestrial plants used as forage material.	Wildlife species	Chemical concentrations (mg/kg) in surface soil that result in adverse effects on growth, reproduction, or survival to terrestrial plants.	The reasonable maximum exposure concentration (mg/kg) of an ECPC in surface soil is greater than the terrestrial plant RTV.
Reduction in the abundance of earthworms used as forage material.	Wildlife species	Chemical concentrations (mg/kg) in surface soil that result in adverse effects on survival (e.g., LC ₅₀ studies) or measured adverse effects on reproduction and growth to terrestrial invertebrates.	The reasonable maximum exposure concentration (mg/kg) in surface soil is greater than the terrestrial invertebrate RTV.
Survival and maintenance of wildlife populations.	Wildlife Species	Oral chemical doses (mg/kg BW/day) based on measured adverse effects on growth, reproduction, or survival (e.g., NOAEL, LOAEL, and LD ₅₀ studies) of mammalian and avian laboratory test populations.	Comparison of potential dietary exposures in mammalian and avian wildlife with literature-derived RTVs. HQs > 1 indicate potential risk.
Survival and maintenance of fish and macroinvertebrate populations.	Aquatic Receptors	Chemical concentrations in groundwater associated with adverse effects to growth, reproduction, or survival of aquatic organisms.	The predicted exposure concentration of groundwater in Clear Creek is greater than available criteria and aquatic toxicity benchmark values.

Notes: mg/kg = milligrams per kilogram.
 ECPC = ecological chemical of potential concern.
 RTV = reference toxicity value.
 LC₅₀ = lethal concentration to 50 percent of a test population.
 BW/day = body weight per day.
 NOAEL = no observed adverse effect level.
 LOAEL = lowest observed adverse effect level.
 LD₅₀ = lethal dose to 50 percent of a test population.
 HQ = hazard quotient.
 > = greater than.

3. Bioaccumulating chemicals are not present at concentrations sufficiently high enough to reduce survivability, growth, or reproduction in top predators (i.e., foxes and owls).
4. ECPCs present in the groundwater are not at concentrations sufficiently high enough to reduce the survival and maintenance of aquatic receptors in Clear Creek, located approximately 1,200 feet downgradient of Site 15.

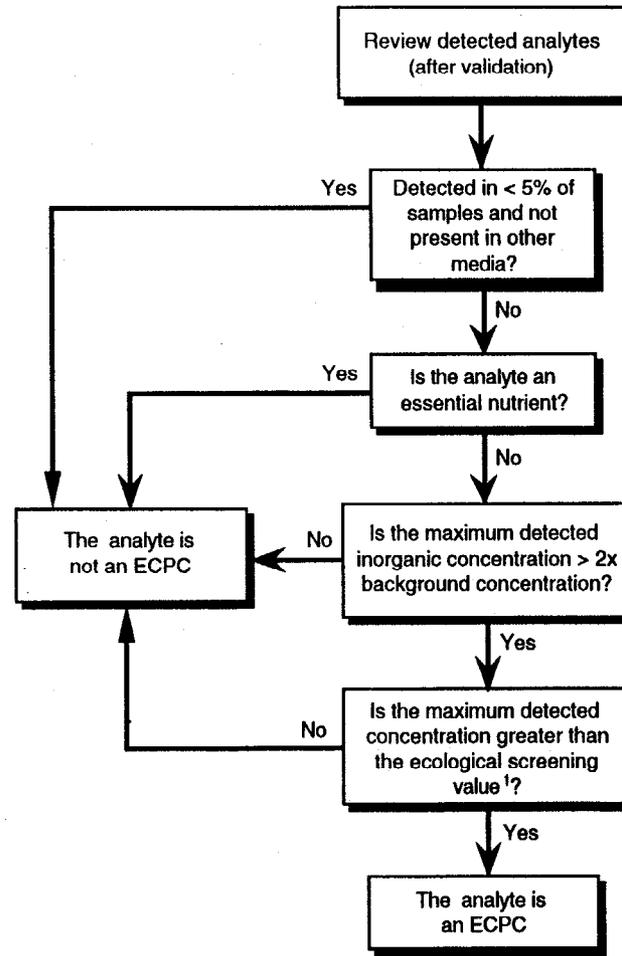
7.3 HAZARD ASSESSMENT AND SELECTION OF ECPCs. The hazard assessment includes a review of analytical data and selection of ECPCs. ECPCs represent analytes detected in environmental media (i.e., surface soil and groundwater) that are considered in the ERA and could present a potential risk for ecological receptors. The process for selecting ECPCs is depicted on Figure 7-3. Additional details regarding the ECPC selection process are provided in Subsection 2.4.2 of the GIR (ABB-ES, 1998). Analytical data for Site 15 were evaluated for use in risk assessment pursuant to national guidance, *Guidance for Data Useability in Risk Assessment (Parts A and B)* (USEPA, 1992a).

Following the data validation step, analytes in surface soil and groundwater were not selected as ECPCs if the analyte was detected in 5 percent or fewer of the samples analyzed and not present in any other media. Calcium, magnesium, potassium, and sodium were excluded as ECPCs for groundwater. In addition to these analytes, iron is also excluded as an ECPC for surface soil. These analytes are considered to be essential nutrients and not toxic. The rationale for eliminating essential nutrients as ECPCs is provided in the GIR (ABB-ES, 1998).

Inorganic chemicals representative of background conditions are not selected as ECPCs. In accordance with USEPA Region IV guidance (USEPA, 1991a), an inorganic analyte is not selected as an ECPC if the maximum detected concentration is less than 2 times the average detected inorganic concentration in background samples. The maximum detected concentrations are compared against representative site-specific background surface soil and groundwater screening concentrations to eliminate chemicals that are unlikely to be site related.

A site-specific background investigation of surface soil and groundwater was conducted at NAS Whiting Field, and the findings are presented in Subsections 3.3.1 and 3.3.3 of the GIR, respectively (ABB-ES, 1998). The site-specific background study used to establish background screening values for Site 15 surface soil consists of nine surface soil samples (BKG-SL-02, BKG-SL-06, BKG-SL-07, BKG-SL-08, BKS00101, BKS00201, BKS00301, BKS00401, and BKS00501) and one duplicate sample (BKS00201D) collected from Troup and Dothan/Lucy/Bonifay soil types, which are considered most geologically similar to the soil from Site 15. The site-specific background study used to establish background screening values for groundwater consists of seven groundwater samples (BKG00101, BKG00102, BKG00103, BKG00201, BKG00202, BKG00203, and BKG00301) and one duplicate sample (BKG00101D) collected from monitoring wells upgradient of any potential site-related contamination.

Analytes that exceed the background screening concentration and are not essential nutrients are also screened against ecological screening values for surface soil and groundwater. The surface soil ecological screening values are the Dutch Soil



NOTES:

ECPC = ecological chemical of potential concern

> = greater than

x = times

¹ Media-specific ecological screening values include the Dutch Soil Criteria for surface soil ECPCs and the U.S. Environmental Protection Agency - Region 4 Surface Water Chronic Screening Values for groundwater.

**FIGURE 7-3
ECOLOGICAL CHEMICAL OF POTENTIAL
CONCERN SELECTION PROCESS**



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Criteria "A", which refer to background concentrations in surface soil issued by the U.S. Fish and Wildlife Service (Beyer, 1990). The groundwater ecological screening values are the Freshwater Surface Water Chronic Screening Values for Hazardous Waste Sites issued by USEPA Region IV (USEPA, 1995b). If the maximum detected concentration of an analyte exceeds the surface soil ecological screening value, the analyte is retained as an ECPC for terrestrial wildlife, terrestrial plants, and soil invertebrates. If the maximum detected concentration of an analyte exceeds the groundwater ecological screening value, the analyte is retained as an ECPC for aquatic receptors.

Thirty surface soil samples (15-SL-01 through 15-SL-05 and 1500101 through 15S02501 with duplicates at 15S00101D, 15S01701D, and 15S02001D) were collected at Site 15 (see Figure 3-2). Samples 15-SL-01 through 15-SL-05 were collected as part of the Phase IIA investigation in August 1992, and samples 15S00101 through 15S02501 were collected as part of the Phase IIB investigation in December 1995. Surface soil samples were analyzed for VOCs, SVOCs, pesticides and PCBs, and inorganic analytes. Unfiltered groundwater data were used to screen potential ecological risks. A discussion of which groundwater samples were used to evaluate both human health and ecological risks is provided in Paragraph 6.2.3.1.

Tables 7-2 and 7-3 present a summary of the respective surface soil and groundwater analytical data and the following information: frequency of detection, range of detection limits, range of detected concentrations, average of detected concentrations, background screening concentrations, ecological screening values, 95 percent upper confidence limits (UCLs), and selected ECPCs.

As shown in Table 7-2, ECPCs selected for the surface soil samples collected at Site 15 include three VOCs (acetone, methylene chloride, and xylenes), two SVOCs (di-n-butylphthalate and bis(2-ethylhexyl)phthalate), and four inorganic analytes (cyanide, lead, silver, and vanadium).

As shown in Table 7-3, ECPCs selected for the unfiltered groundwater samples collected at Site 15 include four VOCs (acetone, benzene, trichloroethene, and xylenes), two SVOCs (1,4-dichlorobenzene, and bis(2-ethylhexyl)phthalate), one pesticide (4,4'-DDT), and nine inorganic analytes (aluminum, cobalt, iron, lead, manganese, mercury, silver, vanadium, and zinc).

7.4 EXPOSURE ASSESSMENT. The purpose of the ecological exposure assessment is to estimate or measure the amount of an ECPC to which an ecological receptor may be exposed. The following sections briefly describe how contaminant exposures are estimated or measured for wildlife, terrestrial plants, and invertebrates at Site 15 and aquatic receptors in Clear Creek downgradient of Site 15. The contaminant pathway model (Figure 7-2) provides a summary of the potential exposure pathways that exist at Site 15 for each group of receptors. Additional details regarding the exposure assessment are provided in the GIR (ABB-ES, 1998).

7.4.1 Calculation of EPCs The EPC is a representative concentration used for evaluating risks throughout this ERA. RME and central tendency concentrations are derived for each ECPC. Because the sample sizes for both the surface soil and groundwater data sets are greater than ten, the RME value is equal to the lesser of the maximum detected concentration and the 95 percent UCL calculated on the log-transformed arithmetic mean (USEPA, 1992b). One-half of the detection

Table 7-2
Selection of Ecological Chemicals of Potential Concern
for Surface Soil Associated with Site 15

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Analyte	Frequency of Detection ¹	Reporting Limit Range	Detected Concentration Range ²	Average of Detected Concentrations ³	Background Screening Concentration ⁴	Ecological Screening Value ⁵	Chemical of Ecological Concern ⁶	95% UCL ⁷	Average of All Samples ⁸	Exposure Point Concentration	
										RME ⁹	CT ¹⁰
<u>Volatile Organic Compounds (µg/kg)</u>											
Acetone	1/30	10 to 22	11 to 11	11	ND	NA	Yes	6.2	6	6.2	6
Methylene chloride	4/30	5 to 12	3 to 9	5.3	ND	NA	Yes	5.6	5.1	5.6	5.1
Xylenes (total)	3/30	5 to 12	1 to 4	2.3	ND	NA	Yes	5.9	5	4	4
<u>Semivolatile Organic Compounds (µg/kg)</u>											
Butylbenzylphthalate	1/30	350 to 430	240 to 240	240	ND	NA	No ¹¹				
Di-n-butylphthalate	6/30	350 to 420	560 to 1,100	800	ND	NA	Yes	369	307	369	307
bis(2-Ethylhexyl)phthalate	4/30	350 to 430	39 to 947.5*	299	80.3	NA	Yes	240	200	240	200
<u>Pesticides/PCBs (µg/kg)</u>											
4,4'-DDD	1/30	3.5 to 18	3.8 to 3.8	3.8	ND	100	No ^{11,12}				
4,4'-DDE	3/30	3.5 to 18	1.9 to 50	18.3	ND	100	No ¹²				
4,4'-DDT	2/30	3.5 to 18	4.4 to 14	9.2	ND	100	No ¹²				
<u>Inorganic Analytes (mg/kg)</u>											
Aluminum	30/30	40 to 40	3,280 to 13,400	7,159	15,334	NA	No ¹³				
Arsenic	30/30	2 to 2	0.75 to 6.8	1.6	4.7	20	No ¹²				
Barium	30/30	40 to 40	3.2 to 11.8	6.8	23.8	200	No ^{12,13}				
Beryllium	3/30	0.05 to 1	0.07 to 0.09	0.08	0.36	NA	No ¹³				
Calcium	18/30	1,000 to 1,000	22.05* to 262.6*	79.5	402	NA	No ^{13,14}				
Chromium	30/30	2 to 2	2.8 to 14.4*	6.1	10.8	100	No ¹²				
Cobalt	11/30	0.33 to 10	0.49 to 1.2	0.72	3.0	20	No ^{12,13}				
Copper	8/30	5 to 5	1.6 to 12.5	5.4	9.4	50	No ¹²				
Cyanide	3/30	0.24 to 0.5	0.09 to 0.31	0.19	0.26	NA	Yes	0.25	0.22	0.25	0.22
Iron	30/30	20 to 20	1,610 to 11,150*	4,278	8,588	NA	No ¹⁴				

See notes at end of table.

Table 7-2 (Continued)
Selection of Ecological Chemicals of Potential Concern
for Surface Soil Associated with Site 15

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Analyte	Frequency of Detection ¹	Reporting Limit Range	Detected Concentration Range ²	Average of Detected Concentrations ³	Background Screening Concentration ⁴	Ecological Screening Value ⁵	Chemical of Ecological Concern ⁶	95% UCL ⁷	Average of All Samples ⁸	Exposure Point Concentration	
										RME ⁹	CT ¹⁰
Inorganic Analytes (mg/kg) (Continued)											
Lead	30/30	0.6 to 1	2.3 to 59.9	6.6	11.4	50	Yes	7.3	6.6	7.3	6.6
Magnesium	30/30	1,000 to 1,000	43 to 156	92.3	258	NA	No ^{13,14}				
Manganese	30/30	3 to 3	8.8* to 143	53.5	404	NA	No ¹³				
Mercury	22/30	0.06 to 0.1	0.01 to 0.19	0.02	0.12	0.5	No ¹²				
Nickel	1/30	2.3 to 8	3.3 to 3.3	3.3	7.2	50	No ^{12,13}				
Potassium	5/30	128 to 1,000	131 to 334.5*	190	177	NA	No ¹⁴				
Selenium	6/30	0.39 to 1	0.24 to 0.41	0.33	0.44	NA	No ¹³				
Silver	4/30	0.32 to 2	0.66 to 2	1	0.7	NA	Yes	1.2	0.86	1.2	0.86
Sodium	5/30	1,000 to 1,000	170 to 179	174	388	NA	No ^{13,14}				
Vanadium	30/30	10 to 10	4.1 to 33.85*	11	21.2	NA	Yes	13.3	11	13.3	11
Zinc	28/30	4 to 4	2.4 to 15.9	5.4	15.4	200	No ¹²				

¹ Frequency of detection is the number of samples in which the analyte was detected divided by the total number of samples analyzed (excluding rejected values).

² The value indicated by an asterisk is the average of a sample and its duplicate. For duplicate samples having one nondetect value, one-half of the detection limit is used as a surrogate for the nondetect value.

³ The average of detected concentrations is the arithmetic mean of all samples in which the analyte was detected. It does not include those samples with "R", "U", or "UJ" validation qualifiers.

⁴ The background screening value is twice the average of detected concentrations for inorganic analytes in background samples. Background screening values for organic analyte values are one times the average of detected concentrations. Organic values are included for comparison purposes only (i.e., not used to select ECPCs).

⁵ The ecological screening values are the Dutch Soil Criteria as reported in the U.S. Fish and Wildlife Service, *Biological Report 90(2)*, "Evaluating Soil Contamination," (Beyer, 1990).

⁶ These chemicals are retained for further evaluation in the ecological risk assessment.

Notes continued on following page.

Table 7-2 (Continued)
Selection of Ecological Chemicals of Potential Concern
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- ⁷ The 95 percent UCL is calculated on the log-transformed average of all samples using the formula provided in the U.S. Environmental Protection Agency (USEPA) *Supplemental Guidance to RAGS: Calculating the Concentration Term*. The 95 percent UCL is not calculated when there are less than 10 total samples (USEPA, 1992c).
- ⁸ The average of all samples assigns a value of one-half of the detection limit as a surrogate concentration for nondetect values.
- ⁹ The RME exposure point concentration (EPC) is equal to the lesser of the maximum detected concentration or the 95 percent UCL.
- ¹⁰ The CT EPC is equal to the lesser of the average of all samples or the RME concentration.
- ¹¹ The analyte was detected in less than 5 percent of the samples and was not detected in groundwater.
- ¹² The maximum detected concentration is less than the ecological screening value.
- ¹³ The maximum detected concentration is less than the background screening concentration.
- ¹⁴ The analyte is an essential nutrient and not considered toxic.

Notes: The average of a sample and its duplicate is used for all table calculations.

Samples: 15-SL-01 through 15-SL-05 and 15S00101 through 15S02501.

Duplicate samples: 15S00101D, 15S01701D, 15S02001D.

Background samples: BKG-SL-02, BKG-SL-06, BKG-SL-07, BKG -SL-08, BKS00101, BKS00201, BKS00301, BKS00401, and BKS00501.

Background duplicate samples: BKS00201D.

% = percent.

RME = reasonable maximum exposure.

CT = central tendency.

µg/kg = micrograms per kilogram.

ND = not detected.

NA = not available.

* = average of sample and duplicate.

PCB = polychlorinated biphenyl.

DDD = dichlorodiphenyldichloroethane.

DDE = dichlorodiphenyldichloroethene.

DDT = dichlorodiphenyltrichloroethane.

mg/kg = milligrams per kilogram.

Table 7-3
Selection of Ecological Chemicals of Potential Concern
for Groundwater Associated with Site 15

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Analyte	Frequency of Detection ¹	Reporting Limit Range	Detected Concentration Range ²	Average of Detected Concentrations ³	Background Screening Concentration ⁴	Ecological Screening Value ⁵	Chemical of Ecological Concern ⁶	95% UCL ⁷	Average of All Samples ⁸	Exposure Point Concentration	
										RME ⁹	CT ¹⁰
<u>Volatile Organic Compounds (µg/l)</u>											
1,1-Dichloroethene	2/20	10 to 25	3.5 to 10	6.8	ND	303	No ¹²				
1,2-Dichloroethane	1/20	10 to 15	2	2	ND	2,000	No ⁸				
1,2-Dichloroethene (total)	8/20	10 to 25	1 to 14	5.4	ND	1,350	No ¹²				
Acetone	1/20	10 to 25	140 to 140	140	ND	NA	Yes	12.3	12.1	12.3	12.1
Benzene	4/20	10 to 25	1 to 100	32.3	ND	53	Yes	14	10.8	14	10.8
Chlorobenzene	2/20	10 to 25	4 to 12	8	ND	195	No ¹²				
Ethylbenzene	1/20	10 to 25	2 to 2	2	ND	453	No ¹²				
Trichloroethene	11/20	10 to 25	1 to 330	37.1	ND	NA	Yes	26.1	22.7	26.1	22.7
Xylenes (total)	1/20	10 to 25	1 to 1	1	ND	NA	Yes	6.4	5.2	1	1
<u>Semivolatile Organic Compounds (µg/l)</u>											
1,4'-Dichlorobenzene	3/19 ¹⁵	10 to 10	1 to 12	7	ND	11.2	Yes	6.8	5.3	6.8	5.3
Diethylphthalate	3/19 ¹⁵	10 to 10	1 to 2	1.3	ND	521	No ¹²				
Naphthalene	2/19 ¹⁵	10 to 10	1 to 4	2.5	ND	62	No ¹²				
bis(2-Ethylhexyl)phthalate	8/19 ¹⁵	10 to 10	1 to 5	2.3	4	0.3	Yes	5.2	3.9	5	3.9
<u>Pesticides and PCBs (µg/l)</u>											
4,4-DDT	2/19 ¹⁵	0.1 to 0.1	0.12 to 0.12	0.12	ND	0.001	Yes	0.06	0.06	0.06	0.06
<u>Inorganic Analytes (mg/l)</u>											
Aluminum	14/20	35.8 to 200	58.65 to 1,030	252	654	87	Yes	317	202	317	202
Antimony	1/20	8.6 to 60	25.6 to 25.6	25.6	20.4	160	No ¹²				
See notes at end of table.											

Table 7-3 (Continued)
Selection of Ecological Chemicals of Potential Concern
for Groundwater Associated with Site 15

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Analyte	Frequency of Detection ¹	Reporting Limit Range	Detected Concentration Range ²	Average of Detected Concentrations ³	Background Screening Concentration ⁴	Ecological Screening Value ⁵	Chemical of Ecological Concern ⁶	95% UCL ⁷	Average of All Samples ⁸	Exposure Point Concentration	
										RME ⁹	CT ¹⁰
Inorganic Analytes (mg/l) (Continued)											
Arsenic	6/20	0.5 to 10	0.6 to 17.2	6.6	ND	190 ¹⁶	No ¹²				
Barium	20/20	200 to 200	7.8 to 68.3	19.7	72.6	NA	No ¹³				
Cadmium	1/20	1.2 to 5	2.3 to 2.3	2.3	4.4	0.66	No ¹³				
Calcium	19/20	5,000 to 5,000	358 to 15,000	2,529	3,316	NA	No ¹⁴				
Chromium	6/20	2 to 10	1.95 to 2.8	2.4	30	11 ¹⁷	No ^{12,13}				
Cobalt	1/20	2.3 to 50	1.78 to 1.78	1.8	ND	NA	Yes	45.6	22.7	1.8	1.8
Copper	6/20	1.1 to 25	1.3 to 3.3	2.2	10.8	6.54	No ^{12,13}				
Cyanide	7/19 ¹⁵	1.5 to 7.6	1.9 to 5	3	7	5.2	No ^{12,13}				
Iron	18/20	100 to 100	56.7 to 40,200	3,020	964	1,000	Yes	7,864	2,723	7,864	2,723
Lead	10/20	0.5 to 3	0.5 to 4.05	1.3	ND	1.32	Yes	1.9	1.4	1.9	1.4
Magnesium	20/20	5,000 to 5,000	273 to 2,140	735	2,426	NA	No ^{13,14}				
Manganese	18/20	15 to 15	1.8 to 553	65	42.8	NA	Yes	194	59.2	194	59.2
Mercury	1/20	0.1 to 0.2	0.06 to 0.06	0.06	ND	0.012	Yes	0.1	0.1	0.06	0.06
Nickel	1/20	7.3 to 40	7.4 to 7.4	7.4	42.8	87.71	No ^{12,13}				
Potassium	17/20	5,000 to 5,000	338 to 2,190	882	1,528	NA	No ¹³				
Silver	1/20	2.5 to 10	2.9 to 2.9	2.9	ND	0.012	Yes	5.5	4.7	2.9	2.9
Sodium	20/20	5,000 to 5,000	1,070 to 18,300	3,570	4,772	NA	No ¹⁴				
Thallium	2/20	0.6 to 10	0.98 to 2.95	2	ND	4.0	No ¹²				
Vanadium	7/20	1.2 to 50	0.9 to 5.2	2.2	3.8	NA	Yes	66.7	15.8	5.2	5.2
Zinc	12/20	20 to 20	1.6 to 306	107	200	58.91	Yes	270	68.1	270	68.1

See notes at end of table.

Table 7-3 (Continued)
Selection of Ecological Chemicals of Potential Concern
for Groundwater Associated with Site 15

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¹ Frequency of detection is the number of samples in which the analyte was detected divided by the total number of samples analyzed (excluding rejected values).

² For duplicate samples having one nondetect value, one-half of the detection limit is used as a surrogate for the nondetect value.

³ The average of detected concentrations is the arithmetic mean of all samples in which the analyte was detected. It does not include those samples with "R", "U", or "UJ" validation qualifiers.

⁴ The background screening value is twice the average of detected concentrations for inorganic analytes in background samples. Background screening values for organic analyte values are one times the average of detected concentrations. Organic values are included for comparison purposes only (i.e., not used to select Ecological Chemicals of Potential Concern).

⁵ The ecological screening values are the Region IV Waste Management Division Freshwater Surface Water Chronic Screening Values for Hazardous Waste Sites as reported in the *Supplemental Guidance to RAGS: Region IV Bulletins* (USEPA, 1995b).

⁶ These chemicals are retained for further evaluation in the ecological risk assessment.

⁷ The 95 percent UCL is calculated on the log-transformed average of all samples using the formula provided in the USEPA *Supplemental Guidance to RAGS: Calculating the Concentration Term*. The 95 percent UCL is not calculated when there are less than 10 total samples. (USEPA, 1992c).

⁸ The average of all samples assigns a value of one-half of the detection limit as a surrogate concentration for nondetect values.

⁹ The RME exposure point concentration (EPC) is equal to the lesser of the maximum detected concentration or the 95 percent UCL.

¹⁰ The central tendency (CT) EPC is equal to the lesser of the average of all samples or the RME concentration.

¹¹ The analyte was detected in less than 5 percent of the samples and was not detected in surface soil.

¹² The maximum detected concentration is less than the ecological screening value.

¹³ The maximum detected concentration is less than the background screening concentration.

¹⁴ The analyte is an essential nutrient and not considered toxic.

¹⁵ Semivolatile organic compounds, pesticides and PCBs, and cyanide were analyzed in sample 15G00602 or its duplicate 15G00602D.

¹⁶ This value is based on trivalent arsenic form.

¹⁷ This value is based on hexavalent chromium form.

Notes: The average of a sample and its duplicate is used for all table calculations.

Samples: 15G00101, 15G00201, 15G00202, 15G00203, 15G00301, 15G00302, 15G00303, 15G00401, 15G00501, 15G00502, 15G00503, 15G00601, 15G00602, 15G00603, 15G00701, 15G00702, 15G00703, 15G00801, 15G00802, and 15G00803.

Duplicate samples: 15G00602D.

Background samples: BKG00101 through BKG00103, BKG00201 through BKG00203, and BKG00301.

Background duplicate samples: BKG00101D.

% = percent.

UCL = upper confidence level.

RME = reasonable maximum exposure.

CT = central tendency.

µg/l = micrograms per liter.

ND = not detected in any background sample.

NA = not available.

PCB = polychlorinated biphenyl.

DDT = dichlorodiphenyltrichloroethane.

limit is used to calculate the 95 percent UCL. If potential risks are predicted based on the RME scenario, then the central tendency exposure scenario is also evaluated. The central tendency exposure concentration is represented by the arithmetic mean of all samples. One-half of the detection limit is also used as a surrogate value for sample results that are below the detection limit.

Table 7-2 presents the RME and central tendency EPCs for selected surface soil ECPCs. RME EPCs are also derived for groundwater ECPCs based on the lesser of the 95 percent UCL and the maximum detected concentration. Table 7-3 presents the RME and central tendency EPCs for selected groundwater ECPCs. Because the point of groundwater discharge to surface water is located approximately 1,200 feet downgradient of Site 15, a 10-fold attenuation factor is applied to the RME concentration in order to derive an realistic exposure concentration for groundwater constituents in the surface water of Clear Creek. The 10-fold attenuation factor is a conservative estimate of the attenuation that occurs between constituents in groundwater and surface water exposure. The attenuation factor is assumed to more accurately represent potential exposure concentrations in the ambient waters of Clear Creek.

7.4.2 Terrestrial Wildlife Exposure routes for wildlife receptors include direct and indirect ingestion of soil and ingestion of food containing site-related chemicals. The actual amount of an ECPC taken in by wildlife species (i.e., ingestion dose in milligrams per kilogram per day [mg/kg-day]) depends on a number of factors. A potential dietary exposure (PDE) model is used to estimate exposure to representative wildlife species. The PDE (or body dose) is calculated for each ECPC in surface soil using the equations presented in Table 7-4 and the methodologies described in the GIR (ABB-ES, 1998).

Wildlife species from different trophic guilds that may be present at the site were selected for the PDE model. The model uses species-specific feeding and habitat characteristics to estimate chemical exposures to wildlife species respective to their position in the food chain. Terrestrial receptors were chosen to represent the trophic levels typically found in the planted pine forest habitat present at Site 15. The representative wildlife species considered in the ERA are summarized in Table 7-5 and discussed below.

- **Cotton mouse** (*Peromyscus gossypinus*). The cotton mouse represents a small mammalian herbivore that could potentially be exposed to contamination in soil and in plant tissue (accumulated from the soil). The cotton mouse home range is estimated at 0.147 acre and could reside entirely on the site. The cotton mouse represents the small mammal herbivore community at Site 15.
- **Short-tailed shrew** (*Blarina brevicauda*). The short-tailed shrew finds suitable habitat in forests, fields, marshes, and brush, and has a home range of approximately 1 acre. It primarily feeds on earthworms, snails, centipedes, insects, small vertebrates, and slugs (DeGraaf and Rudis, 1986). Insectivorous species may receive relatively high chemical doses of bioaccumulating compounds as a result of their voracious appetites. The shrew represents small omnivorous mammals that may be found in the pine forest of Site 15.

Table 7-4
Estimation of Potential Chemical
Exposures for Representative Wildlife Species

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Estimation of Chemical Exposures Related to Surface Soil

Scope: Estimates the amount (dose) of a chemical ingested and accumulated by a species via incidental ingestion of surface soil and food items containing site-related chemicals.

Soil Chemical Concentration: The maximum detected concentration of the ecological chemicals of potential concern when the sample size is ≤ 9 , and the lesser of the maximum detected concentration or the 95th percent upper confidence limit (UCL) of the mean when the sample size is ≥ 10 .

Soil Exposure Concentration:

$$\text{Soil Exposure (mg/kg)} = \left(\begin{array}{l} \% \text{ of Diet} \\ \text{as Soil} \end{array} \times \begin{array}{l} \text{Soil} \\ \text{Concentration} \\ \text{(mg/kg)} \end{array} \right)$$

Primary Prey Item Concentration (T_{N1}):

$$\text{Primary Prey Item Concentration (mg/kg)} = \left(\text{BAF}_{\text{inv or plant}} \times \begin{array}{l} \text{Soil} \\ \text{Concentration} \\ \text{(mg/kg)} \end{array} \right)$$

Secondary Prey Item Concentration (T_{N2}):

$$\text{Secondary Prey Item Concentration (mg/kg)} = \left(\text{BAF}_{\text{mam or bird}} \times \begin{array}{l} \text{Tissue} \\ \text{Concentration of} \\ \text{Primary} \\ \text{Prey Items}^* \\ \text{(mg/kg)} \end{array} \right)$$

where: BAF = Bioaccumulation factor or mg/kg fresh weight tissue over mg/kg dry weight soil for invertebrates and plants, and mg/kg fresh weight tissue over mg/kg fresh weight food for small mammals and small birds.

* For a discussion of the weighted chemical concentration in prey items, see explanation of the PDE term below, and the General Information Report (ABB-ES, 1998)

Total Exposure Related to Surface Soil:

$$\text{PDE (mg/kgBW-day)} = \frac{[P_1 \times T_1 + \dots + P_N \times T_N + \text{soil exposure}] \times \text{IR}_{\text{Diet}} \times \text{SFF} \times \text{ED}}{\text{BW}}$$

where: PDE = potential dietary exposure (mg/kgBW-day),
 P_N = percent of diet composed of food item N,
 T_N = tissue concentration in food item N (mg/kg),
 IR_{Diet} = food ingestion rate of receptor (kg of food or dietary item per day),
 BW = body weight (kg) of receptor,
 SFF = site foraging frequency (site area [acres] divided by home range [acres]), assumed to be equal to 1 for lethal exposure scenario, and
 ED = exposure duration (fraction of year species is expected to occur on site).

Notes: \leq = less than or equal to. \geq = greater than or equal to.
 mg/kg = milligrams per kilogram. % = percent.
 inv = invertebrate species.
 mam = mammal species.
 mg/kg BW-day = milligrams per kilograms of body weight per day.
 kg = kilograms.

- **Eastern meadowlark** (*Sturnella magna*). The eastern meadowlark is most commonly found in open pastures, prairies, farms, and meadows, and has a home range of approximately 5 acres. The meadowlark feeds primarily on invertebrates, although its diet is supplemented with plants. The meadowlark represents insectivorous avian receptors found in the open disturbed area of Site 15.
- **Red Fox** (*Vulpes vulpes*). This omnivorous mammal prefers open woodlands and grassy fields and is most active at night and twilight. It is an opportunistic forager, feeding on small mammals, birds, amphibians, reptiles, invertebrates, berries, and other fruits (Burt and Grossen-heider, 1976). The red fox has an estimated home range of approximately 250 acres and represents the large predatory mammal guild at Site 15.
- **Red-tailed Hawk** (*Buteo jamaicensis*). The red-tailed hawk forages in open country, frequently on woodland edges, feeding primarily on small mammals and has a home range of approximately 800 acres. It will also consume invertebrates, reptiles, and small birds in the diet. Red-tailed hawks are year-round residents in the Southeast and are frequently seen perched adjacent to open fields (DeGraaf and Rudis, 1986). The hawk may reside in forested areas and feed on species that have been exposed to surface soil ECPCs at Site 15.

**Table 7-5
Ecological Receptors Evaluated
for Surface Soil**

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Receptor Evaluated		Method of Evaluation
Common Name	Scientific Name	
Terrestrial Plants	NA	Benchmark comparison
Terrestrial Invertebrate	NA	Benchmark comparison
Cotton mouse	<i>Peromyscus gossypinus</i>	Food-web model
Short-tailed shrew	<i>Blarina brevicauda</i>	Food-web model
Eastern meadowlark	<i>Sturnella magna</i>	Food-web model
Red fox	<i>Vulpes vulpes</i>	Food-web model
Red-tailed hawk	<i>Buteo jamaicensis</i>	Food-web model

Note: NA = not applicable.

Parameters for quantitatively evaluating exposures to wildlife include body weight, food ingestion rate, home range, and relative consumption of food items. Exposure assumptions for each of the representative wildlife species for Site 15 are provided in Table 7-6 and Table H-6 of Appendix H. In addition to these parameters, the species foraging habits and bioaccumulation in food items are also considered.

The site foraging frequency (SFF) is an adjustment term that accounts for the frequency a receptor feeds within the site area. The SFF is based on both the

acreage of the site relative to the receptor's home range and the fraction of the year the receptor would be exposed to site-related chemicals (i.e., the exposure duration). By definition the SFF cannot exceed 1. The area of Site 15 (approximately 21 acres) is larger than the home range for the cotton mouse, short-tailed shrew, and Eastern meadowlark and smaller than the home range for the red fox and the red-tailed hawk. Because all representative wildlife species are expected to actively forage at the site year round, it is assumed that the exposure durations for these organisms are 1.

Wildlife species may be exposed to ECPCs in surface soil via incidental ingestion of soil or by ingesting prey items that have bioaccumulated these ECPCs. To estimate this exposure, a PDE is estimated for all representative wildlife species for each ECPC according to the equations in Table 7-4 and the methodologies described in Subsection 2.4.3 of the GIR (ABB-ES, 1998).

BAFs are used in the wildlife exposure model to estimate the transfer of chemicals between soil and plants or soil invertebrates, and between these organisms and primary consumer species. To estimate the PDE, tissue concentrations of ECPCs in prey items are estimated using BAFs for surface soil. BAFs for most receptors are extrapolated from literature values or estimated using regression equations from scientific literature. Based on the evidence provided in several reference materials (Suter, 1993; Maughan, 1993), an assumption is made that VOCs do not bioaccumulate in prey tissue. The general approach used to select BAFs for Site 15 is summarized in Table 7-7.

BAFs for invertebrate and plant food items are defined as the ratio of the ECPC concentration in plant or invertebrate tissue (mg chemical/kg tissue wet-weight) to the ECPC concentration in surface soil (mg chemical/kg dry-weight soil). BAFs reported in the scientific literature for avian and mammalian receptors are the reported ratios of ECPC concentrations in the tissues of these receptors (mg chemical/kg tissue wet-weight) to the concentrations of ECPCs in their food items (mg chemical/kg tissue wet-weight). BAFs for each of the ECPCs evaluated at Site 15 are included in Table H-1 of Appendix H.

7.4.3 Terrestrial Plants and Invertebrates Terrestrial plants and invertebrates may be exposed to ECPCs via direct contact with and root uptake (plants) or ingestion (invertebrates) of ECPCs measured in Site 15 surface soil. For the purposes of the Site 15 ERA, exposures to terrestrial plants and invertebrates are assumed to occur within the top one foot interval of surface soil. Exposure of terrestrial plants to groundwater is not evaluated because the depth to the water table is approximately 35 to 40 feet bls (see hydrogeological discussion in Chapter 5.0 of this report).

7.4.4 Aquatic Receptors Exposure concentrations for aquatic receptors in Clear Creek are equal to the RME concentrations of ECPCs detected in groundwater divided by an attenuation factor of 10. As previously discussed, the 10-fold attenuation factor is applied to RME concentrations of groundwater ECPCs to account for the 1,200-foot travel distance that groundwater must migrate before it discharges to the surface water of Clear Creek. It is assumed that attenuation of constituents in groundwater will occur from Site 15 prior to discharge to Clear Creek.

**Table 7-7
Estimation of Bioaccumulation Factors**

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Receptor Group	Nature of Approach	General Approach
Terrestrial Plants		
Unit: mg/kg wet tissue per mg/kg dry soil	Literature Values	When available, literature values were used to estimate plant BAFs.
	Extrapolation and Empirical Data	When literature values were not available, plant BAFs for inorganic compounds were obtained from Baes et al. (1984). ¹
	Assumption	Although evidence suggests that plants may transport organic analytes with log K_{ow} s < 5 (i.e., volatile organic compounds [VOCs]) from the roots into leafy portions (Briggs et al., 1982; Briggs et al., 1983), bioaccumulation data for VOCs is generally lacking in the scientific literature. In addition, evidence in the literature (Suter, 1993; Maughan, 1993) suggests that analytes with log K_{ow} s < 3.5 are not bioaccumulated into animal tissue. Therefore, it is assumed that transfer of VOCs from plant tissue to animal tissue does not occur.
Terrestrial Invertebrates		
Unit : mg/kg wet tissue per mg/kg dry soil	Literature Values	When no specific values were available, literature values were used to estimate BAFs for invertebrates.
	Assumption	Bioaccumulation data for VOCs is generally lacking in the scientific literature. In addition, evidence in the literature (Suter, 1993; Maughan, 1993) suggests that analytes with log K_{ow} s < 3.5 are not bioaccumulated into animal tissue. Therefore, it is assumed that soil invertebrates do not bioaccumulate VOCs.
Small Mammals		
Unit : mg/kg wet tissue per mg/kg wet food	Literature Values	When available, literature values were used to estimate BAFs for small mammals.
	Extrapolation and Empirical Data	When literature values were not available, BAFs for small mammals for inorganics were derived from ingestion-to-beef biotransfer factors (BTFs) presented in Baes et al. (1984) ² .
	Assumption	Bioaccumulation data for VOCs are generally lacking in the scientific literature. In addition, evidence in the literature (Suter, 1993; Maughan, 1993) suggests that analytes with log K_{ow} s < 3.5 are not bioaccumulated into animal tissue. Therefore, it is assumed that small mammals do not bioaccumulate VOCs.
See notes at end of table.		

Table 7-7 (Continued)
Estimation of Bioaccumulation Factors

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Receptor Group	Nature of Approach	General Approach
Small Birds Unit: mg/kg wet tissue per mg/kg wet food	Literature Values No Information	When available, literature values were used to estimate BAFs for small birds. BAFs were not obtained for semivolatile organic compounds or for inorganic compounds because there is little bioaccumulation data available for birds. It is assumed that small birds do not accumulate VOCs.
<p>¹ BAFs derived from Baes et al. (1984). Values are based on analysis of literature references, correlations with other chemical and physical parameters, or comparisons of observed and predicted elemental concentrations in vegetative and reproductive plant material and soil. Data are based on dry weight and were converted to a fresh weight basis assuming that plants are 80 percent water. This is generally consistent with the water content of berries (82 to 87 percent water) and leafy vegetables (87 to 95 percent water), presented in Suter (1993). Grains contain a much lower percentage of water (approximately 10 percent); therefore, this assumption likely underestimates exposure to graminivores.</p> <p>² BTFs were converted to a BAF (mg/kg tissue divided by mg/kg food) by multiplying by a food ingestion rate of 50 kg (wet weight) per day (average intake for lactating and nonlactating cattle reported in Travis and Arms, 1988).</p> <p>Notes: mg/kg = milligrams per kilogram. Log K_{ow} = logarithmic expression of the octanol-water partition coefficient. BAFs = bioaccumulation factors. < = less than. kg = kilograms.</p>		

7.5 ECOLOGICAL EFFECTS ASSESSMENT. The ecological effects assessment discusses what measurement endpoints were used to evaluate potential adverse impacts to the assessment endpoints (i.e., the maintenance of receptor populations). The methods used for identifying and characterizing ecological effects for ECPCs in surface soil and groundwater are described in the following subsections and in greater detail in Subsection 2.4.4 of the GIR (ABB-ES, 1998).

Wildlife receptors, terrestrial plants, and terrestrial invertebrates are potentially exposed to ECPCs in surface soil at Site 15, and aquatic receptors are potentially exposed to ECPCs in groundwater that discharge to the surface water of Clear Creek. The measures of adverse ecological effects for these receptors are discussed separately.

7.5.1 Terrestrial Wildlife As identified in the problem formulation, the assessment endpoint selected for terrestrial wildlife is the survival and maintenance of wildlife populations and communities present within the planted pine forest area of Site 15. Because no long-term wildlife population data are available at NAS Whiting Field, a direct measurement of this assessment endpoint is not possible. The literature-derived results of laboratory toxicity studies that relate the dose of a chemical in an oral exposure with an adverse response to growth, reproduction, or survival of a test population (avian or mammalian species) are used as a measure of the assessment endpoint. Wildlife ingestion toxicity data are presented in Appendix H, Table H-2.

Reference toxicity values (RTVs) are derived for each ECPC and representative wildlife species according to the data hierarchy presented in *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments* (USEPA, 1997a). The RTV represents the highest exposure level (e.g., concentration in the diet) not shown to produce adverse effects (e.g., reduced growth, impaired reproduction, increased mortality). For each ECPC, two RTVs representing lethal and sublethal effects are selected for each representative wildlife species. Lethal effects are those that result in mortality while sublethal effects include those that impair or prevent reproduction or growth. The RTVs are assumed to be a measure of the assessment endpoints for the protection of the survival, growth, and reproduction of terrestrial wildlife populations. Lethal RTVs are developed using the following data hierarchy discussed in bullet items 1, 2, and 3, while sublethal RTVs are derived using the methodology discussed in bullet items 1 and 2:

1. For contaminants with well-documented adverse effects, the highest reported exposure level not resulting in significant adverse effects (i.e., a no observable adverse effect level (NOAEL)) was selected as the RTV.
2. Generally, one-tenth of the lowest observed adverse effect level (LOAEL) was selected as the RTV for analytes lacking NOAEL values. However, application of the 10-fold uncertainty factor was based on consideration of the exposure duration, type of toxicity test, and the relationship between the selected measurement and assessment endpoints.
3. The lowest reported oral dose (in mg/kg body weight-day) lethal dose to 50 percent of a test population (LD_{50}) was used to derive the lethal RTV if NOAEL or LOAEL values (based on lethal effects) were not available. The lethal RTV is one-fifth of the lowest reported LD_{50} value for the

species most closely related to the representative wildlife receptor. One-fifth of an oral LD₅₀ value is considered to be protective against lethal effects for 99.9 percent of individuals in a test population (USEPA, 1986b). An assumption is made that the value represented by one-fifth of an oral LD₅₀ would be protective of 99.9 percent of the individuals within the terrestrial wildlife populations and represents a level of acceptable risk.

A summary of lethal and sublethal RTVs selected from the ingestion toxicity data is provided in Table H-3 of Appendix H.

If neither lethal nor sublethal toxicity information were available for a taxonomic group, no RTVs were identified and risks associated with the respective ECPC were not quantitatively evaluated. However, the absence of specific data for a taxonomic group does not imply that there is no toxicological effect associated with contaminant exposure by these receptors; therefore, potential risks to these taxonomic groups are qualitatively discussed in the Uncertainties Section (Section 7.7).

7.5.2 Terrestrial Plants and Invertebrates The assessment endpoints selected for terrestrial plants and soil invertebrates are reduction in the biomass of terrestrial plants and abundance of soil invertebrates used as forage material. Site-specific toxicity data for plants and invertebrates are not available for Site 15; therefore the results of toxicity studies from the literature that relate the soil concentrations of a contaminant with adverse effects to growth, reproduction, or survival of a test population are used as a measure of the assessment endpoint. These study results are summarized for each ECPC in Appendix H, Tables H-4 (plants) and H-5 (invertebrates).

7.5.3 Aquatic Receptors Potential adverse effects associated with Site 15 groundwater ECPCs are available in the form of laboratory aquatic toxicity testing results for individual ECPCs. Aquatic toxicity information for the ECPCs was obtained from searches of the USEPA Aquatic Information Retrieval (AQUIRE) database (USEPA, 1994d). Information on the AQUIRE database is included in Appendix I. The State of Florida Surface Water Quality Standards (Florida Legislature, 1996) and USEPA ambient water quality criteria (AWQC) (USEPA, 1991c) were also used to assess the potential for adverse effects to aquatic receptors.

7.6 RISK CHARACTERIZATION. This section presents the risk characterization for ecological receptors exposed to affected surface soil and groundwater at Site 15. Potential risks associated with exposures to ECPCs in surface soil at Site 15 are discussed separately for wildlife, terrestrial plants, and soil invertebrates. Risks are also characterized for aquatic receptors for exposures resulting from ECPCs in groundwater.

Risks to wildlife are characterized by comparing the PDE concentrations (based on RME and central tendency exposure concentrations) for each surface soil ECPC with its respective RTV (estimated threshold dose for toxicity). Risks for terrestrial plants and soil invertebrates are evaluated by comparing toxicity benchmarks to RME and central tendency exposure concentrations. Risks for aquatic receptors in Clear Creek are evaluated by comparing aquatic toxicity benchmarks to groundwater RME concentrations following application of a 10-fold dilution/attenuation factor.

7.6.1 Terrestrial Wildlife Risks for the representative wildlife species associated with ingestion and bioaccumulation of ECPCs in surface soil and prey items were quantitatively evaluated using HQs. HQs are calculated for each ECPC by dividing the PDE concentration by the selected lethal and sublethal RTV. HIs were determined for each receptor by summing the HQs for all ECPCs. When the estimated PDE is less than the RTV (i.e., the HQ less than 1), it is assumed that chemical exposures are not associated with adverse effects to receptors and risks to wildlife populations are unlikely to be significant. For instance, if the PDE calculated using the RME concentration is less than the lethal RTV, then it is assumed that adverse effects to the survival of wildlife populations are unlikely to occur. Similarly, if the reasonable maximum PDE is less than the sublethal RTV, then it is assumed that adverse effects to wildlife populations related to growth and reproduction are unlikely to occur. When an HI is greater than 1, a discussion of the ecological significance of the HQs comprising the HI is completed and risks from exposure to central tendency concentrations of ECPCs are evaluated.

This HRS evaluates potential ecological effects to individual organisms and does not evaluate potential populationwide effects. Contaminants may cause population reductions by affecting birth and mortality rates, immigration, and emigration (USEPA, 1989d). In many circumstances, lethal or sublethal effects may occur to individual organisms with little population- or community-level impacts; however, as the number of individual organisms experiencing toxic effects increases, the probability that population effects will occur also increases. The number of affected individuals in a population presumably increases with increasing HQ or HI values; therefore, the likelihood of population-level effects occurring is generally expected to increase with higher HQ or HI values.

The HQs and HIs based on lethal and sublethal RTVs were calculated for each ECPC and each representative wildlife species. Tables H-6 through H-9 of Appendix H present the HQ and HI calculations. A summary of risks to representative wildlife receptors is provided in Table 7-8.

**Table 7-8
Summary of HIs for Terrestrial Wildlife¹**

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Ecological Receptors	Lethal Effects from Exposure to Reasonable Maximum EPCs	Sublethal Effects from Exposure to Reasonable Maximum EPCs
Cotton mouse	0.033	0.082
Short-tailed shrew	0.077	0.17
Eastern meadowlark	0.093	0.28
Red fox	0.17	0.51
Red-tailed hawk	0.094	0.45

¹ The information is a summary of the HIs presented in Tables H-6 through H-9 of Appendix H.

Notes: HI = Hazard Index.
EPC = exposure point concentration.

Summary HIs for representative wildlife species exposed to RME concentrations of ECPCs for lethal and sublethal effects were less than 1; therefore risks are not predicted for these receptors (i.e., bioaccumulating chemicals are not sufficiently high to reduce survivability, growth, and reproduction in terrestrial wildlife populations at Site 15).

7.6.2 Terrestrial Plants Risks for terrestrial plants are evaluated by comparing the selected phytotoxicity RTVs to the RME and central tendency exposure concentrations. The results of this comparison are summarized in Table 7-9. Phytotoxicity RTVs are not available for acetone and cyanide.

With the exception of vanadium, RME and central tendency exposure concentrations of all other surface soil ECPCs are well below their respective phytotoxicity benchmarks. Although the RME (13.3 mg/kg) and central tendency (11 mg/kg) exposure concentrations of vanadium exceed the benchmark value of 2 mg/kg, these exposure concentrations are less than the background screening value for vanadium of 21.2 mg/kg. It appears that detected concentrations of vanadium in Site 15 surface soil are not likely to be site related. In addition, no areas of stressed vegetation were observed at Site 15 during the site characterization. Therefore, it is unlikely that the assessment endpoint including plant biomass and/or plant cover would be reduced such that small mammal and bird populations would be affected at Site 15.

7.6.3 Terrestrial Invertebrates Risks for terrestrial invertebrates are evaluated by comparing invertebrate toxicity benchmark values to RME and central tendency exposure concentrations. The results of this evaluation for Site 15 surface soil are also presented in Table 7-9. Invertebrate toxicity benchmark values are not available for acetone, silver, and vanadium.

RME exposure concentrations of ECPCs are well below the available invertebrate toxicity benchmark values; therefore it is unlikely that the assessment endpoint including invertebrate biomass and/or abundance would be reduced such that small mammal and bird populations would be affected at Site 15.

7.6.4 Aquatic Receptors The risks associated with ECPCs in groundwater discharged to Clear Creek were evaluated based on comparison of the predicted EPC in surface water to reported laboratory toxicity test data (AQUIRE information, [USEPA 1994d], Federal AWQC [USEPA, 1991c], and State of Florida Surface Water Quality Standards for Class III waters [Florida Legislature, 1996]). As previously discussed, EPCs for groundwater ECPCs were derived by dividing the RME concentration by a 10-fold attenuation factor. Comparison of groundwater EPCs to benchmark values are presented in Table 7-10.

Of the organic ECPCs in unfiltered groundwater, only the predicted surface water concentrations of 4,4'-DDT exceed available screening values. The EPC of 4,4'-DDT (0.006 $\mu\text{g}/\ell$) is six times greater than the Florida standard and AWQC value of 0.001 $\mu\text{g}/\ell$ and less than the lowest reported adverse effect concentration in AQUIRE of 0.04 $\mu\text{g}/\ell$. Although the predicted surface water concentration of 4,4'-DDT exceeds the lowest toxicity benchmark, this pesticide was detected in only two of 19 monitoring wells at Site 15. In addition, this organochlorine pesticide has relatively low water solubility and a high octanol-water partition coefficient; therefore, it is expected that this constituent would not be particularly mobile in groundwater. Due to the low frequency of detection and hydrophobic nature of this pesticide, it is unlikely that groundwater discharge

Table 7-9
Summary of Ecological Risk for Plants and Invertebrates in Surface Soil at Site 15

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Analyte	Exposure Point Concentrations ¹		RTV		RTV Exceeded? ³ (by RME/by CT)	
	RME	CT	Plant ²	Invertebrate ²	Plant	Invertebrate
<u>Volatile Organic Compounds (mg/kg)</u>						
Acetone	0.0062	0.006	NA	NA	NA	NA
Methylene chloride	0.0056	0.0051	1,000	150	No/No	No/No
Xylenes (total)	0.004	0.004	1,000	21	No/No	No/No
<u>Semivolatile Organic Compounds (mg/kg)</u>						
Di- <i>n</i> -butylphthalate	0.369	0.307	200	478	No/No	No/No
bis(2-Ethylhexyl)phthalate	0.54	0.36	1,000	478	No/No	No/No
<u>Inorganic Analytes (mg/kg)</u>						
Cyanide	0.25	0.22	NA	NA	NA	NA
Lead	7.3	6.6	50	1,190	No/No	No/No
Silver	1.2	0.86	2	NA	No/No	NA
Vanadium	13.3	11	2	NA	Yes/Yes	NA

¹ Exposure point concentrations (EPCs) are presented in Table 7-2. The RME EPCs are equal to the lesser of the maximum detected concentration and the 95 percent upper confidence limit. CT EPCs are equal to the arithmetic mean of all concentrations. When the average is greater than the RME EPC, the maximum EPC is used.

² Plant and invertebrate RTVs are presented in Appendix H, Tables H-4 and H-5, respectively. Generally, the plant RTVs are the lowest observed effect concentration from among growth studies on plants in solid media, and invertebrate RTVs are the lowest concentration lethal to 50 percent of a test population (14-day soil test on *Eisenia foetida*) from among chemicals in the same chemical class (applies to organic compounds). A conservative factor of 0.2 was applied to invertebrate RTVs; the resultant value should be protective of 99.9 percent of the population from acute effects (Neuhauser et al., 1986).

³ Comparison shown is RME EPC to RTV/CT EPC to RTV.

Notes: Shading indicates exceedances.

RME = reasonable maximum exposure.
CT = central tendency.
RTV = reference toxicity value.
mg/kg = milligram per kilogram.
NA = not available.

Table 7-10
Comparison of Site 15 Diluted Groundwater ECPC Exposure Concentrations to Toxicity Benchmark Values

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Naval Air Station Whiting Field
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Analyte	Exposure Point Concentration ($\mu\text{g}/\ell$) ¹	FDEP Class III Fresh Water Quality Standards ($\mu\text{g}/\ell$) ²	AWQC ($\mu\text{g}/\ell$) ³	AQUIRE Lowest Reported Adverse Effect Concentration/Test Species ⁴	Result
<u>Volatile Organic Compounds</u>					
Acetone	1.23	NA	NA	550,000/water flea mortality	
Benzene	1.4	71.28	5,300	3,660/leopard frog LC ₅₀	
Trichloroethene	2.61	⁵ 80.7	21,900	1,900/medaka LC ₅₀	
Xylenes (total)	0.1	NA	NA	350/scud LC ₅₀	
<u>Semivolatile Organic Compounds</u>					
1,4-Dichlorobenzene	0.68	50	NA	1.8/rainbow trout mortality	
bis(2-ethylhexyl)phthalate	0.5	3	160	0.89/moorfrog hatchability	
<u>Pesticides and PCBs</u>					
4,4'-DDT	0.006	0.001	0.001	0.04/water flea mortality	Exceed TBV
<u>Inorganic Analytes</u>					
Aluminum	31.7	NA	87	⁶ 50/narrow-mouthed frog LC ₅₀	
Cobalt	0.18	NA	NA	⁷ 11/pikeperch mortality	
Iron	786.4	1,000	1,000	460/brown trout hatchability	Exceeds TBV
Lead	0.19	⁸ 0.5	⁸ 0.5	52/rainbow trout mortality	
Manganese	19.4	NA	NA	280/phytoplankton species diversity	
Mercury	0.006	0.012	0.012	5.7/freshwater prawn LC ₅₀	
Silver	0.29	0.05	0.12	7.5/invertebrate LC ₅₀	
Vanadium	0.52	NA	NA	128/guppy LC ₅₀	
Zinc	27	⁸ 86	⁸ 86	17/invertebrate species diversity	Exceeds TBV
See notes at end of table.					

Table 7-10 (Continued)
Comparison of Site 15 Diluted Groundwater ECPC Exposure Concentrations to Toxicity Benchmark Values

Remedial Investigation and Feasibility Study
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Naval Air Station Whiting Field
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- ¹ The exposure point concentration is equal to the RME concentration from Table 7-3 divided by a dilution/attenuation factor of 10.
- ² Chapter 62-302, Surface Water Quality Standards (Florida Legislature, 1996).
- ³ Federal Ambient Water Quality Chronic Criteria (USEPA, 1991c).
- ⁴ From Appendix I, Table I-1. Only growth, mortality, and reproductive effects to plants, invertebrates, reptiles/amphibians, and fish were considered (USEPA, 1994d).
- ⁵ This standard is based on human health effects.
- ⁶ Value for aluminum as aluminum chloride.
- ⁷ Value for cobalt as cobalt chloride.
- ⁸ Criteria calculated based on an assumed site hardness concentration of 25 milligrams/liter as calcium carbonate.

Notes: ECPC = ecological chemical of potential concern. NA = not available.
 $\mu\text{g}/\text{l}$ = micrograms per liter. PCB = polychlorinated biphenyl.
 FDEP = Florida Department of Environmental Protection. DDT = dichlorodiphenyltrichloroethane.
 AWQC = Ambient Water Quality Criteria.  = concentration exceeds the most conservative benchmark.
 AQUIRE = Aquatic Information Retrieval. TBV = toxicity benchmark value.

of 4,4'-DDT to the surface water of Clear Creek would pose substantial ecological risks to aquatic receptors.

Of the nine inorganic ECPCs in Site 15 groundwater, predicted exposure concentrations of two analytes (iron and zinc) in unfiltered groundwater were in excess of aquatic toxicity benchmarks.

Although the predicted iron concentration (786 $\mu\text{g}/\ell$) exceeds the LOAEL from AQUIRE (460 $\mu\text{g}/\ell$), the predicted exposure concentration is well below the 1,000 $\mu\text{g}/\ell$ AWQC and Florida benchmark. The AQUIRE value, which is based on brown trout hatchability, may be overly conservative because no salmonids (e.g., trout) occur in Clear Creek downgradient of Site 15. Predicted exposure concentrations of iron are well below the next highest AQUIRE value of 3,700 $\mu\text{g}/\ell$, which is based on duckweed growth inhibition. Therefore, it is unlikely that the levels of iron in groundwater will have an adverse effect on aquatic receptors in Clear Creek.

Predicted groundwater exposure concentrations of zinc (27 $\mu\text{g}/\ell$) slightly exceed the AQUIRE value (17 $\mu\text{g}/\ell$), which is based on reduction of species diversity in invertebrates. However, the predicted zinc concentration is less than the 86 $\mu\text{g}/\ell$ AWQC and Florida benchmark. In addition, review of additional AQUIRE data for zinc (Table I-1 of Appendix I) indicates that the predicted 27 $\mu\text{g}/\ell$ exposure concentration would not result in adverse effects to the majority of aquatic receptors in Clear Creek. The AQUIRE data on zinc was reviewed for toxicity information on specific receptors that would most likely inhabit Clear Creek. The results of this review indicated that exposure to concentrations of zinc at 27 $\mu\text{g}/\ell$ would not pose a risk to these aquatic receptors. Therefore, it is also unlikely that the predicted levels of zinc in groundwater will have an adverse effect on aquatic receptors in Clear Creek.

In summary, it is unlikely that groundwater discharge to the surface water of Clear Creek downgradient of Site 15 will pose an unacceptable risk to aquatic receptors. Further information on potential risks to aquatic receptors in Clear Creek associated with exposures to surface and sediment will be provided in the ERA for Site 39.

7.7 UNCERTAINTY ANALYSIS. The objective of the uncertainty analysis is to discuss the assumptions of the ERA process that may influence the risk assessment results and conclusions. Table 2-5 of the GIR presents several general uncertainties inherent in the risk assessment process (ABB-ES, 1998).

Specific uncertainties associated with exposure to surface soil and groundwater at Site 15 include the following:

- Risks to avian species may have been underestimated because bioaccumulation and toxicity data for this taxonomic group are generally lacking in the literature. As a result, potential risks associated with several ECPCs were not evaluated for avian species. If the toxicological and contaminant transport data obtained from studies conducted on mammals were used to estimate risks to avian species, then risk estimates for birds would be higher. However, there is also uncertainty in assuming that the metabolic functions of mammals and birds are similar enough to use intertaxonomic surrogates.

- Risks to adult amphibians and reptiles species were not estimated for surface soil ECPCs because bioaccumulation and toxicity data for this taxonomic group are generally lacking in the literature. As a result, potential risks associated with ECPCs are uncertain for these species. Intertaxonomic surrogates were not used to calculate dietary risks to reptiles because of the uncertainty associated with extrapolation of data from endothermic to essentially ectothermic species.
- Site-specific toxicity data for Site 15 surface soil is not available. Phytotoxicity and invertebrate benchmark values used in the risk assessment were designed for risk screening purposes only and may not be relevant to the specific conditions of the surface soil at Site 15. The conservative nature of these screening tools may overestimate the actual risk to terrestrial plants and invertebrates at Site 15. However, invertebrate benchmark values for several analytes are not available, potentially resulting in an underestimation of risk for terrestrial invertebrates.
- The PDEs for the red fox and red-tailed hawk assume no exposure from small birds as prey items due to a lack of Avian BAFs. Birds make up a small portion of the red fox and red-tailed hawk diet, and for this evaluation it is assumed that small birds would not provide a source of contamination exposure. In addition, the risks predicted (i.e., the HQs and HIs) for the red fox and red-tailed hawk were so low that it is unlikely that including Avian BAFs (if they were available) would alter the findings of the ERA.
- Application of the 10-fold attenuation factor used to predict exposure concentrations of groundwater ECPCs in the surface water of Clear Creek may over- or underestimate risks to aquatic receptors, depending on the actual dilution.

7.8 SUMMARY OF ECOLOGICAL ASSESSMENT FOR SITE 15. Potential risks for ecological receptors were evaluated for ECPCs in surface soil and groundwater at Site 15.

Risks associated with exposures to ECPCs in Site 15 surface soil were evaluated for terrestrial wildlife based on a model that estimates the amount of contaminant exposure obtained via the diet and incidental ingestion of surface soil. Comparison of estimated doses for wildlife species to reference toxicity doses representing thresholds for lethal and sublethal effects is the basis of wildlife risk evaluation. Risks were not identified for terrestrial wildlife resulting from exposure to ECPCs in surface soil; therefore, reductions in the survivability, growth, and reproduction of wildlife receptor populations at Site 15 are not expected to occur.

Reduction in terrestrial plant and soil invertebrate biomass used as forage material was evaluated by comparing exposure concentrations for surface soil with toxicity benchmarks. Based on this comparison, it is unlikely that plant and invertebrate biomass or plant cover availability would be reduced such that small mammal and bird populations at Site 15 would be affected.

Potential risks for aquatic receptors were evaluated for exposures to ECPCs in groundwater. The concentrations of ECPCs in groundwater as they discharge to Clear Creek 1,200 feet downgradient of Site 15 were estimated based on application of a 10-fold attenuation factor to the RME concentration. Comparison of the predicted exposure concentrations of each ECPC with available criteria and toxicity benchmarks is the basis of the risk characterization. Based on the screening evaluation of groundwater, risks to aquatic receptors in Clear Creek associated with exposure to groundwater ECPCs from Site 15 are not expected. The ERA for Site 39 will provide additional information regarding potential risks for aquatic receptors in Clear Creek based on actual site-related surface water and sediment data.

In summary, the results of the ERA suggest that risks are not predicted for ecological receptor populations at Site 15.

8.0 CONTAMINANT FATE AND TRANSPORT

This chapter discusses the fate and transport of human health and ECPCs detected in soil and groundwater samples at Site 15. Fate, in the context of this chapter, refers to the ultimate disposition of a given CPC following its release into the environment. Transport refers to the mechanism(s) by which a given chemical released into the environment will arrive at its fate. Explanation of the fate and transport of chemicals in the environment can be very complicated or very simple, depending on the physical, chemical, and biological characteristics of the compound or metal considered and the environment into which that compound is released.

Several organic and inorganic analytes were detected in soil and groundwater sampled at Site 15. Because of the number of potential chemicals detected and the myriad fate and transport scenarios possible for those chemicals in the media, this discussion will focus only on those chemicals that may pose adverse risk to human or ecological receptors, as identified by the HHRA (Chapter 6.0) and the ERA (Chapter 7.0) in this report.

The following discussion of contaminant fate and transport is divided into two sections. Section 8.1 discusses potential migration routes of a chemical(s) in the media evaluated and does not focus specifically on media found to be of concern at Site 15. The site-specific persistence, fate, and transport of those compounds and elements found to pose a potential risk to human health or the environment are discussed in Section 8.2.

8.1 POTENTIAL ROUTES OF MIGRATION. Several routes of migration are possible for a contaminant in the various media: air, soil, surface water, groundwater, and biota. These routes are summarized below.

Air. Gases and particulate material can be transported in the atmosphere. Organic compounds, metals, and metal complexes that exist as gases at surface temperature and pressure may disperse or diffuse into the air and particulates may become entrained in air and thereby migrate. The extent to which gaseous constituents and particulate material remain airborne is a function of the level of excitation of the air (wind and temperature) and fate processes acting on the constituent and, for particulates, their density. Particulate material as discussed herein consists of organic compounds and inorganic material that would otherwise not be present in a gaseous medium under atmospheric conditions.

Soil. The primary agents of migration acting on soil include wind, rainwater, running water, biological activity, and human activity. Wind commonly transports soil in the form of particulate material. Rainwater may cause soil to migrate either by washing soil particles downward into the subsurface or by carrying soil particles over land to surface water bodies or other areas of deposition. The amount and type of vegetative cover and surface disturbance affects the degree to which wind and water cause soil to migrate.

Surface Water. The mechanisms for migration of constituents in surface water are dissolution and suspension. Several organic compounds and metals are soluble in water and can be transported in the aqueous phase. Other organic compounds and elements are not soluble in water, but may be transported by surface water via

suspension. The amount of suspended particulate material in surface water is largely a function of the water's energy; as that energy decreases, suspended material will settle and become part of the soil or sediment. Colloidal material may remain in suspension (by electrochemical forces) in water of very low energy (e.g., standing water).

Sediment. Saltation, traction, suspension, biological action, and human action are the primary mechanisms of migration for sediment. Physical, chemical, and biological processes affecting a constituent will determine where and how migration from sediment will occur.

Groundwater. Groundwater is a liquid medium capable of transporting constituents as colloidal forms, complexes, pure-phase liquids, or dissolved-phase liquids. Organic compounds and elements generally reach groundwater either by being placed directly into the water table (e.g., disposal pits) or by being leached from soil or solid waste to the water table by physical or chemical processes. Groundwater may discharge to the land surface, surface water bodies, other aquifers, or pumping wells. The migration of constituents from groundwater upon discharge depends on the chemical and/or physical processes acting upon that individual constituent in the medium to which it is discharged.

Biota. Biota may be considered a medium for migration of certain organic compounds and inorganics. Several compounds and elements are known to accumulate in the tissues of organisms at various levels in the food chain. As these organisms are consumed by other organisms, compounds and elements are accumulated in their tissue and passed on to organisms higher in the food chain. In this manner, contaminants may be transported by biota. Additionally, some organisms disturb bed sediments in streams and rivers. This disturbance can cause organic compounds and elements to be transported downstream as suspended material in surface water.

8.2 CONTAMINANT PERSISTENCE AND FATE. The discussion of contaminant persistence and fate in the environment is divided into three subsections. Subsection 8.2.1 discusses the processes that control the persistence and fate of organic compounds and inorganics in the environment. Subsection 8.2.2 discusses the primary persistence and fate characteristics of the constituents detected at Site 15. Subsection 8.2.3 discusses contaminant transport for Site 15.

8.2.1 Processes The persistence and fate of chemical constituents in the environment depends on various chemical, physical, and biological processes. The predominant processes affecting the environmental persistence and fate of chemical constituents include solubility, photolysis, volatilization, hydrolysis, oxidation, chemical speciation, complexation, precipitation or coprecipitation, cationic exchange, sorption, biodegradation or biotransformation, and bioaccumulation. These processes are briefly summarized below.

Solubility. The solubility of chemical constituents in water is important in assessing their mobility in the environment. This is particularly important for the transport and ultimate fate of chemicals from soil and sediment to water (i.e., groundwater and/or surface water). Generally, for organic compounds, aqueous solubility is a function of molecular size, molecular polarity, temperature, and the presence of other dissolved organic cosolvents. For metals and other inorganic parameters, solubility is generally controlled by chemical

speciation, pH, Eh (redox potential), oxygen content, and the presence of dissolved and/or colloidal organic compounds (e.g., humic and fulvic acids) or other inorganic ion species (e.g., hydroxides and sulfates) (USEPA, 1979). Increased solubility is usually directly related to increased environmental mobility with groundwater and/or surface water being the principal transport medium. Therefore, solubility is a significant factor affecting the fate of a compound or element in the water environment.

Photolysis. Many chemical constituents, particularly organic compounds, are susceptible to photolytic degradation either directly or indirectly. Direct photolysis involves a splitting of the chemical compound by light, whereas indirect photolysis occurs when another compound is transformed by light into a reactive species (i.e., usually a hydroxyl radical) that reacts with and modifies the original compound. In general, photolysis primarily occurs within the atmosphere, although it may also occur to a limited extent in surface water and/or soil under certain environmental conditions (USEPA, 1979).

Volatilization. Volatilization of organic chemicals from soil or water to the atmosphere is an important pathway for chemicals with high vapor pressures. For organic compounds, volatilization is a function of partial pressure gradients, temperature, and molecular size and is more likely to occur for compounds with low molecular weights. In addition, certain metals such as mercury, arsenic, and lead are capable of undergoing biologically mediated transformation (i.e., alkylation) that form volatile end products. Volatilization is important for the transport of certain chemical constituents from surface soil (i.e., vadose zone), sediment, and surface water and is evaluated using Henry's law and other associated chemical-specific rate constants.

Hydrolysis. Hydrolysis involves the decomposition of a chemical compound by its reaction with water. The rate of reaction may be promoted by acid (hydronium ion, $[H_3O^+]$) and/or base (hydroxyl ion, $[OH^-]$) compounds. In general, most organic compounds are resistant to hydrolytic reactions unless they contain a functional group (or groups) capable of reacting with water. Metallic compounds, however, generally dissociate readily in water depending upon the aqueous environmental conditions (e.g., pH and ionic strength). For metals, hydrolytic dissociation is an indirect process that affects the primary fate and transport mechanism of aqueous solubility.

Oxidation. The direct oxidation of organic compounds in natural environmental matrices may occur but this is generally a slow, insignificant transformation mechanism of minimal importance (USEPA, 1979). However, some inorganic compounds may be rapidly oxidized under naturally occurring environmental conditions when the surrounding environment changes from anaerobic to aerobic conditions.

Chemical Speciation. Chemical speciation is important primarily for metals that may exist in multiple forms in the environment, particularly within aqueous matrices. In general, the aqueous speciation of metals depends primarily upon the relative stabilities of individual valence states (which are element-specific), oxygen content, pH and Eh condition, and the presence of available complexing agents and/or other cations and anions (USEPA, 1979). Because various metallic species exhibit differential aqueous solubilities and differential mobilities within soil and/or sediment (USEPA, 1979), the particular speciation of an individual metal will greatly affect its environmental mobility.

Complexation. For metals, complexation with various ligands is an important process because these complexes may be highly soluble in water. Complexation may, therefore, greatly enhance mobility within environmental matrices, particularly in groundwater and surface water, depending upon the aqueous solubility of the resulting complex. Complexation depends upon numerous factors such as pH, Eh, type and concentration of complexing ligands, and other ions present (USEPA, 1979).

Most metals are capable of forming numerous organic and/or inorganic complexes in the natural environment (USEPA, 1979). Metals may form organo-metallic complexes, especially with naturally occurring organic acids (i.e., humic and fulvic acids). In some cases, these metallic species may exhibit varying affinities for different organic ligands (i.e., mercury and arsenic for amino acids and their derivatives) (USEPA, 1979). Metals may also form metallo-inorganic complexes with inorganic ligands such as carbonate, halogens (usually chlorine), hydroxyl, and sulfate (USEPA, 1979). However, organo-metallic complex formation is usually favored over metallo-inorganic complexes.

Precipitation and Coprecipitation. Both chemical precipitation and coprecipitation are important removal mechanisms, particularly for metals and metallo-cyanides in the environment. Precipitation and/or coprecipitation reactions depend on numerous aqueous environmental conditions such as pH, Eh, organic ligands present, oxygen content, and cationic and anionic species present (USEPA, 1979). Depending on the specific conditions, the removal of aqueous metallic species and metallo-cyanides from groundwater and/or surface water can greatly affect a metal's environmental mobility and, hence, its ultimate fate and transport.

Cation Exchange. Cation exchange is important primarily for metals and other ions that may substitute with other cations of similar charge and size within the lattice structure of clay minerals in soil and/or sediment (USEPA, 1979). This process, therefore, can significantly affect the mobility of an aqueous metal cation by removing it from solution under certain environmental conditions.

Sorption. The sorption of chemical constituents by inorganic particulate matter (i.e., soil or sediment) and organic compounds is an important process that affects mobility in the environment. This process is particularly important for the fate and transport of chemicals from soil or sediment to water (i.e., groundwater and surface water). In general, most metals exhibit a potential for adsorption to inorganic particulate matter and organic compounds (USEPA, 1979). Organic compounds also exhibit sorptive capability, but show greater variability in their ability to sorb to particulate or organic matter. The tendency for organic compounds to sorb to soil or sediment is reflected in their organic carbon partitioning coefficients (K_{oc}). K_{oc} is a measure of relative adsorption potential. The normal range of K_{oc} values is from 1 to 10^7 with higher values indicating greater sorption potential. Actual adsorption is chemical-specific and is largely dependent on the organic content of the soil. The fraction of organic carbon, f_{oc} , in soil times the K_{oc} is defined as the distribution coefficient, K_d . The K_d is a ratio of the concentration adsorbed to the concentration partitioned to water.

Regardless of chemical class, sorption is a reversible process whereby desorption can be favored over sorption under certain environmental conditions (e.g., low pH for metals). For organic compounds in general, as the molecular weight

increases and the aqueous solubility decreases (i.e., low polarity and high hydrophobicity), the sorptive binding affinity increases (i.e., K_{oc} increases). The tendency for chemical constituents to adsorb to inorganic particulate and/or organic compounds is a particularly important process because sorption to soil and/or sediment can effectively reduce a chemical constituent's mobility.

Biodegradation or Biotransformation. Biodegradation is a result of the enzyme-catalyzed transformation of chemicals. Organisms require energy, carbon, and essential nutrients from the environment for their growth and maintenance. In the process, chemicals from the environment will be transformed by enzymes into a form that can be used by the organism. The biodegradation rate is the rate by which contaminants will be degraded. The rate is a function of microbial biomass and a chemical's concentration under given environmental conditions. When a pollutant is introduced into the environment, there is often a lag time before biodegradation begins while the organism generates an enzyme capable of digesting the chemical. Co-metabolism occurs when a pollutant can be biotransformed only in the presence of another compound that serves as a carbon and energy source (USEPA, 1979).

Bioaccumulation. Bioconcentration and bioaccumulation data are important when evaluating the impact of chemicals in the aquatic environment. The process is characterized by hydrophobic chemicals that can be partitioned into fat and lipid tissues and inorganic chemicals that can be partitioned into bone marrow. The bioconcentration factor is a measure of the concentration of a chemical in tissue (on a dry-weight basis) divided by the concentration in water, and is a commonly used parameter to quantify bioconcentration (USEPA, 1979). The process is significant because bioaccumulation magnifies up through the food chain.

8.2.2 Persistence and Fate of Site 15 CPCs This section discusses the persistence and fate characteristics for CPCs detected at Site 15. To focus the discussion of persistence and fate characteristics, only those constituents that were (1) identified by the human health or ERAs (presented in Chapters 6.0 and 7.0, respectively) as CPCs and (2) those constituents that were present above relevant standards will be addressed. These constituents are summarized below by medium for Site 15.

Human Health Assessment Constituents

- Surface soil: Two inorganic analytes, arsenic and iron
- Subsurface Soil: No analytes selected
- Groundwater: Five VOCs, 1,1-dichloroethene, 1,2-dichloroethene, benzene, chlorobenzene, and trichloroethene; two SVOCs, 1,4-dichlorobenzene and bis(ethylhexyl)phthalate; one pesticide, 4,4'-DDT; five inorganic analytes, aluminum, arsenic, iron, manganese, and thallium

Ecological Assessment Constituents

- Surface soil: Three VOCs, acetone, methylene chloride, and xylenes; two SVOCs, di-n-butylphthalate, bis(2-ethylhexyl)phthalate; no pesticides or PCBs; five inorganics: cyanide, lead, silver, vanadium, and zinc

- Groundwater: four VOCs, acetone, benzene, trichloroethene, and xylenes; two SVOCs, 1,4-dichlorobenzene and bis(2-ethylhexyl)phthalate; one pesticide/PCB; 4,4'-DDT; nine inorganics, aluminum, cobalt, iron, lead, manganese, mercury, silver, vanadium, and zinc.

The fate and persistence characteristics of these constituents are summarized below by analytical fraction.

VOCs

Acetone. Acetone (C_3H_6O) is both a naturally occurring and man-made compound. It has been identified as a naturally occurring volatile metabolite of both plants and insects; forest fires have also been identified as a natural source of the compound. Acetone is commonly used as a solvent and is a by-product of several manufacturing processes (Howard, 1990).

The majority of acetone released to the environment is by emissions to the atmosphere; in the atmosphere it will break down by photolysis or be removed by rain. If released to the soil, it will both volatilize and leach into the ground. In soil and groundwater, acetone will readily biodegrade and is not likely to significantly adsorb to either soil or sediment (Howard, 1990).

Acetone is a commonly recognized field- or laboratory-derived contaminant according to the USEPA CLP Functional Guidelines for Organic Data Review (USEPA, 1994a). As such, the detected concentrations of acetone at Site 15 may not be related to past disposal activities at the site. Furthermore, given the fact that acetone readily volatilizes, it is unlikely that surface soil would retain detectable quantities of acetone for 19 years (waste disposal at Site 15 ended in approximately 1979).

Benzene. Benzene (C_6H_6) may enter the environment as result of the production, storage, transport, venting, and combustion of gasoline, as well as, the production, transport and storage of benzene as a pure product. Benzene is also natural by-product of forest fires (Howard, 1990).

Benzene is highly volatile, and is highly mobile in soil. If released to the soil, benzene will evaporate or leach from the soil to the groundwater. Biodegradation of benzene is likely in shallow aerobic waters, though not under anaerobic conditions. Abiotic degradation is largely limited to benzene present in the atmosphere. Hydrolysis is an insignificant mechanism for the breakdown of benzene (Howard, 1990).

1,1-Dichloroethene. 1,1-Dichloroethene, also known as vinylidene chloride, is used to make plastics, flexible films like SARAN[®] wrap and packing materials, and flame-retardant coatings for fibrous materials. It is a clear, colorless liquid at room temperatures that evaporates quickly, based on a vapor pressure of 592 millimeters mercury (mm Hg), from soil and surface water, has a mild sweet smell like chloroform, and burns quickly.

When released to soil, 1,1-dichloroethene will either evaporate or leach to the groundwater. Adsorption to soil and sediment particles is low and biodegradation in soil and groundwater is slow. The greatest removal mechanism of 1,1-dichloroethene from soil and surface water is through volatilization. 1,1-

Dichloroethene has high water solubility and will migrate through soil and groundwater without significant retardation by adsorption to organic carbon.

Biotransformation of 1,1-dichloroethene in soil has been shown to be significant under aerobic conditions where the compound was completely mineralized to inorganic end products (Agency for Toxic Substances and Disease Registry [ATSDR] 1993a).

1,2-Dichloroethene (DCE). 1,2-DCE ($C_2H_2Cl_2$) exists as two isomers, *cis* and *trans*. The *trans* isomer is twice as toxic as the *cis* isomer. Both may enter the environment in emissions and wastewater and as a solvent and extractant in the production of perfumes, lacquers, and thermoplastics. In addition, 1,2-DCE is a breakdown product in the reductive dehalogenation of trichloroethene (TCE) and tetrachloroethene (PCE) (Howard, 1990).

When released to soil, 1,2-DCE will either evaporate or leach to the groundwater. Adsorption to soil and sediment particles is low, and biodegradation in soil and groundwater is slow. The greatest removal mechanism of 1,2-DCE from soils and waters is through volatilization (Howard, 1990).

Methylene Chloride. Methylene chloride is a man-made chemical used as an industrial solvent and paint stripper. Most of the methylene chloride released to the environment results from its use as an end product by various industries.

Methylene chloride is not strongly sorbed to soil or sediment and is likely to be highly mobile in soil, thus, it can be expected to leach into groundwater. Methylene chloride has a vapor pressure of 349 mm Hg at 20°C, therefore tends to volatilize to the atmosphere from water and soil. Because of its high vapor pressure, volatilization to the atmosphere is the most likely fate process (ATSDR, 1993b).

Trichloroethene. Trichloroethene is used as an industrial solvent particularly in metal degreasing. It is also used in a wide variety of other applications such as dry cleaning, as a fumigant, as a diluent in paints and adhesives, and in textile processing (Howard, 1990).

Trichloroethene has a relatively high vapor pressure of 58.7 mm Hg at 25°C and would be expected to volatilize rapidly from surface soil. Trichloroethene has a relatively small sorption value of 125 K_{oc} , indicating that it would not sorb strongly to organic material in soil. Trichloroethene is soluble in water (1,100 mg/l at 25°C [USEPA 1986b]) and would be carried by infiltrating rainwater to groundwater where migration with groundwater will occur.

Xylenes. Xylenes are chemicals that are primarily man-made from petroleum or coal. Xylene is a colorless liquid with a sweet odor that evaporates and burns easily. Xylene does not mix well with water, but does mix well with alcohol and other chemicals. Xylene has three isomers: meta-xylene, ortho-xylene, and para-xylene, (respectively m-, o-, and p-xylene) that, when mixed together, are termed xylenes.

Xylene is used as a solvent in the printing, rubber, cleaning, and leather industries, and as a thinner for paints. Xylene is found in gasoline and airplane fuel and is used as a material/ingredient in the manufacture of some plastics.

When xylenes are spilled on land, they either volatilize or leach into the ground. Sorption is an important factor in soil with high organic matter or high carbon content. Xylenes are relatively mobile in soil with low carbon content and may leach into groundwater depending on soil conditions. Xylenes in groundwater are known to persist for several years (ATSDR, 1993c).

SVOCs

Bis(2-ethylhexyl)phthalate. Bis(2-ethylhexyl)phthalate (also known as di(2-ethylhexyl)phthalate) ($C_{24}H_{38}O_4$) is principally used as a plasticizer in the production of polyvinyl chloride (PVC) and vinyl chloride resins. PVC is used in many common household items such as toys, vinyl upholstery, shower curtains, adhesives, and as a component of paper and paperboard. Bis(2-ethylhexyl)phthalate has also been used as a solvent, an acaricide in orchards, and as an inert ingredient in pesticide products (ATSDR, 1993d).

Bis(2-ethylhexyl)phthalate is a widely used chemical that enters the environment primarily through the disposal of industrial and municipal wastes in landfills. Bis(2-ethylhexyl)phthalate tends to adsorb strongly to soil and sediment and to bioconcentrate in aquatic organisms. Sorption, bioaccumulation, and biodegradation are likely to be competing processes, with the dominant fate being determined by local environmental conditions (ATSDR, 1993d).

Bis(2-ethylhexyl)phthalate has a strong tendency to be adsorbed to atmospheric particulate matter, soil, and sediment. Bis(2-ethylhexyl)phthalate biodegradation in soil is slow because strong adsorption reduces the availability for degradation. Biodegradation is expected to occur under aerobic conditions. Bis(2-ethylhexyl)phthalate may slowly volatilize into air. In air, direct photolysis and photooxidation are not likely (ATSDR, 1993d).

Bis(2-ethylhexyl)phthalate is relatively insoluble; however, it may leach to the groundwater in the presence of common organic solvents such as alcohols and ketones. Bis(2-ethylhexyl)phthalate in the water will undergo biodegradation under aerobic conditions. Chemical hydrolysis occurs too slowly to be important (ATSDR, 1993d).

Di-n-butylphthalate. Di-n-butylphthalate is used in the manufacture of plasticizers, plastics, the recycling and processing of plastics, cosmetics, and industrial stains. The solubility of di-n-butylphthalate in water is relatively low (11.2 mg/l at 25°C) indicating that it will not readily dissolve in water (Howard, 1990). Di-n-butylphthalate does not readily volatilize to the atmosphere from surface soil or water due to a vapor pressure of 0.000014 mm Hg at 25°C. As with most phthalates, biodegradation of di-n-butylphthalate is an important mechanism for removal from both soil and water, although the process is slow (Howard, 1990).

1,4-Dichlorobenzene. 1,4-Dichlorobenzene is usually called para-DCB, p-DCB or paramoth. 1,4-Dichlorobenzene is used as the main ingredient in mothballs, deodorant blocks, and for odor control in animal holding areas where it also acts as an insecticide. 1,4-Dichlorobenzene is a white solid that sublimates at room temperatures and smells like mothballs.

1,4-Dichlorobenzene volatilizes to the atmosphere from surface soil and water at a relatively rapid rate. Half-life in a model river was 4.3 hours (Howard,

1990). Adsorption to soil particles may inhibit volatilization relative to water. Biotransformation in soil has not been studied extensively, but has been shown to occur by methanogenic organisms (ATSDR, 1993e).

Pesticides and PCBs

4,4'-DDT. 4,4'-DDT (DDT) and its primary metabolites, 4,4'-DDE (DDE) and 4,4'-DDD (DDD), are man-made chemicals and are not known to occur naturally in the environment. Most releases of the chemicals are related to their manufacture and use as insecticides in agriculture and vector control. Pesticidal use of DDT, except in public health emergency, was banned in the United States in 1972. Due to the extensive past use of DDT worldwide and the persistence of DDT and its metabolites, these materials are virtually ubiquitous and are continually being transformed and redistributed in the environment (ATSDR, 1992).

DDT, DDE, and DDD are only slightly soluble in water. Therefore, they are not easily displaced from their site of application, nor do they tend to leach to groundwater. Appreciable amounts of the compounds may remain in the soil for extended periods of time and are only readily moved by physical erosion of soil particles (ATSDR, 1992).

Four mechanisms have been identified as accounting for the most losses of DDT residues from soils: volatilization, removal by harvest of organic matter, water runoff, and chemical transformation. Photooxidation of DDT is known to occur on soil surfaces; however, it is not known to hydrolyze. Biodegradation may occur under both aerobic and anaerobic conditions in the presence of certain soil microorganisms (ASTDR, 1992).

Inorganic Analytes

Aluminum. Aluminum is the third most common element in the environment, though not generally found in elevated concentrations in groundwater. Aluminum is known to complex readily; however, and high concentrations present in groundwater are generally due to silt-sized particles of aluminum-containing compounds often present as clays or aluminum hydroxides. Complexing and polymerization of the most common valence state of aluminum, Al^{+3} , represents the predominant transport mechanism for aluminum in the environment.

Arsenic. Arsenic has two stable forms in solution in groundwater, arsenate (As^{5+}) and arsenite (As^{3+}). In groundwater with pH ranging from 3 to 7, the monovalent arsenate anion $H_2AsO_4^-$ is the dominant form. Upon entering surface water, via groundwater discharge, arsenic may partition to sediment from solution by hydrous iron oxide adsorption and/or coprecipitation (or a combination of both) with sulfides in the sediment. The Eh and pH conditions of the surface water and sediment govern the effectiveness of these mechanisms (adsorption and coprecipitation) as a sink for arsenic. These mechanisms appear to be the major inorganic factors controlling arsenic concentrations in surface water (Hem, 1992).

Arsenic may be very mobile in the aquatic environment, cycling through the water column, sediment, biota, and air. Most arsenic released into the environment (on the earth's surface) eventually ends up either in sediment (in stream beds or lakes) or in the oceans. Eh and pH conditions largely govern the fate of arsenic (USEPA, 1979).

Cobalt. Cobalt is a relatively rare element, ranking 30th in abundance in the earth's crust. Cobalt exists as a mixture of two allotropes with the β form predominating below 400 °C, and the α form predominating above that temperature. Cobalt has two oxidation states, besides the environmental form: +2, which is the most important oxidation state and +3, which is a strong oxidizing agent. Cobalt forms oxides, nitrates, and ammines, as well as chloride, sulfate, and acetate (Hem, 1992).

Aqueous species of Co^{3+} do not appear to be thermodynamically stable under Eh and pH conditions that normally occur in natural waters (Hem, 1992). Co^{2+} compounds are moderately soluble in groundwater or surface water and are expected to migrate with the water. Cobalt will sorb to the soil and sediment, especially when iron and manganese are present (Moore, 1991).

Cyanide. Cyanides are any of the compounds that include the group $-(\text{CN})^-$. The cyanide ion (CN^-) can react with a variety of metals to form insoluble metal cyanides. If the ion is present in excess, in an environment with transitional metals, complex metalocyanides may form which, are soluble and may be transported in solution.

Cyanide is typically used in the form of hydrogen cyanide, a highly toxic gas, to manufacture acrylonitrile, acrylates, adiponitrile, cyanide salts, dyes, chelates, rodenticides, and pesticides (Hawley's, 1987). Metal cyanides are soluble and are used extensively in electroplating.

Simple metal cyanide complexes are sorbed by sediments while more complex metal cyanide complexes are highly soluble in water, however, adsorption does not appear to be important in controlling the mobility of cyanides in soil or water. Metal cyanide salts are not volatile. Bioaccumulation of metal cyanide complexes occurs but the toxic effects limit the amount of accumulation (USEPA, 1979).

Iron. Iron is the second most abundant element in the environment, though dissolved concentrations present in groundwater are generally low. The chemical behavior of iron and its solubility depend upon the oxidation intensity and pH of the environmental system in which it is found. Iron exists in two valence states, Fe^{2+} and Fe^{3+} , with the Fe^{2+} or ferrous form the most common form of iron found in solution in the reducing conditions within the groundwater environment. Dissolved iron generally sorbs to sediment and may precipitate as iron hydroxide or may oxidize to form iron oxides and iron oxyhydroxides (USEPA, 1979). Iron also may complex with organic molecules, especially fluvic and humic acids. Aerated or flowing water with a pH in the range of 6.5 to 8.5 should contain little dissolved iron.

Lead. The accumulation of lead in most soil is primarily a function of the rate of deposition from the atmosphere. Most lead is retained strongly in soil and very little is transported into surface water or groundwater. The fate of lead in soil is affected by the specific or exchange adsorption at mineral interfaces, the precipitation of sparingly soluble solid phases, and the formation of relatively stable organic-metal complexes or chelates with organic soil matter. These processes are dependant on such factors as soil pH, organic content of soil, the presence of inorganic colloids and iron oxides, ion-exchange characteristics, and the amount of lead in soil (ASTDR, 1988a).

The chemistry of lead in aqueous solutions is highly complex because this element can be found in a many forms. Lead has a tendency to form compounds of low solubility with major anions of natural water. In the natural environment, the divalent form (Pb^{2+}) is the stable ionic species of lead. Hydroxide, carbonate, sulfide, and, more rarely, sulfate may act as solubility controls in precipitating lead from water. The amount of lead that remains in the solution depends upon the pH of the water and the dissolved salt content (ASTDR, 1988a).

Manganese. Manganese is a naturally occurring element found in soil, lakes, streams, and food. Manganese does not occur in the environment as a pure metal, but is found combined with other chemicals like oxygen, sulfur, and chlorine. Elemental manganese and inorganic manganese compounds have negligible vapor pressures, but exist in air as suspended particulate matter derived from industrial emissions or the erosion of soil. Manganese is often transported in rivers as suspended sediment. The metal may exist in any of four oxidation states (2+, 3+, 4+, or 7+). Mn^{2+} is the most common form found in water with a pH between 4 and 7, but manganese may oxidize at a pH greater than 8. The transportation of manganese in water is controlled by the solubility of the specific chemical form present and the characteristics of available anions (ATSDR, 1990a).

Mercury. Mercury is an element that occurs naturally in the environment, typically at very low levels. In the elemental form mercury is a shiny, silver-white odorless liquid with a metallic taste. Mercury in combination with carbon-containing compounds is called "organic mercury"; if no carbon is present, the compound is called "inorganic mercury". All compounds of mercury are considered poisonous.

Mercury has three valence states that are dependant on a number of factors, including redox potential and pH of the medium. In soil and surface water, mercury can exist in the mercuric (Hg^{+2}) and mercurous (Hg^{+1}) states as a number of complex ions with varying water solubilities.

Mercury released to the environment is typically very stable and lingers for a long time, possibly changing from the organic to the inorganic form and vice versa. Mercury released to the environment by human activity is typically higher than is naturally found. Mercury released to surface soil remains in the soil for a long time and seldom migrates through soil to groundwater.

Silver. The major source of elevated silver levels in cultivated soil is from the application of sewage sludge and sludge effluents as agricultural amendments. Additional anthropogenic sources of silver in soil include atmospheric deposition and landfilling of household refuse or industrial wastes (ASTDR, 1989).

The mobility of silver in soils is affected by drainage (silver tends to be removed from well-drained soils), oxidation-reduction potential and pH conditions, and the presence of organic matter (which complexes with silver and reduces its mobility). Silver tends to form complexes with inorganic chemicals and humic substances in soils. Silver is toxic to soil microorganisms and inhibits bacterial biodegradative enzymes; therefore, biotransformation is not expected to be a significant process in the transformation and degradation of silver (ASTDR, 1989).

Thallium. Thallium is soluble over a wide range of oxidizing conditions but in reducing conditions, it precipitates to the metal form, and in the presence of sulfur, to an insoluble sulfide. Under high oxidizing conditions, thallium precipitates in the oxide or hydroxide form and settles into bed sediments.

The most common fate processes affecting thallium are adsorption and bioaccumulation. The ionic radius of thallium is similar to that of lead; thus, the fate of thallium in the environment is believed to be similar to that of lead (USEPA, 1979). Thallium may be strongly adsorbed by montmorillonite clay; thus, sediment is an active sink for thallium in the environment. The adsorption of thallium to clay particles is pH demandant. Adsorption is more effective under alkaline conditions rather than acidic conditions.

Thallium also may remain in solution in aerobic environments and is known to bioaccumulate.

Vanadium. Vanadium commonly exists in the V^{3+} , V^{4+} , and V^{5+} valence states. Its aqueous chemistry is quite complex, but overall concentrations seem to be controlled more by availability of a vanadium source rather than equilibrium considerations. Bioconcentration of vanadium by vegetation has been reported by several researchers.

Zinc. Zinc is a natural element found in soil. Zinc is also deposited in soil by atmospheric deposition. It is released to the atmosphere as dust and fumes from zinc production facilities, lead smelters, brass works, automobile emissions, fuel combustion, incineration, and soil erosion. Zinc occurs in the environment in the +2 oxidation state. The relative mobility of zinc in soil is determined by the solubility of the compound, soil type, and pH and salinity of the soil (ASTDR, 1988b).

8.2.3 Transport of Contaminants This section discusses the transport of chemicals in various media at Site 15. All media, surface soil, subsurface soil, surface water, sediment, and groundwater will be discussed.

Surface Soil. Transport of the CPCs in soil is dependent on several factors, as discussed in Section 8.1. The primary agents of migration acting on soil include wind, water, and human activity. Soil can also act as a source medium from which the CPCs are transported to other media. Transport of the CPCs from soil via wind is not expected to be a major transport mechanism because of the heavy vegetation present at Site 15. Vegetative cover is an effective means of limiting wind erosion of soil. Humans are effective at moving soil and can greatly affect the transport of soil-bound chemicals at hazardous waste sites. Under the current use of Site 15, human activity is not a major transport mechanism for the CPCs in soil. This condition may change based on the future use of Site 15.

Water can cause the transport of soil and, therefore, the CPCs in soil, via the mechanisms of physical transport of soil or the leaching of constituents from the soil to groundwater. Soil erosion, the physical transport of soil via surface water runoff, is currently not considered a major mechanism for the transport of the CPCs in soil at Site 15 because of (1) the low grade (slope) of the land surface at the site, (2) the heavy vegetation at the site, and (3) the nature of the constituents remaining in the soil at the site.

During the period of reported active disposal at the Site 15, 1965 to 1979, the potential for physical transport of both soil and CPCs via runoff could have been a potentially significant mechanism for transport. If pits were excavated into the soil and waste materials were dumped into the pits, heavy precipitation events could have easily moved the unvegetated soil around the pits. Additionally, the possibility exists that the pits overflowed during heavy rain storms, because they were not covered during their operation. The pits are presumed to be backfilled following their periods of use, and the area revegetated. No significant transport of surface soil is expected since revegetation of the Site 15 area.

Subsurface Soil. Transport of CPCs through subsurface soil occur via the physical transport of small soil particles or the leaching of contaminants from soil to groundwater. Once the contaminants reach groundwater there is the potential for transport through groundwater and ultimately discharging into Clear Creek.

Surface Water. There are no permanent surface water bodies associated with Site 15. Transport of the waterborne CPCs from Site 15 may occur during heavy rain events as surface runoff. Surface water runoff is directed west (approximately 1,500 feet) toward Clear Creek. Water infiltration directly into the soil is presumed to occur during all but the heaviest rain events. Infiltrating water and shallow groundwater at Site 15 will eventually discharge to Clear Creek.

Currently, transport of the CPCs at Site 15 via runoff is not considered an important transport mechanism because of (1) the low slope of the land surface at the site, (2) high infiltration capacity of soil at the site, (3) the heavy vegetation at Site 15, and (4) the tendency of the surface soil contaminants at the sites to remain attached to clays in the soil.

When Site 15 was an active disposal area, transport of the CPCs via surface water runoff may have been a more significant means of contaminant transport. If disposal pits were open to rainfall during their operation, it is possible that intense precipitation could have caused the pits (if they existed) to overflow. Transport of the CPCs via surface water runoff is not considered important now that the site is vegetated.

Sediment. The transport of sediment at Site 15 by the action of humans is not currently a significant transport mechanism, because very little human activity occurs in the drainage ditch. Saltation, traction, and suspension are possible means of sediment transport in water at Site 15 during heavy rain events.

Normally there is no over land flow off the site. During heavy rain events, sediment may become suspended in surface water runoff. Suspended sediment may be transported to ditches that ultimately lead to Clear Creek. It is believed that the sediment would not remain in suspension long enough to reach the tributary of Clear Creek because most of the surface water would infiltrate rapidly into the ground. Sediment transport to Clear Creek will be addressed during the Site 39 Clear Creek Flood Plain investigation.

Groundwater. As discussed in Section 5.5, the observed concentrations of the inorganics in unfiltered groundwater at Site 15 was affected by turbidity in the groundwater samples at the time of collection. The groundwater samples collected in 1996 (during Phase IIB) are thought to be more representative of groundwater conditions at the site. It is probable that particulate material of larger than colloidal sizes does not easily move through the matrix of the aquifer. Colloid-

sized material may be transported through the aquifer matrix at flow rates present in the surficial aquifer system at Site 15.

Hydrogeology at Site 15 is discussed in Section 5.2 of this report. The aquifer present at the site is the surficial (sand and gravel) aquifer. The CPCs identified for groundwater are associated with the surficial aquifer system. Recharge of the surficial aquifer at Site 15 occurs primarily by rainfall on the site and in the area north of the site. Groundwater flow direction in the surficial aquifer at Site 15 is primarily to the south-southwest. Clear Creek acts as a point of discharge approximately 1,200 feet southwest of the site.

Hydraulic data from well clusters completed at Site 15 indicate that the vertical gradient in this area is downward. The upper (approximately) 100 feet of material is a sand with varying amounts of silt and clay and likely acts as a single hydraulic unit.

Horizontal hydraulic gradient estimates have been developed for the combined Site 15 and 16 area. The gradient was calculated for the periods of January 1997 and August 1997 and averaged (Table 5-2). The average hydraulic gradient in the surficial aquifer is 0.0067 and 0.0064 ft/ft respectively in a southwest direction.

Hydraulic conductivity testing was completed on seven monitoring wells at Site 15. The average hydraulic conductivity value for the site is 0.00252 feet per minute or 10.8 ft/day (Table 5-4).

Horizontal groundwater seepage velocity calculations have been completed for the surficial aquifer system at Site 15 using available hydraulic information (Section 5.2). A seepage velocity of 139 ft/yr was calculated using the average hydraulic conductivity from eight monitoring wells at Site 15 (0.38 ft/day), an average horizontal gradient of 0.0067 ft/ft for these monitoring wells, and an estimated effective porosity of 0.35. Disposal activities at Site 15 may have begun releasing contaminants to the aquifer approximately 33 years ago. Using the seepage velocity calculated above, the total distance of potential contaminant migration was estimated to be approximately 4,587 feet.

The calculated estimate of 4,587 feet of migration relies on hydraulic conductivity values derived from slug test data. Slug tests provide a rough estimate of hydraulic conductivity that can be more accurately measured using pumping tests. Slug data may differ by up to a factor of 10 (Bouwer and Rice, 1989). If the hydraulic conductivity value used in the calculation were decreased by an order of magnitude, a total migration of only 458 feet would be expected for the 50-year history of the site.

Clear Creek is the final point of discharge for groundwater from the surficial aquifer at Site 15. Clear Creek is located approximately 1,500 feet southwest of Site 15. Surface water and sediment samples collected during Phase I of the RI from sampling locations located upstream and downstream of the expected groundwater discharge points from Site 15 do not conclusively support any impact to surface water quality of Clear Creek from past Site 15 activities (ABB-ES, 1992a). The results of surface water and sediment sampling are presented in Technical Memorandum No. 4, Surface Water and Sediments, May 1992 (ABB-ES, 1992b) and will also be evaluated in the RI for Site 39, Clear Creek Flood Plain. Additional surface water and sediment samples will be collected during the RI for Site 39 to evaluate potential impacts of the IR sites on Clear Creek.

9.0 CONCLUSIONS AND RECOMMENDATIONS

9.1 CONCLUSIONS. The following is a summary based on the RI at Site 15, Southwest Landfill, NAS Whiting Field.

- Geophysical surveys results suggested the presence of geophysical anomalies indicating buried ferromagnetic debris in a series of trenches covering approximately 15 of the 21 acres of the site.
- Ten test pits were excavated at the locations of geophysical anomalies at Site 15. Materials encountered during test pit excavations include construction debris, metallic debris, and aircraft parts.
- Methane and VOCs were detected during the soil gas survey conducted at Site 15. The highest soil gas concentrations (exceeding 5,000 parts per million [ppm] total VOCs and 5,000 ppm methane) were reported near the western boundary of the site.
- Three VOCs, three SVOCs, and three pesticide compounds were detected in Site 15 surface soil samples. Detected concentrations in all VOCs, SVOCs, and pesticides are lower than the USEPA Region III RBCs and Florida residential cleanup target levels for surface soil.
- Twenty inorganic analytes and cyanide were detected in the 30 surface soil samples. Ten inorganic analytes exceeded the background screening values for surface soil. Arsenic exceeded the USEPA Region III RBC and the Florida residential soil cleanup target level in 28 surface soil samples. The detected concentrations of arsenic also exceeded the FDEP-approved site-specific nonresidential soil cleanup target level of 4.62 $\mu\text{g}/\text{kg}$ in one soil sample. The arsenic concentration exceeded the USEPA Region III industrial RBC screening criterion in one surface soil sample.
- Three VOCs, seven SVOCs, and one pesticide compound were detected in Site 15 subsurface soil samples. None of the detected concentrations of VOCs, SVOCs, or pesticides exceeded the USEPA Region III RBCs for industrial-use soils. The PCB Aroclor-1242 was detected in one subsurface sample. Aroclor-1242 exceeded the Florida industrial-use soil cleanup target level and the USEPA Region III RBC industrial soil screening criterion in this sample. Phenol and 4-methylphenol were detected at concentrations exceeding the Florida cleanup target level for leaching to groundwater.
- Twenty inorganic analytes were detected in the five subsurface soil samples. Eight analytes (calcium, chromium, iron, manganese, potassium, vanadium, zinc, and cyanide) were detected at concentrations exceeding the background screening values. None of the detected concentrations exceeded industrial standards for either the Florida soil cleanup target levels or USEPA Region III RBCs.
- The pH values of the groundwater samples collected from monitoring wells were below the lower range for the Federal and State secondary

MCLs of 6.5 SUs but were within the range of pH values observed in background groundwater samples collected at NAS Whiting Field.

- Five VOCs and four SVOCs were detected in groundwater samples collected from the shallow monitoring wells at Site 15. None of the compounds with the exception of bis(2-ethylhexyl)phthalate, were detected in the background groundwater samples and none of the detected concentrations exceeded their Federal or Florida MCLs. The pesticide compound 4,4'-DDT was detected at a concentration exceeding the Florida groundwater guidance concentration.
- Eighteen inorganic analytes were detected in groundwater samples from shallow monitoring wells. Nine inorganic analytes, (aluminum, arsenic, cyanide, iron, magnesium, potassium, thallium, vanadium, and zinc) were detected at concentrations exceeding the background screening concentration. Concentrations of aluminum, iron, and manganese were reported to exceed Federal MCLs and Florida groundwater guidance concentrations.
- Five VOCs (1,1-dichloroethene, 1,2-dichloroethene, trichloroethene, benzene, and xylene) and one SVOC (bis(2-ethylhexyl)phthalate) were detected in groundwater samples collected from intermediate depth monitoring wells. Bis(2-ethylhexyl)phthalate was the only compound detected in the background sample. Trichloroethene and benzene were both detected at concentrations exceeding Federal MCLs and Florida groundwater guidance concentrations.
- Fifteen inorganic analytes were detected in groundwater samples from intermediate depth wells. Seven analytes (arsenic, calcium, iron, lead, manganese, sodium, and zinc) were detected at concentrations exceeding the background screening criteria. Aluminum, iron, and manganese were detected at concentrations exceeding Federal MCLs and the Florida groundwater guidance concentrations.
- Five VOCs, two SVOCs, and one pesticide compound were detected in groundwater samples collected from the deep monitoring wells at Site 15. One SVOC (bis[2-ethylhexyl]phthalate) was the only organic compound detected in the background groundwater samples. Two compounds (1,1-dichloroethene and trichloroethene) were detected at concentrations that either equaled or exceeded Federal MCLs and Florida groundwater guidance concentrations.
- Sixteen inorganic analytes were detected in the groundwater samples from the Site 15 deep monitoring wells. Nine of the compounds including antimony, arsenic, calcium, cobalt, copper, lead, manganese, potassium, and sodium were detected at concentrations exceeding the background screening concentration (Table 5-21). Three of the analytes, antimony, iron, and manganese, were detected at concentrations exceeding the Federal MCLs and Florida groundwater guidance concentrations.
- The extent of groundwater contamination downgradient of Site 15 has not been defined. Benzene and trichloroethene were detected in groundwater at concentrations above cleanup target levels and Federal MCLs between Site 15 and the base boundary.

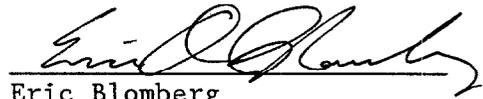
- The groundwater flow direction is toward the southwest and likely discharges to Clear Creek. Clear Creek is located approximately 1,200 feet southwest of the site. The average horizontal hydraulic gradient for the site is 0.0066 ft/ft. The geometric mean for the hydraulic conductivity data for monitoring wells in the site area is 10.8 ft/day and the average seepage velocity value is 0.38 ft/day.
- The HHRA identified three inorganic analytes as HHCPs for surface soils at Site 15. Aroclor-1242 was identified as an HHCP for subsurface soil. Thirteen analytes including 1,1-dichloroethene, 1,2-dichloroethene, benzene, chlorobenzene, trichloroethene, 1,4-dichlorobenzene, bis(2-ethylhexyl)phthalate, 4,4'-DDT, aluminum, arsenic, iron, manganese, and thallium were identified as HHCPs for groundwater at Site 15.
- The HHCPs detected in surface soil do not pose unacceptable carcinogenic risks to the receptors evaluated based on evaluation of the samples using USEPA guidelines and target risk range.
- The total ELCR of 4×10^{-6} at Site 15, associated with exposure to soil by a hypothetical future resident, exceeds Florida's target risk level of concern 1×10^{-6} due to arsenic. The background levels of arsenic at Site 15 exceed the Florida residential soil cleanup target level and may result in an unacceptable carcinogenic risk. It is likely that naturally occurring arsenic contributes to the FDEP target risk-level exceedance.
- The ELCR for groundwater exceeds the USEPA acceptable risk range and the FDEP cancer level of concern due to 1,1-dichloroethene, arsenic, benzene, trichlorobenzene, and 1,4-dichlorobenzene; however, groundwater contamination is being addressed as a separate RI site under a facilitywide investigation.
- The ERA selected three VOCs (acetone, methylene chloride, and xylene) two SVOCs (di-n-butylphthalate and bis[2-ethylhexyl]phthalate) and five inorganic analytes (cyanide, lead, silver, vanadium, and zinc) as ECPCs for surface soil at Site 15. In addition, four VOCs (acetone, benzene, trichloroethene, and xylene), two SVOCs (1,4-dichlorobenzene and bis[2-ethylhexyl]phthalate), one pesticide (4,4'-DDT), and nine inorganic analytes (aluminum, cobalt, iron, lead, manganese, mercury, silver, vanadium, and zinc) were identified as ECPCs in groundwater at the site.
- Risks were not identified for terrestrial wildlife resulting from exposure to ECPCs in surface soil; therefore, reductions in the survivability, growth, and reproduction of wildlife receptor populations at Site 15 are not expected to occur.
- Reduction in terrestrial plant and soil invertebrate biomass used as forage material was evaluated by comparing exposure concentrations for surface soil with toxicity benchmarks. Based on this comparison it is unlikely that plant and invertebrate biomass or plant cover availability would be reduced such that small mammal and bird populations at Site 15 would be affected.

- Potential risks for aquatic receptors were evaluated for exposures to ECPCs in groundwater. The concentrations of ECPCs in groundwater as they discharge to Clear Creek 1,200 feet downgradient of Site 15 were estimated based on application of a 10-fold attenuation factor to the RME concentration. Based on the screening evaluation of groundwater, risks to aquatic receptors in Clear Creek associated with exposure to groundwater ECPCs from Site 15 are not expected. The ERA for Site 39, Clear Creek Flood Plain, will provide additional information regarding potential risks to aquatic receptors in Clear Creek based on actual site-related surface water and sediment data.
- The results of the ERA suggest that risks are not predicted for ecological receptor populations at Site 15.

9.2 RECOMMENDATIONS. Based upon the interpretation of findings from the RI activities, a FS is recommended for Site 15 to evaluate potential strategies for the reduction in human health risks associated with surface and subsurface soil at the site. In addition, the presence of organic and inorganic analytes in Site 15 groundwater samples at concentrations exceeding Florida's target risk levels indicates that additional sampling and remedial measures may be required. Leaching of contaminants (phenol and 4-methylphenol) from subsurface soil to groundwater will also need to be addressed. However, all groundwater contamination issues will be addressed as part of the ongoing RI for the Site 40 facilitywide groundwater study.

10.0 PROFESSIONAL REVIEW CERTIFICATION

The work and professional opinions rendered in this report were conducted or developed in accordance with commonly accepted procedures and protocols consistent with applied standards of practice. This report is based on the geologic investigation and associated information detailed in the text and appended to this report. If conditions are discovered or determined to exist that differ from those described, the undersigned geologist should be notified to evaluate the effects of any additional information on the assessment described in this report. The RI for Site 15, Southwest Landfill was developed for NAS Whiting Field in Milton, Florida, and should not be construed to apply for any other purpose or to any other site.



Eric Blomberg
Professional Geologist
P.G. No. 1695

12-20-99
Date

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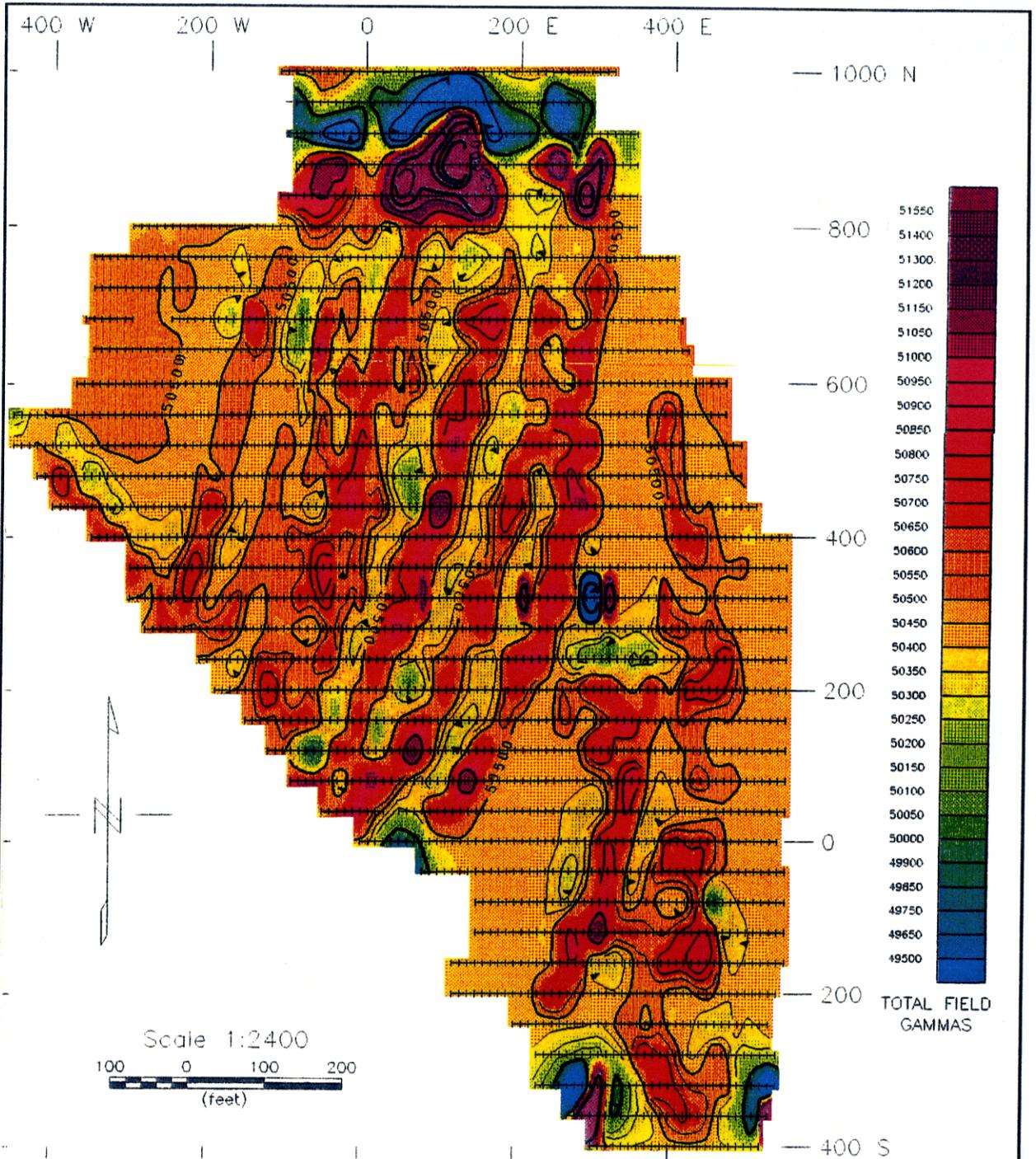
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APPENDIX A
GEOPHYSICAL SURVEY



SOURCE: BLACKHAWK GEOSCIENCES, INC. 1992.

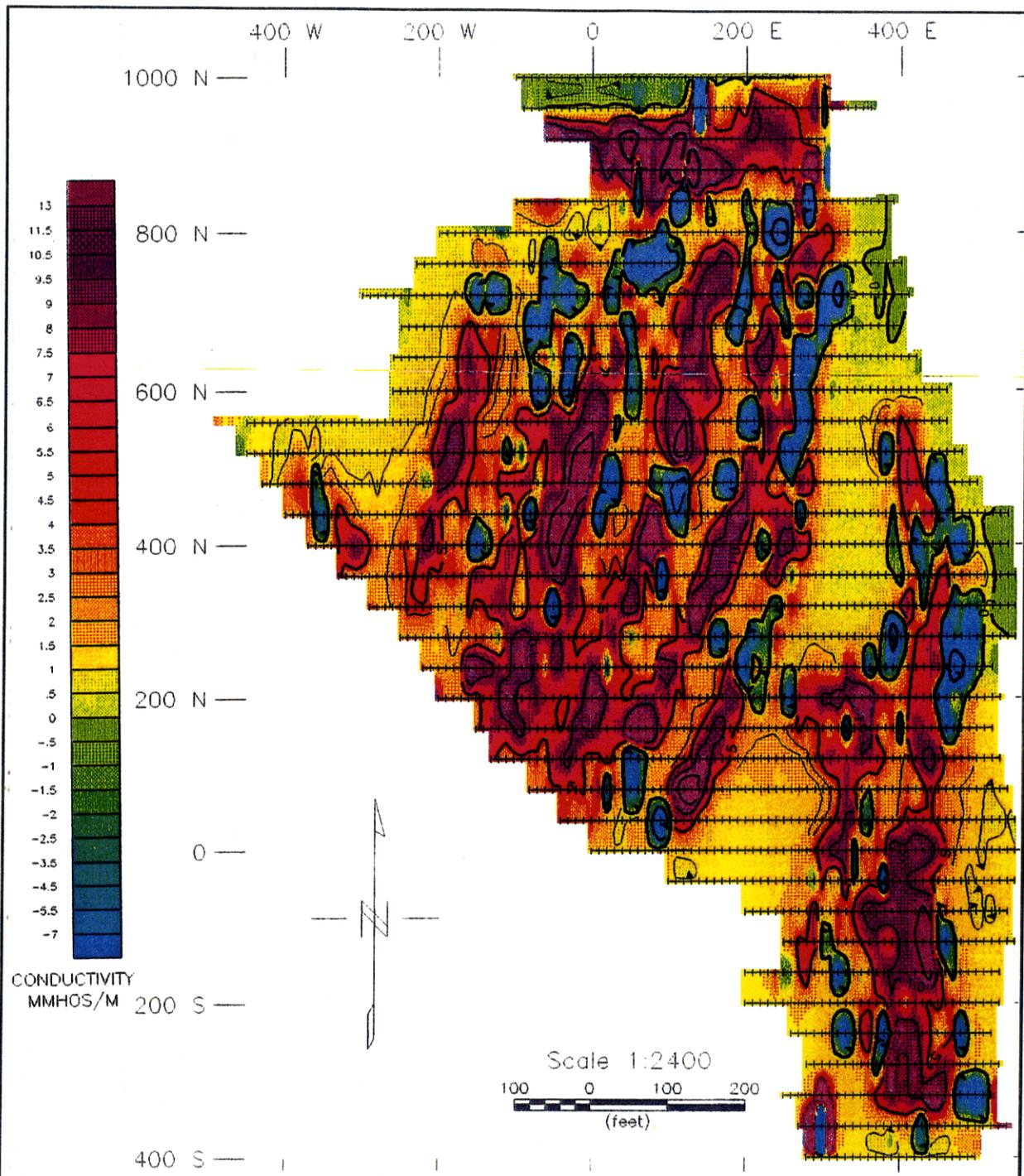
**FIGURE C-2
SITE 15
TOTAL MAGNETIC FIELD
ISOPLETH MAP**



**REMEDIAL INVESTIGATION REPORT
SITE 15, SOUTHWEST LANDFILL**

**NAS WHITING FIELD
MILTON, FLORIDA**

00247DB5Y



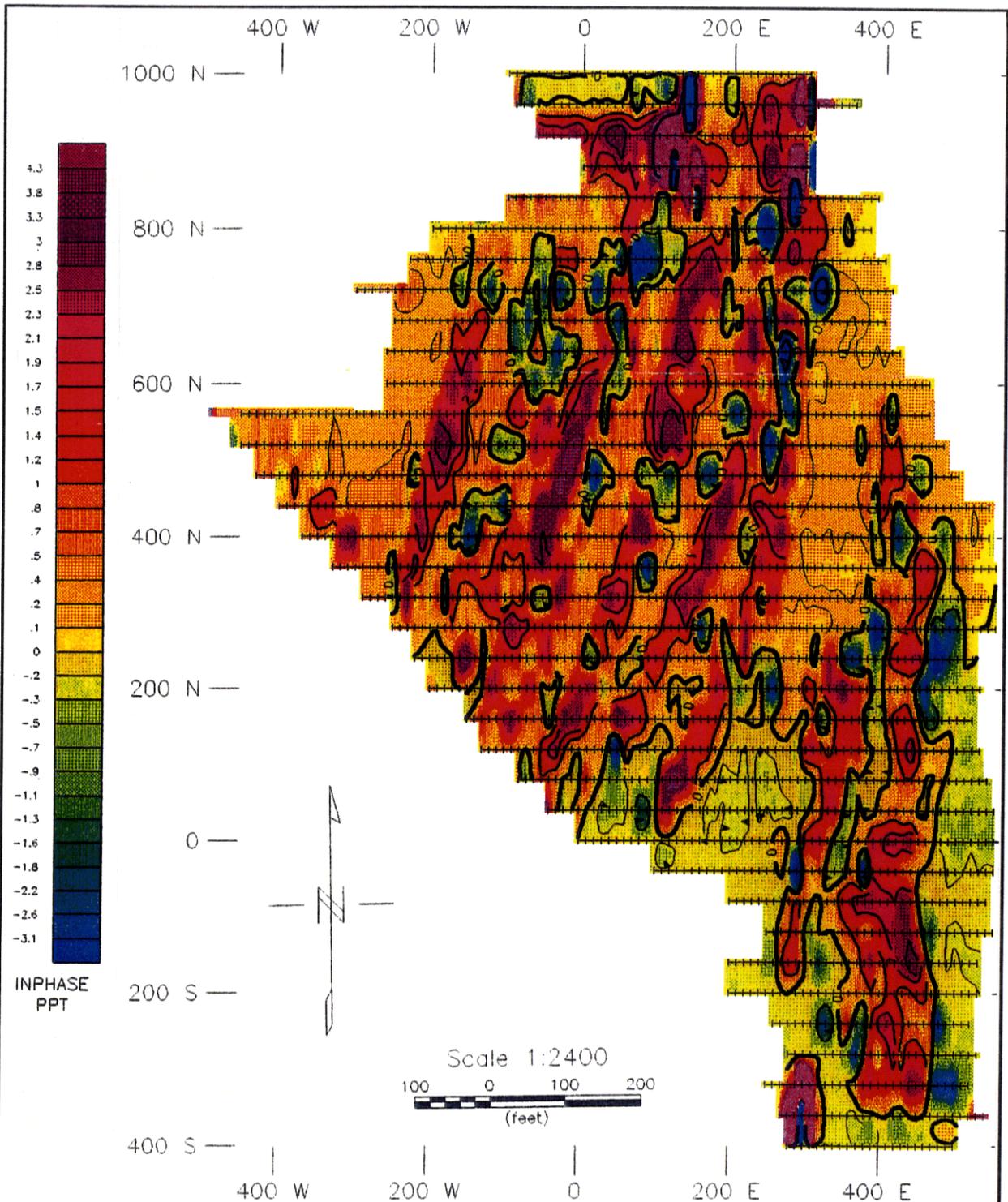
SOURCE: BLACKHAWK GEOSCIENCES, INC. 1992.

FIGURE C-3
SITE 15
EM-31 CONDUCTIVITY
ISOPLETH MAP



REMEDIAL INVESTIGATION REPORT
SITE 15, SOUTHWEST LANDFILL

NAS WHITING FIELD
MILTON, FLORIDA



SOURCE: BLACKHAWK GEOSCIENCES, INC. 1992.

**FIGURE C-4
SITE 15
EM-31 INPHASE
ISOPLETH MAP**



**REMEDIAL INVESTIGATION REPORT
SITE 15, SOUTHWEST LANDFILL**

**NAS WHITING FIELD
MILTON, FLORIDA**

APPENDIX B
QUALITY CONTROL DATA

APPENDIX A

**Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida
PARCC Summary Tables**

Draft Version

12/12/97

APPENDIX A

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Groundwater and Subsurface Soil Investigation, Phase IIB NAS Whiting Field, Milton, Florida

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SDG#: WF022		VALIDATION SAMPLE TABLE						LDC#: 1932A	
Project Name: NAS Whiting Field				Parameters/Analytical Method			Job#: 8532-20		
Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides /PCBs	Metals	Cyanide
BKT01001	RB858001	TB	water	7-16-96	X				
BKR01001	RB858002	R	water	7-16-96	X	X	X	X	X
BKG00101	RB858003		water	7-16-96	X	X	X	X	X
BKG00101D	RB858004	FD	water	7-16-96	X	X	X	X	X
BKG00102	RB858005		water	7-16-96	X	X	X	X	X
BKG00102F	RB858006		water	7-16-96				X	
BKG00103	RB858007		water	7-16-96	X	X	X	X	X
BKG00202	RB858008		water	7-17-96	X	X	X	X	X
BKG00201	RB858009		water	7-17-96	X	X	X	X	X
BKF01001	RB858010	SB	water	7-17-96	X	X	X	X	X
17T01101	RB873001	TB	water	7-18-96	X				
17G00102	RB873002		water	7-18-96	X	X	X	X	X
17G00101	RB873003		water	7-18-96	X	X	X	X	X
17G00201	RB873004		water	7-18-96	X	X	X	X	X
17G00301	RB873005		water	7-18-96	X	X	X	X	X
17G00201F	RB873006		water	7-18-96				X	
01G00101	RB873007		water	7-19-96	X	X	X	X	X
01G00102	RB873008		water	7-19-96	X	X	X	X	X
01G00102D	RB873009		water	7-19-96	X	X	X	X	X
BKG00101MS	RB858003MS	MS	water	7-16-96	X	X	X	X	X
BKG00101MSD	RB858003MSD	MSD	water	7-16-96	X	X	X	X	X

TB = Trip Blank, R = Rinse, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF023		VALIDATION SAMPLE TABLE						LDC#: 1942A	
Project Name: NAS Whiting Field			Parameters/Analytical Method				Job#: 8532-20		
Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides /PCBs	Metals	Cyanide
01T01201	RB887001	TB	water	7-22-96	X				
01G00401	RB887002		water	7-22-96	X	X	X	X	X
01G00201	RB887003		water	7-22-96	X	X	X	X	X
01G00201F	RB887004		water	7-22-96				X	
01R01101	RB887005	R	water	7-23-96	X	X	X	X	X
01G00301	RB887006		water	7-23-96	X	X	X	X	X
BKG00301	RB887007		water	7-23-96	X	X	X	X	X
02G00201	RB887008		water	7-23-96	X	X	X	X	X
02G00101	RB887009		water	7-23-96	X	X	X	X	X
02G00101F	RB887010		water	7-23-96				X	
18G00301	RB887011		water	7-24-96	X	X	X	X	X
02G00301	RB887012		water	7-24-96	X	X	X	X	X
02G00301D	RB887013	FD	water	7-24-96	X	X	X	X	X
16T01301	RB887014		water	7-25-96	X				
16G00701	RB887015		water	7-25-96	X	X	X	X	X
16G00702	RB887016		water	7-25-96	X	X	X	X	X
16G00702DL	RB887016DL		water	7-25-96	X				
16G00703	RB887017		water	7-25-96	X	X	X	X	X
16G00703DL	RB887017DL		water	7-25-96	X				
18G00201	RB887018		water	7-26-96	X	X	X	X	X
02G00301MS	RB887012MS	MS	water	7-24-96	X	X	X	X	X
02G00301MSD	RB887012MSD	MSD	water	7-24-96	X	X	X	X	X

Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = M Snike, MSD = Matrix Spike Duplicate, DUP = Duplicate

SDG#: WF024

VALIDATION SAMPLE TABLE

LDC#: 1943A

Project Name: NAS Whiting Field

Parameters/Analytical Method

Job#: 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides /PCBs	Metals	Cyanide
18T01401	RB920001	TB	water	7-29-96	X				
18G00101	RB920002		water	7-29-96	X	X	X	X	X
15G00401	RB920003		water	7-30-96	X	X	X	X	X
BKG00203	RB920004		water	7-30-96	X	X	X	X	X
15R01201	RB920005	R	water	7-31-96	X	X	X	X	X
BKG00203F	RB920006		water	7-30-96				X	
15G00702	RB920007		water	7-31-96	X	X	X	X	X
15G00702F	RB920008		water	7-31-96				X	
15G00701	RB920009		water	7-31-96	X	X	X	X	X
15G00701D	RB920010	FD	water	7-31-96	X	X	X	X	X
15G00701MS	RB920009MS	MS	water	7-31-96	X	X	X	X	X
15G00701MSD	RB920009MSD	MSD	water	7-31-96	X	X	X	X	X

TB = Trip Blank, R = Rinstate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP -- Duplicate

Table 1

SDG#: WF025		VALIDATION SAMPLE TABLE						LDC#: 1956A	
Project Name: NAS Whiting Field			Parameters/Analytical Method				Job#: 8532-20		
Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides /PCBs	Metals	Cyanide
15T01501	RB956001	TB	water	8-5-96	X				
15G00703	RB956002		water	8-5-96	X	X	X	X	X
15G00503	RB956003		water	8-6-96	X	X	X	X	X
15G00503DL	RB956003DL		water	8-6-96	X				
15G00502	RB956004		water	8-6-96	X	X	X	X	X
15G00501	RB956005		water	8-6-96	X	X	X	X	X
15G00601	RB956006		water	8-7-96	X	X	X	X	X
15G00603	RB956007		water	8-7-96	X	X	X	X	X
15G00601D	RB956008	FD	water	8-7-96	X	X	X	X	X
15G00503F	RB956009		water	8-6-96				X	
15G00501F	RB956010		water	8-6-96				X	
15R01301	RB956011	R	water	8-7-96	X	X	X	X	X
15T01601	RB956012	TB	water	8-8-96	X				
15G00301	RB956013		water	8-8-96	X	X	X	X	X
15G00302	RB956014		water	8-8-96	X	X	X	X	X
15G00303	RB956015		water	8-9-96	X	X	X	X	X
15G00101	RB956016		water	8-8-96	X	X	X	X	X
15G00203	RB956017		water	8-9-96	X	X	X	X	X
15G00301F	RB956018		water	8-8-96				X	
15G00203F	RB956019		water	8-9-96				X	
15G00601MS	RB956006MS	MS	water	8-7-96	X	X	X	X	X
15G00601MSD	RB956006MSD	MSD	water	8-7-96	X	X	X	X	X

TR = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

SDG#: WF026

VALIDATION SAMPLE TABLE

LDC#: 1957A

Project Name: NAS Whiting Field

Parameters/Analytical Method

Job#: 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides /PCBs	Metals	Cyanide
15T01701	RB980001	TB	water	8-12-96	X				
15G00202	RB980002		water	8-12-96	X	X	X	X	X
15G00201	RB980003		water	8-13-96	X	X	X	X	X
15G00802	RB980004		water	8-13-96	X	X	X	X	X
15G00802R	RB980004R		water	8-13-96		X			
15G00801	RB980005		water	8-13-96	X	X	X	X	X
16G00201	RB980006		water	8-14-96	X	X	X	X	X
15G00803	RB980007		water	8-14-96	X	X	X	X	X
16G00803D	RB980008	FD	water	8-14-96	X	X	X	X	X
15G00202F	RB980009		water	8-12-96				X	
15G00201F	RB980010		water	8-13-96				X	
15G00802F	RB980011		water	8-13-96				X	
15R01401	RB980012	R	water	8-14-96	X	X	X	X	X
15G00803F	RB980013		water	8-14-96				X	
16G00201F	RB980014		water	8-14-96				X	
16T01801	RB980015	TB	water	8-15-96	X				
16G00202	RB980016		water	8-15-96	X	X	X	X	X
16G00202DL	RB980016DL		water	8-15-96	X				
16G00203	RB980017		water	8-15-96	X	X	X	X	X
16G00602	RB980018		water	8-15-96	X	X	X	X	X
16G00601	RB980019		water	8-16-96	X	X	X	X	X
16G00403	RB980020		water	8-16-96	X	X	X	X	X
16G00403DL	RB980020DL		water	8-16-96	X				
16G00403D	RB980021		water	8-16-96	X	X	X	X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF026

VALIDATION SAMPLE TABLE

LDC#: 1957A

Project Name: NAS Whiting Field

Parameters/Analytical Method

Job#: 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides /PCBs	Metals	Cyanide
16G00403DDL	RB980021DL		water	8-16-96	X				
16G00601F	RB980022		water	8-16-96				X	
16G00403F	RB980023		water	8-16-96				X	
15G00803MS	RB980007MS	MS	water	8-14-96	X	X	X	X	X
15G00803MSD	RB980007MSD	MSD	water	8-14-96	X	X	X	X	X

TP = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF025		VALIDATION SAMPLE TABLE			LDC#: 1970A
Project Name: NAS Whiting Field		Parameters/Analytical Method			Job#: 8532-20
Client ID #	Lab ID #	QC Type	Matrix	Date Collected	Pesticides/PCBs
15G00502RE	RB956004RE		water	8-6-96	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF027

VALIDATION SAMPLE TABLE

LDC#: 1970B

Project Name: NAS Whiting Field

Parameters/Analytical Method

Job#: 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides /PCBs	Metals	Cyanide
16T01901	RC016001	TB	water	8-19-96	X				
16G00401	RC016002		water	8-19-96	X	X	X	X	X
16G00402	RC016003		water	8-19-96	X	X	X	X	X
16G00101	RC016004		water	8-19-96	X	X	X	X	X
16G00301	RC016005		water	8-20-96	X	X	X	X	X
16G00302	RC016006		water	8-20-96	X	X	X	X	X
16G00304	RC016007		water	8-20-96	X	X	X	X	X
16G00303	RC016008		water	8-21-96	X	X	X	X	X
16G00501	RC016009		water	8-21-96	X	X	X	X	X
16G00303F	RC016010		water	8-21-96				X	
16G00501F	RC016011		water	8-21-96				X	
16R01501	RC016012	R	water	8-21-96	X	X	X	X	X
16G00501D	RC016013	FD	water	8-21-96	X	X	X	X	X
66T02001	RC016014	TB	water	8-22-96	X				
66G02101	RC016015		water	8-22-96	X	X	X	X	X
66G02103	RC016016		water	8-22-96	X	X	X	X	X
66G02102	RC016017		water	8-22-96	X	X	X	X	X
09G00101	RC016018		water	8-23-96	X	X	X	X	X
09G00301	RC016019		water	8-23-96	X	X	X	X	X
09G00301D	RC016020	FD	water	8-23-96	X	X	X	X	X
66G02102F	RC016021		water	8-23-96				X	
09G00301F	RC016022		water	8-23-96				X	
16G00501MS	RC016009MS	MS	water	8-21-96	X	X	X	X	X
16G00501MSD	RC016009MSD	MSD	water	8-21-96	X	X	X	X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

SDG#: WF028

VALIDATION SAMPLE TABLE

LDC#: 1974A

Project Name: NAS Whiting Field

Parameters/Analytical Method

Job#: 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides /PCBs	Metals	Cyanide
10T02101	RC044001	TB	water	8-26-96	X				
09G00201	RC044002		water	8-26-96	X	X	X	X	X
10G00101	RC044003		water	8-26-96	X	X	X	X	X
10G00201	RC044004		water	8-26-96	X	X	X	X	X
11G00402	RC044005		water	8-26-96	X	X	X	X	X
11G00102	RC044006		water	8-27-96	X	X	X	X	X
11G00401	RC044007		water	8-27-96	X	X	X	X	X
11T02201	RC044008	TB	water	8-28-96	X				
11G00301	RC044009		water	8-28-96	X	X	X	X	X
11G00101	RC044010		water	8-28-96	X	X	X	X	X
11G00201	RC044011		water	8-28-96	X	X	X	X	X
12G00101	RC044012		water	8-27-96	X	X	X	X	X
12G00201	RC044013		water	8-27-96	X	X	X	X	X
11G00201F	RC044014		water	8-28-96				X	
11G00301F	RC044015		water	8-28-96				X	
11R01601	RC044016		water	8-28-96	X	X	X	X	X
12G00101D	RC044017	FD	water	8-27-96	X	X	X	X	X
11G00201D	RC044018	FD	water	8-28-96	X	X	X	X	X
12G00101MS	RC044012MS	MS	water	8-27-96	X	X	X	X	X
12G00101MSD	RC044012MSD	MSD	water	8-27-96	X	X	X	X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF029		VALIDATION SAMPLE TABLE						LDC#: 1989A	
Project Name: NAS Whiting Field			Parameters/Analytical Method				Job#: 8532-20		
Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides /PCBs	Metals	Cyanide
13T02301	RC092001	TB	water	9-9-96	X				
13G00101	RC092002		water	9-9-96	X	X	X	X	X
13G00102	RC092003		water	9-9-96	X	X	X	X	X
13G00201	RC092004		water	9-10-96	X	X	X	X	X
13G00103	RC092005		water	9-10-96	X	X	X	X	X
14G00201	RC092006		water	9-10-96	X	X	X	X	X
14G00101	RC092007		water	9-11-96	X	X	X	X	X
13R01701	RC092008	R	water	9-11-96	X	X	X	X	X
14G00101D	RC092009	FD	water	9-11-96	X	X	X	X	X
13G00103F	RC092010		water	9-10-96				X	
66T02401	RC092011	TB	water	9-12-96	X				
66G00901	RC092012		water	9-12-96	X	X	X	X	X
66G00904	RC092013		water	9-12-96	X	X	X	X	X
66G00902	RC092014		water	9-13-96	X	X	X	X	X
66G00903	RC092015		water	9-13-96	X	X	X	X	X
66G00903F	RC092016		water	9-13-96				X	
14G00101MS	RC092007MS	MS	water	9-11-96	X	X	X	X	X
14G00101MSD	RC092007MSD	MSD	water	9-11-96	X	X	X	X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

SDG#: WF030

VALIDATION SAMPLE TABLE

LDC#: 2000A

Project Name: NAS Whiting Field

Parameters/Analytical Method

Job#: 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides /PCBs	Metals	Cyanide
66T02501	RC121001	TB	water	9-16-96	X				
66G00801	RC121002		water	9-16-96	X	X	X	X	X
66G00802	RC121003		water	9-16-96	X	X	X	X	X
66G00803	RC121004		water	9-17-96	X	X	X	X	X
66G00804	RC121005		water	9-17-96	X	X	X	X	X
66G00602	RC121006		water	9-17-96	X	X	X	X	X
66G00601	RC121007		water	9-18-96	X	X	X	X	X
66G00603	RC121008		water	9-18-96	X	X	X	X	X
66G00804F	RC121009		water	9-17-96				X	
66R01801	RC121010		water	9-18-96	X	X	X	X	X
66G00601D	RC121011	FD	water	9-18-96	X	X	X	X	X
66T02601	RC121012	TB	water	9-19-96	X				
66G00604	RC121013		water	9-19-96	X	X	X	X	X
66G02201	RC121014		water	9-19-96	X	X	X	X	X
66G02202	RC121015		water	9-19-96	X	X	X	X	X
66G02203	RC121016		water	9-20-96	X	X	X	X	X
66G02203D	RC121017	FD	water	9-20-96	X	X	X	X	X
66G00601MS	RC121007MS	MS	water	9-18-96	X	X	X	X	X
66G00601MSD	RC121007MSD	MSD	water	9-18-96	X	X	X	X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF031

VALIDATION SAMPLE TABLE

LDC#: 2031A

Project Name: NAS Whiting Field

Parameters/Analytical Method

Job#: 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides /PCBs	Metals	Cyanide
05T02701	MB928001	TB	water	9-23-96	X				
05G00801	MB928002		water	9-23-96	X	X	X	X	X
05G00802	MB928003		water	9-23-96	X	X	X	X	X
05G00901	MB928004		water	9-24-96	X	X	X	X	X
05G00902	MB928005		water	9-24-96	X	X	X	X	X
05G01002	MB928006		water	9-24-96	X	X	X	X	X
05G01001	MB928007		water	9-25-96	X	X	X	X	X
05G00301	MB928008		water	9-25-96	X	X	X	X	X
05G00301RE	MB928008RE		water	9-25-96		X			
05G00801F	MB928009		water	9-23-96				X	
05G00902F	MB928010		water	9-24-96				X	
05R01901	MB928011	R	water	9-25-96	X	X	X	X	X
05G01001D	MB928012	FD	water	9-25-96	X	X	X	X	X
33T02801	MB958001	TB	water	9-26-96	X				
05G00101	MB958002		water	9-26-96	X	X	X	X	X
33G00501	MB958003		water	9-26-96	X	X	X	X	X
33G00201	MB958004		water	9-26-96	X	X	X	X	X
33G00101	MB958005		water	9-27-96	X	X	X	X	X
33G00301	MB958006		water	9-27-96	X	X	X	X	X
33G00301D	MB958007	FD	water	9-27-96	X	X	X	X	X
05G01001MS	MB928007MS	MS	water	9-25-96	X	X	X	X	X
05G01001MSD	MB928007MSD	MSD	water	9-25-96	X	X	X		
05G01001DUP	MB928007DUP	DUP	water	9-25-96				X	X

Trip Blank, R = Rinse, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

SDG#: WF031B

VALIDATION SAMPLE TABLE

LDC#: 2121A

Project Name: NAS Whiting Field

Parameters/Analytical Method

Job#: 7560-32

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (CLP-1.9)	SVOA (CLP-1.9)	Pesticides /PCBs (CLP-1.9)	Metals (CLP-2.1)	Cyanide
05G01002	MC447001		water	11-21-96	X	X	X	X	X
16T04001	MC447002	TB	water	11-21-96	X				

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF032

VALIDATION SAMPLE TABLE

LDC#: 2046A

Project Name: NAS Whiting Field

Parameters/Analytical Method

Job#: 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (CLP-1.9)	SVOA (CLP-1.9)	Pesticides /PCBs (CLP-1.9)	Metals	Cyanide
06T02901	MC011001	TB	water	9-30-96	X				
33G00401	MC011002		water	9-30-96	X	X	X	X	X
06G00102	MC011003		water	10-1-96	X	X	X	X	X
06G00101	MC011004		water	10-1-96	X	X	X	X	X
06G00301	MC011005		water	10-2-96	X	X	X	X	X
06R02001	MC011006	R	water	10-2-96	X	X	X	X	X
29G00501	MC011007		water	10-2-96	X	X	X	X	X
29G00501D	MC011008	FD	water	10-2-96	X	X	X	X	X
29T03001	MC037001	TB	water	10-3-96	X				
29G00101	MC037002		water	10-3-96	X	X	X	X	X
66G01201	MC037003		water	10-3-96	X	X	X	X	X
66G00102	MC037004		water	10-4-96	X	X	X	X	X
29G00501MS	MC011007MS	MS	water	10-2-96	X	X	X	X	X
29G00501MSD	MC011007MSD	MSD	water	10-2-96	X	X	X		
29G00501DUP	MC011007DUP	DUP	water	10-2-96				X	X

Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

SDG#: WF033

VALIDATION SAMPLE TABLE

LDC#: 2069A

Project Name: NAS Whiting Field

Parameters/Analytical Method

Job#: 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (CLP-1.9)	SVOA (CLP-1.9)	Pesticides /PCBs (CLP-1.9)	Metals	Cyanide
29T03101	MC085001	TB	water	10-7-96	X				
26G00401	MC085002		water	10-7-96	X	X	X	X	X
26G00301	MC085003		water	10-8-96	X	X	X	X	X
66G00202	MC085004		water	10-8-96	X	X	X	X	X
29G00201	MC085005		water	10-8-96	X	X	X	X	X
66G01901	MC085006		water	10-9-96	X	X	X	X	X
66R02101	MC085007	R	water	10-9-96	X	X	X	X	X
66T03201	MC118001	TB	water	10-10-96	X				
66G00201	MC118002		water	10-9-96	X	X	X	X	X
66G00201D	MC118003	FD	water	10-9-96	X	X	X	X	X
07G00101	MC118004		water	10-10-96	X	X	X	X	X
30G00501	MC118005		water	10-10-96	X	X	X	X	X
66G00301	MC118006		water	10-11-96	X	X	X	X	X
66G00201MS	MC118002MS	MS	water	10-9-96	X	X	X	X	X
66G00201MSD	MC118002MSD	MSD	water	10-9-96	X	X	X		
66G00201DUP	MC118002DUP	DUP	water	10-9-96				X	X

TB = Trip Blank, R = Rinse, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF034		VALIDATION SAMPLE TABLE						LDC#: 2070A	
Project Name: NAS Whiting Field			Parameters/Analytical Method				Job#: 8532-20		
Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (CLP-1.9)	SVOA (CLP-1.9)	Pesticides /PCBs (CLP-1.9)	Metals	Cyanide
66T03301	MC153001	TB	water	10-14-96	X				
66G02001	MC153002		water	10-14-96	X	X	X	X	X
66G00302	MC153003		water	10-15-96	X	X	X	X	X
66G01801	MC153004		water	10-16-96	X	X	X	X	X
30G00301	MC153005		water	10-16-96	X	X	X	X	X
30G00401	MC153006		water	10-16-96	X	X	X	X	X
66R02201	MC153007	R	water	10-16-96	X	X	X	X	X
30G00301D	MC153008	FD	water	10-16-96	X	X	X	X	X
66T03401	MC176001	TB	water	10-17-96	X				
66G01101	MC176002		water	10-17-96	X	X	X	X	X
66G01301	MC176003		water	10-17-96	X	X	X	X	X
66G00501	MC176004		water	10-18-96	X	X	X	X	X
66G00501F	MC176005		water	10-18-96				X	
30G00301MS	MC153005MS	MS	water	10-16-96	X	X	X	X	X
30G00301MSD	MC153005MSD	MSD	water	10-16-96	X	X	X		
30G00301DUP	MC153005DUP	DUP	water	10-16-96				X	X

Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

SDG#: WF035

VALIDATION SAMPLE TABLE

LDC#: 2076A

Project Name: NAS Whiting Field

Parameters/Analytical Method

Job#: 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (CLP-1.9)	SVOA (CLP-1.9)	Pesticides /PCBs (CLP-1.9)	Metals	Cyanide
66T03501	MC214001	TB	water	10-21-96	X				
66G00401	MC214002		water	10-21-96	X	X	X	X	X
66G01601	MC214003		water	10-22-96	X	X	X	X	X
66G01501	MC214004		water	10-22-96	X	X	X	X	X
66G01701	MC214005		water	10-23-96	X	X	X	X	X
66R02301	MC214006	R	water	10-23-96	X	X	X	X	X
66G01701D	MC214007	FD	water	10-23-96	X	X	X	X	X
66T03601	MC231001	TB	water	10-24-96	X				
66G00101	MC231002		water	10-24-96	X	X	X	X	X
08G00101	MC231003		water	10-24-96	X	X	X	X	X
66G01001	MC231004		water	10-25-96	X	X	X	X	X
66G01701MS	MC214005MS	MS	water	10-23-96	X	X	X	X	X
66G01701MSD	MC214005MSD	MSD	water	10-23-96	X	X	X		
66G01701DUP	MC214005DUP	DUP	water	10-23-96				X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF036

VALIDATION SAMPLE TABLE

LDC#: 2077A

Project Name: NAS Whiting Field

Parameters/Analytical Method

Job#: 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (CLP-1.9)	SVOA (CLP-1.9)	Pesticides /PCBs (CLP-1.9)	Metals	Cyanide
66T03701	MC262001	TB	water	10-28-96	X				
66G00701	MC262002		water	10-29-96	X	X	X	X	X
54G00201	MC262003		water	10-29-96	X	X	X	X	X
54G00101	MC262004		water	10-30-96	X	X	X	X	X
31G00201	MC262005		water	10-30-96	X	X	X	X	X
31G00201F	MC262006		water	10-30-96				X	
54R02401	MC262007	R	water	10-30-96	X	X	X	X	X
54G00101D	MC262008	FD	water	10-30-96	X	X	X	X	X
31T03801	MC284001	TB	water	10-31-96	X				
31G00301	MC284002		water	10-31-96	X	X	X	X	X
31G00402	MC284003		water	10-31-96	X	X	X	X	X
31G00403	MC284004		water	11-1-96	X	X	X	X	X
54G00101MS	MC262004MS	MS	water	10-30-96	X	X	X	X	X
54G00101MSD	MC262004MSD	MSD	water	10-30-96	X	X	X		
54G00101DUP	MC262004DUP	DUP	water	10-30-96				X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

SDG#: WF037

VALIDATION SAMPLE TABLE

LDC#: 2071A

Project Name: NAS Whiting Field

Parameters/Analytical Method

Job#: 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (CLP-1.9)	SVOA (CLP-1.9)	Pesticides /PCBs (CLP-1.9)	Metals	Cyanide
15T03901	MC424001	TB	water	11-18-96	X				
15G00502	MC424002		water	11-18-96	X				
15G00503	MC424003		water	11-18-96	X				
16G00202	MC424004		water	11-19-96	X				
16G00203	MC424005		water	11-19-96	X				
15G00802	MC424006		water	11-20-96	X				
15G00803	MC424007		water	11-20-96	X				
15G00803D	MC424008	FD	water	11-20-96	X				
15R02501	MC424009	R	water	11-20-96	X				
15F00201	MC424010		water	11-20-96	X	X	X	X	X
16G00702	MC448001		water	11-21-96	X				
16G00703	MC448002		water	11-21-96	X				
16G00403	MC448003		water	11-22-96	X				
16T04001	MC448004	TB	water	11-21-96	X				
15G00803MS	MC424007MS	MS	water	11-20-96	X				
15G00803MSD	MC424007MSD	MSD	water	11-20-96	X				

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP -- Duplicate

Table 1

SDG#: WF038

VALIDATION SAMPLE TABLE

LDC#: 2099A

Project Name: NAS Whiting Field

Parameters/Analytical Method

Job#: 7560-32

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (CLP-1.9)
36T04101	MC687001	TB	water	12-17-96	X
36BO0101	MC687002		soil	12-17-96	X
36BO0102	MC687003		soil	12-17-96	X
36BO0103	MC687004		soil	12-17-96	X
36BO0201	MC687005		soil	12-17-96	X
36BO0202	MC687006		soil	12-17-96	X
36BO0203	MC687007		soil	12-17-96	X
36BO0301	MC687008		soil	12-17-96	X
36BO0302	MC687009		soil	12-17-96	X
36BO0303	MC687010		soil	12-17-96	X
36BO0303D	MC687011	FD	soil	12-17-96	X
36BO0401	MC687012		soil	12-18-96	X
36BO0401DL	MC687012DL		soil	12-18-96	X
36BO0402	MC687013		soil	12-18-96	X
36BO0403	MC687014		soil	12-18-96	X
36BO0403D	MC687015	FD	soil	12-18-96	X
36RO2601	MC687016	R	water	12-18-96	X
36BO0303MS	MC687011MS	MS	soil	12-17-96	X
36BO0303MSD	MC687011MSD	MSD	soil	12-17-96	X

TP = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

SDG#: WF039		VALIDATION SAMPLE TABLE				LDC#: 2102A
Project Name: NAS Whiting Field			Parameters/Analytical Method		Job#: 7560-32	
Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (CLP-1.9)	
35TO4201	MC698001	TB	water	12-19-96	X	
35BO0101	MC698002		soil	12-20-96	X	
35BO0102	MC698003		soil	12-20-96	X	
35BO0102DL	MC698003DL		soil	12-20-96	X	
35BO0103	MC698004		soil	12-20-96	X	
35BO0104	MC698005		soil	12-20-96	X	
35BO0105	MC698006		soil	12-20-96	X	
35BO0106	MC698007		soil	12-21-96	X	
35BO0201	MC698008		soil	12-21-96	X	
35BO0202	MC698009		soil	12-21-96	X	
35BO0203	MC698010		soil	12-21-96	X	
35RO2701	MC698011	R	water	12-21-96	X	
35BO0301	MC698012		soil	12-21-96	X	
35BO0302	MC698013		soil	12-21-96	X	
35BO0303	MC698014		soil	12-21-96	X	
35BO0302D	MC698015	FD	soil	12-21-96	X	
35BO0203D	MC698016	FD	soil	12-21-96	X	
35BO0203MS	MC698010MS	MS	soil	12-21-96	X	
35BO0203MSD	MC698010MSD	MSD	soil	12-21-96	X	

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF040

VALIDATION SAMPLE TABLE

LDC#: 2120A

Project Name: NAS Whiting Field

Parameters/Analytical Method

Job#: 7560-32

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (CLP-1.9)
35TO4301	MC783001	TB	water	1-7-97	X
35BO0401	MC783002		soil	1-7-97	X
35BO0402	MC783003		soil	1-7-97	X
35BO0403	MC783004		soil	1-7-97	X
35BO0501	MC783005		soil	1-7-97	X
35BO0501DL	MC783005DL		soil	1-7-97	X
35BO0502	MC783006		soil	1-7-97	X
35BO0503	MC783007		soil	1-7-97	X
35BO0201	MC783008		soil	1-8-97	X
35BO0202	MC783009		soil	1-8-97	X
35BO0203	MC783010		soil	1-8-97	X
35BO0101	MC783011		soil	1-8-97	X
35BO0102	MC783012		soil	1-8-97	X
35BO0103	MC783013		soil	1-8-97	X
35BO0301	MC783014		soil	1-9-97	X
35BO0302	MC783015		soil	1-9-97	X
35BO0303	MC783016		soil	1-9-97	X
35R02801	MC783017	R	water	1-9-97	X
35BO0203D	MC783018	FD	soil	1-8-97	X
35BO0103D	MC783019	FD	soil	1-8-97	X
35BO0203MS	MC783010MS	MS	soil	1-8-97	X
35BO0203MSD	MC783010MSD	MSD	soil	1-8-97	X

TB - Trip Blank, R = Rinse, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP - Duplicate

SDG#: WF041

VALIDATION SAMPLE TABLE

LDC#: 2323A

Project Name: NAS Whiting

Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (1.9)	SVOA (1.9)	Pesticides /PCBs (1.9)	Metals (2.1)
35T04501	MD908001	TB	water	6-11-97	X			
35F00301	MD908002		water	6-11-97	X	X	X	X
35R03001	MD908003	R	water	6-11-97	X	X	X	X
35G00101	MD908004		water	6-11-97	X	X	X	X
35G00101D	MD908005	FD	water	6-11-97	X	X	X	X
35G00101DRE	MD908005RE	FD	water	6-11-97		X		
35G00103	MD908006		water	6-11-97	X	X	X	X
35G00103F	MD908007		water	6-11-97				X
35G00102	MD908008		water	6-12-97	X	X	X	X
37G00102	MD908009		water	6-12-97	X	X	X	X
37T04601	MD926001	TB	water	6-12-97	X			
36G00101	MD926002		water	6-12-97	X	X	X	X
36G00101F	MD926003		water	6-12-97				X
37G00101	MD926004		water	6-12-97	X	X	X	X
36G00102	MD926005		water	6-13-97	X	X	X	X
36G00102RE	MD926005RE		water	6-13-97		X		
36G00103	MD926006		water	6-13-97	X	X	X	X
36G00103RE	MD926006RE		water	6-13-97		X		
35T04701	MD950001	TB	water	6-15-97	X			
35G00202	MD950002		water	6-15-97	X	X	X	X
35G00202D	MD950003	FD	water	6-15-97	X	X	X	X
35G00203	MD950004		water	6-15-97	X	X	X	X
35G00201	MD950005		water	6-16-97	X	X	X	X
35G00201F	MD950006		water	6-16-97				X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF041

VALIDATION SAMPLE TABLE

LDC#: 2323A

Project Name: NAS Whiting

Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (1.9)	SVOA (1.9)	Pesticides /PCBs (1.9)	Metals (2.1)
13T04801	MD985001	TB	water	6-16-97	X			
13G00301	MD985002		water	6-16-97	X	X	X	X
13G00301F	MD985003		water	6-16-97				X
13G00401	MD985004		water	6-16-97	X	X	X	X
35G00101MS	MD908004MS	MS	water	6-11-97	X	X	X	X
35G00101MSD	MD908004MSD	MSD	water	6-11-97	X	X	X	
35G00101DUP	MD908004DUP	DUP	water	6-11-97				X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

SDG#: WF042 VALIDATION SAMPLE TABLE LDC#: 2311A

Project Name: NAS Whiting Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (1.9)
05T04901	ME007001	TB	water	6-18-97	X
05G00301	ME007002		water	6-17-97	X
05G00901	ME007003		water	6-18-97	X
05G00902	ME007004		water	6-19-97	X
05G00902D	ME007005	FD	water	6-19-97	X
05R03101	ME007006	R	water	6-17-97	X
05T05001	ME021001		water	6-20-97	X
05G01001	ME021002		water	6-20-97	X
05G01002	ME021003		water	6-20-97	X
05G00902MS	ME007004MS	MS	water	6-19-97	X
05G00902MSD	ME007004MSD	MSD	water	6-19-97	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF043

VALIDATION SAMPLE TABLE

LDC#: 2315A

Project Name: NAS Whiting

Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (1.9)
05T05101	ME042001	TB	water	6-23-97	X
05R03201	ME042002	R	water	6-23-97	X
05G00801	ME042003		water	6-24-97	X
05G00802	ME042004		water	6-24-97	X
05G00802D	ME042005	FD	water	6-24-97	X
33T05201	ME053001	TB	water	6-24-97	X
33G00501	ME053002		water	6-24-97	X
33G00101	ME053003		water	6-24-97	X
33G00201	ME053004		water	6-25-97	X
33G00301	ME053005		water	6-25-97	X
33G00301DL	ME053005DL		water	6-25-97	X
33T05301	ME073001	TB	water	6-25-97	X
06G00102	ME073002		water	6-26-97	X
06G00301	ME073003		water	6-26-97	X
33G00401	ME073004		water	6-26-97	X
30T05401	ME087001	TB	water	6-26-97	X
07G00101	ME087002		water	6-26-97	X
07G00101D	ME087003	FD	water	6-26-97	X
30G00501	ME087004		water	6-26-97	X
30G00301	ME087005		water	6-27-97	X
30G00401	ME087006		water	6-27-97	X
05G00802MS	ME042004MS	MS	water	6-24-97	X
05G00802MSD	ME042004MSD	MSD	water	6-24-97	X

Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

SDG#: WF044

VALIDATION SAMPLE TABLE

LDC#: 2322A

Project Name: NAS Whiting

Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (1.9)
06T05501	ME100001	TB	water	6-29-97	X
06R03301	ME100002	R	water	6-29-97	X
66G00201	ME100003		water	6-29-97	X
06G00101	ME100004		water	6-29-97	X
66G00202	ME100005		water	6-30-97	X
66T05601	ME110001	TB	water	6-30-97	X
66G01201	ME110002		water	6-30-97	X
66G01201D	ME110003	FD	water	6-30-97	X
66G00102	ME110004		water	7-1-97	X
66G01301	ME110005		water	7-1-97	X
66T05701	ME133001	TB	water	7-2-97	X
66G00401	ME133002		water	7-2-97	X
66G02001	ME133003		water	7-2-97	X
66T05801	ME135001	TB	water	7-2-97	X
66G00603	ME135002		water	7-2-97	X
66G00603D	ME135003	FD	water	7-2-97	X
66G00604	ME135004		water	7-2-97	X
66G00601	ME135005		water	7-3-97	X
66G00602	ME135006		water	7-3-97	X
66G01201MS	ME110002MS	MS	water	6-30-97	X
66G01201MSD	ME110002MSD	MSD	water	6-30-97	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF045		VALIDATION SAMPLE TABLE						LDC#: 2345A	
Project Name: NAS Whiting			Parameters/Analytical Method						
Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (1.9)	SVOA (1.9)	Pesticides /PCBs (1.9)	Metals (2.1)	Cyanide
OWT05901	ME149001	TB	water	7-7-97	X				
OWR03401	ME149002	R	water	7-7-97	X	X	X	X	X
OWG00501	ME149003		water	7-8-97	X	X	X	X	X
OWG00502	ME149004		water	7-8-97	X	X	X	X	X
OWG00502D	ME149005	FD	water	7-8-97	X	X	X	X	X
OWG00503	ME149006		water	7-8-97	X	X	X	X	X
OWG00503F	ME149007		water	7-8-97				X	
OWT06001	ME159001	TB	water	7-8-97	X				
OWG00101	ME159002		water	7-9-97	X	X	X	X	X
OWG00101RE	ME159002RE		water	7-9-97		X			
OWG00102	ME159003		water	7-9-97	X	X	X	X	X
OWG00102RE	ME159003RE		water	7-9-97		X			
OWG00103	ME159004		water	7-9-97	X	X	X	X	X
OWG00103RE	ME159004RE		water	7-9-97		X			
66T06101	ME175001	TB	water	7-9-97	X				
66G02301	ME175002		water	7-9-97	X	X	X	X	X
66G02301RE	ME175002RE		water	7-9-97		X			
66G02302	ME175003		water	7-9-97	X	X	X	X	X
66G02303	ME175004		water	7-10-97	X	X	X	X	X
OWT06201	ME190001	TB	water	7-10-97	X				
OWG00302	ME190002		water	7-10-97	X	X	X	X	X
OWG00302D	ME190003	FD	water	7-10-97	X	X	X	X	X
OWG00303	ME190004		water	7-10-97	X	X	X	X	X
OWG00301	ME190005		water	7-11-97	X	X	X	X	X

TP = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

SDG#: WF045

VALIDATION SAMPLE TABLE

LDC#: 2345A

Project Name: NAS Whiting

Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (1.9)	SVOA (1.9)	Pesticides /PCBs (1.9)	Metals (2.1)	Cyanide
OWG00301F	ME190006		water	7-11-97				X	
OWT06401	ME226001	TB	water	7-14-97	X				
OWT06401DL	ME226001DL		water	7-14-97	X				
OWG00401	ME226002		water	7-14-97	X	X	X	X	X
OWG00201	ME226003		water	7-15-97	X	X	X	X	X
OWG00502MS	ME149004MS	MS	water	7-8-97	X	X	X	X	X
OWG00502MSD	ME149004MSD	MSD	water	7-8-97	X	X	X		
OWG00502DUP	ME149004DUP	DUP	water	7-8-97				X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF046

VALIDATION SAMPLE TABLE

LDC#: 2377A

Project Name: NAS Whiting

Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (1.9)	SVOA (1.9)	Pesticides /PCBs (1.9)	Metals (4.0)	Cyanide
OWT06501	ME241001	TB	water	7-15-97	X				
31R03301	ME241002	R	water	7-15-97	X	X	X	X	X
31G00101	ME241003		water	7-15-97	X	X	X	X	X
31G00101D	ME241004	FD	water	7-15-97	X	X	X	X	X
OWT06601	ME261001	TB	water	7-16-97	X				
31G00401	ME261002		water	7-16-97	X	X	X	X	X
31G00402	ME261003		water	7-16-97	X				
31G00403	ME261004		water	7-16-97	X				
31G00301	ME261005		water	7-16-97	X				
31T06701	ME305001	TB	water	7-21-97	X				
31G00201	ME305002		water	7-21-97	X				
31G00101MS	ME241003MS	MS	water	7-15-97	X	X	X	X	
31G00101MSD	ME241003MSD	MSD	water	7-15-97	X	X	X		
31G00101DUP	ME241003DUP	DUP	water	7-15-97				X	

TB = Trip Blank, R = Rinse, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

SDG#: WF047

VALIDATION SAMPLE TABLE

LDC#: 2346A

Project Name: NAS Whiting

Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA OLV01.0	Metals (2.1)
39W028	ME243001		water	7-15-97	X	
39W027	ME243002		water	7-15-97	X	
39W024	ME243003		water	7-15-97	X	
39W032	ME243004		water	7-15-97	X	X
39W034	ME243005		water	7-15-97	X	X
39W034D	ME243006		water	7-15-97	X	X
39W031	ME243007		water	7-15-97	X	
STOR_BLK	ME243008		water	7-17-97	X	
39T10001	ME244001	TB	water	7-15-97	X	
39W001	ME244002		water	7-15-97	X	
39W002	ME244003		water	7-15-97	X	X
39W003	ME244004		water	7-15-97	X	
39W004	ME244005		water	7-15-97	X	
39W005	ME244006		water	7-15-97	X	
39W006	ME244007		water	7-15-97	X	
39W007	ME244008		water	7-15-97	X	
39W008	ME244009		water	7-15-97	X	
39W014	ME267001		water	7-16-97	X	
39W015	ME267002		water	7-16-97	X	
39W016	ME267003		water	7-16-97	X	X
39W012	ME267004		water	7-16-97	X	
39W012D	ME267005	FD	water	7-16-97	X	
39W013	ME267006		water	7-16-97	X	
39W017	ME267007		water	7-16-97	X	

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF047

VALIDATION SAMPLE TABLE

LDC#: 2346A

Project Name: NAS Whiting

Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA OLV01.0	Metals (2.1)
STOR_BLK2	ME267008		water	7-18-97	X	
39W034MS	ME243005MS	MS	water	7-15-97	X	X
39W034MSD	ME243005MSD	MSD	water	7-15-97	X	
39W034DUP	ME243005DUP	DUP	water	7-15-97		X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

SDG#: WF048

VALIDATION SAMPLE TABLE

LDC#: 2338A

Project Name: NAS Whiting

Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (1.9)
39D002	ME245001		soil	7-15-97	X
39D001	ME245002		soil	7-15-97	X
39D007	ME245003		soil	7-15-97	X
39D023	ME264001		soil	7-16-97	X
39D026	ME264002		soil	7-16-97	X
39D016	ME264003		soil	7-16-97	X
39D013	ME264004		soil	7-16-97	X
39D019	ME264005		soil	7-17-97	X
39D018	ME264006		soil	7-17-97	X
39D018D	ME264007	FD	soil	7-17-97	X
39D022	ME264008		soil	7-17-97	X
39R03401	ME264009	R	water	7-16-97	X
39D018MS	ME264006MS	MS	soil	7-17-97	X
39D018MSD	ME264006MSD	MSD	soil	7-17-97	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF049

VALIDATION SAMPLE TABLE

LDC#: 2347A

Project Name: NAS Whiting

Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (1.9)	SVOA (1.9)
39T10201	ME262001	TB	water	7-15-97	X	
39W023	ME262002		water	7-16-97	X	
39W026	ME262003		water	7-16-97	X	
39W025	ME262004		water	7-16-97	X	
39W029	ME262005		water	7-16-97	X	
39W030	ME262006		water	7-16-97	X	
39U001	ME262007		water	7-16-97	X	X
39W018	ME263001		water	7-17-97	X	
39W019	ME263002		water	7-17-97	X	
39W020	ME263003		water	7-17-97	X	
39W021	ME263004		water	7-17-97	X	
39W021D	ME263005	FD	water	7-17-97	X	
39W022	ME263006		water	7-17-97	X	
39T10401	ME263007	TB	water	7-17-97	X	
39W021MS	ME263004MS	MS	water	7-17-97	X	
39W021MSD	ME263004MSD	MSD	water	7-17-97	X	

TP = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

SDG#: WF051

VALIDATION SAMPLE TABLE

LDC#: 2360A

Project Name: NAS Whiting

Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (1.9)	Metals (CLP)
16T06801	ME306001	TB	water	7-21-97	X	
16R03501	ME306002	R	water	7-21-97	X	
16G00401	ME306003		water	7-22-97	X	
16G00401D	ME306004	FD	water	7-22-97	X	
16G00402	ME306005		water	7-22-97	X	
16G00403	ME306006		water	7-22-97	X	
16T06901	ME322001	TB	water	7-22-97	X	
16G00302	ME322002		water	7-22-97	X	X
16G00303	ME322003		water	7-22-97	X	X
16G00202	ME322004		water	7-23-97	X	X
16G00203	ME322005		water	7-23-97	X	X
16T07001	ME340001	TB	water	7-23-97	X	
16G00601	ME340002		water	7-23-97	X	X
16G00601F	ME340003		water	7-23-97		X
16G00602	ME340004		water	7-23-97	X	X
16R03601	MW340005	R	water	7-23-97		X
16G00304	ME340006		water	7-24-97	X	X
16G00304F	ME340007		water	7-24-97		X
16G00301	ME340008		water	7-24-97	X	X
16G00101	ME340009		water	7-24-97	X	X
16G00101D	ME340010	FD	water	7-24-97	X	X
16T07101	ME348001	TB	water	7-25-97	X	
16G00702	ME348002		water	7-25-97	X	X
16G00702DL	ME348002DL		water	7-25-97	X	

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF051

VALIDATION SAMPLE TABLE

LDC#: 2360A

Project Name: NAS Whiting

Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (1.9)	Metals (CLP)
16G00703	ME348003		water	7-25-97	X	X
16G00703DL	ME348003DL		water	7-25-97	X	
16G00701	ME348004		water	7-25-97	X	X
16G00401MS	ME306003MS	MS	water	7-22-97	X	
16G00401MSD	ME306003MSD	MSD	water	7-22-97	X	

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

SDG#: WF052

VALIDATION SAMPLE TABLE

LDC#: 2354A

Project Name: NAS Whiting

Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (OLV01.0)
39018	ME346001		water	7-25-97	X
39019	ME346002		water	7-25-97	X
39020	ME346003		water	7-25-97	X
39021	ME346004		water	7-25-97	X
39020D	ME346005	FD	water	7-25-97	X
39029	ME346006		water	7-25-97	X
39T10501	ME346007	TB	water	7-25-97	X
STORAGEBLK	ME346008		water	7-26-97	X
39020MS	ME346003MS	MS	water	7-25-97	X
39020MSD	ME346003MSD	MSD	water	7-25-97	X

TB = Trip Blank, R = Rinse, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF053

VALIDATION SAMPLE TABLE

LDC#: 2384A

Project Name: NAS Whiting

Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (1.9)	Metals (2.1)
15T07201	ME367001	TB	water	7-27-97	X	
15R03701	ME367002	R	water	7-27-97	X	X
15G00601	ME367003		water	7-27-97	X	X
15G00602	ME367004		water	7-27-97	X	X
15G00602D	ME367005	FD	water	7-27-97	X	X
15T07301	ME377001	TB	water	7-28-97	X	
15G00201	ME377002		water	7-28-97	X	X
15G00101	ME377003		water	7-28-97	X	X
15G00202	ME377004		water	7-29-97	X	X
15G00203	ME377005		water	7-29-97	X	X
15T07401	ME390001	TB	water	7-29-97	X	
15G00301	ME390002		water	7-29-97	X	X
15G00302	ME390003		water	7-29-97	X	X
15G00701	ME390004		water	7-30-97	X	X
15G00702	ME390005		water	7-30-97	X	X
15T07501	ME404001	TB	water	7-30-97	X	
15G00401	ME404002		water	7-30-97	X	X
15G00703	ME404003		water	7-30-97	X	X
15G00703D	ME404004	FD	water	7-30-97	X	X
15G00501	ME404005		water	7-31-97	X	X
15G00501F	ME404006		water	7-31-97		X
15G00502	ME404007		water	7-31-97	X	X
15G00503	ME404008		water	7-31-97	X	X
15G00602MS	ME367004MS	MS	water	7-27-97	X	X

Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

SDG#: WF053

VALIDATION SAMPLE TABLE

LDC#: 2384A

Project Name: NAS Whiting

Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (1.9)	Metals (2.1)
15G00602MSD	ME367004MSD	MSD	water	7-27-97	X	
15G00602DUP	ME367004DUP	DUP	water	7-27-97		X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF054

VALIDATION SAMPLE TABLE

LDC#: 2399A

Project Name: NAS Whiting

Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (1.9)	Metals (2.1)
15T07601	ME441001	TB	water	8-4-97	X	
15G00801	ME441002		water	8-4-97	X	X
15G00801D	ME441003	FD	water	8-4-97	X	X
15G00802	ME441004		water	8-4-97	X	X
15R03801	ME441005	R	water	8-5-97	X	X
15G00803	ME441006		water	8-5-97	X	X
15G00303	ME441007		water	8-5-97	X	X
30T07701	ME450001	TB	water	8-5-97	X	
30R03901	ME450002	R	water	8-6-97	X	X
30G00302	ME450003		water	8-6-97	X	X
15G00801MS	ME441002MS	MS	water	8-4-97	X	X
15G00801MSD	ME441002MSD	MSD	water	8-4-97	X	
15G00801DUP	ME441002DUP	DUP	water	8-4-97		X

Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

SDG#: WF055

VALIDATION SAMPLE TABLE

LDC#: 2511A

Project Name: NAS Whiting

Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (1.9)
OWT08001	MF004001	TB	water	10-27-97	X
OWR04101	MF004002	R	water	10-27-97	X
OWG00401	MF004003		water	10-27-97	X
OWG00401D	MF004004		water	10-27-97	X
13R04201	MF004005	R	water	10-28-97	X
13G00401	MF004006		water	10-28-97	X
OWG00401MS	MF004003MS	MS	water	10-27-97	X
OWG00401MSD	MF004003MSD	MSD	water	10-27-97	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table II
Summary of Rejected Data (Organics)
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds				
SDG	Fraction	Sample	Compound	Reason
WF022	Volatiles Semivolatiles Pesticides & PCBs	All samples All samples All samples	No rejected results No rejected results No rejected results	- - -
WF023	Volatiles Semivolatiles Pesticides & PCBs	All samples All samples All samples	No rejected results No rejected results No rejected results	- - -
WF024	Volatiles Semivolatiles Pesticides & PCBs	All samples All samples All samples	No rejected results No rejected results No rejected results	- - -
WF025	Volatiles Semivolatiles Pesticides & PCBs	All samples All samples All samples	No rejected results No rejected results No rejected results	- - -
WF026	Volatiles Semivolatiles Pesticides & PCBs	All samples All samples All samples	No rejected results No rejected results No rejected results	- - -
WF027	Volatiles Semivolatiles Pesticides & PCBs	16G00501 16G00501D 16R01501 66G02101 66G02103 66T02001 All samples All samples	2-Butanone 2-Butanone 2-Butanone 2-Butanone 2-Butanone 2-Butanone No rejected results No rejected results	Initial & Continuing Calibration (RRF) - -
WF028	Volatiles Semivolatiles Pesticides & PCBs	All samples All samples All samples	No rejected results No rejected results No rejected results	- - -
WF029	Volatiles Semivolatiles Pesticides & PCBs	All samples All samples All samples	No rejected results No rejected results No rejected results	- - -
WF030	Volatiles Semivolatiles Pesticides & PCBs	All samples All samples All samples	No rejected results No rejected results No rejected results	- - -
WF031	Volatiles Semivolatiles Pesticides & PCBs	All samples All samples All samples	No rejected results No rejected results No rejected results	- - -
WF031B	Volatiles Semivolatiles Pesticides & PCBs	All samples All samples All samples	No rejected results No rejected results No rejected results	- - -
WF032	Volatiles Semivolatiles Pesticides & PCBs	All samples All samples 29G00501 29G00501D	No rejected results No rejected results Heptachlor epoxide Heptachlor epoxide	- - Target compound identification (RT)
WF033	Volatiles Semivolatiles Pesticides & PCBs	All samples All samples All samples	No rejected results No rejected results No rejected results	- - -
WF034	Volatiles Semivolatiles Pesticides & PCBs	All samples All samples All samples	No rejected results No rejected results No rejected results	- - -
WF035	Volatiles Semivolatiles Pesticides & PCBs	All samples All samples All samples	No rejected results No rejected results No rejected results	- - -

Table II
Summary of Rejected Data (Organics)
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds				
SDG	Fraction	Sample	Compound	Reason
WF036	Volatiles Semivolatiles Pesticides & PCBs	All samples All samples All samples	No rejected results No rejected results No rejected results	- - -
WF037	Volatiles Semivolatiles Pesticides & PCBs	All samples All samples All samples	No rejected results No rejected results No rejected results	- - -
WF038	Volatiles	All samples	No rejected results	-
WF039	Volatiles	All samples	No rejected results	-
WF040	Volatiles	All samples	No rejected results	-
WF041	Volatiles Semivolatiles Pesticides & PCBs	All samples All samples All samples	No rejected results No rejected results No rejected results	- - -
WF042	Volatiles	All samples	No rejected results	-
WF043	Volatiles	All samples	No rejected results	-
WF044	Volatiles	All samples	No rejected results	-
WF045	Volatiles Semivolatiles Pesticides & PCBs	All samples All samples All samples	No rejected results No rejected results No rejected results	- - -
WF046	Volatiles Semivolatiles Pesticides & PCBs	All samples All samples All samples	No rejected results No rejected results No rejected results	- - -
WF047	Volatiles	39T10001 39W001 39W002 39W003 39W004 39W005 39W006 39W007 39W008 39W012 39W012D 39W013 39W014 39W015 39W016 39W017 39W024 39W027 39W028 39W031 39W032 39W034 39W034D STOR_BLK STOR_BLK2	Acetone & 2-Butanone Acetone & 2-Butanone 2-Butanone Acetone & 2-Butanone Acetone & 2-Butanone Acetone & 2-Butanone Acetone & 2-Butanone Acetone & 2-Butanone Acetone & 2-Butanone Acetone & 2-Butanone 2-Butanone 2-Butanone 2-Butanone 2-Butanone Acetone & 2-Butanone 2-Butanone Acetone & 2-Butanone 2-Butanone Acetone & 2-Butanone 2-Butanone	Initial & Continuing Calibration (RRF)
WF048	Volatiles	All samples	No rejected results	-

Table II
Summary of Rejected Data (Organics)
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds				
SDG	Fraction	Sample	Compound	Reason
WF049	Volatiles	39T10201 39T10401 39W016 39W019 39W020 39W021 39W021D 39W022 39W023 39W025 39W026 39W029 39W030	Acetone & 2-Butanone Acetone & 2-Butanone Acetone 2-Butanone Acetone & 2-Butanone Acetone & 2-Butanone Acetone & 2-Butanone Acetone & 2-Butanone Acetone & 2-Butanone Acetone & 2-Butanone Acetone & 2-Butanone 2-Butanone 2-Butanone	Initial & Continuing calibration (RRF)
WF049	Semivolatiles	All samples	No rejected results	-
WF051	Volatiles	All samples	No rejected results	-
WF052	Volatiles	39G018 39G019 39G020 39G020D 39G021 39G029 39R10501 STORAGE BLK	Acetone & 2-Butanone Acetone	Initial & Continuing Calibration (RRF)
WF053	Volatiles	All samples	No rejected results	-
WF054	Volatiles	All samples	No rejected results	-
WF055	Volatiles	All samples	No rejected results	-

Table III
Summary of Rejected Data (Inorganics)
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes				
SDG	Fraction	Sample	Analyte	Reason
WF022	All metals Cyanide	All samples All samples	No rejected results No rejected results	- -
WF023	All metals Cyanide	All samples All samples	No rejected results No rejected results	- -
WF024	All metals Cyanide	All samples All samples	No rejected results No rejected results	- -
WF025	All metals Cyanide	All samples All samples	No rejected results No rejected results	- -
WF026	All metals Cyanide	All samples All samples	No rejected results No rejected results	- -
WF027	All metals Cyanide	All samples All samples	No rejected results No rejected results	- -
WF028	All metals Cyanide	All samples All samples	No rejected results No rejected results	- -
WF029	All metals Cyanide	All samples All samples	No rejected results No rejected results	- -
WF030	All metals Cyanide	All samples All samples	No rejected results No rejected results	- -
WF031	All metals Cyanide	All samples 05G00101 05G00301 05G00801 05G00802 05G00901 05G00902 05G01001 05G01001D 05G01002 05R01901 33G00101 33G00201 33G00301 33G00301D 33G00501	No rejected results Cyanide Cyanide Cyanide Cyanide Cyanide Cyanide Cyanide Cyanide Cyanide Cyanide Cyanide Cyanide Cyanide Cyanide	- Matrix spike (%R)
WF031B	All metals Cyanide	All samples All samples	No rejected results No rejected results	- -
WF032	All metals Cyanide	All samples All samples	No rejected results No rejected results	- -
WF033	All metals Cyanide	All samples All samples	No rejected results No rejected results	- -
WF034	All metals Cyanide	All samples All samples	No rejected results No rejected results	- -
WF035	All metals Cyanide	All samples All samples	No rejected results No rejected results	- -
WF036	All metals Cyanide	All samples All samples	No rejected results No rejected results	- -
WF037	All metals Cyanide	All samples 15F00201	No rejected results Cyanide	- Matrix spike (%R)
WF041	All metals Cyanide	All samples All samples	No rejected results No rejected results	- -

Table III
Summary of Rejected Data (Inorganics)
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Fraction	Sample	Analyte	Reason
WF045	All metals Cyanide	All samples All samples	No rejected results No rejected results	-
WF046	All metals Cyanide	All samples All samples	No rejected results No rejected results	-
WF047	All metals	All samples	No rejected results	-
WF051	All metals	All samples	No rejected results	-
WF053	All metals	All samples	No rejected results	-
WF054	All metals	All samples	No rejected results	-

Table IV Summary of Percent Recoveries (%R) and Relative Percent Differences (RPD) for Matrix Spike/Matrix Spike Duplicates Groundwater and Subsurface Soil Investigation, Phase IIB NAS Whiting Field, Milton Florida								
Organic Compounds								
SDG	Client ID	Compound	Criteria		% Recovery		RPD	Qualifier
			% Recovery	RPD	MS	MSD		
WF022	BKG00101	Volatiles	-	-	-	-	-	None
		<u>Semivolatiles</u>						
		4-Chloro-3-methylphenol	23-97	-	108	115	-	J (all detects)
		4-Nitrophenol	10-80	-	88	93	-	J (all detects)
		2,4-Dinitrotoluene	24-96	-	100	108	-	J (all detects)
		Pentachlorophenol	9-103	-	106	118	-	J (all detects)
		Pesticides/PCBs	-	-	-	-	None	
WF023	02G00301	Volatiles	-	-	-	-	-	None
		<u>Semivolatiles</u>						
		4-Nitrophenol	10-80	-	88	82	-	J (all detects)
		2,4-Dinitrotoluene	24-96	-	97	-	-	J (all detects)
		Pentachlorophenol	9-103	-	139	122	-	J (all detects)
				Pesticides/PCBs	-	-	-	-
WF024	15G00701	Volatiles	-	-	-	-	-	None
		<u>Semivolatiles</u>						
		4-Nitrophenol	10-80	-	100	102	-	J (all detects)
		2,4-Dinitrotoluene	24-96	-	102	106	-	J (all detects)
		Pentachlorophenol	9-103	-	147	148	-	J (all detects)
				Pesticides/PCBs	-	-	-	-
WF025	15G00601	Volatiles	-	-	-	-	-	None
		<u>Semivolatiles</u>						
		4-Nitrophenol	10-80	-	99	102	-	J (all detects)
		2,4-Dinitrotoluene	24-96	-	101	103	-	J (all detects)
		Pentachlorophenol	9-103	-	124	130	-	J (all detects)
				Pesticides/PCBs	-	-	-	-

Table IV
Summary of Percent Recoveries (%R) and Relative Percent Differences (RPD) for Matrix Spike/Matrix Spike Duplicates
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds								
SDG	Client ID	Compound	Criteria		% Recovery		RPD	Qualifier
			% Recovery	RPD	MS	MSD		
WF026	15G00803	Volatiles	-	-	-	-	-	None
		<u>Semivolatiles</u>						
		4-Chloro-3-methylphenol	23-97	-	99	-	-	J (all detects)
		4-Nitrophenol	10-80	-	108	114	-	J (all detects)
		Pentachlorophenol	9-103	-	140	144	-	J (all detects)
		2,4-Dinitrotoluene	24-96	-	-	100	-	J (all detects)
		Pesticides/PCBs	-	-	-	-	None	
WF027	16G00501	Volatiles						
		Benzene	-	≤11	-	-	12	J
		<u>Semivolatiles</u>						
		4-Nitrophenol	10-80	-	91	91	-	J (all detects)
		Pentachlorophenol	9-103	-	104	104	-	J (all detects)
		Pesticides/PCBs	-	-	-	-	None	
WF028	12G00101	Volatiles	-	-	-	-	-	None
		<u>Semivolatiles</u>						
		4-Nitrophenol	10-80	-	83	-	-	J (all detects)
		Pesticides/PCBs	-	-	-	-	None	
WF029	14G00101	Volatiles	-	-	-	-	-	None
		<u>Semivolatiles</u>						
		4-Nitrophenol	10-80	-	88	91	-	J (all detects)
		Pentachlorophenol	9-103	-	-	106	-	J (all detects)
		Pesticides/PCBs	-	-	-	-	None	
WF030	66G00601	Volatiles	-	-	-	-	-	None
		<u>Semivolatiles</u>						
		4-Nitrophenol	10-80	-	85	89	-	J (all detects)
		Pesticides/PCBs	-	-	-	-	None	

Table IV
Summary of Percent Recoveries (%R) and Relative Percent Differences (RPD) for Matrix Spike/Matrix Spike Duplicates
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds								
SDG	Client ID	Compound	Criteria		% Recovery		RPD	Qualifier
			% Recovery	RPD	MS	MSD		
WF031	05G01001	Volatiles	-	-	-	-	-	None
		<u>Semivolatiles</u>						
		Phenol	-	≤42	-	-	50	None
		2-Chlorophenol	-	≤40	-	-	50	None
		4-Chloro-3-methylphenol	-	≤42	-	-	51	None
		4-Nitrophenol	10-80	≤50	-	95	58	None
		Pentachlorophenol	-	≤50	-	-	52	None
		1,4-Dichlorobenzene	-	≤28	-	-	45	J
		N-Nitroso-di-n-propylamine	-	≤38	-	-	56	J
		1,2,4-Trichlorobenzene	-	≤28	-	-	41	J
		Acenaphthene	-	≤31	-	-	84	J
		2,4-Dinitrotoluene	-	≤38	-	-	52	J
		Pyrene	-	≤31	-	-	54	J
		Pesticides/PCBs	-	-	-	-	-	None
WF031B	None	Volatiles	-	-	-	-	-	-
		Semivolatiles	-	-	-	-	-	-
		Pesticides/PCBs	-	-	-	-	-	-
WF032	29G00501	Volatiles	-	-	-	-	-	None
		Semivolatiles	-	-	-	-	-	None
		Pesticides/PCBs	-	-	-	-	-	None
WF033	66G00201	<u>Volatiles</u>						
		1,1-Dichloroethene	-	≤14	-	-	16	None
		<u>Semivolatiles</u>						
4-Nitrophenol	10-80	-	-	83	-	None		
Pesticides & PCBs	-	-	-	-	-	None		
WF034	30G00301	Volatiles	-	-	-	-	-	None
		<u>Semivolatiles</u>						
		Acenaphthene	46-118	≤31	44	-	37	None
		1,4-Dichlorobenzene	-	≤28	-	-	33	None
		1,2,4-Trichlorobenzene	-	≤28	-	-	34	None
		2,4-Dinitrotoluene	-	≤38	-	-	40	None
Pyrene	-	≤31	-	-	36	None		

Table IV
Summary of Percent Recoveries (%R) and Relative Percent Differences (RPD) for Matrix Spike/Matrix Spike Duplicates
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds								
SDG	Client ID	Compound	Criteria		% Recovery		RPD	Qualifier
			% Recovery	RPD	MS	MSD		
WF034 cont.	30G00301	Pesticides/PCBs	-	-	-	-	-	None
WF035	66G01701	Volatiles	-	-	-	-	-	None
		Semivolatiles	-	-	-	-	-	None
		Pesticides/PCBs	-	-	-	-	-	None
WF036	54G00101	Volatiles	-	-	-	-	-	None
		<u>Semivolatiles</u>						
		4-Nitrophenol	10-80	-	101	81	-	None
		1,4-Dichlorobenzene	-	≤28	-	-	30	J
		1,2,4-Trichlorobenzene	-	≤28	-	-	36	J
		Pesticides/PCBs	-	-	-	-	None	
WF037	15G00803	Volatiles	-	-	-	-	-	None
WF038	36B00303	Volatiles	-	-	-	-	-	None
WF039	35B00203	Volatiles	-	-	-	-	-	None
WF040	37B00203	Volatiles	-	-	-	-	-	None
WF041	35G00101	Volatiles	-	-	-	-	-	None
		Semivolatiles	-	-	-	-	-	None
		<u>Pesticides & PCBs</u>						
		Aldrin	40-120	-	124	121	-	J (all detects)
WF042	05G00902	Volatiles	-	-	-	-	-	None
WF043	05G00802	Volatiles	-	-	-	-	-	None
WF044	66G01201	<u>Volatiles</u>						
		Trichloroethene	-	≤14	-	-	40	None
WF045	OWG00502	Volatiles	-	-	-	-	-	None
		<u>Semivolatiles</u>						
		4-Nitrophenol	10-80	-	96	109	-	J (all detects)
		2,4-Dinitrotoluene	24-96	-	-	100	-	J (all detects)

Table IV
Summary of Percent Recoveries (%R) and Relative Percent Differences (RPD) for Matrix Spike/Matrix Spike Duplicates
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds								
SDG	Client ID	Compound	Criteria		% Recovery		RPD	Qualifier
			% Recovery	RPD	MS	MSD		
WF045 cont.	OWG00502	<u>Pesticides & PCBs</u>	-	≤15	-	-	28	J
		gamma-BHC	-	≤20	-	-	24	J
		Heptachlor	40-120	≤22	-	128	29	J
		Aldrin	52-126	≤18	-	134	22	J
		Dieldrin	56-121	≤21	-	144	22	J
WF046	31G00101	<u>Volatiles</u>	-	-	-	-	-	None
		<u>Semivolatiles</u>						
		4-Nitrophenol	10-80	-	88	96	-	J (all detects)
WF047	39W034	<u>Pesticides & PCBs</u>						
		Endrin	56-121	-	127	-	-	J (all detects)
WF048	39D018	<u>Volatiles</u>	-	-	-	-	-	None
WF049	39W021	<u>Volatiles</u>	-	-	-	-	-	None
	None	<u>Semivolatiles</u>	-	-	-	-	-	None
WF051	16G00401	<u>Volatiles</u>	-	-	-	-	-	None
WF052	39020	<u>Volatiles</u>	-	-	-	-	-	None
WF053	15G00602	<u>Volatiles</u>	-	-	-	-	-	None
WF054	15G00801	<u>Volatiles</u>	-	-	-	-	-	None
WF055	13G00401	<u>Volatiles</u>	-	-	-	-	-	None

Table V
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Organic Compounds			RPD
WF022	Client ID Laboratory ID Collection Date Acetone Semivolatiles Pesticides/PCBs	BKG00101 RB858003 7/16/96 ND ND ND	BKG00101D RB858004 7/16/96 8 ug/L ND ND	 Not calculable - -
WF022	Client ID Laboratory ID Collection Date Acetone Semivolatiles Pesticides/PCBs	01G00102 RB873008 7/19/96 4 ug/L ND ND	01G00102D RB873009 7/19/96 2 ug/L ND ND	 67 - -
WF023	Client ID Laboratory ID Collection Date Acetone Carbon disulfide Semivolatiles Pesticides/PCBs	02G00301 RB887012 7/24/96 ND 1 ug/L ND ND	02G00301D RB887013 7/24/96 10 ug/L ND ND ND	 Not calculable Not calculable - -
WF024	Client ID Laboratory ID Collection Date Acetone Semivolatiles Pesticides/PCBs	15G00701 RB920009 7/31/96 2 ND ND	15G00701D RB920010 7/31/96 ND ND ND	 Not calculable - -
WF025	Client ID Laboratory ID Collection Date Acetone 1,2-Dichloroethene (total) Chlorobenzene Ethylbenzene 1,4-Dichlorobenzene Naphthalene Diethylphthalate Pesticides/PCBs	15G00601 RB956006 8/7/96 5 ug/L 1 ug/L 5 ug/L 10U ug/L 12 ug/L 4 ug/L 1 ug/L ND	15G00601D RB956008 8/7/96 8 ug/L 1 ug/L 5 ug/L 1 ug/L 12 ug/L 4 ug/L 1 ug/L ND	 46 0 0 Not calculable 0 0 0 -
WF026	Client ID Laboratory ID Collection Date Acetone 2-Butanone Trichloroethene Bis(2-ethylhexyl)phthalate 4,4'-DDT	15G00803 RB980007 8/14/96 25 ug/L 7 ug/L 4 ug/L 2 ug/L 0.16 ug/L	15G00803D RB980008 8/14/96 5 ug/L 10U ug/L 4 ug/L 1 ug/L 0.079 ug/L	 133 Not calculable 0 67 68

Table V
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Organic Compounds			RPD
WF026	Client ID	16G00403	16G00403D	
	Laboratory ID	RB980020	RB980021	
	Collection Date	8/16/96	8/16/96	
	Acetone	3 ug/L	2 ug/L	40
	1,2-Dichloroethene (total)	1 ug/L	2 ug/L	67
	Benzene	600 ug/L	600 ug/L	0
	Phenol	8 ug/L	8 ug/L	0
	Naphthalene	1 ug/L	2 ug/L	67
Bis(2-ethylhexyl)phthalate	1 ug/L	10U ug/L	Not calculable	
Pesticides/PCBs	ND	ND	None	
WF026	Client ID	16G00403DL	16G00403DDL	
	Laboratory ID	RB980020DL	RB9890021DL	
	Collection Date	8/16/96	8/16/96	
Acetone	18 ug/L	24 ug/L	29	
Benzene	700 ug/L	740 ug/L	6	
WF027	Client ID	16G00501	16G00501D	
	Laboratory ID	RC016009	RC016013	
	Collection Date	8/21/96	8/21/96	
	Volatiles	ND	ND	None
	Bis(2-ethylhexyl)phthalate	2 ug/L	10U ug/L	Not calculable
Pesticides/PCBs	ND	ND	None	
WF027	Client ID	09G00301	09G00301D	
	Laboratory ID	RC016019	RC016020	
	Collection Date	8/23/96	8/23/96	
	Acetone	46 ug/L	18 ug/L	88
	2-Butanone	2 ug/L	10U ug/L	Not calculable
Semivolatiles	ND	ND	None	
Pesticides/PCBs	ND	ND	None	
WF028	Client ID	11G00201	11G00201D	
	Laboratory ID	RC044011	RC044018	
	Collection Date	8/28/96	8/28/96	
	Acetone	5 ug/L	11 ug/L	75
	Phenol	4 ug/L	6 ug/L	40
Bis(2-ethylhexyl)phthalate	5 ug/L	4 ug/L	22	
Pesticides/PCBs	ND	ND	None	
WF028	Client ID	12G00101	12G00101D	
	Laboratory ID	RC044012	RC044017	
	Collection Date	8/27/96	8/27/96	
	Acetone	3 ug/L	6 ug/L	67
Bis(2-ethylhexyl)phthalate	2 ug/L	2 ug/L	0	
Pesticides/PCBs	ND	ND	None	

Table V
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Organic Compounds			RPD
WF029	Client ID	14G00101	14G00101D	
	Laboratory ID	RC092007	RC092009	
	Collection Date	9/11/96	9/11/96	
	Acetone	8 ug/L	4 ug/L	67
	Carbon disulfide	3 ug/L	10U ug/L	Not calculable
WF030	Methylene chloride	1 ug/L	10U ug/L	Not calculable
	Bis(2-ethylhexyl)phthalate	4 ug/L	4 ug/L	0
	Pesticides/PCBs	ND	ND	None
	Client ID	66G00601	66G00601D	
	Laboratory ID	RC121007	RC121011	
WF030	Collection Date	9/18/96	9/18/96	
	Acetone	2 ug/L	8 ug/L	120
	Methylene chloride	2 ug/L	10U ug/L	Not calculable
	Bis(2-ethylhexyl)phthalate	2 ug/L	3 ug/L	40
	Pesticides/PCBs	ND	ND	None
WF030	Client ID	66G02203	66G02203D	
	Laboratory ID	RC121016	RC121017	
	Collection Date	9/20/96	9/20/96	
	Acetone	4 ug/L	10U ug/L	Not calculable
	Bis(2-ethylhexyl)phthalate	2 ug/L	10U ug/L	Not calculable
WF031	Pesticides/PCBs	ND	ND	None
	Client ID	05G01001	05G01001D	
	Laboratory ID	MB928007	MB928012	
	Collection Date	9/25/96	9/25/96	
	Volatiles	ND	ND	None
WF031	Semivolatiles	ND	ND	None
	Pesticides/PCBs	ND	ND	None
	Client ID	33G00301	33G00301D	
	Laboratory ID	MB958006	MB958007	
	Collection Date	9/27/96	9/27/96	
WF031	1,1-Dichloroethene	5 ug/L	6 ug/L	18
	1,2-Dichloroethene (total)	4 ug/L	3 ug/L	29
	Trichloroethene	300 ug/L	300 ug/L	0
	Di-n-butylphthalate	1 ug/L	1 ug/L	0
	Pesticides/PCBs	ND	ND	None

Table V
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Organic Compounds			RPD
WF032	Client ID Laboratory ID Collection Date Volatiles Semivolatiles Pesticides/PCBs	29G00501 MC011007 10/2/96 ND ND ND	29G00501D MC011008 10/2/96 ND ND ND	 None None None
WF033	Client ID Laboratory ID Collection Date Trichloroethene Toluene Semivolatiles Pesticides/PCBs	66G00201 MC118002 10/9/96 1 ug/L 1 ug/L ND ND	66G00201D MC118003 10/9/96 1 ug/L 1 ug/L ND ND	 0 0 None None
WF034	Client ID Laboratory ID Collection Date 1,2-Dichloroethene (total) Trichloroethene Di-n-butylphthalate Pesticides/PCBs	30G00301 MC153005 10/16/96 31 ug/L 340 ug/L 2 ug/L ND	30G00301D MC153008 10/16/96 31 ug/L 340 ug/L 10U ug/L ND	 0 0 Not calculable None
WF035	Client ID Laboratory ID Collection Date Volatiles Di-n-butylphthalate Pesticides/PCBs	66G01701 MC214005 10/23/96 ND 3 ug/L ND	66G01701D MC214007 10/23/96 ND 2 ug/L ND	 None 40 None
WF036	Client ID Laboratory ID Collection Date Volatiles Diethylphthalate Di-n-butylphthalate Pesticides/PCBs	54G00101 MC262004 10/30/96 ND 1 ug/L 1 ug/L ND	54G00101D MC262008 10/30/96 ND 10U ug/L 10U ug/L ND	 None Not calculable Not calculable None
WF037	Client ID Laboratory ID Collection Date Trichloroethene	15G00803 MC424007 11/20/96 5 ug/L	15G00803D MC424008 11/20/96 5 ug/L	 0
WF038	Client ID Laboratory ID Collection Date Volatiles	36B00303 MC687010 12/17/96 ND	36B00303D MC687011 12/17/96 ND	 None

Table V
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Organic Compounds			RPD
WF038	Client ID Laboratory ID Collection Date Volatiles	36BO0403 MC687014 12/18/96 ND	36BO0403D MC687015 12/18/96 ND	None
WF039	Client ID Laboratory ID Collection Date Volatiles	35BO0302 MC698013 12/21/96 ND	35BO0302D MC698015 12/21/96 ND	None
WF039	Client ID Laboratory ID Collection Date Volatiles	35BO0203 MC698010 12/21/96 ND	35BO0203D MC698016 12/21/96 ND	None
WF040	Client ID Laboratory ID Collection Date Acetone Methylene chloride	37BO0203 MC783010 1/8/97 14 ug/Kg 2 ug/Kg	37BO0203D MC783018 1/8/97 12 ug/Kg 10 ug/Kg	15 133
WF040	Client ID Laboratory ID Collection Date Acetone Methylene chloride	37BO0103 MC783013 1/8/97 18 ug/Kg 3 ug/Kg	37BO0103D MC783019 1/8/97 22 ug/Kg 11 ug/Kg	20 114
WF041	Client ID Laboratory ID Collection Date <u>Volatiles</u> 1,1-Dichloroethene 1,1,1-Trichloroethane Xylene (total) Semivolatiles Pesticides & PCBs	35G00101 MD908004 6/11/97 6 ug/L 2 ug/L 2 ug/L ND ND	35G00101D MD908005 6/11/97 7 ug/L 2 ug/L 1 ug/L ND ND	15 0 67 - -
WF041	Client ID Laboratory ID Collection Date <u>Volatiles</u> Chloroform <u>Semivolatiles</u> Bis(2-ethylhexyl)phthalate Pesticides & PCBs	35G00202 MD950002 6/15/97 3 ug/L 10U ug/L ND	35G00202D MD950003 6/15/97 3 ug/L 5 ug/L ND	0 Not calculable -
WF042	Client ID Laboratory ID Collection Date Volatiles	05G00902 ME007004 6/19/97 ND	05G00902D ME007005 6/19/97 ND	-

Table V
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Organic Compounds			RPD
WF043	Client ID	05G00802	05G00802D	
	Laboratory ID	ME042004	ME042005	
	Collection Date	6/24/97	6/24/97	
	<u>Volatiles</u>			
	Benzene	1 ug/L	10U ug/L	Not calculable
WF043	Trichloroethene	4 ug/L	10U ug/L	Not calculable
	Xylenes (total)	1 ug/L	10U ug/L	Not calculable
	Client ID	07G00101	07G00101D	
	Laboratory ID	ME087002	ME087003	
	Collection Date	6/26/97	6/26/97	
WF043	Acetone	540 ug/L	490 ug/L	10
	Benzene	3900 ug/L	4400 ug/L	12
	Toluene	14000 ug/L	16000 ug/L	13
	Ethylbenzene	1800 ug/L	2000 ug/L	10
	Xylenes, total	3200 ug/L	3600 ug/L	12
	Client ID	66G01201	66G01201D	
WF044	Laboratory ID	ME110002	ME110003	
	Collection Date	6/30/97	6/30/97	
	<u>Volatiles</u>			
	1,1-Dichloroethene	3 ug/L	2 ug/L	40
	1,2-Dichloroethene (total)	3 ug/L	3 ug/L	0
WF044	Trichloroethene	120 ug/L	96 ug/L	22
	Client ID	66G00603	66G00603D	
	Laboratory ID	ME135002	ME135003	
	Collection Date	7/2/97	7/2/97	
	<u>Volatiles</u>			
WF044	Trichloroethene	1 ug/L	1 ug/L	0
	Client ID	OWG00502	OWG00502D	
	Laboratory ID	ME149004	ME149005	
	Collection Date	7/8/97	7/8/97	
	<u>Volatiles</u>			
WF045	Acetone	3 ug/Kg	2 ug/Kg	40
	Semivolatiles	ND	ND	-
	Pesticides & PCBs	ND	ND	-
	Client ID	OWG00302	OWG00302D	
	Laboratory ID	ME190002	ME190003	
WF045	Collection Date	7/10/97	7/10/97	
	Volatiles	ND	ND	-
	Pesticides & PCBs	ND	ND	-
	<u>Semivolatiles</u>			
	Di-n-butylphthalate	4 ug/L	6 ug/L	40
WF046	Client ID	31G00101	31G00101D	
	Laboratory ID	ME241003	ME241004	
	Collection Date	7/15/97	7/15/97	
	Volatiles	ND	ND	-
	Pesticides & PCBs	ND	ND	-
WF046	<u>Semivolatiles</u>			
	Di-n-butylphthalate	6 ug/L	3 ug/L	67

Table V
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Organic Compounds			RPD
WF047	Client ID	39W034	39W034D	
	Laboratory ID	ME243005	ME243006	
	Collection Date	7/15/97	7/15/97	
	<u>Volatiles</u>			
	Acetone	4 ug/L	5U ug/L	Not calculable
	Carbon disulfide	1U ug/L	1 ug/L	Not calculable
WF047	Client ID	39W012	39W012D	
	Laboratory ID	ME267004	ME267005	
	Collection Date	7/16/97	7/16/97	
	<u>Volatiles</u>			
	Methylene chloride	2U ug/L	1 ug/L	Not calculable
	Benzene	2 ug/L	2 ug/L	0
WF048	Client ID	39D018	39D018D	
	Laboratory ID	ME264006	ME264007	
	Collection Date	7/17/97	7/17/97	
	<u>Volatiles</u>			
	Acetone	27 ug/Kg	27 ug/Kg	0
	Trichloroethene	2 ug/Kg	2 ug/Kg	0
WF049	Client ID	39W021	39W021D	
	Laboratory ID	ME263004	ME263005	
	Collection Date	7/17/97	7/17/97	
	Volatiles	ND	ND	
WF051	Client ID	16G00401	16G00401D	
	Laboratory ID	ME306003	ME306003	
	Collection Date	7/22/97	7/22/97	
	<u>Volatiles</u>			
	Acetone	18 ug/L	14 ug/L	25
WF051	Client ID	16G00101	16G00101D	
	Laboratory ID	ME340009	ME340010	
	Collection Date	7/24/97	7/24/97	
	Volatiles	ND	ND	
WF052	Client ID	39020	39020D	
	Laboratory ID	ME346004	ME346005	
	Collection Date	7/25/97	7/25/97	
	Volatiles	ND	ND	
WF053	Client ID	15G00602	15G00602D	
	Laboratory ID	ME367004	ME367005	
	Collection Date	7/27/97	7/27/97	
	<u>Volatiles</u>			
	Trichloroethene	2 ug/L	2 ug/L	0
WF053	Client ID	15G00703	15G00703D	
	Laboratory ID	ME404003	ME404004	
	Collection Date	7/30/97	7/30/97	
	<u>Volatiles</u>			
	1,2-Trichloroethene (total)	1 ug/L	2 ug/L	67
	Trichloroethene	36 ug/L	38 ug/L	5
	1,1-Dichloroethene	2 ug/L	10U ug/L	Not calculable

Table V Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples Groundwater and Subsurface Soil Investigation, Phase IIB NAS Whiting Field, Milton Florida				
SDG	Organic Compounds			RPD
WF054	Client ID Laboratory ID Collection Date <u>Volatiles</u> Chlorobenzene	15G00801 ME441002 8/4/97 4 ug/L	15G00801D ME441003 8/4/97 4 ug/L	0
WF055	Client ID Laboratory ID Collection Date Volatiles	OWG00401 MF004003 10/27/97 ND	OWG00401D MF004004 10/27/97 ND	-

Table VI
Summary of Surrogate Recoveries
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds						
SDG	Client ID	Compound	Percent Recovery	QC Limits	# of Samples	Qualifier
WF022	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
		<u>Pesticides/PCBs</u>			10	
	BKR01001	Decachlorobiphenyl	58	60-150		J
		Decachlorobiphenyl	58	60-150		J
	BKG00101	Tetrachloro-m-xylene	59	60-150		J
		Tetrachloro-m-xylene	57	60-150		J
	BKG00102	Decachlorobiphenyl	37	60-150		J
		Decachlorobiphenyl	37	60-150		J
	BKG00103	Decachlorobiphenyl	40	60-150		J
		Decachlorobiphenyl	41	60-150		J
	BKG00202	Decachlorobiphenyl	47	60-150		J
		Decachlorobiphenyl	47	60-150		J
	BKG00201	Decachlorobiphenyl	43	60-150		J
		Decachlorobiphenyl	43	60-150		J
	BKF01001	Tetrachloro-m-xylene	59	60-150		J
		Tetrachloro-m-xylene	59	60-150		J
		Decachlorobiphenyl	51	60-150		J
		Decachlorobiphenyl	47	60-150		J
	17G00101	Decachlorobiphenyl	58	60-150		J
	Decachlorobiphenyl	56	60-150		J	
17G00201	Decachlorobiphenyl	22	60-150		J	
	Decachlorobiphenyl	21	60-150		J	
01G00102D	Decachlorobiphenyl	59	60-150		J	
	Decachlorobiphenyl	56	60-150		J	
WF023	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
		<u>Pesticides/PCBs</u>			5	
	01G00201	Decachlorobiphenyl	32	60-150		J
		Decachlorobiphenyl	28	60-150		J
	01G00301	Decachlorobiphenyl	49	60-150		J
		Decachlorobiphenyl	47	60-150		J
	02G00101	Decachlorobiphenyl	41	60-150		J
		Decachlorobiphenyl	42	60-150		J
	16G00703	Decachlorobiphenyl	59	60-150		J
		Decachlorobiphenyl	55	60-150		J
	18G00301	Decachlorobiphenyl	48	60-150		J
		Decachlorobiphenyl	46	60-150		J

Table VI
Summary of Surrogate Recoveries
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds						
SDG	Client ID	Compound	Percent Recovery	QC Limits	# of Samples	Qualifier
WF024	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
	BKG00203	<u>Pesticides/PCBs</u>			1	
		Decachlorobiphenyl	52	60-150	-	J
		Decachlorobiphenyl	48	60-150	-	J
WF025	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
	15G00101	<u>Pesticides/PCBs</u>			5	
		Decachlorobiphenyl	21	60-150	-	J
	15G00303	Decachlorobiphenyl	20	60-150	-	J
		Tetrachloro-m-xylene	57	60-150	-	J
	15G00502	Tetrachloro-m-xylene	58	60-150	-	J
		Tetrachloro-m-xylene	155	60-150	-	J (all detects)
	15R01301	Tetrachloro-m-xylene	162	60-150	-	J (all detects)
	15G00502RE	Decachlorobiphenyl	59	60-150	-	J
Decachlorobiphenyl		53	60-150	-	J	
		Decachlorobiphenyl	54	60-150	-	J
WF026	All	Volatiles	All within QC limits	-	-	None
	15G00802	<u>Semivolatiles</u>			2	
		2-Fluorobiphenyl	161	43-116	-	J (all detects) all B/N
	15G00802R	Terphenyl-d14	163	33-141	-	J (all detects) all B/N
		2-Fluorobiphenyl	182	43-116	-	J (all detects) all B/N
	Terphenyl-d14	153	33-141	-	J (all detects) all B/N	

Table VI
Summary of Surrogate Recoveries
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Client ID	Compound	Percent Recovery	QC Limits	# of Samples	Qualifier
WF026 cont.	15G00201	Pesticides/PCBs			9	
		Decachlorobiphenyl	52	60-150		J
	15G00202	Decachlorobiphenyl	50	60-150		J
		Decachlorobiphenyl	58	60-150		J
	15G00801	Decachlorobiphenyl	58	60-150		J
		Decachlorobiphenyl	43	60-150		J
	15G00803	Decachlorobiphenyl	38	60-150		J
		Decachlorobiphenyl	58	60-150		J
	16G00201	Decachlorobiphenyl	58	60-150		J
		Decachlorobiphenyl	43	60-150		J
	16G00203	Decachlorobiphenyl	37	60-150		J
		Decachlorobiphenyl	44	60-150		J
	16G00403	Decachlorobiphenyl	43	60-150		J
		Decachlorobiphenyl	40	60-150		J
	16G00403D	Decachlorobiphenyl	39	60-150		J
Decachlorobiphenyl		47	60-150	J		
16G00601	Decachlorobiphenyl	46	60-150	J		
	Decachlorobiphenyl	25	60-150	J		
WF027	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
	16G00304	Pesticides/PCBs			2	
		Decachlorobiphenyl	46	60-150		J
		Decachlorobiphenyl	43	60-150		J
		Decachlorobiphenyl	58	60-150		J
66G02103	Decachlorobiphenyl	58	60-150	J		
WF028	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
	10G00101	Pesticides/PCBs			5	
		Decachlorobiphenyl	50	60-150		J
	11G00101	Decachlorobiphenyl	48	60-150		J
		Decachlorobiphenyl	47	60-150		J
	11G00301	Decachlorobiphenyl	47	60-150		J
		Decachlorobiphenyl	25	60-150		J
	11G00401	Decachlorobiphenyl	24	60-150		J
		Decachlorobiphenyl	29	60-150		J
11G00201D	Decachlorobiphenyl	29	60-150	J		
	Decachlorobiphenyl	59	60-150	J		

Table VI
Summary of Surrogate Recoveries
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds						
SDG	Client ID	Compound	Percent Recovery	QC Limits	# of Samples	Qualifier
WF029	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
		<u>Pesticides/PCBs</u>			3	
	13G00101	Decachlorobiphenyl	23	60-150		J
		Decachlorobiphenyl	23	60-150		J
	66G00901	Decachlorobiphenyl	43	60-150		J
		Decachlorobiphenyl	42	60-150		J
66G00903	Decachlorobiphenyl	52	60-150		J	
		Decachlorobiphenyl	52	60-150		J
WF030	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
		<u>Pesticides/PCBs</u>			1	
	66G00804	Decachlorobiphenyl	31	60-150		J
		Decachlorobiphenyl	31	60-150		J
WF031	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
		<u>Pesticides/PCBs</u>			3	
	05G00301	Tetrachloro-m-xylene	56	60-150		J
		Tetrachloro-m-xylene	52	60-150		J
	05G00101	Decachlorobiphenyl	164	60-150		J (all detects)
	05G01002	Tetrachloro-m-xylene	57	60-150		J
WF031B	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
	All	Pesticides/PCBs	All within QC limits	-	-	None
WF032	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
		<u>Pesticides/PCBs</u>			1	
	29G00101	Tetrachloro-m-xylene	54	60-150		J
		Tetrachloro-m-xylene	56	60-150		J

Table VI
Summary of Surrogate Recoveries
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Client ID	Compound	Percent Recovery	QC Limits	# of Samples	Qualifier
WF033	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
	07G00101	<u>Pesticides/PCBs</u>			3	
	30G00501	Tetrachloro-m-xylene	174	60-150		J (all detects)
	66G00201D	Tetrachloro-m-xylene	59	60-150		J
		Tetrachloro-m-xylene	25	60-150		J
		Tetrachloro-m-xylene	36	60-150		J
WF034	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
	66G01801	<u>Pesticides/PCBs</u>			1	
		Tetrachloro-m-xylene	164	60-150		J (all detects)
WF035	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
	08G00101	<u>Pesticides/PCBs</u>			1	
		Tetrachloro-m-xylene	59	60-150		J
WF036	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
	54G00101	<u>Pesticides/PCBs</u>			1	
		Tetrachloro-m-xylene	57	60-150		J
		Tetrachloro-m-xylene	52	60-150		J
WF037	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
	All	Pesticides/PCBs	All within QC limits	-	-	None
WF038	All	Volatiles	All within QC limits	-	-	None
WF039	All	Volatiles	All within QC limits	-	-	None
WF040	All	Volatiles	All within QC limits	-	-	None

Table VI
Summary of Surrogate Recoveries
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds							
SDG	Client ID	Compound	Percent Recovery	QC Limits	# of Samples	Qualifier	
WF041	All	Volatiles	All within QC limits	-	-	None	
	All	Semivolatiles	All within QC limits	-	-	None	
	35G00201	Pesticides & PCBs			2	J	
	36G00103	Decachlorobiphenyl	58	60-150		J	
		Tetrachloro-m-xylene	57	60-150		J	
		Tetrachloro-m-xylene	58	60-150		J	
WF042	All	Volatiles	-	-	-	None	
WF043	All	Volatiles	-	-	-	None	
WF044	All	Volatiles	-	-	-	None	
WF045	All	Volatiles	-	-	-	None	
		Semivolatiles	2-Fluorophenol	0	21-110	3	J (all detects) R (all non-detects)
			Phenol-d5	0	10-110		
			2-Chlorophenol-d4	0	33-110		
			1,2-Dichlorobenzene-d4	0	16-110		
			Nitrobenzene-d5	0	35-114		
			2-Fluorobiphenyl	0	43-116		
			2,4,6-Tribromophenol	0	10-123		
	Terphenyl-d14		0	33-141			
	OWG00101	2-Fluorophenol	0	21-110	3	J (all detects) R (all non-detects)	
		Phenol-d5	0	10-110			
		2-Chlorophenol-d4	0	33-110			
		1,2-Dichlorobenzene-d4	0	16-110			
		Nitrobenzene-d5	0	35-114			
		2-Fluorobiphenyl	0	43-116			
		2,4,6-Tribromophenol	0	10-123			
Terphenyl-d14		0	33-141				
OWG00102	2-Fluorophenol	0	21-110	3	J (all detects) R (all non-detects)		
	Phenol-d5	0	10-110				
	2-Chlorophenol-d4	0	33-110				
	1,2-Dichlorobenzene-d4	0	16-110				
	Nitrobenzene-d5	0	35-114				
	2-Fluorobiphenyl	0	43-116				
	2,4,6-Tribromophenol	0	10-123				
	Terphenyl-d14	0	33-141				

Table VI
Summary of Surrogate Recoveries
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds						
SDG	Client ID	Compound	Percent Recovery	QC Limits	# of Samples	Qualifier
WF045 cont.	OWG00103	2-Fluorophenol	0	21-110	4	J (all detects) R (all non-detects)
		Phenol-d5	0	10-110		
		2-Chlorophenol-d4	0	33-110		
		1,2-Dichlorobenzene-d4	0	16-110		
		Nitrobenzene-d5	0	35-114		
		2-Fluorobiphenyl	0	43-116		
		2,4,6-Tribromophenol	0	10-123		
		Terphenyl-d14	0	33-141		
		<u>Pesticides & PCBs</u>				
	OWG00101	Tetrachloro-m-xylene	45	60-150	J	
		Tetrachloro-m-xylene	52	60-150	J	
OWG00103	Tetrachloro-m-xylene	59	60-150	J		
OWG00302	Tetrachloro-m-xylene	54	60-150	J		
	Tetrachloro-m-xylene	52	60-150	J		
	OWG00302D	Tetrachloro-m-xylene	53	60-150	J	
		Tetrachloro-m-xylene	52	60-150	J	
WF046	All	Volatiles	-	-	-	None
	All	Semivolatiles	-	-	-	None
		<u>Pesticides & PCBs</u>			2	
	31G00101	Tetrachloro-m-xylene	48	60-150	J	
	31R03301	Tetrachloro-m-xylene	55	60-150	J	
		Tetrachloro-m-xylene	59	60-150	J	
WF047	All	Volatiles	-	-	-	None
WF048	All	Volatiles	-	-	-	None
WF049	All	Volatiles	-	-	-	None
	All	Semivolatiles	-	-	-	None
WF051	All	Volatiles	-	-	-	None
WF052	All	Volatiles	-	-	-	None
WF053	All	Volatiles	-	-	-	None
WF054	All	Volatiles	-	-	-	None

Table VI
Summary of Surrogate Recoveries
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Client ID	Compound	Percent Recovery	QC Limits	# of Samples	Qualifier
WF055	All	Volatiles	-	-	-	None

Notes: J = estimated value
 UJ = undetected, but number that is reported as the quantification limit is an estimated value.

Table VII
Summary of Compounds Exceeding Instrument Calibration
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds					
SDG	Date	Compound	Initial Calibration %RSD	Continuing Calibration %D	Qualifier
WF022	6/25/96	<u>Volatiles</u> Acetone	30.2	-	J
	7/19/96	Chloromethane	-	28.8	J
		Chloroethane	-	48.7	J
	7/22/96	Chloroethane	-	30.6	J
	8/13/96	<u>Semivolatiles</u> 4,6-Dinitro-2-methylphenol	-	27.2	J
		Pentachlorophenol	-	25.4	J
	8/14/96	4-Chloroaniline	-	31.6	J
		2,4-Dinitrophenol	-	27.6	J
		4,6-Dinitro-2-methylphenol	-	33.8	J
	All	Pesticides/PCBs	-	-	None
WF023	6/25/96	<u>Volatiles</u> Acetone	30.2	-	J
	7/25/96	Acetone	-	33.2	J
	7/31/96	Acetone	-	30.4	J
		Methylene chloride	-	31.7	J
		Carbon disulfide	-	27.2	J
	8/1/96	Chloroethane	-	27.5	J
		Carbon disulfide	-	27.5	J
		Methylene chloride	-	37.8	J
	8/20/96	<u>Semivolatiles</u> 4-Nitroaniline	-	37.8	J
		Chrysene	-	27.8	J
	8/21/96	4-Nitroaniline	-	31.5	J
		Chrysene	-	28.5	J
		Benzo(g,h,i)perylene	-	32.7	J
	8/25/96	4,4'-DDT	23.6	-	J
WF024	6/25/96	<u>Volatiles</u> Acetone	30.2	-	J
	8/5/96	Acetone	33.8	-	J
	8/2/96	Chloroethane	-	29.5	J
		Carbon disulfide	-	30.8	J
		Methylene chloride	-	41.0	J
	8/21/96	<u>Semivolatiles</u> 4-Nitroaniline	-	28.7	J
		Chrysene	-	29.5	J
		Indeno(1,2,3-cd)pyrene	-	28.1	J
		Dibenz(a,h)anthracene	-	34.0	J
		Benzo(g,h,i)perylene	-	37.6	J
	All	Pesticides/PCBs	-	-	None

Table VII
Summary of Compounds Exceeding Instrument Calibration
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds						
SDG	Date	Compound	Initial Calibration %RSD	Continuing Calibration %D	Qualifier	
WF025	8/5/96	<u>Volatiles</u>				
		Acetone	33.8	-	J	
	8/14/96	Chloromethane	26.7	-	J	
		Chloroethane	28.5	-	J	
		Acetone	29.7	-	J	
	9/9/96	<u>Semivolatiles</u>				
		2,4-Dinitrophenol	-	29.9	J	
		4-Nitroaniline	-	27.6	J	
		4,6-Dinitro-2-methylphenol	-	30.7	J	
		Pyrene	-	30.0	J	
		3,3'-Dichlorobenzidine	-	37.0	J	
		2,4-Dinitrophenol	-	35.6	J	
		4-Nitroaniline	-	29.4	J	
		4,6-Dinitro-2-methylphenol	-	32.0	J	
		Pentachlorophenol	-	27.8	J	
	3,3'-Dichlorobenzidine	-	27.8	J		
8/25/96	4,4'-DDT	23.6	-	J		
WF026	8/5/96	<u>Volatiles</u>				
		Acetone	33.8	-	J	
	8/19/96	Chloromethane	-	46.5	J	
		Chloroethane	-	77.1	J	
		1,1-Dichloroethane	-	28.6	J	
		2-Butanone	-	30.3	J	
	8/20/96	Chloromethane	-	32.5	J	
		Chloroethane	-	32.4	J	
	8/22/96	Acetone	-	37.9	J	
		Carbon disulfide	-	28.0	J	
		2-Butanone	-	27.8	J	
	9/10/96	<u>Semivolatiles</u>				
		2,4-Dinitrophenol	-	35.6	J	
		4-Nitroaniline	-	29.4	J	
		4,6-Dinitro-2-methylphenol	-	32.0	J	
		Pentachlorophenol	-	27.8	J	
		3,3'-Dichlorobenzidine	-	27.8	J	
	9/10/96	4-Chloroaniline	-	36.8	J	
		3-Nitroaniline	-	37.9	J	
		2,4-Dinitrophenol	-	29.3	J	
		4-Nitroaniline	-	49.5	J	
		4,6-Dinitro-2-methylphenol	-	29.4	J	
		Pentachlorophenol	-	29.6	J	
3,3'-Dichlorobenzidine		-	54.1	J		
<u>Pesticides & PCBs</u>						
9/14/96	alpha-BHC	22.2	-	J		
	delta-BHC	22.1	-	J		

Table VII
Summary of Compounds Exceeding Instrument Calibration
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds						
SDG	Date	Compound	Initial Calibration %RSD	Continuing Calibration %D	Qualifier	
WF027	9/1/96	<u>Volatiles</u>				
		2-Butanone	39.1	-	J	
			2-Butanone	0.014 (RRF)	-	J(detects) / R(ND)
	8/5/96	Acetone	33.8	-	J	
	9/2/96	Acetone	-	102.4	J	
		2-Butanone	-	36.3	J	
	8/22/96	Acetone	-	37.9	J	
		Carbon disulfide	-	28.0	J	
		2-Butanone	-	27.8	J	
	8/29/96	Bromomethane	-	31.0	J	
		Chloroethane	-	63.9	J	
		Acetone	-	37.2	J	
	9/2/96	Chloromethane	-	32.4	J	
		Chloroethane	-	28.4	J	
		Acetone	-	49.2	J	
		2-Butanone	-	38.7	J	
		4-Methyl-2-pentanone	-	35.7	J	
		2-Hexanone	-	38.9	J	
		2-Butanone	-	0.019 (RRF)	J (detects) / R (ND)	
	9/3/96	Chloromethane	-	27.4	J	
		Acetone	-	34.7	J	
		2-Butanone	-	32.6	J	
		4-Methyl-2-pentanone	-	32.9	J	
		2-Hexanone	-	38.9	J	
	9/10/96	<u>Semivolatiles</u>				
		4-Chloroaniline	-	36.8	J	
		3-Nitroaniline	-	37.9	J	
2,4-Dinitrophenol		-	29.3	J		
4-Nitroaniline		-	49.5	J		
4,6-Dinitro-2-methylphenol		-	29.4	J		
Pentachlorophenol		-	29.6	J		
3,3'-Dichlorobenzidine	-	54.1	J			
9/20/96	3,3'-Dichlorobenzidine	-	30.4	J		
All	Pesticides/PCBs	-	-	None		
WF028	8/5/96	<u>Volatiles</u>				
		Acetone	33.8	-	J	
	9/2/96	Chloromethane	-	32.4	J	
		Chloroethane	-	28.4	J	
		Acetone	-	49.2	J	
		2-Butanone	-	38.7	J	
		4-Methyl-2-pentanone	-	35.7	J	
		2-Hexanone	-	38.9	J	
	9/3/96	Chloromethane	-	27.4	J	
		Acetone	-	34.7	J	
		2-Butanone	-	32.6	J	
		4-Methyl-2-pentanone	-	32.9	J	
		2-Hexanone	-	38.9	J	

**Table VII
Summary of Compounds Exceeding Instrument Calibration
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida**

Organic Compounds					
SDG	Date	Compound	Initial Calibration %RSD	Continuing Calibration %D	Qualifier
WF028 cont.	9/6/96	Chloromethane	-	35.4	J
		Acetone	-	41.0	J
		2-Butanone	-	41.8	J
		1,2-Dichloropropane	-	27.6	J
		4-Methyl-2-pentanone	-	40.5	J
		2-Hexanone	-	43.3	J
		Bromoform	-	26.2	J
		1,1,2,2-Tetrachloroethane	-	26.5	J
	9/20/96	Semivolatiles 3,3'-Dichlorobenzidine	-	30.4	J
	9/26/96	Benzo(k)fluoranthene	-	28.5	J
All	Pesticides/PCBs	-	-	None	
WF029	9/17/96	Volatiles Chloromethane	-	38.1	J
		Methylene chloride	-	33.6	J
		2-Hexanone	-	26.5	J
	9/26/96	Semivolatiles Benzo(k)fluoranthene	-	28.5	J
		Benzo(k)fluoranthene	-	25.6	J
	All	Pesticides/PCBs	-	-	None
	WF030	9/20/96 9/23/96	Volatiles Methylene chloride	-	35.2
Methylene chloride			-	30.2	J
10/16/96		Semivolatiles 2,4-Dinitrophenol	-	25.8	J
		4-Nitrophenol	-	28.0	J
All		Pesticides/PCBs	-	-	None
WF031		All	Volatiles	-	-
	All	Semivolatiles	-	-	None
	11/5/96	Pesticides & PCBs delta-BHC	21.2	-	J
WF031B	All	Volatiles	-	-	None
	11/28/96	Semivolatiles Di-n-octylphthalate	-	25.3	J
	12/9-10/97	Pesticides & PCBs Alpha-BHC	23.9	-	J
WF032	10/10/96	Volatiles 1,1,2,2-Tetrachloroethane	-	27.8	J
		Semivolatiles Hexachlorobutadiene	-	33.5	J
	11/3/96	Hexachlorocyclopentadiene	-	31.5	J
		Di-n-octylphthalate	-	27.0	J
	11/5/96	Pesticides & PCBs delta-BHC	21.2	-	J

**Table VII
Summary of Compounds Exceeding Instrument Calibration
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida**

Organic Compounds					
SDG	Date	Compound	Initial Calibration %RSD	Continuing Calibration %D	Qualifier
WF033	10/16/96	<u>Volatiles</u> Acetone	-	25.3	J
	11/4/96	<u>Semivolatiles</u> Hexachlorobutadiene	-	31.2	J
		Hexachlorocyclopentadiene	-	27.9	J
	All	<u>Pesticides/PCBs</u>	-	-	None
WF034	All	<u>Volatiles</u>	-	-	None
	11/26/96	<u>Semivolatiles</u> Di-n-octylphthalate	-	33.9	J
	All	<u>Pesticides/PCBs</u>	-	-	None
WF035	All	<u>Volatiles</u>	-	-	None
	11/26/96	<u>Semivolatiles</u> Bis(2-ethylhexyl)phthalate	-	25.6	J
		Di-n-octylphthalate	-	32.1	J
	11/27/96	Di-n-octylphthalate	-	30.0	J
	11/5/96	<u>Pesticides & PCBs</u> delta-BHC	21.2	-	J
WF036	All	<u>Volatiles</u>	-	-	None
		<u>Semivolatiles</u> Di-n-octylphthalate	-	30.0	J
		Di-n-octylphthalate	-	25.3	J
		<u>Pesticides & PCBs</u> alpha-BHC	23.9	-	J
WF037	All	<u>Volatiles</u>	-	-	None
	11/28/96	<u>Semivolatiles</u> Di-n-octylphthalate	-	25.3	J
	12/9-10/96	<u>Pesticides & PCBs</u> alpha-BHC	23.9	-	J
WF038	12/26/96	<u>Volatiles</u> Acetone	-	30.6	J
WF039	12/26/96	<u>Volatiles</u> Acetone	-	30.6	J
WF040	All	<u>Volatiles</u>	-	-	None
WF041	All	<u>Volatiles</u>	-	-	None
	All	<u>Semivolatiles</u>	-	-	None
	6/11-12/97	<u>Pesticides & PCBs</u> Methoxychlor	24.2	-	J
		delta-BHC	21.5	-	J
WF042	All	<u>Volatiles</u>	-	-	None
WF043	All	<u>Volatiles</u>	-	-	None

Table VII
Summary of Compounds Exceeding Instrument Calibration
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds					
SDG	Date	Compound	Initial Calibration %RSD	Continuing Calibration %D	Qualifier
WF044	7/7/97	Volatiles Bromomethane	-	33.5	J
WF045	All All	Volatiles	-	-	None
		Semivolatiles	-	-	None
	7/31/97	<u>Pesticides & PCBs</u> alpha-BHC	20.3	-	J
		alpha-BHC gamma-BHC	24.2 21.9	- -	J J
WF046	All All	Volatiles	-	-	None
		Semivolatiles	-	-	None
	7/31/97	<u>Pesticides & PCBs</u> alpha-BHC	20.3	-	J
		alpha-BHC gamma-BHC	24.2 21.9	- -	J J
WF047	7/21/97	Volatiles Acetone	35.4	-	J
	7/21/97	Acetone	0.023 RRF	-	J (all detects) R (all non-detects)
		2-Butanone	0.030 RRF	-	J (all detects) R (all non-detects)
	7/28/97	Bromomethane	-	34.6	J
		Acetone	-	35.1	J
	7/29/97	Bromo.nethane	-	30.5	J
		Acetone	-	30.9	J
	7/21/97	Acetone	-	0.020 (RRF)	J (all detects) R (all non-detects)
		2-Butanone	-	0.030 (RRF)	J (all detects) R (all non-detects)
	7/22/97	Acetone	-	0.020 (RRF)	J (all detects) R (all non-detects)
		2-Butanone	-	0.030 (RRF)	J (all detects) R (all non-detects)
	7/28/97	Acetone	-	0.015 (RRF)	J (all detects) R (all non-detects)
		2-Butanone	-	0.026 (RRF)	J (all detects) R (all non-detects)
	7/29/97	Acetone	-	0.015 (RRF)	J (all detects) R (all non-detects)
		2-Butanone	-	0.026 (RRF)	J (all detects) R (all non-detects)
	WF048	7/25/97	Volatiles Bromomethane	36.5	-
7/26/97		Bromomethane	-	28.7	J

Table VII
Summary of Compounds Exceeding Instrument Calibration
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds					
SDG	Date	Compound	Initial Calibration %RSD	Continuing Calibration %D	Qualifier
WF049	7/21/97	<u>Volatiles</u> Acetone	35.4	-	J
	7/21/97	Acetone	0.023 (RRF)	-	J (all detects) R (all non-detects)
		2-Butanone	0.030 (RRF)	-	J (all detects) R (all non-detects)
	7/28/97	Bromomethane	-	34.6	J
		Acetone	-	35.1	J
	7/22/97	Acetone	-	0.020 (RRF)	J (all detects) R (all non-detects)
		2-Butanone	-	0.030 (RRF)	J (all detects) R (all non-detects)
	7/28/97	Acetone	-	0.015 (RRF)	J (all detects) R (all non-detects)
		2-Butanone	-	0.026 (RRF)	J (all detects) R (all non-detects)
	All	Semivolatiles	-	-	None
WF051	All	Volatiles	-	-	None
WF052	7/21/97	<u>Volatiles</u> Acetone	35.4	-	J
	7/21/97	Acetone	0.023 (RRF)	-	J (all detects) R (all non-detects)
		2-Butanone	0.030 (RRF)	-	J (all detects) R (all non-detects)
	7/29/97	Bromomethane	-	30.5	J
		Acetone	-	30.9	J
	7/29/97	Acetone	-	0.016 (RRF)	J (all detects) R (all non-detects)
2-Butanone		-	0.026 (RRF)	J (all detects) R (all non-detects)	
WF053	8/8/97	<u>Volatiles</u> Acetone	-	36.4	J
WF054	8/19/97	<u>Volatiles</u> Acetone	39.1	-	J
	8/8/97	Acetone	-	36.4	J
	8/19/97	Acetone	-	30.3	J

Table VII
Summary of Compounds Exceeding Instrument Calibration
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Date	Compound	Initial Calibration %RSD	Continuing Calibration %D	Qualifier
WF055	All	Volatiles	-	-	None

Notes: %RSD = percent Relative Standard Deviation for initial calibrations

%D = percent Difference for continuing calibrations

J = the compound was positively identified; the associated numerical value is the approximate concentration of the compound in the sample, either because its concentration was lower than the QL (laboratory 'J' flag), or because QC criteria were not met (validation 'J').

UJ = the compound was not detected above the reported sample QL. However, the reported sample QL is approximate; the compound concentration may not reliably be presumed to be less than the QL value.

R = the sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the compound cannot be verified.

Table VIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds			
SDG	Compound	Concentration	Associated Samples
WF022	<u>Volatiles</u> Acetone	8 ug/L	BKT01001 BKR01001 BKG00101 BKG00101D BKG00102 BKG00103
	Methylene chloride Acetone	1 ug/L 16 ug/L	BKG00202 BKG00201 BKF01001
	Acetone	14 ug/L	17T01101 17G00102 17G00101 17G00201 17G00301 01G00101 01G00102 01G00102D
	Semivolatiles Pesticides/PCBs	ND ND	- -
WF023	<u>Volatiles</u> Methylene chloride Acetone	2 ug/L 15 ug/L	01T01201 01G00401 01G00201 01G00301 BKG00301 02G00201 02G00101 18G00301 02G00301 02G00301D
	Semivolatiles Pesticides/PCBs	ND ND	- -
WF024	<u>Volatiles</u> Acetone	2 ug/L	18T01401 18G00101 15G00401 BKG00203 15R01201 15G00701
	Semivolatiles Pesticides/PCBs	ND ND	- -
WF025	<u>Volatiles</u> Acetone	3 ug/L	15G00503DL 15R01301 15T01601 15G00301 15G00302 15G00303 15G00101 15G00203
	Semivolatiles Pesticides/PCBs	ND ND	- -

Table VIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds			
SDG	Compound	Concentration	Associated Samples
WF026	<u>Volatiles</u> Acetone	11 ug/L	15T01701 15G00202 15G00201 15G00802 15G00801 16G00201 15G00803D 15R01401
	Acetone	4 ug/L	15G00803 16T01801 16G00202 16G00203
	Acetone	5 ug/L	16G00202DL 16G00602 16G00601 16G00403 16G00403DL 16G00403D 16G00403DDL
	Semivolatiles Pesticides/PCBs	ND ND	- -
WF027	<u>Volatiles</u> Acetone	5 ug/L	16G00401 16G00402 16G00101 16G00301
	Acetone	5 ug/L	09G00301
	Acetone	6 ug/L	16G00501
	Trichloroethene	1 ug/L	16R01501
	Xylenes (total)	2 ug/L	16G00501D 66T02001 66G02101 66G02103
	Acetone	11 ug/L	16G00303 66G02102 09G00101 09G00301D
Semivolatiles Pesticides/PCBs	ND ND	- -	
WF028	<u>Volatiles</u> Acetone	5 ug/L	10T02101 09G00201 10G00201 11G00102 11G00401 11T02201 11G00301
	Acetone	11 ug/L	10G00101 11G00402 11G00201 12G00201

Table VIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds			
SDG	Compound	Concentration	Associated Samples
WFC28 cont.	Acetone Carbon disulfide	5 ug/L 6 ug/L	11G00101 12G00101 11R01601 12G00101D 11G00201D
	Semivolatiles Pesticides/PCBs	ND ND	- -
WF029	<u>Volatiles</u> Acetone	3 ug/L	13T02301 13G00101 13R01701
	Acetone	3 ug/L	13G00102 13G00201 13G00103 14G00201 14G00101 14G00101D 66T02401 66G00901 66G00904 66G00902 66G00903
	<u>Semivolatiles</u> Bis(2-ethylhexyl)phthalate Pesticides/PCBs	1 ug/L ND	All samples in SDG WF029 -
WF030	<u>Volatiles</u> Acetone	3 ug/L	66T02501 66G00801 66G00802 66G00803 66G00804
	<u>Semivolatiles</u> Bis(2-ethylhexyl)phthalate	2 ug/L	All samples in SDG WF030
	Pesticides/PCBs	ND	-
WF031	<u>Volatiles</u>	ND	-
	<u>Semivolatiles</u> Di-n-butylphthalate Bis(2-ethylhexyl)phthalate	3 ug/L 3 ug/L	05G00801 05G00802 05G00901 05G00902
	Di-n-butylphthalate Bis(2-ethylhexyl)phthalate	2 ug/L 2 ug/L	05G01001 05G00301 05R01901 05G01001D
	Di-n-butylphthalate	2 ug/L	05G00101 33G00501 33G00201 33G00101 33G00301 33G00301D
	Pesticides/PCBs	ND	-

Table VIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds			
SDG	Compound	Concentration	Associated Samples
WF031B	Volatiles Semivolatiles Pesticides/PCBs	ND ND ND	- - -
WF032	Volatiles Semivolatiles Di-n-butylphthalate Di-n-butylphthalate Pesticides/PCBs	ND 1 ug/L 3 ug/L ND	- 33G00401 06G00102 06G00101 06G00301 06R02001 29G00501 29G00501D 29G00101 66G01201 66G00102 -
WF033	Volatiles Semivolatiles Pesticides/PCBs	ND ND ND	- - -
WF034	Volatiles Semivolatiles Bis(2-ethylhexyl)phthalate Pesticides/PCBs	ND 2 ug/L ND	- 66G01101 66G01301 66G00501 -
WF035	Volatiles Semivolatiles Pesticides/PCBs	ND ND ND	- - -
WF036	Volatiles Semivolatiles Di-n-butylphthalate Pesticides/PCBs	ND 2 ug/L ND	- 66G00701 54G00201 54G00101 31G00201 54R02401 54G00101D -
WF037	Volatiles Semivolatiles Di-n-butylphthalate Pesticides/PCBs	ND 4 ug/L ND	- All samples in SDG WF037 -

Table VIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds			
SDG	Compound	Concentration	Associated Samples
WF038	<u>Volatiles</u> Acetone	7 ug/Kg	36B00101 36B00102 36B00103 36B00201 36B00202 36B00203 36B00301 36B00302 36B00303 36B00303D 36B00401 36B00402 36B00403 36B00403D
WF039	<u>Volatiles</u> Acetone	7 ug/Kg	35B00203D
	Methylene chloride	4 ug/Kg	35B00102DL 35B00105 35B00201
WF040	<u>Volatiles</u> Acetone Bromomethane	3 ug/L 2 ug/L	All water samples in SDG WF040 35B00402 35B00501 35B00501DL 35B00502 37B00201 37B00202 37B00101 37B00102 37B00103 37B00301 37B00302 37B00303 37B00203D 37B00103D
	Acetone	3 ug/Kg	
WF041	<u>Volatiles</u> Pesticides & PCBs	ND ND	- -
	<u>Semivolatiles</u> Di-n-butylphthalate Bis(2-ethylhexyl)phthalate	1 ug/L 2 ug/L	13G00301 13G00401
WF042	<u>Volatiles</u>	ND	-
WF043	<u>Volatiles</u> Acetone	6 ug/L	33T05301 06G00102 06G00301 33G00401
WF044	<u>Volatiles</u> Acetone	3 ug/L	66T05601 66G01201 66G01201D 66G00102 66G01301

**Table VIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida**

Organic Compounds			
SDG	Compound	Concentration	Associated Samples
WF044 cont.	Acetone	11 ug/L	66T05701 66G00401 66G02001 66T05801 66G00603 66G00603D 66G00604 66G00601 66G00602
WF045	<u>Volatiles</u> Acetone	5ug/L	OWT05901 OWR03401 OWG00501 OWG00502 OWG00502D OWG00503 OWT06001 OWG00101 OWG00102 OWG00103 66T06101 66G02301 66G02302 66G02303
	Acetone	5 ug/L	OWT06201 OWG00302 OWG00302D OWG00303 OWG00301 OWT06401 OWT06401DL OWG00401 OWG00201
	<u>Semivolatiles</u> Di-n-butylphthalate	2 ug/L	OWR03401 OWG00501 OWG00502 OWG00502D OWG00503
	Phenol	72 ug/L	OWG00101
	2-Chlorophenol	67 ug/L	OWG00102
	1,4-Dichlorobenzene	33 ug/L	OWG00103
	N-Nitroso-di-n-propylamine	49 ug/L	
	1,2,4-Trichlorobenzene	36 ug/L	
	4-Chloro-3-methylphenol	62 ug/L	
	Acenaphthylene	12 ug/L	
Acenaphthene	39 ug/L		
4-Nitrophenol	69 ug/L		
2,4-Dinitrotoluene	43 ug/L		
Pentachlorophenol	65 ug/L		
Pyrene	42 ug/L		
Di-n-butylphthalate	5 ug/L	66G02301 66G02302 66G02303	
Di-n-butylphthalate	4 ug/L	OWG00401 OWG00201	
Pesticides & PCBs	ND	-	

Table VIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds			
SDG	Compound	Concentration	Associated Samples
WF046	<u>Volatiles</u> 2-Butanone	4 ug/L	All samples in SDG WF046
	<u>Semivolatiles</u> Di-n-butylphthalate	3 ug/L	31R03301 31G00101 31G00101D
	Pesticides & PCBs	ND	-
WF047	<u>Volatiles</u> Acetone	4 ug/L	39W028 39W027 39W024 39W032 39W034D 39W031 39T10001 39W001 39W002 39W003 39W004 39W005
WF048	<u>Volatiles</u> 2-Butanone	4 ug/L	39R03401
	Acetone 2-Butanone	3 ug/Kg 4 ug/Kg	39D002 39D001 39D007 39D023 39D026 39D016 39D013 39D019 39D018 39D018D 39D022
WF049	<u>Volatiles</u> 2-Butanone	4 ug/L	39U001
	Semivolatiles	ND	-
WF051	<u>Volatiles</u> 2-Butanone	4 ug/L	16T06801 16R03501
WF052	<u>Volatiles</u>	ND	-
WF053	<u>Volatiles</u> Methylene chloride	8 ug/L	15G00602D 15T07501 15G00401 15G00703 15G00703D 15G00501 15G00502 15G00503
WF054	<u>Volatiles</u> Acetone	4 ug/L	30T07701 30R03901 30G00302

Table VIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Compound	Concentration	Associated Samples
WF054 cont.	Methylene chloride	8 ug/L	15T07601 15G00801 15G00801D 15G00802 15R03801 15G00803 15G00303
WF055	Volatiles	ND	-

Table IX
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds			
SDG	Parameter	Concentration	Qualifier
WF022	Client ID: BKF01001 Laboratory ID: RB858010 Collection Date: 7/17/96 Type: Source blank		
	<u>Volatiles</u> Acetone	4 ug/L	10U ug/L ¹
	<u>Semivolatiles</u> Di-n-butylphthalate	6 ug/L	None
	Pesticides/PCBs	ND	None
WF022	Client ID: BKR01001 Laboratory ID: RB858002 Collection Date: 7/16/96 Type: Equipment rinsate		
	<u>Volatiles</u>	ND	None
	<u>Semivolatiles</u> Di-n-butylphthalate Bis(2-ethylhexyl)phthalate	5 ug/L 2 ug/L	None None
	Pesticides/PCBs	ND	None
WF022	Client ID: BKT01001 Laboratory ID: RB858001 Collection Date: 7/16/96 Type: Trip blank		
	<u>Volatiles</u> Acetone	3 ug/L	10U ug/L ¹
WF022	Client ID: 17T01101 Laboratory ID: RB873001 Collection Date: 7/18/96 Type: Trip blank		
	<u>Volatiles</u> Acetone	8 ug/L	10U ug/L ¹
WF023	Client ID: 01R01101 Laboratory ID: RB887005 Collection Date: 7/23/96 Type: Equipment rinsate		
	<u>Volatiles</u> Acetone	4 ug/L	None
	<u>Semivolatiles</u> Di-n-butylphthalate	6 ug/L	None
	Pesticides/PCBs	ND	None
WF023	Client ID: 01T01201 Laboratory ID: RB887001 Collection Date: 7/22/96 Type: Trip blank		
	<u>Volatiles</u> Methylene chloride	2 ug/L	10U ug/L ¹
	Acetone	3 ug/L	10U ug/L ¹

Table IX
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds			
SDG	Parameter	Concentration	Qualifier
WF023	Client ID: 16T01301 Laboratory ID: RB887014 Collection Date: 7/25/96 Type: Trip blank		
	<u>Volatiles</u> Acetone	2 ug/L	None
WF024	Client ID: 18T01401 Laboratory ID: RB92001 Collection Date: 7/29/96 Type: Trip blank		
	<u>Volatiles</u> Methylene chloride	2 ug/L	None
	Acetone	4 ug/L	10U ug/L ¹
	Chloroform	1 ug/L	None
WF024	Client ID: 15R01201 Laboratory ID: RB920005 Collection Date: 7/31/96 Type: Equipment rinsate		
	<u>Volatiles</u> Acetone	6 ug/L	10U ug/L ¹
	<u>Semivolatiles</u> Di-n-butylphthalate	6 ug/L	None
	Pesticides/PCBs	ND	None
WF025	Client ID: 15R01301 Laboratory ID: RB956011 Collection Date: 8/7/96 Type: Equipment rinsate		
	<u>Volatiles</u>	ND	None
	<u>Semivolatiles</u> Di-n-butylphthalate	6 ug/L	None
	Pesticides/PCBs	ND	None
WF025	Client ID: 15T01501 Laboratory ID: RB956001 Collection Date: 8/5/96 Type: Trip blank		
	<u>Volatiles</u> Methylene chloride	2 ug/L	None
	Acetone	4 ug/L	None
WF025	Client ID: 15T01601 Laboratory ID: RB956012 Collection Date: 8/8/96 Type: Trip blank		
	<u>Volatiles</u> Methylene chloride	1 ug/L	None
	Acetone	2 ug/L	10U ug/L

Table IX
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds			
SDG	Parameter	Concentration	Qualifier
WF026	Client ID: 15T01701 Laboratory ID: RB980001 Collection Date: 8/12/96 Type: Trip blank		
	<u>Volatiles</u> Methylene chloride	1 ug/L	None
WF026	Client ID: 16T01801 Laboratory ID: RB980015 Collection Date: 8/15/96 Type: Trip blank		
	<u>Volatiles</u> Methylene chloride	1 ug/L	None
	Acetone	3 ug/L	10U ug/L ¹
WF026	Client ID: 15R01401 Laboratory ID: RB980012 Collection Date: 8/14/96 Type: Equipment rinsate		
	<u>Volatiles</u> Acetone	6 ug/L	10U ug/L ¹
	<u>Semivolatiles</u> Di-n-butylphthalate	6 ug/L	None
	Pesticides/PCBS	ND	None
WF027	Client ID: 16T01901 Laboratory ID: RC016001 Collection Date: 8/19/96 Type: Trip blank		
	<u>Volatiles</u> Methylene chloride	5 ug/L	None
	Acetone	6 ug/L	None
WF027	Client ID: 66T02001 Laboratory ID: RC016014 Collection Date: 8/22/96 Type: Trip blank		
	<u>Volatiles</u> Methylene chloride	3 ug/L	None
WF027	Client ID: 16R01501 Laboratory ID: RC016012 Collection Date: 8/21/96 Type: Equipment rinsate		
	<u>Volatiles</u>	ND	None
	<u>Semivolatiles</u> Di-n-butylphthalate	5 ug/L	None
	Pesticides/PCBs	ND	None

Table IX
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds			
SDG	Parameter	Concentration	Qualifier
WF028	Client ID: 11T02201 Laboratory ID: RC044008 Collection Date: 8/28/96 Type: Trip blank <u>Volatiles</u> Methylene chloride Acetone	 2 ug/L 8 ug/L	 None 10U ug/L ¹
WF028	Client ID: 10T02101 Laboratory ID: RC044001 Collection Date: 8/26/96 Type: Trip blank <u>Volatiles</u> Methylene chloride	 2 ug/L	 None
WF028	Client ID: 11R01601 Laboratory ID: RC044016 Collection Date: 8/28/96 Type: Equipment rinsate <u>Volatiles</u> Acetone <u>Semivolatiles</u> Di-n-butylphthalate Pesticides/PCBs	 9 ug/L 5 ug/L ND	 10U ug/L ¹ None None
WF029	Client ID: 13R01701 Laboratory ID: RC092008 Collection Date: 9/11/96 Type: Equipment rinsate <u>Volatiles</u> Acetone <u>Semivolatiles</u> Di-n-butylphthalate Bis(2-ethylhexyl)phthalate Pesticides/PCBs	 3 ug/L 5 ug/L 1 ug/L ND	 10U ug/L ¹ None 10U ug/L ¹ None
WF029	Client ID: 13T02301 Laboratory ID: RC092001 Collection Date: 9/9/96 Type: Trip blank <u>Volatiles</u> Methylene chloride Acetone	 1 ug/L 2 ug/L	 None 10U ug/L ¹
WF029	Client ID: 66T02401 Laboratory ID: RC092011 Collection Date: 9/12/96 Type: Trip blank <u>Volatiles</u> Methylene chloride Acetone	 3 ug/L 3 ug/L	 None 10U ug/L ¹

**Table IX
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida**

Organic Compounds			
SDG	Parameter	Concentration	Qualifier
WF030	Client ID: 66R01801 Laboratory ID: RC121010 Collection Date: 9/18/96 Type: Equipment rinsate <u>Volatiles</u> Acetone <u>Semivolatiles</u> Di-n-butylphthalate Bis(2-ethylhexyl)phthalate Pesticides/PCBs	 4 ug/L 3 ug/L 1 ug/L ND	 None None 10U ug/L ¹ None
WF030	Client ID: 66T02501 Laboratory ID: RC121001 Collection Date: 9/16/96 Type: Trip blank <u>Volatiles</u> Methylene chloride Acetone	 3 ug/L 3 ug/L	 None 10U ug/L ¹
WF030	Client ID: 66T02601 Laboratory ID: RC121012 Collection Date: 9/19/96 Type: Trip blank <u>Volatiles</u> Methylene chloride Acetone	 3 ug/L 3 ug/L	 None None
WF031	Client ID: 05T02701 Laboratory ID: MB928001 Collection Date: 9/23/96 Type: Trip blank <u>Volatiles</u> Methylene chloride	 2 ug/L	 None
WF031	Client ID: 33T02801 Laboratory ID: MB958001 Collection Date: 9/26/96 Type: Trip blank <u>Volatiles</u> Methylene chloride	 3 ug/L	 None
WF031	Client ID: 05R01901 Laboratory ID: MB928011 Collection Date: 9/25/96 Type: Equipment rinsate Volatiles <u>Semivolatiles</u> Di-n-butylphthalate Pesticides/PCBs	 ND 2 ug/L ND	 None 10U ug/L ¹ None

Table IX
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds			
SDG	Parameter	Concentration	Qualifier
WF031B	Client ID: 16T04001 Laboratory ID: MC447002 Collection Date: 11/21/96 Type: Trip blank Volatiles	ND	None
WF032	Client ID: 06T02901 Laboratory ID: MC011001 Collection Date: 9/30/96 Type: Trip blank Volatiles	ND	None
WF032	Client ID: 29T03001 Laboratory ID: MC037001 Collection Date: 10/3/96 Type: Trip blank Volatiles	ND	None
WF032	Client ID: 06R02001 Laboratory ID: MC011006 Collection Date: 10/2/96 Type: Equipment rinsate Volatiles <u>Semivolatiles</u> Di-n-butylphthalate Pesticides/PCBs	ND 3 ug/L ND	None 10U ug/L ¹ None
WF033	Client ID: 29T03101 Laboratory ID: MC085001 Collection Date: 10/7/96 Type: Trip blank Volatiles	ND	None
WF033	Client ID: 66T03201 Laboratory ID: MC118001 Collection Date: 10/10/96 Type: Trip blank <u>Volatiles</u> Acetone	26 ug/L	None
WF033	Client ID: 66R02101 Laboratory ID: MC02101 Collection Date: 10/9/96 Type: Equipment rinsate <u>Volatiles</u> Methylene chloride <u>Semivolatiles</u> Di-n-butylphthalate Pesticides/PCBs	1 ug/L 6 ug/L ND	None None None

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Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds			
SDG	Parameter	Concentration	Qualifier
WF034	Client ID: 66T03301 Laboratory ID: MC153001 Collection Date: 10/14/96 Type: Trip blank Volatiles	ND	None
WF034	Client ID: 66T03401 Laboratory ID: MC176001 Collection Date: 10/17/96 Type: Trip blank Volatiles	ND	None
WF034	Client ID: 66R02201 Laboratory ID: MC153007 Collection Date: 10/16/96 Type: Equipment rinsate <u>Volatiles</u> Toluene 8 ug/L Ethylbenzene 1 ug/L Xylenes (total) 2 ug/L <u>Semivolatiles</u> Di-n-butylphthalate 2 ug/L Pesticides/PCBs ND		None None None None None
WF035	Client ID: 66T03501 Laboratory ID: MC214001 Collection Date: 10/21/96 Type: Trip blank Volatiles	ND	None
WF035	Client ID: 66T03601 Laboratory ID: MC231001 Collection Date: 10/24/96 Type: Trip blank Volatiles	ND	None
WF035	Client ID: 66R02301 Laboratory ID: MC214006 Collection Date: 10/23/96 Type: Equipment rinsate Volatiles <u>Semivolatiles</u> Di-n-butylphthalate 3 ug/L Pesticides/PCBs ND	ND 3 ug/L ND	None None None
WF036	Client ID: 66T03701 Laboratory ID: MC262001 Collection Date: 10/28/96 Type: Trip blank Volatiles	ND	None

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Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds			
SDG	Parameter	Concentration	Qualifier
WF036	Client ID: 31T03801 Laboratory ID: MC284001 Collection Date: 10/31/96 Type: Trip blank Volatiles	ND	None
WF036	Client ID: 54R02401 Laboratory ID: MC262007 Collection Date: 10/30/96 Type: Equipment rinsate Volatiles <u>Semivolatiles</u> Di-n-butylphthalate Pesticides/PCBs	ND 4 ug/L ND	None 10U ug/L ¹ ND
WF037	Client ID: 15T03901 Laboratory ID: MC424001 Collection Date: 11/18/96 Type: Trip blank Volatiles	ND	None
WF037	Client ID: 16T04001 Laboratory ID: MC448004 Collection Date: 11/21/96 Type: Trip blank Volatiles	ND	None
WF037	Client ID: 15R02501 Laboratory ID: MC424009 Collection Date: 11/20/96 Type: Equipment rinsate Volatiles	ND	None
WF037	Client ID: 15F00201 Laboratory ID: MC424010 Collection Date: 11/20/96 Type: Source blank <u>Volatiles</u> Xylenes (total) <u>Semivolatiles</u> Di-n-butylphthalate Pesticides/PCBs	2 ug/L 4 ug/L ND	None 10U ug/L ¹ None
WF038	Client ID: 36R02601 Laboratory ID: MC687016 Collection Date: 12/18/96 Type: Rinsate Volatiles	ND	None

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Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds			
SDG	Parameter	Concentration	Qualifier
WF038	Client ID: 36T04101 Laboratory ID: MC687001 Collection Date: 12/17/96 Type: Trip Blank Volatiles	ND	None
WF039	Client ID: 35T04201 Laboratory ID: MC698001 Collection Date: 12/19/97 Type: Trip Blank Volatiles	ND	None
WF039	Client ID: 35R02701 Laboratory ID: MC698011 Collection Date: 12/21/96 Type: Equipment rinsate Volatiles	ND	None
WF040	Client ID: 35T04301 Laboratory ID: MC783001 Collection Date: 1/7/97 Type: Trip blank <u>Volatiles</u> Bromomethane	1 ug/L	10U ug/L ¹
WF040	Client ID: 37R02801 Laboratory ID: MC783017 Collection Date: 1/9/97 Type: Equipment rinsate Volatiles Acetone Carbon disulfide	5 ug/L 2 ug/L	10U ug/L ¹ None
WF041	Client ID: 35T04501 Laboratory ID: MD908001 Collection Date: 6/11/97 Type: Trip blank <u>Volatiles</u> Acetone	6 ug/L	None
WF041	Client ID: 37T04601 Laboratory ID: MD926001 Collection Date: 6/12/97 Type: Trip blank Volatiles Methylene chloride	1 ug/L	None
WF041	Client ID: 35T04701 Laboratory ID: MD950001 Collection Date: 6/15/97 Type: Trip blank Volatiles Methylene chloride Xylene (total)	3 ug/L 1 ug/L	None None

**Table IX
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida**

Organic Compounds			
SDG	Parameter	Concentration	Qualifier
WF041	Client ID: 13T04801 Laboratory ID: MD985001 Collection Date: 6/16/97 Type: Trip blank <u>Volatiles</u> Methylene chloride Acetone	 2 ug/L 6 ug/L	 None None
WF041	Client ID: 35F00301 Laboratory ID: MD908002 Collection Date: 6/11/97 Type: Source blank <u>Semivolatiles</u> Di-n-butylphthalate Pesticides & PCBs	 3 ug/L ND	 None -
WF041	Client ID: 35R03001 Laboratory ID: MD908003 Collection Date: 6/11/97 Type: Equipment rinsate <u>Semivolatiles</u> Di-n-butylphthalate Bis(2-ethylhexyl)phthalate Pesticides & PCBs	 4 ug/L 8 ug/L ND	 None None None
WF042	Client ID: 05T04901 Laboratory ID: ME007001 Collection Date: 6/18/97 Type: Trip blank <u>Volatiles</u>	 ND	 None
WF042	Client ID: 05T05001 Laboratory ID: ME021001 Collection Date: 6/20/97 Type: Trip blank <u>Volatiles</u> Acetone	 2 ug/L	 None
WF042	Client ID: 05R03101 Laboratory ID: ME007006 Collection Date: 6/17/97 Type: Equipment rinsate <u>Volatiles</u>	 ND	 None
WF043	Client ID: 05R03201 Laboratory ID: ME042002 Collection Date: 6/23/97 Type: Equipment rinsate <u>Volatiles</u> 1,2-Dichloropropane	 1 ug/L	 None

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Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds			
SDG	Parameter	Concentration	Qualifier
WF043	Client ID: 05T05101 Laboratory ID: MW042001 Collection Date: 6/23/97 Type: Trip blank Volatiles	ND	None
WF043	Client ID: 33T05201 Laboratory ID: MW053001 Collection Date: 6/24/97 Type: Trip blank <u>Volatiles</u> Acetone	3 ug/L	None
WF043	Client ID: 33T05301 Laboratory ID: ME073001 Collection Date: 6/25/97 Type: Trip blank Volatiles	ND	None
WF043	Client ID: 30T05401 Laboratory ID: ME087001 Collection Date: 6/26/97 Type: Trip blank <u>Volatiles</u> Acetone	4 ug/L	None
WF044	Client ID: 06R03301 Laboratory ID: ME100002 Collection Date: 6/29/97 Type: Equipment rinsate <u>Volatiles</u> Acetone Trichloroethene Toluene Ethylbenzene Xylene (total)	7 ug/L 6 ug/L 3 ug/L 1 ug/L 2 ug/L	None None None None None
WF044	Client ID: 06T05501 Laboratory ID: ME100001 Collection Date: 6/29/97 Type: Trip blank Volatiles	ND	None
WF044	Client ID: 66T05601 Laboratory ID: ME110001 Collection Date: 6/30/97 Type: Trip blank <u>Volatiles</u> Acetone	5 ug/L	10U ug/L ¹
WF044	Client ID: 66T05701 Laboratory ID: ME133001 Collection Date: 7/2/97 Type: Trip blank Volatiles	ND	None

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Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds			
SDG	Parameter	Concentration	Qualifier
WF044	Client ID: 66T05801 Laboratory ID: ME135001 Collection Date: 7/2/97 Type: Trip blank <u>Volatiles</u> Acetone	3 ug/L	10U ug/L ¹
WF045	Client ID: OWR03401 Laboratory ID: ME149002 Collection Date: 7/7/97 Type: Equipment rinsate <u>Volatiles</u> Acetone 1,2-Dichloropropane <u>Semivolatiles</u> Di-n-butylphthalate Pesticides & PCBs	3 ug/L 1 ug/L 5 ug/L ND	10U ug/L ¹ None 10U ug/L ¹ None
WF045	Client ID: OWT05901 Laboratory ID: ME149001 Collection Date: 7/7/97 Type: Trip blank <u>Volatiles</u> Acetone	2 ug/L	10U ug/L ¹
WF045	Client ID: OWT06001 Laboratory ID: ME159001 Collection Date: 7/8/97 Type: Trip blank Volatiles	ND	None
WF045	Client ID: 66T06101 Laboratory ID: ME175001 Collection Date: 7/9/97 Type: Trip blank <u>Volatiles</u> Acetone	2 ug/L	10U ug/L ¹
WF045	Client ID: OWT06201 Laboratory ID: ME190001 Collection Date: 7/10/97 Type: Trip blank Volatiles	ND	None
WF045	Client ID: OWT06401 Laboratory ID: ME226001 Collection Date: 7/14/97 Type: Trip blank <u>Volatiles</u> Acetone	250 ug/L	None

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Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida**

Organic Compounds			
SDG	Parameter	Concentration	Qualifier
WF045	Client ID: OWT06401DL Laboratory ID: ME226001DL Collection Date: 7/14/97 Type: Trip blank <u>Volatiles</u> Acetone	250 ug/L	None
WF046	Client ID: 31R03301 Laboratory ID: MW241002 Collection Date: 7/15/97 Type: Equipment rinsate <u>Volatiles</u> 1,2-Dichloropropane <u>Semivolatiles</u> Di-n-butylphthalate Pesticides & PCBs	1 ug/L 12 ug/L ND	None 12U ug/L ¹ None
WF046	Client ID: 31T06501 Laboratory ID: ME241001 Collection Date: 7/15/97 Type: Trip blank <u>Volatiles</u> Acetone	4 ug/L	None
WF046	Client ID: 31T06601 Laboratory ID: ME261001 Collection Date: 7/16/97 Type: Trip blank <u>Volatiles</u> Toluene	1 ug/L	None
WF046	Client ID: 31T06701 Laboratory ID: ME305001 Collection Date: 7/21/97 Type: Trip blank <u>Volatiles</u> Methylene chloride	1 ug/L	None
WF047	Client ID: STOR_BLK Laboratory ID: ME243008 Collection Date: 7/15/97 Type: Storage blank Volatiles	ND	None
WF047	Client ID: STOR_BLK2 Laboratory ID: ME267008 Collection Date: 7/16/97 Type: Storage blank <u>Volatiles</u> Acetone Toluene	4 ug/L 0.4 ug/L	None None

**Table IX
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida**

Organic Compounds			
SDG	Parameter	Concentration	Qualifier
WF047	Client ID: 39T10001 Laboratory ID: ME244001 Collection Date: 7/15/97 Type: Trip blank		
	<u>Volatiles</u>		
	Carbon disulfide Toluene	0.40 ug/L 0.50 ug/L	None None
WF048	Client ID: 39R03401 Laboratory ID: ME264009 Collection Date: 7/17/97 Type: Equipment rinsate		
	<u>Volatiles</u>		
	1,2-Dichloropropane	1 ug/L	None
WF049	Client ID: 39T10201 Laboratory ID: ME262001 Collection Date: 7/15/97 Type: Trip blank		
	<u>Volatiles</u>		
	Toluene	0.90 ug/L	None
WF049	Client ID: 39T10401 Laboratory ID: ME263007 Collection Date: 7/17/97 Type: Trip blank		
	<u>Volatiles</u>		
	Toluene	0.40 ug/L	None
WF051	Client ID: 16R03501 Laboratory ID: ME306002 Collection Date: 7/21/97 Type: Equipment rinsate		
	<u>Volatiles</u>		
	Methylene chloride	1 ug/L	None
WF051	Client ID: 16T06801 Laboratory ID: ME306001 Collection Date: 7/21/97 Type: Trip blank		
	<u>Volatiles</u>		
	Methylene chloride Acetone	1 ug/L 3 ug/L	None None
WF051	Client ID: 16T06901 Laboratory ID: ME322001 Collection Date: 7/22/97 Type: Trip blank		
	<u>Volatiles</u>		
		ND	None
WF051	Client ID: 16T07001 Laboratory ID: ME340001 Collection Date: 7/23/97 Type: Trip blank		
	<u>Volatiles</u>		
		ND	None

Table IX
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Parameter	Concentration	Qualifier
WF051	Client ID: 16T07101 Laboratory ID: ME348001 Collection Date: 7/25/97 Type: Trip blank Volatiles	ND	None
WF052	Client ID: STORAGEBLK Laboratory ID: ME346008 Collection Date: 7/25/97 Type: Storage blank Volatiles Methylene chloride Acetone	 1 ug/L 3 ug/L	 None None
WF052	Client ID: 39T10501 Laboratory ID: ME346007 Collection Date: 7/25/97 Type: Trip blank Volatiles	ND	None
WF053	Client ID: 15R03701 Laboratory ID: ME367002 Collection Date: 7/27/97 Type: Equipment rinsate Volatiles	ND	None
WF053	Client ID: 15T07201 Laboratory ID: ME367001 Collection Date: 7/27/97 Type: Trip blank Volatiles	ND	None
WF053	Client ID: 15T07301 Laboratory ID: ME377001 Collection Date: 7/28/97 Type: Trip blank Volatiles	ND	None
WF053	Client ID: 15T07401 Laboratory ID: ME390001 Collection Date: 7/29/97 Type: Trip blank Volatiles	ND	None
WF053	Client ID: 15T07501 Laboratory ID: ME404001 Collection Date: 7/30/97 Type: Trip blank Volatiles	ND	None
WF054	Client ID: 15R03801 Laboratory ID: ME441005 Collection Date: 8/5/97 Type: Equipment rinsate Volatiles	ND	None

Table IX
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds			
SDG	Parameter	Concentration	Qualifier
WF054	Client ID: 30R03901 Laboratory ID: ME450002 Collection Date: 8/6/97 Type: Equipment rinsate Volatiles 1,2-Dichloropropane	1 ug/L	None
WF054	Client ID: 15T07601 Laboratory ID: ME441001 Collection Date: 8/4/97 Type: Trip blank Volatiles	ND	None
WF054	Client ID: 30T07701 Laboratory ID: ME450001 Collection Date: 8/5/97 Type: Trip blank Volatiles	ND	None
WF055	Client ID: OWR04101 Laboratory ID: MF004002 Collection Date: 10/27/97 Type: Equipment rinsate Volatiles	ND	None
WF055	Client ID: 13R04201 Laboratory ID: MF004005 Collection Date: 10/28/97 Type: Equipment rinsate Volatiles	ND	None
WF055	Client ID: OWT08001 Laboratory ID: MF004001 Collection Date: 10/27/97 Type: Trip blank Volatiles	ND	None
* = sample result was modified based on an associated method blank concentration. Note: see detailed data validation report for the discrete qualifiers.			

Table X
Summary of Percent Recoveries (%R) and Relative Percent Differences (RPD) for Matrix Spike and Laboratory Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes								
SDG	Client ID	Analyte	Criteria		% Recovery		RPD/Difference	Qualifier
			% Recovery	Difference	MS	MSD		
WF022	BKG00101	Metals Cyanide	- -	- -	- -	- -	- -	None None
WF023	02G00301	Metals Cyanide	- -	- -	- -	- -	- -	None None
WF024	15G00701	Metals Cyanide	- -	- -	- -	- -	- -	None None
WF025	15G00601	Metals Cyanide	- -	- -	- -	- -	- -	None None
WF026	15G00803	Metals Cyanide	- -	- -	- -	- -	- -	None None
WF027	16G00501	Metals Cyanide	- -	- -	- -	- -	- -	None None
WF028	12G00101	Metals Cyanide	- -	- -	- -	- -	- -	None None
WF029	14G00101	Metals Cyanide	- -	- -	- -	- -	- -	None None
WF030	66G00601	Metals Cyanide	- -	- -	- -	- -	- -	None None
WF031	05G01001	Iron Lead Sodium Zinc Cyanide	- - - - 75-125	±100 ±3.0 ±5000 ±20.0 -	- - - - 3.7	- - - - -	124.8 ug/L 9.2 ug/L 5978 ug/L 174 ug/L -	J J J J J (det) R (ND)
WF031B	None	Metals Cyanide	- -	- -	- -	- -	- -	None None
WF032	29G00501	Metals Cyanide	- -	- -	- -	- -	- -	None None
WF033	66G00201	Metals Cyanide	- -	- -	- -	- -	- -	None None

Table X
Summary of Percent Recoveries (%R) and Relative Percent Differences (RPD) for Matrix Spike and Laboratory Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes								
SDG	Client ID	Analyte	Criteria		% Recovery		RPD/Difference	Qualifier
			% Recovery	Difference	MS	MSD		
WF034	30G00301	Antimony Cyanide	75-125 -	- -	126.7 -	- -	- -	J (all detects) None
WF035	66G01701	Metals Cyanide	- -	- -	- -	- -	- -	None None
WF036	54G00101	Metals Cyanide	- -	- -	- -	- -	- -	None None
WF037	15F00201	Metals Cyanide	- 75-125	- -	- 3.7	- -	- -	None J (det) R (ND)
WF041	35G00101	Aluminum Iron Manganese Cyanide	- - - -	≤100 ≤100 ≤10 -	- - - -	- - - -	402 ug/L 309 ug/L 75.2 ug/L -	J J J None
WF045	OWG00502	Metals Cyanide	- -	- -	- -	- -	- -	None None
WF046	31G00101	Metals Cyanide	- -	- -	- -	- -	- -	None None
WF047	39W034	Metals	-	-	-	-	-	None
WF051	None	Metals	-	-	-	-	-	None
WF053	15G00602	Metals	-	-	-	-	-	None
WF054	15G00801	Metals	-	-	-	-	-	None

Table XI
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Inorganic Analytes			RPD
WF022	Client ID	BKG00101	BKG00101D	
	Laboratory ID	RB858003	RB858004	
	Collection Date	7/16/96	7/16/96	
	Aluminum	43.4 ug/L	54.4 ug/L	22
	Barium	15.6 ug/L	15.6 ug/L	0
	Calcium	536 ug/L	558 ug/L	4
	Iron	54.0 ug/L	57.9 ug/L	7
	Lead	ND	0.80 ug/L	Not calculable
	Magnesium	499 ug/L	521 ug/L	4
	Manganese	1.7 ug/L	1.9 ug/L	11
	Selenium	0.67 ug/L	ND	Not calculable
	Sodium	1080 ug/L	1080 ug/L	0
	Zinc	2.4 ug/L	ND	Not calculable
Cyanide	3.8 ug/L	6.5 ug/L	52	
WF022	Client ID	01G00102	01G00102D	
	Laboratory ID	RB873008	RB873009	
	Collection Date	7/19/96	7/19/96	
	Aluminum	19.1 ug/L	10.3 ug/L	50
	Barium	15.6 ug/L	15.6 ug/L	0
	Beryllium	0.53 ug/L	ND	Not calculable
	Calcium	5850 ug/L	6250 ug/L	7
	Copper	ND	1.4 ug/L	Not calculable
	Iron	12.2 ug/L	8.8 ug/L	32
	Lead	1.3 ug/L	1.5 ug/L	14
	Magnesium	337 ug/L	331 ug/L	2
	Manganese	6.7 ug/L	9.0 ug/L	29
	Potassium	938 ug/L	842 ug/L	11
	Sodium	2100 ug/L	2070 ug/L	1
	Vanadium	ND	1.6 ug/L	Not calculable
Zinc	10.2 ug/L	11.4 ug/L	11	
Cyanide	1.9 ug/L	ND	Not calculable	
WF023	Client ID	02G00301	02G00301D	
	Laboratory ID	RB887012	RB887013	
	Collection Date	7/24/96	7/24/96	
	Aluminum	79.3 ug/L	84.6 ug/L	6
	Barium	128 ug/L	129 ug/L	0.8
	Beryllium	0.39 ug/L	ND	Not calculable
	Calcium	113000 ug/L	113000 ug/L	0
	Iron	36.2 ug/L	38.7 ug/L	7
	Lead	1.4 ug/L	1.3 ug/L	7
	Magnesium	9560 ug/L	9590 ug/L	0.3
	Manganese	13.5 ug/L	13.7 ug/L	1
	Nickel	7.8 ug/L	9.6 ug/L	21
	Potassium	4610 ug/L	4580 ug/L	0.7
	Selenium	1.2 ug/L	0.66 ug/L	58
	Sodium	2200 ug/L	2240 ug/L	2
Vanadium	3.0 ug/L	2.8 ug/L	7	
Zinc	1.8 ug/L	2.0 ug/L	11	
Cyanide	4.5 ug/L	2.0 ug/L	77	

Table XI
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Inorganic Analytes			RPD
WF024	Client ID	15G00701	15G00701D	
	Laboratory ID	RB920009	RB950010	
	Collection Date	7/31/96	7/31/96	
	Aluminum	161 ug/L	173 ug/L	7
	Barium	15.6 ug/L	19.3 ug/L	21
	Calcium	356 ug/L	360 ug/L	1
	Chromium	2.9 ug/L	2.0 ug/L	37
	Iron	183 ug/L	202 ug/L	10
	Lead	0.70 ug/L	0.60 ug/L	15
	Magnesium	433 ug/L	422 ug/L	3
	Manganese	2.8 ug/L	2.6 ug/L	7
	Sodium	1530 ug/L	1610 ug/L	5
	Vanadium	ND	1.2 ug/L	Not calculable
Zinc	3.4 ug/L	3.6 ug/L	6	
Cyanide	2.6 ug/L	3.2 ug/L	21	
WF025	Client ID	15G00601	15G00601D	
	Laboratory ID	RB956006	RB956008	
	Collection Date	8/7/96	8/7/96	
	Aluminum	89.4 ug/L	55.8 ug/L	46
	Arsenic	8.0 ug/L	7.8 ug/L	2
	Barium	67.6 ug/L	63.7 ug/L	6
	Calcium	3690 ug/L	3620 ug/L	2
	Iron	31000 ug/L	30500 ug/L	2
	Lead	0.90 ug/L	0.50U ug/L	Not calculable
	Magnesium	1940 ug/L	1900 ug/L	2
	Manganese	139 ug/L	136 ug/L	2
	Potassium	2460 ug/L	2340 ug/L	5
	Sodium	2630 ug/L	2590 ug/L	2
Zinc	3.4 ug/L	3.3 ug/L	3	
Cyanide	1.5U ug/L	8.1 ug/L	Not calculable	
WF026	Client ID	15G00803	15G00803D	
	Laboratory ID	RB980007	RB980008	
	Collection Date	8/14/96	8/14/96	
	Aluminum	187 ug/L	146 ug/L	25
	Barium	10.6 ug/L	10.8 ug/L	2
	Calcium	1440 ug/L	1170 ug/L	21
	Chromium	2.9 ug/L	2.0U ug/L	Not calculable
	Cobalt	2.3U ug/L	2.4 ug/L	Not calculable
	Copper	4.0 ug/L	2.4 ug/L	50
	Iron	194 ug/L	175 ug/L	10
	Lead	0.80 ug/L	0.50 ug/L	46
	Magnesium	322 ug/L	296 ug/L	8
	Manganese	33.1 ug/L	32.9 ug/L	0.6
Potassium	522 ug/L	316U ug/L	Not calculable	
Sodium	5350 ug/L	5380 ug/L	0.6	
Vanadium	2.0 ug/L	1.5 ug/L	29	
Zinc	176 ug/L	178 ug/L	1	
Cyanide	1.6 ug/L	4.2 ug/L	90	

Table XI
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Inorganic Analytes			RPD
WF026	Client ID	16G00403	16G00403D	
	Laboratory ID	RB980020	RB980021	
	Collection Date	8/16/96	8/16/96	
	Aluminum	278 ug/L	290 ug/L	4
	Arsenic	1.0 ug/L	0.50U ug/L	Not calculable
	Barium	28.6 ug/L	27.5 ug/L	4
	Calcium	3110 ug/L	3300 ug/L	6
	Chromium	2.3 ug/L	2.9 ug/L	23
	Copper	1.1U ug/L	1.3 ug/L	Not calculable
	Iron	1370 ug/L	879 ug/L	44
	Lead	4.0 ug/L	2.7 ug/L	39
	Magnesium	1320 ug/L	987 ug/L	29
	Manganese	41.3 ug/L	33.5 ug/L	21
	Potassium	540 ug/L	713 ug/L	26
	Sodium	2570 ug/L	2590 ug/L	0.8
Vanadium	2.2 ug/L	1.2U ug/L	Not calculable	
Zinc	103 ug/L	945 ug/L	161	
Cyanide	2.9 ug/L	1.6 ug/L	58	
WF027	Client ID	16G00501	16G00501D	
	Laboratory ID	RC016009	RC016013	
	Collection Date	8/21/96	8/21/96	
	Aluminum	12.6 ug/L	16.7 ug/L	28
	Barium	10 ug/L	10 ug/L	0
	Calcium	239 ug/L	234 ug/L	2
	Cobalt	3.2 ug/L	2.3U ug/L	Not calculable
	Iron	9.2 ug/L	5.3 ug/L	54
	Magnesium	276 ug/L	261 ug/L	6
	Manganese	1.0U ug/L	2.1 ug/L	Not calculable
	Sodium	1550 ug/L	1450 ug/L	7
	Zinc	2.6 ug/L	1.6 ug/L	48
WF027	Client ID	09G00301	09G00301D	
	Laboratory ID	RC016019	RC016020	
	Collection Date	8/23/96	8/23/96	
	Aluminum	407 ug/L	372 ug/L	9
	Antimony	8.6U ug/L	9.3 ug/L	Not calculable
	Arsenic	2.6 ug/L	2.8 ug/L	7
	Barium	27.1 ug/L	25.8 ug/L	5
	Calcium	15300 ug/L	14600 ug/L	5
	Chromium	4.0 ug/L	2.4 ug/L	50
	Iron	173 ug/L	148 ug/L	16
	Lead	0.50U ug/L	0.60 ug/L	Not calculable
	Magnesium	158 ug/L	160 ug/L	1
	Manganese	1.5 ug/L	1.7 ug/L	12
	Potassium	2390 ug/L	2010 ug/L	17
	Sodium	2070 ug/L	1950 ug/L	6
Vanadium	16.4 ug/L	14.3 ug/L	14	
Zinc	14.8 ug/L	1.2 ug/L	170	

Table XI
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Inorganic Analytes			RPD
WF028	Client ID	12G00101	12G00101D	
	Laboratory ID	RC044012	RC044017	
	Collection Date	8/27/96	8/27/96	
	Aluminum	14.0 ug/L	15.1 ug/L	8
	Barium	14.5 ug/L	14.5 ug/L	0
	Calcium	1840 ug/L	1870 ug/L	2
	Lead	0.60 ug/L	0.50U ug/L	Not calculable
	Magnesium	320 ug/L	327 ug/L	2
	Manganese	1.0U ug/L	1.4 ug/L	Not calculable
	Potassium	2220 ug/L	2290 ug/L	3
	Sodium	2310 ug/L	2360 ug/L	2
	Thallium	0.70 ug/L	0.60U ug/L	Not calculable
Zinc	6.7 ug/L	5.5 ug/L	20	
Cyanide	1.8U ug/L	2.1 ug/L	Not calculable	
WF028	Client ID	11G00201	11G00201D	
	Laboratory ID	RC044011	RC044018	
	Collection Date	8/28/96	8/28/96	
	Aluminum	2770 ug/L	2320 ug/L	18
	Arsenic	1.7 ug/L	2.0 ug/L	16
	Barium	50.3 ug/L	51.6 ug/L	3
	Beryllium	0.40 ug/L	0.30U ug/L	Not calculable
	Calcium	35400 ug/L	41800 ug/L	17
	Chromium	20.4 ug/L	19.2 ug/L	6
	Copper	2.0 ug/L	3.1 ug/L	43
	Iron	232 ug/L	337 ug/L	37
	Lead	0.50U ug/L	0.90 ug/L	Not calculable
	Magnesium	388 ug/L	538 ug/L	32
	Manganese	2.2 ug/L	4.8 ug/L	74
	Potassium	12900 ug/L	9610 ug/L	29
	Sodium	3420 ug/L	2950 ug/L	15
	Vanadium	11.0 ug/L	11.0 ug/L	0
Zinc	3.4 ug/L	24.3 ug/L	151	
Cyanide	1.5U ug/L	3.3 ug/L	Not calculable	
WF029	Client ID	14G00101	14G00101D	
	Laboratory ID	RC092007	RC092009	
	Collection Date	9/11/96	9/11/96	
	Aluminum	33.1 ug/L	26.5 ug/L	22
	Arsenic	0.50 ug/L	0.50U ug/L	Not calculable
	Barium	22.3 ug/L	22.3 ug/L	0
	Calcium -	3060 ug/L	2870 ug/L	6
	Iron	22.0 ug/L	27.3 ug/L	22
	Lead	1.3 ug/L	0.80 ug/L	48
	Magnesium	702 ug/L	691 ug/L	2
	Manganese	1.9 ug/L	1.9 ug/L	0
	Mercury	0.12 ug/L	0.10U ug/L	Not calculable
	Sodium	1590 ug/L	1570 ug/L	1
Vanadium	1.2U ug/L	1.4 ug/L	Not calculable	
Zinc	89.5 ug/L	96.8 ug/L	8	

Table XI
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Inorganic Analytes			RPD
WF030	Client ID	66G00601	66G00601D	
	Laboratory ID	RC121007	RC121011	
	Collection Date	9/18/96	9/18/96	
	Aluminum	39.9 ug/L	39.7 ug/L	0.5
	Barium	38.1 ug/L	36.2 ug/L	5
	Calcium	863 ug/L	770 ug/L	11
	Copper	1.8 ug/L	1.1U ug/L	Not calculable
	Iron	8.2 ug/L	41.9 ug/L	134
	Lead	0.90 ug/L	0.50U ug/L	Not calculable
	Magnesium	1130 ug/L	1110 ug/L	2
	Manganese	5.0 ug/L	4.6 ug/L	8
	Potassium	860 ug/L	689 ug/L	22
	Selenium	0.64 ug/L	0.60U ug/L	Not calculable
Sodium	1280 ug/L	1160 ug/L	10	
Zinc	2.9 ug/L	4.8 ug/L	49	
WF030	Client ID	66G02203	66G02203D	
	Laboratory ID	RC121016	RC121017	
	Collection Date	9/20/96	9/20/96	
	Aluminum	44.0 ug/L	51.9 ug/L	16
	Barium	6.4 ug/L	6.4 ug/L	0
	Calcium	751 ug/L	731 ug/L	3
	Cobalt	2.3U ug/L	2.4 ug/L	Not calculable
	Iron	35.6 ug/L	38.9 ug/L	9
	Magnesium	271 ug/L	242 ug/L	11
	Manganese	9.7 ug/L	9.7 ug/L	0
	Potassium	491 ug/L	316U ug/L	Not calculable
	Sodium	2810 ug/L	2760 ug/L	2
	Zinc	1.2 ug/L	2.2 ug/L	59
Cyanide	1.8U ug/L	12.0 ug/L	Not calculable	
WF031	Client ID	05G01001	05G01001D	
	Laboratory ID	MB928007	MB928012	
	Collection Date	9/25/96	9/25/96	
	Barium	27.6 ug/L	27.1 ug/L	2
	Calcium	854 ug/L	803 ug/L	6
	Chromium	0.61 ug/L	0.36 ug/L	52
	Cobalt	0.85 ug/L	0.72 ug/L	17
	Copper	35.6 ug/L	1.7U ug/L	Not calculable
	Iron	40.1 ug/L	31.8U ug/L	Not calculable
	Lead	4.4 ug/L	1.8U ug/L	Not calculable
	Magnesium	874 ug/L	871 ug/L	0.6
	Manganese	3.3 ug/L	2.5 ug/L	28
	Mercury	0.03 ug/L	0.04 ug/L	29
	Nickel	1.4 ug/L	1.4 ug/L	0
	Potassium	3.1U ug/L	825 ug/L	Not calculable
	Selenium	5.4 ug/L	3.9U ug/L	Not calculable
	Sodium	15100 ug/L	14900 ug/L	1
Thallium	7.4 ug/L	1.9U ug/L	Not calculable	
Vanadium	0.58U ug/L	0.63 ug/L	Not calculable	
Zinc	13.7 ug/L	3.8 ug/L	113	

Table XI
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Inorganic Analytes			RPD
WF031	Client ID	33G00301	33G00301D	
	Laboratory ID	MB958006	MB958007	
	Collection Date	9/27/96	9/27/96	
	Aluminum	156	98.7	45
	Antimony	3.5	3.4U	Not calculable
	Barium	59.3	59.9	1
	Calcium	2230	2230	0
	Chromium	0.88	0.34U	Not calculable
	Cobalt	0.70	0.49	35
	Iron	107	50.6	72
	Magnesium	1750	1760	0.6
	Manganese	21.2	21.5	1
	Potassium	31.8	1040	188
	Sodium	5370	5550	3
Thallium	2.9	3.4	16	
Vanadium	1.0	0.58U	Not calculable	
Zinc	7.4	7.2	3	
WF032	Client ID	29G00501	29G00501D	
	Laboratory ID	MC011007	MC011008	
	Collection Date	10/2/96	10/2/96	
	Barium	89.7 ug/L	84.2 ug/L	6
	Beryllium	0.14 ug/L	0.19 ug/L	30
	Calcium	1580 ug/L	1470 ug/L	7
	Chromium	2.1 ug/L	2.8 ug/L	29
	Cobalt	0.94 ug/L	0.98 ug/L	4
	Copper	2.7 ug/L	4.4 ug/L	48
	Magnesium	2500 ug/L	2320 ug/L	7
	Manganese	8.4 ug/L	8.0 ug/L	5
	Mercury	0.04 ug/L	0.04 ug/L	0
	Sodium	5040 ug/L	5030 ug/L	0.2
	Zinc	5.1 ug/L	3.8 ug/L	29
Cyanide	1.0 ug/L	1.2 ug/L	18	
WF033	Client ID	66G00201	66G00201D	
	Laboratory ID	MC118002	MC118003	
	Collection Date	10/9/96	10/9/96	
	Barium	20.8 ug/L	20.7 ug/L	0.5
	Calcium	3250 ug/L	3100 ug/L	5
	Chromium	0.75 ug/L	0.44 ug/L	52
	Copper	1.7U ug/L	2.7 ug/L	Not calculable
	Iron	73.8 ug/L	31.8U ug/L	Not calculable
	Magnesium	456 ug/L	457 ug/L	0.2
	Manganese	3.4 ug/L	3.2 ug/L	6
	Mercury	0.03 ug/L	0.03 ug/L	0
	Potassium	648 ug/L	1920 ug/L	99
	Sodium	3040 ug/L	3020 ug/L	0.7
Zinc	3.6 ug/L	6.0 ug/L	50	

Table XI
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Inorganic Analytes			RPD
WF034	Client ID	30G00301	30G00301D	
	Laboratory ID	MC153005	MC153008	
	Collection Date	10/16/96	10/16/96	
	Barium	28.0 ug/L	27.8 ug/L	0.7
	Beryllium	0.20 ug/L	0.13U ug/L	Not calculable
	Calcium	1530 ug/L	1480 ug/L	3
	Copper	11.0 ug/L	3.2 ug/L	110
	Iron	626 ug/L	634 ug/L	1
	Lead	3.8 ug/L	2.4 ug/L	45
	Magnesium	642 ug/L	650 ug/L	1
	Manganese	20.7 ug/L	21.0 ug/L	1
	Mercury	0.04 ug/L	0.05 ug/L	22
	Potassium	1880 ug/L	2680 ug/L	35
Sodium	4600 ug/L	4490 ug/L	2	
Zinc	5.5 ug/L	4.4 ug/L	22	
WF035	Client ID	66G01701	66G01701D	
	Laboratory ID	MC214005	MC214007	
	Collection Date	10/23/96	10/23/96	
	Aluminum	24.3 ug/L	30.9 ug/L	24
	Barium	10.2 ug/L	10.7 ug/L	5
	Calcium	766 ug/L	816 ug/L	6
	Copper	1.7U ug/L	22.5 ug/L	Not calculable
	Iron	343 ug/L	348 ug/L	1
	Lead	2.0U ug/L	2.6 ug/L	Not calculable
	Magnesium	320 ug/L	324 ug/L	1
	Manganese	4.2 ug/L	5.4 ug/L	25
	Mercury	0.03 ug/L	0.03 ug/L	0
	Selenium	4.0 ug/L	3.9U ug/L	Not calculable
Sodium	7660 ug/L	7790 ug/L	2	
Zinc	2.5 ug/L	26.3 ug/L	165	
WF036	Client ID	54G00101	54G00101D	
	Laboratory ID	MC262004	MC262008	
	Collection Date	10/30/96	10/30/96	
	Aluminum	87.6 ug/L	91.6 ug/L	4
	Barium	75.2 ug/L	74.3 ug/L	1
	Beryllium	0.18 ug/L	0.18 ug/L	0
	Calcium	1680 ug/L	1660 ug/L	1
	Chromium	1.2 ug/L	1.0 ug/L	2
	Cobalt	0.90 ug/L	1.4 ug/L	43
	Magnesium	1950 ug/L	1920 ug/L	2
	Manganese	13.9 ug/L	12.9 ug/L	7
	Mercury	0.02 ug/L	0.01U ug/L	Not calculable
	Potassium	2410 ug/L	2530 ug/L	5
Sodium	2110 ug/L	2070 ug/L	2	
Zinc	4.5 ug/L	3.5 ug/L	25	

Table XI
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Inorganic Analytes			RPD
WF041	Client ID	35G00101	35G00101D	
	Laboratory ID	MD908004	MD908005	
	Collection Date	6/11/97	6/11/97	
	Aluminum	47.8 ug/L	45.2 ug/L	6
	Barium	78.8 ug/L	79.0 ug/L	0.2
	Calcium	3150 ug/L	3240 ug/L	3
	Copper	8.2 ug/L	6.8 ug/L	19
	Iron	15.9 ug/L	19.0 ug/L	18
	Lead	1.7 ug/L	0.93U ug/L	Not calculable
	Magnesium	2340 ug/L	2370 ug/L	1
	Manganese	28.7 ug/L	28.9 ug/L	0.7
	Sodium	4330 ug/L	4430 ug/L	2
	Thallium	1.9 ug/L	0.89U ug/L	Not calculable
	Zinc	12.1 ug/L	130 ug/L	166
Cyanide	ND	ND	-	
WF041	Client ID	35G00202	35G00202D	
	Laboratory ID	MD950002	MD950003	
	Collection Date	6/15/97	6/15/97	
	Aluminum	65.0 ug/L	50.7 ug/L	25
	Barium	24.8 ug/L	25.3 ug/L	2
	Calcium	973 ug/L	1030 ug/L	6
	Copper	5.6 ug/L	3.5 ug/L	46
	Iron	180 ug/L	196 ug/L	8
	Lead	0.93U ug/L	1.9 ug/L	Not calculable
	Magnesium	813 ug/L	819 ug/L	0.7
	Manganese	9.5 ug/L	9.3 ug/L	2
	Selenium	1.8U ug/L	2.6 ug/L	Not calculable
	Sodium	20900 ug/L	21700 ug/L	4
	Thallium	1.0 ug/L	0.89U ug/L	Not calculable
Zinc	18.7 ug/L	15.4 ug/L	19	
Cyanide	ND	ND	-	
WF045	Client ID	OWG00502	OWG00502D	
	Laboratory ID	ME149004	ME149005	
	Collection Date	7/8/97	7/8/97	
	Aluminum	175 ug/L	160 ug/L	9
	Barium	7.3 ug/L	7.1 ug/L	3
	Calcium	648 ug/L	585 ug/L	10
	Copper	2.9 ug/L	4.4 ug/L	41
	Iron	106 ug/L	97.1 ug/L	9
	Magnesium	308 ug/L	317 ug/L	3
	Manganese	3.3 ug/L	3.5 ug/L	6
	Nickel	7.8 ug/L	7.7U ug/L	Not calculable
	Sodium	1990 ug/L	2060 ug/L	3
	Zinc	4.5 ug/L	4.7 ug/L	4
	Cyanide	ND	ND	-

Table XI
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Inorganic Analytes			RPD
WF045	Client ID	OWG00302	OWG00302D	
	Laboratory ID	ME190002	ME190003	
	Collection Date	7/10/97	7/10/97	
	Aluminum	31.5 ug/L	16.6U ug/L	Not calculable
	Barium	10.2 ug/L	10.5 ug/L	3
	Calcium	460 ug/L	454 ug/L	1
	Iron	83.3 ug/L	51.1 ug/L	48
	Lead	1.9 ug/L	1.2U ug/L	Not calculable
	Magnesium	286 ug/L	300 ug/L	5
	Manganese	3.0 ug/L	3.0 ug/L	0
Sodium	1670 ug/L	1670 ug/L	0	
Zinc	3.4 ug/L	3.8 ug/L	11	
Cyanide	ND	ND	-	
WF046	Client ID	31G00101	31G00101D	
	Laboratory ID	ME241003	ME241004	
	Collection Date	7/15/97	7/15/97	
	Aluminum	96.0 ug/L	91.1 ug/L	5
	Barium	22.6 ug/L	22.5 ug/L	0.4
	Calcium	857 ug/L	851 ug/L	0.7
	Copper	1.3U ug/L	1.4 ug/L	Not calculable
	Iron	120 ug/L	103 ug/L	15
	Magnesium	662 ug/L	675 ug/L	2
	Manganese	9.7 ug/L	9.9 ug/L	2
	Potassium	1910 ug/L	2200 ug/L	15
	Sodium	1760 ug/L	1890 ug/L	7
	Vanadium	1.8 ug/L	1.7U ug/L	Not calculable
Zinc	3.5 ug/L	9.8 ug/L	95	
Cyanide	ND	ND	-	
WF047	Client ID	39W034	39W034D	
	Laboratory ID	ME243005	ME243006	
	Collection Date	7/15/97	7/15/97	
	Aluminum	94.0 ug/L	76.3 ug/L	21
	Barium	22.9 ug/L	22.8 ug/L	0.4
	Calcium	1030 ug/L	1010 ug/L	2
	Copper	8.2 ug/L	1.3U ug/L	Not calculable
	Iron	747 ug/L	751 ug/L	0.5
	Magnesium	871 ug/L	854 ug/L	2
	Manganese	12.5 ug/L	12.6 ug/L	0.8
Sodium	2210 ug/L	2090 ug/L	6	
Zinc	14.7 ug/L	3.0 ug/L	132	
WF051	Client ID	16G00101	16G00101D	
	Laboratory ID	ME340009	ME340010	
	Collection Date	7/24/97	7/24/97	
	Barium	20.5 ug/L	20.7 ug/L	1
	Calcium	514 ug/L	520 ug/L	1
	Copper	1.7 ug/L	1.7 ug/L	0
	Iron	11.2 ug/L	14.7 ug/L	27
	Magnesium	617 ug/L	623 ug/L	1
	Manganese	3.2 ug/L	3.0 ug/L	6
Sodium	2130 ug/L	2110 ug/L	1	
Zinc	3.2 ug/L	8.2 ug/L	88	

Table XI
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Inorganic Analytes			RPD
WF053	Client ID	15G00602	15G00602D	
	Laboratory ID	ME367004	ME367005	
	Collection Date	7/27/97	7/27/97	
	Aluminum	16.6U ug/L	29.9 ug/L	Not calculable
	Barium	13.0 ug/L	13.0 ug/L	0
	Calcium	676 ug/L	675 ug/L	0.1
	Chromium	3.3 ug/L	4.2 ug/L	24
	Iron	33.8 ug/L	92.6 ug/L	93
	Magnesium	504 ug/L	490 ug/L	3
	Manganese	2.3 ug/L	2.7 ug/L	16
Sodium	2870 ug/L	2740 ug/L	5	
Zinc	3.1 ug/L	3.4 ug/L	9	
WF053	Client ID	15G00703	15G00703D	
	Laboratory ID	ME404003	ME404004	
	Collection Date	7/30/97	7/30/97	
	Aluminum	43.6 ug/L	108 ug/L	14
	Antimony	17.3U ug/L	21.2 ug/L	Not calculable
	Barium	6.6 ug/L	6.2 ug/L	6
	Calcium	587 ug/L	549 ug/L	7
	Chromium	10.6 ug/L	13.4 ug/L	23
	Copper	2.9 ug/L	4.5 ug/L	43
	Iron	107 ug/L	115 ug/L	7
	Lead	0.93U ug/L	5.1 ug/L	Not calculable
	Magnesium	280 ug/L	266 ug/L	5
	Manganese	6.9 ug/L	6.5 ug/L	6
	Nickel	10.9 ug/L	20.3 ug/L	60
Sodium	2040 ug/L	1820 ug/L	11	
Zinc	5.2 ug/L	6.1 ug/L	16	
WF054	Client ID	15G00801	15G00801D	
	Laboratory ID	ME441002	ME441003	
	Collection Date	8/4/97	8/4/97	
	Aluminum	143 ug/L	116 ug/L	21
	Arsenic	2.0 ug/L	1.1U ug/L	Not calculable
	Barium	34.7 ug/L	37.3 ug/L	7
	Calcium	1870 ug/L	2010 ug/L	7
	Copper	5.2 ug/L	2.6 ug/L	67
	Iron	4760 ug/L	4940 ug/L	4
	Magnesium	1370 ug/L	1470 ug/L	7
	Manganese	84.6 ug/L	91.4 ug/L	8
	Mercury -	0.04U ug/L	0.07 ug/L	Not calculable
	Sodium	1830 ug/L	1960 ug/L	7
Thallium	0.89U ug/L	0.90 ug/L	Not calculable	
Zinc	8.5 ug/L	6.6 ug/L	25	

Table XII
Summary of Analytes Exceeding Instrument Calibration
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes					
SDG	Date	Analyte	Initial Calibration	Continuing Calibration %R	Qualifier
WF022	All	Metals Cyanide	- -	- -	None None
WF023	All	Metals Cyanide	- -	- -	None None
WF024	All	Metals Cyanide	- -	- -	None None
WF025	All	Metals Cyanide	- -	- -	None None
WF026	All	Metals Cyanide	- -	- -	None None
WF027	All	Metals Cyanide	- -	- -	None None
WF028	All	Metals Cyanide	- -	- -	None None
WF029	All	Metals Cyanide	- -	- -	None None
WF030	All	Metals Cyanide	- -	- -	None None
WF031	All	Metals Cyanide	- -	- -	None None
WF031B	All	Metals Cyanide	- -	- -	None None
WF032	All	Metals Cyanide	- -	- -	None None
WF033	All	Metals Cyanide	- -	- -	None None
WF034	All	Metals Cyanide	- -	- -	None None
WF035	All	Metals Cyanide	- -	- -	None None
WF036	All	Metals Cyanide	- -	- -	None None
WF037	All	Metals Cyanide	- -	- -	None None
WF041	All	Metals Cyanide	- -	- -	None None
WF045	All	Metals Cyanide	- -	- -	None None
WF046	All	Metals Cyanide	- -	- -	None None
WF047	All	Metals	-	-	None
WF051	All	Metals	-	-	None

Table XII
Summary of Analytes Exceeding Instrument Calibration
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes					
SDG	Date	Analyte	Initial Calibration r	Continuing Calibration %R	Qualifier
WF053	All	Metals	-	-	None
WF054	All	Metals	-	-	None

Notes: r = correlation coefficient for initial calibrations

%R = percent recovery for continuing calibrations

J = the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample because QC criteria were not met (validation "J").

UJ = the analyte was not detected above the reported sample IDL. However, the reported sample is approximate; the analyte concentration may not reliably be presumed to be less than the IDL value.

R = the sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Table XIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes			
SDG	Analyte	Concentration	Associated Samples
WF022	Aluminum	6.240 ug/L	All samples in SDG WF022
	Iron	12.320 ug/L	
	Lead	0.500 ug/L	
	Sodium	38.890 ug/L	
	Zinc	3.660 ug/L	
WF023	Arsenic	-0.500 ug/L	All samples in SDG WF023
	Iron	5.980 ug/L	
	Lead	1.200 ug/L	
	Sodium	34.400 ug/L	
	Zinc	1.200 ug/L	
WF024	Aluminum	10.600 ug/L	All samples in SDG WF024
	Iron	13.190 ug/L	
	Lead	0.500 ug/L	
	Sodium	37.550 ug/L	
WF025	Aluminum	13.650 ug/L	All samples in SDG WF025
	Beryllium	-0.320 ug/L	
	Iron	7.390 ug/L	
	Selenium	0.650 ug/L	
	Zinc	1.610 ug/L	
WF026	Aluminum	17.380 ug/L	All samples in SDG WF026
	Calcium	119.520 ug/L	
	Iron	10.050 ug/L	
	Magnesium	22.940 ug/L	
	Mercury	0.140 ug/L	
	Sodium	41.280 ug/L	
	Zinc	2.510 ug/L	
Mercury	0.20 ug/L	All samples in SDG WF026	
WF027	Aluminum	18.000 ug/L	All samples in SDG WF027
	Antimony	9.280 ug/L	
	Arsenic	0.500 ug/L	
	Calcium	94.550 ug/L	
	Sodium	28.990 ug/L	
	Vanadium	1.280 ug/L	
	Mercury	0.21 ug/L	
WF028	Aluminum	51.600 ug/L	All samples in SDG WF028
	Antimony	-10.930 ug/L	
	Calcium	113.470 ug/L	
	Magnesium	45.540 ug/L	
	Mercury	0.140 ug/L	
	Potassium	498.120 ug/L	
	Sodium	43.870 ug/L	
	Zinc	1.230 ug/L	

Table XIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes			
SDG	Analyte	Concentration	Associated Samples
WF029	Aluminum	10.6 ug/L	All samples in SDG WF029
	Barium	3.0 ug/L	
	Cobalt	2.7 ug/L	
	Iron	21.4 ug/L	
	Vanadium	1.4 ug/L	
	Cobalt	2.7 ug/L	All samples in SDG WF029
	Vanadium	1.6 ug/L	
	Mercury	-0.1 ug/L	All samples in SDG WF029
	Iron	5.3 ug/L	All samples in SDG WF029
	Vanadium	1.6 ug/L	
	Calcium	153.810 ug/L	All samples in SDG WF029
	Cobalt	2.390 ug/L	
Iron	11.590 ug/L		
Sodium	37.260 ug/L		
Zinc	1.630 ug/L		
WF030	Calcium	59.580 ug/L	All samples in SDG WF030
	Iron	6.080 ug/L	
	Sodium	54.620 ug/L	
WF031	Mercury	0.030 ug/L	All samples in SDG WF031
	Potassium	-617.8 ug/L	
	Silver	-1.2 ug/L	
	Thallium	3.3 ug/L	
	Mercury	0.047 ug/L	All samples in SDG WF031
	Potassium	34.4 ug/L	
	Silver	-1.6 ug/L	
	Thallium	3.7 ug/L	
	Mercury	0.055 ug/L	All samples in SDG WF031
	Potassium	542.9 ug/L	
	Silver	-1.4 ug/L	
	Mercury	0.070 ug/L	All samples in SDG WF031
	Potassium	-21.4 ug/L	
	Silver	-1.3 ug/L	
	Thallium	3.5 ug/L	
	Mercury	0.047 ug/L	All samples in SDG WF031
	Potassium	-411.210 ug/L	
	Mercury	0.085 ug/L	All samples in SDG WF031
	Potassium	955.8 ug/L	
	Silver	-2.5 ug/L	
	Thallium	3.2 ug/L	
	Mercury	0.127 ug/L	All samples in SDG WF031
	Mercury	0.130 ug/L	All samples in SDG WF031
	Mercury	-0.030 ug/L	All samples in SDG WF031
Potassium	-335.53 ug/L		
Silver	-1.420 ug/L		

Table XIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes				
SDG	Analyte	Concentration	Associated Samples	
WF031 cont.	Arsenic	-6.4 ug/L	All samples in SDG WF031	
	Chromium	-0.4 ug/L		
	Mercury	0.034 ug/L		
	Potassium	171.0 ug/L		
	Thallium	5.1 ug/L		
	Vanadium	1.4 ug/L		
	Mercury	0.016 ug/L	All samples in SDG WF031	
	Potassium	342.4 ug/L		
	Silver	-1.2 ug/L		
	Thallium	5.2 ug/L		
	Vanadium	0.8 ug/L		
	Chromium	-0.7 ug/L	All samples in SDG WF031	
	Mercury	0.011 ug/L		
	Potassium	308.7 ug/L		
	Thallium	6.2 ug/L		
	Vanadium	0.7 ug/L		
	Barium	-0.2 ug/L	All samples in SDG WF031	
	Chromium	-0.6 ug/L		
	Mercury	-0.021 ug/L		
	Potassium	377.6 ug/L		
	Thallium	7.2 ug/L		
	Mercury	0.014 ug/L	All samples in SDG WF031	
	Arsenic	-6.7 ug/L		
	Barium	-0.2 ug/L	All samples in SDG WF031	
	Chromium	-0.8 ug/L		
	Mercury	-0.032 ug/L		
	Nickel	-1.4 ug/L		
	Potassium	441.5 ug/L		
Thallium	5.7 ug/L			
Vanadium	0.6 ug/L			
WF031B	Copper	604 ug/L		All samples in SDG WF031B
	Aluminum	-19.5 ug/L		
	Barium	0.4 ug/L		
	Copper	4.4 ug/L		
	Manganese	0.4 ug/L	All samples in SDG WF031B	
	Barium	0.4 ug/L		
	Copper	6.6 ug/L		
	Iron	3.5 ug/L		
	Mercury	0.0 ug/L		
	Nickel	9.5 ug/L		
	Sodium	10.6 ug/L		
	Barium	25.130 ug/L	All samples in SDG WF031B	
	Beryllium	-0.830 ug/L		
	Calcium	129.890 ug/L		
	Copper	8.310 ug/L		
	Iron	8.680 ug/L		
	Magnesium	25.430 ug/L		
	Manganese	0.490 ug/L		
	Silver	2.970 ug/L		
	Sodium	84.450 ug/L		
	Vanadium	2.060 ug/L		
	Zinc	3.100 ug/L		
Cyanide	-0.981 ug/L			

Table XIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes			
SDG	Analyte	Concentration	Associated Samples
WF032	Copper	4.5 ug/L	All samples in SDG WF032
	Manganese	0.5 ug/L	
	Mercury	0.0242 ug/L	
	Potassium	-1595.6 ug/L	
	Beryllium	0.2 ug/L	All samples in SDG WF032
	Cobalt	0.3 ug/L	
	Copper	5.5 ug/L	
	Manganese	0.7 ug/L	
	Mercury	0.0265 ug/L	
	Sodium	17.3 ug/L	
	Beryllium	0.2 ug/L	All samples in SDG WF032
	Copper	4.9 ug/L	
	Manganese	0.6 ug/L	
	Mercury	0.0255 ug/L	
	Potassium	1914.8 ug/L	
	Sodium	11.6 ug/L	
	Beryllium	0.2 ug/L	All samples in SDG WF032
	Copper	5.6 ug/L	
	Manganese	0.6 ug/L	
	Mercury	-0.0178 ug/L	
	Sodium	17.4 ug/L	
	Barium	1.210 ug/L	All samples in SDG WF032
	Chromium	2.750 ug/L	
	Copper	3.390 ug/L	
	Manganese	0.410 ug/L	
	Mercury	0.015 ug/L	
	Sodium	856.490 ug/L	
	Zinc	2.310 ug/L	
	Barium	0.3 ug/L	All samples in SDG WF032
	Beryllium	0.1 ug/L	
	Cobalt	0.4 ug/L	
	Copper	5.8 ug/L	
Manganese	0.2 ug/L		
Barium	0.3 ug/L	All samples in SDG WF032	
Beryllium	0.1 ug/L		
Copper	5.8 ug/L		
Manganese	0.4 ug/L		
Mercury	-0.0874 ug/L		
Nickel	2.0 ug/L		
Sodium	11.5 ug/L		
Barium	0.2 ug/L	All samples in SDG WF032	
Beryllium	0.1 ug/L		
Copper	5.6 ug/L		
Manganese	0.5 ug/L		
Thallium	2.6 ug/L		
Barium	0.3 ug/L	All samples in SDG WF032	
Beryllium	0.3 ug/L		
Cobalt	0.6 ug/L		
Copper	7.0 ug/L		
Manganese	0.8 ug/L		
Nickel	1.4 ug/L		
Thallium	4.3 ug/L		

Table XIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes			
SDG	Analyte	Concentration	Associated Samples
WF032 cont.	Aluminum	107.660 ug/L	All samples in SDG WF032
	Antimony	4.320 ug/L	
	Barium	1.760 ug/L	
	Cadmium	1.660 ug/L	
	Calcium	105.840 ug/L	
	Cobalt	0.430 ug/L	
	Copper	12.450 ug/L	
	Iron	54.350 ug/L	
	Magnesium	103.090 ug/L	
	Manganese	0.280 ug/L	
	Sodium	154.770 ug/L	
	Zinc	9.120 ug/L	
	Antimony	4.3 ug/L	All samples in SDG WF032
	Barium	0.4 ug/L	
	Beryllium	0.3 ug/L	
	Copper	5.2 ug/L	
	Manganese	0.6 ug/L	All samples in SDG WF032
	Sodium	10.2 ug/L	
	WF033	Barium	0.3 ug/L
Beryllium		0.1 ug/L	
Cobalt		0.4 ug/L	
Copper		5.8 ug/L	
Manganese		0.2 ug/L	
Mercury		0.07 ug/L	
Potassium		-1595.8 ug/L	
Barium		0.3 ug/L	All samples in SDG WF033
Beryllium		0.1 ug/L	
Copper		5.8 ug/L	
Manganese		0.4 ug/L	
Mercury		0.04 ug/L	
Potassium		655.4 ug/L	All samples in SDG WF033
Barium		0.2 ug/L	
Beryllium		0.1 ug/L	
Copper		5.6 ug/L	
Manganese		0.5 ug/L	
Mercury		0.05 ug/L	
Potassium		1914.8 ug/L	
Thallium		2.6 ug/L	All samples in SDG WF033
Barium		0.3 ug/L	
Beryllium		0.3 ug/L	
Cobalt		0.6 ug/L	
Copper		7.0 ug/L	
Manganese		0.8 ug/L	
Potassium		425.8 ug/L	
Thallium		4.3 ug/L	All samples in SDG WF033
Aluminum		164.460 ug/L	
Barium		1.220 ug/L	
Calcium		107.040 ug/L	
Copper		2.900 ug/L	
Iron		33.430 ug/L	
Magnesium		82.790 ug/L	
Manganese	0.330 ug/L		
Potassium	1602.780 ug/L		
Sodium	221.450 ug/L		
Zinc	1.660 ug/L		

Table XIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes			
SDG	Analyte	Concentration	Associated Samples
WF033 cont.	Mercury	0.06 ug/L	All samples in SDG WF033
	Barium	0.4 ug/L	All samples in SDG WF033
	Beryllium	0.3 ug/L	
	Copper	5.2 ug/L	
	Manganese	0.6 ug/L	
	Mercury	0.05 ug/L	
	Potassium	163.8 ug/L	
	Antimony	4.810 ug/L	All samples in SDG WF033
	Barium	0.460 ug/L	
	Copper	2.870 ug/L	
	Manganese	0.330 ug/L	
	Potassium	509.990 ug/L	
	Sodium	137.200 ug/L	
	Zinc	3.200 ug/L	
	Barium	0.8 ug/L	All samples in SDG WF033
	Beryllium	0.6 ug/L	
	Cadmium	0.8 ug/L	
	Chromium	0.9 ug/L	
	Cobalt	1.1 ug/L	
	Manganese	1.0 ug/L	
	Potassium	1734.0 ug/L	
	Thallium	2.4 ug/L	
	Vanadium	1.1 ug/L	
	Barium	1.2 ug/L	
	Beryllium	0.8 ug/L	
	Cadmium	0.9 ug/L	
	Chromium	1.2 ug/L	
	Cobalt	1.1 ug/L	
	Manganese	1.3 ug/L	
	Potassium	1605.5 ug/L	
	Thallium	3.4 ug/L	
	Vanadium	1.8 ug/L	
	Barium	1.1 ug/L	All samples in SDG WF033
	Beryllium	0.8 ug/L	
	Cadmium	0.8 ug/L	
	Chromium	1.1 ug/L	
	Cobalt	1.1 ug/L	
	Manganese	1.2 ug/L	
	Potassium	768.8 ug/L	
	Thallium	3.2 ug/L	
	Vanadium	1.7 ug/L	
	Barium	0.7 ug/L	All samples in SDG WF033
Beryllium	0.7 ug/L		
Cadmium	0.6 ug/L		
Chromium	0.9 ug/L		
Cobalt	0.8 ug/L		
Manganese	1.0 ug/L		
Potassium	314.6 ug/L		
Vanadium	1.2 ug/L		

Table XIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes			
SDG	Analyte	Concentration	Associated Samples
WF033 cont.	Barium	1.0 ug/L	All samples in SDG WF033
	Beryllium	0.6 ug/L	
	Cadmium	0.6 ug/L	
	Chromium	0.9 ug/L	
	Cobalt	1.0 ug/L	
	Manganese	1.0 ug/L	
	Potassium	684.9 ug/L	
	Thallium	2.2 ug/L	
	Vanadium	1.2 ug/L	All samples in SDG WF033
	Barium	0.9 ug/L	
	Beryllium	0.7 ug/L	
	Cadmium	0.7 ug/L	
	Chromium	0.9 ug/L	
	Cobalt	1.0 ug/L	
	Manganese	1.0 ug/L	
	Potassium	722.1 ug/L	
	Thallium	3.4 ug/L	
	Vanadium	1.2 ug/L	
WF034	Copper	5.8 ug/L	All samples in SDG WF034
	Mercury	0.023 ug/L	
	Copper	5.8 ug/L	All samples in SDG WF034
	Manganese	0.4 ug/L	
	Mercury	0.017 ug/L	
	Beryllium	0.1 ug/L	All samples in SDG WF034
	Copper	5.6 ug/L	
	Manganese	0.5 ug/L	
	Mercury	0.030 ug/L	
	Beryllium	0.3 ug/L	All samples in SDG WF034
	Copper	7.0 ug/L	
	Manganese	0.8 ug/L	
	Mercury	0.042 ug/L	
	Sodium	10.2 ug/L	
	Barium	0.460 ug/L	66G02001 66G00302 66G01801 30G00301 30G00401 66R02201 30G00301D
	Copper	2.870 ug/L	
	Sodium	137.200 ug/L	
	Zinc	3.200 ug/L	
	Cyanide	-1.327 ug/L	
	Mercury	0.024 ug/L	
	Beryllium	0.3 ug/L	
Copper	5.2 ug/L		
Manganese	0.6 ug/L		
Mercury	0.026 ug/L		
Mercury	0.040 ug/L	All samples in SDG WF034	
Mercury	0.033 ug/L		

Table XIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes			
SDG	Analyte	Concentration	Associated Samples
WF034 cont.	Arsenic	-13.610 ug/L	66G01101
	Barium	1.700 ug/L	66G01301
	Beryllium	-0.710 ug/L	66G00501
	Calcium	108.610 ug/L	66G00501F
	Copper	1.700 ug/L	
	Lead	-8.620 ug/L	
	Manganese	0.790 ug/L	
	Selenium	10.810 ug/L	
	Sodium	70.400 ug/L	
	Zinc	3.200 ug/L	
	Beryllium	0.2 ug/L	All samples in SDG WF034
	Silver	3.3 ug/L	
	Sodium	11.9 ug/L	
	Beryllium	0.2 ug/L	All samples in SDG WF034
	Manganese	0.4 ug/L	
	Silver	2.2 ug/L	
	Sodium	12.2 ug/L	
	Beryllium	0.5 ug/L	All samples in SDG WF034
	Copper	1.9 ug/L	
	Manganese	0.6 ug/L	
	Sodium	20.0 ug/L	
	Beryllium	0.1 ug/L	All samples in SDG WF034
	Silver	2.6 ug/L	
	Sodium	17.3 ug/L	
	Beryllium	0.2 ug/L	All samples in SDG WF034
	Manganese	0.4 ug/L	
	Sodium	9.7 ug/L	
WF035	Barium	0.8 ug/L	All samples in SDG WF035
	Beryllium	0.6 ug/L	
	Manganese	1.0 ug/L	
	Mercury	0.0239 ug/L	
	Thallium	2.4 ug/L	
	Barium	1.2 ug/L	All samples in SDG WF035
	Beryllium	0.8 ug/L	
	Manganese	1.3 ug/L	
	Mercury	0.0256 ug/L	
	Thallium	3.4 ug/L	
	Barium	1.1 ug/L	All samples in SDG WF035
	Beryllium	0.8 ug/L	
	Manganese	1.2 ug/L	
	Mercury	0.0401 ug/L	
	Thallium	3.2 ug/L	
	Barium	0.7 ug/L	All samples in SDG WF035
	Beryllium	0.7 ug/L	
	Manganese	1.0 ug/L	
	Mercury	0.334 ug/L	
	Aluminum	101.120 ug/L	All samples in SDG WF035
	Barium	0.410 ug/L	
	Iron	56.400 ug/L	
	Manganese	0.430 ug/L	
	Sodium	152.450 ug/L	
	Zinc	2.190 ug/L	

Table XIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes			
SDG	Analyte	Concentration	Associated Samples
WF035 cont.	Barium	1.0 ug/L	All samples in SDG WF035
	Beryllium	0.6 ug/L	
	Manganese	1.0 ug/L	
	Mercury	0.0250 ug/L	
	Thallium	2.2 ug/L	
	Barium	0.9 ug/L	All samples in SDG WF035
	Beryllium	0.7 ug/L	
	Manganese	1.0 ug/L	
	Thallium	3.4 ug/L	
	Barium	0.570 ug/L	All samples in SDG WF035
	Beryllium	-0.910 ug/L	
	Calcium	109.820 ug/L	
	Copper	5.470 ug/L	
	Manganese	0.720 ug/L	
	Zinc	4.400 ug/L	
	Manganese	0.6 ug/L	All samples in SDG WF035
	Manganese	0.4 ug/L	All samples in SDG WF035
	Barium	0.4 ug/L	All samples in SDG WF035
Beryllium	-0.2 ug/L		
Manganese	0.6 ug/L		
Beryllium	-0.2 ug/L	All samples in SDG WF035	
Manganese	0.6 ug/L		
Beryllium	-0.2 ug/L	All samples in SDG WF035	
Manganese	0.4 ug/L		
WF036	Aluminum	17.7 ug/L	All samples in SDG WF036
	Barium	0.8 ug/L	
	Beryllium	0.6 ug/L	
	Cadmium	0.8 ug/L	
	Chromium	0.9 ug/L	
	Cobalt	1.1 ug/L	
	Manganese	1.0 ug/L	
	Mercury	0.0265 ug/L	
	Thallium	2.4 ug/L	
	Vanadium	1.1 ug/L	
	Aluminum	18.4 ug/L	All samples in SDG WF036
	Barium	1.2 ug/L	
	Beryllium	0.8 ug/L	
	Cadmium	0.9 ug/L	
	Chromium	1.2 ug/L	
	Cobalt	1.1 ug/L	
	Manganese	1.3 ug/L	
	Mercury	0.0251 ug/L	
Thallium	3.4 ug/L		
Vanadium	1.8 ug/L		

Table XIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes			
SDG	Analyte	Concentration	Associated Samples
WF036 cont.	Aluminum	14.7 ug/L	All samples in SDG WF036
	Barium	1.1 ug/L	
	Beryllium	0.8 ug/L	
	Cadmium	0.8 ug/L	
	Chromium	1.1 ug/L	
	Cobalt	1.1 ug/L	
	Manganese	1.2 ug/L	
	Mercury	0.0165 ug/L	
	Thallium	3.2 ug/L	
	Vanadium	1.7 ug/L	
	Barium	0.7 ug/L	All samples in SDG WF036
	Beryllium	0.7 ug/L	
	Cadmium	0.6 ug/L	
	Chromium	0.9 ug/L	
	Cobalt	0.8 ug/L	
	Manganese	1.0 ug/L	
	Mercury	0.0157 ug/L	
	Vanadium	1.2 ug/L	
	Aluminum	63.950 ug/L	All samples in SDG WF036
	Barium	0.730 ug/L	
	Chromium	0.490 ug/L	
	Manganese	0.430 ug/L	
	Mercury	0.014 ug/L	
	Potassium	1817.440 ug/L	
	Cyanide	-1.333 ug/L	
	Barium	1.0 ug/L	All samples in SDG WF036
	Beryllium	0.6 ug/L	
	Cadmium	0.6 ug/L	
	Chromium	0.9 ug/L	
	Cobalt	1.0 ug/L	
	Manganese	1.0 ug/L	
	Thallium	2.2 ug/L	
	Vanadium	1.2 ug/L	
	Aluminum	91.5 ug/L	All samples in SDG WF036
	Barium	0.9 ug/L	
	Beryllium	0.7 ug/L	
Cadmium	0.7 ug/L		
Chromium	0.9 ug/L		
Cobalt	1.0 ug/L		
Manganese	1.0 ug/L		
Thallium	3.4 ug/L		
Vanadium	1.2 ug/L		
WF037	Copper	6.4 ug/L	All samples in SDG WF037
	Aluminum	-19.5 ug/L	All samples in SDG WF037
	Barium	0.4 ug/L	
	Copper	4.4 ug/L	
	Barium	0.4 ug/L	All samples in SDG WF037
Copper	6.6 ug/L		

Table XIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes			
SDG	Analyte	Concentration	Associated Samples
WF037 cont.	Barium	25.130 ug/L	All samples in SDG WF037
	Beryllium	-0.830 ug/L	
	Calcium	129.890 ug/L	
	Copper	8.310 ug/L	
	Iron	8.680 ug/L	
	Magnesium	25.430 ug/L	
	Manganese	0.490 ug/L	
	Silver	2.970 ug/L	
	Sodium	84.450 ug/L	
	Vanadium	2.060 ug/L	
	Zinc	3.100 ug/L	
Cyanide	-0.981 ug/L		
WF041	Cyanide	-0.6 ug/L	All samples in SDG WF041
	Barium	0.5 ug/L	All samples in SDG WF041
	Sodium	12.2 ug/L	All samples in SDG WF041
	Cyanide	-0.4 ug/L	
	Barium	0.7 ug/L	All samples in SDG WF041
	Sodium	16.3 ug/L	
	Beryllium	-1.010 ug/L	All samples in SDG WF041
	Calcium	133.200 ug/L	
	Copper	3.740 ug/L	
	Iron	9.490 ug/L	
	Lead	1.260 ug/L	
	Sodium	93.470 ug/L	
	Thallium	1.310 ug/L	
	Zinc	19.070 ug/L	
	Cyanide	-1.002 ug/L	
	Barium	-0.6 ug/L	All samples in SDG WF041
	Chromium	-2.9 ug/L	
	Copper	-1.7 ug/L	
	Magnesium	-22.9 ug/L	
	Silver	-2.8 ug/L	
	Vanadium	-3.0 ug/L	
	Copper	6.4 ug/L	All samples in SDG WF041
	Thallium	1.4 ug/L	
	Vanadium	-1.9 ug/L	
	Cobalt	8.9 ug/L	All samples in SDG WF041
	Thallium	1.6 ug/L	
	Cyanide	-0.4 ug/L	
	Beryllium	-0.830 ug/L	All samples in SDG WF041
	Calcium	105.800 ug/L	
	Iron	3.860 ug/L	
	Selenium	-3.230 ug/L	
	Sodium	15.150 ug/L	
	Vanadium	-2.240 ug/L	
Zinc	0.940 ug/L		
Selenium	-3.4 ug/L	All samples in SDG WF041	
Thallium	-1.3 ug/L		
Lead	1.2 ug/L	All samples in SDG WF041	
Selenium	-2.6 ug/L		
Cyanide	-0.4 ug/L		

Table XIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes				
SDG	Analyte	Concentration	Associated Samples	
WF041 cont.	Selenium	-3.1 ug/L	All samples in SDG WF041	
	Thallium	1.3 ug/L		
	Selenium	-2.8 ug/L	All samples in SDG WF041	
	Cyanide	-0.5 ug/L		
	Thallium	-1.0 ug/L	All samples in SDG WF041	
	Cyanide	-0.4 ug/L		
	Cyanide	0.4 ug/L	All samples in SDG WF041	
Cyanide	0.4 ug/L	All samples in SDG WF041		
Cyanide	0.4 ug/L	All samples in SDG WF041		
WF045	Cyanide	-0.6 ug/L	All samples in SDG WF045	
	Cyanide	-0.6 ug/L	All samples in SDG WF045	
	Manganese	0.4 ug/L	All samples in SDG WF045	
	Vanadium	1.8 ug/L	All samples in SDG WF045	
	Beryllium	-0.860 ug/L	All samples in SDG WF045	
	Calcium	136.80 ug/L		
	Iron	5.390 ug/L		
	Sodium	32.780 ug/L		
	Vanadium	-1.730 ug/L		
	Zinc	3.340 ug/L		
	Cyanide	-1.013 ug/L		
	Mercury	0.1 ug/L		
	Cyanide	-0.6 ug/L		
	Thallium	1.1 ug/L		
	Cyanide	-0.6 ug/L		
	Cyanide	-0.6 ug/L	All samples in SDG WF045	
	Aluminum	17.320 ug/L	All samples in SDG WF045	
	Barium	0.450 ug/L		
	Beryllium	-0.550 ug/L		
	Calcium	121.820 ug/L		
	Iron	6.770 ug/L		
	Sodium	45.700 ug/L		
	Thallium	-1.390 ug/L		
	Zinc	2.510 ug/L		
	Cyanide	-0.899 ug/L		
	Beryllium	0.2 ug/L		OWG00401
	Manganese	0.5 ug/L		OWG00201
	Sodium	17.2 ug/L		
	Beryllium	0.2 ug/L		OWG00401
	Manganese	0.7 ug/L		OWG00201
Sodium	12.2 ug/L			
Zinc	1.0 ug/L			

Table XIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes			
SDG	Analyte	Concentration	Associated Samples
WF045 cont.	Barium	0.9 ug/L	OWG00401
	Beryllium	0.5 ug/L	OWG00201
	Chromium	3.0 ug/L	
	Manganese	1.0 ug/L	
	Sodium	19.9 ug/L	
	Thallium	1.2 ug/L	
	Vanadium	2.0 ug/L	
	Zinc	1.6 ug/L	
	Cyanide	-0.377 ug/L	OWG00401 OWG00201
	Beryllium	0.2 ug/L	OWG00401
	Sodium	11.0 ug/L	OWG00201
	Selenium	-2.2 ug/L	OWG00401 OWG00201
	Thallium	-1.0 ug/L	OWG00401 OWG00201
	WF046	Beryllium	0.2 ug/L
Sodium		17.2 ug/L	
Beryllium		0.2 ug/L	All samples in SDG WF046
Mercury		0.040 ug/L	
Sodium		12.2 ug/L	
Beryllium		0.5 ug/L	All samples in SDG WF046
Mercury		0.043 ug/L	
Sodium		19.9 ug/L	
Aluminum		17.320 ug/L	All samples in SDG WF046
Barium		0.450 ug/L	
Beryllium		-0.550 ug/L	
Calcium		121.820 ug/L	
Iron		6.770 ug/L	
Sodium		45.700 ug/L	
Thallium	-1.390 ug/L		
Zinc	2.510 ug/L		
Boron	-0.377 ug/L		
Beryllium	0.2 ug/L	All samples in SDG WF046	
Sodium	11.0 ug/L		
WF047	Beryllium	0.2 ug/L	All samples in SDG WF047
	Manganese	0.5 ug/L	
	Mercury	0.1 ug/L	
	Sodium	17.2 ug/L	
	Beryllium	0.2 ug/L	All samples in SDG WF047
	Manganese	0.7 ug/L	
	Sodium	12.2 ug/L	
	Zinc	1.0 ug/L	
	Barium	0.9 ug/L	All samples in SDG WF047
	Beryllium	0.5 ug/L	
	Chromium	3.0 ug/L	
	Manganese	1.0 ug/L	
	Sodium	19.9 ug/L	
	Thallium	1.1 ug/L	
Vanadium	2.0 ug/L		
Zinc	1.6 ug/L		

Table XIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes				
SDG	Analyte	Concentration	Associated Samples	
WF047 cont.	Aluminum	17.320 ug/L	All samples in SDG WF047	
	Barium	0.450 ug/L		
	Beryllium	-0.550 ug/L		
	Calcium	121.820 ug/L		
	Iron	6.770 ug/L		
	Sodium	45.700 ug/L		
	Thallium	-1.390 ug/L		
	Zinc	2.510 ug/L		
	Beryllium	0.2 ug/L		All samples in SDG WF047
	Sodium	11.0 ug/L		All samples in SDG WF047
WF051	Selenium	-2.2 ug/L	All samples in SDG WF047	
	Barium	1.0 ug/L	All samples in SDG WF051	
	Beryllium	0.2 ug/L		
	Chromium	3.4 ug/L		
	Copper	1.5 ug/L		
	Manganese	0.5 ug/L		
	Silver	2.8 ug/L		
	Vanadium	2.4 ug/L		
	Manganese	-0.5 ug/L	All samples in SDG WF051	
	Mercury	0.04 ug/L		
	Vanadium	1.8 ug/L		
	Arsenic	1.1 ug/L	All samples in SDG WF051	
	Mercury	0.04 ug/L		
	Selenium	-1.9 ug/L		
	Manganese	-0.5 ug/L	All samples in SDG WF051	
	Mercury	0.07 ug/L		
	Beryllium	-0.800 ug/L	All samples in SDG WF051	
	Calcium	140.860 ug/L		
	Iron	5.470 ug/L		
	Sodium	36.740 ug/L		
	Zinc	1.980 ug/L		
	Mercury	0.08 ug/L		All samples in SDG WF051
	Silver	-2.4 ug/L		
	Aluminum	16.800 ug/L	All samples in SDG WF051	
	Barium	0.600 ug/L		
	Beryllium	-0.680 ug/L		
	Calcium	127.440 ug/L		
	Chromium	3.050 ug/L		
	Cobalt	2.850 ug/L		
	Copper	2.120 ug/L		
Iron	10.740 ug/L			
Manganese	0.690 ug/L			
Silver	3.040 ug/L			
Sodium	54.160 ug/L			
Vanadium	2.700 ug/L			
Zinc	2.710 ug/L			
Calcium	42.0 ug/L	All samples in SDG WF051		

Table XIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes			
SDG	Analyte	Concentration	Associated Samples
WF051 cont.	Barium	0.6 ug/L	All samples in SDG WF051
	Beryllium	0.4 ug/L	
	Cobalt	2.6 ug/L	
	Copper	1.7 ug/L	
	Manganese	0.9 ug/L	
	Zinc	1.2 ug/L	
	Manganese	0.7 ug/L	
	Arsenic	-1.130 ug/L	All samples in SDG WF051
	Beryllium	-0.720 ug/L	
	Calcium	131.080 ug/L	
	Iron	12.060 ug/L	
	Zinc	4.540 ug/L	
	Lead	-1.3 ug/L	
	Lead	-1.4 ug/L	All samples in SDG WF051
	Magnesium	0.5 ug/L	
	Lead	-1.6 ug/L	All samples in SDG WF051
	Aluminum	18.640 ug/L	All samples in SDG WF051
	Barium	0.490 ug/L	
	Beryllium	-0.760 ug/L	
	Calcium	134.210 ug/L	
	Chromium	3.850 ug/L	
	Iron	35.410 ug/L	
	Manganese	0.500 ug/L	
	Sodium	35.200 ug/L	
	Zinc	2.300 ug/L	
	Lead	-2.0 ug/L	
	Vanadium	2.0 ug/L	
	Barium	0.9 ug/L	All samples in SDG WF051
Beryllium	0.3 ug/L		
Lead	-2.0 ug/L		
Manganese	0.7 ug/L		
Sodium	9.2 ug/L		
Sodium	15.0 ug/L	All samples in SDG WF051	
Arsenic	-1.6 ug/L	All samples in SDG WF051	
WF053	Aluminum	18.640 ug/L	All samples in SDG WF053
	Barium	0.490 ug/L	
	Beryllium	-0.760 ug/L	
	Calcium	134.210 ug/L	
	Chromium	3.850 ug/L	
	Iron	35.410 ug/L	
	Manganese	0.500 ug/L	
	Sodium	35.200 ug/L	
	Zinc	2.330 ug/L	

Table XIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes			
SDG	Analyte	Concentration	Associated Samples
WF053 cont.	Barium	-0.760 ug/L	All samples in SDG WF053
	Calcium	138.650 ug/L	
	Chromium	3.750 ug/L	
	Copper	3.390 ug/L	
	Iron	14.500 ug/L	
	Manganese	0.490 ug/L	
	Nickel	8.370 ug/L	
	Sodium	42.790 ug/L	
	Zinc	2.940 ug/L	
	Aluminum	26.970 ug/L	All samples in SDG WF053
	Beryllium	-0.710 ug/L	
	Calcium	151.990 ug/L	
	Iron	16.430 ug/L	
	Manganese	0.580 ug/L	
	Silver	4.360 ug/L	
	Sodium	52.750 ug/L	
	Zinc	3.720 ug/L	
	Beryllium	-0.970 ug/L	All samples in SDG WF053
	Calcium	130.780 ug/L	
	Copper	1.450 ug/L	
	Iron	19.510 ug/L	
	Lead	-1.380 ug/L	
	Manganese	0.780 ug/L	
	Sodium	13.170 ug/L	
	Zinc	6.090 ug/L	
	Aluminum	52.990 ug/L	All samples in SDG WF053
	Arsenic	1.300 ug/L	
	Beryllium	-0.940 ug/L	
	Calcium	198.990 ug/L	
	Chromium	6.790 ug/L	
	Copper	2.230 ug/L	
	Iron	38.980 ug/L	
	Lead	-1.460 ug/L	
Manganese	1.000 ug/L		
Sodium	60.080 ug/L		
Zinc	2.040 ug/L		
WF054	Mercury	0.1 ug/L	
	Mercury	0.1 ug/L	All samples in SDG WF054
	Mercury	0.1 ug/L	All samples in SDG WF054
	Beryllium	-0.980 ug/L	All samples in SDG WF054
	Calcium	110.890 ug/L	
	Iron	9.300 ug/L	
	Mercury	0.052 ug/L	
	Vanadium	-2.660 ug/L	
Zinc	2.260 ug/L		

Table XIV
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Parameter	Concentration	Qualifier
WF022	Client ID: BKR01001		
	Laboratory ID: RB858002		
	Collection Date: 7/16/96		
	Type: Equipment rinsate		
	Sodium	43.4 ug/L	None
	Aluminum	55.9 ug/L	23.9U ug/L ¹
	Calcium	69.0 ug/L	None
	Iron	23.9 ug/L	43.4U ug/L ¹
WF022	Client ID: BKF01001		
	Laboratory ID: RB858010		
	Collection Date: 7/17/96		
	Type: Source blank		
	Sodium	61.3 ug/L	61.3U ug/L ¹
WF023	Client ID: 01R01101		
	Laboratory ID: RB887005		
	Collection Date: 7/23/96		
	Type: Equipment rinsate		
	Aluminum	13.3 ug/L	None
WF024	Client ID: 15R01201		
	Laboratory ID: RB920005		
	Collection Date: 7/31/96		
	Type: Equipment rinsate		
	Aluminum	13.8 ug/L	13.8U ug/L ¹
WF025	Client ID: 15R01301		
	Laboratory ID: RB956011		
	Collection Date: 8/7/96		
	Type: Equipment rinsate		
	Iron	5.3 ug/L	5.3U ug/L ¹
WF026	Client ID: 15R01401		
	Laboratory ID: RB980012		
	Collection Date: 8/14/96		
	Type: Equipment rinsate		
	Iron	14.8 ug/L	14.8U ug/L ¹

Table XIV
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes			
SDG	Parameter	Concentration	Qualifier
WF027	Client ID: 16R01501		
	Laboratory ID: RC016012		
	Collection Date: 8/21/96		
	Type: Equipment rinsate		
	Arsenic	0.50 ug/L	0.50U ug/L ¹
	Calcium	64.0 ug/L	64.0U ug/L ¹
WF028	Client ID: 11R01601		
	Laboratory ID: RC044016		
	Collection Date: 8/28/96		
	Type: Equipment rinsate		
	Calcium	67.2 ug/L	67.2U ug/L ¹
	Sodium	30.8 ug/L	30.8U ug/L ¹
WF029	Client ID: 13R01701		
	Laboratory ID: RC092008		
	Collection Date: 9/11/96		
	Type: Equipment rinsate		
	Calcium	66.4 ug/L	66.4U ug/L ¹
	Sodium	25.4 ug/L	25.4U ug/L ¹
WF030	Client ID: 66R01801		
	Laboratory ID: RC121010		
	Collection Date: 9/18/96		
	Type: Equipment rinsate		
	Calcium	55.7 ug/L	55.7U ug/L ¹
	Iron	9.2 ug/L	9.2U ug/L ¹
WF031	Client ID: 05R01901		
	Laboratory ID: MB928011		
	Collection Date: 9/25/96		
	Type: Equipment rinsate		
	Barium	0.34 ug/L	None
	Manganese	0.38 ug/L	None
WF032	Client ID: 06R02001		
	Laboratory ID: MC011006		
	Collection Date: 10/2/96		
	Type: Equipment rinsate		
	Mercury	0.01 ug/L	0.01U ug/L ¹
	Sodium	365 ug/L	None
WF032	Client ID: 06R02001		
	Laboratory ID: MC011006		
	Collection Date: 10/2/96		
	Type: Equipment rinsate		
	Barium	2.8 ug/L	2.8U ug/L ¹
	Chromium	2.5 ug/L	2.5U ug/L ¹
Copper	2.9 ug/L	2.9U ug/L ¹	
Manganese	0.48 ug/L	0.48U ug/L ¹	
Mercury	0.01 ug/L	0.01U ug/L ¹	
Sodium	365 ug/L	None	
Zinc	3.0 ug/L	3.0U ug/L ¹	
Cyanide	1.4 ug/L	None	

Table XIV
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Parameter	Concentration	Qualifier
WF033	Client ID: 66R02101		
	Laboratory ID: MC085007		
	Collection Date: 10/9/96		
	Type: Equipment rinsate		
	Barium	1.6 ug/L	1.6U ug/L ¹
	Beryllium	0.32 ug/L	0.32U ug/L ¹
	Chromium	0.55 ug/L	0.55U ug/L ¹
	Cobalt	0.84 ug/L	0.84U ug/L ¹
	Manganese	2.4 ug/L	2.4U ug/L ¹
	Potassium	777 ug/L	777U ug/L ¹
WF034	Client ID: 66R0201		
	Laboratory ID: MC153007		
	Collection Date: 10/16/96		
	Type: Equipment rinsate		
	Barium	0.56 ug/L	0.56 ug/L ¹
	Manganese	0.44 ug/L	0.44 ug/L ¹
	Mercury	0.02 ug/L	0.02 ug/L ¹
	Sodium	119 ug/L	119 ug/L ¹
	Zinc	2.2 ug/L	2.2 ug/L ¹
	WF035	Client ID: 66R02301	
Laboratory ID: MC214006			
Collection Date: 10/23/96			
Type: Equipment rinsate			
Aluminum		30.7 ug/L	30.7 ug/L ¹
Barium		1.3 ug/L	1.3 ug/L ¹
Calcium		101 ug/L	101 ug/L ¹
Manganese		0.94 ug/L	0.94 ug/L ¹
Mercury		0.03 ug/L	0.03 ug/L ¹
Sodium		100 ug/L	100 ug/L ¹
WF036	Client ID: 54R02401		
	Laboratory ID: MC262007		
	Collection Date: 10/30/96		
	Type: - Equipment rinsate		
	Aluminum	14.8 ug/L	14.8 ug/L ¹
	Barium	0.59 ug/L	0.59 ug/L ¹
	Chromium	0.48 ug/L	0.48 ug/L ¹
	Manganese	0.32 ug/L	0.32 ug/L ¹
	Potassium	756 ug/L	756 ug/L ¹
	Sodium	265 ug/L	None
WF037	Client ID: 15F00201		
	Laboratory ID: MC424010		
	Collection Date: 12/2/96		
	Type: Source blank		
	Barium	1.2 ug/L	None
	Calcium	111 ug/L	None
	Copper	6.8 ug/L	None
	Manganese	0.43 ug/L	None
	Sodium	95.7 ug/L	None
	Zinc	2.6 ug/L	None

Table XIV
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes			
SDG	Parameter	Concentration	Qualifier
WF041	Client ID:	35F00301	
	Laboratory ID:	MD908002	
	Collection Date:	6/11/97	
	Type:	Source blank	
	Barium	0.78 ug/L	None
	Calcium	164 ug/L	164U ug/L ¹
	Copper	10.3 ug/L	10.3U ug/L ¹
	Iron	35.6 ug/L	35.6U ug/L ¹
	Lead	1.0 ug/L	1.0U ug/L ¹
	Manganese	0.88 ug/L	None
Sodium	129 ug/L	129U ug/L ¹	
Zinc	13.3 ug/L	13.3U ug/L ¹	
WF041	Client ID:	35R03001	
	Laboratory ID:	MD908003	
	Collection Date:	6/11/97	
	Type:	Equipment rinsate	
	Barium	1.0 ug/L	None
	Calcium	165 ug/L	165U ug/L ¹
	Copper	4.9 ug/L	4.9U ug/L ¹
	Iron	10.7 ug/L	10.7U ug/L ¹
	Manganese	1.2 ug/L	None
	Sodium	148 ug/L	148U ug/L ¹
Thallium	1.7 ug/L	1.7U ug/L ¹	
Zinc	15.8 ug/L	15.8U ug/L ¹	
WF045	Client ID:	OWR03401	
	Laboratory ID:	ME149002	
	Collection Date:	7/7/97	
	Type:	Equipment rinsate	
	Barium	0.44 ug/L	0.44U ug/L ¹
	Calcium	133 ug/L	133U ug/L ¹
	Copper	1.8 ug/L	None
	Iron	7.1 ug/L	7.1U ug/L ¹
	Sodium	60.4 ug/L	60.4U ug/L ¹
	Zinc	1.7 ug/L	1.7U ug/L ¹
WF046	Client ID:	31R03301	
	Laboratory ID:	MW241002	
	Collection Date:	7/15/97	
	Type:	Equipment rinsate	
	Barium	1.1 ug/L	1.1U ug/L ¹
	Calcium	126 ug/L	126U ug/L ¹
	Iron	4.4 ug/L	4.4U ug/L ¹
	Manganese	0.40 ug/L	None
	Sodium	65.6 ug/L	65.6U ug/L ¹
	Zinc	5.4 ug/L	5.4U ug/L ¹

Table XIV
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Parameter	Concentration	Qualifier
WF051	Client ID: 16R03601		
	Laboratory ID: ME340005		
	Collection Date: 7/23/97		
	Type: Equipment rinsate		
	Calcium	166 ug/L	166U ug/L ¹
	Copper	1.7 ug/L	1.7U ug/L ¹
	Iron	12.7 ug/L	12.7U ug/L ¹
	Lead	1.2 ug/L	None
WF053	Client ID: 15R03701		
	Laboratory ID: ME367002		
	Collection Date: 7/27/97		
	Type: Equipment rinsate		
	Barium	1.6 ug/L	None
	Calcium	134 ug/L	134U ug/L ¹
	Chromium	4.2 ug/L	4.2U ug/L ¹
	Copper	2.1 ug/L	2.1U ug/L ¹
WF054	Client ID: 15R03801		
	Laboratory ID: ME441005		
	Collection Date: 8/5/97		
	Type: Equipment rinsate		
	Cadmium	4.7 ug/L	159U ug/L ¹
	Calcium	159 ug/L	None
	Copper	1.3 ug/L	13.3U ug/L ¹
	Iron	13.3 ug/L	None
WF054	Client ID: 30R03901		
	Laboratory ID: ME450002		
	Collection Date: 8/6/97		
	Type: Equipment rinsate		
	Aluminum	16.7 ug/L	None
	Barium	0.78 ug/L	None
	Calcium	150 ug/L	150U ug/L
	Copper	3.7 ug/L	None
Iron	14.0 ug/L	14.0U ug/L	
WF054	Client ID: 30R03901		
	Laboratory ID: ME450002		
	Collection Date: 8/6/97		
	Type: Equipment rinsate		
	Manganese	0.58 ug/L	None
	Sodium	67.0 ug/L	None
	Zinc	4.4 ug/L	None

¹ = sample result was modified based on an associated method blank concentration.

Note: see detailed data validation report for the discrete qualifiers.

Table XV
Sample Event PARCC Summary
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton, Florida

SDG	Fraction	Precision ¹	Accuracy ²	Representativeness	Completeness (%)	Comparability
WF033	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
WF034	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
WF035	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
WF036	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
WF037	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Unacceptable	Acceptable	0	Acceptable
WF038	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
WF039	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
WF040	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
WF041	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides & PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
WF042	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
WF043	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
WF044	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
WF045	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides & PCBs	Unacceptable	Unacceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
WF046	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides & PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
WF047	Volatiles	Acceptable	Acceptable	Acceptable	97.0	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
WF048	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
WF049	Volatiles	Acceptable	Acceptable	Acceptable	95.2	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
WF051	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
WF052	Volatiles	Acceptable	Acceptable	Acceptable	94.3	Acceptable

Table XV
Sample Event PARCC Summary
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton, Florida

SDG	Fraction	Precision ¹	Accuracy ²	Representativeness	Completeness (%)	Comparability
WF053	Volatiles Metals	Acceptable Acceptable	Acceptable Acceptable	Acceptable Acceptable	100 100	Acceptable Acceptable
WF054	Volatiles Metals	Acceptable Acceptable	Acceptable Acceptable	Acceptable Acceptable	100 100	Acceptable Acceptable
WF055	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable

¹Cumulative of sampling and analytical components

²Analytical component.

³Samples results rejected for database purposes were not used in the completeness calculation.

Notes: All completeness is expressed as the ratio of number of sample results considered usable (i.e., not qualified as rejected) to the total number of sample results.

% = percent

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: NAS Whiting Field, CTO 116

MSA/RO Number: 95-102/Release 001

Collection Date: December 9 through December 11, 1995

LDC Report Date: March 5, 1996

Parameters: Volatiles

Laboratory: Quality Analytical Laboratories, Inc.

Sample Delivery Group (SDG): WF008**

Sample Identification	Laboratory ID	Matrix
15T00101	G8913001	Water
15S02001	G8913002	Soil
15S02001D	G8913003	Soil
15S02101	G8913004	Soil
15S02201	G8913005	Soil
15S02301	G8913006	Soil
15S02401	G8913007	Soil
15S02501	G8913008	Soil
15S01501	G8913009	Soil
15S01401	G8913010	Soil
15S01301	G8913011	Soil
15S01601	G8913012	Soil
15S01701	G8913013	Soil
15S01701D	G8913014	Soil
15S01801	G8913015	Soil
15S01901	G8913016	Soil
15S00901	G8913017	Soil
15R00101	G8913020	Water
15S02001MS	G8913002MS	Soil
15S02001MSD	G8913002MSD	Soil

** Indicates SDG underwent NEESA Level D review.

Introduction

This data review covers 18 soil samples and 2 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Contract Laboratory Program Statement of Work OLM01.9 for Volatiles. The data validation review was based on EPA Contract Laboratory Program Statement of Work OLM01.8 for Volatiles.

This review follows USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (February 1994); the following subsections correlate to the above guidelines.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

The following are definitions of the data qualifiers:

- U Indicates the compound or element was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or element was analyzed for but not detected. The sample detection limit is an estimated value.

I. Technical Holding Times

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals. All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed as required with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
All water samples in SDG WF008	All TCL compounds	Samples were analyzed under heated purge.	Water samples should be analyzed under unheated purge.	None	P

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 30.0% for all compounds.

Average relative response factors (RRF) for all volatile target compounds and system monitoring compounds were within validation criteria.

IV. Continuing Calibration

Continuing calibration was performed as required with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
All water samples in SDG WF008	All TCL compounds	Samples were analyzed under heated purge.	Water samples should be analyzed under unheated purge.	None	P

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0% .

All of the continuing calibration RRF values were within validation criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
All water samples in SDG WF008	All TCL compounds	Water samples associated with soil method blanks.	Water samples to be associated with water method blanks.	None	P

No volatile contaminants were found in the method blanks.

Samples 15T00101 and 15T00201 (from SDG WF009) were identified as trip blanks. No volatile contaminants were found in these blanks with the following exceptions:

Trip Blank ID	Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
15T00101	12/9/95	Acetone	8 ug/L	15S02001 15S02001D 15S02101 15S02201 15S02301 15S02401 15S02501 15S01501 15S01401 15S01301 15S01601 15S01701 15S01701D 15S01801 15S01901
15T00201	12/11/95	Acetone	19 ug/L	15S00901 15R00101

Sample 15R00101 was identified as an equipment rinsate. No volatile contaminants were found in this blank.

Sample 0F100101 (from SDG WF006) was identified as a source blank. No volatile contaminants were found in this blank with the following exceptions:

Source Blank ID	Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
0F100101	12/6/95	Acetone 2-Butanone	12 ug/L 2 ug/L	15S02001 15S02001D 15S02101 15S02201 15S02301 15S02401 15S02501 15S01501 15S01401 15S01301 15S01601 15S01701 15S01701D 15S01801 15S01901 15S00901 15R00101

Sample concentrations were compared to concentrations detected in the field blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated field blanks with the following exceptions:

Sample	Compound TIC (RT in minutes)	Reported Concentration	Modified Final Concentration
15S02001	Acetone	6 ug/Kg	11U ug/Kg
15S01501	Acetone	13 ug/Kg	13U ug/Kg
15S01701	Acetone	6 ug/Kg	11U ug/Kg
15S01701D	Acetone	4 ug/Kg	11U ug/Kg
15S01801	Acetone	6 ug/Kg	11U ug/Kg
15S01901	Acetone	8 ug/Kg	11U ug/Kg
15S00901	Acetone	5 ug/Kg	11U ug/Kg

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the SOW. All surrogate recoveries were within validation criteria.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each

matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

Not applicable to multi-media samples.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

All target compound identifications were within validation criteria.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria.

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment of Data

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

Samples 15S02001 and 15S02001D and samples 15S01701 and 15S01701D were identified as field duplicates. No volatiles were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/Kg)		RPD
	15S02001	15S02001D	
Acetone	5	ND	Not calculable

Compound	Concentration (ug/Kg)		RPD
	15S02001	15S02001D	
Methylene chloride	ND	5	Not calculable

Compound	Concentration (ug/Kg)		RPD
	15S01701	15S01701D	
Acetone	6	4	40

NAS Whiting Field, CTO 116
Volatiles - Data Qualification Summary - SDG WF008**

SDG	Sample	Compound	Flag	A or P	Reason
WF008	15T00101 15R00101	All TCL compounds	None	P	Initial calibration
WF008	15T00101 15R00101	All TCL compounds	None	P	Continuing calibration
WF008	15T00101 15R00101	All TCL compounds	None	P	Method blanks

NAS Whiting Field, CTO 116
Volatiles - Laboratory Blank Data Qualification Summary - SDG WF008**

No Sample Data Qualified in this SDG

NAS Whiting Field, CTO 116
Volatiles - Field Blank Data Qualification Summary - SDG WF008**

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P
WF008	15S02001	Acetone	11U ug/Kg	A
WF008	15S01501	Acetone	13U ug/Kg	A
WF008	15S01701	Acetone	11U ug/Kg	A
WF008	15S01701D	Acetone	11U ug/Kg	A
WF008	15S01801	Acetone	11U ug/Kg	A
WF008	15S01901	Acetone	11U ug/Kg	A
WF008	15S00901	Acetone	11U ug/Kg	A

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: NAS Whiting Field, CTO 116
MSA/RO Number: 95-102/Release 001
Collection Date: December 9 through December 11, 1995
LDC Report Date: April 12, 1996
Parameters: Semivolatiles
Laboratory: Quality Analytical Laboratories, Inc.
Sample Delivery Group (SDG): WF008**

Sample Identification	Laboratory ID	Matrix
15S02001	G8913002	Soil
15S02001D	G8913003	Soil
15S02101	G8913004	Soil
15S02201	G8913005	Soil
15S02301	G8913006	Soil
15S02401	G8913007	Soil
15S02501	G8913008	Soil
15S01501	G8913009	Soil
15S01401	G8913010	Soil
15S01301	G8913011	Soil
15S01601	G8913012	Soil
15S01701	G8913013	Soil
15S01701D	G8913014	Soil
15S01801	G8913015	Soil
15S01901	G8913016	Soil
15S00901	G8913017	Soil
15S00901RE	G8913017RE	Soil
15R00101	G8913020	Water
15S02001MS	G8913002MS	Soil
15S02001MSD	G8913002MSD	Soil

** Indicates SDG underwent NEESA Level D review.

An asterisk (*) will be placed in the margin to the left of any revised item in the text.

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: NAS Whiting Field, CTO 116
MSA/RO Number: 95-102/Release 001
Collection Date: December 9 through December 11, 1995
LDC Report Date: March 6, 1996
Parameters: Semivolatiles
Laboratory: Quality Analytical Laboratories, Inc.
Sample Delivery Group (SDG): WF008**

Sample Identification	Laboratory ID	Matrix
15S02001	G8913002	Soil
15S02001D	G8913003	Soil
15S02101	G8913004	Soil
15S02201	G8913005	Soil
15S02301	G8913006	Soil
15S02401	G8913007	Soil
15S02501	G8913008	Soil
15S01501	G8913009	Soil
15S01401	G8913010	Soil
15S01301	G8913011	Soil
15S01601	G8913012	Soil
15S01701	G8913013	Soil
15S01701D	G8913014	Soil
15S01801	G8913015	Soil
15S01901	G8913016	Soil
15S00901	G8913017	Soil
15S00901RE	G8913017RE	Soil
15R00101	G8913020	Water
15S02001MS	G8913002MS	Soil
15S02001MSD	G8913002MSD	Soil

Amended

** Indicates SDG underwent NEESA Level D review.

Introduction

This data review covers 19 soil samples and one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Contract Laboratory Program Statement of Work OLM01.9 for Semivolatiles. Data validation review was based on EPA Contract Laboratory Program Statement of Work, OLM01.8 for Semivolatiles.

This review follows USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (February 1994); the following subsections correlate to the above guidelines.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

The following are definitions of the data qualifiers:

- U Indicates the compound or element was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UU Indicates the compound or element was analyzed for but not detected. The sample detection limit is an estimated value.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Total Days From Sample Collection Until Extraction	Required Holding Time (in Days) From Sample Collection Until Extraction	Flag	A or P
15S00901RE	16	14	J	A

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals. All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 30.0% .

Average relative response factors (RRF) for all semivolatile target compounds and system monitoring compounds were greater than or equal to 0.05 .

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0% with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
12/15/95	Nitrobenzene	25.6	15R00101	J	A
	Pentachlorophenol	29.6	SBLK4N	J	
12/31/95	2,4-Dinitrophenol	42.0	15S00901RE SBLK5C	J	A
	4-Nitrophenol	27.3		J	
	Pentachlorophenol	34.8		J	
	3,3'-Dichlorobenzidine	25.9		J	
	Benzo(b)fluoranthene	27.7		J	

All of the continuing calibration RRF values were greater than or equal to 0.05 .

V. Blanks

Method blanks were reviewed for each matrix as applicable. No semivolatile contaminants were found in the method blanks with the following exceptions:

Method Blank ID	Extraction Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
SBLK53	12/22/95	Di-n-butylphthalate	280 ug/Kg	15S02001D 15S02101 15S02201 15S01701 15S01701D

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated method blanks.

Sample 15R00101 was identified as a rinsate. No semivolatile contaminants were found in this blank with the following exceptions:

Rinsate ID	Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
15R00101	12/11/95	Di-n-butylphthalate	3 ug/L	15S02001 15S02001D 15S02101 15S02201 15S02301 15S02401 15S02501 15S01501 15S01401 15S01301 15S01601 15S01701 15S01701D 15S01801 15S01901 15S00901 15S00901RE

Sample 01F00101 (from SDG WF006) was identified as a source blank. No semivolatile contaminants were found in this blank with the following exceptions:

Source Blank ID	Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
01F00101	12/6/95	Di-n-butylphthalate	15 ug/L	15S02001 15S02001D 15S02101 15S02201 15S02301 15S02401 15S02501 15S01501 15S01401 15S01301 15S01601 15S01701 15S01701D 15S01801 15S01901 15S00901 15S00901RE 15R00101

Sample concentrations were compared to concentrations detected in the field blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated field blanks with the following exceptions:

Sample	Compound TIC (RT in minutes)	Reported Concentration	Modified Final Concentration
15S00901RE	Di-n-butylphthalate	260 ug/Kg	370U ug/Kg
15R00101	Di-n-butylphthalate	3 ug/L	10U ug/L

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the SOW. All surrogate recoveries were within validation criteria with the following exceptions:

Sample	Surrogate	%R (Limits)	Compound	Flag	A or P
15S00901	1,2-Dichlorobenzene-d4	7 (20-130)	All base neutral compounds	J (all detects) R (all non-detects)	A

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Source Blank ID	Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
01F00101	12/6/95	Di-n-butylphthalate	15 ug/L	15S02001 15S02001D 15S02101 15S02201 15S02301 15S02401 15S02501 15S01501 15S01401 15S01301 15S01601 15S01701 15S01701D 15S01801 15S01901 15S00901 15S00901RE 15R00101

Sample concentrations were compared to concentrations detected in the field blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated field blanks with the following exceptions:

Sample	Compound TIC (RT in minutes)	Reported Concentration	Modified Final Concentration
15S00901RE	Di-n-butylphthalate	260 ug/Kg	370U ug/Kg
15R00101	Di-n-butylphthalate	3 ug/L	10U ug/L

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the SOW. All surrogate recoveries were within validation criteria.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Sample (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
15S02001 MS/MSD (All samples in SDG WF008)	1,4-Dichlorobenzene	-	14 (28-104)	142 (≤ 27)	None	A
	1,2,4-Trichlorobenzene	-	12 (38-107)	149 (≤ 23)	None	
	Acenaphthene	-	-	96 (≤ 19)	None	
	2,4-Dinitrotoluene	100 (28-89)	94 (28-89)	-	None	
	Pyrene	-	6 (35-142)	67 (≤ 36)	None	

VIII. Laboratory Control Samples (LCS)

Not applicable to multi-media samples.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

All target compound identifications were within validation criteria.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria.

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment of Data

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

Samples 15S02001 and 15S02001D and samples 15S01701 and 15S01701D were identified as field duplicates. No semivolatiles were detected in any of the samples.

NAS Whiting Field, CTO 116
Semivolatiles - Data Qualification Summary - SDG WF008**

SDG	Sample	Compound	Flag	A or P	Reason
WF008	15S00901RE	All TCL compounds	J	A	Technical holding times
WF008	15R00101	Nitrobenzene Pentachlorophenol	J J	A	Continuing calibration (%D)
WF008	15S00901RE	2,4-Dinitrophenol 4-Nitrophenol Pentachlorophenol 3,3'-Dichlorobenzidine Benzo(b)fluoranthene	J J J J J	A	Continuing calibration (%D)

NAS Whiting Field, CTO 116
Semivolatiles - Data Qualification Summary - SDG WF008**

SDG	Sample	Compound	Flag	A or P	Reason
WF008	15S00901RE	All TGL compounds	J	A	Technical holding times
WF008	15R00101	Nitrobenzene Pentachlorophenol	J J	A	Continuing calibration (%D)
WF008	15S00901RE	2,4-Dinitrophenol 4-Nitrophenol Pentachlorophenol 3,3'-Dichlorobenzidine Benzo(b)fluoranthene	J J J J J	A	Continuing calibration (%D)

NAS Whiting Field, CTO 116
Semivolatiles - Laboratory Blank Data Qualification Summary - SDG WF008**

No Sample Data Qualified in this SDG

NAS Whiting Field, CTO 116
Semivolatiles - Field Blank Data Qualification Summary - SDG WF008**

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P
WF008	15S00901RE	Di-n-butylphthalate	370U ug/Kg	A
WF008	15R00101	Di-n-butylphthalate	10U ug/L	A

SDG	Sample	Compound	Flag	A or P	Reason
*WF008	15S00901	Bis(2-chloroethyl) ether 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2-Dichlorobenzene 2,2'-Oxybis(1-chloropropane) N-Nitroso-di-n-propylamine Hexachloroethane Nitrobenzene Isophorone Bis(2-chloroethoxy)methane 1,2,4-Trichlorobenzene Naphthalene 4-Chloroaniline Hexachlorobutadiene 2-Methylnaphthalene Hexachlorocyclopentadiene 2-Chloronaphthalene 2-Nitroaniline Dimethylphthalate Acenaphthylene 2,6-Dinitrotoluene 3-Nitroaniline Acenaphthene Dibenzofuran 2,4-Dinitrotoluene Diethylphthalate 4-Chlorophenylphenyl ether Fluorene 4-Nitroaniline N-Nitrosodiphenylamine 4-Bromophenylphenyl ether Hexachlorobenzene Phenanthrene Anthracene Carbazole Di-n-butylphthalate Fluoranthene Pyrene Butylbenzylphthalate 3,3'-Dichlorobenzidine Benzo(a)anthracene Chrysene Bis(2-ethylhexyl)phthalate Di-n-octylphthalate Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenz(a,h)anthracene Benzo(g,h,i)perylene	J (all detects) R (all non-detects)	A	Surrogate spikes (%R)

NAS Whiting Field, CTO 116

Semivolatiles - Laboratory Blank Data Qualification Summary - SDG WF008**

No Sample Data Qualified in this SDG

NAS Whiting Field, CTO 116

Semivolatiles - Field Blank Data Qualification Summary - SDG WF008**

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P
WF008	15S00901RE	Di-n-butyphthalate	370U ug/Kg	A
WF008	15R00101	Di-n-butyphthalate	10U ug/L	A

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: NAS Whiting Field, CTO 116

MSA/RO Number: 95-102/Release 001

Collection Date: December 9 through December 11, 1995

LDC Report Date: March 6, 1996

Parameters: Chlorinated Pesticides & PCBs

Laboratory: Quality Analytical Laboratories, Inc.

Sample Delivery Group (SDG): WF008**

Sample Identification	Laboratory ID	Matrix
15S02001	G8913002	Soil
15S02001D	G8913003	Soil
15S02101	G8913004	Soil
15S02201	G8913005	Soil
15S02301	G8913006	Soil
15S02401	G8913007	Soil
15S02501	G8913008	Soil
15S01501	G8913009	Soil
15S01401	G8913010	Soil
15S01301	G8913011	Soil
15S01601	G8913012	Soil
15S01701	G8913013	Soil
15S01701D	G8913014	Soil
15S01801	G8913015	Soil
15S01901	G8913016	Soil
15S00901	G8913017	Soil
15R00101	G8913020	Water
15S02001MS	G8913002MS	Soil
15S02001MSD	G8913002MSD	Soil

** Indicates SDG underwent NEESA Level D review.

Introduction

This data review covers 18 soil samples and one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Contract Laboratory Program Statement of Work OLM01.9 for Chlorinated Pesticides and PCBs. Data validation review was based on EPA Contract Laboratory Program Statement of Work OLM01.8 for Chlorinated Pesticides and PCBs.

This review follows the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (February 1994); the following subsections correlate to the above guidelines.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XIV.

The following are definitions of the data qualifiers:

- U Indicates the compound or element was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or element was analyzed for but not detected. The sample detection limit is an estimated value.

I. Technical Holding Times

All technical holding time requirements were met.

II. GC/ECD Instrument Performance Check

A Resolution check mixture was analyzed at the beginning of the initial calibration sequence on each GC column. The analyte resolution between adjacent peaks of required compounds was greater than or equal to 60% .

Performance evaluation mixtures (PEM) were analyzed at the proper frequency. The resolution between adjacent peaks was 100% on both GC columns. The absolute retention times for the initial and continuing PEMs were within the calculated retention time windows based on the three-point initial calibration.

The individual 4,4'-DDT and Endrin breakdowns were less than 20.0% and the combined breakdowns were less than 30.0% .

The relative percent difference (RPD) of amount in PEMs were within 25.0% QC limits.

III. Initial Calibration

Initial calibration sequence was followed as required.

Initial calibration of single and multicomponent analytes were performed for both columns at proper frequencies.

The retention time windows were established according to the method.

The percent relative standard deviations (%RSD) of calibration factors for single component analytes were within the 20.0% QC limits with the following exceptions:

Date	Column	Compound	%RSD	Associated Samples	Flag	A or P
11/30/95	SPB-5	Alpha-BHC	21.7	All samples in SDG WF008	J	A
11/30/95	RTX-200	Alpha-BHC	20.3	All samples in SDG WF008	J	A

All required peaks for multicomponent analytes were present.

IV. Continuing Calibration

Continuing calibration sequence was followed as required. No more than 12 hours elapsed between continuing calibration analyses in an analytical sequence.

The retention times (RT) of all compounds in Individual Mix and multicomponent standards were within QC limits.

The relative percent differences (RPD) of amount in Individual Mix standards were within the 25.0% QC limits.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No chlorinated pesticide or PCB contaminants were found in the method blanks.

Instrument blank analyses were performed at the required frequencies. No chlorinated pesticide or PCB contaminants were found in the instrument blanks.

Sample 15R00101 was identified as a rinsate. No chlorinated pesticide or PCB contaminants were found in this blank.

Sample 01F00101 (from SDG WF006) was identified as a source blank. No chlorinated pesticide or PCB contaminants were found in this blank.

VI. Surrogate Spikes

Surrogates were added to all samples, standards and blanks as required by the SOW. The retention times for surrogates were within QC limits.

All surrogate recoveries were within QC limits of 60-150% with the following exceptions:

Sample	Column	Surrogate	%R	Compound	Flag	A or P
15S02501	SPB-5	Decachlorobiphenyl	54	All TCL compounds	J	A

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

Not applicable to multi-media samples.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Pesticide Cleanup Checks

a. Florisil Cartridge Check

Florisil cartridge checks were performed at the required frequency and all compounds were within the 80-120% recovery QC criteria.

b. GPC Calibration

GPC calibration was performed at the required frequency and all compounds were within the 80-110% recovery QC criteria.

XI. Target Compound Identification

All target compound identifications were within validation criteria.

XII. Compound Quantitation and Reported CRQLs

All compound quantitation and reported CRQLs were within validation criteria with the following exceptions:

Sample	Compound	%D (Limits)	Flag	A or P
15S02101	4,4'-DDE	26.8 (≤ 25.0)	J	A

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report.

XIV. Field Duplicates

Samples 15S02001 and 15S02001D and samples 15S01701 and 15S01701D were identified as field duplicates. No chlorinated pesticides or PCBs were detected in any of the samples.

**NAS Whiting Field, CTO 116
Chlorinated Pesticides & PCBs - Data Qualification Summary - SDG WF008****

SDG	Sample	Compound	Flag	A or P	Reason
WF008	15S02001 15S02001D 15S02101 15S02201 15S02301 15S02401 15S02501 15S01501 15S01401 15S01301 15S01601 15S01701 15S01701D 15S01801 15S01901 15S00901 15R00101	Alpha-BHC	J	A	Initial calibration (%RSD)
WF008	15S02501	All TCL compounds	J	A	Surrogate spikes (%R)
WF008	15S02101	4,4'-DDE	J	A	Compound quantitation and CRQLs (%D)

**NAS Whiting Field, CTO 116
Chlorinated Pesticides & PCBs - Laboratory Blank Data Qualification Summary -
SDG WF008****

No Sample Data Qualified in this SDG

**NAS Whiting Field, CTO 116
Chlorinated Pesticides & PCBs - Field Blank Data Qualification Summary - SDG
WF008****

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: NAS Whiting Field, CTO 116

MSA/RO Number: 95-102/Release 001

Collection Date: December 9 through December 11, 1995

LDC Report Date: March 4, 1996

Parameters: Trace Metals & Cyanide

Laboratory: Quality Analytical Laboratories, Inc.

Sample Delivery Group (SDG): WF008**

Sample Identification	Laboratory ID	Matrix
15S02001	G8913002	Soil
15S02001D	G8913003	Soil
15S02101	G8913004	Soil
15S02201	G8913005	Soil
15S02301	G8913006	Soil
15S02401	G8913007	Soil
15S02501	G8913008	Soil
15S01501	G8913009	Soil
15S01401	G8913010	Soil
15S01301	G8913011	Soil
15S01601	G8913012	Soil
15S01701	G8913013	Soil
15S01701D	G8913014	Soil
15S01801	G8913015	Soil
15S01901	G8913016	Soil
15S00901	G8913017	Soil
15R00101	G8913020	Water
15S02001MS	G8913002MS	Soil
15S02001MSD	G8913002MSD	Soil

** Indicates SDG underwent NEESA Level D review.

Introduction

This data review covers 18 soil samples and one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Contract Laboratory Program Statement of Work (SOW) for Inorganic Analysis, Multi-media, Multi-concentration, D.N. ILM02.1 for Trace Metals and Cyanide.

This review follows USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994) and incorporates updates per EPA SOW (D.N. ILM02.1); the following subsections correlate to the guidelines.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XII.

The following are definitions of the data qualifiers:

- U Indicates the compound or element was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or element was analyzed for but not detected. The sample detection limit is an estimated value.

I. Technical Holding Times

All technical holding time requirements were met.

II. Calibration

All criteria for the initial calibration were met.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

CRDL standards for ICP and AA were analyzed and reported as required.

Instrument detection limits, interelement corrections and linear range analysis were performed at the required frequency with the following exceptions:

Analyte	Calibration	Date of Last Report	Report Frequency Requirement	Date of Analysis	Associated Samples	Flag	A or P
All ICP metals	ICP linear range analysis	8/29/95	Quarterly	12/19/95	All samples in SDG WF008	None	P
Mercury	Instrument detection limits	9/21/95	Quarterly	12/24/95	15S02001 15S02001D 15S02101 15S02201 15S02301 15S02401 15S02501 15S01501 15S01401 15S01301 15S01601 15S01701 15S01701D 15S01801 15S01901 15S00901	None	P
Cyanide	Instrument detection limits	7/10/95	Quarterly	12/20/95	All samples in SDG WF008	None	P

The time elapsed since the last quarterly report was not significant, thus the data are not flagged. However, this is still considered a protocol violation.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the preparation blanks (PBs) was based on the maximum contaminant concentration in the PBs in the analysis of each element. No contaminant concentrations were found above the IDL in the preparation blanks with the following

exceptions:

Method Blank ID	Analyte	Concentration	Associated Samples
PB (prep blank)	Aluminum Beryllium Copper Iron Sodium	10.014 mg/Kg 0.068 mg/Kg 0.454 mg/Kg 3.440 mg/Kg -72.604 mg/Kg	All soil samples in SDG WF008
PB (prep blank)	Aluminum Beryllium Cobalt Copper Iron Nickel Sodium Thallium	5.768 mg/Kg 0.060 mg/Kg -0.428 mg/Kg 0.728 mg/Kg 1.184 mg/Kg 2.284 mg/Kg -74.238 mg/Kg -0.470 mg/Kg	All soil samples in SDG WF008
PB (prep blank)	Aluminum Beryllium Calcium Cobalt Copper Iron Nickel Sodium Zinc	47.800 ug/L 0.250 ug/L 38.580 ug/L -2.750 ug/L 6.560 ug/L 15.910 ug/L 12.410 ug/L -320.390 ug/L 2.210 ug/L	All water samples in SDG WF008

No metal contaminant concentrations were found above the CRDL in the preparation blanks. Initial and continuing calibration blanks (ICB/CCBs) were evaluated for significant contaminant trends. No technically significant findings were observed.

Sample concentrations were compared to concentrations detected in the PBs. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Sample ID	Analyte	Reported Concentration	Modified Final Concentration
15S02001	Beryllium Copper Nickel	0.13 mg/Kg 1.9 mg/Kg 2.4 mg/Kg	0.13U mg/Kg 1.9U mg/Kg 2.4U mg/Kg
15S02001D	Beryllium Copper Nickel	0.13 mg/Kg 2.4 mg/Kg 9.1 mg/Kg	0.13U mg/Kg 2.4U mg/Kg 9.1U mg/Kg
15S02101	Beryllium Copper Nickel	0.12 mg/Kg 2.5 mg/Kg 2.5 mg/Kg	0.12U mg/Kg 2.5U mg/Kg 2.5U mg/Kg

Sample ID	Analyte	Reported Concentration	Modified Final Concentration
15S02201	Beryllium Copper Nickel	0.12 mg/Kg 2.0 mg/Kg 3.3 mg/Kg	0.12U mg/Kg 2.0U mg/Kg 3.3U mg/Kg
15S02301	Beryllium Copper	0.11 mg/Kg 1.7 mg/Kg	0.11U mg/Kg 1.7U mg/Kg
15S02401	Beryllium Nickel	0.14 mg/Kg 3.1 mg/Kg	0.14U mg/Kg 3.1U mg/Kg
15S02501	Beryllium Copper	0.14 mg/Kg 1.9 mg/Kg	0.14U mg/Kg 1.9U mg/Kg
15S01501	Beryllium	0.14 mg/Kg	0.14U mg/Kg
15S01401	Beryllium Copper	0.11 mg/Kg 2.3 mg/Kg	0.11U mg/Kg 2.3U mg/Kg
15S01301	Beryllium Copper Nickel	0.12 mg/Kg 2.4 mg/Kg 3.5 mg/Kg	0.12U mg/Kg 2.4U mg/Kg 3.5U mg/Kg
15S01601	Beryllium Copper Nickel	0.10 mg/Kg 2.3 mg/Kg 3.2 mg/Kg	0.10U mg/Kg 2.3U mg/Kg 3.2U mg/Kg
15S01701	Beryllium Copper	0.11 mg/Kg 2.6 mg/Kg	0.11U mg/Kg 2.6U mg/Kg
15S01701D	Beryllium Copper Nickel	0.11 mg/Kg 2.5 mg/Kg 3.0 mg/Kg	0.11U mg/Kg 2.5U mg/Kg 3.0U mg/Kg
15S01801	Beryllium Nickel	0.13 mg/Kg 2.8 mg/Kg	0.13U mg/Kg 2.8U mg/Kg
15S01901	Beryllium Copper Nickel	0.12 mg/Kg 2.4 mg/Kg 3.9 mg/Kg	0.12U mg/Kg 2.4U mg/Kg 3.9U mg/Kg
15S00901	Beryllium Nickel	0.14 mg/Kg 3.1 mg/Kg	0.14U mg/Kg 3.1U mg/Kg

Sample ID	Analyte	Reported Concentration	Modified Final Concentration
15R00101	Aluminum Beryllium Calcium Copper Iron Zinc	54.6 ug/L 0.21 ug/L 22.6 ug/L 5.0 ug/L 45.4 ug/L 1.5 ug/L	54.6U ug/L 0.21U ug/L 22.6U ug/L 5.0U ug/L 45.4U ug/L 1.5U ug/L

Sample 15R00101 was identified as a rinsate. No contaminant concentrations were found above the IDL in this blank with the following exceptions:

Rinsate ID	Date	Analyte	Concentration	Associated Samples
15R00101	12/11/95	Aluminum Barium Beryllium Calcium Copper Iron Zinc	54.6 ug/L 1.0 ug/L 0.21 ug/L 22.6 ug/L 5.0 ug/L 45.4 ug/L 1.5 ug/L	15S02001 15S02001D 15S02101 15S02201 15S02301 15S02401 15S02501 15S01501 15S01401 15S01301 15S01601 15S01701 15S01701D 15S01801 15S01901 15S00901

Sample 01F00101 (from SDG WF006) was identified as a source blank. No contaminant concentrations were found above the IDL in this blank with the following exceptions:

Source Blank ID	Date	Analyte	Concentration	Associated Samples
15R00101	12/6/95	Copper Zinc	3.3 ug/L 113 ug/L	All samples in SDG WF008

Sample concentrations were compared to concentrations detected in the field blanks. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated field blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
15S02001	Beryllium Calcium Copper	0.13 mg/Kg 22.2 mg/Kg 1.9 mg/Kg	0.13U mg/Kg 22.2U mg/Kg 1.9U mg/Kg

Sample	Analyte	Reported Concentration	Modified Final Concentration
15S02001D	Beryllium Copper	0.13 mg/Kg 2.4 mg/Kg	0.13U mg/Kg 2.4U mg/Kg
15S02101	Beryllium Calcium Copper	0.12 mg/Kg 15.8 mg/Kg 2.5 mg/Kg	0.12U mg/Kg 15.8U mg/Kg 2.5U mg/Kg
15S02201	Beryllium Copper	0.12 mg/Kg 2.0 mg/Kg	0.12U mg/Kg 2.0U mg/Kg
15S02301	Beryllium Copper	0.11 mg/Kg 1.7 mg/Kg	0.11U mg/Kg 1.7U mg/Kg
15S02401	Beryllium	0.14 mg/Kg	0.14U mg/Kg
15S02501	Beryllium Copper	0.14 mg/Kg 1.9 mg/Kg	0.14U mg/Kg 1.9U mg/Kg
15S01501	Beryllium	0.14 mg/Kg	0.14U mg/Kg
15S01401	Beryllium Copper	0.11 mg/Kg 2.3 mg/Kg	0.11U mg/Kg 2.3U mg/Kg
15S01301	Beryllium Copper	0.12 mg/Kg 2.4 mg/Kg	0.12U mg/Kg 2.4U mg/Kg
15S01601	Beryllium Copper	0.10 mg/Kg 2.3 mg/Kg	0.10U mg/Kg 2.3U mg/Kg
15S01701	Beryllium Copper Zinc	0.11 mg/Kg 2.6 mg/Kg 1.5 mg/Kg	0.11U mg/Kg 2.6U mg/Kg 1.5U mg/Kg
15S01701D	Beryllium Calcium Copper Zinc	0.11 mg/Kg 20.4 mg/Kg 2.5 mg/Kg 1.1 mg/Kg	0.11U mg/Kg 20.4U mg/Kg 2.5U mg/Kg 1.1U mg/Kg
15S01801	Beryllium Calcium Copper	0.13 mg/Kg 21.3 mg/Kg 3.2 mg/Kg	0.13U mg/Kg 21.3U mg/Kg 3.2U mg/Kg
15S01901	Beryllium Copper	0.12 mg/Kg 2.4 mg/Kg	0.12U mg/Kg 2.4U mg/Kg

Sample	Analyte	Reported Concentration	Modified Final Concentration
15S00901	Beryllium Calcium Copper	0.14 mg/Kg 22.5 mg/Kg 3.8 mg/Kg	0.14U mg/Kg 22.5U mg/Kg 3.8U mg/Kg
15R00101	Copper	5.0 ug/L	5.0U ug/L

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met with the following exceptions:

Sample	Analyte	Finding	Criteria	Flag	A or P
All soil samples in SDG WF008	Antimony	Antimony was not spiked in ICSAB. The concentration of the common interferents in these samples approximated the spike value.	Antimony is potentially affected by common interferents and should be spiked in ICSAB.	J	A

The criteria for analysis were met.

V. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Recoveries were within QC limits with the following exceptions:

LCS ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
LCSW	Sodium	67.3% (80-120)	15R00101	J	P

LCS ID	Analyte	Concentration (Limits)	Associated Samples	Flag	A or P
LCSS	Sodium	116.8 mg/Kg (160-240)	15S02001 15S02001D 15S02101 15S02201 15S02301 15S02401 15S02501 15S01501 15S01401 15S01301 15S01601 15S01701 15S01701D 15S01801 15S01901	J	P

LCS ID	Analyte	Concentration (Limits)	Associated Samples	Flag	A or P
LCSS	Sodium	119.5 mg/Kg (160-240)	15S00901	J	P

VI. Duplicate Sample Analysis

Duplicate sample analyses were reviewed for each matrix as applicable. Relative percent differences (RPD) were within QC limits.

VII. Matrix Spike Analysis

Matrix spike analyses were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits of 75-125% with the following exceptions:

Sample (Associated Samples)	Analyte	%R	Flag	A or P
15S02001MS (All soil samples in SDG WF008)	Antimony Mercury	68.2 125.3	J J (all detects)	A

VIII. Furnace Atomic Absorption QC

All graphite furnace atomic absorption QC were within validation criteria with the following exceptions:

Analytical Spike	Analyte	%R (Limits)	Associated Sample	Flag	A or P
15S02001A	Selenium Thallium	129.0 (85-115) 41.4 (85-115)	15S02001	J J	A
15S02001DA	Thallium	56.9 (85-115)	15S02001D	J	A
15S02101A	Selenium Thallium	122.0 (85-115) 61.6 (85-115)	15S02101	J J	A
15S02201A	Selenium Thallium	122.0 (85-115) 41.8 (85-115)	15S02201	J J	A
15S02301A	Thallium	41.6 (85-115)	15S02301	J	A
15S02401A	Selenium Thallium	122.0 (85-115) 51.5 (85-115)	15S02401	J J	A

Analytical Spike	Analyte	%R (Limits)	Associated Sample	Flag	A or P
15S02501A	Selenium Thallium	117.0 (85-115) 77.9 (85-115)	15S02501	J J	A
15S01501A	Thallium	63.5 (85-115)	15S01501	J	A
15S01401A	Thallium	84.0 (85-115)	15S01401	J	A
15S01301A	Thallium	57.7 (85-115)	15S01301	J	A
15S01601A	Thallium	58.2 (85-115)	15S01601	J	A
15S01701A	Selenium Thallium	119.0 (85-115) 50.3 (85-115)	15S01701	J J	A
15S01801A	Thallium	52.5 (85-115)	15S01801	J	A
15S01901A	Arsenic Thallium	80.8 (85-115) 76.8 (85-115)	15S01901	J J	A
15S00901A	Selenium Thallium	127.0 (85-115) 79.0 (85-115)	15S00901	J J	A

IX. ICP Serial Dilution

The frequency of analysis was met.

The criteria for analysis were met with the following exceptions:

Diluted Sample	Analyte	%D (Limits)	Associated Samples	Flag	A or P
15S02001L	Iron	17.0 (≤ 10)	All soil samples in SDG WF008	J (all detects)	A

X. Sample Result Verification

All sample result verifications met validation criteria with the following exceptions:

Sample	Analyte	Flag	A or P
All samples in SDG WF008	All analytes reported below the CRDL and above the IDL	J	A

XI. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XII. Field Duplicates

Samples 15S02001 and 15S02001D and samples 15S01701 and 15S01701D were identified as field duplicates. No trace metals or cyanide were detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/Kg)		RPD
	15S02001	15S02001D	
Aluminum	4630	5470	17
Arsenic	1.2	1.1	9
Barium	5.6	6.6	16
Beryllium	0.13	0.13	0
Calcium	22.2	25.2	13
Chromium	3.0	3.7	21
Copper	1.9	2.4	23
Iron	2500	2950	17
Lead	5.9	5.9	0
Magnesium	85.0	107	23
Manganese	75.2	87.1	15
Mercury	0.02	0.02	0
Nickel	2.4	9.1	117
Selenium	0.26	ND	Not calculable
Vanadium	5.7	7.1	22
Zinc	3.0	4.1	31

Analyte	Concentration (mg/Kg)		RPD
	15S01701	15S01701D	
Aluminum	13700	9290	38
Arsenic	3.7	4.3	15
Barium	4.4	3.8	15
Beryllium	0.11	0.11	0
Calcium	23.7	20.4	15
Chromium	14.8	14.0	6
Copper	2.6	2.5	4
Iron	11900	10400	13
Lead	4.7	4.1	14
Magnesium	51.2	41.8	20
Manganese	10.8	6.8	45
Nickel	ND	3.0	Not calculable
Selenium	ND	0.25	Not calculable
Vanadium	35.9	31.8	12
Zinc	1.5	1.1	31

**NAS Whiting Field, CTO 116
Trace Metals & Cyanide - Data Qualification Summary - SDG WF008****

SDG	Sample ID	Analyte	Flag	A or P	Reason
WF008	15S02001 15S02001D 15S02101 15S02201 15S02301 15S02401 15S02501 15S01501 15S01401 15S01301 15S01601 15S01701 15S01701D 15S01801 15S01901 15S00901 15R00101	Aluminum Antimony Barium Beryllium Cadmium Calcium Chromium Cobalt Copper Iron Magnesium Manganese Nickel Potassium Silver Sodium Vanadium Zinc	None None None None None None None None None None None None None None None None None None	P	Linear range analysis
WF008	15S02001 15S02001D 15S02101 15S02201 15S02301 15S02401 15S02501 15S01501 15S01401 15S01301 15S01601 15S01701 15S01701D 15S01801 15S01901 15S00901	Mercury	None	P	Instrument detection limit
WF008	15S02001 15S02001D 15S02101 15S02201 15S02301 15S02401 15S02501 15S01501 15S01401 15S01301 15S01601 15S01701 15S01701D 15S01801 15S01901 15S00901 15R00101	Cyanide	None	P	Instrument detection limit

SDG	Sample ID	Analyte	Flag	A or P	Reason
WF008	15S02001 15S02001D 15S02101 15S02201 15S02301 15S02401 15S02501 15S01501 15S01401 15S01301 15S01601 15S01701 15S01701D 15S01801 15S01901 15S00901	Antimony	J	A	ICP interference check sample analysis
WF008	15S02001 15S02001D 15S02101 15S02201 15S02301 15S02401 15S02501 15S01501 15S01401 15S01301 15S01601 15S01701 15S01701D 15S01801 15S01901 15S00901 15R00101	Sodium	J	P	Laboratory control samples
WF008	15S02001 15S02001D 15S02101 15S02201 15S02301 15S02401 15S02501 15S01501 15S01401 15S01301 15S01601 15S01701 15S01701D 15S01801 15S01901 15S00901	Antimony Mercury	J J (all detects)	A	Matrix spike analysis (%R)
WF008	15S02001 15S02101 15S02201 15S02401 15S02501 15S01701 15S00901	Selenium Thallium	J J	A	Furnace atomic absorption QC (%R)

SDG	Sample ID	Analyte	Flag	A or P	Reason
WF008	15S02001D 15S02301 15S01501 15S01401 15S01301 15S01601 15S01801	Thallium	J	A	Furnace atomic absorption QC (%R)
WF008	15S01901	Arsenic Thallium	J J	A	Furnace atomic absorption QC (%R)
WF008	15S02001 15S02001D 15S02101 15S02201 15S02301 15S02401 15S02501 15S01501 15S01401 15S01301 15S01601 15S01701 15S01701D 15S01801 15S01901 15S00901	Iron	J (all detects)	A	ICP serial dilution (%D)
WF008	15S02001 15S02001D 15S02101 15S02201 15S02301 15S02401 15S02501 15S01501 15S01401 15S01301 15S01601 15S01701 15S01701D 15S01801 15S01901 15S00901 15R00101	All analytes reported below the CRDL and above the IDL	J	A	Sample result verification

NAS Whiting Field, CTO 116
Trace Metals & Cyanide - Laboratory Blank Data Qualification Summary - SDG
WF008**

SDG	Sample ID	Analyte	Modified Final Concentration	A or P
WF008	15S02001	Beryllium Copper Nickel	0.13U mg/Kg 1.9U mg/Kg 2.4U mg/Kg	A
WF008	15S02001D	Beryllium Copper Nickel	0.13U mg/Kg 2.4U mg/Kg 9.1U mg/Kg	A
WF008	15S02101	Beryllium Copper Nickel	0.12U mg/Kg 2.5U mg/Kg 2.5U mg/Kg	A
WF008	15S02201	Beryllium Copper Nickel	0.12U mg/Kg 2.0U mg/Kg 3.3U mg/Kg	A
WF008	15S02301	Beryllium Copper	0.11U mg/Kg 1.7U mg/Kg	A
WF008	15S02401	Beryllium Nickel	0.14U mg/Kg 3.1U mg/Kg	A
WF008	15S02501	Beryllium Copper	0.14U mg/Kg 1.9U mg/Kg	A
WF008	15S01501	Beryllium	0.14U mg.Kg	A
WF008	15S01401	Beryllium Copper	0.11U mg/Kg 2.3U mg/Kg	A
WF008	15S01301	Beryllium Copper Nickel	0.12U mg Kg 2.4U mg kg 3.5U mg kg	A
WF008	15S01601	Beryllium Copper Nickel	0.10U mg kg 2.3U mg kg 3.2U mg kg	A
WF008	15S01701	Beryllium Copper	0.11U mg Kg 2.6U mg Kg	A
WF008	15S01701D	Beryllium Copper Nickel	0.11U mg/Kg 2.5U mg/Kg 3.0U mg/Kg	A

SDG	Sample ID	Analyte	Modified Final Concentration	A or P
WF008	15S01801	Beryllium Nickel	0.13U mg/Kg 2.8U mg/Kg	A
WF008	15S01901	Beryllium Copper Nickel	0.12U mg/Kg 2.4U mg/Kg 3.9U mg/Kg	A
WF008	15S00901	Beryllium Nickel	0.14U mg/Kg 3.1U mg/Kg	A
WF008	15R00101	Aluminum Beryllium Calcium Copper Iron Zinc	54.6U ug/L 0.21U ug/L 22.8U ug/L 5.0U ug/L 45.4U ug/L 1.5U ug/L	A

**NAS Whiting Field, CTO 116
Trace Metals & Cyanide - Field Blank Data Qualification Summary - SDG WF008****

SDG	Sample	Analyte	Modified Final Concentration	A or P
WF008	15S02001	Beryllium Calcium Copper	0.13U mg/Kg 22.2U mg/Kg 1.9U mg/Kg	A
WF008	15S02001D	Beryllium Copper	0.13U mg/Kg 2.4U mg/Kg	A
WF008	15S02101	Beryllium Calcium Copper	0.12U mg/Kg 15.8U mg/Kg 2.5U mg/Kg	A
WF008	15S02201	Beryllium Copper	0.12U mg/Kg 2.0U mg/Kg	A
WF008	15S02301	Beryllium Copper	0.11U mg/Kg 1.7U mg/Kg	A
WF008	15S02401	Beryllium	0.14U mg/Kg	A
WF008	15S02501	Beryllium Copper	0.14U mg/Kg 1.9U mg/Kg	A
WF008	15S01501	Beryllium	0.14U mg/Kg	A

SDG	Sample	Analyte	Modified Final Concentration	A or P
WF008	15S01401	Beryllium Copper	0.11U mg/Kg 2.3U mg/Kg	A
WF008	15S01301	Beryllium Copper	0.12U mg/Kg 2.4U mg/Kg	A
WF008	15S01601	Beryllium Copper	0.10U mg/Kg 2.3U mg/Kg	A
WF008	15S01701	Beryllium Copper Zinc	0.11U mg/Kg 2.6U mg/Kg 1.5U mg/Kg	A
WF008	15S01701D	Beryllium Calcium Copper Zinc	0.11U mg/Kg 20.4U mg/Kg 2.5U mg/Kg 1.1U mg/Kg	A
WF008	15S01801	Beryllium Calcium Copper	0.13U mg/Kg 21.3U mg/Kg 3.2U mg/Kg	A
WF008	15S01901	Beryllium Copper	0.12U mg/Kg 2.4U mg/Kg	A
WF008	15S00901	Beryllium Calcium Copper	0.14U mg/Kg 22.5U mg/Kg 3.8U mg/Kg	A
WF008	15R00101	Copper	5.0U ug/L	A

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: NAS Whiting Field, CTO 116
MSA/RO Number: 95-102/Release 001
Collection Date: December 10 through December 11, 1995
LDC Report Date: March 5, 1996
Parameters: Volatiles
Laboratory: Quality Analytical Laboratories, Inc.
Sample Delivery Group (SDG): WF009**

Sample Identification	Laboratory ID	Matrix
15T00201	G8914001	Water
15S00101	G8914002	Soil
15S00101D	G8914003	Soil
15S00201	G8914004	Soil
15S00301	G8914005	Soil
15S00501	G8914006	Soil
15S00401	G8914007	Soil
15S00601	G8914008	Soil
15S00701	G8914009	Soil
15S00801	G8914010	Soil
15S01201	G8914011	Soil
15R00201	G8914012	Water
15S01101	G8914013	Soil
15S01001	G8914014	Soil
15S00101MS	G8914002MS	Soil
15S00101MSD	G8914002MSD	Soil

** Indicates SDG underwent NEESA Level D review.

Introduction

This data review covers 14 soil samples and 2 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Contract Laboratory Program Statement of Work OLM01.9 for Volatiles. The data validation review was based on EPA Contract Laboratory Program Statement of Work OLM01.8 for Volatiles.

This review follows USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (February 1994); the following subsections correlate to the above guidelines.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

The following are definitions of the data qualifiers:

- U Indicates the compound or element was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or element was analyzed for but not detected. The sample detection limit is an estimated value.

I. Technical Holding Times

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals. All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed as required with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
All water samples in SDG WF009	All TCL compounds	Samples were analyzed under heated purge.	Water samples should be analyzed under unheated purge.	None	P

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 30.0% for all compounds.

Average relative response factors (RRF) for all volatile target compounds and system monitoring compounds were within validation criteria.

IV. Continuing Calibration

Continuing calibration was performed as required with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
All water samples in SDG WF009	All TCL compounds	Samples were analyzed under heated purge.	Water samples should be analyzed under unheated purge.	None	P

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0% .

All of the continuing calibration RRF values were within validation criteria.

V. Blanks

Method blanks were reviewed for each matrix as applicable with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
All water samples in SDG WF009	All TCL compounds	Water samples associated with soil method blanks.	Water samples to be associated with water method blanks.	None	P

No volatile contaminants were found in the method blanks.

Samples 15T00201 and 15T00101 (from SDG WF008) were identified as trip blanks. No volatile contaminants were found in these blanks with the following exceptions:

Trip Blank ID	Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
15T00201	12/11/95	Acetone	19 ug/L	15S00101 15S00101D 15S00201 15S00301 15S00501 15S00401 15S00601 15S00701 15S00801 15R00201
15T00101	12/9/95	Acetone	8 ug/L	15S01201 15S01101 15S01001

Sample 15R00201 was identified as an equipment rinsate. No volatile contaminants were found in this blank with the following exceptions:

Equipment Rinsate ID	Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
15R00201	12/11/95	Acetone	12 ug/L	15S00101 15S00101C 15S00201 15S00301 15S00501 15S00401 15S00601 15S00701 15S00801 15S01201 15S01101 15S01001

Sample 01F00101 (from SDG WF006) was identified as a source blank. No volatile contaminants were found in this blank with the following exceptions:

Source Blank ID	Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
01F00101	12/6/95	Acetone 2-Butanone	12 ug/L 2 ug/L	15S00101 15S00101D 15S00201 15S00301 15S00501 15S00401 15S00601 15S00701 15S00801 15S01201 15R00201 15S01101 15S01001

Sample concentrations were compared to concentrations detected in the field blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated field blanks with the following exceptions:

Sample	Compound TIC (RT in minutes)	Reported Concentration	Modified Final Concentration
15S00101	Acetone	6 ug/Kg	11U ug/Kg
15S00101D	Acetone	7 ug/Kg	11U ug/Kg
15S00201	Acetone	13 ug/Kg	13U ug/Kg
15S00301	Acetone	5 ug/Kg	11U ug/Kg
15S00501	Acetone	9 ug/Kg	10U ug/Kg
15S00401	Acetone	7 ug/Kg	11U ug/Kg
15S00701	Acetone	4 ug/Kg	11U ug/Kg
15S00801	Acetone	7 ug/Kg	11U ug/Kg
15R00201	Acetone	12 ug/L	12U ug/L
15S01201	Acetone	6 ug/Kg	11U ug/Kg
15S01101	Acetone	7 ug/Kg	11U ug/Kg

Sample	Compound TIC (RT in minutes)	Reported Concentration	Modified Final Concentration
15S01001	Acetone	22 ug/Kg	22U ug/Kg

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the SOW. All surrogate recoveries were within validation criteria.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

Not applicable to multi-media samples.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

All target compound identifications were within validation criteria.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria.

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment of Data

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

Samples 15S00101 and 15S00101D were identified as field duplicates. No volatiles were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/Kg)		RPD
	15S00101	15S00101D	
Acetone	6	7	15

NAS Whiting Field, CTO 116
Volatiles - Data Qualification Summary - SDG WF009**

SDG	Sample	Compound	Flag	A or P	Reason
WF009	15T00201 15R00201	All TCL compounds	None	P	Initial calibration
WF009	15T00201 15R00201	All TCL compounds	None	P	Continuing calibration
WF009	15T00201 15R00201	All TCL compounds	None	P	Method blanks

NAS Whiting Field, CTO 116
Volatiles - Laboratory Blank Data Qualification Summary - SDG WF009**

No Sample Data Qualified in this SDG

NAS Whiting Field, CTO 116
Volatiles - Field Blank Data Qualification Summary - SDG WF009**

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P
WF009	15S00101	Acetone	11U ug/Kg	A
WF009	15S00101D	Acetone	11U ug/Kg	A
WF009	15S00201	Acetone	13U ug/Kg	A
WF009	15S00301	Acetone	11U ug/Kg	A
WF009	15S00501	Acetone	10U ug/Kg	A
WF009	15S00401	Acetone	11U ug/Kg	A
WF009	15S00701	Acetone	11U ug/Kg	A
WF009	15S00801	Acetone	11U ug/Kg	A
WF009	15R00201	Acetone	12U ug/L	A
WF009	15S01201	Acetone	11U ug/Kg	A

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P
WF009	15S01101	Acetone	11U ug/Kg	A
WF009	15S01001	Acetone	22U ug/Kg	A

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: NAS Whiting Field, CTO 116

MSA/RO Number: 95-102/Release 001

Collection Date: December 10 through December 11, 1995

LDC Report Date: March 6, 1996

Parameters: Semivolatiles

Laboratory: Quality Analytical Laboratories, Inc.

Sample Delivery Group (SDG): WF009**

Sample Identification	Laboratory ID	Matrix
15S00101	G8914002	Soil
15S00101R	G8914002R	Soil
15S00101D	G8914003	Soil
15S00201	G8914004	Soil
15S00301	G8914005	Soil
15S00501	G8914006	Soil
15S00401	G8914007	Soil
15S00601	G8914008	Soil
15S00701	G8914009	Soil
15S00801	G8914010	Soil
15S01201	G8914011	Soil
15R00201	G8914012	Water
15S01101	G8914013	Soil
15S01001	G8914014	Soil
15S00101MS	G8914002MS	Soil
15S00101MSD	G8914002MSD	Soil
15S00101RMS	G8914002RMS	Soil
15S00101RMSD	G8914002RMSD	Soil

** Indicates SDG underwent NEESA Level D review.

Introduction

This data review covers 17 soil samples and one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Contract Laboratory Program Statement of Work OLM01.9 for Semivolatiles. Data validation review was based on EPA Contract Laboratory Program Statement of Work, OLM01.8 for Semivolatiles.

This review follows USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (February 1994); the following subsections correlate to the above guidelines.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

The following are definitions of the data qualifiers:

- U Indicates the compound or element was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or element was analyzed for but not detected. The sample detection limit is an estimated value.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Total Days From Sample Collection Until Extraction	Required Holding Time (in Days) From Sample Collection Until Extraction	Flag	A or P
15S00101R	16	14	J	A
15S00101RMS	16	14	J	A
15S00101RMSD	16	14	J	A

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12 hour intervals. All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 30.0% .

Average relative response factors (RRF) for all semivolatile target compounds and system monitoring compounds were greater than or equal to 0.05 .

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

All of the continuing calibration percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were less than or equal to 25.0% with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
12/15/95	Nitrobenzene	25.6	15R00201	J	A
	Pentachlorophenol	29.6	SBLK4N	J	
12/31/95	2,4-Dinitrophenol	42.0	15S00101R	J	A
	4-Nitrophenol	27.3	15S00101RMS	J	
	Pentachlorophenol	34.8	15S00101RMSD	J	
	3,3'-Dichlorobenzidine	25.9	SBLK5C	J	
	Benzo(b)fluoranthene	27.7		J	

All of the continuing calibration RRF values were greater than or equal to 0.05 .

V. Blanks

Method blanks were reviewed for each matrix as applicable. No semivolatile contaminants were found in the method blanks.

Sample 15R00201 was identified as a rinsate. No semivolatile contaminants were found in this blank with the following exceptions:

Rinsate ID	Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
15R00201	12/11/95	Di-n-butylphthalate	4 ug/L	15S00101 15S00101R 15S00101D 15S00201 15S00301 15S00501 15S00401 15S00601 15S00701 15S00801 15S01201 15S01101 15S01001

Sample 01F00101 (from SDG WF006) was identified as a source blank. No semivolatile contaminants were found in this blank with the following exceptions:

Source Blank ID	Date	Compound TIC (RT in minutes)	Concentration	Associated Samples
01F00101	12/6/95	Di-n-butylphthalate	15 ug/L	15S00101 15S00101R 15S00101D 15S00201 15S00301 15S00501 15S00401 15S00601 15S00701 15S00801 15S01201 15R00201 15S01101 15S01001

Sample concentrations were compared to concentrations detected in the field blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated field blanks with the following exceptions:

Sample	Compound TIC (RT in minutes)	Reported Concentration	Modified Final Concentration
15S00801	Di-n-butylphthalate	370 ug/Kg	370U ug/Kg
15R00201	Di-n-butylphthalate	4 ug/L	10U ug/L

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the SOW. All surrogate recoveries were within validation criteria.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Sample (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
15S00101 MS/MSD (15S00101D 15S00301 15S00501 15S00401 15S00601 15S00701 15S00801 15S01201 15S01101 15S01001 15S00101)	2-Chlorophenol 1,4-Dichlorobenzene 1,2,4-Trichlorobenzene Acenaphthene Pentachlorophenol Pyrene	16 (25-102) 0 (28-104) 0 (38-107) 0 (31-137) 10 (17-109) 0 (35-142)	- 0 (28-104) 3 (38-107) 9 (31-137) - 0 (35-142)	110 (≤ 50) - 200 (≤ 23) 200 (≤ 19) 127 (≤ 47) -	None None None None None None	A
15S00101 RMS/MSD (15S00101R)	2,4-Dinitrotoluene	-	95 (28-89)	-	J (all detects)	A
15S00101 MS/MSD (15S00201)	1,4-Dichlorobenzene 1,2,4-Trichlorobenzene Acenaphthene Pyrene	0 (28-104) 0 (38-107) 0 (31-137) 0 (35-142)	0 (28-104) 3 (38-107) 9 (31-137) 0 (35-142)	- 200 (≤ 23) 200 (≤ 19) -	J (all detects) R (all non-detects)	A

VIII. Laboratory Control Samples (LCS)

Not applicable to multi-media samples.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

All target compound identifications were within validation criteria.

XII. Compound Quantitation and CRQLs

All compound quantitation and CRQLs were within validation criteria.

XIII. Tentatively Identified Compounds (TICs)

Tentatively identified compounds were not reported by the laboratory.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment of Data

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

Samples 15S00101 and 15S00101D were identified as field duplicates. No semivolatiles were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/Kg)		RPD
	15S00101	15S00101D	
Bis(2-ethylhexyl)phthalate	ND	1700	Not calculable

NAS Whiting Field, CTO 116
Semivolatiles - Data Qualification Summary - SDG WF009**

SDG	Sample	Compound	Flag	A or P	Reason
WF009	15S00101R	All TCL compounds	J	A	Technical holding times
WF009	15R00201	Nitrobenzene Pentachlorophenol	J J	A	Continuing calibration (%D)
WF009	15S00101R	2,4-Dinitrophenol 4-Nitrophenol Pentachlorophenol 3,3'-Dichlorobenzidine Benzo(b)fluoranthene	J J J J J	A	Continuing calibration (%D)
WF009	15S00101R	2,4-Dinitrotoluene	J (all detects)	A	Matrix spike/Matrix spike duplicates (%R)
WF009	15S00201	1,4-Dichlorobenzene 1,2,4-Trichlorobenzene Acenaphthene Pyrene	J (all detects) R (all non-detects)	A	Matrix spike/Matrix spike duplicates (%R)(RPD)

NAS Whiting Field, CTO 116
Semivolatiles - Laboratory Blank Data Qualification Summary - SDG WF009**

No Sample Data Qualified in this SDG

NAS Whiting Field, CTO 116
Semivolatiles - Field Blank Data Qualification Summary - SDG WF009**

SDG	Sample	Compound TIC (RT in minutes)	Modified Final Concentration	A or P
WF009	15S00801	Di-n-butylphthalate	370U ug/Kg	A
WF009	15R00201	Di-n-butylphthalate	10U ug/L	A

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: NAS Whiting Field, CTO 116
MSA/RO Number: 95-102/Release 001
Collection Date: December 10 through December 11, 1995
LDC Report Date: March 6, 1996
Parameters: Chlorinated Pesticides & PCBs
Laboratory: Quality Analytical Laboratories, Inc.
Sample Delivery Group (SDG): WF009**

Sample Identification	Laboratory ID	Matrix
15S00101	G8914002	Soil
15S00101D	G8914003	Soil
15S00201	G8914004	Soil
15S00301	G8914005	Soil
15S00501	G8914006	Soil
15S00401	G8914007	Soil
15S00601	G8914008	Soil
15S00701	G8914009	Soil
15S00801	G8914010	Soil
15S01201	G8914011	Soil
15R00201	G8914012	Water
15S01101	G8914013	Soil
15S01001	G8914014	Soil
15S00101MS	G8914002MS	Soil
15S00101MSD	G8914002MSD	Soil

** Indicates SDG underwent NEESA Level D review.

Introduction

This data review covers 14 soil samples and one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Contract Laboratory Program Statement of Work OLM01.9 for Chlorinated Pesticides and PCBs. Data validation review was based on EPA Contract Laboratory Program Statement of Work OLM01.8 for Chlorinated Pesticides and PCBs.

This review follows the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (February 1994); the following subsections correlate to the above guidelines.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XIV.

The following are definitions of the data qualifiers:

- U Indicates the compound or element was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or element was analyzed for but not detected. The sample detection limit is an estimated value.

I. Technical Holding Times

All technical holding time requirements were met.

II. GC/ECD Instrument Performance Check

A Resolution check mixture was analyzed at the beginning of the initial calibration sequence on each GC column. The analyte resolution between adjacent peaks of required compounds was greater than or equal to 60% .

Performance evaluation mixtures (PEM) were analyzed at the proper frequency. The resolution between adjacent peaks was 100% on both GC columns. The absolute retention times for the initial and continuing PEMs were within the calculated retention time windows based on the three-point initial calibration.

The individual 4,4'-DDT and Endrin breakdowns were less than 20.0% and the combined breakdowns were less than 30.0% .

The relative percent difference (RPD) of amount in PEMs were within 25.0% QC limits.

III. Initial Calibration

Initial calibration sequence was followed as required.

Initial calibration of single and multicomponent analytes were performed for both columns at proper frequencies.

The retention time windows were established according to the method.

The percent relative standard deviations (%RSD) of calibration factors for single component analytes were within the 20.0% QC limits with the following exceptions:

Date	Column	Compound	%RSD	Associated Samples	Flag	A or P
11/30/95	SPB-5	Alpha-BHC	21.7	All samples in SDG WF009	J	A
11/30/95	RTX-200	Alpha-BHC	20.3	All samples in SDG WF009	J	A

All required peaks for multicomponent analytes were present.

IV. Continuing Calibration

Continuing calibration sequence was followed as required. No more than 12 hours elapsed between continuing calibration analyses in an analytical sequence.

The retention times (RT) of all compounds in Individual Mix and multicomponent standards were within QC limits.

The relative percent differences (RPD) of amount in Individual Mix standards were within the 25.0% QC limits.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No chlorinated pesticide or PCB contaminants were found in the method blanks.

Instrument blank analyses were performed at the required frequencies. No chlorinated pesticide or PCB contaminants were found in the instrument blanks.

Sample 15R00201 was identified as a rinsate. No chlorinated pesticide or PCB contaminants were found in this blank.

Sample 01F00101 (from SDG WF006) was identified as a source blank. No chlorinated pesticide or PCB contaminants were found in this blank.

VI. Surrogate Spikes

Surrogates were added to all samples, standards and blanks as required by the SOW. The retention times for surrogates were within QC limits.

All surrogate recoveries were within QC limits of 60-150% .

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

Not applicable to multi-media samples.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Pesticide Cleanup Checks

a. Florisil Cartridge Check

Florisil cartridge checks were performed at the required frequency and all compounds were within the 80-120% recovery QC criteria.

b. GPC Calibration

GPC calibration was performed at the required frequency and all compounds were within the 80-110% recovery QC criteria.

XI. Target Compound Identification

All target compound identifications were within validation criteria.

XII. Compound Quantitation and Reported CRQLs

All compound quantitation and reported CRQLs were within validation criteria with the following exceptions:

Sample	Compound	%D (Limit)	Flag	A or P
15S01001	4,4'-DDE	36.4 (≤ 25)	J	A

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report.

XIV. Field Duplicates

Samples 15S00101 and 15S00101D were identified as field duplicates. No chlorinated pesticides or PCBs were detected in any of the samples.

NAS Whiting Field, CTO 116

Chlorinated Pesticides & PCBs - Data Qualification Summary - SDG WF009**

SDG	Sample	Compound	Flag	A or P	Reason
WF009	15S00101 15S00101D 15S00201 15S00301 15S00501 15S00401 15S00601 15S00701 15S00801 15S01201 15R00201 15S01101 15S01001	Alpha-BHC	J	A	Initial calibration (%RSD)
WF009	15S01001	4,4'-DDE	J	A	Compound quantitation and CRQLs (%D)

NAS Whiting Field, CTO 116

Chlorinated Pesticides & PCBs - Laboratory Blank Data Qualification Summary - SDG WF009**

No Sample Data Qualified in this SDG

NAS Whiting Field, CTO 116

Chlorinated Pesticides & PCBs - Field Blank Data Qualification Summary - SDG WF009**

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: NAS Whiting Field, CTO 116
MSA/RO Number: 95-102/Release 001
Collection Date: December 10 through December 11, 1995
LDC Report Date: March 5, 1996
Parameters: TCL Metals & Cyanide
Laboratory: Quality Analytical Laboratories, Inc.
Sample Delivery Group (SDG): WF009**

Sample Identification	Laboratory ID	Matrix
15S00101	G8914002	Soil
15S00101D	G8914003	Soil
15S00201	G8914004	Soil
15S00301	G8914005	Soil
15S00501	G8914006	Soil
15S00401	G8914007	Soil
15S00601	G8914008	Soil
15S00701	G8914009	Soil
15S00801	G8914010	Soil
15S01201	G8914011	Soil
15R00201	G8914012	Water
15S01101	G8914013	Soil
15S01001	G8914014	Soil
15S00101MS	G8914002MS	Soil
15S00101MSD	G8914002MSD	Soil

** Indicates SDG underwent NEESA Level D review.

Introduction

This data review covers 14 soil samples and one water sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Contract Laboratory Program Statement of Work (SOW) for Inorganic Analysis, Multi-media, Multi-concentration, D.N. ILM02.1 for TCL Metals and Cyanide.

This review follows USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994) and incorporates updates per EPA SOW (D.N. ILM02.1); the following subsections correlate to the guidelines.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XII.

The following are definitions of the data qualifiers:

- U Indicates the compound or element was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or element was analyzed for but not detected. The sample detection limit is an estimated value.

I. Technical Holding Times

All technical holding time requirements were met.

II. Calibration

All criteria for the initial calibration were met.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

CRDL standards for ICP and AA were analyzed and reported as required.

Instrument detection limits, interelement corrections and linear range analysis were performed at the required frequency with the following exceptions:

Analyte	Calibration	Date of Last Report	Report Frequency Requirement	Date of Analysis	Associated Samples	Flag	A or P
All ICP metals	ICP Linear Range Analysis	8-29-95	Quarterly	12/19/95	All samples in SDG WF009	None	P
Cyanide	Instrument detection limits	7/10/95	Quarterly	12/20-21/95	All samples in SDG WF009	None	P

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the preparation blanks (PBs) was based on the maximum contaminant concentration in the PBs in the analysis of each element. No contaminant concentrations were found above the IDL in the preparation blanks with the following exceptions:

Method Blank ID	Analyte	Concentration	Associated Samples
PB (prep blank)	Aluminum Beryllium Copper Iron Sodium	10.014 mg/Kg 0.068 mg/Kg 0.454 mg/Kg 3.440 mg/Kg -72.604 mg/Kg	All soil samples in SDG WF009

Method Blank ID	Analyte	Concentration	Associated Samples
PB (prep blank)	Aluminum Beryllium Cobalt Copper Iron Nickel Sodium Thallium	5.768 mg/Kg 0.068 mg/Kg -0.428 mg/Kg 0.728 mg/Kg 1.184 mg/Kg 2.284 mg/Kg -74.238 mg/Kg -0.470 mg/Kg	All soil samples in SDG WF009
PB (prep blank)	Aluminum Beryllium Calcium Cobalt Copper Iron Nickel Sodium Zinc	47.800 ug/L 0.250 ug/L 38.580 ug/L -2.750 ug/L 6.560 ug/L 15.910 ug/L 12.410 ug/L -320.390 ug/L 2.210 ug/L	All water samples in SDG WF009

No metal contaminant concentrations were found above the CRDL in the preparation blanks. Initial and continuing calibration blanks (ICB/CCBs) were evaluated for significant contaminant trends. No technically significant findings were observed.

Sample concentrations were compared to concentrations detected in the PBs. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks with the following exceptions:

Sample ID	Analyte	Reported Concentration	Modified Final Concentration
15S00101	Beryllium Copper Nickel	0.12 mg/Kg 3.4 mg/Kg 5.0 mg/Kg	0.12U mg/Kg 3.4U mg/Kg 5.0U mg/Kg
15S00101D	Beryllium Nickel	0.13 mg/Kg 2.4 mg/Kg	0.13U mg/Kg 2.4U mg/Kg
15S00201	Beryllium Copper Nickel	0.12 mg/Kg 2.1 mg/Kg 3.6 mg/Kg	0.12U mg/Kg 2.1U mg/Kg 3.6U mg/Kg
15S00301	Beryllium Copper Nickel	0.13 mg/Kg 3.4 mg/Kg 3.3 mg/Kg	0.13U mg/Kg 3.4U mg/Kg 3.3U mg/Kg
15S00501	Beryllium Copper Nickel	0.11 mg/Kg 3.6 mg/Kg 3.1 mg/Kg	0.11U mg/Kg 3.6U mg/Kg 3.1U mg/Kg

Sample ID	Analyte	Reported Concentration	Modified Final Concentration
15S00401	Beryllium Nickel	0.14 mg/Kg 4.2 mg/Kg	0.14U mg/Kg 4.2U mg/Kg
15S00601	Beryllium Nickel	0.14 mg/Kg 3.3 mg/Kg	0.14U mg/Kg 3.3U mg/Kg
15S00701	Beryllium Copper Nickel	0.11 mg/Kg 2.5 mg/Kg 3.1 mg/Kg	0.11U mg/Kg 2.5U mg/Kg 3.1U mg/Kg
15S00801	Beryllium Copper Nickel	0.20 mg/Kg 3.5 mg/Kg 4.1 mg/Kg	0.20U mg/Kg 3.5U mg/Kg 4.1U mg/Kg
15S01201	Beryllium	0.13 mg/Kg	0.13U mg/Kg
15R00201	Aluminum Beryllium Calcium Copper Iron Nickel	69.8 ug/L 0.29 ug/L 58.5 ug/L 6.5 ug/L 29.2 ug/L 48.7 ug/L	69.8U ug/L 0.29U ug/L 58.5U ug/L 6.5U ug/L 29.2U ug/L 48.7U ug/L
15S01101	Beryllium Copper Nickel	0.10 mg/Kg 2.0 mg/Kg 2.5 mg/Kg	0.10U mg/Kg 2.0U mg/Kg 2.5U mg/Kg
15S01001	Beryllium Copper	0.14 mg/Kg 2.4 mg/Kg	0.14U mg/Kg 2.4U mg/Kg

Sample 15R00201 was identified as a rinsate. No contaminant concentrations were found above the IDL in this blank with the following exceptions:

Rinsate ID	Date	Analyte	Concentration	Associated Samples
15R00201	12/11/95	Aluminum Barium Beryllium Calcium Copper Iron Nickel Zinc	69.8 ug/L 1.0 ug/L 0.29 ug/L 58.5 ug/L 6.5 ug/L 29.2 ug/L 48.7 ug/L 2.7 ug/L	15S00101 15S00101D 15S00201 15S00301 15S00501 15S00401 15S00601 15S00701 15S00801 15S01201 15S01101 15S01001

Sample 01F00101 (from SDG WF006) was identified as a source blank. No contaminant concentrations were found above the IDL in this blank with the following exceptions:

Source Blank ID	Date	Analyte	Concentration	Associated Samples
01F00101	12/6/95	Copper Sodium	3.3 ug/L 113 ug/L	15S00201 15S00701 15R00201 15S01101 15S01001

Sample concentrations were compared to concentrations detected in the field blanks. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated field blanks with the following exceptions:

Sample	Analyte	Reported Concentration	Modified Final Concentration
15S00101	Beryllium Calcium Copper Nickel	0.12 mg/Kg 21.6 mg/Kg 3.4 mg/Kg 5.0 mg/Kg	0.12U mg/Kg 21.6U mg/Kg 3.4U mg/Kg 5.0U mg/Kg
15S00101D	Beryllium Calcium Copper Nickel	0.13 mg/Kg 23.9 mg/Kg 3.9 mg/Kg 2.4 mg/Kg	0.13U mg/Kg 23.9U mg/Kg 3.9U mg/Kg 2.4U mg/Kg
15S00201	Beryllium Calcium Copper Nickel	0.12 mg/Kg 18.7 mg/Kg 2.1 mg/Kg 3.6 mg/Kg	0.12U mg/Kg 18.7U mg/Kg 2.1U mg/Kg 3.6U mg/Kg
15S00301	Beryllium Calcium Copper Nickel	0.13 mg/Kg 20.1 mg/Kg 3.4 mg/Kg 3.3 mg/Kg	0.13U mg/Kg 20.1U mg/Kg 3.4U mg/Kg 3.3U mg/Kg
15S00501	Beryllium Calcium Copper Nickel	0.11 mg/Kg 22.7 mg/Kg 3.6 mg/Kg 3.1 mg/Kg	0.11U mg/Kg 22.7U mg/Kg 3.6U mg/Kg 3.1U mg/Kg
15S00401	Beryllium Calcium Copper Nickel	0.14 mg/Kg 22.0 mg/Kg 4.6 mg/Kg 4.2 mg/Kg	0.14U mg/Kg 22.0U mg/Kg 4.6U mg/Kg 4.2U mg/Kg

Sample	Analyte	Reported Concentration	Modified Final Concentration
15S00601	Beryllium Calcium Copper Nickel	0.14 mg/Kg 31.1 mg/Kg 5.5 mg/Kg 3.3 mg/Kg	0.14U mg/Kg 31.1U mg/Kg 5.5U mg/Kg 3.3U mg/Kg
15S00701	Beryllium Calcium Copper Nickel	0.11 mg/Kg 28.3 mg/Kg 2.5 mg/Kg 3.1 mg/Kg	0.11U mg/Kg 28.3U mg/Kg 2.5U mg/Kg 3.1U mg/Kg
15S00801	Beryllium Copper Nickel	0.20 mg/Kg 3.5 mg/Kg 4.1 mg/Kg	0.20U mg/Kg 3.5U mg/Kg 4.1U mg/Kg
15S01201	Beryllium	0.13 mg/Kg	0.13U mg/Kg
15S01101	Beryllium Calcium Copper Nickel	0.10 mg/Kg 26.4 mg/Kg 2.0 mg/Kg 2.5 mg/Kg	0.10U mg/Kg 26.4U mg/Kg 2.0U mg/Kg 2.5U mg/Kg
15S01001	Beryllium Calcium Copper	0.14 mg/Kg 23.5 mg/Kg 2.4 mg/Kg	0.14U mg/Kg 23.5U mg/Kg 2.4U mg/Kg
15R00201	Copper	6.5 ug/L	6.5U ug/L

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met with the following exceptions:

Sample	Analyte	Finding	Criteria	Flag	A or P
All soil samples in SDG WF009	Antimony	Antimony was not spiked in ICSAB. The concentration of the common interferences in these samples approximated the spike values.	Antimony is potentially affected by common interferences and should be spiked in ICSAB.	J	A

The criteria for analysis were met.

V. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries were within QC limits with the following exceptions:

LCS ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
LCSW	Sodium	67.3 (80-120)	All water samples in SDG WF009	J	P

LCS ID	Analyte	Concentration (Limits)	Associated Samples	Flag	A or P
LCSS	Sodium	116.8 mg/Kg (160.0-240.0)	15S01201 15S01101 15S01001 PB (soil)	J	P
LCSS	Sodium	119.5 mg/Kg (160.0-240.0)	15S00101 15S00101D 15S00201 15S00301 15S00501 15S00401 15S00601 15S00701 15S00801 PB (soil)	J	P

VI. Duplicate Sample Analysis

Duplicate sample analyses were reviewed for each matrix as applicable. Relative percent differences (RPD) were within QC limits.

VII. Matrix Spike Analysis

Matrix spike analyses were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits of 75-125% with the following exceptions:

Sample (Associated Samples)	Analyte	%R	Flag	A or P
15S00101MS (All soil samples in SDG WF009)	Antimony	53.5 (75-125)	J	A

VIII. Furnace Atomic Absorption QC

All graphite furnace atomic absorption QC were within validation criteria with the following exceptions:

Analytical Spike	Analyte	%R (Limits)	Associated Sample	Flag	A or P
15R00201A	Selenium Thallium	83.0 (85-115) 81.0 (85-115)	15R00201	J J	A
15S01201A	Selenium Thallium	118.0 (85-115) 81.4 (85-115)	15S01201	J J	A
15S01101A	Selenium Thallium	119.0 (85-115) 65.1 (85-115)	15S01101	J J	A
15S01001A	Selenium Thallium	119.0 (85-115) 58.2 (85-115)	15S01001	J J	A
15S00101A	Selenium Thallium	118.0 (85-115) 70.2 (85-115)	15S00101	J J	A
15S00101DA	Selenium Thallium	118.0 (85-115) 60.9 (85-115)	15S00101D	J J	A
15S00601A	Selenium Thallium	122.0 (85-115) 67.9 (85-115)	15S00601	J J	A
15S00801A	Thallium	74.9 (85-115)	15S00801	J	A
15S00201A	Selenium Thallium	116.0 (85-115) 76.5 (85-115)	15S00201	J J	A
15S00301A	Selenium Thallium	119.0 (85-115) 83.1 (85-115)	15S00301	J J	A
15S00501A	Selenium Thallium	118.0 (85-115) 71.4 (85-115)	15S00501	J J	A
15S00401A	Selenium Thallium	122.0 (85-115) 78.6 (85-115)	15S00401	J J	A
15S00701A	Selenium	129.0 (85-115)	15S00701	J	A

IX. ICP Serial Dilution

The frequency of analysis was met.

The criteria for analysis were met.

X. Sample Result Verification

All sample result verifications met validation criteria with the following exceptions:

Sample	Analyte	Flag	A or P
All samples in SDG WF009	All analytes reported below the CRDL and above the IDL	J	A

XI. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XII. Field Duplicates

Samples 15S00101 and 15S00101D were identified as field duplicates. No TCL metals or cyanide were detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/Kg)		RPD
	15S00101	15S00101D	
Aluminum	9280	10800	15
Arsenic	2.0	1.9	5
Barium	6.6	7.8	17
Beryllium	0.12	0.13	8
Calcium	21.6	23.9	10
Chromium	8.4	8.0	5
Copper	3.4	3.9	14
Iron	5120	5700	11
Lead	4.7	3.6	26
Magnesium	109	132	19
Manganese	36.4	39.9	9
Mercury	0.02	0.02	0
Nickel	5.0	2.4	70

Analyte	Concentration (mg/Kg)		RPD
	15S00101	15S00101D	
Potassium	169	ND	Not calculable
Vanadium	13.3	15.1	13
Zinc	4.1	5.0	22

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TCL Metals & Cyanide - Data Qualification Summary - SDG WF009**

SDG	Sample ID	Analyte	Flag	A or P	Reason
WF009	15S00101 15S00101D 15S00201 15S00301 15S00501 15S00401 15S00601 15S00701 15S00801 15S01201 15R00201 15S01101 15S01001	Aluminum Antimony Barium Beryllium Cadmium Calcium Chromium Cobalt Copper Iron Magnesium Manganese Nickel Potassium Silver Sodium Vanadium Zinc	None None None None None None None None None None None None None None None None None None	P	Linear range analysis
WF009	15S00101 15S00101D 15S00201 15S00301 15S00501 15S00401 15S00601 15S00701 15S00801 15S01201 15R00201 15S01101 15S01001	Cyanide	None	P	Instrument detection limits
WF009	15S00101 15S00101D 15S00201 15S00301 15S00501 15S00401 15S00601 15S00701 15S00801 15S01201 15S01101 15S01001	Antimony	J	A	ICP interference check sample analysis
WF009	15R00201	Sodium	J	P	Laboratory control samples (%R)

SDG	Sample ID	Analyte	Flag	A or P	Reason
WF009	15S01201 15S01101 15S01001 15S00101 15S00101D 15S00201 15S00301 15S00501 15S00401 15S00601 15S00701 15S00801	Sodium	J	P	Laboratory control samples (Concentration)
WF009	15S00101 15S00101D 15S00201 15S00301 15S00501 15S00401 15S00601 15S00701 15S00801 15S01201 15S01101 15S01001	Antimony	J	A	Matrix spike analysis (%R)
WF009	15R00201 15S01201 15S01101 15S01001 15S00101 15S00101D 15S00601 15S00201 15S00301 15S00501 15S00401	Selenium Thallium	J J	A	Furnace atomic absorption QC (%R)
WF009	15S00801	Thallium	J	A	Furnace atomic absorption QC (%R)
WF009	15S00701	Selenium	J	A	Furnace atomic absorption QC (%R)
WF009	15S00101 15S00101D 15S00201 15S00301 15S00501 15S00401 15S00601 15S00701 15S00801 15S01201 15R00201 15S01101 15S01001	All analytes reported below the CRDL and above the IDL	J	A	Sample result verification

NAS Whiting Field, CTO 116

TCL Metals & Cyanide - Laboratory Blank Data Qualification Summary - SDG WF009**

SDG	Sample ID	Analyte	Modified Final Concentration	A or P
WF009	15S00101	Beryllium Copper Nickel	0.12U mg/Kg 3.4U mg/Kg 5.0U mg/Kg	A
WF009	15S00101D	Beryllium Nickel	0.13U mg/Kg 2.4U mg/Kg	A
WF009	15S00201	Beryllium Copper Nickel	0.12U mg/Kg 2.1U mg/Kg 3.6U mg/Kg	A
WF009	15S00301	Beryllium Copper Nickel	0.13U mg/Kg 3.4U mg/Kg 3.3U mg/Kg	A
WF009	15S00501	Beryllium Copper Nickel	0.11U mg/Kg 3.6U mg/Kg 3.1U mg/Kg	A
WF009	15S00401	Beryllium Nickel	0.14U mg/Kg 4.2U mg/Kg	A
WF009	15S00601	Beryllium Nickel	0.14U mg/Kg 3.3U mg/Kg	A
WF009	15S00701	Beryllium Copper Nickel	0.11U mg/Kg 2.5U mg/Kg 3.1U mg/Kg	A
WF009	15S00801	Beryllium Copper Nickel	0.20U mg/Kg 3.5U mg/Kg 4.1U mg/Kg	A
WF009	15S01201	Beryllium	0.13U mg/Kg	A
WF009	15R00201	Aluminum Beryllium Calcium Copper Iron Nickel	69.8U ug/L 0.29U ug/L 58.5U ug/L 6.5U ug/L 29.2U ug/L 48.7U ug/L	A
WF009	15S01101	Beryllium Copper Nickel	0.10U mg/Kg 2.0U mg/Kg 2.5U mg/Kg	A

SDG	Sample ID	Analyte	Modified Final Concentration	A or P
WF009	15S01001	Beryllium Copper	0.14U mg/Kg 2.4U mg/Kg	A

**NAS Whiting Field, CTO 116
TCL Metals & Cyanide - Field Blank Data Qualification Summary - SDG WF009****

SDG	Sample	Analyte	Modified Final Concentration	A or P
WF009	15S00101	Beryllium Calcium Copper Nickel	0.12U mg/Kg 21.6U mg/Kg 3.4U mg/Kg 5.0U mg/Kg	A
WF009	15S00101D	Beryllium Calcium Copper Nickel	0.13U mg/Kg 23.9U mg/Kg 3.9U mg/Kg 2.4U mg/Kg	A
WF009	15S00201	Beryllium Calcium Copper Nickel	0.12U mg/Kg 18.7U mg/Kg 2.1U mg/Kg 3.6U mg/Kg	A
WF009	15S00301	Beryllium Calcium Copper Nickel	0.13U mg/Kg 20.1U mg/Kg 3.4U mg/Kg 3.3U mg/Kg	A
WF009	15S00501	Beryllium Calcium Copper Nickel	0.11U mg/Kg 22.7U mg/Kg 3.6U mg/Kg 3.1U mg/Kg	A
WF009	15S00401	Beryllium Calcium Copper Nickel	0.14U mg/Kg 22.0U mg/Kg 4.6U mg/Kg 4.2U mg/Kg	A
WF009	15S00601	Beryllium Calcium Copper Nickel	0.14U mg/Kg 31.1U mg/Kg 5.5U mg/Kg 3.3U mg/Kg	A
WF009	15S00701	Beryllium Calcium Copper Nickel	0.11U mg/Kg 26.3U mg/Kg 2.5U mg/Kg 3.1U mg/Kg	A

SDG	Sample	Analyte	Modified Final Concentration	A or P
WF009	15S00801	Beryllium Copper Nickel	0.20U mg/Kg 3.5U mg/Kg 4.1U mg/Kg	A
WF009	15S01201	Beryllium	0.13U mg/Kg	A
WF009	15S01101	Beryllium Calcium Copper Nickel	0.10U mg/Kg 26.4U mg/Kg 2.0U mg/Kg 2.5U mg/Kg	A
WF009	15S01001	Beryllium Calcium Copper	0.14U mg/Kg 23.5U mg/Kg 2.4U mg/Kg	A
WF009	15R00201	Copper	6.5U ug/L	A

APPENDIX C
TEST PITS AND CPT LOGS

TITLE: Naval Air Station Whiting Field		LOG of WELL:	BORING NO. TEST PIT 15-1A (B40N, 240W)
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: RI PHASE IIA	
CONTRACTOR: UXB Inc.		DATE STARTED:	COMPLTD:
METHOD: BACK HOE	CASE SIZE:	SCREEN INT.:	PROTECTION LEVEL: 0
TOC ELEV.: FT.	MONITOR INST.: FID,LEL,RM	TOT DPTH: 12FT.	DPTH TO ∇ FT.
LOGGED BY: G. Kanchibhatla	WELL DEVELOPMENT DATE: N/A		SITE:

DEPTH FT.	INTERVAL SAMPLED	TOTAL HEADSPACE (ppm)	METHANE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/8-IN	WELL DATA
				SAND - reddish orange, fine to medium.		SP		
				SAND - light tan, fine to medium.				
				SAND - black solid coloring, very fine to fine.				
5				SAND - reddish orange, very fine to fine.				
10								
15								

TITLE: Naval Air Station Whiting Field		LOG of WELL:	BORING NO. TEST PIT 15-1B
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: RI PHASE IIA	
CONTRACTOR: UXB Inc.		DATE STARTED:	COMPLTD:
METHOD: BACK HOE	CASE SIZE:	SCREEN INT.:	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST: FID,LEL,RM	TOT DPTH: 12FT.	DPTH TO ∇ FT.
LOGGED BY: G. Kanchibhatla	WELL DEVELOPMENT DATE: N/A		SITE:

DEPTH FT.	INTERVAL SAMPLED	TOTAL HEADSPACE (ppm) METHANE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
0			SAND - reddish orange, fine to medium.		SP		
0			SAND - light tan to reddish orange.				
5-20			SAND - reddish orange, metal debris, aircraft communication cables, steel cables, rusted buckets, domestic trash, aircraft debris.		SP/TRASH		
5			FILL - metal debris, black stained soil, innertube of tire, rubber gloves.				
100			SAND - light brown, trash layer at 7'.				
100							
10							
15							

TITLE: Naval Air Station Whiting Field		LOG of WELL:		BORING NO. TEST PIT 15-02				
CLIENT: SOUTHNAVFACENCOM			PROJECT NO: RI PHASE IIA					
CONTRACTOR: UXB Inc.		DATE STARTED: 10/2/92		COMPLTD: 10/2/92				
METHOD: BACK HOE	CASE SIZE:	SCREEN INT.:	PROTECTION LEVEL: 0					
TOC ELEV.: FT.	MONITOR INST.: FID,LEL,RM	TOT DPTH: 12FT.	DPTH TO ∇ FT.					
LOGGED BY: G. Kanchibhatla		WELL DEVELOPMENT DATE: N/A		SITE:				
DEPTH FT.	INTERVAL SAMPLED	TOTAL HEADSPACE (ppm)	METHANE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5		20	5	SAND - reddish orange, very fine to fine, oil filter, airlogs, aluminum, soda bottles.	[Dotted pattern]	SP		
				SAND - black stained, municipal garbage, rubber, bottles, metal debris				
		1000	1000	SAND - SAA, liquid wax, plastic, burned and decayed material, nozzles of fire extinguishers, trashbags.	[V-pattern]	SP/TRASH		
		100	100					
				SAND - SAA, beer cans, spray cans, oil filters, rubber, wood, wind socks.				
		5						
			SAND - SAA, car parts, baseball bats.					
	0-50							
10		500	500	SAND - SAA, liquid wax.				
15								

TITLE: Naval Air Station Whiting Field		LOG of WELL:	BORING NO. TEST PIT 15-03A
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: RI PHASE IIA	
CONTRACTOR: UXB Inc.		DATE STARTED: 10/2/92	COMPLTD: 10/2/92
METHOD: BACK HOE	CASE SIZE:	SCREEN INT:	PROTECTION LEVEL: 0
TOC ELEV.: FT.	MONITOR INST.: FID,LEL,RM	TOT DPTH: 12FT.	DPTH TO ∇ FT.
LOGGED BY: G. Kanchibhatia	WELL DEVELOPMENT DATE: N/A		SITE:

DEPTH FT.	INTERVAL SAMPLED	TOTAL HEADSPACE (ppm) METHANE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/8-IN	WELL DATA
		0	FILL - reddish orange, very fine to fine, oil filter, airlogs, aluminum, soda bottles.		SP		
		0			SP/TRASH		
		0	SAND - reddish orange, garbage, plastic, bottles.				
		N/A	SAND - tan to reddish orange, very fine to fine, natural soil.				
			SAND - tan, very fine to fine, municipal garbage, nylon fibers, carpet fibers, banger cord (shock absorbers).				
			CLAYEY SAND - bright sand, very fine to fine, natural soil.		SC		
5		0					
		50	CLAYEY SAND - SAA.				
		50					
10							
15							

TITLE: Naval Air Station Whiting Field		LOG of WELL:	BORING NO. TEST PIT 15-03B
CLIENT: SOUTHNAVFACENGCOM			PROJECT NO: RI PHASE IIA
CONTRACTOR: UXB Inc.		DATE STARTED: 10/2/92	COMPLTD: 10/2/92
METHOD: BACK HOE	CASE SIZE:	SCREEN INT.:	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: FID,LEL,RM	TOT DPTH: 12FT.	DPTH TO ∇ FT.
LOGGED BY: G. Kanchibhatla	WELL DEVELOPMENT DATE: N/A		SITE:

DEPTH FT.	INTERVAL SAMPLED	TOTAL HEADSPACE (ppm) METHANE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
		0	TOP SOIL - natural top soil		SP		
	0-10		ORGANICS - decayed organic matter, municipal garbage, bottle caps.		OL		
			SAND - yellowish orange, very fine to fine, cans and bottles.		SP/TRASH		
5		N/A					
			SAND - gray stained, plastic, aluminum foil, metal debris.				
		N/A					
			ASH - gray, rubber, flashlight, umbrella, aluminum debris.		SH/TRASH		
10		FLUC					
			FILL - gray soil, garbage layer continuous beyond this point, lubrilatar supply head of aircraft, aircraft communication cables.				
		N/A					
15							

TITLE: Naval Air Station Whiting Field		LOG of WELL:	BORING NO. TEST PIT 15-08
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: RI PHASE IIA	
CONTRACTOR: UXB Inc.		DATE STARTED: 10/3/92	COMPLTD: 10/3/92
METHOD: BACK HOE	CASE SIZE:	SCREEN INT.:	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: FID,LEL,RM	TOT DPTH: 12FT.	DPTH TO \bar{v} FT.
LOGGED BY: G. Kanchibhatla	WELL DEVELOPMENT DATE: N/A		SITE:

DEPTH FT.	INTERVAL SAMPLED	TOTAL HEADSPACE (ppm) METHANE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
		0	FILL - yellowish orange sand, very fine to fine.		SP		
		0	SAND - gray, very fine to fine, municipal garbage, plastic, boots, bottles, cans, industrial garbage, dry cleaning material.		SP/TRASH		
		0	SILT - gray ash, garbage.		SM/TRASH		
5		0	Garbage Layer - aircraft parts, motorcycle muffler, aircraft communication cables, fuel tank neck.				
10			MUNICIPAL GARBAGE - spray can, aircraft cleaner, melted plastic.				
		N/A	INDUSTRIAL GARBAGE - aircraft parts, solvent cans with solvent, dry cleaning fluid container empty.				

TITLE: Naval Air Station Whiting Field		LOG of WELL:	BORING NO. TEST PIT 15-07
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: RI PHASE IIA	
CONTRACTOR: UXB Inc.		DATE STARTED: 10/4/92	COMPLTD: 10/4/92
METHOD: BACK HOE	CASE SIZE:	SCREEN INT.:	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: FID,LEL,RM	TOT DPTH: 12FT.	DPTH TO ∇ FT.
LOGGED BY: G. Kanchibhatta	WELL DEVELOPMENT DATE: N/A		SITE:

DEPTH FT.	INTERVAL SAMPLED	TOTAL HEADSPACE (ppm) METHANE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/8-IN	WELL DATA
		0	SAND - reddish orange, very fine to fine, fill material.		SP		
		100	SAND - tan, very fine to fine, cans, plastic bags.		SP/TRASH		
		1000	SAND - tan, very fine to fine, garbage, layer, steel cables.				
5		1000					
		0	SAND - bright red, very fine to fine, garbage layer, rubber tire, plastic bags, cans, bottles, paper material dating 1972.				
10							
15							

TITLE: Naval Air Station Whiting Field		LOG of WELL:	BORING NO. TEST PIT 15-08A
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: RI PHASE IIA	
CONTRACTOR: UXB Inc.		DATE STARTED: 10/4/92	COMPLTD: 10/4/92
METHOD: BACK HOE	CASE SIZE:	SCREEN INT:	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: FID,LEL,RM	TOT DPTH: 12FT.	DPTH TO ∇ FT.
LOGGED BY: G. Kanchibhatla	WELL DEVELOPMENT DATE: N/A		SITE:

DEPTH FT.	INTERVAL SAMPLED	TOTAL HEADSPACE (ppm) METHANE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/8-IN	WELL DATA
		0	SAND - reddish orange, very fine to fine, fill material.		SP		
		0	SAND - municipal garbage layer, coffee cups, oil filter.		SP/TRASH		
		0	SAND - tan, very fine to fine, oil can empty.				
		50	SAND - dark olive green, very fine to fine, garbage layer.				
5		N/A	FILL - yellowish orange, very fine to fine.				
10							
15							

TITLE: Naval Air Station Whiting Field		LOG of WELL:	BORING NO. TEST PIT 15-08B
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: RI PHASE IIA	
CONTRACTOR: UXB Inc.		DATE STARTED: 10/4/92	COMPLTD: 10/4/92
METHOD: BACK HOE	CASE SIZE:	SCREEN INT:	PROTECTION LEVEL: D
TOC ELEV.: FT.	MONITOR INST.: FID,LEL,RM	TOT DPTH: 12FT.	DPTH TO ∇ FT.
LOGGED BY: G. Kanchibhatla	WELL DEVELOPMENT DATE: N/A		SITE:

DEPTH FT.	INTERVAL SAMPLED	TOTAL HEADSPACE (ppm) METHANE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/8-IN	WELL DATA
		0	SAND - fill material.		SP		
		0	SAND - fine, garbage layer, base newspaper August 15, '89, cans, bottles, plastic bags.		SP/TRASH		
		0	FILL - garbage, shoes, tubes, etc.				
5		0					
		0	FILL - yellowish orange, very fine to fine.				
10							
15							

TITLE: Naval Air Station Whiting Field		LOG of WELL:	BORING NO. TEST PIT 15-09
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: RI PHASE IIA	
CONTRACTOR: UXB Inc.		DATE STARTED: 10/4/82	COMPLTD: 10/4/82
METHOD: BACK HOE	CASE SIZE:	SCREEN INT.:	PROTECTION LEVEL: 0
TOC ELEV.: FT.	MONITOR INST.: FID,LEL,RM	TOT DPTH: 12FT.	DPTH TO ∇ FT.
LOGGED BY: G. Kanchibhatla	WELL DEVELOPMENT DATE: N/A		SITE:

DEPTH FT.	INTERVAL SAMPLED	TOTAL HEADSPACE (ppm) METHANE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/8-IN	WELL DATA
		0	SAND - fill material, reddish orange, very fine to fine.		SP		
		0	SAND - SAA.				
		0	FILL - thin layer of plastic debris.		SP/TRASH		
5		0	SAND - tan, very fine to fine, trash debris.				
		0	SAND - bright red to dark tan, grass pieces.				
10		0	FILL - concrete slab, solid across pit.				
15							

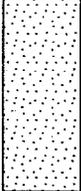
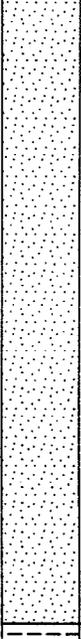
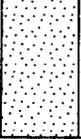
TITLE: Naval Air Station Whiting Field		LOG of WELL:	BORING NO. TEST PIT 15-10
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: RI PHASE IIA	
CONTRACTOR: UXB Inc.		DATE STARTED: 10/4/92	COMPLTD: 10/4/92
METHOD: BACK HOE	CASE SIZE:	SCREEN INT.:	PROTECTION LEVEL: 0
TOC ELEV.: FT.	MONITOR INST.: FID,EL,RM	TOT DPTH: 12FT.	DPTH TO ∇ FT.
LOGGED BY: G. Kanchibhatla	WELL DEVELOPMENT DATE: N/A		SITE:

DEPTH FT.	INTERVAL SAMPLED	TOTAL HEADSPACE (ppm) METHANE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/B-IN	WELL DATA
		0	SAND - yellowish orange, very fine to fine, fill material		SP		
		0	SAND - reddish orange, very fine to fine, asphalt & concrete pieces				
		0	SAND - SAA, steel cables.	SP/TRASH			
		0	SAND - SAA.		SP		
5		0	SAND - SAA.				
		0	SAND - SAA.				
10							
15							

TITLE: NAŠ WHITING FIELD RI		LOG of WELL: WHF-15-CPT-1	BORING NO.
CLIENT: SDIV NAVY		PROJECT NO: 8500-01	
CONTRACTOR: WILLIAMS & ASSOC.		DATE STARTED:	COMPLTD: 12-11-90
METHOD: PCPT	CASE SIZE: NA	SCREEN INT.: NA	PROTECTION LEVEL: D
TOC ELEV.: NA FT.	MONITOR INST.: NA	TOT DPTH: 98FT.	DPTH TO ∇ NA FT.
LOGGED BY: COMPUTER	WELL DEVELOPMENT DATE: NA		SITE: WHITING FIELD

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5				SAND-moderately dense sand		SP		
10				CLAY-clay w/ some sand		CL		
20				SAND-dense sand		SP		
100								

TITLE: NAŠ WHITING FIELD RI		LOG of WELL: WHF-15-CPT-2	BORING NO.
CLIENT: SDIV NAVY		PROJECT NO: 8500-01	
CONTRACTOR: WILLIAMS & ASSOC.		DATE STARTED:	COMPLTD: 12-11-90
METHOD: PCPT	CASE SIZE: NA	SCREEN INT: NA	PROTECTION LEVEL: D
TOC ELEV.: 80.18 FT.	MONITOR INST: NA	TOT DPTH: 100FT.	DPTH TO ∇ NA FT.
LOGGED BY: COMPUTER	WELL DEVELOPMENT DATE: NA		SITE: WHITING FIELD

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5				SAND-moderately dense sand		SP		
15				CLAY-stiff clay		CH		
20				SAND-dense sand		SP		
22				CLAY-stiff clay		CH		
25				SAND-dense sand w/ clay lenses		SC		
40				SAND-moderately dense sand		SP		
90				CLAY-stiff clay		CH		
92				SAND-dense sand		SP		

APPENDIX D
MONITORING WELL LOGS

LITHOLOGIC LOG FOR WELL NUMBER (SITE 15)

<u>Description</u>	<u>Depth (ft)</u>	<u>Thickness (ft)</u>
Clay, red, gray, tan; sand, fine to medium grained.....	0 - 42.0	42.0
Sand, fine to coarse grained, buff; clay, light gray.....	42.0 - 65.0	23.0
Sand, fine to coarse grained, buff; gravel, mafics.....	65.0 - 72.0	7.0

Geraghty & Miller, Verification Study, 1986

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-15-2D	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: R1 PHASE IIA	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 07/17/93	COMPLTD: 07/18/93
METHOD: MUD ROTARY	CASE SIZE: 2 in.	SCREEN INT.: 104.6-109.8	PROTECTION LEVEL: D
TOC ELEV.: 60.07 FT.	MONITOR INST.: OVA	TOT DPTH: 110FT.	DPTH TO ∇ 19.33 FT.
LOGGED BY: N. Roka	WELL DEVELOPMENT DATE:	SITE: 15 - S.W. Landfill	

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5	24/24		BKG	SAND - rust brown, fine to medium, poorly graded, loose, slightly moist, subrounded.		SP	2,3,4,5	
10	22/24		2	Same as above. CLAY - brown, soft, plastic, moist. SILT SAND - black, fine, loose, slightly moist.		SM	1,1,2,1	
15	24/24		BKG	CLAYEY SAND - gray, fine, poorly graded, loose, slightly moist.		SC	2,2,2,2	
20	24/24		0.4	SAND - white, fine, silt, poorly graded, medium dense, moist.		SP/SM	11,13,17,13	
25	24/12		BKG	SANDY SILT - brown, saturated. SAND - yellowish tan, fine to medium, poorly graded, saturated.		SM/SP	WOR,6,4	
30				FROM WHF-15-MW-21 SAND - orange to red to white, coarse, well graded. SAND - orangish brown, fine, poorly graded.		SW		
35				SAND - light tan, fine to medium, poorly graded, saturated.		SP		
40						SP		

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-15-2D	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: RI PHASE IIA	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 07/17/93	COMPLTD: 07/18/93
METHOD: MUD ROTARY	CASE SIZE: 2 in.	SCREEN INT.: 104.6-109.6	PROTECTION LEVEL: D
TOC ELEV.: 60.07 FT.	MONITOR INST.: OVA	TOT DPTH: 110FT.	DPTH TO ∇ 19.33 FT.
LOGGED BY: N. Roka	WELL DEVELOPMENT DATE:		SITE: 15 - S.W. Landfill

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
Continued from PAGE 1								
				SAND - gray, fine, silty, well graded, saturated.		SP		
45				SAND - gray, fine to medium, trace coarse, poorly graded, saturated.		SP		
50				SAND - light brown, medium, well graded, saturated.		SP		
55				SAND - light tan, fine, poorly graded, saturated. RESUME WHF-15-MW-2D		SP		
60		24/24	1.6	SAND - light tan, fine to medium, poorly graded, medium dense, saturated, subangular.		SP	13,11,10,12	
65		24/24	BKG	Same as above, loose.		SP	4,5,5,9	
70		12/24	1.2	Same as above, medium dense.		SP	4,8,9,11	
75		24/24	8	Same as above, dense.		SP	10,18,28,42	
80			2.6			SP	4,4,8,11	

TITLE: NAVAL AIR STATION WHITING FIELD

LOG of WELL: WHF-15-20

BORING NO.

CLIENT: SOUTHNAVFACENCOM

PROJECT NO: R1 PHASE IIIA

CONTRACTOR: Groundwater Protection Inc.

DATE STARTED: 07/17/93

COMPLTD: 07/18/93

METHOD: MUD ROTARY

CASE SIZE: 2 in.

SCREEN INT.: 104.6-109.6 F PROTECTION LEVEL: C

TOC ELEV.: 60.07 FT.

MONITOR INST.: OVA

TOT DPTH: 110 FT.

DPTH TO ∇ : 19.33 FT.

LOGGED BY: N. Roka

WELL DEVELOPMENT DATE:

SITE: 15 - S.w. Landfill

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				Continued from PAGE 2				
		10/24		Same as above, medium dense.		SP		
85		24/24	10	same as above, dense.		SP	48,22,23,20	
90		0/24	BKG	NO RECOVERY			6,8,15,22	
95		24/24	3	Same as above, medium dense.		SP	4,6,8,12	
100		12/24	21	Same as above, dense.		SP	10,15,22,29	
105		24/24	5	Same as above, loose.		SP	3,4,5,8	
110								
115								
120								

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-15-21	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: RI PHASE IIA	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 02/3/93	COMPLTD: 02/4/93
METHOD: MUD ROTARY	CASE SIZE: 2 in.	SCREEN INT.: 50-80 FT	PROTECTION LEVEL: 0
TOC ELEV: 60.18 FT.	MONITOR INST.: OVA	TOT DPTH: 82FT.	DPTH TO ∇ 20.7 FT.
LOGGED BY: R. NELSON	WELL DEVELOPMENT DATE:		SITE: 15 - S.W. Landfill

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5	6/24	0	SAND - light brown, fine to medium, poorly graded, dry.		SP	3,2,4,4	
10	24/24	0	CLAYEY SILT - gray, medium plasticity, saturated, firm, some sand.		CL	2,2,2,2	
	24/24		CLAY - gray, plastic, saturated, soft, trace sand.		CH	1,1,3,5	
15	24/24	0	CLAYEY SILT - gray, medium plasticity, firm, some sand.		CL	10,10,12,11	
	24/24					7,7,8,10	
20	14/24	1	CLAYEY SAND - gray, medium to low plasticity, moist, firm.		SP	6,2,3,3	
			CLAYEY SAND - gray, moist, firm.				
			SAND - gray, fine, poorly graded, saturated.				
25	12/12	2.5	SAND - reddish brown, fine, poorly graded, loose, saturated.		SP	10,12,13,17	
30	18/24	15	SAND - orange to red to white, coarse, well graded.		SW	22,22,33,40	
			SAND - orangish brown, fine, poorly graded.				
35	14/24	9	SAND - light tan, fine to medium, poorly graded, saturated.		SP	14,19,23,27	
40	14/24	3	SAND - gray, fine, silty, well graded, saturated.		SW	6,5,4,5	
45	12/24	7	SAND - gray, fine to medium, trace coarse, poorly graded, saturated.		SP	7,8,12,12	
50	12/24	5	SAND - light brown, medium, well graded, saturated.		SP	7,7,7,8	
55	12/24	2	SAND - light tan, fine, poorly graded, saturated.		SP	6,9,8,11	
60							
65							

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-15-2S	BORING NO.
CLIENT: SOUTHNAVFACENCOM			PROJECT NO: RI PHASE IIA
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 02/4/93	COMPLTD: 02/4/93
METHOD: HSA	CASE SIZE: 2	SCREEN INT.: 15-30 FT	PROTECTION LEVEL: D
TOC ELEV.: 60.18 FT.	MONITOR INST.: OVA	TOT DPTH: 37FT.	DPTH TO ∇ 19.34 FT.
LOGGED BY: R.Nelson	WELL DEVELOPMENT DATE:		SITE: 15 - S.W. Landfill

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5				SEE WHF-15-2D FOR ADDITIONAL LITHOLOGICAL DESCRIPTIONS.				
15		18/24		1 CLAY - gray, firm, moist, some sand.	---	SC	2,2,2,4	
20		12/24		1 CLAYEY SAND - gray, firm, moist.	---	SC	2,7,10,10	
25		20/24		SAND - gray, fine, poorly graded, saturated.		SP	3,4,4,4	
30								
35								
40								

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-15-3D	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: R1 PHASE IIA	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 01/23/93	COMPLTD: 01/25/93
METHOD: MUD ROTARY	CASE SIZE: 2	SCREEN INT.: 108-118 FT	PROTECTION LEVEL: C
TOC ELEV.: 69.61 FT.	MONITOR INST.: OVA	TOT DPTH: 119FT.	DPTH TO ∇ 26.2 FT.
LOGGED BY: R. Nelson	WELL DEVELOPMENT DATE:		SITE: 15 - S.W. Landfill

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5								
		14/24	0	SANDY CLAY - red. moist.		SC/CL	2.3.3.4	
10								
		08/24	0	SAND - red, fine, poorly graded, trace clay, slightly moist.		SP	5.5.8.10	
15								
		09/24	3	SAND - SAA.		SP	6.8.8.12	
20								
		07/24	1	SAND/GRAVEL - red, well graded, slightly moist.		GW	10.8.10.11	
25								
		12/24	1000	SAND (3") - reddish brown, fine, poorly graded CLAY (3") - purple, very fine, poorly graded. SAND (9") - yellow to tan, coarse, poorly graded, strong odor.		SP	2.3.3.4	
30								
		24/24	4	SAND (1.5') - reddish brown, very fine, poorly graded, saturated. SAND (6") - white to purple, medium to coarse, well graded, saturated.		SP	3.3.3.3	
35								
		12/24	2	SAND - light purple, fine to medium, poorly graded, saturated, sub-rounded.		SP	6.7.8.8	
40								

TITLE: NAVAL AIR STATION WHITING FIELD		LOG OF WELL: WHF-15-3D	BORING NO.
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: R1 PHASE 11A	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 01/23/93	COMPLTD: 01/25/93
METHOD: MUD ROTARY	CASE SIZE: 2	SCREEN INT.: 108-118 FT	PROTECTION LEVEL: C
TOC ELEV.: 69.61 FT.	MONITOR INST.: OVA	TOT DPTH: 119FT.	DPTH TO ∇ : 26.2 FT
LOGGED BY: R. Nelson	WELL DEVELOPMENT DATE:	SITE: 15 - S.W. Landfill	

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				Continued from PAGE 1				
		16/24	6	SAND - SAA, 1" bands of red fine sand at top and bottom of spoon.		SP	6,6,7,9	
45		12/24	5	SAND (8") - orange to brown, medium, well graded, trace coarse, saturated. SAND (4") - yellowish, medium, well graded.	•••	SW	7,8,5,6	
50		14/24	4	SAND (10") - white, medium, well graded, trace coarse, saturated. SAND (4") - purple, SAA.	•••	SW	6,5,5,4	
55		18/24	1	SAND - white to tan, very fine, poorly graded, saturated.		SP	3,2,5,6	
60		12/24	1	SAND - yellow to brown, fine, poorly graded, trace coarse, saturated.		SP	8,11,2,11	
65		18/24	N/A	SAND - fine, poorly graded, saturated.		SP	12,16,16,16	
70		12/24	20	SAND - yellow to brown, medium, poorly graded, saturated, sub-rounded.		sp	3,4,3,6	
75		16/24	10	SAND - yellow to brown, medium, well graded, saturated, sub-rounded.		SP	11,12,16,23	
80								

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-15-3C	BORING NO.
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: RI PHASE III	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 01/23/93	COMPLTD: 01/25/93
METHOD: MUD ROTARY	CASE SIZE: 2	SCREEN INT.: 108-118 FT.	PROTECTION LEVEL: D
TOC ELEV.: 69.61 FT.	MONITOR INST.: OVA	TOT DPTH: 119FT.	DPTH TO \bar{z} : 26.2 FT
LOGGED BY: R. Nelson	WELL DEVELOPMENT DATE:	SITE: 15 - S.W. Landfill	

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY SAMPLE	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				Continued from PAGE 2				
		12/24	40	SAND - yellow to brown, medium, poorly graded, saturated, 2" lamina of purple sand, fine at 83'.		SP	17,21,23,21	
85		14/24	2	SAND - yellow brown, fine, well graded, saturated, 4" lamina of purple, medium sand at 86'.		SP	N/A	
90		20/24	0	CLAY (16") - purple to yellow, firm, plastic, saturated. SAND (4") - yellow brown, fine, poorly graded, trace clay, saturated.		CH	N/A	
95		18/24	0	SAND - yellow brown, very fine, poorly graded, trace silt, moist.		SM	N/A	
100		18/24	1	SAND - SAA.		SM	N/A	
105		14/24	0	SAND (4") - yellow to brown, fine, saturated. CLAY (4") - purple to yellow, plastic, saturated. SAND (6") - purple to yellow-brown, fine.		SP	N/A	
110		14/24	5	SAND - yellow to brown, fine to coarse, saturated.		SP	N/A	
115		20/24	5	SAND - purple, medium, poorly graded, saturated, sub-rounded.		SP	N/A	
120		20/24	N/A	SAND (10") - SAA. CLAY (10") - purple, stiff, fine yellow sand interbedded.		SP	N/A	

TITLE: NAVAL AIR STATION WHITING FIELD

LOG of WELL: WHF-15-3:

BORING NO.

CLIENT: SOUTHNAVFACENGCOM

PROJECT NO: R1 PHASE 11A

CONTRACTOR: Groundwater Protection Inc.

DATE STARTED: 02/2/93

COMPLTD: 02/2/93

METHOD: MUD ROTARY

CASE SIZE: 2

SCREEN INT.: 75-85 FT

PROTECTION LEVEL: D

TOC ELEV.: 69.72 FT.

MONITOR INST.: OVA

TOT DPTH: 87FT.

DPTH TO ∇ 26.86 FT.

LOGGED BY: G. Kanchibhatia

WELL DEVELOPMENT DATE:

SITE: 15 - S.W. Landfill

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5				SEE WHF-15-3D FOR LITHOLOGICAL DESCRIPTIONS				
10								
15								
20								
25								
30								
35								
40								
45								

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-15-31	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: RI PHASE IIA	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 02/2/93	COMPLTD: 02/2/93
METHOD: MUD ROTARY	CASE SIZE: 2	SCREEN INT.: 75-85 FT	PROTECTION LEVEL: C
TOC ELEV.: 69.72 FT.	MONITOR INST.: OVA	TOT DPTH: 87FT	DPTH TO ∇ 26.86 FT
LOGGED BY: G. Kanchibhatta	WELL DEVELOPMENT DATE:	SITE: 15 - S.W. Landfill	

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
Continued from PAGE 1									
50									
55									
60									
65									
70									
75					SAND - purple, fine, poorly graded, saturated.		SP	2,3,2,2	
					SAND - purple, medium, well graded, saturated.				
80					SAND - light purple, fine, silty, poorly graded, saturated.		SP	5,8,9,12	
85									
90									

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-15-3S	BORING NO.
CLIENT: SOUTHNAVFACENGCOM			PROJECT NO: RI PHASE IIA
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 02/1/93	COMPLTD: 02/1/93
METHOD: HSA	CASE SIZE: 2"	SCREEN INT.: 20-35 FT	PROTECTION LEVEL: 0
TOC ELEV: 69.87 FT.	MONITOR INST.: OVA	TOT DPTH: 37FT.	DPTH TO ∇ 28.24 FT.
LOGGED BY: G. Kanchibhalla	WELL DEVELOPMENT DATE:		SITE: 15 - S.W. Landfill

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5								
10								
15		■		SAND - reddish brown, fine to medium, poorly graded, dry.		SP	5.8.6.6	
20		■		Same as above, alternating bands of pink and white.		SP	3.4.4.5	
25		■		SAND - gray to white, medium, poorly graded, saturated. SAND - fine, silty, saturated.		SP	3.2.2.3	
30								
35								
40								

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-15-4	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: RI PHASE IIA	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 02/18/93	COMPLTD: 04/29/93
METHOD: HSA	CASE SIZE: 2"	SCREEN INT.: 92-107 FT.	PROTECTION LEVEL: 0
TOC ELEV.: 143.54 FT.	MONITOR INST.: OVA	TOT DPTH: 112FT.	DPTH TO ∇ 98.8 FT.
LOGGED BY: G. Kanchibhatia	WELL DEVELOPMENT DATE:		SITE: 15 - S.W. Landfill

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5	20/24		< 1	SAND - dark brown, fine, poorly graded, dry, loose, some organic content.		SP	1,1,1,1	
10	8/24		0	SAND - reddish brown, fine, poorly graded, dry, loose.		SP	2,2,3,2	
15	1/24		0	SAND - dark tan and yellowish orange bands, fine, poorly graded, dry.		SP	6,8,9,10	
	6/24							
20	24/24		0	Same as above, trace amounts of silt at 21 ft. dis.		SP	4,6,10,12	
25	20/24		0	SAND - white, very fine, poorly graded, moderately dense, dry.		SP	8,7,11,14	
30	20/24		0	SAND - very fine to fine, poorly graded, moderately dense, trace amounts of coarse to very coarse sand.		SP	8,7,11,14	
35	12/24		0	SAND - white with bands of reddish brown fine to medium, poorly graded, loose, dry.		SP	5,6,10,13	
40						SP		

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-15-4	BORING NO.
CLIENT: SOUTHNAVACENCOM		PROJECT NO: RI PHASE IIA	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 02/18/93	COMPLTD: 04/29/93
METHOD: HSA	CASE SIZE: 2"	SCREEN INT.: 92-107 FT.	PROTECTION LEVEL: 0
TOC ELEV.: 143.54 FT.	MONITOR INST.: OVA	TOT DPTH: 112FT.	DPTH TO ∇ 98.8 FT.
LOGGED BY: G. Kanchibhalla	WELL DEVELOPMENT DATE:		SITE: 15 - S.W. Landfill

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				Continued from PAGE 1				
		20/24	0	Same as above, trace coarse.		SP	5,8,11,14	
45		24/24	0	Same as above.		SP	8,13,23,27	
50		20/24	0	SAND - white, fine, trace silt, moderately dense, slightly moist, poorly graded.		SP	6,11,15,17	
55		20/24	0	Same as above.		SP	14,10,14,21	
60		20/24	0	Same as above, white to tan.		SP	10,15,21,29	
65		18/24	0	SAND - white to tan, fine to medium, fairly graded, moderately dense, slightly moist.		SP	22,28,29,28	
70		18/24	0	SAND - white, very fine to fine, poorly graded, moderately dense, dry.		SP	17,11,25,52	
75		18/24	1	SAND - white, very fine to fine, purple bands, poorly graded, loose, dry.		SP	18,27,31,28	
80						SP		

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-15-4	BORING NO.
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: RI PHASE IIA	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 02/18/93	COMPLTD: 04/29/93
METHOD: HSA	CASE SIZE: 2"	SCREEN INT.: 92-107 FT.	PROTECTION LEVEL: 0
TOC ELEV.: 143.54 FT.	MONITOR INST.: OVA	TOT DPTH: 112FT.	DPTH TO § 98.8 FT.
LOGGED BY: G. Kanchibhatta	WELL DEVELOPMENT DATE:		SITE: 15 - S.W. Landfill

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
Continued from PAGE 2								
		20/24	0	SAND - white to purple, medium to fine, some coarse, poorly graded, moderately dense, slightly moist, trace silt.		SP	22,12,12,14	
85		16/24	0	SAND - white to tan and purple, very fine to fine, poorly graded, dry, moderately dense.		SP	16,31,39,29	
90		18/24	0	SAND - white to tan, fine, poorly graded with some silt, loose to moderate density, slightly moist.		SP	22,22,42,27	
95		20/24	0	SAND - white to tan, very fine to fine, some silt, poorly graded top 8", over SANDY CLAY, yellow orange to purple, moist 8", over SAND, very fine to fine, purple, slightly moist, dense.		SP	7,15,31,33	
100		16/24	-	SAND - white to tan, fine, poorly graded, saturated, trace sandy clay.		SP	DROP,16,15	
105		24/24	-	Same as above, trace silt, saturated to wet.		SP		
110		24/24	-	Same as above, fine, light brown.		SP		
115	WHF-15-4 WAS REDRILLED ON 4/29/93.							
120								

TITLE: NAVAL AIR STATION WHITING FIELD

LOG of WELL: W-F-15-5

BORING NO.

CLIENT: SOUTHNAVFACENGCOM

PROJECT NO: R1 PHASE 11A

CONTRACTOR: Groundwater Protection Inc.

DATE STARTED: 02/05/93

COMPLTD: 02/08/93

METHOD: Mud Rot

CASE SIZE: 6 in.

SCREEN INT.: 56-66 FT

PROTECTION LEVEL: C

TOC ELEV.: 104.32 FT.

MONITOR INST.: OVA

TOT DPTH: 68FT.

DPTH TO \bar{z} 64.63 FT.

LOGGED BY: N. Haglin

WELL DEVELOPMENT DATE:

SITE: 15 - S w Landfill

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5	15/24	0		SILTY SAND - dark red, fine, medium dense, damp.		SM	3.5.5.7	
10	24/24	0		Same as above.		SM	---	
15	12/24	0		SAND - reddish tan to white, fine, loose, dry.		SP	2.5.8.11	
20	24/24	0		Same as above, more white sand.		SP	4.5.7.10	
25	24/24	0		SAND - white, very fine to fine, loose, dry.		SP	5.5.6.7	
30	20/24	0		Same As Above, banded dark red and white		SP	5.11.12.15	
35	15/24	0		SAND - fine, banded rust and white, damp.		SP	6.9.12.12	
40						SP		

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-15-5	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: RI PHASE IIA	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 02/05/93	COMPLTD: 02/08/93
METHOD: Mud Rot	CASE SIZE: 6 in.	SCREEN INT.: 56-66 FT	PROTECTION LEVEL: D
TOC ELEV.: 104.32 FT.	MONITOR INST.: OVA	TOT DPTH: 68FT.	DPTH TO \bar{z} 64.63 FT
LOGGED BY: N. Haglin	WELL DEVELOPMENT DATE:		SITE: 15 - S.W. Landfill

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
Continued from PAGE 1								
		14/24	0	SAND - white, some pink, fine, trace coarse sand, loose, damp.		SP	3,7,8,7	
45		24/24	0	SAND - purple, fine to medium, some coarse sand, loose, wet.		SW	4,3,3,5	
		24/24	0	CLAY - purple, grey, tan, and yellow, fine sand lenses, firm, plastic, moist.		CL	2,3,2,4	
50		24/24	0	CLAY - Grey, highly plastic, firm, traces of purple very fine sand and yellow silt.		CL	1,2,3,6	
		24/24	0	CLAY - Grey mottled red, some sandy lenses, plastic, firm.		CL	1,1,4,5	
55		24/24	0	Same As Above top 18" over SAND, white, very fine, some silt, dry.		SP	10,12,14,18	
		24/24	0	SILTY SAND - brown, medium, wet, over very fine sand, white, damp (bottom 6").		SM	18,30,36,46	
60		24/24	0	SAND - Top 8" brown, medium, wet, over 8" of sandy clay, brown, wet, over 8" of sand, white, very fine, damp.		SP	12,14,10,12	
65		14/24	< 1	SAND - brown to white, fine to medium, some clayey sand, loose, wet.		SP	14,14,11,10	
70								
75								
80								

TITLE: NAVAL AIR STATION WHITING FIELD

LOG of WELL: WHF-15-6C

BORING NO.

CLIENT: SOUTHNAVFACENGCOM

PROJECT NO: R1 PHASE IIA

CONTRACTOR: Groundwater Protection Inc.

DATE STARTED: 02/9/93

COMPLTD: 02/9/93

METHOD: MUD ROTARY

CASE SIZE: 2"

SCREEN INT.: 110-120 FT

PROTECTION LEVEL: C

TOC ELEV.: 75.14 FT.

MONITOR INST.: OVA

TOT DPTH: 122FT.

DPTH TO ∇ : 35.33 FT

LOGGED BY: R.Nelson

WELL DEVELOPMENT DATE:

SITE: 15 - Sw Landfill

DEPTH FT	LABORATORY SAMPLE ID	SAMPLE RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5		16/24	0	SANDY SILT - reddish brown, medium, poorly graded, slightly moist.		SM	3.3.3.3	
10		20/24	1	Same as above.		SM	3.3.3.5	
15		18/24	1	SAND - reddish brown, fine, trace silt, poorly graded, saturated. SAND - white to gray, fine, poorly graded.		SP	7.11.12.15	
20		14/24	1	SAND - reddish brown, fine, poorly graded, trace silt, wet.		SP	5.9.10.12	
25		18/24	120	SAND - light purple, fine, poorly graded, silt, wet.		SP	5.8.8.7	
30		14/24	160	SAND - orangish brown to gray, fine, trace silt, poorly graded.		SP	4.5.5.6	
35		8/24	3	SAND - tan, fine, poorly graded, silty.		SP	PUSHED	
40		10/24	160	SAND - gray, fine, poorly graded, wet.		SP	PUSHED	
45								

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-15-6D	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: R1 PHASE IIIA	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 02/5/93	COMPLTD: 02/8/93
METHOD: MUD ROTARY	CASE SIZE: 2"	SCREEN INT.: 110-120 FT	PROTECTION LEVEL: D
TOC ELEV.: 75.14 FT.	MONITOR INST.: OVA	TOT DPTH: 122FT.	DPTH TO ∇ 35.33 FT.
LOGGED BY: R.Nelson	WELL DEVELOPMENT DATE:		SITE: 15 - S.W. Landfill

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY SAMPLE	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
Continued from PAGE 1								
			22	Same as above.		SP		PUSHED
		6/24						
50			2	Same as above, medium.		SP		PUSHED
		4/24						
55			12	SAND - light tan, fine to medium, poorly graded, wet, trace coarse		SP	7,14,21,18	
		20/24						
60			5	SAND - purple, fine, poorly graded, wet.		SP	7,9,9,10	
		12/24						
65			1	SAND - light brown to light purple, medium to coarse, poorly graded, wet.		SP	11,13,8,10	
		20/24						
70			1	SAND - light brown, medium to coarse, wet. SAND - gray to white, fine, poorly graded.		SP	8,7,4,6	
		12/24						
75			0	SAND - light brown, medium to coarse, well graded, wet.		SP	10,7,6,7	
		18/24						
80			1.5	SAND - light brown, medium grained, well graded, wet.	• • • • • •	SW	7,7,8,5	
		14/24						
85			18	Same as above. 3 in. clay layer, medium sand, light purple, poorly graded.	• • • • • •	SW	5,6,11,11	
		14/24						
90								

TITLE: NAVAL AIR STATION WHITING FIELD		LOG OF WELL: WHF-15-6D	BORING NO.
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: R1 PHASE 11A	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 02/5/93	COMPLTD: 02/9/93
METHOD: MUD ROTARY	CASE SIZE: 2"	SCREEN INT.: 110-120 FT.	PROTECTION LEVEL: C
TOC ELEV.: 75.14 FT.	MONITOR INST.: OVA	TOT DPTH: 122FT.	DPTH TO ∇ 35.33 FT
LOGGED BY: R.Nelson	WELL DEVELOPMENT DATE:		SITE: 15 - S.W. Landfill

DEPTH FT	LABORATORY SAMPLE ID.	RECOVERY SAMPLE	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				Continued from PAGE 2				
		14/24	1.5	SAND - light brown to purple, medium, well graded.	••••	Sw	2.7.8.9	
95		24/24	2.5	SAND - light brown, medium, well graded, wet. Same as above, fine.	••••	Sw	3.4.8.11	
100		14/24	4	SAND - light brown, fine, poorly graded, wet.		SP	25.15.15.14	
105		12/24	7	SAND - light brown to light purple, medium, poorly graded.		SP	21.16.18.19	
110		12/24	10	SAND - light brown, fine, poorly graded, wet.		SP	30.37.34.38	
115		12/24	11	SAND - light brown, fine to medium, poorly graded. Same as above, medium. Same as above, purple.		SP	21.20.18.19	
120								
125								
130								
135								

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-15-6S	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: RP-PASE 01A	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 02/6/93	COMPLTD: 02/8/93
METHOD: HSA	CASE SIZE: 2"	SCREEN INT.: 25-40 FT	PROTECTION LEVEL: C
TOC ELEV.: 74.35 FT.	MONITOR INST.: OVA	TOT DPTH: 41 FT.	DPTH TO ∇ 34.32 FT
LOGGED BY: R. Nelson	WELL DEVELOPMENT DATE:		SITE: 15 - S.W. Landfill

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY SAMPLE	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5				SEE WHF-15-6D FOR LITHOLOGIC DESCRIPTIONS.				
10								
15								
20								
25								
30								
35								
40								

TITLE: NAS Whiting Field		LOG of WELL: WHF-15-7S	BORING NO.
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: 02534.09	
CONTRACTOR: ABB Environmental Services, Inc.		DATE STARTED: 04/10/96	COMPLTD: 04/11/96
METHOD: Hollow Stem Auger	CASE SIZE: 2 inches	SCREEN INT.: 15 feet	PROTECTION LEVEL: D
TOC ELEV.: 120.18 FT.	MONITOR INST.: FID	TOT DPTH: 86FT.	DPTH TO ∇ 67.5 FT.
LOGGED BY: F. Risk	WELL DEVELOPMENT DATE: 04/10/96		SITE: 15

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
1				FINE SANDY SILT: Yellowish orange, moist, with some plant matter organics.		ML		
2								
3				CLAY: Dark brown, some silt, low plasticity, moist.		CL		
4								
5			0	CLAY: Moderate reddish brown, some silt, little sand, nonplastic, moist.				
6								
7								
8								
9								
10				SILTY CLAY: With minor percentage of sand, soft, non-plastic, moist,				
11			0	increasing sand with depth reddish brown.				
12								
13								
14								
15				SANDY SILT: Light yellow, fine sand, moist.		SM		
16								
17								
18								
19								
20				SANDY SILT: Light yellow, increasing fine sand with depth moist.				
21								
22								
23								
24								
25								
26		22/24						
27								
28								
29								
30				SILTY FINE SAND: Light yellow, increasing fine sand with depth moist.				
31								
32								
33								
34								
35								
36								
37								
38								
39								
40				SANDY SILT: Pale yellowish orange, moist.		ML		
41								
42			1					
43								
44								
45								
46								
47								
48								
49								
50				SILTY FINE SAND: Pale yellowish orange, some silt, moist.		SM		
51								
52								
53								
54								
55				Fine to medium SAND: Pale yellowish orange, some coarse sand, moist.		SW		
56								
57								
58			3					
59								
60								

TITLE: NAS Whiting Field		LOG of WELL: WHF-15-7S	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 02534.09	
CONTRACTOR: ABB Environmental Services, Inc.		DATE STARTED: 04/10/96	COMPLTD: 04/11/96
METHOD: Hollow Stem Auger	CASE SIZE: 2 inches	SCREEN INT.: 15 feet	PROTECTION LEVEL: D
TOC ELEV.: 120.18 FT.	MONITOR INST.: FID	TOT DPTH: 86FT.	DPTH TO ∇ 67.5 FT.
LOGGED BY: F. Risk	WELL DEVELOPMENT DATE: 04/10/96		SITE: 15

DEPTH F.T.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
Continued from PAGE 1								
61				MEDIUM SAND: Pale yellowish orange, some fine sand, moist.	•••••	SW		
62								
63								
64								
65			0	FINE SAND: Pale yellowish orange, some medium sand, moist.	•••••	SP		
66								
67								
68								
69								
70				FINE SAND: Light brown, some medium and coarse sand, moist.	•••••			
71								
72								
73								
74								
75				Same as above.				
76								
77			1					
78								
79								
80				MEDIUM SAND: Some fine sand, moist, light brown.	•••••			
81								
82								
83								
84				SILTY CLAY: 1 to 13 inches, stiff, moist, moderate reddish brown.	====	CL		
85				SANDY SILT: 13 to 15 inches, some sand, moist, gray to purple.	•••••	SW	9,18,20,19	
86				15 to 24 inches, medium to coarse SAND, pale yellowish orange.				
87								
88				END OF BORING AT 88 FEET BELOW LAND SURFACE.				
89								
90								
91								
92								
93								
94								
95								
96								
97								
98								
99								
100								
101								
102								
103								
104								
105								
106								
107								
108								
109								
110								
111								
112								
113								
114								
115								
116								
117								
118								
119								
120								

TITLE: NAS Whiting Field		LOG of WELL: WHF-15-71	BORING NO.
CLIENT: SOUTHNAVFACENGCOM			PROJECT NO: 02534.09
CONTRACTOR: ABB Environmental Services, Inc.		DATE STARTED: 04/11/96	COMPLTD: 04/13/96
METHOD: OVA	CASE SIZE: 2 inches	SCREEN INT.: 10 feet	PROTECTION LEVEL: D
TOC ELEV.: 119.85 FT.	MONITOR INST.: FID	TOT DPTH: 117FT.	DPTH TO ∇ FT.
LOGGED BY: F. Risk	WELL DEVELOPMENT DATE: 04/13/96		SITE: 15

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
1				FINE SANDY SILT: Yellowish orange, moist, with some plant matter organics.	•••••	SW ₅		
2					•••••			
3				CLAY: Dark brown, some silt, low plasticity, moist.	•••••			
4					•••••			
5				CLAY: Moderate reddish brown, some silt, little sand, nonplastic, moist.	•••••			
6					•••••			
7					•••••			
8					•••••			
9					•••••			
10					•••••			
11				SILTY CLAY: With minor percentage sand soft, nonplastic, moist, increasing sand with depth, reddish brown.	•••••			
12					•••••			
13					•••••			
14					•••••			
15				SANDY SILT: Light yellow, fine sand, moist.	•••••			
16					•••••			
17					•••••			
18					•••••			
19					•••••			
20				SANDY SILT: Light yellow, increasing fine sand with depth, moist.	•••••			
21					•••••			
22					•••••			
23					•••••			
24					•••••			
25					•••••			
26					•••••			
27					•••••			
28					•••••			
29					•••••			
30			0	SILTY FINE SAND: Light yellow, increasing fine sand with depth.	•••••			
31					•••••			
32					•••••			
33					•••••			
34					•••••			
35					•••••			
36					•••••			
37					•••••			
38					•••••			
39					•••••			
40				SANDY SILT: Pale yellowish orange, moist.	•••••			
41					•••••			
42					•••••			
43					•••••			
44					•••••			
45					•••••			
46					•••••			
47					•••••			
48					•••••			
49					•••••			
50				SILTY FINE SAND: Pale yellowish orange, some silt, moist.	•••••			
51					•••••			
52					•••••			
53					•••••			
54					•••••			
55				Fine to medium SAND: Pale yellowish orange, some coarse sand, moist.	•••••			
56					•••••			
57					•••••			
58					•••••			
59					•••••			
60					•••••			

TITLE: NAS Whiting Field		LOG of WELL: WHF-15-71	BORING NO.
CLIENT: SOUTHNAVFACENGCOM			PROJECT NO: 02534.09
CONTRACTOR: ABB Environmental Services, Inc.		DATE STARTED: 04/11/96	COMPLTD: 04/13/96
METHOD: OVA	CASE SIZE: 2 inches	SCREEN INT.: 10 feet	PROTECTION LEVEL: 0
TOC ELEV.: 119.85 FT.	MONITOR INST.: FID	TOT DPTH: 117FT.	DPTH TO ∇ FT.
LOGGED BY: F. Risk	WELL DEVELOPMENT DATE: 04/13/96		SITE: 15

DEPTH F.T.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
Continued from PAGE 1								
61				Medium SAND: Pale yellowish orange, some fine sand, moist.	•••••	SW		
62					•••••			
63					•••••			
64					•••••			
65				FINE SAND: Pale yellowish orange, some medium sand, moist.	•••••			
66					•••••			
67					•••••			
68					•••••			
69					•••••			
70				FINE SAND: Light brown, some medium and coarse sand moist.	•••••			
71					•••••			
72					•••••			
73					•••••			
74					•••••			
75				Same as above.	•••••			
76					•••••			
77					•••••			
78					•••••			
79					•••••			
80				MEDIUM SAND: Some fine sand, moist, light brown.	•••••			
81					•••••			
82					•••••			
83					•••••			
84				1-13 inches: SILTY CLAY, stiff, moist, moderate reddish brown.	•••••			
85		0			•••••			
86				13-15 inches: SANDY SILT, some sand, moist, gray to purple.	•••••			
87					•••••			
88				15-24 inches: Medium to coarse sand, pale yellowish orange.	•••••			
89					•••••			
90					•••••			
91					•••••			
92					•••••			
93					•••••			
94					•••••			
95					•••••			
96					•••••			
97					•••••			
98					•••••			
99					•••••			
100					•••••			
101					•••••			
102					•••••			
103					•••••			
104					•••••			
105					•••••			
106					•••••			
107					•••••			
108					•••••			
109					•••••			
110		60/2	5	Fine to medium SILTY SAND: Pale yellowish orange, some silt minor percent gravel, wet.	•••••		17,17,34,30	
111			1		•••••	ML		
112				GRAVELY SILT: Pale purple, minor percent clay, dense, wet.	•••••			
113					•••••			
114					•••••			
115					•••••			
116					•••••			
117					•••••			
118					•••••			
119					•••••			
120					•••••			

TITLE: NAS Whiting Field		LOG of WELL: WHF-15-7D	BORING NO.
AGENT: SOUTHNAVFACENCOM		PROJECT NO: 02534.09	
CONTRACTOR: ABB Environmental Services, Inc.		DATE STARTED: 04/12/96	COMPLTD: 04/13/96
METHOD: Mud Rotary	CASE SIZE: 2 inches	SCREEN INT.: 10 feet	PROTECTION LEVEL: 0
TOC ELEV.: 119.49 FT.	MONITOR INST.: FID	TOT DPTH: 146FT.	DPTH TO ∇ FT.
LOGGED BY: F. Risk	WELL DEVELOPMENT DATE: 4/13/96		SITE: 15

DEPTH F.T.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
1				FINE SANDY SILT: Yellowish orange, moist, with some plant matter organics.	•••••	SW		
2								
3				CLAY: Dark brown, some silt, low plasticity, moist.	•••••			
4								
5				CLAY: Moderate reddish brown, some silt, little sand, nonplastic, moist.	•••••			
6								
7								
8								
9								
10				SILTY CLAY: With minor percentage sand, soft, non-plastic, increasing sand with depth.	•••••			
11								
12								
13								
14								
15				SANDY SILT: Light yellow fine sand, moist.	•••••			
16								
17								
18								
19				SANDY SILT: Light yellow, increasing fine sand with depth, moist.	•••••			
20								
22								
23								
24								
25								
26								
27								
28								
29								
30		0						
31				SILTY FINE SAND: Light yellow, increasing fine SAND with depth.	•••••			
32								
33								
34								
35								
36								
37								
38								
39								
40				SANDY SILT: Pale yellowish orange, moist.	•••••			
41								
42								
43								
44								
45								
46								
47								
48								
49								
50				SILTY FINE SAND: Pale yellowish orange, some silt, moist.	•••••			
51								
52								
53								
54								
55				Fine to medium SAND: Pale yellowish orange, some coarse sand moist.	•••••			
56								
57								
58								
59								
60								

TITLE: NAS Whiting Field		LOG of WELL: WHF-15-7D	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 02534.09	
CONTRACTOR: ABB Environmental Services, Inc.		DATE STARTED: 04/12/96	COMPLTD: 04/13/96
METHOD: Mud Rotary	CASE SIZE: 2 inches	SCREEN INT.: 10 feet	PROTECTION LEVEL: D
TOC ELEV.: 119.49 FT.	MONITOR INST.: FID	TOT DPTH: 146FT.	DPTH TO ∇ FT.
LOGGED BY: F. Risk	WELL DEVELOPMENT DATE: 4/13/96		SITE: 15

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
Continued from PAGE 1								
61				MEDIUM SAND: Pale yellowish orange, some fine sand, moist.	•••••	SW		
62					•••••			
63					•••••			
64					•••••			
65				FINE SAND: Pale yellowish orange, some medium sand, moist.	•••••			
66					•••••			
67					•••••			
68					•••••			
69					•••••			
70				FINE SAND: Light brown, some medium coarse sand moist.	•••••			
71					•••••			
72					•••••			
73					•••••			
74					•••••			
75				Same as above.	•••••			
76					•••••			
77					•••••			
78					•••••			
79					•••••			
80				MEDIUM SAND: Some fine sand, moist, light brown.	•••••			
81					•••••			
82					•••••			
83					•••••			
84				1-13 inches: SILTY CLAY, stiff, moist, moderate reddish brown.	•••••			
85		0			•••••			
86				13-15 inches: SANDY SILT, some sand, moist, gray to purple.	•••••			
87					•••••			
88				15-24 inches: Medium to coarse SAND, pale yellowish orange.	•••••			
89					•••••			
90					•••••			
91					•••••			
92					•••••			
93					•••••			
94					•••••			
95					•••••			
96					•••••			
97					•••••			
98					•••••			
99					•••••			
100					•••••			
101					•••••			
102					•••••			
103					•••••			
104					•••••			
105					•••••			
106					•••••			
107					•••••			
108					•••••			
109					•••••			
110		60/2			•••••			
111					•••••			
112					•••••			
113					•••••			
114					•••••			
115					•••••			
116					•••••			
117					•••••			
118					•••••			
119					•••••			
120					•••••			

TITLE: NAS Whiting Field		LOG of WELL: WHF-15-7D	BORING NO.
AGENT: SOUTHNAVFACENCOM		PROJECT NO: 02534.09	
CONTRACTOR: ABB Environmental Services, Inc.		DATE STARTED: 04/12/96	COMPLTD: 04/13/96
METHOD: Mud Rotary	CASE SIZE: 2 inches	SCREEN INT.: 10 feet	PROTECTION LEVEL: D
TOC ELEV.: 119.49 FT.	MONITOR INST.: FID	TOT DPTH: 146FT.	DPTH TO ∇ FT.
LOGGED BY: F. Risk	WELL DEVELOPMENT DATE: 4/13/96		SITE: 15

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				Continued from PAGE 2				
121					•••••	SW		
122					•••••			
123					•••••			
124					•••••			
125					•••••			
126					•••••			
127					•••••			
128					•••••			
129					•••••			
130					•••••			
131					•••••			
132					•••••			
133					•••••			
134					•••••			
135					•••••			
136					•••••			
137					•••••			
138				Gravelly MEDIUM SAND: Yellowish orange, some silt gravel, little silt, trace clay, very dense, wet.	•••••			
139				Gravelly medium SAND: Light yellowish orange, some gravel, very dense, wet.	•••••			
140					•••••			
141					•••••			
142					•••••			
143					•••••	ML		
144				SILT: Pale yellow orange, some sand, little clay, hard, moist.	•••••	SW		
145				SAND: Light yellowish orange, some gravel, dense, wet.	•••••			
146				END OF BORING AT 145.5 FEET BELOW LAND SURFACE.	•••••			
147					•••••			
148					•••••			
149					•••••			
150					•••••			
151					•••••			
152					•••••			
153					•••••			
154					•••••			
155					•••••			
156					•••••			
157					•••••			
158					•••••			
159					•••••			
160					•••••			
161					•••••			
162					•••••			
163					•••••			
164					•••••			
165					•••••			
166					•••••			
167					•••••			
168					•••••			
169					•••••			
170					•••••			
171					•••••			
172					•••••			
173					•••••			
174					•••••			
175					•••••			
176					•••••			
177					•••••			
178					•••••			
179					•••••			
180					•••••			

TITLE: NAS Whiting Field		LOG of WELL: WHF-15-85	BORING NO.
CLIENT: SOUTHNAVFACENCOM			PROJECT NO: 02534.09
CONTRACTOR: ABB Environmental Services, Inc.		DATE STARTED: 05/23/96	COMPLTD: 05/23/96
METHOD: Mud Rotary	CASE SIZE: 2 inches	SCREEN INT.: 15 feet	PROTECTION LEVEL: D
TOC ELEV.: 80.0 FT.	MONITOR INST.: FID	TOT DPTH: 55FT.	DPTH TO ∇ 39.7 FT.
LOGGED BY: F. Risk	WELL DEVELOPMENT DATE: 05/23/96		SITE: 15

DEPTH F.T.	LABORATORY SAMPLE ID.	RECOVERY SAMPLE	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
1				FINE SAND and SILT: Yellowish brown, loose, moist.		SM		
2								
3								
4								
5				FINE SAND: Reddish brown, moist.		SP		
6								
7								
8								
9								
10								
11								
12								
13								
14								
15				MEDIUM SAND: Reddish brown, poorly sorted, moist.				
16								
17								
18								
19								
20								
21								
22								
23								
24								
25				FINE SAND: Light brown, well sorted, moist.		SM		
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								
41								
42								
43								
44								
45								
46								
47								
48								
49								
50								
51								
52								
53								
54								
55								
56								
57								
58								
59								
60								

TITLE: NAS Whiting Field		LOG of WELL: WHF-15-81	BORING NO.
CLIENT: SOUTHNAVFACEGCOM		PROJECT NO: 02534.09	
CONTRACTOR: ABB Environmental Services, Inc.		DATE STARTED: 05/10/96	COMPLTD: 05/10/96
METHOD: Mud Rotary	CASE SIZE: 2 inches	SCREEN INT.: 10 feet	PROTECTION LEVEL: 0
TOC ELEV.: 79.48 FT.	MONITOR INST.: FID	TOT DPTH: 85FT.	DPTH TO ∇ FT.
LOGGED BY: J. Beauchamp	WELL DEVELOPMENT DATE: 5/10/96		SITE: 15

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
1								
2								
3			0					
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25			0					
26								
27								
28								
29								
30								

TITLE: NAS Whiting Field		LOG of WELL: WHF-15-81	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 02534.09	
CONTRACTOR: ABB Environmental Services, Inc.		DATE STARTED: 05/10/96	COMPLTD: 05/10/96
METHOD: Mud Rotary	CASE SIZE: 2 inches	SCREEN INT.: 10 feet	PROTECTION LEVEL: D
TOC ELEV.: 79.48 FT.	MONITOR INST.: FID	TOT DPTH: 85FT.	DPTH TO ∇ FT.
LOGGED BY: J. Beauchamp	WELL DEVELOPMENT DATE: 5/10/96		SITE: 15

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
Continued from PAGE 1								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								
41			0					
42								
43								
44								
45								
46								
47								
48								
49								
50								
51								
52								
53								
54								
55								
56			0					
57								
58								
59								
60								

TITLE: NAS Whiting Field		LOG of WELL: WHF-15-81	BORING NO.
CLIENT: SOUTHNAVFACENGCOM			PROJECT NO: 02534.09
CONTRACTOR: ABB Environmental Services, Inc.		DATE STARTED: 05/10/96	COMPLTD: 05/10/96
METHOD: Mud Rotary	CASE SIZE: 2 inches	SCREEN INT.: 10 feet	PROTECTION LEVEL: D
TOC ELEV.: 79.48 FT.	MONITOR INST.: FID	TOT DPTH: 85FT.	DPTH TO ∇ FT.
LOGGED BY: J. Beauchamp	WELL DEVELOPMENT DATE: 5/10/96		SITE: 15

DEPTH F.T.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
Continued from PAGE 2								
61								
62								
63								
64								
65								
66								
67								
68								
69								
70			0					
71								
72								
73								
74								
75								
76								
77			0	SAND: Medium grained, some silt, well-graded, light brown, saturated.				
78								
79			0				20,22,34,37	
80								
81								
82								
83								
84								
85			0					
86								
87								
88								
89								
90								

TITLE: NAS Whiting Field		LOG of WELL: WHF-15-8D	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 02534.09	
CONTRACTOR: ABB Environmental Services, Inc.		DATE STARTED: 06/07/96	COMPLTD: 06/08/96
METHOD: Mud Rotary	CASE SIZE: 2 inches	SCREEN INT.: 10 Feet	PROTECTION LEVEL: 0
TOC ELEV.: 79.08 FT.	MONITOR INST.: OVA	TOT DPTH: 115FT.	DPTH TO ∇ FT.
LOGGED BY: F. Risk	WELL DEVELOPMENT DATE: 6/08/96		SITE: 15

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								
41								
42								
43								
44								
45								
46								
47								
48								
49								
50								
51								
52								
53								
54								
55								
56								
57								
58								
59								
60								

TITLE: NAS Whiting Field		LOG of WELL: WHF-15-8D	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 02534.09	
CONTRACTOR: ABB Environmental Services, Inc.		DATE STARTED: 06/07/96	COMPLTD: 06/08/96
METHOD: Mud Rotary	CASE SIZE: 2 inches	SCREEN INT.: 10 Feet	PROTECTION LEVEL: D
TOC ELEV.: 79.08 FT.	MONITOR INST.: OVA	TOT DPTH: 115FT.	DPTH TO ∇ FT.
LOGGED BY: F. Risk	WELL DEVELOPMENT DATE: 6/08/96		SITE: 15

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
Continued from PAGE 1								
61								
62								
63								
64								
65								
66								
67								
68								
69								
70								
71								
72								
73								
74								
75								
76								
77								
78								
79								
80								
81								
82								
83								
84								
85								
86								
87								
88								
89								
90								
91								
92								
93								
94								
95								
96								
97								
98								
99								
100								
101								
102								
103								
104								
105								
106								
107								
108					• • • • • •	SW		
109				Fine to very coarse SAND yellowish orange poorly sorted, subrounded, wet.				
110								
111								
112								
113								
114								
115				END OF BORING @ 115 FEET.				
116								
117								
118								
119								
120								

LITHOLOGIC LOG FOR WELL NUMBER (SITE 16)

Description	Depth (ft)	Thickness (ft)
Sand, fine to medium grained, yellow; clay, yellow.....	0 - 9.0	9.0
Clay, red, white.....	9.0 - 15.0	6.0
Sand, fine to coarse grained, white; gravel.....	15.0 - 42.0	27.0

Geraghty & Miller, Verification Study, 1986

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-16-2D	BORING NO. WHF-16-2D
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: RI PHASE IIA	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 02/09/93	COMPLTD: 03/4/93
METHOD: MUD ROT.	CASE SIZE: N/A	SCREEN INT.: N/A	PROTECTION LEVEL: D
TOC ELEV.: N/A FT.	MONITOR INST.: OVA	TOT DPTH: 282FT.	DPTH TO ∇ FT.
LOGGED BY: R. Nelson, G.K.	WELL DEVELOPMENT DATE: N/A	SITE: 16 - Wastewater Pint.	

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/8-IN	WELL DATA
5	15/24		0	SAND - light brown, fine to medium, poorly graded, dry.		SP	4,4,7,5	
10	12/24		0	SILTY SAND - reddish brown, poorly graded, dry.		SP	4,3,5,4	
15	12/24		2	SILTY SAND - reddish brown, poorly graded, trace coarse, dry.		SP	6,8,12,14	
20	16/24		1	SILTY SAND - SAA.		SP	5,6,7,9	
25	14/24		0	SAND - white to tan, very fine, poorly graded, grade to SANDY CLAY - white, yellow mottling, firm, dry.		SP	6,9,8,5	
30	14/24		0	SAND - off-white, fine, poorly graded, dry.		SP	9,11,12,14	
35	16/24		0	SAND - SAA, saturated.		SP	6,6,7,9	
40			2			SP	4,5,9,16	

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-16-2D	BORING NO. WHF-16-2D
CLIENT: SOUTHNAVFACEGCOM		PROJECT NO: RI PHASE IIA	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 02/09/93	COMPLTD: 03/4/93
METHOD: MUD ROT.	CASE SIZE: N/A	SCREEN INT.: N/A	PROTECTION LEVEL: D
TOC ELEV.: N/A FT.	MONITOR INST.: OVA	TOT DPTH: 282FT.	DPTH TO γ FT.
LOGGED BY: R. Nelson, G.K.	WELL DEVELOPMENT DATE: N/A		SITE: 16 - Wastewater Pint.

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				Continued from PAGE 1				
		20/24		SAND - light brown, fine, poorly graded, saturated.		SP		
				SAND - white, fine, poorly graded, saturated.				
45		22/24	9	SAND - light brown to tan, fine to medium, poorly graded, saturated.		SP	15,16,11,9	
50		20/24	6	SAND - off-white, fine to medium, poorly graded, trace silt, saturated.		SP	6,7,7,11	
55		16/24	10	SAND - off-white to light pink, fine to medium, poorly graded, saturated.		SP	7,8,9,11	
60		16/24	2	SAND - SAA.		SP	16,12,12,14	
65		18/24	7	SAND - purple, medium, poorly graded, trace silt, saturated.		SP	dropped	
70		18/24	11	SAND - off-white, fine, poorly graded, saturated.		SP	13,15,9,6	
75		12/24	26	SAND - light brown, fine, poorly graded, saturated.		SP	13,15,15,15	
80			0			SW	4,5,8,12	

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-16-20	BORING NO. WHF-16-20
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: RI PHASE IIA	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 02/09/93	COMPLTD: 03/4/93
METHOD: MUD ROT.	CASE SIZE: N/A	SCREEN INT.: N/A	PROTECTION LEVEL: D
TOC ELEV.: N/A FT.	MONITOR INST.: OVA	TOT DPTH: 262FT.	DPTH TO ∇ FT.
LOGGED BY: R. Nelson, G.K.	WELL DEVELOPMENT DATE: N/A	SITE: 16 - Wastewater Pint.	

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/8-IN	WELL DATA
			Continued from PAGE 2				
	12/24		SAND - tan to brown, medium, well graded, saturated.	•••••	SW		
85	12/24	2.5	SAND - light brown, fine to coarse, poorly graded, saturated.		SP	14,12,16,15	
90	14/24	70	SAND - SAA, purple.	•••••	SP	10,14,21,28	
95	14/24	19	SAND - light brown to tan, fine to medium, trace coarse poorly graded.		SP	12,16	
100	16/24	5.5	SAND - SAA, purple.		SP	16,19,22,17	
105	16/24	4	SAND - light brown, fine to medium, poorly graded, saturated.		SP	dropped	
110	18/24	8.5			SP	19,21,26,28	
115	12/24	4	SAND - SAA.		SP	39,41,53,60	
120		N/A			SP	33,42,51,58	

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-16-2D	BORING NO. WHF-16-2D
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: RI PHASE IIA	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 02/09/93	COMPLTD: 03/4/93
METHOD: MUD ROT.	CASE SIZE: N/A	SCREEN INT.: N/A	PROTECTION LEVEL: D
TOC ELEV.: N/A FT.	MONITOR INST.: OVA	TOT DPTH: 282FT.	DPTH TO ∇ FT.
LOGGED BY: R. Nelson, G.K.	WELL DEVELOPMENT DATE: N/A		SITE: 16 - Wastewater Pint.

DEPTH F.T.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
		12/24		SAND - light brown with 1" purple lense, medium, poorly graded, saturated.		SP		
125		20/24	N/A	SILTY SAND - fine to medium, poorly graded, soft.		SM	11,11,15,12	
130		24/24	N/A	SILTY SAND - mustard yellow, fine, soft, saturated.		SM	1,2,1,1	
			N/A	SILTY SAND - SAA.		SM		dropped
135		24/24	N/A	SILTY SAND -SAA, gray.		SM		dropped
140		24/24	0	SAND - SAA.		CH	7,12,13,14	
			N/A	CLAY - gray, moderately stiff.				20,18,23,24
		12/12	0	CLAY - gray, moderately stiff.				9,5,5,7
145		22/24	0	CLAY (3") - SAA. SANDY SILT - yellowish orange.				9,10,9,8
		23/24	0	SAND (6") - yellowish orange, fine to coarse, some silt. SANDY CLAY (8") - gray, moderately stiff.				13,12,11,12
		22/24	0	CLAY (11") - gray, moderately stiff.				14,14,15,16
150				CLAY - SAA, high plasticity.				
		24/24	0	CLAY - SAA.		CH		6,7,8,15
155								
160		24/24	0	CLAY - SAA.		CH		14,12,11,14

Continued from PAGE 3

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-16-2D	BORING NO. WHF-16-2D
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: RI PHASE IIA	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 02/09/93	COMPLTD: 03/4/93
METHOD: MUD ROT.	CASE SIZE: N/A	SCREEN INT.: N/A	PROTECTION LEVEL: D
TOC ELEV.: N/A FT.	MONITOR INST.: OVA	TOT DPTH: 262FT.	DPTH TO ∇ FT.
LOGGED BY: R. Neison, G.K.	WELL DEVELOPMENT DATE: N/A		SITE: 16 - Wastewater Pint.

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY SAMPLE	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				Continued from PAGE 4				
		24/24		CLAY - SAA.		CH	12,12,12,16	
165		24/24	0			CH		
				CLAY - SAA, some fine sand.		CH	11,10,18,24	
170		24/24	0			CH		
				CLAY (3") - gray, moderately stiff, some sand. SAND (9") - gray, fine to coarse, poorly graded, very dense, saturated.		CH	60,85,refusi	
175		14/24	0			CH		
				SANDY CLAY - gray, low plasticity.		CL	24,26,22,15	
180		24/24	0			CL		
				SANDY SILT - olive gray, very fine, poorly graded, moderately dense, moist.		ML	29,41,46,52	
185		12/24	0			ML		
				SILT (8") - olive green, dense, slightly moist. SAND (3") - light olive gray, very fine, poorly graded, very dense, moist. SANDY SILT (3") - olive gray, dense, moist.		ML	57,59,55,70	
190		12/24	0			ML		
				SAND - olive gray, fine, poorly graded, very dense, some silt, saturated.		SP	61,refusal	
195		08/24	0			SP		
				SANDY SILT - olive green to gray, very dense, shell fragments, moist.		ML	60,82,96,ref	
200		24/24	0			ML		

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-16-2D	BORING NO. WHF-16-2D
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: RI PHASE IIA	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 02/09/93	COMPLTD: 03/4/93
METHOD: MUD ROT.	CASE SIZE: N/A	SCREEN INT.: N/A	PROTECTION LEVEL: D
TOC ELEV.: N/A FT.	MONITOR INST.: OVA	TOT DPTH: 262FT.	DPTH TO \bar{v} FT.
LOGGED BY: R. Nelson, G.K.	WELL DEVELOPMENT DATE: N/A		SITE: 16 - Wastewater Pint.

DEPTH FT	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
						ML		
205	12/24		0	SANDY SILT - SAA, saturated.		ML	86.75.ref	
210	24/24		0	CLAY - dark gray, stiff, high plasticity, dry.		CH	22.22.24.31	
215	24/24		0	CLAY - SAA.		CH	18.20.29.37	
220	24/24		0	CLAY - SAA.		CH	18.20.28.43	
230	24/24		0	SAND (6") - gray, fine to medium, poorly graded, saturated. CLAY (1.5') - gray, firm, plastic.		CH	33.31.48.ref	
235	24/24		0	CLAY - gray, moderately stiff, plastic.		CH	12.17.22.35	
240								

Continued from PAGE 5

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-16-2D	BORING NO. WHF-16-2D
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: RI PHASE IIA	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 02/09/93	COMPLTD: 03/4/93
METHOD: MUD ROT.	CASE SIZE: N/A	SCREEN INT.: N/A	PROTECTION LEVEL: 0
TOC ELEV.: N/A FT.	MONITOR INST.: OVA	TOT DPTH: 262FT.	DPTH TO ∇ FT.
LOGGED BY: R. Nelson, G.K.	WELL DEVELOPMENT DATE: N/A		SITE: 16 - Wastewater Pint.

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
Continued from PAGE 6								
245		24/24	0	CLAY - SAA.		CH	37.40,35.35	
255		24/24	3	SILTY SAND - gray, dense, trace coarse, moist.		SM	52.50,refusl	
260		12/24	N/A	SANDY SILT - gray, fine, poorly graded, shell fragments, saturated.		ML	23.35,53,ref	
265								
270								
275								
280								

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-16-21	BORING NO.
CLIENT: SOUTHNAVFACENCOM			PROJECT NO: R1 PHASE IIA
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 02/18/93	COMPLTD: 02/18/93
METHOD: MUD ROTARY	CASE SIZE: 2"	SCREEN INT.: 117-127 FT	PROTECTION LEVEL: C
TOC ELEV.: 80.71 FT.	MONITOR INST.: OVA	TOT DPTH: 127.5FT.	DPTH TO ∇ 36.52 FT.
LOGGED BY: R. Nelson	WELL DEVELOPMENT DATE:		SITE: 16 - Open Disposal/Burn Area.

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5				SEE WHF-16-20 FOR FULL LITHOLOGIC DATA.				
10								
15								
20								
25								
30								
35								
40								
45								
50								
55								
60								
65								

TITLE: NAVAL AIR STATION WHITING FIELD

LOG of WELL: WHF-16-2:

BORING NO.

CLIENT: SOUTHNAVFACENCOM

PROJECT NO: R: PHASE 11A

CONTRACTOR: Groundwater Protection Inc.

DATE STARTED: 02/18/93

COMPLTD: 02/18/93

METHOD: MUD ROTARY

CASE SIZE: 2"

SCREEN INT.: 117-127 FT

PROTECTION LEVEL: D

TOC ELEV.: 80.71 FT.

MONITOR INST.: OVA

TOT DPTH: 127.5FT

DPTH TO § 36.52 FT.

LOGGED BY: R. Nelson

WELL DEVELOPMENT DATE:

SITE: 16 - Open Disposal/Burn Area

DEPTH FT	LABORATORY SAMPLE ID.	RECOVERY SAMPLE	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
Continued from PAGE 1								
70								
75								
80								
90								
95								
100								
105								
110								
115		06/24	N/A	SAND - light brown, medium, poorly graded, saturated, purple lamina.		SP	12.18.18.37	
120		08/24	N/A	SAND - SAA.		SP	38.30.60.48	
125		16/24	N/A	SAND - tan, medium, poorly graded, trace gravel, saturated, rounded.		SP	20.20.20.24	
130								

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-16-25	BORING NO.
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: R1 PHASE 11A	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 02/27/93	COMPLTD: 02/27/93
METHOD: HSA	CASE SIZE: 2"	SCREEN INT.: 31-46 FT	PROTECTION LEVEL: 0
TOC ELEV.: 83.75 FT.	MONITOR INST.: OVA	TOT DPTH: 46 FT	DPTH TO 7 39.41 FT
LOGGED BY: R. Nelson	WELL DEVELOPMENT DATE:	SITE: 16 - Coen Disposal Burn Area	

DEPTH F	LABORATORY SAMPLE ID	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5				SEE WHF-16-20 FOR FULL LITHOLOGIC DATA.				
30	20/24	0		SAND - white, very fine to fine, poorly graded, dry.		SP	3,3,5,8	
35	20/24	0		SAND - SAA, trace silt.		SP	7,4,6,11	
40	22/24	0		SAND - white, very fine to coarse, poorly graded, saturated.	•••	SW	5,3,4,7	
45								

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-16-3D	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: RI PHASE 11A	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 01/22/93	COMPLTD: 01/26/93
METHOD: MUD ROTARY	CASE SIZE: 2"	SCREEN INT.: 105-115 FT	PROTECTION LEVEL: 0
TOC ELEV.: 51.47 FT.	MONITOR INST.: OVA	TOT DPTH: 115FT.	DPTH TO ∇ 10.32 FT.
LOGGED BY: W. Colby-George	WELL DEVELOPMENT DATE:		SITE: 16 - S.W. Landfill

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5					SAND - light brown, well sorted.		SP		
10					SAND - some fines, wet.		SP		
15					SAND - red brown.		SP		
20					SAND - SAA		SP		
25					SAND - yellow to tan.		SP		
30					SAND - yellow to purple, fine.		SP		
35					SAA		SP		
40							SP		

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-16-3D	BORING NO.
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: RI PHASE IIA	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 01/22/93	COMPLTD: 01/26/93
METHOD: MUD ROTARY	CASE SIZE: 2"	SCREEN INT.: 105-115 FT	PROTECTION LEVEL: 0
TOC ELEV.: 51.47 FT.	MONITOR INST.: OVA	TOT DPTH: 115FT.	DPTH TO ∇ 10.32 FT.
LOGGED BY: W. Colby-George	WELL DEVELOPMENT DATE:		SITE: 18 - S.W. Landfill

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				Continued from PAGE 1				
				SAA		SP		
45				SAND - white, medium.		SP		
50				SAND - yellow brown, some fine, trace gravel.		SP		
55				SAA		SP		
60				SAA		SP		
65				SAA		SP		
70				SAA		SP		
75				SAND - fine sand, purple gravel.		SP		
80						SP		

TITLE: NAVAL AIR STATION WHITING FIELD

LOG of WELL: WHF-16-3D

BORING NO.

CLIENT: SOUTHNAVFACENCOM

PROJECT NO: RI PHASE IIA

CONTRACTOR: Groundwater Protection Inc.

DATE STARTED: 01/22/93

COMPLTD: 01/26/93

METHOD: MUD ROTARY

CASE SIZE: 2"

SCREEN INT.: 105-115 FT

PROTECTION LEVEL: C

TOC ELEV.: 51.47 FT.

MONITOR INST.: OVA

TOT DPTH: 115FT.

DPTH TO ϕ 10.32 FT

LOGGED BY: W. Colby-George

WELL DEVELOPMENT DATE:

SITE: 16 - S.W. Landfill

DEPTH FT	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
					Continued from PAGE 2				
					SAND - yellow, medium to coarse; trace clay.		SP		
85					SAA		SP		
90					SAA		SP		
95					SILTY SAND - gray, clay 6"		SM		
100					SAA, no clay.		SM		
105					SAA		SM		
110					SILTY SAND - gray, clay, very plastic.		SM		
115							SP		
120									

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-16-31	BORING NO.
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: R1 PHASE IIA	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 01/26/93	COMPLTD: 01/26/93
METHOD: MUD ROTARY	CASE SIZE: 2"	SCREEN INT.: 45-50 FT	PROTECTION LEVEL: D
TOC ELEV.: 51.54 FT.	MONITOR INST.: OVA	TOT DPTH: 22FT.	DPTH TO ∇ 13.04 FT.
LOGGED BY: W. Colby-George	WELL DEVELOPMENT DATE:	SITE: 16 - S.W. Landfill	

DEPTH FT	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5				SEE WHF-16-3D FOR LITHOLOGICAL DESCRIPTION.				
10								
15								
20								
25								
30								
35								
40								
45								
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55								
60								

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-16-3D	BORING NO.
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: R1 PHASE IIA	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 01/25/93	COMPLTD: 01/25/93
METHOD: MUD ROTARY	CASE SIZE: 2"	SCREEN INT.: 75-80 FT	PROTECTION LEVEL: C
TOC ELEV.: 51.31 FT.	MONITOR INST.: OVA	TOT DPTH: 22 FT	DPTH TO 13.35 FT
LOGGED BY: W. Colby-George	WELL DEVELOPMENT DATE:	SITE: 16 - S w Landfill	

DEPTH FT	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5				SEE WHF-16-3D FOR LITHOLOGICAL DESCRIPTION.				
10								
15								
20								
25								
30								
35								
40								

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-16-3S	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: RI PHASE IIA	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 01/22/93	COMPLTD: 01/22/93
METHOD: HSA	CASE SIZE: 2"	SCREEN INT.: 5-20 FT	PROTECTION LEVEL: 0
OC ELEV.: 51.75 FT.	MONITOR INST.: OVA	TOT DPTH: 22FT.	DPTH TO ∇ 13.65 FT.
LOGGED BY: W. Colby-George	WELL DEVELOPMENT DATE:	SITE: 16 - S.W. Landfill	

FT	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
					SEE WHF-16-3D FOR LITHOLOGICAL DESCRIPTION.		SP		
							SP		
							SP		
							SP		

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-16-40	BORING NO. N/A
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: RI PHASE IIA	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 02/02/93	COMPLTD: 02/18/93
METHOD: MUD ROT.	CASE SIZE: 8" & 2"	SCREEN INT.: 109-119 FT	PROTECTION LEVEL: 0
TOC ELEV.: 52.95 FT.	MONITOR INST.: OVA	TOT DPTH: 121FT.	DPTH TO ∇ 14.18 FT.
LOGGED BY: M. Alvarez	WELL DEVELOPMENT DATE:		SITE: 16 - Wastewater Pit.

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5	18/24	0		SILTY SAND - Light brown, poorly graded, slightly plastic, loose, moist.		SM	3.5,7,18	
10	22/24	0		Same As Above, yellowish brown, 1 in. clay lense.		SM		
15	22/24	0		SAND - tan to reddish brown, fine to medium, 2" layer of sandy silt, loose, and wet.		SP		
20	10/24	< 1		SAND - tan, fine, poorly graded, loose, wet.		SP		
25	20/24	5		SAND - tan, fine to coarse, little fine gravel, trace silt, well graded, loose, wet.		SW		
30	04/24	1		SAND - tan, coarse, loose, poorly graded, wet.		SP		
35	20/24	20		SAND - tan, coarse, some medium to fine sand, well graded, wet.		SW		
40	12/24	3		Same As Above.		SW		

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-16-4D	BORING NO. N/A
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: RI PHASE IIA	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 02/02/93	COMPLTD: 02/18/93
METHOD: MUD ROT.	CASE SIZE: 8" & 2"	SCREEN INT.: 109-119 FT	PROTECTION LEVEL: D
TOC ELEV.: 52.95 FT.	MONITOR INST.: OVA	TOT DPTH: 121FT.	DPTH TO ∇ 14.18 FT.
LOGGED BY: M. Alvarez	WELL DEVELOPMENT DATE:	SITE: 16 - Wastewater Pit.	

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
Continued from PAGE 1								
46		12/24	2	SAND - purple to yellow, fine, trace silt, poorly graded, wet.		SP		
51		08/24	2.5	SAND - pinkish tan, fine to medium, poorly graded, wet.		SP		
56		08/24	2.5	Same As Above.		SP		
61		08/24	5	SAND - tan to purple, fine to coarse, with shell fragments.		SP		
66		08/24	0	CLAY - grey and red mottled firm, plastic.		CL		
		24/24	0	CLAY - grey, lenses of purple and orange very fine sand, firm, very plastic.				
71		08/24	< 1	SAND - light tan, fine, poorly graded, trace silt, wet.		SP	3,5,4,3	
76		20/24	---	CLAY - light tan, low plasticity, sharp contact at 74 ft. to SAND, moderate reddish brown, fine to medium, poorly graded.		CL/SP	1,1,2,4	
81		18/24	---	SAND - yellowish orange, fine to some medium, poorly graded, wet.		SP	11,22,24,27	

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-16-4D	BORING NO. N/A
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: RI PHASE IIA	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 02/02/93	COMPLTD: 02/18/93
METHOD: MUD ROT.	CASE SIZE: 6" & 2"	SCREEN INT.: 109-119 FT	PROTECTION LEVEL: 0
TOC ELEV: 52.95 FT.	MONITOR INST.: OVA	TOT DPTH: 121 FT.	DPTH TO \bar{g} 14.16 FT.
LOGGED BY: M. Alvarez	WELL DEVELOPMENT DATE:		SITE: 16 - Wastewater PII.

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				Continued from PAGE 2				
		12/24	---	SAND - purple to brown, fine to medium, poorly graded, wet.		SP	4,8,10,14	
87		24/24	0	SAND - tan to purple, fine, poorly graded.		SP	15,26,22,18	
92		22/24	0	SAND - tan to greyish brown, fine, poorly graded, wet, some coarse at 90 ft.		SP	14,18,18,15	
97		18/24	2	SAND - tan to purple, fine, poorly graded, wet.		SP	13,23,22,24	
102		23/24	2	SAND - tan to yellowish orange, fine, poorly graded, wet, some coarse.		SP	13,17,27,29	
107		06/24	0	Same As Above.		SP	5,4,3,3	
112		20/24	---	SAND - greyish purple, yellow bands, fine, poorly graded, wet.		SP		
117		07/24	---	SAND - yellowish orange, fine to medium, poorly sorted to 119 ft., over 3 in. of purple angular gravel, over 9 in. of CLAY, grey, tight, highly plastic, stiff.		CL		DROP
122								

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-16-411	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: RI PHASE IIA	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 02/04/93	COMPLTD: 02/05/93
METHOD: MUD ROTARY	CASE SIZE: 2"	SCREEN INT.: 50-60	PROTECTION LEVEL: D
TOC ELEV.: 53.06 FT.	MONITOR INST.: OVA	TOT DPTH: 60.5FT.	DPH TO \bar{z} : 14.19 FT
LOGGED BY: G. Kanchibhatia	WELL DEVELOPMENT DATE:		SITE: 16 - S.W. LANCH III

DEPTH FT	LABORATORY SAMPLE ID	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5				PLEASE REFER TO 16-40 FOR LITHOLOGIC DATA				
10								
15								
20								
25								
30								
35								
40								
45								
50								
55								
60		24/24	N/A	CLAY - gray, red to yellow lenses, very fine sand. firm, moderately plastic.		CL	2.2.4.8	
65								

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-16-4S	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: RI PHASE IIA	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 02/03/93	COMPLTD: 02/04/93
METHOD: HSA	CASE SIZE: 2"	SCREEN INT.: 5-20 FT.	PROTECTION LEVEL: D
TOC ELEV.: 54.92 FT.	MONITOR INST.: OVA	TOT DPTH: 21FT.	DPTH TO ∇ 16.66 FT.
LOGGED BY: N. Haglin	WELL DEVELOPMENT DATE:		SITE: 16 - Open Disposal/Burn Area

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
0				SILTY SAND - fine, ash, glass, and metal.			6.9,12,14	
5		18/24		SILTY SAND - reddish brown, fine, poorly graded with a 2" lens of light grey sandy clay at 5 ft. bls. moist.		SM	15,17,20,24	
10		12/24		Same as above, grey silty lenses at depth.		SM	7,16,17,15	
15		22/24		Same as above, tan to reddish brown, saturated.		SM	2,4,5,7	

TITLE: NAVAL AIR STATION WHITING FIELD		LOG of WELL: WHF-16-5	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: RI PHASE IIA	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 7/27/93	COMPLTD: 7/27/93
METHOD: HSA	CASE SIZE: 2"	SCREEN INT.: 0-10 FT	PROTECTION LEVEL: 0
TOC ELEV.: FT.	MONITOR INST.: OVA	TOT DPTH: 10FT.	DPTH TO \bar{g} 1.2 FT.
LOGGED BY: S. Consalvi	WELL DEVELOPMENT DATE:		SITE: 16 Flood plain

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY SAMPLE	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5				<p>SAMPLES WERE NOT TAKEN DURING INSTALLATION OF THIS WELL. IT IS LOCATED IN THE FLOOD PLAIN AND WAS INSTALLED BY HAND.</p>				
10								
15								
20								
25								
30								
35								

TITLE: NAS Whiting Field		LOG of WELL: WHF-1466-6	BORING NO. SFF-SB-42
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: 7518-40	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 3/25/92	COMPLTD: 3/25/92
METHOD: 4.25" HSA	CASE SIZE: 4 inches	SCREEN INT.: 115-130 FT	PROTECTION LEVEL: D
TOC ELEV.: 173.09 FT.	MONITOR INST.: OVA	TOT DPTH: 131FT.	DPTH TO ∇ 112 FT.
LOGGED BY: N. Pagano	WELL DEVELOPMENT DATE:	SITE: 1466. South Fuel Farm	

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5		1.8/2	0.0	SAND: Red and dark brown, fine- to medium-grained, trace clay.	---	SC	5.5,5.5	POSTHOLE
10		1.0/2	0.0	SAND: Red, fine- to medium-grained, trace clay.	---	SC	1.2,2.5	
15		1.8/2	0.0				3.3,3.3	
20		1.5/2	0.0	SAND: Red, very fine- to fine-grained.		SP	6.6,7.8	
25		2.0/2	0.0	SAND: Red to white, fine- to medium-grained.		SP	8.9,14,14	
30		2.0/2	0.0	SAND: Red and white striped, very fine-grained, silt.	///	SM	14,14,16,16	
35		2.0/2	0.0	SAND: Red and white striped, very fine-grained, silt.	///	SM	14,16,19,20	
40		1.8/2	0.0	SAND: White and pink, very fine-grained, well-sorted.		SP	16,18,22,23	
45		1.8/2	0.0	SAND: White and beige, very fine-grained, well-sorted.		SP	15,16,20,20	
50		1.7/2	2.0	SAND: White with red stripes, medium-grained, well-sorted.		SP	10,10,12,16	
55						SP		

TITLE: NAS Whiting Field		LOG of WELL: WHF-1466-6	BORING NO. SFF-SB-42
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: 7518-40	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 3/25/92	COMPLTD: 3/25/92
METHOD: 4.25" HSA	CASE SIZE: 4 inches	SCREEN INT.: 115-130 FT	PROTECTION LEVEL: D
TOC ELEV: 173.09 FT.	MONITOR INST.: OVA	TOT DPTH: 131FT.	DPTH TO ∇ 112 FT.
LOGGED BY: N. Pagano	WELL DEVELOPMENT DATE:		SITE: 1466, South Fuel Farm

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
Continued from PAGE 1								
60		1.7/2	3.0	SAND: White with red stripes, medium-grained, some coarse grains.		SP	14,14,16,15	
65		1.7/2	2.0	SAND: White with thin stripes of red and black, fine- to medium- grained.		SP	10,12,12,14	
70		1.6/2	5.0	SAND: White and red, medium-grained with some small cobbles.		SP	12,15,15,19	
75		1.5/2	1.0	SAND: White with gold, medium- to coarse-grained.	•••	SW	16,17,24,24	
80		2.0/2	0.0	SAND: Red, gold, beige, very fine-grained, silt and clay, mottled.	/ / /	SM	Wt. of Rod	
85		2.0/2	0.0	SAND: Red, gold, grey, fine-grained, silt and clay, mottled.	/ / /	SM	5,6,7,8	
90		2.0/2	0.0	SAND: White with gold stripes, very fine-grained grading to medium grained.		SP	29,32,36,36	
95		2.0/2	0.0	SAND: Beige with gold and red stripes, very fine-grained.		SP	20,22,22,24	
100		1.8/2	0.0	SAND: Beige, medium-grained, well-sorted.		SP	-22,34,32	
105		1.8/2	0.0	SAND: Very fine- to coarse-grained, 2" clayey lens.	•••	SW	-22,38,50	
110		2.0/2	1.0	SAND: Beige, very fine- to medium-grained.	•••	SW	50,R	

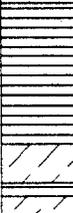
TITLE: NAS Whiting Field		LOG of WELL: WHF-1466-6	BORING NO. SFF-SB-42
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: 7518-40	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 3/25/92	COMPLTD: 3/25/92
METHOD: 4.25" HSA	CASE SIZE: 4 inches	SCREEN INT.: 115-130 FT	PROTECTION LEVEL: D
TOC ELEV: 173.09 FT.	MONITOR INST.: OVA	TOT DPTH: 131FT.	DPTH TO ∇ 112 FT.
LOGGED BY: N. Pagano	WELL DEVELOPMENT DATE:		SITE: 1466. South Fuel Farm

DEPTH F.T.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
Continued from PAGE 2								
		2.0/2	0.0	SAND: Beige with red stripes, very fine- to medium-grained.	• • • • • •	SW	36,48,48,50	
115		2.0/2	1.0	SAND: Beige, medium- to coarse-grained.	• • • • • •	SW	-,27,29,25	
120		2.0/2	3.0	SAND: Beige, gold, medium- to very coarse-grained, many large cobbles, moist.	• • • • • •	SW	-,20,25,33	
125		2.0/2	2.0	SAND: White with gold and red stripes, fine-grained, well-sorted, saturated.		SP	-, -,20,19	
130		2.0/2	8.0	SAND: White, medium- to coarse-grained, saturated.	• • • • • •	SW	17,20,29,33	
135		2.0/2	1.0				9,10,12,12	
140								
145								
150								
155								
160								
165								

TITLE: NAS Whiting Field		LOG of WELL: WHF-1466-7	BORING NO. SFF-SB-43
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: 7518-40	
CONTRACTOR: Groundwater Protection Inc.		DATE STARTED: 3/26/92	COMPLTD: 3/26/92
METHOD: 4.25" HSA	CASE SIZE: 4 inches	SCREEN INT.: 115-130 FT	PROTECTION LEVEL: 0
TOC ELEV.: 172.26 FT.	MONITOR INST.: OVA	TOT DPTH: 131FT.	DPTH TO 8 FT.
LOGGED BY: N. Pagano	WELL DEVELOPMENT DATE:		SITE: 1466, South Fuel Farm

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5		1.7/2	0.0	CLAY: Orange-red to red, very sandy grading to sand.	---	SC		POSTHOLE
10		1.7/2	0.0	SANDY CLAY: Red, very sandy grading to sand.	---	SC		
15		1.0/2	0.0					
20		1.0/2	0.0	SAND: Orange-red, medium- to coarse-grained, poorly sorted.	•••	SW		
25		1.0/2	0.0	SAND: White, some orange, coarse-grained, moderately well sorted.	•••	SW		
30		1.3/2	0.0	SAND: White, pink, orange, medium- to coarse-grained, poorly sorted, 6" of stiff clay at bottom of spoon.	•••	SW		
35		1.0/2	0.0	CLAY: Gray to pinkish gray, stiff.				
40		1.0/2	0.0	SAND: White, medium-grained, moderately well sorted.		SP		
45		1.2/2	0.0					
50		1.4/2	0.0	SAND: Light yellow to white with pink streaks, medium- to coarse- grained, some gravel, poorly sorted.	•••	SW		
55						SP		

TITLE: NAS Whiting Field		LOG of WELL: WHF-16-6S	BORING NO.
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: 02534.09	
CONTRACTOR: ABB Environmental Services		DATE STARTED: 04/26/96	COMPLTD: 04/26/96
METHOD: Hollow Stem Auger	CASE SIZE: 2 inches	SCREEN INT.: 15 feet	PROTECTION LEVEL: C
TOC ELEV.: 56.57 FT.	MONITOR INST.: OVA	TOT DPTH: 25FT.	DPTH TO ∇ FT.
LOGGED BY: J. Beauchamp	WELL DEVELOPMENT DATE: 4/26/96		SITE: 16

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
1				Fine SAND, some silt, moist, light orange.		SP		
2								
3				Silty fine SAND, light orange, damp.				
4								
5								
6								
7				CLAYEY SILT, wet, dark gray.		ML		
8								
9								
10								
11								
12				SILTY CLAY, some silt, wet, moderate gray.		CL		
13								
14								
15			0	As above, moist, light gray.		ML	7,21,15,12	
16				SILT, some clay, loose, moist, light gray.		CL		
17				CLAY, some silt, dry, light gray.		SM		
18				Fine SAND, some silt, moist, light gray.				
19				Fine SAND, some silt, moist, greenish orange.				
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

TITLE: NAS Whiting Field		LOG of WELL: WHF-16-6I	BORING NO.
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: 02534.09	
CONTRACTOR: ABB Environmental Services, Inc.		DATE STARTED: 04/01/96	COMPLTD: 04/01/96
METHOD: Mud Rotary	CASE SIZE: 2 inches	SCREEN INT.: 10 feet	PROTECTION LEVEL: 0
TOC ELEV.: 56.77 FT.	MONITOR INST.: FID	TOT DPTH: 60FT.	DPTH TO ∇ FT.
LOGGED BY: F. Rizk	WELL DEVELOPMENT DATE:		SITE: 16

DEPTH F.T.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
1				0-2.5 Feet: Fine SAND, light orange brown, wet, little or no fines, poorly graded.		SP		
2								
3				Not logged.				
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

TITLE: NAS Whiting Field		LOG of WELL: WHF-16-61	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 02534.09	
CONTRACTOR: ABB Environmental Services, Inc.		DATE STARTED: 04/01/96	COMPLTD: 04/01/96
METHOD: Mud Rotary	CASE SIZE: 2 inches	SCREEN INT.: 10 feet	PROTECTION LEVEL: D
TOC ELEV.: 56.77 FT.	MONITOR INST.: FID	TOT DPTH: 60FT.	DPTH TO ∇ FT.
LOGGED BY: F. Rizk	WELL DEVELOPMENT DATE:		SITE: 16

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				Continued from PAGE 1				
31						SP		
32								
33								
34								
35								
36								
37								
38								
39								
40								
41								
42								
43								
44								
45								
46								
47								
48								
49								
50								
51								
52								
53								
54			0	Coarse to fine SAND, well graded, minor pebbles	•••	SW	12,12,12	
55		0		Silty CLAY, gray, with pebbles, low plasticity.	•••			
56				Gravelly SAND, coarse to fine, light orange to red brown.	•••			
57								
58								
59								
60								

TITLE: NAS Whiting Field		LOG of WELL: WHF-16-7S	BORING NO.
CLIENT: SOUTHNAVFACENCOM		PROJECT NO: 02534.09	
CONTRACTOR: ABB Environmental Services, Inc.		DATE STARTED: 04/09/96	COMPLTD: 04/09/96
METHOD: Hollow Stem Auger	CASE SIZE: 2 inches	SCREEN INT.: 10 feet	PROTECTION LEVEL: D
TOC ELEV.: 38.27 FT.	MONITOR INST.: FID	TOT DPTH: 15FT.	DPTH TO ∇ FT.
LOGGED BY: F. Risk	WELL DEVELOPMENT DATE: 4/09/96		SITE: 16

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
1				Medium SAND, moderately sorted, some silt, wet, yellowish-orange.		SP		
2								
3								
4								
5				Medium SAND, poorly sorted, some silt, wet, light yellowish orange.			1,1,1	
6								
7				Fine SAND, poorly sorted, wet, light yellowish orange.		SM		
8								
9								
10				Fine SAND, well sorted, some silt, wet, dark gray.				
11								
12								
13				Note: Natural soil used as sand pack.				
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

TITLE: NAS Whiting Field		LOG of WELL: WHF-16-71	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 02534.09	
CONTRACTOR: ABB Environmental Services, Inc.		DATE STARTED: 04/25/96	COMPLTD: 04/25/96
METHOD: Hollow Stem Auger	CASE SIZE: 2 inches	SCREEN INT.: 10 feet	PROTECTION LEVEL: D
TOC ELEV.: 38.17 FT.	MONITOR INST.: FID	TOT DPTH: 45FT.	DPTH TO ∇ FT.
LOGGED BY: F. Risk	WELL DEVELOPMENT DATE: 4/09/96		SITE: 16

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
1				Fine SAND, pale-yellowish brown, poorly graded, no organics.		SM		
2		0/0						
3								
4								
5				Fine SAND, poorly graded, brownish/black, no organics.				
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

TITLE: NAS Whiting Field		LOG of WELL: WHF-16-71	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 02534.09	
CONTRACTOR: ABB Environmental Services, Inc.		DATE STARTED: 04/25/96	COMPLTD: 04/25/96
METHOD: Hollow Stem Auger	CASE SIZE: 2 inches	SCREEN INT.: 10 feet	PROTECTION LEVEL: D
TOC ELEV.: 38.17 FT.	MONITOR INST.: FID	TOT DPTH: 45FT.	DPTH TO ∇ FT.
LOGGED BY: F. Risk	WELL DEVELOPMENT DATE: 4/09/96		SITE: 16

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
Continued from PAGE 1									
31							SM		
32									
33									
34									
35									
36							SP	12,12,12	
37					Medium SAND, grayish orange, saturated.				
38									
39									
40									
41									
42									
43									
44									
45					Boring terminated @ 45 feet below land surface.				
46									
47									
48									
49									
50									
51									
52									
53									
54									
55									
56									
57									
58									
59									
60									

TITLE: NAS Whiting Field		LOG of WELL: WHF-16-7D	BORING NO.
AGENT: SOUTHNAVFACENGCOM		PROJECT NO: 02534.09	
CONTRACTOR: ABB Environmental Services		DATE STARTED: 04/26/96	COMPLTD: 04/26/96
METHOD: Mud Rotary	CASE SIZE: 2 inch	SCREEN INT.: 10 feet	PROTECTION LEVEL: D
TOC ELEV.: 38.05 FT.	MONITOR INST.: FID	TOT DPTH: 75FT.	DPTH TO ∇ FT.
LOGGED BY: J. Beauchamp	WELL DEVELOPMENT DATE: 4/26/96		SITE: 16

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
1							SP		
2									
3									
4							SM		
5									
6									
7									
8									
9									
10									
11									
12				0					
13									
14									
15									
16									
17				0					
18									
19									
20									
21									
22									
23									
24									
25									
26									
27				0					
28									
29									
30									

TITLE: NAS Whiting Field		LOG of WELL: WHF-16-7D	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 02534.09	
CONTRACTOR: ABB Environmental Services		DATE STARTED: 04/26/96	COMPLTD: 04/26/96
METHOD: Mud Rotary	CASE SIZE: 2 inch	SCREEN INT.: 10 feet	PROTECTION LEVEL: D
TOC ELEV.: 38.05 FT.	MONITOR INST.: FID	TOT DPTH: 75FT.	DPTH TO ∇ FT.
LOGGED BY: J. Beauchamp	WELL DEVELOPMENT DATE: 4/26/96		SITE: 16

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
				Continued from PAGE 1				
31					SM			
32			0					
33								
34								
35								
36								
37								
38								
39								
40								
41								
42			0					
43								
44								
45								
46								
47								
48								
49								
50								
51								
52								
53			0					
54								
55								
56								
57								
58								
59								
60								

TITLE: NAS Whiting Field		LOG of WELL: WHF-16-7D	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 02534.09	
CONTRACTOR: ABB Environmental Services		DATE STARTED: 04/26/96	COMPLTD: 04/26/96
METHOD: Mud Rotary	CASE SIZE: 2 inch	SCREEN INT.: 10 feet	PROTECTION LEVEL: D
TOC ELEV.: 38.05 FT.	MONITOR INST.: FID	TOT DPTH: 75FT.	DPTH TO ∇ FT.
LOGGED BY: J. Beauchamp	WELL DEVELOPMENT DATE: 4/26/96		SITE: 16

DEPTH FT.	LABORATORY SAMPLE ID.	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
Continued from PAGE 2								
61						SM		
62								
63			0					
64								
65								
66								
67			0	SAND, orange-pink medium grained, poorly graded, no organics.				
68		0/0				SP		
69								
70								
71								
72								
73								
74								
75			0	Boring terminated @ 75 feet below land surface.				
76								
77								
78								
79								
80								
81								
82								
83								
84								
85								
86								
87								
88								
89								
90								

APPENDIX E

SURFACE AND SUBSURFACE SOIL SAMPLE ANALYTICAL DATA

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:	S22454005			22454005			S22454006			22454006			
	Site	WHITING		WHITING			WHITING			WHITING			
Locator	15-SL-01			15-SL-01			15-SL-02			15-SL-02			
Collect Date:	11-AUG-92			11-AUG-92			11-AUG-92			11-AUG-92			
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	
CLP VOLATILES 90-SOW													
	ug/kg												
Chloromethane	-	ug/kg		11 U	ug/kg		11	-	ug/kg		11 U	ug/kg	11
Bromomethane	-	ug/kg		11 U	ug/kg		11	-	ug/kg		11 U	ug/kg	11
Vinyl chloride	-	ug/kg		11 U	ug/kg		11	-	ug/kg		11 U	ug/kg	11
Chloroethane	-	ug/kg		11 U	ug/kg		11	-	ug/kg		11 U	ug/kg	11
Methylene chloride	-	ug/kg		5 UJ	ug/kg		5	-	ug/kg		5 UJ	ug/kg	5
Acetone	-	ug/kg		11 UJ	ug/kg		11	-	ug/kg		11 U	ug/kg	11
Carbon disulfide	-	ug/kg		5 U	ug/kg		5	-	ug/kg		5 U	ug/kg	5
1,1-Dichloroethene	-	ug/kg		5 U	ug/kg		5	-	ug/kg		5 U	ug/kg	5
1,1-Dichloroethane	-	ug/kg		5 U	ug/kg		5	-	ug/kg		5 U	ug/kg	5
1,2-Dichloroethene (total)	-	ug/kg		5 U	ug/kg		5	-	ug/kg		5 U	ug/kg	5
Chloroform	-	ug/kg		5 U	ug/kg		5	-	ug/kg		5 U	ug/kg	5
1,2-Dichloroethane	-	ug/kg		5 U	ug/kg		5	-	ug/kg		5 U	ug/kg	5
2-Butanone	-	ug/kg		11 U	ug/kg		11	-	ug/kg		11 U	ug/kg	11
1,1,1-Trichloroethane	-	ug/kg		5 U	ug/kg		5	-	ug/kg		5 U	ug/kg	5
Carbon tetrachloride	-	ug/kg		5 U	ug/kg		5	-	ug/kg		5 U	ug/kg	5
Bromodichloromethane	-	ug/kg		5 U	ug/kg		5	-	ug/kg		5 U	ug/kg	5
1,2-Dichloropropane	-	ug/kg		5 U	ug/kg		5	-	ug/kg		5 U	ug/kg	5
cis-1,3-Dichloropropene	-	ug/kg		5 U	ug/kg		5	-	ug/kg		5 U	ug/kg	5
Trichloroethene	-	ug/kg		5 U	ug/kg		5	-	ug/kg		5 U	ug/kg	5
Dibromochloromethane	-	ug/kg		5 U	ug/kg		5	-	ug/kg		5 U	ug/kg	5
1,1,2-Trichloroethane	-	ug/kg		5 U	ug/kg		5	-	ug/kg		5 U	ug/kg	5
Benzene	-	ug/kg		5 U	ug/kg		5	-	ug/kg		5 U	ug/kg	5
trans-1,3-Dichloropropene	-	ug/kg		5 U	ug/kg		5	-	ug/kg		5 U	ug/kg	5
Bromoform	-	ug/kg		5 U	ug/kg		5	-	ug/kg		5 U	ug/kg	5
4-Methyl-2-pentanone	-	ug/kg		11 U	ug/kg		11	-	ug/kg		11 U	ug/kg	11
2-Hexanone	-	ug/kg		11 U	ug/kg		11	-	ug/kg		11 U	ug/kg	11
Tetrachloroethene	-	ug/kg		5 U	ug/kg		5	-	ug/kg		5 U	ug/kg	5
Toluene	-	ug/kg		5 U	ug/kg		5	-	ug/kg		5 U	ug/kg	5
1,1,2,2-Tetrachloroethane	-	ug/kg		5 U	ug/kg		5	-	ug/kg		5 U	ug/kg	5
Chlorobenzene	-	ug/kg		5 U	ug/kg		5	-	ug/kg		5 U	ug/kg	5
Ethylbenzene	-	ug/kg		5 U	ug/kg		5	-	ug/kg		5 U	ug/kg	5
Styrene	-	ug/kg		5 U	ug/kg		5	-	ug/kg		5 U	ug/kg	5
Xylenes (total)	-	ug/kg		5 U	ug/kg		5	-	ug/kg		1 J	ug/kg	5
CLP SEMIVOLATILES 90-SOW													
	ug/kg												
Phenol	-	ug/kg		360 U	ug/kg		360	-	ug/kg		350 U	ug/kg	350
bis(2-Chloroethyl) ether	-	ug/kg		360 U	ug/kg		360	-	ug/kg		350 U	ug/kg	350
2-Chlorophenol	-	ug/kg		360 U	ug/kg		360	-	ug/kg		350 U	ug/kg	350
1,3-Dichlorobenzene	-	ug/kg		360 U	ug/kg		360	-	ug/kg		350 U	ug/kg	350
1,4-Dichlorobenzene	-	ug/kg		360 U	ug/kg		360	-	ug/kg		350 U	ug/kg	350
1,2-Dichlorobenzene	-	ug/kg		360 U	ug/kg		360	-	ug/kg		350 U	ug/kg	350
2-Methylphenol	-	ug/kg		360 U	ug/kg		360	-	ug/kg		350 U	ug/kg	350
2,2-oxybis(1-Chloropropane)	-	ug/kg		360 U	ug/kg		360	-	ug/kg		350 U	ug/kg	350
4-Methylphenol	-	ug/kg		360 U	ug/kg		360	-	ug/kg		350 U	ug/kg	350
N-Nitroso-di-n-propylamine	-	ug/kg		360 U	ug/kg		360	-	ug/kg		350 U	ug/kg	350
Hexachloroethane	-	ug/kg		360 U	ug/kg		360	-	ug/kg		350 U	ug/kg	350
Nitrobenzene	-	ug/kg		360 U	ug/kg		360	-	ug/kg		350 U	ug/kg	350
Isophorone	-	ug/kg		360 U	ug/kg		360	-	ug/kg		350 U	ug/kg	350
2-Nitrophenol	-	ug/kg		360 U	ug/kg		360	-	ug/kg		350 U	ug/kg	350
2,4-Dimethylphenol	-	ug/kg		360 U	ug/kg		360	-	ug/kg		350 U	ug/kg	350

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:
Site
Locator
Collect Date:

S22454005
WHITING
15-SL-01
11-AUG-92

22454005
WHITING
15-SL-01
11-AUG-92

S22454006
WHITING
15-SL-02
11-AUG-92

22454006
WHITING
15-SL-02
11-AUG-92

	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
bis(2-Chloroethoxy) methane	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
2,4-Dichlorophenol	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
1,2,4-Trichlorobenzene	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
Naphthalene	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
4-Chloroaniline	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
Hexachlorobutadiene	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
4-Chloro-3-methylphenol	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
2-Methylnaphthalene	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
Hexachlorocyclopentadiene	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
2,4,6-Trichlorophenol	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
2,4,5-Trichlorophenol	-	ug/kg		1700 U	ug/kg	1700	-	ug/kg		1700 U	ug/kg	1700
2-Chloronaphthalene	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
2-Nitroaniline	-	ug/kg		1700 UJ	ug/kg	1700	-	ug/kg		1700 UJ	ug/kg	1700
Dimethylphthalate	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
Acenaphthylene	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
2,6-Dinitrotoluene	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
3-Nitroaniline	-	ug/kg		1700 UJ	ug/kg	1700	-	ug/kg		1700 UJ	ug/kg	1700
Acenaphthene	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
2,4-Dinitrophenol	-	ug/kg		1700 U	ug/kg	1700	-	ug/kg		1700 U	ug/kg	1700
4-Nitrophenol	-	ug/kg		1700 UJ	ug/kg	1700	-	ug/kg		1700 UJ	ug/kg	1700
Dibenzofuran	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
2,4-Dinitrotoluene	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
Diethylphthalate	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
4-Chlorophenyl-phenylether	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
Fluorene	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
4-Nitroaniline	-	ug/kg		1700 UJ	ug/kg	1700	-	ug/kg		1700 UJ	ug/kg	1700
4,6-Dinitro-2-methylphenol	-	ug/kg		1700 U	ug/kg	1700	-	ug/kg		1700 U	ug/kg	1700
N-Nitrosodiphenylamine	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
4-Bromophenyl-phenylether	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
Hexachlorobenzene	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
Pentachlorophenol	-	ug/kg		1700 U	ug/kg	1700	-	ug/kg		1700 U	ug/kg	1700
Phenanthrene	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
Anthracene	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
Carbazole	-	ug/kg		-	ug/kg	-	-	ug/kg		-	ug/kg	-
Di-n-butylphthalate	-	ug/kg		360 UJ	ug/kg	360	-	ug/kg		350 UJ	ug/kg	350
Fluoranthene	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
Pyrene	-	ug/kg		360 UJ	ug/kg	360	-	ug/kg		350 UJ	ug/kg	350
Butylbenzylphthalate	-	ug/kg		360 UJ	ug/kg	360	-	ug/kg		350 UJ	ug/kg	350
3,3-Dichlorobenzidine	-	ug/kg		720 U	ug/kg	720	-	ug/kg		710 U	ug/kg	710
Benzo (a) anthracene	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
Chrysene	-	ug/kg		360 UJ	ug/kg	360	-	ug/kg		350 UJ	ug/kg	350
bis(2-Ethylhexyl) phthalate	-	ug/kg		39 J	ug/kg	360	-	ug/kg		350 U	ug/kg	350
Di-n-octylphthalate	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
Benzo (b) fluoranthene	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
Benzo (k) fluoranthene	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
Benzo (a) pyrene	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
Indeno (1,2,3-cd) pyrene	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
Dibenzo (a,h) anthracene	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
Benzo (g,h,i) perylene	-	ug/kg		360 U	ug/kg	360	-	ug/kg		350 U	ug/kg	350
CLP PESTICIDES/PCBS 90-SOW	ug/kg											
alpha-BHC	-	ug/kg		8.7 U	ug/kg	8.7	-	ug/kg		8.6 U	ug/kg	8.6

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:	S22454005	22454005	S22454006	22454006
Site:	WHITING	WHITING	WHITING	WHITING
Locator:	15-SL-01	15-SL-01	15-SL-02	15-SL-02
Collect Date:	11-AUG-92	11-AUG-92	11-AUG-92	11-AUG-92

	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
beta-BHC	-	ug/kg		8.7 U	ug/kg	8.7	-	ug/kg		8.6 U	ug/kg	8.6
delta-BHC	-	ug/kg		8.7 U	ug/kg	8.7	-	ug/kg		8.6 U	ug/kg	8.6
gamma-BHC (Lindane)	-	ug/kg		8.7 U	ug/kg	8.7	-	ug/kg		8.6 U	ug/kg	8.6
Heptachlor	-	ug/kg		8.7 U	ug/kg	8.7	-	ug/kg		8.6 U	ug/kg	8.6
Aldrin	-	ug/kg		8.7 U	ug/kg	8.7	-	ug/kg		8.6 U	ug/kg	8.6
Heptachlor epoxide	-	ug/kg		8.7 U	ug/kg	8.7	-	ug/kg		8.6 U	ug/kg	8.6
Endosulfan I	-	ug/kg		8.7 U	ug/kg	8.7	-	ug/kg		8.6 U	ug/kg	8.6
Dieldrin	-	ug/kg		17 U	ug/kg	17	-	ug/kg		17 U	ug/kg	17
4,4-DDE	-	ug/kg		17 U	ug/kg	17	-	ug/kg		17 U	ug/kg	17
Endrin	-	ug/kg		17 U	ug/kg	17	-	ug/kg		17 U	ug/kg	17
Endosulfan II	-	ug/kg		17 U	ug/kg	17	-	ug/kg		17 U	ug/kg	17
4,4-DDD	-	ug/kg		17 U	ug/kg	17	-	ug/kg		17 U	ug/kg	17
Endosulfan sulfate	-	ug/kg		17 U	ug/kg	17	-	ug/kg		17 U	ug/kg	17
4,4-DDT	-	ug/kg		17 U	ug/kg	17	-	ug/kg		17 U	ug/kg	17
Methoxychlor	-	ug/kg		87 U	ug/kg	87	-	ug/kg		86 U	ug/kg	86
Endrin ketone	-	ug/kg		17 U	ug/kg	17	-	ug/kg		17 U	ug/kg	17
Endrin aldehyde	-	ug/kg		-	ug/kg	-	-	ug/kg		-	ug/kg	-
alpha-Chlordane	-	ug/kg		87 U	ug/kg	87	-	ug/kg		86 U	ug/kg	86
gamma-Chlordane	-	ug/kg		87 U	ug/kg	87	-	ug/kg		86 U	ug/kg	86
Toxaphene	-	ug/kg		170 U	ug/kg	170	-	ug/kg		170 U	ug/kg	170
Aroclor-1016	-	ug/kg		87 U	ug/kg	87	-	ug/kg		86 U	ug/kg	86
Aroclor-1221	-	ug/kg		87 U	ug/kg	87	-	ug/kg		86 U	ug/kg	86
Aroclor-1232	-	ug/kg		87 U	ug/kg	87	-	ug/kg		86 U	ug/kg	86
Aroclor-1242	-	ug/kg		87 U	ug/kg	87	-	ug/kg		86 U	ug/kg	86
Aroclor-1248	-	ug/kg		87 U	ug/kg	87	-	ug/kg		86 U	ug/kg	86
Aroclor-1254	-	ug/kg		170 U	ug/kg	170	-	ug/kg		170 U	ug/kg	170
Aroclor-1260	-	ug/kg		170 U	ug/kg	170	-	ug/kg		170 U	ug/kg	170
CLP METALS AND CYANIDE												
	mg/kg											
Aluminum	11800	mg/kg	40	-	mg/kg		5160	mg/kg	40	-	mg/kg	
Antimony	2.7 U	mg/kg	12	-	mg/kg		2.6 U	mg/kg	12	-	mg/kg	
Arsenic	1.6 J	mg/kg	2	-	mg/kg		.93 J	mg/kg	2	-	mg/kg	
Barium	5.3 J	mg/kg	40	-	mg/kg		7 J	mg/kg	40	-	mg/kg	
Beryllium	.07 J	mg/kg	1	-	mg/kg		.05 U	mg/kg	1	-	mg/kg	
Cadmium	.59 U	mg/kg	1	-	mg/kg		.59 U	mg/kg	1	-	mg/kg	
Calcium	75.6 J	mg/kg	1000	-	mg/kg		137 J	mg/kg	1000	-	mg/kg	
Chromium	10.8	mg/kg	2	-	mg/kg		3.3	mg/kg	2	-	mg/kg	
Cobalt	1.2 J	mg/kg	10	-	mg/kg		.73 J	mg/kg	10	-	mg/kg	
Copper	4.1 J	mg/kg	5	-	mg/kg		4.2 J	mg/kg	5	-	mg/kg	
Iron	7760	mg/kg	20	-	mg/kg		3040	mg/kg	20	-	mg/kg	
Lead	2.8 J	mg/kg	1	-	mg/kg		4.4 J	mg/kg	1	-	mg/kg	
Magnesium	54.3 J	mg/kg	1000	-	mg/kg		74.3 J	mg/kg	1000	-	mg/kg	
Manganese	23.1	mg/kg	3	-	mg/kg		25.7	mg/kg	3	-	mg/kg	
Mercury	.06 U	mg/kg	.1	-	mg/kg		.07 U	mg/kg	.1	-	mg/kg	
Nickel	2.3 U	mg/kg	8	-	mg/kg		2.3 U	mg/kg	8	-	mg/kg	
Potassium	130 U	mg/kg	1000	-	mg/kg		129 U	mg/kg	1000	-	mg/kg	
Selenium	.4 U	mg/kg	1	-	mg/kg		.4 U	mg/kg	1	-	mg/kg	
Silver	.32 U	mg/kg	2	-	mg/kg		.32 U	mg/kg	2	-	mg/kg	
Sodium	.170 J	mg/kg	1000	-	mg/kg		.174 J	mg/kg	1000	-	mg/kg	
Thallium	.44 U	mg/kg	2	-	mg/kg		.44 U	mg/kg	2	-	mg/kg	
Vanadium	20.6	mg/kg	10	-	mg/kg		6.8 J	mg/kg	10	-	mg/kg	
Zinc	11.3	mg/kg	4	-	mg/kg		6.8 J	mg/kg	4	-	mg/kg	

Naval Air Station Whiting Field, Milton, Florida
 Site 15 Surface Soil Data

Lab Sample Number:
 Site
 Locator
 Collect Date:

S22454005
 WHITING
 15-SL-01
 11-AUG-92

22454005
 WHITING
 15-SL-01
 11-AUG-92

S22454006
 WHITING
 15-SL-02
 11-AUG-92

22454006
 WHITING
 15-SL-02
 11-AUG-92

VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL

Cyanide	.24	U	mg/kg	1	-		mg/kg		.24	U	mg/kg	1	-		mg/kg
Total organic carbon	-		mg/kg		-		mg/kg		-		mg/kg		-		mg/kg
Total petroleum hydrocarbons	-		mg/kg		-		mg/kg		-		mg/kg		-		mg/kg

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:	S22454007	22454007	S22454008	22454008
Site	WHITING	WHITING	WHITING	WHITING
Locator	15-SL-03	15-SL-03	15-SL-04	15-SL-04
Collect Date:	11-AUG-92	11-AUG-92	11-AUG-92	11-AUG-92

	VALUE	QUAL	UNITS	DL														
CLP VOLATILES 90-SOW																		
	ug/kg																	
Chloromethane	-		ug/kg		11 U		ug/kg		11	-			ug/kg		11 U		ug/kg	11
Bromomethane	-		ug/kg		11 U		ug/kg		11	-			ug/kg		11 U		ug/kg	11
Vinyl chloride	-		ug/kg		11 U		ug/kg		11	-			ug/kg		11 U		ug/kg	11
Chloroethane	-		ug/kg		11 U		ug/kg		11	-			ug/kg		11 U		ug/kg	11
Methylene chloride	-		ug/kg		7 UJ		ug/kg		6	-			ug/kg		6 UJ		ug/kg	5
Acetone	-		ug/kg		11 U		ug/kg		11	-			ug/kg		11 U		ug/kg	11
Carbon disulfide	-		ug/kg		6 U		ug/kg		6	-			ug/kg		5 U		ug/kg	5
1,1-Dichloroethene	-		ug/kg		6 U		ug/kg		6	-			ug/kg		5 U		ug/kg	5
1,1-Dichloroethane	-		ug/kg		6 U		ug/kg		6	-			ug/kg		5 U		ug/kg	5
1,2-Dichloroethene (total)	-		ug/kg		6 U		ug/kg		6	-			ug/kg		5 U		ug/kg	5
Chloroform	-		ug/kg		6 U		ug/kg		6	-			ug/kg		5 U		ug/kg	5
1,2-Dichloroethane	-		ug/kg		6 U		ug/kg		6	-			ug/kg		5 U		ug/kg	5
2-Butanone	-		ug/kg		11 U		ug/kg		11	-			ug/kg		11 U		ug/kg	11
1,1,1-Trichloroethane	-		ug/kg		6 U		ug/kg		6	-			ug/kg		5 U		ug/kg	5
Carbon tetrachloride	-		ug/kg		6 U		ug/kg		6	-			ug/kg		5 U		ug/kg	5
Bromodichloromethane	-		ug/kg		6 U		ug/kg		6	-			ug/kg		5 U		ug/kg	5
1,2-Dichloropropane	-		ug/kg		6 U		ug/kg		6	-			ug/kg		5 U		ug/kg	5
cis-1,3-Dichloropropene	-		ug/kg		6 U		ug/kg		6	-			ug/kg		5 U		ug/kg	5
Trichloroethene	-		ug/kg		6 U		ug/kg		6	-			ug/kg		5 U		ug/kg	5
Dibromochloromethane	-		ug/kg		6 U		ug/kg		6	-			ug/kg		5 U		ug/kg	5
1,1,2-Trichloroethane	-		ug/kg		6 U		ug/kg		6	-			ug/kg		5 U		ug/kg	5
Benzene	-		ug/kg		6 U		ug/kg		6	-			ug/kg		5 U		ug/kg	5
trans-1,3-Dichloropropene	-		ug/kg		6 U		ug/kg		6	-			ug/kg		5 U		ug/kg	5
Bromoform	-		ug/kg		6 U		ug/kg		6	-			ug/kg		5 U		ug/kg	5
4-Methyl-2-pentanone	-		ug/kg		11 U		ug/kg		11	-			ug/kg		11 U		ug/kg	11
2-Hexanone	-		ug/kg		11 U		ug/kg		11	-			ug/kg		11 U		ug/kg	11
Tetrachloroethene	-		ug/kg		6 U		ug/kg		6	-			ug/kg		5 U		ug/kg	5
Toluene	-		ug/kg		6 U		ug/kg		6	-			ug/kg		5 U		ug/kg	5
1,1,2,2-Tetrachloroethane	-		ug/kg		6 U		ug/kg		6	-			ug/kg		5 U		ug/kg	5
Chlorobenzene	-		ug/kg		6 U		ug/kg		6	-			ug/kg		5 U		ug/kg	5
Ethylbenzene	-		ug/kg		6 U		ug/kg		6	-			ug/kg		5 U		ug/kg	5
Styrene	-		ug/kg		6 U		ug/kg		6	-			ug/kg		5 U		ug/kg	5
Xylenes (total)	-		ug/kg		2 J		ug/kg		6	-			ug/kg		4 J		ug/kg	5
CLP SEMIVOLATILES 90-SOW																		
	ug/kg																	
Phenol	-		ug/kg		370 U		ug/kg		370	-			ug/kg		350 U		ug/kg	350
bis(2-Chloroethyl) ether	-		ug/kg		370 U		ug/kg		370	-			ug/kg		350 U		ug/kg	350
2-Chlorophenol	-		ug/kg		370 U		ug/kg		370	-			ug/kg		350 U		ug/kg	350
1,3-Dichlorobenzene	-		ug/kg		370 U		ug/kg		370	-			ug/kg		350 U		ug/kg	350
1,4-Dichlorobenzene	-		ug/kg		370 U		ug/kg		370	-			ug/kg		350 U		ug/kg	350

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:	S22454007	22454007	S22454008	22454008
Site	WHITING	WHITING	WHITING	WHITING
Locator	15-SL-03	15-SL-03	15-SL-04	15-SL-04
Collect Date:	11-AUG-92	11-AUG-92	11-AUG-92	11-AUG-92

	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
1,2-Dichlorobenzene	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
2-Methylphenol	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
2,2-oxybis(1-Chloropropane)	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
4-Methylphenol	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
N-Nitroso-di-n-propylamine	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
Hexachloroethane	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
Nitrobenzene	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
Isophorone	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
2-Nitrophenol	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
2,4-Dimethylphenol	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
bis(2-Chloroethoxy) methane	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
2,4-Dichlorophenol	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
1,2,4-Trichlorobenzene	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
Naphthalene	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
4-Chloroaniline	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
Hexachlorobutadiene	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
4-Chloro-3-methylphenol	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
2-Methylnaphthalene	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
Hexachlorocyclopentadiene	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
2,4,6-Trichlorophenol	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
2,4,5-Trichlorophenol	-	ug/kg		1800 U	ug/kg		1800	-	ug/kg	1700 U	ug/kg	1700
2-Chloronaphthalene	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
2-Nitroaniline	-	ug/kg		1800 UJ	ug/kg		1800	-	ug/kg	1700 UJ	ug/kg	1700
Dimethylphthalate	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
Acenaphthylene	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
2,6-Dinitrotoluene	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
3-Nitroaniline	-	ug/kg		1800 UJ	ug/kg		1800	-	ug/kg	1700 UJ	ug/kg	1700
Acenaphthene	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
2,4-Dinitrophenol	-	ug/kg		1800 U	ug/kg		1800	-	ug/kg	1700 U	ug/kg	1700
4-Nitrophenol	-	ug/kg		1800 UJ	ug/kg		1800	-	ug/kg	1700 UJ	ug/kg	1700
Dibenzofuran	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
2,4-Dinitrotoluene	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
Diethylphthalate	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
4-Chlorophenyl-phenylether	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
Fluorene	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
4-Nitroaniline	-	ug/kg		1800 UJ	ug/kg		1800	-	ug/kg	1700 UJ	ug/kg	1700
4,6-Dinitro-2-methylphenol	-	ug/kg		1800 U	ug/kg		1800	-	ug/kg	1700 U	ug/kg	1700
N-Nitrosodiphenylamine	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
4-Bromophenyl-phenylether	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
Hexachlorobenzene	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
Pentachlorophenol	-	ug/kg		1800 U	ug/kg		1800	-	ug/kg	1700 U	ug/kg	1700
Phenanthrene	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
Anthracene	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
Carbazole	-	ug/kg		-	ug/kg		-	-	ug/kg	-	ug/kg	-
Di-n-butylphthalate	-	ug/kg		370 UJ	ug/kg		370	-	ug/kg	350 UJ	ug/kg	350
Fluoranthene	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
Pyrene	-	ug/kg		370 UJ	ug/kg		370	-	ug/kg	350 UJ	ug/kg	350
Butylbenzylphthalate	-	ug/kg		370 UJ	ug/kg		370	-	ug/kg	350 UJ	ug/kg	350
3,3-Dichlorobenzidine	-	ug/kg		730 U	ug/kg		730	-	ug/kg	710 U	ug/kg	710
Benzo (a) anthracene	-	ug/kg		370 U	ug/kg		370	-	ug/kg	350 U	ug/kg	350
Chrysene	-	ug/kg		370 UJ	ug/kg		370	-	ug/kg	350 UJ	ug/kg	350
bis(2-Ethylhexyl) phthalate	-	ug/kg		41 J	ug/kg		370	-	ug/kg	350 U	ug/kg	350

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:	S22454007	22454007	S22454008	22454008								
Site	WHITING	WHITING	WHITING	WHITING								
Locator	15-SL-03	15-SL-03	15-SL-04	15-SL-04								
Collect Date:	11-AUG-92	11-AUG-92	11-AUG-92	11-AUG-92								
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
Di-n-octylphthalate	-	ug/kg		370 U	ug/kg	370	-	ug/kg		350 U	ug/kg	350
Benzo (b) fluoranthene	-	ug/kg		370 U	ug/kg	370	-	ug/kg		350 U	ug/kg	350
Benzo (k) fluoranthene	-	ug/kg		370 U	ug/kg	370	-	ug/kg		350 U	ug/kg	350
Benzo (a) pyrene	-	ug/kg		370 U	ug/kg	370	-	ug/kg		350 U	ug/kg	350
Indeno (1,2,3-cd) pyrene	-	ug/kg		370 U	ug/kg	370	-	ug/kg		350 U	ug/kg	350
Dibenzo (a,h) anthracene	-	ug/kg		370 U	ug/kg	370	-	ug/kg		350 U	ug/kg	350
Benzo (g,h,i) perylene	-	ug/kg		370 U	ug/kg	370	-	ug/kg		350 U	ug/kg	350
CLP PESTICIDES/PCBS 90-SOW	ug/kg											
alpha-BHC	-	ug/kg		8.9 U	ug/kg	8.9	-	ug/kg		8.6 U	ug/kg	8.6
beta-BHC	-	ug/kg		8.9 U	ug/kg	8.9	-	ug/kg		8.6 U	ug/kg	8.6
delta-BHC	-	ug/kg		8.9 U	ug/kg	8.9	-	ug/kg		8.6 U	ug/kg	8.6
gamma-BHC (Lindane)	-	ug/kg		8.9 U	ug/kg	8.9	-	ug/kg		8.6 U	ug/kg	8.6
Heptachlor	-	ug/kg		8.9 U	ug/kg	8.9	-	ug/kg		8.6 U	ug/kg	8.6
Aldrin	-	ug/kg		8.9 U	ug/kg	8.9	-	ug/kg		8.6 U	ug/kg	8.6
Heptachlor epoxide	-	ug/kg		8.9 U	ug/kg	8.9	-	ug/kg		8.6 U	ug/kg	8.6
Endosulfan I	-	ug/kg		8.9 U	ug/kg	8.9	-	ug/kg		8.6 U	ug/kg	8.6
Dieldrin	-	ug/kg		18 U	ug/kg	18	-	ug/kg		17 U	ug/kg	17
4,4-DDE	-	ug/kg		18 U	ug/kg	18	-	ug/kg		17 U	ug/kg	17
Endrin	-	ug/kg		18 U	ug/kg	18	-	ug/kg		17 U	ug/kg	17
Endosulfan II	-	ug/kg		18 U	ug/kg	18	-	ug/kg		17 U	ug/kg	17
4,4-DDD	-	ug/kg		18 U	ug/kg	18	-	ug/kg		17 U	ug/kg	17
Endosulfan sulfate	-	ug/kg		18 U	ug/kg	18	-	ug/kg		17 U	ug/kg	17
4,4-DDT	-	ug/kg		18 U	ug/kg	18	-	ug/kg		17 U	ug/kg	17
Methoxychlor	-	ug/kg		89 U	ug/kg	89	-	ug/kg		86 U	ug/kg	86
Endrin ketone	-	ug/kg		18 U	ug/kg	18	-	ug/kg		17 U	ug/kg	17
Endrin aldehyde	-	ug/kg		-	ug/kg	-	-	ug/kg		-	ug/kg	-
alpha-Chlordane	-	ug/kg		89 U	ug/kg	89	-	ug/kg		86 U	ug/kg	86
gamma-Chlordane	-	ug/kg		89 U	ug/kg	89	-	ug/kg		86 U	ug/kg	86
Toxaphene	-	ug/kg		180 U	ug/kg	180	-	ug/kg		170 U	ug/kg	170
Aroclor-1016	-	ug/kg		89 U	ug/kg	89	-	ug/kg		86 U	ug/kg	86
Aroclor-1221	-	ug/kg		89 U	ug/kg	89	-	ug/kg		86 U	ug/kg	86
Aroclor-1232	-	ug/kg		89 U	ug/kg	89	-	ug/kg		86 U	ug/kg	86
Aroclor-1242	-	ug/kg		89 U	ug/kg	89	-	ug/kg		86 U	ug/kg	86
Aroclor-1248	-	ug/kg		89 U	ug/kg	89	-	ug/kg		86 U	ug/kg	86
Aroclor-1254	-	ug/kg		180 U	ug/kg	180	-	ug/kg		170 U	ug/kg	170
Aroclor-1260	-	ug/kg		180 U	ug/kg	180	-	ug/kg		170 U	ug/kg	170
CLP METALS AND CYANIDE	mg/kg											
Aluminum	7450	mg/kg	40	-	mg/kg		6790	mg/kg	40	-	mg/kg	
Antimony	2.7 U	mg/kg	12	-	mg/kg		2.7 U	mg/kg	12	-	mg/kg	
Arsenic	2.2 J	mg/kg	2	-	mg/kg		1 J	mg/kg	2	-	mg/kg	
Barium	4.3 J	mg/kg	40	-	mg/kg		9 J	mg/kg	40	-	mg/kg	
Beryllium	.08 J	mg/kg	1	-	mg/kg		.09 J	mg/kg	1	-	mg/kg	
Cadmium	.61 U	mg/kg	1	-	mg/kg		.59 U	mg/kg	1	-	mg/kg	
Calcium	79.6 J	mg/kg	1000	-	mg/kg		78.9 J	mg/kg	1000	-	mg/kg	
Chromium	6.3	mg/kg	2	-	mg/kg		3.9	mg/kg	2	-	mg/kg	
Cobalt	.85 J	mg/kg	10	-	mg/kg		1 J	mg/kg	10	-	mg/kg	
Copper	1.6 J	mg/kg	5	-	mg/kg		5.1 J	mg/kg	5	-	mg/kg	
Iron	4980	mg/kg	20	-	mg/kg		3460	mg/kg	20	-	mg/kg	
Lead	4.4 J	mg/kg	1	-	mg/kg		10.7 J	mg/kg	1	-	mg/kg	
Magnesium	43 J	mg/kg	1000	-	mg/kg		93.9 J	mg/kg	1000	-	mg/kg	

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

	S22454007			22454007			S22454008			22454008		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
Manganese	9.3	mg/kg	3	-	mg/kg	-	143	mg/kg	3	-	mg/kg	-
Mercury	.08 U	mg/kg	1	-	mg/kg	-	.08 U	mg/kg	.1	-	mg/kg	-
Nickel	2.4 U	mg/kg	8	-	mg/kg	-	2.3 U	mg/kg	8	-	mg/kg	-
Potassium	133 U	mg/kg	1000	-	mg/kg	-	130 U	mg/kg	1000	-	mg/kg	-
Selenium	.41 U	mg/kg	1	-	mg/kg	-	.4 U	mg/kg	1	-	mg/kg	-
Silver	.33 U	mg/kg	2	-	mg/kg	-	.32 U	mg/kg	2	-	mg/kg	-
Sodium	172 J	mg/kg	1000	-	mg/kg	-	174 J	mg/kg	1000	-	mg/kg	-
Thallium	.45 U	mg/kg	2	-	mg/kg	-	.44 U	mg/kg	2	-	mg/kg	-
Vanadium	12.6	mg/kg	10	-	mg/kg	-	8.3 J	mg/kg	10	-	mg/kg	-
Zinc	5.4 J	mg/kg	4	-	mg/kg	-	7.4 J	mg/kg	4	-	mg/kg	-
Cyanide	.24 U	mg/kg	1	-	mg/kg	-	.24 U	mg/kg	1	-	mg/kg	-
Total organic carbon	-	mg/kg	-	-	mg/kg	-	-	mg/kg	-	-	mg/kg	-
Total petroleum hydrocarbons	-	mg/kg	-	-	mg/kg	-	-	mg/kg	-	-	mg/kg	-

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:	S22454009	22454009	G8914002	G8914003				
Site	WHITING	WHITING	WHITING	WHITING				
Locator	15-SL-05	15-SL-05	15S00101	15S00101D				
Collect Date:	11-AUG-92	11-AUG-92	11-DEC-95	11-DEC-95				
VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 90-SOW

ug/kg

Chloromethane	-	ug/kg	13 U	ug/kg	13	11 U	ug/kg	11	11 U	ug/kg	11
Bromomethane	-	ug/kg	13 U	ug/kg	13	11 U	ug/kg	11	11 U	ug/kg	11
Vinyl chloride	-	ug/kg	13 U	ug/kg	13	11 U	ug/kg	11	11 U	ug/kg	11
Chloroethane	-	ug/kg	13 U	ug/kg	13	11 U	ug/kg	11	11 U	ug/kg	11
Methylene chloride	-	ug/kg	7 UJ	ug/kg	7	11 U	ug/kg	11	11 U	ug/kg	11
Acetone	-	ug/kg	13 U	ug/kg	13	11 U	ug/kg	11	11 U	ug/kg	11
Carbon disulfide	-	ug/kg	7 U	ug/kg	7	11 U	ug/kg	11	11 U	ug/kg	11
1,1-Dichloroethene	-	ug/kg	7 U	ug/kg	7	11 U	ug/kg	11	11 U	ug/kg	11
1,1-Dichloroethane	-	ug/kg	7 U	ug/kg	7	11 U	ug/kg	11	11 U	ug/kg	11
1,2-Dichloroethene (total)	-	ug/kg	7 U	ug/kg	7	11 U	ug/kg	11	11 U	ug/kg	11
Chloroform	-	ug/kg	7 U	ug/kg	7	11 U	ug/kg	11	11 U	ug/kg	11
1,2-Dichloroethane	-	ug/kg	7 U	ug/kg	7	11 U	ug/kg	11	11 U	ug/kg	11
2-Butanone	-	ug/kg	13 U	ug/kg	13	11 U	ug/kg	11	11 U	ug/kg	11
1,1,1-Trichloroethane	-	ug/kg	7 U	ug/kg	7	11 U	ug/kg	11	11 U	ug/kg	11
Carbon tetrachloride	-	ug/kg	7 U	ug/kg	7	11 U	ug/kg	11	11 U	ug/kg	11
Bromodichloromethane	-	ug/kg	7 U	ug/kg	7	11 U	ug/kg	11	11 U	ug/kg	11
1,2-Dichloropropane	-	ug/kg	7 U	ug/kg	7	11 U	ug/kg	11	11 U	ug/kg	11
cis-1,3-Dichloropropene	-	ug/kg	7 U	ug/kg	7	11 U	ug/kg	11	11 U	ug/kg	11
Trichloroethene	-	ug/kg	7 U	ug/kg	7	11 U	ug/kg	11	11 U	ug/kg	11
Dibromochloromethane	-	ug/kg	7 U	ug/kg	7	11 U	ug/kg	11	11 U	ug/kg	11
1,1,2-Trichloroethane	-	ug/kg	7 U	ug/kg	7	11 U	ug/kg	11	11 U	ug/kg	11
Benzene	-	ug/kg	7 U	ug/kg	7	11 U	ug/kg	11	11 U	ug/kg	11
trans-1,3-Dichloropropene	-	ug/kg	7 U	ug/kg	7	11 U	ug/kg	11	11 U	ug/kg	11
Bromoform	-	ug/kg	7 U	ug/kg	7	11 U	ug/kg	11	11 U	ug/kg	11
4-Methyl-2-pentanone	-	ug/kg	13 U	ug/kg	13	11 U	ug/kg	11	11 U	ug/kg	11
2-Hexanone	-	ug/kg	13 U	ug/kg	13	11 U	ug/kg	11	11 U	ug/kg	11
Tetrachloroethene	-	ug/kg	7 U	ug/kg	7	11 U	ug/kg	11	11 U	ug/kg	11
Toluene	-	ug/kg	7 U	ug/kg	7	11 U	ug/kg	11	11 U	ug/kg	11
1,1,2,2-Tetrachloroethane	-	ug/kg	7 U	ug/kg	7	11 U	ug/kg	11	11 U	ug/kg	11
Chlorobenzene	-	ug/kg	7 U	ug/kg	7	11 U	ug/kg	11	11 U	ug/kg	11
Ethylbenzene	-	ug/kg	7 U	ug/kg	7	11 U	ug/kg	11	11 U	ug/kg	11
Styrene	-	ug/kg	7 U	ug/kg	7	11 U	ug/kg	11	11 U	ug/kg	11
Xylenes (total)	-	ug/kg	7 U	ug/kg	7	11 U	ug/kg	11	11 U	ug/kg	11

CLP SEMIVOLATILES 90-SOW

ug/kg

Phenol	-	ug/kg	350 U	ug/kg	350	390 U	ug/kg	390	360 U	ug/kg	360
bis(2-Chloroethyl) ether	-	ug/kg	350 U	ug/kg	350	390 U	ug/kg	390	360 U	ug/kg	360
2-Chlorophenol	-	ug/kg	350 U	ug/kg	350	390 U	ug/kg	390	360 U	ug/kg	360
1,3-Dichlorobenzene	-	ug/kg	350 U	ug/kg	350	390 U	ug/kg	390	360 U	ug/kg	360
1,4-Dichlorobenzene	-	ug/kg	350 U	ug/kg	350	390 U	ug/kg	390	360 U	ug/kg	360

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:	S22454009			22454009			G8914002			G8914003			
	Site	WHITING		Site	WHITING		Site	WHITING		Site	WHITING		
Locator	15-SL-05		Locator	15-SL-05		Locator	15S00101		Locator	15S00101D			
Collect Date:	11-AUG-92		Collect Date:	11-AUG-92		Collect Date:	11-DEC-95		Collect Date:	11-DEC-95			
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	
1,2-Dichlorobenzene	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
2-Methylphenol	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
2,2-oxybis(1-Chloropropane)	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
4-Methylphenol	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
N-Nitroso-di-n-propylamine	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
Hexachloroethane	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
Nitrobenzene	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
Isophorone	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
2-Nitrophenol	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
2,4-Dimethylphenol	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
bis(2-Chloroethoxy) methane	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
2,4-Dichlorophenol	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
1,2,4-Trichlorobenzene	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
Naphthalene	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
4-Chloroaniline	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
Hexachlorobutadiene	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
4-Chloro-3-methylphenol	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
2-Methylnaphthalene	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
Hexachlorocyclopentadiene	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
2,4,6-Trichlorophenol	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
2,4,5-Trichlorophenol	-	ug/kg		1700 U	ug/kg		1700	970 U	ug/kg	970	900 U	ug/kg	900
2-Chloronaphthalene	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
2-Nitroaniline	-	ug/kg		1700 UJ	ug/kg		1700	970 U	ug/kg	970	900 U	ug/kg	900
Dimethylphthalate	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
Acenaphthylene	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
2,6-Dinitrotoluene	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
3-Nitroaniline	-	ug/kg		1700 UJ	ug/kg		1700	970 U	ug/kg	970	900 U	ug/kg	900
Acenaphthene	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
2,4-Dinitrophenol	-	ug/kg		1700 U	ug/kg		1700	970 U	ug/kg	970	900 U	ug/kg	900
4-Nitrophenol	-	ug/kg		1700 UJ	ug/kg		1700	970 U	ug/kg	970	900 U	ug/kg	900
Dibenzofuran	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
2,4-Dinitrotoluene	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
Diethylphthalate	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
4-Chlorophenyl-phenylether	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
Fluorene	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
4-Nitroaniline	-	ug/kg		1700 UJ	ug/kg		1700	970 U	ug/kg	970	900 U	ug/kg	900
4,6-Dinitro-2-methylphenol	-	ug/kg		1700 U	ug/kg		1700	970 U	ug/kg	970	900 U	ug/kg	900
N-Nitrosodiphenylamine	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
4-Bromophenyl-phenylether	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
Hexachlorobenzene	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
Pentachlorophenol	-	ug/kg		1700 U	ug/kg		1700	970 U	ug/kg	970	900 U	ug/kg	900
Phenanthrene	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
Anthracene	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
Carbazole	-	ug/kg		-	ug/kg		-	390 U	ug/kg	390	360 U	ug/kg	360
Di-n-butylphthalate	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
Fluoranthene	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
Pyrene	-	ug/kg		350 UJ	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
Butylbenzylphthalate	-	ug/kg		350 UJ	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
3,3-Dichlorobenzidine	-	ug/kg		700 U	ug/kg		700	390 U	ug/kg	390	360 U	ug/kg	360
Benzo (a) anthracene	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
Chrysene	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	360 U	ug/kg	360
bis(2-Ethylhexyl) phthalate	-	ug/kg		350 U	ug/kg		350	390 U	ug/kg	390	1700	ug/kg	360

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:	S22454009	22454009	68914002	88914003
Site	WHITING	WHITING	WHITING	WHITING
Locator	15-SL-05	15-SL-05	15S00101	15S00101D
Collect Date:	11-AUG-92	11-AUG-92	11-DEC-95	11-DEC-95

	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
Di-n-octylphthalate	-	ug/kg		350 U	ug/kg	350	390 U	ug/kg	390	360 U	ug/kg	360
Benzo (b) fluoranthene	-	ug/kg		350 U	ug/kg	350	390 U	ug/kg	390	360 U	ug/kg	360
Benzo (k) fluoranthene	-	ug/kg		350 U	ug/kg	350	390 U	ug/kg	390	360 U	ug/kg	360
Benzo (a) pyrene	-	ug/kg		350 U	ug/kg	350	390 U	ug/kg	390	360 U	ug/kg	360
Indeno (1,2,3-cd) pyrene	-	ug/kg		350 U	ug/kg	350	390 U	ug/kg	390	360 U	ug/kg	360
Dibenzo (a,h) anthracene	-	ug/kg		350 U	ug/kg	350	390 U	ug/kg	390	360 U	ug/kg	360
Benzo (g,h,i) perylene	-	ug/kg		350 U	ug/kg	350	390 U	ug/kg	390	360 U	ug/kg	360
CLP PESTICIDES/PCBS 90-SOW ug/kg												
alpha-BHC	-	ug/kg		8.5 U	ug/kg	8.5	1.8 UJ	ug/kg	1.8	1.8 UJ	ug/kg	1.8
beta-BHC	-	ug/kg		8.5 U	ug/kg	8.5	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8
delta-BHC	-	ug/kg		8.5 U	ug/kg	8.5	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8
gamma-BHC (Lindane)	-	ug/kg		8.5 U	ug/kg	8.5	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8
Heptachlor	-	ug/kg		8.5 U	ug/kg	8.5	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8
Aldrin	-	ug/kg		8.5 U	ug/kg	8.5	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8
Heptachlor epoxide	-	ug/kg		8.5 U	ug/kg	8.5	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8
Endosulfan I	-	ug/kg		8.5 U	ug/kg	8.5	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8
Dieldrin	-	ug/kg		17 U	ug/kg	17	3.6 U	ug/kg	3.6	3.6 U	ug/kg	3.6
4,4-DDE	-	ug/kg		17 U	ug/kg	17	3.6 U	ug/kg	3.6	3.6 U	ug/kg	3.6
Endrin	-	ug/kg		17 U	ug/kg	17	3.6 U	ug/kg	3.6	3.6 U	ug/kg	3.6
Endosulfan II	-	ug/kg		17 U	ug/kg	17	3.6 U	ug/kg	3.6	3.6 U	ug/kg	3.6
4,4-DDD	-	ug/kg		17 U	ug/kg	17	3.6 U	ug/kg	3.6	3.6 U	ug/kg	3.6
Endosulfan sulfate	-	ug/kg		17 U	ug/kg	17	3.6 U	ug/kg	3.6	3.6 U	ug/kg	3.6
4,4-DDT	-	ug/kg		17 U	ug/kg	17	3.6 U	ug/kg	3.6	3.6 U	ug/kg	3.6
Methoxychlor	-	ug/kg		85 U	ug/kg	85	18 U	ug/kg	18	18 U	ug/kg	18
Endrin ketone	-	ug/kg		17 U	ug/kg	17	3.6 U	ug/kg	3.6	3.6 U	ug/kg	3.6
Endrin aldehyde	-	ug/kg		-	ug/kg	-	3.6 U	ug/kg	3.6	3.6 U	ug/kg	3.6
alpha-Chlordane	-	ug/kg		85 U	ug/kg	85	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8
gamma-Chlordane	-	ug/kg		85 U	ug/kg	85	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8
Toxaphene	-	ug/kg		170 U	ug/kg	170	180 U	ug/kg	180	180 U	ug/kg	180
Aroclor-1016	-	ug/kg		85 U	ug/kg	85	36 U	ug/kg	36	36 U	ug/kg	36
Aroclor-1221	-	ug/kg		85 U	ug/kg	85	73 U	ug/kg	73	73 U	ug/kg	73
Aroclor-1232	-	ug/kg		85 U	ug/kg	85	36 U	ug/kg	36	36 U	ug/kg	36
Aroclor-1242	-	ug/kg		85 U	ug/kg	85	36 U	ug/kg	36	36 U	ug/kg	36
Aroclor-1248	-	ug/kg		85 U	ug/kg	85	36 U	ug/kg	36	36 U	ug/kg	36
Aroclor-1254	-	ug/kg		170 U	ug/kg	170	36 U	ug/kg	36	36 U	ug/kg	36
Aroclor-1260	-	ug/kg		170 U	ug/kg	170	36 U	ug/kg	36	36 U	ug/kg	36
CLP METALS AND CYANIDE mg/kg												
Aluminum	4940	mg/kg	40	-	mg/kg	-	9280	mg/kg	40	10800	mg/kg	40
Antimony	2.6 U	mg/kg	12	-	mg/kg	-	12 UJ	mg/kg	12	12 UJ	mg/kg	12
Arsenic	.98 J	mg/kg	2	-	mg/kg	-	2 J	mg/kg	2	1.9 J	mg/kg	2
Barium	3.2 J	mg/kg	40	-	mg/kg	-	6.6 J	mg/kg	40	7.8 J	mg/kg	40
Beryllium	.05 UJ	mg/kg	1	-	mg/kg	-	1 UJ	mg/kg	1	1 UJ	mg/kg	1
Cadmium	.58 U	mg/kg	1	-	mg/kg	-	1 U	mg/kg	1	1 U	mg/kg	1
Calcium	136 J	mg/kg	1000	-	mg/kg	-	1000 UJ	mg/kg	1000	1000 UJ	mg/kg	1000
Chromium	3.8	mg/kg	2	-	mg/kg	-	8.4	mg/kg	2	8	mg/kg	2
Cobalt	.33 U	mg/kg	10	-	mg/kg	-	10 U	mg/kg	10	10 U	mg/kg	10
Copper	12.5	mg/kg	5	-	mg/kg	-	5 UJ	mg/kg	5	5 UJ	mg/kg	5
Iron	2810	mg/kg	20	-	mg/kg	-	5120	mg/kg	20	5700	mg/kg	20
Lead	59.9	mg/kg	1	-	mg/kg	-	4.7	mg/kg	.6	3.6	mg/kg	.6
Magnesium	57.8 J	mg/kg	1000	-	mg/kg	-	109 J	mg/kg	1000	132 J	mg/kg	1000

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

	S22454009			22454009			G8914002			G8914003		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
Lab Sample Number:	S22454009			22454009			G8914002			G8914003		
Site	WHITING			WHITING			WHITING			WHITING		
Locator	15-SL-05			15-SL-05			15S00101			15S00101D		
Collect Date:	11-AUG-92			11-AUG-92			11-DEC-95			11-DEC-95		
Manganese	13.7	mg/kg	3	-	mg/kg		36.4	mg/kg	3	39.9	mg/kg	3
Mercury	.07 U	mg/kg		-	mg/kg		.02 J	mg/kg	.1	.02 J	mg/kg	.1
Nickel	2.3 U	mg/kg	8	-	mg/kg		8 UJ	mg/kg	8	8 UJ	mg/kg	8
Potassium	128 U	mg/kg	1000	-	mg/kg		169 J	mg/kg	1000	1000 U	mg/kg	1000
Selenium	.39 U	mg/kg	1	-	mg/kg		1 UJ	mg/kg	1	1 UJ	mg/kg	1
Silver	.32 U	mg/kg	2	-	mg/kg		2 U	mg/kg	2	2 U	mg/kg	2
Sodium	179 J	mg/kg	1000	-	mg/kg		1000 UJ	mg/kg	1000	1000 UJ	mg/kg	1000
Thallium	.44 U	mg/kg	2	-	mg/kg		2 UJ	mg/kg	2	2 UJ	mg/kg	2
Vanadium	7.2 J	mg/kg	10	-	mg/kg		13.3	mg/kg	10	15.1	mg/kg	10
Zinc	8.8	mg/kg	4	-	mg/kg		4.1 J	mg/kg	4	5	mg/kg	4
Cyanide	.24 U	mg/kg	1	-	mg/kg		.5 U	mg/kg	.5	.5 U	mg/kg	.5
Total organic carbon	-	mg/kg		-	mg/kg		-	mg/kg		-	mg/kg	
Total petroleum hydrocarbons	-	mg/kg		-	mg/kg		-	mg/kg		-	mg/kg	

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:	G8914004	G8914005	G8914007	G8914006								
Site	WHITING	WHITING	WHITING	WHITING								
Locator	15S00201	15S00301	15S00401	15S00501								
Collect Date:	11-DEC-95	11-DEC-95	11-DEC-95	11-DEC-95								
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 90-SOW

ug/kg

Chloromethane	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
Bromomethane	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
Vinyl chloride	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
Chloroethane	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
Methylene chloride	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
Acetone	13 U	ug/kg	13	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
Carbon disulfide	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
1,1-Dichloroethane	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
1,1-Dichloroethane	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
1,2-Dichloroethane (total)	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
Chloroform	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
1,2-Dichloroethane	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
2-Butanone	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
1,1,1-Trichloroethane	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
Carbon tetrachloride	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
Bromodichloromethane	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
1,2-Dichloropropane	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
cis-1,3-Dichloropropene	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
Trichloroethene	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
Dibromochloromethane	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
1,1,2-Trichloroethane	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
Benzene	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
trans-1,3-Dichloropropene	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
Bromoform	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
4-Methyl-2-pentanone	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
2-Hexanone	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
Tetrachloroethene	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
Toluene	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
1,1,2,2-Tetrachloroethane	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
Chlorobenzene	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
Ethylbenzene	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
Styrene	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10
Xylenes (total)	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	10 U	ug/kg	10

CLP SEMIVOLATILES 90-SOW

ug/kg

Phenol	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
bis(2-Chloroethyl) ether	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
2-Chlorophenol	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
1,3-Dichlorobenzene	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
1,4-Dichlorobenzene	370 R	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number: Site Locator Collect Date:	G8914004 WHITING 15S00201 11-DEC-95			G8914005 WHITING 15S00301 11-DEC-95			G8914007 WHITING 15S00401 11-DEC-95			G8914006 WHITING 15S00501 11-DEC-95		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
1,2-Dichlorobenzene	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
2-Methylphenol	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
2,2-oxybis(1-Chloropropane)	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
4-Methylphenol	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
N-Nitroso-di-n-propylamine	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
Hexachloroethane	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
Nitrobenzene	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
Isophorone	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
2-Nitrophenol	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
2,4-Dimethylphenol	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
bis(2-Chloroethoxy) methane	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
2,4-Dichlorophenol	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
1,2,4-Trichlorobenzene	370 R	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
Naphthalene	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
4-Chloroaniline	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
Hexachlorobutadiene	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
4-Chloro-3-methylphenol	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
2-Methylnaphthalene	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
Hexachlorocyclopentadiene	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
2,4,6-Trichlorophenol	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
2,4,5-Trichlorophenol	920 U	ug/kg	920	900 U	ug/kg	900	1100 U	ug/kg	1100	920 U	ug/kg	920
2-Chloronaphthalene	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
2-Nitroaniline	920 U	ug/kg	920	900 U	ug/kg	900	1100 U	ug/kg	1100	920 U	ug/kg	920
Dimethylphthalate	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
Acenaphthylene	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
2,6-Dinitrotoluene	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
3-Nitroaniline	920 U	ug/kg	920	900 U	ug/kg	900	1100 U	ug/kg	1100	920 U	ug/kg	920
Acenaphthene	370 R	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
2,4-Dinitrophenol	920 U	ug/kg	920	900 U	ug/kg	900	1100 U	ug/kg	1100	920 U	ug/kg	920
4-Nitrophenol	920 U	ug/kg	920	900 U	ug/kg	900	1100 U	ug/kg	1100	920 U	ug/kg	920
Dibenzofuran	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
2,4-Dinitrotoluene	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
Diethylphthalate	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
4-Chlorophenyl-phenylether	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
Fluorene	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
4-Nitroaniline	920 U	ug/kg	920	900 U	ug/kg	900	1100 U	ug/kg	1100	920 U	ug/kg	920
4,6-Dinitro-2-methylphenol	920 U	ug/kg	920	900 U	ug/kg	900	1100 U	ug/kg	1100	920 U	ug/kg	920
N-Nitrosodiphenylamine	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
4-Bromophenyl-phenylether	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
Hexachlorobenzene	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
Pentachlorophenol	920 U	ug/kg	920	900 U	ug/kg	900	1100 U	ug/kg	1100	920 U	ug/kg	920
Phenanthrene	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
Anthracene	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
Carbazole	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
Di-n-butylphthalate	1100	ug/kg	370	790	ug/kg	360	730	ug/kg	420	770	ug/kg	370
Fluoranthene	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
Pyrene	370 R	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
Butylbenzylphthalate	240 J	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
3,3-Dichlorobenzidine	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
Benzo (a) anthracene	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
Chrysene	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
bis(2-Ethylhexyl) phthalate	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:	G8914004	G8914005	G8914007	G8914006								
Site	WHITING	WHITING	WHITING	WHITING								
Locator	15S00201	15S00301	15S00401	15S00501								
Collect Date:	11-DEC-95	11-DEC-95	11-DEC-95	11-DEC-95								
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

Di-n-octylphthalate	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
Benzo (b) fluoranthene	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
Benzo (k) fluoranthene	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
Benzo (a) pyrene	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
Indeno (1,2,3-cd) pyrene	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
Dibenzo (a,h) anthracene	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
Benzo (g,h,i) perylene	370 U	ug/kg	370	360 U	ug/kg	360	430 U	ug/kg	430	370 U	ug/kg	370
CLP PESTICIDES/PCBS 90-SOW ug/kg												
alpha-BHC	1.9 UJ	ug/kg	1.9	1.9 UJ	ug/kg	1.9	1.9 UJ	ug/kg	1.9	1.8 UJ	ug/kg	1.8
beta-BHC	1.9 U	ug/kg	1.9	1.9 U	ug/kg	1.9	1.9 U	ug/kg	1.9	1.8 U	ug/kg	1.8
delta-BHC	1.9 U	ug/kg	1.9	1.9 U	ug/kg	1.9	1.9 U	ug/kg	1.9	1.8 U	ug/kg	1.8
gamma-BHC (Lindane)	1.9 U	ug/kg	1.9	1.9 U	ug/kg	1.9	1.9 U	ug/kg	1.9	1.8 U	ug/kg	1.8
Heptachlor	1.9 U	ug/kg	1.9	1.9 U	ug/kg	1.9	1.9 U	ug/kg	1.9	1.8 U	ug/kg	1.8
Aldrin	1.9 U	ug/kg	1.9	1.9 U	ug/kg	1.9	1.9 U	ug/kg	1.9	1.8 U	ug/kg	1.8
Heptachlor epoxide	1.9 U	ug/kg	1.9	1.9 U	ug/kg	1.9	1.9 U	ug/kg	1.9	1.8 U	ug/kg	1.8
Endosulfan I	1.9 U	ug/kg	1.9	1.9 U	ug/kg	1.9	1.9 U	ug/kg	1.9	1.8 U	ug/kg	1.8
Dieldrin	3.6 U	ug/kg	3.6	3.7 U	ug/kg	3.7	3.6 U	ug/kg	3.6	3.6 U	ug/kg	3.6
4,4-DDE	3.6 U	ug/kg	3.6	3.7 U	ug/kg	3.7	3.6 U	ug/kg	3.6	3.6 U	ug/kg	3.6
Endrin	3.6 U	ug/kg	3.6	3.7 U	ug/kg	3.7	3.6 U	ug/kg	3.6	3.6 U	ug/kg	3.6
Endosulfan II	3.6 U	ug/kg	3.6	3.7 U	ug/kg	3.7	3.6 U	ug/kg	3.6	3.6 U	ug/kg	3.6
4,4-DDD	3.6 U	ug/kg	3.6	3.7 U	ug/kg	3.7	3.6 U	ug/kg	3.6	3.6 U	ug/kg	3.6
Endosulfan sulfate	3.6 U	ug/kg	3.6	3.7 U	ug/kg	3.7	3.6 U	ug/kg	3.6	3.6 U	ug/kg	3.6
4,4-DDT	3.6 U	ug/kg	3.6	3.7 U	ug/kg	3.7	3.6 U	ug/kg	3.6	3.6 U	ug/kg	3.6
Methoxychlor	19 U	ug/kg	19	19 U	ug/kg	19	19 U	ug/kg	19	18 U	ug/kg	18
Endrin ketone	3.6 U	ug/kg	3.6	3.7 U	ug/kg	3.7	3.6 U	ug/kg	3.6	3.6 U	ug/kg	3.6
Endrin aldehyde	3.6 U	ug/kg	3.6	3.7 U	ug/kg	3.7	3.6 U	ug/kg	3.6	3.6 U	ug/kg	3.6
alpha-Chlordane	1.9 U	ug/kg	1.9	1.9 U	ug/kg	1.9	1.9 U	ug/kg	1.9	1.8 U	ug/kg	1.8
gamma-Chlordane	1.9 U	ug/kg	1.9	1.9 U	ug/kg	1.9	1.9 U	ug/kg	1.9	1.8 U	ug/kg	1.8
Toxaphene	190 U	ug/kg	190	190 U	ug/kg	190	190 U	ug/kg	190	180 U	ug/kg	180
Aroclor-1016	36 U	ug/kg	36	37 U	ug/kg	37	36 U	ug/kg	36	36 U	ug/kg	36
Aroclor-1221	74 U	ug/kg	74	74 U	ug/kg	74	74 U	ug/kg	74	73 U	ug/kg	73
Aroclor-1232	36 U	ug/kg	36	37 U	ug/kg	37	36 U	ug/kg	36	36 U	ug/kg	36
Aroclor-1242	36 U	ug/kg	36	37 U	ug/kg	37	36 U	ug/kg	36	36 U	ug/kg	36
Aroclor-1248	36 U	ug/kg	36	37 U	ug/kg	37	36 U	ug/kg	36	36 U	ug/kg	36
Aroclor-1254	36 U	ug/kg	36	37 U	ug/kg	37	36 U	ug/kg	36	36 U	ug/kg	36
Aroclor-1260	36 U	ug/kg	36	37 U	ug/kg	37	36 U	ug/kg	36	36 U	ug/kg	36
CLP METALS AND CYANIDE mg/kg												
Aluminum	6210	mg/kg	40	10200	mg/kg	40	12400	mg/kg	40	5290	mg/kg	40
Antimony	12 UJ	mg/kg	12									
Arsenic	1.3 J	mg/kg	2	2 J	mg/kg	2	2.7	mg/kg	2	1.2 J	mg/kg	2
Barium	4.7 J	mg/kg	40	6.9 J	mg/kg	40	7.4 J	mg/kg	40	5.5 J	mg/kg	40
Beryllium	1 UJ	mg/kg	1									
Cadmium	1 U	mg/kg	1									
Calcium	1000 UJ	mg/kg	1000									
Chromium	8.1	mg/kg	2	6.9	mg/kg	2	9.1	mg/kg	2	4.6	mg/kg	2
Cobalt	10 U	mg/kg	10	10 U	mg/kg	10	10 U	mg/kg	10	.55 J	mg/kg	10
Copper	5 UJ	mg/kg	5									
Iron	3760	mg/kg	20	5100	mg/kg	20	6570	mg/kg	20	3490	mg/kg	20
Lead	2.8	mg/kg	.6	6	mg/kg	.6	3.6	mg/kg	.6	3.2	mg/kg	.6
Magnesium	72.2 J	mg/kg	1000	133 J	mg/kg	1000	121 J	mg/kg	1000	84.9 J	mg/kg	1000

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:
Site
Locator
Collect Date:

G8914004
WHITING
15S00201
11-DEC-95

G8914005
WHITING
15S00301
11-DEC-95

G8914007
WHITING
15S00401
11-DEC-95

G8914006
WHITING
15S00501
11-DEC-95

VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL

Manganese	35.7	mg/kg	3	12.9	mg/kg	3	34.4	mg/kg	3	43.3	mg/kg	3
Mercury	.01 J	mg/kg	.1									
Nickel	8 UJ	mg/kg	8									
Potassium	1000 U	mg/kg	1000	131	mg/kg	1000	1000 U	mg/kg	1000	1000 U	mg/kg	1000
Selenium	1 UJ	mg/kg	1									
Silver	.74 J	mg/kg	2	2 U	mg/kg	2	2 U	mg/kg	2	.66 J	mg/kg	2
Sodium	1000 UJ	mg/kg	1000									
Thallium	2 UJ	mg/kg	2									
Vanadium	9.6 J	mg/kg	10	14.5	mg/kg	10	17.8	mg/kg	10	7.5 J	mg/kg	10
Zinc	2.8 J	mg/kg	4	6.3	mg/kg	4	4.9	mg/kg	4	3.7 J	mg/kg	4
Cyanide	.16 J	mg/kg	.5	.5 U	mg/kg	.5	.5 U	mg/kg	.5	.5 U	mg/kg	.5
Total organic carbon	-	mg/kg										
Total petroleum hydrocarbons	-	mg/kg										

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:	G8914008	G8914009	G8914010	G8913017							
Site	WHITING	WHITING	WHITING	WHITING							
Locator	15S00601	15S00701	15S00801	15S00901							
Collect Date:	11-DEC-95	11-DEC-95	11-DEC-95	11-DEC-95							
VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 90-SOW

ug/kg

Chloromethane	11 U	ug/kg	11									
Bromomethane	11 U	ug/kg	11									
Vinyl chloride	11 U	ug/kg	11									
Chloroethane	11 U	ug/kg	11									
Methylene chloride	11 U	ug/kg	11									
Acetone	11 U	ug/kg	11									
Carbon disulfide	11 U	ug/kg	11									
1,1-Dichloroethene	11 U	ug/kg	11									
1,1-Dichloroethane	11 U	ug/kg	11									
1,2-Dichloroethene (total)	11 U	ug/kg	11									
Chloroform	11 U	ug/kg	11									
1,2-Dichloroethane	11 U	ug/kg	11									
2-Butanone	11 U	ug/kg	11									
1,1,1-Trichloroethane	11 U	ug/kg	11									
Carbon tetrachloride	11 U	ug/kg	11									
Bromodichloromethane	11 U	ug/kg	11									
1,2-Dichloropropane	11 U	ug/kg	11									
cis-1,3-Dichloropropene	11 U	ug/kg	11									
Trichloroethene	11 U	ug/kg	11									
Dibromochloromethane	11 U	ug/kg	11									
1,1,2-Trichloroethane	11 U	ug/kg	11									
Benzene	11 U	ug/kg	11									
trans-1,3-Dichloropropene	11 U	ug/kg	11									
Bromoform	11 U	ug/kg	11									
4-Methyl-2-pentanone	11 U	ug/kg	11									
2-Hexanone	11 U	ug/kg	11									
Tetrachloroethene	11 U	ug/kg	11									
Toluene	11 U	ug/kg	11									
1,1,2,2-Tetrachloroethane	11 U	ug/kg	11									
Chlorobenzene	11 U	ug/kg	11									
Ethylbenzene	11 U	ug/kg	11									
Styrene	11 U	ug/kg	11									
Xylenes (total)	11 U	ug/kg	11									

CLP SEMIVOLATILES 90-SOW

ug/kg

Phenol	360 U	ug/kg	360	360 U	ug/kg	360	360 U	ug/kg	360	370 R	ug/kg	370
bis(2-Chloroethyl) ether	360 U	ug/kg	360	360 U	ug/kg	360	360 U	ug/kg	360	370 R	ug/kg	370
2-Chlorophenol	360 U	ug/kg	360	360 U	ug/kg	360	360 U	ug/kg	360	370 R	ug/kg	370
1,3-Dichlorobenzene	360 U	ug/kg	360	360 U	ug/kg	360	360 U	ug/kg	360	370 R	ug/kg	370
1,4-Dichlorobenzene	360 U	ug/kg	360	360 U	ug/kg	360	360 U	ug/kg	360	370 R	ug/kg	370

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:	G8914008	G8914009	G8914010	G8913017
Site	WHITING	WHITING	WHITING	WHITING
Locator	15S00601	15S00701	15S00801	15S00901
Collect Date:	11-DEC-95	11-DEC-95	11-DEC-95	11-DEC-95

	VALUE	QUAL	UNITS	DL												
1,2-Dichlorobenzene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
2-Methylphenol	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
2,2-oxybis(1-Chloropropane)	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
4-Methylphenol	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
N-Nitroso-di-n-propylamine	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
Hexachloroethane	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
Nitrobenzene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
Isophorone	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
2-Nitrophenol	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
2,4-Dimethylphenol	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
bis(2-Chloroethoxy) methane	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
2,4-Dichlorophenol	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
1,2,4-Trichlorobenzene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
Naphthalene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
4-Chloroaniline	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
Hexachlorobutadiene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
4-Chloro-3-methylphenol	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
2-Methylnaphthalene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
Hexachlorocyclopentadiene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
2,4,6-Trichlorophenol	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
2,4,5-Trichlorophenol	900	U	ug/kg	900	900	U	ug/kg	900	900	U	ug/kg	900	920	R	ug/kg	920
2-Chloronaphthalene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
2-Nitroaniline	900	U	ug/kg	900	900	U	ug/kg	900	900	U	ug/kg	900	920	R	ug/kg	920
Dimethylphthalate	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
Acenaphthylene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
2,6-Dinitrotoluene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
3-Nitroaniline	900	U	ug/kg	900	900	U	ug/kg	900	900	U	ug/kg	900	920	R	ug/kg	920
Acenaphthene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
2,4-Dinitrophenol	900	U	ug/kg	900	900	U	ug/kg	900	900	U	ug/kg	900	920	R	ug/kg	920
4-Nitrophenol	900	U	ug/kg	900	900	U	ug/kg	900	900	U	ug/kg	900	920	R	ug/kg	920
Dibenzofuran	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
2,4-Dinitrotoluene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
Diethylphthalate	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
4-Chlorophenyl-phenylether	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
Fluorene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
4-Nitroaniline	900	U	ug/kg	900	900	U	ug/kg	900	900	U	ug/kg	900	920	R	ug/kg	920
4,6-Dinitro-2-methylphenol	900	U	ug/kg	900	900	U	ug/kg	900	900	U	ug/kg	900	920	R	ug/kg	920
N-Nitrosodiphenylamine	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
4-Bromophenyl-phenylether	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
Hexachlorobenzene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
Pentachlorophenol	900	U	ug/kg	900	900	U	ug/kg	900	900	U	ug/kg	900	920	R	ug/kg	920
Phenanthrene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
Anthracene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
Carbazole	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
Di-n-butylphthalate	850	U	ug/kg	360	560	U	ug/kg	360	370	U	ug/kg	370	370	R	ug/kg	370
Fluoranthene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
Pyrene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
Butylbenzylphthalate	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
3,3-Dichlorobenzidine	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
Benzo (a) anthracene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
Chrysene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
bis(2-Ethylhexyl) phthalate	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:
Site
Locator
Collect Date:

G8914008
WHITING
15S00601
11-DEC-95

G8914009
WHITING
15S00701
11-DEC-95

G8914010
WHITING
15S00801
11-DEC-95

G8913017
WHITING
15S00901
11-DEC-95

	VALUE	QUAL	UNITS	DL												
Di-n-octylphthalate	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
Benzo (b) fluoranthene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
Benzo (k) fluoranthene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
Benzo (a) pyrene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
Indeno (1,2,3-cd) pyrene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
Dibenzo (a,h) anthracene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
Benzo (g,h,i) perylene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	370	R	ug/kg	370
CLP PESTICIDES/PCBS 90-SOW																
alpha-BHC	1.8	UJ	ug/kg	1.8	1.8	UJ	ug/kg	1.8	1.8	UJ	ug/kg	1.8	2	UJ	ug/kg	2
beta-BHC	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	2	U	ug/kg	2
delta-BHC	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	2	U	ug/kg	2
gamma-BHC (Lindane)	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	2	U	ug/kg	2
Heptachlor	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	2	U	ug/kg	2
Aldrin	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	2	U	ug/kg	2
Heptachlor epoxide	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	2	U	ug/kg	2
Endosulfan I	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	2	U	ug/kg	2
Dieldrin	3.6	U	ug/kg	3.6	3.5	U	ug/kg	3.5	3.6	U	ug/kg	3.6	3.9	U	ug/kg	3.9
4,4-DDE	3.6	U	ug/kg	3.6	3.5	U	ug/kg	3.5	3.6	U	ug/kg	3.6	3.9	U	ug/kg	3.9
Endrin	3.6	U	ug/kg	3.6	3.5	U	ug/kg	3.5	3.6	U	ug/kg	3.6	3.9	U	ug/kg	3.9
Endosulfan II	3.6	U	ug/kg	3.6	3.5	U	ug/kg	3.5	3.6	U	ug/kg	3.6	3.9	U	ug/kg	3.9
4,4-DDD	3.6	U	ug/kg	3.6	3.5	U	ug/kg	3.5	3.6	U	ug/kg	3.6	3.9	U	ug/kg	3.9
Endosulfan sulfate	3.6	U	ug/kg	3.6	3.5	U	ug/kg	3.5	3.6	U	ug/kg	3.6	3.9	U	ug/kg	3.9
4,4-DDT	3.6	U	ug/kg	3.6	3.5	U	ug/kg	3.5	3.6	U	ug/kg	3.6	3.9	U	ug/kg	3.9
Methoxychlor	18	U	ug/kg	18	18	U	ug/kg	18	18	U	ug/kg	18	20	U	ug/kg	20
Endrin ketone	3.6	U	ug/kg	3.6	3.5	U	ug/kg	3.5	3.6	U	ug/kg	3.6	3.9	U	ug/kg	3.9
Endrin aldehyde	3.6	U	ug/kg	3.6	3.5	U	ug/kg	3.5	3.6	U	ug/kg	3.6	3.9	U	ug/kg	3.9
alpha-Chlordane	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	2	U	ug/kg	2
gamma-Chlordane	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	2	U	ug/kg	2
Toxaphene	180	U	ug/kg	180	180	U	ug/kg	180	180	U	ug/kg	180	200	U	ug/kg	200
Aroclor-1016	36	U	ug/kg	36	35	U	ug/kg	35	36	U	ug/kg	36	39	U	ug/kg	39
Aroclor-1221	73	U	ug/kg	73	72	U	ug/kg	72	73	U	ug/kg	73	80	U	ug/kg	80
Aroclor-1232	36	U	ug/kg	36	35	U	ug/kg	35	36	U	ug/kg	36	39	U	ug/kg	39
Aroclor-1242	36	U	ug/kg	36	35	U	ug/kg	35	36	U	ug/kg	36	39	U	ug/kg	39
Aroclor-1248	36	U	ug/kg	36	35	U	ug/kg	35	36	U	ug/kg	36	39	U	ug/kg	39
Aroclor-1254	36	U	ug/kg	36	35	U	ug/kg	35	36	U	ug/kg	36	39	U	ug/kg	39
Aroclor-1260	36	U	ug/kg	36	35	U	ug/kg	35	36	U	ug/kg	36	39	U	ug/kg	39
CLP METALS AND CYANIDE																
Aluminum	11900		mg/kg	40	5590		mg/kg	40	10200		mg/kg	40	8400		mg/kg	40
Antimony	12	UJ	mg/kg	12												
Arsenic	2.1	J	mg/kg	2	1	J	mg/kg	2	1.8	J	mg/kg	2	1.7	J	mg/kg	2
Barium	7.3	J	mg/kg	40	8.1	J	mg/kg	40	9.2	J	mg/kg	40	9.4	J	mg/kg	40
Beryllium	1	UJ	mg/kg	1												
Cadmium	1	U	mg/kg	1												
Calcium	1000	UJ	mg/kg	1000	1000	UJ	mg/kg	1000	89	J	mg/kg	1000	1000	UJ	mg/kg	1000
Chromium	8.5		mg/kg	2	5.8		mg/kg	2	8.8		mg/kg	2	6.1		mg/kg	2
Cobalt	.49	J	mg/kg	10	.58	J	mg/kg	10	10	U	mg/kg	10	.56	J	mg/kg	10
Copper	5	U	mg/kg	5	5	UJ	mg/kg	5	5	UJ	mg/kg	5	5	UJ	mg/kg	5
Iron	6400		mg/kg	20	2900		mg/kg	20	6700		mg/kg	20	4510	J	mg/kg	20
Lead	5.5		mg/kg	.6	3.3		mg/kg	.6	4.9		mg/kg	.6	4.4		mg/kg	.6
Magnesium	135	J	mg/kg	1000	121	J	mg/kg	1000	124	J	mg/kg	1000	156	J	mg/kg	1000

Naval Air Station Whiting Field, Milton, Florida
 Site 15 Surface Soil Data

	G8914008			G8914009			G8914010			G8913017		
	VALUE	QUAL UNITS	DL									
Lab Sample Number:	G8914008			G8914009			G8914010			G8913017		
Site	WHITING			WHITING			WHITING			WHITING		
Locator	15S00601			15S00701			15S00801			15S00901		
Collect Date:	11-DEC-95			11-DEC-95			11-DEC-95			11-DEC-95		
Manganese	30.8	mg/kg	3	112	mg/kg	3	53.2	mg/kg	3	35.3	mg/kg	3
Mercury	.01 J	mg/kg	.1	.02 J	mg/kg	.1	.01 J	mg/kg	.1	.1 U	mg/kg	.1
Nickel	8 UJ	mg/kg	8									
Potassium	1000 U	mg/kg	1000	1000 U	mg/kg	1000	1000 U	mg/kg	1000	137 J	mg/kg	1000
Selenium	1 UJ	mg/kg	1	1 UJ	mg/kg	1	.27 J	mg/kg	1	1 UJ	mg/kg	1
Silver	2 U	mg/kg	2									
Sodium	1000 UJ	mg/kg	1000									
Thallium	2 UJ	mg/kg	2	2 U	mg/kg	2	2 UJ	mg/kg	2	2 UJ	mg/kg	2
Vanadium	17	mg/kg	10	7.2 J	mg/kg	10	17.5	mg/kg	10	11.5	mg/kg	10
Zinc	7.1	mg/kg	4	3.9 J	mg/kg	4	5.5	mg/kg	4	5.4	mg/kg	4
Cyanide	.5 U	mg/kg	.5	.31 J	mg/kg	.5	.5 U	mg/kg	.5	.5 U	mg/kg	.5
Total organic carbon	-	mg/kg										
Total petroleum hydrocarbons	-	mg/kg										

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:	G8913017RE	G8914014	G8914013	G8914011							
Site	WHITING	WHITING	WHITING	WHITING							
Locator	15S00901RE	15S01001	15S01101	15S01201							
Collect Date:	11-DEC-95	10-DEC-95	10-DEC-95	10-DEC-95							
VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 90-SOW												
	ug/kg											
Chloromethane	-	ug/kg	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11	
Bromomethane	-	ug/kg	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11	
Vinyl chloride	-	ug/kg	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11	
Chloroethane	-	ug/kg	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11	
Methylene chloride	-	ug/kg	12 U	ug/kg	12	3 J	ug/kg	11	4 J	ug/kg	11	
Acetone	-	ug/kg	22 U	ug/kg	22	11 U	ug/kg	11	11 U	ug/kg	11	
Carbon disulfide	-	ug/kg	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11	
1,1-Dichloroethene	-	ug/kg	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11	
1,1-Dichloroethane	-	ug/kg	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11	
1,2-Dichloroethene (total)	-	ug/kg	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11	
Chloroform	-	ug/kg	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11	
1,2-Dichloroethane	-	ug/kg	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11	
2-Butanone	-	ug/kg	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11	
1,1,1-Trichloroethane	-	ug/kg	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11	
Carbon tetrachloride	-	ug/kg	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11	
Bromodichloromethane	-	ug/kg	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11	
1,2-Dichloropropane	-	ug/kg	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11	
cis-1,3-Dichloropropene	-	ug/kg	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11	
Trichloroethene	-	ug/kg	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11	
Dibromochloromethane	-	ug/kg	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11	
1,1,2-Trichloroethane	-	ug/kg	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11	
Benzene	-	ug/kg	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11	
trans-1,3-Dichloropropene	-	ug/kg	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11	
Bromoform	-	ug/kg	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11	
4-Methyl-2-pentanone	-	ug/kg	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11	
2-Hexanone	-	ug/kg	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11	
Tetrachloroethene	-	ug/kg	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11	
Toluene	-	ug/kg	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11	
1,1,2,2-Tetrachloroethane	-	ug/kg	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11	
Chlorobenzene	-	ug/kg	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11	
Ethylbenzene	-	ug/kg	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11	
Styrene	-	ug/kg	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11	
Xylenes (total)	-	ug/kg	12 U	ug/kg	12	11 U	ug/kg	11	11 U	ug/kg	11	
CLP SEMIVOLATILES 90-SOW												
	ug/kg											
Phenol	370 UJ	ug/kg	370	410 U	ug/kg	410	360 U	ug/kg	360	360 U	ug/kg	360
bis(2-Chloroethyl) ether	370 UJ	ug/kg	370	410 U	ug/kg	410	360 U	ug/kg	360	360 U	ug/kg	360
2-Chlorophenol	370 UJ	ug/kg	370	410 U	ug/kg	410	360 U	ug/kg	360	360 U	ug/kg	360
1,3-Dichlorobenzene	370 UJ	ug/kg	370	410 U	ug/kg	410	360 U	ug/kg	360	360 U	ug/kg	360
1,4-Dichlorobenzene	370 UJ	ug/kg	370	410 U	ug/kg	410	360 U	ug/kg	360	360 U	ug/kg	360

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:	G8913017RE	G8914014	G8914013	G8914011								
Site	WHITING	WHITING	WHITING	WHITING								
Locator	15S00901RE	15S01001	15S01101	15S01201								
Collect Date:	11-DEC-95	10-DEC-95	10-DEC-95	10-DEC-95								
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

1,2-Dichlorobenzene	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
2-Methylphenol	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
2,2-oxybis(1-Chloropropane)	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
4-Methylphenol	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
N-Nitroso-di-n-propylamine	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
Hexachloroethane	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
Nitrobenzene	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
Isophorone	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
2-Nitrophenol	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
2,4-Dimethylphenol	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
bis(2-Chloroethoxy) methane	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
2,4-Dichlorophenol	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
1,2,4-Trichlorobenzene	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
Naphthalene	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
4-Chloroaniline	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
Hexachlorobutadiene	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
4-Chloro-3-methylphenol	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
2-Methylnaphthalene	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
Hexachlorocyclopentadiene	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
2,4,6-Trichlorophenol	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
2,4,5-Trichlorophenol	920	UJ	ug/kg	920	1000	U	ug/kg	1000	900	U	ug/kg	900	900	U	ug/kg	900
2-Chloronaphthalene	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
2-Nitroaniline	920	UJ	ug/kg	920	1000	U	ug/kg	1000	900	U	ug/kg	900	900	U	ug/kg	900
Dimethylphthalate	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
Acenaphthylene	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
2,6-Dinitrotoluene	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
3-Nitroaniline	920	UJ	ug/kg	920	1000	U	ug/kg	1000	900	U	ug/kg	900	900	U	ug/kg	900
Acenaphthene	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
2,4-Dinitrophenol	920	UJ	ug/kg	920	1000	U	ug/kg	1000	900	U	ug/kg	900	900	U	ug/kg	900
4-Nitrophenol	920	UJ	ug/kg	920	1000	U	ug/kg	1000	900	U	ug/kg	900	900	U	ug/kg	900
Dibenzofuran	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
2,4-Dinitrotoluene	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
Diethylphthalate	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
4-Chlorophenyl-phenylether	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
Fluorene	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
4-Nitroaniline	920	UJ	ug/kg	920	1000	U	ug/kg	1000	900	U	ug/kg	900	900	U	ug/kg	900
4,6-Dinitro-2-methylphenol	920	UJ	ug/kg	920	1000	U	ug/kg	1000	900	U	ug/kg	900	900	U	ug/kg	900
N-Nitrosodiphenylamine	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
4-Bromophenyl-phenylether	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
Hexachlorobenzene	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
Pentachlorophenol	920	UJ	ug/kg	920	1000	U	ug/kg	1000	900	U	ug/kg	900	900	U	ug/kg	900
Phenanthrene	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
Anthracene	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
Carbazole	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
Di-n-butylphthalate	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
Fluoranthene	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
Pyrene	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
Butylbenzylphthalate	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
3,3-Dichlorobenzidine	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
Benzo (a) anthracene	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
Chrysene	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360
bis(2-Ethylhexyl) phtalate	370	UJ	ug/kg	370	410	U	ug/kg	410	360	U	ug/kg	360	360	U	ug/kg	360

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:
Site
Locator
Collect Date:

G8913017RE
WHITING
15S00901RE
11-DEC-95

G8914014
WHITING
15S01001
10-DEC-95

G8914013
WHITING
15S01101
10-DEC-95

G8914011
WHITING
15S01201
10-DEC-95

VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL

Di-n-octylphthalate	370 UJ	ug/kg	370	410 U	ug/kg	410	360 U	ug/kg	360	360 U	ug/kg	360
Benzo (b) fluoranthene	370 UJ	ug/kg	370	410 U	ug/kg	410	360 U	ug/kg	360	360 U	ug/kg	360
Benzo (k) fluoranthene	370 UJ	ug/kg	370	410 U	ug/kg	410	360 U	ug/kg	360	360 U	ug/kg	360
Benzo (a) pyrene	370 UJ	ug/kg	370	410 U	ug/kg	410	360 U	ug/kg	360	360 U	ug/kg	360
Indeno (1,2,3-cd) pyrene	370 UJ	ug/kg	370	410 U	ug/kg	410	360 U	ug/kg	360	360 U	ug/kg	360
Dibenzo (a,h) anthracene	370 UJ	ug/kg	370	410 U	ug/kg	410	360 U	ug/kg	360	360 U	ug/kg	360
Benzo (g,h,i) perylene	370 UJ	ug/kg	370	410 U	ug/kg	410	360 U	ug/kg	360	360 U	ug/kg	360
CLP PESTICIDES/PCBS 90-SOW ug/kg												
alpha-BHC	-	ug/kg	2.1 UJ	ug/kg	2.1	1.8 UJ	ug/kg	1.8	1.8 UJ	ug/kg	1.8	
beta-BHC	-	ug/kg	2.1 U	ug/kg	2.1	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8	
delta-BHC	-	ug/kg	2.1 U	ug/kg	2.1	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8	
gamma-BHC (Lindane)	-	ug/kg	2.1 U	ug/kg	2.1	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8	
Heptachlor	-	ug/kg	2.1 U	ug/kg	2.1	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8	
Aldrin	-	ug/kg	2.1 U	ug/kg	2.1	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8	
Heptachlor epoxide	-	ug/kg	2.1 U	ug/kg	2.1	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8	
Endosulfan I	-	ug/kg	2.1 U	ug/kg	2.1	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8	
Dieldrin	-	ug/kg	4 U	ug/kg	4	3.5 U	ug/kg	3.5	3.6 U	ug/kg	3.6	
4,4-DDE	-	ug/kg	3.1 J	ug/kg	4	50	ug/kg	4	3.6 U	ug/kg	3.6	
Endrin	-	ug/kg	4 U	ug/kg	4	3.5 U	ug/kg	3.5	3.6 U	ug/kg	3.6	
Endosulfan II	-	ug/kg	4 U	ug/kg	4	3.5 U	ug/kg	3.5	3.6 U	ug/kg	3.6	
4,4-DDD	-	ug/kg	4 U	ug/kg	4	3.8	ug/kg	4	3.6 U	ug/kg	3.6	
Endosulfan sulfate	-	ug/kg	4 U	ug/kg	4	3.5 U	ug/kg	3.5	3.6 U	ug/kg	3.6	
4,4-DDT	-	ug/kg	4 U	ug/kg	4	14	ug/kg	4	3.6 U	ug/kg	3.6	
Methoxychlor	-	ug/kg	21 U	ug/kg	21	18 U	ug/kg	18	18 U	ug/kg	18	
Endrin ketone	-	ug/kg	4 U	ug/kg	4	3.5 U	ug/kg	3.5	3.6 U	ug/kg	3.6	
Endrin aldehyde	-	ug/kg	4 U	ug/kg	4	3.5 U	ug/kg	3.5	3.6 U	ug/kg	3.6	
alpha-Chlordane	-	ug/kg	2.1 U	ug/kg	2.1	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8	
gamma-Chlordane	-	ug/kg	2.1 U	ug/kg	2.1	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8	
Toxaphene	-	ug/kg	210 U	ug/kg	210	180 U	ug/kg	180	180 U	ug/kg	180	
Aroclor-1016	-	ug/kg	40 U	ug/kg	40	35 U	ug/kg	35	36 U	ug/kg	36	
Aroclor-1221	-	ug/kg	82 U	ug/kg	82	72 U	ug/kg	72	73 U	ug/kg	73	
Aroclor-1232	-	ug/kg	40 U	ug/kg	40	35 U	ug/kg	35	36 U	ug/kg	36	
Aroclor-1242	-	ug/kg	40 U	ug/kg	40	35 U	ug/kg	35	36 U	ug/kg	36	
Aroclor-1248	-	ug/kg	40 U	ug/kg	40	35 U	ug/kg	35	36 U	ug/kg	36	
Aroclor-1254	-	ug/kg	40 U	ug/kg	40	35 U	ug/kg	35	36 U	ug/kg	36	
Aroclor-1260	-	ug/kg	40 U	ug/kg	40	35 U	ug/kg	35	36 U	ug/kg	36	
CLP METALS AND CYANIDE mg/kg												
Aluminum	-	mg/kg	5810	mg/kg	40	5060	mg/kg	40	4190	mg/kg	40	
Antimony	-	mg/kg	12 UJ	mg/kg	12	12 UJ	mg/kg	12	12 UJ	mg/kg	12	
Arsenic	-	mg/kg	1.5 J	mg/kg	2	.75 J	mg/kg	2	.84 J	mg/kg	2	
Barium	-	mg/kg	6.5 J	mg/kg	40	7.4 J	mg/kg	40	11.4 J	mg/kg	40	
Beryllium	-	mg/kg	1 UJ	mg/kg	1	1 UJ	mg/kg	1	1 UJ	mg/kg	1	
Cadmium	-	mg/kg	1 U	mg/kg	1	1 U	mg/kg	1	1 U	mg/kg	1	
Calcium	-	mg/kg	1000 UJ	mg/kg	1000	1000 UJ	mg/kg	1000	115 J	mg/kg	1000	
Chromium	-	mg/kg	5.2	mg/kg	2	3.7	mg/kg	2	4.7	mg/kg	2	
Cobalt	-	mg/kg	10 U	mg/kg	10	10 U	mg/kg	10	.57 J	mg/kg	10	
Copper	-	mg/kg	5 UJ	mg/kg	5	5 UJ	mg/kg	5	7.1	mg/kg	5	
Iron	-	mg/kg	3440	mg/kg	20	2780	mg/kg	20	2500	mg/kg	20	
Lead	-	mg/kg	4.7	mg/kg	.6	3	mg/kg	.6	13.8	mg/kg	.6	
Magnesium	-	mg/kg	85.7 J	mg/kg	1000	94.4 J	mg/kg	1000	99 J	mg/kg	1000	

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:
Site
Locator
Collect Date:

G8913017RE
WHITING
15S00901RE
11-DEC-95
VALUE QUAL UNITS DL

G8914014
WHITING
15S01001
10-DEC-95
VALUE QUAL UNITS DL

G8914013
WHITING
15S01101
10-DEC-95
VALUE QUAL UNITS DL

G8914011
WHITING
15S01201
10-DEC-95
VALUE QUAL UNITS DL

	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
Manganese	-	mg/kg		10.9	mg/kg	3	52.4	mg/kg	3	55.3	mg/kg	3
Mercury	-	mg/kg		.01 J	mg/kg		.02 J	mg/kg	.1	.19	mg/kg	.1
Nickel	-	mg/kg		8 U	mg/kg	8	8 UJ	mg/kg	8	8 U	mg/kg	8
Potassium	-	mg/kg		1000 U	mg/kg	1000	1000 U	mg/kg	1000	1000 U	mg/kg	1000
Selenium	-	mg/kg		1 UJ	mg/kg	1	1 UJ	mg/kg	1	1 UJ	mg/kg	1
Silver	-	mg/kg		2 U	mg/kg	2	2 U	mg/kg	2	2 J	mg/kg	2
Sodium	-	mg/kg		1000 UJ	mg/kg	1000	1000 UJ	mg/kg	1000	1000 UJ	mg/kg	1000
Thallium	-	mg/kg		2 UJ	mg/kg	2	2 UJ	mg/kg	2	2 UJ	mg/kg	2
Vanadium	-	mg/kg		8.6 J	mg/kg	10	6.8 J	mg/kg	10	5.6 J	mg/kg	10
Zinc	-	mg/kg		3.3 J	mg/kg	4	3.2 J	mg/kg	4	15.9	mg/kg	4
Cyanide	-	mg/kg		.5 U	mg/kg	.5	.5 U	mg/kg	.5	.5 U	mg/kg	.5
Total organic carbon	-	mg/kg		-	mg/kg		-	mg/kg		-	mg/kg	
Total petroleum hydrocarbons	-	mg/kg		-	mg/kg		-	mg/kg		-	mg/kg	

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:
Site
Locator
Collect Date:

G8913011
WHITING
15S01301
09-DEC-95

G8913010
WHITING
15S01401
09-DEC-95

G8913009
WHITING
15S01501
09-DEC-95

G8913012
WHITING
15S01601
09-DEC-95

	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW																
	ug/kg															
Chloromethane	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
Bromomethane	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
Vinyl chloride	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
Chloroethane	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
Methylene chloride	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
Acetone	11	U	ug/kg	11	11	U	ug/kg	11	13	U	ug/kg	13	-	-	ug/kg	
Carbon disulfide	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
1,1-Dichloroethene	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
1,1-Dichloroethane	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
1,2-Dichloroethene (total)	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
Chloroform	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
1,2-Dichloroethane	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
2-Butanone	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
1,1,1-Trichloroethane	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
Carbon tetrachloride	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
Bromodichloromethane	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
1,2-Dichloropropane	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
cis-1,3-Dichloropropene	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
Trichloroethene	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
Dibromochloromethane	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
1,1,2-Trichloroethane	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
Benzene	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
trans-1,3-Dichloropropene	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
Bromoform	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
4-Methyl-2-pentanone	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
2-Hexanone	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
Tetrachloroethene	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
Toluene	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
1,1,2,2-Tetrachloroethane	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
Chlorobenzene	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
Ethylbenzene	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
Styrene	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
Xylenes (total)	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	-	-	ug/kg	
CLP SEMIVOLATILES 90-SOW																
	ug/kg															
Phenol	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380	-	-	ug/kg	
bis(2-Chloroethyl) ether	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380	-	-	ug/kg	
2-Chlorophenol	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380	-	-	ug/kg	
1,3-Dichlorobenzene	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380	-	-	ug/kg	
1,4-Dichlorobenzene	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380	-	-	ug/kg	

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:	G8913011			G8913010			G8913009			G8913012		
Site	WHITING			WHITING			WHITING			WHITING		
Locator	15S01301			15S01401			15S01501			15S01601		
Collect Date:	09-DEC-95			09-DEC-95			09-DEC-95			09-DEC-95		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
1,2-Dichlorobenzene	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
2-Methylphenol	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
2,2-oxybis(1-Chloropropane)	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
4-Methylphenol	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
N-Nitroso-di-n-propylamine	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
Hexachloroethane	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
Nitrobenzene	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
Isophorone	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
2-Nitrophenol	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
2,4-Dimethylphenol	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
bis(2-Chloroethoxy) methane	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
2,4-Dichlorophenol	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
1,2,4-Trichlorobenzene	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
Naphthalene	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
4-Chloroaniline	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
Hexachlorobutadiene	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
4-Chloro-3-methylphenol	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
2-Methylnaphthalene	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
Hexachlorocyclopentadiene	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
2,4,6-Trichlorophenol	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
2,4,5-Trichlorophenol	920	U	ug/kg	920	900	U	ug/kg	900	950	U	ug/kg	950
2-Chloronaphthalene	920	U	ug/kg	920	900	U	ug/kg	900	950	U	ug/kg	950
2-Nitroaniline	920	U	ug/kg	920	900	U	ug/kg	900	950	U	ug/kg	950
Dimethylphthalate	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
Acenaphthylene	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
2,6-Dinitrotoluene	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
3-Nitroaniline	920	U	ug/kg	920	900	U	ug/kg	900	950	U	ug/kg	950
Acenaphthene	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
2,4-Dinitrophenol	920	U	ug/kg	920	900	U	ug/kg	900	950	U	ug/kg	950
4-Nitrophenol	920	U	ug/kg	920	900	U	ug/kg	900	950	U	ug/kg	950
Dibenzofuran	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
2,4-Dinitrotoluene	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
Diethylphthalate	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
4-Chlorophenyl-phenylether	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
Fluorene	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
4-Nitroaniline	920	U	ug/kg	920	900	U	ug/kg	900	950	U	ug/kg	950
4,6-Dinitro-2-methylphenol	920	U	ug/kg	920	900	U	ug/kg	900	950	U	ug/kg	950
N-Nitrosodiphenylamine	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
4-Bromophenyl-phenylether	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
Hexachlorobenzene	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
Pentachlorophenol	920	U	ug/kg	920	900	U	ug/kg	900	950	U	ug/kg	950
Phenanthrene	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
Anthracene	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
Carbazole	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
Di-n-butylphthalate	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
Fluoranthene	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
Pyrene	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
Butylbenzylphthalate	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
3,3-Dichlorobenzidine	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
Benzo (a) anthracene	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
Chrysene	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380
bis(2-Ethylhexyl) phthalate	370	U	ug/kg	370	170	J	ug/kg	360	380	U	ug/kg	380

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:
Site
Locator
Collect Date:

G8913011
WHITING
15S01301
09-DEC-95

G8913010
WHITING
15S01401
09-DEC-95

G8913009
WHITING
15S01501
09-DEC-95

G8913012
WHITING
15S01601
09-DEC-95

	VALUE	QUAL	UNITS	DL												
Di-n-octylphthalate	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380	-		ug/kg	
Benzo (b) fluoranthene	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380	-		ug/kg	
Benzo (k) fluoranthene	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380	-		ug/kg	
Benzo (a) pyrene	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380	-		ug/kg	
Indeno (1,2,3-cd) pyrene	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380	-		ug/kg	
Dibenzo (a,h) anthracene	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380	-		ug/kg	
Benzo (g,h,i) perylene	370	U	ug/kg	370	360	U	ug/kg	360	380	U	ug/kg	380	-		ug/kg	
CLP PESTICIDES/PCBS 90-SOW ug/kg																
alpha-BHC	1.8	UJ	ug/kg	1.8	1.8	UJ	ug/kg	1.8	1.9	UJ	ug/kg	1.9	-		ug/kg	
beta-BHC	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.9	U	ug/kg	1.9	-		ug/kg	
delta-BHC	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.9	U	ug/kg	1.9	-		ug/kg	
gamma-BHC (Lindane)	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.9	U	ug/kg	1.9	-		ug/kg	
Heptachlor	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.9	U	ug/kg	1.9	-		ug/kg	
Aldrin	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.9	U	ug/kg	1.9	-		ug/kg	
Heptachlor epoxide	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.9	U	ug/kg	1.9	-		ug/kg	
Endosulfan I	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.9	U	ug/kg	1.9	-		ug/kg	
Dieldrin	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.7	U	ug/kg	3.7	-		ug/kg	
4,4-DDE	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.7	U	ug/kg	3.7	-		ug/kg	
Endrin	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.7	U	ug/kg	3.7	-		ug/kg	
Endosulfan II	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.7	U	ug/kg	3.7	-		ug/kg	
4,4-DDD	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.7	U	ug/kg	3.7	-		ug/kg	
Endosulfan sulfate	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.7	U	ug/kg	3.7	-		ug/kg	
4,4-DDT	4.4	U	ug/kg	4	3.6	U	ug/kg	3.6	3.7	U	ug/kg	3.7	-		ug/kg	
Methoxychlor	18	U	ug/kg	18	18	U	ug/kg	18	19	U	ug/kg	19	-		ug/kg	
Endrin ketone	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.7	U	ug/kg	3.7	-		ug/kg	
Endrin aldehyde	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.7	U	ug/kg	3.7	-		ug/kg	
alpha-Chlordane	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.9	U	ug/kg	1.9	-		ug/kg	
gamma-Chlordane	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.9	U	ug/kg	1.9	-		ug/kg	
Toxaphene	180	U	ug/kg	180	180	U	ug/kg	180	190	U	ug/kg	190	-		ug/kg	
Aroclor-1016	36	U	ug/kg	36	36	U	ug/kg	36	37	U	ug/kg	37	-		ug/kg	
Aroclor-1221	73	U	ug/kg	73	73	U	ug/kg	73	76	U	ug/kg	76	-		ug/kg	
Aroclor-1232	36	U	ug/kg	36	36	U	ug/kg	36	37	U	ug/kg	37	-		ug/kg	
Aroclor-1242	36	U	ug/kg	36	36	U	ug/kg	36	37	U	ug/kg	37	-		ug/kg	
Aroclor-1248	36	U	ug/kg	36	36	U	ug/kg	36	37	U	ug/kg	37	-		ug/kg	
Aroclor-1254	36	U	ug/kg	36	36	U	ug/kg	36	37	U	ug/kg	37	-		ug/kg	
Aroclor-1260	36	U	ug/kg	36	36	U	ug/kg	36	37	U	ug/kg	37	-		ug/kg	
CLP METALS AND CYANIDE mg/kg																
Aluminum	5860		mg/kg	40	6220		mg/kg	40	13400		mg/kg	40	7190		mg/kg	40
Antimony	12	UJ	mg/kg	12												
Arsenic	1.6	J	mg/kg	2	1.5	J	mg/kg	2	6.8		mg/kg	2	1.5	J	mg/kg	2
Barium	5.5	J	mg/kg	40	7	J	mg/kg	40	11.8	J	mg/kg	40	4.9	J	mg/kg	40
Beryllium	1	UJ	mg/kg	1												
Cadmium	1	U	mg/kg	1												
Calcium	29.3	J	mg/kg	1000	23.3	J	mg/kg	1000	189	J	mg/kg	1000	25.1	J	mg/kg	1000
Chromium	4.3		mg/kg	2	10.2		mg/kg	2	12.4		mg/kg	2	5.4		mg/kg	2
Cobalt	10	U	mg/kg	10												
Copper	5	UJ	mg/kg	5	5	UJ	mg/kg	5	4.2	J	mg/kg	5	5	UJ	mg/kg	5
Iron	3520	J	mg/kg	20	3620	J	mg/kg	20	9790	J	mg/kg	20	4610	J	mg/kg	20
Lead	3.6		mg/kg	.6	3.2		mg/kg	.6	9.7		mg/kg	.6	3.6		mg/kg	.6
Magnesium	74.8	J	mg/kg	1000	84.2	J	mg/kg	1000	114	J	mg/kg	1000	63.6	J	mg/kg	1000

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:
Site
Locator
Collect Date:

G8913011
WHITING
15S01301
09-DEC-95

G8913010
WHITING
15S01401
09-DEC-95

G8913009
WHITING
15S01501
09-DEC-95

G8913012
WHITING
15S01601
09-DEC-95

VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL

Manganese	51.9	mg/kg	3	56.3	mg/kg	3	44.3	mg/kg	3	23.1	mg/kg	3
Mercury	.01 J	mg/kg	.1	.01 J	mg/kg	.1	.02 J	mg/kg	.1	.1 U	mg/kg	.1
Nickel	8 UJ	mg/kg	8	8 U	mg/kg	8	8 U	mg/kg	8	8 UJ	mg/kg	8
Potassium	1000 U	mg/kg	1000									
Selenium	1 U	mg/kg	1	1 U	mg/kg	1	.41 J	mg/kg	1	1 U	mg/kg	1
Silver	2 U	mg/kg	2									
Sodium	1000 UJ	mg/kg	1000									
Thallium	2 UJ	mg/kg	2									
Vanadium	8.5 J	mg/kg	10	8.6 J	mg/kg	10	26.2	mg/kg	10	11.4	mg/kg	10
Zinc	3.1 J	mg/kg	4	11.2	mg/kg	4	5.3	mg/kg	4	2.7 J	mg/kg	4
Cyanide	.5 U	mg/kg	.5	.5 U	mg/kg	.5	.09 J	mg/kg	.5	.5 U	mg/kg	.5
Total organic carbon	-	mg/kg										
Total petroleum hydrocarbons	-	mg/kg										

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:
Site
Locator
Collect Date:

G8913012
WHITING
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G8913013
WHITING
15S01701
10-DEC-95

G8913014
WHITING
15S01701D
10-DEC-95

G8913015
WHITING
15S01801
10-DEC-95

	VALUE	QUAL	UNITS	DL												
CLP VOLATILES 90-SOW																
Chloromethane	11	U	ug/kg	11												
Bromomethane	11	U	ug/kg	11												
Vinyl chloride	11	U	ug/kg	11												
Chloroethane	11	U	ug/kg	11												
Methylene chloride	11	U	ug/kg	11												
Acetone	11	U	ug/kg	11												
Carbon disulfide	11	U	ug/kg	11												
1,1-Dichloroethene	11	U	ug/kg	11												
1,1-Dichloroethane	11	U	ug/kg	11												
1,2-Dichloroethene (total)	11	U	ug/kg	11												
Chloroform	11	U	ug/kg	11												
1,2-Dichloroethane	11	U	ug/kg	11												
2-Butanone	11	U	ug/kg	11												
1,1,1-Trichloroethane	11	U	ug/kg	11												
Carbon tetrachloride	11	U	ug/kg	11												
Bromodichloromethane	11	U	ug/kg	11												
1,2-Dichloropropane	11	U	ug/kg	11												
cis-1,3-Dichloropropene	11	U	ug/kg	11												
Trichloroethene	11	U	ug/kg	11												
Dibromochloromethane	11	U	ug/kg	11												
1,1,2-Trichloroethane	11	U	ug/kg	11												
Benzene	11	U	ug/kg	11												
trans-1,3-Dichloropropene	11	U	ug/kg	11												
Bromoform	11	U	ug/kg	11												
4-Methyl-2-pentanone	11	U	ug/kg	11												
2-Hexanone	11	U	ug/kg	11												
Tetrachloroethene	11	U	ug/kg	11												
Toluene	11	U	ug/kg	11												
1,1,2,2-Tetrachloroethane	11	U	ug/kg	11												
Chlorobenzene	11	U	ug/kg	11												
Ethylbenzene	11	U	ug/kg	11												
Styrene	11	U	ug/kg	11												
Xylenes (total)	11	U	ug/kg	11												
CLP SEMIVOLATILES 90-SOW																
Phenol	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
bis(2-Chloroethyl) ether	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
2-Chlorophenol	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
1,3-Dichlorobenzene	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
1,4-Dichlorobenzene	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:	G8913012	G8913013	G8913014	G8913015							
Site	WHITING	WHITING	WHITING	WHITING							
Locator	15S01601	15S01701	15S01701D	15S01801							
Collect Date:	10-DEC-95	10-DEC-95	10-DEC-95	10-DEC-95							
VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL

1,2-Dichlorobenzene	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
2-Methylphenol	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
2,2-oxybis(1-Chloropropane)	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
4-Methylphenol	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
N-Nitroso-di-n-propylamine	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
Hexachloroethane	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
Nitrobenzene	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
Isophorone	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
2-Nitrophenol	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
2,4-Dimethylphenol	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
bis(2-Chloroethoxy) methane	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
2,4-Dichlorophenol	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
1,2,4-Trichlorobenzene	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
Naphthalene	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
4-Chloroaniline	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
Hexachlorobutadiene	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
4-Chloro-3-methylphenol	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
2-Methylnaphthalene	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
Hexachlorocyclopentadiene	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
2,4,6-Trichlorophenol	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
2,4,5-Trichlorophenol	900	U	ug/kg	900	950	U	ug/kg	950	950	U	ug/kg	950	900	U	ug/kg	900
2-Chloronaphthalene	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
2-Nitroaniline	900	U	ug/kg	900	950	U	ug/kg	950	950	U	ug/kg	950	900	U	ug/kg	900
Dimethylphthalate	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
Acenaphthylene	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
2,6-Dinitrotoluene	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
3-Nitroaniline	900	U	ug/kg	900	950	U	ug/kg	950	950	U	ug/kg	950	900	U	ug/kg	900
Acenaphthene	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
2,4-Dinitrophenol	900	U	ug/kg	900	950	U	ug/kg	950	950	U	ug/kg	950	900	U	ug/kg	900
4-Nitrophenol	900	U	ug/kg	900	950	U	ug/kg	950	950	U	ug/kg	950	900	U	ug/kg	900
Dibenzofuran	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
2,4-Dinitrotoluene	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
Diethylphthalate	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
4-Chlorophenyl-phenylether	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
Fluorene	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
4-Nitroaniline	900	U	ug/kg	900	950	U	ug/kg	950	950	U	ug/kg	950	900	U	ug/kg	900
4,6-Dinitro-2-methylphenol	900	U	ug/kg	900	950	U	ug/kg	950	950	U	ug/kg	950	900	U	ug/kg	900
N-Nitrosodiphenylamine	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
4-Bromophenyl-phenylether	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
Hexachlorobenzene	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
Pentachlorophenol	900	U	ug/kg	900	950	U	ug/kg	950	950	U	ug/kg	950	900	U	ug/kg	900
Phenanthrene	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
Anthracene	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
Carbazole	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
Di-n-butylphthalate	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
Fluoranthene	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
Pyrene	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
Butylbenzylphthalate	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
3,3-Dichlorobenzidine	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
Benzo (a) anthracene	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
Chrysene	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360
bis(2-Ethylhexyl) phthalate	360	U	ug/kg	360	380	U	ug/kg	380	380	U	ug/kg	380	360	U	ug/kg	360

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:
Site
Locator
Collect Date:

G8913012
WHITING
15S01601
10-DEC-95
VALUE QUAL UNITS DL

G8913013
WHITING
15S01701
10-DEC-95
VALUE QUAL UNITS DL

G8913014
WHITING
15S01701D
10-DEC-95
VALUE QUAL UNITS DL

G8913015
WHITING
15S01801
10-DEC-95
VALUE QUAL UNITS DL

	VALUE	QUAL UNITS	DL									
Di-n-octylphthalate	360 U	ug/kg	360	380 U	ug/kg	380	380 U	ug/kg	380	360 U	ug/kg	360
Benzo (b) fluoranthene	360 U	ug/kg	360	380 U	ug/kg	380	380 U	ug/kg	380	360 U	ug/kg	360
Benzo (k) fluoranthene	360 U	ug/kg	360	380 U	ug/kg	380	380 U	ug/kg	380	360 U	ug/kg	360
Benzo (a) pyrene	360 U	ug/kg	360	380 U	ug/kg	380	380 U	ug/kg	380	360 U	ug/kg	360
Indeno (1,2,3-cd) pyrene	360 U	ug/kg	360	380 U	ug/kg	380	380 U	ug/kg	380	360 U	ug/kg	360
Dibenzo (a,h) anthracene	360 U	ug/kg	360	380 U	ug/kg	380	380 U	ug/kg	380	360 U	ug/kg	360
Benzo (g,h,i) perylene	360 U	ug/kg	360	380 U	ug/kg	380	380 U	ug/kg	380	360 U	ug/kg	360

CLP PESTICIDES/PCBS 90-SOW

ug/kg

	VALUE	QUAL UNITS	DL									
alpha-BHC	1.8 UJ	ug/kg	1.8	1.9 UJ	ug/kg	1.9	1.9 UJ	ug/kg	1.9	1.8 UJ	ug/kg	1.8
beta-BHC	1.8 U	ug/kg	1.8	1.9 U	ug/kg	1.9	1.9 U	ug/kg	1.9	1.8 U	ug/kg	1.8
delta-BHC	1.8 U	ug/kg	1.8	1.9 U	ug/kg	1.9	1.9 U	ug/kg	1.9	1.8 U	ug/kg	1.8
gamma-BHC (Lindane)	1.8 U	ug/kg	1.8	1.9 U	ug/kg	1.9	1.9 U	ug/kg	1.9	1.8 U	ug/kg	1.8
Heptachlor	1.8 U	ug/kg	1.8	1.9 U	ug/kg	1.9	1.9 U	ug/kg	1.9	1.8 U	ug/kg	1.8
Aldrin	1.8 U	ug/kg	1.8	1.9 U	ug/kg	1.9	1.9 U	ug/kg	1.9	1.8 U	ug/kg	1.8
Heptachlor epoxide	1.8 U	ug/kg	1.8	1.9 U	ug/kg	1.9	1.9 U	ug/kg	1.9	1.8 U	ug/kg	1.8
Endosulfan I	1.8 U	ug/kg	1.8	1.9 U	ug/kg	1.9	1.9 U	ug/kg	1.9	1.8 U	ug/kg	1.8
Dieldrin	3.6 U	ug/kg	3.6	3.7 U	ug/kg	3.7	3.7 U	ug/kg	3.7	3.6 U	ug/kg	3.6
4,4-DDE	3.6 U	ug/kg	3.6	3.7 U	ug/kg	3.7	3.7 U	ug/kg	3.7	3.6 U	ug/kg	3.6
Endrin	3.6 U	ug/kg	3.6	3.7 U	ug/kg	3.7	3.7 U	ug/kg	3.7	3.6 U	ug/kg	3.6
Endosulfan II	3.6 U	ug/kg	3.6	3.7 U	ug/kg	3.7	3.7 U	ug/kg	3.7	3.6 U	ug/kg	3.6
4,4-DDD	3.6 U	ug/kg	3.6	3.7 U	ug/kg	3.7	3.7 U	ug/kg	3.7	3.6 U	ug/kg	3.6
Endosulfan sulfate	3.6 U	ug/kg	3.6	3.7 U	ug/kg	3.7	3.7 U	ug/kg	3.7	3.6 U	ug/kg	3.6
4,4-DDT	3.6 U	ug/kg	3.6	3.7 U	ug/kg	3.7	3.7 U	ug/kg	3.7	3.6 U	ug/kg	3.6
Methoxychlor	18 U	ug/kg	18	19 U	ug/kg	19	19 U	ug/kg	19	18 U	ug/kg	18
Endrin ketone	3.6 U	ug/kg	3.6	3.7 U	ug/kg	3.7	3.7 U	ug/kg	3.7	3.6 U	ug/kg	3.6
Endrin aldehyde	3.6 U	ug/kg	3.6	3.7 U	ug/kg	3.7	3.7 U	ug/kg	3.7	3.6 U	ug/kg	3.6
alpha-Chlordane	1.8 U	ug/kg	1.8	1.9 U	ug/kg	1.9	1.9 U	ug/kg	1.9	1.8 U	ug/kg	1.8
gamma-Chlordane	1.8 U	ug/kg	1.8	1.9 U	ug/kg	1.9	1.9 U	ug/kg	1.9	1.8 U	ug/kg	1.8
Toxaphene	180 U	ug/kg	180	190 U	ug/kg	190	190 U	ug/kg	190	180 U	ug/kg	180
Aroclor-1016	36 U	ug/kg	36	37 U	ug/kg	37	37 U	ug/kg	37	36 U	ug/kg	36
Aroclor-1221	73 U	ug/kg	73	76 U	ug/kg	76	76 U	ug/kg	76	73 U	ug/kg	73
Aroclor-1232	36 U	ug/kg	36	37 U	ug/kg	37	37 U	ug/kg	37	36 U	ug/kg	36
Aroclor-1242	36 U	ug/kg	36	37 U	ug/kg	37	37 U	ug/kg	37	36 U	ug/kg	36
Aroclor-1248	36 U	ug/kg	36	37 U	ug/kg	37	37 U	ug/kg	37	36 U	ug/kg	36
Aroclor-1254	36 U	ug/kg	36	37 U	ug/kg	37	37 U	ug/kg	37	36 U	ug/kg	36
Aroclor-1260	36 U	ug/kg	36	37 U	ug/kg	37	37 U	ug/kg	37	36 U	ug/kg	36

CLP METALS AND CYANIDE

mg/kg

	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
Aluminum	-	mg/kg		13700	mg/kg	40	9290	mg/kg	40	6020	mg/kg	40
Antimony	-	mg/kg		12 UJ	mg/kg	12	12 UJ	mg/kg	12	12 UJ	mg/kg	12
Arsenic	-	mg/kg		3.7	mg/kg	2	4.3	mg/kg	2	1 J	mg/kg	2
Barium	-	mg/kg		4.4 J	mg/kg	40	3.8 J	mg/kg	40	7.7 J	mg/kg	40
Beryllium	-	mg/kg		1 UJ	mg/kg	1	1 UJ	mg/kg	1	1 UJ	mg/kg	1
Cadmium	-	mg/kg		1 U	mg/kg	1	1 U	mg/kg	1	1 U	mg/kg	1
Calcium	-	mg/kg		23.7 J	mg/kg	1000	20.4 J	mg/kg	1000	1000 UJ	mg/kg	1000
Chromium	-	mg/kg		14.8	mg/kg	2	14	mg/kg	2	3.8	mg/kg	2
Cobalt	-	mg/kg		10 U	mg/kg	10	10 U	mg/kg	10	.53 J	mg/kg	10
Copper	-	mg/kg		5 UJ	mg/kg	5	5 UJ	mg/kg	5	5 UJ	mg/kg	5
Iron	-	mg/kg		11900 J	mg/kg	20	10400 J	mg/kg	20	3040 J	mg/kg	20
Lead	-	mg/kg		4.7	mg/kg	.6	4.1	mg/kg	.6	3.9	mg/kg	.6
Magnesium	-	mg/kg		51.2 J	mg/kg	1000	41.8 J	mg/kg	1000	108 J	mg/kg	1000

Naval Air Station Whiting Field, Milton, Florida
 Site 15 Surface Soil Data

Lab Sample Number:
 Site
 Locator
 Collect Date:

G8913012
 WHITING
 15S01601
 10-DEC-95

G8913013
 WHITING
 15S01701
 10-DEC-95

G8913014
 WHITING
 15S01701D
 10-DEC-95

G8913015
 WHITING
 15S01801
 10-DEC-95

	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
Manganese	-	mg/kg		10.8	mg/kg	3	6.8	mg/kg	3	116	mg/kg	3
Mercury	-	mg/kg		.1 U	mg/kg	.1	.1 U	mg/kg	.1	.01 J	mg/kg	.1
Nickel	-	mg/kg		8 U	mg/kg	8	8 UJ	mg/kg	8	8 UJ	mg/kg	8
Potassium	-	mg/kg		1000 U	mg/kg	1000	1000 U	mg/kg	1000	201 J	mg/kg	1000
Selenium	-	mg/kg		1 UJ	mg/kg	1	.25 J	mg/kg	1	.24 J	mg/kg	1
Silver	-	mg/kg		2 U	mg/kg	2	2 U	mg/kg	2	2 U	mg/kg	2
Sodium	-	mg/kg		1000 UJ	mg/kg	1000	1000 UJ	mg/kg	1000	1000 UJ	mg/kg	1000
Thallium	-	mg/kg		2 UJ	mg/kg	2	2 U	mg/kg	2	2 UJ	mg/kg	2
Vanadium	-	mg/kg		35.9	mg/kg	10	31.8	mg/kg	10	7.4 J	mg/kg	10
Zinc	-	mg/kg		4 UJ	mg/kg	4	4 UJ	mg/kg	4	3.5 J	mg/kg	4
Cyanide	-	mg/kg		.5 U	mg/kg	.5	.5 U	mg/kg	.5	.5 U	mg/kg	.5
Total organic carbon	-	mg/kg		-	mg/kg		-	mg/kg		-	mg/kg	
Total petroleum hydrocarbons	-	mg/kg		-	mg/kg		-	mg/kg		-	mg/kg	

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:	G8913016	G8913002	G8913003	G8913004							
Site	WHITING	WHITING	WHITING	WHITING							
Locator	15S01901	15S02001	15S02001D	15S02101							
Collect Date:	10-DEC-95	09-DEC-95	09-DEC-95	09-DEC-95							
VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 90-SOW	ug/kg											
Chloromethane	11 U	ug/kg	11									
Bromomethane	11 U	ug/kg	11									
Vinyl chloride	11 U	ug/kg	11									
Chloroethane	11 U	ug/kg	11									
Methylene chloride	11 U	ug/kg	11	11 U	ug/kg	11	5 J	ug/kg	11	9	ug/kg	11
Acetone	11 U	ug/kg	11	11 U	ug/kg	11	11 U	ug/kg	11	11 J	ug/kg	11
Carbon disulfide	11 U	ug/kg	11									
1,1-Dichloroethene	11 U	ug/kg	11									
1,1-Dichloroethane	11 U	ug/kg	11									
1,2-Dichloroethene (total)	11 U	ug/kg	11									
Chloroform	11 U	ug/kg	11									
1,2-Dichloroethane	11 U	ug/kg	11									
2-Butanone	11 U	ug/kg	11									
1,1,1-Trichloroethane	11 U	ug/kg	11									
Carbon tetrachloride	11 U	ug/kg	11									
Bromodichloromethane	11 U	ug/kg	11									
1,2-Dichloropropane	11 U	ug/kg	11									
cis-1,3-Dichloropropene	11 U	ug/kg	11									
Trichloroethene	11 U	ug/kg	11									
Dibromochloromethane	11 U	ug/kg	11									
1,1,2-Trichloroethane	11 U	ug/kg	11									
Benzene	11 U	ug/kg	11									
trans-1,3-Dichloropropene	11 U	ug/kg	11									
Bromoform	11 U	ug/kg	11									
4-Methyl-2-pentanone	11 U	ug/kg	11									
2-Hexanone	11 U	ug/kg	11									
Tetrachloroethene	11 U	ug/kg	11									
Toluene	11 U	ug/kg	11									
1,1,2,2-Tetrachloroethane	11 U	ug/kg	11									
Chlorobenzene	11 U	ug/kg	11									
Ethylbenzene	11 U	ug/kg	11									
Styrene	11 U	ug/kg	11									
Xylenes (total)	11 U	ug/kg	11									
CLP SEMIVOLATILES 90-SOW	ug/kg											
Phenol	370 U	ug/kg	370	360 U	ug/kg	360	360 U	ug/kg	360	370 U	ug/kg	370
bis(2-Chloroethyl) ether	370 U	ug/kg	370	360 U	ug/kg	360	360 U	ug/kg	360	370 U	ug/kg	370
2-Chlorophenol	370 U	ug/kg	370	360 U	ug/kg	360	360 U	ug/kg	360	370 U	ug/kg	370
1,3-Dichlorobenzene	370 U	ug/kg	370	360 U	ug/kg	360	360 U	ug/kg	360	370 U	ug/kg	370
1,4-Dichlorobenzene	370 U	ug/kg	370	360 U	ug/kg	360	360 U	ug/kg	360	370 U	ug/kg	370

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:	G8913016	G8913002	G8913003	G8913004
Site	WHITING	WHITING	WHITING	WHITING
Locator	15S01901	15S02001	15S02001D	15S02101
Collect Date:	10-DEC-95	09-DEC-95	09-DEC-95	09-DEC-95

	VALUE	QUAL	UNITS	DL												
1,2-Dichlorobenzene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
2-Methylphenol	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
2,2-oxybis(1-Chloropropane)	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
4-Methylphenol	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
N-Nitroso-di-n-propylamine	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
Hexachloroethane	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
Nitrobenzene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
Isophorone	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
2-Nitrophenol	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
2,4-Dimethylphenol	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
bis(2-Chloroethoxy) methane	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
2,4-Dichlorophenol	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
1,2,4-Trichlorobenzene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
Naphthalene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
4-Chloroaniline	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
Hexachlorobutadiene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
4-Chloro-3-methylphenol	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
2-Methylnaphthalene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
Hexachlorocyclopentadiene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
2,4,6-Trichlorophenol	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
2,4,5-Trichlorophenol	920	U	ug/kg	920	900	U	ug/kg	900	900	U	ug/kg	900	920	U	ug/kg	920
2-Chloronaphthalene	920	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
2-Nitroaniline	920	U	ug/kg	920	900	U	ug/kg	900	900	U	ug/kg	900	920	U	ug/kg	920
Dimethylphthalate	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
Acenaphthylene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
2,6-Dinitrotoluene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
3-Nitroaniline	920	U	ug/kg	920	900	U	ug/kg	900	900	U	ug/kg	900	920	U	ug/kg	920
Acenaphthene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
2,4-Dinitrophenol	920	U	ug/kg	920	900	U	ug/kg	900	900	U	ug/kg	900	920	U	ug/kg	920
4-Nitrophenol	920	U	ug/kg	920	900	U	ug/kg	900	900	U	ug/kg	900	920	U	ug/kg	920
Dibenzofuran	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
2,4-Dinitrotoluene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
Diethylphthalate	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
4-Chlorophenyl-phenylether	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
Fluorene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
4-Nitroaniline	920	U	ug/kg	920	900	U	ug/kg	900	900	U	ug/kg	900	920	U	ug/kg	920
4,6-Dinitro-2-methylphenol	920	U	ug/kg	920	900	U	ug/kg	900	900	U	ug/kg	900	920	U	ug/kg	920
N-Nitrosodiphenylamine	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
4-Bromophenyl-phenylether	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
Hexachlorobenzene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
Pentachlorophenol	920	U	ug/kg	920	900	U	ug/kg	900	900	U	ug/kg	900	920	U	ug/kg	920
Phenanthrene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
Anthracene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
Carbazole	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
Di-n-butylphthalate	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
Fluoranthene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
Pyrene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
Butylbenzylphthalate	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
3,3-Dichlorobenzidine	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
Benzo (a) anthracene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
Chrysene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
bis(2-Ethylhexyl) phthalate	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:
Site
Locator
Collect Date:

G8913016
WHITING
15S01901
10-DEC-95

G8913002
WHITING
15S02001
09-DEC-95

G8913003
WHITING
15S02001D
09-DEC-95

G8913004
WHITING
15S02101
09-DEC-95

	VALUE	QUAL	UNITS	DL												
Di-n-octylphthalate	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
Benzo (b) fluoranthene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
Benzo (k) fluoranthene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
Benzo (a) pyrene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
Indeno (1,2,3-cd) pyrene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
Dibenzo (a,h) anthracene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
Benzo (g,h,i) perylene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	370	U	ug/kg	370
CLP PESTICIDES/PCBS 90-SOW ug/kg																
alpha-BHC	1.8	UJ	ug/kg	1.8												
beta-BHC	1.8	U	ug/kg	1.8												
delta-BHC	1.8	U	ug/kg	1.8												
gamma-BHC (Lindane)	1.8	U	ug/kg	1.8												
Heptachlor	1.8	U	ug/kg	1.8												
Aldrin	1.8	U	ug/kg	1.8												
Heptachlor epoxide	1.8	U	ug/kg	1.8												
Endosulfan I	1.8	U	ug/kg	1.8												
Dieldrin	3.6	U	ug/kg	3.6	3.5	U	ug/kg	3.5	3.5	U	ug/kg	3.5	3.6	U	ug/kg	3.6
4,4-DDE	3.6	U	ug/kg	3.6	3.5	U	ug/kg	3.5	3.5	U	ug/kg	3.5	1.9	J	ug/kg	4
Endrin	3.6	U	ug/kg	3.6	3.5	U	ug/kg	3.5	3.5	U	ug/kg	3.5	3.6	U	ug/kg	3.6
Endosulfan II	3.6	U	ug/kg	3.6	3.5	U	ug/kg	3.5	3.5	U	ug/kg	3.5	3.6	U	ug/kg	3.6
4,4-DDD	3.6	U	ug/kg	3.6	3.5	U	ug/kg	3.5	3.5	U	ug/kg	3.5	3.6	U	ug/kg	3.6
Endosulfan sulfate	3.6	U	ug/kg	3.6	3.5	U	ug/kg	3.5	3.5	U	ug/kg	3.5	3.6	U	ug/kg	3.6
4,4-DDT	3.6	U	ug/kg	3.6	3.5	U	ug/kg	3.5	3.5	U	ug/kg	3.5	3.6	U	ug/kg	3.6
Methoxychlor	18	U	ug/kg	18												
Endrin ketone	3.6	U	ug/kg	3.6	3.5	U	ug/kg	3.5	3.5	U	ug/kg	3.5	3.6	U	ug/kg	3.6
Endrin aldehyde	3.6	U	ug/kg	3.6	3.5	U	ug/kg	3.5	3.5	U	ug/kg	3.5	3.6	U	ug/kg	3.6
alpha-Chlordane	1.8	U	ug/kg	1.8												
gamma-Chlordane	1.8	U	ug/kg	1.8												
Toxaphene	180	U	ug/kg	180												
Aroclor-1016	36	U	ug/kg	36	35	U	ug/kg	35	35	U	ug/kg	35	36	U	ug/kg	36
Aroclor-1221	73	U	ug/kg	73	72	U	ug/kg	72	72	U	ug/kg	72	73	U	ug/kg	73
Aroclor-1232	36	U	ug/kg	36	35	U	ug/kg	35	35	U	ug/kg	35	36	U	ug/kg	36
Aroclor-1242	36	U	ug/kg	36	35	U	ug/kg	35	35	U	ug/kg	35	36	U	ug/kg	36
Aroclor-1248	36	U	ug/kg	36	35	U	ug/kg	35	35	U	ug/kg	35	36	U	ug/kg	36
Aroclor-1254	36	U	ug/kg	36	35	U	ug/kg	35	35	U	ug/kg	35	36	U	ug/kg	36
Aroclor-1260	36	U	ug/kg	36	35	U	ug/kg	35	35	U	ug/kg	35	36	U	ug/kg	36
CLP METALS AND CYANIDE mg/kg																
Aluminum	6040		mg/kg	40	4630		mg/kg	40	5470		mg/kg	40	4050		mg/kg	40
Antimony	12	UJ	mg/kg	12												
Arsenic	1.2	J	mg/kg	2	1.2	J	mg/kg	2	1.1	J	mg/kg	2	1.1	J	mg/kg	2
Barium	8.4	J	mg/kg	40	5.6	J	mg/kg	40	6.6	J	mg/kg	40	4.4	J	mg/kg	40
Beryllium	1	UJ	mg/kg	1												
Cadmium	1	U	mg/kg	1												
Calcium	40.3	J	mg/kg	1000	1000	UJ	mg/kg	1000	25.2	J	mg/kg	1000	1000	UJ	mg/kg	1000
Chromium	5.2		mg/kg	2	3		mg/kg	2	3.7		mg/kg	2	2.8		mg/kg	2
Cobalt	.88	J	mg/kg	10	10	U	mg/kg	10	10	U	mg/kg	10	10	U	mg/kg	10
Copper	5	UJ	mg/kg	5												
Iron	3220	J	mg/kg	20	2500	J	mg/kg	20	2950	J	mg/kg	20	2090	J	mg/kg	20
Lead	4.2		mg/kg	.6	5.9		mg/kg	.6	5.9		mg/kg	.6	2.8		mg/kg	.6
Magnesium	99.1	J	mg/kg	1000	85	J	mg/kg	1000	107	J	mg/kg	1000	74.3	J	mg/kg	1000

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:
Site
Locator
Collect Date:

G8913016
WHITING
15S01901
10-DEC-95

G8913002
WHITING
15S02001
09-DEC-95

G8913003
WHITING
15S02001D
09-DEC-95

G8913004
WHITING
15S02101
09-DEC-95

VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL

Manganese	139	mg/kg	3	75.2	mg/kg	3	87.1	mg/kg	3	43.3	mg/kg	3
Mercury	.04 J	mg/kg	.1	.02 J	mg/kg	.1	.02 J	mg/kg	.1	.01 J	mg/kg	.1
Nickel	8 UJ	mg/kg	8	8 UJ	mg/kg	8	8 U	mg/kg	8	8 UJ	mg/kg	8
Potassium	1000 U	mg/kg	1000	1000 U	mg/kg	1000	1000 U	mg/kg	1000	146 J	mg/kg	1000
Selenium	.3 J	mg/kg	1	.26 J	mg/kg	1	1 U	mg/kg	1	1 UJ	mg/kg	1
Silver	2 U	mg/kg	2	2 U	mg/kg	2	2 U	mg/kg	2	.67 J	mg/kg	2
Sodium	1000 UJ	mg/kg	1000									
Thallium	2 UJ	mg/kg	2									
Vanadium	7.7 J	mg/kg	10	5.7 J	mg/kg	10	7.1 J	mg/kg	10	4.8 J	mg/kg	10
Zinc	3.7 J	mg/kg	4	3 J	mg/kg	4	4.1 J	mg/kg	4	2.7 J	mg/kg	4
Cyanide	.5 U	mg/kg	.5									
Total organic carbon	-	mg/kg	-									
Total petroleum hydrocarbons	-	mg/kg	-									

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:	G8913005	G8913006	G8913007	G8913008								
Site	WHITING	WHITING	WHITING	WHITING								
Locator	15S02201	15S02301	15S02401	15S02501								
Collect Date:	09-DEC-95	09-DEC-95	09-DEC-95	09-DEC-95								
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 90-SOW

ug/kg

Chloromethane	11 U	ug/kg	11									
Bromomethane	11 U	ug/kg	11									
Vinyl chloride	11 U	ug/kg	11									
Chloroethane	11 U	ug/kg	11									
Methylene chloride	11 U	ug/kg	11									
Acetone	11 U	ug/kg	11									
Carbon disulfide	11 U	ug/kg	11									
1,1-Dichloroethene	11 U	ug/kg	11									
1,1-Dichloroethane	11 U	ug/kg	11									
1,2-Dichloroethene (total)	11 U	ug/kg	11									
Chloroform	11 U	ug/kg	11									
1,2-Dichloroethane	11 U	ug/kg	11									
2-Butanone	11 U	ug/kg	11									
1,1,1-Trichloroethane	11 U	ug/kg	11									
Carbon tetrachloride	11 U	ug/kg	11									
Bromodichloromethane	11 U	ug/kg	11									
1,2-Dichloropropane	11 U	ug/kg	11									
cis-1,3-Dichloropropene	11 U	ug/kg	11									
Trichloroethene	11 U	ug/kg	11									
Dibromochloromethane	11 U	ug/kg	11									
1,1,2-Trichloroethane	11 U	ug/kg	11									
Benzene	11 U	ug/kg	11									
trans-1,3-Dichloropropene	11 U	ug/kg	11									
Bromoform	11 U	ug/kg	11									
4-Methyl-2-pentanone	11 U	ug/kg	11									
2-Hexanone	11 U	ug/kg	11									
Tetrachloroethene	11 U	ug/kg	11									
Toluene	11 U	ug/kg	11									
1,1,2,2-Tetrachloroethane	11 U	ug/kg	11									
Chlorobenzene	11 U	ug/kg	11									
Ethylbenzene	11 U	ug/kg	11									
Styrene	11 U	ug/kg	11									
Xylenes (total)	11 U	ug/kg	11									

CLP SEMIVOLATILES 90-SOW

ug/kg

Phenol	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
bis(2-Chloroethyl) ether	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
2-Chlorophenol	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
1,3-Dichlorobenzene	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
1,4-Dichlorobenzene	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:
Site
Locator
Collect Date:

G8913005
WHITING
15S02201
09-DEC-95

G8913006
WHITING
15S02301
09-DEC-95

G8913007
WHITING
15S02401
09-DEC-95

G8913008
WHITING
15S02501
09-DEC-95

VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL

1,2-Dichlorobenzene	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
2-Methylphenol	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
2,2-oxybis(1-Chloropropane)	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
4-Methylphenol	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
N-Nitroso-di-n-propylamine	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
Hexachloroethane	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
Nitrobenzene	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
Isophorone	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
2-Nitrophenol	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
2,4-Dimethylphenol	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
bis(2-Chloroethoxy) methane	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
2,4-Dichlorophenol	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
1,2,4-Trichlorobenzene	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
Naphthalene	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
4-Chloroaniline	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
Hexachlorobutadiene	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
4-Chloro-3-methylphenol	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
2-Methylnaphthalene	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
Hexachlorocyclopentadiene	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
2,4,6-Trichlorophenol	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
2,4,5-Trichlorophenol	900 U	ug/kg	900	990 U	ug/kg	990	920 U	ug/kg	920	950 U	ug/kg	950
2-Chloronaphthalene	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
2-Nitroaniline	900 U	ug/kg	900	990 U	ug/kg	990	920 U	ug/kg	920	950 U	ug/kg	950
Dimethylphthalate	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
Acenaphthylene	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
2,6-Dinitrotoluene	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
3-Nitroaniline	900 U	ug/kg	900	990 U	ug/kg	990	920 U	ug/kg	920	950 U	ug/kg	950
Acenaphthene	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
2,4-Dinitrophenol	900 U	ug/kg	900	990 U	ug/kg	990	920 U	ug/kg	920	950 U	ug/kg	950
4-Nitrophenol	900 U	ug/kg	900	990 U	ug/kg	990	920 U	ug/kg	920	950 U	ug/kg	950
Dibenzofuran	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
2,4-Dinitrotoluene	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
Diethylphthalate	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
4-Chlorophenyl-phenylether	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
Fluorene	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
4-Nitroaniline	900 U	ug/kg	900	990 U	ug/kg	990	920 U	ug/kg	920	950 U	ug/kg	950
4,6-Dinitro-2-methylphenol	900 U	ug/kg	900	990 U	ug/kg	990	920 U	ug/kg	920	950 U	ug/kg	950
N-Nitrosodiphenylamine	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
4-Bromophenyl-phenylether	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
Hexachlorobenzene	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
Pentachlorophenol	900 U	ug/kg	900	990 U	ug/kg	990	920 U	ug/kg	920	950 U	ug/kg	950
Phenanthrene	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
Anthracene	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
Carbazole	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
Di-n-butylphthalate	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
Fluoranthene	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
Pyrene	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
Butylbenzylphthalate	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
3,3-Dichlorobenzidine	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
Benzo (a) anthracene	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
Chrysene	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
bis(2-Ethylhexyl) phthalate	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:
Site
Locator
Collect Date:

G8913005
WHITING
15S02201
09-DEC-95

G8913006
WHITING
15S02301
09-DEC-95

G8913007
WHITING
15S02401
09-DEC-95

G8913008
WHITING
15S02501
09-DEC-95

	VALUE	QUAL UNITS	DL									
Di-n-octylphthalate	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
Benzo (b) fluoranthene	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
Benzo (k) fluoranthene	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
Benzo (a) pyrene	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
Indeno (1,2,3-cd) pyrene	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
Dibenzo (a,h) anthracene	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
Benzo (g,h,i) perylene	360 U	ug/kg	360	400 U	ug/kg	400	370 U	ug/kg	370	380 U	ug/kg	380
CLP PESTICIDES/PCBS 90-SOW	ug/kg											
alpha-BHC	1.8 UJ	ug/kg	1.8	1.8 UJ	ug/kg	1.8	1.9 UJ	ug/kg	1.9	2 UJ	ug/kg	2
beta-BHC	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8	1.9 U	ug/kg	1.9	2 UJ	ug/kg	2
delta-BHC	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8	1.9 U	ug/kg	1.9	2 UJ	ug/kg	2
gamma-BHC (Lindane)	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8	1.9 U	ug/kg	1.9	2 UJ	ug/kg	2
Heptachlor	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8	1.9 U	ug/kg	1.9	2 UJ	ug/kg	2
Aldrin	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8	1.9 U	ug/kg	1.9	2 UJ	ug/kg	2
Heptachlor epoxide	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8	1.9 U	ug/kg	1.9	2 UJ	ug/kg	2
Endosulfan I	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8	1.9 U	ug/kg	1.9	2 UJ	ug/kg	2
Dieldrin	3.6 U	ug/kg	3.6	3.6 U	ug/kg	3.6	3.7 U	ug/kg	3.7	4 UJ	ug/kg	4
4,4-DDE	3.6 U	ug/kg	3.6	3.6 U	ug/kg	3.6	3.7 U	ug/kg	3.7	4 UJ	ug/kg	4
Endrin	3.6 U	ug/kg	3.6	3.6 U	ug/kg	3.6	3.7 U	ug/kg	3.7	4 UJ	ug/kg	4
Endosulfan II	3.6 U	ug/kg	3.6	3.6 U	ug/kg	3.6	3.7 U	ug/kg	3.7	4 UJ	ug/kg	4
4,4-DDD	3.6 U	ug/kg	3.6	3.6 U	ug/kg	3.6	3.7 U	ug/kg	3.7	4 UJ	ug/kg	4
Endosulfan sulfate	3.6 U	ug/kg	3.6	3.6 U	ug/kg	3.6	3.7 U	ug/kg	3.7	4 UJ	ug/kg	4
4,4-DDT	3.6 U	ug/kg	3.6	3.6 U	ug/kg	3.6	3.7 U	ug/kg	3.7	4 UJ	ug/kg	4
Methoxychlor	18 U	ug/kg	18	18 U	ug/kg	18	19 U	ug/kg	19	20 UJ	ug/kg	20
Endrin ketone	3.6 U	ug/kg	3.6	3.6 U	ug/kg	3.6	3.7 U	ug/kg	3.7	4 UJ	ug/kg	4
Endrin aldehyde	3.6 U	ug/kg	3.6	3.6 U	ug/kg	3.6	3.7 U	ug/kg	3.7	4 UJ	ug/kg	4
alpha-Chlordane	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8	1.9 U	ug/kg	1.9	2 UJ	ug/kg	2
gamma-Chlordane	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8	1.9 U	ug/kg	1.9	2 UJ	ug/kg	2
Toxaphene	180 U	ug/kg	180	180 U	ug/kg	180	190 U	ug/kg	190	200 UJ	ug/kg	200
Aroclor-1016	36 U	ug/kg	36	36 U	ug/kg	36	37 U	ug/kg	37	40 UJ	ug/kg	40
Aroclor-1221	73 U	ug/kg	73	73 U	ug/kg	73	74 U	ug/kg	74	81 UJ	ug/kg	81
Aroclor-1232	36 U	ug/kg	36	36 U	ug/kg	36	37 U	ug/kg	37	40 UJ	ug/kg	40
Aroclor-1242	36 U	ug/kg	36	36 U	ug/kg	36	37 U	ug/kg	37	40 UJ	ug/kg	40
Aroclor-1248	36 U	ug/kg	36	36 U	ug/kg	36	37 U	ug/kg	37	40 UJ	ug/kg	40
Aroclor-1254	36 U	ug/kg	36	36 U	ug/kg	36	37 U	ug/kg	37	40 UJ	ug/kg	40
Aroclor-1260	36 U	ug/kg	36	36 U	ug/kg	36	37 U	ug/kg	37	40 UJ	ug/kg	40
CLP METALS AND CYANIDE	mg/kg											
Aluminum	3910	mg/kg	40	3280	mg/kg	40	5410	mg/kg	40	5420	mg/kg	40
Antimony	12 UJ	mg/kg	12	12 U	mg/kg	12	12 UJ	mg/kg	12	12 UJ	mg/kg	12
Arsenic	.85 J	mg/kg	2	.77 J	mg/kg	2	1.1 J	mg/kg	2	1.1 J	mg/kg	2
Barium	5.2 J	mg/kg	40	4.5 J	mg/kg	40	7.3 J	mg/kg	40	6.9 J	mg/kg	40
Beryllium	1 UJ	mg/kg	1									
Cadmium	1 U	mg/kg	1									
Calcium	27.3 J	mg/kg	1000	27.9 J	mg/kg	1000	36.9 J	mg/kg	1000	36.9 J	mg/kg	1000
Chromium	2.8	mg/kg	2	4.4	mg/kg	2	3.9	mg/kg	2	3.3	mg/kg	2
Cobalt	10 U	mg/kg	10									
Copper	5 UJ	mg/kg	5	5 UJ	mg/kg	5	4.4 J	mg/kg	5	5 UJ	mg/kg	5
Iron	1940 J	mg/kg	20	1610 J	mg/kg	20	2620 J	mg/kg	20	2800 J	mg/kg	20
Lead	2.7	mg/kg	.6	2.3	mg/kg	.6	3.7	mg/kg	.6	6.1	mg/kg	.6
Magnesium	81.1 J	mg/kg	1000	65.7 J	mg/kg	1000	106 J	mg/kg	1000	85.7 J	mg/kg	1000

Naval Air Station Whiting Field, Milton, Florida
Site 15 Surface Soil Data

Lab Sample Number:
Site
Locator
Collect Date:

G8913005
WHITING
15S02201
09-DEC-95

G8913006
WHITING
15S02301
09-DEC-95

G8913007
WHITING
15S02401
09-DEC-95

G8913008
WHITING
15S02501
09-DEC-95

	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
Manganese	52.1	mg/kg	3	52.8	mg/kg	3	86.3	mg/kg	3	122	mg/kg	3
Mercury	.01 J	mg/kg	.1	.01 J	mg/kg	.1	.02 J	mg/kg	.1	.02 J	mg/kg	.1
Nickel	3.3 J	mg/kg	8	8 U	mg/kg	8	8 UJ	mg/kg	8	8 U	mg/kg	8
Potassium	1000 U	mg/kg	1000	1000 U	mg/kg	1000	1000 U	mg/kg	1000	1000 U	mg/kg	1000
Selenium	1 UJ	mg/kg	1	1 U	mg/kg	1	1 UJ	mg/kg	1	1 UJ	mg/kg	1
Silver	2 U	mg/kg	2	2 U	mg/kg	2	2 U	mg/kg	2	2 U	mg/kg	2
Sodium	1000 U	mg/kg	1000	1000 UJ	mg/kg	1000	1000 UJ	mg/kg	1000	1000 UJ	mg/kg	1000
Thallium	2 UJ	mg/kg	2	2 UJ	mg/kg	2	2 UJ	mg/kg	2	2 UJ	mg/kg	2
Vanadium	4.7 J	mg/kg	10	4.1 J	mg/kg	10	6.7 J	mg/kg	10	6.6 J	mg/kg	10
Zinc	4 UJ	mg/kg	4	2.4 J	mg/kg	4	4 J	mg/kg	4	3.6 J	mg/kg	4
Cyanide	.5 U	mg/kg	.5	.5 U	mg/kg	.5	.5 U	mg/kg	.5	.5 U	mg/kg	.5
Total organic carbon	-	mg/kg		-	mg/kg		-	mg/kg		-	mg/kg	
Total petroleum hydrocarbons	-	mg/kg		-	mg/kg		-	mg/kg		-	mg/kg	

Naval Air Station Whiting Field, Milton, Florida
Site 15 Subsurface Soil Data

Lab Sample Number:	22883001		22889004		22889004		22889005		
Site	WHITING		WHITING		WHITING		WHITING		
Locator	15SS0201		15SS0502		15SS0502		15SS0603		
Collect Date:	02-OCT-92		03-OCT-92		04-OCT-92		03-OCT-92		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 90-SOW

ug/kg

Chloromethane	11 U	ug/kg	11	11 U	ug/kg	11	-	ug/kg	11 U	ug/kg	11
Bromomethane	11 U	ug/kg	11	11 U	ug/kg	11	-	ug/kg	11 U	ug/kg	11
Vinyl chloride	11 U	ug/kg	11	11 U	ug/kg	11	-	ug/kg	11 U	ug/kg	11
Chloroethane	11 U	ug/kg	11	11 U	ug/kg	11	-	ug/kg	11 U	ug/kg	11
Methylene chloride	12 UJ	ug/kg	11	11 UJ	ug/kg	11	-	ug/kg	11 UJ	ug/kg	11
Acetone	87 UJ	ug/kg	11	47 UJ	ug/kg	11	-	ug/kg	11 U	ug/kg	11
Carbon disulfide	11 U	ug/kg	11	11 U	ug/kg	11	-	ug/kg	11 U	ug/kg	11
1,1-Dichloroethene	11 U	ug/kg	11	11 U	ug/kg	11	-	ug/kg	11 U	ug/kg	11
1,1-Dichloroethane	11 U	ug/kg	11	11 U	ug/kg	11	-	ug/kg	11 U	ug/kg	11
1,2-Dichloroethene (total)	11 U	ug/kg	11	11 U	ug/kg	11	-	ug/kg	11 U	ug/kg	11
Chloroform	11 U	ug/kg	11	11 U	ug/kg	11	-	ug/kg	11 U	ug/kg	11
1,2-Dichloroethane	11 U	ug/kg	11	11 U	ug/kg	11	-	ug/kg	11 U	ug/kg	11
2-Butanone	11 U	ug/kg	11	11 U	ug/kg	11	-	ug/kg	11 U	ug/kg	11
1,1,1-Trichloroethane	11 U	ug/kg	11	11 U	ug/kg	11	-	ug/kg	11 U	ug/kg	11
Carbon tetrachloride	11 U	ug/kg	11	11 U	ug/kg	11	-	ug/kg	11 U	ug/kg	11
Bromodichloromethane	11 U	ug/kg	11	11 U	ug/kg	11	-	ug/kg	11 U	ug/kg	11
1,2-Dichloropropane	11 U	ug/kg	11	11 U	ug/kg	11	-	ug/kg	11 U	ug/kg	11
cis-1,3-Dichloropropene	11 U	ug/kg	11	11 U	ug/kg	11	-	ug/kg	11 U	ug/kg	11
Trichloroethene	11 U	ug/kg	11	11 U	ug/kg	11	-	ug/kg	11 U	ug/kg	11
Dibromochloromethane	11 U	ug/kg	11	11 U	ug/kg	11	-	ug/kg	11 U	ug/kg	11
1,1,2-Trichloroethane	11 U	ug/kg	11	11 U	ug/kg	11	-	ug/kg	11 U	ug/kg	11
Benzene	11 U	ug/kg	11	11 U	ug/kg	11	-	ug/kg	11 U	ug/kg	11
trans-1,3-Dichloropropene	11 U	ug/kg	11	11 U	ug/kg	11	-	ug/kg	11 U	ug/kg	11
Bromoform	11 U	ug/kg	11	11 U	ug/kg	11	-	ug/kg	11 U	ug/kg	11
4-Methyl-2-pentanone	11 U	ug/kg	11	11 U	ug/kg	11	-	ug/kg	11 U	ug/kg	11
2-Hexanone	3 J	ug/kg	11	11 U	ug/kg	11	-	ug/kg	11 U	ug/kg	11
Tetrachloroethene	11 U	ug/kg	11	11 U	ug/kg	11	-	ug/kg	11 U	ug/kg	11
Toluene	11 U	ug/kg	11	11 U	ug/kg	11	-	ug/kg	11 U	ug/kg	11
1,1,1,2-Tetrachloroethane	11 U	ug/kg	11	11 U	ug/kg	11	-	ug/kg	11 U	ug/kg	11
Chlorobenzene	11 U	ug/kg	11	11 U	ug/kg	11	-	ug/kg	11 U	ug/kg	11
Ethylbenzene	11 U	ug/kg	11	11 U	ug/kg	11	-	ug/kg	11 U	ug/kg	11
Styrene	11 U	ug/kg	11	11 U	ug/kg	11	-	ug/kg	11 U	ug/kg	11
Xylenes (total)	4 J	ug/kg	11	11 U	ug/kg	11	-	ug/kg	5 J	ug/kg	11

CLP SEMIVOLATILES 90-SOW

ug/kg

Phenol	53 J	ug/kg	360	350 U	ug/kg	350	-	ug/kg	360 U	ug/kg	360
bis(2-Chloroethyl) ether	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	360 U	ug/kg	360
2-Chlorophenol	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	360 U	ug/kg	360
1,3-Dichlorobenzene	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	360 U	ug/kg	360
1,4-Dichlorobenzene	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	360 U	ug/kg	360
1,2-Dichlorobenzene	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	360 U	ug/kg	360
2-Methylphenol	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	360 U	ug/kg	360
2,2-oxybis(1-Chloropropane)	360 UJ	ug/kg	360	350 U	ug/kg	350	-	ug/kg	360 UJ	ug/kg	360
4-Methylphenol	42 J	ug/kg	360	350 U	ug/kg	350	-	ug/kg	77 J	ug/kg	360
N-Nitroso-di-n-propylamine	360 UJ	ug/kg	360	350 U	ug/kg	350	-	ug/kg	360 UJ	ug/kg	360
Hexachloroethane	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	360 U	ug/kg	360
Nitrobenzene	360 UJ	ug/kg	360	350 UJ	ug/kg	350	-	ug/kg	360 UJ	ug/kg	360
Isophorone	360 UJ	ug/kg	360	350 UJ	ug/kg	350	-	ug/kg	360 UJ	ug/kg	360
2-Nitrophenol	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	360 U	ug/kg	360
2,4-Dimethylphenol	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	360 U	ug/kg	360

Naval Air Station Whiting Field, Milton, Florida
Site 15 Subsurface Soil Data

Lab Sample Number: Site Locator Collect Date:	22883001 WHITING 15SS0201 02-OCT-92			22889004 WHITING 15SS0502 03-OCT-92			22889004 WHITING 15SS0502 04-OCT-92			22889005 WHITING 15SS0603 03-OCT-92		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
bis(2-Chloroethoxy) methane	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
2,4-Dichlorophenol	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
1,2,4-Trichlorobenzene	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
Naphthalene	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	140 J	ug/kg	360
4-Chloroaniline	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
Hexachlorobutadiene	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
4-Chloro-3-methylphenol	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
2-Methylnaphthalene	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	68 J	ug/kg	360
Hexachlorocyclopentadiene	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
2,4,6-Trichlorophenol	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
2,4,5-Trichlorophenol	870 U	ug/kg	870	850 U	ug/kg	850	-	ug/kg	-	870 U	ug/kg	870
2-Chloronaphthalene	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
2-Nitroaniline	870 U	ug/kg	870	850 U	ug/kg	850	-	ug/kg	-	870 U	ug/kg	870
Dimethylphthalate	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
Acenaphthylene	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
2,6-Dinitrotoluene	360 U	ug/kg	360	350 UJ	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
3-Nitroaniline	870 U	ug/kg	870	850 UJ	ug/kg	850	-	ug/kg	-	870 U	ug/kg	870
Acenaphthene	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
2,4-Dinitrophenol	870 U	ug/kg	870	850 U	ug/kg	850	-	ug/kg	-	870 U	ug/kg	870
4-Nitrophenol	870 U	ug/kg	870	850 U	ug/kg	850	-	ug/kg	-	870 U	ug/kg	870
Dibenzofuran	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
2,4-Dinitrotoluene	360 U	ug/kg	360	350 UJ	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
Diethylphthalate	41 J	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
4-Chlorophenyl-phenylether	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
Fluorene	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
4-Nitroaniline	870 U	ug/kg	870	850 UJ	ug/kg	850	-	ug/kg	-	870 U	ug/kg	870
4,6-Dinitro-2-methylphenol	870 U	ug/kg	870	850 U	ug/kg	850	-	ug/kg	-	870 U	ug/kg	870
N-Nitrosodiphenylamine	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
4-Bromophenyl-phenylether	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
Hexachlorobenzene	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
Pentachlorophenol	870 U	ug/kg	870	850 U	ug/kg	850	-	ug/kg	-	870 U	ug/kg	870
Phenanthrene	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
Anthracene	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
Carbazole	360 U	ug/kg	360	350 UJ	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
Di-n-butylphthalate	360 UJ	ug/kg	360	350 UJ	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
Fluoranthene	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
Pyrene	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
Butylbenzylphthalate	360 UJ	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 UJ	ug/kg	360
3,3-Dichlorobenzidine	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
Benzo (a) anthracene	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
Chrysene	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
bis(2-Ethylhexyl) phthalate	42 J	ug/kg	360	350 UJ	ug/kg	350	-	ug/kg	-	230 J	ug/kg	360
Di-n-octylphthalate	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
Benzo (b) fluoranthene	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
Benzo (k) fluoranthene	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
Benzo (a) pyrene	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
Indeno (1,2,3-cd) pyrene	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
Dibenzo (a,h) anthracene	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
Benzo (g,h,i) perylene	360 U	ug/kg	360	350 U	ug/kg	350	-	ug/kg	-	360 U	ug/kg	360
CLP PESTICIDES/PCBS 90-SOW alpha-BHC	ug/kg			ug/kg				ug/kg		ug/kg		
	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8	-	ug/kg	-	1.8 U	ug/kg	1.8

Naval Air Station Whiting Field, Milton, Florida
Site 15 Subsurface Soil Data

Lab Sample Number:	22883001	22889004	22889004	22889005
Site	WHITING	WHITING	WHITING	WHITING
Locator	15SS0201	15SS0502	15SS0502	15SS0603
Collect Date:	02-OCT-92	03-OCT-92	04-OCT-92	03-OCT-92

	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
beta-BHC	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8	-	ug/kg	-	1.8 U	ug/kg	1.8
delta-BHC	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8	-	ug/kg	-	1.8 U	ug/kg	1.8
gamma-BHC (Lindane)	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8	-	ug/kg	-	1.8 U	ug/kg	1.8
Heptachlor	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8	-	ug/kg	-	1.8 U	ug/kg	1.8
Aldrin	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8	-	ug/kg	-	1.8 U	ug/kg	1.8
Heptachlor epoxide	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8	-	ug/kg	-	1.8 U	ug/kg	1.8
Endosulfan I	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8	-	ug/kg	-	1.8 U	ug/kg	1.8
Dieldrin	3.5 U	ug/kg	3.5	3.5 U	ug/kg	3.5	-	ug/kg	-	3.6 U	ug/kg	3.6
4,4-DDE	3.5 U	ug/kg	3.5	3.5 U	ug/kg	3.5	-	ug/kg	-	3.6 U	ug/kg	3.6
Endrin	3.5 U	ug/kg	3.5	3.5 U	ug/kg	3.5	-	ug/kg	-	3.6 U	ug/kg	3.6
Endosulfan II	3.5 U	ug/kg	3.5	3.5 U	ug/kg	3.5	-	ug/kg	-	3.6 U	ug/kg	3.6
4,4-DDD	3.5 U	ug/kg	3.5	3.5 U	ug/kg	3.5	-	ug/kg	-	3.6 U	ug/kg	3.6
Endosulfan sulfate	3.5 U	ug/kg	3.5	3.5 U	ug/kg	3.5	-	ug/kg	-	3.6 U	ug/kg	3.6
4,4-DDT	3.5 U	ug/kg	3.5	3.5 U	ug/kg	3.5	-	ug/kg	-	3.6 U	ug/kg	3.6
Methoxychlor	18 U	ug/kg	18	18 U	ug/kg	18	-	ug/kg	-	18 U	ug/kg	18
Endrin ketone	3.5 U	ug/kg	3.5	3.5 U	ug/kg	3.5	-	ug/kg	-	3.6 U	ug/kg	3.6
Endrin aldehyde	3.5 U	ug/kg	3.5	3.5 U	ug/kg	3.5	-	ug/kg	-	3.6 U	ug/kg	3.6
alpha-Chlordane	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8	-	ug/kg	-	1.8 U	ug/kg	1.8
gamma-Chlordane	1.8 U	ug/kg	1.8	1.8 U	ug/kg	1.8	-	ug/kg	-	1.8 U	ug/kg	1.8
Toxaphene	180 U	ug/kg	180	180 U	ug/kg	180	-	ug/kg	-	180 U	ug/kg	180
Aroclor-1016	35 U	ug/kg	35	35 U	ug/kg	35	-	ug/kg	-	36 U	ug/kg	36
Aroclor-1221	72 U	ug/kg	72	71 U	ug/kg	71	-	ug/kg	-	73 U	ug/kg	73
Aroclor-1232	35 U	ug/kg	35	35 U	ug/kg	35	-	ug/kg	-	36 U	ug/kg	36
Aroclor-1242	35 U	ug/kg	35	35 U	ug/kg	35	-	ug/kg	-	36 U	ug/kg	36
Aroclor-1248	35 U	ug/kg	35	35 U	ug/kg	35	-	ug/kg	-	36 U	ug/kg	36
Aroclor-1254	35 U	ug/kg	35	35 U	ug/kg	35	-	ug/kg	-	36 U	ug/kg	36
Aroclor-1260	35 U	ug/kg	35	35 U	ug/kg	35	-	ug/kg	-	36 U	ug/kg	36

CLP METALS AND CYANIDE

mg/kg

Aluminum	13900	mg/kg	40	-	mg/kg	3520	mg/kg	40	-	mg/kg
Antimony	2.3 U	mg/kg	12	-	mg/kg	2.3 U	mg/kg	12	-	mg/kg
Arsenic	2.6	mg/kg	2	-	mg/kg	.63 J	mg/kg	2	-	mg/kg
Barium	5 J	mg/kg	40	-	mg/kg	1.6 J	mg/kg	40	-	mg/kg
Beryllium	.17 J	mg/kg	1	-	mg/kg	.05 U	mg/kg	1	-	mg/kg
Cadmium	.65 U	mg/kg	1	-	mg/kg	.64 U	mg/kg	1	-	mg/kg
Calcium	131 J	mg/kg	1000	-	mg/kg	72.7 J	mg/kg	1000	-	mg/kg
Chromium	11	mg/kg	2	-	mg/kg	3.8	mg/kg	2	-	mg/kg
Cobalt	.71 J	mg/kg	10	-	mg/kg	.71 U	mg/kg	10	-	mg/kg
Copper	5.9	mg/kg	5	-	mg/kg	.86 J	mg/kg	5	-	mg/kg
Iron	7520	mg/kg	20	-	mg/kg	2100	mg/kg	20	-	mg/kg
Lead	4.3	mg/kg	1	-	mg/kg	2.8	mg/kg	1	-	mg/kg
Magnesium	78.9 J	mg/kg	1000	-	mg/kg	18.8 J	mg/kg	1000	-	mg/kg
Manganese	21.4	mg/kg	3	-	mg/kg	10	mg/kg	3	-	mg/kg
Mercury	.44 J	mg/kg	.1	-	mg/kg	.09 J	mg/kg	.1	-	mg/kg
Nickel	2.3 J	mg/kg	8	-	mg/kg	1.1 U	mg/kg	8	-	mg/kg
Potassium	137 J	mg/kg	1000	-	mg/kg	145 U	mg/kg	1000	-	mg/kg
Selenium	.45 U	mg/kg	1	-	mg/kg	.45 U	mg/kg	1	-	mg/kg
Silver	.51 J	mg/kg	2	-	mg/kg	.43 U	mg/kg	2	-	mg/kg
Sodium	175 J	mg/kg	1000	-	mg/kg	165 J	mg/kg	1000	-	mg/kg
Thallium	.34 U	mg/kg	2	-	mg/kg	.34 U	mg/kg	2	-	mg/kg
Vanadium	22.5	mg/kg	10	-	mg/kg	6.5 J	mg/kg	10	-	mg/kg
Zinc	9.9 J	mg/kg	4	-	mg/kg	3.1 J	mg/kg	4	-	mg/kg

Naval Air Station Whiting Field, Milton, Florida
 Site 15 Subsurface Soil Data

Lab Sample Number:
 Site
 Locator
 Collect Date:

22883001
 WHITING
 15SS0201
 02-OCT-92

22889004
 WHITING
 15SS0502
 03-OCT-92

22889004
 WHITING
 15SS0502
 04-OCT-92

22889005
 WHITING
 15SS0603
 03-OCT-92

	VALUE	QUAL UNITS	DL									
Cyanide	.09	U mg/kg	1	-	mg/kg		.53	J mg/kg	1	-	mg/kg	
Total organic carbon	-	mg/kg										
Total petroleum hydrocarbons	-	mg/kg										

Naval Air Station Whiting Field, Milton, Florida
Site 15 Subsurface Soil Data

Lab Sample Number:	22889005	22891002	22891004
Site	WHITING	WHITING	WHITING
Locator	15SS0603	15SS0804	15SS1005
Collect Date:	04-OCT-92	04-OCT-92	04-OCT-92

VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
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CLP VOLATILES 90-SOW ug/kg

Chloromethane	-	ug/kg		11 U	ug/kg	11	11 U	ug/kg	11
Bromomethane	-	ug/kg		11 U	ug/kg	11	11 U	ug/kg	11
Vinyl chloride	-	ug/kg		11 U	ug/kg	11	11 U	ug/kg	11
Chloroethane	-	ug/kg		11 U	ug/kg	11	11 U	ug/kg	11
Methylene chloride	-	ug/kg		11 UJ	ug/kg	11	11 UJ	ug/kg	11
Acetone	-	ug/kg		63 UJ	ug/kg	11	12 UJ	ug/kg	11
Carbon disulfide	-	ug/kg		11 U	ug/kg	11	11 U	ug/kg	11
1,1-Dichloroethene	-	ug/kg		11 U	ug/kg	11	11 U	ug/kg	11
1,1-Dichloroethane	-	ug/kg		11 U	ug/kg	11	11 U	ug/kg	11
1,2-Dichloroethene (total)	-	ug/kg		11 U	ug/kg	11	11 U	ug/kg	11
Chloroform	-	ug/kg		11 U	ug/kg	11	11 U	ug/kg	11
1,2-Dichloroethane	-	ug/kg		11 U	ug/kg	11	11 U	ug/kg	11
2-Butanone	-	ug/kg		11 U	ug/kg	11	11 U	ug/kg	11
1,1,1-Trichloroethane	-	ug/kg		11 U	ug/kg	11	11 U	ug/kg	11
Carbon tetrachloride	-	ug/kg		11 U	ug/kg	11	11 U	ug/kg	11
Bromodichloromethane	-	ug/kg		11 U	ug/kg	11	11 U	ug/kg	11
1,2-Dichloropropane	-	ug/kg		11 U	ug/kg	11	11 U	ug/kg	11
cis-1,3-Dichloropropene	-	ug/kg		11 U	ug/kg	11	11 U	ug/kg	11
Trichloroethene	-	ug/kg		11 U	ug/kg	11	11 U	ug/kg	11
Dibromochloromethane	-	ug/kg		11 U	ug/kg	11	11 U	ug/kg	11
1,1,2-Trichloroethane	-	ug/kg		11 U	ug/kg	11	11 U	ug/kg	11
Benzene	-	ug/kg		11 U	ug/kg	11	11 U	ug/kg	11
trans-1,3-Dichloropropene	-	ug/kg		11 U	ug/kg	11	11 U	ug/kg	11
Bromoform	-	ug/kg		11 U	ug/kg	11	11 U	ug/kg	11
4-Methyl-2-pentanone	-	ug/kg		11 U	ug/kg	11	11 U	ug/kg	11
2-Hexanone	-	ug/kg		11 U	ug/kg	11	11 U	ug/kg	11
Tetrachloroethene	-	ug/kg		11 U	ug/kg	11	11 U	ug/kg	11
Toluene	-	ug/kg		11 U	ug/kg	11	11 U	ug/kg	11
1,1,2,2-Tetrachloroethane	-	ug/kg		11 U	ug/kg	11	11 U	ug/kg	11
Chlorobenzene	-	ug/kg		2 J	ug/kg	11	11 U	ug/kg	11
Ethylbenzene	-	ug/kg		11 U	ug/kg	11	11 U	ug/kg	11
Styrene	-	ug/kg		11 U	ug/kg	11	11 U	ug/kg	11
Xylenes (total)	-	ug/kg		5 J	ug/kg	11	6 J	ug/kg	11

CLP SEMIVOLATILES 90-SOW ug/kg

Phenol	-	ug/kg		370 U	ug/kg	370	350 U	ug/kg	350
bis(2-Chloroethyl) ether	-	ug/kg		370 U	ug/kg	370	350 U	ug/kg	350
2-Chlorophenol	-	ug/kg		370 U	ug/kg	370	350 U	ug/kg	350
1,3-Dichlorobenzene	-	ug/kg		370 U	ug/kg	370	350 U	ug/kg	350
1,4-Dichlorobenzene	-	ug/kg		110 J	ug/kg	370	350 U	ug/kg	350

Naval Air Station Whiting Field, Milton, Florida
Site 15 Subsurface Soil Data

Lab Sample Number:	22889005	22891002	22891004						
Site	WHITING	WHITING	WHITING						
Locator	15SS0603	15SS0804	15SS1005						
Collect Date:	04-OCT-92	04-OCT-92	04-OCT-92						
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	
1,2-Dichlorobenzene	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
2-Methylphenol	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
2,2-oxybis(1-Chloropropane)	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
4-Methylphenol	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
N-Nitroso-di-n-propylamine	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
Hexachloroethane	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
Nitrobenzene	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
Isophorone	-	ug/kg		370 UJ	ug/kg		370	350 UJ	ug/kg	350
2-Nitrophenol	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
2,4-Dimethylphenol	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
bis(2-Chloroethoxy) methane	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
2,4-Dichlorophenol	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
1,2,4-Trichlorobenzene	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
Naphthalene	-	ug/kg		92 J	ug/kg		370	350 U	ug/kg	350
4-Chloroaniline	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
Hexachlorobutadiene	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
4-Chloro-3-methylphenol	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
2-Methylnaphthalene	-	ug/kg		76 J	ug/kg		370	350 U	ug/kg	350
Hexachlorocyclopentadiene	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
2,4,6-Trichlorophenol	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
2,4,5-Trichlorophenol	-	ug/kg		900 U	ug/kg		900	850 U	ug/kg	850
2-Chloronaphthalene	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
2-Nitroaniline	-	ug/kg		900 U	ug/kg		900	850 U	ug/kg	850
Dimethylphthalate	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
Acenaphthylene	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
2,6-Dinitrotoluene	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
3-Nitroaniline	-	ug/kg		900 U	ug/kg		900	850 U	ug/kg	850
Acenaphthene	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
2,4-Dinitrophenol	-	ug/kg		900 U	ug/kg		900	850 U	ug/kg	850
4-Nitrophenol	-	ug/kg		900 UJ	ug/kg		900	850 UJ	ug/kg	850
Dibenzofuran	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
2,4-Dinitrotoluene	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
Diethylphthalate	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
4-Chlorophenyl-phenylether	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
Fluorene	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
4-Nitroaniline	-	ug/kg		900 U	ug/kg		900	850 U	ug/kg	850
4,6-Dinitro-2-methylphenol	-	ug/kg		900 U	ug/kg		900	850 U	ug/kg	850
N-Nitrosodiphenylamine	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
4-Bromophenyl-phenylether	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
Hexachlorobenzene	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
Pentachlorophenol	-	ug/kg		900 U	ug/kg		900	850 U	ug/kg	850
Phenanthrene	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
Anthracene	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
Carbazole	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
Di-n-butylphthalate	-	ug/kg		370 U	ug/kg		370	350 UJ	ug/kg	350
Fluoranthene	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
Pyrene	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
Butylbenzylphthalate	-	ug/kg		370 UJ	ug/kg		370	350 UJ	ug/kg	350
3,3-Dichlorobenzidine	-	ug/kg		370 UJ	ug/kg		370	350 UJ	ug/kg	350
Benzo (a) anthracene	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
Chrysene	-	ug/kg		370 U	ug/kg		370	350 U	ug/kg	350
bis(2-Ethylhexyl) phthalate	-	ug/kg		370 UJ	ug/kg		370	350 UJ	ug/kg	350

Naval Air Station Whiting Field, Milton, Florida
Site 15 Subsurface Soil Data

Lab Sample Number:	22889005	22891002	22891004					
Site	WHITING	WHITING	WHITING					
Locator	15SS0603	15SS0804	15SS1005					
Collect Date:	04-OCT-92	04-OCT-92	04-OCT-92					
VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

Di-n-octylphthalate	-	ug/kg		370 U	ug/kg	370	350 U	ug/kg	350
Benzo (b) fluoranthene	-	ug/kg		370 U	ug/kg	370	350 U	ug/kg	350
Benzo (k) fluoranthene	-	ug/kg		370 U	ug/kg	370	350 U	ug/kg	350
Benzo (a) pyrene	-	ug/kg		370 U	ug/kg	370	350 U	ug/kg	350
Indeno (1,2,3-cd) pyrene	-	ug/kg		370 U	ug/kg	370	350 U	ug/kg	350
Dibenzo (a,h) anthracene	-	ug/kg		370 U	ug/kg	370	350 U	ug/kg	350
Benzo (g,h,i) perylene	-	ug/kg		370 U	ug/kg	370	350 U	ug/kg	350

CLP PESTICIDES/PCBS 90-SOW

ug/kg

alpha-BHC	-	ug/kg		19 U	ug/kg	19	1.8 U	ug/kg	1.8
beta-BHC	-	ug/kg		19 U	ug/kg	19	1.8 U	ug/kg	1.8
delta-BHC	-	ug/kg		19 U	ug/kg	19	1.8 U	ug/kg	1.8
gamma-BHC (Lindane)	-	ug/kg		19 U	ug/kg	19	1.8 U	ug/kg	1.8
Heptachlor	-	ug/kg		19 U	ug/kg	19	1.8 U	ug/kg	1.8
Aldrin	-	ug/kg		19 U	ug/kg	19	1.8 U	ug/kg	1.8
Heptachlor epoxide	-	ug/kg		19 U	ug/kg	19	1.8 U	ug/kg	1.8
Endosulfan I	-	ug/kg		19 U	ug/kg	19	1.8 U	ug/kg	1.8
Dieldrin	-	ug/kg		37 U	ug/kg	37	3.5 U	ug/kg	3.5
4,4-DDE	-	ug/kg		37 U	ug/kg	37	2.3 J	ug/kg	3.5
Endrin	-	ug/kg		37 U	ug/kg	37	3.5 U	ug/kg	3.5
Endosulfan II	-	ug/kg		37 U	ug/kg	37	3.5 U	ug/kg	3.5
4,4-DDD	-	ug/kg		37 U	ug/kg	37	3.5 U	ug/kg	3.5
Endosulfan sulfate	-	ug/kg		37 U	ug/kg	37	3.5 U	ug/kg	3.5
4,4-DDT	-	ug/kg		37 U	ug/kg	37	3.5 U	ug/kg	3.5
Methoxychlor	-	ug/kg		190 U	ug/kg	190	18 U	ug/kg	18
Endrin ketone	-	ug/kg		37 U	ug/kg	37	3.5 U	ug/kg	3.5
Endrin aldehyde	-	ug/kg		37 U	ug/kg	37	3.5 U	ug/kg	3.5
alpha-Chlordane	-	ug/kg		19 U	ug/kg	19	1.8 U	ug/kg	1.8
gamma-Chlordane	-	ug/kg		19 U	ug/kg	19	1.8 U	ug/kg	1.8
Toxaphene	-	ug/kg		1900 U	ug/kg	1900	180 U	ug/kg	180
Aroclor-1016	-	ug/kg		370 U	ug/kg	370	35 U	ug/kg	35
Aroclor-1221	-	ug/kg		750 U	ug/kg	750	71 U	ug/kg	71
Aroclor-1232	-	ug/kg		370 U	ug/kg	370	35 U	ug/kg	35
Aroclor-1242	-	ug/kg		2200 U	ug/kg	370	35 U	ug/kg	35
Aroclor-1248	-	ug/kg		370 U	ug/kg	370	35 U	ug/kg	35
Aroclor-1254	-	ug/kg		370 U	ug/kg	370	35 U	ug/kg	35
Aroclor-1260	-	ug/kg		370 U	ug/kg	370	35 U	ug/kg	35

CLP METALS AND CYANIDE

mg/kg

Aluminum	7250	mg/kg	40	15100	mg/kg	40	7760	mg/kg	40
Antimony	2.3 U	mg/kg	12	2.4 U	mg/kg	12	2.3 U	mg/kg	12
Arsenic	1.5 J	mg/kg	2	2.6	mg/kg	2	1.9 J	mg/kg	2
Barium	9.6 J	mg/kg	40	13.2 J	mg/kg	40	6.5 J	mg/kg	40
Beryllium	.11 J	mg/kg	1	.16 J	mg/kg	1	.09 J	mg/kg	1
Cadmium	2.1	mg/kg	1	.66 U	mg/kg	1	.63 U	mg/kg	1
Calcium	148 J	mg/kg	1000	267 J	mg/kg	1000	264 J	mg/kg	1000
Chromium	6.6	mg/kg	2	12.7	mg/kg	2	6.5	mg/kg	2
Cobalt	.72 U	mg/kg	10	.73 U	mg/kg	10	.71 U	mg/kg	10
Copper	3.5 J	mg/kg	5	6.8	mg/kg	5	3.6 J	mg/kg	5
Iron	3650	mg/kg	20	9640	mg/kg	20	4530	mg/kg	20
Lead	5.7	mg/kg	1	8.4	mg/kg	1	86.2	mg/kg	1
Magnesium	109 J	mg/kg	1000	96 J	mg/kg	1000	70.7 J	mg/kg	1000

Naval Air Station Whiting Field, Milton, Florida
 Site 15 Subsurface Soil Data

	22889005			22891002			22891004		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
Manganese	22.9	mg/kg	3	44.2	mg/kg	3	28.1	mg/kg	3
Mercury	.44 J	mg/kg	.1	.59	mg/kg	.1	.43 J	mg/kg	.1
Nickel	2.1 J	mg/kg	8	1.2 U	mg/kg	8	3 J	mg/kg	8
Potassium	157 J	mg/kg	1000	154 J	mg/kg	1000	145 U	mg/kg	1000
Selenium	.46 U	mg/kg	1	.46 U	mg/kg	1	.45 U	mg/kg	1
Silver	.48 J	mg/kg	2	.62 J	mg/kg	2	.43 U	mg/kg	2
Sodium	175 J	mg/kg	1000	191 J	mg/kg	1000	182 J	mg/kg	1000
Thallium	.35 U	mg/kg	2	.35 U	mg/kg	2	.34 U	mg/kg	2
Vanadium	11.1	mg/kg	10	25	mg/kg	10	13.9	mg/kg	10
Zinc	12.9	mg/kg	4	19.1	mg/kg	4	7.4 J	mg/kg	4
Cyanide	.55 J	mg/kg	1	.09 U	mg/kg	1	.09 U	mg/kg	1
Total organic carbon	-	mg/kg		-	mg/kg		-	mg/kg	
Total petroleum hydrocarbons	-	mg/kg		-	mg/kg		-	mg/kg	

APPENDIX F

GROUNDWATER SAMPLE ANALYTICAL DATA

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	90271002	90210003	90210004	90210002								
Site	WHITING	WHITING	WHITING	WHITING								
Locator	WHF15-1	WHF15-2B	WHF15-2BA	WHF15-2C								
Collect Date:	03-DEC-93	09-NOV-93	09-NOV-93	09-NOV-93								
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 90-SOW

ug/l

Chloromethane	10 UJ	ug/l	10	1 J	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Bromomethane	10 U	ug/l	10									
Vinyl chloride	10 U	ug/l	10									
Chloroethane	10 U	ug/l	10	10 UJ	ug/l	10	10 UJ	ug/l	10	10 UJ	ug/l	10
Methylene chloride	10 U	ug/l	10	10 UJ	ug/l	10	10 UJ	ug/l	10	10 UJ	ug/l	10
Acetone	10 U	ug/l	10	10 UJ	ug/l	10	10 UJ	ug/l	10	10 UJ	ug/l	10
Carbon disulfide	10 U	ug/l	10									
1,1-Dichloroethene	10 U	ug/l	10									
1,1-Dichloroethane	10 U	ug/l	10									
1,2-Dichloroethene (total)	10 U	ug/l	10									
Chloroform	10 U	ug/l	10									
1,2-Dichloroethane	10 U	ug/l	10									
2-Butanone	10 U	ug/l	10									
1,1,1-Trichloroethane	10 U	ug/l	10									
Carbon tetrachloride	10 U	ug/l	10									
Bromodichloromethane	10 U	ug/l	10									
1,2-Dichloropropane	10 U	ug/l	10									
cis-1,3-Dichloropropene	10 U	ug/l	10									
Trichloroethene	10 U	ug/l	10									
Dibromochloromethane	10 U	ug/l	10									
1,1,2-Trichloroethane	10 U	ug/l	10									
Benzene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 UJ	ug/l	10
trans-1,3-Dichloropropene	10 U	ug/l	10									
Bromoform	10 U	ug/l	10									
4-Methyl-2-pentanone	10 U	ug/l	10									
2-Hexanone	10 U	ug/l	10	10 UJ	ug/l	10	10 UJ	ug/l	10	10 UJ	ug/l	10
Trachloroethene	10 U	ug/l	10									
Toluene	10 U	ug/l	10									
1,1,2,2-Tetrachloroethane	10 U	ug/l	10									
Chlorobenzene	10 U	ug/l	10									
Ethylbenzene	10 U	ug/l	10									
Styrene	10 U	ug/l	10									
Xylenes (total)	10 U	ug/l	10									

CLP SEMIVOLATILES 90-SOW

ug/l

Phenol	10 U	ug/l	10									
bis(2-Chloroethyl) ether	10 U	ug/l	10									
2-Chlorophenol	10 U	ug/l	10									
1,3-Dichlorobenzene	10 U	ug/l	10									
1,4-Dichlorobenzene	10 U	ug/l	10									
1,2-Dichlorobenzene	10 U	ug/l	10									
2-Methylphenol	10 U	ug/l	10									
2,2-oxybis(1-Chloropropane)	10 U	ug/l	10									
4-Methylphenol	10 U	ug/l	10									
N-Nitroso-di-n-propylamine	10 U	ug/l	10									
Hexachloroethane	10 U	ug/l	10									
Nitrobenzene	10 U	ug/l	10									
Isophorone	10 U	ug/l	10									
2-Nitrophenol	10 U	ug/l	10									
2,4-Dimethylphenol	10 U	ug/l	10									

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:
Site
Locator
Collect Date:

90271002
WHITING
WHF15-1
03-DEC-93

90210003
WHITING
WHF15-2B
09-NOV-93

90210004
WHITING
WHF15-2BA
09-NOV-93

90210002
WHITING
WHF15-2C
09-NOV-93

	VALUE	QUAL	UNITS	DL												
bis(2-Chloroethoxy) methane	10	U	ug/l	10												
2,4-Dichlorophenol	10	U	ug/l	10												
1,2,4-Trichlorobenzene	10	U	ug/l	10												
Naphthalene	10	U	ug/l	10												
4-Chloroaniline	10	U	ug/l	10												
Hexachlorobutadiene	10	U	ug/l	10												
4-Chloro-3-methylphenol	10	U	ug/l	10												
2-Methylnaphthalene	10	U	ug/l	10												
Hexachlorocyclopentadiene	10	U	ug/l	10												
2,4,6-Trichlorophenol	10	U	ug/l	10												
2,4,5-Trichlorophenol	25	U	ug/l	25												
2-Chloronaphthalene	10	U	ug/l	10												
2-Nitroaniline	25	U	ug/l	25												
Dimethylphthalate	10	U	ug/l	10												
Acenaphthylene	10	U	ug/l	10												
2,6-Dinitrotoluene	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10	10	UJ	ug/l	10
3-Nitroaniline	25	U	ug/l	25												
Acenaphthene	10	U	ug/l	10												
2,4-Dinitrophenol	25	UJ	ug/l	25												
4-Nitrophenol	25	U	ug/l	25												
Dibenzofuran	10	U	ug/l	10												
2,4-Dinitrotoluene	10	U	ug/l	10												
Diethylphthalate	10	U	ug/l	10												
4-Chlorophenyl-phenylether	10	U	ug/l	10												
Fluorene	10	U	ug/l	10												
4-Nitroaniline	25	UJ	ug/l	25												
4,6-Dinitro-2-methylphenol	25	U	ug/l	25	25	UJ	ug/l	25	25	UJ	ug/l	25	25	UJ	ug/l	25
N-Nitrosodiphenylamine	10	U	ug/l	10												
4-Bromophenyl-phenylether	10	U	ug/l	10												
Hexachlorobenzene	10	U	ug/l	10												
Pentachlorophenol	25	UJ	ug/l	25	25	U	ug/l	25	25	U	ug/l	25	25	U	ug/l	25
Phenanthrene	10	U	ug/l	10												
Anthracene	10	U	ug/l	10												
Carbazole	10	U	ug/l	10												
Di-n-butylphthalate	10	U	ug/l	10												
Fluoranthene	10	U	ug/l	10												
Pyrene	10	U	ug/l	10												
Butylbenzylphthalate	10	U	ug/l	10												
3,3-Dichlorobenzidine	10	U	ug/l	10												
Benzo (a) anthracene	10	U	ug/l	10												
Chrysene	10	U	ug/l	10												
bis(2-Ethylhexyl) phthalate	10	U	ug/l	10												
Di-n-octylphthalate	10	U	ug/l	10												
Benzo (b) fluoranthene	10	U	ug/l	10												
Benzo (k) fluoranthene	10	U	ug/l	10												
Benzo (a) pyrene	10	U	ug/l	10												
Indeno (1,2,3-cd) pyrene	10	U	ug/l	10												
Dibenzo (a,h) anthracene	10	U	ug/l	10												
Benzo (g,h,i) perylene	10	U	ug/l	10												
CLP PESTICIDES/PCBS 90-SOW	ug/l															
alpha-BHC	.05	U	ug/l	.05	.05	U	ug/l	.05	.05	UJ	ug/l	.05	.05	U	ug/l	.05

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	90271002	90210003	90210004	90210002
Site	WHITING	WHITING	WHITING	WHITING
Locator	WHF15-1	WHF15-2B	WHF15-2BA	WHF15-2C
Collect Date:	03-DEC-93	09-NOV-93	09-NOV-93	09-NOV-93

	VALUE	QUAL	UNITS	DL												
beta-BHC	.05	U	ug/l	.05	.05	U	ug/l	.05	.05	UJ	ug/l	.05	.05	U	ug/l	.05
delta-BHC	.05	U	ug/l	.05	.05	U	ug/l	.05	.05	UJ	ug/l	.05	.05	U	ug/l	.05
gamma-BHC (Lindane)	.05	U	ug/l	.05	.05	U	ug/l	.05	.05	UJ	ug/l	.05	.05	U	ug/l	.05
Heptachlor	.05	U	ug/l	.05	.05	U	ug/l	.05	.05	UJ	ug/l	.05	.05	U	ug/l	.05
Aldrin	.05	U	ug/l	.05	.05	U	ug/l	.05	.05	UJ	ug/l	.05	.05	U	ug/l	.05
Heptachlor epoxide	.05	U	ug/l	.05	.05	U	ug/l	.05	.05	UJ	ug/l	.05	.05	U	ug/l	.05
Endosulfan I	.05	U	ug/l	.05	.05	U	ug/l	.05	.05	UJ	ug/l	.05	.05	U	ug/l	.05
Dieldrin	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	UJ	ug/l	.1	.1	U	ug/l	.1
4,4-DDE	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	UJ	ug/l	.1	.1	U	ug/l	.1
Endrin	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	UJ	ug/l	.1	.1	U	ug/l	.1
Endosulfan II	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	UJ	ug/l	.1	.1	U	ug/l	.1
4,4-DDD	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	UJ	ug/l	.1	.1	U	ug/l	.1
Endosulfan sulfate	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	UJ	ug/l	.1	.1	U	ug/l	.1
4,4-DDT	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	UJ	ug/l	.1	.1	U	ug/l	.1
Methoxychlor	.5	U	ug/l	.5	.5	U	ug/l	.5	.5	UJ	ug/l	.5	.5	U	ug/l	.5
Endrin ketone	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	UJ	ug/l	.1	.1	U	ug/l	.1
Endrin aldehyde	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	UJ	ug/l	.1	.1	U	ug/l	.1
alpha-Chlordane	.05	U	ug/l	.05	.05	U	ug/l	.05	.05	UJ	ug/l	.05	.05	U	ug/l	.05
gamma-Chlordane	.05	U	ug/l	.05	.05	U	ug/l	.05	.05	UJ	ug/l	.05	.05	U	ug/l	.05
Toxaphene	5	U	ug/l	5	5	U	ug/l	5	5	UJ	ug/l	5	5	U	ug/l	5
Aroclor-1016	1	U	ug/l	1	1	U	ug/l	1	1	UJ	ug/l	1	1	U	ug/l	1
Aroclor-1221	2	U	ug/l	2	2	U	ug/l	2	2	UJ	ug/l	2	2	U	ug/l	2
Aroclor-1232	1	U	ug/l	1	1	U	ug/l	1	1	UJ	ug/l	1	1	U	ug/l	1
Aroclor-1242	1	U	ug/l	1	1	U	ug/l	1	1	UJ	ug/l	1	1	U	ug/l	1
Aroclor-1248	1	U	ug/l	1	1	U	ug/l	1	1	UJ	ug/l	1	1	U	ug/l	1
Aroclor-1254	1	U	ug/l	1	1	U	ug/l	1	1	UJ	ug/l	1	1	U	ug/l	1
Aroclor-1260	1	U	ug/l	1	1	U	ug/l	1	1	UJ	ug/l	1	1	U	ug/l	1
CLP METALS AND CYANIDE	ug/l															
Aluminum	24.5	J	ug/l	200	76400		ug/l	200	45600		ug/l	200	39.2	J	ug/l	200
Antimony	20.7	U	ug/l	60												
Arsenic	1.6	U	ug/l	10												
Barium	24.3	J	ug/l	200	75.8	J	ug/l	200	56.1	J	ug/l	200	15.9	J	ug/l	200
Beryllium	.2	U	ug/l	5	.71	J	ug/l	5	.52	J	ug/l	5	.2	U	ug/l	5
Cadmium	7.6		ug/l	5	3.2	U	ug/l	5	5		ug/l	5	3.2	U	ug/l	5
Calcium	8710		ug/l	5000	2430	J	ug/l	5000	2570	J	ug/l	5000	801	J	ug/l	5000
Chromium	3.4	J	ug/l	10	71.5		ug/l	10	46.9		ug/l	10	3.3	U	ug/l	10
Cobalt	4.3	J	ug/l	50	4.1	U	ug/l	50	4.1	U	ug/l	50	4.1	U	ug/l	50
Copper	2.2	J	ug/l	25	30.6		ug/l	25	23.2	J	ug/l	25	2.1	U	ug/l	25
Iron	22.6	J	ug/l	100	94500		ug/l	100	78000		ug/l	100	46	J	ug/l	100
Lead	1	U	ug/l	3	12		ug/l	3	6.8		ug/l	3	1	U	ug/l	3
Magnesium	670	J	ug/l	5000	1240	J	ug/l	5000	1070	J	ug/l	5000	581	J	ug/l	5000
Manganese	2.5	J	ug/l	15	1270		ug/l	15	1260		ug/l	15	14.1	J	ug/l	15
Mercury	1		ug/l	.2	.15	U	ug/l	.2	.16	J	ug/l	.2	.15	U	ug/l	.2
Nickel	9	U	ug/l	40	20.5	J	ug/l	40	9	U	ug/l	40	9	U	ug/l	40
Potassium	870	J	ug/l	5000	1110	J	ug/l	5000	1020	J	ug/l	5000	614	U	ug/l	5000
Selenium	2	U	ug/l	5												
Silver	2.7	U	ug/l	10	3.8	J	ug/l	10	2.7	J	ug/l	10	2.7	U	ug/l	10
Sodium	4850	J	ug/l	5000	1080	J	ug/l	5000	1040	J	ug/l	5000	2670	J	ug/l	5000
Thallium	.88	U	ug/l	10	1	J	ug/l	10	.88	U	ug/l	10	.93	J	ug/l	10
Vanadium	2.5	U	ug/l	50	136		ug/l	50	102		ug/l	50	2.5	U	ug/l	50
Zinc	4.9	J	ug/l	20	51.6		ug/l	20	39.5		ug/l	20	14.7	J	ug/l	20

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	90271002		90210003		90210004		90210002		
Site	WHITING		WHITING		WHITING		WHITING		
Locator	WHF15-1		WHF15-2B		WHF15-2BA		WHF15-2C		
Collect Date:	03-DEC-93		09-NOV-93		09-NOV-93		09-NOV-93		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

Cyanide	1.7 U	ug/l	10	1.9 J	ug/l	10	2.5 J	ug/l	10	1.7 U	ug/l	10
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Locator Annotations: A = DUPLICATE SAMPLE B = SHALLOW SAMPLE C = INTERMEDIATE SAMPLE CD = DOUBLE INTERMEDIATE SAMPLE D = DEEP SAMPLE
Qualifiers: U = NOT DETECTED J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED R = RESULT IS REJECTED AND UNUSABLE

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	90210001	90203001	90199005	90199005RE								
Site:	WHITING	WHITING	WHITING	WHITING								
Locator:	WHF15-2D	WHF15-3B	WHF15-3C	WHF15-3CRE								
Collect Date:	09-NOV-93	14-NOV-93	03-NOV-93	03-NOV-93								
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 90-SOW

ug/l

Chloromethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Bromomethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Vinyl chloride	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Chloroethane	10 UJ	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Methylene chloride	10 UJ	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Acetone	10 UJ	ug/l	10	10 UJ	ug/l	10	10 UJ	ug/l	10	-	ug/l
Carbon disulfide	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
1,1-Dichloroethene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
1,1-Dichloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
1,2-Dichloroethene (total)	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Chloroform	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
1,2-Dichloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
2-Butanone	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
1,1,1-Trichloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Carbon tetrachloride	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Bromodichloromethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
1,2-Dichloropropane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
cis-1,3-Dichloropropene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Trichloroethene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Dibromochloromethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
1,1,2-Trichloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Benzene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
trans-1,3-Dichloropropene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Bromoform	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
4-Methyl-2-pentanone	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
2-Hexanone	10 UJ	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Tetrachloroethene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Toluene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
1,1,2,2-Tetrachloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Chlorobenzene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Ethylbenzene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Styrene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Xylenes (total)	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l

CLP SEMIVOLATILES 90-SOW

ug/l

Phenol	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
bis(2-Chloroethyl) ether	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
2-Chlorophenol	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
1,3-Dichlorobenzene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
1,4-Dichlorobenzene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	90210001			90203001			90199005			90199005RE		
Site	WHITING			WHITING			WHITING			WHITING		
Locator	WHF15-2D			WHF15-3B			WHF15-3C			WHF15-3CRE		
Collect Date:	09-NOV-93			14-NOV-93			03-NOV-93			03-NOV-93		
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
1,2-Dichlorobenzene	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
2-Methylphenol	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
2,2-oxybis(1-Chloropropane)	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
4-Methylphenol	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
N-Nitroso-di-n-propylamine	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
Hexachloroethane	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
Nitrobenzene	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
Isophorone	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
2-Nitrophenol	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
2,4-Dimethylphenol	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
bis(2-Chloroethoxy) methane	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
2,4-Dichlorophenol	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
1,2,4-Trichlorobenzene	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
Naphthalene	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
4-Chloroaniline	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
Hexachlorobutadiene	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
4-Chloro-3-methylphenol	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
2-Methylnaphthalene	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
Hexachlorocyclopentadiene	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
2,4,6-Trichlorophenol	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
2,4,5-Trichlorophenol	25 U		ug/l	25	25 U		ug/l	25	25 U		ug/l	25
2-Chloronaphthalene	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
2-Nitroaniline	25 U		ug/l	25	25 U		ug/l	25	25 U		ug/l	25
Dimethylphthalate	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
Acenaphthylene	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
2,6-Dinitrotoluene	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
3-Nitroaniline	25 U		ug/l	25	25 U		ug/l	25	25 U		ug/l	25
Acenaphthene	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
2,4-Dinitrophenol	25 U		ug/l	25	25 U		ug/l	25	25 U		ug/l	25
4-Nitrophenol	25 U		ug/l	25	25 U		ug/l	25	25 U		ug/l	25
Dibenzofuran	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
2,4-Dinitrotoluene	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
Diethylphthalate	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
4-Chlorophenyl-phenylether	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
Fluorene	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
4-Nitroaniline	25 U		ug/l	25	25 U		ug/l	25	25 U		ug/l	25
4,6-Dinitro-2-methylphenol	25 U		ug/l	25	25 U		ug/l	25	25 U		ug/l	25
N-Nitrosodiphenylamine	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
4-Bromophenyl-phenylether	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
Hexachlorobenzene	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
Pentachlorophenol	25 U		ug/l	25	25 U		ug/l	25	25 U		ug/l	25
Phenanthrene	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
Anthracene	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
Carbazole	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
Di-n-butylphthalate	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
Fluoranthene	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
Pyrene	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
Butylbenzylphthalate	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
3,3-Dichlorobenzidine	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
Benzo (a) anthracene	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
Chrysene	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10
bis(2-Ethylhexyl) phthalate	10 U		ug/l	10	10 U		ug/l	10	10 U		ug/l	10

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	90210001	90203001	90199005	90199005RE								
Site	WHITING	WHITING	WHITING	WHITING								
Locator	WHF15-2D	WHF15-3B	WHF15-3C	WHF15-3CRE								
Collect Date:	09-NOV-93	14-NOV-93	03-NOV-93	03-NOV-93								
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
Di-n-octylphthalate	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
Benzo (b) fluoranthene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
Benzo (k) fluoranthene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
Benzo (a) pyrene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
Indeno (1,2,3-cd) pyrene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
Dibenzo (a,h) anthracene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
Benzo (g,h,i) perylene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
CLP PESTICIDES/PCBS 90-SOW	ug/l											
alpha-BHC	.05 U	ug/l	.05	.05 U	ug/l	.05	.05 UJ	ug/l	.05	.05 UJ	ug/l	.05
beta-BHC	.05 U	ug/l	.05	.05 U	ug/l	.05	.05 UJ	ug/l	.05	.05 UJ	ug/l	.05
delta-BHC	.05 U	ug/l	.05	.05 U	ug/l	.05	.05 UJ	ug/l	.05	.05 UJ	ug/l	.05
gamma-BHC (Lindane)	.05 U	ug/l	.05	.05 U	ug/l	.05	.05 UJ	ug/l	.05	.05 UJ	ug/l	.05
Heptachlor	.05 U	ug/l	.05	.05 U	ug/l	.05	.05 UJ	ug/l	.05	.05 UJ	ug/l	.05
Aldrin	.05 U	ug/l	.05	.05 U	ug/l	.05	.05 UJ	ug/l	.05	.05 UJ	ug/l	.05
Heptachlor epoxide	.05 U	ug/l	.05	.05 U	ug/l	.05	.05 UJ	ug/l	.05	.05 UJ	ug/l	.05
Endosulfan I	.05 U	ug/l	.05	.05 U	ug/l	.05	.05 UJ	ug/l	.05	.05 UJ	ug/l	.05
Dieldrin	.1 U	ug/l	.1	.1 U	ug/l	.1	.1 UJ	ug/l	.1	.1 UJ	ug/l	.1
4,4-DDE	.1 U	ug/l	.1	.1 U	ug/l	.1	.1 UJ	ug/l	.1	.1 UJ	ug/l	.1
Endrin	.1 U	ug/l	.1	.1 U	ug/l	.1	.1 UJ	ug/l	.1	.1 UJ	ug/l	.1
Endosulfan II	.1 U	ug/l	.1	.1 U	ug/l	.1	.1 UJ	ug/l	.1	.1 UJ	ug/l	.1
4,4-DDD	.1 U	ug/l	.1	.1 U	ug/l	.1	.1 UJ	ug/l	.1	.1 UJ	ug/l	.1
Endosulfan sulfate	.1 U	ug/l	.1	.1 U	ug/l	.1	.1 UJ	ug/l	.1	.1 UJ	ug/l	.1
4,4-DDT	.1 U	ug/l	.1	.1 U	ug/l	.1	.1 UJ	ug/l	.1	.1 UJ	ug/l	.1
Methoxychlor	.5 U	ug/l	.5	.5 U	ug/l	.5	.5 UJ	ug/l	.5	.5 UJ	ug/l	.5
Endrin ketone	.1 U	ug/l	.1	.1 U	ug/l	.1	.1 UJ	ug/l	.1	.1 UJ	ug/l	.1
Endrin aldehyde	.1 U	ug/l	.1	.1 U	ug/l	.1	.1 UJ	ug/l	.1	.1 UJ	ug/l	.1
alpha-Chlordane	.05 U	ug/l	.05	.05 U	ug/l	.05	.05 UJ	ug/l	.05	.05 UJ	ug/l	.05
gamma-Chlordane	.05 U	ug/l	.05	.05 U	ug/l	.05	.05 UJ	ug/l	.05	.05 UJ	ug/l	.05
Toxaphene	5 U	ug/l	5	5 U	ug/l	5	5 UJ	ug/l	5	5 UJ	ug/l	5
Aroclor-1016	1 U	ug/l	1	1 U	ug/l	1	1 UJ	ug/l	1	1 UJ	ug/l	1
Aroclor-1221	2 U	ug/l	2	2 U	ug/l	2	2 UJ	ug/l	2	2 UJ	ug/l	2
Aroclor-1232	1 U	ug/l	1	1 U	ug/l	1	1 UJ	ug/l	1	1 UJ	ug/l	1
Aroclor-1242	1 U	ug/l	1	1 U	ug/l	1	1 UJ	ug/l	1	1 UJ	ug/l	1
Aroclor-1248	1 U	ug/l	1	1 U	ug/l	1	1 UJ	ug/l	1	1 UJ	ug/l	1
Aroclor-1254	1 U	ug/l	1	1 U	ug/l	1	1 UJ	ug/l	1	1 UJ	ug/l	1
Aroclor-1260	1 U	ug/l	1	1 U	ug/l	1	1 UJ	ug/l	1	1 UJ	ug/l	1
CLP METALS AND CYANIDE	ug/l											
Aluminum	77.2	ug/l	200	10600	ug/l	200	19.9 U	ug/l	200	-	ug/l	
Antimony	20.7 U	ug/l	60	20.7 U	ug/l	60	20.7 U	ug/l	60	-	ug/l	
Arsenic	1.6 U	ug/l	10	2.1 J	ug/l	10	1.6 U	ug/l	10	-	ug/l	
Barium	8.5 J	ug/l	200	46 UJ	ug/l	200	8.4 J	ug/l	200	-	ug/l	
Beryllium	.2 U	ug/l	5	.2 U	ug/l	5	.2 UJ	ug/l	5	-	ug/l	
Cadmium	23.3	ug/l	5	3.2 U	ug/l	5	3.2 U	ug/l	5	-	ug/l	
Calcium	2090 J	ug/l	5000	1080 J	ug/l	5000	605 J	ug/l	5000	-	ug/l	
Chromium	3.3 U	ug/l	10	22.1	ug/l	10	3.3 U	ug/l	10	-	ug/l	
Cobalt	4.1 U	ug/l	50	4.1 U	ug/l	50	4.1 U	ug/l	50	-	ug/l	
Copper	2.6 J	ug/l	25	13.3 J	ug/l	25	8.8 J	ug/l	25	-	ug/l	
Iron	180	ug/l	100	33000	ug/l	100	75.2 J	ug/l	100	-	ug/l	
Lead	1 U	ug/l	3	6	ug/l	3	1 U	ug/l	3	-	ug/l	
Magnesium	491 J	ug/l	5000	1010 J	ug/l	5000	423 J	ug/l	5000	-	ug/l	

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

	90210001			90203001			90199005			90199005RE		
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Manganese	11.6	J	ug/l	15	39.6		ug/l	15	8	J	ug/l	15
Mercury	.17	J	ug/l	.2	.15	J	ug/l	.2	.15	U	ug/l	.2
Nickel	10	J	ug/l	40	9	U	ug/l	40	9	U	ug/l	40
Potassium	2240	J	ug/l	5000	916	J	ug/l	5000	614	U	ug/l	5000
Selenium	2	U	ug/l	5	2	U	ug/l	5	2	U	ug/l	5
Silver	2.7	U	ug/l	10	2.7	U	ug/l	10	2.7	U	ug/l	10
Sodium	3860	J	ug/l	5000	1810	J	ug/l	5000	2360	J	ug/l	5000
Thallium	.88	U	ug/l	10	.88	U	ug/l	10	.88	U	ug/l	10
Vanadium	2.5	U	ug/l	50	69		ug/l	50	2.5	U	ug/l	50
Zinc	16.8	J	ug/l	20	48.4		ug/l	20	35.9		ug/l	20
Cyanide	1.7	U	ug/l	10	1.7	U	ug/l	10	1.7	U	ug/l	10

Locator Annotations: A = DUPLICATE SAMPLE B = SHALLOW SAMPLE C = INTERMEDIATE SAMPLE CD = DOUBLE INTERMEDIATE SAMPLE D = DEEP SAMPLE

Qualifiers: U = NOT DETECTED J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED R = RESULT IS REJECTED AND UNUSABLE

Naval Air Station Whiting Field, Milton, Florida
 Site 15 Groundwater Data

Lab Sample Number:	90199004	90199004RE	90199003	90271001							
Site:	WHITING	WHITING	WHITING	WHITING							
Locator:	WHF15-3D	WHF15-3DRE	WHF15-4	WHF15-5							
Collect Date:	03-NOV-93	03-NOV-93	03-NOV-93	03-DEC-93							
VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 90-SOW

ug/l

Chloromethane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 UJ	ug/l	10
Bromomethane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Vinyl chloride	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Chloroethane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Methylene chloride	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Acetone	10 UJ	ug/l	10	-	ug/l	10 UJ	ug/l	10	10 U	ug/l	10
Carbon disulfide	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
1,1-Dichloroethene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
1,1-Dichloroethane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
1,2-Dichloroethene (total)	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Chloroform	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
1,2-Dichloroethane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
2-Butanone	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
1,1,1-Trichloroethane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Carbon tetrachloride	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Bromodichloromethane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
1,2-Dichloropropane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
cis-1,3-Dichloropropene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Trichloroethene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Dibromochloromethane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
1,1,2-Trichloroethane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Benzene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
trans-1,3-Dichloropropene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Bromoform	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
4-Methyl-2-pentanone	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
2-Hexanone	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Tetrachloroethene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Toluene	10 U	ug/l	10	-	ug/l	7 J	ug/l	10	10 U	ug/l	10
1,1,2,2-Tetrachloroethane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Chlorobenzene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Ethylbenzene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Styrene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Xylenes (total)	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10

CLP SEMIVOLATILES 90-SOW

ug/l

Phenol	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
bis(2-Chloroethyl) ether	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
2-Chlorophenol	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
1,3-Dichlorobenzene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
1,4-Dichlorobenzene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:
Site
Locator
Collect Date:

90199004
WHITING
WHF15-3D
03-NOV-93

90199004RE
WHITING
WHF15-3DRE
03-NOV-93

90199003
WHITING
WHF15-4
03-NOV-93

90271001
WHITING
WHF15-5
03-DEC-93

VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL

1,2-Dichlorobenzene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
2-Methylphenol	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
2,2-oxybis(1-Chloropropane)	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
4-Methylphenol	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
N-Nitroso-di-n-propylamine	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Hexachloroethane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Nitrobenzene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Isophorone	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
2-Nitrophenol	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
2,4-Dimethylphenol	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
bis(2-Chloroethoxy) methane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
2,4-Dichlorophenol	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
1,2,4-Trichlorobenzene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Naphthalene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
4-Chloroaniline	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Hexachlorobutadiene	10 UJ	ug/l	10	-	ug/l	10 UJ	ug/l	10	10 U	ug/l	10
4-Chloro-3-methylphenol	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
2-Methylnaphthalene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Hexachlorocyclopentadiene	10 UJ	ug/l	10	-	ug/l	10 UJ	ug/l	10	10 U	ug/l	10
2,4,6-Trichlorophenol	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
2,4,5-Trichlorophenol	25 U	ug/l	25	-	ug/l	25 U	ug/l	25	25 U	ug/l	25
2-Chloronaphthalene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
2-Nitroaniline	25 U	ug/l	25	-	ug/l	25 U	ug/l	25	25 U	ug/l	25
Dimethylphthalate	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Acenaphthylene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
2,6-Dinitrotoluene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
3-Nitroaniline	25 U	ug/l	25	-	ug/l	25 U	ug/l	25	25 U	ug/l	25
Acenaphthene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
2,4-Dinitrophenol	25 UJ	ug/l	25	-	ug/l	25 UJ	ug/l	25	25 UJ	ug/l	25
4-Nitrophenol	25 U	ug/l	25	-	ug/l	25 U	ug/l	25	25 UJ	ug/l	25
Dibenzofuran	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
2,4-Dinitrotoluene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Diethylphthalate	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
4-Chlorophenyl-phenylether	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Fluorene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
4-Nitroaniline	25 UJ	ug/l	25	-	ug/l	25 UJ	ug/l	25	25 UJ	ug/l	25
4,6-Dinitro-2-methylphenol	25 UJ	ug/l	25	-	ug/l	25 UJ	ug/l	25	25 U	ug/l	25
N-Nitrosodiphenylamine	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
4-Bromophenyl-phenylether	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Hexachlorobenzene	10 UJ	ug/l	10	-	ug/l	10 UJ	ug/l	10	10 U	ug/l	10
Pentachlorophenol	25 U	ug/l	25	-	ug/l	25 U	ug/l	25	25 UJ	ug/l	25
Phenanthrene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Anthracene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Carbazole	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Di-n-butylphthalate	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Fluoranthene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Pyrene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Butylbenzylphthalate	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
3,3-Dichlorobenzidine	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Benzo (a) anthracene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Chrysene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
bis(2-Ethylhexyl) phthalate	10 U	ug/l	10	-	ug/l	10	ug/l	10	21	ug/l	10

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:
Site
Locator
Collect Date:

90199004
WHITING
WHF15-3D
03-NOV-93

90199004RE
WHITING
WHF15-3DRE
03-NOV-93

90199003
WHITING
WHF15-4
03-NOV-93

90271001
WHITING
WHF15-5
03-DEC-93

	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Di-n-octylphthalate	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	10	U	ug/l	10
Benzo (b) fluoranthene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	10	U	ug/l	10
Benzo (k) fluoranthene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	10	U	ug/l	10
Benzo (a) pyrene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	10	U	ug/l	10
Indeno (1,2,3-cd) pyrene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	10	U	ug/l	10
Dibenzo (a,h) anthracene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	10	U	ug/l	10
Benzo (g,h,i) perylene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	10	U	ug/l	10
CLP PESTICIDES/PCBS 90-SOW ug/l																
alpha-BHC	.05	UJ	ug/l	.05	.05	UJ	ug/l	.05	.05	U	ug/l	.05	.05	U	ug/l	.05
beta-BHC	.05	UJ	ug/l	.05	.05	UJ	ug/l	.05	.05	U	ug/l	.05	.05	U	ug/l	.05
delta-BHC	.05	UJ	ug/l	.05	.05	UJ	ug/l	.05	.05	U	ug/l	.05	.05	U	ug/l	.05
gamma-BHC (Lindane)	.05	UJ	ug/l	.05	.05	UJ	ug/l	.05	.05	U	ug/l	.05	.05	U	ug/l	.05
Heptachlor	.05	UJ	ug/l	.05	.05	UJ	ug/l	.05	.05	U	ug/l	.05	.05	U	ug/l	.05
Aldrin	.05	UJ	ug/l	.05	.05	UJ	ug/l	.05	.05	U	ug/l	.05	.05	U	ug/l	.05
Heptachlor epoxide	.05	UJ	ug/l	.05	.05	UJ	ug/l	.05	.05	U	ug/l	.05	.05	U	ug/l	.05
Endosulfan I	.05	UJ	ug/l	.05	.05	UJ	ug/l	.05	.05	U	ug/l	.05	.05	U	ug/l	.05
Dieldrin	.1	UJ	ug/l	.1	.1	UJ	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1
4,4-DDE	.1	UJ	ug/l	.1	.1	UJ	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1
Endrin	.1	UJ	ug/l	.1	.1	UJ	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1
Endosulfan II	.1	UJ	ug/l	.1	.1	UJ	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1
4,4-DDD	.1	UJ	ug/l	.1	.1	UJ	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1
Endosulfan sulfate	.1	UJ	ug/l	.1	.1	UJ	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1
4,4-DDT	.1	UJ	ug/l	.1	.1	UJ	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1
Methoxychlor	.5	UJ	ug/l	.5	.5	UJ	ug/l	.5	.5	U	ug/l	.5	.5	U	ug/l	.5
Endrin ketone	.1	UJ	ug/l	.1	.1	UJ	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1
Endrin aldehyde	.1	UJ	ug/l	.1	.1	UJ	ug/l	.1	.1	U	ug/l	.1	.1	U	ug/l	.1
alpha-Chlordane	.05	UJ	ug/l	.05	.05	UJ	ug/l	.05	.05	U	ug/l	.05	.05	U	ug/l	.05
gamma-Chlordane	.05	UJ	ug/l	.05	.05	UJ	ug/l	.05	.05	U	ug/l	.05	.05	U	ug/l	.05
Toxaphene	5	UJ	ug/l	5	5	UJ	ug/l	5	5	U	ug/l	5	5	U	ug/l	5
Aroclor-1016	1	UJ	ug/l	1	1	UJ	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Aroclor-1221	2	UJ	ug/l	2	2	UJ	ug/l	2	2	U	ug/l	2	2	U	ug/l	2
Aroclor-1232	1	UJ	ug/l	1	1	UJ	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Aroclor-1242	1	UJ	ug/l	1	1	UJ	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Aroclor-1248	1	UJ	ug/l	1	1	UJ	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Aroclor-1254	1	UJ	ug/l	1	1	UJ	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
Aroclor-1260	1	UJ	ug/l	1	1	UJ	ug/l	1	1	U	ug/l	1	1	U	ug/l	1
CLP METALS AND CYANIDE ug/l																
Aluminum	19.9	U	ug/l	200	-		ug/l		3350		ug/l	200	519		ug/l	200
Antimony	20.7	U	ug/l	60	-		ug/l		20.7	U	ug/l	60	20.7	U	ug/l	60
Arsenic	1.6	U	ug/l	10	-		ug/l		1.6	U	ug/l	10	2.3	J	ug/l	10
Barium	7.8	J	ug/l	200	-		ug/l		23	J	ug/l	200	34.3	J	ug/l	200
Beryllium	.2	UJ	ug/l	5	-		ug/l		.2	UJ	ug/l	5	.2	U	ug/l	5
Cadmium	3.2	U	ug/l	5	-		ug/l		3.2	U	ug/l	5	3.2	U	ug/l	5
Calcium	2820	J	ug/l	5000	-		ug/l		4360	J	ug/l	5000	1320	J	ug/l	5000
Chromium	3.3	U	ug/l	10	-		ug/l		32.2		ug/l	10	11.2		ug/l	10
Cobalt	4.1	U	ug/l	50	-		ug/l		4.1	U	ug/l	50	4.1	U	ug/l	50
Copper	2.1	U	ug/l	25	-		ug/l		5	J	ug/l	25	7.6	J	ug/l	25
Iron	66	J	ug/l	100	-		ug/l		4700		ug/l	100	3390		ug/l	100
Lead	1	U	ug/l	3	-		ug/l		1	U	ug/l	3	3.6		ug/l	3
Magnesium	1430	J	ug/l	5000	-		ug/l		628	J	ug/l	5000	1340	J	ug/l	5000

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

	Lab Sample Number: 90199004			90199004RE			90199003			90271001		
	WHITING			WHITING			WHITING			WHITING		
	WHF15-3D			WHF15-3DRE			WHF15-4			WHF15-5		
	03-NOV-93			03-NOV-93			03-NOV-93			03-DEC-93		
Collect Date:	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
Manganese	1.6 J	ug/l	15	-	ug/l		16.5	ug/l	15	41	ug/l	15
Mercury	.15 U	ug/l	.2	-	ug/l		.15 U	ug/l	.2	.15 U	ug/l	.2
Nickel	9 U	ug/l	40	-	ug/l		14 J	ug/l	40	9 U	ug/l	40
Potassium	1100 J	ug/l	5000	-	ug/l		3250 J	ug/l	5000	949 J	ug/l	5000
Selenium	2 U	ug/l	5	-	ug/l		2 U	ug/l	5	2 U	ug/l	5
Silver	2.7 U	ug/l	10	-	ug/l		2.7 U	ug/l	10	4.6 J	ug/l	10
Sodium	13300	ug/l	5000	-	ug/l		3540 J	ug/l	5000	1540 J	ug/l	5000
Thallium	.88 U	ug/l	10	-	ug/l		.88 U	ug/l	10	.88 U	ug/l	10
Vanadium	2.5 U	ug/l	50	-	ug/l		29.1 J	ug/l	50	2.5 U	ug/l	50
Zinc	10.8 J	ug/l	20	-	ug/l		16.9 J	ug/l	20	52.7	ug/l	20
Cyanide	1.7 U	ug/l	10	-	ug/l		1.7 U	ug/l	10	1.7 U	ug/l	10

Locator Annotations: A = DUPLICATE SAMPLE B = SHALLOW SAMPLE C = INTERMEDIATE SAMPLE CD = DOUBLE INTERMEDIATE SAMPLE D = DEEP SAMPLE

Qualifiers: U = NOT DETECTED J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED R = RESULT IS REJECTED AND UNUSABLE

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	90214004	90214003	RB956016	ME377003								
Site	WHITING	WHITING	WHITING	WHITING								
Locator	WHF15-6B	WHF15-6D	15G00101	15G00101								
Collect Date:	24-NOV-93	24-NOV-93	08-AUG-96	28-JUL-97								
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 90-SOW

ug/l

Chloromethane	10 UJ	ug/l	10	10 UJ	ug/l	10	10 UJ	ug/l	10	10 U	ug/l	10
Bromomethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Vinyl chloride	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Chloroethane	10 UJ	ug/l	10	10 UJ	ug/l	10	10 UJ	ug/l	10	10 U	ug/l	10
Methylene chloride	10 UJ	ug/l	10	10 UJ	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Acetone	10 UJ	ug/l	10	10 UJ	ug/l	10	22 UJ	ug/l	22	10 U	ug/l	10
Carbon disulfide	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,1-Dichloroethene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,1-Dichloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,2-Dichloroethene (total)	3 J	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Chloroform	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,2-Dichloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
2-Butanone	10 UJ	ug/l	10	10 UJ	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,1,1-Trichloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Carbon tetrachloride	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Bromodichloromethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,2-Dichloropropane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
cis-1,3-Dichloropropene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Trichloroethene	10 U	ug/l	10	10 U	ug/l	10	2 J	ug/l	10	3 J	ug/l	10
Dibromochloromethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,1,2-Trichloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Benzene	10 UJ	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
trans-1,3-Dichloropropene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Bromoform	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
4-Methyl-2-pentanone	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
2-Hexanone	10 UJ	ug/l	10	10 UJ	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Tetrachloroethene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Toluene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,1,2,2-Tetrachloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Chlorobenzene	5 J	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Ethylbenzene	7 J	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Styrene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Xylenes (total)	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10

CLP SEMIVOLATILES 90-SOW

ug/l

Phenol	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
bis(2-Chloroethyl) ether	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
2-Chlorophenol	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
1,3-Dichlorobenzene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
1,4-Dichlorobenzene	42	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	90214004	90214003	RB956016	ME377003								
Site	WHITING	WHITING	WHITING	WHITING								
Locator	WHF15-6B	WHF15-6D	15G00101	15G00101								
Collect Date:	24-NOV-93	24-NOV-93	08-AUG-96	28-JUL-97								
VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	
1,2-Dichlorobenzene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
2-Methylphenol	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
2,2-oxybis(1-Chloropropane)	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
4-Methylphenol	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
N-Nitroso-di-n-propylamine	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
Hexachloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
Nitrobenzene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
Isophorone	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
2-Nitrophenol	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
2,4-Dimethylphenol	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
bis(2-Chloroethoxy) methane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
2,4-Dichlorophenol	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
1,2,4-Trichlorobenzene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
Naphthalene	7 J	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
4-Chloroaniline	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
Hexachlorobutadiene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
4-Chloro-3-methylphenol	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
2-Methylnaphthalene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
Hexachlorocyclopentadiene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
2,4,6-Trichlorophenol	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
2,4,5-Trichlorophenol	25 U	ug/l	25	25 U	ug/l	25	25 U	ug/l	25	-	ug/l	
2-Chloronaphthalene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
2-Nitroaniline	25 U	ug/l	25	25 U	ug/l	25	25 U	ug/l	25	-	ug/l	
Dimethylphthalate	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
Acenaphthylene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
2,6-Dinitrotoluene	10 UJ	ug/l	10	10 UJ	ug/l	10	10 U	ug/l	10	-	ug/l	
3-Nitroaniline	25 U	ug/l	25	25 U	ug/l	25	25 U	ug/l	25	-	ug/l	
Acenaphthene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
2,4-Dinitrophenol	25 UJ	ug/l	25	25 UJ	ug/l	25	25 UJ	ug/l	25	-	ug/l	
4-Nitrophenol	25 U	ug/l	25	25 U	ug/l	25	25 U	ug/l	25	-	ug/l	
Dibenzofuran	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
2,4-Dinitrotoluene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
Diethylphthalate	2 J	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
4-Chlorophenyl-phenylether	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
Fluorene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
4-Nitroaniline	25 UJ	ug/l	25	25 UJ	ug/l	25	25 UJ	ug/l	25	-	ug/l	
4,6-Dinitro-2-methylphenol	25 UJ	ug/l	25	25 UJ	ug/l	25	25 UJ	ug/l	25	-	ug/l	
N-Nitrosodiphenylamine	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
4-Bromophenyl-phenylether	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
Hexachlorobenzene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
Pentachlorophenol	25 U	ug/l	25	25 U	ug/l	25	25 U	ug/l	25	-	ug/l	
Phenanthrene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
Anthracene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
Carbazole	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
Di-n-butylphthalate	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
Fluoranthene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
Pyrene	10 U	ug/l	10	10 U	ug/l	10	10 UJ	ug/l	10	-	ug/l	
Butylbenzylphthalate	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
3,3-Dichlorobenzidine	10 U	ug/l	10	10 U	ug/l	10	10 UJ	ug/l	10	-	ug/l	
Benzo (a) anthracene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
Chrysene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
bis(2-Ethylhexyl) phthalate	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	90214004	90214003	RB956016	ME377003
Site:	WHITING	WHITING	WHITING	WHITING
Locator:	WHF15-6B	WHF15-6D	15G00101	15G00101
Collect Date:	24-NOV-93	24-NOV-93	08-AUG-96	28-JUL-97

	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Di-n-octylphthalate	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10	-		ug/l	
Benzo (b) fluoranthene	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10	-		ug/l	
Benzo (k) fluoranthene	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10	-		ug/l	
Benzo (a) pyrene	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10	-		ug/l	
Indeno (1,2,3-cd) pyrene	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10	-		ug/l	
Dibenzo (a,h) anthracene	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10	-		ug/l	
Benzo (g,h,i) perylene	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10	-		ug/l	
CLP PESTICIDES/PCBS 90-SOW																
			ug/l													
alpha-BHC	.05	U	ug/l	.05	.05	U	ug/l	.05	.05	UJ	ug/l	.05	-		ug/l	
beta-BHC	.05	U	ug/l	.05	.05	U	ug/l	.05	.05	UJ	ug/l	.05	-		ug/l	
delta-BHC	.05	U	ug/l	.05	.05	U	ug/l	.05	.05	UJ	ug/l	.05	-		ug/l	
gamma-BHC (Lindane)	.05	U	ug/l	.05	.05	U	ug/l	.05	.05	UJ	ug/l	.05	-		ug/l	
Heptachlor	.05	U	ug/l	.05	.05	U	ug/l	.05	.05	UJ	ug/l	.05	-		ug/l	
Aldrin	.05	U	ug/l	.05	.05	U	ug/l	.05	.05	UJ	ug/l	.05	-		ug/l	
Heptachlor epoxide	.05	U	ug/l	.05	.05	U	ug/l	.05	.05	UJ	ug/l	.05	-		ug/l	
Endosulfan I	.05	U	ug/l	.05	.05	U	ug/l	.05	.05	UJ	ug/l	.05	-		ug/l	
Dieldrin	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	UJ	ug/l	.1	-		ug/l	
4,4-DDE	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	UJ	ug/l	.1	-		ug/l	
Endrin	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	UJ	ug/l	.1	-		ug/l	
Endosulfan II	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	UJ	ug/l	.1	-		ug/l	
4,4-DDD	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	UJ	ug/l	.1	-		ug/l	
Endosulfan sulfate	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	UJ	ug/l	.1	-		ug/l	
4,4-DDT	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	UJ	ug/l	.1	-		ug/l	
Methoxychlor	.5	U	ug/l	.5	.5	U	ug/l	.5	.5	UJ	ug/l	.5	-		ug/l	
Endrin ketone	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	UJ	ug/l	.1	-		ug/l	
Endrin aldehyde	.1	U	ug/l	.1	.1	U	ug/l	.1	.1	UJ	ug/l	.1	-		ug/l	
alpha-Chlordane	.05	U	ug/l	.05	.05	U	ug/l	.05	.05	UJ	ug/l	.05	-		ug/l	
gamma-Chlordane	.05	U	ug/l	.05	.05	U	ug/l	.05	.05	UJ	ug/l	.05	-		ug/l	
Toxaphene	5	U	ug/l	5	5	U	ug/l	5	5	UJ	ug/l	5	-		ug/l	
Aroclor-1016	1	U	ug/l	1	1	U	ug/l	1	1	UJ	ug/l	1	-		ug/l	
Aroclor-1221	2	U	ug/l	2	2	U	ug/l	2	2	UJ	ug/l	2	-		ug/l	
Aroclor-1232	1	U	ug/l	1	1	U	ug/l	1	1	UJ	ug/l	1	-		ug/l	
Aroclor-1242	1	U	ug/l	1	1	U	ug/l	1	1	UJ	ug/l	1	-		ug/l	
Aroclor-1248	1	U	ug/l	1	1	U	ug/l	1	1	UJ	ug/l	1	-		ug/l	
Aroclor-1254	1	U	ug/l	1	1	U	ug/l	1	1	UJ	ug/l	1	-		ug/l	
Aroclor-1260	1	U	ug/l	1	1	U	ug/l	1	1	UJ	ug/l	1	-		ug/l	
CLP METALS AND CYANIDE																
			ug/l													
Aluminum	9990		ug/l	200	43	J	ug/l	200	153	J	ug/l		200	U	ug/l	200
Antimony	20.7	U	ug/l	60	20.7	U	ug/l	60	8.6	U	ug/l		60	U	ug/l	60
Arsenic	2.1	J	ug/l	10	1.6	U	ug/l	10	.5	U	ug/l		10	U	ug/l	10
Barium	126	J	ug/l	200	14.2	J	ug/l	200	26	J	ug/l		16.7	J	ug/l	200
Beryllium	.39	J	ug/l	5	.26	J	ug/l	5	.3	U	ug/l		5	U	ug/l	5
Cadmium	3.2	U	ug/l	5	12.7		ug/l	5	1.2	U	ug/l		5	U	ug/l	5
Calcium	7430		ug/l	5000	802	J	ug/l	5000	15000		ug/l		5000	U	ug/l	5000
Chromium	13		ug/l	10	3.3	U	ug/l	10	2	U	ug/l		10	U	ug/l	10
Cobalt	4.1	U	ug/l	50	4.1	U	ug/l	50	2.3	U	ug/l		50	U	ug/l	50
Copper	19.9	J	ug/l	25	2.6	J	ug/l	25	1.1	U	ug/l		25	U	ug/l	25
Iron	65600		ug/l	100	198		ug/l	100	13.3	U	ug/l		100	U	ug/l	100
Lead	3.9	J	ug/l	5	1.1	J	ug/l	3	1.1	J	ug/l		3	U	ug/l	3
Magnesium	3590	J	ug/l	5000	540	J	ug/l	5000	612	J	ug/l		506	J	ug/l	5000

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

	90214004			90214003			RB956016			ME377003		
	VALUE	QUAL	UNITS									
Lab Sample Number:	90214004			90214003			RB956016			ME377003		
Site:	WHITING			WHITING			WHITING			WHITING		
Locator:	WHF15-68			WHF15-6D			15G00101			15G00101		
Collect Date:	24-NOV-93			24-NOV-93			08-AUG-96			28-JUL-97		
	DL			DL			DL			DL		
Manganese	291	ug/l	15	10.8 J	ug/l	15	8.1 J	ug/l	15	U	ug/l	15
Mercury	.15 U	ug/l	.2	.15 U	ug/l	.2	.1 U	ug/l	.2	U	ug/l	.2
Nickel	11.7 J	ug/l	40	9 U	ug/l	40	7.3 U	ug/l	40	U	ug/l	40
Potassium	2680 J	ug/l	5000	641 J	ug/l	5000	1680 J	ug/l	5000	U	ug/l	5000
Selenium	2 U	ug/l	5	2 U	ug/l	5	.6 U	ug/l	5	UJ	ug/l	5
Silver	2.7 U	ug/l	10	2.7 U	ug/l	10	2.5 U	ug/l	10	U	ug/l	10
Sodium	3800 J	ug/l	5000	2890 J	ug/l	5000	3420 J	ug/l	4370	J	ug/l	5000
Thallium	.92 J	ug/l	10	.91 J	ug/l	10	.6 U	ug/l	10	U	ug/l	10
Vanadium	17.6 J	ug/l	50	2.5 U	ug/l	50	1.2 U	ug/l	50	U	ug/l	50
Zinc	43.7	ug/l	20	17.1 J	ug/l	20	7.5 U	ug/l	20	U	ug/l	20
Cyanide	2.1 J	ug/l	10	1.7 U	ug/l	10	2.5 J	ug/l	-		ug/l	

Locator Annotations: A = DUPLICATE SAMPLE B = SHALLOW SAMPLE C = INTERMEDIATE SAMPLE CD = DOUBLE INTERMEDIATE SAMPLE D = DEEP SAMPLE

Qualifiers: U = NOT DETECTED J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED R = RESULT IS REJECTED AND UNUSABLE

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	RB980003	ME377002	RB980010	RB980002							
Site	WHITING	WHITING	WHITING	WHITING							
Locator	15G00201	15G00201	15G00201F	15G00202							
Collect Date:	13-AUG-96	28-JUL-97	13-AUG-96	12-AUG-96							
VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 90-SOW

ug/l

Chloromethane	10 UJ	ug/l	10	10 U	ug/l	10	-	ug/l	10 UJ	ug/l	10
Bromomethane	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
Vinyl chloride	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
Chloroethane	10 UJ	ug/l	10	10 U	ug/l	10	-	ug/l	10 UJ	ug/l	10
Methylene chloride	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
Acetone	10 UJ	ug/l	10	10 U	ug/l	10	-	ug/l	10 UJ	ug/l	10
Carbon disulfide	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
1,1-Dichloroethene	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
1,1-Dichloroethane	10 UJ	ug/l	10	10 U	ug/l	10	-	ug/l	10 UJ	ug/l	10
1,2-Dichloroethene (total)	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
Chloroform	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
1,2-Dichloroethane	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
2-Butanone	10 UJ	ug/l	10	10 U	ug/l	10	-	ug/l	10 UJ	ug/l	10
1,1,1-Trichloroethane	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
Carbon tetrachloride	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
Bromodichloromethane	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
1,2-Dichloropropane	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
cis-1,3-Dichloropropene	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
Trichloroethene	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	1 J	ug/l	10
Dibromochloromethane	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
1,1,2-Trichloroethane	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
Benzene	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
trans-1,3-Dichloropropene	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
Bromoform	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
4-Methyl-2-pentanone	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
2-Hexanone	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
Tetrachloroethene	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
Toluene	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
1,1,2,2-Tetrachloroethane	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
Chlorobenzene	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
Ethylbenzene	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
Styrene	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
Xylenes (total)	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10

CLP SEMIVOLATILES 90-SOW

ug/l

Phenol	10 U	ug/l	10	-	ug/l	-	ug/l	10 UJ	ug/l	10
bis(2-Chloroethyl) ether	10 U	ug/l	10	-	ug/l	-	ug/l	10 UJ	ug/l	10
2-Chlorophenol	10 U	ug/l	10	-	ug/l	-	ug/l	10 UJ	ug/l	10
1,3-Dichlorobenzene	10 U	ug/l	10	-	ug/l	-	ug/l	10 UJ	ug/l	10
1,4-Dichlorobenzene	10 U	ug/l	10	-	ug/l	-	ug/l	10 UJ	ug/l	10

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:
Site
Locator
Collect Date:

RB980003
WHITING
15G00201
13-AUG-96

ME377002
WHITING
15G00201
28-JUL-97

RB980010
WHITING
15G00201F
13-AUG-96

RB980002
WHITING
15G00202
12-AUG-96

	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
1,2-Dichlorobenzene	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
2-Methylphenol	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
2,2-oxybis(1-Chloropropane)	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
4-Methylphenol	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
N-Nitroso-di-n-propylamine	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
Hexachloroethane	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
Nitrobenzene	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
Isophorone	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
2-Nitrophenol	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
2,4-Dimethylphenol	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
bis(2-Chloroethoxy) methane	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
2,4-Dichlorophenol	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
1,2,4-Trichlorobenzene	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
Naphthalene	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
4-Chloroaniline	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
Hexachlorobutadiene	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
4-Chloro-3-methylphenol	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
2-Methylnaphthalene	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
Hexachlorocyclopentadiene	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
2,4,6-Trichlorophenol	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
2,4,5-Trichlorophenol	25	U	ug/l	25	-	ug/l	-	ug/l	25	UJ	ug/l	25
2-Chloronaphthalene	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
2-Nitroaniline	25	U	ug/l	25	-	ug/l	-	ug/l	25	UJ	ug/l	25
Dimethylphthalate	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
Acenaphthylene	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
2,6-Dinitrotoluene	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
3-Nitroaniline	25	U	ug/l	25	-	ug/l	-	ug/l	25	UJ	ug/l	25
Acenaphthene	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
2,4-Dinitrophenol	25	UJ	ug/l	25	-	ug/l	-	ug/l	25	UJ	ug/l	25
4-Nitrophenol	25	U	ug/l	25	-	ug/l	-	ug/l	25	UJ	ug/l	25
Dibenzofuran	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
2,4-Dinitrotoluene	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
Diethylphthalate	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
4-Chlorophenyl-phenylether	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
Fluorene	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
4-Nitroaniline	25	UJ	ug/l	25	-	ug/l	-	ug/l	25	UJ	ug/l	25
4,6-Dinitro-2-methylphenol	25	UJ	ug/l	25	-	ug/l	-	ug/l	25	UJ	ug/l	25
N-Nitrosodiphenylamine	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
4-Bromophenyl-phenylether	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
Hexachlorobenzene	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
Pentachlorophenol	25	UJ	ug/l	25	-	ug/l	-	ug/l	25	UJ	ug/l	25
Phenanthrene	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
Anthracene	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
Carbazole	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
Di-n-butylphthalate	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
Fluoranthene	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
Pyrene	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
Butylbenzylphthalate	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
3,3-Dichlorobenzidine	10	UJ	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
Benzo (a) anthracene	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
Chrysene	10	U	ug/l	10	-	ug/l	-	ug/l	10	UJ	ug/l	10
bis(2-Ethylhexyl) phthalate	2	J	ug/l	10	-	ug/l	-	ug/l	2	J	ug/l	10

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	RB980003	ME377002	RB980010	RB980002								
Site	WHITING	WHITING	WHITING	WHITING								
Locator	15G00201	15G00201	15G00201F	15G00202								
Collect Date:	13-AUG-96	28-JUL-97	13-AUG-96	12-AUG-96								
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
Di-n-octylphthalate	10 U	ug/l	10	-	ug/l	-	ug/l	10 UJ	ug/l	10		
Benzo (b) fluoranthene	10 U	ug/l	10	-	ug/l	-	ug/l	10 UJ	ug/l	10		
Benzo (k) fluoranthene	10 U	ug/l	10	-	ug/l	-	ug/l	10 UJ	ug/l	10		
Benzo (a) pyrene	10 U	ug/l	10	-	ug/l	-	ug/l	10 UJ	ug/l	10		
Indeno (1,2,3-cd) pyrene	10 U	ug/l	10	-	ug/l	-	ug/l	10 UJ	ug/l	10		
Dibenzo (a,h) anthracene	10 U	ug/l	10	-	ug/l	-	ug/l	10 UJ	ug/l	10		
Benzo (g,h,i) perylene	10 U	ug/l	10	-	ug/l	-	ug/l	10 UJ	ug/l	10		
CLP PESTICIDES/PCBS 90-SOW	ug/l											
alpha-BHC	.05 UJ	ug/l	.05	-	ug/l	-	ug/l	.05 UJ	ug/l	.05		
beta-BHC	.05 UJ	ug/l	.05	-	ug/l	-	ug/l	.05 UJ	ug/l	.05		
delta-BHC	.05 UJ	ug/l	.05	-	ug/l	-	ug/l	.05 UJ	ug/l	.05		
gamma-BHC (Lindane)	.05 UJ	ug/l	.05	-	ug/l	-	ug/l	.05 UJ	ug/l	.05		
Heptachlor	.05 UJ	ug/l	.05	-	ug/l	-	ug/l	.05 UJ	ug/l	.05		
Aldrin	.05 UJ	ug/l	.05	-	ug/l	-	ug/l	.05 UJ	ug/l	.05		
Heptachlor epoxide	.05 UJ	ug/l	.05	-	ug/l	-	ug/l	.05 UJ	ug/l	.05		
Endosulfan I	.05 UJ	ug/l	.05	-	ug/l	-	ug/l	.05 UJ	ug/l	.05		
Dieldrin	.1 UJ	ug/l	.1	-	ug/l	-	ug/l	.1 UJ	ug/l	.1		
4,4-DDE	.1 UJ	ug/l	.1	-	ug/l	-	ug/l	.1 UJ	ug/l	.1		
Endrin	.1 UJ	ug/l	.1	-	ug/l	-	ug/l	.1 UJ	ug/l	.1		
Endosulfan II	.1 UJ	ug/l	.1	-	ug/l	-	ug/l	.1 UJ	ug/l	.1		
4,4-DDD	.1 UJ	ug/l	.1	-	ug/l	-	ug/l	.1 UJ	ug/l	.1		
Endosulfan sulfate	.1 UJ	ug/l	.1	-	ug/l	-	ug/l	.1 UJ	ug/l	.1		
4,4-DDT	.12 J	ug/l	.1	-	ug/l	-	ug/l	.1 UJ	ug/l	.1		
Methoxychlor	.5 UJ	ug/l	.5	-	ug/l	-	ug/l	.5 UJ	ug/l	.5		
Endrin ketone	.1 UJ	ug/l	.1	-	ug/l	-	ug/l	.1 UJ	ug/l	.1		
Endrin aldehyde	.1 UJ	ug/l	.1	-	ug/l	-	ug/l	.1 UJ	ug/l	.1		
alpha-Chlordane	.05 UJ	ug/l	.05	-	ug/l	-	ug/l	.05 UJ	ug/l	.05		
gamma-Chlordane	.05 UJ	ug/l	.05	-	ug/l	-	ug/l	.05 UJ	ug/l	.05		
Toxaphene	5 UJ	ug/l	5	-	ug/l	-	ug/l	5 UJ	ug/l	5		
Aroclor-1016	1 UJ	ug/l	1	-	ug/l	-	ug/l	1 UJ	ug/l	1		
Aroclor-1221	2 UJ	ug/l	2	-	ug/l	-	ug/l	2 UJ	ug/l	2		
Aroclor-1232	1 UJ	ug/l	1	-	ug/l	-	ug/l	1 UJ	ug/l	1		
Aroclor-1242	1 UJ	ug/l	1	-	ug/l	-	ug/l	1 UJ	ug/l	1		
Aroclor-1248	1 UJ	ug/l	1	-	ug/l	-	ug/l	1 UJ	ug/l	1		
Aroclor-1254	1 UJ	ug/l	1	-	ug/l	-	ug/l	1 UJ	ug/l	1		
Aroclor-1260	1 UJ	ug/l	1	-	ug/l	-	ug/l	1 UJ	ug/l	1		
CLP METALS AND CYANIDE	ug/l											
Aluminum	1030	ug/l		200 U	ug/l	200	46.2 U	ug/l		204	ug/l	
Antimony	8.6 U	ug/l		60 U	ug/l	60	8.6 U	ug/l		8.6 U	ug/l	
Arsenic	2.2 J	ug/l		10 U	ug/l	10	.5 U	ug/l		.5 U	ug/l	
Barium	34.6 J	ug/l		27.1 J	ug/l	200	30.2 J	ug/l		23.2 J	ug/l	
Beryllium	.3 U	ug/l		5 U	ug/l	5	.3 U	ug/l		.3 U	ug/l	
Cadmium	1.2 U	ug/l		5 U	ug/l	5	1.3 J	ug/l		1.2 U	ug/l	
Calcium	1470 J	ug/l		1810 J	ug/l	5000	1480 J	ug/l		892 J	ug/l	
Chromium	2.8 J	ug/l		10 U	ug/l	10	2 U	ug/l		2 U	ug/l	
Cobalt	2.3 U	ug/l		50 U	ug/l	50	2.3 U	ug/l		2.3 U	ug/l	
Copper	1.3 J	ug/l		25 U	ug/l	25	1.1 U	ug/l		1.5 J	ug/l	
Iron	4250	ug/l		923	ug/l	100	89.8 J	ug/l		462	ug/l	
Lead	1.5 J	ug/l		3 U	ug/l	3	.5 U	ug/l		.5 J	ug/l	
Magnesium	283 J	ug/l		533 J	ug/l	5000	283 J	ug/l		751 J	ug/l	

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

	Lab Sample Number: RB980003			ME377002			RB980010			RB980002					
	Site WHITING			WHITING			WHITING			WHITING					
	Locator 15G00201			15G00201			15G00201F			15G00202					
	Collect Date: 13-AUG-96			28-JUL-97			13-AUG-96			12-AUG-96					
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL			
Manganese	141		ug/l		553		ug/l		15	131		ug/l	6.1	J	ug/l
Mercury	.1	U	ug/l		.2	U	ug/l		.2	.1	U	ug/l	.2	U	ug/l
Nickel	7.3	U	ug/l		40	U	ug/l		40	7.3	U	ug/l	7.3	U	ug/l
Potassium	1600	J	ug/l		1080	J	ug/l		5000	1440	J	ug/l	431	J	ug/l
Selenium	.6	U	ug/l		5	U	ug/l		5	.6	U	ug/l	.6	U	ug/l
Silver	2.5	U	ug/l		10	U	ug/l		10	2.5	U	ug/l	2.5	U	ug/l
Sodium	978	J	ug/l		1390	J	ug/l		5000	969	J	ug/l	3500	J	ug/l
Thallium	.6	U	ug/l		10	U	ug/l		10	.6	U	ug/l	.6	U	ug/l
Vanadium	5.2	J	ug/l		50	U	ug/l		50	1.2	U	ug/l	1.2	U	ug/l
Zinc	5.2	U	ug/l		20	U	ug/l		20	7.5	U	ug/l	86.6		ug/l
Cyanide	1.6	U	ug/l		-		ug/l			-		ug/l	1.5	U	ug/l

Locator Annotations: A = DUPLICATE SAMPLE B = SHALLOW SAMPLE C = INTERMEDIATE SAMPLE CD = DOUBLE INTERMEDIATE SAMPLE D = DEEP SAMPLE

Qualifiers: U = NOT DETECTED J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED R = RESULT IS REJECTED AND UNUSABLE

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	ME377004			RB980009			RB956017			ME377005		
Site	WHITING			WHITING			WHITING			WHITING		
Locator	15G00202			15G00202F			15G00203			15G00203		
Collect Date:	29-JUL-97			12-AUG-96			09-AUG-96			29-JUL-97		
	VALUE	QUAL UNITS	DL									

CLP VOLATILES 90-SOW

ug/l

Chloromethane	10 U	ug/l	10	-	ug/l	10 UJ	ug/l	10	10 U	ug/l	10
Bromomethane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Vinyl chloride	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Chloroethane	10 U	ug/l	10	-	ug/l	10 UJ	ug/l	10	10 U	ug/l	10
Methylene chloride	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Acetone	10 U	ug/l	10	-	ug/l	15 UJ	ug/l	15	10 U	ug/l	10
Carbon disulfide	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
1,1-Dichloroethene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
1,1-Dichloroethane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
1,2-Dichloroethene (total)	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Chloroform	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
1,2-Dichloroethane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
2-Butanone	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
1,1,1-Trichloroethane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Carbon tetrachloride	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Bromodichloromethane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
1,2-Dichloropropane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
cis-1,3-Dichloropropene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Trichloroethene	2 J	ug/l	10	-	ug/l	10 U	ug/l	10	1 J	ug/l	10
Dibromochloromethane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
1,1,2-Trichloroethane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Benzene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
trans-1,3-Dichloropropene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Bromoform	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
4-Methyl-2-pentanone	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
2-Hexanone	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Tetrachloroethene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Toluene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
1,1,2,2-Tetrachloroethane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Chlorobenzene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Ethylbenzene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Styrene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10
Xylenes (total)	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	10 U	ug/l	10

CLP SEMIVOLATILES 90-SOW

ug/l

Phenol	-	ug/l	-	ug/l	10 U	ug/l	10	-	ug/l
bis(2-Chloroethyl) ether	-	ug/l	-	ug/l	10 U	ug/l	10	-	ug/l
2-Chlorophenol	-	ug/l	-	ug/l	10 U	ug/l	10	-	ug/l
1,3-Dichlorobenzene	-	ug/l	-	ug/l	10 U	ug/l	10	-	ug/l
1,4-Dichlorobenzene	-	ug/l	-	ug/l	10 U	ug/l	10	-	ug/l

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	ME377004		RB980009			RB956017			ME377005			
Site	WHITING		WHITING			WHITING			WHITING			
Locator	15G00202		15G00202F			15G00203			15G00203			
Collect Date:	29-JUL-97		12-AUG-96			09-AUG-96			29-JUL-97			
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
1,2-Dichlorobenzene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
2-Methylphenol	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
2,2-oxybis(1-Chloropropane)	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
4-Methylphenol	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
N-Nitroso-di-n-propylamine	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
Hexachloroethane	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
Nitrobenzene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
Isophorone	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
2-Nitrophenol	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
2,4-Dimethylphenol	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
bis(2-Chloroethoxy) methane	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
2,4-Dichlorophenol	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
1,2,4-Trichlorobenzene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
Naphthalene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
4-Chloroaniline	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
Hexachlorobutadiene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
4-Chloro-3-methylphenol	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
2-Methylnaphthalene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
Hexachlorocyclopentadiene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
2,4,6-Trichlorophenol	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
2,4,5-Trichlorophenol	-	ug/l		-	ug/l		25 U	ug/l	25	-	ug/l	
2-Chloronaphthalene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
2-Nitroaniline	-	ug/l		-	ug/l		25 U	ug/l	25	-	ug/l	
Dimethylphthalate	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
Acenaphthylene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
2,6-Dinitrotoluene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
3-Nitroaniline	-	ug/l		-	ug/l		25 U	ug/l	25	-	ug/l	
Acenaphthene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
2,4-Dinitrophenol	-	ug/l		-	ug/l		25 UJ	ug/l	25	-	ug/l	
4-Nitrophenol	-	ug/l		-	ug/l		25 U	ug/l	25	-	ug/l	
Dibenzofuran	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
2,4-Dinitrotoluene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
Diethylphthalate	-	ug/l		-	ug/l		2 J	ug/l	10	-	ug/l	
4-Chlorophenyl-phenylether	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
Fluorene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
4-Nitroaniline	-	ug/l		-	ug/l		25 UJ	ug/l	25	-	ug/l	
4,6-Dinitro-2-methylphenol	-	ug/l		-	ug/l		25 UJ	ug/l	25	-	ug/l	
N-Nitrosodiphenylamine	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
4-Bromophenyl-phenylether	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
Hexachlorobenzene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
Pentachlorophenol	-	ug/l		-	ug/l		25 U	ug/l	25	-	ug/l	
Phenanthrene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
Anthracene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
Carbazole	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
Di-n-butylphthalate	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
Fluoranthene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
Pyrene	-	ug/l		-	ug/l		10 UJ	ug/l	10	-	ug/l	
Butylbenzylphthalate	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
3,3-Dichlorobenzidine	-	ug/l		-	ug/l		10 UJ	ug/l	10	-	ug/l	
Benzo (a) anthracene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
Chrysene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
bis(2-Ethylhexyl) phthalate	-	ug/l		-	ug/l		1 J	ug/l	10	-	ug/l	

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	ME377004	RB980009	RB956017	ME377005
Site	WHITING	WHITING	WHITING	WHITING
Locator	15G00202	15G00202F	15G00203	15G00203
Collect Date:	29-JUL-97	12-AUG-96	09-AUG-96	29-JUL-97

	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Di-n-octylphthalate	-		ug/l		-		ug/l		10	U	ug/l		10	-		ug/l
Benzo (b) fluoranthene	-		ug/l		-		ug/l		10	U	ug/l		10	-		ug/l
Benzo (k) fluoranthene	-		ug/l		-		ug/l		10	U	ug/l		10	-		ug/l
Benzo (a) pyrene	-		ug/l		-		ug/l		10	U	ug/l		10	-		ug/l
Indeno (1,2,3-cd) pyrene	-		ug/l		-		ug/l		10	U	ug/l		10	-		ug/l
Dibenzo (a,h) anthracene	-		ug/l		-		ug/l		10	U	ug/l		10	-		ug/l
Benzo (g,h,i) perylene	-		ug/l		-		ug/l		10	U	ug/l		10	-		ug/l
CLP PESTICIDES/PCBS 90-SOW	ug/l															
alpha-BHC	-		ug/l		-		ug/l		.05	U	ug/l		.05	-		ug/l
beta-BHC	-		ug/l		-		ug/l		.05	U	ug/l		.05	-		ug/l
delta-BHC	-		ug/l		-		ug/l		.05	U	ug/l		.05	-		ug/l
gamma-BHC (Lindane)	-		ug/l		-		ug/l		.05	U	ug/l		.05	-		ug/l
Heptachlor	-		ug/l		-		ug/l		.05	U	ug/l		.05	-		ug/l
Aldrin	-		ug/l		-		ug/l		.05	U	ug/l		.05	-		ug/l
Heptachlor epoxide	-		ug/l		-		ug/l		.05	U	ug/l		.05	-		ug/l
Endosulfan I	-		ug/l		-		ug/l		.05	U	ug/l		.05	-		ug/l
Dieldrin	-		ug/l		-		ug/l		.1	U	ug/l		.1	-		ug/l
4,4-DDE	-		ug/l		-		ug/l		.1	U	ug/l		.1	-		ug/l
Endrin	-		ug/l		-		ug/l		.1	U	ug/l		.1	-		ug/l
Endosulfan II	-		ug/l		-		ug/l		.1	U	ug/l		.1	-		ug/l
4,4-DDD	-		ug/l		-		ug/l		.1	U	ug/l		.1	-		ug/l
Endosulfan sulfate	-		ug/l		-		ug/l		.1	U	ug/l		.1	-		ug/l
4,4-DDT	-		ug/l		-		ug/l		.1	U	ug/l		.1	-		ug/l
Methoxychlor	-		ug/l		-		ug/l		.5	U	ug/l		.5	-		ug/l
Endrin ketone	-		ug/l		-		ug/l		.1	U	ug/l		.1	-		ug/l
Endrin aldehyde	-		ug/l		-		ug/l		.1	U	ug/l		.1	-		ug/l
alpha-Chlordane	-		ug/l		-		ug/l		.05	U	ug/l		.05	-		ug/l
gamma-Chlordane	-		ug/l		-		ug/l		.05	U	ug/l		.05	-		ug/l
Toxaphene	-		ug/l		-		ug/l		5	U	ug/l		5	-		ug/l
Aroclor-1016	-		ug/l		-		ug/l		1	U	ug/l		1	-		ug/l
Aroclor-1221	-		ug/l		-		ug/l		2	U	ug/l		2	-		ug/l
Aroclor-1232	-		ug/l		-		ug/l		1	U	ug/l		1	-		ug/l
Aroclor-1242	-		ug/l		-		ug/l		1	U	ug/l		1	-		ug/l
Aroclor-1248	-		ug/l		-		ug/l		1	U	ug/l		1	-		ug/l
Aroclor-1254	-		ug/l		-		ug/l		1	U	ug/l		1	-		ug/l
Aroclor-1260	-		ug/l		-		ug/l		1	U	ug/l		1	-		ug/l
CLP METALS AND CYANIDE	ug/l															
Aluminum	200	U	ug/l	200	15.7	U	ug/l		156	J	ug/l		200	U	ug/l	200
Antimony	60	U	ug/l	60	8.6	U	ug/l		8.6	U	ug/l		60	U	ug/l	60
Arsenic	10	U	ug/l	10	.5	U	ug/l		.5	U	ug/l		10	U	ug/l	10
Barium	24.6	J	ug/l	200	17.4	J	ug/l		8.2	J	ug/l		200	U	ug/l	200
Beryllium	5	U	ug/l	5	.3	U	ug/l		.3	U	ug/l		5	U	ug/l	5
Cadmium	5	U	ug/l	5	1.3	J	ug/l		1.2	J	ug/l		5	U	ug/l	5
Calcium	5000	U	ug/l	5000	1370	J	ug/l		1600	J	ug/l		1760	J	ug/l	5000
Chromium	10	U	ug/l	10	2	U	ug/l		2	U	ug/l		10	U	ug/l	10
Cobalt	50	U	ug/l	50	2.3	U	ug/l		2.3	U	ug/l		50	U	ug/l	50
Copper	25	U	ug/l	25	1.1	J	ug/l		1.1	U	ug/l		25	U	ug/l	25
Iron	100	U	ug/l	100	43.9	U	ug/l		314	U	ug/l		111	U	ug/l	100
Lead	3	U	ug/l	3	.5	U	ug/l		.5	U	ug/l		3	U	ug/l	3
Magnesium	758	J	ug/l	5000	695	J	ug/l		651	J	ug/l		840	J	ug/l	5000

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:
Site
Locator
Collect Date:

ME377004
WHITING
15G00202
29-JUL-97

RB980009
WHITING
15G00202F
12-AUG-96

RB956017
WHITING
15G00203
09-AUG-96

ME377005
WHITING
15G00203
29-JUL-97

VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL

Manganese	5.4 J	ug/l	15	7 J	ug/l	25.9	ug/l	12.4 J	ug/l	15
Mercury	.2 U	ug/l	.2	.1 U	ug/l	.1 U	ug/l	.2 U	ug/l	.2
Nickel	40 U	ug/l	40	7.3 U	ug/l	7.3 U	ug/l	40 U	ug/l	40
Potassium	5000 U	ug/l	5000	316 U	ug/l	1250 J	ug/l	5000 U	ug/l	5000
Selenium	5 U	ug/l	5	.6 U	ug/l	.6 U	ug/l	5 U	ug/l	5
Silver	10 U	ug/l	10	2.5 U	ug/l	2.5 U	ug/l	10 U	ug/l	10
Sodium	4030 J	ug/l	5000	3510 J	ug/l	5750	ug/l	6310 J	ug/l	5000
Thallium	10 U	ug/l	10	.6 U	ug/l	.6 U	ug/l	10 U	ug/l	10
Vanadium	50 U	ug/l	50	1.2 U	ug/l	1.2 U	ug/l	50 U	ug/l	50
Zinc	20 U	ug/l	20	123	ug/l	30.5	ug/l	20 U	ug/l	20
Cyanide	-	ug/l	-	-	ug/l	1.9 J	ug/l	-	ug/l	-

Locator Annotations: A = DUPLICATE SAMPLE B = SHALLOW SAMPLE C = INTERMEDIATE SAMPLE CD = DOUBLE INTERMEDIATE SAMPLE D = DEEP SAMPLE

Qualifiers: U = NOT DETECTED J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED R = RESULT IS REJECTED AND UNUSABLE

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	RB956019	RB956013	ME390002	RB956018							
Site	WHITING	WHITING	WHITING	WHITING							
Locator	15G00203F	15G00301	15G00301	15G00301F							
Collect Date:	09-AUG-96	08-AUG-96	29-JUL-97	08-AUG-96							
VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 90-SOW

ug/l

Chloromethane	-	ug/l	10 UJ	ug/l	10	10 U	ug/l	10	-	ug/l
Bromomethane	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Vinyl chloride	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Chloroethane	-	ug/l	10 UJ	ug/l	10	10 U	ug/l	10	-	ug/l
Methylene chloride	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Acetone	-	ug/l	11 UJ	ug/l	11	10 U	ug/l	10	-	ug/l
Carbon disulfide	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
1,1-Dichloroethene	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
1,1-Dichloroethane	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
1,2-Dichloroethene (total)	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Chloroform	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
1,2-Dichloroethane	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
2-Butanone	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
1,1,1-Trichloroethane	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Carbon tetrachloride	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Bromodichloromethane	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
1,2-Dichloropropane	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
cis-1,3-Dichloropropene	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Trichloroethene	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Dibromochloromethane	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
1,1,2-Trichloroethane	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Benzene	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
trans-1,3-Dichloropropene	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Bromoform	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
4-Methyl-2-pentanone	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
2-Hexanone	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Tetrachloroethene	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Toluene	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
1,1,2,2-Tetrachloroethane	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Chlorobenzene	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Ethylbenzene	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Styrene	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Xylenes (total)	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	-	ug/l

CLP SEMIVOLATILES 90-SOW

ug/l

Phenol	-	ug/l	10 U	ug/l	10	-	ug/l	-	ug/l
bis(2-Chloroethyl) ether	-	ug/l	10 U	ug/l	10	-	ug/l	-	ug/l
2-Chlorophenol	-	ug/l	10 U	ug/l	10	-	ug/l	-	ug/l
1,3-Dichlorobenzene	-	ug/l	10 U	ug/l	10	-	ug/l	-	ug/l
1,4-Dichlorobenzene	-	ug/l	10 U	ug/l	10	-	ug/l	-	ug/l

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:
Site
Locator
Collect Date:

RB956019
WHITING
15G00203F
09-AUG-96

RB956013
WHITING
15G00301
08-AUG-96

ME390002
WHITING
15G00301
29-JUL-97

RB956018
WHITING
15G00301F
08-AUG-96

VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL

1,2-Dichlorobenzene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
2-Methylphenol	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
2,2-oxybis(1-Chloropropane)	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
4-Methylphenol	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
N-Nitroso-di-n-propylamine	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
Hexachloroethane	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
Nitrobenzene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
Isophorone	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
2-Nitrophenol	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
2,4-Dimethylphenol	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
bis(2-Chloroethoxy) methane	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
2,4-Dichlorophenol	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
1,2,4-Trichlorobenzene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
Naphthalene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
4-Chloroaniline	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
Hexachlorobutadiene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
4-Chloro-3-methylphenol	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
2-Methylnaphthalene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
Hexachlorocyclopentadiene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
2,4,6-Trichlorophenol	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
2,4,5-Trichlorophenol	-	ug/l		25 U	ug/l	25	-	ug/l		-	ug/l
2-Chloronaphthalene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
2-Nitroaniline	-	ug/l		25 U	ug/l	25	-	ug/l		-	ug/l
Dimethylphthalate	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
Acenaphthylene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
2,6-Dinitrotoluene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
3-Nitroaniline	-	ug/l		25 U	ug/l	25	-	ug/l		-	ug/l
Acenaphthene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
2,4-Dinitrophenol	-	ug/l		25 U	ug/l	25	-	ug/l		-	ug/l
4-Nitrophenol	-	ug/l		25 U	ug/l	25	-	ug/l		-	ug/l
Dibenzofuran	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
2,4-Dinitrotoluene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
Diethylphthalate	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
4-Chlorophenyl-phenylether	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
Fluorene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
4-Nitroaniline	-	ug/l		25 U	ug/l	25	-	ug/l		-	ug/l
4,6-Dinitro-2-methylphenol	-	ug/l		25 U	ug/l	25	-	ug/l		-	ug/l
N-Nitrosodiphenylamine	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
4-Bromophenyl-phenylether	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
Hexachlorobenzene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
Pentachlorophenol	-	ug/l		25 U	ug/l	25	-	ug/l		-	ug/l
Phenanthrene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
Anthracene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
Carbazole	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
Di-n-butylphthalate	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
Fluoranthene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
Pyrene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
Butylbenzylphthalate	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
3,3-Dichlorobenzidine	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
Benzo (a) anthracene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
Chrysene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
bis(2-Ethylhexyl) phthalate	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	RB956019	RB956013	ME390002	RB956018							
Site:	WHITING	WHITING	WHITING	WHITING							
Locator:	15G00203F	15G00301	15G00301	15G00301F							
Collect Date:	09-AUG-96	08-AUG-96	29-JUL-97	08-AUG-96							
VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

Di-n-octylphthalate	-	ug/l	10 U	ug/l	10	-	ug/l	-	ug/l
Benzo (b) fluoranthene	-	ug/l	10 U	ug/l	10	-	ug/l	-	ug/l
Benzo (k) fluoranthene	-	ug/l	10 U	ug/l	10	-	ug/l	-	ug/l
Benzo (a) pyrene	-	ug/l	10 U	ug/l	10	-	ug/l	-	ug/l
Indeno (1,2,3-cd) pyrene	-	ug/l	10 U	ug/l	10	-	ug/l	-	ug/l
Dibenzo (a,h) anthracene	-	ug/l	10 U	ug/l	10	-	ug/l	-	ug/l
Benzo (g,h,i) perylene	-	ug/l	10 U	ug/l	10	-	ug/l	-	ug/l

CLP PESTICIDES/PCBS 90-SOW ug/l

alpha-BHC	-	ug/l	.05 U	ug/l	.05	-	ug/l	-	ug/l
beta-BHC	-	ug/l	.05 U	ug/l	.05	-	ug/l	-	ug/l
delta-BHC	-	ug/l	.05 U	ug/l	.05	-	ug/l	-	ug/l
gamma-BHC (Lindane)	-	ug/l	.05 U	ug/l	.05	-	ug/l	-	ug/l
Heptachlor	-	ug/l	.05 U	ug/l	.05	-	ug/l	-	ug/l
Aldrin	-	ug/l	.05 U	ug/l	.05	-	ug/l	-	ug/l
Heptachlor epoxide	-	ug/l	.05 U	ug/l	.05	-	ug/l	-	ug/l
Endosulfan I	-	ug/l	.05 U	ug/l	.05	-	ug/l	-	ug/l
Dieldrin	-	ug/l	.1 U	ug/l	.1	-	ug/l	-	ug/l
4,4-DDE	-	ug/l	.1 U	ug/l	.1	-	ug/l	-	ug/l
Endrin	-	ug/l	.1 U	ug/l	.1	-	ug/l	-	ug/l
Endosulfan II	-	ug/l	.1 U	ug/l	.1	-	ug/l	-	ug/l
4,4-DDD	-	ug/l	.1 U	ug/l	.1	-	ug/l	-	ug/l
Endosulfan sulfate	-	ug/l	.1 U	ug/l	.1	-	ug/l	-	ug/l
4,4-DDT	-	ug/l	.1 U	ug/l	.1	-	ug/l	-	ug/l
Methoxychlor	-	ug/l	.5 U	ug/l	.5	-	ug/l	-	ug/l
Endrin ketone	-	ug/l	.1 U	ug/l	.1	-	ug/l	-	ug/l
Endrin aldehyde	-	ug/l	.1 U	ug/l	.1	-	ug/l	-	ug/l
alpha-Chlordane	-	ug/l	.05 U	ug/l	.05	-	ug/l	-	ug/l
gamma-Chlordane	-	ug/l	.05 U	ug/l	.05	-	ug/l	-	ug/l
Toxaphene	-	ug/l	5 U	ug/l	5	-	ug/l	-	ug/l
Aroclor-1016	-	ug/l	1 U	ug/l	1	-	ug/l	-	ug/l
Aroclor-1221	-	ug/l	2 U	ug/l	2	-	ug/l	-	ug/l
Aroclor-1232	-	ug/l	1 U	ug/l	1	-	ug/l	-	ug/l
Aroclor-1242	-	ug/l	1 U	ug/l	1	-	ug/l	-	ug/l
Aroclor-1248	-	ug/l	1 U	ug/l	1	-	ug/l	-	ug/l
Aroclor-1254	-	ug/l	1 U	ug/l	1	-	ug/l	-	ug/l
Aroclor-1260	-	ug/l	1 U	ug/l	1	-	ug/l	-	ug/l

CLP METALS AND CYANIDE ug/l

Aluminum	193 J	ug/l	50 U	ug/l	200 U	ug/l	200	36 U	ug/l
Antimony	9.4 J	ug/l	8.6 U	ug/l	60 U	ug/l	60	8.6 U	ug/l
Arsenic	.5 U	ug/l	.5 U	ug/l	10 U	ug/l	10	.5 U	ug/l
Barium	8 J	ug/l	21.7 J	ug/l	14.2 J	ug/l	200	21.2 J	ug/l
Beryllium	.3 U	ug/l	.3 U	ug/l	5 U	ug/l	5	.3 U	ug/l
Cadmium	1.2 U	ug/l	1.2 U	ug/l	5 U	ug/l	5	1.2 U	ug/l
Calcium	1660 J	ug/l	830 J	ug/l	2240 J	ug/l	5000	795 J	ug/l
Chromium	2 U	ug/l	2 U	ug/l	10 U	ug/l	10	2 U	ug/l
Cobalt	2.3 U	ug/l	2.3 U	ug/l	50 U	ug/l	50	2.3 U	ug/l
Copper	1.1 U	ug/l	1.1 U	ug/l	25 U	ug/l	25	1.1 U	ug/l
Iron	321	ug/l	447	ug/l	324	ug/l	100	331	ug/l
Lead	.7 J	ug/l	1.2 J	ug/l	.98 J	ug/l	3	.9 J	ug/l
Magnesium	695 J	ug/l	606 J	ug/l	404 J	ug/l	5000	603 J	ug/l

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	RB956019	RB956013	ME390002	RB956018								
Site	WHITING	WHITING	WHITING	WHITING								
Locator	15G00203F	15G00301	15G00301	15G00301F								
Collect Date:	09-AUG-96	08-AUG-96	29-JUL-97	08-AUG-96								
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
Manganese	23	ug/l		9 J	ug/l		9 J	ug/l	15	9.8 J	ug/l	
Mercury	.1 U	ug/l		.1 U	ug/l		.2 U	ug/l	.2	.1 U	ug/l	
Nickel	7.3 U	ug/l		7.3 U	ug/l		40 U	ug/l	40	7.3 U	ug/l	
Potassium	1600 J	ug/l		946 J	ug/l		5000 U	ug/l	5000	743 J	ug/l	
Selenium	.6 U	ug/l		.6 U	ug/l		5 U	ug/l	5	.66 U	ug/l	
Silver	2.5 U	ug/l		2.5 U	ug/l		10 U	ug/l	10	2.5 U	ug/l	
Sodium	6610	ug/l		1800 J	ug/l		2080 J	ug/l	5000	1790 J	ug/l	
Thallium	.6 U	ug/l		.6 U	ug/l		10 U	ug/l	10	.6 U	ug/l	
Vanadium	1.4 J	ug/l		1.2 U	ug/l		50 U	ug/l	50	1.2 U	ug/l	
Zinc	30.5	ug/l		2.8 U	ug/l		20 U	ug/l	20	3.2 U	ug/l	
Cyanide	-	ug/l		1.9 J	ug/l		-	ug/l		-	ug/l	

Locator Annotations: A = DUPLICATE SAMPLE B = SHALLOW SAMPLE C = INTERMEDIATE SAMPLE CD = DOUBLE INTERMEDIATE SAMPLE D = DEEP SAMPLE

Qualifiers: U = NOT DETECTED J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED R = RESULT IS REJECTED AND UNUSABLE

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	RB956014	ME390003	RB956015	ME441007								
Site	WHITING	WHITING	WHITING	WHITING								
Locator	15G00302	15G00302	15G00303	15G00303								
Collect Date:	08-AUG-96	29-JUL-97	09-AUG-96	05-AUG-97								
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 90-SOW

ug/l

Chloromethane	10 UJ	ug/l	10	10 U	ug/l	10	10 UJ	ug/l	10	10 U	ug/l	10
Bromomethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Vinyl chloride	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Chloroethane	10 UJ	ug/l	10	10 U	ug/l	10	10 UJ	ug/l	10	10 U	ug/l	10
Methylene chloride	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Acetone	10 UJ	ug/l	10	10 U	ug/l	10	20 UJ	ug/l	20	10 UJ	ug/l	10
Carbon disulfide	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,1-Dichloroethene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,1-Dichloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,2-Dichloroethene (total)	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Chloroform	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,2-Dichloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
2-Butanone	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,1,1-Trichloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Carbon tetrachloride	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Bromodichloromethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,2-Dichloropropane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
cis-1,3-Dichloropropene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Trichloroethene	1 J	ug/l	10	3 J	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Dibromochloromethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,1,2-Trichloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Benzene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
trans-1,3-Dichloropropene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Bromoform	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
4-Methyl-2-pentanone	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
2-Hexanone	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Tetrachloroethene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Toluene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,1,2,2-Tetrachloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Chlorobenzene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Ethylbenzene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Styrene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Xylenes (total)	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10

CLP SEMIVOLATILES 90-SOW

ug/l

Phenol	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	-	ug/l
bis(2-Chloroethyl) ether	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	-	ug/l
2-Chlorophenol	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	-	ug/l
1,3-Dichlorobenzene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	-	ug/l
1,4-Dichlorobenzene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	-	ug/l

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:
Site
Locator
Collect Date:

RB956014
WHITING
15G00302
08-AUG-96

ME390003
WHITING
15G00302
29-JUL-97

RB956015
WHITING
15G00303
09-AUG-96

ME441007
WHITING
15G00303
05-AUG-97

	VALUE	QUAL	UNITS	DL												
1,2-Dichlorobenzene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
2-Methylphenol	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
2,2-oxybis(1-Chloropropane)	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
4-Methylphenol	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
N-Nitroso-di-n-propylamine	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Hexachloroethane	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Nitrobenzene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Isophorone	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
2-Nitrophenol	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
2,4-Dimethylphenol	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
bis(2-Chloroethoxy) methane	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
2,4-Dichlorophenol	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
1,2,4-Trichlorobenzene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Naphthalene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
4-Chloroaniline	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Hexachlorobutadiene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
4-Chloro-3-methylphenol	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
2-Methylnaphthalene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Hexachlorocyclopentadiene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
2,4,6-Trichlorophenol	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
2,4,5-Trichlorophenol	25	U	ug/l	25	-		ug/l		25	U	ug/l	25	-		ug/l	
2-Chloronaphthalene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
2-Nitroaniline	25	U	ug/l	25	-		ug/l		25	U	ug/l	25	-		ug/l	
Dimethylphthalate	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Acenaphthylene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
2,6-Dinitrotoluene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
3-Nitroaniline	25	U	ug/l	25	-		ug/l		25	U	ug/l	25	-		ug/l	
Acenaphthene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
2,4-Dinitrophenol	25	UJ	ug/l	25	-		ug/l		25	UJ	ug/l	25	-		ug/l	
4-Nitrophenol	25	U	ug/l	25	-		ug/l		25	U	ug/l	25	-		ug/l	
Dibenzofuran	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
2,4-Dinitrotoluene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Diethylphthalate	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
4-Chlorophenyl-phenylether	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Fluorene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
4-Nitroaniline	25	UJ	ug/l	25	-		ug/l		25	UJ	ug/l	25	-		ug/l	
4,6-Dinitro-2-methylphenol	25	UJ	ug/l	25	-		ug/l		25	UJ	ug/l	25	-		ug/l	
N-Nitrosodiphenylamine	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
4-Bromophenyl-phenylether	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Hexachlorobenzene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Pentachlorophenol	25	U	ug/l	25	-		ug/l		25	U	ug/l	25	-		ug/l	
Phenanthrene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Anthracene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Carbazole	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Di-n-butylphthalate	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Fluoranthene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Pyrene	10	UJ	ug/l	10	-		ug/l		10	UJ	ug/l	10	-		ug/l	
Butylbenzylphthalate	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
3,3-Dichlorobenzidine	10	UJ	ug/l	10	-		ug/l		10	UJ	ug/l	10	-		ug/l	
Benzo (a) anthracene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Chrysene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
bis(2-Ethylhexyl) phtalate	3	J	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	RB956014	ME390003	RB956015	ME441007
Site:	WHITING	WHITING	WHITING	WHITING
Locator:	15G00302	15G00302	15G00303	15G00303
Collect Date:	08-AUG-96	29-JUL-97	09-AUG-96	05-AUG-97

	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL		
Di-n-octylphthalate	10	U	ug/l	10	-		ug/l		10	U	ug/l	10		
Benzo (b) fluoranthene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10		
Benzo (k) fluoranthene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10		
Benzo (a) pyrene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10		
Indeno (1,2,3-cd) pyrene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10		
Dibenzo (a,h) anthracene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10		
Benzo (g,h,i) perylene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10		
CLP PESTICIDES/PCBS 90-SOW ug/l														
alpha-BHC	.05	U	ug/l	.05	-		ug/l		.05	UJ	ug/l	.05		
beta-BHC	.05	U	ug/l	.05	-		ug/l		.05	UJ	ug/l	.05		
delta-BHC	.05	U	ug/l	.05	-		ug/l		.05	UJ	ug/l	.05		
gamma-BHC (Lindane)	.05	U	ug/l	.05	-		ug/l		.05	UJ	ug/l	.05		
Heptachlor	.05	U	ug/l	.05	-		ug/l		.05	UJ	ug/l	.05		
Aldrin	.05	U	ug/l	.05	-		ug/l		.05	UJ	ug/l	.05		
Heptachlor epoxide	.05	U	ug/l	.05	-		ug/l		.05	UJ	ug/l	.05		
Endosulfan I	.05	U	ug/l	.05	-		ug/l		.05	UJ	ug/l	.05		
Dieldrin	.1	U	ug/l	.1	-		ug/l		.1	UJ	ug/l	.1		
4,4-DDE	.1	U	ug/l	.1	-		ug/l		.1	UJ	ug/l	.1		
Endrin	.1	U	ug/l	.1	-		ug/l		.1	UJ	ug/l	.1		
Endosulfan II	.1	U	ug/l	.1	-		ug/l		.1	UJ	ug/l	.1		
4,4-DDD	.1	U	ug/l	.1	-		ug/l		.1	UJ	ug/l	.1		
Endosulfan sulfate	.1	U	ug/l	.1	-		ug/l		.1	UJ	ug/l	.1		
4,4-DDT	.1	UJ	ug/l	.1	-		ug/l		.1	UJ	ug/l	.1		
Methoxychlor	.5	U	ug/l	.5	-		ug/l		.5	UJ	ug/l	.5		
Endrin ketone	.1	U	ug/l	.1	-		ug/l		.1	UJ	ug/l	.1		
Endrin aldehyde	.1	U	ug/l	.1	-		ug/l		.1	UJ	ug/l	.1		
alpha-Chlordane	.05	U	ug/l	.05	-		ug/l		.05	UJ	ug/l	.05		
gamma-Chlordane	.05	U	ug/l	.05	-		ug/l		.05	UJ	ug/l	.05		
Toxaphene	5	U	ug/l	5	-		ug/l		5	UJ	ug/l	5		
Aroclor-1016	1	U	ug/l	1	-		ug/l		1	UJ	ug/l	1		
Aroclor-1221	2	U	ug/l	2	-		ug/l		2	UJ	ug/l	2		
Aroclor-1232	1	U	ug/l	1	-		ug/l		1	UJ	ug/l	1		
Aroclor-1242	1	U	ug/l	1	-		ug/l		1	UJ	ug/l	1		
Aroclor-1248	1	U	ug/l	1	-		ug/l		1	UJ	ug/l	1		
Aroclor-1254	1	U	ug/l	1	-		ug/l		1	UJ	ug/l	1		
Aroclor-1260	1	U	ug/l	1	-		ug/l		1	UJ	ug/l	1		
CLP METALS AND CYANIDE ug/l														
Aluminum	18.5	U	ug/l	200	U	ug/l	200	49.7	U	ug/l	171	J	ug/l	200
Antimony	8.6	U	ug/l	60	U	ug/l	60	8.6	U	ug/l	60	U	ug/l	60
Arsenic	.5	U	ug/l	10	U	ug/l	10	.5	U	ug/l	10	U	ug/l	10
Barium	15.1	J	ug/l	17.3	J	ug/l	200	13.7	J	ug/l	13.3	J	ug/l	200
Beryllium	.3	U	ug/l	5	U	ug/l	5	.3	U	ug/l	5	U	ug/l	5
Cadmium	2.3	J	ug/l	5	U	ug/l	5	1.2	U	ug/l	5	U	ug/l	5
Calcium	735	J	ug/l	5000	U	ug/l	5000	3470	J	ug/l	3570	J	ug/l	5000
Chromium	2.2	J	ug/l	10	U	ug/l	10	2	U	ug/l	10	U	ug/l	10
Cobalt	2.3	U	ug/l	50	U	ug/l	50	2.3	U	ug/l	50	U	ug/l	50
Copper	1.1	U	ug/l	25	U	ug/l	25	1.1	U	ug/l	25	U	ug/l	25
Iron	67.7	J	ug/l	100	U	ug/l	100	43.8	J	ug/l	136	ug/l	100	
Lead	.5	J	ug/l	3	U	ug/l	3	.5	U	ug/l	3	U	ug/l	3
Magnesium	508	J	ug/l	598	J	ug/l	5000	1720	J	ug/l	1810	J	ug/l	5000

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

	Lab Sample Number: RB956014			ME390003			RB956015			ME441007		
	Site WHITING			WHITING			WHITING			WHITING		
	Locator 15G00302			15G00302			15G00303			15G00303		
	Collect Date: 08-AUG-96			29-JUL-97			09-AUG-96			05-AUG-97		
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Manganese	3.4	J	ug/l		15	U	ug/l	15	1	U	ug/l	15
Mercury	.1	U	ug/l		.2	U	ug/l	.2	.1	U	ug/l	.2
Nickel	7.3	U	ug/l		40	U	ug/l	40	7.3	U	ug/l	40
Potassium	338	J	ug/l		5000	U	ug/l	5000	1550	J	ug/l	5000
Selenium	.6	U	ug/l		5	U	ug/l	5	.71	UJ	ug/l	5
Silver	2.5	U	ug/l		10	U	ug/l	10	2.5	U	ug/l	10
Sodium	2300	J	ug/l		3150	J	ug/l	5000	16800	J	ug/l	5000
Thallium	.6	U	ug/l		10	U	ug/l	10	.6	U	ug/l	10
Vanadium	1.2	U	ug/l		50	U	ug/l	50	1.2	U	ug/l	50
Zinc	127	U	ug/l		20	U	ug/l	20	1.6	U	ug/l	20
Cyanide	2.5	J	ug/l		-		ug/l		2.5	J	ug/l	

Locator Annotations: A = DUPLICATE SAMPLE B = SHALLOW SAMPLE C = INTERMEDIATE SAMPLE CD = DOUBLE INTERMEDIATE SAMPLE D = DEEP SAMPLE

Qualifiers: U = NOT DETECTED J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED R = RESULT IS REJECTED AND UNUSABLE

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	RB920003	ME404002	RB956005	ME404005
Site	WHITING	WHITING	WHITING	WHITING
Locator	15G00401	15G00401	15G00501	15G00501
Collect Date:	30-JUL-96	30-JUL-97	06-AUG-96	31-JUL-97

	VALUE	QUAL	UNITS	DL												
CLP VOLATILES 90-SOW																
	ug/l															
Chloromethane	10	U	ug/l	10												
Bromomethane	10	U	ug/l	10												
Vinyl chloride	10	U	ug/l	10												
Chloroethane	10	UJ	ug/l	10	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
Methylene chloride	10	UJ	ug/l	10	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
Acetone	17	UJ	ug/l	17	10	UJ	ug/l	10	13	UJ	ug/l	13	10	UJ	ug/l	10
Carbon disulfide	10	UJ	ug/l	10	10	U	ug/l	10	10	U	ug/l	10	10	U	ug/l	10
1,1-Dichloroethene	10	U	ug/l	10												
1,1-Dichloroethane	10	U	ug/l	10												
1,2-Dichloroethene (total)	10	U	ug/l	10	10	U	ug/l	10	2	J	ug/l	10	10	U	ug/l	10
Chloroform	10	U	ug/l	10												
1,2-Dichloroethane	10	U	ug/l	10												
2-Butanone	10	U	ug/l	10												
1,1,1-Trichloroethane	10	U	ug/l	10												
Carbon tetrachloride	10	U	ug/l	10												
Bromodichloromethane	10	U	ug/l	10												
1,2-Dichloropropane	10	U	ug/l	10												
cis-1,3-Dichloropropene	10	U	ug/l	10												
Trichloroethene	10	U	ug/l	10												
Dibromochloromethane	10	U	ug/l	10												
1,1,2-Trichloroethane	10	U	ug/l	10												
Benzene	10	U	ug/l	10												
trans-1,3-Dichloropropene	10	U	ug/l	10												
Bromoform	10	U	ug/l	10												
4-Methyl-2-pentanone	10	U	ug/l	10												
2-Hexanone	10	U	ug/l	10												
Tetrachloroethene	10	U	ug/l	10												
Toluene	10	U	ug/l	10												
1,1,2,2-Tetrachloroethane	10	U	ug/l	10												
Chlorobenzene	10	U	ug/l	10												
Ethylbenzene	10	U	ug/l	10												
Styrene	10	U	ug/l	10												
Xylenes (total)	10	U	ug/l	10												
CLP SEMIVOLATILES 90-SOW																
	ug/l															
Phenol	10	U	ug/l	10	-		ug/l	10	10	U	ug/l	10	-		ug/l	10
bis(2-Chloroethyl) ether	10	U	ug/l	10	-		ug/l	10	10	U	ug/l	10	-		ug/l	10
2-Chlorophenol	10	U	ug/l	10	-		ug/l	10	10	U	ug/l	10	-		ug/l	10
1,3-Dichlorobenzene	10	U	ug/l	10	-		ug/l	10	10	U	ug/l	10	-		ug/l	10
1,4-Dichlorobenzene	10	U	ug/l	10	-		ug/l	10	1	J	ug/l	10	-		ug/l	10

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:
Site
Locator
Collect Date:

RB920003
WHITING
15G00401
30-JUL-96

ME404002
WHITING
15G00401
30-JUL-97

RB956005
WHITING
15G00501
06-AUG-96

ME404005
WHITING
15G00501
31-JUL-97

	VALUE	QUAL	UNITS	DL												
1,2-Dichlorobenzene	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
2-Methylphenol	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
2,2-oxybis(1-Chloropropane)	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
4-Methylphenol	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
N-Nitroso-di-n-propylamine	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
Hexachloroethane	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
Nitrobenzene	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
Isophorone	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
2-Nitrophenol	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
2,4-Dimethylphenol	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
bis(2-Chloroethoxy) methane	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
2,4-Dichlorophenol	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
1,2,4-Trichlorobenzene	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
Naphthalene	10	U	ug/l	10	-	ug/l			1	J	ug/l	10	-	ug/l		
4-Chloroaniline	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
Hexachlorobutadiene	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
4-Chloro-3-methylphenol	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
2-Methylnaphthalene	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
Hexachlorocyclopentadiene	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
2,4,6-Trichlorophenol	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
2,4,5-Trichlorophenol	25	U	ug/l	25	-	ug/l			25	U	ug/l	25	-	ug/l		
2-Chloronaphthalene	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
2-Nitroaniline	25	U	ug/l	25	-	ug/l			25	U	ug/l	25	-	ug/l		
Dimethylphthalate	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
Acenaphthylene	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
2,6-Dinitrotoluene	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
3-Nitroaniline	25	U	ug/l	25	-	ug/l			25	U	ug/l	25	-	ug/l		
Acenaphthene	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
2,4-Dinitrophenol	25	U	ug/l	25	-	ug/l			25	UJ	ug/l	25	-	ug/l		
4-Nitrophenol	25	U	ug/l	25	-	ug/l			25	U	ug/l	25	-	ug/l		
Dibenzofuran	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
2,4-Dinitrotoluene	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
Diethylphthalate	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
4-Chlorophenyl-phenylether	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
Fluorene	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
4-Nitroaniline	25	UJ	ug/l	25	-	ug/l			25	U	ug/l	25	-	ug/l		
4,6-Dinitro-2-methylphenol	25	U	ug/l	25	-	ug/l			25	UJ	ug/l	25	-	ug/l		
N-Nitrosodiphenylamine	10	U	ug/l	10	-	ug/l			10	UJ	ug/l	10	-	ug/l		
4-Bromophenyl-phenylether	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
Hexachlorobenzene	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
Pentachlorophenol	25	U	ug/l	25	-	ug/l			25	U	ug/l	25	-	ug/l		
Phenanthrene	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
Anthracene	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
Carbazole	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
Di-n-butylphthalate	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
Fluoranthene	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
Pyrene	10	U	ug/l	10	-	ug/l			10	UJ	ug/l	10	-	ug/l		
Butylbenzylphthalate	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
3,3-Dichlorobenzidine	10	U	ug/l	10	-	ug/l			10	UJ	ug/l	10	-	ug/l		
Benzo (a) anthracene	10	U	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
Chrysene	10	UJ	ug/l	10	-	ug/l			10	U	ug/l	10	-	ug/l		
bis(2-Ethylhexyl) phthalate	10	U	ug/l	10	-	ug/l			2	J	ug/l	10	-	ug/l		

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	RB920003	ME404002	RB956005	ME404005							
Site	WHITING	WHITING	WHITING	WHITING							
Locator	15G00401	15G00401	15G00501	15G00501							
Collect Date:	30-JUL-96	30-JUL-97	06-AUG-96	31-JUL-97							
VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

Di-n-octylphthalate	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	-	ug/l	
Benzo (b) fluoranthene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	-	ug/l	
Benzo (k) fluoranthene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	-	ug/l	
Benzo (a) pyrene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	-	ug/l	
Indeno (1,2,3-cd) pyrene	10 UJ	ug/l	10	-	ug/l	10 U	ug/l	10	-	ug/l	
Dibenzo (a,h) anthracene	10 UJ	ug/l	10	-	ug/l	10 U	ug/l	10	-	ug/l	
Benzo (g,h,i) perylene	10 UJ	ug/l	10	-	ug/l	10 U	ug/l	10	-	ug/l	
CLP PESTICIDES/PCBS 90-SOW ug/l											
alpha-BHC	.05 U	ug/l	.05	-	ug/l	.05 U	ug/l	.05	-	ug/l	
beta-BHC	.05 U	ug/l	.05	-	ug/l	.05 U	ug/l	.05	-	ug/l	
delta-BHC	.05 U	ug/l	.05	-	ug/l	.05 U	ug/l	.05	-	ug/l	
gamma-BHC (Lindane)	.05 U	ug/l	.05	-	ug/l	.05 U	ug/l	.05	-	ug/l	
Heptachlor	.05 U	ug/l	.05	-	ug/l	.05 U	ug/l	.05	-	ug/l	
Aldrin	.05 U	ug/l	.05	-	ug/l	.05 U	ug/l	.05	-	ug/l	
Heptachlor epoxide	.05 U	ug/l	.05	-	ug/l	.05 U	ug/l	.05	-	ug/l	
Endosulfan I	.05 U	ug/l	.05	-	ug/l	.05 U	ug/l	.05	-	ug/l	
Dieldrin	.1 U	ug/l	.1	-	ug/l	.1 U	ug/l	.1	-	ug/l	
4,4-DDE	.1 U	ug/l	.1	-	ug/l	.1 U	ug/l	.1	-	ug/l	
Endrin	.1 U	ug/l	.1	-	ug/l	.1 U	ug/l	.1	-	ug/l	
Endosulfan II	.1 U	ug/l	.1	-	ug/l	.1 U	ug/l	.1	-	ug/l	
4,4-DBD	.1 U	ug/l	.1	-	ug/l	.1 U	ug/l	.1	-	ug/l	
Endosulfan sulfate	.1 U	ug/l	.1	-	ug/l	.1 U	ug/l	.1	-	ug/l	
4,4-DDT	.1 UJ	ug/l	.1	-	ug/l	.1 UJ	ug/l	.1	-	ug/l	
Methoxychlor	.5 U	ug/l	.5	-	ug/l	.5 U	ug/l	.5	-	ug/l	
Endrin ketone	.1 U	ug/l	.1	-	ug/l	.1 U	ug/l	.1	-	ug/l	
Endrin aldehyde	.1 U	ug/l	.1	-	ug/l	.1 U	ug/l	.1	-	ug/l	
alpha-Chlordane	.05 U	ug/l	.05	-	ug/l	.05 U	ug/l	.05	-	ug/l	
gamma-Chlordane	.05 U	ug/l	.05	-	ug/l	.05 U	ug/l	.05	-	ug/l	
Toxaphene	5 U	ug/l	5	-	ug/l	5 U	ug/l	5	-	ug/l	
Aroclor-1016	1 U	ug/l	1	-	ug/l	1 U	ug/l	1	-	ug/l	
Aroclor-1221	2 U	ug/l	2	-	ug/l	2 U	ug/l	2	-	ug/l	
Aroclor-1232	1 U	ug/l	1	-	ug/l	1 U	ug/l	1	-	ug/l	
Aroclor-1242	1 U	ug/l	1	-	ug/l	1 U	ug/l	1	-	ug/l	
Aroclor-1248	1 U	ug/l	1	-	ug/l	1 U	ug/l	1	-	ug/l	
Aroclor-1254	1 U	ug/l	1	-	ug/l	1 U	ug/l	1	-	ug/l	
Aroclor-1260	1 U	ug/l	1	-	ug/l	1 U	ug/l	1	-	ug/l	
CLP METALS AND CYANIDE ug/l											
Aluminum	102 J	ug/l	200 U	ug/l	200	174 J	ug/l	481	ug/l	200	
Antimony	8.6 U	ug/l	60 U	ug/l	60	8.6 U	ug/l	60 U	ug/l	60	
Arsenic	.5 U	ug/l	10 U	ug/l	10	1.8 J	ug/l	10 U	ug/l	10	
Barium	11.5 J	ug/l	14.2 J	ug/l	200	31.9 J	ug/l	41.5 J	ug/l	200	
Beryllium	.3 U	ug/l	5 U	ug/l	5	.3 U	ug/l	5 U	ug/l	5	
Cadmium	1.2 U	ug/l	5 U	ug/l	5	1.2 U	ug/l	5 U	ug/l	5	
Calcium	936 J	ug/l	2640 J	ug/l	5000	1110 J	ug/l	2650 J	ug/l	5000	
Chromium	2 U	ug/l	10 U	ug/l	10	2.1 J	ug/l	10 U	ug/l	10	
Cobalt	2.3 U	ug/l	50 U	ug/l	50	2.3 U	ug/l	50 U	ug/l	50	
Copper	1.1 U	ug/l	25 U	ug/l	25	1.1 U	ug/l	25 U	ug/l	25	
Iron	17.8 U	ug/l	100 U	ug/l	100	3730	ug/l	5150	ug/l	100	
Lead	.5 U	ug/l	3 U	ug/l	3	.6 J	ug/l	1.7 J	ug/l	3	
Magnesium	354 J	ug/l	5000 U	ug/l	5000	1160 J	ug/l	1470 J	ug/l	5000	

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

	RB920003			ME404002			RB956005			ME404005		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
Manganese	1.8 J	ug/l		15 U	ug/l	15	38.1	ug/l		92.2	ug/l	15
Mercury	.1 U	ug/l		.2 U	ug/l	.2	.1 U	ug/l		.2 U	ug/l	.2
Nickel	7.3 U	ug/l		40 U	ug/l	40	7.3 U	ug/l		40 U	ug/l	40
Potassium	978 J	ug/l		5000 U	ug/l	5000	792 J	ug/l		5000 U	ug/l	5000
Selenium	.6 U	ug/l		5 U	ug/l	5	.6 U	ug/l		5 U	ug/l	5
Silver	2.9 J	ug/l		10 U	ug/l	10	2.5 U	ug/l		10 U	ug/l	10
Sodium	3280 J	ug/l		2000 J	ug/l	5000	1480 J	ug/l		1070 J	ug/l	5000
Thallium	.6 U	ug/l		10 U	ug/l	10	.6 U	ug/l		.98 J	ug/l	10
Vanadium	1.2 U	ug/l		1.7 J	ug/l	50	1.9 J	ug/l		50 U	ug/l	50
Zinc	1.6 J	ug/l		20 U	ug/l	20	306	ug/l		20 U	ug/l	20
Cyanide	2 U	ug/l		-	ug/l		5 J	ug/l		-	ug/l	

Locator Annotations: A = DUPLICATE SAMPLE B = SHALLOW SAMPLE C = INTERMEDIATE SAMPLE CD = DOUBLE INTERMEDIATE SAMPLE D = DEEP SAMPLE

Qualifiers: U = NOT DETECTED J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED R = RESULT IS REJECTED AND UNUSABLE

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	RB956010	ME404006	RB956004	MC424002							
Site	WHITING	WHITING	WHITING	WHITING							
Locator	15G00501F	15G00501F	15G00502	15G00502							
Collect Date:	06-AUG-96	31-JUL-97	06-AUG-96	18-NOV-96							
VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 90-SOW											
	ug/l										
Chloromethane	-	ug/l	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	
Bromomethane	-	ug/l	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	
Vinyl chloride	-	ug/l	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	
Chloroethane	-	ug/l	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	
Methylene chloride	-	ug/l	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	
Acetone	-	ug/l	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	
Carbon disulfide	-	ug/l	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	
1,1-Dichloroethene	-	ug/l	-	ug/l	2 J	ug/l	10	10 U	ug/l	10	
1,1-Dichloroethane	-	ug/l	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	
1,2-Dichloroethene (total)	-	ug/l	-	ug/l	38	ug/l	10	21	ug/l	10	
Chloroform	-	ug/l	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	
1,2-Dichloroethane	-	ug/l	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	
2-Butanone	-	ug/l	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	
1,1,1-Trichloroethane	-	ug/l	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	
Carbon tetrachloride	-	ug/l	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	
Bromodichloromethane	-	ug/l	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	
1,2-Dichloropropane	-	ug/l	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	
cis-1,3-Dichloropropene	-	ug/l	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	
Trichloroethene	-	ug/l	-	ug/l	29	ug/l	10	21	ug/l	10	
Dibromochloromethane	-	ug/l	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	
1,1,2-Trichloroethane	-	ug/l	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	
Benzene	-	ug/l	-	ug/l	130	ug/l	10	66	ug/l	10	
trans-1,3-Dichloropropene	-	ug/l	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	
Bromoform	-	ug/l	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	
4-Methyl-2-pentanone	-	ug/l	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	
2-Hexanone	-	ug/l	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	
Tetrachloroethene	-	ug/l	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	
Toluene	-	ug/l	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	
1,1,2,2-Tetrachloroethane	-	ug/l	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	
Chlorobenzene	-	ug/l	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	
Ethylbenzene	-	ug/l	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	
Styrene	-	ug/l	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	
Xylenes (total)	-	ug/l	-	ug/l	10 U	ug/l	10	10 U	ug/l	10	
CLP SEMIVOLATILES 90-SOW											
	ug/l										
Phenol	-	ug/l	-	ug/l	10 U	ug/l	10	-	ug/l		
bis(2-Chloroethyl) ether	-	ug/l	-	ug/l	10 U	ug/l	10	-	ug/l		
2-Chlorophenol	-	ug/l	-	ug/l	10 U	ug/l	10	-	ug/l		
1,3-Dichlorobenzene	-	ug/l	-	ug/l	10 U	ug/l	10	-	ug/l		
1,4-Dichlorobenzene	-	ug/l	-	ug/l	10 U	ug/l	10	-	ug/l		

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:
Site
Locator
Collect Date:

RB956010
WHITING
15G00501F
06-AUG-96

ME404006
WHITING
15G00501F
31-JUL-97

RB956004
WHITING
15G00502
06-AUG-96

MC424002
WHITING
15G00502
18-NOV-96

VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL

1,2-Dichlorobenzene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2-Methylphenol	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2,2-oxybis(1-Chloropropane)	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
4-Methylphenol	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
N-Nitroso-di-n-propylamine	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Hexachloroethane	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Nitrobenzene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Isophorone	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2-Nitrophenol	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2,4-Dimethylphenol	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
bis(2-Chloroethoxy) methane	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2,4-Dichlorophenol	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
1,2,4-Trichlorobenzene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Naphthalene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
4-Chloroaniline	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Hexachlorobutadiene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
4-Chloro-3-methylphenol	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2-Methylnaphthalene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Hexachlorocyclopentadiene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2,4,6-Trichlorophenol	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2,4,5-Trichlorophenol	-	ug/l	-	ug/l	-	25 U	ug/l	25	-	ug/l
2-Chloronaphthalene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2-Nitroaniline	-	ug/l	-	ug/l	-	25 U	ug/l	25	-	ug/l
Dimethylphthalate	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Acenaphthylene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2,6-Dinitrotoluene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
3-Nitroaniline	-	ug/l	-	ug/l	-	25 U	ug/l	25	-	ug/l
Acenaphthene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2,4-Dinitrophenol	-	ug/l	-	ug/l	-	25 U	ug/l	25	-	ug/l
4-Nitrophenol	-	ug/l	-	ug/l	-	25 U	ug/l	25	-	ug/l
Dibenzofuran	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2,4-Dinitrotoluene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Diethylphthalate	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
4-Chlorophenyl-phenylether	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Fluorene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
4-Nitroaniline	-	ug/l	-	ug/l	-	25 U	ug/l	25	-	ug/l
4,6-Dinitro-2-methylphenol	-	ug/l	-	ug/l	-	25 U	ug/l	25	-	ug/l
N-Nitrosodiphenylamine	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
4-Bromophenyl-phenylether	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Hexachlorobenzene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Pentachlorophenol	-	ug/l	-	ug/l	-	25 U	ug/l	25	-	ug/l
Phenanthrene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Anthracene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Carbazole	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Di-n-butylphthalate	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Fluoranthene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Pyrene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Butylbenzylphthalate	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
3,3-Dichlorobenzidine	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Benzo (a) anthracene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Chrysene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
bis(2-Ethylhexyl) phthalate	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	RB956010	ME404006	RB956004	MC424002
Site	WHITING	WHITING	WHITING	WHITING
Locator	15G00501F	15G00501F	15G00502	15G00502
Collect Date:	06-AUG-96	31-JUL-97	06-AUG-96	18-NOV-96

	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
Di-n-octylphthalate	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
Benzo (b) fluoranthene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
Benzo (k) fluoranthene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
Benzo (a) pyrene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
Indeno (1,2,3-cd) pyrene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
Dibenzo (a,h) anthracene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
Benzo (g,h,i) perylene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
CLP PESTICIDES/PCBS 90-SOW ug/l												
alpha-BHC	-	ug/l		-	ug/l		.05 U	ug/l	.05	-	ug/l	
beta-BHC	-	ug/l		-	ug/l		.05 U	ug/l	.05	-	ug/l	
delta-BHC	-	ug/l		-	ug/l		.05 U	ug/l	.05	-	ug/l	
gamma-BHC (Lindane)	-	ug/l		-	ug/l		.05 U	ug/l	.05	-	ug/l	
Heptachlor	-	ug/l		-	ug/l		.05 U	ug/l	.05	-	ug/l	
Aldrin	-	ug/l		-	ug/l		.05 U	ug/l	.05	-	ug/l	
Heptachlor epoxide	-	ug/l		-	ug/l		.05 U	ug/l	.05	-	ug/l	
Endosulfan I	-	ug/l		-	ug/l		.05 U	ug/l	.05	-	ug/l	
Dieldrin	-	ug/l		-	ug/l		.1 U	ug/l	.1	-	ug/l	
4,4-DDE	-	ug/l		-	ug/l		.1 U	ug/l	.1	-	ug/l	
Endrin	-	ug/l		-	ug/l		.1 U	ug/l	.1	-	ug/l	
Endosulfan II	-	ug/l		-	ug/l		.1 U	ug/l	.1	-	ug/l	
4,4-DDD	-	ug/l		-	ug/l		.1 U	ug/l	.1	-	ug/l	
Endosulfan sulfate	-	ug/l		-	ug/l		.1 U	ug/l	.1	-	ug/l	
4,4-DDT	-	ug/l		-	ug/l		.1 U	ug/l	.1	-	ug/l	
Methoxychlor	-	ug/l		-	ug/l		.5 U	ug/l	.5	-	ug/l	
Endrin ketone	-	ug/l		-	ug/l		.1 U	ug/l	.1	-	ug/l	
Endrin aldehyde	-	ug/l		-	ug/l		.1 U	ug/l	.1	-	ug/l	
alpha-Chlordane	-	ug/l		-	ug/l		.05 U	ug/l	.05	-	ug/l	
gamma-Chlordane	-	ug/l		-	ug/l		.05 U	ug/l	.05	-	ug/l	
Toxaphene	-	ug/l		-	ug/l		5 U	ug/l	5	-	ug/l	
Aroclor-1016	-	ug/l		-	ug/l		1 U	ug/l	1	-	ug/l	
Aroclor-1221	-	ug/l		-	ug/l		2 U	ug/l	2	-	ug/l	
Aroclor-1232	-	ug/l		-	ug/l		1 U	ug/l	1	-	ug/l	
Aroclor-1242	-	ug/l		-	ug/l		1 U	ug/l	1	-	ug/l	
Aroclor-1248	-	ug/l		-	ug/l		1 U	ug/l	1	-	ug/l	
Aroclor-1254	-	ug/l		-	ug/l		1 U	ug/l	1	-	ug/l	
Aroclor-1260	-	ug/l		-	ug/l		1 U	ug/l	1	-	ug/l	
CLP METALS AND CYANIDE ug/l												
Aluminum	63 U	ug/l		200 U	ug/l	200	14 U	ug/l		-	ug/l	
Antimony	8.6 U	ug/l		60 U	ug/l	60	8.6 U	ug/l		-	ug/l	
Arsenic	1.7 J	ug/l		10 U	ug/l	10	.5 U	ug/l		-	ug/l	
Barium	37.3 J	ug/l		36.9 J	ug/l	200	28.5 J	ug/l		-	ug/l	
Beryllium	.3 U	ug/l		5 U	ug/l	5	.3 U	ug/l		-	ug/l	
Cadmium	1.2 U	ug/l		5 U	ug/l	5	1.2 U	ug/l		-	ug/l	
Calcium	1480 J	ug/l		2510 J	ug/l	5000	2260 J	ug/l		-	ug/l	
Chromium	2 U	ug/l		10 U	ug/l	10	2 U	ug/l		-	ug/l	
Cobalt	2.3 U	ug/l		50 U	ug/l	50	2.3 U	ug/l		-	ug/l	
Copper	1.1 U	ug/l		25 U	ug/l	25	1.1 U	ug/l		-	ug/l	
Iron	2180	ug/l		3550	ug/l	100	2190	ug/l		-	ug/l	
Lead	.8 J	ug/l		3 U	ug/l	3	1.8 J	ug/l		-	ug/l	
Magnesium	1190 J	ug/l		1450 J	ug/l	5000	1130 J	ug/l		-	ug/l	

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

	Lab Sample Number: RB956010			ME404006			RB956004			MC424002		
	Site WHITING			WHITING			WHITING			WHITING		
	Locator 15G00501F			15G00501F			15G00502			15G00502		
	Collect Date: 06-AUG-96			31-JUL-97			06-AUG-96			18-NOV-96		
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Manganese	61.5		ug/l		83		ug/l	15	114		ug/l	-
Mercury	.1	U	ug/l		.2	U	ug/l	.2	.1	U	ug/l	-
Nickel	7.8	J	ug/l		40	U	ug/l	40	7.3	U	ug/l	-
Potassium	630	J	ug/l		5000	U	ug/l	5000	316	U	ug/l	-
Selenium	.6	U	ug/l		5	U	ug/l	5	.6	U	ug/l	-
Silver	2.5	U	ug/l		10	U	ug/l	10	2.5	U	ug/l	-
Sodium	1500	J	ug/l		1300	J	ug/l	5000	2120	J	ug/l	-
Thallium	.6	U	ug/l		10	U	ug/l	10	.6	U	ug/l	-
Vanadium	1.2	U	ug/l		50	U	ug/l	50	1.2	U	ug/l	-
Zinc	112		ug/l		20	U	ug/l	20	7.4	U	ug/l	-
Cyanide	-		ug/l		-		ug/l		1.5	U	ug/l	-

Locator Annotations: A = DUPLICATE SAMPLE B = SHALLOW SAMPLE C = INTERMEDIATE SAMPLE CD = DOUBLE INTERMEDIATE SAMPLE D = DEEP SAMPLE

Qualifiers: U = NOT DETECTED J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED R = RESULT IS REJECTED AND UNUSABLE

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	ME404007		RB956004RE		RB956003		MC424003		
Site	WHITING		WHITING		WHITING		WHITING		
Locator	15G00502		15G00502RE		15G00503		15G00503		
Collect Date:	31-JUL-97		06-AUG-96		06-AUG-96		18-NOV-96		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 90-SOW

ug/l

Chloromethane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	25 U	ug/l	25
Bromomethane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	25 U	ug/l	25
Vinyl chloride	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	25 U	ug/l	25
Chloroethane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	25 U	ug/l	25
Methylene chloride	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	25 U	ug/l	25
Acetone	10 UJ	ug/l	10	-	ug/l	170 J	ug/l	10	25 U	ug/l	25
Carbon disulfide	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	25 U	ug/l	25
1,1-Dichloroethene	10 U	ug/l	10	-	ug/l	11	ug/l	10	10 J	ug/l	25
1,1-Dichloroethane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	25 U	ug/l	25
1,2-Dichloroethene (total)	7 J	ug/l	10	-	ug/l	16	ug/l	10	22 J	ug/l	25
Chloroform	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	25 U	ug/l	25
1,2-Dichloroethane	10 U	ug/l	10	-	ug/l	2 J	ug/l	10	25 U	ug/l	25
2-Butanone	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	25 U	ug/l	25
1,1,1-Trichloroethane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	25 U	ug/l	25
Carbon tetrachloride	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	25 U	ug/l	25
Bromodichloromethane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	25 U	ug/l	25
1,2-Dichloropropane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	25 U	ug/l	25
cis-1,3-Dichloropropene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	25 U	ug/l	25
Trichloroethene	7 J	ug/l	10	-	ug/l	320 R	ug/l	10	350	ug/l	25
Dibromochloromethane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	25 U	ug/l	25
1,1,2-Trichloroethane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	25 U	ug/l	25
Benzene	9 J	ug/l	10	-	ug/l	10 U	ug/l	10	25 U	ug/l	25
trans-1,3-Dichloropropene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	25 U	ug/l	25
Bromoform	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	25 U	ug/l	25
4-Methyl-2-pentanone	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	25 U	ug/l	25
2-Hexanone	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	25 U	ug/l	25
Tetrachloroethene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	25 U	ug/l	25
Toluene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	25 U	ug/l	25
1,1,2,2-Tetrachloroethane	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	25 U	ug/l	25
Chlorobenzene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	25 U	ug/l	25
Ethylbenzene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	25 U	ug/l	25
Styrene	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	25 U	ug/l	25
Xylenes (total)	10 U	ug/l	10	-	ug/l	10 U	ug/l	10	25 U	ug/l	25

CLP SEMIVOLATILES 90-SOW

ug/l

Phenol	-	ug/l	-	ug/l	10 U	ug/l	10	-	ug/l
bis(2-Chloroethyl) ether	-	ug/l	-	ug/l	10 U	ug/l	10	-	ug/l
2-Chlorophenol	-	ug/l	-	ug/l	10 U	ug/l	10	-	ug/l
1,3-Dichlorobenzene	-	ug/l	-	ug/l	10 U	ug/l	10	-	ug/l
1,4-Dichlorobenzene	-	ug/l	-	ug/l	10 U	ug/l	10	-	ug/l

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:
Site
Locator
Collect Date:

ME404007
WHITING
15G00502
31-JUL-97

RB956004RE
WHITING
15G00502RE
06-AUG-96

RB956003
WHITING
15G00503
06-AUG-96

MC424003
WHITING
15G00503
18-NOV-96

VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL

1,2-Dichlorobenzene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2-Methylphenol	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2,2-oxybis(1-Chloropropane)	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
4-Methylphenol	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
N-Nitroso-di-n-propylamine	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Hexachloroethane	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Nitrobenzene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Isophorone	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2-Nitrophenol	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2,4-Dimethylphenol	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
bis(2-Chloroethoxy) methane	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2,4-Dichlorophenol	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
1,2,4-Trichlorobenzene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Naphthalene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
4-Chloroaniline	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Hexachlorobutadiene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
4-Chloro-3-methylphenol	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2-Methylnaphthalene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Hexachlorocyclopentadiene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2,4,6-Trichlorophenol	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2,4,5-Trichlorophenol	-	ug/l	-	ug/l	-	25 U	ug/l	25	-	ug/l
2-Chloronaphthalene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2-Nitroaniline	-	ug/l	-	ug/l	-	25 U	ug/l	25	-	ug/l
Dimethylphthalate	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Acenaphthylene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2,6-Dinitrotoluene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
3-Nitroaniline	-	ug/l	-	ug/l	-	25 U	ug/l	25	-	ug/l
Acenaphthene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2,4-Dinitrophenol	-	ug/l	-	ug/l	-	25 U	ug/l	25	-	ug/l
4-Nitrophenol	-	ug/l	-	ug/l	-	25 U	ug/l	25	-	ug/l
Dibenzofuran	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2,4-Dinitrotoluene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Diethylphthalate	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
4-Chlorophenyl-phenylether	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Fluorene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
4-Nitroaniline	-	ug/l	-	ug/l	-	25 U	ug/l	25	-	ug/l
4,6-Dinitro-2-methylphenol	-	ug/l	-	ug/l	-	25 U	ug/l	25	-	ug/l
N-Nitrosodiphenylamine	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
4-Bromophenyl-phenylether	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Hexachlorobenzene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Pentachlorophenol	-	ug/l	-	ug/l	-	25 U	ug/l	25	-	ug/l
Phenanthrene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Anthracene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Carbazole	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Di-n-butylphthalate	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Fluoranthene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Pyrene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Butylbenzylphthalate	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
3,3-Dichlorobenzidine	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Benzo (a) anthracene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Chrysene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
bis(2-Ethylhexyl) phthalate	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	ME404007	RB956004RE	RB956003	MC424003
Site	WHITING	WHITING	WHITING	WHITING
Locator	15G00502	15G00502RE	15G00503	15G00503
Collect Date:	31-JUL-97	06-AUG-96	06-AUG-96	18-NOV-96

	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Di-n-octylphthalate	-	-	ug/l		-	-	ug/l		10	U	ug/l	10
Benzo (b) fluoranthene	-	-	ug/l		-	-	ug/l		10	U	ug/l	10
Benzo (k) fluoranthene	-	-	ug/l		-	-	ug/l		10	U	ug/l	10
Benzo (a) pyrene	-	-	ug/l		-	-	ug/l		10	U	ug/l	10
Indeno (1,2,3-cd) pyrene	-	-	ug/l		-	-	ug/l		10	U	ug/l	10
Dibenzo (a,h) anthracene	-	-	ug/l		-	-	ug/l		10	U	ug/l	10
Benzo (g,h,i) perylene	-	-	ug/l		-	-	ug/l		10	U	ug/l	10
CLP PESTICIDES/PCBS 90-SOW ug/l												
alpha-BHC	-	-	ug/l		.05	R	ug/l		.05	U	ug/l	.05
beta-BHC	-	-	ug/l		.05	R	ug/l		.05	U	ug/l	.05
delta-BHC	-	-	ug/l		.05	R	ug/l		.05	U	ug/l	.05
gamma-BHC (Lindane)	-	-	ug/l		.05	R	ug/l		.05	U	ug/l	.05
Heptachlor	-	-	ug/l		.05	R	ug/l		.05	U	ug/l	.05
Aldrin	-	-	ug/l		.05	R	ug/l		.05	U	ug/l	.05
Heptachlor epoxide	-	-	ug/l		.05	R	ug/l		.05	U	ug/l	.05
Endosulfan I	-	-	ug/l		.05	R	ug/l		.05	U	ug/l	.05
Dieldrin	-	-	ug/l		.1	R	ug/l		.1	U	ug/l	.1
4,4-DDE	-	-	ug/l		.1	R	ug/l		.1	U	ug/l	.1
Endrin	-	-	ug/l		.1	R	ug/l		.1	U	ug/l	.1
Endosulfan II	-	-	ug/l		.1	R	ug/l		.1	U	ug/l	.1
4,4-DDD	-	-	ug/l		.1	R	ug/l		.1	U	ug/l	.1
Endosulfan sulfate	-	-	ug/l		.1	R	ug/l		.1	U	ug/l	.1
4,4-DDT	-	-	ug/l		.1	R	ug/l		.1	UJ	ug/l	.1
Methoxychlor	-	-	ug/l		.5	R	ug/l		.5	U	ug/l	.5
Endrin ketone	-	-	ug/l		.1	R	ug/l		.1	U	ug/l	.1
Endrin aldehyde	-	-	ug/l		.1	R	ug/l		.1	U	ug/l	.1
alpha-Chlordane	-	-	ug/l		.05	R	ug/l		.05	U	ug/l	.05
gamma-Chlordane	-	-	ug/l		.05	R	ug/l		.05	U	ug/l	.05
Toxaphene	-	-	ug/l		5	R	ug/l		5	U	ug/l	5
Aroclor-1016	-	-	ug/l		1	R	ug/l		1	U	ug/l	1
Aroclor-1221	-	-	ug/l		2	R	ug/l		2	U	ug/l	2
Aroclor-1232	-	-	ug/l		1	R	ug/l		1	U	ug/l	1
Aroclor-1242	-	-	ug/l		1	R	ug/l		1	U	ug/l	1
Aroclor-1248	-	-	ug/l		1	R	ug/l		1	U	ug/l	1
Aroclor-1254	-	-	ug/l		1	R	ug/l		1	U	ug/l	1
Aroclor-1260	-	-	ug/l		1	R	ug/l		1	U	ug/l	1
CLP METALS AND CYANIDE ug/l												
Aluminum	200	U	ug/l	200	-	-	ug/l		103	J	ug/l	-
Antimony	60	U	ug/l	60	-	-	ug/l		8.6	U	ug/l	-
Arsenic	10	U	ug/l	10	-	-	ug/l		.5	U	ug/l	-
Barium	14.3	J	ug/l	200	-	-	ug/l		10.2	J	ug/l	-
Beryllium	5	U	ug/l	5	-	-	ug/l		.3	U	ug/l	-
Cadmium	5	U	ug/l	5	-	-	ug/l		1.2	U	ug/l	-
Calcium	5000	U	ug/l	5000	-	-	ug/l		2000	J	ug/l	-
Chromium	10	U	ug/l	10	-	-	ug/l		2	U	ug/l	-
Cobalt	50	U	ug/l	50	-	-	ug/l		2.3	U	ug/l	-
Copper	25	U	ug/l	25	-	-	ug/l		2	J	ug/l	-
Iron	1060	U	ug/l	100	-	-	ug/l		134	U	ug/l	-
Lead	3	UJ	ug/l	3	-	-	ug/l		.5	U	ug/l	-
Magnesium	516	J	ug/l	5000	-	-	ug/l		232	J	ug/l	-

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

	Lab Sample Number: ME404007			RB956004RE			RB956003			MC424003			
	Site WHITING			WHITING			WHITING			WHITING			
	Locator 15G00502			15G00502RE			15G00503			15G00503			
	Collect Date: 31-JUL-97			06-AUG-96			06-AUG-96			18-NOV-96			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	
Manganese	29.9		ug/l	15	-		ug/l		71		ug/l	-	ug/l
Mercury	.2	U	ug/l	.2	-		ug/l		.1	U	ug/l	-	ug/l
Nickel	40	U	ug/l	40	-		ug/l		7.3	U	ug/l	-	ug/l
Potassium	5000	U	ug/l	5000	-		ug/l		460	J	ug/l	-	ug/l
Selenium	5	U	ug/l	5	-		ug/l		.6	UJ	ug/l	-	ug/l
Silver	10	U	ug/l	10	-		ug/l		2.5	U	ug/l	-	ug/l
Sodium	1700	J	ug/l	5000	-		ug/l		3250	J	ug/l	-	ug/l
Thallium	10	U	ug/l	10	-		ug/l		.6	U	ug/l	-	ug/l
Vanadium	50	U	ug/l	50	-		ug/l		1.7	J	ug/l	-	ug/l
Zinc	20	U	ug/l	20	-		ug/l		49		ug/l	-	ug/l
Cyanide	-		ug/l		-		ug/l		1.5	U	ug/l	-	ug/l

Locator Annotations: A = DUPLICATE SAMPLE B = SHALLOW SAMPLE C = INTERMEDIATE SAMPLE CD = DOUBLE INTERMEDIATE SAMPLE D = DEEP SAMPLE

Qualifiers: U = NOT DETECTED J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED R = RESULT IS REJECTED AND UNUSABLE.

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	ME404008	RB956003DL	RB956009	RB956006					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	15G00503	15G00503DL	15G00503F	15G00601					
Collect Date:	31-JUL-97	06-AUG-96	06-AUG-96	07-AUG-96					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 90-SOW

ug/l

Chloromethane	25 U	ug/l	25	20 R	ug/l	20	-	ug/l	10 U	ug/l	10
Bromomethane	25 U	ug/l	25	20 R	ug/l	20	-	ug/l	10 U	ug/l	10
Vinyl chloride	25 U	ug/l	25	20 R	ug/l	20	-	ug/l	10 U	ug/l	10
Chloroethane	25 U	ug/l	25	20 R	ug/l	20	-	ug/l	10 U	ug/l	10
Methylene chloride	25 U	ug/l	25	20 R	ug/l	20	-	ug/l	10 U	ug/l	10
Acetone	25 UJ	ug/l	25	140 R	ug/l	20	-	ug/l	10 UJ	ug/l	10
Carbon disulfide	25 U	ug/l	25	20 R	ug/l	20	-	ug/l	10 U	ug/l	10
1,1-Dichloroethene	10 J	ug/l	25	8 R	ug/l	20	-	ug/l	10 U	ug/l	10
1,1-Dichloroethane	25 U	ug/l	25	20 R	ug/l	20	-	ug/l	10 U	ug/l	10
1,2-Dichloroethene (total)	14 J	ug/l	25	12 R	ug/l	20	-	ug/l	1 J	ug/l	10
Chloroform	25 U	ug/l	25	20 R	ug/l	20	-	ug/l	10 U	ug/l	10
1,2-Dichloroethane	25 U	ug/l	25	20 R	ug/l	20	-	ug/l	10 U	ug/l	10
2-Butanone	25 U	ug/l	25	20 R	ug/l	20	-	ug/l	10 U	ug/l	10
1,1,1-Trichloroethane	25 U	ug/l	25	20 R	ug/l	20	-	ug/l	10 U	ug/l	10
Carbon tetrachloride	25 U	ug/l	25	20 R	ug/l	20	-	ug/l	10 U	ug/l	10
Bromodichloromethane	25 U	ug/l	25	20 R	ug/l	20	-	ug/l	10 U	ug/l	10
1,2-Dichloropropane	25 U	ug/l	25	20 R	ug/l	20	-	ug/l	10 U	ug/l	10
cis-1,3-Dichloropropene	25 U	ug/l	25	20 R	ug/l	20	-	ug/l	10 U	ug/l	10
Trichloroethene	330 U	ug/l	25	230 R	ug/l	20	-	ug/l	10 U	ug/l	10
Dibromochloromethane	25 U	ug/l	25	20 R	ug/l	20	-	ug/l	10 U	ug/l	10
1,1,2-Trichloroethane	25 U	ug/l	25	20 R	ug/l	20	-	ug/l	10 U	ug/l	10
Benzene	25 U	ug/l	25	20 R	ug/l	20	-	ug/l	10 U	ug/l	10
trans-1,3-Dichloropropene	25 U	ug/l	25	20 R	ug/l	20	-	ug/l	10 U	ug/l	10
Bromoform	25 U	ug/l	25	20 R	ug/l	20	-	ug/l	10 U	ug/l	10
4-Methyl-2-pentanone	25 U	ug/l	25	20 R	ug/l	20	-	ug/l	10 U	ug/l	10
2-Hexanone	25 U	ug/l	25	20 R	ug/l	20	-	ug/l	10 U	ug/l	10
Tetrachloroethene	25 U	ug/l	25	20 R	ug/l	20	-	ug/l	10 U	ug/l	10
Toluene	25 U	ug/l	25	20 R	ug/l	20	-	ug/l	10 U	ug/l	10
1,1,2,2-Tetrachloroethane	25 U	ug/l	25	20 R	ug/l	20	-	ug/l	10 U	ug/l	10
Chlorobenzene	25 U	ug/l	25	20 R	ug/l	20	-	ug/l	5 J	ug/l	10
Ethylbenzene	25 U	ug/l	25	20 R	ug/l	20	-	ug/l	10 U	ug/l	10
Styrene	25 U	ug/l	25	20 R	ug/l	20	-	ug/l	10 U	ug/l	10
Xylenes (total)	25 U	ug/l	25	20 R	ug/l	20	-	ug/l	10 U	ug/l	10

CLP SEMIVOLATILES 90-SOW

ug/l

Phenol	-	ug/l	-	ug/l	-	ug/l	-	ug/l	10 U	ug/l	10
bis(2-Chloroethyl) ether	-	ug/l	-	ug/l	-	ug/l	-	ug/l	10 U	ug/l	10
2-Chlorophenol	-	ug/l	-	ug/l	-	ug/l	-	ug/l	10 U	ug/l	10
1,3-Dichlorobenzene	-	ug/l	-	ug/l	-	ug/l	-	ug/l	10 U	ug/l	10
1,4-Dichlorobenzene	-	ug/l	-	ug/l	-	ug/l	-	ug/l	12	ug/l	10

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	ME404008		RB956003DL		RB956009		RB956006
Site	WHITING		WHITING		WHITING		WHITING
Locator	15G00503		15G00503DL		15G00503F		15G00601
Collect Date:	31-JUL-97		06-AUG-96		06-AUG-96		07-AUG-96

	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
1,2-Dichlorobenzene	-		ug/l		-		ug/l		10	U	ug/l	10
2-Methylphenol	-		ug/l		-		ug/l		10	U	ug/l	10
2,2-oxybis(1-Chloropropane)	-		ug/l		-		ug/l		10	U	ug/l	10
4-Methylphenol	-		ug/l		-		ug/l		10	U	ug/l	10
N-Nitroso-di-n-propylamine	-		ug/l		-		ug/l		10	U	ug/l	10
Hexachloroethane	-		ug/l		-		ug/l		10	U	ug/l	10
Nitrobenzene	-		ug/l		-		ug/l		10	U	ug/l	10
Isophorone	-		ug/l		-		ug/l		10	U	ug/l	10
2-Nitrophenol	-		ug/l		-		ug/l		10	U	ug/l	10
2,4-Dimethylphenol	-		ug/l		-		ug/l		10	U	ug/l	10
bis(2-Chloroethoxy) methane	-		ug/l		-		ug/l		10	U	ug/l	10
2,4-Dichlorophenol	-		ug/l		-		ug/l		10	U	ug/l	10
1,2,4-Trichlorobenzene	-		ug/l		-		ug/l		10	U	ug/l	10
Naphthalene	-		ug/l		-		ug/l		4	J	ug/l	10
4-Chloroaniline	-		ug/l		-		ug/l		10	U	ug/l	10
Hexachlorobutadiene	-		ug/l		-		ug/l		10	U	ug/l	10
4-Chloro-3-methylphenol	-		ug/l		-		ug/l		10	U	ug/l	10
2-Methylnaphthalene	-		ug/l		-		ug/l		10	U	ug/l	10
Hexachlorocyclopentadiene	-		ug/l		-		ug/l		10	U	ug/l	10
2,4,6-Trichlorophenol	-		ug/l		-		ug/l		10	U	ug/l	10
2,4,5-Trichlorophenol	-		ug/l		-		ug/l		25	U	ug/l	25
2-Chloronaphthalene	-		ug/l		-		ug/l		10	U	ug/l	10
2-Nitroaniline	-		ug/l		-		ug/l		25	U	ug/l	25
Dimethylphthalate	-		ug/l		-		ug/l		10	U	ug/l	10
Acenaphthylene	-		ug/l		-		ug/l		10	U	ug/l	10
2,6-Dinitrotoluene	-		ug/l		-		ug/l		10	U	ug/l	10
3-Nitroaniline	-		ug/l		-		ug/l		25	U	ug/l	25
Acenaphthene	-		ug/l		-		ug/l		10	U	ug/l	10
2,4-Dinitrophenol	-		ug/l		-		ug/l		25	UJ	ug/l	25
4-Nitrophenol	-		ug/l		-		ug/l		25	U	ug/l	25
Dibenzofuran	-		ug/l		-		ug/l		10	U	ug/l	10
2,4-Dinitrotoluene	-		ug/l		-		ug/l		10	U	ug/l	10
Diethylphthalate	-		ug/l		-		ug/l		1	J	ug/l	10
4-Chlorophenyl-phenylether	-		ug/l		-		ug/l		10	U	ug/l	10
Fluorene	-		ug/l		-		ug/l		10	U	ug/l	10
4-Nitroaniline	-		ug/l		-		ug/l		25	UJ	ug/l	25
4,6-Dinitro-2-methylphenol	-		ug/l		-		ug/l		25	UJ	ug/l	25
N-Nitrosodiphenylamine	-		ug/l		-		ug/l		10	U	ug/l	10
4-Bromophenyl-phenylether	-		ug/l		-		ug/l		10	U	ug/l	10
Hexachlorobenzene	-		ug/l		-		ug/l		10	U	ug/l	10
Pentachlorophenol	-		ug/l		-		ug/l		25	U	ug/l	25
Phenanthrene	-		ug/l		-		ug/l		10	U	ug/l	10
Anthracene	-		ug/l		-		ug/l		10	U	ug/l	10
Carbazole	-		ug/l		-		ug/l		10	U	ug/l	10
Di-n-butylphthalate	-		ug/l		-		ug/l		10	U	ug/l	10
Fluoranthene	-		ug/l		-		ug/l		10	U	ug/l	10
Pyrene	-		ug/l		-		ug/l		10	UJ	ug/l	10
Butylbenzylphthalate	-		ug/l		-		ug/l		10	U	ug/l	10
3,3-Dichlorobenzidine	-		ug/l		-		ug/l		10	UJ	ug/l	10
Benzo (a) anthracene	-		ug/l		-		ug/l		10	U	ug/l	10
Chrysene	-		ug/l		-		ug/l		10	U	ug/l	10
bis(2-Ethylhexyl) phthalate	-		ug/l		-		ug/l		10	U	ug/l	10

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	ME404008	RB956003DL	RB956009	RB956006
Site	WHITING	WHITING	WHITING	WHITING
Locator	15G00503	15G00503DL	15G00503F	15G00601
Collect Date:	31-JUL-97	06-AUG-96	06-AUG-96	07-AUG-96

	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
Di-n-octylphthalate	-	ug/l		-	ug/l		-	ug/l		10 U	ug/l	10
Benzo (b) fluoranthene	-	ug/l		-	ug/l		-	ug/l		10 U	ug/l	10
Benzo (k) fluoranthene	-	ug/l		-	ug/l		-	ug/l		10 U	ug/l	10
Benzo (a) pyrene	-	ug/l		-	ug/l		-	ug/l		10 U	ug/l	10
Indeno (1,2,3-cd) pyrene	-	ug/l		-	ug/l		-	ug/l		10 U	ug/l	10
Dibenzo (a,h) anthracene	-	ug/l		-	ug/l		-	ug/l		10 U	ug/l	10
Benzo (g,h,i) perylene	-	ug/l		-	ug/l		-	ug/l		10 U	ug/l	10
CLP PESTICIDES/PCBS 90-SOW	ug/l											
alpha-BHC	-	ug/l		-	ug/l		-	ug/l		.05 U	ug/l	.05
beta-BHC	-	ug/l		-	ug/l		-	ug/l		.05 U	ug/l	.05
delta-BHC	-	ug/l		-	ug/l		-	ug/l		.05 U	ug/l	.05
gamma-BHC (Lindane)	-	ug/l		-	ug/l		-	ug/l		.05 U	ug/l	.05
Heptachlor	-	ug/l		-	ug/l		-	ug/l		.05 U	ug/l	.05
Aldrin	-	ug/l		-	ug/l		-	ug/l		.05 U	ug/l	.05
Heptachlor epoxide	-	ug/l		-	ug/l		-	ug/l		.05 U	ug/l	.05
Endosulfan I	-	ug/l		-	ug/l		-	ug/l		.05 U	ug/l	.05
Dieldrin	-	ug/l		-	ug/l		-	ug/l		.1 U	ug/l	.1
4,4-DDE	-	ug/l		-	ug/l		-	ug/l		.1 U	ug/l	.1
Endrin	-	ug/l		-	ug/l		-	ug/l		.1 U	ug/l	.1
Endosulfan II	-	ug/l		-	ug/l		-	ug/l		.1 U	ug/l	.1
4,4-DDD	-	ug/l		-	ug/l		-	ug/l		.1 U	ug/l	.1
Endosulfan sulfate	-	ug/l		-	ug/l		-	ug/l		.1 U	ug/l	.1
4,4-DDT	-	ug/l		-	ug/l		-	ug/l		.1 UJ	ug/l	.1
Methoxychlor	-	ug/l		-	ug/l		-	ug/l		.5 U	ug/l	.5
Endrin ketone	-	ug/l		-	ug/l		-	ug/l		.1 U	ug/l	.1
Endrin aldehyde	-	ug/l		-	ug/l		-	ug/l		.1 U	ug/l	.1
alpha-Chlordane	-	ug/l		-	ug/l		-	ug/l		.05 U	ug/l	.05
gamma-Chlordane	-	ug/l		-	ug/l		-	ug/l		.05 U	ug/l	.05
Toxaphene	-	ug/l		-	ug/l		-	ug/l		5 U	ug/l	5
Aroclor-1016	-	ug/l		-	ug/l		-	ug/l		1 U	ug/l	1
Aroclor-1221	-	ug/l		-	ug/l		-	ug/l		2 U	ug/l	2
Aroclor-1232	-	ug/l		-	ug/l		-	ug/l		1 U	ug/l	1
Aroclor-1242	-	ug/l		-	ug/l		-	ug/l		1 U	ug/l	1
Aroclor-1248	-	ug/l		-	ug/l		-	ug/l		1 U	ug/l	1
Aroclor-1254	-	ug/l		-	ug/l		-	ug/l		1 U	ug/l	1
Aroclor-1260	-	ug/l		-	ug/l		-	ug/l		1 U	ug/l	1
CLP METALS AND CYANIDE	ug/l											
Aluminum	200 U	ug/l	200	-	ug/l		12.3 U	ug/l		89.4 J	ug/l	
Antimony	60 U	ug/l	60	-	ug/l		8.6 U	ug/l		8.6 U	ug/l	
Arsenic	17.2	ug/l	10	-	ug/l		.5 U	ug/l		8 J	ug/l	
Barium	9.8 J	ug/l	200	-	ug/l		8.7 J	ug/l		67.6 J	ug/l	
Beryllium	5 U	ug/l	5	-	ug/l		.3 U	ug/l		.3 U	ug/l	
Cadmium	5 U	ug/l	5	-	ug/l		1.2 U	ug/l		1.2 U	ug/l	
Calcium	5000 U	ug/l	5000	-	ug/l		2080 J	ug/l		3690 J	ug/l	
Chromium	10 U	ug/l	10	-	ug/l		2 U	ug/l		2 U	ug/l	
Cobalt	50 U	ug/l	50	-	ug/l		2.3 U	ug/l		2.3 U	ug/l	
Copper	25 U	ug/l	25	-	ug/l		1.7 J	ug/l		1.1 U	ug/l	
Iron	100 U	ug/l	100	-	ug/l		16.5 U	ug/l		31000	ug/l	
Lead	3 U	ug/l	3	-	ug/l		.7 J	ug/l		.9 J	ug/l	
Magnesium	361 J	ug/l	5000	-	ug/l		227 J	ug/l		1940 J	ug/l	

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

	ME404008			RB956003DL			RB956009			RB956006		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
Manganese	18.5	ug/l	15	-	ug/l		69.3	ug/l		139	ug/l	
Mercury	.06 J	ug/l	.2	-	ug/l		.1 U	ug/l		.1 U	ug/l	
Nickel	40 U	ug/l	40	-	ug/l		7.3 U	ug/l		7.3 U	ug/l	
Potassium	5000 U	ug/l	5000	-	ug/l		403 J	ug/l		2460 J	ug/l	
Selenium	5 U	ug/l	5	-	ug/l		.6 U	ug/l		.6 U	ug/l	
Silver	10 U	ug/l	10	-	ug/l		2.5 U	ug/l		2.5 U	ug/l	
Sodium	2480 J	ug/l	5000	-	ug/l		3260 J	ug/l		2630 J	ug/l	
Thallium	10 U	ug/l	10	-	ug/l		.6 U	ug/l		.6 U	ug/l	
Vanadium	50 U	ug/l	50	-	ug/l		1.2 U	ug/l		1.2 U	ug/l	
Zinc	20 U	ug/l	20	-	ug/l		88.3	ug/l		3.4 U	ug/l	
Cyanide	-	ug/l		-	ug/l		-	ug/l		1.5 U	ug/l	

Locator Annotations: A = DUPLICATE SAMPLE B = SHALLOW SAMPLE C = INTERMEDIATE SAMPLE CD = DOUBLE INTERMEDIATE SAMPLE D = DEEP SAMPLE

Qualifiers: U = NOT DETECTED J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED R = RESULT IS REJECTED AND UNUSABLE

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	ME367003			RB956008			RB956007			ME367004		
Site:	WHITING			WHITING			WHITING			WHITING		
Locator:	15G00601			15G00601D			15G00603			15G00602		
Collect Date:	27-JUL-97			07-AUG-96			07-AUG-96			27-JUL-97		
	VALUE	QUAL UNITS	DL									

CLP VOLATILES 90-SOW

ug/l

Chloromethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Bromomethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Vinyl chloride	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Chloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Methylene chloride	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Acetone	10 U	ug/l	10	10 UJ	ug/l	10	10 UJ	ug/l	10	10 U	ug/l	10
Carbon disulfide	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,1-Dichloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,1-Dichloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,2-Dichloroethane (total)	3 J	ug/l	10	1 J	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Chloroform	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,2-Dichloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
2-Butanone	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,1,1-Trichloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Carbon tetrachloride	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Bromodichloromethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,2-Dichloropropane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
cis-1,3-Dichloropropene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Trichloroethene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	2 J	ug/l	10
Dibromochloromethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,1,2-Trichloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Benzene	1 J	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
trans-1,3-Dichloropropene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Bromoform	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
4-Methyl-2-pentanone	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
2-Hexanone	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Tetrachloroethene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Toluene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,1,2,2-Tetrachloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Chlorobenzene	12	ug/l	10	5 J	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Ethylbenzene	2 J	ug/l	10	1 J	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Styrene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Xylenes (total)	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10

CLP SEMIVOLATILES 90-SOW

ug/l

Phenol	-	ug/l		10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
bis(2-Chloroethyl) ether	-	ug/l		10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
2-Chlorophenol	-	ug/l		10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
1,3-Dichlorobenzene	-	ug/l		10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
1,4-Dichlorobenzene	-	ug/l		12	ug/l	10	10 U	ug/l	10	-	ug/l	

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number: Site Locator Collect Date:	ME367003 WHITING 15G00601 27-JUL-97		RB956008 WHITING 15G00601D 07-AUG-96		RB956007 WHITING 15G00603 07-AUG-96		ME367004 WHITING 15G00602 27-JUL-97		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
1,2-Dichlorobenzene	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
2-Methylphenol	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
2,2-oxybis(1-Chloropropane)	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
4-Methylphenol	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
N-Nitroso-di-n-propylamine	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
Hexachloroethane	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
Nitrobenzene	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
Isophorone	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
2-Nitrophenol	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
2,4-Dimethylphenol	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
bis(2-Chloroethoxy) methane	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
2,4-Dichlorophenol	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
1,2,4-Trichlorobenzene	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
Naphthalene	-	ug/l		4 J	ug/l	10	10 U	ug/l	10
4-Chloroaniline	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
Hexachlorobutadiene	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
4-Chloro-3-methylphenol	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
2-Methylnaphthalene	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
Hexachlorocyclopentadiene	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
2,4,6-Trichlorophenol	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
2,4,5-Trichlorophenol	-	ug/l		25 U	ug/l	25	25 U	ug/l	25
2-Chloronaphthalene	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
2-Nitroaniline	-	ug/l		25 U	ug/l	25	25 U	ug/l	25
Dimethylphthalate	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
Acenaphthylene	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
2,6-Dinitrotoluene	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
3-Nitroaniline	-	ug/l		25 U	ug/l	25	25 U	ug/l	25
Acenaphthene	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
2,4-Dinitrophenol	-	ug/l		25 UJ	ug/l	25	25 UJ	ug/l	25
4-Nitrophenol	-	ug/l		25 U	ug/l	25	25 U	ug/l	25
Dibenzofuran	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
2,4-Dinitrotoluene	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
Diethylphthalate	-	ug/l		1 J	ug/l	10	10 U	ug/l	10
4-Chlorophenyl-phenylether	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
Fluorene	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
4-Nitroaniline	-	ug/l		25 UJ	ug/l	25	25 UJ	ug/l	25
4,6-Dinitro-2-methylphenol	-	ug/l		25 UJ	ug/l	25	25 UJ	ug/l	25
N-Nitrosodiphenylamine	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
4-Bromophenyl-phenylether	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
Hexachlorobenzene	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
Pentachlorophenol	-	ug/l		25 U	ug/l	25	25 U	ug/l	25
Phenanthrene	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
Anthracene	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
Carbazole	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
Di-n-butylphthalate	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
Fluoranthene	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
Pyrene	-	ug/l		10 UJ	ug/l	10	10 UJ	ug/l	10
Butylbenzylphthalate	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
3,3-Dichlorobenzidine	-	ug/l		10 UJ	ug/l	10	10 UJ	ug/l	10
Benzo (a) anthracene	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
Chrysene	-	ug/l		10 U	ug/l	10	10 U	ug/l	10
bis(2-Ethylhexyl) phthalate	-	ug/l		10 U	ug/l	10	10 U	ug/l	10

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	ME367003	RB956008	RB956007	ME367004
Site	WHITING	WHITING	WHITING	WHITING
Locator	15G00601	15G00601D	15G00603	15G00602
Collect Date:	27-JUL-97	07-AUG-96	07-AUG-96	27-JUL-97

	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
Di-n-octylphthalate	-	ug/l		10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
Benzo (b) fluoranthene	-	ug/l		10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
Benzo (k) fluoranthene	-	ug/l		10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
Benzo (a) pyrene	-	ug/l		10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
Indeno (1,2,3-cd) pyrene	-	ug/l		10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
Dibenzo (a,h) anthracene	-	ug/l		10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
Benzo (g,h,i) perylene	-	ug/l		10 U	ug/l	10	10 U	ug/l	10	-	ug/l	
CLP PESTICIDES/PCBS 90-SOW ug/l												
alpha-BHC	-	ug/l		.05 U	ug/l	.05	.05 U	ug/l	.05	-	ug/l	
beta-BHC	-	ug/l		.05 U	ug/l	.05	.05 U	ug/l	.05	-	ug/l	
delta-BHC	-	ug/l		.05 U	ug/l	.05	.05 U	ug/l	.05	-	ug/l	
gamma-BHC (Lindane)	-	ug/l		.05 U	ug/l	.05	.05 U	ug/l	.05	-	ug/l	
Heptachlor	-	ug/l		.05 U	ug/l	.05	.05 U	ug/l	.05	-	ug/l	
Aldrin	-	ug/l		.05 U	ug/l	.05	.05 U	ug/l	.05	-	ug/l	
Heptachlor epoxide	-	ug/l		.05 U	ug/l	.05	.05 U	ug/l	.05	-	ug/l	
Endosulfan I	-	ug/l		.05 U	ug/l	.05	.05 U	ug/l	.05	-	ug/l	
Dieldrin	-	ug/l		.1 U	ug/l	.1	.1 U	ug/l	.1	-	ug/l	
4,4-DDE	-	ug/l		.1 U	ug/l	.1	.1 U	ug/l	.1	-	ug/l	
Endrin	-	ug/l		.1 U	ug/l	.1	.1 U	ug/l	.1	-	ug/l	
Endosulfan II	-	ug/l		.1 U	ug/l	.1	.1 U	ug/l	.1	-	ug/l	
4,4-DDD	-	ug/l		.1 U	ug/l	.1	.1 U	ug/l	.1	-	ug/l	
Endosulfan sulfate	-	ug/l		.1 U	ug/l	.1	.1 U	ug/l	.1	-	ug/l	
4,4-DDT	-	ug/l		.1 U	ug/l	.1	.1 U	ug/l	.1	-	ug/l	
Methoxychlor	-	ug/l		.5 U	ug/l	.5	.5 U	ug/l	.5	-	ug/l	
Endrin ketone	-	ug/l		.1 U	ug/l	.1	.1 U	ug/l	.1	-	ug/l	
Endrin aldehyde	-	ug/l		.1 U	ug/l	.1	.1 U	ug/l	.1	-	ug/l	
alpha-Chlordane	-	ug/l		.05 U	ug/l	.05	.05 U	ug/l	.05	-	ug/l	
gamma-Chlordane	-	ug/l		.05 U	ug/l	.05	.05 U	ug/l	.05	-	ug/l	
Toxaphene	-	ug/l		5 U	ug/l	5	5 U	ug/l	5	-	ug/l	
Aroclor-1016	-	ug/l		1 U	ug/l	1	1 U	ug/l	1	-	ug/l	
Aroclor-1221	-	ug/l		2 U	ug/l	2	2 U	ug/l	2	-	ug/l	
Aroclor-1232	-	ug/l		1 U	ug/l	1	1 U	ug/l	1	-	ug/l	
Aroclor-1242	-	ug/l		1 U	ug/l	1	1 U	ug/l	1	-	ug/l	
Aroclor-1248	-	ug/l		1 U	ug/l	1	1 U	ug/l	1	-	ug/l	
Aroclor-1254	-	ug/l		1 U	ug/l	1	1 U	ug/l	1	-	ug/l	
Aroclor-1260	-	ug/l		1 U	ug/l	1	1 U	ug/l	1	-	ug/l	
CLP METALS AND CYANIDE ug/l												
Aluminum	200 U	ug/l	200	55.8 U	ug/l		35.8 U	ug/l		200 U	ug/l	200
Antimony	60 U	ug/l	60	8.6 U	ug/l		8.6 U	ug/l		60 U	ug/l	60
Arsenic	14.2	ug/l	10	7.8 J	ug/l		.5 U	ug/l		10 U	ug/l	10
Barium	68.3 J	ug/l	200	63.7 J	ug/l		13.7 J	ug/l		13 J	ug/l	200
Beryllium	5 U	ug/l	5	.3 U	ug/l		.3 U	ug/l		5 U	ug/l	5
Cadmium	5 U	ug/l	5	1.2 U	ug/l		1.2 U	ug/l		5 U	ug/l	5
Calcium	4170 J	ug/l	5000	3620 J	ug/l		826 J	ug/l		5000 U	ug/l	5000
Chromium	10 U	ug/l	10	2 U	ug/l		2 U	ug/l		10 U	ug/l	10
Cobalt	50 U	ug/l	50	2.3 U	ug/l		2.3 U	ug/l		50 U	ug/l	50
Copper	25 U	ug/l	25	1.1 U	ug/l		1.1 U	ug/l		25 U	ug/l	25
Iron	40200	ug/l	100	30500	ug/l		56.7 J	ug/l		100 U	ug/l	100
Lead	3 U	ug/l	3	.5 U	ug/l		.5 U	ug/l		3 U	ug/l	3
Magnesium	2140 J	ug/l	5000	1900 J	ug/l		500 J	ug/l		504 J	ug/l	5000

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:
Site
Locator
Collect Date:

ME367003
WHITING
15G00601
27-JUL-97

RB956008
WHITING
15G00601D
07-AUG-96

RB956007
WHITING
15G00603
07-AUG-96

ME367004
WHITING
15G00602
27-JUL-97

	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
Manganese	164	ug/l	15	136	ug/l		3 J	ug/l		15 U	ug/l	15
Mercury	.2 U	ug/l	.2	.1 U	ug/l		.1 U	ug/l		.2 U	ug/l	.2
Nickel	40 U	ug/l	40	7.3 U	ug/l		7.3 U	ug/l		40 U	ug/l	40
Potassium	2190 J	ug/l	5000	2340 J	ug/l		354 J	ug/l		5000 U	ug/l	5000
Selenium	5 U	ug/l	5	.6 U	ug/l		.6 UJ	ug/l		5 U	ug/l	5
Silver	10 U	ug/l	10	2.5 U	ug/l		2.5 U	ug/l		10 U	ug/l	10
Sodium	2210 J	ug/l	5000	2590 J	ug/l		2540 J	ug/l		2870 J	ug/l	5000
Thallium	10 U	ug/l	10	.6 U	ug/l		.6 U	ug/l		10 UJ	ug/l	10
Vanadium	50 U	ug/l	50	1.2 U	ug/l		1.2 U	ug/l		50 U	ug/l	50
Zinc	20 U	ug/l	20	3.3 U	ug/l		173	ug/l		20 U	ug/l	20
Cyanide	-	ug/l		8.1 J	ug/l		1.5 U	ug/l		-	ug/l	

Locator Annotations: A = DUPLICATE SAMPLE B = SHALLOW SAMPLE C = INTERMEDIATE SAMPLE CD = DOUBLE INTERMEDIATE SAMPLE D = DEEP SAMPLE

Qualifiers: U = NOT DETECTED J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED R = RESULT IS REJECTED AND UNUSABLE

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:
Site
Locator
Collect Date:

ME367005
WHITING
15G00602D
27-JUL-97

RB920009
WHITING
15G00701
31-JUL-96

ME390004
WHITING
15G00701
30-JUL-97

RB920010
WHITING
15G00701D
31-JUL-96

VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL

CLP VOLATILES 90-SOW

ug/l

Chloromethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Bromomethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Vinyl chloride	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Chloroethane	10 U	ug/l	10	10 UJ	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Methylene chloride	10 U	ug/l	10	10 UJ	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Acetone	10 UJ	ug/l	10	10 UJ	ug/l	10	10 U	ug/l	10	10 UJ	ug/l	10
Carbon disulfide	10 U	ug/l	10	10 UJ	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,1-Dichloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,1-Dichloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,2-Dichloroethane (total)	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Chloroform	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,2-Dichloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
2-Butanone	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,1,1-Trichloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Carbon tetrachloride	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Bromodichloromethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,2-Dichloropropane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
cis-1,3-Dichloropropene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Trichloroethene	2 J	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Dibromochloromethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,1,2-Trichloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Benzene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
trans-1,3-Dichloropropene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Bromoform	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
4-Methyl-2-pentanone	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
2-Hexanone	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Tetrachloroethene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Toluene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,1,2,2-Tetrachloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Chlorobenzene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Ethylbenzene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Styrene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Xylenes (total)	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10

CLP SEMIVOLATILES 90-SOW

ug/l

Phenol	-	ug/l		10 U	ug/l	10	-	ug/l		10 U	ug/l	10
bis(2-Chloroethyl) ether	-	ug/l		10 U	ug/l	10	-	ug/l		10 U	ug/l	10
2-Chlorophenol	-	ug/l		10 U	ug/l	10	-	ug/l		10 U	ug/l	10
1,3-Dichlorobenzene	-	ug/l		10 U	ug/l	10	-	ug/l		10 U	ug/l	10
1,4-Dichlorobenzene	-	ug/l		10 U	ug/l	10	-	ug/l		10 U	ug/l	10

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:
Site
Locator
Collect Date:

ME367005
WHITING
15G00602D
27-JUL-97

RB920009
WHITING
15G00701
31-JUL-96

ME390004
WHITING
15G00701
30-JUL-97

RB920010
WHITING
15G00701D
31-JUL-96

	VALUE	QUAL	UNITS	DL												
1,2-Dichlorobenzene	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
2-Methylphenol	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
2,2-oxybis(1-Chloropropane)	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
4-Methylphenol	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
N-Nitroso-di-n-propylamine	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
Hexachloroethane	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
Nitrobenzene	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
Isophorone	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
2-Nitrophenol	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
2,4-Dimethylphenol	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
bis(2-Chloroethoxy) methane	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
2,4-Dichlorophenol	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
1,2,4-Trichlorobenzene	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
Naphthalene	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
4-Chloroaniline	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
Hexachlorobutadiene	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
4-Chloro-3-methylphenol	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
2-Methylnaphthalene	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
Hexachlorocyclopentadiene	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
2,4,6-Trichlorophenol	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
2,4,5-Trichlorophenol	-		ug/l		25 U		ug/l	25	-		ug/l		25 U		ug/l	25
2-Chloronaphthalene	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
2-Nitroaniline	-		ug/l		25 U		ug/l	25	-		ug/l		25 U		ug/l	25
Dimethylphthalate	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
Acenaphthylene	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
2,6-Dinitrotoluene	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
3-Nitroaniline	-		ug/l		25 U		ug/l	25	-		ug/l		25 U		ug/l	25
Acenaphthene	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
2,4-Dinitrophenol	-		ug/l		25 U		ug/l	25	-		ug/l		25 U		ug/l	25
4-Nitrophenol	-		ug/l		25 U		ug/l	25	-		ug/l		25 U		ug/l	25
Dibenzofuran	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
2,4-Dinitrotoluene	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
Diethylphthalate	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
4-Chlorophenyl-phenylether	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
Fluorene	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
4-Nitroaniline	-		ug/l		25 UJ		ug/l	25	-		ug/l		25 UJ		ug/l	25
4,6-Dinitro-2-methylphenol	-		ug/l		25 U		ug/l	25	-		ug/l		25 U		ug/l	25
N-Nitrosodiphenylamine	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
4-Bromophenyl-phenylether	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
Hexachlorobenzene	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
Pentachlorophenol	-		ug/l		25 U		ug/l	25	-		ug/l		25 U		ug/l	25
Phenanthrene	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
Anthracene	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
Carbazole	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
Di-n-butylphthalate	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
Fluoranthene	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
Pyrene	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
Butylbenzylphthalate	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
3,3-Dichlorobenzidine	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
Benzo (a) anthracene	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10
Chrysene	-		ug/l		10 UJ		ug/l	10	-		ug/l		10 UJ		ug/l	10
bis(2-Ethylhexyl) phthalate	-		ug/l		10 U		ug/l	10	-		ug/l		10 U		ug/l	10

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:
Site
Locator
Collect Date:

ME367005
WHITING
15G00602D
27-JUL-97

RB920009
WHITING
15G00701
31-JUL-96

ME390004
WHITING
15G00701
30-JUL-97

RB920010
WHITING
15G00701D
31-JUL-96

	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
Di-n-octylphthalate	-	ug/l		10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Benzo (b) fluoranthene	-	ug/l		10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Benzo (k) fluoranthene	-	ug/l		10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Benzo (a) pyrene	-	ug/l		10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Indeno (1,2,3-cd) pyrene	-	ug/l		10 UJ	ug/l	10	-	ug/l		10 UJ	ug/l	10
Dibenzo (a,h) anthracene	-	ug/l		10 UJ	ug/l	10	-	ug/l		10 UJ	ug/l	10
Benzo (g,h,i) perylene	-	ug/l		10 UJ	ug/l	10	-	ug/l		10 UJ	ug/l	10
CLP PESTICIDES/PCBS 90-SOW ug/l												
alpha-BHC	-	ug/l		.05 U	ug/l	.05	-	ug/l		.05 U	ug/l	.05
beta-BHC	-	ug/l		.05 U	ug/l	.05	-	ug/l		.05 U	ug/l	.05
delta-BHC	-	ug/l		.05 U	ug/l	.05	-	ug/l		.05 U	ug/l	.05
gamma-BHC (Lindane)	-	ug/l		.05 U	ug/l	.05	-	ug/l		.05 U	ug/l	.05
Heptachlor	-	ug/l		.05 U	ug/l	.05	-	ug/l		.05 U	ug/l	.05
Aldrin	-	ug/l		.05 U	ug/l	.05	-	ug/l		.05 U	ug/l	.05
Heptachlor epoxide	-	ug/l		.05 U	ug/l	.05	-	ug/l		.05 U	ug/l	.05
Endosulfan I	-	ug/l		.05 U	ug/l	.05	-	ug/l		.05 U	ug/l	.05
Dieldrin	-	ug/l		.1 U	ug/l	.1	-	ug/l		.1 U	ug/l	.1
4,4-DDE	-	ug/l		.1 U	ug/l	.1	-	ug/l		.1 U	ug/l	.1
Endrin	-	ug/l		.1 U	ug/l	.1	-	ug/l		.1 U	ug/l	.1
Endosulfan II	-	ug/l		.1 U	ug/l	.1	-	ug/l		.1 U	ug/l	.1
4,4-DDD	-	ug/l		.1 U	ug/l	.1	-	ug/l		.1 U	ug/l	.1
Endosulfan sulfate	-	ug/l		.1 U	ug/l	.1	-	ug/l		.1 U	ug/l	.1
4,4-DDT	-	ug/l		.1 UJ	ug/l	.1	-	ug/l		.1 UJ	ug/l	.1
Methoxychlor	-	ug/l		.5 U	ug/l	.5	-	ug/l		.5 U	ug/l	.5
Endrin ketone	-	ug/l		.1 U	ug/l	.1	-	ug/l		.1 U	ug/l	.1
Endrin aldehyde	-	ug/l		.1 U	ug/l	.1	-	ug/l		.1 U	ug/l	.1
alpha-Chlordane	-	ug/l		.05 U	ug/l	.05	-	ug/l		.05 U	ug/l	.05
gamma-Chlordane	-	ug/l		.05 U	ug/l	.05	-	ug/l		.05 U	ug/l	.05
Toxaphene	-	ug/l		5 U	ug/l	5	-	ug/l		5 U	ug/l	5
Aroclor-1016	-	ug/l		1 U	ug/l	1	-	ug/l		1 U	ug/l	1
Aroclor-1221	-	ug/l		2 U	ug/l	2	-	ug/l		2 U	ug/l	2
Aroclor-1232	-	ug/l		1 U	ug/l	1	-	ug/l		1 U	ug/l	1
Aroclor-1242	-	ug/l		1 U	ug/l	1	-	ug/l		1 U	ug/l	1
Aroclor-1248	-	ug/l		1 U	ug/l	1	-	ug/l		1 U	ug/l	1
Aroclor-1254	-	ug/l		1 U	ug/l	1	-	ug/l		1 U	ug/l	1
Aroclor-1260	-	ug/l		1 U	ug/l	1	-	ug/l		1 U	ug/l	1
CLP METALS AND CYANIDE ug/l												
Aluminum	200 U	ug/l	200	161 J	ug/l		200 U	ug/l	200	173 J	ug/l	
Antimony	60 U	ug/l	60	8.6 U	ug/l		60 U	ug/l	60	8.6 U	ug/l	
Arsenic	10 U	ug/l	10	.5 U	ug/l		10 U	ug/l	10	.5 U	ug/l	
Barium	13 J	ug/l	200	15.6 J	ug/l		20.4 J	ug/l	200	19.3 J	ug/l	
Beryllium	5 U	ug/l	5	.3 U	ug/l		5 U	ug/l	5	.3 U	ug/l	
Cadmium	5 U	ug/l	5	1.2 U	ug/l		5 U	ug/l	5	1.2 U	ug/l	
Calcium	5000 U	ug/l	5000	356 J	ug/l		5000 U	ug/l	5000	360 J	ug/l	
Chromium	10 U	ug/l	10	2.9 J	ug/l		10 U	ug/l	10	2 J	ug/l	
Cobalt	50 U	ug/l	50	2.3 U	ug/l		50 U	ug/l	50	2.3 U	ug/l	
Copper	25 U	ug/l	25	1.1 U	ug/l		25 U	ug/l	25	1.1 U	ug/l	
Iron	92.6 J	ug/l	100	183	ug/l		155	ug/l	100	202	ug/l	
Lead	3 U	ug/l	3	.7 U	ug/l		3 UJ	ug/l	3	.6 U	ug/l	
Magnesium	490 J	ug/l	5000	433 J	ug/l		482 J	ug/l	5000	422 J	ug/l	

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:
Site
Locator
Collect Date:

ME367005
WHITING
15G00602D
27-JUL-97

RB920009
WHITING
15G00701
31-JUL-96

ME390004
WHITING
15G00701
30-JUL-97

RB920010
WHITING
15G00701D
31-JUL-96

	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Manganese	15	U	ug/l		2.8	J	ug/l		15	U	ug/l	15
Mercury	.2	U	ug/l		.1	U	ug/l		.2	U	ug/l	.2
Nickel	40	U	ug/l		7.3	U	ug/l		40	U	ug/l	40
Potassium	5000	U	ug/l		316	U	ug/l		5000	U	ug/l	5000
Selenium	5	U	ug/l		.6	U	ug/l		5	U	ug/l	5
Silver	10	U	ug/l		2.5	U	ug/l		10	U	ug/l	10
Sodium	2740	J	ug/l		1530	J	ug/l		1840	J	ug/l	5000
Thallium	10	U	ug/l		.6	U	ug/l		10	U	ug/l	10
Vanadium	50	U	ug/l		1.2	U	ug/l		50	U	ug/l	50
Zinc	20	U	ug/l		3.4	J	ug/l		20	U	ug/l	20
Cyanide	-		ug/l		2.6	U	ug/l		-		ug/l	3.2

Locator Annotations: A = DUPLICATE SAMPLE B = SHALLOW SAMPLE C = INTERMEDIATE SAMPLE CD = DOUBLE INTERMEDIATE SAMPLE D = DEEP SAMPLE

Qualifiers: U = NOT DETECTED J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED R = RESULT IS REJECTED AND UNUSABLE

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	RB920007	ME390005	RB920008	RB956002							
Site	WHITING	WHITING	WHITING	WHITING							
Locator	15G00702	15G00702	15G00702F	15G00703							
Collect Date:	31-JUL-96	30-JUL-97	31-JUL-96	05-AUG-96							
VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 90-SOW

ug/l

Chloromethane	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
Bromomethane	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
Vinyl chloride	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
Chloroethane	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
Methylene chloride	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
Acetone	27 UJ	ug/l	27	10 U	ug/l	10	-	ug/l	140 J	ug/l	10
Carbon disulfide	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
1,1-Dichloroethene	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	5 J	ug/l	10
1,1-Dichloroethane	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
1,2-Dichloroethene (total)	10 U	ug/l	10	14	ug/l	10	-	ug/l	4 J	ug/l	10
Chloroform	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
1,2-Dichloroethane	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
2-Butanone	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
1,1,1-Trichloroethane	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
Carbon tetrachloride	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
Bromodichloromethane	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
1,2-Dichloropropane	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
cis-1,3-Dichloropropene	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
Trichloroethene	1 J	ug/l	10	5 J	ug/l	10	-	ug/l	150	ug/l	10
Dibromochloromethane	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
1,1,2-Trichloroethane	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
Benzene	10 U	ug/l	10	100	ug/l	10	-	ug/l	10 U	ug/l	10
trans-1,3-Dichloropropene	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
Bromoform	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
4-Methyl-2-pentanone	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
2-Hexanone	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
Tetrachloroethene	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
Toluene	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
1,1,2,2-Tetrachloroethane	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
Chlorobenzene	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
Ethylbenzene	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
Styrene	10 U	ug/l	10	10 U	ug/l	10	-	ug/l	10 U	ug/l	10
Xylenes (total)	10 U	ug/l	10	1 J	ug/l	10	-	ug/l	10 U	ug/l	10

CLP SEMIVOLATILES 90-SOW

ug/l

Phenol	10 U	ug/l	10	-	ug/l	-	ug/l	10 U	ug/l	10
bis(2-Chloroethyl) ether	10 U	ug/l	10	-	ug/l	-	ug/l	10 U	ug/l	10
2-Chlorophenol	10 U	ug/l	10	-	ug/l	-	ug/l	10 U	ug/l	10
1,3-Dichlorobenzene	10 U	ug/l	10	-	ug/l	-	ug/l	10 U	ug/l	10
1,4-Dichlorobenzene	10 U	ug/l	10	-	ug/l	-	ug/l	10 U	ug/l	10

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	RB920007	ME390005	RB920008	RB956002								
Site	WHITING	WHITING	WHITING	WHITING								
Locator	15G00702	15G00702	15G00702F	15G00703								
Collect Date:	31-JUL-96	30-JUL-97	31-JUL-96	05-AUG-96								
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
1,2-Dichlorobenzene	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
2-Methylphenol	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
2,2-oxybis(1-Chloropropane)	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
4-Methylphenol	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
N-Nitroso-di-n-propylamine	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
Hexachloroethane	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
Nitrobenzene	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
Isophorone	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
2-Nitrophenol	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
2,4-Dimethylphenol	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
bis(2-Chloroethoxy) methane	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
2,4-Dichlorophenol	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
1,2,4-Trichlorobenzene	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
Naphthalene	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
4-Chloroaniline	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
Hexachlorobutadiene	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
4-Chloro-3-methylphenol	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
2-Methylnaphthalene	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
Hexachlorocyclopentadiene	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
2,4,6-Trichlorophenol	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
2,4,5-Trichlorophenol	25 U	ug/l	25	-	ug/l	-	-	ug/l	25 U	ug/l	25	
2-Chloronaphthalene	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
2-Nitroaniline	25 U	ug/l	25	-	ug/l	-	-	ug/l	25 U	ug/l	25	
Dimethylphthalate	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
Acenaphthylene	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
2,6-Dinitrotoluene	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
3-Nitroaniline	25 U	ug/l	25	-	ug/l	-	-	ug/l	25 U	ug/l	25	
Acenaphthene	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
2,4-Dinitrophenol	25 U	ug/l	25	-	ug/l	-	-	ug/l	25 U	ug/l	25	
4-Nitrophenol	25 U	ug/l	25	-	ug/l	-	-	ug/l	25 U	ug/l	25	
Dibenzofuran	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
2,4-Dinitrotoluene	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
Diethylphthalate	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
4-Chlorophenyl-phenylether	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
Fluorene	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
4-Nitroaniline	25 U	ug/l	25	-	ug/l	-	-	ug/l	25 U	ug/l	25	
4,6-Dinitro-2-methylphenol	25 U	ug/l	25	-	ug/l	-	-	ug/l	25 U	ug/l	25	
N-Nitrosodiphenylamine	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
4-Bromophenyl-phenylether	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
Hexachlorobenzene	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
Pentachlorophenol	25 U	ug/l	25	-	ug/l	-	-	ug/l	25 U	ug/l	25	
Phenanthrene	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
Anthracene	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
Carbazole	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
Di-n-butylphthalate	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
Fluoranthene	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
Pyrene	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
Butylbenzylphthalate	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
3,3-Dichlorobenzidine	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
Benzo (a) anthracene	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
Chrysene	10 U	ug/l	10	-	ug/l	-	-	ug/l	10 U	ug/l	10	
bis(2-Ethylhexyl) phthalate	10 U	ug/l	10	-	ug/l	-	-	ug/l	2 J	ug/l	10	

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	RB920007	ME390005	RB920008	RB956002
Site	WHITING	WHITING	WHITING	WHITING
Locator	15G00702	15G00702	15G00702F	15G00703
Collect Date:	31-JUL-96	30-JUL-97	31-JUL-96	05-AUG-96

	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL		
Di-n-octylphthalate	10	U	ug/l	10	-		ug/l	-	-		ug/l	10		
Benzo (b) fluoranthene	10	U	ug/l	10	-		ug/l	-	-		ug/l	10		
Benzo (k) fluoranthene	10	U	ug/l	10	-		ug/l	-	-		ug/l	10		
Benzo (a) pyrene	10	U	ug/l	10	-		ug/l	-	-		ug/l	10		
Indeno (1,2,3-cd) pyrene	10	UJ	ug/l	10	-		ug/l	-	-		ug/l	10		
Dibenzo (a,h) anthracene	10	UJ	ug/l	10	-		ug/l	-	-		ug/l	10		
Benzo (g,h,i) perylene	10	UJ	ug/l	10	-		ug/l	-	-		ug/l	10		
CLP PESTICIDES/PCBS 90-SOW ug/l														
alpha-BHC	.05	U	ug/l	.05	-		ug/l	-	-		ug/l	.05		
beta-BHC	.05	U	ug/l	.05	-		ug/l	-	-		ug/l	.05		
delta-BHC	.05	U	ug/l	.05	-		ug/l	-	-		ug/l	.05		
gamma-BHC (Lindane)	.05	U	ug/l	.05	-		ug/l	-	-		ug/l	.05		
Heptachlor	.05	U	ug/l	.05	-		ug/l	-	-		ug/l	.05		
Aldrin	.05	U	ug/l	.05	-		ug/l	-	-		ug/l	.05		
Heptachlor epoxide	.05	U	ug/l	.05	-		ug/l	-	-		ug/l	.05		
Endosulfan I	.05	U	ug/l	.05	-		ug/l	-	-		ug/l	.05		
Dieldrin	.1	U	ug/l	.1	-		ug/l	-	-		ug/l	.1		
4,4-DDE	.1	U	ug/l	.1	-		ug/l	-	-		ug/l	.1		
Endrin	.1	U	ug/l	.1	-		ug/l	-	-		ug/l	.1		
Endosulfan II	.1	U	ug/l	.1	-		ug/l	-	-		ug/l	.1		
4,4-DDD	.1	U	ug/l	.1	-		ug/l	-	-		ug/l	.1		
Endosulfan sulfate	.1	U	ug/l	.1	-		ug/l	-	-		ug/l	.1		
4,4-DDT	.1	UJ	ug/l	.1	-		ug/l	-	-		ug/l	.1		
Methoxychlor	.5	U	ug/l	.5	-		ug/l	-	-		ug/l	.5		
Endrin ketone	.1	U	ug/l	.1	-		ug/l	-	-		ug/l	.1		
Endrin aldehyde	.1	U	ug/l	.1	-		ug/l	-	-		ug/l	.1		
alpha-Chlordane	.05	U	ug/l	.05	-		ug/l	-	-		ug/l	.05		
gamma-Chlordane	.05	U	ug/l	.05	-		ug/l	-	-		ug/l	.05		
Toxaphene	5	U	ug/l	5	-		ug/l	-	-		ug/l	5		
Aroclor-1016	1	U	ug/l	1	-		ug/l	-	-		ug/l	1		
Aroclor-1221	2	U	ug/l	2	-		ug/l	-	-		ug/l	2		
Aroclor-1232	1	U	ug/l	1	-		ug/l	-	-		ug/l	1		
Aroclor-1242	1	U	ug/l	1	-		ug/l	-	-		ug/l	1		
Aroclor-1248	1	U	ug/l	1	-		ug/l	-	-		ug/l	1		
Aroclor-1254	1	U	ug/l	1	-		ug/l	-	-		ug/l	1		
Aroclor-1260	1	U	ug/l	1	-		ug/l	-	-		ug/l	1		
CLP METALS AND CYANIDE ug/l														
Aluminum	500		ug/l		538		ug/l	200	10.4	U	ug/l	48.2	U	ug/l
Antimony	8.6	U	ug/l		60	U	ug/l	60	8.6	U	ug/l	8.6	U	ug/l
Arsenic	.6	J	ug/l		10	U	ug/l	10	.5	U	ug/l	.5	U	ug/l
Barium	15.5	J	ug/l		15.4	J	ug/l	200	11.8	J	ug/l	7.8	J	ug/l
Beryllium	.3	U	ug/l		5	U	ug/l	5	.3	U	ug/l	.3	U	ug/l
Cadmium	1.2	U	ug/l		5	U	ug/l	5	1.2	U	ug/l	1.2	U	ug/l
Calcium	2460	J	ug/l		1350	J	ug/l	5000	1990	J	ug/l	783	J	ug/l
Chromium	2	U	ug/l		10	U	ug/l	10	2	U	ug/l	2.6	J	ug/l
Cobalt	2.3	U	ug/l		50	U	ug/l	50	2.3	U	ug/l	2.3	U	ug/l
Copper	3.3	J	ug/l		25	U	ug/l	25	1.5	J	ug/l	1.1	U	ug/l
Iron	380		ug/l		388		ug/l	100	6.9	U	ug/l	63.6	J	ug/l
Lead	1.5	U	ug/l		3	UJ	ug/l	3	.6	U	ug/l	.5	U	ug/l
Magnesium	474	J	ug/l		501	J	ug/l	5000	386	J	ug/l	279	J	ug/l

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

	Lab Sample Number: RB920007			ME390005			RB920008			RB956002			
	WHITING			WHITING			WHITING			WHITING			
	15G00702			15G00702			15G00702F			15G00703			
	31-JUL-96			30-JUL-97			31-JUL-96			05-AUG-96			
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	
Manganese	70.4	ug/l		50.7	ug/l		15	62.3	ug/l		14.5	J	ug/l
Mercury	.1	U		.2	U		.2	.1	U		.1	U	ug/l
Nickel	7.3	U		40	U		40	7.3	U		7.4	J	ug/l
Potassium	698	J		5000	U		5000	714	J		451	J	ug/l
Selenium	.6	U		5	UJ		5	.6	U		.6	U	ug/l
Silver	2.5	U		10	U		10	2.5	U		2.5	U	ug/l
Sodium	9090	ug/l		4130	J		5000	7340	ug/l		2890	J	ug/l
Thallium	.6	U		10	U		10	.6	U		.6	U	ug/l
Vanadium	1.9	J		50	U		50	1.2	U		1.2	U	ug/l
Zinc	65.1	ug/l		20	U		20	38.6	ug/l		66.3	ug/l	
Cyanide	7.6	U		-	ug/l		-	-	ug/l		1.5	U	ug/l

Locator Annotations: A = DUPLICATE SAMPLE B = SHALLOW SAMPLE C = INTERMEDIATE SAMPLE CD = DOUBLE INTERMEDIATE SAMPLE D = DEEP SAMPLE

Qualifiers: U = NOT DETECTED J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED R = RESULT IS REJECTED AND UNUSABLE

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	ME404003	ME404004	RB980005	ME441002					
Site	WHITING	WHITING	WHITING	WHITING					
Locator	15G00703	15G00703D	15G00801	15G00801					
Collect Date:	30-JUL-97	30-JUL-97	13-AUG-96	04-AUG-97					
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

CLP VOLATILES 90-SOW	ug/l											
Chloromethane	10 U	ug/l	10	10 U	ug/l	10	10 UJ	ug/l	10	10 U	ug/l	10
Bromomethane	10 U	ug/l	10									
Vinyl chloride	10 U	ug/l	10									
Chloroethane	10 U	ug/l	10	10 U	ug/l	10	10 UJ	ug/l	10	10 U	ug/l	10
Methylene chloride	10 U	ug/l	10									
Acetone	10 UJ	ug/l	10									
Carbon disulfide	10 U	ug/l	10									
1,1-Dichloroethene	2 J	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,1-Dichloroethane	10 U	ug/l	10	10 U	ug/l	10	10 UJ	ug/l	10	10 U	ug/l	10
1,2-Dichloroethene (total)	1 J	ug/l	10	2 J	ug/l	10	1 J	ug/l	10	10 U	ug/l	10
Chloroform	10 U	ug/l	10									
1,2-Dichloroethane	10 U	ug/l	10									
2-Butanone	10 U	ug/l	10	10 U	ug/l	10	10 UJ	ug/l	10	10 U	ug/l	10
1,1,1-Trichloroethane	10 U	ug/l	10									
Carbon tetrachloride	10 U	ug/l	10									
Bromodichloromethane	10 U	ug/l	10									
1,2-Dichloropropane	10 U	ug/l	10									
cis-1,3-Dichloropropene	10 U	ug/l	10									
Trichloroethene	36	ug/l	10	38	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Dibromochloromethane	10 U	ug/l	10									
1,1,2-Trichloroethane	10 U	ug/l	10									
Benzene	10 U	ug/l	10									
trans-1,3-Dichloropropene	10 U	ug/l	10									
Bromoform	10 U	ug/l	10									
4-Methyl-2-pentanone	10 U	ug/l	10									
2-Hexanone	10 U	ug/l	10									
Tetrachloroethene	10 U	ug/l	10									
Toluene	10 U	ug/l	10									
1,1,2,2-Tetrachloroethane	10 U	ug/l	10									
Chlorobenzene	10 U	ug/l	10	10 U	ug/l	10	3 J	ug/l	10	4 J	ug/l	10
Ethylbenzene	10 U	ug/l	10									
Styrene	10 U	ug/l	10									
Xylenes (total)	10 U	ug/l	10									
CLP SEMIVOLATILES 90-SOW	ug/l											
Phenol	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
bis(2-Chloroethyl) ether	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
2-Chlorophenol	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
1,3-Dichlorobenzene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
1,4-Dichlorobenzene	-	ug/l		-	ug/l		8 J	ug/l	10	-	ug/l	

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:
Site
Locator
Collect Date:

ME404003
WHITING
15G00703
30-JUL-97

ME404004
WHITING
15G00703D
30-JUL-97

RB980005
WHITING
15G00801
13-AUG-96

ME441002
WHITING
15G00801
04-AUG-97

VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL

1,2-Dichlorobenzene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2-Methylphenol	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2,2-oxybis(1-Chloropropane)	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
4-Methylphenol	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
N-Nitroso-di-n-propylamine	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Hexachloroethane	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Nitrobenzene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Isophorone	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2-Nitrophenol	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2,4-Dimethylphenol	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
bis(2-Chloroethoxy) methane	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2,4-Dichlorophenol	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
1,2,4-Trichlorobenzene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Naphthalene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
4-Chloroaniline	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Hexachlorobutadiene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
4-Chloro-3-methylphenol	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2-Methylnaphthalene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Hexachlorocyclopentadiene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2,4,6-Trichlorophenol	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2,4,5-Trichlorophenol	-	ug/l	-	ug/l	-	25 U	ug/l	25	-	ug/l
2-Chloronaphthalene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2-Nitroaniline	-	ug/l	-	ug/l	-	25 U	ug/l	25	-	ug/l
Dimethylphthalate	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Acenaphthylene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2,6-Dinitrotoluene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
3-Nitroaniline	-	ug/l	-	ug/l	-	25 U	ug/l	25	-	ug/l
Acenaphthene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2,4-Dinitrophenol	-	ug/l	-	ug/l	-	25 UJ	ug/l	25	-	ug/l
4-Nitrophenol	-	ug/l	-	ug/l	-	25 U	ug/l	25	-	ug/l
Dibenzofuran	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
2,4-Dinitrotoluene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Diethylphthalate	-	ug/l	-	ug/l	-	1 J	ug/l	10	-	ug/l
4-Chlorophenyl-phenylether	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Fluorene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
4-Nitroaniline	-	ug/l	-	ug/l	-	25 UJ	ug/l	25	-	ug/l
4,6-Dinitro-2-methylphenol	-	ug/l	-	ug/l	-	25 UJ	ug/l	25	-	ug/l
N-Nitrosodiphenylamine	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
4-Bromophenyl-phenylether	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Hexachlorobenzene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Pentachlorophenol	-	ug/l	-	ug/l	-	25 UJ	ug/l	25	-	ug/l
Phenanthrene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Anthracene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Carbazole	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Di-n-butylphthalate	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Fluoranthene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Pyrene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Butylbenzylphthalate	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
3,3-Dichlorobenzidine	-	ug/l	-	ug/l	-	10 UJ	ug/l	10	-	ug/l
Benzo (a) anthracene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
Chrysene	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l
bis(2-Ethylhexyl) phthalate	-	ug/l	-	ug/l	-	10 U	ug/l	10	-	ug/l

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:
Site
Locator
Collect Date:

ME404003
WHITING
15G00703
30-JUL-97

ME404004
WHITING
15G00703D
30-JUL-97

RB980005
WHITING
15G00801
13-AUG-96

ME441002
WHITING
15G00801
04-AUG-97

	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
Di-n-octylphthalate	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
Benzo (b) fluoranthene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
Benzo (k) fluoranthene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
Benzo (a) pyrene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
Indeno (1,2,3-cd) pyrene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
Dibenzo (a,h) anthracene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
Benzo (g,h,i) perylene	-	ug/l		-	ug/l		10 U	ug/l	10	-	ug/l	
CLP PESTICIDES/PCBS 90-SOW	ug/l											
alpha-BHC	-	ug/l		-	ug/l		.05 UJ	ug/l	.05	-	ug/l	
beta-BHC	-	ug/l		-	ug/l		.05 UJ	ug/l	.05	-	ug/l	
delta-BHC	-	ug/l		-	ug/l		.05 UJ	ug/l	.05	-	ug/l	
gamma-BHC (Lindane)	-	ug/l		-	ug/l		.05 UJ	ug/l	.05	-	ug/l	
Heptachlor	-	ug/l		-	ug/l		.05 UJ	ug/l	.05	-	ug/l	
Aldrin	-	ug/l		-	ug/l		.05 UJ	ug/l	.05	-	ug/l	
Heptachlor epoxide	-	ug/l		-	ug/l		.05 UJ	ug/l	.05	-	ug/l	
Endosulfan I	-	ug/l		-	ug/l		.05 UJ	ug/l	.05	-	ug/l	
Dieldrin	-	ug/l		-	ug/l		.1 UJ	ug/l	.1	-	ug/l	
4,4-DDE	-	ug/l		-	ug/l		.1 UJ	ug/l	.1	-	ug/l	
Endrin	-	ug/l		-	ug/l		.1 UJ	ug/l	.1	-	ug/l	
Endosulfan II	-	ug/l		-	ug/l		.1 UJ	ug/l	.1	-	ug/l	
4,4-DDD	-	ug/l		-	ug/l		.1 UJ	ug/l	.1	-	ug/l	
Endosulfan sulfate	-	ug/l		-	ug/l		.1 UJ	ug/l	.1	-	ug/l	
4,4-DDT	-	ug/l		-	ug/l		.1 UJ	ug/l	.1	-	ug/l	
Methoxychlor	-	ug/l		-	ug/l		.5 UJ	ug/l	.5	-	ug/l	
Endrin ketone	-	ug/l		-	ug/l		.1 UJ	ug/l	.1	-	ug/l	
Endrin aldehyde	-	ug/l		-	ug/l		.1 UJ	ug/l	.1	-	ug/l	
alpha-Chlordane	-	ug/l		-	ug/l		.05 UJ	ug/l	.05	-	ug/l	
gamma-Chlordane	-	ug/l		-	ug/l		.05 UJ	ug/l	.05	-	ug/l	
Toxaphene	-	ug/l		-	ug/l		5 UJ	ug/l	5	-	ug/l	
Aroclor-1016	-	ug/l		-	ug/l		1 UJ	ug/l	1	-	ug/l	
Aroclor-1221	-	ug/l		-	ug/l		2 UJ	ug/l	2	-	ug/l	
Aroclor-1232	-	ug/l		-	ug/l		1 UJ	ug/l	1	-	ug/l	
Aroclor-1242	-	ug/l		-	ug/l		1 UJ	ug/l	1	-	ug/l	
Aroclor-1248	-	ug/l		-	ug/l		1 UJ	ug/l	1	-	ug/l	
Aroclor-1254	-	ug/l		-	ug/l		1 UJ	ug/l	1	-	ug/l	
Aroclor-1260	-	ug/l		-	ug/l		1 UJ	ug/l	1	-	ug/l	
CLP METALS AND CYANIDE	ug/l											
Aluminum	200 U	ug/l	200	200 U	ug/l	200	53.5 U	ug/l		143 J	ug/l	200
Antimony	60 U	ug/l	60	21.2 J	ug/l	60	8.6 U	ug/l		60 U	ug/l	60
Arsenic	10 U	ug/l	10	10 U	ug/l	10	1.2 J	ug/l		2 J	ug/l	10
Barium	200 U	ug/l	200	200 U	ug/l	200	69.8 J	ug/l		34.7 J	ug/l	200
Beryllium	5 U	ug/l	5	5 U	ug/l	5	.3 U	ug/l		5 U	ug/l	5
Cadmium	5 U	ug/l	5	5 U	ug/l	5	1.2 U	ug/l		5 U	ug/l	5
Calcium	5000 U	ug/l	5000	5000 U	ug/l	5000	2570 J	ug/l		1870 J	ug/l	5000
Chromium	10 U	ug/l	10	10 U	ug/l	10	2 U	ug/l		10 U	ug/l	10
Cobalt	50 U	ug/l	50	50 U	ug/l	50	2.3 U	ug/l		50 U	ug/l	50
Copper	25 U	ug/l	25	25 U	ug/l	25	1.1 U	ug/l		25 U	ug/l	25
Iron	107 U	ug/l	100	115 U	ug/l	100	22100 U	ug/l		4760 U	ug/l	100
Lead	3 U	ug/l	3	5.1 U	ug/l	3	.5 U	ug/l		3 U	ug/l	3
Magnesium	280 J	ug/l	5000	266 J	ug/l	5000	2330 J	ug/l		1370 J	ug/l	5000

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

	Lab Sample Number: ME404003			ME404004			RB980005			ME441002		
	Site	WHITING		WHITING			WHITING		WHITING			
	Locator	15G00703		15G00703D			15G00801		15G00801			
	Collect Date:	30-JUL-97		30-JUL-97			13-AUG-96		04-AUG-97			
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
Manganese	6.9 J	ug/l	15	6.5 J	ug/l	15	150	ug/l		84.6	ug/l	15
Mercury	.2 U	ug/l	.2	.2 U	ug/l	.2	.1 U	ug/l		.2 U	ug/l	.2
Nickel	40 U	ug/l	40	40 U	ug/l	40	7.3 U	ug/l		40 U	ug/l	40
Potassium	5000 U	ug/l	5000	5000 U	ug/l	5000	1080 J	ug/l		5000 U	ug/l	5000
Selenium	5 U	ug/l	5	5 UJ	ug/l	5	.6 U	ug/l		5 U	ug/l	5
Silver	10 U	ug/l	10	10 U	ug/l	10	2.5 U	ug/l		10 U	ug/l	10
Sodium	2040 J	ug/l	5000	1820 J	ug/l	5000	2160 J	ug/l		1830 J	ug/l	5000
Thallium	10 U	ug/l	10	10 U	ug/l	10	.6 U	ug/l		10 U	ug/l	10
Vanadium	50 U	ug/l	50	50 U	ug/l	50	1.2 U	ug/l		50 U	ug/l	50
Zinc	20 U	ug/l	20	20 U	ug/l	20	2.2 U	ug/l		20 U	ug/l	20
Cyanide	-	ug/l		-	ug/l		2.2 U	ug/l		-	ug/l	

Locator Annotations: A = DUPLICATE SAMPLE B = SHALLOW SAMPLE C = INTERMEDIATE SAMPLE CD = DOUBLE INTERMEDIATE SAMPLE D = DEEP SAMPLE

Qualifiers: U = NOT DETECTED J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED R = RESULT IS REJECTED AND UNUSABLE

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:
Site
Locator
Collect Date:

ME441003
WHITING
15G00801D
04-AUG-97

RB980004
WHITING
15G00802
13-AUG-96

MC424006
WHITING
15G00802
20-NOV-96

ME441004
WHITING
15G00802
04-AUG-97

VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL

CLP VOLATILES 90-SOW

ug/l

Chloromethane	10 U	ug/l	10	10 UJ	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Bromomethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Vinyl chloride	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Chloroethane	10 U	ug/l	10	10 UJ	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Methylene chloride	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Acetone	10 UJ	ug/l	10	10 UJ	ug/l	10	10 U	ug/l	10	10 UJ	ug/l	10
Carbon disulfide	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,1-Dichloroethene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,1-Dichloroethane	10 U	ug/l	10	10 UJ	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,2-Dichloroethene (total)	10 U	ug/l	10	10 U	ug/l	10	3 J	ug/l	10	1 J	ug/l	10
Chloroform	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,2-Dichloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
2-Butanone	10 U	ug/l	10	10 UJ	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,1,1-Trichloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Carbon tetrachloride	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Bromodichloromethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,2-Dichloropropane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
cis-1,3-Dichloropropene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Trichloroethene	10 U	ug/l	10	5 J	ug/l	10	15	ug/l	10	11	ug/l	10
Dibromochloromethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,1,2-Trichloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Benzene	10 U	ug/l	10	5 J	ug/l	10	84	ug/l	10	19	ug/l	10
trans-1,3-Dichloropropene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Bromoform	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
4-Methyl-2-pentanone	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
2-Hexanone	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Tetrachloroethene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Toluene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
1,1,2,2-Tetrachloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Chlorobenzene	4 J	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Ethylbenzene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Styrene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10
Xylenes (total)	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10

CLP SEMIVOLATILES 90-SOW

ug/l

Phenol	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
bis(2-Chloroethyl) ether	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
2-Chlorophenol	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
1,3-Dichlorobenzene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
1,4-Dichlorobenzene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	ME441003	RB980004	MC424006	ME441004							
Site	WHITING	WHITING	WHITING	WHITING							
Locator	15G00801D	15G00802	15G00802	15G00802							
Collect Date:	04-AUG-97	13-AUG-96	20-NOV-96	04-AUG-97							
VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
1,2-Dichlorobenzene	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
2-Methylphenol	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
2,2-oxybis(1-Chloropropane)	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
4-Methylphenol	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
N-Nitroso-di-n-propylamine	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
Hexachloroethane	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
Nitrobenzene	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
Isophorone	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
2-Nitrophenol	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
2,4-Dimethylphenol	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
bis(2-Chloroethoxy) methane	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
2,4-Dichlorophenol	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
1,2,4-Trichlorobenzene	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
Naphthalene	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
4-Chloroaniline	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
Hexachlorobutadiene	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
4-Chloro-3-methylphenol	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
2-Methylnaphthalene	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
Hexachlorocyclopentadiene	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
2,4,6-Trichlorophenol	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
2,4,5-Trichlorophenol	-	ug/l	25 U	ug/l	25	-	ug/l	-	-	ug/l	-
2-Chloronaphthalene	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
2-Nitroaniline	-	ug/l	25 U	ug/l	25	-	ug/l	-	-	ug/l	-
Dimethylphthalate	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
Acenaphthylene	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
2,6-Dinitrotoluene	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
3-Nitroaniline	-	ug/l	25 U	ug/l	25	-	ug/l	-	-	ug/l	-
Acenaphthene	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
2,4-Dinitrophenol	-	ug/l	25 UJ	ug/l	25	-	ug/l	-	-	ug/l	-
4-Nitrophenol	-	ug/l	25 U	ug/l	25	-	ug/l	-	-	ug/l	-
Dibenzofuran	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
2,4-Dinitrotoluene	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
Diethylphthalate	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
4-Chlorophenyl-phenylether	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
Fluorene	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
4-Nitroaniline	-	ug/l	25 UJ	ug/l	25	-	ug/l	-	-	ug/l	-
4,6-Dinitro-2-methylphenol	-	ug/l	25 UJ	ug/l	25	-	ug/l	-	-	ug/l	-
N-Nitrosodiphenylamine	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
4-Bromophenyl-phenylether	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
Hexachlorobenzene	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
Pentachlorophenol	-	ug/l	25 UJ	ug/l	25	-	ug/l	-	-	ug/l	-
Phenanthrene	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
Anthracene	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
Carbazole	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
Di-n-butylphthalate	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
Fluoranthene	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
Pyrene	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
Butylbenzylphthalate	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
3,3-Dichlorobenzidine	-	ug/l	10 UJ	ug/l	10	-	ug/l	-	-	ug/l	-
Benzo (a) anthracene	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
Chrysene	-	ug/l	10 U	ug/l	10	-	ug/l	-	-	ug/l	-
bis(2-Ethylhexyl) phthalate	-	ug/l	5 J	ug/l	10	-	ug/l	-	-	ug/l	-

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	ME441003	RB980004	MC424006	ME441004
Site	WHITING	WHITING	WHITING	WHITING
Locator	15G00801D	15G00802	15G00802	15G00802
Collect Date:	04-AUG-97	13-AUG-96	20-NOV-96	04-AUG-97

	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
Di-n-octylphthalate	-	ug/l		10 UJ	ug/l	10	-	ug/l		-	ug/l	
Benzo (b) fluoranthene	-	ug/l		10 UJ	ug/l	10	-	ug/l		-	ug/l	
Benzo (k) fluoranthene	-	ug/l		10 UJ	ug/l	10	-	ug/l		-	ug/l	
Benzo (a) pyrene	-	ug/l		10 UJ	ug/l	10	-	ug/l		-	ug/l	
Indeno (1,2,3-cd) pyrene	-	ug/l		10 UJ	ug/l	10	-	ug/l		-	ug/l	
Dibenzo (a,h) anthracene	-	ug/l		10 UJ	ug/l	10	-	ug/l		-	ug/l	
Benzo (g,h,i) perylene	-	ug/l		10 UJ	ug/l	10	-	ug/l		-	ug/l	
CLP PESTICIDES/PCBS 90-SOW	ug/l											
alpha-BHC	-	ug/l		.05 UJ	ug/l	.05	-	ug/l		-	ug/l	
beta-BHC	-	ug/l		.05 U	ug/l	.05	-	ug/l		-	ug/l	
delta-BHC	-	ug/l		.05 UJ	ug/l	.05	-	ug/l		-	ug/l	
gamma-BHC (Lindane)	-	ug/l		.05 U	ug/l	.05	-	ug/l		-	ug/l	
Heptachlor	-	ug/l		.05 U	ug/l	.05	-	ug/l		-	ug/l	
Aldrin	-	ug/l		.05 U	ug/l	.05	-	ug/l		-	ug/l	
Heptachlor epoxide	-	ug/l		.05 U	ug/l	.05	-	ug/l		-	ug/l	
Endosulfan I	-	ug/l		.05 U	ug/l	.05	-	ug/l		-	ug/l	
Dieldrin	-	ug/l		.1 U	ug/l	.1	-	ug/l		-	ug/l	
4,4-DDE	-	ug/l		.1 U	ug/l	.1	-	ug/l		-	ug/l	
Endrin	-	ug/l		.1 U	ug/l	.1	-	ug/l		-	ug/l	
Endosulfan II	-	ug/l		.1 U	ug/l	.1	-	ug/l		-	ug/l	
4,4-DDD	-	ug/l		.1 U	ug/l	.1	-	ug/l		-	ug/l	
Endosulfan sulfate	-	ug/l		.1 U	ug/l	.1	-	ug/l		-	ug/l	
4,4-DDT	-	ug/l		.1 U	ug/l	.1	-	ug/l		-	ug/l	
Methoxychlor	-	ug/l		.5 U	ug/l	.5	-	ug/l		-	ug/l	
Endrin ketone	-	ug/l		.1 U	ug/l	.1	-	ug/l		-	ug/l	
Endrin aldehyde	-	ug/l		.1 U	ug/l	.1	-	ug/l		-	ug/l	
alpha-Chlordane	-	ug/l		.05 U	ug/l	.05	-	ug/l		-	ug/l	
gamma-Chlordane	-	ug/l		.05 U	ug/l	.05	-	ug/l		-	ug/l	
Toxaphene	-	ug/l		5 U	ug/l	5	-	ug/l		-	ug/l	
Aroclor-1016	-	ug/l		1 U	ug/l	1	-	ug/l		-	ug/l	
Aroclor-1221	-	ug/l		2 U	ug/l	2	-	ug/l		-	ug/l	
Aroclor-1232	-	ug/l		1 U	ug/l	1	-	ug/l		-	ug/l	
Aroclor-1242	-	ug/l		1 U	ug/l	1	-	ug/l		-	ug/l	
Aroclor-1248	-	ug/l		1 U	ug/l	1	-	ug/l		-	ug/l	
Aroclor-1254	-	ug/l		1 U	ug/l	1	-	ug/l		-	ug/l	
Aroclor-1260	-	ug/l		1 U	ug/l	1	-	ug/l		-	ug/l	
CLP METALS AND CYANIDE	ug/l											
Aluminum	116 J	ug/l	200	127 J	ug/l		-	ug/l		200 U	ug/l	200
Antimony	60 U	ug/l	60	8.6 U	ug/l		-	ug/l		60 U	ug/l	60
Arsenic	10 U	ug/l	10	.5 U	ug/l		-	ug/l		10 U	ug/l	10
Barium	37.3 J	ug/l	200	21.9 J	ug/l		-	ug/l		9.3 J	ug/l	200
Beryllium	5 U	ug/l	5	.3 U	ug/l		-	ug/l		5 U	ug/l	5
Cadmium	5 U	ug/l	5	1.2 U	ug/l		-	ug/l		5 U	ug/l	5
Calcium	2010 J	ug/l	5000	5760	ug/l		-	ug/l		1760 J	ug/l	5000
Chromium	10 U	ug/l	10	2 U	ug/l		-	ug/l		10 U	ug/l	10
Cobalt	50 U	ug/l	50	2.3 U	ug/l		-	ug/l		50 U	ug/l	50
Copper	25 U	ug/l	25	1.8 J	ug/l		-	ug/l		25 U	ug/l	25
Iron	4940	ug/l	100	118	ug/l		-	ug/l		75 J	ug/l	100
Lead	3 U	ug/l	3	.5 U	ug/l		-	ug/l		3 U	ug/l	3
Magnesium	1470 J	ug/l	5000	796 J	ug/l		-	ug/l		381 J	ug/l	5000

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	ME441003	RB980004	MC424006	ME441004
Site	WHITING	WHITING	WHITING	WHITING
Locator	15G00801D	15G00802	15G00802	15G00802
Collect Date:	04-AUG-97	13-AUG-96	20-NOV-96	04-AUG-97

	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
Manganese	91.4	ug/l	15	215	ug/l		-	ug/l		106	ug/l	15
Mercury	.2 U	ug/l	.2	.1 U	ug/l		-	ug/l		.2 U	ug/l	.2
Nickel	40 U	ug/l	40	7.3 U	ug/l		-	ug/l		40 U	ug/l	40
Potassium	5000 U	ug/l	5000	649 J	ug/l		-	ug/l		5000 U	ug/l	5000
Selenium	5 U	ug/l	5	.6 U	ug/l		-	ug/l		5 U	ug/l	5
Silver	10 U	ug/l	10	2.5 U	ug/l		-	ug/l		10 U	ug/l	10
Sodium	1960 J	ug/l	5000	18600	ug/l		-	ug/l		4890 J	ug/l	5000
Thallium	.9 J	ug/l	10	.6 U	ug/l		-	ug/l		10 U	ug/l	10
Vanadium	50 U	ug/l	50	1.2 U	ug/l		-	ug/l		50 U	ug/l	50
Zinc	20 U	ug/l	20	197	ug/l		-	ug/l		20 U	ug/l	20
Cyanide	-	ug/l		4.2 U	ug/l		-	ug/l		-	ug/l	

Locator Annotations: A = DUPLICATE SAMPLE B = SHALLOW SAMPLE C = INTERMEDIATE SAMPLE CD = DOUBLE INTERMEDIATE SAMPLE D = DEEP SAMPLE

Qualifiers: U = NOT DETECTED J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED R = RESULT IS REJECTED AND UNUSABLE

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:
Site
Locator
Collect Date:

RB980011
WHITING
15G00802F
13-AUG-96

RB980004R
WHITING
15G00802RE
13-AUG-96

RB980007
WHITING
15G00803
14-AUG-96

MC424007
WHITING
15G00803
20-NOV-96

VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL VALUE QUAL UNITS DL

CLP VOLATILES 90-SOW

ug/l

Chloromethane	-	ug/l	-	ug/l	-	10 UJ	ug/l	10	10 U	ug/l	10
Bromomethane	-	ug/l	-	ug/l	-	10 U	ug/l	10	10 U	ug/l	10
Vinyl chloride	-	ug/l	-	ug/l	-	10 U	ug/l	10	10 U	ug/l	10
Chloroethane	-	ug/l	-	ug/l	-	10 UJ	ug/l	10	10 U	ug/l	10
Methylene chloride	-	ug/l	-	ug/l	-	10 U	ug/l	10	10 U	ug/l	10
Acetone	-	ug/l	-	ug/l	-	25 UJ	ug/l	25	10 U	ug/l	10
Carbon disulfide	-	ug/l	-	ug/l	-	10 U	ug/l	10	10 U	ug/l	10
1,1-Dichloroethane	-	ug/l	-	ug/l	-	10 U	ug/l	10	10 U	ug/l	10
1,1-Dichloroethane	-	ug/l	-	ug/l	-	10 U	ug/l	10	10 U	ug/l	10
1,2-Dichloroethane (total)	-	ug/l	-	ug/l	-	10 U	ug/l	10	10 U	ug/l	10
Chloroform	-	ug/l	-	ug/l	-	10 U	ug/l	10	10 U	ug/l	10
1,2-Dichloroethane	-	ug/l	-	ug/l	-	10 U	ug/l	10	10 U	ug/l	10
2-Butanone	-	ug/l	-	ug/l	-	7 J	ug/l	10	10 U	ug/l	10
1,1,1-Trichloroethane	-	ug/l	-	ug/l	-	10 U	ug/l	10	10 U	ug/l	10
Carbon tetrachloride	-	ug/l	-	ug/l	-	10 U	ug/l	10	10 U	ug/l	10
Bromodichloromethane	-	ug/l	-	ug/l	-	10 U	ug/l	10	10 U	ug/l	10
1,2-Dichloropropane	-	ug/l	-	ug/l	-	10 U	ug/l	10	10 U	ug/l	10
cis-1,3-Dichloropropene	-	ug/l	-	ug/l	-	10 U	ug/l	10	10 U	ug/l	10
Trichloroethene	-	ug/l	-	ug/l	-	4 J	ug/l	10	5 J	ug/l	10
Dibromochloromethane	-	ug/l	-	ug/l	-	10 U	ug/l	10	10 U	ug/l	10
1,1,2-Trichloroethane	-	ug/l	-	ug/l	-	10 U	ug/l	10	10 U	ug/l	10
Benzene	-	ug/l	-	ug/l	-	10 U	ug/l	10	10 U	ug/l	10
trans-1,3-Dichloropropene	-	ug/l	-	ug/l	-	10 U	ug/l	10	10 U	ug/l	10
Bromoform	-	ug/l	-	ug/l	-	10 U	ug/l	10	10 U	ug/l	10
4-Methyl-2-pentanone	-	ug/l	-	ug/l	-	10 U	ug/l	10	10 U	ug/l	10
2-Hexanone	-	ug/l	-	ug/l	-	10 U	ug/l	10	10 U	ug/l	10
Tetrachloroethene	-	ug/l	-	ug/l	-	10 U	ug/l	10	10 U	ug/l	10
Toluene	-	ug/l	-	ug/l	-	10 U	ug/l	10	10 U	ug/l	10
1,1,2,2-Tetrachloroethane	-	ug/l	-	ug/l	-	10 U	ug/l	10	10 U	ug/l	10
Chlorobenzene	-	ug/l	-	ug/l	-	10 U	ug/l	10	10 U	ug/l	10
Ethylbenzene	-	ug/l	-	ug/l	-	10 U	ug/l	10	10 U	ug/l	10
Styrene	-	ug/l	-	ug/l	-	10 U	ug/l	10	10 U	ug/l	10
Xylenes (total)	-	ug/l	-	ug/l	-	10 U	ug/l	10	10 U	ug/l	10

CLP SEMIVOLATILES 90-SOW

ug/l

Phenol	-	ug/l	10 R	ug/l	10	10 U	ug/l	10	-	ug/l	
bis(2-Chloroethyl) ether	-	ug/l	10 R	ug/l	10	10 U	ug/l	10	-	ug/l	
2-Chlorophenol	-	ug/l	10 R	ug/l	10	10 U	ug/l	10	-	ug/l	
1,3-Dichlorobenzene	-	ug/l	10 R	ug/l	10	10 U	ug/l	10	-	ug/l	
1,4-Dichlorobenzene	-	ug/l	10 R	ug/l	10	10 U	ug/l	10	-	ug/l	

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	RB980011		RB980004R		RB980007		MC424007				
Site	WHITING		WHITING		WHITING		WHITING				
Locator	15G00802F		15G00802RE		15G00803		15G00803				
Collect Date:	13-AUG-96		13-AUG-96		14-AUG-96		20-NOV-96				
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL		
1,2-Dichlorobenzene	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
2-Methylphenol	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
2,2-oxybis(1-Chloropropane)	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
4-Methylphenol	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
N-Nitroso-di-n-propylamine	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
Hexachloroethane	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
Nitrobenzene	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
Isophorone	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
2-Nitrophenol	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
2,4-Dimethylphenol	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
bis(2-Chloroethoxy) methane	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
2,4-Dichlorophenol	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
1,2,4-Trichlorobenzene	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
Naphthalene	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
4-Chloroaniline	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
Hexachlorobutadiene	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
4-Chloro-3-methylphenol	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
2-Methylnaphthalene	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
Hexachlorocyclopentadiene	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
2,4,6-Trichlorophenol	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
2,4,5-Trichlorophenol	-	ug/l		25 R	ug/l	25	25 U	ug/l	25	-	ug/l
2-Chloronaphthalene	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
2-Nitroaniline	-	ug/l		25 R	ug/l	25	25 U	ug/l	25	-	ug/l
Dimethylphthalate	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
Acenaphthylene	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
2,6-Dinitrotoluene	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
3-Nitroaniline	-	ug/l		25 R	ug/l	25	25 U	ug/l	25	-	ug/l
Acenaphthene	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
2,4-Dinitrophenol	-	ug/l		25 R	ug/l	25	25 UJ	ug/l	25	-	ug/l
4-Nitrophenol	-	ug/l		25 R	ug/l	25	25 U	ug/l	25	-	ug/l
Dibenzofuran	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
2,4-Dinitrotoluene	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
Diethylphthalate	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
4-Chlorophenyl-phenylether	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
Fluorene	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
4-Nitroaniline	-	ug/l		25 R	ug/l	25	25 UJ	ug/l	25	-	ug/l
4,6-Dinitro-2-methylphenol	-	ug/l		25 R	ug/l	25	25 UJ	ug/l	25	-	ug/l
N-Nitrosodiphenylamine	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
4-Bromophenyl-phenylether	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
Hexachlorobenzene	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
Pentachlorophenol	-	ug/l		25 R	ug/l	25	25 UJ	ug/l	25	-	ug/l
Phenanthrene	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
Anthracene	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
Carbazole	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
Di-n-butylphthalate	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
Fluoranthene	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
Pyrene	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
Butylbenzylphthalate	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
3,3-Dichlorobenzidine	-	ug/l		10 R	ug/l	10	10 UJ	ug/l	10	-	ug/l
Benzo (a) anthracene	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
Chrysene	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l
bis(2-Ethylhexyl) phthalate	-	ug/l		5 R	ug/l	10	2 J	ug/l	10	-	ug/l

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	RB980011	RB980004R	RB980007	MC424007								
Site	WHITING	WHITING	WHITING	WHITING								
Locator	15G00802F	15G00802RE	15G00803	15G00803								
Collect Date:	13-AUG-96	13-AUG-96	14-AUG-96	20-NOV-96								
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

Di-n-octylphthalate	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l	
Benzo (b) fluoranthene	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l	
Benzo (k) fluoranthene	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l	
Benzo (a) pyrene	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l	
Indeno (1,2,3-cd) pyrene	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l	
Dibenzo (a,h) anthracene	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l	
Benzo (g,h,i) perylene	-	ug/l		10 R	ug/l	10	10 U	ug/l	10	-	ug/l	
CLP PESTICIDES/PCBS 90-SOW ug/l												
alpha-BHC	-	ug/l		-	ug/l		.05 UJ	ug/l	.05	-	ug/l	
beta-BHC	-	ug/l		-	ug/l		.05 UJ	ug/l	.05	-	ug/l	
delta-BHC	-	ug/l		-	ug/l		.05 UJ	ug/l	.05	-	ug/l	
gamma-BHC (Lindane)	-	ug/l		-	ug/l		.05 UJ	ug/l	.05	-	ug/l	
Heptachlor	-	ug/l		-	ug/l		.05 UJ	ug/l	.05	-	ug/l	
Aldrin	-	ug/l		-	ug/l		.05 UJ	ug/l	.05	-	ug/l	
Heptachlor epoxide	-	ug/l		-	ug/l		.05 UJ	ug/l	.05	-	ug/l	
Endosulfan I	-	ug/l		-	ug/l		.05 UJ	ug/l	.05	-	ug/l	
Dieldrin	-	ug/l		-	ug/l		.1 UJ	ug/l	.1	-	ug/l	
4,4-DDE	-	ug/l		-	ug/l		.1 UJ	ug/l	.1	-	ug/l	
Endrin	-	ug/l		-	ug/l		.1 UJ	ug/l	.1	-	ug/l	
Endosulfan II	-	ug/l		-	ug/l		.1 UJ	ug/l	.1	-	ug/l	
4,4-DDD	-	ug/l		-	ug/l		.1 UJ	ug/l	.1	-	ug/l	
Endosulfan sulfate	-	ug/l		-	ug/l		.1 UJ	ug/l	.1	-	ug/l	
4,4-DDT	-	ug/l		-	ug/l		.16 J	ug/l	.1	-	ug/l	
Methoxychlor	-	ug/l		-	ug/l		.5 UJ	ug/l	.5	-	ug/l	
Endrin ketone	-	ug/l		-	ug/l		.1 UJ	ug/l	.1	-	ug/l	
Endrin aldehyde	-	ug/l		-	ug/l		.1 UJ	ug/l	.1	-	ug/l	
alpha-Chlordane	-	ug/l		-	ug/l		.05 UJ	ug/l	.05	-	ug/l	
gamma-Chlordane	-	ug/l		-	ug/l		.05 UJ	ug/l	.05	-	ug/l	
Toxaphene	-	ug/l		-	ug/l		5 UJ	ug/l	5	-	ug/l	
Aroclor-1016	-	ug/l		-	ug/l		1 UJ	ug/l	1	-	ug/l	
Aroclor-1221	-	ug/l		-	ug/l		2 UJ	ug/l	2	-	ug/l	
Aroclor-1232	-	ug/l		-	ug/l		1 UJ	ug/l	1	-	ug/l	
Aroclor-1242	-	ug/l		-	ug/l		1 UJ	ug/l	1	-	ug/l	
Aroclor-1248	-	ug/l		-	ug/l		1 UJ	ug/l	1	-	ug/l	
Aroclor-1254	-	ug/l		-	ug/l		1 UJ	ug/l	1	-	ug/l	
Aroclor-1260	-	ug/l		-	ug/l		1 UJ	ug/l	1	-	ug/l	
CLP METALS AND CYANIDE ug/l												
Aluminum	9.1 U	ug/l		-	ug/l		187 J	ug/l		-	ug/l	
Antimony	8.6 U	ug/l		-	ug/l		8.6 U	ug/l		-	ug/l	
Arsenic	.5 U	ug/l		-	ug/l		.5 U	ug/l		-	ug/l	
Barium	22.8 J	ug/l		-	ug/l		10.6 J	ug/l		-	ug/l	
Beryllium	.3 U	ug/l		-	ug/l		.3 U	ug/l		-	ug/l	
Cadmium	1.2 U	ug/l		-	ug/l		1.2 U	ug/l		-	ug/l	
Calcium	6270	ug/l		-	ug/l		1440 J	ug/l		-	ug/l	
Chromium	2 U	ug/l		-	ug/l		2.9 J	ug/l		-	ug/l	
Cobalt	2.3 U	ug/l		-	ug/l		2.3 U	ug/l		-	ug/l	
Copper	1.5 J	ug/l		-	ug/l		4 J	ug/l		-	ug/l	
Iron	12.7 U	ug/l		-	ug/l		194	ug/l		-	ug/l	
Lead	.5 U	ug/l		-	ug/l		.8 J	ug/l		-	ug/l	
Magnesium	839 J	ug/l		-	ug/l		322 J	ug/l		-	ug/l	

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	RB980011		RB980004R		RB980007		MC424007		
Site	WHITING		WHITING		WHITING		WHITING		
Locator	15G00802F		15G00802RE		15G00803		15G00803		
Collect Date:	13-AUG-96		13-AUG-96		14-AUG-96		20-NOV-96		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

Manganese	226	ug/l	-	ug/l	33.1	ug/l	-	ug/l
Mercury	.1 U	ug/l	-	ug/l	.21 U	ug/l	-	ug/l
Nickel	7.3 U	ug/l	-	ug/l	7.3 U	ug/l	-	ug/l
Potassium	740 J	ug/l	-	ug/l	522 J	ug/l	-	ug/l
Selenium	.6 U	ug/l	-	ug/l	.6 U	ug/l	-	ug/l
Silver	2.5 U	ug/l	-	ug/l	2.5 U	ug/l	-	ug/l
Sodium	19800	ug/l	-	ug/l	5350	ug/l	-	ug/l
Thallium	.6 U	ug/l	-	ug/l	.6 U	ug/l	-	ug/l
Vanadium	1.2 U	ug/l	-	ug/l	2 J	ug/l	-	ug/l
Zinc	232	ug/l	-	ug/l	176	ug/l	-	ug/l
Cyanide	-	ug/l	-	ug/l	1.6 U	ug/l	-	ug/l

Locator Annotations: A = DUPLICATE SAMPLE B = SHALLOW SAMPLE C = INTERMEDIATE SAMPLE CD = DOUBLE INTERMEDIATE SAMPLE D = DEEP SAMPLE

Qualifiers: U = NOT DETECTED J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED R = RESULT IS REJECTED AND UNUSABLE

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	ME441006			RB980008			MC424008			RB980013		
Site:	WHITING			WHITING			WHITING			WHITING		
Locator:	15G00803			15G00803D			15G00803D			15G00803F		
Collect Date:	05-AUG-97			14-AUG-96			20-NOV-96			13-AUG-96		
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL

CLP VOLATILES 90-SOW

ug/l

Chloromethane	10 U	ug/l	10	10 UJ	ug/l	10	10 U	ug/l	10	-	ug/l
Bromomethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Vinyl chloride	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Chloroethane	10 U	ug/l	10	10 UJ	ug/l	10	10 U	ug/l	10	-	ug/l
Methylene chloride	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Acetone	10 UJ	ug/l	10	10 UJ	ug/l	10	10 U	ug/l	10	-	ug/l
Carbon disulfide	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
1,1-Dichloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
1,1-Dichloroethane	10 U	ug/l	10	10 UJ	ug/l	10	10 U	ug/l	10	-	ug/l
1,2-Dichloroethane (total)	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Chloroform	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
1,2-Dichloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
2-Butanone	10 U	ug/l	10	10 UJ	ug/l	10	10 U	ug/l	10	-	ug/l
1,1,1-Trichloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Carbon tetrachloride	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Bromodichloromethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
1,2-Dichloropropane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
cis-1,3-Dichloropropene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Trichloroethene	7 J	ug/l	10	4 J	ug/l	10	5 J	ug/l	10	-	ug/l
Dibromochloromethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
1,1,2-Trichloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Benzene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
trans-1,3-Dichloropropene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Bromoform	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
4-Methyl-2-pentanone	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
2-Hexanone	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Tetrachloroethene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Toluene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
1,1,2,2-Tetrachloroethane	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Chlorobenzene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Ethylbenzene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Styrene	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l
Xylenes (total)	10 U	ug/l	10	10 U	ug/l	10	10 U	ug/l	10	-	ug/l

CLP SEMIVOLATILES 90-SOW

ug/l

Phenol	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
bis(2-Chloroethyl) ether	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
2-Chlorophenol	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
1,3-Dichlorobenzene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l
1,4-Dichlorobenzene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	ME441006		RB980008		MC424008		RB980013		
Site	WHITING		WHITING		WHITING		WHITING		
Locator	15G00803		15G00803D		15G00803D		15G00803F		
Collect Date:	05-AUG-97		14-AUG-96		20-NOV-96		13-AUG-96		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

	VALUE	QUAL UNITS	DL									
1,2-Dichlorobenzene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
2-Methylphenol	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
2,2-oxybis(1-Chloropropane)	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
4-Methylphenol	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
N-Nitroso-di-n-propylamine	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
Hexachloroethane	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
Nitrobenzene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
Isophorone	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
2-Nitrophenol	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
2,4-Dimethylphenol	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
bis(2-Chloroethoxy) methane	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
2,4-Dichlorophenol	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
1,2,4-Trichlorobenzene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
Naphthalene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
4-Chloroaniline	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
Hexachlorobutadiene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
4-Chloro-3-methylphenol	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
2-Methylnaphthalene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
Hexachlorocyclopentadiene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
2,4,6-Trichlorophenol	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
2,4,5-Trichlorophenol	-	ug/l		25 U	ug/l	25	-	ug/l		-	ug/l	
2-Chloronaphthalene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
2-Nitroaniline	-	ug/l		25 U	ug/l	25	-	ug/l		-	ug/l	
Dimethylphthalate	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
Acenaphthylene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
2,6-Dinitrotoluene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
3-Nitroaniline	-	ug/l		25 U	ug/l	25	-	ug/l		-	ug/l	
Acenaphthene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
2,4-Dinitrophenol	-	ug/l		25 UJ	ug/l	25	-	ug/l		-	ug/l	
4-Nitrophenol	-	ug/l		25 U	ug/l	25	-	ug/l		-	ug/l	
Dibenzofuran	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
2,4-Dinitrotoluene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
Diethylphthalate	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
4-Chlorophenyl-phenylether	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
Fluorene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
4-Nitroaniline	-	ug/l		25 UJ	ug/l	25	-	ug/l		-	ug/l	
4,6-Dinitro-2-methylphenol	-	ug/l		25 UJ	ug/l	25	-	ug/l		-	ug/l	
N-Nitrosodiphenylamine	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
4-Bromophenyl-phenylether	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
Hexachlorobenzene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
Pentachlorophenol	-	ug/l		25 UJ	ug/l	25	-	ug/l		-	ug/l	
Phenanthrene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
Anthracene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
Carbazole	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
Di-n-butylphthalate	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
Fluoranthene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
Pyrene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
Butylbenzylphthalate	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
3,3-Dichlorobenzidine	-	ug/l		10 UJ	ug/l	10	-	ug/l		-	ug/l	
Benzo (a) anthracene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
Chrysene	-	ug/l		10 U	ug/l	10	-	ug/l		-	ug/l	
bis(2-Ethylhexyl) phthalate	-	ug/l		1 J	ug/l	10	-	ug/l		-	ug/l	

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

Lab Sample Number:	ME441006	RB980008	MC424008	RB980013							
Site	WHITING	WHITING	WHITING	WHITING							
Locator	15G00803	15G00803D	15G00803D	15G00803F							
Collect Date:	05-AUG-97	14-AUG-96	20-NOV-96	13-AUG-96							
VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL

Di-n-octylphthalate	-	ug/l		10 U	ug/l	10	-	ug/l	-	ug/l	
Benzo (b) fluoranthene	-	ug/l		10 U	ug/l	10	-	ug/l	-	ug/l	
Benzo (k) fluoranthene	-	ug/l		10 U	ug/l	10	-	ug/l	-	ug/l	
Benzo (a) pyrene	-	ug/l		10 U	ug/l	10	-	ug/l	-	ug/l	
Indeno (1,2,3-cd) pyrene	-	ug/l		10 U	ug/l	10	-	ug/l	-	ug/l	
Dibenzo (a,h) anthracene	-	ug/l		10 U	ug/l	10	-	ug/l	-	ug/l	
Benzo (g,h,i) perylene	-	ug/l		10 U	ug/l	10	-	ug/l	-	ug/l	
CLP PESTICIDES/PCBS 90-SOW		ug/l									
alpha-BHC	-	ug/l		.05 UJ	ug/l	.05	-	ug/l	-	ug/l	
beta-BHC	-	ug/l		.05 U	ug/l	.05	-	ug/l	-	ug/l	
delta-BHC	-	ug/l		.05 UJ	ug/l	.05	-	ug/l	-	ug/l	
gamma-BHC (Lindane)	-	ug/l		.05 U	ug/l	.05	-	ug/l	-	ug/l	
Heptachlor	-	ug/l		.05 U	ug/l	.05	-	ug/l	-	ug/l	
Aldrin	-	ug/l		.05 U	ug/l	.05	-	ug/l	-	ug/l	
Heptachlor epoxide	-	ug/l		.05 U	ug/l	.05	-	ug/l	-	ug/l	
Endosulfan I	-	ug/l		.05 U	ug/l	.05	-	ug/l	-	ug/l	
Dieldrin	-	ug/l		.1 U	ug/l	.1	-	ug/l	-	ug/l	
4,4-DDE	-	ug/l		.1 U	ug/l	.1	-	ug/l	-	ug/l	
Endrin	-	ug/l		.1 U	ug/l	.1	-	ug/l	-	ug/l	
Endosulfan II	-	ug/l		.1 U	ug/l	.1	-	ug/l	-	ug/l	
4,4-DDD	-	ug/l		.1 U	ug/l	.1	-	ug/l	-	ug/l	
Endosulfan sulfate	-	ug/l		.1 U	ug/l	.1	-	ug/l	-	ug/l	
4,4-DDT	-	ug/l		.079 J	ug/l	.1	-	ug/l	-	ug/l	
Methoxychlor	-	ug/l		.5 U	ug/l	.5	-	ug/l	-	ug/l	
Endrin ketone	-	ug/l		.1 U	ug/l	.1	-	ug/l	-	ug/l	
Endrin aldehyde	-	ug/l		.1 U	ug/l	.1	-	ug/l	-	ug/l	
alpha-Chlordane	-	ug/l		.05 U	ug/l	.05	-	ug/l	-	ug/l	
gamma-Chlordane	-	ug/l		.05 U	ug/l	.05	-	ug/l	-	ug/l	
Toxaphene	-	ug/l		5 U	ug/l	5	-	ug/l	-	ug/l	
Aroclor-1016	-	ug/l		1 U	ug/l	1	-	ug/l	-	ug/l	
Aroclor-1221	-	ug/l		2 U	ug/l	2	-	ug/l	-	ug/l	
Aroclor-1232	-	ug/l		1 U	ug/l	1	-	ug/l	-	ug/l	
Aroclor-1242	-	ug/l		1 U	ug/l	1	-	ug/l	-	ug/l	
Aroclor-1248	-	ug/l		1 U	ug/l	1	-	ug/l	-	ug/l	
Aroclor-1254	-	ug/l		1 U	ug/l	1	-	ug/l	-	ug/l	
Aroclor-1260	-	ug/l		1 U	ug/l	1	-	ug/l	-	ug/l	
CLP METALS AND CYANIDE		ug/l									
Aluminum	110 J	ug/l	200	146 J	ug/l	-	ug/l	8.5 U	ug/l		
Antimony	60 U	ug/l	60	8.6 U	ug/l	-	ug/l	11 J	ug/l		
Arsenic	10 U	ug/l	10	.5 U	ug/l	-	ug/l	.5 U	ug/l		
Barium	8.9 J	ug/l	200	10.8 J	ug/l	-	ug/l	7.9 J	ug/l		
Beryllium	5 U	ug/l	5	.3 U	ug/l	-	ug/l	.3 U	ug/l		
Cadmium	5 U	ug/l	5	1.2 U	ug/l	-	ug/l	1.2 U	ug/l		
Calcium	5000 U	ug/l	5000	1170 J	ug/l	-	ug/l	1130 J	ug/l		
Chromium	10 U	ug/l	10	2 U	ug/l	-	ug/l	2 U	ug/l		
Cobalt	50 U	ug/l	50	2.4 J	ug/l	-	ug/l	2.3 U	ug/l		
Copper	25 U	ug/l	25	2.4 J	ug/l	-	ug/l	1.1 U	ug/l		
Iron	91.4 J	ug/l	100	175	ug/l	-	ug/l	5.8 U	ug/l		
Lead	3 U	ug/l	3	.5 J	ug/l	-	ug/l	.5 U	ug/l		
Magnesium	361 J	ug/l	5000	296 J	ug/l	-	ug/l	268 J	ug/l		

Naval Air Station Whiting Field, Milton, Florida
Site 15 Groundwater Data

	Lab Sample Number: ME441006			RB980008			MC424008			RB980013		
	Site	WHITING		WHITING			WHITING			WHITING		
Locator	15G00803			15G00803D			15G00803D			15G00803F		
Collect Date:	05-AUG-97			14-AUG-96			20-NOV-96			13-AUG-96		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
Manganese	14.7	J ug/l	15	32.9	ug/l		-	ug/l		32	ug/l	
Mercury	.2	U ug/l		.1	U ug/l		-	ug/l		.1	U ug/l	
Nickel	40	U ug/l	40	7.3	U ug/l		-	ug/l		7.3	U ug/l	
Potassium	5000	U ug/l	5000	316	U ug/l		-	ug/l		485	J ug/l	
Selenium	5	U ug/l	5	.6	U ug/l		-	ug/l		.6	U ug/l	
Silver	10	U ug/l	10	2.5	U ug/l		-	ug/l		2.5	U ug/l	
Sodium	2270	J ug/l	5000	5380	ug/l		-	ug/l		4650	J ug/l	
Thallium	10	U ug/l	10	.6	U ug/l		-	ug/l		.6	J ug/l	
Vanadium	50	U ug/l	50	1.5	J ug/l		-	ug/l		1.8	J ug/l	
Zinc	20	U ug/l	20	178	ug/l		-	ug/l		40.2	ug/l	
Cyanide	-	ug/l		4.2	U ug/l		-	ug/l		-	ug/l	

Locator Annotations: A = DUPLICATE SAMPLE B = SHALLOW SAMPLE C = INTERMEDIATE SAMPLE CD = DOUBLE INTERMEDIATE SAMPLE D = DEEP SAMPLE

Qualifiers: U = NOT DETECTED J = ESTIMATED VALUE UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED R = RESULT IS REJECTED AND UNUSABLE

APPENDIX G

HUMAN HEALTH RISK DATA

**Table G-1
Screening Concentrations for Surface Soil
for Selection of Chemicals of Potential Concern**

Remedial Investigation Report
Site 15
NAS Whiting Field, Milton, Florida

Analyte	Risk Based Screening Concentration ¹	Florida Cleanup Target Level ²	Florida Cleanup Target Level Leaching Value ²	Selected Screening Concentration ³
<u>Volatile Organic Compounds (µg/kg)</u>				
Acetone	780,000	780,000	2,800	780,000
Methylene chloride	85,000	16,000	20	16,000
Xylenes (total)	16,000,000	5,900,000	200	5,900,000
<u>Semivolatile Organic Compounds (µg/kg)</u>				
Butylbenzylphthalate	1,600,000	15,000,000	310,000	1,600,000
Di-n-butylphthalate	780,000	7,300,000	47,000	780,000
ibis(2-Ethylhexyl)phthalate	46,000	76,000	3,600,000	46,000
<u>Pesticides/PCBs (µg/kg)</u>				
4,4-DDD	2,700	4,600	4,000	2,700
4,4-DDE	1,900	3,300	18,000	1,900
4,4-DDT	1,900	3,300	11,000	1,900
<u>Inorganics (mg/kg)</u>				
Aluminum	7,800	72,000	NC	7,800
Arsenic	0.43 ⁴	0.8	29	0.43
Barium	550	110	1,600	110
Beryllium	16	120	63	16
Calcium	1,000,000 ⁵	NSC	NC	1,000,000
Chromium	23	210	38	23
Cobalt	470	4,700	NC	470
Copper	310	110	NC	110
Cyanide	160 ⁷	30	NC	30
Iron	2,300	23,000	NC	2,300
Lead	400 ⁸	400	NC	400
Magnesium	460,468 ⁵	NSC	NC	460,468
Manganese	160	1,600	NC	160
Mercury	2.3	3.4	2.1	2.3
See notes at end of table.				

Table G-1
Screening Concentrations for Surface Soil
for Selection of Chemicals of Potential Concern

Remedial Investigation Report
 Site 15
 NAS Whiting Field, Milton, Florida

Analyte	Risk Based Screening Concentration ¹	Florida Cleanup Target Level ²	Florida Cleanup Target Level Leaching Value ²	Selected Screening Concentration ³
<u>Inorganics (mg/kg) (Cont.)</u>				
Nickel	160	110	130	110
Potassium	1,000,000 ⁵	NSC	NC	1,000,000
Selenium	39	390	5	39
Silver	39	390	17	39
Sodium	1,000,000 ⁵	NSC	NC	1,000,000
Vanadium	55	15	980	15
Zinc	2,300	23,000	6,000	2,300

¹ For all chemicals except the essential nutrients, the USEPA Region III RBC Table for residential soil (October 1, 1998) has been used, unless otherwise noted. Screening values are based on a cancer risk of 10⁻⁶ or a hazard quotient of 1.0. Noncarcinogenic RBCs have been adjusted to reflect a target hazard quotient of 0.1.

² Chapter 62-777, Florida Administrative Code, June, 1999. Cleanup target levels are based on a target cancer risk of 10⁻⁶ or a target hazard quotient of 1.

³ The selected screening concentration for the human health risk assessment is the lowest value of the RBC and the Florida Cleanup Target Level.

⁴ RBC value is based on arsenic as a carcinogen.

⁵ Essential nutrient screening value (see GIR Report).

⁶ RBC and Florida Cleanup Target Level values are based on Chromium VI.

⁷ RBC value is based on hydrogen cyanide.

⁸ RBC is not available for lead; value is from Revised Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites (OSWER Directive 9355.4-12).

NOTES: μg/kg = micrograms per kilogram. mg/kg = milligrams per kilogram.
 NC = not calculated, per FDEP, 1996. NSC = no screening criteria available.
 RBC = USEPA Region III Risk Based Concentration.

**Table G-2
Screening Concentrations for Subsurface Soil
for Selection of Chemicals of Potential Concern**

Remedial Investigation Report
Site 15
NAS Whiting Field, Milton, Florida

Analyte	Risk-Based Screening Concentration ¹	Florida Cleanup Target Level ²	Florida Cleanup Target Level Leaching Value ²	Selected Screening Concentration ³
<u>Volatile Organic Compounds (µg/kg)</u>				
2-Hexanone	8,200,000	34,000	1,400	34,000
Chlorobenzene	4,100,000	200,000	1,300	200,000
Xylenes (total)	410,000,000	40,000,000	200	40,000,000
<u>Semivolatile Organic Compounds (µg/kg)</u>				
1,4-Dichlorobenzene	240,000	9,000	2,200	9,000
2-Methylnaphthalene	4,100,000	560,000	6,100	560,000
4-Methylphenol	1,000,000	3,000,000	30	1,000,000
Diethylphthalate	160,000,000	920,000,000	86,000	160,000,000
Naphthalene	4,100,000	270,000	1,700	270,000
Phenol	120,000,000	390,000,000	50	120,000,000
bis(2-Ethylhexyl)phthalate	410,000	280,000	3,600,000	280,000
<u>Pesticides/PCBs (µg/kg)</u>				
4,4-DDE	17,000	13,000	18,000	13,000
Aroclor-1242	2,900 ⁴	2,100	17,000	2,100
<u>Inorganics (mg/kg)</u>				
Aluminum	200,000	NSC	NSC	200,000
Arsenic	3.8 ⁵	4.62	29	3.8
Barium	14,000	87,000	1,600	14,000
Beryllium	410	800	63	410
Cadmium	100	1,300	8	100
Calcium	1,000,000 ⁶	NSC	NSC	1,000,000
Chromium	610	420 ⁷	38	420
Cobalt	12,000	110,000	NSC	12,000
Copper	8,200	76,000	NC	8,200
Cyanide	4,100	28,000	40	4,100
See notes at end of table.				

**Table G-2
Screening Concentrations for Subsurface Soil
for Selection of Chemicals of Potential Concern**

Remedial Investigation Report
Site 15
NAS Whiting Field, Milton, Florida

Analyte	Risk-Based Screening Concentration ¹	Florida Cleanup Target Level ²	Florida Cleanup Target Level Leaching Value ²	Selected Screening Concentration ³
Iron	61,000	480,000	NC	61,000
Lead	400 ⁸	920	NC	400
Magnesium	460,468 ⁶	NSC	NC	460,468
Manganese	4,100	22,000	NC	4,100
Mercury	61	26	2.1	26
Nickel	4,100	28,000	130	4,100
Potassium	1,000,000 ⁶	NSC	NC	1,000,000
Silver	1,000	9,100	17	1,000
Sodium	1,000,000 ⁶	NSC	NC	1,000,000
Vanadium	1,400	7,400	980	1,400
Zinc	61,000	560,000	6,000	61,000

¹ For all chemicals except the essential nutrients, the USEPA Region III RBC Table for industrial soil (October 1, 1998) has been used, unless otherwise noted. Screening values are based on a cancer risk of 10⁻⁶ or a hazard quotient of 1.0. Noncarcinogenic RBCs have been adjusted to reflect a target hazard quotient of 0.1.

² Chapter 62-777, Florida Administrative Code, June, 1999.

³ The selected screening concentration for the human health risk assessment is the lowest value of the RBC and the Florida Cleanup Target Level.

⁴ Polychlorinated biphenyls value was used.

⁵ RBC value is based on arsenic's properties as a carcinogen.

⁶ Essential nutrient screening value (see GIR Report).

⁷ RBC and Florida Cleanup Target Level values are based on Chromium VI.

⁸ RBC is not available for lead; value is from Revised Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites (OSWER Directive 9355.4-12).

Notes:

µg/kg = micrograms per kilogram.

mg/kg = milligrams per kilogram.

DDE = Dichlorodiphenyl dichloroethylene.

NC = not calculated per FDEP, 1996.

NSC = no screening criteria available.

PCBs = Polychlorinated biphenyls.

RBC = USEPA Region III Risk Based Concentration.

**Table G-3
Screening Concentrations for Groundwater
For Selection of Chemicals of Potential Concern**

Remedial Investigation Report
Site 15
NAS Whiting Field, Milton, Florida

Chemical	Risk-Based Screening Concentration ¹	Federal MCL ²	Florida Groundwater Cleanup Target Levels ³	Selected Screening Concentration ⁴
<u>Volatiles (µg/L)</u>				
1,1-Dichloroethene	0.044	7	7	0.044
1,2-Dichloroethene (total)	5.5	70 ⁵	70 ⁵	5.5
Acetone	370	NSC	700	370
Benzene	0.36	5	1	0.36
2-Butanone	190	NSC	4,200	190
Chlorobenzene	3.5	100	100	3.5
Ethylbenzene	130	700	30	30
Trichloroethene	1.6	5	3	1.6
Xylenes (total)	1,200	10,000	20	20
<u>Semivolatiles (µg/L)</u>				
1,4-Dichlorobenzene	0.47	60	75	0.47
Diethylphthalate	2,900	NSC	5,600	2,900
Naphthalene	73	NSC	20	20
bis(2-Ethylhexyl)phthalate	4.8	6	6	4.8
<u>Pesticides/PCBs (µg/L)</u>				
4,4-DDT	0.2	NSC	0.1	0.1
<u>Inorganics (µg/L)</u>				
Aluminum	3,700	200	(200)	200
Antimony	1.5	6	6	1.5
Arsenic	0.045 ⁶	50	50	0.045
Barium	260	2,000	2,000	260
Cadmium	1.8	5	5	1.8
Calcium	1,055,398	NSC	NSC	1,055,398
Chromium	11 ⁸	100	100 ⁷	11
Cobalt	220	NSC	420	220
Copper	150	1,000	(1,000)	150
Cyanide	73 ¹⁰	200	200	73

See notes at end of table

**Table G-4
Oral Dose-Response Data
for Carcinogenic Effects**

Remedial Investigation Report
Site 15
NAS, Whiting Field, Milton, Florida

Chemical	Weight of Evidence	Oral Slope Factor (mg/kg/day) ⁻¹	Source	Test Species	Exposure Route	Tumor Type	Study Source
<u>Volatiles</u>							
1,1-Dichloroethylene	C	6.0e-01	IRIS	Rat	Oral-drinking water	Adrenal	IRIS
1,2-Dichloroethylene (total)	D	NE					
Benzene	A	2.9e-02	IRIS	Human	Inhalation	Leukemia	IRIS
Chlorobenzene	D	NE					
Trichloroethylene	B2	1.1e-02	(1)				
<u>Semivolatiles</u>							
1,4-Dichlorobenzene	C	2.4e-02	HEAST	Mouse	Oral-gavage	Liver	HEAST
bis(2-Ethylhexyl)phthalate	B2	1.4e-02	IRIS	Rat	Oral-diet	Liver	IRIS
<u>Pesticides/PCBs</u>							
4,4'-DDT	B2	3.4e-01	IRIS	Mouse/rat	Oral-diet	Liver	IRIS
<u>Inorganics</u>							
Aluminum	D	NE					
Arsenic	A	1.5e + 00	IRIS	Human	Oral-drinking water	Skin	IRIS
Iron	D	NE					
See notes at end of table							

**Table G-4 (Continued)
Oral Dose-Response Data
for Carcinogenic Effects**

Remedial Investigation Report
Site 15
NAS, Whiting Field, Milton, Florida

Chemical	Weight of Evidence	Oral Slope Factor (mg/kg/day) ⁽⁻¹⁾	Source	Test Species	Exposure Route	Tumor Type	Study Source
Inorganics (Cont.)							
Manganese	D	NE					
Thallium	D	NE					

(1) This value was provided by the Environmental Criteria and Assessment Office (ECAO) of the USEPA in response to a specific request.

Weight of Evidence (route-specific):

A = Human carcinogen

B = Probable human carcinogen (B1 = limited human evidence; B2 = sufficient human evidence)

C = Possible human carcinogen

D = Not classifiable as to human carcinogenicity

Notes: ND = No Data
NE = Not Evaluated

Integrated Risk Information System (IRIS) on-line database search, current as of February 1998.
Health Effects Assessment Summary Tables (HEAST), current as of July 1997.

**Table G-5
Dermal Dose-Response Data for Carcinogenic Effects**

Remedial Investigation Report
Site 15
NAS, Whitting Field, Milton, Florida

Compound	Weight of Evidence	Oral Slope Factor (mg/kg-day) ⁻¹	Oral Absorption Efficiency	Reference	Dermal Slope Factor (mg/kg-day) ⁻¹
<u>Volatiles</u>					
1,1-Dichloroethylene	C	6.0e-01	100%	Putcha et al., 1986	6.0e-01
1,2-Dichloroethylene (total)	D	NE			NE
Benzene	A	2.9e-02		(1)	2.9e-02
Chlorobenzene	D	NE			NE
Trichloroethylene	B2	1.1e-02	100%	Prout et al., 1985	1.1e-02
<u>Semivolatiles</u>					
1,4-Dichlorobenzene	C	2.4e-02	100%	ATSDR, 1989	2.4e-02
bis(2-Ethylhexyl)phthalate	B2	1.4e-02	100%	Chadwick et al., 1982	1.4e-02
<u>Pesticides/PCBs</u>					
4,4'-DDT	B2	3.4e-01	20%	Siebert, 1976	1.7e+00
<u>Inorganics</u>					
Aluminum	D	NE			NE
Arsenic	A	1.5e+00	98%	Vahter, 1983	1.5e+00
Iron	D	NE			NE
See notes at end of table					

**Table G-5 (Continued)
Dermal Dose-Response Data for Carcinogenic Effects**

Remedial Investigation Report
Site 15
NAS, Whitting Field, Milton, Florida

Compound	Weight of Evidence	Oral Slope Factor (mg/kg-day) ⁻¹	Oral Absorption Efficiency	Reference	Dermal Slope Factor (mg/kg-day) ⁻¹
<u>Inorganics (Cont.)</u>					
Manganese	D	NE			NE
Thallium	D	NE			NE

(1) This toxicity values is based on absorbed dose. Therefore, no adjustment of this value is necessary.

Weight of Evidence (route-specific):

A = Human carcinogen

B = Probable human carcinogen (B1 = limited human evidence; B2 = sufficient human evidence)

C = Possible human carcinogen

D = Not classifiable as to human carcinogenicity

ATSDR, 1989b. "Toxicological Profile for p-DCB". Agency for Toxic Substances and Disease Registry, U.S. Public Health Service, Jan. 1989.

Chadwick, M., Branfman, A.K. and Silveria, D.M. 1982. Dose-dependence of and Effect of Prior Exposure on the Metabolism of DEPH Administered in the Diet to Rats. Report to Chemical Manufacturers Association. Arthur D. Little, Inc.

Putcha, L., Bruchner, J.V. and D'Soyza, R. 1986. Toxicokinetics and Bioavailability of Oral and Intravenous 1,1-Dichloroethylene. Fund. Appl. Toxicol. 6: 240-250.

Prout, M.Prout, M.S., Provan, W.M. and Green, T. 1985. Species Differences in Response to Trichloroethylene. Toxicol. Appl. Pharmacol. 79: 389-400.

Siebert, S. 1976. The Lymphatic Absorption of p,p-DDT and Some Structurally-Related Compounds in the Rat. Pharmacol. 14: 443-454.

Vahter, M. 1983. Metabolism of Arsenic. In: Fowler, B.A., ed. Biological and Environmental Effect of Arsenic. NY: Elsevier. pp. 171-198.

Notes: NE = Not Evaluated

**Table G-6
Inhalation Dose-Response Data
for Carcinogenic Effects**

Remedial Investigation Report
Site 15
NAS, Whiting Field, Milton, Florida

Chemical	Weight of Evidence	Inhalation Slope Factor (mg/kg/day) ⁽⁻¹⁾	Source	Inhalation Unit Risk (μg/m ³) ⁽⁻¹⁾	Source	Test Species	Exposure Route	Tumor Type	Study Source
<u>Volatiles</u>									
1,1-Dichloroethylene	C	1.2e +00	HEAST	5.0e-05	IRIS	Mouse	Inhalation	Kidney	IRIS
1,2-Dichloroethylene (total)	D	NE		NE					
Benzene	A	2.9e-02	HEAST	8.3e-06	IRIS	Human	Inhalation	Leukemia	IRIS
Chlorobenzene	D	NE		NE					
Trichloroethylene	B2	6.0e-03	(1)	1.7e-06	(1)				
<u>Semivolatiles</u>									
1,4-Dichlorobenzene	D	NE		NE					
bis(2-Ethylhexyl)phthalate	D	NE		NE					
<u>Pesticides/PCBs</u>									
4,4'-DDT	B2	3.4e-01	HEAST	9.7e-05	IRIS	Mouse/rat	Oral-diet	Liver	IRIS
<u>Inorganics</u>									
Aluminum	D	NE		NE					
Arsenic	A	1.5e +01	HEAST	4.3e-03	IRIS	Human	Inhalation	Lung	IRIS
Iron	D	NE		NE					
See notes at end of table									

**Table G-6 (continued)
Inhalation Dose-Response Data
for Carcinogenic Effects**

Remedial Investigation Report
Site 15
NAS, Whiting Field, Milton, Florida

Chemical	Weight of Evidence	Inhalation Slope Factor (mg/kg/day) ⁽⁻¹⁾	Source	Inhalation Unit Risk (µg/m ³) ⁽⁻¹⁾	Source	Test Species	Exposure Route	Tumor Type	Study Source
<u>Inorganics (Cont.)</u>									
Manganese	D	NE		NE					
Thallium	D	NE		NE					
<p>(1) This value was provided by the Environmental Criteria and Assessment Office (ECAO) of the USEPA in response to a specific request.</p> <p>Weight of Evidence (route-specific): A = Human carcinogen B = Probable human carcinogen (B1 = limited human evidence; B2 = sufficient human evidence) C = Possible human carcinogen D = Not classifiable as to human carcinogenicity</p> <p>Notes: NE = Not Evaluated</p> <p>Integrated Risk Information System (IRIS) on-line database search, current as of February 1998. Health Effects Assessment Summary Tables (HEAST), current as of July 1997.</p>									

**Table G-7
Oral Dose-Response Data
for Noncarcinogenic Effects**

Remedial Investigation Report
Site 15
NAS, Whiting Field, Milton, Florida

Chemical	Chronic		Subchronic		Study Type	Confidence Level	Critical Effect	Test Animal	Uncertainty Factor	Study Source
	Oral RfD (mg/kg-day)	Source	Oral RfD (mg/kg-day)	Source						
<u>Volatiles</u>										
1,1-Dichloroethylene	9.0e-03	IRIS	9.0e-03	HEAST	Oral-drinking water	Medium	Hepatic lesions	Rat	1000 H,A,L	IRIS
1,2-Dichloroethylene (total)	9.0e-03	HEAST (1)	9.0e-03	HEAST (1)						
Benzene	3.0e-04	(2)	ND							
Chlorobenzene	2.0e-02	IRIS	ND		Oral-capsule	Medium	Hepatic changes	Dog	1000 H,A,S	IRIS
Trichloroethylene	6.0e-03	(2)	ND							
<u>Semivolatiles</u>										
1,4-Dichlorobenzene	ND		ND							
bis(2-Ethylhexyl)phthalate	2.0e-02	IRIS	ND		Oral-diet	Medium	Increased liver weight	Guinea pig	1000 H,A,S,L	IRIS
<u>Pesticides/PCBs</u>										
4,4'-DDT	5.0e-04	IRIS	5.0e-04	HEAST	Oral-diet	Medium	Liver lesions	Rat	100 H,A	IRIS
<u>Inorganics</u>										
Aluminum	1.0e +00	(2)	ND							
Arsenic	3.0e-04	IRIS	3.0e-04	HEAST	Oral-drinking water	Medium	Hyperpigmentation, keratosis	Human	3 D	IRIS

See notes at end of table

**Table G-7 (Continued)
Oral Dose-Response Data
for Noncarcinogenic Effects**

Remedial Investigation Report
Site 15
NAS, Whiting Field, Milton, Florida

Chemical	Chronic		Subchronic		Study Type	Confidence Level	Critical Effect	Test Animal	Uncertainty Factor	Study Source	
	Oral RfD (mg/kg-day)	Source	Oral RfD (mg/kg-day)	Source							
Inorganics (Cont.)											
Iron	3.0e-01	(2)	ND								
Manganese	Food	1.4e-01	IRIS	1.4e-01	HEAST	Oral-diet	NA	CNS effects	Human	1	IRIS
	All other media	4.7e-02	IRIS	ND		Oral-diet	NA	CNS effects	Human	3 M	IRIS
Thallium		8.0e-05	IRIS (3)	8.0e-04	HEAST (3)	Oral-gavage	Low	No effects observed	Rat	3000 H,A,S,D	IRIS

- (1) This value was provided by the Environmental Criteria and Assessment Office (ECAO) of the USEPA in response to a specific request.
 (2) The values for 1,1-dichloroethylene have been used as surrogates for 1,2-dichloroethylene (total) adopted based on analogy.
 (3) The ingestion RfD values for thallium are based on thallium sulfate.

Uncertainty factors:

- H = Variation in human sensitivity
- A = Animal to human extrapolation
- S = Extrapolation from subchronic to chronic NOAEL
- L = Extrapolation from LOAEL to NOAEL
- D = Inadequate data
- M = Modifying factor

Notes: ND = No Data
NA = Not Applicable

Integrated Risk Information System (IRIS) on-line database search, current as of February 1998.
 Health Effects Assessment Summary Tables (HEAST), current as of July 1997.

**Table G-8
Dermal Dose-Response Data for Noncarcinogenic Effects**

Remedial Investigation Report
Site 15
NAS, Whiting Field, Milton, Florida

Chemical	Chronic Oral RfD (mg/kg-day)	Subchronic Oral RfD (mg/kg-day)	Oral Absorption Efficiency	Reference	Dermal Chronic RfD (mg/kg-day)	Dermal Subchronic RfD (mg/kg-day)
<u>Volatiles</u>						
1,1-Dichloroethylene	9.0e-03	9.0e-03	100%	Putcha et al., 1986	9.0e-03	9.0e-03
1,2-Dichloroethylene (total)	9.0e-03	9.0e-03	100%	(1)	9.0e-03	9.0e-03
Benzene	3.0e-04	ND	100%	ATSDR, 1993	3.0e-04	ND
Chlorobenzene	2.0e-02	ND	100%	Ogata & Shimada, 1983	2.0e-02	ND
Trichloroethylene	6.0e-03	ND	100%	Prout et al., 1985	6.0e-03	ND
<u>Semivolatiles</u>						
1,4-Dichlorobenzene	ND	ND	100%	ATSDR, 1989	ND	ND
bis(2-Ethylhexyl)phthalate	2.0e-02	ND	100%	Chadwick et al., 1982	2.0e-02	ND
<u>Pesticides/PCBs</u>						
4,4'-DDT	5.0e-04	5.0e-04	20%	Siebert, 1976	1.0e-04	1.0e-04
<u>Inorganics</u>						
Aluminum	1.0e+00	ND	20%	(3)	2.0e-01	ND
Arsenic	3.0e-04	3.0e-04	98%	Vahter, 1983	2.9e-04	2.9e-04
Iron	3.0e-01	ND	2%	Goyer, 1991	6.0e-03	ND
See notes at end of table						

Table G-8 (continued)
Dermal Dose-Response Data for Noncarcinogenic Effects

Remedial Investigation Report
 Site 15
 NAS, Whiting Field, Milton, Florida

Chemical	Chronic Oral RfD (mg/kg-day)	Subchronic Oral RfD (mg/kg-day)	Oral Absorption Efficiency	Reference	Dermal Chronic RfD (mg/kg-day)	Dermal Subchronic RfD (mg/kg-day)
Inorganics (Cont.)						
Manganese	4.7e-02	ND	4%	ATSDR, 1991b	1.9e-03	ND
Thallium	8.0e-05	8.0e-04	100%	Lie et al., 1960	8.0e-05	8.0e-04

- (1) The oral absorption efficiency of 1,2-dichloroethylene is assumed to be identical to that of 1,1-dichloroethylene, based on structural analogy.
 (2) The oral absorption efficiency of all phthalates is assumed to be identical to that of bis(2-ethylhexyl)phthalate, based on structural analogy.
 (3) Inorganics lacking specific information on absorption efficiency are assigned a default value of 20% (USEPA Region IV, 1993).

Weight of Evidence (route-specific):

- A = Human carcinogen
 B = Probable human carcinogen (B1 = limited human evidence; B2 = sufficient human evidence)
 C = Possible human carcinogen
 D = Not classifiable as to human carcinogenicity

ATSDR, 1993. "Toxicological Profile for Benzene". Agency for Toxic Substances and Disease Registry, U.S. Public Health Service.
 ATSDR, 1991a. "Toxicological Profile for Antimony". Agency for Toxic Substances and Disease Registry, U.S. Public Health Service (Draft).
 ATSDR, 1991b. "Toxicological Profile for Manganese". Agency for Toxic Substances and Disease Registry, U.S. Public Health Service (Draft).
 ATSDR, 1989. "Toxicological Profile for p-DCB". Agency for Toxic Substances and Disease Registry, U.S. Public Health Service, Jan. 1989.
 Chadwick, M., Branfman, A.K. and Silveria, D.M. 1982. Dose-dependence of and Effect of Prior Exposure on the Metabolism of DEPH Administered in the Diet to Rats. Report to Chemical Manufacturers Association. Arthur D. Little, Inc.
 Goyer, R.A., 1991. Toxic Effects of Metals. In: Cassarett and Doull's Toxicology: The Basic Science of Posions, 4th edition. Eds. M.O. Amdur, J. Doull and C.D. Klaassen. Pergamon Press, N.Y.
 Lie, R., Thomas, R. and Scott, J. 1960. The Distribution and Excretion of Thallium²⁰⁴ in the Rat, with Suggested MPC's and a Bio-assay Procedure. Health Phys. 2: 334-340.
 Ogata, M. and Shimada, Y. 1987. Differences in Urinary Monochlorobenzene Metabolites Between Rats and Humans. Int. Arch. Occup. Environ. Health 53: 51-57.
 Putcha, L., Bruchner, J.V. and D'Soyza, R. 1986. Toxicokinetics and Bioavailability of Oral and Intravenous 1,1-Dichloroethylene. Fund. Appl. Toxicol. 6: 240-250.
 Prout, M.S., Provan, W.M. and Green, T. 1985. Species Differences in Response to Trichloroethylene. Toxicol. Appl. Pharmacol. 79: 389-400.
 Siebert, S. 1976. The Lymphatic Absorption of p,p'-DDT and Some Structurally-Related Compounds in the Rat. Pharmacol. 14: 443-454.
 Vahter, M. 1983. Metabolism of Arsenic. In: Fowler, B.A., ed. Biological and Environmental Effect of Arsenic. NY: Elsevier. pp. 171-198.

Notes: ND = No Data

**Table G-9
Inhalation Dose-Response Data
for Noncarcinogenic Effects**

Remedial Investigation Report
Site 15
NAS, Whiting Field, Milton, Florida

Chemical	Chronic		Subchronic		Study Type	Confidence Level	Critical Effect	Test Animal	Uncertainty Factor	Study Source
	RfC ($\mu\text{g}/\text{m}^3$)	Source	RfC ($\mu\text{g}/\text{m}^3$)	Source						
<u>Volatiles</u>										
1,1-Dichloroethylene	ND		ND							
1,2-Dichloroethylene (total)	ND		ND							
Benzene	ND		ND							
Chlorobenzene	2.0e +01	HEAST (1)	ND		Inhalation	Low	Liver, kidney effects	Rat	10,000 H,A,S,L	HEAST
Trichloroethylene	ND		ND							
<u>Semivolatiles</u>										
1,4-Dichlorobenzene	8.0e +02	IRIS	2.5e +03	HEAST	Inhalation	Medium	Increased liver weight	Rat	100 H,A,S	IRIS
bis(2-Ethylhexyl)phthalate	ND		ND							
<u>Pesticides/PCBs</u>										
4,4'-DDT	ND		ND							
<u>Inorganics</u>										
Aluminum	ND		ND							
Arsenic	ND		ND							
Iron	ND		ND							

See notes at end of table

**Table G-9 (Continued)
Inhalation Dose-Response Data
for Noncarcinogenic Effects**

Remedial Investigation Report
Site 15
NAS, Whiting Field, Milton, Florida

Chemical	Chronic		Subchronic		Study Type	Confidence Level	Critical Effect	Test Animal	Uncertainty Factor	Study Source
	RfC ($\mu\text{g}/\text{m}^3$)	Source	RfC ($\mu\text{g}/\text{m}^3$)	Source						
Inorganics (Cont.)										
Manganese	5.0e-02	IRIS	ND		Inhalation	Medium	Impaired neurobehavioral function	Human	1000 H,L,D	IRIS
Thallium	ND		ND							

(1) Chlorobenzene has a chronic inhalation RfD of 5.0e-03 mg/kg-day (HEAST).

Uncertainty factors:

- A = Animal to human extrapolation
- H = Variation in human sensitivity
- S = Extrapolation from subchronic to chronic NOAEL
- L = Extrapolation from LOAEL to NOAEL
- D = Inadequate data
- M = Modifying factor

Notes: ND = No Data
NA = Not Applicable

Integrated Risk Information System (IRIS) on-line database search, current as of February 1998.
Health Effects Assessment Summary Tables (HEAST), current as July 1997.

HUMAN HEALTH TOXICITY PROFILES

1,4-Dichlorobenzene. 1,4-Dichlorobenzene has been used as mothballs, an insecticidal fumigant, a germicide, and a space deodorant. Human exposure to 1,4-dichlorobenzene has produced irritation to skin, throat, and eyes; prolonged exposure to high concentrations may cause weakness, dizziness, loss of weight, or liver injury. In several studies involving female rats and mice, no overt signs of toxicity were apparent at any exposure level. Non-tumor and tumor pathology did not indicate any treatment related effect of either species. An embryotoxicity and teratology study on rats did not demonstrate any signs of embryo- or phytotoxicity or teratogenicity at any exposure level (Loeser, 1983). In a series of mutagenicity tests, 1,4-dichlorobenzene did not produce a mutagenic response. (Loeser, 1983). Other exposure studies in rats have produced developmental abnormalities, phytotoxicity, and kidney tumors. Additional exposure studies in animals have produced histological changes in the lung, cirrhosis and necrosis of the liver, swelling of the tubular epithelium of the kidneys. 1,4-dichlorobenzene has been classified by the USEPA as a group C carcinogen, possibly carcinogenic to humans.

References:

Health Effects Summary Tables (HEAST), 1993. United States Environmental Protection Agency.

Loeser E, Litchfield MH; Food Chem Toxicol 21 (6): 825-32 (1983)

1,1-Dichloroethene. 1,1-Dichloroethene is a man-made chlorinated solvent that is used to make polyvinylidene chloride copolymers, which are used as flexible films for packaging all types of materials, including food.

Data on 1,1-dichloroethene exposure in humans are limited. However, available evidence suggests that 1,1-dichloroethene causes central nervous system depression and liver toxicity in humans. Toxicity data on laboratory animals confirm this evidence, and also indicate that 1,1-dichloroethene may produce adverse effects on the kidney, heart, and lung. Pharmacokinetic data from laboratory animals suggest that 1,1-dichloroethene is metabolized to toxic metabolites, and that these metabolites are responsible for the adverse effects. Therefore, organs with high biotransformation enzyme activity, such as the liver, kidney, and lungs, are likely to be adversely impacted. Limited evidence in animals suggests that 1,1-dichloroethene may be carcinogenic. Therefore, the USEPA has placed 1,1-dichloroethene in weight-of-evidence group C, possible human carcinogen.

References:

MADEP, 1992. "Risk Assessment Shortform Residential Exposure Scenario, Version 1.6"; Policy #WSC/ORS-142-92; Office of Research and Standards and the Bureau of Waste Site Cleanup, Boston, MA; September 1992.

Agency for Toxic Substances and Disease Registry (ATSDR), 1992. "Toxicological Profile for 1,1-Dichloroethene"; Agency for Toxic Substances and Disease Registry, U.S. Public Health Service, October 1992.

1,2-Dichloroethene. 1,2-Dichloroethene is a volatile organic compound which exists as cis- and trans-isomers. The commercially used material is usually a mixture of the two isomers. In the past, it was used as a general inhalation anesthetic. It is used most often as a solvent for dyes, perfume oils, waxes, resins, and plastics. It is also used as an intermediate in the synthesis of polymers.

1,2-Dichloroethene is absorbed by all routes of administration. Distribution is rapid and, due to its lipophilic nature, occurs to all organ systems. It is extensively metabolized to dichloroacetaldehyde and chloroacetic acids which are excreted primarily through urine.

Dermal contact to 1,2-dichloroethene may result in defatting of the skin and dermatitis. Exposure to airborne 1,2-dichloroethene causes irritation to eyes, mucous membranes and the upper respiratory tract. Systemically, the trans-isomer is believed to be more toxic than the cis-isomer. However, both have been reported to produce central nervous system depression and toxicity to liver and lungs. No data on the reproductive toxicity of 1,2-dichloroethene exists. Both isomers have tested negative for mutagenicity in vitro tests. Cancer effects have not been studied in humans or animals.

References:

Agency for Toxic Substances and Disease Registry (ATSDR), 1990. "Toxicological Profile for 1,2-Dichloroethene"; Agency for Toxic Substances and Disease Registry, U.S. Public Health Service, February 1990.

Mycroft, F.J., Jones, J.R., and Olson, K.R. 1990. Environmental and Occupational Toxicology. In: Poisoning and Drug Overdose. Ed. K.R. Olson. Appleton & Lange, CT. p. 397.

Aluminum. Aluminum occurs naturally in the soil and makes up approximately 8 percent of the earth's crust. Higher soil concentrations are associated with industries which burn coal and aluminum mining and smelting. Human exposures to aluminum may occur through ingestion of foods grown in soil that contains aluminum and use of antacids, antiperspirants, and other drug store items. Aluminum in antiperspirants can cause skin rashes in some people. Factory workers who inhale large amounts of aluminum dust may develop lung problems. Aluminum has caused lower birth weights in some animals. Studies have shown that aluminum accumulates in the brains of people with Alzheimer's disease. However, any causal link between aluminum exposure and this disease is yet to be demonstrated. Both human epidemiological studies and animal experiments strongly suggest that aluminum is not a carcinogen.

References:

Agency for Toxic Substances and Disease Registry (ATSDR), 1989. "Toxicological Profile for Aluminum"; Agency for Toxic Substances and Disease Registry, U.S. Public Health Service, October 1989.

Antimony. Antimony enters the environment during the mining and processing of its ores and other related metals. Small amounts of antimony are also released into the environment by incinerators and coal-burning power plants. Antimony will strongly adhere to soil which contains iron, manganese, or aluminum. Antimony was used for medicinal purposes to treat people infected with parasites. However, chronic exposure can cause eye, skin, and lung irritation, as well as heart problems, vomiting and diarrhea. The oral RfD was based on changes in glucose and cholesterol levels in an oral drinking water study in rats. Antimony has not been evaluated by the USEPA for evidence of human carcinogenic potential.

References:

Agency for Toxic Substances and Disease Registry (ATSDR), 1991. "Toxicological Profile for Antimony"; Agency for Toxic Substances and Disease Registry, U.S. Public Health Service, February 1991.

Integrated Risk Information System (IRIS), 1993. United States Environmental Protection Agency.

Arsenic. Arsenic has once been used in pesticide formulations and has industrial uses in tanneries, as well as the glass and wine making industries. Toxicity depends on its chemical form. Arsenic is an irritant of the skin, mucous membranes, and gastrointestinal tract. Symptoms of acute toxicity include vomiting, diarrhea, convulsions, and a severe drop in blood pressure. Subchronic effects include hyperpigmentation, sensory-motor polyneuropathy, persistent headache, and lethargy. Chronic oral exposure has caused skin lesions, peripheral vascular disease, and peripheral neuropathy. The USEPA has classified arsenic as Group A, human carcinogen, based on increased incidence of skin and lung cancer in epidemiology studies.

References:

Agency for Toxic Substances and Disease Registry (ATSDR), 1992. "Toxicological Profile for Arsenic"; Agency for Toxic Substances and Disease Registry, U.S. Public Health Service, February 1992.

Benzene. Benzene is an organic solvent that is found in the environment from both natural processes from petroleum sources. Benzene is used in the synthesis of many industrial chemicals and pharmaceuticals, for the extraction of fats and oils, in the manufacture of explosives, and is a major component of petroleum based fuels such as gasoline.

Benzene is readily absorbed orally, moderately absorbed by inhalation, and poorly absorbed dermally. Its toxic actions are primarily a result of its metabolites, which are largely produced in the liver, and to some extent, in the bone marrow. Acute exposure to benzene has produced central nervous system depression in humans and animals.

Chronic exposures have produced adverse liver effects and hematological toxicity, including aplastic anemia and leukemia. Available evidence does not suggest that benzene is teratogenic in humans or animals. There is sufficient evidence of benzene-induced carcinogenicity in humans via inhalation exposure, placing it in USEPA weight-of-evidence group A, human carcinogen.

References:

MADEP, 1992. "Risk Assessment Shortform Residential Exposure Scenario, Version 1.6"; Policy #WSC/ORS-

142-92; Office of Research and Standards and the Bureau of Waste Site Cleanup, Boston, MA; September 1992.

Bis(2-ethylhexyl)phthalate (DEHP). DEHP is used industrially as a plasticizer for resins and is found in many plastic materials as it makes them more flexible. It is also used in manufacturing organic pump fluids in electrical capacitors. Acute exposure to DEHP has produced eye and mucous membrane irritation, nausea, and diarrhea. Chronic exposure of laboratory animals to DEHP indicate that the target organs are the liver, causing morphological and biochemical changes, as well as the testes, producing damage to the seminiferous tubules. DEHP has produced developmental and reproductive effects in laboratory animals including spina bifida and reduced fertility. DEHP has been shown to cause a dose-related increase in liver tumors in mice and rats. Thus, the USEPA has designated DEHP as a B2, probable human carcinogen.

References:

ATSDR, 1991. Toxicological Profile for Di(2-ethylhexyl)phthalate. Agency for Toxic Substances and Disease Registry, U.S. Public Health Service, October, 1991.

Chlorobenzene. Chlorobenzene is used industrially as a solvent and in the manufacture of other chemicals. It is an intermediate in the manufacture of dyestuffs and pesticides. Acute exposures have caused irritation of the eyes, nose, and skin, as well as CNS depression accompanied by drowsiness, numbness, nausea, and vomiting. Evidence from animal studies indicate that exposure via ingestion or inhalation can produce severe kidney and liver effects. The USEPA has classified chlorobenzene in Group D, inadequate evidence of carcinogenicity.

References:

Clayton, George D. and Florence E. Clayton, editors, 1981. Patty's Industrial Hygiene and Toxicology, 3rd Revised Edition; John Wiley & Sons; New York.

Integrated Risk Information System (IRIS), 1993. United States Environmental Protection Agency.

DDT. DDT was one of the most highly used insecticides, and is now ubiquitous in the environment. It was used extensively in World War II to control lice (applied directly to human skin), and later used as an agricultural insecticide and as a public health tool to control insects which spread typhus and malaria. DDD and DDE were contained as impurities in DDT, and are also primary metabolites of DDT, and share similar toxicological properties. DDT, DDD, and DDE are highly persistent in the environment, and thus tend to bioconcentrate in the food chain. This, combined with its toxicological properties, has been attributed to the decline in population of several predatory bird species.

DDT is absorbed to a minor extent via inhalation and dermal routes, and to a large extent by the oral route. Exposure to humans is likely greatest through ingestion of mucous that was contaminated with DDT that had been inhaled. DDT is absorbed into the lymphatic system and distributed to fats throughout the body. In both humans and animals, DDT acts as a CNS stimulant by interfering with the movement of ions within neurons. DDT acts as an estrogenic compound in animals, and this has been attributed to numerous adverse reproductive effects observed in animals exposed to DDT. DDT also causes liver hypertrophy, hepatocyte degeneration, and induces the enzyme cytochrome P450, which can effect the metabolism of other xenobiotics. There is no conclusive evidence of DDT-induced carcinogenicity in humans. However, DDT has produced liver tumors in laboratory animals. DDD, DDE, and DDT have, therefore, been placed in USEPA's weight of evidence group B2, probable human carcinogen.

References:

Agency for Toxic Substances and Disease Registry (ATSDR), 1992. "Toxicological Profile for DDD, DDE, and DDT"; Agency for Toxic Substances and Disease Registry, U.S. Public Health Service, October 1992.

Iron. Iron is a metal which is required for a variety of physiological functions such as heme biosynthesis, oxidative phosphorylation and mixed-function oxidase-mediated metabolic reactions. Only divalent forms of iron are absorbed. As absorption occurs, divalent iron is biochemically converted to trivalent iron, the biologically active form. Under normal conditions, absorbed dietary iron is complexed to hemoglobin and transported to the liver for storage until needed for physiological reactions. The balance of iron is regulated only by the amount of dietary intake and the degree of intestinal absorption. Intestinal absorption tends to be low (2 - 15%) except during periods of increased iron need when absorption efficiency increases dramatically.

Acute iron toxicity has been well characterized following the accidental ingestion of iron-containing preparations

by children. Shortly after ingestion, the corrosive effects of iron cause vomiting and diarrhea, often bloody. Later signs include shock, metabolic acidosis, seizures, liver and/or kidney failure, coma, and death. Chronic iron overload manifests as disturbances in liver function, diabetes mellitus, and endocrine and cardiovascular effects. Inhalation of iron containing dust or fumes in occupational settings may result in deposition of iron particles in the lungs leading to interstitial fibrosis. Autopsies of hematite miners noted an increase in lung cancer. However, the etiology of the lung cancer may be related to factors other than iron exposure such as cigarette, silica or PAH exposures.

References:

Aisen, P., Cohen, G. and Kang, J.O., 1990. Iron Toxicosis. *Int. Rev. Exp. Pathol.* 31:1-46.

Goyer, R.A., 1991. Toxic Effects of Metals. In: Casarett and Doull's Toxicology: The Basic Science of Poisons, 3rd edition. Eds. C.D. Klaassen, M.O. Amdur and J. Doull. Macmillan Publishing Co. N.Y.

Manganese. Manganese is a naturally-occurring substance found in many types of rock. It does not generally occur in the environment as the pure metal, rather, it is found combined with other chemicals such as sulfur, oxygen, and chlorine. Manganese is mixed with iron to make various types of steel. Manganese is a component of some ceramics, pesticides, fertilizers, and in nutritional supplements. In small doses manganese is beneficial to human health. Manganese miners and steel workers exposed to elevated concentrations of manganese have evidenced mental and emotional disturbances, and slow and clumsy body movements. Target organs of manganese are the lung and CNS. When inhaled, manganese dust can also cause lung irritation. EPA has classified manganese as a Class D, not classifiable as to human carcinogenicity.

References:

Agency for Toxic Substances and Disease Registry (ATSDR), 1991. "Toxicological Profile for Manganese"; Agency for Toxic Substances and Disease Registry, U.S. Public Health Service, February 1991.

Thallium. Thallium is a naturally-occurring soft metal that is a minor constituent in a variety of ores and is obtained as a by-product of the refining of iron, cadmium, and zinc. It is used as a catalyst, in certain alloys, jewelry, thermometers, semiconductors, dyes and pigments, and optical lenses. It has been used medically as a depilatory agent. Additionally, it is used as a rodenticide and insecticide. Thallium is efficiently absorbed from the gastrointestinal tract. Excretion occurs primarily through urine and feces. Following absorption, distribution occurs to kidney tissue to a large extent, with lesser distribution to thyroid, intestines, testes, pancreas, skin, bone, and spleen.

Thallium is one of the more toxic metals. Acute toxicity results in gastrointestinal irritation, shock, ascending paralysis, seizures, and psychic disturbances. Signs of subacute or chronic thallium poisoning include hair loss, nail dystrophy, cataracts, peripheral muscular weakness and atrophy, chorea, peripheral neuropathy, and kidney damage. Loss of vision have been related to industrial thallium exposures. No information is available which addresses the carcinogenic potential of thallium.

References:

Goyer, R.A., 1991. Toxic Effects of Metals. In: Casarett and Doull's Toxicology: The Basic Science of Poisons, 3rd edition. Eds. C.D. Klaassen, M.O. Amdur and J. Doull. Macmillan Publishing Co. N.Y.

Tweig, M., 1990. Thallium. In: Poisoning and Drug Overdose. Ed. K.R. Olson. Appleton & Lange, CT. pps. 276-7.

Trichloroethene. Trichloroethene is a man-made chlorinated solvent that is used extensively in industry as a metal degreasing agent. Trichloroethene is also used in dry cleaning and as a solvent in paints and adhesives.

Several human deaths and acute neurotoxic effects have been attributed to oral and inhalation exposure to trichloroethene. In animals, oral and inhalation exposure to trichloroethene have produce neurotoxic effects, including behavioral changes, and renal toxicity. Additionally, inhalation and oral exposures to trichloroethene in animals have produced lung, liver, and testicular cancers. Epidemiological data in humans is insufficient to conclude whether trichloroethene is a human carcinogen. However, studies on trichloroethene metabolism suggest that it is metabolized similarly in humans and laboratory animals. Therefore, the USEPA has placed trichloroethene in weight-of-evidence group B2, probable human carcinogen.

References:

MADEP, 1992. "Risk Assessment Shortform Residential Exposure Scenario, Version 1.6"; Policy #WSC/ORS-142-92; Office of Research and Standards and the Bureau of Waste Site Cleanup, Boston, MA; September 1992.

TABLE G-10

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
 ADULT TRESPASSER
 NAS WHITING FIELD
 MILTON, FLORIDA
 SITE 15

EQUATIONS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION SOIL	CS	chemical-specific	chemical-specific	
INGESTION RATE	IR	100	mg/day	USEPA, 1991
FRACTION INGESTED	FI	100%	unitless	USEPA, 1995
ADHERENCE FACTOR	AF	1	mg/cm ² -event	USEPA, 1995
ABSORPTION FRACTION	ABS _d	chemical specific	unitless	USEPA, 1995
SURFACE AREA EXPOSED	SA	5,750	cm ²	USEPA, 1992
DOSE ABSORBED PER EVENT	DA _{event}	chemical specific	mg/cm ² -event	USEPA, 1992
CONVERSION FACTOR	CF	1.00E-06	kg/mg	inorganics
	CF	1.00E-09	kg/ug	organics
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE FREQUENCY	EF	45	days/year [1]	Assumption
EXPOSURE DURATION	ED	20	years	Assumption
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	20	years	Assumption

[1] Units for exposure frequency are events/year in the calculation of the dermally absorbed dose.
 USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.
 USEPA, 1992. Dermal Exposure Assessment: Principles and Applications; EPA/600/8-91/011B; 1/92.
 USEPA, 1995. Supplemental Guidance to RAGS: Region IV, Human Health Risk Assessment Bulletin No. 3.

CANCER RISK = **INTAKE (mg/kg-day) x CANCER SLOPE FACTOR (mg/kg-day)⁻¹**

HAZARD QUOTIENT = **INTAKE (mg/kg-day) / REFERENCE DOSE (mg/kg-day)**

INTAKE_{INGESTION} = **$\frac{CS \times IR \times FI \times CF \times EF \times ED}{BW \times AT \times 365 \text{ days/yr}}$**

INTAKE_{DERMAL} = **$\frac{DA_{event} \times SA \times EF \times ED}{BW \times AT \times 365 \text{ days/yr}}$**

Where:
 DA_{event} = AF x ABS_d x CF

Note: **For noncarcinogenic effects: AT = ED**

TABLE G-10

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL.
 ADULT TRESPASSER
 NAS WHITING FIELD
 MILTON, FLORIDA
 SITE 15

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL CSF (mg/kg-day) ⁻¹	CANCER RISK INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL CSF [2] (mg/kg-day) ⁻¹	CANCER RISK DERMAL	TOTAL CANCER RISK
Arsenic	I	1.9	mg/kg	9.6E-08	1.5E+00	1.4E-07	0.001	5.5E-09	1.5E+00	8.2E-09	1.5E-07
SUMMARY CANCER RISK						1E-07				8E-09	2E-07
[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).											
[2] Calculated from oral CSFs.											

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL RfD (mg/kg-day)	HAZARD QUOTIENT INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL RfD [2] (mg/kg-day)	HAZARD QUOTIENT DERMAL	TOTAL HAZARD QUOTIENT
Di-n-butylphthalate	O	369	ug/kg	6.5E-08	1.0E-01	6.5E-07	0.01	3.7E-08	1.0E-01	3.7E-07	1.0E-06
Arsenic	I	1.9	mg/kg	3.3E-07	3.0E-04	1.1E-03	0.001	1.9E-08	2.9E-04	6.6E-05	1.2E-03
Iron	I	5060	mg/kg	8.9E-04	3.0E-01	3.0E-03	0.001	5.1E-05	6.0E-03	8.5E-03	1.2E-02
SUMMARY HAZARD INDEX						0.004				0.01	0.01
[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).											
[2] Calculated from oral RfDs.											

TABLE G-11

INHALATION OF PARTICULATES - SURFACE SOIL
 ADULT TRESPASSER
 NAS WHITING FIELD
 MILTON, FLORIDA
 SITE 15

EXPOSURE PARAMETERS

EQUATIONS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
SOIL CONCENTRATION	C	chemical-specific	chemical-specific	
PART. EMISSION FACTOR	PEF	1.24E+09	m ³ /kg	default [1]
CONCENTRATION AIR	CA	chemical-specific	mg/m ³	
INHALATION RATE	IR	0.833	m ³ /hour	USEPA, 1995
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE TIME	ET	4	hours/day	Assumption
EXPOSURE FREQUENCY	EF	45	days/year	Assumption
EXPOSURE DURATION	ED	20	years	Assumption
CONVERSION FACTOR	CF	0.001	mg/ug	Organics only
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	20	years	USEPA, 1991

CANCER RISK = INTAKE (mg/kg-day) x INHALATION CANCER SLOPE FACTOR (mg/kg-day)⁻¹

HAZARD QUOTIENT = INTAKE (mg/kg-day) / INHALATION REFERENCE DOSE (mg/kg-day)

INTAKE = CA x IR x ET x EF x ED
 BW x AT x 365 days/yr

Where:

CA = C x CF x (1/PEF)

Note: For noncarcinogenic effects, AT = ED

[1] Florida Soil Clean-Up Goal Variable. FDEP, 1995.

USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.

USEPA, 1995. Supplemental Guidance to RAGS: Region IV, Human Health Risk Assessment Bulletin No. 3.

TABLE G-11

INHALATION OF PARTICULATES - SURFACE SOIL
 ADULT TRESPASSER
 NAS WHITING FIELD
 MILTON, FLORIDA
 SITE 15

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m ³)	INTAKE (mg/kg-day)	INHALATION CSF (mg/kg-day) ⁻¹	CANCER RISK
Arsenic	I	1.9	mg/kg	1.53E-09	2.6E-12	1.5E+01	3.9E-11
SUMMARY CANCER RISK							4E-11

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m ³)	INTAKE (mg/kg-day)	INHALATION RfD (mg/kg-day)	HAZARD QUOTIENT
Di-n-butylphthalate	O	369	ug/kg	2.98E-10	1.7E-12	ND	
Arsenic	I	1.9	mg/kg	1.53E-09	9.0E-12	ND	
Iron	I	5060	mg/kg	4.08E-06	2.4E-08	ND	
SUMMARY HAZARD INDEX							0E+00

TABLE G-12

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
 ADOLESCENT TRESPASSER
 NAS WHITING FIELD
 MILTON, FLORIDA
 SITE 15

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION SOIL	CS	chemical-specific	chemical-specific	
INGESTION RATE	IR	100	mg/day	USEPA, 1991
FRACTION INGESTED	FI	100%	unitless	Assumption
ADHERENCE FACTOR	AF	1	mg/cm ² -event	USEPA, 1995
AGE-SPECIFIC SURFACE AREA	SA _i	age-specific	cm ²	USEPA, 1989
ABSORPTION FRACTION	ABS _i	chemical-specific	unitless	USEPA, 1995
CONVERSION FACTOR	CF	1.00E-06	kg/mg	Inorganics
	CF	1.00E-09	kg/mg	Organics
BODY WEIGHT	BW	45	kg	USEPA, 1995
AGE-SPECIFIC BODY WEIGHT	BW _i	age-specific	kg	USEPA, 1989
EXPOSURE FREQUENCY	EF	45	days/year [1]	Assumption
EXPOSURE DURATION	ED	10	years	USEPA, 1995
AGE-SPECIFIC EXPOSURE DURATION	ED _i	age-specific	years	Assumption
AGE-WEIGHTED SURFACE AREA [2]	SA _{wt,adj}	1013	cm ² -year/kg	Per USEPA, 1992
DOSE ABSORBED PER EVENT	DA _{event}	chemical-specific	mg/cm ² -event	Per USEPA, 1992
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	10	years	USEPA, 1995

[1] Units for exposure frequency are in events/year in the calculation of the dermally absorbed dose.

[2] In estimating the dermally absorbed dose for children age 7 through 16, the time-weighted, bodyweight normalized surface area exposed is calculated from surface area, exposure duration, and body weight for each of 10 age periods, age 7 through 16, per USEPA, 1992.

USEPA, 1989. Exposure Factors Handbook: EPA/600/8-89-043; May 1989.

USEPA, 1991. Human Health Evaluation Manual. Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.

USEPA, 1992. Dermal Exposure Assessment: Principles and Applications; EPA/600/8-91/011B; January 1992.

USEPA, 1995. Supplemental Guidance to RAUS: Region 4 Bulletins, Bulletin No. 3, November 1995.

EQUATIONS

$$\text{CANCER RISK} = \text{INTAKE (mg/kg-day)} \times \text{CANCER SLOPE FACTOR (mg/kg-day)}^{-1}$$

$$\text{HAZARD QUOTIENT} = \text{INTAKE (mg/kg-day)} / \text{REFERENCE DOSE (mg/kg-day)}$$

$$\text{INTAKE}_{\text{INGESTION}} = \frac{\text{CS} \times \text{IR} \times \text{FI} \times \text{CF} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT} \times 365 \text{ days/yr}}$$

$$\text{INTAKE}_{\text{DERMAL}} = \text{AT} \times 365 \text{ days/year} \times \text{SA}_{\text{wt,adj}}$$

Where:

$$\text{SA}_{\text{wt,adj}} = \text{SUM} (\text{SA}_i \times \text{ED}_i / \text{BW}_i)$$

$$\text{DA}_{\text{event}} = \text{CS} \times \text{AF} \times \text{ABS}_i \times \text{CF}$$

Note: For noncarcinogenic effects: AT = ED.

TABLE G-12

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
 ADOLESCENT TRESPASSER
 NAS WHITING FIELD
 MILTON, FLORIDA
 SITE 15

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL CSF (mg/kg-day) ⁻¹	CANCER RISK INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL CSF [2] (mg/kg-day) ⁻¹	CANCER RISK DERMAL	TOTAL CANCER RISK
Arsenic	I	1.9	mg/kg	7.4E-08	1.5E+00	1.1E-07	0.001	3.4E-09	1.5E+00	5.1E-09	1.2E-07
SUMMARY CANCER RISK						2E-06				7E-08	2E-06
[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995). [2] Calculated from oral CSFs.											

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL RfD (mg/kg-day)	HAZARD QUOTIENT INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL RfD [2] (mg/kg-day)	HAZARD QUOTIENT DERMAL	TOTAL HAZARD QUOTIENT
Di-n-butylphthalate	O	369	ug/kg	1.0E-07	1.0E-01	1.0E-06	0.01	4.6E-08	1.0E-01	4.6E-07	1.5E-06
Arsenic	I	1.9	mg/kg	5.2E-07	3.0E-04	1.7E-03	0.001	2.4E-08	2.9E-04	8.2E-05	1.8E-03
Iron	I	5060	mg/kg	1.4E-03	3.0E-01	4.6E-03	0.001	6.3E-05	6.0E-03	1.1E-02	1.5E-02
SUMMARY HAZARD INDEX						0.006				0.01	0.02
[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995). [2] Calculated from oral RfDs.											

TABLE G-13

INHALATION OF PARTICULATES - SURFACE SOIL
 ADOLESCENT TRESPASSER
 NAS WHITING FIELD
 MILTON, FLORIDA
 SITE 15

EXPOSURE PARAMETERS

EQUATIONS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
SOIL CONCENTRATION	C	chemical-specific	chemical-specific	
PART. EMISSION FACTOR	PEF	1.24E+09	m ³ /kg	default [1]
CONCENTRATION AIR	CA	chemical-specific	mg/m ³	
INHALATION RATE	IR	0.625	m ³ /hour	USEPA, 1995
BODY WEIGHT	BW	45	kg	USEPA, 1995
EXPOSURE TIME	ET	4	hours/day	Assumption
EXPOSURE FREQUENCY	EF	45	days/year	Assumption
EXPOSURE DURATION	ED	10	years	USEPA, 1995
CONVERSION FACTOR	CF	0.001	mg/ug	Organics only
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	10	years	USEPA, 1995

CANCER RISK = INTAKE (mg/kg-day) x INHALATION CANCER SLOPE FACTOR (mg/kg-day)⁻¹

HAZARD QUOTIENT = INTAKE (mg/kg-day) / INHALATION REFERENCE DOSE (mg/kg-day)

INTAKE = $\frac{CA \times IR \times ET \times EF \times ED}{BW \times AT \times 365 \text{ days/yr}}$

Where:

$CA = C \times CF \times (1/PEF)$

Note: For noncarcinogenic effects: AT = ED

[1] Florida Soil Clean-Up Goal Variable. FDEP, 1995.
 USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.
 USEPA 1995. Supplemental Guidance to RAGS, Region 4 Bulletins, Bulletin No. 3, November 1995.

TABLE G-13

INHALATION OF PARTICULATES - SURFACE SOIL
 ADOLESCENT TRESPASSER
 NAS WHITING FIELD
 MILTON, FLORIDA
 SITE 15

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m ³)	INTAKE (mg/kg-day)	INHALATION CSF (mg/kg-day) ⁻¹	CANCER RISK
Arsenic	I	1.9	mg/kg	1.53E-09	1.5E-12	1.5E+01	2.2E-11
SUMMARY CANCER RISK							2E-11

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m ³)	INTAKE (mg/kg-day)	INHALATION RfD (mg/kg-day)	HAZARD QUOTIENT
Di-n-butylphthalate	O	369	ug/kg	2.98E-10	2.0E-12	ND	
Arsenic	I	1.9	mg/kg	1.53E-09	1.0E-11	ND	
Iron	I	5060	mg/kg	4.08E-06	2.8E-08	ND	
SUMMARY HAZARD INDEX							0E+00

TABLE G-14

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
 ADULT RESIDENT
 NAS WHITING FIELD
 MILTON, FLORIDA
 SITE 15

EXPOSURE PARAMETERS

EQUATIONS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION SOIL	CS	chemical-specific	chemical-specific	
INGESTION RATE	IR	100	mg/day	USEPA, 1995
FRACTION INGESTED	FI	100%	unitless	USEPA, 1995
ADHERENCE FACTOR	AF	1	mg/cm ² -event	USEPA, 1995
ABSORPTION FRACTION	ABS _d	chemical-specific	unitless	USEPA, 1995
SURFACE AREA EXPOSED	SA	5,750	cm ²	USEPA, 1992
DOSE ABSORBED PER EVENT	DA _{event}	chemical-specific	mg/cm ² -event	USEPA, 1992
CONVERSION FACTOR	CF	1.00E-09	kg/ug	Organic conversion
CONVERSION FACTOR	CF	1.00E-06	kg/mg	Inorganic conversion
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE FREQUENCY	EF	350	days/year [1]	Assumption
EXPOSURE DURATION	ED	24	years	USEPA, 1995
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	24	years	USEPA, 1995

[1] Units for exposure frequency are events/year in the calculation of the dermally absorbed dose.
 USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors";
 OSWER Directive 9285.6-03.
 USEPA, 1992. Dermal Exposure Assessment: Principles and Applications; EPA/600/8-91/011B; January 1992.
 USEPA, 1995. Supplemental Guidance to RAGS: Region IV, Human Health Risk Assessment Bulletin No. 3.

$$\text{CANCER RISK} = \text{INTAKE (mg/kg-day)} \times \text{CANCER SLOPE FACTOR (mg/kg-day)}^{-1}$$

$$\text{HAZARD QUOTIENT} = \text{INTAKE (mg/kg-day)} / \text{REFERENCE DOSE (mg/kg-day)}$$

$$\text{INTAKE}_{\text{INGESTION}} = \frac{\text{CS} \times \text{IR} \times \text{FI} \times \text{CF} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT} \times 365 \text{ days/yr}}$$

$$\text{INTAKE}_{\text{DERMAL}} = \frac{\text{DA}_{\text{event}} \times \text{SA} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT} \times 365 \text{ days/yr}}$$

Where:

$$\text{DA}_{\text{event}} = \text{CS} \times \text{AF} \times \text{ABS}_d \times \text{CF}$$

Note: For noncarcinogenic effects, AT = ED.

TABLE G-14

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL.
ADULT RESIDENT
NAS WHITING FIELD
MILTON, FLORIDA
SITE 15

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL CSF (mg/kg-day) ⁻¹	CANCER RISK INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL CSF [2] (mg/kg-day) ⁻¹	CANCER RISK DERMAL	TOTAL CANCER RISK
Arsenic	I	1.9	mg/kg	8.9E-07	1.5E+00	1.3E-06	0.001	5.1E-08	1.5E+00	7.7E-08	1.4E-06
SUMMARY CANCER RISK						1E-06				8E-08	1E-06
[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995). [2] Calculated from oral CSFs.											

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL RfD (mg/kg-day)	HAZARD QUOTIENT INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL RfD [2] (mg/kg-day)	HAZARD QUOTIENT DERMAL	TOTAL HAZARD QUOTIENT
Di-n-butylphthalate	O	369	ug/kg	5.1E-07	1.0E-01	5.1E-06	0.01	2.9E-07	1.0E-01	2.9E-06	8.0E-06
Arsenic	I	1.9	mg/kg	2.6E-06	3.0E-04	8.7E-03	0.001	1.5E-07	2.9E-04	5.2E-04	9.2E-03
Iron	I	5060	mg/kg	6.9E-03	3.0E-01	2.3E-02	0.001	4.0E-04	6.0E-03	6.6E-02	9.0E-02
SUMMARY HAZARD INDEX						0.03				0.07	0.1
[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November, 1995). [2] Calculated from oral RfDs.											

TABLE G-15

INHALATION OF PARTICULATES - SURFACE SOIL
 ADULT RESIDENT
 NAS WHITING FIELD
 MILTON, FLORIDA
 SITE 15

EXPOSURE PARAMETERS

EQUATIONS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
SOIL CONCENTRATION	C	chemical-specific	chemical-specific	
PART. EMISSION FACTOR	PEF	1.24E+09	m ³ /kg	default [1]
CONCENTRATION AIR	CA	chemical-specific	mg/m ³	
INHALATION RATE	IR	0.833	m ³ /hour	USEPA, 1995
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE TIME	ET	16	hours/day	Assumption
EXPOSURE FREQUENCY	EF	350	days/year	USEPA, 1995
EXPOSURE DURATION	ED	24	years	USEPA, 1995
CONVERSION FACTOR	CF	0.001	mg/ug	Organics only
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	24	years	USEPA, 1995

[1] Florida Soil Clean-Up Goal Variable. FDEP, 1995.
 USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.
 USEPA, 1995. Supplemental Guidance to RAGS : Region IV, Human Health Risk Assessment Bulletin No. 3.

CANCER RISK = INTAKE (mg/kg-day) x INHALATION CANCER SLOPE FACTOR (mg/kg-day)⁻¹

HAZARD QUOTIENT = INTAKE (mg/kg-day) / INHALATION REFERENCE DOSE (mg/kg-day)

INTAKE = CA x IR x ET x EF x ED
 BW x AT x 365 days/yr

Where:

CA = C x CF x (1/PEF)

Note:
 For noncarcinogenic effects: AT = ED

TABLE G-15

INHALATION OF PARTICULATES - SURFACE SOIL
 ADULT RESIDENT
 NAS WHITING FIELD
 MILTON, FLORIDA
 SITE 15

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m ³)	INTAKE (mg/kg-day)	INHALATION CSF (mg/kg-day) ⁻¹	CANCER RISK
Arsenic	I	1.9	mg/kg	1.53E-09	9.6E-11	1.5E+01	1.4E-09
SUMMARY CANCER RISK							1E-09

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m ³)	INTAKE (mg/kg-day)	INHALATION RfD (mg/kg-day)	HAZARD QUOTIENT
Di-n-butylphthalate	O	369	ug/kg	2.98E-10	5.4E-11	ND	
Arsenic	I	1.9	mg/kg	1.53E-09	2.8E-10	ND	
Iron	I	5060	mg/kg	4.08E-06	7.5E-07	ND	
SUMMARY HAZARD INDEX							0E+00

TABLE G-16

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
CHILD RESIDENT
NAS WHITING FIELD
MILTON, FLORIDA
SITE 15

EXPOSURE PARAMETERS

EQUATIONS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION SOIL	CS	chemical-specific	chemical-specific	
INGESTION RATE	IR	200	mg/day	USEPA, 1995
FRACTION INGESTED	FI	100%	unitless	USEPA, 1995
ADHERENCE FACTOR	AF	1	mg/cm ² -event	USEPA, 1995
AGE-SPECIFIC SURFACE AREA	SA	age-specific	cm ²	USEPA, 1989
ABSORPTION FRACTION	ABS	chemical-specific	unitless	USEPA, 1995
CONVERSION FACTOR	CF	1.00E-06	kg/mg	Inorganic conversion
CONVERSION FACTOR	CF	1.00E-09	kg/ug	Organic conversion
BODY WEIGHT	BW	15	kg	USEPA, 1991
AGE-SPECIFIC BODY WEIGHT	BW	age-specific	kg	USEPA, 1989
EXPOSURE FREQUENCY	EF	350	days/year [1]	USEPA, 1995
EXPOSURE DURATION	ED	6	years	USEPA, 1995
AGE-SPECIFIC EXPOSURE DURATION	ED	age-specific	years	Assumption
AGE-WEIGHTED SURFACE AREA [2]	SA _{adj}	766	cm ² -year/kg	USEPA, 1992
DOSE ABSORBED PER EVENT	DA _{event}	chemical-specific	mg/cm ² -event	USEPA, 1992
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	6	years	USEPA, 1995

$$\text{CANCER RISK} = \text{INTAKE (mg/kg-day)} \times \text{CANCER SLOPE FACTOR (mg/kg-day)}^{-1}$$

$$\text{HAZARD QUOTIENT} = \text{INTAKE (mg/kg-day)} / \text{REFERENCE DOSE (mg/kg-day)}$$

$$\text{INTAKE}_{\text{INGESTION}} = \text{CS} \times \text{IR} \times \text{FI} \times \text{CF} \times \text{EF} \times \text{ED}$$

$$\text{BW} \times \text{AT} \times 365 \text{ days/yr}$$

$$\text{INTAKE}_{\text{DERMAL}} = (\text{DA}_{\text{event}} \times \text{EF} / \text{AT} \times 365 \text{ days/year}) \times \text{SA}_{\text{adj}} [2]$$

Where:

$$\text{SA}_{\text{adj}} = \text{SUM} (\text{SA} \times \text{ED} / \text{BW})$$

$$\text{DA}_{\text{event}} = \text{CS} \times \text{AF} \times \text{ABS} \times \text{CF}$$

Note: For noncarcinogenic effects, AT = ED.

[1] Units for exposure frequency are in events/year in the calculation of the dermally absorbed dose.

[2] In estimating the dermally absorbed dose for children age 1 through 6, the time weighted, bodyweight normalized surface area exposed is calculated from surface area, exposure duration, and body weight for each of 6 age periods, age 1 through 6, per USEPA, 1992.

USEPA, 1989. Exposure Factors Handbook: EPA/600/8-89/043; May 1989.

USEPA, 1991. Human Health Evaluation Manual. Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.

USEPA, 1992. Dermal Exposure Assessment: Principles and Applications; EPA/600/8-91/011B; January 1992.

USEPA, 1995. Supplemental Guidance to RAGS: Region IV. Human Health Risk Assessment Bulletin No. 3.

TABLE G-16

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
CHILD RESIDENT
NAS WHITING FIELD
MILTON, FLORIDA
SITE 15

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL CSF (mg/kg-day) ⁻¹	CANCER RISK INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL CSF [2] (mg/kg-day) ⁻¹	CANCER RISK DERMAL	TOTAL CANCER RISK
Arsenic	I	1.9	mg/kg	2.1E-06	1.5E+00	3.1E-06	0.001	2.0E-08	1.5E+00	3.0E-08	3.2E-06
SUMMARY CANCER RISK						3E-06				3E-08	3E-06
[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).											
[2] Calculated from oral CSFs.											

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL RfD (mg/kg-day)	HAZARD QUOTIENT INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL RfD [2] (mg/kg-day)	HAZARD QUOTIENT DERMAL	TOTAL HAZARD QUOTIENT
Di-n-butylphthalate	O	369	ug/kg	4.7E-06	1.0E-01	4.7E-05	0.01	4.5E-07	1.0E-01	4.5E-06	5.2E-05
Arsenic	I	1.9	mg/kg	2.4E-05	3.0E-04	8.1E-02	0.001	2.3E-07	2.9E-04	8.0E-04	8.2E-02
Iron	I	5060	mg/kg	6.5E-02	3.0E-01	2.2E-01	0.001	6.2E-04	6.0E-03	1.0E-01	3.2E-01
SUMMARY HAZARD INDEX						0.3				0.1	0.4
[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).											
[2] Calculated from oral RfDs.											

TABLE G-17

INHALATION OF PARTICULATES - SURFACE SOIL
CHILD RESIDENT
NAS WHITING FIELD
MILTON, FLORIDA
SITE 15

EXPOSURE PARAMETERS

EQUATIONS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
SOIL CONCENTRATION	C	chemical-specific	chemical-specific	
PART. EMISSION FACTOR	PEF	1.24E+09	m ³ /kg	default [1]
CONCENTRATION IN AIR	CA	chemical-specific	mg/m ³	
INHALATION RATE	IR	0.625	m ³ /hour	USEPA, 1995
BODY WEIGHT	BW	15	kg	USEPA, 1991
EXPOSURE TIME	ET	24	hours/day	Assumption
EXPOSURE FREQUENCY	EF	350	days/year	USEPA, 1991
EXPOSURE DURATION	ED	6	years	USEPA, 1991
CONVERSION FACTOR	CF	0.001	mg/ug	Organics only
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	6	years	USEPA, 1991

CANCER RISK = INTAKE (mg/kg-day) x INHALATION CANCER SLOPE FACTOR (mg/kg-day)⁻¹

HAZARD QUOTIENT = INTAKE (mg/kg-day) / INHALATION REFERENCE DOSE (mg/kg-day)

INTAKE = CA x IR x ET x EF x ED
 BW x AT x 365 days/yr

Where:
 CA = C x CF x (1/PEF)

Note:
For noncarcinogenic effects: AT = ED

[1] Florida Soil Clean-Up Goal Variable. FDEP, 1995.
USEPA, 1991. Human Health Evaluation Manual. Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.
USEPA, 1995. Supplemental Guidance to RAGS: Region 4 Bulletins, Bulletin No. 3, November 1995.

TABLE G-17

INHALATION OF PARTICULATES - SURFACE SOIL
 CHILD RESIDENT
 NAS WHITING FIELD
 MILTON, FLORIDA
 SITE 15

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m ³)	INTAKE (mg/kg-day)	INHALATION CSF (mg/kg-day) ⁻¹	CANCER RISK
Arsenic	I	1.9	mg/kg	1.53E-09	1.3E-10	1.5E+01	1.9E-09
SUMMARY CANCER RISK							2E-09

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m ³)	INTAKE (mg/kg-day)	INHALATION RfD (mg/kg-day)	HAZARD QUOTIENT
Di-n-butylphthalate	O	369	ug/kg	2.98E-10	2.9E-10	ND	
Arsenic	I	1.9	mg/kg	1.53E-09	1.5E-09	ND	
Iron	I	5060	mg/kg	4.08E-06	3.9E-06	ND	
SUMMARY HAZARD INDEX							0E+00

TABLE G-18

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
 SITE MAINTENANCE WORKER
 NAS WHITING FIELD
 MILTON, FLORIDA
 SITE 15

EXPOSURE PARAMETERS

EQUATIONS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION SOIL	CS	chemical-specific	chemical-specific	
INGESTION RATE	IR	50	mg/day	USEPA, 1995
FRACTION INGESTED	FI	100%	unitless	Assumption
ADHERENCE FACTOR	AF	1	mg·cm ² -event	USEPA, 1995
ABSORPTION FRACTION	ABS	chemical-specific	unitless	Assumption
SURFACE AREA EXPOSED	SA	5,750	cm ²	USEPA, 1992
DOSE ABSORBED PER EVENT	DA _{event}	chemical-specific	mg·cm ² -event	USEPA, 1992
CONVERSION FACTOR	CF	1.00E-09	kg/ug	Organic conversion
CONVERSION FACTOR	CF	1.00E-06	kg/mg	Inorganic conversion
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE FREQUENCY	EF	30	days/year [1]	Assumption
EXPOSURE DURATION	ED	25	years	USEPA, 1995
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	25	years	USEPA, 1995

[1] Units for exposure frequency are events/year in the calculation of the dermally absorbed dose.
 USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors";
 OSWER Directive 9285.6-03.
 USEPA, 1992. Dermal Exposure Assessment: Principles and Applications; EPA/600/8-91/011B; 1/92.
 USEPA, 1995. Supplemental Guidance to RAGS: Region IV, Human Health Risk Assessment Bulletin No. 3.

CANCER RISK = INTAKE (mg/kg-day) x CANCER SLOPE FACTOR (mg/kg-day)⁻¹

HAZARD QUOTIENT = INTAKE (mg/kg-day) / REFERENCE DOSE (mg/kg-day)

INTAKE_{INGESTION} = CS x IR x FI x CF x EF x ED
 BW x AT x 365 days/yr

INTAKE_{DERMAL} = DA_{event} x SA x EF x ED
 BW x AT x 365 days/yr

Where:
 DA_{event} = CS x AF x ABS x CF

Note: For noncarcinogenic effects, AT = ED

TABLE G-18

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
 SITE MAINTENANCE WORKER
 NAS WHITING FIELD
 MILTON, FLORIDA
 SITE 15

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL CSF (mg/kg-day) ⁻¹	CANCER RISK INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL CSF [2] (mg/kg-day) ⁻¹	CANCER RISK DERMAL	TOTAL CANCER RISK
Arsenic	I	1.9	mg/kg	4.0E-08	1.5E+00	6.0E-08	0.001	4.6E-09	1.5E+00	6.9E-09	6.7E-08
SUMMARY CANCER RISK						6E-08				7E-09	7E-08
[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).											
[2] Calculated from oral CSFs.											

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL RfD (mg/kg-day)	HAZARD QUOTIENT INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL RfD [2] (mg/kg-day)	HAZARD QUOTIENT DERMAL	TOTAL HAZARD QUOTIENT
Di-n-butylphthalate	O	369	ug/kg	2.2E-08	1.0E-01	2.2E-07	0.01	2.5E-08	1.0E-01	2.5E-07	4.7E-07
Arsenic	I	1.9	mg/kg	1.1E-07	3.0E-04	3.7E-04	0.001	1.3E-08	2.9E-04	4.4E-05	4.2E-04
Iron	I	5060	mg/kg	3.0E-04	3.0E-01	9.9E-04	0.001	3.4E-05	6.0E-03	5.7E-03	6.7E-03
SUMMARY HAZARD INDEX						0.001				0.006	0.007
[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).											
[2] Calculated from oral RfDs.											

TABLE G-19

INHALATION OF PARTICULATES - SURFACE SOIL
 SITE MAINTENANCE WORKER
 NAS WHITING FIELD
 MILTON, FLORIDA
 SITE 15

EXPOSURE PARAMETERS

EQUATIONS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
SOIL CONCENTRATION	C	chemical-specific	chemical-specific	
PART. EMISSION FACTOR	PEF	1.24E+09	m ³ /kg	default [1]
CONCENTRATION AIR	CA	chemical-specific	mg/m ³	
INHALATION RATE	IR	2.5	m ³ /hour	USEPA, 1995
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE TIME	ET	8	hours/day	Assumption
EXPOSURE FREQUENCY	EF	30	days/year	Assumption
EXPOSURE DURATION	ED	25	years	USEPA, 1995
CONVERSION FACTOR	CF	0.001	mg/ug	Organics only
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	25	years	USEPA, 1995

CANCER RISK = INTAKE (mg/kg-day) x INHALATION CANCER SLOPE FACTOR (mg/kg-day)⁻¹

HAZARD QUOTIENT = INTAKE (mg/kg-day) / INHALATION REFERENCE DOSE (mg/kg-day)

INTAKE = CA x IR x ET x EF x ED
 BW x AT x 365 days/yr

Where:

CA = C x CF x (I/PEF)

Note: For noncarcinogenic effects, AT = ED

[1] Florida Soil Clean-Up Goal Variable. FDEP, 1995.
 USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance:
 "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.
 USEPA, 1995. Supplemental Guidance to RAGS: Region 4 Bulletins, Bulletin No. 3, November 1995.

TABLE G-19

INHALATION OF PARTICULATES - SURFACE SOIL
 SITE MAINTENANCE WORKER
 NAS WHITING FIELD
 MILTON, FLORIDA
 SITE 15

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m ³)	INTAKE (mg/kg-day)	INHALATION CSF (mg/kg-day) ⁻¹	CANCER RISK
Arsenic	I	1.9	mg/kg	1.53E-09	1.3E-11	1.5E+01	1.9E-10
SUMMARY CANCER RISK							2E-10

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m ³)	INTAKE (mg/kg-day)	INHALATION RfD (mg/kg-day)	HAZARD QUOTIENT
Di-n-butylphthalate	O	369	ug/kg	2.98E-10	7.0E-12	ND	
Arsenic	I	1.9	mg/kg	1.53E-09	3.6E-11	ND	
Iron	I	5060	mg/kg	4.08E-06	9.6E-08	ND	
SUMMARY HAZARD INDEX							0E+00

TABLE G-20

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL.
 OCCUPATIONAL WORKER
 NAS WHITING FIELD
 MILTON, FLORIDA
 SITE 15

EXPOSURE PARAMETERS

EQUATIONS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION SOIL	CS	chemical-specific	chemical-specific	
INGESTION RATE	IR	50	mg/day	USEPA, 1995
FRACTION INGESTED	FI	100%	unitless	Assumption
ADHERENCE FACTOR	AF	1	mg/cm ² -event	USEPA, 1992
ABSORPTION FRACTION	ABS	chemical-specific	unitless	Assumption
SURFACE AREA EXPOSED	SA	2,300	cm ²	USEPA, 1992
DOSE ABSORBED PER EVENT	DA _{event}	chemical-specific	mg/cm ² -event	USEPA, 1995
CONVERSION FACTOR	CF	1.00E-09	kg/ug	Organic conversion
CONVERSION FACTOR	CF	1.00E-06	kg/mg	Inorganic conversion
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE FREQUENCY	EF	250	days/year [1]	USEPA, 1995
EXPOSURE DURATION	ED	25	years	USEPA, 1995
AVERAGING TIME				
CANCER	AT _c	70	years	USEPA, 1991
NONCANCER	AT _n	25	years	USEPA, 1995

[1] Units for exposure frequency are events/year in the calculation of the dermally absorbed dose.
 USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors";
 OSWER Directive 9285.6-03.
 USEPA, 1992. Dermal Exposure Assessment: Principles and Applications; EPA/600/8-91/011B; 1/92.
 USEPA, 1995. Supplemental Guidance to RAGS : Region IV, Human Health Risk Assessment Bulletin No. 3.

$$\text{CANCER RISK} = \text{INTAKE (mg/kg-day)} \times \text{CANCER SLOPE FACTOR (mg/kg-day)}^{-1}$$

$$\text{HAZARD QUOTIENT} = \text{INTAKE (mg/kg-day)} / \text{REFERENCE DOSE (mg/kg-day)}$$

$$\text{INTAKE}_{\text{INGESTION}} = \frac{\text{CS} \times \text{IR} \times \text{FI} \times \text{CF} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT} \times 365 \text{ days/yr}}$$

$$\text{INTAKE}_{\text{DERMAL}} = \frac{\text{DA}_{\text{event}} \times \text{SA} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT} \times 365 \text{ days/yr}}$$

Where:

$$\text{DA}_{\text{event}} = \text{CS} \times \text{AF} \times \text{ABS} \times \text{CF}$$

Note: For noncarcinogenic effects, AT = ED

TABLE G-20

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
 OCCUPATIONAL WORKER
 NAS WHITING FIELD
 MILTON, FLORIDA
 SITE 15

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL CSF (mg/kg-day) ⁻¹	CANCER RISK INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL CSF [2] (mg/kg-day) ⁻¹	CANCER RISK DERMAL	TOTAL CANCER RISK
Arsenic	I	1.9	mg/kg	3.3E-07	1.5E+00	5.0E-07	0.001	1.5E-08	1.5E+00	2.3E-08	5.2E-07
SUMMARY CANCER RISK						5E-07				2E-08	5E-07
[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995). [2] Calculated from oral CSFs.											

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL RfD (mg/kg-day)	HAZARD QUOTIENT INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL RfD [2] (mg/kg-day)	HAZARD QUOTIENT DERMAL	TOTAL HAZARD QUOTIENT
Di-n-butylphthalate	O	369	ug/kg	1.8E-07	1.0E-01	1.8E-06	0.01	8.3E-08	1.0E-01	8.3E-07	2.6E-06
Arsenic	I	1.9	mg/kg	9.3E-07	3.0E-04	3.1E-03	0.001	4.3E-08	2.9E-04	1.5E-04	3.2E-03
Iron	I	5060	mg/kg	2.5E-03	4.0E-02	6.2E-02	0.001	1.1E-04	4.0E-02	2.8E-03	6.5E-02
SUMMARY HAZARD INDEX						0.06				0.003	0.07
[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995). [2] Calculated from oral RfDs.											

TABLE G-21

INHALATION OF PARTICULATES - SURFACE SOIL
 OCCUPATIONAL WORKER
 NAS WHITING FIELD
 MILTON, FLORIDA
 SITE 15

EXPOSURE PARAMETERS

EQUATIONS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
SOIL CONCENTRATION	C	chemical-specific	chemical-specific	
PART. EMISSION FACTOR	PEF	1.24E+09	m ³ /kg	default [1]
CONCENTRATION AIR	CA	chemical-specific	mg/m ³	
INHALATION RATE	IR	0.833	m ³ /hour	USEPA, 1995
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE TIME	ET	8	hours/day	Assumption
EXPOSURE FREQUENCY	EF	250	days/year	Assumption
EXPOSURE DURATION	ED	25	years	USEPA, 1995
CONVERSION FACTOR	CF	0.001	mg/ug	Organics only
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	25	years	USEPA, 1995

CANCER RISK = INTAKE (mg/kg-day) x INHALATION CANCER SLOPE FACTOR (mg/kg-day)⁻¹

HAZARD QUOTIENT = INTAKE (mg/kg-day) / INHALATION REFERENCE DOSE (mg/kg-day)

INTAKE = $CA \times IR \times ET \times EF \times ED$
 $BW \times AT \times 365 \text{ days/yr}$

Where:

CA = $C \times CF \times (1/PEF)$

Note: For noncarcinogenic effects, AT = ED.

[1] Florida Soil Clean-Up Goal Variable. FDEP, 1995.
 USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance:
 "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.
 USEPA, 1995. Supplemental Guidance to RAGS: Region 4 Bulletins, Bulletin No. 3, November 1995.

TABLE G-21

INHALATION OF PARTICULATES - SURFACE SOIL
 OCCUPATIONAL WORKER
 NAS WHITING FIELD
 MILTON, FLORIDA
 SITE 15

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m ³)	INTAKE (mg/kg-day)	INHALATION CSF (mg/kg-day) ⁻¹	CANCER RISK
Arsenic	I	1.9	mg/kg	1.53E-09	3.6E-11	1.5E+01	5.4E-10
SUMMARY CANCER RISK							5E-10

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m ³)	INTAKE (mg/kg-day)	INHALATION RfD (mg/kg-day)	HAZARD QUOTIENT
Di-n-butylphthalate	O	369	ug/kg	2.98E-10	1.9E-11	ND	
Arsenic	I	1.9	mg/kg	1.53E-09	1.0E-10	ND	
Iron	I	5060	mg/kg	4.08E-06	2.7E-07	ND	
SUMMARY HAZARD INDEX							0E+00

TABLE G-22

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
EXCAVATION WORKER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 15

EXPOSURE PARAMETERS

EQUATIONS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION SOIL	CS	chemical-specific	chemical-specific	
INGESTION RATE	IR	480	mg/day	USEPA, 1995
FRACTION INGESTED	FI	100%	unitless	Assumption
ADHERENCE FACTOR	AF	1	mg/cm ² -event	USEPA, 1995
ABSORPTION FRACTION	ABS	chemical-specific	unitless	USEPA, 1995
SURFACE AREA EXPOSED	SA	5,750	cm ²	USEPA, 1992
DOSE ABSORBED PER EVENT	DA _{event}	chemical-specific	mg/cm ² -event	USEPA, 1992
CONVERSION FACTOR	CF	1.00E-09	kg/ug	Organic conversion
CONVERSION FACTOR	CF	1.00E-06	kg/mg	Inorganic conversion
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE FREQUENCY	EF	30	days/year [1]	Assumption
EXPOSURE DURATION	ED	1	years	USEPA, 1991
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	1	years	USEPA, 1991

[1] Units for exposure frequency are events/year in the calculation of the dermally absorbed dose.
USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors";
OSWER Directive 9285.6-03.
USEPA, 1992. Dermal Exposure Assessment: Principles and Applications; EPA/600/8-91/011B; 1-92.
USEPA, 1995. Supplemental Guidance to RAGS: Region IV, Human Health Risk Assessment Bulletin No. 3.

CANCER RISK = INTAKE (mg/kg-day) x CANCER SLOPE FACTOR (mg/kg-day)⁻¹

HAZARD QUOTIENT = INTAKE (mg/kg-day) / REFERENCE DOSE (mg/kg-day)

INTAKE_{INGESTION} = CS x IR x FI x CF x EF x ED
BW x AT x 365 days/yr

INTAKE_{DERMAL} = DA_{event} x SA x EF x ED
BW x AT x 365 days/yr

Where:
DA_{event} = CS x AF x ABS x CF

Note: For noncarcinogenic effects, AT = ED

TABLE G-22

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
EXCAVATION WORKER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 15

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL CSF (mg/kg-day) ⁻¹	CANCER RISK INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL CSF [2] (mg/kg-day) ⁻¹	CANCER RISK DERMAL	TOTAL CANCER RISK
Arsenic	I	1.9	mg/kg	1.5E-08	1.5	2.3E-08	0.001	1.8E-10	1.5	2.7E-10	2.3E-08
SUMMARY CANCER RISK						3E-08				4E-10	3E-08
[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).											
[2] Calculated from oral CSFs.											

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL RfD [1] (mg/kg-day)	HAZARD QUOTIENT INGESTION	DERMAL ABS [2]	INTAKE DERMAL (mg/kg-day)	DERMAL RfD [3] (mg/kg-day)	HAZARD QUOTIENT DERMAL	TOTAL HAZARD QUOTIENT
Di-n-butylphthalate	O	369	ug/kg	2.1E-07	1.0E-01	2.1E-06	0.01	2.5E-08	1.0E-01	2.5E-07	2.3E-06
Arsenic	I	1.9	mg/kg	1.1E-06	3.0E-04	3.6E-03	0.001	1.3E-08	2.9E-04	4.4E-05	3.6E-03
Iron	I	5060	mg/kg	2.9E-03	3.0E-01	9.5E-03	0.001	3.4E-05	6.0E-03	5.7E-03	1.5E-02
SUMMARY HAZARD INDEX						0.01				0.01	0.02
[1] Subchronic Rfd values were used for the excavation worker due to short exposure scenario.											
[2] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (USEPA, 1995).											
[3] Calculated from oral RfDs.											

TABLE G-23

INHALATION OF PARTICULATES - SURFACE SOIL
 EXCAVATION WORKER
 NAS WHITING FIELD
 MILTON, FLORIDA
 SITE 15

EXPOSURE PARAMETERS

EQUATIONS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
SOIL CONCENTRATION	C	chemical-specific	chemical-specific	
PART. EMISSION FACTOR	PEF	1.24E+09	m ³ /kg	default [1]
CONCENTRATION AIR	CA	chemical-specific	mg/m ³	
INHALATION RATE	IR	2.5	m ³ /hour	USEPA, 1995
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE TIME	ET	8	hours/day	Assumption
EXPOSURE FREQUENCY	EF	30	days/year	Assumption
EXPOSURE DURATION	ED	1	years	Assumption
CONVERSION FACTOR	CF	0.001	mg/ug	Organics only
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	1	years	USEPA, 1991

CANCER RISK = INTAKE (mg/kg-day) x INHALATION CANCER SLOPE FACTOR (mg/kg-day)⁻¹

HAZARD QUOTIENT = INTAKE (mg/kg-day) / INHALATION REFERENCE DOSE (mg/kg-day)

INTAKE = CA x IR x ET x EF x ED
 BW x AT x 365 days/yr

Where:
 CA = C x CF x (1/PEF)

Note: For noncarcinogens, AT = ED.

[1] Florida Soil Clean-Up Goal Variable. FDEP, 1995.
 USEPA, 1991. Human Health Evaluation Manual. Supplemental Guidance:
 Standard Default Exposure Factors; OSWER Directive 9285 6-03.
 USEPA, 1995. Supplemental Guidance to RAGS: Region IV. Human Health Risk Assessment Bulletin No. 3.

TABLE G-23

INHALATION OF PARTICULATES - SURFACE SOIL
 EXCAVATION WORKER
 NAS WHITING FIELD
 MILTON, FLORIDA
 SITE 15

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m ³)	INTAKE (mg/kg-day)	INHALATION CSF (mg/kg-day) ⁻¹	CANCER RISK
Arsenic	I	1.9	mg/kg	1.53E-09	5.1E-13	1.5E+01	7.7E-12
SUMMARY CANCER RISK							8E-12

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m ³)	INTAKE (mg/kg-day)	INHALATION RfD (mg/kg-day)	HAZARD QUOTIENT
Di-n-butylphthalate	O	369	ug/kg	2.98E-10	7.0E-12	ND	
Arsenic	I	1.9	mg/kg	1.53E-09	3.6E-11	ND	
Iron	I	5060	mg/kg	4.08E-06	9.6E-08	ND	
SUMMARY HAZARD INDEX							0E+00

TABLE G-24

INGESTION OF GROUNDWATER AS DRINKING WATER (UNFILTERED SAMPLES)
 ADULT RESIDENT
 SITE 11
 MILTON, FLORIDA

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION WATER	CW	chemical-specific	ug/liter	
INGESTION RATE	IR	2	liters/day	USEPA, 1995
BODY WEIGHT	BW	70	kg	USEPA, 1991
CONVERSION FACTOR	CF	0.001	mg/ug	
EXPOSURE FREQUENCY	EF	350	days/year	USEPA, 1995
EXPOSURE DURATION	ED	24	years	USEPA, 1995
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	24	years	USEPA, 1991

USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03. USEPA, 1995. Region IV Supplemental Guidance to RAGS, Bulletin No. 3, November.	$\text{CANCER RISK} = \text{INTAKE (mg/kg-day)} \times \text{CANCER SLOPE FACTOR (mg/kg-day)}^{-1}$ $\text{HAZARD QUOTIENT} = \text{INTAKE (mg/kg-day)} / \text{REFERENCE DOSE (mg/kg-day)}$ $\text{INTAKE} = \frac{\text{CW} \times \text{IR} \times \text{EF} \times \text{ED} \times \text{CF}}{\text{BW} \times \text{AT} \times 365 \text{ days/year}}$ Note: For noncarcinogenic effects, AT = ED.
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TABLE G-24

INGESTION OF GROUNDWATER AS DRINKING WATER (UNFILTERED SAMPLES)
 ADULT RESIDENT
 SITE 11
 MILTON, FLORIDA

CARCINOGENIC EFFECTS

COMPOUND	WATER CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	CANCER SLOPE FACTOR (mg/kg-day) ⁻¹	CANCER RISK INGESTION
1,1-Dichloroethene	5.2	UG/LITER	4.9E-05	6.0E-01	2.9E-05
Benzene	10.8	UG/LITER	1.0E-04	2.9E-02	2.9E-06
Trichloroethene	22.7	UG/LITER	2.1E-04	1.1E-02	2.3E-06
1,4-Dichlorobenzene	5.3	UG/LITER	5.0E-05	2.4E-02	1.2E-06
4,4'-DDT	0.06	UG/LITER	5.6E-07	3.4E-01	1.9E-07
bis(2-Ethylhexyl)phthalate	3.9	UG/LITER	3.7E-05	1.4E-02	5.1E-07
Arsenic	5.2	UG/LITER	4.9E-05	1.5E+00	7.3E-05
TOTAL CANCER RISK					1E-04

NONCARCINOGENIC EFFECTS

COMPOUND	WATER CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	REFERENCE DOSE (mg/kg-day)	HAZARD QUOTIENT INGESTION
1,1-Dichloroethene	5.2	UG/LITER	1.4E-04	9.0E-03	1.6E-02
1,2-Dichloroethene (total)	5.2	UG/LITER	1.4E-04	1.0E-02	1.4E-02
Benzene	10.8	UG/LITER	3.0E-04	9.0E-03	3.3E-02
Chlorobenzene	5.7	UG/LITER	1.6E-04	9.0E-03	1.7E-02
Trichloroethene	22.7	UG/LITER	6.2E-04	ND	
1,4-Dichlorobenzene	5.3	UG/LITER	1.5E-04	ND	
bis(2-Ethylhexyl)phthalate	3.9	UG/LITER	1.1E-04	2.0E-02	5.3E-03
4,4'-DDT	0.06	UG/LITER	1.6E-06	5.0E-04	3.3E-03
Aluminum	202	UG/LITER	5.5E-03	1.0E+00	5.5E-03
Antimony	25.6	UG/LITER	7.0E-04	4.0E-04	1.8E+00
Arsenic	5.2	UG/LITER	1.4E-04	3.0E-04	4.7E-01
Iron	2723	UG/LITER	7.5E-02	3.0E-01	2.5E-01
Manganese	59.2	UG/LITER	1.6E-03	4.7E-02	3.5E-02
Thallium	2.95	UG/LITER	8.1E-05	8.0E-05	1.0E+00
TOTAL HAZARD INDEX					4

ND = no data available.

TABLE G-25

INGESTION OF GROUNDWATER AS DRINKING WATER (UNFILTERED SAMPLES) IN CAPTURE ZONE
 CHILD RESIDENT
 SITE 15
 MILTON, FLORIDA

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION WATER	CW	chemical-specific	ug/liter	
INGESTION RATE	IR	1	liters/day	USEPA, 1995
BODY WEIGHT	BW	15	kg	USEPA, 1991
CONVERSION FACTOR	CF	0.001	mg/ug	
EXPOSURE FREQUENCY	EF	350	days/year	USEPA, 1995
EXPOSURE DURATION	ED	6	years	USEPA, 1995
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	6	years	USEPA, 1991

USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance:
 "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.

USEPA, 1995. Region IV Supplemental Guidance to RAGS, Bulletin No. 3, November.

CANCER RISK = INTAKE (mg/kg-day) x CANCER SLOPE FACTOR (mg/kg-day)⁻¹

HAZARD QUOTIENT = INTAKE (mg/kg-day) / REFERENCE DOSE (mg/kg-day)

INTAKE = $\frac{CW \times IR \times EF \times ED \times CF}{BW \times AT \times 365 \text{ days/year}}$

Note: For noncarcinogenic effects, AT = ED.

TABLE G-25

INGESTION OF GROUNDWATER AS DRINKING WATER (UNFILTERED SAMPLES) IN CAPTURE ZONE
 CHILD RESIDENT
 SITE 15
 MILTON, FLORIDA

CARCINOGENIC EFFECTS

COMPOUND	WATER CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	CANCER SLOPE FACTOR (mg/kg-day) ⁻¹	CANCER RISK INGESTION
1,1-Dichloroethene	5.2	UG/LITER	2.8E-05	6.0E-01	1.7E-05
Benzene	10.8	UG/LITER	5.9E-05	2.9E-02	1.7E-06
Trichloroethene	22.7	UG/LITER	1.2E-04	1.1E-02	1.4E-06
4,4-DDT	0.06	UG/LITER	3.3E-07	3.4E-01	1.1E-07
1,4-Dichlorobenzene	5.3	UG/LITER	2.9E-05	2.4E-02	7.0E-07
bis(2-Ethylhexyl)phthalate	3.9	UG/LITER	2.1E-05	1.4E-02	3.0E-07
Arsenic	5.2	UG/LITER	2.8E-05	1.5E+00	4.3E-05
TOTAL CANCER RISK					6E-05

NONCARCINOGENIC EFFECTS

COMPOUND	WATER CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	REFERENCE DOSE (mg/kg-day)	HAZARD QUOTIENT INGESTION
1,1-Dichloroethene	5.2	UG/LITER	3.3E-04	9.0E-03	3.7E-02
1,2-Dichloroethene (total)	5.2	UG/LITER	3.3E-04	1.0E-02	3.3E-02
Benzene	10.8	UG/LITER	6.9E-04	9.0E-03	7.7E-02
Chlorobenzene	5.7	UG/LITER	3.6E-04	9.0E-03	4.0E-02
Trichloroethene	22.7	UG/LITER	1.5E-03	ND	
1,4-Dichlorobenzene	5.3	UG/LITER	3.4E-04	ND	
bis(2-Ethylhexyl)phthalate	3.9	UG/LITER	2.5E-04	2.0E-02	1.2E-02
4,4-DDT	0.06	UG/LITER	3.8E-06	5.0E-04	7.7E-03
Aluminum	202	UG/LITER	1.3E-02	1.0E+00	1.3E-02
Antimony	25.6	UG/LITER	1.6E-03	4.0E-04	4.1E+00
Arsenic	5.2	UG/LITER	3.3E-04	3.0E-04	1.1E+00
Iron	2723	UG/LITER	1.7E-01	3.0E-01	5.8E-01
Manganese	59.2	UG/LITER	3.8E-03	4.7E-02	8.1E-02
Thallium	2.95	UG/LITER	1.9E-04	8.0E-05	2.4E+00
TOTAL HAZARD INDEX					8

TABLE G-26

INHALATION EXPOSURE TO VOCs WHILE SHOWERING
 ADULT RESIDENT
 SITE 15
 MILTON, FLORIDIA

EXPOSURE PARAMETERS

EQUATIONS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION SHOWER AIR	CA [1]	chemical	ug/m ³	Modeled
CONVERSION FACTOR 1	CF ₁	24	hours/day	
EXPOSURE TIME SHOWER	ET	0.2	hours/day	USEPA, 1989
EXPOSURE FREQUENCY	EF	350	days/year	USEPA, 1991
EXPOSURE DURATION	ED	24	years	USEPA, 1991
CONVERSION FACTOR 2	CF ₂	365	days/year	
AVERAGING TIME CANCER	AT	70	years	USEPA, 1989
AVERAGING TIME NONCANCER	AT	24	years	USEPA, 1989

$$\text{CANCER RISK} = \text{AVG. CONC. (ug/m}^3\text{)} \times \text{CANCER UNIT RISK (ug/m}^3\text{)}^{-1}$$

$$\text{HAZARD QUOTIENT} = \text{AVG. CONC. (ug/m}^3\text{)} / \text{REF. CONC. (ug/m}^3\text{)}$$

$$\text{AVG. CONC.} = \frac{\text{CA}_{\text{air}} \times \text{EF} \times \text{ET} \times \text{ED}}{\text{AT} \times \text{CF}_1 \times \text{CF}_2}$$

[1] Calculated via model by Foster and Chrostowski, Air Pollution Control Association Annual Meeting, 1987.
 USEPA, 1989, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual, (Part A)
 EPA 540/1-89/002; December 1989.
 USEPA, 1991, Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Assumptions".

TABLE G-26

INHALATION EXPOSURE TO VOCs WHILE SHOWERING
 ADULT RESIDENT
 SITE 15
 MILTON, FLORIDA

CARCINOGENIC EFFECTS

COMPOUND	VOLATILE OR NON-VOLATILE? V/NV	SHOWER AIR CONCENTRATION ($\mu\text{g}/\text{m}^3$)	AVERAGE AIR CONCENTRATION LIFETIME ($\mu\text{g}/\text{m}^3$)	INHALATION CANCER UNIT RISK ($\mu\text{g}/\text{m}^3$) ⁻¹	CANCER RISK
1,1-Dichloroethene	V	26.19	7.2E-02	5.0E-05	3.6E-06
Benzene	V	57.86	1.6E-01	8.3E-06	1.3E-06
Trichloroethene	V	99.73	2.7E-01	2.0E-06	5.5E-07
1,4-Dichlorobenzene	NV	NA	NA	ND	NA
4,4'-DDT	NV	NA	NA	ND	NA
bis(2-Ethylhexyl)phthalate	NV	NA	NA	ND	NA
Arsenic	NV	NA	NA	4.3E-03	NA
SUMMARY CANCER RISK					5E-06
NA = not applicable. This analyte is not volatile and has therefore not been evaluated via this volatilization model.					

TABLE G-26

INHALATION EXPOSURE TO VOCs WHILE SHOWERING
ADULT RESIDENT
SITE 15
MILTON, FLORIDA

NONCARCINOGENIC EFFECTS

COMPOUND	VOLATILE OR NON-VOLATILE? V/NV	SHOWER AIR CONCENTRATION ($\mu\text{g}/\text{m}^3$)	AVERAGE AIR CONCENTRATION FOR TIME PERIOD ($\mu\text{g}/\text{m}^3$)	CHRONIC INHALATION RfC [1] ($\mu\text{g}/\text{m}^3$)	HAZARD QUOTIENT
1,1-Dichloroethene	V	26.19	2.1E-01	ND	
1,2-Dichloroethene (total)	V	25.69	2.1E-01	ND	
Benzene	V	57.86	4.6E-01	ND	
Chlorobenzene	V	26.01	2.1E-01	2.0E+01	1.0E-02
Trichloroethene	V	99.73	8.0E-01	ND	
4,4'-DDT	NV	ND	NA	8.0E-01	
1,4-Dichlorobenzene	NV	ND	NA	ND	
bis(2-Ethylhexyl)phthalate	NV	ND	NA	ND	
Aluminum	NV	ND	NA	ND	
Antimony	NV	ND	NA	ND	
Arsenic	NV	ND	NA	ND	
Iron	NV	ND	NA	ND	
Manganese	NV	ND	NA	5.0E-05	
Thallium	NV	ND	NA	ND	
SUMMARY HAZARD INDEX					0.01
[1] RfC is the Reference Concentration published by USEPA. ND = no data available. NA = not applicable. The analyte is not volatile and has therefore not been evaluated via this volatilization model.					

TABLE G-27

CONCENTRATION OF VOCs WHILE SHOWERING
 ADULT RESIDENT
 SITE 15
 MILTON, FLORIDIA

EMPIRICAL CONSTANTS

CONSTANT	SYMBOL	VALUE	UNIT	SOURCE
Liquid-film mass transfer for CO ₂	K _l (CO ₂)	20	cm/hr	Calculated
Gas-film mass transfer for water	K _g (H ₂ O)	3000	cm/hr	Calculated
Molar gas constant x Temperature	RT	0.024	atm-m ³ /mole	
Reference temperature	T ₁	293	K	
Temperature of shower water	T _s	318	K	Assumption
Viscosity of water at shower temperature	u _s	0.6178	cp	Calculated
Viscosity of water at reference temperature	u ₁	0.65	cp	Calculated
Shower droplet free-fall time	t _s	1.5	sec	Assumption
Droplet diameter	d	1	mm	Foster & Chrostowski, 1987
Flow rate in shower	FR	20	l/min	Assumption
Volume of shower area	SV	12	m ³	Assumption
Air exchange rate	R	0.03	min ⁻¹	Calculated
Time in shower	D _s	12	min	USEPA, 1989
Time at which concentration is being calculated	t	12	min	Assumption

Foster, S.A. and Chrostowski, P.C., 1987. Inhalation Exposures to Volatile Organic Contaminants in the Shower.
 USEPA, 1989. Exposure Factors Handbook: EPA/600/8-89/043, May 1989.
 All equations and definitions of terms are presented in the Appendix to this report, Calculation of Air Concentration Using the Shower Model.

TABLE G-27

CONCENTRATION OF VOCs WHILE SHOWERING
 ADULT RESIDENT
 SITE 15
 MILTON, FLORIDIA

SHOWER CONCENTRATIONS

COMPOUND	C _w (ug/l)	MW (g/mol)	H (atm-m ³ /mol)	k _l (cm/hr)	k _g (cm/hr)	K _L (cm/hr)	K _{at} (cm/hr)	C _{wd} (ug/l)	S (ug/m ³ -min)	C _(voc) (ug/m ³)
1,1-Dichloroethene	5.2	97.0	0.026	1.3E+01	1.3E+03	1.3E+01	1.4E+01	1.6E+00	2.6E+00	2.6E+01
1,2-Dichloroethene (total)	5.2	97.0	0.00758	1.3E+01	1.3E+03	1.3E+01	1.4E+01	1.5E+00	2.5E+00	2.6E+01
Benzene	10.8	78.0	0.0056	1.5E+01	1.4E+03	1.4E+01	1.5E+01	3.4E+00	5.7E+00	5.8E+01
Chlorobenzene	5.7	110.0	0.0038	1.3E+01	1.2E+03	1.2E+01	1.3E+01	1.5E+00	2.6E+00	2.6E+01
Trichloroethene	22.7	130.0	0.01	1.2E+01	1.1E+03	1.1E+01	1.2E+01	5.9E+00	9.9E+00	1.0E+02
C _w = Concentration in groundwater			K _L = Mass transfer coefficient							
MW = Molecular weight			K _{at} = Temperature correction of mass transfer coefficient							
H = Henry's Law constant			C _{wd} = Analyte concentration in water droplet							
k _l = Chemical-specific mass-transfer coefficient			S = Release rate of analyte to air							
k _g = Chemical-specific gas mass-transfer coefficient			C _(voc) = Analyte concentration in bathroom air at time t.							
$C_{(voc)} = (S/R) \times (e^{(R)t} - 1) \times e^{(-R)t}$										

TABLE G-28

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL (CENTRAL TENDENCY)
 ADULT TRESPASSER
 NAS WHITING FIELD
 MILTON, FLORIDA
 SITE 15

EQUATIONS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION SOIL	CS	chemical-specific	chemical-specific	
INGESTION RATE	IR	50	mg/day	USEPA, 1996
FRACTION INGESTED	FI	100%	unitless	USEPA, 1995
ADHERENCE FACTOR	AF	0.2	mg/cm ² -event	USEPA, 1992
ABSORPTION FRACTION	ABS _d	chemical specific	unitless	USEPA, 1995
SURFACE AREA EXPOSED	SA	5,000	cm ²	USEPA, 1992
DOSE ABSORBED PER EVENT	DA _{event}	chemical specific	mg/cm ² -event	USEPA, 1992
CONVERSION FACTOR	CF	1.00E-06	kg/mg	Inorganic conversion
	CF	1.00E-09	kg/ug	Organic conversion
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE FREQUENCY	EF	45	days/year	USEPA, 1992
EXPOSURE DURATION	ED	7	years	USEPA, 1992
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	7	years	USEPA, 1992

USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.	<p>CANCER RISK = INTAKE (mg/kg-day) x CANCER SLOPE FACTOR (mg/kg-day)⁻¹</p> <p>HAZARD QUOTIENT = INTAKE (mg/kg-day) / REFERENCE DOSE (mg/kg-day)</p> <p>INTAKE-INGESTION = $\frac{CS \times IR \times FI \times CF \times EF \times ED}{BW \times AT \times 365 \text{ days/yr}}$</p> <p>INTAKE-DERMAL = $\frac{DA_{event} \times SA \times EF \times ED}{BW \times AT \times 365 \text{ days/yr}}$</p> <p>Where:</p> <p> $DA_{event} = AF \times ABS_d \times CF$</p> <p>Note: For noncarcinogenic effects: AT = ED</p>
USEPA, 1992. Region 6 Memorandum: Central Tendency and RME Exposure Parameters.	
USEPA, 1995. Supplemental Guidance to RAGS : Region IV, Human Health Risk Assessment Bulletin No. 3.	
USEPA, 1996. Exposure Factors Handbook, 1996.	

TABLE G-28

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL (CENTRAL TENDENCY)
 ADULT TRESPASSER
 NAS WHITING FIELD
 MILTON, FLORIDA
 SITE 15

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL CSF (mg/kg-day) ⁻¹	CANCER RISK INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL CSF [2] (mg/kg-day) ⁻¹	CANCER RISK DERMAL	TOTAL CANCER RISK
Arsenic	I	1.9	mg/kg	1.7E-08	1.5E+00	2.5E-08	0.001	3.3E-10	1.5E+00	5.0E-10	2.6E-08
SUMMARY CANCER RISK						3E-08				5E-10	3E-08
[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).											
[2] Calculated from oral CSFs.											

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL RfD (mg/kg-day)	HAZARD QUOTIENT INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL RfD [2] (mg/kg-day)	HAZARD QUOTIENT DERMAL	TOTAL HAZARD QUOTIENT
Arsenic	I	1.9	mg/kg	1.7E-07	3.0E-04	5.6E-04	0.001	3.3E-09	2.9E-04	1.2E-05	5.7E-04
Iron	I	5060	mg/kg	4.5E-04	3.0E-01	1.5E-03	0.001	8.9E-06	6.0E-03	1.5E-03	3.0E-03
SUMMARY HAZARD INDEX						0.002				0.001	0.004
[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).											
[2] Calculated from oral RfDs.											

TABLE G-29

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL (CENTRAL TENDENCY)
 ADOLESCENT TRESPASSER
 NAS WHITING FIELD
 MILTON, FLORIDA
 SITE 15

EXPOSURE PARAMETERS

EQUATIONS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION SOIL	CS	chemical-specific	chemical-specific	
INGESTION RATE	IR	50	mg/day	USEPA, 1996
FRACTION INGESTED	FI	100%	unitless	USEPA, 1995
ADHERENCE FACTOR	AF	0.2	mg/cm ² -event	USEPA, 1992
AGE-SPECIFIC SURFACE AREA	SA _i	age-specific	cm ²	USEPA, 1989
ABSORPTION FRACTION	ABS _d	chemical-specific	unitless	USEPA, 1995
CONVERSION FACTOR	CF	1.00E-06	kg/mg	Inorganic conversion
	CF	1.00E-09	kg/mg	Organic conversion
BODY WEIGHT	BW	45	kg	USEPA, 1991
AGE-SPECIFIC BODY WEIGHT	BW _i	age-specific	kg	USEPA, 1989
EXPOSURE FREQUENCY	EF	45	days/year [1]	USEPA, 1996
EXPOSURE DURATION	ED	2	years	USEPA, 1992
AGE-SPECIFIC EXPOSURE DURATION	ED _i	age-specific	years	Assumption
AGE-WEIGHTED SURFACE AREA [2]	SA _{avg}	821	cm ² -year/kg	GHR -Table C-5-5; USEPA, 1992
DOSE ABSORBED PER EVENT	DA _{event}	chemical-specific	mg/cm ² -event	USEPA, 1992
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	2	years	USEPA, 1992

$$\text{CANCER RISK} = \text{INTAKE (mg/kg-day)} \times \text{CANCER SLOPE FACTOR (mg/kg-day)}^{-1}$$

$$\text{HAZARD QUOTIENT} = \text{INTAKE (mg/kg-day)} / \text{REFERENCE DOSE (mg/kg-day)}$$

$$\text{INTAKE}_{\text{INGESTION}} = \frac{\text{CS} \times \text{IR} \times \text{FI} \times \text{CF} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT} \times 365 \text{ days/yr}}$$

$$\text{INTAKE}_{\text{DERMAL}} = \text{AT} \times 365 \text{ days/year} \times \text{SA}_{\text{avg}}$$

Where:

$$\text{SA}_{\text{avg}} = \text{SUM} (\text{SA}_i \times \text{ED}_i) / \text{BW}_i$$

$$\text{DA}_{\text{event}} = \text{CS} \times \text{AF} \times \text{ABS}_d \times \text{CF}$$

Note: For noncarcinogenic effects: AT = ED.

[1] Units for exposure frequency are in events/year in the calculation of the dermally absorbed dose.

[2] In estimating the dermally absorbed dose for children age 7 through 16, the time weighted, bodyweight normalized surface area exposed is

USEPA, 1989. Exposure Factors Handbook: EPA/600/8-89/043; May 1989.

USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.

USEPA, 1992. Region 6 Memorandum: Central Tendency and RME Exposure Parameters.

USEPA, 1995. Supplemental Guidance to RAGS: Region 4 Bulletin, Bulletin No. 3, November 1995.

USEPA, 1996. Exposure Factors Handbook 1996.

TABLE G-29

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL (CENTRAL TENDENCY)
 ADOLESCENT TRESPASSER
 NAS WHITING FIELD
 MILTON, FLORIDA
 SITE 15

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL CSF (mg/kg-day) ⁻¹	CANCER RISK INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL CSF [2] (mg/kg-day) ⁻¹	CANCER RISK DERMAL	TOTAL CANCER RISK
Arsenic	I	1.9	mg/kg	7.4E-09	1.5E+00	1.1E-08	0.001	5.5E-10	1.5E+00	8.2E-10	1.2E-08
SUMMARY CANCER RISK						1E-08				8E-10	1E-08
[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).											
[2] Calculated from oral CSFs.											

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL RfD (mg/kg-day)	HAZARD QUOTIENT INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL RfD [2] (mg/kg-day)	HAZARD QUOTIENT DERMAL	TOTAL HAZARD QUOTIENT
Arsenic	I	1.9	mg/kg	2.6E-07	3.0E-04	8.7E-04	0.001	1.9E-08	2.9E-04	6.6E-05	9.3E-04
Iron	I	5060	mg/kg	6.9E-04	3.0E-01	2.3E-03	0.001	5.1E-05	6.0E-03	8.5E-03	1.1E-02
SUMMARY HAZARD INDEX						0.003				0.01	0.01
[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).											
[2] Calculated from oral RfDs.											

TABLE G-30

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL (CENTRAL TENDENCY)
 ADULT RESIDENT
 NAS WHITING FIELD
 MILTON, FLORIDA
 SITE 15

EXPOSURE PARAMETERS

EQUATIONS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION SOIL	CS	chemical-specific	chemical-specific	
INGESTION RATE	IR	50	mg/day	USEPA, 1996
FRACTION INGESTED	FI	100%	unitless	USEPA, 1995
ADHERENCE FACTOR	AF	0.2	mg/cm ² -event	USEPA, 1992
ABSORPTION FRACTION	ABS _d	chemical-specific	unitless	USEPA, 1995
SURFACE AREA EXPOSED	SA	5,000	cm ²	USEPA, 1992
DOSE ABSORBED PER EVENT	DA _{event}	chemical-specific	mg/cm ² -event	USEPA, 1992
CONVERSION FACTOR	CF	1.00E-09	kg/ug	Organic conversion
CONVERSION FACTOR	CF	1.00E-06	kg/mg	Inorganic conversion
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE FREQUENCY	EF	350	days/year [1]	USEPA, 1992
EXPOSURE DURATION	ED	7	years	USEPA, 1992
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	7	years	USEPA, 1992

USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors";
 OSWER Directive 9285.6-03.

USEPA, 1992. Region 6 Memorandum: Central Tendency and RME Exposure Parameters.

USEPA, 1995. Supplemental Guidance to RAGS: Region IV, Human Health Risk Assessment Bulletin No. 3.

USEPA, 1996. Exposure Factors Handbook, 1996.

$$\text{CANCER RISK} = \text{INTAKE (mg/kg-day)} \times \text{CANCER SLOPE FACTOR (mg/kg-day)}^{-1}$$

$$\text{HAZARD QUOTIENT} = \text{INTAKE (mg/kg-day)} / \text{REFERENCE DOSE (mg/kg-day)}$$

$$\text{INTAKE}_{\text{INGESTION}} = \frac{\text{CS} \times \text{IR} \times \text{FI} \times \text{CF} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT} \times 365 \text{ days/yr}}$$

$$\text{INTAKE}_{\text{DERMAL}} = \frac{\text{DA}_{\text{event}} \times \text{SA} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT} \times 365 \text{ days/yr}}$$

Where:

$$\text{DA}_{\text{event}} = \text{CS} \times \text{AF} \times \text{ABS}_d \times \text{CF}$$

Note: For noncarcinogenic effects, AT = ED.

TABLE G-30

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL (CENTRAL TENDENCY)
 ADULT RESIDENT
 NAS WHITING FIELD
 MILTON, FLORIDA
 SITE 15

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL CSF (mg/kg-day) ¹	CANCER RISK INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL CSF [2] (mg/kg-day) ¹	CANCER RISK DERMAL	TOTAL CANCER RISK
Arsenic	I	1.9	mg/kg	1.3E-07	1.5E+00	2.0E-07	0.001	2.6E-09	1.5E+00	3.9E-09	2.0E-07
SUMMARY CANCER RISK						2E-07				4E-09	2E-07
<p>[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995). [2] Calculated from oral CSFs.</p>											

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL RfD (mg/kg-day)	HAZARD QUOTIENT INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL RfD [2] (mg/kg-day)	HAZARD QUOTIENT DERMAL	TOTAL HAZARD QUOTIENT
Arsenic	I	1.9	mg/kg	1.3E-06	3.0E-04	4.3E-03	0.001	2.6E-08	2.9E-04	9.0E-05	4.4E-03
Iron	I	5060	mg/kg	3.5E-03	3.0E-01	1.2E-02	0.001	6.9E-05	6.0E-03	1.2E-02	2.3E-02
SUMMARY HAZARD INDEX						0.02				0.01	0.03
<p>[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November, 1995). [2] Calculated from oral RfDs.</p>											

TABLE G-31

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL (CENTRAL TENDENCY)
 CHILD RESIDENT
 NAS WHITING FIELD
 MILTON, FLORIDA
 SITE 15

EXPOSURE PARAMETERS

EQUATIONS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION SOIL	CS	chemical-specific	chemical-specific	
INGESTION RATE	IR	100	mg/day	USEPA, 1995
FRACTION INGESTED	FI	100%	unitless	USEPA, 1995
ADHERENCE FACTOR	AF	0.2	mg/cm ² -event	USEPA, 1995
AGE-SPECIFIC SURFACE AREA	SA	age-specific	cm ²	USEPA, 1989
ABSORPTION FRACTION	ABS	chemical-specific	unitless	USEPA, 1995
CONVERSION FACTOR	CF	1.00E-06	kg/mg	Inorganic conversion
CONVERSION FACTOR	CF	1.00E-09	kg/ug	Organic conversion
BODY WEIGHT	BW	15	kg	USEPA, 1991
AGE-SPECIFIC BODY WEIGHT	BW	age-specific	kg	USEPA, 1989
EXPOSURE FREQUENCY	EF	350	days/year [1]	USEPA, 1995
EXPOSURE DURATION	ED	2	years	USEPA, 1995
AGE-SPECIFIC EXPOSURE DURATION	ED	age-specific	years	Assumption
AGE-WEIGHTED SURFACE AREA [2]	SA _{wt(adj)}	766	cm ² -year/kg	USEPA, 1992
DOSE ABSORBED PER EVENT	DA _{event}	chemical-specific	mg/cm ² -event	USEPA, 1992
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	2	years	USEPA, 1995

$$\text{CANCER RISK} = \text{INTAKE (mg/kg-day)} \times \text{CANCER SLOPE FACTOR (mg/kg-day)}^{-1}$$

$$\text{HAZARD QUOTIENT} = \text{INTAKE (mg/kg-day)} / \text{REFERENCE DOSE (mg/kg-day)}$$

$$\text{INTAKE}_{\text{INGESTION}} = \frac{\text{CS} \times \text{IR} \times \text{FI} \times \text{CF} \times \text{EF} \times \text{ED}}{\text{BW} \times \text{AT} \times 365 \text{ days/yr}}$$

$$\text{INTAKE}_{\text{THERMAL}} = (\text{DA}_{\text{event}} \times \text{EF} / \text{AT} \times 365 \text{ days/year}) \times \text{SA}_{\text{wt(adj)}}$$

Where:

$$\text{SA}_{\text{wt(adj)}} = \text{SUM}(\text{SA} \times \text{ED} / \text{BW})$$

$$\text{DA}_{\text{event}} = \text{CS} \times \text{AF} \times \text{ABS} \times \text{CF}$$

Note: For noncarcinogenic effects, AT = ED.

[1] Air Force meteorological data summary for Eglin AFB (close proximity to Milton) states that there is 0.01 inches of rain for

110 days per year. Exposure frequency assumes half of the rainy days require indoor restriction.

[2] In estimating the dermally absorbed dose for children age 1 through 6, the time-weighted, bodyweight normalized surface area exposed is calculated from surface area, exposure duration, and body weight for each of 6 age periods, age 1 through 6, per USEPA, 1992.

USEPA. 1989. Exposure Factors Handbook: EPA/600/8-89/043; May 1989.

USEPA. 1991. Human Health Evaluation Manual. Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.

USEPA. 1995. Supplemental Guidance to RAGS: Region IV. Human Health Risk Assessment Bulletin No. 3.

USEPA. 1996. Exposure Factors Handbook: 1996.

TABLE G-31

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL (CENTRAL TENDENCY)
 CHILD RESIDENT
 NAS WHITING FIELD
 MILTON, FLORIDA
 SITE 15

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL CSF (mg/kg-day) ⁻¹	CANCER RISK INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL CSF [2] (mg/kg-day) ⁻¹	CANCER RISK DERMAL	TOTAL CANCER RISK
Arsenic	I	1.9	mg/kg	3.5E-07	1.5E+00	5.2E-07	0.001	4.0E-09	1.5E+00	6.0E-09	5.3E-07
SUMMARY CANCER RISK						5E-07				6E-09	5E-07
[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995). [2] Calculated from oral CSFs.											

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL RfD (mg/kg-day)	HAZARD QUOTIENT INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL RfD [2] (mg/kg-day)	HAZARD QUOTIENT DERMAL	TOTAL HAZARD QUOTIENT
Arsenic	I	1.9	mg/kg	1.2E-05	3.0E-04	4.0E-02	0.001	1.4E-07	2.9E-04	4.8E-04	4.1E-02
Iron	I	5060	mg/kg	3.2E-02	3.0E-01	1.1E-01	0.001	3.7E-04	6.0E-03	6.2E-02	1.7E-01
SUMMARY HAZARD INDEX						0.1				0.1	0.2
[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995). [2] Calculated from oral RfDs.											

TABLE G-32

INGESTION OF GROUNDWATER AS DRINKING WATER (UNFILTERED SAMPLES) (CENTRAL TENDENCY)
 ADULT RESIDENT
 SITE II
 MILTON, FLORIDA

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION WATER	CW	chemical-specific	ug/liter	
INGESTION RATE	IR	1.4	liters/day	USEPA, 1992
BODY WEIGHT	BW	70	kg	USEPA, 1991
CONVERSION FACTOR	CF	0.001	mg/ug	
EXPOSURE FREQUENCY	EF	350	days/year	USEPA, 1992
EXPOSURE DURATION	ED	7	years	USEPA, 1992
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	7	years	USEPA, 1991

USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03. USEPA, 1992. Region 6 Memorandum: Central Tendency and RME Exposure Parameters.	<p>CANCER RISK = INTAKE (mg/kg-day) x CANCER SLOPE FACTOR (mg/kg-day)⁻¹</p> <p>HAZARD QUOTIENT = INTAKE (mg/kg-day) / REFERENCE DOSE (mg/kg-day)</p> <p>INTAKE = CW x IR x EF x ED x CF RW x AT x 365 days/year</p> <p>Note: For noncarcinogenic effects, AT = ED.</p>
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TABLE G-32

INGESTION OF GROUNDWATER AS DRINKING WATER (UNFILTERED SAMPLES) (CENTRAL TENDENCY)
 ADULT RESIDENT
 SITE 11
 MILTON, FLORIDA

CARCINOGENIC EFFECTS

COMPOUND	WATER CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	CANCER SLOPE FACTOR (mg/kg-day) ⁻¹	CANCER RISK INGESTION
1,1-Dichloroethene	5.2	UG/LITER	1.0E-05	6.0E-01	6.0E-06
Benzene	10.8	UG/LITER	2.1E-05	2.9E-02	6.0E-07
Trichloroethene	22.7	UG/LITER	4.4E-05	1.1E-02	4.8E-07
1,4-Dichlorobenzene	5.3	UG/LITER	1.0E-05	2.4E-02	2.4E-07
4,4'-DDT	0.06	UG/LITER	1.2E-07	3.4E-01	3.9E-08
bis(2-Ethylhexyl)phthalate	3.9	UG/LITER	7.5E-06	1.4E-02	1.0E-07
Arsenic	5.2	UG/LITER	1.0E-05	1.5E+00	1.5E-05
TOTAL CANCER RISK					2E-05

NONCARCINOGENIC EFFECTS

COMPOUND	WATER CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	REFERENCE DOSE (mg/kg-day)	HAZARD QUOTIENT INGESTION
1,1-Dichloroethene	5.2	UG/LITER	1.0E-04	9.0E-03	1.1E-02
1,2-Dichloroethene (total)	5.2	UG/LITER	1.0E-04	9.0E-03	1.1E-02
Benzene	10.8	UG/LITER	2.1E-04	3.0E-04	6.9E-01
Chlorobenzene	5.7	UG/LITER	1.1E-04	2.0E-02	5.5E-03
Trichloroethene	22.7	UG/LITER	4.4E-04	6.0E-03	7.3E-02
1,4-Dichlorobenzene	5.3	UG/LITER	1.0E-04	ND	
bis(2-Ethylhexyl)phthalate	3.9	UG/LITER	7.5E-05	2.0E-02	3.7E-03
4,4-DDT	0.06	UG/LITER	1.2E-06	5.0E-04	2.3E-03
Aluminum	202	UG/LITER	3.9E-03	1.0E+00	3.9E-03
Arsenic	5.2	UG/LITER	1.0E-04	3.0E-04	3.3E-01
Iron	2723	UG/LITER	5.2E-02	3.0E-01	1.7E-01
Manganese	59.2	UG/LITER	1.1E-03	4.7E-02	2.4E-02
Thallium	2.95	UG/LITER	5.7E-05	8.0E-05	7.1E-01
TOTAL HAZARD INDEX					2

ND = no data available.

TABLE G-33

INGESTION OF GROUNDWATER AS DRINKING WATER (UNFILTERED SAMPLES) (CENTRAL TENDENCY)
 CHILD RESIDENT
 SITE 15
 MILTON, FLORIDA

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION WATER	CW	chemical-specific	ug/liter	
INGESTION RATE	IR	0.7	liters/day	USEPA, 1992
BODY WEIGHT	BW	15	kg	USEPA, 1991
CONVERSION FACTOR	CF	0.001	mg/ug	
EXPOSURE FREQUENCY	EF	350	days/year	USEPA, 1992
EXPOSURE DURATION	ED	2	years	USEPA, 1992
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	2	years	USEPA, 1991

<p>USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.</p> <p>USEPA, 1992. Region 6 Memorandum: Central Tendency and RME Exposure Parameters.</p>	<p>CANCER RISK = INTAKE (mg/kg-day) x CANCER SLOPE FACTOR (mg/kg-day)⁻¹</p> <p>HAZARD QUOTIENT = INTAKE (mg/kg-day) / REFERENCE DOSE (mg/kg-day)</p> <p>INTAKE = $\frac{C \times V \times IR \times EF \times ED \times CF}{BW \times AT \times 365 \text{ days/year}}$</p> <p>Note: For noncarcinogenic effects, AT = ED.</p>
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TABLE G-33

INGESTION OF GROUNDWATER AS DRINKING WATER (UNFILTERED SAMPLES) (CENTRAL TENDENCY)
 CHILD RESIDENT
 SITE 15
 MILTON, FLORIDA

CARCINOGENIC EFFECTS

COMPOUND	WATER CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	CANCER SLOPE FACTOR (mg/kg-day) ⁻¹	CANCER RISK INGESTION
1,1-Dichloroethene	5.2	UG/LITER	6.6E-06	6.0E-01	4.0E-06
Benzene	10.8	UG/LITER	1.4E-05	2.9E-02	4.0E-07
Trichloroethene	22.7	UG/LITER	2.9E-05	1.1E-02	3.2E-07
4,4-DDT	0.06	UG/LITER	7.7E-08	3.4E-01	2.6E-08
1,4-Dichlorobenzene	5.3	UG/LITER	6.8E-06	2.4E-02	1.6E-07
bis(2-Ethylhexyl)phthalate	3.9	UG/LITER	5.0E-06	1.4E-02	7.0E-08
Arsenic	5.2	UG/LITER	6.6E-06	1.5E+00	1.0E-05
TOTAL CANCER RISK					1E-05

NONCARCINOGENIC EFFECTS

COMPOUND	WATER CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	REFERENCE DOSE (mg/kg-day)	HAZARD QUOTIENT INGESTION
1,1-Dichloroethene	5.2	UG/LITER	2.3E-04	9.0E-03	2.6E-02
1,2-Dichloroethene (total)	5.2	UG/LITER	2.3E-04	9.0E-03	2.6E-02
Benzene	10.8	UG/LITER	4.8E-04	3.0E-04	1.6E+00
Chlorobenzene	5.7	UG/LITER	2.6E-04	2.0E-02	1.3E-02
Trichloroethene	22.7	UG/LITER	1.0E-03	6.0E-03	1.7E-01
1,4-Dichlorobenzene	5.3	UG/LITER	2.4E-04	ND	
bis(2-Ethylhexyl)phthalate	3.9	UG/LITER	1.7E-04	2.0E-02	8.7E-03
4,4-DDT	0.06	UG/LITER	2.7E-06	5.0E-04	5.4E-03
Aluminum	202	UG/LITER	9.0E-03	1.0E+00	9.0E-03
Arsenic	5.2	UG/LITER	2.3E-04	3.0E-04	7.8E-01
Iron	2723	UG/LITER	1.2E-01	3.0E-01	4.1E-01
Manganese	59.2	UG/LITER	2.6E-03	4.7E-02	5.6E-02
Thallium	2.95	UG/LITER	1.3E-04	8.0E-05	1.7E+00
TOTAL HAZARD INDEX					5

APPENDIX H
ECOLOGICAL RISK DATA

Table H - 1
Summary of Bioaccumulation Data

RI/RA Report, Site 15
NAS Whiting Field
Milton, Florida

Analyte	Bioaccumulation Factor [a]				
	Log K _{ow} [b]	Invertebrate [c]	Plant [d]	Mammal [e]	Bird [f]
VOLATILES [g]					
Acetone	-0.24	NA	NA	NA	NA
Methylene chloride	1.3	NA	NA	NA	NA
Xylenes (total)	3.2	NA	NA	NA	NA
SEMIVOLATILES					
Di-n-butylphthalate	5.2	5.0E-02	7.6E-03	2.4E-01	NA
bis(2-Ethylhexyl)phthalate	5.1	5.0E-02	8.7E-03	1.9E-01	NA
INORGANICS					
Cyanide	NA	0.0E+00 [h]	1.0E+00 [h]	0.0E+00 [h]	NA
Lead	NA	7.8E-02 [j]	0.0E+00 [k]	1.5E-02 [l]	NA
Silver	NA	1.5E-01 [m]	8.0E-02 [n]	1.5E-01 [l]	NA
Vanadium	NA	1.3E-01 [m]	1.1E-03 [n]	1.3E-01 [l]	NA

NOTES:

- [a] Units for bioaccumulation factors (BAFs) are mg/kg (wet) tissue weight over mg/kg (dry) soil weight for invertebrates and plant. The BAF units for small mammals and small birds are mg/kg (wet) tissue weight over mg/kg (wet) food weight.
- [b] Log K_{ow} values are from the Superfund Chemical Data Matrix (USEPA, 1993), unless otherwise noted. Average Log K_{ow} for classes of semivolatiles are presented in the second log K_{ow} column. When available, chemical class log K_{ow} averages are used instead of chemical specific log K_{ow} to calculate BAF values.
- [c] The value is an average BAF for semivolatiles measured in earthworms (Beyer, 1990), unless otherwise noted. Dry weight values were converted to wet weight assuming earthworm are 80% water (BAF_{wet weight} = BAF_{dry weight}/ 0.2).
- [d] Plant BAF were calculated using the following equation presented by Travis and Arms (1988) unless otherwise noted:
log (Plant Bioaccumulation Factor) = 1.588-0.578 (log K_{ow}). The calculated plant BAF value was converted from dry weight to wet weight by dividing the BAF by a factor of 0.2 (assuming 80% water content) (BAF_{wet weight} = BAF_{dry weight}/ 0.2).
- [e] Mammalian BAFs were calculated using the following equation from Travis and Arms (1988), unless otherwise noted:
log BTF (biotransfer factor) = Log K_{ow} - 7.6.
To convert from BTF to BAF, the calculated log BTF is first transformed to base 10 than multiplied by the average ingestion rates for nonlactating and lactating test animals (12 kg/day). BAFs are converted from dry to wet feed weight by dividing the BAF by a factor of 0.2 (BAF_{wet weight} = BTF * 12 mg/day/0.2). There is an uncertainty involved in using this equation for PAHs because the study by Travis and Arms (1988) did not use PAHs in the regression analysis.
- [f] Bioaccumulation data are generally lacking for birds. Therefore, there is uncertainty associated with estimating body dose for birds without considering what chemicals may have bioaccumulated in prey-item tissue.
- [g] VOCs with low Kow values < 3.5 do not bioaccumulate into animal tissue. Therefore it is assumed that transfer of VOCs from food items to animal tissue does not occur.
- [h] Cyanide has not shown to bioaccumulate in any organism.
- [i] Cyanide is naturally occurring in some plants; the extent to which it is taken up from soil is unknown and therefore a BAF of 1 is assumed.
- [j] Geometric mean of BAF values (wet weight/dry weights) for worms and woodlice (USEPA, 1985b). Wet weight tissue concentrations calculated assuming 80% body water content.
- [k] Lead does not accumulate in plant tissue; therefore, a BAF of zero was assigned.
- [l] Value derived from biotransfer factors (BTFs), presented in Baes et al (1984) for uptake into cattle. BTF converted to BAF by multiplying by food ingestion rate of 50 kg/day wet weight.
- [m] Prey-specific value not available; value shown is small mammal BAF for this chemical.
- [n] Value from Baes et al. (1984) for leafy portions of plants multiplied by 0.2 to represent 80% water composition of plants.

Table H - 1
Summary of Bioaccumulation Data

RI/RA Report, Site 15
NAS Whiting Field
Milton, Florida

- [o] BCF for earthworms from Diercxens et al. (1985).
[p] Median of values reported from Levine et al. (1989).
[q] Value calculated for di-n-butylphthalate used as a surrogate.

Notes:

Log Kow = Logarithm transformation of the octanol/water partitioning coefficient.
NA = Not available.
BAF = bioaccumulation factor.
mg/kg = milligrams per kilogram.
BTF = biotransfer factor.
PAH = polynuclear aromatic hydrocarbons.
> = greater than.
< = less than.
% = percent.

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Table H - 1
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NAS Whiting Field
Milton, Florida

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Summary of Bioaccumulation Data

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NAS Whiting Field
Milton, Florida

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Table II-2
Ingestion Toxicity Information for Wildlife

RI/FS Report, Site 15
NAS Whiting Field
Milton, Florida

Chemical	Test Species	Test Type	Duration	Effect	Lethal RTV		Sublethal RTV		Reference	
					Oral LD50	mg/kgBW-day LOAEL	mg/kgBW-day LOAEL	mg/kgBW-day NOAEL		RTV [a]
VOLATILE ORGANIC COMPOUNDS										
Acetone	Rat	Oral	NR	Reproductive effects			273,000		27,300	RTECS, 1993
	Rat	Oral LD50	NR	Mortality	5,800					RTECS, 1993
	Rat	Oral LD50	NR	Mortality	9,750					Sax, 1984
	Mouse	Oral LD50	NR	Mortality	3,000	600				RTECS, 1993
Methylene chloride	Rabbit	Oral LD50	NR	Mortality	5,340					RTECS, 1993
	Rat	Oral LD50	NR	Mortality	1,600	320				RTECS, 1994
	Dog	Oral LD50	NR	Mortality	3,000					RTECS, 1994
	Rabbit	Oral LD50	NR	Mortality	1,900					RTECS, 1994
	Rat	Oral (chronic)	2 years	Liver toxicity			52.6	5.9	5.9	IRIS, 1993
	Rat	Oral (subchronic)	3 months	Mortality, blood chemistry, histopathology				12.5		USEPA, 1984
Xylenes (total)	Rat	Oral LD50	NR	Mortality	4,300	860				NIOSH, 1985
	Rat	Oral (chronic)	103 weeks	Hyperactivity, decreased BW, mortality			500	250	250	IRIS, 1993
	Japanese quail	Oral (acute)	5 days	Mortality		2,014	201			Hill, E.F., et al., 1986
SEMIVOLATILE ORGANIC COMPOUNDS										
Di-n-butylphthalate	Rat	Oral (subchronic)	48 days	Reproductive effects			125		12.5	ATSDR, 1989
	Rat	Oral (chronic)	1 year	Mortality		600	60			IRIS, 1993
bis(2-Ethylhexyl)phthalate	Rat	Oral LD50	NR	Mortality	30,600					RTECS, 1993
	Rat	Oral	NR	Reproductive effects			7,140			RTECS, 1993
	Rat	Oral	NR	Reproductive effects			35		3.5	RTECS, 1993
	Rat	Oral	NR	Reproductive effects			6,000			RTECS, 1993
	Rat	Oral	NR	Reproductive effects			17,200			RTECS, 1993
	Rat	Oral	NR	Reproductive effects			10,000			RTECS, 1993
	Rat	Oral	NR	Reproductive effects			9,766			RTECS, 1993
	Mouse	Oral LD50	NR	Mortality	30,000					RTECS, 1993
	Mouse	Oral	NR	Reproductive effects			78,880			RTECS, 1993
	Mouse	Oral	NR	Reproductive effects			4,200			RTECS, 1993
	Mouse	Oral	NR	Reproductive effects			50			RTECS, 1993
	Mouse	Oral	NR	Reproductive effects			1,000			RTECS, 1993
	Mouse	Oral	NR	Reproductive effects			2,040			RTECS, 1993
	Rabbit	Oral LD50	NR	Mortality	34,000					RTECS, 1993
	Guinea pig	Oral LD50	NR	Mortality	26,000					RTECS, 1993
	Guinea pig	Oral	NR	Reproductive effects			20,000			RTECS, 1993
	Mammal	Oral	NR	Reproductive effects			20,000			RTECS, 1993
Mammal	Oral	NR	Reproductive effects			509,000			RTECS, 1993	
Mouse	Oral LD50	NR	Mortality	800	160				RTECS, 1993	
Mouse	Oral (subchronic)	13 weeks	Renal effects				125		RTECS, 1993	
INORGANIC ANALYTES										
Cyanide	Rat	Oral (subchronic)	11.5 months	Increased thyroid weight, myelin degeneration			30			IRIS, 1993
	Mouse	Single oral dose	NR	Mortality	8.5	1.7				Armstrong Medical, 1987
	Young chickens	Oral	20 days	Decreased growth and food intake			11		1.1	Elzubeir, E.A., et al., 1988
	Pig	Oral	110 days	Thyroid hypofunction during pregnancy			11			Tewe, O.O., et al., 1981
	Hamsters	Oral	12 days	Decreased fetal weight and delayed ossification			11.9		1.1	Frakes, R.A., et al., 1986
	Mallard	Single oral dose	NR	Mortality in 6% of the population		1.1	0.11			Eisler, R., 1991
Lead	Rat	Oral	NR	Reproductive effects			790			RTECS, 1993
	Rat	Oral	NR	Reproductive effects			1,140			RTECS, 1993
	Rat	Oral	NR	Reproductive effects			520			RTECS, 1993
	Rat	Oral	NR	Reproductive effects			1,100			RTECS, 1993
	Calf	Oral LD50	NR	Mortality	220					Eisler, 1988
	Rat	Oral (subchronic)	12-14 days	Decreased fetal body weight			2.5			McClain and Becker, 1972
	Mouse	Oral	NR	Reproductive effects			1,120			RTECS, 1993
	Mouse	Oral	NR	Reproductive effects			6,300			RTECS, 1993
	Mouse	Oral	NR	Reproductive effects			300			RTECS, 1993
	Mouse	Oral	NR	Reproductive effects			4,800			RTECS, 1993
	Domestic animal	Oral	NR	Reproductive effects			662			RTECS, 1993
Mammal	Oral	NR	Reproductive effects			2,118			RTECS, 1993	
Kestrel	Diet	NR	Decreased egg laying fertility; decreased egg shell thickness				4.61	4.61	Eisler, 1988	

**Table II-2
Ingestion Toxicity Information for Wildlife**

RI/FS Report, Site 15
NAS Whiting Field
Milton, Florida

Chemical	Test Species	Test Type	Duration	Effect	Lethal RTV mg/kgBW-day			Sublethal RTV mg/kgBW-day			Reference
					Oral LD50	LOAEL	RTV [a]	LOAEL	NOAEL	RTV [a]	
	Kestrel nestlings	Oral	10 days	Reduced growth and brain weight, abnormal development				125			Eisler, 1988
	Japanese quail	Oral LD50	5 days	Mortality	24,752						Hill and Camardese, 1986
	Rat	Oral (chronic)	2 generations	Developmental effects					7	7	Kimmel et al., 1980 and Grant et al., 1980
	Guinea pig	Oral LD50		Mortality	300		60				Sax, 1984
	Rock dove	Oral (chronic)	NS	Kidney pathology; learning deficiencies				6.25			Anders et al., 1982 and Dietz et al., 1979
Silver	Rock dove	Oral LD50		Mortality	375		75				Kendall and Scanlon, 1985
	Mouse	Intraperitoneal (acute)		Mortality	34		6.8				NIOSH, 1985
	Rat	Oral (chronic)	37 week	Weight gain				222.2			ATSDR, 1990a
	Mouse	Oral (chronic)	125 days	Hypoactivity				18.1		1.81	ATSDR, 1990a
Vanadium	Japanese quail	Oral LD50	5 days	Mortality	96		19.2				Hill, E.F., et al., 1986
	Mouse	Gavage LD50	One-time	Mortality	31		6.2				ATSDR, 1990b
	Rat	Oral (subchronic)	2 months	Hypertension				15			Susic, D., et al., 1986
	Rat	Oral (subchronic)	35 days	Developmental effects					8.4	8.4	Domingo, J.L., et al., 1986
	Chicken	Oral (subchronic)	Decrease in egg-laying						11		1.1 Berg, L.R., et al., 1963

Notes:

LD50 = Dose resulting in 50% mortality in test population

BW = Body weight

LOAEL = Lowest Observed Adverse Effect Level

NOAEL = No Observed Adverse Effect Level

NR = Not reported

[a] Selected RTVs are boxed. Lethal and sublethal RTVs are chosen based on the data hierarchy discussed in Section 7.5.1.

[b] Converted to dose per kilogram body weight by multiplying by ingestion and dividing by body weight. Body weights for birds obtained from Dunning, 1984.

Ingestion rates were calculated using the following regression equation (for all birds) from USEPA, 1993b: Food Ingestion (kg/day) = 0.00582 * Body Weight^{0.651} (kg). Ingestion rates for the chicken from NRC, 1984 (pg. 13).

Table H-3
RTVs Selected for Ecological Risk Assessment [a]
Units (mg/kgBW/day)

RI/FS Report, Site 15
 NAS Whiting Field
 Milton, Florida

Compound	Small Mammal [b]		Small Bird [c]		Predatory Mammal [d]		Predatory Bird [e]	
	Lethal	Sublethal	Lethal	Sublethal	Lethal	Sublethal	Lethal	Sublethal
Volatile Organic Compounds								
Acetone	600	27,300			600	27,300		
Methylene chloride	320	5.9			320	5.9		
Xylenes	860	250	201		860	250	201	
Semivolatile Organic Compounds								
Di-n-butylphthalate	60	12.5			60	12.5		
bis(2-Ethylhexyl)phthalate	160	3.5			160	3.5		
Inorganic Compounds								
Cyanide	1.7	1.1	0.11	1.1	1.7	1.1	0.11	1.1
Lead	60	7	75	4.61	60	7	75	4.61
Silver	6.8	1.81			6.8	1.81		
Vanadium	6.2	8.4	19.2	1.1	6.2	8.4	19.2	1.1
Zinc	502	20			502	20		

Notes:

- [a] Lethal and sublethal RTVs correspond to the boxed values presented in Table H-2.
- [b] These RTVs represent chemical concentrations that are not anticipated to result in adverse effects for the cotton mouse or the short tailed shrew.
- [c] These RTVs represent chemical concentrations that are not anticipated to result in adverse effects for the eastern meadowlark.
- [d] These RTVs represent chemical concentrations that are not anticipated to result in adverse effects for the red fox.
 When no data were available, the small mammal values were used as a surrogate.
- [e] These RTVs represent chemical concentrations that are not anticipated to result in adverse effects for the red-tailed hawk. When no data were available, the small bird values were used as a surrogate.

**Table H-4
Summary of Toxicity Data for Plant Receptors**

**RI/FS Report, Site 15
NAS Whiting Field
Milton, Florida**

Chemical	Reference	RTV in soil [a] (mg/kg)
VOLATILE ORGANICS		
Acetone		NA
Methylene chloride	Hulzebos <i>et al.</i> , 1993 [b]	>1,000 [c]
Xylenes (total)	Hulzebos <i>et al.</i> , 1993 [b]	>1,000 [c]
SEMI-VOLATILE ORGANICS		
Di-n-butylphthalate	Will and Suter, 1994	200
bis(2-Ethylhexyl)phthalate	Hulzebos <i>et al.</i> , 1993 [b]	>1,000
INORGANICS		
Cyanide		NA
Lead	Will and Suter, 1994	50
Silver	Will and Suter, 1994	2
Vanadium	Will and Suter, 1994	2
Zinc	Will and Suter, 1994	50

Notes:

[a] RTVs in soil are equal to chemical concentrations in soil that are not expected to result in adverse effects to plants.

[b] Values represent 14-day growth EC50s for *Lactuca sativa* in soil, or 16- to 21-day growth EC50 for *L. sativa* in solution.

[c] Value for tetrachloroethylene used as a surrogate.

[d] Value for di-n-butylphthalate used as a surrogate.

NA = Not Available

**Table H-5
Summary of Toxicity Data for Terrestrial Invertebrates**

**RI/FS Report, Site 15
NAS Whiting Field
Milton, Florida**

Chemical	Test Type	Test Duration	Test Species	Chemical Concentration (mg/kg)	Effect	RTV (mg/kg)	Reference
VOLATILE ORGANIC COMPOUNDS							
Acetone	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	Soil Test	14 day	<i>E. foetida</i>	740	LC50	150 [a]	Neuhauser et al., 1985.
Xylenes (total)	Soil Test	14 day	<i>E. foetida</i>	160	LC50	21 [a]	Neuhauser et al., 1985.
SEMIVOLATILE ORGANIC COMPOUNDS							
Di-n-butylphthalate	Soil Test	14 day	4 test species	2,390	LC50	478 [b]	Neuhauser et al., 1985.
bis(2-Ethylhexyl)phthalate	Soil Test	14 day	4 test species	2,390	LC50	478 [b]	Neuhauser et al., 1986.
INORGANIC ANALYTES							
Cyanide	NA	NA	NA	NA	NA	NA	NA
Lead	Soil Test	20 week	<i>E. foetida</i>	5,000 [d]	Decrease in cocoon production		Malecki et al., 1982
Lead	Soil Test	2 week	<i>E. foetida</i>	5,941	LC50	1,190 [c]	Neuhauser et al., 1985
Silver	NA	NA	NA	NA	NA	NA	NA
Vanadium	NA	NA	NA	NA	NA	NA	NA
Zinc	Soil Test	20 week	<i>E. foetida</i>	5,000 [d]	Decrease in cocoon production		Malecki et al., 1982
Zinc	Soil Test	2 week	<i>E. foetida</i>	662	LC50	130 [c]	Neuhauser et al., 1985

NOTES:

[a] Equal to the lowest LC50 in each chemical class, multiplied by a safety factor of 0.2, as described in text. Value for 2-chloroethyl vinyl ether used for all chlorinated volatiles.

[b] Mean of LC50s for four test species (*A. tuberculata*, *E. foetida*, *E. eugeniae*, and *P. excavatus*) from artificial soil tests; values used for a whole chemical class are multiplied by a factor of 0.2 (Neuhauser et al., 1986). Value for dimethylphthalate used for phthalates.

[c] Conservative factor of 0.2 applied to endpoint; resultant value should be protective of 99.9% of the exposed population from acute effects (USEPA, 1986a).

[d] Acetate salt

NA = Not available

Table H-6
 Exposure Parameters and Assumptions for Terrestrial Receptors [a]
 Site 15
 Remedial Investigation and Feasibility Study, Site 15
 Naval Air Station Whiting Field, Milton, Florida

Representative Wildlife Species		Percent Prey in Diet			Small Birds	Soil	Home Range (acres)	ED [b]	Site Foraging Frequency [c]	Food Ingestion Rate (kg/day)	Body Weight (kg)
		Inverts	Plants	Small Mammals							
<i>Collon mouse</i>	(Small herb mammal)	10%	88%	0%	0%	2%	0.147	1	1.00E+00	0.0029	0.021
<i>Short-tailed shrew</i>	(Small omn. mammal)	78%	12%	0%	0%	10%	0.96	1	1.00E+00	0.0024	0.017
<i>Eastern meadowlark</i>	(Small herb. bird)	75%	20%	0%	0%	5%	5	1	1.00E+00	0.0119	0.087
<i>Red fox</i>	(Predatory mammal)	20%	10%	57%	10%	3%	250	1	8.40E-02	0.24	4.69
<i>Red-tailed hawk</i>	(Predatory bird)	0%	0%	70%	27%	3%	800	1	1.00E+00	0.113	1.02

NOTES:

SITE AREA: 21.0 acres

[a] Documentation of exposure parameters presented in:

Table 7-6

[b] ED = Exposure Duration (percentage of year receptor is expected to be found at study area). ED is assumed to be 1 for this risk assessment.

[c] SFF = Site Foraging Frequency (calculated by dividing site area by receptor home range (cannot exceed 1.0)). SFF is assumed to be 1 for lethal exposure scenario.

Table H-7
 Estimated Chronic Exposure to Terrestrial Receptors from Ingestion of Reasonable Maximum Exposure Concentrations of Contaminants in Food and Surface Soil
 Site 15
 Remedial Investigation and Feasibility Study, Site 15
 Naval Air Station Whiting Field, Milton, Florida

EXPOSURE CONCENTRATION DATA		ESTIMATED CONTAMINANT CONCENTRATIONS IN PRIMARY FOOD ITEMS				BAF VALUES FOR OTHER FOOD ITEMS	
ANALYTE	REASONABLE MAXIMUM EXPOSURE CONCENTRATION (mg/kg)	Concentration in Invertebrate Tissue [b]		Concentration in Plant Tissue [c]		Small Mammal	Small Bird
		Invert BAF [a]	(mg/kg)	Plant BAF [a]	(mg/kg)	BAF [a]	BAF [a]
Acetone	6.2E-03	NA	0.0E+00	NA	0.0E+00	NA	NA
Methylene chloride	5.6E-03	NA	0.0E+00	NA	0.0E+00	NA	NA
Xylenes	4.0E-03	NA	0.0E+00	NA	0.0E+00	NA	NA
Di-n-butylphthalate	3.7E-01	5.0E-02	1.8E-02	6.7E-03	2.5E-03	3.0E-01	NA
bis(2-ethylhexyl)phthalate	2.4E-01	5.0E-02	1.2E-02	6.7E-03	1.6E-03	3.0E-01	NA
Cyanide	2.5E-01	0.0E+00	0.0E+00	1.0E+00	2.5E-01	0.0E+00	NA
Lead	7.3E+00	7.8E-02	5.7E-01	0.0E+00	0.0E+00	1.5E-02	NA
Silver	1.2E+00	1.5E-01	1.8E-01	8.0E-02	9.6E-02	1.5E-01	NA
Vanadium	1.3E+01	1.3E-01	1.7E+00	1.1E-03	1.5E-02	1.3E-01	NA
Zinc	6.3E+00	1.0E+00	1.1E+01	6.1E-01	3.8E+00	2.1E+00	NA

ECPC = Ecological Chemical of Potential Concern

RME = Reasonable Maximum Exposure

[a] Bioaccumulation data presented in:

Appendix H, Table H-1

[b] ECPC concentrations in invertebrate tissue equals the invertebrate BAF multiplied by the RME soil concentration of the contaminant.

[c] ECPC concentrations in plant tissue equals the plant BAF multiplied by the RME soil concentration of the contaminant.

Table H-7
 Estimated Chronic Exposure to Terrestrial Receptors from Ingestion of Reasonable Maximum Exposure Concentrations of ECPCs in Food and Surface Soil
 Site 15
 Remedial Investigation and Feasibility Study, Site 15
 Naval Air Station Whiting Field, Milton, Florida

POTENTIAL DIETARY EXPOSURE (mg/kgBW/day) [d]

ANALYTE	<i>Cotton mouse</i>	<i>Short-tailed shrew</i>	<i>Eastern meadowlark</i>	<i>Red fox</i>	<i>Red-tailed hawk</i>
Acetone	1.7E-05	8.8E-05	4.2E-05	1.9E-04	1.9E-04
Methylene chloride	1.5E-05	7.9E-05	3.8E-05	1.7E-04	1.7E-04
Xylenes	1.1E-05	5.6E-05	2.7E-05	1.2E-04	1.2E-04
Di-n-butylphthalate	1.6E-03	7.3E-03	4.5E-03	1.6E-02	1.3E-02
bis(2-ethylhexyl)phthalate	1.0E-03	4.7E-03	2.9E-03	1.0E-02	8.4E-03
Cyanide	3.1E-02	7.8E-03	8.5E-03	3.3E-02	7.5E-03
Lead	2.8E-02	1.7E-01	1.1E-01	3.3E-01	2.2E-01
Silver	1.7E-02	3.8E-02	2.9E-02	8.7E-02	4.4E-02
Vanadium	6.2E-02	3.8E-01	2.7E-01	7.6E-01	4.3E-01
Zinc	6.4E-01	1.4E+00	1.3E+00	5.6E+00	4.4E+00

[d] Calculated by summing the products of individual prey type concentrations and percent in diet, multiplying by the ingestion rate, and dividing by body weight.

Table II-8
 Risk from Potential Lethal Effects for Terrestrial Receptors from Reasonable Maximum Exposure Concentrations of ECPCs in Food and Surface Soil
 Site 15
 Remedial Investigation and Feasibility Study, Site 15
 Naval Air Station Whiting Field, Milton, Florida

ANALYTE	Cotton mouse			Short-tailed shrew			Eastern meadowlark		
	PDE	RTV	HQ	PDE	RTV	HQ	PDE	RTV	HQ
Acetone	1.7E-05	6.0E+02	2.9E-08	8.8E-05	6.0E+02	1.5E-07	4.2E-05		0.0E+00
Methylene chloride	1.5E-05	3.2E+02	4.8E-08	7.9E-05	3.2E+02	2.5E-07	3.8E-05		0.0E+00
Xylenes	1.1E-05	8.6E+02	1.3E-08	5.6E-05	8.6E+02	6.6E-08	2.7E-05	2.0E+02	1.4E-07
Di-n-butylphthalate	1.6E-03	6.0E+01	2.6E-05	7.3E-03	6.0E+01	1.2E-04	4.5E-03		0.0E+00
bis(2-ethylhexyl)phthalate	1.0E-03	1.6E+02	6.4E-06	4.7E-03	1.6E+02	3.0E-05	2.9E-03		0.0E+00
Cyanide	3.1E-02	1.7E+00	1.8E-02	7.8E-03	1.7E+00	4.6E-03	8.5E-03	1.1E-01	7.8E-02
Lead	2.8E-02	6.0E+01	4.7E-04	1.7E-01	6.0E+01	2.8E-03	1.1E-01	7.5E+01	1.4E-03
Silver	1.7E-02	6.8E+00	2.6E-03	3.8E-02	6.8E+00	5.6E-03	2.9E-02		0.0E+00
Vanadium	6.2E-02	6.2E+00	1.0E-02	3.8E-01	6.2E+00	6.1E-02	2.7E-01	1.9E+01	1.4E-02
Zinc	6.4E-01	5.0E+02	1.3E-03	1.4E+00	5.0E+02	2.8E-03	1.3E+00		0.0E+00

SUMMARY HAZARD INDEX
 PDE = Potential Dietary Exposure (mg/kgBW/day) RTV = Reference Toxicity Value (mg/kgBW/day) HQ = Hazard Quotient (calculated by dividing PDE by RTV) 9.3E-02

3.2E-02

7.4E-02

Table H-9
 Risk from Potential Sublethal Effects for Terrestrial Receptors from Reasonable Maximum Exposure Concentrations of ECPCs in Food and Surface Soil
 Site 15
 Remedial Investigation and Feasibility Study, Site 15
 Naval Air Station Whiting Field, Milton, Florida

ANALYTE	Cotton mouse			Short-tailed shrew			Eastern meadowlark		
	PDE	RTV	HQ	PDE	RTV	HQ	PDE	RTV	HQ
Acetone	1.7E-05	2.7E+04	6.3E-10	8.8E-05	2.7E+04	3.2E-09	4.2E-05		0.0E+00
Methylene chloride	1.5E-05	5.9E+00	2.6E-06	7.9E-05	5.9E+00	1.3E-05	3.8E-05		0.0E+00
Xylenes	1.1E-05	2.5E+02	4.4E-08	5.6E-05	2.5E+02	2.3E-07	2.7E-05		0.0E+00
Di-n-butylphthalate	1.6E-03	1.3E+01	1.3E-04	7.3E-03	1.3E+01	5.8E-04	4.5E-03		0.0E+00
bis(2-ethylhexyl)phthalate	1.0E-03	3.5E+00	2.9E-04	4.7E-03	3.5E+00	1.4E-03	2.9E-03		0.0E+00
Cyanide	3.1E-02	1.1E+00	2.8E-02	7.8E-03	1.1E+00	7.1E-03	8.5E-03	1.1E+00	7.8E-03
Lead	2.8E-02	7.0E+00	4.0E-03	1.7E-01	7.0E+00	2.4E-02	1.1E-01	4.6E+00	2.4E-02
Silver	1.7E-02	1.8E+00	9.6E-03	3.8E-02	1.8E+00	2.1E-02	2.9E-02		0.0E+00
Vanadium	6.2E-02	8.4E+00	7.4E-03	3.8E-01	8.4E+00	4.5E-02	2.7E-01	1.1E+00	2.4E-01
Zinc	6.4E-01	2.0E+01	3.2E-02	1.4E+00	2.0E+01	7.0E-02	1.3E+00		0.0E+00

SUMMARY HAZARD INDEX 5.0E-02 1.0E-01 2.8E-01

PDE = Potential Dietary Exposure (mg/kgBW/day) RTV = Reference Toxicity Value (mg/kgBW/day) HQ = Hazard Quotient (calculated by dividing PDE by RTV)

Table H-8

Risk from Potential Lethal Effects for Terrestrial Receptors from Reasonable Maximum Exposure Concentrations of ECPCs in Food and Surface Soil
 Site 15
 Remedial Investigation and Feasibility Study, Site 15
 Naval Air Station Whiting Field, Milton, Florida

ANALYTE	<i>Red fox</i>			<i>Red-tailed hawk</i>		
	PDE	RTV	HQ	PDE	RTV	HQ
Acetone	1.9E-04	6.0E+02	3.1E-07	1.9E-04		0.0E+00
Methylene chloride	1.7E-04	3.2E+02	5.3E-07	1.7E-04		0.0E+00
Xylenes	1.2E-04	8.6E+02	1.4E-07	1.2E-04	2.0E+02	6.0E-07
Di-n-butylphthalate	1.6E-02	6.0E+01	2.7E-04	1.3E-02		0.0E+00
bis(2-ethylhexyl)phthalate	1.0E-02	1.6E+02	6.5E-05	8.4E-03		0.0E+00
Cyanide	3.3E-02	1.7E+00	1.9E-02	7.5E-03	1.1E-01	6.8E-02
Lead	3.3E-01	6.0E+01	5.6E-03	2.2E-01	7.5E+01	2.9E-03
Silver	8.7E-02	6.8E+00	1.3E-02	4.4E-02		0.0E+00
Vanadium	7.6E-01	6.2E+00	1.2E-01	4.3E-01	1.9E+01	2.3E-02
Zinc	5.6E+00	5.0E+02	1.1E-02	4.4E+00		0.0E+00

SUMMARY HAZARD INDEX

PDE = Potential Dietary Exposure (mg/kgBW/day)

1.6E-01 1.7E-07

RTV = Reference Toxicity Value (mg/kgBW/day)

9.4E-02

HQ = Hazard Quotient (calculated by dividing PDE by RTV)

Table H-9

Risk from Potential Sublethal Effects for Terrestrial Receptors from Reasonable Maximum Exposure Concentrations of ECPCs in Food and Surface Soil
 Site 15
 Remedial Investigation and Feasibility Study, Site 15
 Naval Air Station Whiting Field, Milton, Florida

ANALYTE	<i>Red fox</i>			<i>Red-tailed hawk</i>		
	PDE	RTV	HQ	PDE	RTV	HQ
Acetone	1.9E-04	2.7E+04	6.8E-09	1.9E-04		0.0E+00
Methylene chloride	1.7E-04	5.9E+00	2.8E-05	1.7E-04		0.0E+00
Xylenes	1.2E-04	2.5E+02	4.8E-07	1.2E-04		0.0E+00
Di-n-butylphthalate	1.6E-02	1.3E+01	1.3E-03	1.3E-02		0.0E+00
bis(2-ethylhexyl)phthalate	1.0E-02	3.5E+00	3.0E-03	8.4E-03		0.0E+00
Cyanide	3.3E-02	1.1E+00	3.0E-02	7.5E-03	1.1E+00	6.8E-03
Lead	3.3E-01	7.0E+00	4.8E-02	2.2E-01	4.6E+00	4.8E-02
Silver	8.7E-02	1.8E+00	4.8E-02	4.4E-02		0.0E+00
Vanadium	7.6E-01	8.4E+00	9.1E-02	4.3E-01	1.1E+00	3.9E-01
Zinc	5.6E+00	2.0E+01	2.8E-01	4.4E+00		0.0E+00

SUMMARY HAZARD INDEX

PDE = Potential Dietary Exposure (mg/kgBW/day)

RTV = Reference Toxicity Value (mg/kgBW/day) 2.2E-01 ~~1.0E-01~~

HQ = Hazard Quotient (calculated by dividing PDE by RTV) 4.5E-01

Appendix H Reference List
Site 15
NAS Whiting Field, Milton, Florida

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APPENDIX I
AQUIRE DATA

Table
 AQUIRE Freshwater Toxicity Information (µg/L)
 Site

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
Volatile Organics								
Acetone	Aedes aegypti; Mosquito	3rd INST-AR	48 H	LC ₅₀	15,000,000		310574	83
	Ambystoma mexicanum; Salamander	3-4 WK	48 H	LC ₅₀	20,000,000		219740	80
	Asellus aquaticus; Aquatic sowbug	NR	48 H	LC ₅₀	7,550,000		315788	83
	Chironomus thummi; Midge	NR	48 H	LC ₅₀	13,000,000		315788	83
	Chlorella pyrenoidosa; Green algae	LOG PHASE	48 H	GRO		3,400,000	310574	83
	Cipangopaludina malleata; Mud snail	NR	48 H	LC ₅₀	48,000,000		219158	72
	Cloeon dipterum; Mayfly	NR	48 H	LC ₅₀	7,600,000		315788	83
	Corixa punctata; Water boatman	NR	48 H	LC ₅₀	5,000,000		315788	83
	Culex pipiens; Mosquito	3rd INST-AR	48 H	LC ₅₀	17,000,000		310574	83
	Culex restuans; White dotted mosquito	3rd INST-AR	18 H	LC ₅₀	6,190,000		212192	81
	Daphnia magna; Water flea	½24 H	28 D	MOR	1,100,000		310694	83
	Daphnia magna; Water flea	½24 H	28 D	MOR	4,300,000		310694	83
	Daphnia magna; Water flea	½24 H	7 D	MOR	2,200,000		310694	83
	Daphnia magna; Water flea	½24 H	14 D	MOR	4,300,000		310694	83
	Daphnia magna; Water flea	½24 H	28 D	MOR	550,000		310694	83
	Daphnia magna; Water flea	½24 H	7 D	MOR	550,000		310694	83
	Daphnia magna; Water flea	½24 H	14 D	MOR	550,000		310694	83
	Daphnia magna; Water flea	½24 H	21 D	MOR	550,000		310694	83
	Daphnia magna; Water flea	8 H	0.25 H	LOC		9,280,000	212171	44
	Daphnia magna; Water flea	½24 H	7 D	LET	8,700,000		310694	83
	Daphnia magna; Water flea	½24 H	21 D	MOR	1,100,000		310694	83
	Daphnia magna; Water flea	½24 H	14 D	MOR	1,100,000		310694	83
	Daphnia magna; Water flea	½24 H	28 D	MOR	2,200,000		310694	83
	Daphnia magna; Water flea	½24 H	7 D	MOR	1,100,000		310694	83
	Daphnia magna; Water flea	½24 H	14 D	MOR	2,200,000		310694	83
	Daphnia magna; Water flea	½24 H	28 D	REP		4,300,000	310694	83
	Daphnia magna; Water flea	½24 H	21 D	MOR	4,300,000		310694	83
	Daphnia magna; Water flea	½24 H	48 H	LC ₅₀	31,000,000		310694	83
	Daphnia magna; Water flea	½24 H	24 H	LC ₅₀	35,000,000		310694	83
	Daphnia magna; Water flea	½24 H	21 D	MOR	2,200,000		310694	83
	Daphnia magna; Water flea	<24 H	48 H	EC ₅₀ /M		13,500,000	212193	80
	Daphnia magna; Water flea	½24 H	28 D	REP		1,100,000	310694	83
	Daphnia magna; Water flea	½24 H	7 D	MOR	4,300,000		310694	83
	Daphnia pulex; Water flea	<24 H	18 H	LC ₅₀	1,220,000		212192	81
	Dugesia lugubris; Turbellarian	NR	48 H	LC ₅₀	7,500,000		315788	83
	Erpobdella octoculata; Leech	NR	48 H	LC ₅₀	7,000,000		315788	83
	Gambusia affinis; Mosquitofish	ADULT FEMALE	96 H	LC ₅₀	13,000,000		210508	57
	Gambusia affinis; Mosquitofish	ADULT FEMALE	24 H	LC ₅₀	13,500,000		210508	57
	Gambusia affinis; Mosquitofish	ADULT FEMALE	48 H	LC ₅₀	13,000,000		210508	57
	Gammarus pulex; Scud	NR	48 H	LC ₅₀	6,000,000		315788	83
	Hydra oligactis; Hydra	NR	48 H	LC ₅₀	13,500,000		315788	83
Hydra oligactis; Hydra	BUD-LESS	48 H	LC ₅₀	13,500,000		310574	83	
Indoplanorbis exustus; Snail	NR	48 H	LC ₅₀	35,000,000		219158	72	
Isonura elegans; Dragonfly	NR	48 H	LC ₅₀	6,400,000		315788	83	
Lepomis macrochirus; Bluegill	5.3-7.2cm 3.5-3.9 g	96 H	LC ₅₀	8,300,000		212406	68	
Lepomis macrochirus; Bluegill	NR	96 H	LC ₅₀	8,300,000		210949	68	
Lymnaea stagnalis; Great pond snail	3-4 WK	48 H	LC ₅₀	7,000,000		310574	83	
Lymnaea stagnalis; Great pond snail	NR	48 H	LC ₅₀	7,000,000		315788	83	
Acetone (cont)	Nemoura cinerea; Stonefly	NR	48 H	LC ₅₀	10,300,000		315788	83

Table I-1
 AQUIRE Freshwater Toxicity Information (µg/L)
 Site 15

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
	Oncorhynchus mykiss; Rainbow trout	5-8 WK	48 H	LC ₅₀	7,400,000		310574	83
	Oncorhynchus mykiss; Rainbow trout	10.0cm 10.2 g	6 H	LET	12,500,000		210991	78
	Oncorhynchus mykiss; Rainbow trout	10 g	96 H	LC ₅₀	5,540,000		210666	80
	Oncorhynchus mykiss; Rainbow trout	9.4 cm 10.8 g	24 H	LC ₅₀	6,100,000		210991	78
	Oryzias latipes; Medaka, high-eyes	4-5 WK	48 H	LC ₅₀	14,300,000		310574	83
	Palaemonetes kadiakensis; Grass shrimp, freshwater prawn	JUV-ENILE	18 H	LC ₅₀	2,610,000		212192	81
	Physa acuta; Bladder snail	NR	48 H	LC ₅₀	35,000,000		219158	72
	Pimephales promelas; Fathead minnow	28 D	96 H	LC ₅₀	7,280,000		312448	84
	Pimephales promelas; Fathead minnow	0.12 g	96 H	LC ₅₀	7,310,000		310183	83
	Pimephales promelas; Fathead minnow	33 D	96 H	LC ₅₀	8,120,000		312448	84
	Pimephales promelas; Fathead minnow	32 D	96 H	LC ₅₀	6,210,000		312448	84
	Pimephales promelas; Fathead minnow	3-4 WK	48 H	LC ₅₀	15,000,000		310574	83
	Pimephales promelas; Fathead minnow	0.12 g	96 H	LC ₅₀	8,140,000		310183	83
	Rasbora heteromorpha; Harlequinfish, red rasbora	1.3-3 cm	48 H	LC ₅₀	4,000,000		210542	69
	Rasbora heteromorpha; Harlequinfish, red rasbora	1.3-3 cm	24 H	LC ₅₀	5,700,000		210542	69
	Scenedesmus pannonicus; Green algae	LOG PHASE	48 H	GRO		4,740,000	310574	83
	Selenastrum capricornutum; Green algae	LOG PHASE	96 H	GRO		7,000,000	310574	83
	Semisulcospira libertina; Marsh snail	NR	48 H	LC ₅₀	35,000,000		219158	72
	Tubificidae; Oligochaete family	NR	48 H	LC ₅₀	15,000,000		315788	83
	Xenopus laevis; Clawed toad	3-4 WK	48 H	LC ₅₀	24,000,000		219740	80
Benzene	Ambystoma gracile; Salamander	EMBRYO TO NEWLY Hatched LARVAE	NR	LC ₅₀	3,970 to 12,120			82
	Ambystoma gracile; Salamander	EMBRYO TO LARVAE	NR	LC ₅₀	5,210			82
	Ambystoma mexicanum; Salamander	3-4 WK	48 H	LC ₅₀	370,000			80
	Rana pipiens; Leopard frog	EMBRYO TO NEWLY Hatched LARVAE	NR	LC ₅₀	2,180 to 10,080			82
	Rana pipiens; Leopard frog	EMBRYO TO LARVAE	NR	LC ₅₀	3,660			82
	Xenopus laevis; Clawed toad	3-4 WK	48 H	LC ₅₀	190,000			80
	Xenopus laevis; Clawed toad	3-4 WK	48 H	LC ₅₀	190,000			87
1,1,2-Trichloroethylene	Aedes aegypti; mosquito	3RD INSTAR	48 H	LC ₅₀	48,000			83
	Ambystoma mexicanum; salamander	3-4 WK	48 H	LC ₅₀	48,000			80
	Asellus aquaticus; sowbug	NR	48 H	LC ₅₀	30,000			83
	Brachydanio rerio; zebrafish	NR	48 H	LC ₅₀	60,000			79
	Chironomus thummi; midge	NR	48 H	LC ₅₀	64,000			83
	Cloeon dipterum; mayfly	NR	48 H	LC ₅₀	42,000			83
	Corixa punctata; water boatman	NR	48 H	LC ₅₀	110,000			83
	Culex pipiens; mosquito	3RD INSTAR	48 H	LC ₅₀	55,000			83
	Daphnia magna; water flea	<=24 H	48 H	LC ₅₀	18,000			80
	Daphnia magna; water flea	NR	3 D	ABD	25,000			84
	Daphnia magna; water flea	24 H	24 H	LC ₅₀	1,000,000			77
	Daphnia magna; water flea	NR	24 H	leth	110,000			84
	Daphnia magna; water flea	NR	24 H	EC ₅₀	1,313,000			82
	Daphnia magna; water flea	<=24 H	24 H	LC ₅₀	22,000			80
	Daphnia magna; water flea	<=24 H	48 H		2,200			80
	Dugesia lugubris; flatworm	NR	48 H	LC ₅₀	42,000			83
	Erpobdella octoculata; leech	NR	48 H	LC ₅₀	75,000			83
	Gammarus pulex; scud	NR	48 H	LC ₅₀	24,000			83
	Hydra oligactis; hydra	BUDLESS	48 H	LC ₅₀	75,000			83
	1,1,2-Trichloroethylene (cont)	Hydra oligactis; hydra	NR	48 H	LC ₅₀	75,000		
Ischnura elegans; dragonfly		NR	48 H	LC ₅₀	49,000			83

Remedial Investigation
NAS Whiting Field
Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
	Lepomis macrochirus, bluegill	JUVENILE 75 D, 2.2 CM	1 H	RES	100			90
	Lepomis macrochirus, bluegill	JUVENILE, 0.32-1.2 G	96 H	LC ₅₀	45,000			81
	Lepomis macrochirus, bluegill	JUVENILE, 0.32-1.2 G	24 H	LC ₅₀	68,000 to 100,000			81
	Lymnaea stagnalis, great pond snail	3-4 WK	48 H	LC ₅₀	56,000			83
	Lymnaea stagnalis, great pond snail	NR	48 H	LC ₅₀	56,000			83
	Moina macrocopa, water flea	5 D	3 H	LC ₅₀	2,300			86
	Nemoura cinerea, stonefly	NR	48 H	LC ₅₀	70,000			83
	Oncorhynchus mykiss, rainbow trout	NR	24 H	RES	5,000			79
	Oncorhynchus mykiss, rainbow trout	5.8 WK	48 H	LC ₅₀	42,000			83
	Oryzias latipes, medaka	3 CM, 0.3 G	48 H	LC ₅₀	1,900			86
	Oryzias latipes, medaka	4.5 WK	48 H	LC ₅₀	270,000			83
	Pimephales promelas, fathead minnow	1.04 G, 49.0 MM	48 H	IMM	22,700			78
	Pimephales promelas, fathead minnow	31 D	96 H	LC ₅₀	44,100			85
	Pimephales promelas, fathead minnow	30-35 D	24 H	LC ₅₀	58,800			83
	Pimephales promelas, fathead minnow	3.4 WK	48 H	LC ₅₀	47,000			83
	Pimephales promelas, fathead minnow	1.04 G, 49.0 MM	96 H	IMM	21,900			78
	Pimephales promelas, fathead minnow	30-35 D	48 H	LC ₅₀	57,900			83
	Pimephales promelas, fathead minnow	1.04 G, 49.0 MM	72 H	IMM	22,200			78
	Pimephales promelas, fathead minnow	1.04 G, 49.0 MM	24 H	LC ₅₀	52,400			78
	Pimephales promelas, fathead minnow	30-35 D	96 H	LC ₅₀	45,000			83
	Pimephales promelas, fathead minnow	1.04 G, 49.0 MM	24 H	IMM	23,000			78
	Pimephales promelas, fathead minnow	0.12 G	96 H	LC ₅₀	44,100			83
	Pimephales promelas, fathead minnow	30-35 D	72 H	LC ₅₀	55,400			83
	Pimephales promelas, fathead minnow	1.04 G, 49.0 MM	96 H	LC ₅₀	66,800			78
	Pimephales promelas, fathead minnow	1.04 G, 49.0 MM	96 H	LC ₅₀	40,700			78
	Pimephales promelas, fathead minnow	1.04 G, 49.0 MM	72 H	LC ₅₀	39,000			78
	Pimephales promelas, fathead minnow	1.04 G, 49.0 MM	48 H	LC ₅₀	53,300			78
	Scenedesmus abundans, green algae	10E4 CELLS/ML	96 H	GRO	450,000			85
	Selenastrum capricornutum, green algae	LOG PHASE	96 H	PGR	175,000			83
	Tubificidae, tubificidae	NR	48 H	LC ₅₀	132,000			83
	Xenopus laevis, clawed toad	3-4 WK	48 H	LC ₅₀	45,000			80
Xylene	Brachionus calyciflorus; Rotifer	NEONATE	24 H	LC ₅₀	253,000		219385	91
	Brachionus calyciflorus; Rotifer	NEWLY, HATCHED, NEONATES	2 D	REP		20,000	213963	92
	Brachionus calyciflorus; Rotifer	NEWLY, HATCHED, NEONATES	2 D	EC ₅₀ REP		99,000	213963	92
	Brachionus calyciflorus; Rotifer	NEONATE	24 H	LC ₅₀	252,700		216002	92
	Brachionus calyciflorus; Rotifer	NEWLY, HATCHED, NEONATES	2 D	LC ₅₀	253,000		213963	92
	Brachionus calyciflorus; Rotifer	NEWLY, HATCHED, NEONATES	2 D	REP		40,000	213963	92
	Brachydanio rerio; Zebra danio, zebrafish	NR	48 H	LC ₅₀	20,000		215938	79
	Carassius auratus; Goldfish	3.8-6.4 CM, 1-2 G	48 H	LC ₅₀	36,810		210728	68
	Carassius auratus; Goldfish	3.8-6.4 CM, 1-2 G	96 H	LC ₅₀	36,810		210728	68
	Carassius auratus; Goldfish	20-80 G, 1-1.5 YR, 13-20 CM	48 H	LC ₅₀	25,100		210416	76
	Carassius auratus; Goldfish	3.8-6.4 CM, 1-2 G	24 H	LC ₅₀	36,810		210728	66
	Carassius auratus; Goldfish	20-80 G, 1-1.5 YR, 13-20 CM	24 H	LC ₅₀	30,550		210416	76
	Carassius auratus; Goldfish	20-80 G, 1-1.5 YR, 13-20 CM	72 H	LC ₅₀	20,720		210416	76
	Carassius auratus; Goldfish	20-80 G, 1-1.5 YR, 13-20 CM	96 H	LC ₅₀	16,940		210416	76
	Cyprinus carpio; Common, mirror, colored, carp	4-5 CM	24 H	LC ₅₀	1,080,000		212077	75
Xylene (cont)	Cyprinus carpio; Common, mirror, colored, carp	4-5 CM	48 H	LC ₅₀	950,000		212077	75
	Cyprinus carpio; Common, mirror, colored, carp	4-5 CM	96 H	LC ₅₀	780,000		212077	75
	Daphnia magna; Water flea	24 H	24 H	LC ₅₀	150,000		215718	77

Table I-1
 AQUIRE Freshwater Toxicity Information (µg/L)
 Site 15

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
	Daphnia magna; Water flea	NR	24 H	LC ₅₀ (Calc)	> 100000 to < 1000000		210915	85
	Diaptomus forbesi; Calanoid copepod	NR	96 H	LC ₅₀	99,500		311282	83
	Gammarus lacustris; Scud	2 MO	96 H	LC ₅₀	350		210885	69
	Gammarus lacustris; Scud	2 MO	24 H	LC ₅₀	800		210885	69
	Gammarus lacustris; Scud	2 MO	48 H	LC ₅₀	600		210885	69
	Lepomis macrochirus; Bluegill	3.8-6.4 CM, 1-2 G	48 H	LC ₅₀	24,000		210728	66
	Lepomis macrochirus; Bluegill	JUVENILE, 3.65 CM, 0.90 G	48 H	LC ₅₀	16,500		217398	85
	Lepomis macrochirus; Bluegill	JUVENILE, 3.65 CM, 0.90 G	16 H	LC ₅₀	11,000		217398	85
	Lepomis macrochirus; Bluegill	JUVENILE, 3.65 CM, 0.90 G	24 H	LC ₅₀	10,400		217398	85
	Lepomis macrochirus; Bluegill	JUVENILE, 3.65 CM, 0.90 G	4 H	LC ₅₀	15,900		217398	85
	Lepomis macrochirus; Bluegill	JUVENILE, 3.65 CM, 0.90 G	96 H	LC ₅₀	24,500		217398	85
	Lepomis macrochirus; Bluegill	JUVENILE, 3.65 CM, 0.90 G	1 H	LC ₅₀	30,500		217398	85
	Lepomis macrochirus; Bluegill	0.9 G	96 H	LC ₅₀	13,500		210666	80
	Lepomis macrochirus; Bluegill	3.8-6.4 CM, 1-2 G	24 H	LC ₅₀	24,000		210728	66
	Lepomis macrochirus; Bluegill	JUVENILE, 3.65 CM, 0.90 G	96 H	LC ₅₀	15,700		217398	85
	Lepomis macrochirus; Bluegill	JUVENILE, 3.65 CM, 0.90 G	8 H	LC ₅₀	13,600		217398	85
	Lepomis macrochirus; Bluegill	JUVENILE, 3.65 CM, 0.90 G	72 H	LC ₅₀	25,600		217398	85
	Lepomis macrochirus; Bluegill	JUVENILE, 3.65 CM, 0.90 G	2 H	LC ₅₀	19,900		217398	85
	Lepomis macrochirus; Bluegill	JUVENILE, 3.65 CM, 0.90 G	48 H	LC ₅₀	25,600		217398	85
	Lepomis macrochirus; Bluegill	JUVENILE, 3.65 CM, 0.90 G	24 H	LC ₅₀	16,800		217398	85
	Lepomis macrochirus; Bluegill	JUVENILE, 3.65 CM, 0.90 G	72 H	LC ₅₀	16,500		217398	85
	Lepomis macrochirus; Bluegill	3.8-6.4 CM, 1-2 G	96 H	LC ₅₀	20,870		210728	66
	Lepomis macrochirus; Bluegill	JUVENILE, 3.65 CM, 0.90 G	24 H	LC ₅₀	25,600		217398	85
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	0.9 G	24 H	LC ₅₀	17,300		210676	77
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	0.9 G	96 H	LC ₅₀	17,300		210676	77
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	200 G	56 D	MOR	Survival unaffected		210676	77
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	FRY	96 H	AVO		100	215498	76
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	200 G	2 H	LC ₅₀	7,100		210676	77
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	NR	24 H	RES		2,000	215938	79
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	0.9 G	24 H	LC ₅₀	13,500		210676	77
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	200 G	2 H	LC ₁₀₀	16,100		210676	77
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	200 G	1.5 H	Severe flavor of fish		7,100	210676	77
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	0.9 G	96 H	LC ₅₀	13,500		210676	77
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	0.6 G	96 H	LC ₅₀	8,200		210666	80
	Pimephales promelas; Fathead minnow	JUVENILE, 4.8 WK, 1.1-3.1 CM	96 H	LC ₅₀	42,000		210719	76
	Pimephales promelas; Fathead minnow	JUVENILE, 4.8 WK, 1.1-3.1 CM	24 H	LC ₅₀	42,000		210719	76
	Pimephales promelas; Fathead minnow	JUVENILE, 4.8 WK, 1.1-3.1 CM	1 H	LC ₅₀	46,000		210719	76
	Pimephales promelas; Fathead minnow	3.8-6.4 CM, 1-2 G	24 H	LC ₅₀	28,770		210728	66
	Pimephales promelas; Fathead minnow	3.8-6.4 CM, 1-2 G	48 H	LC ₅₀	28,770		210728	66
	Pimephales promelas; Fathead minnow	3.8-6.4 CM, 1-2 G	96 H	LC ₅₀	28,770		210728	66
	Pimephales promelas; Fathead minnow	JUVENILE, 4.8 WK, 1.1-3.1 CM	72 H	LC ₅₀	42,000		210719	76
	Pimephales promelas; Fathead minnow	JUVENILE, 4.8 WK, 1.1-3.1 CM	48 H	LC ₅₀	42,000		210719	76
	Pimephales promelas; Fathead minnow	3.8-6.4 CM, 1-2 G	24 H	LC ₅₀	28,770		210728	66
	Pimephales promelas; Fathead minnow	3.8-6.4 CM, 1-2 G	48 H	LC ₅₀	27,710		210728	66
	Pimephales promelas; Fathead minnow	3.8-6.4 CM, 1-2 G	96 H	LC ₅₀	26,700		210728	66
	Pimephales promelas; Fathead minnow	31 D, 18.4 MM, 0.077 G	96 H	LC ₅₀	13,400		213217	90
Xylene (cont)	Poecilia reticulata; Guppy	6 MO, 1.9-2.5 CM, 0.1-0.2 G	48 H	LC ₅₀	34,730		210728	66
	Poecilia reticulata; Guppy	6 MO, 1.9-2.5 CM, 0.1-0.2 G	24 H	LC ₅₀	34,730		210728	66
	Poecilia reticulata; Guppy	6 MO, 1.9-2.5 CM, 0.1-0.2 G	96 H	LC ₅₀	34,730		210728	66

Tab
 AQUIRE Freshwater Toxicity Information (µg/L)
 Site 15

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication	
					Lethal	Sublethal			
Semivolatile Organics									
1,4-Dichlorobenzene	Brachydanio rerio; Zebra danio, zebrafish	FERTILIZED EGG	28 D	REP *			2,100	213279	90
	Brachydanio rerio; Zebra danio, zebrafish	FERTILIZED EGG	14 D	REP *			2,100	213279	90
	Brachydanio rerio; Zebra danio, zebrafish	FERTILIZED EGG	7 D	REP *			2,100	213279	90
	Brachydanio rerio; Zebra danio, zebrafish	FERTILIZED EGG	21 D	REP *			2,100	213279	90
	Brachydanio rerio; Zebra danio, zebrafish	NR	LC ₅₀	24 H		4,200		310712	82
	Brachydanio rerio; Zebra danio, zebrafish	FERTILIZED EGG	28 D	LC ₅₀		2,700		213279	90
	Brachydanio rerio; Zebra danio, zebrafish	NR	LC ₅₀	48 H		4,250		315526	83
	Daphnia magna; Water flea	NR	EC ₀	24 H			1,500	216628	88
	Daphnia magna; Water flea	NR	EC ₅₀	48 H			700	216629	85
	Daphnia magna; Water flea	NR	EC ₅₀	24 H			3,200	216628	88
	Daphnia magna; Water flea	NR	EC ₅₀ IM	24 H			1,600	315526	83
	Daphnia magna; Water flea	<= 24 H	EC ₅₀ IM	24 H			3,200	210847	89
	Daphnia magna; Water flea	NR	EC ₅₀ IM	24 H			1,600	310712	82
	Daphnia magna; Water flea	12 H	EC ₅₀ RE	14 D			930	315526	83
	Daphnia magna; Water flea	<24 H	LC ₅₀	48 H		11,000		215184	80
	Daphnia magna; Water flea	<24 H	LC ₅₀	24 H		42,000		215184	80
	Daphnia magna; Water flea	<24 H	MOR *	48 H		680		215184	80
	Daphnia magna; Water flea	<= 24 H	REP *	21 D			300	210847	89
	Daphnia magna; Water flea	NR	REP *	28 D			400	310712	82
	Lepomis macrochirus; Bluegill	JUVENILE, 0.32-1.2 G	LC ₅₀	24 H		4,500		215590	81
	Lepomis macrochirus; Bluegill	JUVENILE, 0.32-1.2 G	LC ₅₀	96 H		4,300		215590	81
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	NR	LC ₅₀	48 H		1,180		315526	83
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	NR	LC ₅₀	24 H		1,200		310712	82
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	FER EGG TO 2 WK EATING ALEVINS	MOR *	60 D		1.8 to 122		310712	82
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	5.3 CM, 2.1 G, FINGERLING	LC ₅₀	24 H		1,370		310579	83
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	5.3 CM, 2.1 G, FINGERLING	LC ₅₀	72 H		1,240		310579	83
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	2-3 CM ALEVINS	LC ₅₀	14 D		800		310712	82
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	5.3 CM, 2.1 G, FINGERLING	LC ₅₀	96 H		1,120		310579	83
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	5.3 CM, 2.1 G, FINGERLING	LC ₅₀	48 H		1,240		310579	83
	Pimephales promelas; Fathead minnow	FRY, <24 H	GRO *	7 D			3,700	210257	88
	Pimephales promelas; Fathead minnow	FRY, <24 H	GRO *	7 D			2,200	210257	88
	Pimephales promelas; Fathead minnow	3.2-4.2 CM	LC ₅₀	96 H		33,700		210875	79
	Pimephales promelas; Fathead minnow	NR	LC ₅₀	96 H		34,500		215735	78
	Pimephales promelas; Fathead minnow	0.3-1 G	LC ₅₀	96 H		30,000		212965	81
	Pimephales promelas; Fathead minnow	NR	LC ₅₀	96 H		2,400		215735	78
	Pimephales promelas; Fathead minnow	30 D, 106-160 MG	LC ₅₀	96 H		4,200		312124	87
	Pimephales promelas; Fathead minnow	JUVENILE, 30-35 D, 76.8 MG, 14.9 MM	LC ₅₀	96 H		14,200		310432	83
	Pimephales promelas; Fathead minnow	3.2-4.2 CM	LC ₅₀	48 H		35,400		210875	79
	Pimephales promelas; Fathead minnow	NR	LC ₅₀	24 H		34,000		215735	78
	Pimephales promelas; Fathead minnow	FRY, 10-15 D, 11.6 MG, 9.5 MM	LC ₅₀	96 H		3,600		310432	83
	Pimephales promelas; Fathead minnow	SUB-ADULT, 65-94 D, 391 MG, 28 MM	LC ₅₀	96 H		11,700		310432	83
	Pimephales promelas; Fathead minnow	0.12 G	LC ₅₀	96 H		4,000		310183	83
Pimephales promelas; Fathead minnow	3.2-4.2 CM	LC ₅₀	24 H		35,400		210875	79	
Pimephales promelas; Fathead minnow	NR	LC ₅₀	48 H		34,000		215735	78	
1,4-Dichlorobenzene (cont)	Pimephales promelas; Fathead minnow	4-12 H, EMBRYO	32 D	MOR *	570		312124	87	
	Pimephales promelas; Fathead minnow	FRY, <24 H	7 D	MOR *	3,700		210257	88	
	Pimephales promelas; Fathead minnow	4-12 H, EMBRYO	32 D	MOR *	1,000		312124	87	
	Poecilia reticulata; Guppy	2-3 MO	LC ₅₀ (Calc)	14 D		3,960		216354	81
	Scenedesmus subspicatus; Green algae	LOG GRO PHASE	EC ₅₀ BM *	48 H			28,000	212997	90

Table I-1
 AQUIRE Freshwater Toxicity Information (µg/L)
 Site 15

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
	Scenedesmus subspicatus; Green algae	LOG GRO PHASE	48 H	EC ₅₀ GR		38,000	212997	80
	Selenastrum capricornutum; Green algae	NR	3 H	EC ₅₀ PS *		5,200	310712	82
	Selenastrum capricornutum; Green algae	NR	96 H	EC ₅₀ GR		1,600	310712	82
	Tanytarsus dissimilis; Midge	3RD OR 4TH INSTAR, 2.0-3.5 MM	24 H	LC ₅₀	22,100		310579	83
	Tanytarsus dissimilis; Midge	3RD OR 4TH INSTAR, 2.0-3.5 MM	48 H	LC ₅₀	13,000		310579	83
Bis(2-ethylhexyl)phthalate	Anacystis aeruginosa; Blue-green algae;	LOG-PHASE 500000 CELLS/ML	96 H	EC ₅₀ GR		>=320	215336	81
	Anacystis aeruginosa; Blue-green algae;	LOG-PHASE 500000 CELLS/ML	96 H	PGR *		>=320	215336	81
	Brachydanio rerio; Zebra danio, zebrafish;	4-5 WK	96 H	LC ₅₀	>320		215390	84
	Brachydanio rerio; Zebra danio, zebrafish;	4-5 WK	96 H	MOR *	>=320		215390	84
	Brachydanio rerio; Zebra danio, zebrafish;	<4 H, EGGS	5 WK	DVP *		>=1000	215390	84
	Brachydanio rerio; Zebra danio, zebrafish;	1-2 D	96 H	MOR *	>=320		215390	84
	Brachydanio rerio; Zebra danio, zebrafish;	<4 H, EGGS	5 WK	GRO *		>=1000	215390	84
	Brachydanio rerio; Zebra danio, zebrafish;	1-2 D	96 H	BEH *		>=320	215390	84
	Brachydanio rerio; Zebra danio, zebrafish;	4-5 WK	96 H	BEH *		>=320	215390	84
	Brachydanio rerio; Zebra danio, zebrafish;	1-2 D	96 H	LC ₅₀	>320		215390	84
	Brachydanio rerio; Zebra danio, zebrafish;	<4 H, EGGS	5 WK	MOR *	>=1000		215390	84
	Bufo woodhousei fowleri; Fowler's toad;	EMBRYO TO LARVA	to 8 D *	LC ₅₀	3,880		216772	78
	Bufo woodhousei fowleri; Fowler's toad;	LARVA	96 H *	LC ₅₀	3,880		216772	78
	Carassius auratus; Goldfish;	EMBRYO TO LARVA	96 H *	LC ₅₀	6,180		216772	78
	Carassius auratus; Goldfish;	EGGS, 4 D POSTHATCH	96 H	LC ₅₀	> 191000		210563	79
	Carassius auratus; Goldfish;	EGGS, 4 D POSTHATCH	96 H	LC ₅₀	> 186000		210563	79
	Carassius auratus; Goldfish;	EGGS, 4 D POSTHATCH	8 D	LC ₅₀	> 191000		210563	79
	Carassius auratus; Goldfish;	EGGS, 4 D POSTHATCH	8 D	LC ₅₀	> 186000		210563	79
	Chironomus plumosus; Midge;	EGG	30 D	HAT *		560	217688	77
	Chironomus plumosus; Midge;	LARVAE	30 D	DVP *		560	217688	77
	Chlorella pyrenoidosa; Green algae;	LOG-PHASE 10000 CELLS/ML	96 H	EC ₅₀ GR		>320	215336	81
	Chlorella pyrenoidosa; Green algae;	LOG-PHASE 10000 CELLS/ML	96 H	PGR *		>=320	215336	81
	Daphnia magna; Water flea;	<24 H	24 H	LC ₅₀	>68000		215184	80
	Daphnia magna; Water flea;	NR	21 D	REP *		10	210736	73
	Daphnia magna; Water flea;	< 24 H	21 D	MOR *	10		311061	82
	Daphnia magna; Water flea;	NR	21 D	REP *		2.5	210736	73
	Daphnia magna; Water flea;	< 24 H	21 D	MOR *	3.2		311061	82
	Daphnia magna; Water flea;	NR	21 D	REP *		3	210736	73
	Daphnia magna; Water flea;	< 24 H	48 H	LOC *		47	311061	82
	Daphnia magna; Water flea;	NR	21 D	REP *		30	210736	73
	Daphnia magna; Water flea;	<1 D	2 WK	MOR *	32		215336	81
	Daphnia magna; Water flea;	FIRST INSTAR, < 24 H	7 D	BIO *		811	312340	87
Daphnia magna; Water flea;	FIRST INSTAR, < 24 H	7 D	MOR *	158		312340	87	
Daphnia magna; Water flea;	<1 D	3 WK	LC ₅₀	>320		215336	81	
Daphnia magna; Water flea;	FIRST INSTAR, < 24 H	7 D	MOR *	811		312340	87	
Daphnia magna; Water flea;	<24 H	2 WK	REP *		320	215336	81	
Daphnia magna; Water flea;	NR	14 D	REP *		10	210736	73	
Daphnia magna; Water flea;	<24 H	48 H	LC ₅₀	11,000		215184	80	
Bis(2-ethylhexyl)phthalate (cont)	Daphnia magna; Water flea;	NR	14 D	REP *		3	210736	73
	Daphnia magna; Water flea;	FIRST INSTAR, < 24 H	21 D	MOR *	158		312340	87
	Daphnia magna; Water flea;	NR	14 D	REP *		30	210736	73
	Daphnia magna; Water flea;	FIRST INSTAR, < 24 H	7 D	BIO *		158	312340	87
	Daphnia magna; Water flea;	< 24 H	21 D	MOR *	100		311061	82
	Daphnia magna; Water flea;	<1 D	3 WK	MOR *	>=320		215336	81

Table
 AQUIRE Freshwater Toxicity Information (µg/L)
 Site 15

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
	Daphnia magna; Water flea;	< 24 H	21 D	MOR *	32		311061	82
	Daphnia magna; Water flea;	<24 H	48 H	MOR *	1,100		215184	80
	Daphnia magna; Water flea;	<1 D	2 WK	LC ₅₀	>320		215336	81
	Daphnia magna; Water flea;	<1 D	24 H	EC ₅₀ JM		>320	215336	81
	Daphnia magna; Water flea;	FIRST INSTAR, < 24 H	21 D	MOR *	811		312340	87
	Daphnia magna; Water flea;	1ST INSTAR, 24 H	21 D	REP		3	210732	73
	Daphnia magna; Water flea;	<1 D	2 WK	MOR *	>=320		215336	81
	Daphnia pulex; Water flea;	NEONATE, < 24 H	48 H	EC ₅₀ JM		133	312730	87
	Euglena gracilis; Flagellate euglenoid;	LOG-PHASE 10000 CELLS/ML	96 H	EC ₅₀ GR		>320	215336	81
	Euglena gracilis; Flagellate euglenoid;	LOG-PHASE 10000 CELLS/ML	96 H	PGR *		>=320	215336	81
	Gammarus pseudolimnaeus; Scud;	NR	96 H	LC ₅₀	>32000		210732	73
	Gammarus pseudolimnaeus; Scud;	JUVENILE	96 H	LC ₅₀	> 32000		210666	80
	Gammarus pulex; Scud;	>12 MM	10 D	LOC *		100	210079	91
	Gammarus pulex; Scud;	>12 MM	10 D	LOC *		500	210079	91
	Gasterosteus aculeatus; Three spine stickleback;	4-5 WK	48 H	LC ₅₀	> 300		210823	89
	Gasterosteus aculeatus; Three spine stickleback;	4-5 WK	96 H	LC ₅₀	> 300		210823	89
	Gasterosteus aculeatus; Three spine stickleback;	4-5 WK	24 H	LC ₅₀	> 300		210823	89
	Gasterosteus aculeatus; Three spine stickleback;	EGGS, < 6 H	35 D	EC ₅₀		> 320	210823	89
	Gasterosteus aculeatus; Three spine stickleback;	4-5 WK	24 H	EC ₅₀		> 300	210823	89
	Gasterosteus aculeatus; Three spine stickleback;	EGGS, < 6 H	35 D	LC ₅₀	> 320		210823	89
	Gasterosteus aculeatus; Three spine stickleback;	4-5 WK	72 H	LC ₅₀	> 300		210823	89
	Gasterosteus aculeatus; Three spine stickleback;	4-5 WK	48 H	EC ₅₀		> 300	210823	89
	Gasterosteus aculeatus; Three spine stickleback;	4-5 WK	72 H	EC ₅₀		> 300	210823	89
	Gasterosteus aculeatus; Three spine stickleback;	4-5 WK	96 H	EC ₅₀		> 300	210823	89
	Ictalurus punctatus; Channel catfish;	1.5 G	96 H	LC ₅₀	> 100000		210666	80
	Ictalurus punctatus; Channel catfish;	EMBRYO TO LARVA	96 H *	LC ₅₀	690		216772	78
	Jordanella floridae; Flagfish;	28-35 D	3 WK	MOR *	>=320		215336	81
	Jordanella floridae; Flagfish;	<36 H	4 WK	MOR *	>=320		215336	81
	Jordanella floridae; Flagfish;	<36 H	7 D	LC ₅₀	>320		215336	81
	Jordanella floridae; Flagfish;	1-2 D	96 H	LC ₅₀	>320		215336	81
	Jordanella floridae; Flagfish;	4-5 WK	96 H	BEH *		>=320	215336	81
	Jordanella floridae; Flagfish;	4-5 WK	96 H	LC ₅₀	>320		215336	81
	Jordanella floridae; Flagfish;	1-2 D	48 H	LC ₅₀	>320		215336	81
	Jordanella floridae; Flagfish;	<36 H	4 WK	GRO *		>=320	215336	81
	Jordanella floridae; Flagfish;	28-35 D	4 WK	MOR *	>=320		215336	81
	Jordanella floridae; Flagfish;	<36 H	4 WK	LC ₅₀	>320		215336	81
	Jordanella floridae; Flagfish;	4-5 WK	48 H	LC ₅₀	>320		215336	81
	Jordanella floridae; Flagfish;	1-2 D	96 H	BEH *		>=320	215336	81
	Jordanella floridae; Flagfish;	28-35 D	4 WK	GRO *		>=320	215336	81
	Jordanella floridae; Flagfish;	28-35 D	2 WK	MOR *	>=320		215336	81
	Jordanella floridae; Flagfish;	28-35 D	4 WK	REP *		>=320	215336	81
	Jordanella floridae; Flagfish;	28-35 D	1 WK	MOR *	>=320		215336	81
	Lepomis macrochirus; Bluegill;	0.32-1.2 G, JUVENILE	24 H	LC ₅₀	>770000		215590	81
	Lepomis macrochirus; Bluegill;	0.32-1.2 G, JUVENILE	96 H	LC ₅₀	>770000		215590	81
	Lepomis macrochirus; Bluegill;	0.6 G	96 H	LC ₅₀	> 100000		210666	80
	Lepomis macrochirus; Bluegill;	JUVENILE, 35 - 60 MM	0.7 H	AVO *		112.400	215272	80
	Micropterus salmoides; Largemouth bass;	EGGS, 4 D POSTHATCH	84 H	LC ₅₀	32,100		210563	79
	Micropterus salmoides; Largemouth bass;	EMBRYO TO LARVA	96 H *	LC ₅₀	32,900		216772	78
	Micropterus salmoides; Largemouth bass;	EMBRYO TO LARVA	96 H *	LC ₅₀	42,100		216772	78
	Micropterus salmoides; Largemouth bass;	EGGS, 4 D POSTHATCH	7.5 D	LC ₅₀	45,500		210563	79

Bis(2-ethylhexyl)phthalate
 (cont.)

Table I-1
 AQUIRE Freshwater Toxicity Information (µg/L)
 Site 15

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
	Micropterus salmoides; Largemouth bass;	EGGS, 4 D POSTHATCH	7.5 D	LC ₅₀	55,700		210563	79
	Micropterus salmoides; Largemouth bass;	EGGS, 4 D POSTHATCH	84 H	LC ₅₀	65,500		210563	79
	Oncorhynchus kisutch; Coho salmon, silver salmon;	1.5 G	96 H	LC ₅₀	> 100000		210666	80
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	EYED EGGS	12 D *	MOR *	54		217859	76
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	EYED EGGS	100 D	HAT *		54	217859	76
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	EYED EGGS	12 D *	MOR *	14		217859	76
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	EGGS, 4 D POSTHATCH	23 D	LC ₅₀	154,000		210563	79
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	EYED EGGS	12 D *	MOR *	5		217859	76
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	EGGS, 4 D POSTHATCH	27 D	LC ₅₀	149,200		210563	79
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	1.5 G	96 H	LC ₅₀	> 100000		210666	80
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	EMBRYO TO LARVA	96 H *	LC ₅₀	149,200		216772	78
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	EYED EGGS	24 D *	MOR *	14		217859	76
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	EYED EGG	90 D	VTE *		14	215109	77
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	EYED EGGS	24 D *	MOR *	5		217859	76
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	EYED EGGS	100 D	GRO *		62	217859	76
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	EYED EGGS	24 D *	MOR *	54		217859	76
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	EGGS, 4 D POSTHATCH	27 D	LC ₅₀	139,500		210563	79
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	EYED EGGS	5 D *	MOR *	14		217859	76
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	EYED EGG	90 D	GRO *		54	215109	77
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	EYED EGGS	5 D *	MOR *	5		217859	76
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	EGGS, 4 D POSTHATCH	23 D	LC ₅₀	139,100		210563	79
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	EYED EGG	90 D	VTE *		5	215109	77
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	EMBRYO TO LARVA	96 H *	LC ₅₀	139,500		216772	78
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	EYED EGGS	5 D *	MOR *	54		217859	76
	Oryzias latipes; Medaka, high-eyes;	28-35 D	4 WK	GRO *		>=320	215336	81
	Oryzias latipes; Medaka, high-eyes;	28-35 D	4 WK	REP *		>=320	215336	81
	Oryzias latipes; Medaka, high-eyes;	1-2 D	96 H	BEH *		>=320	215336	81
	Oryzias latipes; Medaka, high-eyes;	4-5 WK	48 H	LC ₅₀	>320		215336	81
	Oryzias latipes; Medaka, high-eyes;	28-35 D	1 WK	MOR *	>=320		215336	81
	Oryzias latipes; Medaka, high-eyes;	4-5 WK	96 H	BEH *		>=320	215336	81
	Oryzias latipes; Medaka, high-eyes;	28-35 D	3 WK	MOR *	>=320		215336	81
	Oryzias latipes; Medaka, high-eyes;	4-5 WK	96 H	LC ₅₀	>320		215336	81
	Oryzias latipes; Medaka, high-eyes;	28-35 D	4 WK	LC ₅₀	>320		215336	81
	Oryzias latipes; Medaka, high-eyes;	<36 H	4 WK	LC ₅₀	>320		215336	81
	Oryzias latipes; Medaka, high-eyes;	1-2 D	96 H	LC ₅₀	>320		215336	81
	Oryzias latipes; Medaka, high-eyes;	<36 H	4 WK	MOR *	>=320		215336	81
	Oryzias latipes; Medaka, high-eyes;	1-2 D	48 H	LC ₅₀	>320		215336	81
	Oryzias latipes; Medaka, high-eyes;	28-35 D	2 WK	MOR *	>=320		215336	81
	Oryzias latipes; Medaka, high-eyes;	28-35 D	4 WK	MOR *	>=320		215336	81
	Oryzias latipes; Medaka, high-eyes;	<36 H	7 D	LC ₅₀	>320		215336	81
	Pimephales promelas; Fathead minnow;	7.5 MO, 1.24 G	56 D	MOR *	62		217859	76
	Pimephales promelas; Fathead minnow;	7.5 MO, 1.24 G	56 D	GRO *		62	217859	76
	Pimephales promelas; Fathead minnow;	FRY, 10 D	127 D	GRO *		100	215109	77
	Pimephales promelas; Fathead minnow;	FRY, 10 D	127 D	VTE *		11	215109	77
	Poecilia reticulata; Guppy;	21-28 D	2 WK	LC ₅₀	>320		215336	81
	Poecilia reticulata; Guppy;	21-28 D	48 H	LC ₅₀	>320		215336	81
	Poecilia reticulata; Guppy;	21-28 D	4 WK	LC ₅₀	>320		215336	81
	Poecilia reticulata; Guppy;	21-28 D	1 WK	LC ₅₀	>320		215336	81
	Rana arvalis; Moorfrog;	EGGS	3 WK	HAT		0.89 to 187.40	215904	87
	Rana pipiens; Leopard frog;	EMBRYO TO LARVA	to 8 D *	LC ₅₀	4,440		216772	78

Bis(2-ethylhexyl)phthalate
 (cont.)

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
	Rana pipiens; Leopard frog;	LARVA	96 H *	LC ₅₀	4,440		216772	78
	Salvelinus fontinalis; Brook trout;	ADULT, 1.5 YR	150 D	GRO *		52	215109	77
	Salvelinus fontinalis; Brook trout;	ADULT, 1.5 YR	150 D	VTE *		3.7	215109	77
	Selenastrum capricornutum; Green algae;	LOG-PHASE 50000 CELLS/ML	96 H	EC ₅₀ GR		>320	215336	81
	Selenastrum capricornutum; Green algae;	LOG-PHASE 50000 CELLS/ML	96 H	PGR *		>=320	215336	81
	Stephanodiscus hantzschii; Diatom;	LOG-PHASE 10000 CELLS/ML	96 H	EC ₅₀ GR		>320	215336	81
	Stephanodiscus hantzschii; Diatom;	LOG-PHASE 10000 CELLS/ML	96 H	PGR *		>=320	215336	81
Pesticides								
4,4' DDT	Acartia sp; Calanoid copepod	MATURE	24 H	LC ₅₀	28		212658	88
	Acroneturia pacifica; Stonefly	NAIADS	25 D	LC ₅₀	76		212238	64
	Acroneturia pacifica; Stonefly	NAIAD, 2-2.5 CM	96 H	LC ₅₀	320		210528	65
	Acroneturia pacifica; Stonefly	NAIADS	30 D	LC ₅₀	72		212238	64
	Acroneturia pacifica; Stonefly	NAIADS	20 D	LC ₅₀	84		212238	64
	Acroneturia pacifica; Stonefly	NAIAD, 2-2.5 CM	96 H	LC ₅₀	320		212667	64
	Acroneturia pacifica; Stonefly	NAIADS	5 D	LC ₅₀	2,150		212238	64
	Acroneturia pacifica; Stonefly	NAIADS	10 D	LC ₅₀	440		212238	64
	Acroneturia pacifica; Stonefly	NAIAD, 2-2.5 CM	48 H	LC ₅₀	2,200		212667	64
	Acroneturia pacifica; Stonefly	NAIADS	15 D	LC ₅₀	240		212238	64
	Acroneturia pacifica; Stonefly	NAIAD, 2-2.5 CM	72 H	LC ₅₀	320		212667	64
	Aedes aegypti; Mosquito	LARVAE, 2ND INSTAR	0.193 H	ET ₅₀ IMM		1,000	212929	54
	Aedes aegypti; Mosquito	4TH INSTAR LARVAE *	24 H	EC ₅₀ IMM		83	216867	93
	Aedes aegypti; Mosquito	LARVAE, 2ND INSTAR	1.93 H	ET ₅₀ IMM		10	212929	54
	Aedes aegypti; Mosquito	LARVAE	96 H	LC ₅₀	1		216270	74
	Aedes aegypti; Mosquito	4TH INSTAR LARVAE *	24 H	EC ₅₀ IMM		22	216867	93
	Aedes aegypti; Mosquito	LARVAE, 2ND INSTAR	0.307 H	ET ₅₀ IMM		100	212929	54
	Aedes aegypti; Mosquito	LARVAE, 2ND INSTAR	0.14 H	ET ₅₀ IMM		10,000	212929	54
	Aedes cantans; Mosquito	LARVAE	24 H	LC ₅₀	5		215162	79
	Aedes cantans; Mosquito	LARVAE	48 H	LC ₅₀	4.2		215162	79
	Aedes cantans; Mosquito	YOUNG, 4TH INSTAR	72 H	LC ₁₀₀	20		215162	79
	Aedes sp; Mosquito	NR	24 H	LETH	1 to 7		219269	72
	Alburnus albidus; Bleak	6 CM	48 H	LC ₅₀	21,500		310309	72
	Alburnus albidus; Bleak	8 CM	96 H	LC ₅₀	80		215185	79
	Algae; Algae, phytoplankton, algal mat	NR	28 H	PSE		5	212223	72
	Algae; Algae, phytoplankton, algal mat	NR	to 10 H	EC ₅₀ PSE		100	218926	73
	Algae; Algae, phytoplankton, algal mat	NR	4 H	PSE		1,000	212188	63
	Algae; Algae, phytoplankton, algal mat	NR	10 H	EC ₅₀ PSE		100	218926	73
	Algae; Algae, phytoplankton, algal mat	NR	28 H	EC ₅₀ PSE		55	218926	73
	Amphidinium carterae; Dinoflagellate	10000 CELLS/ML	1 to 17 D	PGR		80	219047	72
	Anguilla rostrata; American eel	NR	1 H	ENZ		50,000	219110	72
	Anguilla rostrata; American eel	NR	1 H	PHY		50,000	219110	72
4,4' DDT (cont.)	Anguilla rostrata; American eel	56 MM, 0.18 G	24 H	LC ₅₀	7		210628	70
	Anguilla rostrata; American eel	56 MM, 0.18 G	96 H	LC ₅₀	4		210628	70
	Anguilla rostrata; American eel	56 MM, 0.18 G	48 H	LC ₅₀	6		210628	70
	Anguilla rostrata; American eel	5 G	6 H	HEM, PHY		1,000	219110	72
	Anguilla vulgaris; Eel	MATURE	96 H	HEM, PHY		1	315978	83
	Anguilla vulgaris; Eel	MATURE	96 H	GRO		1	315978	83
	Anguilla vulgaris; Eel	MATURE	96 H	HEM, PHY		0.05	315978	83
	Anguilla vulgaris; Eel	MATURE	96 H	PHY		0.1	315978	83
	Anopheles sp, Mosquito	LARVAE, MIXED MICROFAUNA SPECI	2 D	POP		70	312237	83

Table I-1
 AQUIRE Freshwater Toxicity Information (µg/L)
 Site 15

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication	
					Lethal	Sublethal			
4,4' DDT (cont)	Anopheles stephensi; Mosquito	4TH INSTAR LARVAE	24 H	LC ₅₀	282		312464	84	
	Anopheles stephensi; Mosquito	4TH INSTAR LARVAE	24 H	LC ₅₀	175		312464	84	
	Aplocheilus lineatus; Killifish	25-40 MM STD LENGTH	24 H	LC ₅₀	148.9		311081	82	
	Aplocheilus lineatus; Killifish	25-40 MM STD LENGTH	48 H	LC ₅₀	122.8		311081	82	
	Aplodinotus grunniens; Freshwater drum	3.3 G	96 H	LC ₅₀	10		212009	66	
	Aquatic community; Aquatic community	MICROCOSM	25 D	POP			10 to 500	213972	92
	Arctopsyche grandis; Caddisfly	LARVAE	96 H	LC ₅₀	175			210528	65
	Artemia salina; Brine shrimp	5TH INSTAR	5 H	EC ₅₀ BEH			24	218105	58
	Artemia salina; Brine shrimp	ADULT	5 H	EC ₅₀ BEH			142	218105	58
	Artemia salina; Brine shrimp	3RD INSTAR	5 H	EC ₅₀ BEH			105	218105	58
	Artemia salina; Brine shrimp	9TH INSTAR	5 H	EC ₅₀ BEH			12	218105	58
	Artemia salina; Brine shrimp	7TH INSTAR	5 H	EC ₅₀ BEH			12	218105	58
	Artemia salina; Brine shrimp	DRIED EGG	48 H	HAT			10,000	216548	80
	Artemia salina; Brine shrimp	11TH INSTAR	5 H	EC ₅₀ BEH			28	218105	58
	Arthropoda; Arthropod phylum	NR	48 H	LETH	200			219237	72
	Asellus brevicaudus; Aquatic sowbug	MATURE	96 H	LC ₅₀	4			210666	80
	Asellus brevicaudus; Aquatic sowbug	NR	96 H	LC ₅₀	4			210887	72
	Asellus brevicaudus; Aquatic sowbug	NR	24 H	LC ₅₀	8.7			210887	72
	Asplanchna brightwelli; Rotifer	<= 1 D	12 H	LC ₅₀	2,218			312237	83
	Astacus astacus; European crayfish	MATURE, 80-90 MM, 22 G	96 H	LC ₅₀	1 to 10			218297	77
	Astacus leptodactylus; Crayfish	6.8 G	NR	RSD			50	218908	73
	Balanus amphitrite; Barnacle	ADULT	1 H *	BEH			1	218645	74
	Balanus amphitrite; Barnacle	ADULT	1 H *	BEH			0.1	218645	74
	Balanus improvisus; Barnacle	CYPRIDS	24 H *	BEH			0.03	217940	74
	Balanus improvisus; Barnacle	CYPRIDS	24 H *	CLN			60,000 to 500,000	217940	74
	Balanus improvisus; Barnacle	CYPRIDS	24 H *	BEH			1,000,000	217940	74
	Barbus dorsalis; Two spot african barb	6-8.5 CM, 0.52-0.59 G	96 H	LC ₅₀	48			216722	67
	Barbus dorsalis; Two spot african barb	6-8.5 CM, 0.52-0.59 G	24 H	LC ₅₀	86			216722	67
	Barbus dorsalis; Two spot african barb	6-8.5 CM, 0.52-0.59 G	48 H	LC ₅₀	86			216722	67
	Barbus sophero; Two spot barb, dotted barb	7.1-9.1 CM, 4.0-9.5 G	15 D	CEL, PHY			50	312352	85
	Barytelphusa cunicularis; Crab	NR	72 H	LC ₅₀	980			312790	87
	Barytelphusa cunicularis; Crab	NR	24 H	LC ₅₀	2,020			312790	87
Barytelphusa cunicularis; Crab	NR	48 H	LC ₅₀	1,540			312790	87	
Barytelphusa cunicularis; Crab	NR	96 H	LC ₅₀	560			312790	87	
Biomphalaria glabrata; Snail	14-16 MM SHELL DIAMETER	24 H	PHY			41,100	218797	73	
Biomphalaria glabrata; Snail	14-16 MM SHELL DIAMETER	24 H	PHY			1,100	218797	73	
Bosmina longirostris; Water flea	NEONATE, < 24 H	48 H	EC ₅₀ IMM			1.72	310658	84	
Bosmina longirostris; Water flea	NEONATE, < 24 H	48 H	EC ₅₀ IMM			0.63	310658	84	
Branchiura sowerbyi; Oligochaete	NR	72 H	LETH	4,000			212798	73	
Branchiura sowerbyi; Oligochaete	NR	72 H	LETH	4,000			212798	73	
Branchiura sowerbyi; Oligochaete	NR	90 D	MOR	4,000			212798	73	
Branchiura sowerbyi; Oligochaete	NR	72 H	MOR	4,000			212798	73	
Bufo woodhousei fowleri; Fowler's toad	TADPOLE, 28-35 D	96 H	LC ₅₀	1,000			212891	70	
Bufo woodhousei fowleri; Fowler's toad	TADPOLE, 28-35 D	48 H	LC ₅₀	1,500			212891	70	
Bufo woodhousei fowleri; Fowler's toad	TADPOLE, 28-35 D	24 H	LC ₅₀	2,400			212891	70	
Callinectes sapidus; Blue crab	JUVENILE	24 H	EC ₅₀ EQU			10	212188	63	
Callinectes sapidus; Blue crab	JUVENILE	48 H	EC ₅₀ EQU			10	212188	63	
Cancer magister; Dungeness or edible crab	ZOEA	96 H	EC ₅₀ IMM			1.1	212264	89	
Capitella capitata; Polychaete	NR	96 H	LC ₅₀	>1,000			213785	91	
Carassius auratus; Goldfish	NR	48 H	LC ₅₀	68			315192	67	

Tat
 AQUIRE Freshwater Toxicity Information (µg/L)
 Site 15

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
	Carassius auratus; Goldfish	2.72 G	96 H	LC ₅₀	9.8		210851	75
	Carassius auratus; Goldfish	25 G	5.9 D	HEM		17.5	218756	74
	Carassius auratus; Goldfish	2.5-6.0 CM	24 H	LC ₅₀	160		313000	65
	Carassius auratus; Goldfish	6 CM	48 H	LC ₅₀	27,500		310309	72
	Carassius auratus; Goldfish	0.8 G	96 H	LC ₅₀	40		212009	66
	Carassius auratus; Goldfish	4.01 CM, 1.04 G	48 H	LC ₅₀	68		212682	69
	Carassius auratus; Goldfish	1.9 G	96 H	LC ₅₀	180		212009	66
	Carassius auratus; Goldfish	19-31 CM	96 H	BEH		10	218528	73
	Carassius auratus; Goldfish	1.0 G	96 H	LC ₅₀	21		212009	66
	Carassius auratus; Goldfish	19-31 CM	96 H	LOC		10	219065	72
	Carassius auratus; Goldfish	2.5-6.0 CM	96 H	LC ₅₀	13		313000	65
	Carassius auratus; Goldfish	2.5-6.0 CM	72 H	LC ₅₀	18		313000	65
	Carassius auratus; Goldfish	2.5-6.0 CM	48 H	LC ₅₀	32		313000	65
	Carassius auratus; Goldfish	NR	48 H	LETH	2,000		212807	50
	Carassius auratus; Goldfish	19-30 CM	96 H	LOC		10	218814	73
	Carassius auratus; Goldfish	2.4 G	96 H	LC ₅₀	32		212009	66
	Carassius auratus; Goldfish	NR	96 H	LC ₅₀	21		210610	70
	Carassius auratus; Goldfish	2.4 G	96 H	LC ₅₀	27		212009	66
	Carassius auratus; Goldfish	0.7 G	96 H	LC ₅₀	35		212009	66
	Carassius auratus; Goldfish	25 G	5.9 D	HEM		17.5	218756	74
	Carassius auratus; Goldfish	2.5 G	96 H	LC ₅₀	76		212009	66
	Carassius auratus; Goldfish	25-50 G	96 H	LC ₅₀	80		312999	75
	Carassius sp; Carp	FRY	96 H	LC ₅₀	710		216270	74
	Calla calla; Calla	30 MM, FINGERLING	96 H	LC ₅₀	6,800		212520	86
	Ceriodaphnia cornuta; Water flea	MIXED MICROFAUNA SPECIES	2 D	POP		70	312237	83
	Ceriodaphnia cornuta; Water flea	<= 1 D	24 H	LC ₅₀	23		312237	83
	Ceriodaphnia reticulata; Water flea	<= 1 D	24 H	LC ₅₀	44		312237	83
	Channa punctatus; Snake-head catfish	10-15 CM	48 H	LC ₅₀	46		218371	72
	Channa punctatus; Snake-head catfish	10-15 CM	72 H	LC ₅₀	29		218371	72
	Channa punctatus; Snake-head catfish	10-15 CM	96 H	LC ₅₀	21.4		218371	72
	Channa punctatus; Snake-head catfish	10-15 CM	24 H	LC ₅₀	83		218371	72
	Channa punctatus; Snake-head catfish	NR	24 H	CEL, PHY		100	219363	71
	Chaoborus sp; Phantom midge	JUVENILE	96 H	LC ₅₀	7.4		210666	80
	Chasmichthys dolichognathus; Agohaze, goby	0.01-0.02 G	24 H	LC ₅₀	8		216128	76
	Chasmichthys dolichognathus; Agohaze, goby	0.01-0.02 G	24 H	LC ₅₀	10		216128	76
	Chasmichthys dolichognathus; Agohaze, goby	0.01-0.02 G	48 H	LC ₅₀	4.8		216128	76
	Chironomidae; Midge family	LARVAE, 9-11 MM	24 H	LC ₅₀	74.65		217954	75
	Chironomus riparius; Midge	4TH INSTAR	24 H	EC ₅₀ IMM		4.7	218830	79
	Chironomus tentans; Midge	2ND INSTAR, 10-14 D	48 H	LC ₅₀	1		217884	86
	Chironomus tentans; Midge	3RD-4TH INSTAR	24 H	EC ₅₀ IMM		19.5	216267	74
	Chironomus yoshimatsui; Midge	LARVAE	24 H *	EC ₅₀ BEH		23	212687	79
	Chlorella sp; Green algae	150000 CELLS/ML INITIAL CONC	10 D	PGR		1,000	218039	62
	Chlorella sp; Green algae	150000 CELLS/ML INITIAL CONC	10 D	PGR		600	218039	62
	Chlorella vulgaris; Green algae	NR	NR	BIO, PHY		100 to 10,000	213306	87
	Chrysophyta; Diatoms, chrysophyte division	NR	48 H	ABD		200	219237	72
	Cipangopaludina malleata; Mud snail	NR	48 H	LC ₅₀	13,000		219158	72
	Cirrhinus mrigala; Carp, hawk fish	FINGERLING, 7.1 CM, 3.1 G	48 H	OXC		20	218402	78
	Cirrhinus mrigala; Carp, hawk fish	30 MM, FINGERLING	96 H	LC ₅₀	6,400		212520	86
	Claassenia sabulosa; Stonefly	20-25 MM	24 H	LC ₅₀	16		210889	68
	Claassenia sabulosa; Stonefly	20-25 MM	48 H	LC ₅₀	6.4		210889	68

4,4'-DDT (cont.)

Table I-1
 AQUIRE Freshwater Toxicity Information (µg/L)
 Site 15

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
	<i>Claassenia sabulosa</i> ; Stonefly	20-25 MM	96 H	LC ₅₀	3.5		210889	68
	<i>Clarias batrachus</i> ; Walking catfish	NR	72 H	LC ₅₀	4.2		311522	84
	<i>Clarias batrachus</i> ; Walking catfish	NR	24 H	LC ₅₀	18		311522	84
	<i>Clarias batrachus</i> ; Walking catfish	NR	48 H	LC ₅₀	8.5		311522	84
	<i>Clarias batrachus</i> ; Walking catfish	NR	96 H	LC ₅₀	1.75		311522	84
	<i>Cdliisa fasciata</i> ; Giant gourami	48-69 MM	48 H	EC ₅₀ IMM		132	218745	74
	<i>Colisa fasciata</i> ; Giant gourami	FINGERLING, 4.4 CM, 1.9 G	48 H	OXC		20	218402	78
	<i>Colisa fasciata</i> ; Giant gourami	48-69 MM	96 H	EC ₅₀ IMM		126	218745	74
	<i>Colisa fasciata</i> ; Giant gourami	48-69 MM	6 H	EC ₅₀ IMM		162	218745	74
	<i>Colisa fasciata</i> ; Giant gourami	48-69 MM	24 H	EC ₅₀ IMM		150	218745	74
	<i>Crangon septemspinosa</i> ; Sand shrimp	2.0 G	21 H	LC ₅₀	0.9		215409	80
	<i>Crangon septemspinosa</i> ; Sand shrimp	26 MM, 0.25 G	24 H	LC ₅₀	3		210627	69
	<i>Crangon septemspinosa</i> ; Sand shrimp	2.0 G	15 H	LC ₅₀	1.1		215409	80
	<i>Crangon septemspinosa</i> ; Sand shrimp	2.0 G	96 H	LC ₅₀	0.4		215409	80
	<i>Crangon septemspinosa</i> ; Sand shrimp	2.0 G	20 H	LC ₅₀	1.8		215409	80
	<i>Crangon septemspinosa</i> ; Sand shrimp	2.0 G	15 H	LC ₅₀	1.9		215409	80
	<i>Crangon septemspinosa</i> ; Sand shrimp	26 MM, 0.25 G	48 H	LC ₅₀	1		210627	69
	<i>Crangon septemspinosa</i> ; Sand shrimp	2.0 G	16 H	LC ₅₀	0.9		215409	80
	<i>Crassostrea madrasensis</i> ; Oyster	15-20 MM	72 H	LC ₅₀	15.75		210276	89
	<i>Crassostrea madrasensis</i> ; Oyster	15-20 MM	96 H	LC ₅₀	9.36		210276	89
	<i>Crassostrea madrasensis</i> ; Oyster	15-20 MM	120 H	LC ₅₀	9.28		210276	89
	<i>Crassostrea madrasensis</i> ; Oyster	15-20 MM	24 H	LC ₅₀	24.82		210276	89
	<i>Crassostrea madrasensis</i> ; Oyster	15-20 MM	48 H	LC ₅₀	16.19		210276	89
	<i>Crassostrea virginica</i> ; American or virginia oyster	2 5-5 1 CM	96 H	GRO		7	212188	63
	<i>Crassostrea virginica</i> ; American or virginia oyster	2 MO	1 to 48 WK	HIS, PHY		0.6	210981	71
	<i>Crassostrea virginica</i> ; American or virginia oyster	2 D LARVAE	12 D	LC ₅₀	34		212400	79
	<i>Crassostrea virginica</i> ; American or virginia oyster	2 MO	48 WK	GRO		0.6	210981	71
	<i>Crassostrea virginica</i> ; American or virginia oyster	2 5-5 1 CM	96 H	GRO		9	212188	63
	<i>Crithidia fasciculata</i> ; Flagellate	NR	NR	PGR		3,500	218552	74
	<i>Culaea inconstans</i> ; Brook stickleback	1.6 G	96 H	LC ₅₀	67		212009	66
	<i>Culex fatigans</i> ; Mosquito	LARVAE, 4TH INSTAR STAGE	24 H	LC ₅₀	180		312237	83
	<i>Culex pipiens molestus</i> ; Mosquito	4TH INSTAR	72 H	LC ₁₀₀	50		215162	79
	<i>Culex pipiens molestus</i> ; Mosquito	NR	3 D *	MOR	250		215162	79
	<i>Culex pipiens molestus</i> ; Mosquito	NR	3 D *	MOR	250		215162	79
	<i>Culex pipiens molestus</i> ; Mosquito	LARVAE	48 H	LC ₅₀	7.2		215162	79
	<i>Culex pipiens molestus</i> ; Mosquito	LARVAE	24 H	LC ₅₀	8.6		215162	79
	<i>Culex pipiens molestus</i> ; Mosquito	4TH INSTAR	72 H	LC ₁₀₀	50		215162	79
	<i>Culex pipiens molestus</i> ; Mosquito	NR	3 D *	MOR	250		215162	79
4,4'-DDT (cont.)	<i>Culex pipiens quinquefasciata</i> ; Mosquito	3RD-4TH INSTAR LARVAE	24 H	LC ₅₀	100		219297	71
	<i>Culex pipiens quinquefasciata</i> ; Mosquito	3RD-4TH INSTAR LARVAE	24 H	LC ₅₀	80		219297	71
	<i>Culex quinquefasciatus</i> ; Mosquito	4TH INSTAR LARVAE	24 H	LC ₅₀	2.1		210810	88
	<i>Culex quinquefasciatus</i> ; Mosquito	3RD OR 4TH INSTAR LARVAE	24 H	LC ₅₀	22		311201	85
	<i>Cyclops</i> sp; Cyclopoid copepod	4TH INSTAR STAGE	24 H	LC ₅₀	515		312237	83
	<i>Cyclops</i> sp; Cyclopoid copepod	MIXED MICROFAUNA SPECIES	2 D	POP		70	312237	83
	<i>Cyclotella cryptica</i> ; Diatom	INIT CONC 50000 CELLS/ML	6 D	BMS		10	310161	84
	<i>Cyclotella cryptica</i> ; Diatom	INIT CONC 50000 CELLS/ML	6 D	BMS		20	310161	84
	<i>Cymatogaster aggregata</i> ; Shiner perch	48-104 MM, 1.2-11.0 G	96 H	LC ₅₀	0.45		210611	72
	<i>Cymatogaster aggregata</i> ; Shiner perch	48-104 MM, 1.2-11.0 G	96 H	LC ₅₀	3.7		210611	72
	<i>Cypridopsis vidua</i> ; Ostracod	NR	24 H	MOR	250		218599	74
	<i>Cypridopsis vidua</i> ; Ostracod	MATURE	48 H	EC ₅₀ IMM		15	210666	80

Table 1
AQUIRE Freshwater Toxicity Information (µg/L)
Site

Remedial Investigation
NAS Whiting Field
Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
	Cypridopsis vidua; Ostracod	NR	48 H	MOR	125		218599	74
	Cypridopsis vidua; Ostracod	NR	48 H	MOR	63		218599	74
	Cypridopsis vidua; Ostracod	NR	24 H	MOR	1,000		218599	74
	Cypridopsis vidua; Ostracod	NR	24 H	MOR	63		218599	74
	Cypridopsis vidua; Ostracod	NR	48 H	MOR	250		218599	74
	Cyprinodon variegatus; Sheepshead minnow	NR	24 H	EC ₅₀ EQU		1,000	210807	65
	Cyprinodon variegatus; Sheepshead minnow	20-40 MM	0.5 H *	AVO		5	215145	69
	Cyprinodon variegatus; Sheepshead minnow	NR	48 H	LC ₅₀	5		210807	65
	Cyprinodon variegatus; Sheepshead minnow	JUVENILE	48 H	LC ₅₀	5		210646	64
	Cyprinodon variegatus; Sheepshead minnow	JUVENILE	24 H	IRR		100	210646	64
	Cyprinodontidae; Killifish, topminnow family	ADULT, 13-15 CM	72 H	LETH	500		212807	50
	Cyprinus carpio; Common, mirror, colored, carp	15 G	96 H	ENZ		21	219265	72
	Cyprinus carpio; Common, mirror, colored, carp	0.6 G	96 H	LC ₅₀	6		212009	66
	Cyprinus carpio; Common, mirror, colored, carp	2.2 G	96 H	LC ₅₀	9.2		212009	66
	Cyprinus carpio; Common, mirror, colored, carp	NR	48 H	LC ₅₀	110		315192	67
	Cyprinus carpio; Common, mirror, colored, carp	NR	6 H	BIO, PHY		50	311249	84
	Cyprinus carpio; Common, mirror, colored, carp	0.8 G	96 H	LC ₅₀	6.9		212009	66
	Cyprinus carpio; Common, mirror, colored, carp	15 G	96 H	ENZ		34	219265	72
	Cyprinus carpio; Common, mirror, colored, carp	2.1 G	96 H	LC ₅₀	11.3		212009	66
	Cyprinus carpio; Common, mirror, colored, carp	15 G	96 H	ENZ		34	219265	72
	Cyprinus carpio; Common, mirror, colored, carp	EGGS	96 H	HAT		1,000	219629	70
	Cyprinus carpio; Common, mirror, colored, carp	4.5 CM, 1.1 G	48 H	LC ₅₀	110		212682	69
	Cyprinus carpio; Common, mirror, colored, carp	NR	96 H	LC ₅₀	10		210610	70
	Cyprinus carpio; Common, mirror, colored, carp	NR	6 H	BIO, PHY		50	311249	84
	Cyprinus carpio; Common, mirror, colored, carp	12-17 CM, 40-80 G	6 H	PHY		50	310912	85
	Cyprinus carpio; Common, mirror, colored, carp	EGGS	96 H	HAT		5,000	219629	70
	Cyprinus carpio; Common, mirror, colored, carp	FRY	96 H	LC ₅₀	540		216270	74
	Cyprinus carpio; Common, mirror, colored, carp	EGG	96 H	LC ₅₀	350		311812	86
	Cyprinus carpio; Common, mirror, colored, carp	2.0 G	96 H	LC ₅₀	4		212009	66
	Cyprinus carpio; Common, mirror, colored, carp	2.5 G	96 H	LC ₅₀	12		212009	66
	Cyprinus carpio; Common, mirror, colored, carp	NR	6 H	BIO, PHY		50	311249	84
	Daphnia carinata; Water flea	2-2.5 MM ADULT	48 H	EC ₅₀ IMM		12	215194	76
	Daphnia carinata; Water flea	2-2.5 MM ADULT	24 H	EC ₅₀ IMM		23	215194	76
	Daphnia magna; Water flea	NR	26 H	EC ₅₀ IMM		5.5	217984	66
	Daphnia magna; Water flea	JUVENILE, 6-24 H	24 H	EC ₅₀ IMM		5.10	310871	84
	Daphnia magna; Water flea	JUVENILE, 6-24 H	48 H	EC ₅₀ IMM		1.1	310871	84
	Daphnia magna; Water flea	< 24 H	14 D	REP		0.5	215525	75
	Daphnia magna; Water flea	JUVENILE, 6-24 H	24 H	EC ₅₀ IMM		71	310871	84
	Daphnia magna; Water flea	<24 H	14 D	REP		0.75	215525	75
	Daphnia magna; Water flea	1ST INSTAR, < 24 H	26 H	LC ₅₀	4.4		212820	67
	Daphnia magna; Water flea	< 24 H	48 H	MOR	0.04		218455	74
	Daphnia magna; Water flea	1ST INSTAR, 9 UG	24 H *	MOR	8		219303	71
	Daphnia magna; Water flea	1ST INSTAR	48 H	EC ₅₀ IMM		4.7	210666	80
	Daphnia magna; Water flea	2-26 H ADULT	24 H	EC ₅₀ IMM		6.5	215539	75
	Daphnia magna; Water flea	1ST INSTAR, 9 UG	24 H *	MOR	200		219303	71
	Daphnia magna; Water flea	JUVENILE, 6-24 H	24 H	EC ₅₀ IMM		0.5	310871	84
	Daphnia magna; Water flea	1ST INSTAR, 9 UG	24 H *	MOR	50		219303	71
	Daphnia magna; Water flea	NR	48 H	LC ₅₀	2.66		313007	76
	Daphnia magna; Water flea	< 24 H	24 H	LC ₅₀	9		315291	75
	Daphnia magna; Water flea	JUVENILE, 6-24 H	24 H	EC ₅₀ IMM		42	310871	84

4,4'-DDT (cont)

Table I-1
 AQUIRE Freshwater Toxicity Information (µg/L)
 Site 15

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
	Daphnia magna; Water flea	1ST INSTAR, 9 UG	24 H *	MOR	16		219303	71
	Daphnia magna; Water flea	JUVENILE, 6-24 H	48 H	EC ₅₀ IMM		0.68	310871	84
	Daphnia magna; Water flea	< 24 H	48 H	EC ₅₀ IMM		1.7	212076	79
	Daphnia magna; Water flea	JUVENILE, 6-24 H	24 H	EC ₅₀ IMM		0.99	310871	84
	Daphnia magna; Water flea	JUVENILE, 1-2 MM, <24 H	48 H	EC ₅₀ IMM		1.08	212554	90
	Daphnia magna; Water flea	JUVENILE, 6-24 H	24 H	EC ₅₀ IMM		98	310871	84
	Daphnia magna; Water flea	NR	96 H	LC ₅₀	3		216270	74
	Daphnia magna; Water flea	JUVENILE, 6-24 H	24 H	EC ₅₀ IMM		1.3	310871	84
	Daphnia magna; Water flea	1ST INSTAR, 9 UG	24 H *	MOR	1,100		219303	71
	Daphnia magna; Water flea	JUVENILE, 1-2 MM, <24 H	48 H	EC ₅₀ IMM		1.23	212554	90
	Daphnia magna; Water flea	< 24 H	48 H	MOR	0.9		218455	74
	Daphnia magna; Water flea	<24 H	14 D	EC ₅₀ IMM		0.67	215525	75
	Daphnia magna; Water flea	12 +/- 12 H	14 D	EC ₅₀ IMM		0.67	215525	75
	Daphnia magna; Water flea	<24 H	48 H	LC ₅₀	3		217884	86
	Daphnia magna; Water flea	<24 H	14 D	REP		0.61	215525	75
	Daphnia magna; Water flea	JUVENILE, 1-2 MM, <24 H	48 H	EC ₅₀ IMM		1.51	212554	90
	Daphnia magna; Water flea	1ST INSTAR, 9 UG	24 H *	MOR	100		219303	71
	Daphnia magna; Water flea	JUVENILE, 1-2 MM, <24 H	48 H	EC ₅₀ IMM		1.13	212554	90
	Daphnia magna; Water flea	< 24 H	48 H	EC ₅₀ IMM		1.1	212076	79
	Daphnia magna; Water flea	12 +/- 12 H	14 D	REP		0.5	215525	75
	Daphnia magna; Water flea	NR	26 H	EC ₅₀ IMM		195	217984	66
	Daphnia magna; Water flea	JUVENILE, 1-2 MM, <24 H	48 H	EC ₅₀ IMM		1.2	212554	90
	Daphnia pulex; Water flea	NEONATE, <24 H	48 H	EC ₅₀ IMM		1.1	213283	88
	Daphnia pulex; Water flea	1ST INSTAR	48 H	EC ₅₀ IMM		0.36	210888	66
	Daphnia pulex; Water flea	FEMALE ADULT	3 H	LC ₅₀	3,500		212682	69
	Daphnia pulex; Water flea	NR	48 H	EC ₅₀ IMM		2.67	310658	84
	Daphnia pulex; Water flea	NEONATE, < 24 H	48 H	EC ₅₀ IMM		1.1	312730	87
	Daphnia pulex; Water flea	NR	3 H	LC ₅₀	3,500		315192	67
	Daphnia sp; Water flea	NR	48 H	REP		100	210666	80
	Dendraster excentricus; Sand dollar	EMBRYO	72 H	EC ₅₀ DVP		>17.2	212264	89
	Diphanosoma excisum; Water flea	MIXED MICROFAUNA SPECIES	2 D	POP		70	312237	83
	Diphanosoma excisum; Water flea	<= 1 D	24 H	LC ₅₀	28		312237	83
	Diptera; Fly, mosquito, midge order	NR	3 H *	DRF		10 to 11	217387	61
	Donax cuneatus; Marine bivalve	ADULT, 20-25 MM	72 H	FLT		1,000	218286	79
	Donax cuneatus; Marine bivalve	ADULT, 20-25 MM	72 H	PHY		1,000	218286	79
	Donax cuneatus; Marine bivalve	ADULT, 20-25 MM	9 D	LETH	1,000		218286	79
4,4'-DDT (cont.)	Donax cuneatus; Marine bivalve	ADULT, 20-25 MM	8 D	OXC		1,000	218286	79
	Dunaliella euchlora; Green algae	150000 CELLS/ML INITIAL CONC	10 D	PGR		1,000	218039	62
	Dunaliella euchlora; Green algae	150000 CELLS/ML INITIAL CONC	10 D	PGR		600	218039	62
	Dunaliella euchlora; Green algae	NR	24 H	PSE		10	219310	71
	Dunaliella tertiolecta; Green algae	10000 CELLS/ML	1 to 17 D	PGR		80	219047	72
	Emiliania huxleyi; Coccolithophorid	10000 CELLS/ML	1 to 17 D	PGR		80	219047	72
	Ephemerella grandis; Mayfly	NYMPH	96 H	LC ₅₀	25		210528	65
	Ephemeroptera; Mayfly order	NR	2.5 H *	DRF		10 to 11	217387	61
	Eretes sticticus; Beetle	NR	24 H	LC ₅₀	35		215182	78
	Eretes sticticus; Beetle	NR	48 H	LC ₅₀	21.5		215182	78
	Esox lucius; Northern pike	0.7 G	96 H	LC ₅₀	2.7		210666	80
	Esox lucius; Northern pike	0.5 G	96 H	LC ₅₀	1.7		212009	66
	EuCalanus sp; Calanoid copepod	MATURE	24 H	LC ₅₀	12		212658	88
	Euplores vannus; Ciliate	NR	48 H	REP		10,000	215922	75

Remedial Investigation
NAS Whiting Field
Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
	Fundulus heteroclitus; Mummichog	55 MM, 20 G	96 H	LC ₅₀	5		210628	70
	Fundulus heteroclitus; Mummichog	5 G	6 H	HEM		250	219110	72
	Fundulus heteroclitus; Mummichog	5 G	24 H	LETH	750		219110	72
	Fundulus heteroclitus; Mummichog	55 MM, 20 G	24 H	LC ₅₀	11		210628	70
	Fundulus heteroclitus; Mummichog	5 G	96 H	MOR	250		219110	72
	Fundulus heteroclitus; Mummichog	4-5 CM	7 D	RGN		10	218232	75
	Fundulus heteroclitus; Mummichog	5 G	72 H	MOR	250		219110	72
	Fundulus heteroclitus; Mummichog	ADULT	24 H	LC ₁₀₀	1,000		218806	72
	Fundulus heteroclitus; Mummichog	5 G	48 H	MOR	250		219110	72
	Fundulus heteroclitus; Mummichog	42 (36-45) MM	10 D	LC ₅₀	2.7		212814	70
	Fundulus heteroclitus; Mummichog	5-10 CM	0.25 H	BIO, PHY		18,000	219485	81
	Fundulus heteroclitus; Mummichog	5 G	24 H	HEM		75	219110	72
	Fundulus heteroclitus; Mummichog	5 G	96 H	MOR	25		219110	72
	Fundulus heteroclitus; Mummichog	5 G	24 H	MOR	250		219110	72
	Fundulus heteroclitus; Mummichog	5 G	24 H	MOR	75		219110	72
	Fundulus heteroclitus; Mummichog	4-5 CM	14 D	RGN		10	218232	75
	Fundulus heteroclitus; Mummichog	5 G	48 H	MOR	75		219110	72
	Fundulus heteroclitus; Mummichog	42 (36-45) MM	96 H	LC ₅₀	3		212814	70
	Fundulus heteroclitus; Mummichog	5 G	72 H	MOR	75		219110	72
	Fundulus heteroclitus; Mummichog	55 MM, 20 G	48 H	LC ₅₀	5		210628	70
	Fundulus heteroclitus; Mummichog	5 G	6 H	HEM		250	219110	72
	Fundulus heteroclitus; Mummichog	ADULT	24 H	LC ₀	70		218806	72
	Fundulus heteroclitus; Mummichog	5 G	96 H	MOR	75		219110	72
	Fundulus majalis; Striped killifish	40 MM, 0.92 G	48 H	LC ₅₀	2		210628	70
	Fundulus majalis; Striped killifish	40 MM, 0.92 G	24 H	LC ₅₀	3		210628	70
	Fundulus majalis; Striped killifish	40 MM, 0.92 G	96 H	LC ₅₀	1		210628	70
	Fundulus similis; Longnose killifish	JUVENILE	48 H	LC ₅₀	5.5		212188	63
	Fundulus similis; Longnose killifish	NR	24 H	LC ₅₀	28		210807	65
	Fundulus similis; Longnose killifish	NR	48 H	LC ₅₀	18		210807	65
	Fundulus similis; Longnose killifish	JUVENILE	24 H	LC ₅₀	5.5		212188	63
	Gambusia affinis; Mosquitofish	NR	48 H	LC ₅₀	313		215494	73
	Gambusia affinis; Mosquitofish	NR	14.5 D	LT ₅₀	4		216978	77
	Gambusia affinis; Mosquitofish	FEMALE, 3.8-5.1 CM, 0.68-0.81 G	48 H	LC ₅₀	60		210568	80
	Gambusia affinis; Mosquitofish	NR	13.4 H	LT ₅₀	1,500		216978	77
	Gambusia affinis; Mosquitofish	NR	24 H *	MOR	2		212128	61
	Gambusia affinis; Mosquitofish	1.8-4.8 CM	24 H	MOR	1		219096	72
	Gambusia affinis; Mosquitofish	NR	48 H *	MOR	2		212128	61
	Gambusia affinis; Mosquitofish	NR	13.4 H	LT ₅₀	2,500		216978	77
	Gambusia affinis; Mosquitofish	NR	48 H	LC ₅₀	528		215494	73
	Gambusia affinis; Mosquitofish	1.9 G, 4.3 CM	24 H	LC ₅₀	560		216038	70
	Gambusia affinis; Mosquitofish	1.9 G, 4.3 CM	96 H	LC ₅₀	20		216038	70
	Gambusia affinis; Mosquitofish	FEMALE, 3.8-5.1 CM, 0.68-0.81 G	96 H	LC ₅₀	40		210568	80
	Gambusia affinis; Mosquitofish	NR	24 H *	MOR	2		212128	61
	Gambusia affinis; Mosquitofish	NR	12.5 H	LT ₅₀	1,000		216978	77
	Gambusia affinis; Mosquitofish	NR	48 H *	MOR	2		212128	61
	Gambusia affinis; Mosquitofish	NR	13 H	LT ₅₀	500		216978	77
	Gambusia affinis; Mosquitofish	NR	24 H *	MOR	2		212128	61
	Gambusia affinis; Mosquitofish	FRY, 2.06 CM, 222 MG, BEHERA STRAI	96 H	LC ₅₀	9.87		313099	86
	Gambusia affinis; Mosquitofish	NR	96 H *	MOR	0.5		212128	61
	Gambusia affinis; Mosquitofish	NR	48 H	LC ₅₀	43		215494	73

4,4'-DDT (cont.)

Table I-1
 AQUIRE Freshwater Toxicity Information (µg/L)
 Site 15

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
	Gambusia affinis; Mosquitofish	19 G, 4.3 CM	48 H	LC ₅₀	46		216038	70
	Gambusia affinis; Mosquitofish	NR	0.17 H	ENZ		40,000	217212	78
	Gambusia affinis; Mosquitofish	NR	23 H	LT ₅₀	100		216978	77
	Gambusia affinis; Mosquitofish	95 % MATURE FEMALES	0.67 H	ENZ		3	219148	72
	Gambusia affinis; Mosquitofish	NR	13.4 H	LT ₅₀	2,000		216978	77
	Gambusia affinis; Mosquitofish	NR	24 H	MOR	2		212128	61
	Gambusia affinis; Mosquitofish	FEMALE, 3.8-5.1 CM, 0.68-0.81 G	72 H	LC ₅₀	55		210568	80
	Gambusia affinis; Mosquitofish	NR	48 H	MOR	2		212128	61
	Gambusia affinis; Mosquitofish	2.0-5.8 CM	96 H	LC ₅₀	0.45		216033	77
	Gambusia affinis; Mosquitofish	NR	24 H *	MOR	2		212128	61
	Gambusia affinis; Mosquitofish	FRY, 2.06 CM, 222 MG	24 H	LC ₅₀	58.58		313099	86
	Gambusia affinis; Mosquitofish	NR	48 H *	MOR	2		212128	61
	Gambusia affinis; Mosquitofish	FRY, 2.06 CM, 222 MG	24 H	LC ₅₀	22.74		313099	86
	Gambusia affinis; Mosquitofish	NR	24 H	MOR	0.5		212128	61
	Gambusia affinis; Mosquitofish	NR	14.2 D	LT ₅₀	20		216978	77
	Gambusia affinis; Mosquitofish	NR	48 H	MOR	0.5		212128	61
	Gambusia affinis; Mosquitofish	FEMALE, 3.8-5.1 CM, 0.68-0.81 G	24 H	LC ₅₀	70		210568	80
	Gambusia affinis; Mosquitofish	NR	24 H *	MOR	0.5		212128	61
	Gambusia affinis; Mosquitofish	0.5 G	96 H	LC ₅₀	27		210942	72
	Gambusia affinis; Mosquitofish	NR	48 H *	MOR	0.5		212128	61
	Gambusia affinis; Mosquitofish	FRY, 2.06 CM, 222 MG, BEHERA STRAI	96 H	LC ₅₀	27.69		313099	86
	Gambusia affinis; Mosquitofish	95 % MATURE FEMALES	0.67 H	ENZ		3	219148	72
	Gambusia affinis; Mosquitofish	1.8-4.8 CM	24 H	MOR	5		219096	72
	Gambusia affinis; Mosquitofish	NR	72 H *	MOR	0.5		212128	61
	Gammarus duebeni; Scud	ADULT, 50-80 MG	72 H	PHY		3.5	218132	75
	Gammarus fasciatus; Scud	NR	48 H	LC ₅₀	1		210887	72
	Gammarus fasciatus; Scud	NR	24 H	LC ₅₀	15		210887	72
	Gammarus fasciatus; Scud	NR	96 H	LC ₅₀	3.2		210948	72
	Gammarus fasciatus; Scud	NR	96 H	LC ₅₀	3.2		210887	72
	Gammarus fasciatus; Scud	NR	24 H	LC ₅₀	1.1		210887	72
	Gammarus fasciatus; Scud	NR	24 H	LC ₅₀	4.2		210887	72
	Gammarus fasciatus; Scud	NR	5 D	LC ₅₀	0.6		210887	72
	Gammarus fasciatus; Scud	NR	48 H	LC ₅₀	3.1		210887	72
	Gammarus fasciatus; Scud	NR	5 D	LC ₅₀	0.32		210887	72
	Gammarus fasciatus; Scud	NR	5 D	LC ₅₀	0.6		210948	72
	Gammarus fasciatus; Scud	NR	96 H	LC ₅₀	0.8		210887	72
	Gammarus fasciatus; Scud	NR	96 H	LC ₅₀	1.8		210887	72
	Gammarus lacustris; Scud	2 MONTH OLD	48 H	LC ₅₀	2.1		210885	69
	Gammarus lacustris; Scud	2 MO	24 H	LC ₅₀	12		210885	69
	Gammarus lacustris; Scud	2 MONTH OLD	24 H	LC ₅₀	4.7		210885	69
	Gammarus lacustris; Scud	2 MONTH OLD	96 H	LC ₅₀	1		210885	69
	Gammarus lacustris; Scud	MATURE	96 H	LC ₅₀	1		210666	80
	Gammarus lacustris; Scud	1 MONTH OLD	24 H	LC ₅₀	1.4		210885	69
	Gammarus lacustris; Scud	NR	96 H	LC ₅₀	9		212094	64
	Gammarus lacustris; Scud	2 MONTH OLD	24 H	LC ₅₀	5.6		210885	69
	Gammarus lacustris; Scud	NR	96 H	LC ₅₀	9		210528	65
	Gammarus lacustris; Scud	3 MONTH OLD	24 H	LC ₅₀	8		210885	69
	Gammarus lacustris; Scud	2 MONTH OLD	24 H	LC ₅₀	7.6		210885	69
	Gasterosteus aculeatus; Three spine stickleback	22-44 MM, 0.38-0.77 G	24 H	LC ₅₀	18		210522	61
	Gasterosteus aculeatus; Three spine stickleback	22-44 MM, 0.38-0.77 G	96 H	LC ₅₀	11.5		210522	61

4,4'-DDT (cont.)

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
	Gasterosteus aculeatus; Three spine stickleback	22-44 MM, 0.38-0.77 G	96 H	LC ₅₀	18		210522	61
	Gasterosteus aculeatus; Three spine stickleback	22-44 MM, 0.38-0.77 G	72 H	LC ₅₀	14.5		210522	61
	Gasterosteus aculeatus; Three spine stickleback	22-44 MM, 0.38-0.77 G	72 H	LC ₅₀	18.5		210522	61
	Gasterosteus aculeatus; Three spine stickleback	22-44 MM, 0.38-0.77 G	24 H	LC ₅₀	22		210522	61
	Gasterosteus aculeatus; Three spine stickleback	22-44 MM, 0.38-0.77 G	48 H	LC ₅₀	21		210522	61
	Gasterosteus aculeatus; Three spine stickleback	22-44 MM, 0.38-0.77 G	48 H	LC ₅₀	15		210522	61
	Girella punctata; Green fish	0.15-0.24 G	24 H	LC ₅₀	6.5		216128	76
	Girella punctata; Green fish	0.15-0.24 G	48 H	LC ₅₀	7		216128	76
	Girella punctata; Green fish	0.15-0.24 G	24 H	LC ₅₀	7.2		216128	76
	Girella punctata; Green fish	0.15-0.24 G	48 H	LC ₅₀	6		216128	76
	Halodule uninervis; Macrophyte	2-3 G FRESH WT	6 H	PSE		50	310569	84
	Halophila ovalis; Macrophyte	2-3 G FRESH WT	6 H	PSE		50	310569	84
	Hemipterus americanus; Sea raven	NR	0.5 H	ENZ		1,000	219361	71
	Hesperophylax sp; Caddisfly	LARVAE	0.25 H	LETH	15,000		315079	49
	Hesperophylax sp; Caddisfly	LARVAE	0.25 H	MOR	15,000		315079	49
	Heterocypris incongruens; Ostracod	ADULT	48 H	LETH	5,000		218599	74
	Heterocypris incongruens; Ostracod	ADULT	48 H	MOR	100		218599	74
	Heterocypris incongruens; Ostracod	ADULT	24 H	MOR	5,000		218599	74
	Heterocypris incongruens; Ostracod	ADULT	24 H	MOR	100		218599	74
	Heteropneustes fossilis; Indian catfish	19.8-22.0 CM, 40-57 G	96 H	LC ₅₀	2,950		312480	84
	Heteropneustes fossilis; Indian catfish	19.8-22.0 CM, 40-57 G	11 D	HEM. PHY		500	312480	84
	Heteropneustes fossilis; Indian catfish	19.8-22.0 CM, 40-57 G	72 H	LC ₅₀	3,020		312480	84
	Heteropneustes fossilis; Indian catfish	19.8-22.0 CM, 40-57 G	48 H	LC ₅₀	3,550		312480	84
	Homarus americanus; American lobster	NR	0.17 H	BIO. PHY		1,100	212818	74
	Homarus americanus; American lobster	NR	0.17 H	BIO. PHY		3,500	212818	74
	Hydropsyche californica; Caddisfly	LARVAE	96 H	LC ₅₀	48		210528	65
	Hydropsyche morosa; Caddisfly	LARVAE, 42 MG	6 H	EC ₅₀ IMM		50	212822	72
	Hydropsyche morosa; Caddisfly	LARVAE, 25 MG	6 H	EC ₅₀ IMM		50	212822	72
	Hydropsyche morosa; Caddisfly	LARVAE, 32.5 MG	40 H	ET ₅₀ IMM		20	212822	72
	Hydropsyche morosa; Caddisfly	LARVAE, 19.0 MG	6 H	ET ₅₀ IMM		20	212822	72
	Hydropsyche morosa; Caddisfly	LARVAE, 42 MG	3 H	EC ₅₀ IMM		70	212822	72
	Hydropsyche morosa; Caddisfly	LARVAE, 25 MG	6 H *	EC ₅₀ IMM		250	212822	72
	Hydropsyche morosa; Caddisfly	LARVAE, 42 MG	6 H *	EC ₅₀ IMM		50	212822	72
	Hydropsyche morosa; Caddisfly	LARVAE, 25 MG	6 H *	EC ₅₀ IMM		100	212822	72
	Hydropsyche morosa; Caddisfly	LARVAE, 40 MG	6 H	EC ₅₀ IMM		40	212822	72
	Hydropsyche morosa; Caddisfly	LARVAE, 25 MG	3 H	EC ₅₀ IMM		40	212822	72
	Hydropsyche morosa; Caddisfly	LARVAE, 40 MG	6 H	EC ₅₀ IMM		20	212822	72
	Hydropsyche morosa; Caddisfly	LARVAE, 25 MG	3 H	EC ₅₀ IMM		90	212822	72
	Hydropsyche morosa; Caddisfly	LARVAE, 32.5 MG	9 H	ET ₅₀ IMM		100	212822	72
	Hydropsyche morosa; Caddisfly	LARVAE, 40 MG	6 H	EC ₅₀ IMM		30	212822	72
	Hydropsyche morosa; Caddisfly	LARVAE, 40 MG	6 H	EC ₅₀ IMM		60	212822	72
	Hydropsyche morosa; Caddisfly	LARVAE, 25 MG	3 H	EC ₅₀ IMM		500	212822	72
	Hydropsyche morosa; Caddisfly	LARVAE, 25 MG	6 H	EC ₅₀ IMM		150	212822	72
	Hydropsyche morosa; Caddisfly	LARVAE, 40 MG	6 H	EC ₅₀ IMM		20	212822	72
	Hydropsyche morosa; Caddisfly	LARVAE, 25 MG	6 H *	EC ₅₀ IMM		50	212822	72
	Hydropsyche morosa; Caddisfly	LARVAE, 25 MG	6 H *	EC ₅₀ IMM		50	212822	72
	Hydropsyche morosa; Caddisfly	LARVAE, 40 MG	6 H	EC ₅₀ IMM		20	212822	72
	Hydropsyche morosa; Caddisfly	LARVAE, 25 MG	6 H	EC ₅₀ IMM		250	212822	72
	Hydropsyche morosa; Caddisfly	LARVAE, 19.0 MG	2 H	ET ₅₀ IMM		100	212822	72
	Hydropsyche morosa; Caddisfly	LARVAE, 25 MG	6 H	EC ₅₀ IMM		50	212822	72

4,4'-DDT (cont.)

Table I-1
 AQUIRE Freshwater Toxicity Information (µg/L)
 Site 15

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication	
					Lethal	Sublethal			
	Hydropsyche morosa; Caddisfly	LARVAE, 25 MG	3 H	EC ₅₀ IMM			90	212822	72
	Hydropsyche recurvata; Caddisfly	LARVAE, 25 MG	6 H	EC ₅₀ IMM			60	212822	72
	Hydropsyche recurvata; Caddisfly	LARVAE, 25 MG	24 H *	EC ₅₀ IMM			40	212822	72
	Hydropsyche recurvata; Caddisfly	LARVAE, 25 MG	6 H *	EC ₅₀ IMM			40	212822	72
	Hydropsyche recurvata; Caddisfly	LARVAE, 25 MG	6 H	EC ₅₀ IMM			30	212822	72
	Hydropsyche recurvata; Caddisfly	LARVAE, 25 MG	3 H	EC ₅₀ IMM			1,000	212822	72
	Hydropsyche recurvata; Caddisfly	LARVAE, 25 MG	3 H	EC ₅₀ IMM			10	212822	72
	Hydropsyche recurvata; Caddisfly	LARVAE, 25 MG	3 H	EC ₅₀ IMM			1,000	212822	72
	Hydropsyche recurvata; Caddisfly	LARVAE, 25 MG	3 H	EC ₅₀ IMM			100	212822	72
	Hydropsyche recurvata; Caddisfly	LARVAE, 25 MG	6 H *	EC ₅₀ IMM			20	212822	72
	Hydropsyche recurvata; Caddisfly	LARVAE, 25 MG	6 H	EC ₅₀ IMM			60	212822	72
	Hydropsyche recurvata; Caddisfly	LARVAE, 25 MG	24 H *	EC ₅₀ IMM			300	212822	72
	Hydropsyche recurvata; Caddisfly	LARVAE, 25 MG	24 H *	EC ₅₀ IMM			400	212822	72
	Hydropsyche recurvata; Caddisfly	LARVAE, 25 MG	6 H	EC ₅₀ IMM			500	212822	72
	Hydropsyche recurvata; Caddisfly	LARVAE, 25 MG	3 H	EC ₅₀ IMM			90	212822	72
	Hydropsyche recurvata; Caddisfly	LARVAE, 25 MG	6 H	EC ₅₀ IMM			150	212822	72
	Hydropsyche sp; Caddisfly	LARVAE	0.25 H	LETH	15,000			315079	49
	Hydropsyche sp; Caddisfly	LARVAE	0.25 H	MOR	15,000			315079	49
	Ictalurus melas; Black bullhead	1.2 G	96 H	LC ₅₀	4.8			210666	80
	Ictalurus melas; Black bullhead	2.1 G	96 H	LC ₅₀	42			212009	66
	Ictalurus melas; Black bullhead	2.4 G	96 H	LC ₅₀	23.5			212009	66
	Ictalurus melas; Black bullhead	NR	96 H	LC ₅₀	5			210610	70
	Ictalurus melas; Black bullhead	2.2 G	96 H	LC ₅₀	20			212009	66
	Ictalurus melas; Black bullhead	2.3 G	96 H	LC ₅₀	17			212009	66
	Ictalurus punctatus; Channel catfish	NR	96 H	LC ₅₀	16			210610	70
	Ictalurus punctatus; Channel catfish	10.0 G	24 H	LC ₅₀	34			210942	72
	Ictalurus punctatus; Channel catfish	2.0 G	96 H	LC ₅₀	17.5			212009	66
	Ictalurus punctatus; Channel catfish	2.98 G	96 H	LC ₅₀	13.5			210851	75
	Ictalurus punctatus; Channel catfish	1.5 G	96 H	LC ₅₀	21.5			210666	80
	Ictalurus punctatus; Channel catfish	43 (39-46) MM, 0.5 (0.4-0.6) G	96 H	LC ₅₀	3.3			218048	65
	Ictalurus punctatus; Channel catfish	86.5 G, 194.6 MM	96 H	BEH			10	218528	73
4,4'-DDT (cont.)	Ictalurus punctatus; Channel catfish	43, (39-46) MM, 0.5 (0.4-0.6) G	48 H	LC ₅₀	4.1			218048	65
	Ictalurus punctatus; Channel catfish	43 (39-46) MM, 0.5 (0.4-0.6) G	24 H	LC ₅₀	4.9			218048	65
	Ictalurus punctatus; Channel catfish	1.9 G	96 H	LC ₅₀	17.5			212009	66
	Ictiobus cyprinellus; Bigmouth buffalo	ADULT	45 D	MOR	1,000			212807	50
	Indonaiia caerulea; Unionid clam	ADULT, 55-65 MM	72 H	LT ₅₀	1,000			218286	79
	Indoplanorbis exustus; Snail	NR	48 H	LC ₅₀	5,500			219158	72
	Ischnura verticalis; Damselfly	NR	96 H	LC ₅₀	56			210948	72
	Isoperla sp; Stonefly	JUVENILE	96 H	LC ₅₀	1.2			210666	80
	Katelysia opima; Marine bivalve	10-15 MM	24 H	LC ₅₀	16.48			210276	89
	Katelysia opima; Marine bivalve	ADULT, 25-30 MM	72 H	FLT			1,000	218286	79
	Katelysia opima; Marine bivalve	10-15 MM	96 H	LC ₅₀	13.19			210276	89
	Katelysia opima; Marine bivalve	ADULT, 25-30 MM	80 H	MOR	1,000			218286	79
	Katelysia opima; Marine bivalve	10-15 MM	72 H	LC ₅₀	14.62			210276	89
	Katelysia opima; Marine bivalve	10-15 MM	120 H	LC ₅₀	11.05			210276	89
	Katelysia opima; Marine bivalve	ADULT, 25-30 MM	72 H	OXC			1,000	218286	79
	Katelysia opima; Marine bivalve	ADULT, 25-30 MM	72 H	PHY			1,000	218286	79
	Katelysia opima; Marine bivalve	10-15 MM	48 H	LC ₅₀	15.78			210276	89
	Kuhlia sandvicensis; Aholehole	1.49 G, 4.3 CM	48 H	LC ₅₀	6.3			216038	70
	Kuhlia sandvicensis; Aholehole	1.49 G, 4.3 CM	96 H	LC ₅₀	3.9			216038	70

Tab
 AQUIRE Freshwater Toxicity Information (µg/L)
 Site 15

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
	Kuhlia sandvicensis; Aholehole	1.49 G, 4.3 CM	24 H	LC ₅₀	12		216038	70
	Labeo rohita; Rohu	30 MM, FINGERLING	96 H	LC ₅₀	6,400		212520	86
	Labeo rohita; Rohu	FINGERLING, 5.9 CM, 1.9 G	48 H	OXC		20	218402	78
	Leiostomus xanthurus; Spot	JUVENILE	24 H	LC ₅₀	5		210646	64
	Leiostomus xanthurus; Spot	JUVENILE	48 H	LC ₅₀	2		210646	64
	Lepomis cyanellus; Green sunfish	1.1 G	96 H	LC ₅₀	6.7		212009	66
	Lepomis cyanellus; Green sunfish	1.4 G	96 H	LC ₅₀	3.9		212009	66
	Lepomis cyanellus; Green sunfish	0.7 G	96 H	LC ₅₀	4.4		212009	66
	Lepomis cyanellus; Green sunfish	0.8 G	96 H	LC ₅₀	5		212009	66
	Lepomis cyanellus; Green sunfish	1.0 G	96 H	LC ₅₀	3		212009	66
	Lepomis cyanellus; Green sunfish	0.7 G	96 H	LC ₅₀	2.8		212009	66
	Lepomis cyanellus; Green sunfish	0.8 G	96 H	LC ₅₀	6.4		212009	66
	Lepomis cyanellus; Green sunfish	0.8 G	96 H	LC ₅₀	3.6		212009	66
	Lepomis gibbosus; Pumpkinseed	1.4 G	96 H	LC ₅₀	6.7		212009	66
	Lepomis gibbosus; Pumpkinseed	1.3 G	96 H	LC ₅₀	3.6		212009	66
	Lepomis gibbosus; Pumpkinseed	1.3 G	96 H	LC ₅₀	2.8		212009	66
	Lepomis gibbosus; Pumpkinseed	1.4 G	96 H	LC ₅₀	7.5		212009	66
	Lepomis gibbosus; Pumpkinseed	1.3 G	96 H	LC ₅₀	1.8		212009	66
	Lepomis macrochirus; Bluegill	1.3 G	96 H	LC ₅₀	7		212009	66
	Lepomis macrochirus; Bluegill	42 MM, 0.8 G	24 H	LC ₅₀	16.5		313045	71
	Lepomis macrochirus; Bluegill	2.5 CM	96 H	LC ₅₀	0.2 to 1.0		218343	77
	Lepomis macrochirus; Bluegill	38 (35-42) MM, 0.6 (0.5-0.8) G	24 H	LC ₅₀	8.4		218048	65
	Lepomis macrochirus; Bluegill	1.1 G	96 H	LC ₅₀	3		212009	66
	Lepomis macrochirus; Bluegill	0.6 G	96 H	LC ₅₀	1.7		212009	66
	Lepomis macrochirus; Bluegill	2.5 CM	8 D	LOC		0.008	218343	77
	Lepomis macrochirus; Bluegill	0.6 G	96 H	LC ₅₀	4.3		212009	66
	Lepomis macrochirus; Bluegill	2.5-5.0 CM	48 H	LC ₅₀	3.3		313000	65
	Lepomis macrochirus; Bluegill	42 MM, 0.8 G	48 H	LC ₅₀	13.5		313045	71
	Lepomis macrochirus; Bluegill	38-6.4 CM, 1.0-2.0 G	96 H	LC ₅₀	8.8		210936	59
	Lepomis macrochirus; Bluegill	0.26 G ; < 1 YEAR	96 H	LC ₅₀	9		212076	79
4,4' DDT (cont)	Lepomis macrochirus; Bluegill	NR	96 H	LC ₅₀	8		210610	70
	Lepomis macrochirus; Bluegill	0.5 G	96 H	LC ₅₀	7		210942	72
	Lepomis macrochirus; Bluegill	ADULT, 13-15 CM	7 WK	LETH	500		212807	50
	Lepomis macrochirus; Bluegill	2.5-5.0 CM	72 H	LC ₅₀	3		313000	65
	Lepomis macrochirus; Bluegill	1.0 G	96 H	LC ₅₀	2.8		212009	66
	Lepomis macrochirus; Bluegill	1.2 G	96 H	LC ₅₀	9.4		212009	66
	Lepomis macrochirus; Bluegill	ADULTS, 13-15 CM	7 WK	MOR	200		212807	50
	Lepomis macrochirus; Bluegill	0.8 G	96 H	LC ₅₀	1.2		212009	66
	Lepomis macrochirus; Bluegill	FINGERLING, 5-7.6 CM	7 WK	LETH	100		212807	50
	Lepomis macrochirus; Bluegill	0.6 G	96 H	LC ₅₀	7		212009	66
	Lepomis macrochirus; Bluegill	ADULT	45.D	MOR	1,000		212807	50
	Lepomis macrochirus; Bluegill	2.5-5.0 CM	96 H	LC ₅₀	2.7		313000	65
	Lepomis macrochirus; Bluegill	1.5 G	96 H	LC ₅₀	8.6		210666	80
	Lepomis macrochirus; Bluegill	0.26 G ; < 1 YEAR	96 H	LC ₅₀	3.4		212076	79
	Lepomis macrochirus; Bluegill	38 (35-42) MM, 0.6 (0.5-0.8) G	48 H	LC ₅₀	6		218048	65
	Lepomis macrochirus; Bluegill	0.5 G	96 H	LC ₅₀	2.2		210851	75
	Lepomis macrochirus; Bluegill	38 (35-42) MM, 0.6 (0.5-0.8) G	96 H	LC ₅₀	4.7		218048	65
	Lepomis macrochirus; Bluegill	1.1 G	96 H	LC ₅₀	3.6		212009	66
	Lepomis macrochirus; Bluegill	NR	96 H	LC ₅₀	21		218046	66
	Lepomis macrochirus; Bluegill	2.5-5.0 CM	24 H	LC ₅₀	10		313000	65

Table I-1
 AQUIRE Freshwater Toxicity Information (µg/L)
 Site 15

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication	
					Lethal	Sublethal			
	Lepomis macrochirus; Bluegill	0.5 G, 35-45 MM	96 H	LC ₅₀	2.9		313034	72	
	Lepomis macrochirus; Bluegill	0.9 G	96 H	LC ₅₀	4.6		212009	66	
	Lepomis macrochirus; Bluegill	3.8-6.4 CM, 1.0-2.0 G	96 H	LC ₅₀	6.4		210936	59	
	Lepomis macrochirus; Bluegill	42 MM, 0.8 G	96 H	LC ₅₀	12.5		313045	71	
	Lepomis macrochirus; Bluegill	3.8-6.4 CM, 1.0-2.0 G	96 H	LC ₅₀	16		210936	59	
	Lepomis megalotis; Longear sunfish	1.0 G	96 H	LC ₅₀	4.9		212009	66	
	Lepomis megalotis; Longear sunfish	1.0 G	96 H	LC ₅₀	12.5		212009	66	
	Lepomis microlophus; Redear sunfish	NR	96 H	LC ₅₀	5		210610	70	
	Leuresthes tenuis; California grunion	FRY	51 D *	LETH	100		219010	73	
	Limanda ferruginea; Yellowtail flounder	NR	0.5 H	ENZ		50,000	219361	71	
	Lucifer sp; Decapod	MATURE	24 H	LC ₅₀	26		212658	88	
	Lumbriculus variegatus; Oligochaete	NR	7 D *	LC ₅₀	>130		216502	80	
	Lumbriculus variegatus; Oligochaete	NR	6 D *	LC ₅₀	>130		216502	80	
	Lymnaea stagnalis; Great pond snail	28.16 (25-35) MM	45 D	EGP		0.9	215094	92	
	Macrobrachium kistnensis; Shrimp	ADULT MALE, 50-66 MM, 1.2-1.5 G	24 H	LC ₅₀	48		216296	83	
	Macrobrachium kistnensis; Shrimp	ADULT MALE, 50-66 MM, 1.2-1.5 G	24 H	BIO, PHY			9.6	216296	83
	Macrobrachium kistnensis; Shrimp	ADULT MALE, 50-66 MM, 1.2-1.5 G	24 H	ENZ			9.6	216296	83
	Macrobrachium lamarrei; Prawn	INTERMOLT, 12-17 MM, *	72 H	LC ₅₀	4.7		311973	86	
	Macrobrachium lamarrei; Prawn	INTERMOLT, 12-17 MM, *	48 H	LC ₅₀	6.1		311973	86	
	Macrobrachium lamarrei; Prawn	INTERMOLT, 12-17 MM, *	24 H	LC ₅₀	8.6		311973	86	
	Macropodus cupanus; Paradise fish	20-28 MM STD LENGTH	24 H	LC ₅₀	2.813		311081	82	
	Macropodus cupanus; Paradise fish	20-28 MM STD LENGTH	48 H	LC ₅₀	2.277		311081	82	
	Menidia menidia; Atlantic silverside	59 MM, 1.2 G	96 H	LC ₅₀	0.4		210628	70	
	Menidia menidia; Atlantic silverside	59 MM, 1.2 G	24 H	LC ₅₀	4		210628	70	
	Menidia menidia; Atlantic silverside	59 MM, 1.2 G	48 H	LC ₅₀	0.4		210628	70	
	Mercenaria mercenaria; Northern quahog or hard clam	ADULT, 82 MM, 21 G SHELL WT	96 H	MOR	10,000		212896	70	
	Meretrix casta; Bivalve	12-17 MM	24 H	LC ₅₀	24.04		210276	89	
	Meretrix casta; Bivalve	12-17 MM	48 H	LC ₅₀	20		210276	89	
	Meretrix casta; Bivalve	12-17 MM	72 H	LC ₅₀	14.42		210276	89	
	Meretrix casta; Bivalve	12-17 MM	96 H	LC ₅₀	14.16		210276	89	
4,4'-DDT (cont.)	Meretrix casta; Bivalve	12-17 MM	120 H	LC ₅₀	11.28		210276	89	
	Metapenaeus monoceros; Sand shrimp	70.0 MM	48 H	LC ₅₀	81		212505	88	
	Metapenaeus monoceros; Sand shrimp	2.5 G, 77 MM	96 H	BIO, PHY			6	213081	90
	Micrometrus minimus; Dwarf perch	48-104 MM, 1.2-11.0 G	96 H	LC ₅₀	5		210611	72	
	Micrometrus minimus; Dwarf perch	48-104 MM, 1.2-11.0 G	96 H	LC ₅₀	0.26		210611	72	
	Micropterus salmoides; Largemouth bass	YEARLING, 15-20 CM	7 WK	MOR	50		212807	50	
	Micropterus salmoides; Largemouth bass	0.8 G	96 H	LC ₅₀	1.5		210666	80	
	Micropterus salmoides; Largemouth bass	NR	96 H	LC ₅₀	2		210610	70	
	Micropterus salmoides; Largemouth bass	0.5 G	96 H	LC ₅₀	0.8		212009	66	
	Micropterus salmoides; Largemouth bass	ADULT	45 D	MOR	1,000		212807	50	
	Micropterus salmoides; Largemouth bass	YEARLING, 15-20 CM	7 WK	LETH	100		212807	50	
	Moina brachiata; Water flea	<= 1 D	24 H	LC ₅₀	49		312237	83	
	Moina brachiata; Water flea	MIXED MICROFAUNA SPECIES	2 D	POP			70	312237	83
	Moina macrocopa; Water flea	NR	3 H	LC ₅₀	4,800		315192	67	
	Moina macrocopa; Water flea	FEMALE ADULT	3 H	LC ₅₀	4,800		212682	69	
	Morone saxatilis; Striped bass	JUVENILE 2.7 G	96 H	LC ₅₀	0.53		210602	74	
	Mugil cephalus; Striped mullet	46 MM, 1.0 G	24 H	LC ₅₀	4		210628	70	
	Mugil cephalus; Striped mullet	88 MM, 6.8 G	96 H	LC ₅₀	3		210628	70	
	Mugil cephalus; Striped mullet	15.3 G	12.2 H	LC ₅₀	56		310891	82	
	Mugil cephalus; Striped mullet	MATURE	96 H	PHY			0.1	315978	83

Table J.1
 AQUIRE Freshwater Toxicity Information (µg/L)

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
	Mugil cephalus; Striped mullet	15.3 G	26.6 H	LT ₅₀	56		310891	82
	Mugil cephalus; Striped mullet	100-110 MM	72 H	LC ₅₀	0.4		210276	89
	Mugil cephalus; Striped mullet	MATURE	96 H	GRO		1	315978	83
	Mugil cephalus; Striped mullet	100-110 MM	48 H	LC ₅₀	0.72		210276	89
	Mugil cephalus; Striped mullet	15.3 G	11.6 H	LT ₅₀	56		310891	82
	Mugil cephalus; Striped mullet	100-110 MM	24 H	LC ₅₀	1.19		210276	89
	Mugil cephalus; Striped mullet	100-110 MM	96 H	LC ₅₀	0.26		210276	89
	Mugil cephalus; Striped mullet	MATURE	96 H	HEM		1	315978	83
	Mugil cephalus; Striped mullet	100-110 MM	120 H	LC ₅₀	0.2		210276	89
	Mugil cephalus; Striped mullet	46 MM, 1.0 G	96 H	LC ₅₀	0.9		210628	70
	Mugil cephalus; Striped mullet	MATURE	96 H	HEM		0.05	315978	83
	Mugil cephalus; Striped mullet	88 MM, 6.8 G	24 H	LC ₅₀	7		210628	70
	Mugil cephalus; Striped mullet	46 MM, 1.0 G	48 H	LC ₅₀	0.9		210628	70
	Mugil cephalus; Striped mullet	15.3 G	48 H	LC ₅₀	42 to 56		310891	82
	Mugil cephalus; Striped mullet	15.3 G	7.4 H	LT ₅₀	56		310891	82
	Mugil cephalus; Striped mullet	88 MM, 6.8 G	48 H	LC ₅₀	6		210628	70
	Mugil curema; White mullet	JUVENILE	24 H	LC ₅₀	0.8		212188	63
	Mugil curema; White mullet	0.60-1.51 G, 40.0-53.2 MM, *	24 H *	BEH		9	218124	73
	Mugil curema; White mullet	JUVENILE	48 H	LC ₅₀	0.4		212188	63
	Myoxocephalus octodecemspinosus; Longhorn sculpin	NR	0.5 H	ENZ		50,000	219361	71
	Nassarius obsoletus; Eastern mud snail	15 MM, 0.16 G - SHELL	96 H	MOR	10,000		212896	70
	Nassarius obsoletus; Eastern mud snail	15 MM, 0.16 G SHELL	96 H	REP		10	212896	70
	Neanthes grubei; Polychaete	NR	96 H	LC ₅₀	>1,000		213785	91
	Nereis arenaceodentata; Polychaete	NR	96 H	LC ₅₀	>1,000		213785	91
	Nereis virens; Polychaete	NR	12 D	MOR	10		315468	82
	Nereis virens; Polychaete	NR	12 D	MOR	30		315468	82
	Nitocra spinipes; Harpacticoid copepod	0.6-0.8 MM, ADULTS	96 H	LC ₅₀	30		215185	79
	Nitzschia delicatissima; Diatom	LOG PHASE, 75000 CELLS/ML	24 H	CLR, PHY		23.5	219126	72
	Nitzschia delicatissima; Diatom	LOG PHASE, 75000 CELLS/ML	24 H	PSE		100	219126	72
	Nitzschia delicatissima; Diatom	LOG PHASE, 75000 CELLS/ML	24 H	LETH	1,000		219126	72
	Nitzschia delicatissima; Diatom	LOG PHASE, 75000 CELLS/ML	24 H	PSE		100	219126	72
	Nitzschia delicatissima; Diatom	LOG PHASE, 75000 CELLS/ML	24 H	CLR, PHY		220	219126	72
	Nitzschia delicatissima; Diatom	LOG PHASE, 75000 CELLS/ML	24 H	PSE		100	219126	72
	Nitzschia delicatissima; Diatom	LOG PHASE, 75000 CELLS/ML	24 H	PSE		100	219126	72
	Nitzschia delicatissima; Diatom	LOG PHASE, 75000 CELLS/ML	24 H	CLR, PHY		220	219126	72
	Nitzschia delicatissima; Diatom	LOG PHASE, 75000 CELLS/ML	24 H	CEL, PHY		9.4	219126	72
	Nolemigonus crysoleucas; Golden shiner	1.02-1.31 G, 54.0-60.0 MM, ADULT	24 H *	BEH		15	218124	73
	Notopterus notopterus; Featherback	92-212 MM	6 H	EC ₅₀ IMM		92	218745	74
	Notopterus notopterus; Featherback	92-212 MM	96 H	EC ₅₀ IMM		43	218745	74
	Notopterus notopterus; Featherback	92-212 MM	48 H	EC ₅₀ IMM		62	218745	74
	Notopterus notopterus; Featherback	92-212 MM	24 H	EC ₁₀ IMM		84	218745	74
	Oligochaeta; Annelid worm class	NR	48 H	LETH	200		219237	72
	Oncorhynchus clarki; Cutthroat trout	1.25 G	96 H	LC ₅₀	1.37		210964	71
	Oncorhynchus clarki; Cutthroat trout	.33 G	96 H	LC ₅₀	0.85		210964	71
	Oncorhynchus clarki; Cutthroat trout	.33 G	48 H	LC ₅₀	1.63		210964	71
	Oncorhynchus kisutch; Coho salmon, silver salmon	1.65 G	96 H	LC ₅₀	18.5		210964	71
	Oncorhynchus kisutch; Coho salmon, silver salmon	< 1 YR, FINGERLING, 0.63 G	22.5 D	LT ₅₀	100,000		212448	69
	Oncorhynchus kisutch; Coho salmon, silver salmon	< 1 YR, FINGERLING, 0.63 G	>95 D	LT ₅₀	25,000		212448	69
	Oncorhynchus kisutch; Coho salmon, silver salmon	57-76 MM, 2.7-4.1 G	48 H	LC ₅₀	46		210522	61
	Oncorhynchus kisutch; Coho salmon, silver salmon	< 1 YR, FINGERLING, 0.63 G	>95 D	LT ₅₀	6,250		212448	69

4.4'-DDT (cont.)

Table I-1
 AQUIRE Freshwater Toxicity Information (µg/L)
 Site 15

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
	Oncorhynchus kisutch; Coho salmon, silver salmon	1.0 G	96 H	LC ₅₀	4		210666	80
	Oncorhynchus kisutch; Coho salmon, silver salmon	< 1 YR, FINGERLING, 3.7 G	6.5 D	LT ₅₀	400,000		212448	69
	Oncorhynchus kisutch; Coho salmon, silver salmon	NR	96 H	LC ₅₀	4		210610	70
	Oncorhynchus kisutch; Coho salmon, silver salmon	< 1 YR, FINGERLING, 3.7 G	60 D	LT ₅₀	100,000		212448	69
	Oncorhynchus kisutch; Coho salmon, silver salmon	FRY	25 H	LT ₅₀	3.2		212298	74
	Oncorhynchus kisutch; Coho salmon, silver salmon	JUVENILE	48 H	LC ₅₀	24		212003	67
	Oncorhynchus kisutch; Coho salmon, silver salmon	FRY	7.3 D	LT ₅₀	0.8		212298	74
	Oncorhynchus kisutch; Coho salmon, silver salmon	JUVENILE	96 H	LC ₅₀	13		212003	67
	Oncorhynchus kisutch; Coho salmon, silver salmon	< 1 YR, FINGERLING, 3.7 G	>60 D	LT ₅₀	100,000		212448	69
	Oncorhynchus kisutch; Coho salmon, silver salmon	JUVENILE	96 H	PHY		50	212003	67
	Oncorhynchus kisutch; Coho salmon, silver salmon	FRY	7 D	LC ₅₀	> 0.7		212298	74
	Oncorhynchus kisutch; Coho salmon, silver salmon	JUVENILE, SMALLER FISH	30 H	LETH	50		212003	67
	Oncorhynchus kisutch; Coho salmon, silver salmon	1.65 G	72 H	LC ₅₀	24		210964	71
	Oncorhynchus kisutch; Coho salmon, silver salmon	JUVENILE, LARGER FISH	96 H	LETH	50		212003	67
	Oncorhynchus kisutch; Coho salmon, silver salmon	< 1 YR, FINGERLING, 0.63 G	7.5 D	LT ₅₀	400,000		212448	69
	Oncorhynchus kisutch; Coho salmon, silver salmon	JUVENILE, LARGER FISH	12 H	LETH	200		212003	67
	Oncorhynchus kisutch; Coho salmon, silver salmon	57-76 MM, 2.7-4.1 G	24 H	LC ₅₀	66		210522	61
	Oncorhynchus kisutch; Coho salmon, silver salmon	JUVENILE, LARGER FISH	7 H	LETH	350		212003	67
	Oncorhynchus kisutch; Coho salmon, silver salmon	57-76 MM, 2.7-4.1 G	96 H	LC ₅₀	44		210522	61
	Oncorhynchus kisutch; Coho salmon, silver salmon	< 1 YR, FINGERLING, 3.7 G	60 D	LT ₅₀	25,000		212448	69
	Oncorhynchus kisutch; Coho salmon, silver salmon	FRY	14 D	LT ₅₀	> 0.5		212298	74
	Oncorhynchus kisutch; Coho salmon, silver salmon	< 1 YR, FINGERLING, 3.7 G	>60 D	LT ₅₀	6,250		212448	69
	Oncorhynchus kisutch; Coho salmon, silver salmon	.5 G	24 H	LC ₅₀	25		210964	71
	Oncorhynchus kisutch; Coho salmon, silver salmon	< 1 YR, FINGERLING, 0.63 G	23.8 D	LT ₅₀	100,000		212448	69
	Oncorhynchus kisutch; Coho salmon, silver salmon	57-76 MM, 2.7-4.1 G	72 H	LC ₅₀	44		210522	61
	Oncorhynchus kisutch; Coho salmon, silver salmon	.5 G	96 H	LC ₅₀	11.3		210964	71
	Oncorhynchus kisutch; Coho salmon, silver salmon	FRY	55 H	LT ₅₀	1.4		212298	74
	Oncorhynchus kisutch; Coho salmon, silver salmon	5 G	72 H	LC ₅₀	11.7		210964	71
4,4'-DDT (cont.)	Oncorhynchus kisutch; Coho salmon, silver salmon	1.65 G	48 H	LC ₅₀	30		210964	71
	Oncorhynchus kisutch; Coho salmon, silver salmon	FRY	25 H	LT ₅₀	3.3		212298	74
	Oncorhynchus kisutch; Coho salmon, silver salmon	FRY	55 H	LT ₅₀	1.9		212298	74
	Oncorhynchus kisutch; Coho salmon, silver salmon	.5 G	48 H	LC ₅₀	12.5		210964	71
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	33 (30-38) MM, 0.3 (0.2-0.4) G	24 H	LC ₅₀	3		218048	65
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	YOUNG, 9-11 CM	1 H	MOR	40,000		219634	70
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	3-7 CM	48 H	LC ₅₀	5.6		313000	65
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	YOUNG, 9-11 CM	1 H	MOR	40,000		219634	70
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	JUVENILE, 1-1.5 YR, 120 G, 22.8 CM	5 H	RES		52.5	217846	76
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	JUVENILE, 1-1.5 YR, 120 G, 22.8 CM	5 H	RES		140	217846	76
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	51-79 MM, 3.2 G	72 H	LC ₅₀	42		210522	61
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	.41 G	96 H	LC ₅₀	1.72		210964	71
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	51-79 MM, 3.2 G	48 H	LC ₅₀	42		210522	61
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	.41 G	72 H	LC ₅₀	2.25		210964	71
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	51-79 MM, 3.2 G	24 H	LC ₅₀	42		210522	61
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	0.16 G, 28-35 MM	96 H	LC ₅₀	1.9		313034	72
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	NR	10 D	LC ₅₀	0.87		210948	72
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	15 G	140 D	HEM, PHY		1	315101	71
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	0.9 G	96 H	LC ₅₀	4.6		212009	66
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	0.8 G	96 H	LC ₅₀	18		313046	72
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	1.0 G	96 H	LC ₅₀	8.7		210666	80
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	0.8 G	48 H	LC ₅₀	16.7		313046	72

Remedial Investigation
NAS Whiting Field
Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
Oncorhynchus mykiss; Rainbow trout, donaldson trout	1.6 G	96 H	LC ₅₀	15		212009	66	
Oncorhynchus mykiss; Rainbow trout, donaldson trout	0.8 G	24 H	LC ₅₀	17.8		313046	72	
Oncorhynchus mykiss; Rainbow trout, donaldson trout	1.9 G	96 H	LC ₅₀	17		212009	66	
Oncorhynchus mykiss; Rainbow trout, donaldson trout	25-50 G	96 H	LC ₅₀	60		312999	75	
Oncorhynchus mykiss; Rainbow trout, donaldson trout	3.1 G	96 H	LC ₅₀	12		212009	66	
Oncorhynchus mykiss; Rainbow trout, donaldson trout	33 (30-38) MM, 0.3 (0.2-0.4) G	96 H	LC ₅₀	1.5		218048	65	
Oncorhynchus mykiss; Rainbow trout, donaldson trout	6 CM	48 H	LD ₅₀	17,000		310309	72	
Oncorhynchus mykiss; Rainbow trout, donaldson trout	YEARLING	0.25 H	ENZ, PHY		40,000	219308	71	
Oncorhynchus mykiss; Rainbow trout, donaldson trout	JUVENILE, 1-1.5 YR, 120 G, 22.8 CM	5 H	PHY		140	217846	76	
Oncorhynchus mykiss; Rainbow trout, donaldson trout	.41 G	48 H	LC ₅₀	3.05		210964	71	
Oncorhynchus mykiss; Rainbow trout, donaldson trout	NR	15 D	LC ₅₀	0.26		210948	72	
Oncorhynchus mykiss; Rainbow trout, donaldson trout	33 (30-38) MM, 0.3 (0.2-0.4) G	48 H	LC ₅₀	2		218048	65	
Oncorhynchus mykiss; Rainbow trout, donaldson trout	NR	5 D	LC ₅₀	2.26		210948	72	
Oncorhynchus mykiss; Rainbow trout, donaldson trout	5-13 CM	0.25 H	MOR	12,000		315079	49	
Oncorhynchus mykiss; Rainbow trout, donaldson trout	3.4 G	96 H	LC ₅₀	3.8		210851	75	
Oncorhynchus mykiss; Rainbow trout, donaldson trout	51-79 MM, 3.2 G	96 H	LC ₅₀	42		210522	61	
Oncorhynchus mykiss; Rainbow trout, donaldson trout	2.5 G	96 H	LC ₅₀	13		212009	66	
Oncorhynchus mykiss; Rainbow trout, donaldson trout	.41 G	24 H	LC ₅₀	6.9		210964	71	
Oncorhynchus mykiss; Rainbow trout, donaldson trout	JUVENILE, 1-1.5 YR, 120 G, 22.8 CM	5 H	PHY		140	217846	76	
Oncorhynchus mykiss; Rainbow trout, donaldson trout	5-13 CM	0.25 H	MOR	35,000		315079	49	
Oncorhynchus mykiss; Rainbow trout, donaldson trout	0.9 G	96 H	LC ₅₀	14		212009	66	
Oncorhynchus mykiss; Rainbow trout, donaldson trout	3-7 CM	24 H	LC ₅₀	5.6		313000	65	
Oncorhynchus mykiss; Rainbow trout, donaldson trout	NR	96 H	LC ₅₀	7		210610	70	
Oncorhynchus mykiss; Rainbow trout, donaldson trout	3-7 CM	96 H	LC ₅₀	3.4		313000	65	
Oncorhynchus mykiss; Rainbow trout, donaldson trout	JUVENILE, 1-1.5 YR, 120 G, 22.8 CM	5 H	PHY		350	217846	76	
Oncorhynchus mykiss; Rainbow trout, donaldson trout	0.5 G	96 H	LC ₅₀	2.4		212009	66	
Oncorhynchus mykiss; Rainbow trout, donaldson trout	1.2 G	96 H	LC ₅₀	7.2		212009	66	
Oncorhynchus mykiss; Rainbow trout, donaldson trout	3.7 CM	72 H	LC ₅₀	5.6		313000	65	
Oncorhynchus tshawytscha; Chinook salmon	< 1 YR, FINGERLING, 1.1 G	12.3 D	LT ₅₀	100,000		212448	69	
Oncorhynchus tshawytscha; Chinook salmon	< 1 YR, FINGERLING, 0.61 G	26.6 D	LT ₅₀	37,500		212448	69	
Oncorhynchus tshawytscha; Chinook salmon	51-114 MM, 1.45-5 G	96 H	LC ₅₀	11.5		210522	61	
Oncorhynchus tshawytscha; Chinook salmon	< 1 YR, FINGERLING, 1.1 G	>60 D	LT ₅₀	6,250		212448	69	
Oncorhynchus tshawytscha; Chinook salmon	51-114 MM, 1.45-5 G	72 H	LC ₅₀	14		210522	61	
Oncorhynchus tshawytscha; Chinook salmon	51-114 MM, 1.45-5 G	48 H	LC ₅₀	17		210522	61	
Oncorhynchus tshawytscha; Chinook salmon	< 1 YR, FINGERLING, 4.4 G	35.5 D	LT ₅₀	100,000		212448	69	
Oncorhynchus tshawytscha; Chinook salmon	< 1 YR, FINGERLING, 0.61 G	4.8 D	LT ₅₀	150,000		212448	69	
Oncorhynchus tshawytscha; Chinook salmon	< 1 YR, FINGERLING, 0.61 G	>40 D	LT ₅₀	9,400		212448	69	
Oncorhynchus tshawytscha; Chinook salmon	< 1 YR, FINGERLING, 0.61 G	1.6 D	LT ₅₀	600,000		212448	69	
Oncorhynchus tshawytscha; Chinook salmon	51-114 MM, 1.45-5 G	24 H	LC ₅₀	38		210522	61	
Oncorhynchus tshawytscha; Chinook salmon	< 1 YR, FINGERLING, 1.1 G	>60 D	LT ₅₀	25,000		212448	69	
Oncorhynchus tshawytscha; Chinook salmon	< 1 YR, FINGERLING, 1.1 G	13.7 D	LT ₅₀	100,000		212448	69	
Oncorhynchus tshawytscha; Chinook salmon	< 1 YR, FINGERLING, 1.1 G	4.8 D	LT ₅₀	400,000		212448	69	
Ophryotrocha labronica; Polychaete	NR	96 H	LC ₅₀	>1,000		213785	91	
Orconectes nais; Crayfish	35 D, 50 MG	96 H	LC ₅₀	0.9		210887	72	
Orconectes nais; Crayfish	80 D, 1200 MG	96 H	LC ₅₀	30		210887	72	
Orconectes nais; Crayfish	1 D, 15 MG	24 H	LC ₅₀	1.4		210887	72	
Orconectes nais; Crayfish	14 D, 23 MG	96 H	LC ₅₀	0.2		210887	72	
Orconectes nais; Crayfish	21-35 D	24 H	LC ₅₀	1		210887	72	
Orconectes nais; Crayfish	56 D, 500 MG	24 H	LC ₅₀	45		210887	72	
Orconectes nais; Crayfish	MATURE	24 H	LC ₅₀	1,100		210887	72	

4.4 DDT (cont)

Table I-1
 AQUIRE Freshwater Toxicity Information (µg/L)
 Site 15

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
	Orconectes nais; Crayfish	21 D, 30 MG	24 H	LC ₅₀	1		210887	72
	Orconectes nais; Crayfish	80 D, 1200 MG	24 H	LC ₅₀	50		210887	72
	Orconectes nais; Crayfish	21 D, 30 MG	96 H	LC ₅₀	0.24		210887	72
	Orconectes nais; Crayfish	14 D, 23 MG	24 H	LC ₅₀	1.2		210887	72
	Orconectes nais; Crayfish	7 D, 20 MG	24 H	LC ₅₀	1		210887	72
	Orconectes nais; Crayfish	1 D, 15 MG	96 H	LC ₅₀	0.3		210887	72
	Orconectes nais; Crayfish	7 D, 20 MG	96 H	LC ₅₀	0.18		210887	72
	Orconectes nais; Crayfish	JUVENILE	96 H	LC ₅₀	0.18		210666	80
	Orconectes nais; Crayfish	21-35 D	96 H	LC ₅₀	0.24		210887	72
	Orconectes nais; Crayfish	56 D, 500 MG	96 H	LC ₅₀	28		210887	72
	Orconectes nais; Crayfish	NR	96 H	LC ₅₀	100		210948	72
	Orconectes nais; Crayfish	MATURE	96 H	LC ₅₀	100		210887	72
	Orconectes nais; Crayfish	35 D, 50 MG	24 H	LC ₅₀	3.2		210887	72
	Oryzias latipes; Medaka, high-eyes	YOLK SAC FRY STAGE	96 H	LC ₅₀	14		311174	84
	Oryzias latipes; Medaka, high-eyes	NR	24 H	LC ₅₀	380		312497	86
	Oryzias latipes; Medaka, high-eyes	NR	48 H	LC ₅₀	450		312497	86
	Oryzias latipes; Medaka, high-eyes	2.54 CM, 0.16 G	48 H	LC ₅₀	12		212682	69
	Oryzias latipes; Medaka, high-eyes	ADULT FEMALE, SEXUALLY INACTIVA	96 H	LC ₅₀	48.7		311174	84
	Oryzias latipes; Medaka, high-eyes	ADULT MALE, SEXUALLY INACTIVATE	96 H	LC ₅₀	35.6		311174	84
	Oryzias latipes; Medaka, high-eyes	NR	48 H	LC ₅₀	540		312497	86
	Oryzias latipes; Medaka, high-eyes	POST-LARVAE, STAGE II	96 H	LC ₅₀	4.9		311174	84
	Oryzias latipes; Medaka, high-eyes	NR	48 H	LC ₅₀	12		315192	67
	Oryzias latipes; Medaka, high-eyes	ADULT MALE, SEXUALLY ACTIVATED	96 H	LC ₅₀	31.6		311174	84
	Oryzias latipes; Medaka, high-eyes	NR	48 H	LC ₅₀	290		312497	86
	Oryzias latipes; Medaka, high-eyes	NR	24 H	LC ₅₀	10,000		312497	86
	Oryzias latipes; Medaka, high-eyes	ADULT FEMALE, SEXUALLY ACTIVAT	96 H	LC ₅₀	43.7		311174	84
	Oryzias latipes; Medaka, high-eyes	JUVENILE, 70 D POST-HAT	96 H	LC ₅₀	76 to 157		311174	84
	Oryzias latipes; Medaka, high-eyes	NR	24 H	LC ₅₀	490		312497	86
	Ostracoda; Ostracod, seed shrimp subclass	MIXED MICROFAUNA SPECIES	2 D	POP		70	312237	83
	Pagurus longicarpus; Longwrist hermit crab	3.5 MM, 0.28 G	48 H	LC ₅₀	6		210627	69
	Pagurus longicarpus; Longwrist hermit crab	3.5 MM, 0.28 G	24 H	LC ₅₀	7		210627	69
	Palaemon squilla; Black sea shrimp	NR	3 H	LC ₁₀₀	100		217260	72
	Palaemon squilla; Black sea shrimp	NR	24 H	LC ₁₀₀	1		217260	72
	Palaemon squilla; Black sea shrimp	200-300 MG	15 D	OXC		0.001	217260	72
	Palaemon squilla; Black sea shrimp	NR	24 H	LC ₁₀₀	10		217260	72
	Palaemon squilla; Black sea shrimp	NR	3 H	LC ₁₀₀	100		217260	72
	Palaemon squilla; Black sea shrimp	NR	6.5 D	LC ₁₀₀	0.1		217260	72
	Palaemon squilla; Black sea shrimp	ADULTS, 750-850 MG	10 D	OXC		0.00001	217260	72
	Palaemon squilla; Black sea shrimp	ADULTS, 750-850 MG	96 H	OXC		0.01	217260	72
	Palaemonetes kadiakensis; Grass shrimp	NR	24 H*	LC ₅₀	3.7		212665	70
	Palaemonetes kadiakensis; Grass shrimp	NR	5 D	LC ₅₀	1		210948	72
	Palaemonetes kadiakensis; Grass shrimp	LATE INSTAR	5 D	LC ₅₀	1		210887	72
	Palaemonetes kadiakensis; Grass shrimp	NR	5 D	LC ₅₀	1.3		210948	72
	Palaemonetes kadiakensis; Grass shrimp	LATE INSTAR	96 H	LC ₅₀	2.3		210887	72
	Palaemonetes kadiakensis; Grass shrimp	LATE INSTAR	24 H	LC ₅₀	6.8		210887	72
	Palaemonetes kadiakensis; Grass shrimp	NR	24 H*	LC ₅₀	5.7		212665	70
	Palaemonetes kadiakensis; Grass shrimp	LATE INSTAR	5 D	LC ₅₀	1.3		210887	72
	Palaemonetes kadiakensis; Grass shrimp	NR	24 H*	LC ₅₀	2.6		212665	70
	Palaemonetes kadiakensis; Grass shrimp	LATE INSTAR	96 H	LC ₅₀	3.5		210887	72
	Palaemonetes kadiakensis; Grass shrimp	MATURE	96 H	LC ₅₀	2.3		210666	80

4,4' DDI (cont.)

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
	<i>Palaemonetes kadiakensis</i> ; Grass shrimp	LATE INSTAR	24 H	LC ₅₀	9.4		210887	72
	<i>Palaemonetes kadiakensis</i> ; Grass shrimp	NR	24 H *	LC ₅₀	6.8		212665	70
	<i>Palaemonetes kadiakensis</i> ; Grass shrimp	LATE INSTAR	48 H	LC ₅₀	4.7		210887	72
	<i>Palaemonetes kadiakensis</i> ; Grass shrimp	LATE INSTAR	48 H	LC ₅₀	7.7		210887	72
	<i>Palaemonetes pugio</i> ; Daggerblade grass shrimp	10 40 MM	0.5 H *	AVO		0.1	215146	73
	<i>Palaemonetes vulgaris</i> ; Marsh grass shrimp	31 MM, 0 47 G	24 H	LC ₅₀	12		210627	69
	<i>Palaemonetes vulgaris</i> ; Marsh grass shrimp	31 MM, 0 47 G	48 H	LC ₅₀	5.1		210627	69
	<i>Paratanytarsus parthenogenetic</i> ; Midge	LARVAE	24 H *	EC ₅₀ BEH		1.4	212687	79
	<i>Paratelphusa jacuemonitii</i> ; Crab	INTERMOLT, MALE AND FEMALE	96 H	LC ₅₀	62 129		213938	91
	<i>Paratelphusa jacuemonitii</i> ; Crab	INTERMOLT, MALE AND FEMALE	24 H	LC ₅₀	116 43		213938	91
	<i>Paratelphusa jacuemonitii</i> ; Crab	INTERMOLT, MALE AND FEMALE	48 H	LC ₅₀	91 24		213938	91
	<i>Paratelphusa jacuemonitii</i> ; Crab	INTERMOLT, MALE AND FEMALE	72 H	LC ₅₀	74 35		213938	91
	<i>Pavlova lutheri</i> ; Haptophyte	150000 CELLS/ML INIT CONC	10 D	PGR		1,000	218039	62
	<i>Pavlova lutheri</i> ; Haptophyte	150000 CELLS/ML INIT CONC	10 D	PGR		600	218039	62
	<i>Pelecypoda</i> ; Bivalve, clam, mussel class	OYSTER, 3 8-6 4 CM	96 H	EC ₅₀ SHD		40	313008	65
	<i>Pellodytes</i> sp; Beetle	ADULT, 5 MG	48 H	LC ₅₀	4		217775	76
	<i>Pellodytes</i> sp; Beetle	ADULT, 5 MG	96 H	LC ₅₀	1		217775	76
	<i>Pellodytes</i> sp; Beetle	ADULT, 5 MG	72 H	LC ₅₀	2		217775	76
	<i>Pellodytes</i> sp; Beetle	ADULT, 5 MG	24 H	LC ₅₀	7		217775	76
	<i>Penaeus aztecus</i> ; Brown shrimp	ADULT	48 H	EC ₅₀ EQU		1	212188	63
	<i>Penaeus aztecus</i> ; Brown shrimp	ADULT	24 H	EC ₅₀ EQU		5.5	212188	63
	<i>Penaeus indicus</i> ; Indian prawn	70 0 MM	48 H	LC ₅₀	63		212505	88
	<i>Penaeus indicus</i> ; Indian prawn	2.5 G, 70.0 MM	48 H	LC ₅₀	63		210015	87
	<i>Penaeus indicus</i> ; Indian prawn	2.5 G, 70.0 MM	96 H	LC ₅₀	37		210015	87
	<i>Penaeus indicus</i> ; Indian prawn	75 MM, 2.5 G	48 H	LC ₅₀	120		213434	90
4,4'-DDT (cont.)	<i>Penaeus</i> sp; Penaeidean shrimp	NR	30 D	GRO		0.1	219156	72
	<i>Penaeus</i> sp; Penaeidean shrimp	NR	30 D	PHY		0.05	219156	72
	<i>Penaeus</i> sp; Penaeidean shrimp	NR	30 D	PHY		0.1	219156	72
	<i>Pentaneura</i> sp; Midge	JUVENILE	96 H	LC ₅₀	1.5		210666	80
	<i>Perca flavescens</i> ; Yellow perch	1.1 G	96 H	LC ₅₀	0.8		212009	66
	<i>Perca flavescens</i> ; Yellow perch	0.8 G	96 H	LC ₅₀	0.6		212009	66
	<i>Perca flavescens</i> ; Yellow perch	1.2 G	96 H	LC ₅₀	1.5		212009	66
	<i>Perca flavescens</i> ; Yellow perch	1.4 G	96 H	LC ₅₀	9		210666	80
	<i>Perca flavescens</i> ; Yellow perch	NR	96 H	LC ₅₀	9		210610	70
	<i>Phaeodactylum tricornutum</i> ; Diatom	NR	24 H	PSE		1,000	219310	71
	<i>Phaeodactylum tricornutum</i> ; Diatom	INIT CONC 50000 CELLS/ML	6 D	BMS		20	310161	84
	<i>Phaeodactylum tricornutum</i> ; Diatom	250000 CELLS/ML INITIAL CONC	10 D	PGR		20	218039	62
	<i>Phaeodactylum tricornutum</i> ; Diatom	INIT CONC 50000 CELLS/ML	6 D	BMS		10	310161	84
	<i>Phaeodactylum tricornutum</i> ; Diatom	250000 CELLS/ML INITIAL CONC	10 D	PGR		40	218039	62
	<i>Phaeodactylum tricornutum</i> ; Diatom	250000 CELLS/ML INITIAL CONC	10 D	PGR		1,000	218039	62
	<i>Phaeodactylum tricornutum</i> ; Diatom	NR	24 H	PSE		100	219310	71
	<i>Phagocata gracilis</i> ; Turbellarian, flatworm	NR	10 D	LC ₅₀	3,980		312705	87
	<i>Phoxinus eos</i> ; Northern redbelly dace	1.1 G	96 H	LC ₅₀	68		212009	66
	<i>Physa acuta</i> ; Bladder snail	NR	48 H	LC ₅₀	3,500		219156	72
	<i>Phytoconis</i> sp; Green algae	150000 CELLS/ML INITIAL CONC	10 D	PGR		600	218039	62
	<i>Phytoconis</i> sp; Green algae	150000 CELLS/ML INITIAL CONC	10 D	PGR		1,000	218039	62
	<i>Phytoconis</i> sp; Green algae	150000 CELLS/ML INITIAL CONC	10 D	PGR		40	218039	62
	<i>Pimephales promelas</i> ; Fathead minnow	3 8-6 4 CM, 1-2 G	24 H	LC ₅₀	78		210878	59
	<i>Pimephales promelas</i> ; Fathead minnow	3 8-6 4 CM, 1-2 G	48 H	LC ₅₀	68		210878	59
	<i>Pimephales promelas</i> ; Fathead minnow	3 8-6 4 CM, 1-2 G	96 H	LC ₅₀	45 34		210878	59

Table I-1
 AQUIRE Freshwater Toxicity Information (µg/L)
 Site 15

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
	Pimephales promelas; Fathead minnow	RECENTLY HATCHED	1 WK	LETH	400		212807	50
	Pimephales promelas; Fathead minnow	3.8-6.4 CM, 1-2 G	24 H	LC ₅₀	29		210878	59
	Pimephales promelas; Fathead minnow	3 CM	48 H	LC ₅₀	> 40		219615	70
	Pimephales promelas; Fathead minnow	NR	96 H	LC ₅₀	34		218046	66
	Pimephales promelas; Fathead minnow	LARVAE	5 D	LETH	1.53		210534	77
	Pimephales promelas; Fathead minnow	41 D	266 D	PHY		1.53	210534	77
	Pimephales promelas; Fathead minnow	3.8-6.4 CM, 1-2 G	48 H	LC ₅₀	27		210878	59
	Pimephales promelas; Fathead minnow	LARGE	48 H	LETH	2,000		212807	50
	Pimephales promelas; Fathead minnow	PROGENY	60 D	GRO		1.53	210534	77
	Pimephales promelas; Fathead minnow	3 CM	48 H	LC ₅₀	7.4		219615	70
	Pimephales promelas; Fathead minnow	NR	96 H	LC ₅₀	19		210610	70
	Pimephales promelas; Fathead minnow	1.2 G	96 H	LC ₅₀	12.2		210666	80
	Pimephales promelas; Fathead minnow	3.8-6.4 CM, 1-2 G	96 H	LC ₅₀	26		210878	59
	Plecoglossus altivelis; Ayu	YOUNG, 8-9 CM	1 H	MOR	60,000		219634	70
	Plecoglossus altivelis; Ayu	YOUNG, 5.7 CM	1 H	MOR	60,000		219634	70
	Plecoptera; Stonefly	NR	1 H *	DRF		10 to 11	217387	61
	Poecilia reticulata; Guppy	7 WK	0.5 H	MOR	7,000		219297	71
	Poecilia reticulata; Guppy	0.17 G, 1.8 CM	48 H	LC ₅₀	8		216038	70
	Poecilia reticulata; Guppy	7 WK	24 H	LC ₅₀	200		219297	71
	Poecilia reticulata; Guppy	MALE, 70 MG	12 D	HIS, PHY		2.5 to 5.8	312501	86
	Poecilia reticulata; Guppy	NR	12 D	HIS, PHY		1.2 to 3.0	219916	80
	Poecilia reticulata; Guppy	MALE, 70 MG	12 D	HIS, PHY		1.3 to 3.0	312501	86
	Poecilia reticulata; Guppy	7 WK	24 H	LC ₅₀	50		219297	71
	Poecilia reticulata; Guppy	MALE, 70 MG	12 D	HIS, PHY		1.3 to 3.5	312501	86
4,4' DDT (cont.)	Poecilia reticulata; Guppy	0.17 G, 1.8 CM	96 H	LC ₅₀	3		216038	70
	Poecilia reticulata; Guppy	0.17 G, 1.8 CM	24 H	LC ₅₀	20		216038	70
	Polycelis felina; Turbellarian	0.80 CM	96 H	LC ₅₀	1,230		212015	74
	Polypedilum nubifer; Midge	LARVAE	24 H *	EC ₅₀ BEH		15	212687	79
	Porphyridium sp; Red algae	10000 CELLS/ML	1 to 17 D	PGR		80	219047	72
	Procambarus acutus acutus; White river crayfish	0.7 G	96 H	LC ₅₀	28		210942	72
	Procambarus acutus acutus; White river crayfish	0.25-0.40 G; 11.8-14.6 MM	48 H	EC ₅₀ IMM		3	212029	72
	Procladius sp; Midge	LARVAE	24 H	LC ₅₀	3.6		212687	79
	Procladius sp; Midge	LARVAE	24 H *	EC ₅₀ BEH		3.8	212687	79
	Procladius sp; Midge	LARVAE	48 H	LC ₅₀	1		212687	79
	Psectrocladius sp; Midge	LARVAE	24 H *	EC ₅₀ BEH		57	212687	79
	Pseudacris triseriata triseria; Western chorus frog	TADPOLE, 7 D	48 H	LC ₅₀	900		212891	70
	Pseudacris triseriata triseria; Western chorus frog	TADPOLE, 7 D	96 H	LC ₅₀	800		212891	70
	Pseudacris triseriata triseria; Western chorus frog	TADPOLE, 7 D	24 H	LC ₅₀	1,400		212891	70
	Pseudopleuronectes americanus; Winter flounder	NR	0.5 H	ENZ		1,000	219361	71
	Pseudopleuronectes americanus; Winter flounder	NR	0.5 H	ENZ		50,000	219361	71
	Pteronarcella badia; Stonefly	15-20 MM	48 H	LC ₅₀	9		210889	68
	Pteronarcella badia; Stonefly	15-20 MM	24 H	LC ₅₀	12		210889	68
	Pteronarcella badia; Stonefly	15-20 MM	96 H	LC ₅₀	1.9		210889	68
	Pteronarcys californica; Stonefly	30-35 MM	48 H	LC ₅₀	19		210889	68
	Pteronarcys californica; Stonefly	NAIAD, 4-6 CM	72 H	LC ₅₀	2,450		212667	64
	Pteronarcys californica; Stonefly	NAIADS	25 D	LC ₅₀	290		212238	64
	Pteronarcys californica; Stonefly	2ND YR CLASS	96 H	LC ₅₀	7		210666	80
	Pteronarcys californica; Stonefly	NAIADS	4 D	LC ₅₀	3,800		212238	64
	Pteronarcys californica; Stonefly	NAIAD, 4-6 CM	48 H	LC ₅₀	2,450		212667	64
	Pteronarcys californica; Stonefly	NAIAD, 4.6 CM	96 H	LC ₅₀	1,800		212667	64

Table
 AQUIRE Freshwater Toxicity Information (µg/L)
 Site

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
	Pteronarcys californica; Stonefly	30-35 MM	96 H	LC ₅₀	7		210889	68
	Pteronarcys californica; Stonefly	NAIADS	15 D	LC ₅₀	510		212238	64
	Pteronarcys californica; Stonefly	NAIADS	10 D	LC ₅₀	1,100		212238	64
	Pteronarcys californica; Stonefly	30-35 MM, NYMPHS	96 H	LC ₅₀	7		218048	65
	Pteronarcys californica; Stonefly	NAIADS	30 D	LC ₅₀	265		212238	64
	Pteronarcys californica; Stonefly	30-35 MM, NYMPHS	24 H	LC ₅₀	41		218048	65
	Pteronarcys californica; Stonefly	NAIAD; 4-6 CM	96 H	LC ₅₀	1,800		210528	65
	Pteronarcys californica; Stonefly	NAIADS	20 D	LC ₅₀	365		212238	64
	Pteronarcys californica; Stonefly	NAIADS	5 D	LC ₅₀	3,000		212238	64
	Pteronarcys californica; Stonefly	30-35 MM, NYMPHS	48 H	LC ₅₀	19		218048	65
	Pteronarcys californica; Stonefly	30-35 MM	24 H	LC ₅₀	41		210889	68
	Rana temporaria; Frog	TADPOLE, STAGE 28, 689 MG	48 H	MOR	100		315713	79
	Rana temporaria; Frog	TADPOLE, STAGE 28, 363 MG	48 H	BEH		100	315713	79
	Rana temporaria; Frog	TADPOLE, STAGE 28, 363 MG	48 H	DVP		100	315713	79
	Rana temporaria; Frog	TADPOLE, STAGE 28, 363 MG	48 H	BEH		100	315713	79
	Rasbora daniconia; Slender rasbora	ADULT, 12 CM, 40 G	8 D	LC ₅₀	6,000		313217	88
	Rasbora daniconia; Slender rasbora	ADULT, 12 CM, 40 G	8 D	PHY		< 6,000	313217	88
	Rasbora heteromorpha; Harlequinfish, red rasbora	1.3-3 CM	24 H	LC ₅₀	20		210542	69
	Rasbora heteromorpha; Harlequinfish, red rasbora	1.3-3 CM	24 H	LC ₅₀	10		210542	69
	Rasbora heteromorpha; Harlequinfish, red rasbora	1.3-3 CM	48 H	LC ₅₀	17		210542	69
	Rasbora heteromorpha; Harlequinfish, red rasbora	1.3-3 CM	24 H	LC ₅₀	140		210542	69
	Rasbora heteromorpha; Harlequinfish, red rasbora	1.3-3 CM	24 H	LC ₅₀	14,200		210542	69
	Rasbora heteromorpha; Harlequinfish, red rasbora	1.3-3 CM	24 H	LC ₅₀	13		210542	69
	Rasbora heteromorpha; Harlequinfish, red rasbora	1.3-3 CM	48 H	LC ₅₀	110		210542	69
	Rasbora heteromorpha; Harlequinfish, red rasbora	1.3-3 CM	48 H	LC ₅₀	3.1		210542	69
	Rasbora heteromorpha; Harlequinfish, red rasbora	1.3-3 CM	24 H	LC ₅₀	10,700		210542	69
	Rasbora heteromorpha; Harlequinfish, red rasbora	1.3-3 CM	48 H	LC ₅₀	0.54		210542	69
	Rasbora heteromorpha; Harlequinfish, red rasbora	1.3-3 CM	48 H	LC ₅₀	1		210542	69
	Rasbora heteromorpha; Harlequinfish, red rasbora	1.3-3 CM	48 H	LC ₅₀	8,000		210542	69
	Rasbora heteromorpha; Harlequinfish, red rasbora	1.3-3 CM	24 H	LC ₅₀	3.8		210542	69
	Rasbora heteromorpha; Harlequinfish, red rasbora	1.3-3 CM	48 H	LC ₅₀	170		210542	69
	Rasbora heteromorpha; Harlequinfish, red rasbora	1.3-3 CM	48 H	LC ₅₀	1.4		210542	69
	Rasbora heteromorpha; Harlequinfish, red rasbora	1.3-3 CM	24 H	LC ₅₀	200		210542	69
	Rotifera; Rotifer phylum	NR	48 H	LETH	200		219237	72
	Sagitta sp; Chaetognaths; Arrowworms	MATURE	24 H	LC ₅₀	37		212658	88
	Salmo salar; Atlantic salmon	YEARLING, 10-12 CM	24 H	PRB		70	218872	72
	Salmo salar; Atlantic salmon	20.1 G	24 H	MOR	20		219591	70
	Salmo salar; Atlantic salmon	20.1 G	24 H	MOR	200		219591	70
	Salmo salar; Atlantic salmon	EGG AT GASTRULATION	1 MO	BEH		50	218533	74
	Salmo salar; Atlantic salmon	2.5-4 CM	24 H	BEH		30	218952	73
	Salmo salar; Atlantic salmon	EGG AT GASTRULATION	1 MO	BEH		10	218533	74
	Salmo salar; Atlantic salmon	20.1 G	24 H	BEH		200	219591	70
	Salmo trutta; Brown trout	ALEVIN	24 H	LC ₅₀	4.2		210542	69
	Salmo trutta; Brown trout	ALEVIN	24 H	LC ₅₀	16		210542	69
	Salmo trutta; Brown trout	ALEVIN	48 H	LC ₅₀	2.5		210542	69
	Salmo trutta; Brown trout	NR	96 H	LC ₅₀	2		210610	70
	Salmo trutta; Brown trout	4.0 G	96 H	LC ₅₀	10.9		212009	66
	Salmo trutta; Brown trout	ALEVIN	48 H	LC ₅₀	11		210542	69
	Salvelinus fontinalis; Brook trout	3.3 G	96 H	LC ₅₀	20		212009	66
	Salvelinus fontinalis; Brook trout	FINGERLING, 1-3 G	24 H	LC ₅₀	30		212825	73

4,4'-DDT (cont.)

Table I-1
 AQUIRE Freshwater Toxicity Information (µg/L)
 Site 15

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication	
					Lethal	Sublethal			
	Salvelinus fontinalis; Brook trout	UNDERYEARLING, 2-3 MO	24 H	THL			10	215531	75
	Salvelinus fontinalis; Brook trout	UNDERYEARLING, 2-3 MO	24 H	LC ₅₀	54			215531	75
	Salvelinus fontinalis; Brook trout	FINGERLING, 1-3 G	24 H	THL			20	212825	73
	Salvelinus fontinalis; Brook trout	105.0 G	24 H	MOR	1,000			219591	70
	Salvelinus fontinalis; Brook trout	3.3 G	96 H	LC ₅₀	17			212009	66
	Salvelinus fontinalis; Brook trout	213 G	48 H	LC ₅₀	12.75			210964	71
	Salvelinus fontinalis; Brook trout	1.4 G	96 H	LC ₅₀	7.2			212009	66
	Salvelinus fontinalis; Brook trout	0.4 G	96 H	LC ₅₀	1.8			212009	66
	Salvelinus fontinalis; Brook trout	213 G	96 H	LC ₅₀	11.9			210964	71
	Salvelinus fontinalis; Brook trout	105.0 G	24 H	BEH			1,000	219591	70
	Salvelinus fontinalis; Brook trout	1.15 G	96 H	LC ₅₀	7.4			210964	71
	Salvelinus fontinalis; Brook trout	213 G	72 H	LC ₅₀	11.9			210964	71
	Salvelinus fontinalis; Brook trout	213 G	24 H	LC ₅₀	23.1			210964	71
	Salvelinus fontinalis; Brook trout	1.15 G	48 H	LC ₅₀	7.35			210964	71
	Salvelinus fontinalis; Brook trout	1.15 G	72 H	LC ₅₀	7.4			210964	71
	Salvelinus namaycush; Lake trout, siscowet	2.8 G	96 H	LC ₅₀	9.5			212009	66
	Salvelinus namaycush; Lake trout, siscowet	2.5 G	96 H	LC ₅₀	9.1			212009	66
	Salvelinus sp; Trout, charr	FRY	96 H	LC ₅₀	46			216270	74
	Scenedesmus quadricauda; Green algae	NR	6 D	PSE			1,000	212251	71
	Scenedesmus quadricauda; Green algae	NR	48 H	PSE			100	212251	71
	Scenedesmus quadricauda; Green algae	NR	96 H	PSE			100	212251	71
	Scenedesmus quadricauda; Green algae	NR	8 D	PSE			1,000	212251	71
4,4' DDT (cont.)	Scomber scombrus; Atlantic mackerel	NR	0.5 H	ENZ			50,000	219361	71
	Selenastrum capricornutum; Green algae	NR	to 3 D	PSE			36	212249	76
	Semisulcospira libertina; Marsh snail	NR	48 H	LC ₅₀	3,800			219158	72
	Seniola quinqueradiata; Yellowtail	6.1-7.6 G	24 H	LC ₅₀	6.5			216128	76
	Simocephalus serrulatus; Water flea	1ST INSTAR	48 H	EC ₅₀ IMM			2.5	210888	66
	Simocephalus serrulatus; Water flea	1ST INSTAR	48 H	EC ₅₀ IMM			2.8	210888	66
	Simocephalus sp; Water flea	NR	48 H	EC ₅₀ IMM			5.8	219859	80
	Simuliidae; Blackfly family	LARVAE	72 H	MOR	200			219237	72
	Simuliidae; Blackfly family	LARVAE, 3RD-6TH INSTAR	0.083 H	DRF			400	212837	66
	Simuliidae; Blackfly family	LARVAE, 3RD-6TH INSTAR	0.083 H	DRF			40	212837	66
	Simulium ornatum; Blackfly	EGG	24 H	HAT			1,000	212805	69
	Simulium sp; Blackfly	LARVAE	0.17 H	MOR	1,000			219634	70
	Simulium sp; Blackfly	LARVAE	0.017 H	MOR	10,000			219634	70
	Simulium sp; Blackfly	LARVAE	0.17 H	MOR	100			219634	70
	Simulium sp; Blackfly	LARVAE	0.017 H	MOR	1,000			219634	70
	Sketonema costatum; Diatom	NR	24 H	PSE			10	219310	71
	Sketonema costatum; Diatom	10000 CELLS/ML	1 to 17 D	PGR			80	219047	72
	Sphoeroides maculatus; Northern puffer	146 MM, 63 G	48 H	LC ₅₀	89			210628	70
	Sphoeroides maculatus; Northern puffer	146 MM, 63 G	96 H	LC ₅₀	89			210628	70
	Sphoeroides maculatus; Northern puffer	146 MM, 63 G	24 H	LC ₅₀	115			210628	70
	Spicodiantomus chilospinus; Calanoid copepod	ADULT, 2.2-2.8 MM	48 H	LC ₅₀	24			215264	76
	Spicodiantomus chilospinus; Calanoid copepod	ADULT, 2.2-2.8 MM	24 H	LC ₅₀	32			215264	76
	Stizostedion vitreum vitreum; Walleye	1.4 G	96 H	LC ₅₀	2.9			210666	80
	Stolephorus purpureus; Nehu	0.39 G, 3.6 CM	12 H	LC ₅₀	1			216038	70
	Strongylocentrotus droebachien; Green sea urchin	SPERM	1.3 H	REP			3	212264	89
	Strongylocentrotus droebachien; Green sea urchin	EMBRYO	120 H	EC ₅₀ DVP			>82	212264	89
	Strongylocentrotus purpuratus; Purple sea urchin	EMBRYO	120 H	EC ₅₀ DVP			>8.2	212264	89
	Strongylocentrotus purpuratus; Purple sea urchin	SPERM	1.3 H	REP			>0.5 to <1.0	212264	89

Table
 AQUIRE Freshwater Toxicity Information (µg/L)
 Site 15

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
	Stylonychia notophora; Ciliate	NR	36 H	PGR		1,000	219892	80
	Stylonychia notophora; Ciliate	NR	36 H	PGR		40,000	219892	80
	Stylonychia notophora; Ciliate	NR	9 H	PGR		100,000	219892	80
	Tetrahymena pyriformis; Ciliate	LOG PHASE	96 H	PGR		100	315127	70
	Thalassiosira guillardii; Diatom	NR	24 H	PSE		100	219310	71
	Thalassiosira guillardii; Diatom	10000 CELLS/ML	1 to 17 D	PGR		80	219047	72
	Thalassiosira guillardii; Diatom	NR	96 H	PGR		100	212225	72
	Thalassiosira guillardii; Diatom	NR	24 H	PSE		10	219310	71
	Thalassiosira weissflogii; Diatom	10000 CELLS/ML	1 to 17 D	PGR		80	219047	72
	Thalassoma bifasciatum; Bluehead wrasse	80 MM, 5.4 G	96 H	LC ₅₀	7		210628	70
	Thalassoma bifasciatum; Bluehead wrasse	80 MM, 5.4 G	24 H	LC ₅₀	17		210628	70
	Thalassoma bifasciatum; Bluehead wrasse	80 MM, 5.4 G	48 H	LC ₅₀	4		210628	70
	Therapon jarbua, Tigerfish, crescent perch	6.9-9.2 CM, 6.5-13.1 G, 6.9 MO	96 H	LC ₅₀	3.6		216020	78
	Tilapia mossambica; Mozambique tilapia	1.3 G, 3.4 CM	96 H	LC ₅₀	7		216038	70
	Tilapia mossambica; Mozambique tilapia	15-20 G	to 15 D	ENZ		10	312483	85
	Tilapia mossambica; Mozambique tilapia	1.3 G, 3.4 CM	48 H	LC ₅₀	12		216038	70
	Tilapia mossambica; Mozambique tilapia	ADULT, 22 G, 9.2 CM	20 D	CEL, PHY		1	312488	84
	Tilapia mossambica; Mozambique tilapia	1.3 G, 3.4 CM	24 H	LC ₅₀	20		216038	70
	Tilapia mossambica; Mozambique tilapia	ADULT, 9.2 CM, 22.5 G	20 D	HIS, PHY		1	311784	86
	Tilapia mossambica; Mozambique tilapia	FEMALE, 22.0 G, 9.3 CM	20 D	HIS, PHY		1	311558	85
	Tilapia mossambica; Mozambique tilapia	15-20 G	to 15 D	BIO, PHY		10	210552	88
4.4' DDT (cont.)	Tilapia mossambica; Mozambique tilapia	MATURE, 22.00 G, 9.2 CM	10 D	HIS, PHY		1	311851	86
	Tilapia nilotica; Nile tilapia	NR	NR	RSD		0.04	312855	88
	Tilapia zillii; Tilapia	FRY, 3.36 CM, 825 MG *	96 H	LC ₅₀	9.5		313099	86
	Tilapia zillii; Tilapia	FRY, 3.36 CM, 825 MG *	24 H	LC ₅₀	63		313099	86
	Tilapia zillii; Tilapia	FRY, 3.36 CM, 825 MG, BEHERA STRAI	96 H	LC ₅₀	15.5		313099	86
	Tilapia zillii; Tilapia	FRY, 3.36 CM, 825 MG, BEHERA STRAI	24 H	LC ₅₀	12.78		313099	86
	Tilapia zillii; Tilapia	FRY, 3.36 CM, 825 MG, BEHERA STRAI	24 H	LC ₅₀	21.81		313099	86
	Tilapia zillii; Tilapia	FRY, 3.36 CM, 825 MG *	24 H	LC ₅₀	27.5		313099	86
	Tilapia zillii; Tilapia	FRY, 3.36 CM, 825 MG *	96 H	LC ₅₀	42		313099	86
	Tilapia zillii; Tilapia	FRY, 3.36 CM, 825 MG, BEHERA STRAI	96 H	LC ₅₀	9.52		313099	86
	Tinca tinca; Tench	FRY	96 H	LC ₅₀	370		216270	74
	Trichoptera; Caddisfly order	NR	3 H *	DRF		10 to 11	217387	61
	Uca pugilator; Fiddler crab	FEMALE	72 H	LOC		80	218349	79
	Uca pugilator; Fiddler crab	MALE	72 H	LOC		80	218349	79
PAL Metals								
Aluminum	Brachionus calyciflorus; Rotifer;	NEONATE	24 H	LC ₅₀	> 3,000		219385	91
	Myriophyllum spicatum; Water-milfoil;	4 CM APEX	32 D	EC ₅₀ GR		12,700	212262	74
	Myriophyllum spicatum; Water-milfoil;	4 CM APEX	32 D	EC ₅₀ BM *		7,600	212262	74
	Myriophyllum spicatum; Water-milfoil;	4 CM APEX	32 D	EC ₅₀ BM *		2,500	212262	74
	Myriophyllum spicatum; Water-milfoil;	4 CM APEX	32 D	EC ₅₀ GR		5,100	212262	74
	Salmo trutta; Brown trout;	ALEVIN	28 D	LC ₅₀	19		213472	90
	Salmo trutta; Brown trout;	ALEVIN	42 D	LC ₅₀	72		213472	90
	Salmo trutta; Brown trout;	ALEVIN	21 D	LC ₅₀	84 to 105		213472	90
	Salmo trutta; Brown trout;	ALEVIN	42 D	LC ₅₀	15		213472	90
	Salmo trutta; Brown trout;	ALEVIN	28 D	LC ₅₀	79		213472	90
	Salmo trutta; Brown trout;	FERT EGG	<4 MO	HAT		<677	213472	90
	Salvelinus fontinalis; Brook trout;	FRY	43.2 H	LC ₅₀	1,000		216632	80
	Salvelinus fontinalis; Brook trout;	FRY	7.3 D	LC ₅₀	630		216632	80

Table I-1
 AQUIRE Freshwater Toxicity Information (µg/L)
 Site 15

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
	Salvelinus fontinalis; Brook trout;	FRY	79.2 H	LC ₅₀	500		216632	80
	Salvelinus fontinalis; Brook trout;	ADULT, 25-30 CM	5 D	LET	320		216632	80
	Salvelinus fontinalis; Brook trout;	FRY	86.4 H	LT ₅₀	1,000		216632	80
	Salvelinus fontinalis; Brook trout;	FRY	11.5 D	LT ₅₀	100		216632	80
	Salvelinus fontinalis; Brook trout;	FRY, 22-23 MM	10.67 D	LT ₅₀	480		216188	80
	Salvelinus fontinalis; Brook trout;	FRY	4.7 D	LT ₅₀	650		216632	80
	Salvelinus fontinalis; Brook trout;	FRY, 22-23 MM	19.67 D	LT ₅₀	470		216188	80
	Salvelinus fontinalis; Brook trout;	FRY	5 D	LT ₅₀	1,000		216632	80
	Salvelinus fontinalis; Brook trout;	FRY, 22-23 MM	20.83 D	LT ₅₀	20		216188	80
	Salvelinus fontinalis; Brook trout;	FRY	50.4 H	LT ₅₀	500		216632	80
	Salvelinus fontinalis; Brook trout;	FRY, 22-23 MM	4.79 D	LT ₅₀	42		216188	80
	Salvelinus fontinalis; Brook trout;	FRY	67.2 H	LT ₅₀	500		216632	80
	Salvelinus fontinalis; Brook trout;	FRY, 22-23 MM	8.42 D	LT ₅₀	500		216188	80
	Salvelinus fontinalis; Brook trout;	EYED EGGS	5 D	MOR *	320		216632	80
	Salvelinus fontinalis; Brook trout;	FRY, 22-23 MM	>20.83 D	LT ₅₀	10		216188	80
	Salvelinus fontinalis; Brook trout;	0.2 G, 30 D	3 D	GRO *		268	213592	91
	Salvelinus fontinalis; Brook trout;	FRY, 22-23 MM	>20.83 D	LT ₅₀	500		216188	80
	Salvelinus fontinalis; Brook trout;	FRY	55.2 H	LT ₅₀	500		216632	80
	Salvelinus fontinalis; Brook trout;	FRY, 22-23 MM	>20.83 D	LT ₅₀	500		216188	80
	Salvelinus fontinalis; Brook trout;	FRY	38.4 H	LT ₅₀	500		216632	80
Aluminum (cont)	Salvelinus fontinalis; Brook trout;	0.2 G, 30 D	56 D	MOR *	268		213592	91
	Salvelinus fontinalis; Brook trout;	FRY	5.2 D	LT ₅₀	100		216632	80
	Salvelinus fontinalis; Brook trout;	RECENTLY HATCHED FRY	5 D	LET	320		216632	80
	Salvelinus fontinalis; Brook trout;	YEARLINGS, 13-17 CM	5 D	LET	320		216632	80
Aluminum chloride	Ambystoma opacum; Marbled salamander;	EGGS	8 D	LC ₅₀	2,280		216199	78
	Brachydanio rerio; Zebra danio, zebrafish;	LARVAE, 7-8 D POST-SPAWN	48 H	LC ₅₀	106,000		311199	85
	Brachydanio rerio; Zebra danio, zebrafish;	LARVAE, 7-8 D POST-SPAWN	48 H	LC ₅₀	80,000		311199	85
	Carassius auratus; Goldfish;	EGGS	7 D	LC ₅₀	150		215305	78
	Chilomonas paramecium; Cryptomonad;	NR	0.17 H	LET	2,400		212863	73
	Cyprinus carpio; Common, mirror, colored, carp;	7.5-8.5 CM, 10.5-12.5 G	24 H	MOR *	8,000		315166	81
	Cyprinus carpio; Common, mirror, colored, carp;	7.5-8.5 CM, 10.5-12.5 G	48 H	MOR *	2,000		315166	81
	Cyprinus carpio; Common, mirror, colored, carp;	7.5-8.5 CM, 10.5-12.5 G	24 H	MOR *	4,000		315166	81
	Cyprinus carpio; Common, mirror, colored, carp;	7.5-8.5 CM, 10.5-12.5 G	48 H	MOR *	2,000		315166	81
	Cyprinus carpio; Common, mirror, colored, carp;	7.5-8.5 CM, 10.5-12.5 G	24 H	MOR *	8,000		315166	81
	Cyprinus carpio; Common, mirror, colored, carp;	7.5-8.5 CM, 10.5-12.5 G	48 H	MOR *	8,000		315166	81
	Daphnia magna; Water flea;	12 H	21 D	EC ₅₀ IM ?		1,400	212022	72
	Daphnia magna; Water flea;	4 H	64 H	EC ₅₀ IM		1,400	212054	48
	Daphnia magna; Water flea;	12 H	48 H	EC ₅₀ IM ?		3,900	212022	72
	Daphnia magna; Water flea;	12 H	21 D	EC ₅₀ RE ?		680	212022	72
	Euglena gracilis; Flagellate euglenoid;	NR	3 H	MOR *	1,000,000		212863	73
	Gambusia affinis; Mosquitofish; Poeciliidae;	ADULT, FEMALE	48 H	LC ₅₀	27,500		210508	57
	Gambusia affinis; Mosquitofish; Poeciliidae;	ADULT, FEMALE	24 H	LC ₅₀	29,600		210508	57
	Gambusia affinis; Mosquitofish; Poeciliidae;	ADULT, FEMALE	96 H	LC ₅₀	27,100		210508	57
	Gambusia affinis; Mosquitofish; Poeciliidae;	ADULT, FEMALE	96 H	MOR * (Calc)	20,400		210508	57
	Microhyla carolinensis; Narrow mouthed frog;	EGGS	7 D	LC ₅₀	50		215305	78
	Micropterus salmoides; Largemouth bass;	EGGS	8 D	LC ₅₀	170		216199	78
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	EGGS	28 D	LC ₅₀	560		215305	78
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	FINGERLING, 6 WK	9.25 D	PHY *		5,140; 1,570	218830	73
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	EGGS	28 D	LC ₅₀	560		216199	78
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	FINGERLING, 6 MO	45 D	PHY *		514; 514	218830	73

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	FINGERLING, 11 WK	43.9 D	LC ₅₀	513		219328	71
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	FINGERLING, 6 WK	4.7 D	PHY *		5,200; 5,050	218830	73
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	FINGERLING, 6 MO	31.96 D	LT ₅₀	5,230		219328	71
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	FINGERLING, 6 WK	7.46 D	LT ₅₀	5,140		219328	71
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	FINGERLING, 6 MO	45 D	GRO *		51.6; 51.6	218830	73
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	FINGERLING, 6 WK	71.52 H	LT ₅₀	5,200		219328	71
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	FINGERLING, 11 WK	45 D	GRO *		513	219328	71
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	FINGERLING, 6 MO	45 D	GRO *		514	219328	71
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	FINGERLING, 6 MO	45 D	GRO *		51.6	219328	71
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	FINGERLING, 11 WK	38.9 D	LT ₅₀	5,140		219328	71
	Peranema trichophorum; Flagellate;	NR	0.17 H	LET	>1,000,000		212863	73
	Pimephales promelas; Fathead minnow;	LARVAE, <24 H	14 D	GRO *		66; 35	213070	89
	Pimephales promelas; Fathead minnow;	EMBRYO	4 D	HAT *		66; 35	213070	89
	Pimephales promelas; Fathead minnow;	30 D	to 109 D	HIS		30 to 60	213182	90
	Pimephales promelas; Fathead minnow;	12 D LARVAE	to 96 H	MOR	50 to 400		210836	89
	Pimephales promelas; Fathead minnow;	JUVENILE	to 96 H	MOR	50 to 400		210836	89
	Pimephales promelas; Fathead minnow;	1 D LARVAE	to 96 H	MOR	50 to 400		210836	89
	Pimephales promelas; Fathead minnow;	LARVAE, <24 H	14 D	MOR *	66; 35		213070	89
	Pimephales promelas; Fathead minnow.	ADULT	2 MO	REP *		66; 35	213070	89
Aluminum chloride (cont)	Tetrahymena pyriformis; Ciliate;	NR	0.17 H	LET	3,200		212863	73
	Tropisternus lateralis; Beetle;	ADULT	14 D	PHY * (Calc)		27,000	212868	69
Aluminum sulfate	Asellus aquaticus; Aquatic sowbug;	ADULT, 7 MM, 1.5 MG DRY WT	48 H	EC ₅₀ IM ?		6,570	311972	86
	Asellus aquaticus; Aquatic sowbug;	ADULT, 7 MM, 1.5 MG DRY WT	72 H	EC ₅₀ IM ?		4,370	311972	86
	Biomphalaria glabrata; Snail;	ADULT, 4.4 5 SUTURE WHORL	24 H	STR *		100	212853	63
	Biomphalaria glabrata; Snail;	ADULT, 4.4 5 SUTURE WHORL	24 H	STR *		1,000	212853	63
	Cladocera, Water flea order;	NR	2 MO *	POP *		500	217183	78
	Crangonyx pseudogracilis; Amphipod;	ADULT, 4 MM, 0.2 MG DRY WT	48 H	EC ₅₀ IM ?		12,800	311972	86
	Crangonyx pseudogracilis; Amphipod;	ADULT, 4 MM, 0.2 MG DRY WT	96 H	EC ₅₀ IM ?		9,190	311972	86
	Crustacea; Crustacean class;	NR	2 MO *	ABD *		500	217183	78
	Cyprinus carpio; Common, mirror, colored, carp;	7.5-8.5 CM, 10.5-12.5 G	24 H	MOR *	8,000		315166	81
	Cyprinus carpio; Common, mirror, colored, carp;	7.5-8.5 CM, 10.5-12.5 G	24 H	MOR *	8,000		315166	81
	Cyprinus carpio; Common, mirror, colored, carp;	7.5-8.5 CM, 10.5-12.5 G	48 H	MOR *	2,000		315166	81
	Cyprinus carpio; Common, mirror, colored, carp;	7.5-8.5 CM, 10.5-12.5 G	48 H	MOR *	4,000		315166	81
	Cyprinus carpio; Common, mirror, colored, carp;	7.5-8.5 CM, 10.5-12.5 G	48 H	MOR *	4,000		315166	81
	Cyprinus carpio; Common, mirror, colored, carp;	7.5-8.5 CM, 10.5-12.5 G	48 H	MOR *	8,000		315166	81
	Daphnia magna; Water flea;	8 H, YOUNG	0.25 H *	LOC *		136,000	212171	44
	Fundulus heteroclitus; Mummichog;	NR	36 H	LC ₁₀₀ (Calc)	2,200		212865	15
	Fundulus heteroclitus; Mummichog;	NR	5 D	LC ₁₀₀ (Calc)	1,100		212865	15
	Gambusia affinis; Mosquitofish;	ADULT, FEMALE	24 H	LC ₅₀	69,000		210508	57
	Gambusia affinis; Mosquitofish;	ADULT, FEMALE	48 H	LC ₅₀	38,000		210508	57
	Gambusia affinis; Mosquitofish;	ADULT, FEMALE	48 H	MOR * (Calc)	< 28,000		210508	57
	Gambusia affinis; Mosquitofish;	ADULT, FEMALE	96 H	LC ₅₀ ? (Calc)	37,000		210508	57
	Micropterus dolomieu; Smallmouth bass;	13.8(12-17) MM, 32.5(9-59) MG	30 D	GRO *		251.6	312723	87
	Micropterus dolomieu; Smallmouth bass;	LARVAE	30 D	MOR *	251.6		312723	87
	Micropterus dolomieu; Smallmouth bass;	LARVAE, 48 H POST-HATCH	96 H	MOR *	100		312723	87
	Micropterus dolomieu; Smallmouth bass;	LARVAE, 48 H POST-HATCH	96 H	MOR *	196		312723	87
	Micropterus dolomieu; Smallmouth bass;	LARVAE, 48 H POST-HATCH	96 H	MOR *	217		312723	87
	Micropterus dolomieu; Smallmouth bass;	LARVAE, 48 H POST-HATCH	96 H	MOR *	32		312723	87
	Micropterus dolomieu; Smallmouth bass;	LARVAE, 48 H POST-HATCH	96 H	MOR *	320		312723	87
	Micropterus dolomieu; Smallmouth bass;	LARVAE, 48 H POST-HATCH	96 H	MOR *	56		312723	87

Table I-1
 AQUIRE Freshwater Toxicity Information (µg/L)
 Site 15

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
	Micropterus dolomieu; Smallmouth bass;	LARVAE, 48 H POST-HATCH	96 H	MOR *	560		312723	87
	Notemigonus crysoleucas; Golden shiner;	NR	45 D	MOR *	100,000		312756	86
	Notemigonus crysoleucas; Golden shiner;	NR	45 D	MOR *	100,000		312756	86
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	118-355 G, 22-31 CM FORK LENGTH	24 H	MOR *	910		212508	88
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	118-355 G, 22-31 CM FORK LENGTH	24 H	MOR *	9,100		212508	88
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	118-355 G, 22-31 CM FORK LENGTH	48 H	LET	9,100		212508	88
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	118-355 G, 22-31 CM FORK LENGTH	48 H	MOR *	910		212508	88
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	118-355 G, 22-31 CM FORK LENGTH	72 H	MOR *	910		212508	88
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	118-355 G, 22-31 CM FORK LENGTH	96 H	HEM *		90	212508	88
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	118-355 G, 22-31 CM FORK LENGTH	96 H	HEM *		910	212508	88
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	118-355 G, 22-31 CM FORK LENGTH	96 H	HEM *		910	212508	88
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	118-355 G, 22-31 CM FORK LENGTH	96 H	MOR *	90		212508	88
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	118-355 G, 22-31 CM FORK LENGTH	96 H	MOR *	910		212508	88
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	50-80 MM	10 D	LC ₀	200,000		216520	80
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	50-80 MM	10 D	LC ₀	50,000		216520	80
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	50-80 MM	42 H	LC ₁₀₀	50,000		216520	80
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	50-80 MM	42 H	LC ₁₀₀	50,000		216520	80
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	50-80 MM	96 H	MOR *	50,000		216520	80
Aluminum sulfate (cont.)	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	FINGERLING, 11 WK	45 D	PHY *		513	218830	73
	Salvelinus fontinalis; Brook trout;	14 MO, 210 MM, 130 G	24 H	LC ₅₀ ?	4,000		216115	75
	Salvelinus fontinalis; Brook trout;	14 MO, 210 MM, 130 G	24 H	LC ₅₀ ?	4,450		216115	75
	Salvelinus fontinalis; Brook trout;	14 MO, 210 MM, 130 G	24 H	MOR *	5,000		216115	75
	Salvelinus fontinalis; Brook trout;	14 MO, 210 MM, 130 G	24 H	MOR *	5,000		216115	75
	Salvelinus fontinalis; Brook trout;	14 MONTHS, 210 MM, 130 G	96 H	LC ₅₀ ?	3,600		216115	75
	Salvelinus fontinalis; Brook trout;	EYED EMBRYO - LARVAE	45 D	GRO *		283	312720	87
	Salvelinus fontinalis; Brook trout;	EYED EMBRYO - LARVAE	60 D	BEH *		283	312720	87
	Salvelinus fontinalis; Brook trout;	EYED EMBRYO - LARVAE	60 D	MOR *	283		312720	87
	Stizostedion lucioperca; Pikeperch;	11.5-16 MM	24 H	MOR *	400		212700	75
Cobalt	Anabolia nervosa; Quiver fly	LARVAE	7 D	LET	400,000		210725	57
	Chironomus thummi; Midge	LARVAE	7 D	LET	600,000		210725	57
	Corbicula fluminea; Asiatic clam	NR	NR	RSD		130 to 150	215024	80
	Cyprinidae; Minnow, carp family	1 SUMMER	7 D	MOR *	90,000		210725	57
	Cyprinidae; Minnow, carp family	1 SUMMER	29 H	LET *	500,000		210725	57
	Cyprinidae; Minnow, carp family	1 SUMMER	10 H	LET *	1,000,000		210725	57
	Cyprinidae; Minnow, carp family	1 SUMMER	4.5 D	LET *	150,000		210725	57
	Cyprinidae; Minnow, carp family	1 SUMMER	7 D	MOR *	100,000		210725	57
	Cyprinidae; Minnow, carp family	2 SUMMERS	66 H	LET *	300,000		210725	57
	Cyprinidae; Minnow, carp family	1 SUMMER	65 H	LET *	200,000		210725	57
	Cyprinidae; Minnow, carp family	1 SUMMER	43 H	LET *	300,000		210725	57
	Cyprinidae; Minnow, carp family	1 SUMMER	7.08 D	LET *	125,000		210725	57
	Gammarus roesei; Scud	NR	7 D	LET	8,000		210725	57
	Lemna minor; Duckweed	NR	NR	BCF *		15	218581	75
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	1 SUMMER	7 D	MOR *	30,000		210725	57
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	2 SUMMERS	58 H	LET *	50,000		210725	57
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	1 SUMMER	36 H	LET *	50,000		210725	57
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	1 SUMMER	63 H	LET *	40,000		210725	57
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	1 SUMMER	14 H	LET *	100,000		210725	57
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	1 SUMMER	26 H	LET *	55,000		210725	57
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	1 SUMMER	4.08 D	LET *	35,000		210725	57

Tat
AQUIRE Freshwater Toxicity Information (µg/L)
Site 15

Remedial Investigation
NAS Whiting Field
Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
	Salvelinus fontinalis; Brook trout	1 SUMMER	3.58 D	LET *	45,000		210725	57
	Salvelinus fontinalis; Brook trout	1 SUMMER	7 D	MOR *	40,000		210725	57
	Salvelinus fontinalis; Brook trout	2 SUMMERS	75 H	LET *	50,000		210725	57
	Salvelinus fontinalis; Brook trout	1 SUMMER	67 H	LET *	50,000		210725	57
	Salvelinus fontinalis; Brook trout	1 SUMMER	20 H	LET *	100,000		210725	57
	Salvelinus fontinalis; Brook trout	1 SUMMER	60 H	LET *	55,000		210725	57
	Tinca tinca; Tench	1 SUMMER	6.42 D	LET *	150,000		210725	57
	Tinca tinca; Tench	2 SUMMERS	72 H	LET *	300,000		210725	57
	Tinca tinca; Tench	1 SUMMER	32 H	LET *	500,000		210725	57
	Tinca tinca; Tench	1 SUMMER	72 H	LET *	200,000		210725	57
	Tinca tinca; Tench	1 SUMMER	7 D	MOR *	125,000		210725	57
	Tinca tinca; Tench	1 SUMMER	46 H	LET *	300,000		210725	57
	Tinca tinca; Tench	1 SUMMER	14 H	LET *	1,000,000		210725	57
	Tubifex tubifex; Tubificid worm	NR	7 D	LET	400,000		210725	57
Cobalt chloride	Austropotamobius pallipes pall; Crayfish	19-32 MM	96 H	LC ₅₀	8,800		232888	73
	Carassius auratus; Goldfish	60-90 MM, 3-5 G	to 7 D	MOR	100,000		221110	37
	Ceriodaphnia dubia; Water flea	<24 H	24 H	LC ₅₀	2,347		317084	92
Cobalt chloride (cont.)	Colisa fasciata; Giant gourami	4.56 G, ADULT, FEMALE	96 H	LC ₅₀	102,000		221932	79
	Crangonyx pseudogracilis; Amphipod	ADULT, 4 MM, 0.2 MG DRY WT	48 H	IMM		167,000	299125	86
	Cyclops abyssorum prealpinus; Cyclopoid copepod	ADULT, 0.62 MM	48 H	IMM		15,500	232882	74
	Daphnia hyalina; Water flea	ADULT, 1.27 MM	48 H	LC ₅₀	1,320		232884	74
	Daphnia magna; Water flea	NR	24 H	IMM		2,610	305743	89
	Daphnia magna; Water flea	12 H	48 H	IMM		1,620	232878	72
	Daphnia magna; Water flea	1ST AND 2ND INSTAR LARVAE	96 H	LC ₅₀	1,500		298195	86
	Daphnia magna; Water flea	12 H	21 D	REP		12	232881	72
	Dugesia tigrina; Turbellarian, flatworm	JUVENILE, 0.006 G	96 H	LC ₅₀	12,000		298196	86
	Eudiaptomus padanus padanus; Calanoid copepod	ADULT, 0.43 MM	48 H	IMM		4,000	232883	74
	Heteropneustes fossilis; Indian catfish	4.0 MM, 3 D, HATCHLINGS	18 D	MOR	454		238822	73
	Orconectes limosus; Crayfish	19-32 MM	30 D	LC ₅₀	790		232887	73
	Philodina acuticornis; Rotifer	0.2-0.5 MM	24 H	IMM		32,000	225424	74
	Pimephales promelas; Fathead minnow	JUVENILE, 0.2-0.5 G	96 H	LC ₅₀	22,000		298198	86
	Pimephales promelas; Fathead minnow	5-15 D	48 H	MOR	13,733		317082	92
	Rana hexadactyla; Frog	20(15-25) MM, 500(350-800) MG.	96 H	LC ₅₀	17,590		276775	85
	Spirulina platensis; Blue-green algae	NR	168 H	GRO		8,130	299978	87
	Slizostedion lucioperca; Pikeperch	11.5-16 MM	24 H	MOR	11		255008	75
	Tubifex tubifex; Tubificid worm	NR	24 H	IMM		447,710	234412	91
Iron	Dugesia dorotocephala; Turbellarian, flatworm;	18-20 MM	1 H	BEH *		1,000 to 50,000	310581	91
	Lemna minor; Duckweed;	20 COLONIES OR 40 FRONDS	4 D	EC ₅₀ GR		3,700	311789	86
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	EGGS AND LARVA	NR	DVP *		5,700	315523	82
	Salmo trutta; Brown trout;	ALEVIN	NR	MOR *	5,170		311637	83
	Salmo trutta; Brown trout;	EGG	NR	HAT *		460	311637	83
	Salmo trutta; Brown trout;	EYED EGGS	NR	MOR *	5,170		311637	83
	Salmo trutta; Brown trout;	NEWLY HAT ALEVIN	NR	MOR *	3,020		311637	83
	Tilapia sparrmanii; Banded bream;	10.24-99.43 G	2 to 72 H	OC *		88,000	213066	89
Lead	Astacus astacus; European crayfish;	8-10 CM	2 WK	ENZ *		20	210376	91
	Astacus astacus; European crayfish;	8-10 CM	to 10 WK	HIS		20	210376	91
	Barbus arulius; Barb;	1.24 G	4 D	HIS		200,000 to 400,000	219972	87
	Brachionus calyciflorus; Rotifer;	NEONATE	24 H	LC ₅₀	> 4,000		219385	91

Table I-1
 AQUIRE Freshwater Toxicity Information (µg/L)
 Site 15

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication	
					Lethal	Sublethal			
	Brachydanio rerio; Zebra danio, zebrafish;	DECHLORIONATED EGG	24 H				72	219870	80
	Brachydanio rerio; Zebra danio, zebrafish;	EGG	48 H				72	219870	80
	Bufo arenarum; Toad;	EMBRYO	24 H	DVP *			1,000	213162	90
	Bufo arenarum; Toad;	EMBRYO	24 H	MOR *	1,000			213162	90
	Carassius auratus; Goldfish;	UNDERYEARLING	1 WK *	ENZ *			470	315460	77
	Ceriodaphnia reticulata; Water flea;	< 4 H	48 H	LC ₅₀	530			311181	84
	Daphnia magna; Water flea;	< 24 H	48 H	LC ₅₀	4,400			311181	84
	Daphnia pulex; Water flea;	< 24 H	48 H	LC ₅₀	5,100			311181	84
	Dugesia dorotocephala; Turbellarian, flatworm;	18-20 MM	1 H	BEH *		100 to 1,000		310581	91
	Dugesia tigrina; Turbellarian, flatworm;	NR	96 H	LC ₅₀	160,000			218709	74
	Hyatella azteca; Scud;	NR	5 D	LC ₁₀₀	5,000			219804	80
	Lemna minor; Duckweed;	20 COLONIES OR 40 FRONDS	4 D	EC ₅₀ GR		8,000		311789	86
	Lepomis gibbosus; Pumpkinseed;	> 1.75 YR	<=2 WK *	ENZ *			90	315460	77
	Micropterus dolomieu; Smallmouth bass;	EGG	96 H	MOR *	<=15,900			312153	86
	Micropterus dolomieu; Smallmouth bass;	FINGERLING	10 WK	LOC *			405	312153	86
	Micropterus dolomieu; Smallmouth bass;	FINGERLING	90 D	GRO *			405	312153	86
	Micropterus dolomieu; Smallmouth bass;	FINGERLING	90 D	HEM *			405	312153	86
	Micropterus dolomieu; Smallmouth bass;	FINGERLING	96 H	LC ₅₀	29,000			312153	86
	Micropterus dolomieu; Smallmouth bass;	SAC FRY, 7 D POST-SPAWN	96 H	MOR *	<=15,900			312153	86
	Micropterus dolomieu; Smallmouth bass;	SWM-UP FRY, 17 D POST-SPAWN	96 H	LC ₅₀	2,800			312153	86
	Micropterus dolomieu; Smallmouth bass;	SWM-UP, FRY 17 D POST-SPAWN	96 H	LC ₅₀	2,200			312153	86
	Micropterus salmoides; Largemouth bass;	NR	24 H	BEH *		1,500		311127	78
	Micropterus salmoides; Largemouth bass;	NR	24 H	RES *		1,050		311127	78
	Myriophyllum spicatum; Water-milfoil;	4 CM APEX	32 D	EC ₅₀ BM *		363,000		212262	74
	Myriophyllum spicatum; Water-milfoil;	4 CM APEX	32 D	EC ₅₀ BM *		808,000		212262	74
	Myriophyllum spicatum; Water-milfoil;	4 CM APEX	32 D	EC ₅₀ GR		725,000		212262	74
	Myriophyllum spicatum; Water-milfoil;	4 CM APEX	32 D	EC ₅₀ GR		767,000		212262	74
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	10 5 G	32 WK	HIS *				310573	83
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	15 G	24 H	HEM *		130		315719	78
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	4 MO, 15 G	4 to 72 H	MOR *	110			315719	78
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	4 MO, 15 G	4 to 72 H	MOR *	120			315719	78
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	4 MO, 15 G	4 to 72 H	MOR *	120			315719	78
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	4 MO, 15 G	4 to 72 H	MOR *	210			315719	78
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	4 MO, 15 G	4 to 72 H	MOR *	300			315719	78
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	4 MO, 15 G	4 to 72 H	MOR *	470			315719	78
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	4 MO, 15 G	4 to 72 H	MOR *	490			315719	78
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	4 MO, 15 G	4 to 72 H	MOR *	500			315719	78
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	4 MO, 15 G	4 to 72 H	MOR *	52			315719	78
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	4 MO, 15 G	4 to 72 H	MOR *	53			315719	78
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	4 MO, 15 G	4 to 72 H	MOR *	740			315719	78
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	4 MO, 15 G	4 to 72 H	MOR *	80			315719	78
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	4 MO, 15 G	4 to 72 H	MOR *	85			315719	78
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	4 MO, 15 G	4 to 72 H	MOR *	900			315719	78
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	4 MO, 15 G	4 to 72 H	MOR *	910			315719	78
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	53 G	1 WK	MOR *	1,000			315719	78
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	6-18 MO	<=2 WK *	ENZ *		10		315460	77
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	6 5 G	30 WK	HIS *		120		310573	83
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	NEWLY HAT, SAC FRY	189 D	ABN *		32		219830	80
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	NEWLY HAT, SAC FRY	189 D	ENZ *		100		219830	80
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	NEWLY HAT, SAC FRY	189 D	HEM *		100		219830	80

Lead (cont.)

Table
AQUIRE Freshwater Toxicity Information (µg/L)
Site

Remedial Investigation
NAS Whiting Field
Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
	Pimephales promelas; Fathead minnow;	JUVENILE	4 WK	PHY		500 to 1,000	210204	89
	Polamogeton crispus; Curled pondweed;	NR	NR	PSE *		25,000	217552	77
	Salvelinus fontinalis; Brook trout;	6-18 MO	<=2 WK *	ENZ *		90	315460	77
	Simocephalus vetulus; Water flea;	< 24 H	48 H	LC ₅₀	4,500		311181	84
Manganese	Algae; Algae, phytoplankton, algal mat;	NATURAL COLONY	38 D	POP *		280	212862	69
	Anabolia nervosa; Quiver fly;	LARVAE	7 D	LET	2,000,000		210725	57
	Chironomus thummi; Midge;	LARVAE	7 D	LET	1,000,000		210725	57
	Cyprinidae; Minnow, carp family;	1 SUMMER	2.25 H	LET *	1,000,000		210725	57
	Cyprinidae; Minnow, carp family;	1 SUMMER	24 H	LET *	2,000,000		210725	57
	Cyprinidae; Minnow, carp family;	1 SUMMER	25 H	LET *	1,800,000		210725	57
	Cyprinidae; Minnow, carp family;	1 SUMMER	4 17 D	LET *	800,000		210725	57
	Cyprinidae; Minnow, carp family;	1 SUMMER	5 13 D	LET *	700,000		210725	57
	Cyprinidae; Minnow, carp family;	1 SUMMER	6 63 D	LET *	650,000		210725	57
	Cyprinidae; Minnow, carp family;	1 SUMMER	7 D	MOR *	600,000		210725	57
Manganese (cont.)	Cyprinidae; Minnow, carp family;	1 SUMMER	78 H	LET *	900,000		210725	57
	Cyprinidae; Minnow, carp family;	2 SUMMERS	48 H	LET *	2,000,000		210725	57
	Gammarus roeseli; Scud;	NR	7 D	LET	70,000		210725	57
	Lemna minor; Duckweed;	20 COLONIES OR 40 FRONDS	4 D	EC ₅₀ GR		31,000	311789	86
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	1 SUMMER	10 H	LET *	700,000		210725	57
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	1 SUMMER	13 H	LET *	600,000		210725	57
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	1 SUMMER	34 H	LET *	300,000		210725	57
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	1 SUMMER	5 D	LET *	100,000		210725	57
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	1 SUMMER	7 D	MOR *	75,000		210725	57
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	1 SUMMER	77 H	LET *	150,000		210725	57
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	2 SUMMERS	34 H	LET *	600,000		210725	57
	Salvelinus fontinalis; Brook trout;	1 SUMMER	15 H	LET *	700,000		210725	57
	Salvelinus fontinalis; Brook trout;	1 SUMMER	23 H	LET *	600,000		210725	57
	Salvelinus fontinalis; Brook trout;	1 SUMMER	4.79 D	LET *	150,000		210725	57
	Salvelinus fontinalis; Brook trout;	1 SUMMER	66 H	LET *	300,000		210725	57
	Salvelinus fontinalis; Brook trout;	1 SUMMER	7 D	MOR *	100,000		210725	57
	Salvelinus fontinalis; Brook trout;	2 SUMMERS	41 H	LET *	600,000		210725	57
	Tinca tinca; Tench;	1 SUMMER	48 H	LET *	2,000,000		210725	57
	Tinca tinca; Tench;	1 SUMMER	6.75 D	LET *	1,500,000		210725	57
	Tinca tinca; Tench;	1 SUMMER	7 D	MOR *	1,200,000		210725	57
	Tinca tinca; Tench;	1 SUMMER	7 D	MOR *	1,300,000		210725	57
	Tinca tinca; Tench;	1 SUMMER	96 H	LET *	1,800,000		210725	57
	Tinca tinca; Tench;	2 SUMMERS	7 D	LET *	2,000,000		210725	57
	Tubifex tubifex; Tubificid worm;	NR	7 D	LET	700,000		210725	57
Mercury	Aedes aegypti; Mosquito	LARVAE	48 H	LC ₅₀	290		313255	88
	Algae; Algae, phytoplankton, algal mat	PHYTOPLANKTON	14 D	BMS *		100	313109	88
	Amoeba sp; Amoeba	NR	>1.66 H	LT ₅₀	500		218981	73
	Anabolia nervosa; Quiver fly	LARVAE	7 D	LET	2,000		210725	57
	Brachionus calyciflorus; Rotifer	NEONATE	24 H	LC ₅₀	60		219385	91
	Carassius auratus; Goldfish	20-25 G	to 15 D	BIO *		50	219207	72
	Carassius auratus; Goldfish	NR	8 D	RSD *		230	219568	71
	Carassius auratus; Goldfish	15-25 G	to 15 D	BIO *		50	219207	72
	Caridina rajadhari; Freshwater prawn	NR	48 H	LC ₅₀	6.918		311025	85
	Caridina rajadhari; Freshwater prawn	NR	72 H	LC ₅₀	5.784		311025	85

Table I-1
 AQUIRE Freshwater Toxicity Information (µg/L)
 Site 15

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
Mercury (cont.)	Caridina rajadhari; Freshwater prawn	NR	24 H	LC ₅₀	9.12		311025	85
	Caridina rajadhari; Freshwater prawn	STAGE C. 2.5 CM	30 D	HIS * (Calc)		0.51	311025	85
	Caridina rajadhari; Freshwater prawn	NR	96 H	LC ₅₀	4.786		311025	85
	Catostomus commersoni; White sucker	JUVENILE, 142 MM, 28.7 G	1 WK	RSD		190	312412	87
	Chironomus plumosus; Midge	LARVA-STATE L3	24 H	LC ₅₀	2,430		215356	89
	Chironomus plumosus; Midge	LARVA-STATE L3	72 H	LC ₅₀	1,360		215356	89
	Chironomus plumosus; Midge	LARVA-STATE L3	48 H	LC ₅₀	1,760		215356	89
	Chironomus plumosus; Midge	LARVA-STATE L4	48 H	LC ₅₀	1,280		215356	89
	Chironomus plumosus; Midge	LARVA-STATE L4	96 H	LC ₅₀	880		215356	89
	Chironomus plumosus; Midge	LARVA-STATE L3	96 H	LC ₅₀	600		215356	89
	Chironomus plumosus; Midge	LARVA-STATE L4	24 H	LC ₅₀	3,230		215356	89
	Chironomus plumosus; Midge	LARVA-STATE L4	72 H	LC ₅₀	880		215356	89
	Chironomus plumosus; Midge	LARVA-STATE L1	24 H	LC ₅₀	3,180		215356	89
	Chironomus riparius; Midge	LARVA-STATE L3	72 H	LC ₅₀	230		215356	89
	Chironomus riparius; Midge	LARVA-STATE L2	72 H	LC ₅₀	260		215356	89
	Chironomus riparius; Midge	LARVA-STATE L2	48 H	LC ₅₀	820		215356	89
	Chironomus riparius; Midge	LARVA-STATE L4	48 H	LC ₅₀	790		215356	89
	Chironomus riparius; Midge	LARVA-STATE L2	24 H	LC ₅₀	1,960		215356	89
	Chironomus riparius; Midge	LARVA-STATE L3	96 H	LC ₅₀	230		215356	89
	Chironomus riparius; Midge	LARVA-STATE L1	24 H	LC ₅₀	1,690		215356	89
	Chironomus riparius; Midge	LARVA-STATE L3	48 H	LC ₅₀	240		215356	89
	Chironomus riparius; Midge	EGGS	<=24 H	MOR *	10,000		215356	89
	Chironomus riparius; Midge	LARVA-STATE L2	96 H	LC ₅₀	220		215356	89
	Chironomus riparius; Midge	EGGS	7 to 96 H	MOR *	320		215356	89
	Chironomus riparius; Midge	LARVA-STATE L4	24 H	LC ₅₀	4,800		215356	89
	Chironomus riparius; Midge	EGGS	<=24 H	MOR *	3,200		215356	89
	Chironomus riparius; Midge	LARVA-STATE L3	24 H	LC ₅₀	750		215356	89
	Chironomus riparius; Midge	LARVA-STATE L4	96 H	LC ₅₀	480		215356	89
	Chironomus riparius; Midge	LARVA-STATE L4	72 H	LC ₅₀	710		215356	89
	Chironomus riparius; Midge	EGGS	7 to 96 H	MOR *	320		215356	89
	Chironomus tentans; Midge	LARVA-STATE L1	24 H	LC ₅₀	2,280		215356	89
	Chironomus tentans; Midge	LARVA-STATE L3	96 H	LC ₅₀	280		215356	89
	Chironomus tentans; Midge	LARVA-STATE L3	48 H	LC ₅₀	6,700		215356	89
	Chironomus tentans; Midge	LARVA-STATE L2	48 H	LC ₅₀	8,040		215356	89
	Chironomus tentans; Midge	LARVA-STATE L2	24 H	LC ₅₀	23,400		215356	89
	Chironomus tentans; Midge	LARVA-STATE L4	72 H	LC ₅₀	3,040		215356	89
	Chironomus tentans; Midge	LARVA-STATE L3	24 H	LC ₅₀	29,800		215356	89
	Chironomus tentans; Midge	LARVA-STATE L4	24 H	LC ₅₀	32,300		215356	89
	Chironomus tentans; Midge	LARVA-STATE L2	96 H	LC ₅₀	240		215356	89
	Chironomus tentans; Midge	LARVA-STATE L4	96 H	LC ₅₀	570		215356	89
	Chironomus tentans; Midge	LARVA-STATE L3	72 H	LC ₅₀	580		215356	89
	Chironomus tentans; Midge	LARVA-STATE L4	48 H	LC ₅₀	6,860		215356	89
Chironomus tentans; Midge	LARVA-STATE L2	72 H	LC ₅₀	570		215356	89	
Chironomus thummi; Midge	LARVAE	7 D	LET	3,500		210725	57	
Cyclops sp; Cyclopoid copepod	ADULT	48 H	LC ₅₀	600		313255	88	
Cyprinidae; Minnow, carp family	1 SUMMER	7 D	MOR *	300		210725	57	
Cyprinidae; Minnow, carp family	1 SUMMER	7 D	MOR *	700		210725	57	
Cyprinidae; Minnow, carp family	1 SUMMER	60 H	LET *	1,000		210725	57	
Cyprinidae; Minnow, carp family	1 SUMMER	8.5 H	LET *	5,000		210725	57	
Cyprinidae; Minnow, carp family	1 SUMMER	24.25 H	LET *	1,500		210725	57	

Tab
 AQUIRE Freshwater Toxicity Information (µg/L)
 Site 15

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
	Cyprinidae; Minnow, carp family	1 SUMMER	84 H	LET *	800		210725	57
	Cyprinidae; Minnow, carp family	1 SUMMER	2.5 H	LET *	75,000		210725	57
	Cyprinidae; Minnow, carp family	1 SUMMER	7 D	MOR *	290		210725	57
	Cyprinidae; Minnow, carp family	1 SUMMER	4.5 H	LET *	50,000		210725	57
	Cyprinidae; Minnow, carp family	1 SUMMER	7 D	MOR *	500		210725	57
	Cyprinidae; Minnow, carp family	2 SUMMERS	58 H	LET *	4,500		210725	57
	Cyprinidae; Minnow, carp family	1 SUMMER	1.25 H	LET *	100,000		210725	57
	Dugesia tigrina; Turbellarian, flatworm	NR	96 H	LC ₅₀	270		218709	74
	Gambusia affinis; Mosquitofish	NR	<24 H	LT ₅₀	50 to 500		315524	79
	Gambusia affinis; Mosquitofish	NR	30 D	BCF *		1	315524	79
	Gambusia affinis; Mosquitofish	NR	30 D	BCF *		1	315524	79
	Gambusia affinis; Mosquitofish	NR	30 D	BCF *		1	315524	79
	Gammarus roeseli; Scud	NR	7 D	LET	100		210725	57
Mercury (cont.)	Gnathonemus petersii; Electric fish	JUVENILE, 5-20 G	20 H	PHY *		100	310685	84
	Lamellidens marginalis; Mussel	5 0-6 0 CM	1 to 30 D	OC		500 to 2,000	213776	91
	Lamellidens marginalis; Mussel	5 0-6 0 CM	96 H	LC ₅₀	5,000		213776	91
	Lamellidens marginalis; Mussel	NR	96 H	LC ₅₀	10,000		213311	89
	Lamellidens marginalis; Mussel	5 0-6 0 CM	1 to 30 D	GRO		500 to 2,000	213776	91
	Lamellidens marginalis; Mussel	7 CM	3. to 6.5 H	PHY *		500 to 2,000	213311	89
	Lamellidens marginalis; Mussel	32 G	48 H	OC *		5,910	311622	84
	Myriophyllum spicatum; Water-milfoil	4 CM APEX	32 D	EC ₅₀ GR		1,200	212262	74
	Myriophyllum spicatum; Water-milfoil	4 CM APEX	32 D	EC ₅₀ BM *		3,400	212262	74
	Myriophyllum spicatum; Water-milfoil	4 CM APEX	32 D	EC ₅₀ GR		12,000	212262	74
	Myriophyllum spicatum; Water-milfoil	4 CM APEX	32 D	EC ₅₀ BM *		4,400	212262	74
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	1 SUMMER	11 H	LET *	500		210725	57
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	1 SUMMER	7 D	MOR *	150		210725	57
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	2 SUMMERS	24 H	LET *	500		210725	57
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	1 SUMMER	5.33 D	LET *	250		210725	57
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	5 8-15 6 CM, 1.7-52 5 G	2 to 209 D	RSD		48,200	210503	71
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	1 SUMMER	13.67 H	LET *	350		210725	57
	Oncorhynchus mykiss; Rainbow trout, donaldson trout	1 SUMMER	8.17 H	LET *	800		210725	57
	Planaria sp; Planarian, flatworm	NR	6.6 H	LT ₅₀	500		218981	73
	Potamogeton crispus; Curled pondweed	NR	NR	PSE *		5,000	217552	77
	Salvelinus fontinalis; Brook trout	1 SUMMER	7 D	MOR *	250		210725	57
	Salvelinus fontinalis; Brook trout	2 SUMMERS	88 H	LET *	500		210725	57
	Salvelinus fontinalis; Brook trout	1 SUMMER	21 H	LET *	350		210725	57
	Salvelinus fontinalis; Brook trout	1 SUMMER	18 H	LET *	500		210725	57
	Salvelinus fontinalis; Brook trout	1 SUMMER	4.25 D	LET *	300		210725	57
	Salvelinus fontinalis; Brook trout	1 SUMMER	16.33 H	LET *	800		210725	57
	Tilapia mossambica; Mozambique tilapia	7-10 CM, 6-10 G	1 WK	HEM *		4,000	212931	87
	Tilapia mossambica; Mozambique tilapia	7 0-11 8 CM	11 WK	BIO *		10	310166	84
	Tinca tinca; Tench	1 SUMMER	72 H	LET *	1,500		210725	57
	Tinca tinca; Tench	1 SUMMER	7 D	MOR *	1,000		210725	57
	Tinca tinca; Tench	1 SUMMER	7.17 D	LET *	1,100		210725	57
	Tinca tinca; Tench	1 SUMMER	12.58 H	LET *	5,000		210725	57
	Tinca tinca; Tench	1 SUMMER	4.5 H	LET *	50,000		210725	57
	Tinca tinca; Tench	1 SUMMER	4.25 D	LET *	1,300		210725	57
	Tinca tinca; Tench	2 SUMMERS	4.3 D	LET *	1,500		210725	57
	Tubifex tubifex; Tubificid worm	NR	7 D	LET	300		210725	57

Table I-1
 AQUIRE Freshwater Toxicity Information (µg/L)
 Site 15

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
Silver	Brachionus calyciflorus; Rotifer	NEONATE	24 H	LC ₅₀	7.5		219385	91
	Ceriodaphnia reticulata; Water flea	< 4 H	48 H	LC ₅₀	11		311181	84
	Daphnia pulex; Water flea	< 24 H	48 H	LC ₅₀	14		311181	84
	Simocephalus velulus; Water flea	< 24 H	48 H	LC ₅₀	15		311181	84
Vanadium oxide sulfate	Carassius auratus; Goldfish	3-5 CM, 0.3-2.9 G	6 D	LC ₅₀	1,020		228999	79
	Lepomis macrochirus; Bluegill	NR	96 H	LC ₅₀	6,000		287133	60
	Pimephastes promelas; Fathead minnow	NR	96 H	LC ₅₀	4,800		287131	60
	Poecilia reticulata; Guppy	1.5-2.5 CM, 0.1-0.5 G	6 D	LC ₅₀	128		229000	79
Zinc	Algae; Algae, phytoplankton, algal mat;	CLADOCERA, COPEPODA, ROTIFERA	2 WK	CLR *		15 to 30	311256	83
	Algae; Algae, phytoplankton, algal mat;	EXPO GRO PHASE	24 H	PSE		<=98100	213095	89
Zinc (cont.)	Asellus communis; Aquatic sowbug;	NR	20 D	RSD *		0.11 to 0.12	312027	86
	Brachionus calyciflorus; Rotifer;	NEONATE	24 H	LC ₅₀	1,300		219385	91
	Canthocamptus sp.; Copepod;	LARVAE	24 H	LET	1,250		311797	85
	Carassius auratus; Goldfish;	20-25 G	to 15 D	BIO *		500	219207	72
	Calostomus commersoni; White sucker;	JUVENILE, 142 MM, 28.7 G	1 WK	RSD		890	312412	87
	Ceriodaphnia reticulata; Water flea;	< 4 H	48 H	LC ₅₀	76		311181	84
	Channa punctatus; Snake-head catfish;	2.4 G, 58 MM	24 H	ENZ *		56,000	315190	81
	Chironomidae; Midge family;	LARVAE	12 MO	POP		1,140	213176	88
	Chironomus riparius; Midge;	4TH INSTAR LARVAE	>10 D	RSD		50 to 100	212729	89
	Clarias lazera; Catfish;	IMMATURE, 12-15 G	2 to 96 H	BIO *		32,000	312716	87
	Clarias lazera; Catfish;	JUVENILE, 230 MM, 130 G	24 H	RSD *		15,000	312717	87
	Cyclops sp.; Cyclopoid copepod;	ADULT	48 H	LC ₅₀	3,310		313255	88
	Cypris subglobosa; Ostracod;	NR	12 H	LC ₅₀	47,780		312365	88
	Cypris subglobosa; Ostracod;	NR	24 H	LC ₅₀	50,620		312365	88
	Cypris subglobosa; Ostracod;	NR	48 H	LC ₅₀	34,990		312365	88
	Cypris subglobosa; Ostracod;	NR	96 H	LC ₅₀	8,352		312365	88
	Daphnia lumholzi; Water flea;	NR	12 H	LC ₅₀	10,740		312365	88
	Daphnia lumholzi; Water flea;	NR	24 H	LC ₅₀	6,704		312365	88
	Daphnia lumholzi; Water flea;	NR	48 H	LC ₅₀	2,290		312365	88
	Daphnia lumholzi; Water flea;	NR	96 H	LC ₅₀	437.5		312365	88
	Daphnia magna; Water flea;	24-48 HR, NEONATE	21 D	GRO *		150	213950	91
	Daphnia magna; Water flea;	24-48 HR, NEONATE	21 D	MOR	50 to 150		213950	91
	Daphnia magna; Water flea;	24-48 HR, NEONATE	21 D	REP *		150	213950	91
	Daphnia magna; Water flea;	< 24 H	48 H	LC ₅₀	68		311181	84
	Daphnia pulex; Water flea;	< 24 H	48 H	LC ₅₀	107		311181	84
	Dugesia dorotocephala; Turbellarian, flatworm;	18-20 MM	1 H	BEH *		1,000 to 10,000	310581	91
	Dugesia tigrina; Turbellarian, flatworm;	NR	96 H	LC ₅₀	7,400		218709	74
	Gambusia affinis; Mosquitofish;	MIXED SIZES	to 30 D	RSD		50	312897	88
	Gambusia affinis; Mosquitofish;	NR	48 H	LC ₅₀ ?	116		315578	78
	Gammarus lacustris; Scud;	NR	96 H	LC ₅₀	2,240		313058	88
	Gomphonema parvulum; Diatom;	MIXED SPECIES	to 28 D	ABD *		1,000	212397	84
	Hyphessobrycon serpa; Serpa tetra;	JUVENILE & OLDER FISH	14 D	RSD		66,000	212709	78
Invertebrates; Invertebrates;	CLADOCERA, COPEPODA, ROTIFERA	2 WK	POP *		17.1 to 89.6	311256	83	
Invertebrates; Invertebrates;	CLADOCERA, COPEPODA, ROTIFERA	2 WK	POP *		30 to 90	311256	83	
Lemna minor; Duckweed;	20 COLONIES OR 40 FRONDS	4 D	EC ₅₀ GR		10,000	311789	86	
Lepomis gibbosus; Pumpkinseed;	15-25 G	to 15 D	BIO *		500	219207	72	
Lepomis macrochirus; Bluegill;	NR	6 MO	MOR *	5,000		212143	73	
Limnodrilus sp; Sludge worm;	NR	14 D	RSD		1,000	311865	83	

Table 1
 AQUIRE Freshwater Toxicity Information (µg/L)
 Site

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		
	Lophopodella carteri; Bryozoa;	ANCENSTRULAE, 2-3 D	96 H	LC ₅₀	5,630		216703	80
	Macrobrachium hendersodayanus; Prawn;	NR	96 H	OC *		7,870	311545	84
	Myriophyllum spicatum; Water-milfoil;	4 CM APEX	32 D	EC ₅₀ BM *		21,600	212262	74
	Myriophyllum spicatum; Water-milfoil;	4 CM APEX	32 D	EC ₅₀ GR		20,900	212262	74
	Myriophyllum spicatum; Water-milfoil;	4 CM APEX	32 D	EC ₅₀ GR		21,600	212262	74
	Mystus vittatus; Catfish;	80-100 MM, 6-10 G	96 H	LC ₅₀ ?	209,000		315793	82
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	20-50 G	6 H	PHY *		2,000	311200	82
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	FINGERLING	12 D	RSD *		910 to 2,320	311689	86
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	JUVENILE	to 4 WK	BIO		44 to 140	310107	84
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	NR	48 H	LC ₅₀	2,600		310185	68
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	NR	48 H	LC ₅₀	2,800		218317	68
Zinc (cont)	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	NR	48 H	LC ₅₀	3,500		218317	68
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	SAC-FRY	42 D	GRO *		430	310527	83
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	SAC-FRY	42 D	MOR *	120		310527	83
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	SAC-FRY	42 D	MOR *	430		310527	83
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	SAC-FRY	42 D	MOR * (Calc)	220		310527	83
	Oncorhynchus mykiss; Rainbow trout, donaldson trout;	SAC-FRY	42 D	MOR * (Calc)	80		310527	83
	Osteichthyes; Bony fish class;	ADULT GUPPY, 20-30 MM	48 H	LC ₅₀	2,630		212882	88
	Osteichthyes; Bony fish class;	ADULT GUPPY, 20-30 MM	96 H	LC ₅₀	1,860		212882	88
	Osteichthyes; Bony fish class;	JUVENILE GUPPY, 8-15 MM	48 H	LC ₅₀	1,970		212882	88
	Osteichthyes; Bony fish class;	JUVENILE GUPPY, 8-15 MM	96 H	LC ₅₀	1,360		212882	88
	Pectinatella magnifica; Bryozoa;	ANCENSTRULAE, 2-3 D	96 H	LC ₅₀	4,310		216703	80
	Phaenopsectra sp; Chironomid;	MIXED SPECIES	to 28 D	ABD *		10,000	212397	84
	Pimephales promelas; Fathead minnow;	NEWLY HAT, < 24 H	7 D	GRO *		184	311182	85
	Pimephales promelas; Fathead minnow;	NEWLY HAT, < 24 H	7 D	GRO *		85	311182	85
	Pimephales promelas; Fathead minnow;	NEWLY HAT, < 24 H	7 D	LC ₅₀	238		311182	85
	Pimephales promelas; Fathead minnow;	NEWLY HAT, < 24 H	96 H	LC ₅₀	238		311182	85
	Pimephales promelas; Fathead minnow;	SUBADULT, 8-12 WK, <=250 MG	2 to 35 D	GRO *		600	210678	89
	Pimephales promelas; Fathead minnow;	SUBADULT, 8-12 WK, <=250 MG	96 H	LC ₅₀	2,540		210678	89
	Plumatella emarginata; Bryozoan;	ANCENSTRULAE, 2-3 D	96 H	LC ₅₀	5,300		216703	80
	Salmo trutta; Brown trout;	NR	2 to 40 D	RSD		366 to 832	311216	85
	Tilapia sparrmanii; Banded bream;	12,13-81.77 G	2 to 72 H	OC *		98,000	213066	89
	Tilapia zillii; Tilapia;	IMMATURE, 7-9 G	2 to 96 H	BIO *		22,000	312716	87
	Tubifex sp; Tubificid worm;	NR	14 D	RSD		1,000	311865	83

NOTES:

ABD = Abundance
 ABN = Abnormalities
 BCF = Bioconcentration factor
 BEH = Behavioral change
 BIO = Biochemical effect
 BM = Biomass
 BMS = Biomass
 C = Celsius
 CLR = Chlorophyll content
 CM = Centimeter
 D = Days
 EC₅₀ = Effect of concentration to 50% of the population
 EMS = Emergence?

G = Grams
 GR = Growth
 GRO = Growth
 H = Hours
 HAT = Hatchability
 HEM = Hematological effect
 HIS = Histological effect
 IM = Immobilization
 LC d50 = Lethal concentration to 50% of test organisms
 LET = Lethality
 LOC = Locomotor Behaviour
 LT d50 = Lethal threshold to 50% of test organisms
 MM = Millimeter

OC = Oxygen consumption
 PGR = Population growth
 PHY = Physiological effects
 POP = Population, species diversity
 PSE = Photosynthesis effect
 RE = Reproduction
 REP = Adverse effect to reproduction
 RES = Respiratory effects
 RN = Renewal
 RSD = Residue
 ST = Static
 STR = Stress
 THL = Thermal effect

Table 1-1
AQUIRE Freshwater Toxicity Information (µg/L)
Site 15

Remedial Investigation
 NAS Whiting Field
 Milton, Florida

Chemical Name	Species	Age	Exposure	Effect	Effect Concentration		AQUIRE Reference Number	Year of Publication
					Lethal	Sublethal		

ENZ = Enzyme effect
 F = Fahrenheit

MOR = Mortality
 NR = Not reported

VTE = Vertebral effect
 µg/L = Microgram per liter

APPENDIX J

NAVY RESPONSE TO COMMENTS

**Final Response to Review Comments
For Remedial Investigation Report
Site 15, Southwest Landfill**

Florida Department of Environmental Protection

1. As we have previously discussed for other sites at NAS Whiting Field, please insure that the soil, surface water and ground water are evaluated with respect to the soil, surface and ground water (Table 1 and Table 3b) values in Chapter 62-785, F.A.C. Please note that the evaluation for soil should be the lower of either the direct exposure or the leachability level, if ground water is indicated to be contaminated. Please modify the appropriate tables to reflect this change. Please reevaluate the existing COPC, risk evaluation, etc., as necessary to also reflect this change. Table G-1 should be corrected to reflect the screening concentrations for those contaminants that were detected in significant concentrations in the groundwater, for example, the screening value for total xylenes is 300 ug/kg, not 100 ug/kg. Note that Table G-3 lists incorrect Florida groundwater guidance concentrations for 1,2-dichloroethene, chlorobenzene, naphthalene, xylenes and cyanide. Some of the TCLs in the Department's former guidelines, 1994 Ground Water Guidance Concentrations, have been superseded by the values in Chapter 62-785, F.A.C. (Table 3b). Finally, the previous Soil Cleanup Goals Memoranda from Mr. John Ruddell and others should not be used since they have also been superseded by Chapter 62-785, F.A.C. The use of the TCLs from Chapter 62-785, F.A.C. will eliminate the errors such as those seen in copper, vanadium, and others presently noted in Tables 5-9 and 5-10. Finally, footnote 12 in Table 5-10 (page 5-44) is incorrect in that the 1998 FDEP document is not appended and my name in the references (page Ref-3) is misspelled.

Response: As recommended by the reviewer, all data will be compared against the criteria specified in Chapter 62-785, F.A.C. All relevant tables will be updated as necessary.

2. Please present a modified version of Figure 3-4 which shows the analytical values for significant contaminants in the site ground water such as benzene and TCE. If the ground water contaminant data are plotted as requested, there is the suggestion that some of the TCE contamination that is observed may originate from Site 15. The figure will also illustrate the areal distribution of contaminants at Site 15 and also the fact that TCE and petroleum compounds are found in the ground water between Site 15 and the base boundary. I suggest that this be included and discussed in Section 9.1, Conclusions. In addition, a statement should be added which relates the contaminants in the soil and ground water, including exceedances of leaching values from Chapter 62-785, F.A.C., if any are present. All of the previous suggestions will help make the final report more comprehensive and help link data from Site 15, which has significant ground water contamination, to the information that will be obtained in the basewide ground water study.

Response: As recommended by the reviewer, a modified version of Figure 3-4 will be presented showing significant contaminants in the site ground water. Discussion

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For Remedial Investigation Report
Site 15, Southwest Landfill**

of areal distribution of contaminants will be provided in section 9.1, as well as statements relating soil and ground water contamination.

3. Please provide a discussion for the use of the terms, "shallow," "intermediate" and "deep" when discussing monitoring wells. A summary table which explains the depth ranges for each type and which groups the various wells into those classifications would be good. A cross-section diagram similar to the one presently used for the Clear Creek area would also help the reader understand the situation, especially if the diagram can be related to the figure that was requested in comment 2.

Response: As recommended by the reviewer, discussion of use of terms "shallow," "intermediate," and "deep" will be provided when discussing monitoring wells. A summary table and cross-section diagram will also be provided.

4. I have concerns as to whether the characterization of the subsurface soil for Site 15 is adequate since only five samples were obtained and there was no testing to determine if the landfill is a continuing source of contamination to the ground water. If a cap is determined to be a potential remedy in the future, additional information regarding the groundwater levels and how they may interact with the base of the landfill will also be required in order to assess the adequacy of the cap. In this regard, a review of the Test Pit and CPT Logs data in Appendix C is quite informative, especially Test Pit 15-06, which notes the presence of "solvent cans with solvent." With respect to those CPT logs, there is much information to be obtained from it and I respectfully suggest that prior to preparing a focused feasibility study (which I think is not appropriate at this time), the author of that study should carefully review it.

Response: *Subsurface soil samples were collected per the scope and protocols presented in the approved workplan. Notes in the field log book state that at a depth of 12-13 feet bls. solvent cans were found in test pit TP-15-06. The logbook describes municipal and industrial (aircraft parts, motor cycle muffler, etc) waste as being found in the test pits. Although collection of additional samples may enable the Navy to better characterize the site, the presumptive remedy for the Site 15 landfill (e.g. land use restrictions) eliminates any future intrusive work at this site. With restrictions as part of any remedial alternative, additional data will not be necessary.*

5. Figure 6-6: please correct this figure, placing the FDEP acceptable level as 1E-06.

Response: Figure 6-6 will be revised as recommended.

**Final Response to Review Comments
For Remedial Investigation Report
Site 15, Southwest Landfill**

U.S. Environmental Protection Agency

GENERAL COMMENTS

1. In each of the statistical summary tables presented in the report, the mean of the detected concentrations is presented. Since any exceedances of the screening criteria should be based on the maximum detected concentrations, it is not clear why the mean of the detected concentrations are presented. This purpose of presenting the mean of the detected concentrations should be clarified.

Response: The mean of the detected concentrations is a byproduct of the statistical analysis for the risk assessment and has been included in the tables. The maximum detected concentration is also represented in the tables under the detected concentration range.

2. The Soil Cleanup Goals for Florida (FSCGs) Memorandum from John M. Ruddell, dated September 29, 1995 states in the first paragraph that "If there is groundwater contamination above Florida standards and minimum criteria or if there was a recent discharge, the leachability-based cleanup goals should also be considered using the applicable direct contact scenario (residential and industrial). The lowest of the two should be the final cleanup goal for the upper two feet of soil. For below two feet, the leachability based-goal should be applied if the parameters of concern are detected above the Florida criteria." It is not apparent that this procedure was followed in the screening process. This should be clarified. It should also be noted that the FSCGs usually only apply to the upper two feet of soil as stated in the Applicability of Soil Cleanup Goals for Florida from John M. Ruddell, dated January 19, 1996. However, the report uses these goals for comparison to subsurface soils collected from depths to 12 feet below ground surface. This apparent deviation from the procedures specified in the RSCGs should be addressed.

Response: As recommended by the reviewer, the leachability-based cleanup target levels will also be considered during the screening process, due to ground water contamination.

3. Surface soil samples were collected from 0 to 12 inches. However, Florida guidance (as referenced in the previous comment) suggests that surface soil is defined as the upper two feet of soil. The rationale for collecting samples from 0 to 12 inches should be provided.

Response: *At the time the surface soil samples were collected the EPA sample depth requirement was 0-1 foot bls which was adopted by the Whiting Field team.*

4. The statistical summary tables should identify the exceedances of the screening criteria

**Final Response to Review Comments
For Remedial Investigation Report
Site 15, Southwest Landfill**

by highlighting or bolding the analytes and/or the concentrations. In addition, figures should be provided to show the locations of the exceedances.

Response: As recommended by the reviewer, exceedances of the screening criteria will be bolded in the statistical summary tables. Figures will also be provided to show the locations of the exceedances.

5. Several errors were noted in the text of the report including changes in font and redundant page numbers (for an example, see Page 5-46). The report should be reviewed carefully by the Navy.

Response: Errors in the text of the report, including font changes and redundant page numbering will be corrected, as requested.

SPECIFIC COMMENTS

6. **Page 1-1, Fifth Paragraph.** The depth of the trenches and information on whether the waste is located beneath the water table should be provided, if known (note that the test pit and monitoring well logs do not provide this information). This information is relevant to the Feasibility Study and the selection of alternatives and/or the design of the selected alternative. If not presently known, this information should be determined.

Response: There is no documentation available on the depth of the trenches at Site 15. Based on the depth to the water table (approximately 16 to 90 feet bls) it is not anticipated that the trenches intersect the water table.

7. **Page 3-1, Eighth Paragraph.** Subsurface soil samples were collected in October 1992 and a soil gas survey for methane and total VOCs was conducted in September 1995. Figures 5-7 through 5-10 show the results of the screening at 1.5 feet and 3.0 feet below land surface. The following comments concern these soil gas survey results:

It is not clear why subsurface soil samples were not collected during Phase IIB in the area from soil gas survey locations 17, 6, 97 and 98 (see Figures 5-7 and 5-9) on the western part of the site, or sample location 20 (Figure 5-9) on the northern part of the site. This additional information would have been useful in attempting to identify the source and nature of the VOCs which were shown by the soil gas concentrations as being in excess of 5,000 ppm. Justification for not collecting these subsurface soil samples should be provided.

Groundwater samples collected downgradient of these elevated VOC areas (e.g., from WHF-15-1, WHF-15-6S, and WHF-15-6D) in 1996 and 1997 do not appear to

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substantiate the elevated VOC levels detected during the soil gas survey. Potential explanations for this anomaly should be provided.

Response: *Data presented on Figures 5-7 through 5-10 provide soil gas surveys as total organic vapor readings including methane. For most of the samples, methane contributed 100% to the reading. These results support a general absence of VOCs in monitoring wells CEF-15-1S, CEF-15-6S, and CEF-15-6D.*

8. **Page 3-5, Sixth Paragraph.** This paragraph does not continue logically to the next page of text (Page 3-7). It appears that a number of words are missing. This discrepancy should be corrected.

Response: The text in question will be revised to include the missing words.

9. **Page 5-2, Figure 5-1.** It is recommended that an additional downgradient geologic cross-section be constructed. For example, WHF-1466-6 to WHF-15-7 to WH-15-6 to WHF-15-8 would be a good selection for constructing the additional geologic cross-section.

Response: It appears that the existing cross-sections provide an adequate profile of the subsurface geology at Site 15. Therefore, additional cross-sections are not necessary.

10. **Pages 5-16 and 5-17, Table 5-3.** Monitoring wells WHF-15-8S, WHF-15-8I, WHF-15-8D, WHF-16-7S, WHF-16-7I, and WHF-16-7D should be added to this table to provide vertical hydraulic gradients between Sites 15 & 16 and Clear Creek. In particular, the gradient for WHF- 16-7 may indicate whether the groundwater was discharging to Clear Creek on the date(s) that the measurements were collected.

Response: From a hydrogeologic standpoint it is known that groundwater discharges to Clear Creek. Vertical gradients in Site 16 monitoring wells are not relevant to the Site 15 RI as they are cross-gradient from the site. Groundwater flow issues will be further addressed in the basewide groundwater investigation.

11. **Page 5-19, First Paragraph.** This paragraph presents seepage velocities for the shallow zone of the aquifer only. The seepage velocities for the intermediate and deep zones should also be discussed.

Response: Seepage velocities for other parts of the aquifer will be addressed in the basewide groundwater investigation.

12. **Page 5-20, Table 5-5.** The seepage velocities presented in this table only apply to the shallow zone of the sand and gravel aquifer. The seepage velocities for the intermediate and deep zones should also be presented in this table.

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Response: Seepage velocities for other parts of the aquifer will be addressed in the basewide groundwater investigation.

13. **Page 5-45, Second Paragraph.** This paragraph should be checked for accuracy (it appears that a sentence was repeated). In addition, a concentration of 1,7000 is listed. This should be corrected to 1,700, 17,000, or whatever is correct.

Response: As recommended, the repeated sentence will be removed and the concentration will be changed to 1,700.

14. **Page 5-51, Table 5-14.** It seems highly coincidental that the mean of the detected concentrations is the same as the background concentrations for mercury through zinc. These numbers should be confirmed.

Response: The values will be confirmed and modified if necessary.

15. **Page 5-53, Fifth Paragraph.** It is stated that the preferred groundwater data set is from the Phase IIB sampling event since low-flow sampling methodology was applied. This statement is acceptable. However, Table 5-20 and 5-21 only present the statistics from the second Phase IIB sampling event in 1997. It is not clear why the data from the first Phase IIB sampling event in 1996 was not included. This should be explained and, if appropriate, the 1996 data should be added to the data set. In addition, note that the reference to Tables 6-20 and 6-21 in this paragraph should be Tables 5-20 and 5-21.

Response: The 1996 data was not used in Tables 5-20 and 5-21 because the 1997 was the most current data set and represents the most current condition of groundwater quality. The 1996 data will be used as appropriate to discuss groundwater concentration trends and distribution. The reference to the tables will be changed as suggested.

16. **Page 5-79, Fourth Paragraph.** With respect to the filtered and non-filtered samples, this paragraph should also note that, in several instances, the filtered samples contained higher concentrations of the same analytes than non-filtered samples. In addition, the authors of the RI report should be aware that EPA Region 4 will not consider the use of filtered samples in any steps of the CERCLA decision making process, including risk assessment determinations.

Response: The text will be revised to include a discussion comparing filtered and unfiltered data. Only unfiltered data was used in the RI including the risk assessment.

17. **Page 5-74, Table 5-20.** The reporting limit ranges for several analytes exceeded the screening criteria including 1,1-dichloroethene, 1,2-dichloroethane, benzene, trichloroethene, naphthalene, and bis-(2-ethylhexyl)phthalate. This should be noted in

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the text of the report.

Response: It will be noted in the text that the reporting limit ranges for the above analytes exceeded the screening criteria.

18. **Page 5-76, Table 5-21.** The reporting limit range for antimony exceeded the screening criteria. This should be noted in the text of the report.

Response: It will be noted in the text that the reporting limit range for antimony exceeded the screening criteria.

19. **Page 8-12, Sixth Paragraph.** It is noted in this paragraph that subsurface soil is discussed with respect to fate and transport. However, this discussion is missing from this section. A discussion of the fate and transport of contaminants in the subsurface soil should be added.

Response: The subsurface soil fate and transport section will be added to this section.

20. **Page 8-13, Second Paragraph.** This paragraph (regarding surface soil) states that the metals in the soil are not likely to be mobile since metal analytes readily adsorb to, or are natural constituents of, clays and other minerals. While the statement may be true, it is not apparent that it is highly applicable to the conditions at Site 15. The test pits and monitoring well logs show that the surface soil is predominantly sand. This paragraph should be modified or removed from the report.

Response: The paragraph will be removed from the report.

21. **Page 8-13, Third Paragraph.** In addition to surface water contamination via runoff from contaminated surface soil, the potential for the contamination of Clear Creek via groundwater discharge should be discussed.

Response: The potential for groundwater discharge to Clear Creek will be included in this paragraph.

22. **Page 8-13, Seventh Paragraph.** According to this paragraph, contaminated sediment transport to Clear Creek is not believed possible. It should be stated that this hypothesis will be evaluated during the Site 39, Clear Creek Flood Plain investigation. Additionally, the surface transport of contaminated sediment to the ditch along the southern end of the site, and potential ecological exposure, should be discussed.

Response: Text will be included to identify that sediment transport to Clear Creek will be addressed during the Clear Creek Flood Plain investigation. Transport of sediment to the ditch at the southern end of the site will be included in the report.

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23. **Page 8-14, First Paragraph.** The last sentence states that Clear Creek is located 1500 feet southwest of the site. This is inconsistent with other statements in the report which specify the distance as 1200 feet (e.g., Page vi, Bullet 6). This discrepancy should be corrected.

Response: The last sentence has been changed to state that Clear Creek is located 1200 feet southwest of the site.

24. **Page 8-14, Fifth Paragraph.** In the second sentence, it is stated that a seepage velocity of 139 feet/year was calculated for the surficial aquifer from eight monitoring wells at Site 15. This sentence should be clarified since:

- the identification of discrete aquifers (“surficial aquifer” implies that there are deeper aquifers) has not been made in the report, and
- the seepage velocity was calculated from four monitoring wells at Site 15 and four monitoring wells at Site 16.

Additionally, the seepage velocity of 139 feet/year was calculated based on data from shallow monitoring wells and does not represent the seepage velocity of the deeper aquifer zones. Information on the seepage velocities in the deeper aquifer zones should be added. Also, it should be noted that WHF-15-2I and WHF-15-3I had significantly higher hydraulic conductivities (see Page 5-18, Table 5-4) than the shallow wells at Site 15.

It is not clear why the last sentence contains the phrase “50-year time frame”. The distance of 4,587 feet for potential contaminant migration is calculated based on the seepage velocity of 139 feet/year and a 33-year time frame. To avoid confusion, the “50-year time frame” should be removed. Furthermore, the calculation of the distance of potential contaminant migration should be based on the “worst-case scenario” using the maximum seepage velocity from the shallow, intermediate, and deep zones.

Response: Seepage velocities in deeper zones of the aquifer will be addressed in the basewide groundwater investigation. The “50-year time frame” phrase will be removed from the text.

25. **Page 8-14, Seventh Paragraph.** It should be clarified whether additional sediment and surface water samples will be collected from Clear Creek in the RI for Site 39, Clear Creek Flood Plain, to evaluate the potential impacts of Site 15.

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Response: Text will be added to indicate that additional surface water and sediment samples will be collected during the RI for Site 39 to evaluate potential impacts of the IR sites on Clear Creek.

26. **Page 9-1, First Paragraph.** The second bullet refers to "total organic carbon" which is not relevant with respect to the soil gas survey. "Total organic carbon" should be replaced with "total VOCs".

The fifth bullet incorrectly states that the detected concentrations of arsenic in surface soil did not exceed the FDEP-approved site-specific non-residential goal of 4.2 ug/l (note that ug/l is not the correct units for soil samples). Table 5-10 on page 5-43 shows that arsenic concentrations ranged from 0.75 mg/kg to 6.8 mg/kg. In addition, the FDEP-approved site specific non-residential goal is shown as 4.62 mg/kg in Table 5-10 and not 4.2 ug/l as stated in this paragraph. These discrepancies should be corrected.

The first sentence of the sixth bullet should refer to "subsurface soil" samples and not "surface soil" samples. In addition, it is stated that the concentration of Arochlor-1242 exceeded the Florida industrial-use soil cleanup goal. However, the detected concentration was 2,200 ug/kg and the Florida industrial-use soil cleanup goal is 3,500 ug/kg (see Page 5-49, Table 5-13). The Region III RBC (industrial) was exceeded, as stated. These discrepancies should be corrected.

Response: The reference to "total organic carbon" in the second bullet will be replaced with "total VOCs."

The fifth bullet will be changed to include arsenic's correct FDEP-approved site-specific target level of 4.62 mg/kg. Text stating that arsenic did exceed the site-specific non-residential target level will be added.

The sixth bullet will be changed to refer to "subsurface soil." Arochlor-1242 has exceeded the Florida SCTL for leachability instead of the industrial value and will be changed accordingly.

Site 15 Human Health and Ecological Risk Review Comments:

GENERAL COMMENTS

27. The results of investigations conducted at Site 15 are presented in Section 5 (Investigative Results section) of the document. Throughout the chapter, the analytical results and the various screening criteria are presented in table form for each media evaluated. Generally, it appears that USEPA Region III Risk-Based Concentrations (RBCs) are not adjusted by 0.1 for noncarcinogenic constituents. However, this does not

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seem to be consistent throughout the section. For example, it appears that the values have been adjusted on Table 5-14. The RBCs have been appropriately adjusted during screening in the risk assessment section of the document. Therefore, it is acceptable for the values to remain unadjusted in the Investigative Results section since they are presented for informational purposes only. However, the information that is presented should be consistent. Section 5 of the document should be reviewed and corrected accordingly.

Response: Section 5 tables will be revised to be consistent in the presentation of USEPA Region III Risk-Based Concentrations.

SPECIFIC COMMENTS

28. **Section 5.5, Page 5-45.** The section presents a discussion of the surface soil analytical results for Site 15. The text states that dibutylphthalate was detected in six samples at concentrations ranging from 730 to 1,100 ug/kg. This is inconsistent with the information presented on Table 5-9. According to the table, the range of dibutylphthalate concentrations is 560 to 1,100 ug/kg. The discrepancy between the text and table should be corrected.

Response: The range of dibutylphthalate will be changed to 560 to 1,100 ug/kg as shown in Table 5-9.

29. **Table 6-8.** The table presents a summary of the risks calculated for receptors identified under future land use. According to Table 6-8, the hazard indices calculated for ingestion of groundwater for the adult and child are three and seven, respectively. However, this is inconsistent with the values presented in Tables G-24 and G-25. These tables indicate that adult and child hazard indices are four and eight, respectively. The discrepancy should be corrected.

Response: Table 6-8 has been reviewed and the hazard indices for ingestion of groundwater for the adult and child will be changed, according to Tables G-24 and G-25, to four and eight, respectively.

30. **Section 6.8, Page 6-34.** It is stated in the text that the human health contaminants of potential concern (HHCPs) detected in subsurface soil do not pose unacceptable carcinogenic risk to the receptors evaluated. However, no subsurface HHCP were identified at Site 15. The text of this section and the Executive Summary should be amended in order to avoid unnecessary confusion.

Response: The text will be revised to indicate that no HHCPs were identified for subsurface soil.

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31. **Figure 7-2, Page 7-6.** Figure 7-2 shows the contaminant pathway model for Site 15 ecological receptors. Shading of the boxes indicates exposure pathways that are quantitatively evaluated for receptors in Site 15. Nonshaded boxes indicate insignificant exposure pathways. The soil-to-food-to-ingestion pathway for terrestrial invertebrates is not shaded meaning it is not considered to be a significant exposure pathway. This is somewhat misleading because the soil-to-food-to-ingestion pathway is a significant route of exposure. However, since the majority of food for terrestrial invertebrates comes from soil, exposure via soil ingestion and food ingestion can be lumped into one exposure route. Soil ingestion and food ingestion should both be shaded and a note should be provided about them being essentially one pathway and that they will be analyzed as such.

Response: The box for terrestrial invertebrate soil-to-food-to-ingestion pathway will be shaded in Figure 7-2. The following footnote will be added to the table; The ingestion exposure routes for terrestrial invertebrates include the ingestion of soil and food items containing chemicals accumulated from Site 15 surface soil.

32. **Section 7.2.3, Pages 7-7 and 7-8.** This section presents the hypotheses developed to gauge risks associated with exposure to surface soil. Hypothesis number 4 on page 7-8 discusses ECPC in groundwater. The first sentence of the fifth paragraph on page 7-7 should be changed to, "Four hypotheses were developed to gauge potential risks associated with exposure to Site 15 surface soil *and groundwater*."

Response: The second paragraph in Section 7.2.3 will be replaced with the following:
"Four questions were developed to gauge potential risks associated with exposure to Site 15 surface soil and groundwater. These questions are designed for multiple species and trophic levels and represent both individual and community dynamics. Questions for the Site 15 ERA include the following:"

33. **Table 7-1, Page 7-8.** Table 7-1 shows the endpoints selected for the ecological risk assessment. In Section 7.2.3, the assessment endpoints are defined as representing the ecological component to be protected. However, in Table 7-1 the assessment endpoints for terrestrial plants and terrestrial invertebrates are stated as being a reduction in the biomass of terrestrial plants used as forage material and a reduction in the abundance of earthworms used as forage material, respectively. Reductions in forage material are not ecological components to be protected. The assessment endpoints in Table 7-1 are not consistent with the definition of an assessment endpoint provided in section 7.2.3. This inconsistency should be corrected.

Response: The receptors for the first two assessment endpoints in Table 7-1 will be changed from terrestrial plants and invertebrates to wildlife species. Therefore, a reduction in forage material is an ecological component to be protected, as a reduction in

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forage material would have a direct effect on the receptors of concern (i.e. wildlife species).

34. **Table 7-2, Page 7-13.** Table 7-2 provides information on the selection of ECPCs such as detected concentrations and screening values. It is reported in Table 7-2 that the ecological screening value for zinc is not available. However, when referencing Beyer (1990), a screening value of 200 mg/kg was found. This value should be use in Table 7-2.

Response: The screening value of 200 mg/kg will be added to Table 7-2, and the ERA will be revised accordingly.

35. **Section 7.4.1, Page 7-18.** The second paragraph on page 7-18 involves groundwater EPCs. It is explained that a 10-fold attenuation factor is applied to the RME concentration in order to derive a realistic exposure concentration for groundwater constituents in the surface water of Clear Creek. It is unclear as to how the "10-fold attenuation factor" was derived. This needs to be clarified.

Response: The 10-fold attenuation factor is a conservative estimate of the attenuation that occurs between groundwater and surface water exposure.

36. **Section 7.4.2, Page 7-18.** Several sections in chapter 7 (e.g. Section 7.4.2 and Section 7.3) refer the reader to information in the General Information Report (GIR) prepared by ABB-ES in 1998. Information such as PDE calculation methodologies and background investigation data are only available in the GIR and are not provided in this report. It would be helpful for pertinent information to be provided in an appendix to this report.

Response: The background data are provided in the NAS Whiting Field GIR and will not be added to the RI report. The GIR was created to reduce the presentation of redundant information in the RI reports and contains a large amount of technical information that would be unwieldy to append to each RI report.

37. **Table 7-4, Page 7-19.** This table provides the equations used to calculate the potential dietary exposures for wildlife receptors. The variable "TN" is given three different definitions in Table 7-3. They are as follows, 1) the tissue concentration in food item N, 2) the secondary prey item concentration, and 3) the primary prey item concentration. Clarification (e.g., T_p for primary prey item tissue concentration and T_s for secondary prey item tissue concentration) in Table 7-3 would be beneficial.

Response: The variable T_N will be modified so that T_{N1} refers to the tissue concentration of the primary prey item, T_{N2} refers to the tissue concentration of the secondary prey item, and T_N refers to the tissue concentration of either the primary or secondary prey item.

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The rationale provided in the ERA for not calculating bird tissue concentrations is the lack of avian bioaccumulation factors (BAFs). Since contaminant concentrations in birds as a secondary prey items were not calculated, it should be stated in section 7.4 how PDEs for the red fox and red-tailed hawk were calculated without the avian BAFs.

Response: The text in section will not be revised however an uncertainty will be added in Section 7.7 to address this issue. The following uncertainty will be added to section 7.7. The PDEs for the red fox and red-tailed hawk assume no exposure from small birds as prey items due to a lack of avian BAFs. Birds make-up a small portion of the red fox and red-tailed hawk diet, and for this evaluation it is assumed that small birds would not provide a source of contaminant exposure. In addition, the risks predicted (i.e. the HQs and HIs) for the red fox and red-tailed hawk were so low that it is unlikely that including avian BAFs (if they were available) would alter the findings of the ERA.

38. **Section 7.4.2, Pages 7-18 and 7-20.** The second bullet in Section 7.4.2 provides a discussion of the short-tailed shrew as a wildlife receptor. The home range of the short-tailed shrew is not provided in this discussion although the home ranges for other ecological receptors are provided in this section. The home range of the short-tailed shrew should be provided in the first bullet.

The second bullet on page 7-20 provides a discussion of the red-tailed hawk as a wildlife receptor. The home range of the red-tailed hawk is not provided in this discussion, although the home ranges for other ecological receptors are provided in this section. The home range of the red-tailed hawk should be provided in the fourth bullet.

Response: The home range for the short-tailed shrew will be included as suggested. The first sentence in this paragraph will be revised as follows; "... , and brush, and has a home range of approximately 1 acre".

The home range for the red-tailed hawk will be included as suggested. The first sentence of this paragraph will be revised as follows; "... on small mammals, and has a home range of approximately 800 acres".

39. **Table 7-6, Page 7-21.** This table describes the exposure parameters for representative wildlife species used as receptors in this remedial investigation. Many of the parameters are cited from the *Wildlife Exposure Factors Handbook* (USEPA, 1993); however, it is not consistently stated whether an average of the exposure parameter is calculated or if a certain study was selected. For example, it is not explained in Table 7-5 how the values in the column titled, "Assumed Diet for Terrestrial Exposure Assessment (% of diet)," were derived. The dietary composition data for the deer mouse (surrogate for the cotton mouse) provided in the handbook are seasonal percentages with invertebrates comprising as much as 63% of the deer mouse's diet, but Table 7-6 states that invertebrates make up

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10% of the deer mouse's diet. It should be clarified in Table 7-6 how the values in the dietary composition column were derived from the data provided in the handbook.

The food ingestion rate (FIR) for the red-tailed hawk was calculated using the bird equation based on body weight from the *Wildlife Exposure Factors Handbook* (USEPA, 1993). An FIR of 0.133 kg/day for the red-tailed hawk is presented in table 7-6; however, when calculated using the EPA bird equation and the body weight provided in Table 7-6, an FIR of 0.059 kg/day results. This calculation should be reevaluated and checked for accuracy.

In Table 7-6 it is stated that the body weight of the red-tailed hawk is 1.02 kg with a footnote of [I]. However, footnote [I] refers to the bird food ingestion equation, not to the derivation of body weight. The footnote for the red-tailed hawk body weight should be changed to indicate the source of the body weight value.

Response: The dietary composition data in Table 7-6 were derived based on average exposure parameters cited in the *Wildlife Exposure Factors Handbook* (USEPA, 1993). The table footnotes will be revised to clarify this distinction.

The food ingestion rates were re-calculated for the eastern meadowlark and red-tailed hawk. The FIR for the eastern meadowlark is correct. However, the FIR for the red-tailed hawk was calculated incorrectly, the correct FIR for the red-tailed hawk should be 0.059 kg/day. The ERA will be revised as required.

The footnote will be changed to [h], as the body weight for the red-tailed hawk, used in this evaluation was presented in Terres 1980.

40. **Section 7.6.4, Page 7-32.** In this section, it was concluded that it is unlikely that the predicted levels of zinc in the groundwater will have an adverse effect on aquatic receptors in Clear Creek. This was concluded in spite of the fact that the predicted groundwater exposure concentrations of zinc (27 µg/L) exceed the AQUIRE value of 17 µg/L. The reasoning behind this conclusion is that a review of additional AQUIRE data for zinc indicated that the predicted 27 µg/L exposure concentration would not result in adverse effects to the majority of the aquatic receptors in Clear Creek. Although this conclusion is believed to be accurate, the reasoning behind this conclusion should be further discussed in this section.

Response: The text will be modified to include more details on the reasoning behind the conclusion of no adverse effect to aquatic receptors from exposure to zinc. The following text will be added to this section: The AQUIRE data on zinc was reviewed for toxicity information on specific receptors that would most likely inhabit Clear Creek. The results of this review indicated that exposure to concentrations of zinc at 27 ug/L would not pose a risk to these aquatic receptors.

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41. **Section 9.1, Page 9-1.** The text states that three volatile organic compounds (VOCs), seven semi-volatile organic compounds (SVOCs), and one pesticide compound were detected in Site 15 surface soil samples. However, these constituents are actually found in subsurface soil samples. The text of this section and the Executive Summary should be corrected accordingly.

Response: The text of section 9.1 and the Executive Summary will be corrected to refer to subsurface soil samples.

42. **Table H-1.** This table presents bioaccumulation factors (BAFs) for terrestrial invertebrates, terrestrial plants, mammals, and birds.

It is not possible to confirm the mammal BAFs for semivolatiles using the cited Travis and Arms equation for biotransfer factors with conversion to BAFs. The average ingestion rate used for this calculation in the ERA was not provided. Provide more information on the calculation of the mammal BAFs and re-confirm the calculated mammal BAFs.

Table F-1 provides a plant BAF of 6.7E-03 for bis(2-ethylhexyl)phthalate, Di-n-butylphthalate, and butylbenzylphthalate. However, when recalculated using the equation in footnote [d], a plant BAF of 8.7E-03 was obtained for bis(2-ethylhexyl)phthalate, 7.6E-03 for Di-n-butylphthalate, and 1.1E-02 for butylbenzylphthalate. Please review these calculations and address the discrepancies.

Response: The average ingestion rate for lactating and non-lactating cows is 12 kg feed/day (dry weight). As noted in footnote [e] in Table H-1, this value was converted to a wet weight prior to calculation of a BAF. This ingestion rate for lactating and non-lactating cows will be included in footnote [e], in Table H-1. The mammal BAFs for Di-n-butylphthalate, and bis(2-ethylhexyl)phthalate, calculated using this equation are 2.4E-01 and 1.9E-01, respectively. The BAF for Di-n-butylphthalate will be used as a surrogate for butylbenzylphthalate, as a BAF was not calculated for this analyte because it has a log Kow value of <5.

The calculations were reviewed and the USEPA reviewer is correct in stating that the plant BAF for bis(2-ethylhexyl)phthalate and Di-n-butylphthalate should be 7.6E-03 and 8.7E-03, respectively. However, the BAF for Di-n-butylphthalate will be used as a surrogate for butylbenzylphthalate, as a BAF was not calculated for this analyte because it has a log Kow value of <5.

43. **Table H-2.** Table H-2 presents ingestion toxicity information. The Lowest Observed Adverse Effect Level (LOAEL) column heading should not be under the lethal reference toxicity value (RTV) heading. The LOAEL should be presented only with sublethal

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RTVs. The column headings need to be verified to ensure that they reflect the data in the column and be revised as necessary.

Response: LOAEL values for mortality are available (i.e., mortality in 6% of the population); therefore, it is appropriate to list these values under the "lethal RTV" heading. As described in Section 7.5.1 of the ERA, data used to select lethal RTVs includes NOAEL and LOAEL data, as well as well as LD 50 values from literature.

44. **Table H-3.** Table H-3 presents the RTVs selected for the ERA while Table H-2 presents ingestion toxicity data for wildlife.

For zinc, an LD50 derived lethal RTV of 502 mg/kg/BW/day was used in Table H-3 and a LOAEL derived sublethal RTV of 20 mg/kg/BW/day was used in Table H-3. However a lower lethal RTV of 3.9 mg/kg/BW/day and a lower sublethal RTV of 16 mg/kg/BW/day are both available as listed in Table H-2. The lowest possible RTVs should be used in Table H-3. Please review this calculation and address this discrepancy.

Response: The lethal and sublethal RTVs presented in Table H-3 were used as the selected RTVs because the effects measured in the laboratory tests were more closely related to the chosen assessment endpoints. The alternatives listed in Table H-2 (i.e., lethal RTV of 390mg/kg/BW-day and sublethal RTV of 160 mg/kg/BW-day) are consistent with the selected RTVs, and are based on effects that are not as closely related to the chosen assessment endpoints as the selected RTVs. In addition, the RTV values identified in the reviewers comment are not consistent with the RTVs listed in Table H-2.

EDITORIAL COMMENTS

45. **Section 7.5, Page 7-25.** The first sentence on page 7-25 mentions Site 18 when it is believed that Site 15 is being referred to. This discrepancy should be addressed.

Response: The first sentence on page 7-25 will be corrected to refer to site 15.

APPENDIX K
EVALUATION OF BACKGROUND CONCENTRATIONS
FOR COVERED LANDFILL SITES

Evaluation of Background Arsenic Concentrations for Covered Landfill Sites

Naval Air Station (NAS) Whiting Field, Milton, Florida

At NAS Whiting Field nine soil types, as identified by the U. S. Department of Agriculture, Soil Conservation Service (USSCS), are present. The Remedial Investigation (RI) sites at NAS Whiting Field are associated with seven of the nine soil types. The background surface soil data set for each RI site was initially determined to be comprised of background surface soil samples from the same USSCS soil types as occur on the individual sites. However, available information and review of historical aerial photographs indicated that in the construction of landfills at the facility, a borrow pit was dug to an approximate depth of 10 to 15 feet below land surface (bls) and the excavated soil was piled to the side. Following landfill operations, the borrow materials comprised of undifferentiated surface and subsurface soils, were used for the landfill cover. Any additional soils required to complete the landfill cover are believed to have been obtained from other borrow pits located at the facility.

If a mix of surface and subsurface soils were used in the cover for landfills, it would be appropriate to use the combined data set of surface and subsurface soil samples as the background screening value. However in order to be protective of human health and the environment, it is proposed that the background surface and subsurface data set be combined to a single value as be used as the "Industrial Use Soil Cleanup Goal". This modified "Industrial Use Soil Cleanup Goal" is specifically limited to the covered landfill sites including: Site 1, 2, 9, 10, 11, 13, 14, 15, and 16 and to the inorganic analyte arsenic.

Tables 3-8 through 3-18 in the General Information Report present the detected concentrations and summarize the analytical data for the individual background soil samples collected at NAS Whiting Field. A summary of the arsenic background data set and the modified "Industrial Use Soil Cleanup Goal" for arsenic is presented Table I-1. As indicated on the table the modified "Industrial Use Soil Cleanup Goal" for arsenic to be used at covered landfill sites is 4.62 mg/kg.

**Table A-1
Summary of Arsenic Detected in
Surface and Subsurface Background Soil Samples**

Feasibility Study
Site 12, Tetraethyl Lead Disposal Area
Naval Air Station Whiting Field
Milton, Florida

Analyte	Frequency of Detection Surface Soil Samples ¹	Mean of Detected Concentrations Surface Soil Samples ²	Frequency of Detection Sub-surface Soil Samples ¹	Mean of Detected Concentrations Subsurface Soil Samples ²	Frequency of Detection Surface and Subsurface Soil Samples ¹	Mean of Detected Concentrations Surface and Subsurface Soil Samples ²	Surface and Subsurface Soil Background Screening Concentration (modified Industrial Use Cleanup Goal)
<u>Inorganic Analytes (mg/kg)</u>							
Arsenic	15/15	1.54	14/14	3.14	29/29	2.31	4.62
¹ Frequency of detection is the number of samples in which the analyte was detected divided by the total number of samples analyzed. ² The mean of detected concentrations is the arithmetic mean of all samples in which the analyte was detected. It does not include those samples in which the analyte was not detected.							
Note: mg/kg = milligrams per kilogram.							

Table A-2
Comparison of Detected Arsenic Concentrations in Surface and Subsurface Soil Samples
to Florida Soil Cleanup Goals

Feasibility Study
Site 12, Tetraethyl Lead Disposal Area
Naval Air Station Whiting Field
Milton, Florida

Analyte	Minimum Detected Concentration	Maximum Detected Concentration	Mean of Detected Concentrations	Soil Cleanup Target Levels for Florida (Residential) ¹	Soil Cleanup Target Levels for Florida (Industrial) ¹	Surface and Subsurface Soil Background Screening Concentration (modified Industrial Use Cleanup Goal) ²
Inorganic Analyte (mg/kg)						
Arsenic	0.52	6.3	2.31	0.8	3.7	4.62

¹ Source: Chapter 62-785, Florida Administrative Code.

² The modified Industrial Use Cleanup Goal for arsenic is the Florida Department of Environmental Protection approved site specific cleanup goal for Perimeter Road sites at Naval Air Station, Whiting Field.

Note: mg/kg = milligrams per kilogram.



Department of Environmental Protection

Twin Towers Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

April 27, 1998

Ms. Linda Martin
Department of the Navy, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive, PO Box 190010
North Charleston, SC 29419-9010

file: arsenic1.doc

RE: Request for Site-Specific Arsenic Soil Cleanup Levels: Covered Landfill Sites, NAS
Whiting Field

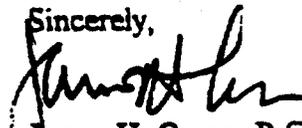
Dear Ms. Martin:

I have reviewed the request for approval of a site-specific Soil Cleanup Goal for arsenic at the "covered landfill sites" at NAS Whiting Field from Mr. Gerald Walker, ABB Environmental Services, dated April 22, 1998 (received April 22, 1998). Based on the prior presentation to Department Staff and the summary information furnished in the letter and the attached Appendix I, the request is granted to utilize a site-specific Soil Cleanup Goal for arsenic of 4.62 mg/kg at Sites 1, 2, 9, 10, 11, 12, 13, 14, 15 and 16., with the following conditions:

1. The sites may be utilized for activities that involve less than full-time contact with the site. This may include, but is not limited to, a.) parks b.) recreation areas that receive heavy use (such as soccer or baseball fields) or, c.) agricultural sites where farming practices result in moderate site contact (approximately 100 days/year, or less).
2. The Navy must assure adherence to the land use by incorporating the site and conditions in a legally binding Land Use Control agreement.
3. The above Soil Cleanup Goal shall not be utilized at any other site without specific Department approval.

If you have questions or require further clarification, please contact me at (904) 921-4230.

Sincerely,



James H. Cason, P.G.
Remedial Project Manager

"Protect, Conserve and Manage Florida's Environment and Natural Resources"

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