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Remedial Investigation/ Focused Feasibility Study

for

Hangar 1000

Volume I: Sections 1.0 Through References

Naval Air Station Jacksonville

Jacksonville, Florida

Southern Division
Naval Facilities Engineering Command
Contract Number N62467-94-D-0888
Contract Task Order CTO 0111

March 2004

REMEDIAL INVESTIGATION/ FOCUSED FEASIBILITY STUDY FOR HANGAR 1000

NAVAL AIR STATION JACKSONVILLE
JACKSONVILLE, FLORIDA

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29406

Submitted by:
Tetra Tech NUS, Inc.
661 Andersen Drive
Foster Plaza 7
Pittsburgh, Pennsylvania 15220

CONTRACT NUMBER N62467-94-D-0888
CONTRACT TASK ORDER 0111

MARCH 2004

PREPARED UNDER THE SUPERVISION OF:

Mark A. Peterson

MARK A. PETERSON, P.G.
TASK ORDER MANAGER
TETRA TECH NUS, INC.
JACKSONVILLE, FLORIDA

APPROVED FOR SUBMITTAL BY:

Debra M Wroblewski

DEBBIE WROBLEWSKI
PROGRAM MANAGER
TETRA TECH NUS, INC.
PITTSBURGH, PENNSYLVANIA

PROFESSIONAL CERTIFICATION

Remedial Investigation
Hangar 1000
Naval Air Station Jacksonville, Jacksonville, Florida

This Remedial Investigation was prepared under the direct supervision of the undersigned geologist using geologic and hydrogeologic principles standard to the profession at the time the report was prepared in general conformance with the Requirements of Chapter 62-770, Florida Administrative Code. If conditions are determined to exist that differ from those described, the undersigned geologist should be notified to evaluate the effects of additional information on the assessment described in this report. This report was developed specifically for the referenced site and should not be construed to apply to any other site.

Mark C. Peterson

Mark Peterson, P.G.
Florida License Number PG-1852

3/15/04

Date

DEPARTMENT OF THE NAVY ★ SOUTHERN DIV FACILITIES ENGINEERING COMD ★

The professional opinions rendered in this document identified as Remedial Investigation/Focused Feasibility Study for Hangar 1000 were developed in accordance with commonly accepted procedures consistent with applicable standards of practice. Decision documents were prepared under the supervision of the signing engineer and are based on information obtained from others. If conditions are determined to exist differently than those described in this document, then the undersigned professional engineer should be notified to evaluate the effects of any additional information on the project described in this document.

Mark Speranza

March 19, 2004
Mark Speranza, P.E.
Professional Engineering Number PE0050304
Tetra Tech NUS, Inc. Engineering No. 7988

Mark Speranza

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ACRONYMS

ABB-ES	ABB Environmental Services
AFCEE	Air Force Center for Environmental Excellence
Ag	Silver
AgCl	Silver (I) Chloride
ARARs	Applicable or Relevant and Appropriate Requirements
ASTM	American Society for Testing and Materials
AWQC	Ambient Water Quality Criteria
bls	Below Land Surface
BNP	Bimetallic Nano-Scale Particles
CAA	Clean Air Act
CCI	CH2M Hill Constructors, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liabilities Act
CFR	Code of Federal Regulations
CNS	Central Nervous System
COCs	Chemicals of Concern
COPCs	Constituents of Potential Concern
CP	Closure Plan
CPCP	Contingency Post Closure Plan
CSFs	Cancer Slope Factors
CTO	Contract Task Order
°C	Degrees Celsius
°F	Degrees Fahrenheit
DCA	Dichloroethane
DCE	Dichloroethene or Dichloroethylene
DNAPL	Dense Non-aqueous Phase Liquid
DO	Dissolved Oxygen
DPT	Direct Push Technology
DQOs	Data Quality Objectives
ERA	Ecological Risk Assessment
ESVs	Ecological Screening Values
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FDER	Florida Department of Environmental Regulation
FFS	Focused Feasibility Study

ACRONYMS (Continued)

FS	Feasibility Study
ft	Feet or Foot
GCTLs	Groundwater Cleanup Target Levels
GRAs	General Response Actions
GWMP	Groundwater Monitoring Plan
GWPS	Groundwater Protection Standards
HEA	Health and Environmental Assessment
HHRA	Human Health Risk Assessment
HI	Hazard Index
HLA	Harding Lawson Associates
HQ	Hazard Quotient
HSDB	Hazardous Substance Data Bank
ICR	Incremental Cancer Risk
IRA	Interim Removal Action
J. A. Jones	J. A. Jones Environmental Services
µg/L	Micrograms per Liter
MCLs	Maximum Containment Levels
mg/kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
MHSPE	Ministry of Housing, Spatial Planning, and Environment
MIP	Membrane Interface Probe
MODFLOW	Modular Three-Dimensional Finite-Difference Water Flow Model
msl	Mean Sea Level
mS/m	Millisiemens per Meter
mV	Millivolts
NA	Natural Attenuation
NAAQS	National Ambient Air Quality Standards
NAS	Naval Air Station
NAT	Navy Aviation Trades
Navy	United States Navy
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEPA	National Environmental Policy Act
NIRP	Navy Installation Restoration Program
NPW	Net Present Worth
O&M	Operation and Maintenance

ACRONYMS (Continued)

ORP	Oxidation-Reduction Potential
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PAHs	Polynuclear Aromatic Hydrocarbons
PCE	Tetrachloroethylene
PELs	Probably Effects Levels
PPE	Personal Protection Equipment
ppt	Parts per Thousand
PQL	Practical Quantitation Limit
PRBs	Permeable Reactive Barriers
PRE	Preliminary Risk Evaluation
PRGs	Preliminary Remediation Goals
PSC	Potential Source of Contamination
RAOs	Remedial Action Objectives
RCRA	Resource Conservation and Recovery Act
RfDs	Reference Doses
RI	Remedial Investigation
ROD	Record of Decision
RT3D	Reactive Transport in Three Dimensions
SAR	Site Assessment Report
SDWA	Safe Drinking Water Act
SMCLs	Secondary Maximum Contaminant Levels
SOUTHNAVFACENGCOM	Southern Division, Naval Facilities Engineering Command
SVOCs	Semivolatile Organic Compounds
TAL	Target Analyte List
TBC	To Be Considered (criteria)
TCA	Trichloroethane
TCE	Trichloroethene or Trichloroethylene
TCL	Target Compound List
TELs	Threshold Effects Levels
TOC	Total Organic Carbon
TSD	Treatment, Storage, and Disposal
TtNUS	Tetra Tech NUS, Inc.
UCL	Upper 95 Percent Confidence Limit
UIC	Underground Injection Control

ACRONYMS (Continued)

USDA	Unites States Department of Agriculture
USEPA	United States Environmental Protection Agency
USGS	United States Geologic Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound
ZVI	Zero-Valent Iron

EXECUTIVE SUMMARY

The Hangar 1000 regulated unit consisted of two underground storage tanks (USTs), Tank A and Tank B, which were operated from the late 1960s until they were closed in 1994. Tank A was a 750-gallon concrete tank used as a solvent and water separator that discharged water to a nearby storm sewer. Tank B was a 2000-gallon steel underground storage tank (UST), which received solvent overflow from Tank A and waste oils and solvents discharged from other operations at the facility.

Historical documentation indicates that during periods of heavy rainfall, water in the storm sewer would back into the oil-water separator (Tank A), which was not designed to prevent back flow. It is presumed that back flow into the separator may have resulted in releases to the environment. Releases may have occurred over the life span of the tank system, from the late 1960's until the time of the last waste discharge to the tanks in 1987.

During the early 1990's groundwater conditions around the tank were assessed and closure plans for the tank system were developed. Site specific risk based target concentrations were developed for both soil and groundwater. Closure of the tanks was completed in 1994. During closure activities, the tanks and associated piping were removed, except for piping that had to be abandoned in place due to the presence of structures. Contaminated soil exceeding site specific risk-based target concentrations were removed from the site, however impacts to groundwater exceeding the site-specific risk-based levels did not allow for a clean closure.

Primary constituents of potential concern (COPCs) detected in soils and groundwater at the site include 1,1,1-trichloroethane (TCA); 1,1-dichloroethane (DCA); trichloroethene (TCE); 1,1-dichloroethene (DCE); 1,2-DCE; and vinyl chloride. Other COPC constituents have also been present to varying degrees of contamination including benzene, toluene, 3&4-methylphenol, and naphthalene.

Groundwater impacts are limited to the shallow unit of the surficial aquifer, which is composed of three units at Hangar 1000. The shallow unit is composed of a heterogeneous mixture of fine-grained sands, silt, and sandy clay. The percentage of clay increases in the shallow unit with depth until a sandy clay member is encountered at approximately 24 feet (ft) below land surface (bls). This sandy clay member continues until a second unit, a dry clay is encountered at 28 to 30 ft bls. The clay unit prevents communication between the shallow unit and a second sand unit (intermediate aquifer) found at appoximately 50 ft in depth. Groundwater flow in the shallow unit is to the southeast with an average flow velocity of appoximately 75 ft per year. Downgradient of Hangar 1000, groundwater enters a storm sewer located on the south side of Yorktown Avenue. Based on the groundwater velocity, groundwater will travel from the source area to the storm sewer at the downgradient end of the plume in approximately 6.5 years.

The source area has been subjected to three rounds of chemical-oxidation treatments. After each treatment, dissolved phase COPC concentrations in groundwater rebounded to baseline concentrations or greater. It is believed that dense non-aqueous phase liquid (DNAPL) in the source area is the source for the rebound of dissolved phase constituents. Recent work performed by J. A. Jones Environmental Services to further assess the source area indicates that DNAPL may be present in soils beneath the former Tank A location in a sandy clay horizon at 10-12 ft bls and in the sandy clay at 24 ft bls. Total volatile organic compound (VOC) concentrations in groundwater vary, but generally are between 10 and 20 milligrams per liter (mg/L) in the source area and surrounding wells.

Computerized modeling of the fate and transport of COPCs in groundwater indicate that the travel time from the tank source area to the storm sewer is 16, 14, and 12 years for TCE, DCE, and vinyl chloride, respectively. At the present time, the source area appears to be continuously loading contamination into the aquifer, but the system has reached steady state conditions. A simulation of the cleanup time of the aquifer, after a 100 percent removal of TCE, DCE, and vinyl chloride in the source area, resulted in restoration of the aquifer in approximately 17 years.

The results of the human health preliminary risk evaluation (PRE) for industrial receptors exposed to chemicals that have volatilized from groundwater and migrated through building foundations into indoor air indicates an incremental cancer risk (ICR) of 6.4×10^{-7} that is less than both United States Environmental Protection Agency (USEPA) and the Florida Department of Environmental Protection (FDEP) target risk levels. Calculation of a hazard index (HI) of 0.0003 is less than USEPA's and FDEP's acceptable level of 1.0.

The results of the human health PRE for direct contact exposures from potable use of groundwater indicates an ICR of 3.9×10^{-2} which exceeds both USEPA’s and FDEP’s target risk range. Chemical specific ICRs for benzene, 1,2- DCA; 1,1-DCE; TCE; 1,1,2-TCA; tetrachloroethylene (PCE); and vinyl chloride were greater than 1×10^{-6}.

The results of a screening level ecological risk assessment (ERA) do not indicate unacceptable risk to ecological receptors from contamination in the storm sewer and the drainage ditch located downgradient from Hangar 1000.

A Focused Feasibility Study (FFS) was developed to address groundwater contamination. To protect the public from potential current and future health risks, as well as protect the environment, this FFS identified the following Remedial Action Objectives (RAOs):

Prevent unacceptable risks from human exposure to contaminated groundwater.
Prevent contaminant migration from groundwater to surface water.

The following chemicals of concern (COCs) and PRGs were established for groundwater:

Chemical of Concern	PRG[1] (µg/L)
Chlorinated VOCs	
1,2-DCA	3
1,1-DCE	7
1,2-DCE (total)	63
1,1,1-TCA	200
1,1,2-TCA	5
TCE	3
PCE	3
Vinyl Chloride	1
Petroleum Compounds	
Benzene	1
SVOCs	
3-methylphenol	35
4-methylphenol	3.5
Naphthalene	20

(1) FDEP GCTLs (FDEP, 1999).

Based on the results of the RI, it was established that the groundwater contaminant plume extends approximately 520 ft in a southeasterly direction from Hangar 1000, reaching across Yorktown Avenue. The surface area, depth, and volume of that contaminant plume are estimated at approximately 52,400 square ft; 25 ft; and 8,400,000 gallons, respectively.

Results of post-RI field investigations have shown that the majority of COCs are contained in three areas of groundwater and associated saturated soil that have been designated as DNAPL source areas. These three areas extend over a total surface of approximately 1,050 square ft and from a depth of 7 to 25 ft bls. The total weight of COCs in the DNAPL source areas has been estimated at approximately 60 pounds.

The following general response actions (GRAs) were considered for groundwater remediation:

- No Action
- Limited Action
- Containment
- Removal

- In-Situ Treatment
- Ex-Situ (On-Site) Treatment
- Disposal

Consideration of the No Action GRA is mandated by law. Although Limited Action technologies such as natural attenuation, institutional controls, and monitoring would be of limited effectiveness for removal of the DNAPL source areas, they were retained for consideration because they would be effective to address contaminated groundwater outside of the DNAPL source areas. Containment and Removal technologies, as well as the removal-associated Ex-Situ Treatment and Disposal technologies, were eliminated from further consideration because these types of technologies have historically proved ineffective for the removal of DNAPL, and they do not offer substantial advantages over Limited Action technologies for the remediation of contaminated groundwater outside of the DNAPL source areas. In-Situ Treatment technologies were retained for consideration because this type of technology has generally proven most effective for the removal of DNAPL. Although a previous Interim Removal Action (IRA) has failed to prove the effectiveness of in-situ oxidation with Fenton Reagent, bench-scale testing of in-situ treatment with bimetallic nano-scale particles (BNP) was very successful, and this technology is likely to be most cost-effective for the removal of the DNAPL source areas at Hangar 1000.

On that basis, the NAS Jacksonville Partnering Team has agreed to streamline the groundwater treatment technologies screening process and retain the following technologies for further consideration in this FFS:

- No Action.
- Limited Action including natural attenuation, institutional controls, and monitoring.
- In-Situ Treatment with BNP technology.

Based upon this selection the following remedial alternatives were developed:

- No Action.
- Natural Attenutation, Institutional Controls, and Monitoring.
- Source Removal with BNP, natural attenuation, institutional controls, and monitoring.

These alternatives were evaluated for the following seven criteria:

- Overall protection of human health and the environment.
- Compliance with applicable and relevant and appropriate requirements (ARARs).
- Long-term effectiveness and permanence.

- Reduction of toxicity, mobility, and volume through treatment.
- Short-term effectiveness.
- Implementability.
- Cost.

Overall Protection of Health and Environment

Alternative 1 would not provide protection of human health and the environment because it would allow uncontrolled exposure to contaminated groundwater and unmonitored contaminant migration.

Alternatives 2 and 3 would be protective of human health and the environment. Alternative 2 would mostly achieve protection through its institutional controls and monitoring components that would prevent exposure to contaminated groundwater and warn of contaminant migration. Alternative 3 would be significantly more protective because in addition to the same institutional controls and monitoring as Alternative 2, it also includes an active treatment component that would remove groundwater COCs much faster than natural attenuation.

Compliance with ARARs and To Be Considered (TBC) Criterion

Alternative 1 would not comply with chemical- and location-specific ARARs. Action-specific ARARs or TBC criterion would not apply.

Alternatives 2 and 3 would comply with location- and action-specific ARARs and TBC criterion. Alternatives 2 and 3 would not immediately comply with chemical-specific ARARs and TBC criterion, but these two alternatives would eventually achieve compliance as they attain PRGs either through natural attenuation alone (Alternative 2) or through active treatment (Alternative 3). Alternative 3 would achieve compliance much sooner than Alternative 2.

Long-Term Effectiveness and Permanence

Alternative 1 would not be effective and permanent because it would not restrict exposure to contaminated groundwater or provide monitoring for the evaluation of potential COC migration.

Alternatives 2 and 3 would provide long-term effectiveness and permanence. The institutional controls and monitoring components of Alternative 2 would effectively prevent the use of the surficial aquifer as a drinking water source until the PRGs have been achieved and verify that no COC migration is occurring.

Alternative 3 would be significantly more effective than Alternative 2, because, in addition to the same institutional controls and monitoring components, this alternative would also include an active treatment component that greatly accelerates the permanent removal of COCs.

Reduction of Toxicity, Mobility, or Volume through Treatment

Alternatives 1 and 2 would not achieve any reduction of toxicity, mobility, or volume of COCs through treatment. Both alternatives would eventually achieve reduction of contaminant toxicity and volume through natural attenuation; however, under Alternative 1, this reduction would neither be verified nor quantified.

Alternative 3 would achieve a reduction in COC toxicity and volume through treatment. Alternative 3 would irreversibly remove an estimated 60 pounds of COCs from the DNAPL source areas through application of BNP technology. Alternative 3 would not generate treatment residues.

Short-Term Effectiveness

Implementation of Alternative 1 would not result in risks to site workers or adversely impact the surrounding community or environment because no remedial activities would be performed. Alternative 1 would not achieve the RAOs and, although the PRGs might eventually be attained through natural processes, this would not be verified.

Implementation of Alternatives 2 and 3 would result in a possibility of exposing site workers to contaminated groundwater during monitoring activities. However, these risks of exposure would be effectively controlled by compliance with proper site-specific health and safety procedures. Implementation of Alternatives 2 and 3 would not adversely impact the surrounding community or environment. Alternatives 2 and 3 would achieve RAOs immediately upon implementation of institutional controls and monitoring. Alternative 2 might require several thousand years to attain PRGs; however, Alternative 3 would comply with these within approximately 18 years.

Implementability

Alternative 1 would be easiest to implement because there would be no activities to implement.

Technical implementation of Alternatives 2 and 3 would be relatively simple. The resources, equipment, and material required for this implementation are readily available; however, the selection of qualified contractors for the BNP treatment component of Alternative 3 would be relatively limited, and a pilot-scale test would be necessary to confirm the design.

Administrative implementation of Alternatives 2 and 3 would be relatively simple. Alternative 2 would require no permits. Alternative 3 may require a construction permit and may have to meet the substantive requirements of an Underground Injection Control (UIC) permit.

The capital and operation and maintenance (O&M) costs and net present worth (NPW) of the alternatives are as follows:

Alternative	Capital Cost	NPW of O&M Cost	NPW Cost
1	$0	$0	$0
2	$9,000	$211,000 (30-Year)	$220,000 (30-Year)
3	$418,000	$188,000 (20-Year)	$606,000 (20-Year)

The above cost figures have been rounded to the nearest $1,000 to reflect the very preliminary nature of the estimates. Detailed cost estimates are provided in Appendix J.

Based on the results of evaluation of alternatives, the NAS Jacksonville Partnering Team has selected Alternative 3 as the preferred remedy. Alternative 3 was selected as the preferred remedy since it best meets the conditions for protection of human health and the environment through active removal of the sources of groundwater contamination. Alternative 3 also meets this criterion through the establishment of institutional controls to prevent human exposure to contaminated groundwater until cleanup goals have been met through natural attenuation.

1.0 INTRODUCTION

Tetra Tech NUS, Inc. (TtNUS) under contract to the United States Navy (Navy), Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) conducted a RI/FS for Hangar 1000 at Naval Air Station (NAS) Jacksonville located in Jacksonville, Duval County, Florida. This RI/FS has been completed in accordance with Contract Number N62467-94-D-0888, Contract Task Order (CTO) 111 as part of the Navy Installation Restoration Program (NIRP). The activities and findings for the RI/FS are presented and discussed in this report.

The Navy implemented the NIRP to investigate and remediate releases of hazardous materials at Navy and Marine Corps installations. The NAS Jacksonville Partnering Team, established in 1993, guides the implementation of the NIRP at NAS Jacksonville. This team consists of representatives from USEPA, the FDEP, SOUTHNAVFACENGCOM and its consultants, and the NAS Jacksonville Facilities Department.

1.1 RI/FS APPROACH AND OBJECTIVES

Hangar 1000 is the location of a former oil-water separator and UST system, which received liquid wastes from wash racks and floor drains located inside of the Hangar's maintenance facilities. An inspection conducted by the FDEP in 1989 identified the UST system as a Resource Conservation and Recovery Act (RCRA) unit. A series of investigations and closure activities, in which data was collected, indicated impacts to both soils and groundwater beneath Hangar 1000. Detail regarding the site history is provided in Section 2.0

Work conducted under the RCRA program included the following:

- Removal of the UST system except piping located beneath structures, which were closed in place.
- Removal of impacted soils with COPCs in excess of site-specific soil clean up levels.
- Identification of impacts to groundwater and assessment of the extent of impacts.
- Monitoring of groundwater conditions

Subsequent discussion between the Navy and FDEP resulted in a decision to transfer the assessment and cleanup of impacted groundwater at the Hangar 1000 to the Comprehensive Environmental Response, Compensation, and Liabilities Act (CERCLA) program allowing for management of the site under the NIRP by the NAS Jacksonville Partnering Team. Therefore, Hangar 1000 was identified as Potential Source of Contamination (PSC) 52 and Operable Unit (OU) 7. The NAS Jacksonville Partnering Team subsequently required an RI/FS to address groundwater contamination resulting from the operation of the former UST system.

A scoping meeting was conducted by the NAS Jacksonville Partnering Team to plan the RI field activities. Due to prior work conducted in the source area located in the key-way to Hangar 1000, the NAS Jacksonville Partnering Team decided to focus RI activities on determining the extent of contamination in groundwater. It was determined that the site-specific Sampling and Analysis Plan would be used to guide the proposed RI/FS field activities. The specific assessment tasks were as follows:

- Direct Push Technology (DPT) Survey: Conducted a screening survey of groundwater conditions using DPT techniques and mobile laboratory. The screening results were used to field locate additional sample locations and monitoring well locations.

- Monitoring Well Installation: Based on results of the screening survey, monitoring wells were designed, installed, and developed.

- Sampling of Newly Installed and Existing Wells: All newly installed and existing wells were purged and sampled.

The objectives of the RI/FS are as follows:

- Develop an understanding of the geologic and hydrogeologic setting at Hangar 1000.
- Define the aerial and vertical extent of impact to the media of concern.
- Collect natural attenuation (NA) parameters and evaluate the potential NA pathways.
- Identify the COPCs for the risk assessment process.
- Conduct human health and ecological risk assessments.
- Evaluate and recommend remedial alternatives that may achieve a final remedy for the site.

1.2 REPORT SCOPE AND ORGANIZATION

This report documents the results from the current field RI program and also presents data from previous activities at Hangar 1000. This report includes analytical results from previous investigations and also summarizes their findings and conclusions. Furthermore, it incorporates these reports by reference to provide a comprehensive record of the investigative activities at Hangar 1000.

This report contains the following 14 sections:

1.0 Introduction, overview of the RI/FS approach and objectives, background information, and the scope and organization of the report.

2.0 Site background, location, descriptions, history of Hangar 1000, and physical characteristics of the region and Hangar 1000, including climate, soil, geology, and hydrogeology.

3.0 Previous site investigations and remedial actions.

4.0 RI/FS field program summary of the activities conducted for this remedial investigation.

5.0 Nature and extent of all contamination within each environmental media including an evaluation of NA processes and results.

6.0 Contaminant fate and transport.

7.0 Human Health Risk Assessment (HHRA).

8.0 Ecological Risk Assessment (ERA).

Sections 9.0 through 14.0 are to be added when the draft FS is completed.

9.0 Description of the FS process.

10.0 Remedial Action Objectives.

11.0 Screening of remedial technologies and development of remedial alternatives.

12.0 Detailed analysis of the remedial alternatives for surface soil and groundwater.

13.0 Comparative analysis of the remedial alternatives.

References

2.0 SITE BACKGROUND

2.1 SITE CHARACTERIZATION

The following sections provide a historical overview of the NAS Jacksonville facility and a site-specific background for Hangar 1000. Background information on the geography and demographics, physiography and topography, climate, soil, regional geology, and regional hydrogeology are summarized.

2.1.1 Location and Description

NAS Jacksonville occupies approximately 3,896 acres in southeastern Duval County, Florida and is located approximately 9 miles south of downtown Jacksonville. The facility is located on the St. Johns River approximately 24 miles upstream from its confluence with the Atlantic Ocean. The main portion of NAS Jacksonville is bordered to the north by the Timaquana Country Club, to the east and northeast by the St. Johns River, to the south by a residential area, and to the west by Highway 17 (Roosevelt Boulevard) with Westside Regional Park, commercial developments, and other NAS Jacksonville operations beyond. The location of NAS Jacksonville is presented in Figure 2-1. The location of Hangar 1000 on NAS Jacksonville is presented in Figure 2-2.

NAS Jacksonville is a multi-mission base hosting more than 100 tenant commands and employing more than 26,000 active duty and civilian personnel. The installation is home to the P-3C Orion long-range maritime surveillance aircraft, the SH-60F Seahawk helicopter, and the S-3B Viking jet aircraft. The Naval Aviation Depot located at NAS Jacksonville is the largest industrial employer in northeast Florida and performs maintenance, repair, and overhaul of Navy aircraft.

In addition to the many operational squadrons flying P-3, C-12, and C-9 aircraft and SH-60F helicopters, NAS Jacksonville is home to Patrol Squadron Thirty, the Navy's largest aviation squadron and the only "Orion" Fleet Replacement Squadron that prepares and trains United States and foreign pilots, air crew, and maintenance personnel for further operational assignments.

Support facilities include an airfield for pilot training, a maintenance depot employing more than 150 different trade skills capable of performing maintenance as basic as changing a tire to intricate micro-electronics or total engine disassembly, a Naval Hospital, a Fleet Industrial Supply Center, a Navy Family Service Center, and recreational facilities.

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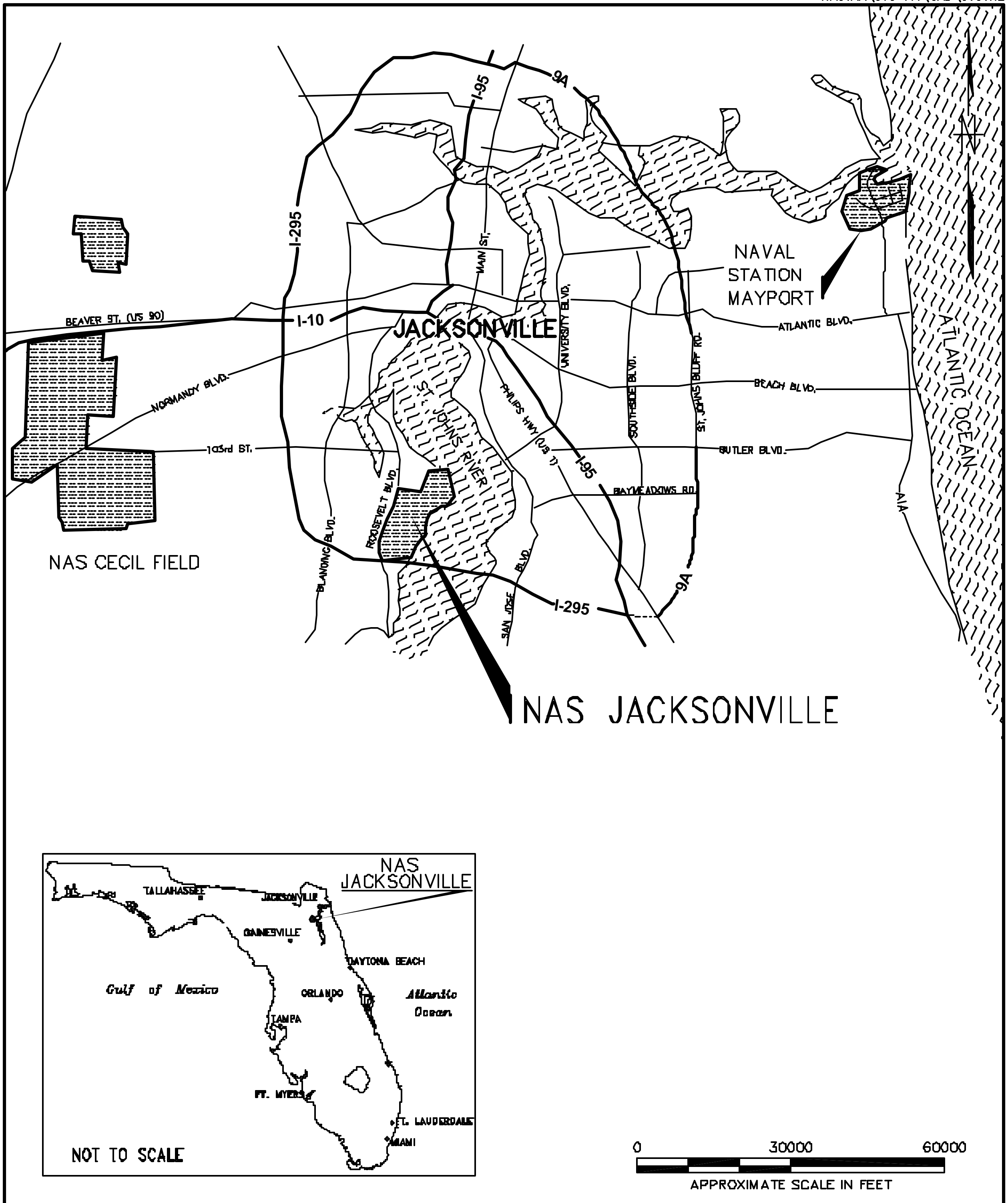

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CHECKED BY / DATE		APPROVED BY / DATE
COST/SCHED-AREA		APPROVED BY / DATE
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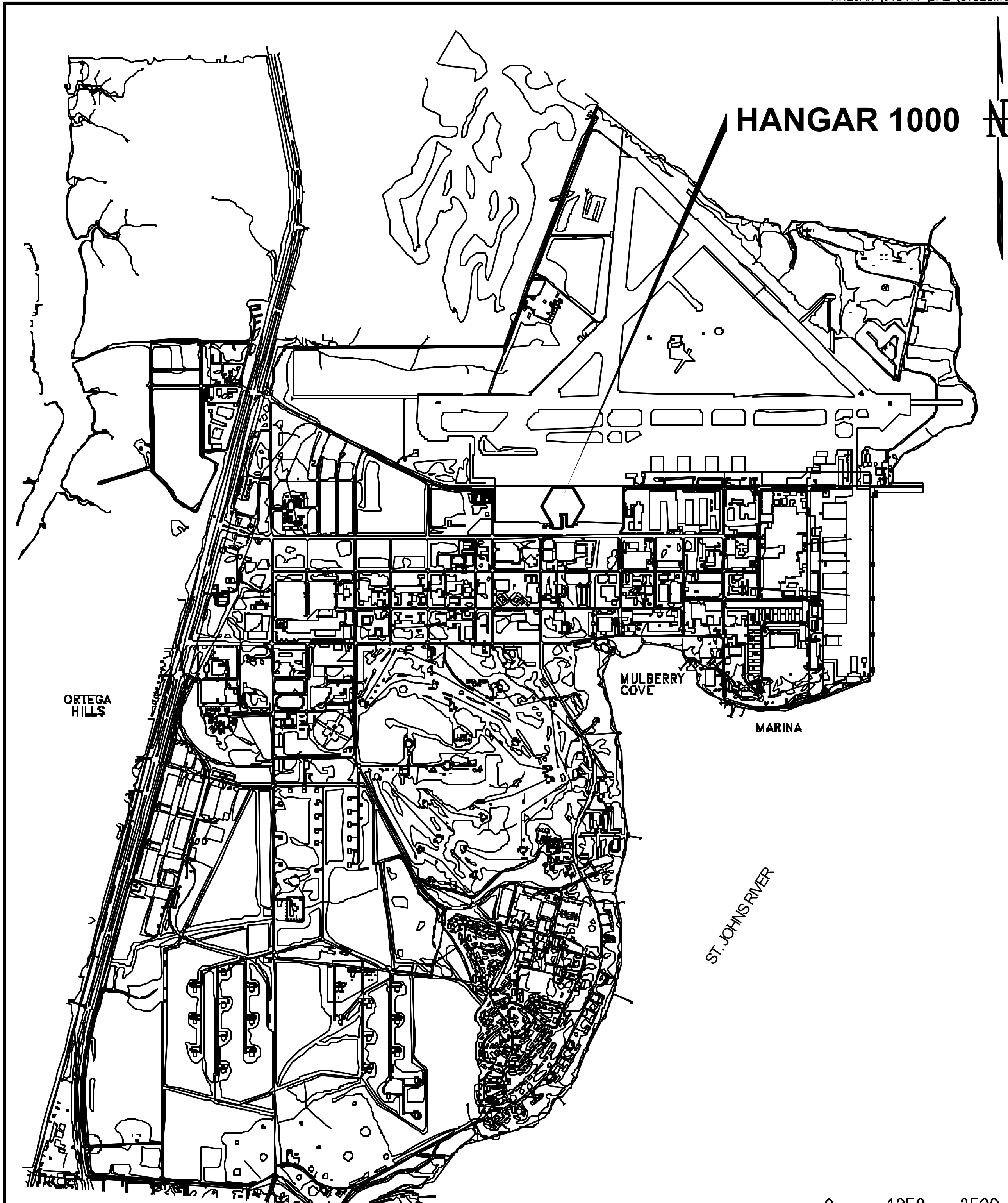

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COST/SCHED-AREA			APPROVED BY DATE
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2.1.2 NAS Jacksonville History

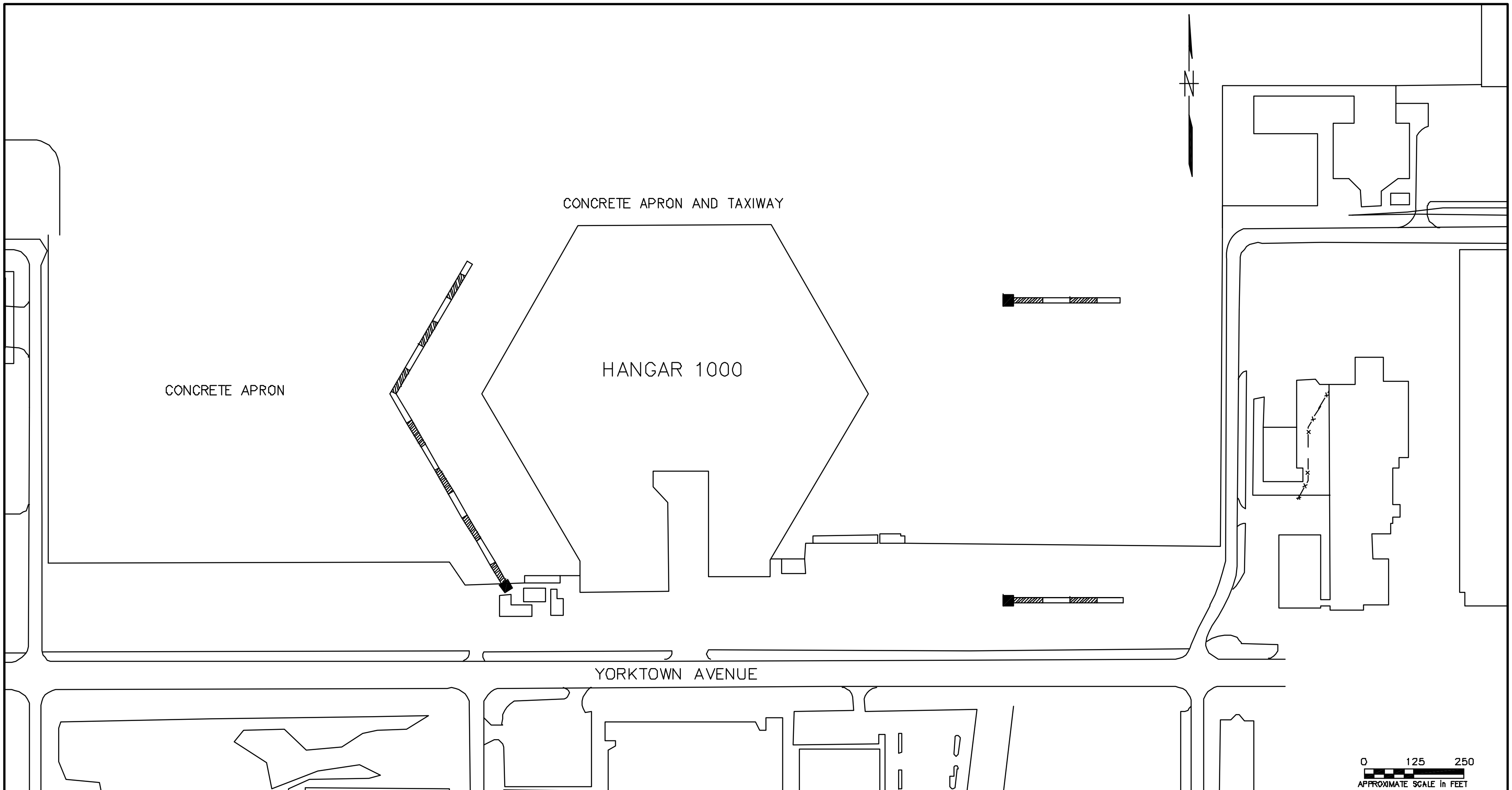
NAS Jacksonville was commissioned on October 15, 1940 to provide facilities for pilot training and a Navy Aviation Trades (NAT) School for ground crewmen. With the advent of World War II, the physical size of the NAS Jacksonville more than doubled, and military functions supported the war effort. During 1942, the Navy phased out pilot training, and the station became the headquarters for the Chief of Naval Operational Training, the final training phase before fleet assignment. The NAT School became the Naval Air Technical Training Center under the Chief of Naval Air Technical Training, NAS Memphis. The operational areas of the station still maintained coastal protection with seaplanes. The facility reached a peak of 42,000 Naval personnel and 11,000 civilians by 1946.

At the conclusion of World War II, NAS Jacksonville was devoted entirely to aviation training. In 1945, Chief of Naval Operational Training was redesignated Chief Naval Air Advanced Training. In July 1946, the Seventh Naval District was transferred from Miami, Florida to the NAS Jacksonville facility, as joint command with Chief Naval Air Advanced Training. On April 5, 1948, the Navy transferred the Chief Naval Air Training and all training facilities to NAS Corpus Christi, Texas.

By January 1949, NAS Jacksonville's mission was to support the operational carrier squadrons with fleet squadrons assigned to Commander, Naval Air Bases, Sixth District, and patrol squadrons assigned to Combat Patrol Wing Eleven. On January 1, 1951, the Navy reactivated the Naval Air Technical Training Center and Marine Air Division activities in support of the Korean build-up of facilities. This joint operational and training status continues to this time.

2.1.3 Hangar 1000 History

Hangar 1000 is located slightly southwest of John Towers Field at NAS Jacksonville along the northern side of Yorktown Avenue. Hangar 1000 is part of a complex that services large aircraft at NAS Jacksonville. The Hangar 1000 site plan is presented as Figure 2-3. The Hangar 1000 regulated unit consists of two USTs, Tank A and Tank B, which were operated from the late 1960's until they were closed in 1994. Tank A was a 750-gallon concrete tank used as a solvent and water separator. Tank B was a 2000-gallon steel UST, which received solvent overflow from Tank A and waste oils and solvents discharged from other operations at the facility. The location of the tanks is provided on Figure 2-4. See Appendix A, Section 3, Figure 3-8 for a diagram of the UST, piping, floor drains, and wash rack system.



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY CW DATE 7/12/00
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

SITE PLAN
HANGAR 1000
NAS JACKSONVILLE
JACKSONVILLE, FLORIDA

CONTRACT NO. 0399
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 2-3 REV. 0

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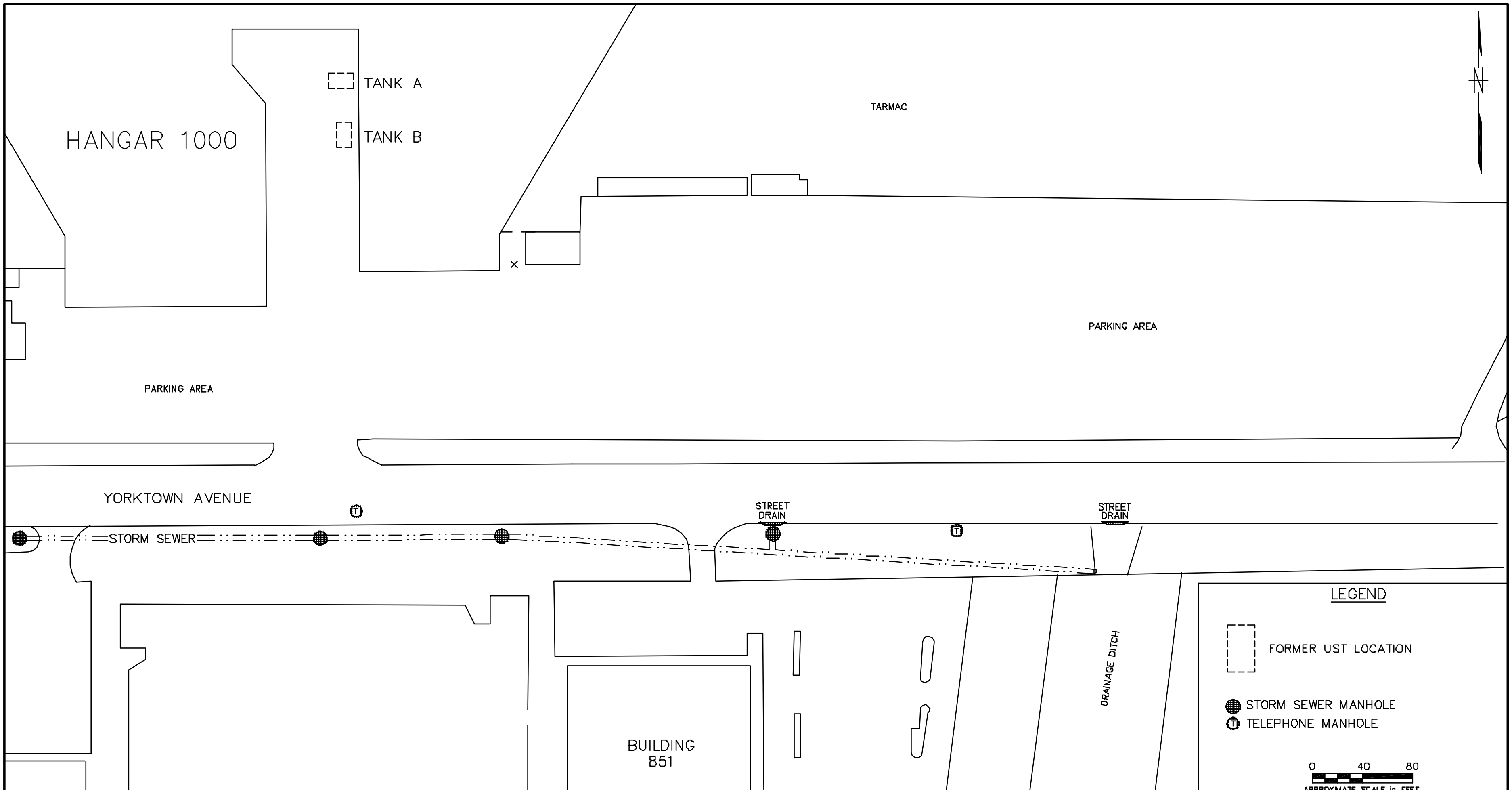

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

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SITE PLAN SHOWING FORMER UST LOCATIONS
HANGAR 1000
NAS JACKSONVILLE
JACKSONVILLE, FLORIDA

CONTRACT NO. 0399
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 2-4 REV. 0

FORM CADD NO. SDIV_BH.DWG - REV 0 - 1/20/98

The following is a list of chronological events for activities performed at the Hangar 1000 regulated unit:

- 1989 – RCRA inspection discovers Tanks A and B were utilized to process discharges from Hangar 1000 wash racks and shop activities. Tank A was a separator, and Tank B received product from the separator and product directly from the shop drains.

- 1991-1992 – Initial assessment activities discovered VOC contamination in soil and groundwater at Hangar 1000.

- 1992 – An HHRA was conducted and target concentrations for soils were developed and approved.

- 1993 – A Closure Plan was developed and submitted.

- 1994 – Tanks A and B were removed, and soils above target concentrations were excavated. Most of the piping was removed; however, some pipes were cleaned and abandoned in place due to obstructions.

- 1995-1999 – Various assessment activities expanded the scope of the investigation in order to define the extent of the plume.

- 2000 – A post-closure permit was issued and the area was closed as a landfill. RCRA monitoring was conducted. An agreement was reached to allow clean up to be conducted under CERCLA. RCRA monitoring continues on a semi-annual basis.

- 2000-2001 – Interim remedial action (chemical oxidation) was performed in the source area.

- 2001-2002 – Additional assessment activities were conducted to define the vertical and horizontal extent of contamination.

2.2 ENVIRONMENTAL SETTING

2.2.1 Geography, Demographics, and Land Use

Hangar 1000 is located slightly southwest of John Towers Field on NAS Jacksonville along the northern side of Yorktown Avenue. Hangar 1000 is part of a complex that services large aircraft at NAS Jacksonville.

2.2.2 Physiography and Topography

NAS Jacksonville is located in the Coastal Plain physiographic province. The Coastal Plain is composed of marine and fluvial sediments in the vicinity of the facility. The sediments were deposited in terraces related to prehistoric fluctuations in sea level. The terrace deposits are in the form of ridges that tend to parallel the current coastline. The topography of the terrace deposits is characterized by very low relief with gentle slopes to the east-southeast. Seven terraces are present in northeast Florida with NAS Jacksonville located within the Pamlico terrace [10-25 ft mean sea level (msl)].

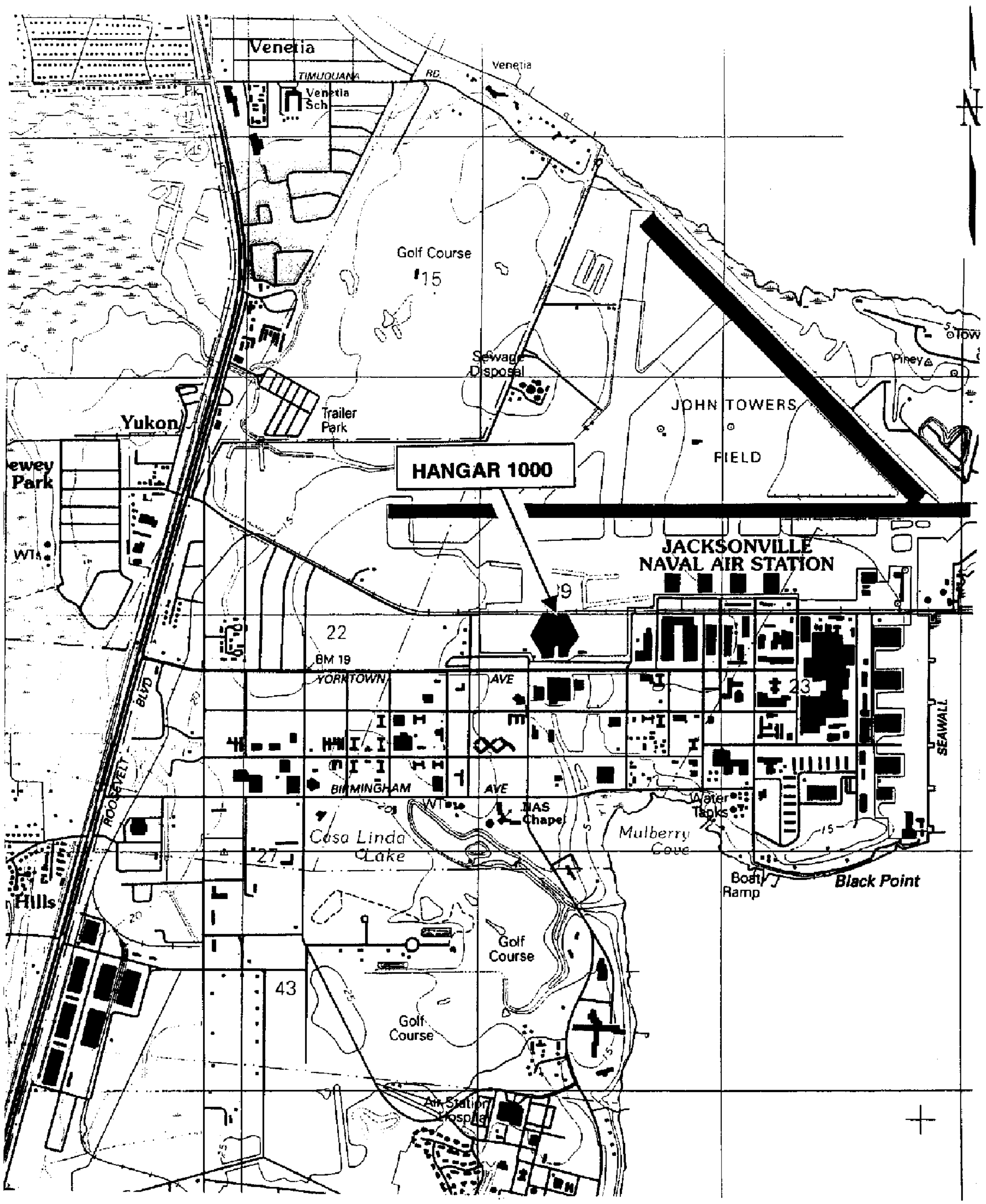
The overall topography at Hangar 1000 is generally flat with a gentle slope to the southeast according to the United States Geological Survey (USGS) topographic map for Orange Park (USGS, 1993). A topographical map is presented in Figure 2-5.

2.2.3 Climate

The climate in northeast Florida approaches semi-tropical as it lies near the northern limit of the trade winds (the prevailing easterly winds that moderate summer and winter temperatures). The annual mean temperature is 68 to 70 degrees Fahrenheit (°F) with an average temperature in the summer of 82 to 83°F and a winter average of 56 to 57°F. Summer highs reach the middle to upper 90°F, sometimes exceeding 100°F. The winter lows can reach the upper teens, although temperatures seldom drop below freezing.

The region experiences an average of 54 inches of rainfall per year, most of which accumulates during frequent summer thunderstorms. Extended dry periods may occur throughout the year; however, they are most common in spring and fall. The relative humidity averages 87 percent and the average annual sunshine is 62 percent of the maximum.

Wind speed in northeast Florida averages 8 miles per hour with winds predominantly from the northeast in the winter and from the southwest in the summer. Winds of hurricane force can be expected once in five years with significant deviations from the average. Tropical storm activity mostly occurs from August through October, although the 6-month period from June 1 through November 30 is officially considered the Atlantic hurricane season.



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EAC/LK	11/20/02		TOPOGRAPHIC MAP HANGAR 1000 NAS JACKSONVILLE JACKSONVILLE, FLORIDA	0399	
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COST/SCHED - AREA				APPROVED BY	DATE
SCALE AS NOTED				DRAWING NO. FIGURE 2-5	REV. 0

Source: USGS Orange Park, FLorida 7.5-Minute Quadrange, 1993

2.2.4 Soil

Soils at NAS Jacksonville developed in marine terrace sediment deposits and are regionally classified by the United States Department of Agriculture (USDA) Soil Conservation Service as the Pelham-Mascotte-Sapelo soil series assocation. Soils in this association are characterized as nearly level, poorly drained sands to a depth of 20 inches bls, which are underlain by loamy sands (USDA, 1978).

2.2.5 Regional Geology

The geologic profile at NAS Jacksonville is comprised of unconsolidated surficial deposits of predominantly fine to very fine clastic sediments that range from clean fine to medium-grained sands, to silty sands, to sandy and silty clay (Fairchild, 1972) overlying thick deposits of phosphatic sands and clays of the Hawthorn Group (Scott, 1988) and limestones and dolomites of the Floridan aquifer system (Leve, 1966).

The Hawthorn Group is significant at NAS Jacksonville because it contains as much as 200 ft of low permeability, silty, sand-clay layers (Scott, 1988). This low permeability deposit acts as an aquiclude for the underlying Floridan aquifer system. The Floridan aquifer system is the major source of potable water in the Jacksonville area and throughout much of northeastern and central Florida.

2.2.6 Regional Hydrology

Three aquifer systems have been identified in the Jacksonville area including the surficial aquifer, the intermediate aquifer, and the Floridan aquifer system.

The surficial deposits consist of sediments of Late Miocene to Recent age. The sediments are highly variable and include sands, shelly sands, coquina, silts, clay, and shell beds. While the surficial aquifer may be considered a single unit on a regional or base-wide scale, localized clay layers or discontinuous lenses may divide the aquifer into distinct permable units (ABB-ES, 1995a). The contact between the surficial aquifer deposits and the underlying Hawthorn Group is an unconformity generally identified by a coarse phosphatic sand and gravel bed (Leve, 1966). Average well yields in Jacksonville for the shallow groundwater aquifer were estimated by the City of Jacksonvlle Planning Department to be between 200 and 500 gallons per day (Toth, 1990). This groundwater is primarliy used for lawn irrigations, domestic purposes, and the heat exchange unit in air conditioning and heating units.

The Hawthorn Group consists mainly of dark-gray and olive-green sandy to silty clay, clayey sand, clay, and sandy limestone at a depth of approximately 60 to 70 ft bls at Hangar 1000. Black phosphatic sand, granules, and pebbles are common throughout the Hawthorn Group (Fairchild, 1972). The combination of numerous thick clay layers within the Hawthorn Group serves as confining layers that separate the surficial aquifer from the underlying Floridan aquifer system. The most common carbonate components of the Hawthorn Group are dolomite and dolosilt. Clay minerals associated with the Hawthorn Group sediments are smectite, illite, palygorskite, and kaolinite.

The intermediate aquifer has been identified at NAS Jacksonville as permeable sediments in the upper part of the Hawthorne formation.

A marine carbonate sequence makes up the Floridan aquifer system beneath NAS Jacksonville. The formation groups of the Floridan aquifer are Eocene in age and consist of, in descending order, the Ocala Group, Avon Park Limestone, Lake City Limestone, and Oldsmar Limestone. The Floridan aquifer system is the principal source of fresh water in northeast Florida. The water bearing zones consist of soft, porous limestone and porous dolomite beds. The top of the Floridan aquifer in the vicinity of NAS Jacksonville occurs at a depth of about 400 ft bls. Published transmissivities of the Floridan aquifer in eastern Duval County range from approximately 85,000 to 160,000 gallons per day per ft (Leve, 1966). Groundwater in the Floridan aquifer in the vicinity of NAS Jacksonville is moving eastward toward areas of heavy pumping (Fairchild, 1977). Floridan aquifer wells in the vicinity of NAS Jacksonville are under sufficient artesian pressure to flow at the surface.

Hydrogeologic information for water supply wells located within one mile of the site can be found in the Navy Installation Restoration Program Plan, Naval Air Station, Jacksonville, Florida, Volume 1, Organization and Planning, September 1991 by Geraghty and Miller, Inc. This Plan contains information related to seasonal variation of surface water and groundwater flow, geological cross sections, and regional surveys.

2.2.7 Regional Surface Water

Two principal waterways, the St. Johns River and Ortega River, are located near NAS Jacksonville. The St. Johns River forms the eastern boundary of NAS Jacksonville. The St. Johns River is rated by the FDEP as a Class III water body, which is designated for fish and wildlife propogation and body contact recreational use. The river at this point is influenced by tidal action and can be considered part of the St. Johns River estuary (NAS Jacksonville, 1990). Hangar 1000 is within the St. Johns River drainage basin. Based on salinity measurements taken during the Scoping Study Field Program, which ranged from 7.0 to 8.8 parts per thousand (ppt) as reported in the OU 3 RI/FS, the water would be classified as marine. Salinity values greater than 2 ppt would support marine vegetation and aquatic life.

2.2.8 Site-Specific Geology

Site-specific geological information has been obtained from the installation of monitoring wells at Hangar 1000. The site geology is characterized by a fine to medium grained unconsolidated sand near the ground surface, which grades vertically into a silty sand interval at approximately 15 ft bls followed by a sandy clay interval beginning at approximately 24 ft bls. The shallow sand interval is heterogeneous in nature and contains silty clay and sandy clay stringers. The sandy clay interval transitions into a dry clay at approximately 28 to 30 ft bls. This dry clay interval divides the surficial aquifer into distinct hydrogeologic units, or layers. The shallow unit (layer 1) includes the surficial sands, silty sands, and sandy clay. The clay unit (layer 2) extends to approximately 50 ft bls where a second sand unit (layer 3) is encountered. The second sand unit has been referred to as the intermediate aquifer at NAS Jacksonville. Below the intermediate aquifer are sediments of the Hawthorne Group at an estimated depth of 60 ft bls (Davis, 2002). The Hawthorne Formation was not encountered by borings at Hangar 1000.

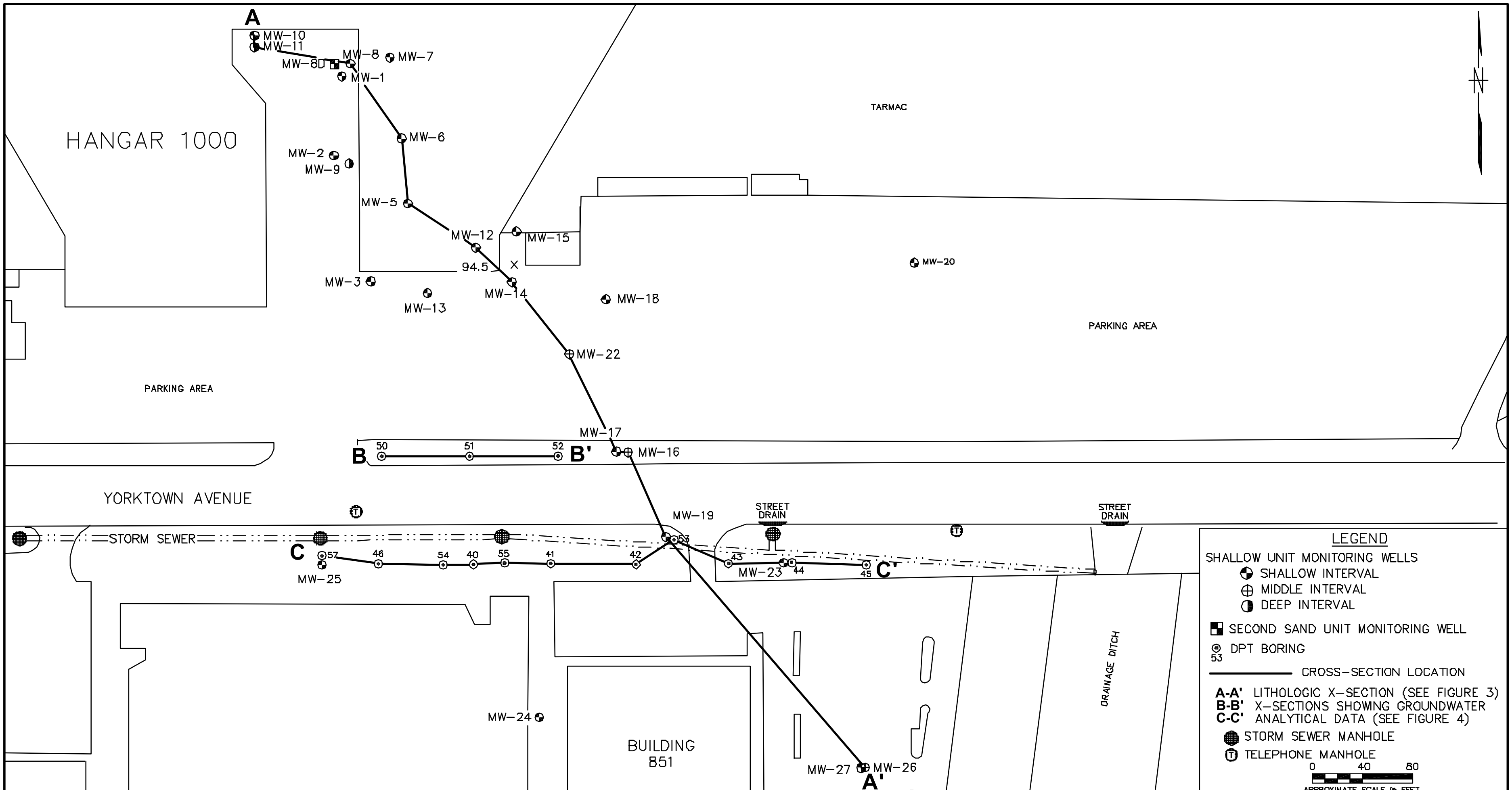
A geologic cross-section line location map is provided as Figure 2-6. A geologic cross section for transect A-A' is provided in Figure 2-7. Other cross section lines (B-B' and C-C' prime) are discussed in Section 5.0

2.2.8.1 Site-Specific Surface Water

Surface water runoff is directed toward an extensive stormwater drainage system present at NAS Jacksonville. Stormwater runoff from Hangar 1000 empties into storm sewers, which, in turn, empty into a drainage ditch located southeast of Hangar 1000. The storm sewer system south of Yorktown Avenue was observed during a dry period and was found to contain flowing water, which indicates that the storm sewer also serves as a receptor to groundwater. Runoff from the stormwater ditch flows to the south toward the St. Johns River, located approximately 2000 ft east of Hangar 1000. Impacts to surface water were evaluated during the RI, and the results are presented in Section 5.0. The drainage ditch was previously evaluated as PSC 44 and was determined to require no further action.

2.2.8.2 Site-Specific Groundwater

Groundwater is encountered at approximately 6 ft below the pavement surfaces at Hangar 1000. Shallow groundwater within the surfcial aquifer flows to the southeast toward the drainage ditch located southeast



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY LLK DATE 4/4/01
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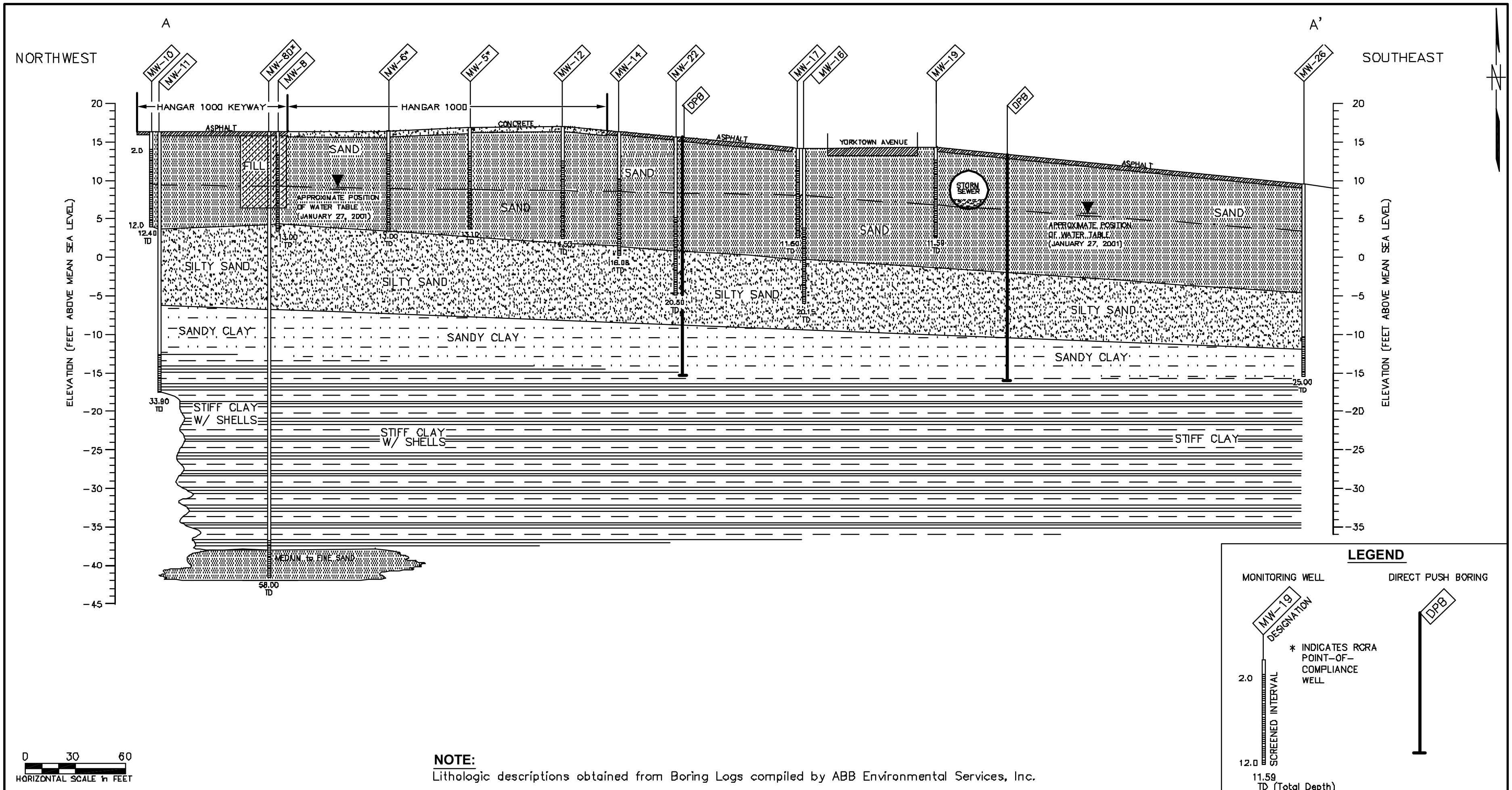
COST/SCHED-AREA
SCALE AS NOTED

CROSS-SECTION LOCATIONS
HANGAR 1000
NAS JACKSONVILLE
JACKSONVILLE, FLORIDA

CONTRACT NO. 0399
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 2-6 REV. 0

FORM CADD NO. SDIV_BH.DWG - REV 0 - 1/20/98



0 30 60
HORIZONTAL SCALE in FEET

NOTE:
Lithologic descriptions obtained from Boring Logs compiled by ABB Environmental Services, Inc.

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COST/SCHED-AREA
SCALE AS NOTED

SITE GEOLOGIC PROFILE A-A'
HANGAR 1000
NAS JACKSONVILLE
JACKSONVILLE, FLORIDA

CONTRACT NO. 0399
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 2-7 REV. 0

FORM CADD NO. SDIV_BH.DWG - REV 0 - 1/20/98

of the site as indicated on Figure 2-8. Review of Figure 2-8 shows that groundwater in the surficial aquifer is captured by a storm sewer located on the south side of Yorktown Avenue. The storm sewer is a large diameter drain (approximately 5 ft in diameter) that is buried to an approxiamate depth of 8 ft bls.

Hydraulic properties for the surficial aquifer were determined by the USGS via aquifer testing methods (slug and pump tests) that were conducted on select monitoring wells (see Appendix G). This data was utilized along with groundwater elevation data to calculate the groundwater flow velocity at Hangar 1000 using the following formula:

$$V = \frac{\frac{K(h1-h2)}{L}}{n} \quad \text{where}$$

V = horizontal component of groundwater

K = hydraulic conductivity

h1 and h2 = groundwater elevation at select points

L = the horizontal distance between select points

n = porosity

Using an average K value of 6 ft per day derived from the pump and slug tests, an average porosity of 25 percent (0.25), and the gradient between monitoring wells MW-10 and MW-19, the shallow groundwater flow velocity was calculated to be approximately 75 ft per year.

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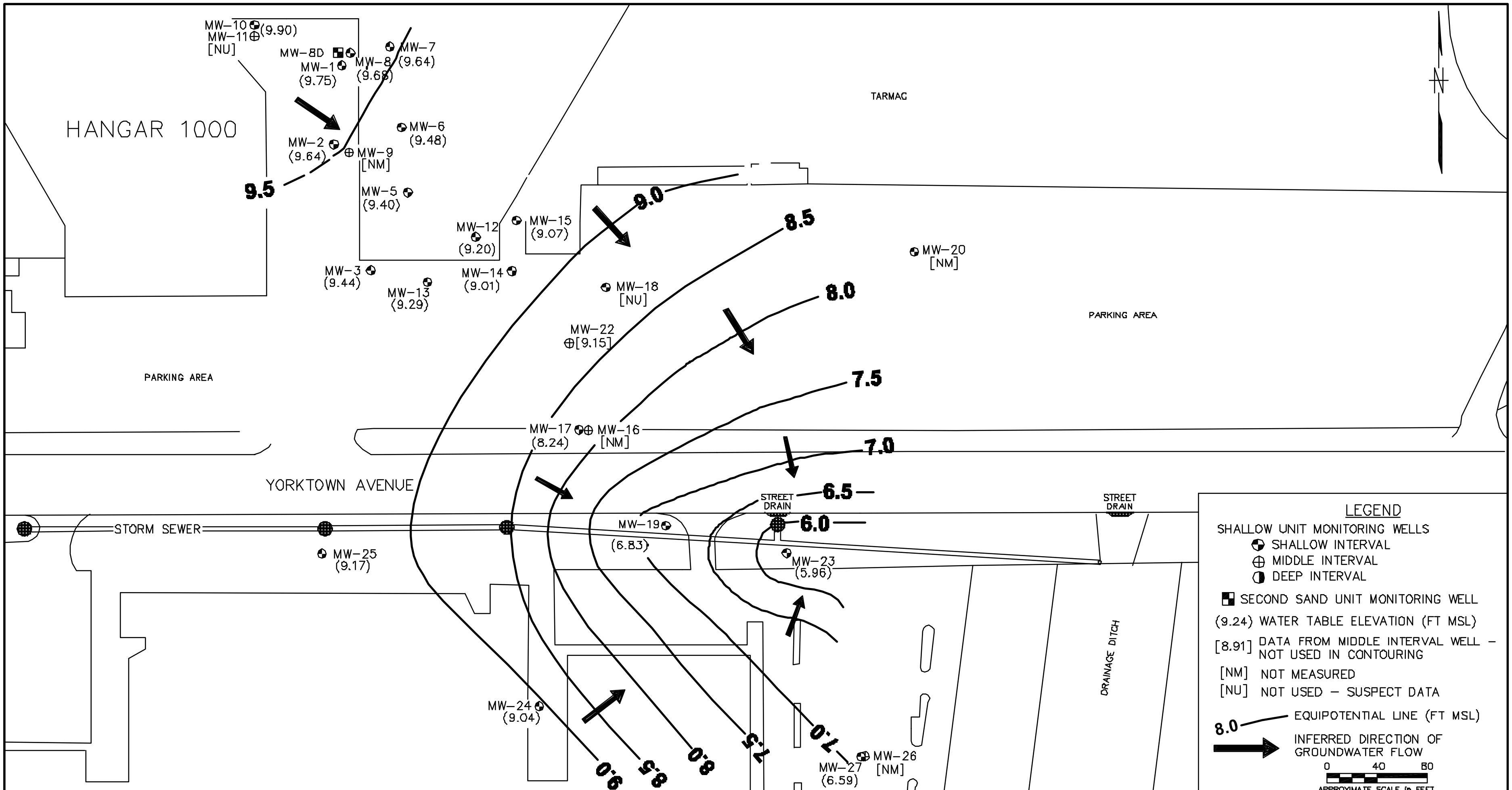

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DRAWN BY LLK DATE 10/21/02
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POTENTIOMETRIC SURFACE MAP
FOR SHALLOW INTERVAL
JULY 2002
HANGAR 1000
NAS JACKSONVILLE
JACKSONVILLE, FLORIDA

CONTRACT NO. 0399
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 2-8 REV. 0

FORM CADD NO. SDIV_BH.DWG – REV 0 – 1/20/98

3.0 PREVIOUS SITE INVESTIGATIONS AND REMEDIAL ACTIONS

The following sections describe the previous investigations and remedial actions performed by Garver and Garver, P.A., from June 1988 to 1989; ABB Environmental Services Inc. (ABB-ES) between December 1990 and December 1999; Harding Lawson Associates (HLA) between 1998 and 1999; and by J. A. Jones Environmental Services (J. A. Jones) in 2000 and 2001. Due to the complexity and numerous field events, the information is summarized for ease of review.

On June 21, 1988, the Florida Department of Environmental Regulation (FDER) (now the FDEP) conducted a hazardous waste inspection of the NAS Jacksonville facility. As a result of the inspection, FDER issued Warning Notice Number HW-16-0013 to NAS Jacksonville on July 22, 1988 for alleged violations including identification of the solvent/oil-water separator and associated tanks (Tanks A and B) as a RCRA regulated unit requiring closure. To resolve the remaining issues, FDER and NAS Jacksonville entered into Consent Order Number 88-0738 on October 4, 1988.

The consent order required the Navy to:

- Pay enforcement costs.

- Submit a Closure Plan in accordance with USEPA 40 Code of Federal Regulations (CFR) 265.197(a) and (b) for the underground tanks at Hangar 1000 by January 4, 1989 (subsequently extended to December of 1993).

- Conduct daily inspections of the tanks in accordance with 40 CFR 265.195 until the Certificate of Closure is approved.

- Close the tank system and provide post closure care as required for landfills (40 CFR 265.310) if it cannot be demonstrated that all contaminated soils can be practically removed or decontaminated persuant to 40 CFR 265.197(a).

- Provide the FDER with additional information if needed.

- Publish a public notice of the consent order.

Each of the requirements of the consent order was completed except for the clean closure requirement due to the presence of groundwater contamination.

3.1 CLOSURE ACTIVITIES

Various site assessment and closure activities were were undertaken in response to the Consent Order. These activites included the following:

- Groundwater Monitoring Plan (GWMP), April 1992, ABB-ES.
- Closure Plan (CP), Revised in December 1992, ABB-ES.
- Contingency Post Closure Plan (CPCP), December 1992, ABB-ES.
- Site Assessment Report (SAR), December 1992, ABB-ES.
- Health and Environmental Assessment (HEA), December 1992, ABB-ES.
- Technical Memorandum, December 1993, ABB-ES.
- Revised GWMP, HEA, CP, and CPCP; 1993; ABB-ES.
- Revised GWMP, December 1994, ABB-ES.
- Closure Activities Summary Report, March 1996, ABB-ES.
- Quarterly Monitoring Reports; March, July, and August 1995 and January 1996; ABB-ES.
- Additonal Assessment and Well Installations, 1999, HLA.

3.1.1 Groundwater Monitoring Plans

The GWMP for Hangar 1000 was updated three times during the early to mid 1990s. The intent of the GWMP was to provide plans to complete the groundwater monitoring activites necessary to support the risk-based clean closure of the Hangar 1000 tank system.

3.1.2 Closure Plan and Contingency Post Closure Plan

A CP and a CPCP were originally completed by ABB-ES in December of 1992 and then revised in December of 1993. The intent of the CP was to provide a methodology for the closure of the tank system through the removal of the wastes, tanks, and pipes; decontamination and abandonment of the washrack and manhole; and restoring the site. The CP incorporated risk-based standards for clean closure of soils as developed in the HEA.

The CPCP was prepared to provide guidance and details to execute the contingency plan for the closure of the tank system in the event that implementation of the CP failed to result in clean closure or risk-based clean closure.

Garver and Garver, P.A., was contracted by the Navy to implement the CP for the tank system. In accordance with that plan, soil samples were collected from around Tanks A and B and analyzed to provide data for a clean closure of the tank system. Garver and Garver, P.A., performed two rounds of sampling in January and May 1990. The data indicated that soils contained four metal constituents (cadmium, chromium, lead, and barium); nine VOC constituents [1,1-DCA, toluene, xylene, 1,1,1-trichloroethane (TCA), TCE, 1,1-DCE, ethylbenzene, PCE, and trichlorotrifluoroethane]; and two semi-volatile constituents [bis(2-ethylhexyl)phthalate and naphthalene]. A summary of historical soil sampling data is presented on Table 2-1 in Section 1 of Appendix A.

3.1.3 Site Assessment Report

A SAR prepared by ABB-ES, dated December 1992, documents field investigation activities conducted from January 1991 to December 1992. As part of the field activities at Hangar 1000, ABB-ES installed eight temporary piezometers, five soil borings, and four shallow groundwater monitoring wells. Additionally, ABB-ES performed groundwater and soil sampling, field screening, aquifer testing, and a sampling location survey to fulfill the requirements of the site assessment. The temporary piezometers, soil borings, and monitoring well locations are presented in Figure 2-7, Figure 2-8, and Figure 2-9, respectively, in Section 2 of Appendix A.

The results of aquifer testing indicated groundwater flow in the surficial aquifer to the southeast at an approximate flow velocity of 105 ft per year in the vicinity of the tank system.

The results of soil analyses indicated general agreement with closure sampling results with three metal constituents (chromium, barium, and lead), five VOC constituents (acetone; 1,1,1-TCA; carbon tetrachloride; PCE; and 1,1-DCE); and one semi-volatile constituent [bis(2-ethylhexyl)phthalate] detected in soils in the vicinity of the tank system.

Two rounds of groundwater analyses were conducted on the four monitoring wells. In the first round, each monitoring well was sampled and analyzed for VOCs (USEPA Method 8240); semivolatile organic compounds (SVOCs) (USEPA Method 8270); pesticides (USEPA Method 8240); barium, chromium, and lead (USEPA Method 6010); cadmium (USEPA Method 7131); and hexavalent chromium (USEPA Method 7196).

In the second sampling round, groundwater collected from wells MW-1 and MW-4 (the background well) were analyzed for USEPA Appendix IX parameters (USEPA Methods 8010, 8020, 8141, 8150, 8280, and 6010) in addition to SVOCs and pesticides. Samples from wells MW-2 and MW-3 were analyzed for the same contaminants previously tested (VOCs, SVOCs, pesticides, and metals).

Results ranges for the groundwater samples are as follows:

- arsenic [5.5 micrograms per liter (µg/L)]
- barium (105 µg/L to 199 µg/L)
- cobalt (2.6 µg/L)
- copper (6.3 µg/L)
- total chromium (12.3 µg/L to 26.3 µg/L)
- lead (6.4 µg/L to 15.6 µg/L)
- zinc (17.5 µg/L)
- carbon disulfide (1 µg/L)
- chloroform (2 µg/L to 14 µg/L)
- 1,1-DCA (24 µg/L to 51 µg/L)
- 1,1-DCE (18 µg/L to 63 µg/L)
- 1,2-DCE (15 µg/L to 57 µg/L)
- 1,1,1-TCA (76 µg/L to 440 µg/L)
- TCE (98 µg/L to 370 µg/L)
- PCE (5 µg/L to 7.0 µg/L)
- di-n-butylphthalate (1.0 µg/L)
- bis(2-ethylhexyl)phthalate (2 µg/L to 5.0 µg/L)

3.1.4 Health and Environmental Assessment

ABB-ES conducted an HEA to develop soil and groundwater concentrations for preliminary remedial goals based upon risk estimated from potential exposure to contaminants from the tank system at Hangar 1000. The goal of the HEA was to provide an evaluative basis for achieving clean closure or risk-based clean closure of the site. The result of the HEA was the adoption of target soil concentrations based on a worker-industrial land use scenario. The HEA also established target groundwater concentrations for nonpotable use, which are in excess of current regulatory standards for groundwater imposed at Hangar 1000 [Groundwater Cleanup Target Levels (GCTLs)]. The target soil concentrations were used during the tank system closure activities. Soils in excess of the target concentrations were removed and disposed offsite. Table 3-1 provides the target soil concentrations.

The information provided by the HEA was considered in the development of the HHRA conducted for the RI/FS as presented in Section 7.0.

Table 3-1
Target Soil Concentrations, Worker-Industrial Land Use

Remedial Investigation/Focused Feasibility Study for Hangar 1000
Naval Air Station Jacksonville
Jacksonville, Florida

CAS Number	Chemical Name	Maximum Detected Soil Concentration (mg/kg)	Final Target Soil Concentration (mg/kg)	Target Soil Concentration Based on $1x10^{-6}$ Cancer Risk (mg/kg)	Target Soil Concentration Based on Hazard Index = 1 (mg/kg)
67-64-1	Acetone	5.2	5,900		5,900
7440-39-3	Barium	22.2	3,000		3,000
71-43-2	Benzene	ND	1,600	1,600	
117-81-7	bis(2-Ethylhexyl)phthalate	0.955	1,200	3,600	1,200
7440-43-9	Cadmium	25.3	30		30
56-23-5	Carbon tetrachloride	0.018	42	360	42
67-66-3	Chloroform	ND	600	2,900	600
18540-29-9	Chromium (as VI)	14.1	300		300
106-44-5	Cresol (as para)	ND	300		300
75-34-3	1,1-Dichloroethane	1.85	5,900		5,900
107-06-2	1,2-Dichloroethane	ND	490	490	
75-35-4	1,1-Dichloroethene	1.883	48	48	530
540-59-0	1,2-Dichloroethene (mixed)	ND	530		530
105-67-9	2,4-Dimethylphenol	ND	1,200		1,200
84-74-2	Di-N-butyl phthalate	ND	5,900		5,900
100-41-4	Ethylbenzene	2.0	5,900		5,900
7439-92-1	Lead	27.0	[1]500		
78-93-3	Methyl ethyl ketone	ND	36,000		36,000
75-09-2	Methylene chloride	2.0	3,600	6,700	3,600
91-20-3	Naphthalene	1.04	2,400		2,400
108-95-2	Phenol	ND	36,000		36,000
1336-36-3	Polychlorinated biphenyls	ND	6.6	6.6	
127-18-4	Tetrachloroethene	31.45	600	990	600
108-88-3	Toluene	11.35	12,000		12,000
71-55-6	1,1,1-Trichlorethane	52.0	5,300		5,300
79-01-6	Trichloroethene	6.3	4,600	4,600	
76-13-1	Trichlorotrifluoroethane	0.783	1,800,000		1,800,000
75-01-4	Vinyl Chloride	ND	24	24	
1330-20-7	Xylenes (mixed)	14.75	120,000		120,000

Notes: [1]Lower lead cleanup level recommended in Office of Solid Waste and Emergency Response (OSWER) Directive Number 9355.4-02 (USEPA, 1989e).

$1x10^{-6}$ = one in a million
mg/kg = milligrams per kilogram
ND = not detected in any of the samples taken at Hangar 1000.
ABB-ES = ABB Environmental Services

3.1.5 Technical Memorandum

A Technical Memorandum was completed in December of 1993. The purpose of the memorandum was to provide additional assessment information from a push probe survey of soil and groundwater conditions conducted in the Keyway to Hangar 1000. Soil and groundwater sampling was conducted at 40 locations with all data collected from shallow intervals. The results of the assessment confirmed prior results, which indicated VOC-impacted soil in close proximity to the tank system and VOC impacts to shallow groundwater.

3.1.6 Closure Activities Summary Report

ABB-ES prepared a Closure Activities Summary Report in March of 1996. The report documents the removal/abandonment of the tank system and summarizes the results of previous closure activities including the HEA and prior assessment results. The Closure Activities Summary Report is provided as Section 4 of Appendix A.

Pertinent findings from the summary report included the following:

- All elements of the tank system have been removed from the site and properly disposed.
- Soil contamination in excess of the risk-based target concentrations is not present at the site.
- Groundwater contamination in excess of risk-based target concentrations is present at the site.

3.1.7 Quarterly Monitoring Activities

Based on the results of prior assessment activites, additional monitoring wells were installed at the site and incorporated into the site's monitoring network. A total of 11 monitoring wells (MW-1 through MW-11) were present at the site by the end of 1994. Of these 11 wells, seven wells (MW-5 through MW-11) were sampled in December of 1994, March of 1995, June of 1995, and September of 1995. The results were compared to target groundwater concentrations developed in the HEA.

The results of these analyses showed VOC impacts to shallow groundwater (principally DCE and TCE). However, it is noted that the concentrations of constituents were as much as an order of magntiude lower for key COPCs (TCE) in well MW-8 than has been observed in more recent data. Concentration Versus Time Charts are provided in Section 5.0 of Appendix A.

3.1.8 Additional Assessment and Well Installations

In 1998 and 1999, additional assessment and well installation activities were conducted by HLA. The assessment activities included conducting geoprobe sampling of groundwater and the installation of monitoring wells MW-12 through MW-19 and MW-22 at the Hangar 1000 site. Two additional wells (MW-20 and MW-21) were also installed; however, they were installed to address another location and not the Hangar 1000 tank system.

The results of the assessment activities indicated that COPCs were present in groundwater at levels exceeding GCTLs in the parking lot to the southeast of the Hangar 1000 Keyway area. The results of geoprobe sampling and the locations of the monitoring wells are presented in Section 6 of Appendix A on Figure U-3.

3.2 INSTALLATION RESTORATION ACTIVITIES

In the latter part of 1999, the Navy and FDEP entered into negotiations to transfer the cleanup of groundwater at Hangar 1000 from the RCRA Program to the CERCLA Program under the oversight of the NAS Jacksonville Partnering Team. As part of these negotiations, the Navy agreed to implement the CERCLA cleanup process including completion of an RI/FS. The Navy agreed to conduct an interim action to address VOC contamination in groundwater in the vicinity of monitoring well MW-8, which monitors the primary source area for COPCs at Hangar 1000. In addition, the Navy also agreed to continue monitoring groundwater conditions under RCRA in accordance with the facility's RCRA permit.

Because of these negotiations, the Navy contracted with CH2M Hill to conduct the interim measures, which were performed by their subcontractor, J. A. Jones. The Navy also contracted TtNUS to conduct an RI/FS and to conduct RCRA groundwater monitoring.

3.2.1 Interim Measure

In order to address VOC contamination in the source area, J. A. Jones conducted an interim measure utilizing chemical oxidation technology. The interim measure consisted of a multiple chemical oxidation injection events to reduce dissolved phase VOCs in groundwater in the source area. See Appendix A for a diagram showing the area treated by chemical oxidation.

To accomplish the interim measure, seven injection points were established, each consisting of two injections wells (one completed at 17 ft and the second at 22 ft). Two vent wells were also installed to a depth of 7 ft. The first event conducted on August 31 2001, utilized 250 gallons of iron catalyst and 200 gallons of 25 percent hydrogen peroxide. Initial post injection monitoring results showed a

98 percent reduction in total VOCs; however, constituents concentrations later rebounded. See Appendix A for locations of wells showing a temporary 98 percent reduction in total VOCs.

Additional injection events were conducted on October 16, 2000 and May 1, 2001. Following each event, sampling was conducted to evaluate the effectiveness of the interim measure. In both cases, constituent concentrations rebounded indicating that additional source(s) of the contamination still exist in the subsurface.

3.2.2 Site Characterization and Analysis

J. A. Jones conducted additional site characterization activities to investigate the cause(s) of the observed constituent rebound and to provide additional information for the evaluation of a bimetallic nano-particle pilot test for the site. The site characterization included the use of membrane interface probe (MIP) technology to further define the source area, the sampling of existing monitoring wells to provide baseline conditions, and the collection of soil samples from the source area. One objective of the study was to identify the potential occurrence of DNAPL at the site. A detailed presentation of the site characterization and analysis effort is provided as Section 7 of Appendix A.

The results of the characterization were as follows:

- MIP and VOC analytical data indicates that the contaminant source area does not extend upgradient from the historical tank location.

- The vertical extent of dissolved groundwater contamination was verified to be at approximately 24 to 26 ft bls, which corresponds to the top of the sandy clay unit.

- Elevated dissolved phase concentrations of VOCs extending beyond the source area under the Hangar 1000 structure.

- VOC analytical data collected from soil samples at location H1000-06 indicate a possible DNAPL source may remain in the historical tank location at a depth of approximately 10 to 14 ft bls and 20 to 24 ft bls.

3.2.3 RCRA Monitoring

TtNUS has implemented RCRA monitoring at Hangar 1000 in accordance with the facility's RCRA permit. Sampling has been conducted on a semi-annual basis beginning in 2000.

Based on the results of prior Appendix IX sampling, FDEP developed a list of parameters at Hangar 1000 for RCRA monitoring purposes. The parameters listed in the facility's RCRA Permit Number HF16-288092 dated January 17, 2000, are provided in Table 3-2. These parameters were adopted by the NAS Jacksonville Partnering Team as COPCs for the RI/FS activities. It should be noted that Groundwater Protection Standards (GWPS) are provided in the facility's RCRA permit for the COPCs. The GWPS values are equivalent to Florida GCTLs.

Table 3-2
Constituents and Standards [1] - Hangar 1000

Remedial Investigation/Focused Feasibility Study for Hangar 1000
Naval Air Station Jacksonville
Jacksonville, Florida

VOCs		SVOCs	
Parameter	**Regulatory Limit (µg/L)**	**Parameter**	**Regulatory Limit (µg/L)**
Acetone	700	Acenaphthene	20
Benzene	1	Benzo(a)anthracene	0.2
n-Butanol	700	Benzo(a)pyrene	0.2
Carbon Disulfide	700	Benzo(b)fluoranthene	0.2
Carbon Tetrachloride	3	Benzo(k)fluoranthene	0.5
Chlorobenzene	100	Carbazole	4
Cyclohexanone	35,000	2-Chlorophenol	35
1,1-DCA	70	Chrysene	4.8
1,2-DCA	3	Dibenz(a,h)anthracene	0.2
1,1-DCE	7	2,4-Dinitrotoluene [3]	0.2
1,2-DCE (total)	63	Indeno(1,2,3-cd)pyrene	0.2
Ethylbenzene	700	2-Methylphenol	35
Isobutanol	2,100	3-Methylphenol	35
Methanol	5,000	4-Methylphenol	4
Methylene Chloride	5	Naphthalene	20
2-Nitropropane	PQL [2]	4-Nitrophenol	56
PCA	3	N-nitroso-di-n-propylamine	4
Toluene	40	Pentachlorophenol [3]	1
1,1,1-TCA	200	Phenol	10
1,1,2-TCA	5	Pyridine	7
TCE	3	**Metals**	
1,1,1-Trichloro-1,2,2,-Trifluoroethane	PQL [2]	**Parameter**	**Regulatory Limit (µg/L)**
Xylenes	20	Chromium, Total	100
Vinyl Chloride	1	Cadmium	5

Notes:
[1] As listed in Table 1 of Chapter 62-785, Florida Administrative Code (FAC).
[2] Neither 2-Nitropropane nor 1,1,1-Trichloro-1,2,2-Trifluoroethane has a groundwater standard listed in Chapter 62-785, FAC. The Practical Quantitation Limit (PQL) for each parameter will, therefore, serve as the standard.
[3] Lowest attainable method detection limit using USEPA Method 8270 will be accepted in lieu of Method 8270 Single Ion Monitoring.

4.0 RI/FS FIELD PROGRAM

4.1 OBJECTIVE AND APPROACH

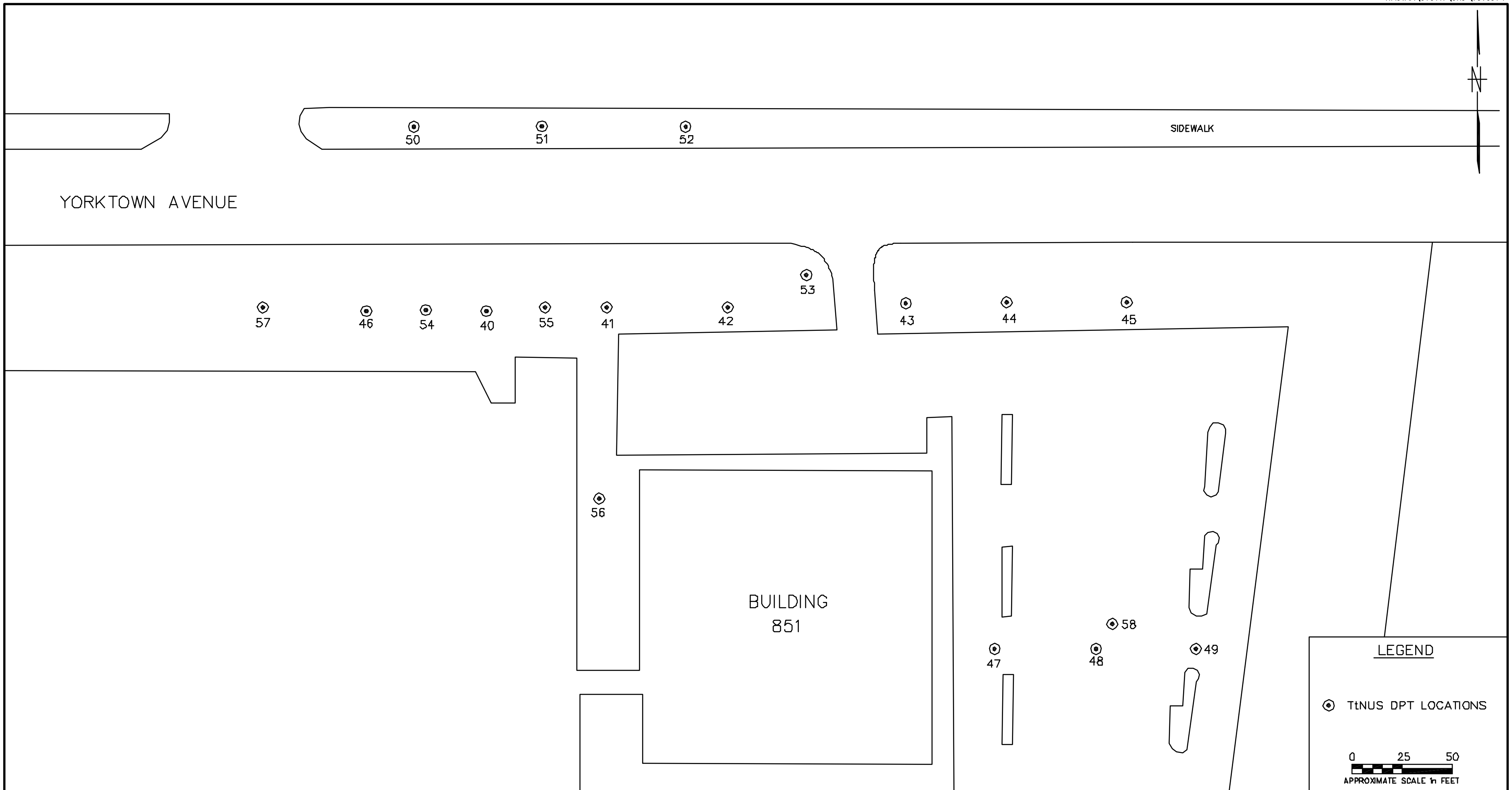
The RI/FS field activities were conducted at Hangar 1000 between December 4, 2000, and February 2001. Planning for the RI included a review of the data quality objectives (DQOs) needed to complete the RI/FS. Review of the existing data available for Hangar 1000 revealed that considerable data was available regarding the source area; however, additional data was needed to complete definition of the extent of groundwater contamination. As a result, the NAS Jacksonville Partnering Team agreed that the RI activities would focus on completing the horizontal definition of groundwater contamination. To accomplish this, members of the NAS Jacksonville Partnering Team created the scope of work implemented by TtNUS. The scope of work involved the following approach:

- DPT Survey: Conduct a screening survey of groundwater conditions at the downgradient end of the contaminant plume using DPT techniques. Collect groundwater samples from the shallow unit at multiple depths (shallow, mid-point, and deep intervals) in the downgradient area of the plume to evaluate the horizontal and vertical extent of impact. The DPT samples were analyzed by a mobile laboratory and provided same day analytical results. The screening results were used to field locate additional sample locations, and monitoring well locations. Water samples were collected from the upper 5 ft of the water table, at approximately 20 ft bls and 26 to 30 ft bls, which includes the sandy clay layer immediately above the clay unit. Sample depths were field adjusted based on site conditions. A map showing the DPT sample locations is provided as Figure 4-1.

- Monitoring Well Installation: Based on the results of the screening survey, monitoring wells were designed and installed downgradient of the source area. Four “micro" wells (MW-22 through MW-25) were installed by DPT techniques. A 2-inch monitoring well cluster [one shallow zone (approximately 15 ft) and one deep zone (approximately 30 ft)] was installed at a downgradient location to provide information regarding the extent of COPCs in groundwater. The design of the deep zone well was based on the results of depth profiling information obtained via DPT methods. Monitoring well locations are provided on Figure 4-2.

- Sampling of Newly Installed and Existing Wells: All new and existing wells were developed, purged, and sampled.

- Storm Sewer and Surface Water Sampling: Three locations were sampled in June 2001 and analyzed for USEPA target compound list (TCL) constituents. The location of the storm sewer is provided on Figure 4-3. Two samples were collected from the storm sewer. A third sample was collected from



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY LLK DATE 10/18/02
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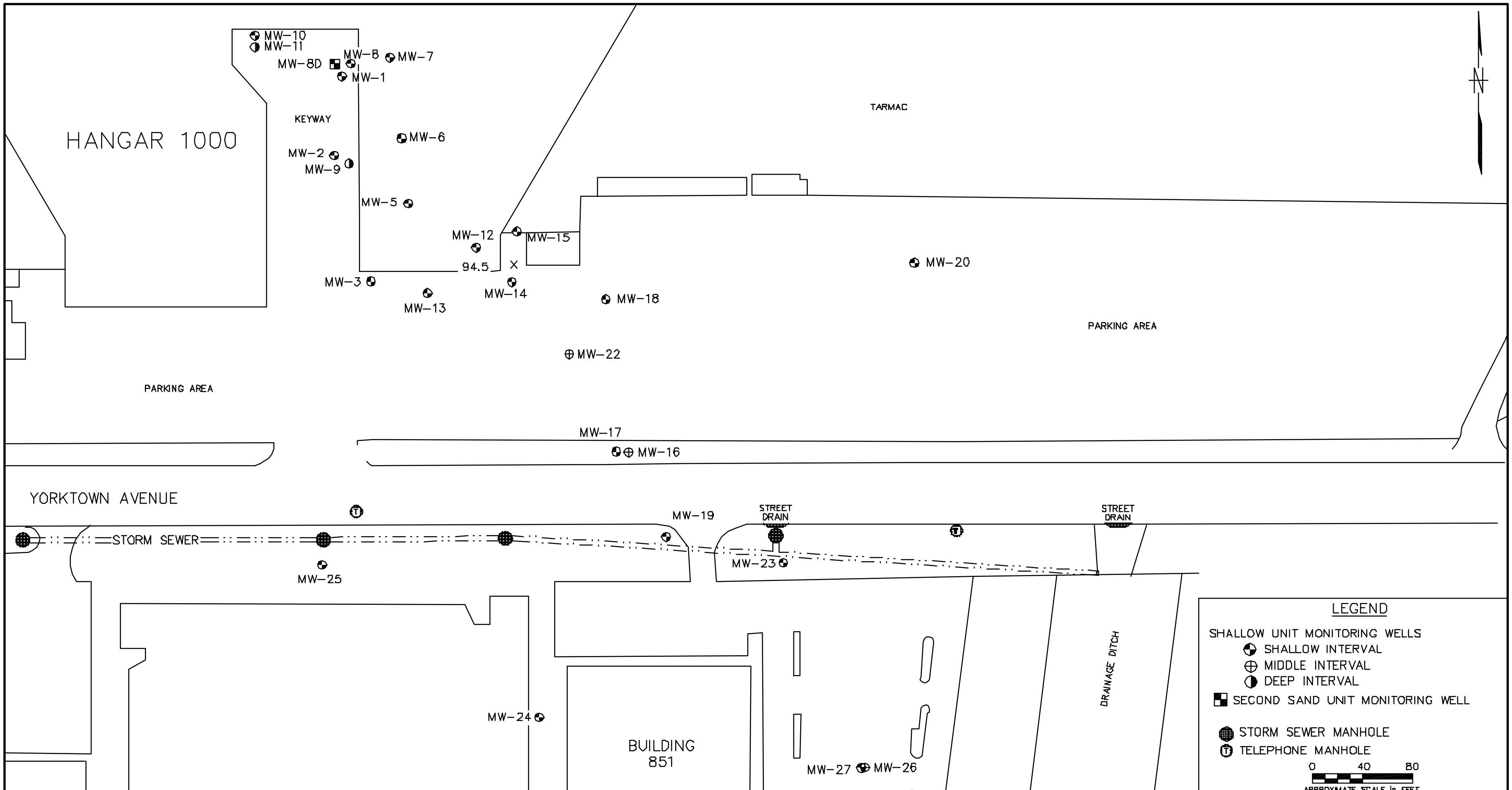
COST/SCHED-AREA
SCALE AS NOTED

RI DPT LOCATIONS
HANGAR 1000
NAS JACKSONVILLE
JACKSONVILLE, FLORIDA

CONTRACT NO. 0399
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 4-1 REV. 0

FORM CADD NO. SDIV_BH.DWG – REV D – 1/20/98



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DRAWN BY: LLK DATE: 10/21/02
CHECKED BY DATE
COST/SCHED-AREA
SCALE: AS NOTED

MONITORING WELL LOCATIONS MAP
HANGAR 1000
NAS JACKSONVILLE
JACKSONVILLE, FLORIDA

CONTRACT NO. 0399
APPROVED BY DATE
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DRAWING NO. FIGURE 4-2 REV. 0

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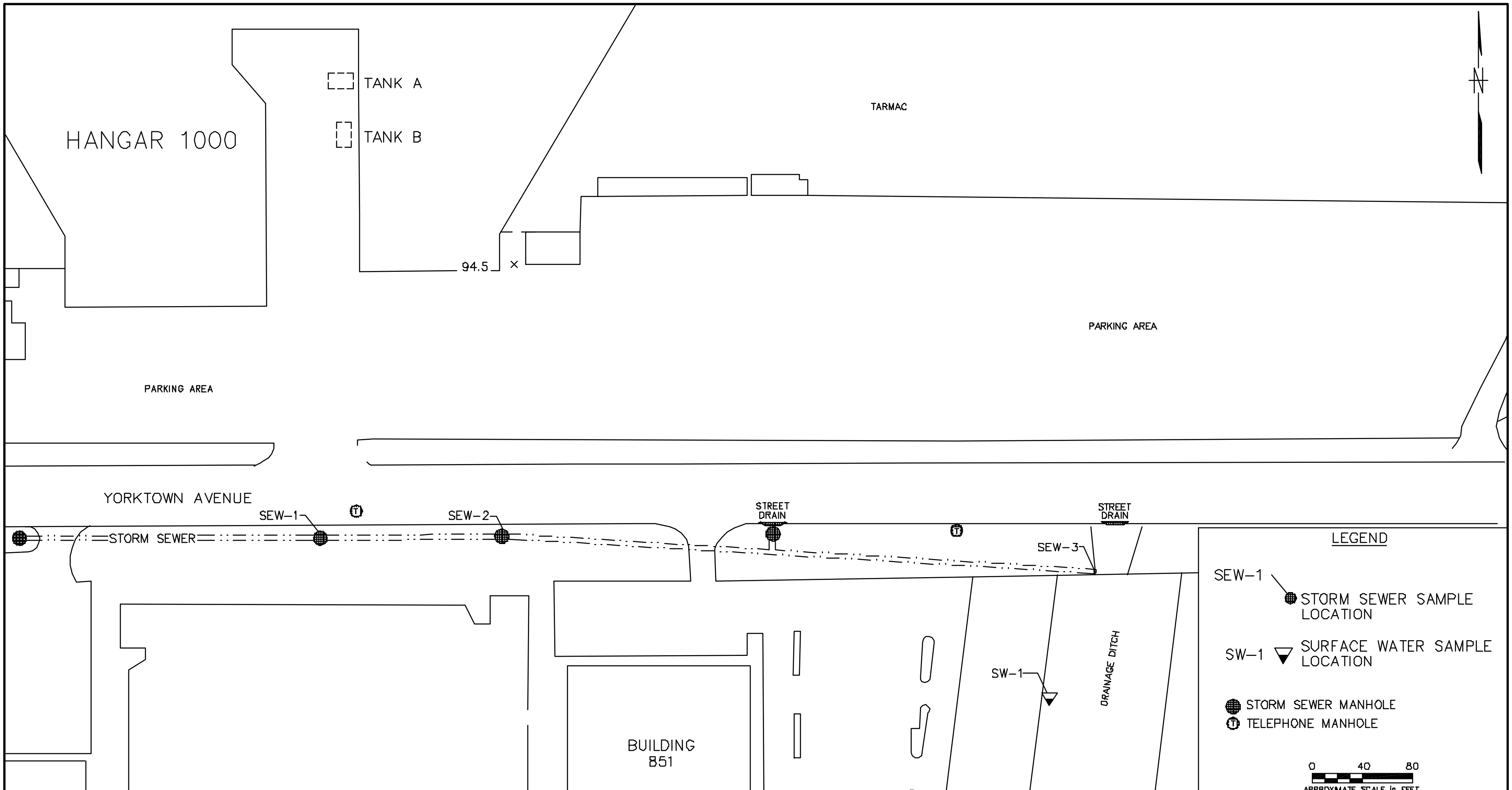

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

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SCALE AS NOTED

STORM SEWER AND SURFACE WATER SAMPLING LOCATIONS
HANGAR 1000
NAS JACKSONVILLE
JACKSONVILLE, FLORIDA

CONTRACT NO. 0399
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 4-3
REV. 0

FORM CADD NO. SDIV_BH.DWG - REV 0 - 1/20/98

the drainage ditch at the out-fall of the storm sewer. In addition, one surface water sample was collected during the RI field activities from the drainage ditch south of Yorktown Avenue and analyzed for VOCs by an onsite mobile laboratory.

- Aquifer Testing: Aquifer testing was performed at Hangar 1000. The testing was performed by Hal Davis of the USGS. The results of the aquifer testing are summarized in this section.

The following sections describe the field activities that took place during the RI investigation.

4.1.1 Direct Push Technology Survey

Groundwater samples were collected via DPT techniques to establish COPC concentrations at shallow, mid, and deep zones within the shallow unit of the surficial aquifer. To accomplish this, DPT rods were advanced to the bottom of the sandy clay unit and water samples were obtained from the deep zone. The rods were withdrawn to the mid zone and then the shallow zone for sampling. DPT rods were purged in between each zone to mitigate the potential for cross contamination between the zones.

Soil sampling was not performed during the DPT survey.

TtNUS presented the results of the DPT survey to the Navy, FDEP, and USEPA via teleconference at the conclusion of the DPT effort. Based on this discussion of results, the following was agreed to by consensus:

- MW-10 would be used as the upgradient well.
- The design and locations of monitoring wells MW-23 through MW-27.
- The installation of an additional shallow zone well would be nested with the downgradient well screening the shallow and deep intervals of the surficial aquifer.

4.1.2 Direct Push Technology Well Installation

Four DPT “micro” monitoring wells were installed, each to an approximate depth of 15 ft bls. These wells were installed at locations established based on the results of the DPT survey to define the areal extent of groundwater contamination at the site. No soil sampling was performed during the installation of the DPT monitoring wells. Survey data for the new and previous monitoring well locations are provided in Appendix B. Monitoring well installation documentation is provided in Appendix C.

4.1.3 Two-inch Monitoring Well Installation and Development

Two-inch polyvinyl chloride monitoring wells were installed via hollow stem auger techniques at well locations MW-26 and MW-27. The micro and 2-inch monitoring wells were developed using peristaltic pumps (micro wells) and submersible pumps (2-inch wells) within 24 hours of well installation.

The wells were developed until the following criteria were achieved:

- Stabilization of the following parameters occurred:
  - Temperature plus or minus 1 degree Celsius (°C).
  - pH plus or minus 1 unit.
  - Electrical conductivity plus or minus 5 percent of scale.
- Turbidity remained within a 10 Nephelometric Turbidity Unit range for two consecutive readings.
- Accumulated sediment was removed from the well.

4.1.4 Groundwater Level Measurements

After well installation and development, multiple rounds of synoptic groundwater level measurements were collected at Hangar 1000. The measurements were collected in order to determine the depth, flow direction, and gradient of groundwater. Groundwater level measurements for the most recent event (July 2002) are summarized in Table 4-1. A groundwater elevation contour map is provided on Figure 2-8.

4.1.5 Groundwater Sampling

Groundwater sampling at Hangar 1000 took place on December 14, 2000, for the newly installed wells and on January 16 through 19, 2001, for the existing monitoring wells. The purpose of the sampling was to define the areal and vertical extent of groundwater contamination and collect data for evaluation of NA. Groundwater samples were collected from 19 existing and 5 newly installed monitoring wells using low-flow purging and sampling techniques and were analyzed for the COPC parameters utilizing the following methods: VOCs (USEPA Method 8260B), alcohols (USEPA Method 8015B), SVOCs (USEPA Method 8270C), polynuclear aromatic hydrocarbons (PAHs) (USEPA Method 8310), and metals (Cd and Cr) (USEPA Method 6010B). The groundwater analytical results are discussed in Section 5.0.

For the purposes of the RI, the NAS Jacksonville Partnering Team adopted the same COCs identified in the Facility's RCRA permit in force at the time of the sampling event. The development of the COC list in the RCRA permit was based on the FDEP's review of the historical data, and the review of materials utilized at Hangar 1000 and the nearby T-56 engine wash area. Arsenic, barium, cobalt, copper, and lead results from the Appendix IX analyses are below basewide screening values and, therefore, were not

Table 4-1
Water Table Elevation and Monitoring Well Construction Data

Remedial Investigation/Focused Feasibility Study for Hangar 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Well Number	Total Well Depth (ft, bls)	Top of Casing Elevation (ft) msl	July 9, 2002	
			Depth to Water below Top of Casing (ft)	Water Elevation (ft) msl
MW-01	13.85	16.32	6.57	9.75
MW-02	13.75	16.19	6.55	9.64
MW-03	13.89	16.40	6.96	9.44
MW-05	13.10	16.93	7.53	9.40
MW-06	12.70	16.96	7.48	9.48
MW-07	13.39	16.93	7.29	9.64
MW-08	13.00	16.46	6.78	9.68
MW-08D	58.00	17.87	7.9	9.97
MW-09	39.58	16.21	6.80	9.41
MW-10	12.40	16.37	6.47	9.90
MW-11	33.90	16.35	0.00*	*
MW-12	14.53	17.01	7.81	9.20
MW-13	14.31	16.56	7.27	9.29
MW-14	16.08	16.35	7.34	9.01
MW-15	15.60	15.67	6.60	9.07
MW-16	20.15	14.14	5.72	8.42
MW-17	11.60	14.13	5.89	8.24
MW-18	11.69	14.17	0.00*	*
MW-19	11.59	14.24	7.41	6.83
MW-22	20.50	14.48	5.33	9.15
MW-23	15.00	12.62	6.66	5.96
MW-24	14.50	17.01	7.97	9.04
MW-25	11.00	16.38	7.21	9.17
MW-26	25.00	9.50	3.23	6.27
MW-27	14.00	9.70	3.11	6.59

Notes:
*Because this is a suspect data point, it was not used in the construction of the groundwater flow direction.
msl **=** Mean Sea Level

retained as COPCs. Cadmium and chromium were retained since they were identified as potential contaminants.

Field forms are provided in Appendix D. The validated laboratory data packages and Form I's are provided in Appendix E.

Groundwater samples were also tested for NA evaluation purposes. The parameters analyzed in the field include carbon dioxide, dissolved oxygen (DO), dissolved inorganic carbon as alkalinity, ferrous iron, hydrogen sulfide, sulfide, oxidation-reduction potential (ORP), pH, specific conductivity, and temperature. The NA parameters analyzed in the laboratory include dissolved sulfide, methane, ethane, ethene, and anions (sulfite, chloride,and nitrate). NA is discussed further in Section 5.0 of this report.

The validated laboratory data packages for NA analyses are also provided in Appendix E. The field analytical log sheets for NA parameters are provided in Appendix F.

4.1.6 Aquifer Testing

On February 14 and 15, 2001, TtNUS and Hal Davis, a representative from the USGS, conducted aquifer testing on selected wells at Hangar 1000. The results of the aquifer test are provided in Appendix G and are summarized in Section 6.0

4.1.7 Storm Sewer and Surface Water Sampling

On June 21, 2002, TtNUS, under the direction of the NAS Jacksonville Partnering Team, collected three water samples from the storm sewer and drainage ditch located south of Hangar 1000 (Figure 4-3). The samples were collected by submerging a pre-cleaned beaker into the water and then transferring the samples into pre-cleaned bottleware supplied by the laboratory. After sample collection, the samples were place on ice and shipped to the laboratory via Federal Express for VOC analysis.

One surface water sample was collected in December of 2002 from the stormwater drainage ditch south of Yorktown Avenue. The sample was collected and hand delivered to an onsite mobile laboratory for VOC analysis.

5.0 NATURE AND EXTENT OF CONTAMINATION

This section summarizes and evaluates results of the sampling activities supporting the RI as described in Sections 3.0 and 4.0. Specifically, this section summarizes the nature and extent of impact to groundwater as required by project DQOs. The validated laboratory data packages are presented in Appendix E and the Form I's (analytical summary sheets) from the laboratory are presented in Appendix F. In addition, the TtNUS sample locations are presented in the previous section on Figures 4-1, 4-2, and 4-3.

The quality of the chemical analytical data collected during the investigation of Hangar 1000 has been documented. The analytical data validation process was completed for all laboratory data packages in accordance with the USEPA Functional Guidelines for Organic Data Validation (February 1994) and the USEPA Functional Guidelines for Inorganic Data Validation (February 1994). The data set compiled using these guidelines is considered acceptable for use in this RI and to support an FS.

Discussion of the nature and extent of contamination at Hangar 1000 is structured according to the USEPA RI/FS guidance. Sources of contamination are discussed first. Sampled media are then discussed. Within the media discussion, analytical fractions are discussed in the following order: VOCs, SVOCs, alcohols, PAHs, and inorganics. Following the evaluation of each analytical fraction for a particular medium, a summary of relevant results and findings is presented.

5.1 SOURCES OF CONTAMINATION

Sources of contamination at Hangar 1000 include two USTs (Tank A and Tank B), which previously received waste solvents and other substances from a washrack, drain lines, and other shop operations. The following paragraphs present a brief description of each identified source of contamination and the reported releases to the environment.

5.1.1 Tank A

Tank A was a 750-gallon solvent and water separator constructed of concrete. Tank A consisted of two concrete chambers interconnected with a cast iron pipe (underflow). Overflow from the first chamber discharged through a metal, 4-inch diameter pipe to Tank B. Overflow from the second chamber of Tank A discharged through a 4-inch diameter pipe to the nearby storm sewer system. The location of Tank A and Tank B are provided on Figure 2-4. Construction details of Tank A are provided in

Appendix A, Section 3. Based on historical sampling data, the primary source for impacts to groundwater originate at the location of the former Tank A.

5.1.2 Tank B

Tank B was a 2,000-gallon steel UST. Tank B received the waste solvent overflow from Tank A, as described above, plus other waste oils and solvents discharged directly from shop drains inside Hangar 1000. A review of available figures indicates that a total of 11 floor drains discharged to Tank B.

Tanks A and B, associated piping, and visually contaminated soils were excavated and removed in March 1994. Confirmatory soil sample analyses from the excavation indicated that no soil contamination exceeded site specific industrial exposure risk-based standards remained in the excavation. The floor drains and their associated pipes were abandoned in-place.

5.2 REGULATORY SCREENING CRITERIA

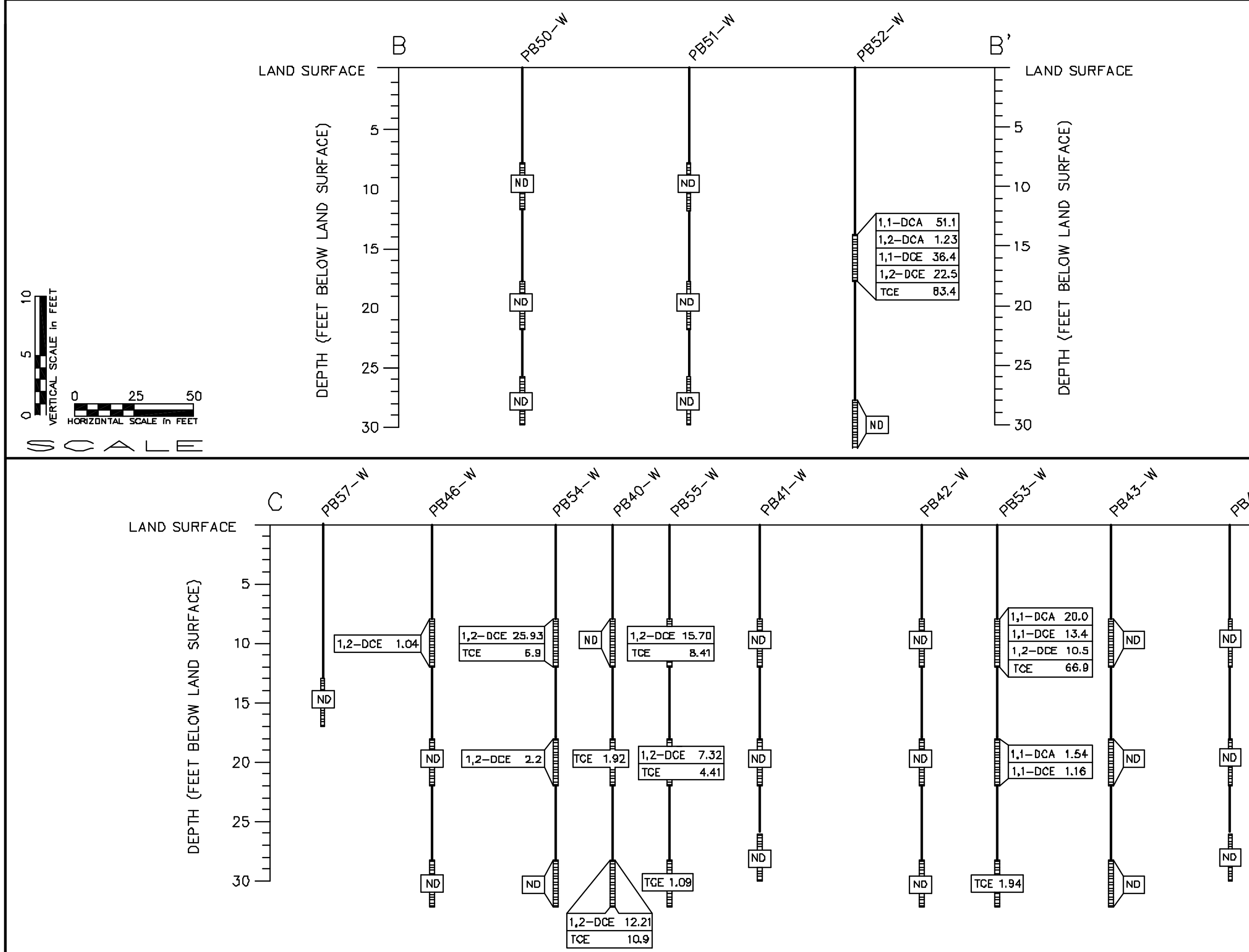
The NAS Jacksonville Partnering Team determined that FDEP GCTLs would be adopted as applicable or relevant and appropriate requirements for the RI sampling activities at Hangar 1000. The groundwater results were compared to the FDEP GCTL standards for the RI sampling event. No soil thresholds were established for the RI since impacted soils above previously established target concentration levels have been removed from the site.

5.3 CONTAMINATION ASSESSMENT

This section discusses the data collected during the field investigation performed in support of the RI/FS.

5.3.1 DPT Investigation – Groundwater Sampling

Between December 4, 2001, and December 8, 2001, a screening survey was conducted using DPT techniques. Groundwater samples were collected from the shallow unit of the surficial aquifer at multiple depths (shallow, mid, and deep intervals) in the downgradient area of the plume to evaluate the horizontal and vertical extent of impact. The DPT samples were analyzed by a mobile laboratory for VOC compounds via modified USEPA Method 8260. The DPT sampling locations are shown on Figure 4-1. Storm sewer sampling locations and surface water sampling locations are shown on Figure 4-3, and an east-west profile of B-B' and C-C' showing contaminant concentrations at the DPT locations is presented on Figure 5-1. RI screening results are presented on Table 5-1.



LEGEND

DPT SCREENING LOCATION

PB-45W DESIGNATION

ND GROUNDWATER SAMPLING INTERVAL

1,2-DCE 15.70 TCE 8.41	CONSTITUENTS REPORTED IN GROUNDWATER SAMPLES

CONSTITUENT ABBREVIATIONS

DCA	DICHLOROETHANE
DCE	DICHLOROETHENE
TCE	TRICHLOROETHENE

ALL VALUES REPORTED IN MICROGRAMS PER LITER (μg/L)

ND NO ANALYZED CONSTITUENTS DETECTED BY LABORATORY

See Figure 2-6 for Cross-Section Locations in Plan View

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY LLK DATE 4/11/01
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EAST-WEST PROFILES B-B' AND C-C' SHOWING CONTAMINANT CONCENTRATIONS AT DPT SCREENING POINTS
HANGAR 1000
NAS JACKSONVILLE
JACKSONVILLE, FLORIDA

CONTRACT NO. 0399
APPROVED BY DATE
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Table 5-1
Mobile Laboratory Results

Remedial Investigation/Focused Feasibility Study for Hangar 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Sample ID: H10-	**Blank**	**PB40-W10'**	**PB40-W20'**	**PB40-W30'**	**PB41-W10'**	**PB41-W20'**	**PB41-W28'**	**PB42-W10'**	**PB42-W20'**	**PB42-W30'**
Date Analyzed	12/05/00	12/04/00	12/04/00	12/04/00	12/04/00	12/04/00	12/04/00	12/05/00	12/05/00	12/05/00
Vinyl Chloride	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-DCE	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
t-1,2-DCE	<1	<1	<1	6.5	<1	<1	<1	<1	<1	<1
1,1-DCA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
c-1,2-DCE	<1	<1	1.1	15.7	<1	<1	<1	<1	<1	<1
1,1,1-TCA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-DCA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
TCE	<1	<1	1.9	10.9	<1	<1	<1	<1	<1	<1
1,1,2-TCA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
PCE	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

Sample ID: H10-	**Blank**	**PB43-W10'**	**PB43-W20'**	**PB43-W30'**	**PB44-W10'**	**PB44-W20'**	**PB44-W30'**	**PB45-W10'**	**PB45-W20'**	**PB45-W30'**
Date Analyzed	12/06/00	12/05/00	12/05/00	12/05/00	12/04/00	12/04/00	12/04/00	12/05/00	12/05/00	12/05/00
Vinyl Chloride	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-DCE	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
t-1,2-DCE	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-DCA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
c-1,2-DCE	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1-TCA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-DCA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
TCE	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-TCA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
PCE	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

See notes at end of table.

Table 5-1 (Continued)
Mobile Laboratory Results

Remedial Investigation/Focused Feasibility Study for Hangar 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Sample ID: H10-	**Blank**	**PB46-W10'**	**PB46-W20'**	**PB46-W30'**	**PB47-W10'**	**PB47-W20'**	**PB47-W30'**	**PB48-W10'**	**PB48-W18'**	**PB48-W30'**
Date Analyzed	12/04/00	12/05/00	12/05/00	12/05/00	12/05/00	12/05/00	12/05/00	12/05/00	12/05/00	12/05/00
Vinyl Chloride	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-DCE	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
t-1,2-DCE	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-DCA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
c-1,2-DCE	<1	1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1-TCA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-DCA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
TCE	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-TCA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
PCE	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

Sample ID: H10-	**Blank**	**PB49-W10'**	**PB49-W20'**	**PB49-W30'**	**PB50-W10'**	**PB50-W20'**	**PB50-W28'**	**PB51-W10'**	**PB51-W20'**	**PB51-W28'**
Date Analyzed	12/05/00	12/06/00	12/06/00	12/06/00	12/06/00	12/06/00	12/06/00	12/07/00	12/07/00	12/07/00
Vinyl Chloride	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-DCE	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
t-1,2-DCE	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-DCA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
c-1,2-DCE	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1-TCA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-DCA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
TCE	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-TCA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
PCE	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

See notes at end of table.

Table 5-1 (Continued)
Mobile Laboratory Results

Remedial Investigation/Focused Feasibility Study for Hangar 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Sample ID: H10-	**Blank**	**PB52-W10'**	**PB52-W16'**	**PB52-W30'**	**PB53-W10'**	**PB53-W20'**	**PB53-W30'**	**PB54-W10'**	**PB54-W20'**	**PB54-W28'**
Date Analyzed	12/08/00	12/07/00	12/07/00	12/07/00	12/07/00	12/07/00	12/07/00	12/07/00	12/07/00	12/07/00
Vinyl Chloride	<1	NR	<1	<1	<1	<1	<1	<1	<1	<1
1,1-DCE	<1	NR	36.4	<1	13.4	1.2	<1	<1	<1	<1
t-1,2-DCE	<1	NR	<1	<1	<1	<1	<1	7.8	<1	<1
1,1-DCA	<1	NR	51.1	<1	20.0	1.5	<1	<1	<1	<1
c-1,2-DCE	<1	NR	22.5	<1	10.5	<1	<1	18.1	2.2	<1
1,1,1-TCA	<1	NR	<1	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	<1	NR	<1	<1	<1	<1	<1	<1	<1	<1
1,2-DCA	<1	NR	1.2	<1	<1	<1	<1	<1	<1	<1
TCE	<1	NR	83.4	<1	66.9	<1	1.9	6.9	<1	<1
1,1,2-TCA	<1	NR	<1	<1	<1	<1	<1	<1	<1	<1
PCE	<1	NR	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	<1	NR	<1	<1	<1	<1	<1	<1	<1	<1

Sample ID: H10-	**Blank**	**PB55-W10'**	**PB55-W20'**	**PB55-W30'**	**PB56-W10'**	**PB56-W20'**	**PB56-W28'**	**PB57-W15'**	**PB57-W20'**	**PB57-W30'**
Date Analyzed	12/08/00	12/08/00	12/08/00	12/08/00	12/08/00	12/08/00	12/08/00	12/08/00	12/08/00	12/08/00
Vinyl Chloride	<1	<1	<1	<1	<1	<1	<1	<1	NS	NS
1,1-DCE	<1	<1	<1	<1	<1	<1	<1	<1	NS	NS
t-1,2-DCE	<1	3.8	2.0	<1	<1	<1	<1	<1	NS	NS
1,1-DCA	<1	<1	<1	<1	<1	<1	<1	<1	NS	NS
c-1,2-DCE	<1	11.8	5.4	<1	<1	<1	<1	<1	NS	NS
1,1,1-TCA	<1	<1	<1	<1	<1	<1	<1	<1	NS	NS
Carbon tetrachloride	<1	<1	<1	<1	<1	<1	<1	<1	NS	NS
1,2-DCA	<1	<1	<1	<1	<1	<1	<1	<1	NS	NS
TCE	<1	8.4	4.4	1.1	<1	<1	<1	<1	NS	NS
1,1,2-TCA	<1	<1	<1	<1	<1	<1	<1	<1	NS	NS
PCE	<1	<1	<1	<1	<1	<1	<1	<1	NS	NS
1,1,2,2-Tetrachloroethane	<1	<1	<1	<1	<1	<1	<1	<1	NS	NS

See notes at end of table.

Table 5-1 (Continued)
Mobile Laboratory Results

Remedial Investigation/Focused Feasibility Study for Hangar 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Sample ID: H10-	**Blank**	**PB58-W10'**	**PB58-W20'**	**PB58-W28'**
Date Analyzed	12/08/00	12/08/00	12/08/00	12/08/00
Vinyl Chloride	<1	<1	<1	<1
1,1-DCE	<1	<1	<1	<1
t-1,2-DCE	<1	<1	<1	<1
1,1-DCA	<1	<1	<1	<1
c-1,2-DCE	<1	<1	<1	<1
1,1,1-TCA	<1	<1	<1	<1
Carbon tetrachloride	<1	<1	<1	<1
1,2-DCA	<1	<1	<1	<1
TCE	<1	<1	<1	<1
1,1,2-TCA	<1	<1	<1	<1
PCE	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	<1	<1	<1	<1

Notes:
NR = no recovery
NS = not sampled
t-1,2-DCE = trans-1,2-dichloroethene
c-1,2-DCE = cis-1,2,-dichloroethene

A review of Figure 5-1 shows that the downgradient end of the plume is dominated by VOC constituents including 1,1-DCA; 1,1-DCE; 1,2-DCE; and TCE. The highest levels of the constituents near the downgradient end of the plume are found in the upper interval of the shallow unit; however, constituents were detected in middle and deep intervals of the shallow unit at levels exceeding GCTLs.

5.3.2 Groundwater Sampling – Monitoring wells

To further define the horizontal and vertical extent of impacts to the groundwater, TtNUS sampled groundwater at 24 locations across Hangar 1000. With the exception of well MW-8D, which encounters the second sand unit at the site, the Hangar 1000 wells sampled were all screened in the shallow unit of the surficial aquifer. These wells were completed to varying depths to provide information regarding the vertical extent of impact to groundwater.

Each of the monitoring wells were sampled and analyzed for COPCs including VOCs, SVOCs, PAHs, and target analyte list (TAL) metals (cadmium and chromium). The samples were also tested for NA parameters as follows: methane, ethane, ethene, and anions (nitrate, nitrite, chloride, and sulfate). The analytical results are provided below and are grouped by analytical fraction. TtNUS' interpretation is also included below. Table 5-2 presents a summary of the detected constituents in the groundwater samples analyzed. Figure 5-2 graphically represents the organic constituents that exceeded GCTLs. Figure 5-3 provides information regarding the vertical extent of constituents in the center of the plume along cross section line A-A.

5.3.2.1 VOCs

Nine VOCs (benzene; 1,1-DCA; 1,1-DCE; 1,2-DCA; 1,2-DCE; 1,1,1-TCA; PCE; TCE; and vinyl chloride) were detected in excess of GCTLs in the groundwater samples from Hangar 1000. Table 5-2 presents a summary of the COPCs detected in the groundwater samples analyzed. Each of the detected analytes is discussed below.

Benzene was detected at its GCTL (1 μg/L) in one of the 24 groundwater samples collected from Hangar 1000. Benzene was detected in a groundwater sample from shallow monitoring well MW-27 at 1.0 μg/L. Benzene was not detected in excess of its GCTL of 1 μg/L in any of the other samples collected at Hangar 1000. The detection of benzene in well MW-27 is not considered to be related to Hangar 1000.

Table 5-2
Summary of Groundwater Analytical Results

Remedial Investigation/Focused Feasibility Study for Hangar 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Compound	GCTLs[1]/ GWPS[2]	MW-1	MW-2	MW-3	MW-5*	MW-6*	MW-7	MW-8	MW-8D	MW-9*	MW-10	MW-11
		01/17/01	01/17/01	01/16/01	01/19/01	01/19/01	01/19/01	01/17/01	07/11/01	01/18/01	01/17/01	01/17/01
Detected VOCs (USEPA Method 8260B)(µg/L)												
Acetone	700	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-DCA	70	1.5J	ND	ND	3.7	5.3	4.4	**600**	ND	3.5	ND	ND
1,2-DCA	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-DCE	7	1.4J	ND	ND	**19.6**	5.2	4.8	**1500**	ND	1.8J	ND	ND
1,2-DCE (Total)	63	3.2J	ND	11	ND	5.8	9.7	**2780**	ND	ND	ND	ND
Ethylbenzene	30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Freon 113***	500000	22	ND	ND	6.7	29.6	47.3	ND	ND	3.7	11.6	ND
TCE	3	**7.8**	1.0J	ND	**18.5**	**36.2**	**25.3**	**8710**	ND	**5.2**	0.97J	ND
1,1,1-TCA	200	20.7	5.6	ND	77.2	6.8	7.2	**7330**	ND	59.5	1.1J	ND
1,1,2-TCA	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PCE	3	ND	ND	0.92J	ND	0.81J	0.64J	ND	ND	ND	ND	ND
Toluene	40	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	1	ND	ND	**15.9**	ND	ND	ND	ND	ND	ND	ND	ND
Detected SVOCs (USEPA Method 8270)(µg/L)												
3&4-Methylphenol	4**	ND	ND	ND	ND	ND	ND	**5.2**	ND	ND	ND	ND
Detected PAHs (USEPA Method 8310)(µg/L)												
Naphthalene	20	ND	ND	ND	ND	ND	ND	2	ND	ND	ND	ND
Metals (USEPA SW-846 6010B/7000A)(µg/L)												
Cadmium	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	100	ND	ND	ND	ND	ND	ND	ND	2.8	ND	ND	ND

See notes at end of table.

Table 5-2 (Continued)
Summary of Groundwater Analytical Results

Remedial Investigation/Focused Feasibility Study for Hangar 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Compound	GCTLs[1]/	MW-12	MW-13	MW-14	MW-14D	MW-15	MW-16	MW-17	MW-18	MW-19	MW-19D	MW-22
	GWPS[2]	01/18/01	01/16/01	01/18/01	01/18/01	01/18/01	01/16/01	01/16/01	01/18/01	01/19/01	01/19/01	01/16/01
Detected VOCs (USEPA Method 8260B)(µg/L)												
Acetone	700	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	26.3J
Benzene	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.75J
1,1-DCA	70	49.9	ND	**182**	**188**	39.9	24.4	19.3	2.3	**98.9**	**110**	**627**
1,2-DCA	3	1.5J	ND	1.9J	2	ND	ND	ND	ND	1.5J	1.4J	**9.4**
1,1-DCE	7	**133**	1.3J	**424**	**431**	**65.5**	**47.4**	**42.6**	1.6J	**190**	**188**	**1140**
1,2-DCE (Total)	63	1.8J	6.8	1.4J	1.5J	**65.2**	13.8	ND	1.1J	52.7	52.4	**376**
Ethylbenzene	30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.52J
Freon 113***	500000	95.1	ND	87.9	99.1	50.8	37.1	ND	ND	447	438	1240
TCE	3	**94.5**	**3.1**	**266**	**273**	**578**	**48.1**	**29.5**	**8.6**	**229**	**226**	**1610**
1,1,1-TCA	200	62.1	1.4J	17	17.5	ND	ND	ND	ND	ND	ND	ND
1,1,2-TCA	5	1.4J	ND	1.9J	2	ND	ND	ND	ND	ND	1J	3.2
PCE	3	ND	**33.7**	ND	ND	2.7	**10.6**	ND	ND	**3**	**3**	**8.9**
Toluene	40	ND	ND	1.9J	2.1	0.71J	ND	ND	ND	1.8J	1.7J	9.8
Vinyl Chloride	1	ND	**1.4**	ND	ND	**4.7**	ND	ND	ND	0.6J	0.6J	**3.3**
Detected SVOCs (USEPA Method 8270)(µg/L)												
3&4-Methylphenol	4**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Detected PAHs (USEPA Method 8310)(µg/L)												
Naphthalene	20	ND	ND	ND	ND	2.6	ND	ND	ND	1.9J	2.1J	11.8
Metals (USEPA SW-846 6010B/7000A)(µg/L)												
Cadmium	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

See notes at end of table.

Table 5-2 (Continued)
Summary of Groundwater Analytical Results

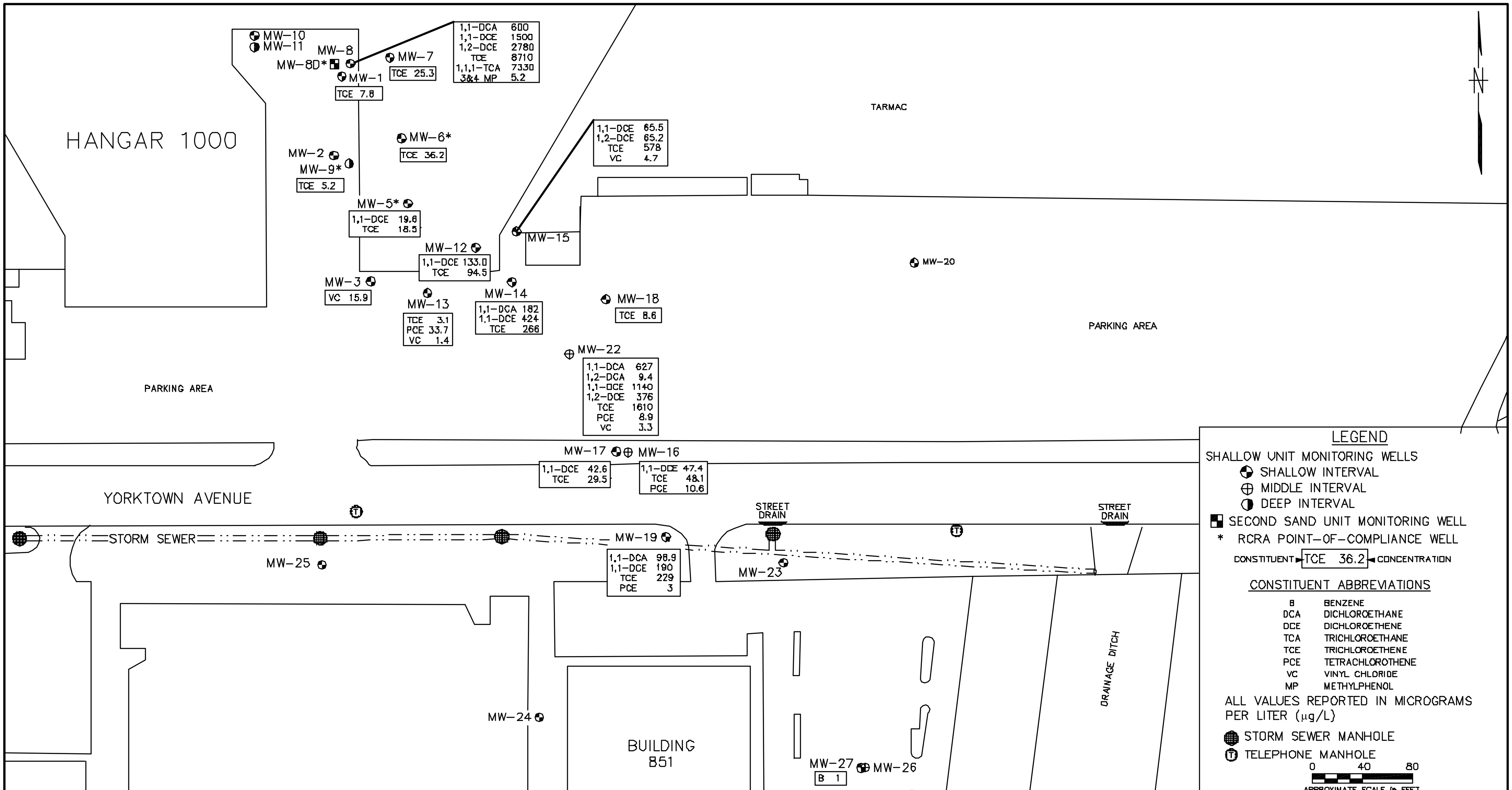
Remedial Investigation/Focused Feasibility Study for Hangar 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Compound	GCTLs[1]/ GWPS[2]	MW-23	MW-23D	MW-24	MW-25	MW-26	MW-27	H10-FB-01
		12/14/00	12/14/00	12/14/00	12/14/00	12/14/00	12/14/00	12/14/01
Detected VOCs (USEPA Method 8260B)(µg/L)								
Acetone	700	ND	ND	ND	ND	ND	ND	ND
Benzene	1	ND	ND	ND	ND	ND	**1**	ND
1,1-DCA	70	ND	ND	ND	ND	ND	ND	ND
1,2-DCA	3	ND	ND	ND	ND	ND	ND	ND
1,1-DCE	7	ND	ND	ND	ND	ND	ND	ND
1,2-DCE (Total)	63	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	30	ND	ND	ND	ND	0.96J	1.5J	ND
Freon 113***	500000	ND	ND	ND	ND	ND	ND	ND
TCE	3	ND	ND	ND	ND	ND	ND	ND
1,1,1-TCA	200	ND	ND	ND	ND	ND	ND	ND
1,1,2-TCA	5	ND	ND	ND	ND	ND	ND	ND
PCE	3	ND	ND	ND	ND	ND	ND	ND
Toluene	40	ND	ND	ND	ND	1.6J	9.5	ND
Vinyl Chloride	1	ND	ND	ND	ND	ND	ND	ND
Xylenes, Total	20	ND	ND	ND	ND	1.3J	8	ND
Detected SVOCs (USEPA Method 8270)(µg/L)								
3&4-Methylphenol	4**	ND	ND	ND	ND	ND	ND	ND
Detected PAHs (USEPA Method 8310)(µg/L)								
Naphthalene	20	ND	ND	ND	ND	2.6	ND	ND
Metals (USEPA SW-846 6010B/7000A)(µg/L)								
Cadmium	5	ND	ND	ND	ND	ND	ND	ND
Chromium	100	ND	ND	ND	ND	ND	ND	ND

Notes: *Point of compliance wells
**GWPS is for 4-methylphenol
***Freon 113 = 1,1,1-trichloro-1,2,2-trifluorethene

[1] Groundwater Cleaup Target Levels (GCTLs), Chapter 62-777, FAC
[2] GWPS Standards, Permit Number HF-16-288092
J = estimate between the instrument detection limit and the reporting limit.

Bolded concentrations exceed GWPS.
D = duplicate FB = field blank
ND = non detect

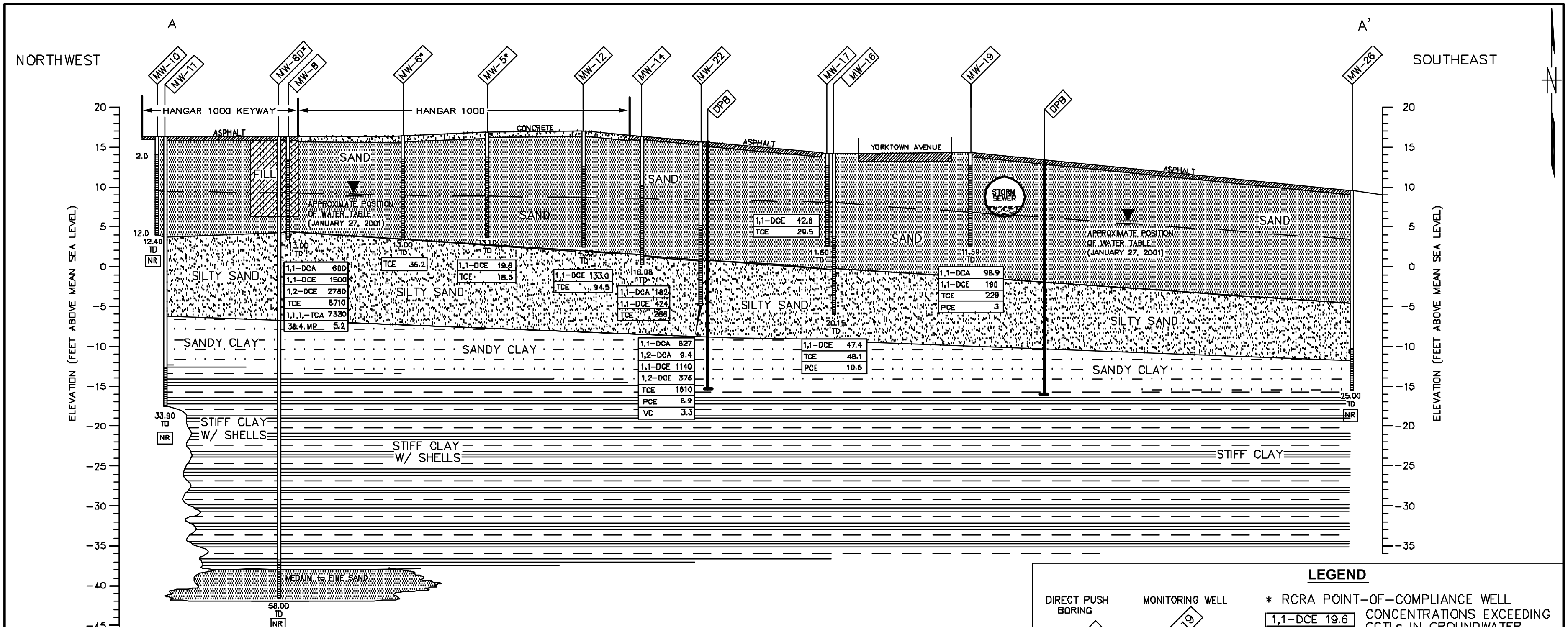


NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY LLK DATE 10/21/02
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

DISSOLVED CONSTITUENT CONCENTRATIONS
EXCEEDING GCTLs
HANGAR 1000
NAS JACKSONVILLE
JACKSONVILLE, FLORIDA

CONTRACT NO. 0399
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 5-2 REV. 0



NOTE:
Lithologic descriptions obtained from Boring Logs compiled by ABB Environmental Services, Inc.

LEGEND

DIRECT PUSH BORING (DPB)

MONITORING WELL (MW-19): DESIGNATION; 2.0; SCREENED INTERVAL; 12.0; 11.59 TD (Total Depth)

* RCRA POINT-OF-COMPLIANCE WELL

1,1-DCE	19.6
TCE	18.5

CONCENTRATIONS EXCEEDING GCTLs IN GROUNDWATER SAMPLES

CONSTITUENT ABBREVIATIONS

DCA	DICHLOROETHANE
DCE	DICHLOROETHENE
TCE	TRICHLOROETHENE
TCA	TRICHLOROETHANE
PCE	TETRACHLOROETHENE
MP	METHYLPHENOL
VC	VINYL CHLORIDE

ALL VALUES REPORTED IN MICROGRAMS PER LITER (μg/L)

NR — NO CONSTITUENTS REPORTED IN EXCESS OF GCTLs

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY LLK DATE 3/27/01
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

SITE GEOLOGIC PROFILE A-A' SHOWING CONTAMINANT CONCENTRATIONS EXCEEDING GCTLs
HANGAR 1000
NAS JACKSONVILLE
JACKSONVILLE, FLORIDA

CONTRACT NO. 0399
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 5-3 REV. 0

FORM CADD NO. SDIV_BH.DWG - REV 0 - 1/20/98

1,1-DCA was detected in excess of its GCTL of 70 µg/L in six samples ranging in concentration from 111 µg/L to 627 µg/L. The highest concentration was detected in well MW-22 near the midpoint of the contaminant plume at a concentration of 627 µg/L.

1,1-DCE was detected in excess of its GCTL of 7µg/L in nine samples ranging in concentration from 19.6 µg/L to 1500 µg/L. The highest concentration was detected in well MW-8 at the source area at a concentration of 1500 µg/L.

1,2-DCA was detected in excess of its GCTL of 3 µg/L in one of the samples collected from Hangar 1000. 1,2-DCA was detected in a groundwater sample from well MW-22 at a concentration of 9.4 µg/L.

1,2-DCE was detected in excess of its GCTL of 63 µg/L in three samples ranging in concentration from 65.2 µg/L to 2780 µg/L. Source area monitoring well MW-8 had the highest concentration of 1,2-DCE at 2780 µg/L.

1,1,1-TCA was detected in excess of its GCTL of 200 µg/L in one of the samples collected from Hangar 1000. 1,1,1-TCA was detected in a groundwater sample from source area well MW-8 at a concentration of 7330 µg/L.

PCE was detected at or above its GCTL of 3 µg/L in six samples ranging in concentration from 3 µg/L to 33.7 µg/L. The highest concentration was detected in MW-13 at a concentration of 33.7 µg/L.

TCE was detected in excess of its GCTL of 3 µg/L in 15 samples ranging in concentration from 3.1 µg/L to 8710 µg/L. The highest concentration was detected in source area well MW-8 at a concentration of 8710 µg/L.

Vinyl chloride was detected in excess of its GCTL of 1 µg/L in four samples ranging in concentration from 1.4 µg/L to 15.9 µg/L. The highest concentration was detected in MW-3 at a concentration of 15.9 µg/L.

Other VOCs detected in monitoring wells at Hangar 1000 included acetone; ethylbenzene; Freon 113; 1,1,2-TCA; toluene; and xylenes (total). None of these chemicals were detected at concentrations exceeding GCTLs.

5.3.2.2 SVOCs

Only one SVOC was detected above its respective GCTL from a single groundwater sample collected from source well MW-8. 3&4-Methylphenol was detected above its respective GCTL of 4 µg/L at a concentration of 5.2 µg/L.

5.3.2.3 PAHs

A single PAH constituent was detected in groundwater samples obtained from two of the 24 monitoring wells. Naphthalene was detected in well MW-8 at 2 µg/L and well MW-26 at 2.6 µg/L, below the GCTL of 20 µg/L.

5.3.2.4 Inorganics

One inorganic parameter, chromium was detected in one well (MW-8D) below the GCTL of 100 µg/L. There were no other inorganic detections in the groundwater samples collected from Hangar 1000 during the RI sampling activities.

5.3.3 Interpretation of COPC Groundwater Data

In general, VOCs are the dominant COPCs in groundwater at Hangar 1000 and are mostly derived from chlorinated solvents. SVOC, PAH, and metal analyses indicated only one constituent (methylphenol) exceeding its respective GCTL at one location.

Impact to groundwater is limited to the shallow unit of the surficial aquifer beneath Hangar 1000. Groundwater collected from the intermediate aquifer contained no detectable constituents. The lateral extent of groundwater contamination has been defined at the storm sewer, which parallels Yorktown Avenue. The storm sewer serves as the primary receptor to groundwater from Hangar 1000. Samples collected to the south of the storm sewer were all non-detect, with the exception of benzene detected in well MW-27. Since benzene was not detected in other site wells and the location of well MW-27 places it outside of the flow boundary for Hangar 1000, the benzene detected is not believed to be related to Hangar 1000.

The concentrations of VOCs in the source area suggest that a continuing source is present and is likely to be remnant DNAPL located near the former Tank A location. Recent studies conducted by J. A. Jones suggest that DNAPL may be present in soils at 10-14 ft bls and 20-24 ft bls beneath the former Tank A location.

Nine VOCs (benzene; 1,1-DCA; 1,1-DCE; 1,2-DCA; 1,2-DCE; 1,1,1-TCA; PCE; TCE; and vinyl chloride) exceeded their respective FDEP GCTLs. Wells with the greatest number and concentrations of constituents are source area well MW-8 and plume mid-point well MW-22. In general, the highest concentrations of VOCs are encountered in the shallow interval of the shallow unit; however, this is not always the case. The lower intervals of the shallow unit have been impacted and, in the center of the plume, the greatest concentrations of VOCs are found in a mid-point interval well (MW-22).

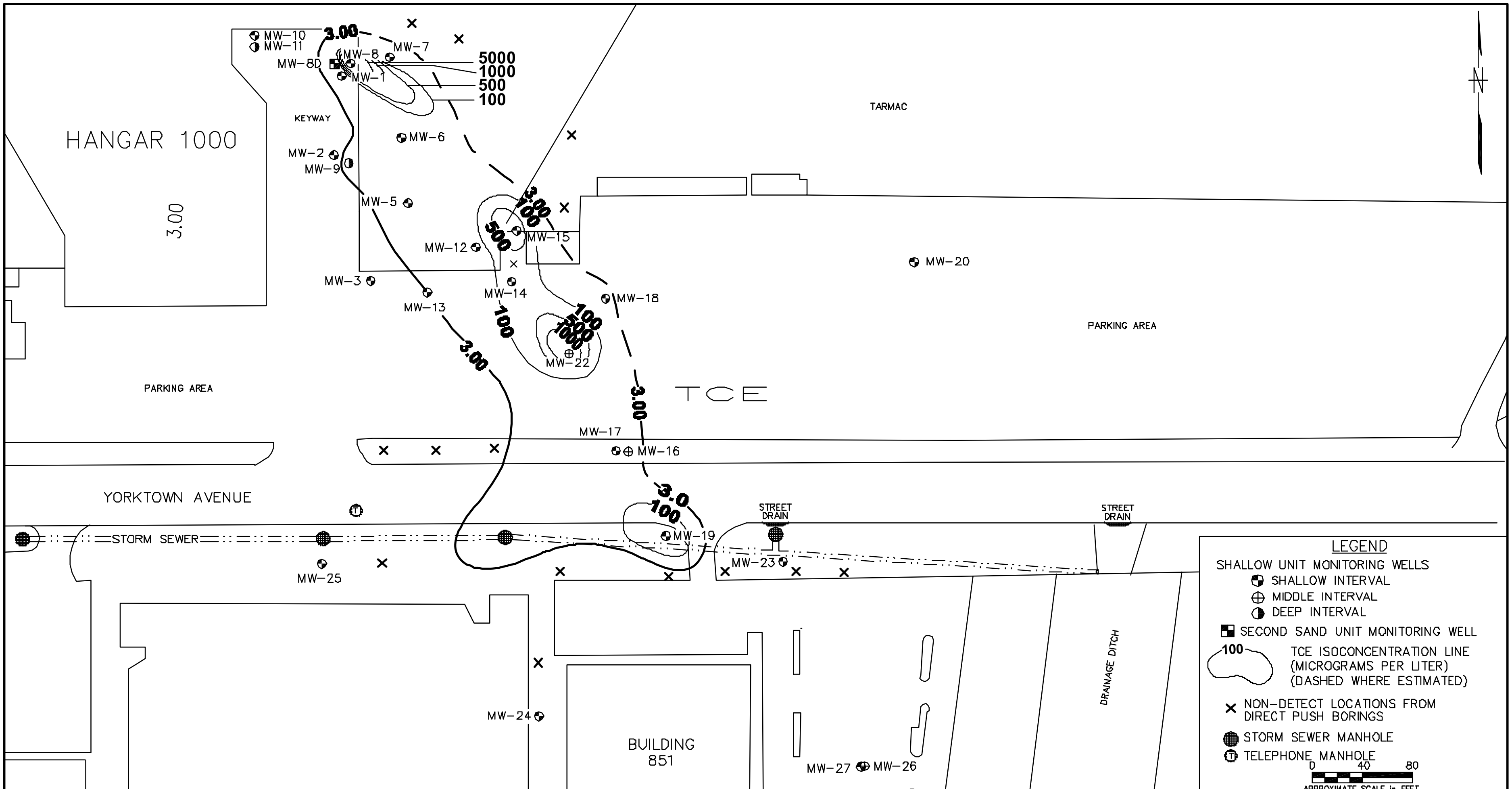
The constituents with the most consistent detection are TCE; 1,1-DCE; and 1,2-DCE. The distribution of these constituents in the shallow unit of the surficial aquifer at Hangar 1000 is provided in Figures 5-4, 5-5, and 5-6, respectively. These figures were created utilizing maximum concentrations of constituents from both the DPT survey and from the sampling of monitoring wells at the site and are contoured to their respective GCTL values. Review of these figures show the source area for the constituents is located in the vicinity of well MW-8, which corresponds to the former Tank A location. The plume is relatively narrow, averaging approximately 100 ft across and approximately 450 ft long. The plume trends to the southeast in the direction of groundwater flow.

Review of the data also shows that constituent ratios change in the down gradient direction from the source area. Source area contaminants include 1,1,1-TCA; 1,2-DCA; TCE; 1,1-DCE; and 1,2-DCE as primary contaminants. The most commonly detected contaminant at the site is TCE, detected in 15 of the 27 wells above its GCTL of 3 µg/L. The maximum TCE concentration of 8,710 µg/L was detected in the source area well. The second highest TCE concentration of 1,610 µg/L was detected in well MW-22 located near the center of the plume.

An abiotic breakdown product of 1,1,1-TCA, 1,1-DCE is also commonly encountered exceeding GCTLs in nine wells. The ratio of TCA to 1,1-DCE changes from approximately 4.9 to 1 in the source area well to 1 to 25 or greater near the center of the plume. 1,1,1-TCA was not detected in downgradient well MW-19; however, the well contained 110 µg/L of 1,1-DCE. This distribution of 1,1,1-TCA to 1,1-DCE may be indicative of the breakdown of 1,1,1-TCA into 1,1-DCE during transport.

1,2-DCE is an abiotic breakdown product of TCE. The ratio of TCE to 1,2-DCE changes from 2.63 to 1 in the source area well to values ranging from 1 to 1.59 (MW-14) near the mid-point of the plume. At well MW-19 and the downgradient well MW-22, the ratio reverses to slightly greater than 1 part TCE to 1 part 1,2-DCE. The relative increase in 1,2-DCE concentrations also is indicative of the breakdown of TCE during transport.

NASJAX\CTO111\CAD\RI Rev1 Figs\0399TCE101



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY LLK — DATE 4/4/01
CHECKED BY — DATE
COST/SCHED-AREA
SCALE AS NOTED

TRICHLOROETHENE (TCE) PLUME
JANUARY 2001
HANGAR 1000
NAS JACKSONVILLE
JACKSONVILLE, FLORIDA

CONTRACT NO. 0399
APPROVED BY — DATE
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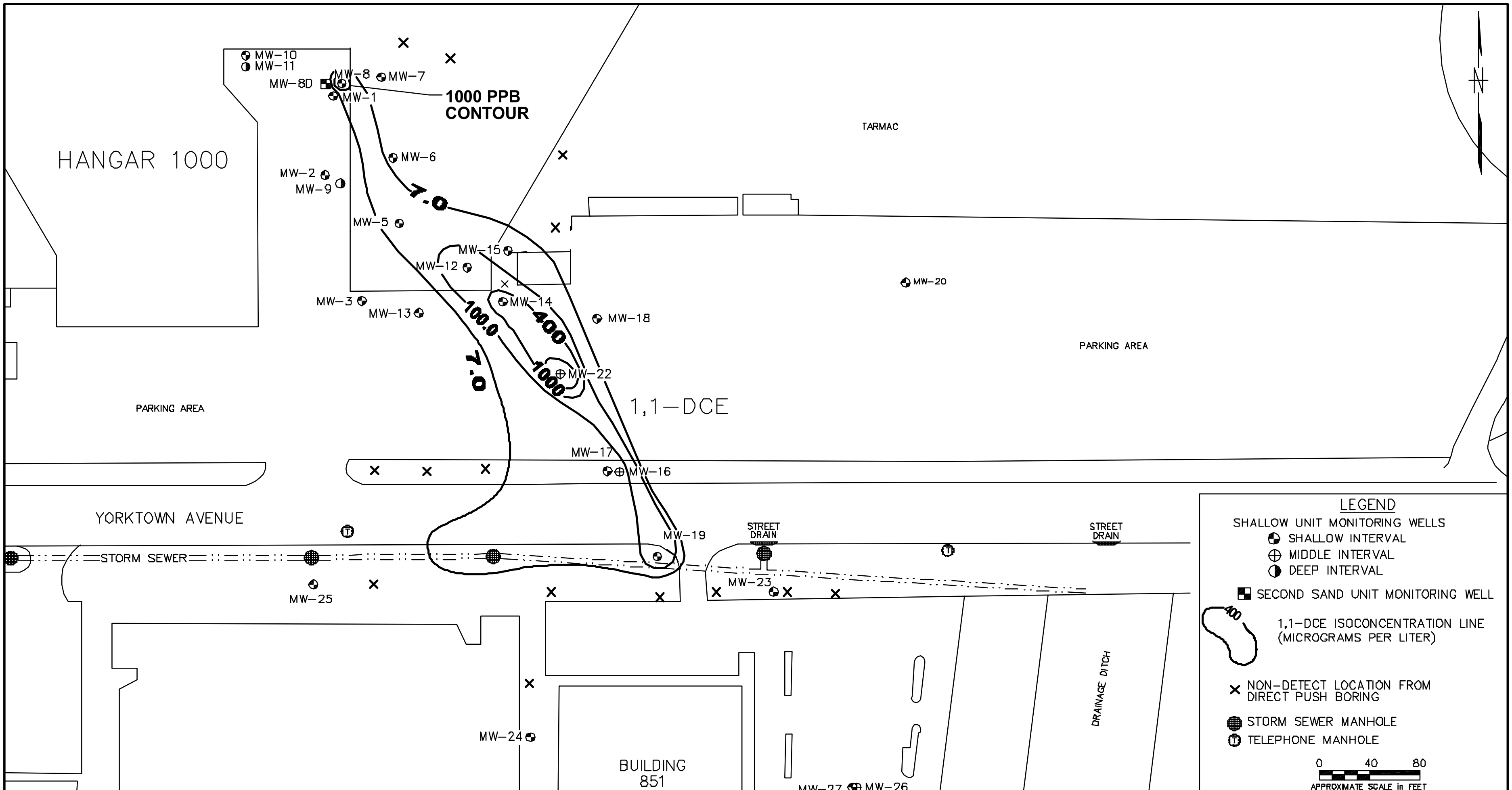
DRAWING NO. FIGURE 5-4 — REV. 0



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY LLK — DATE 4/4/01
CHECKED BY — DATE
COST/SCHED-AREA
SCALE AS NOTED

1,1-DICHLOROETHENE (1,1-DCE) PLUME
JANUARY 2001
HANGAR 1000
NAS JACKSONVILLE
JACKSONVILLE, FLORIDA

CONTRACT NO. 0399
APPROVED BY — DATE
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DRAWING NO. FIGURE 5-5 — REV. 0

FORM CADD NO. SDIV_BH.DWG - REV 0 - 1/20/98

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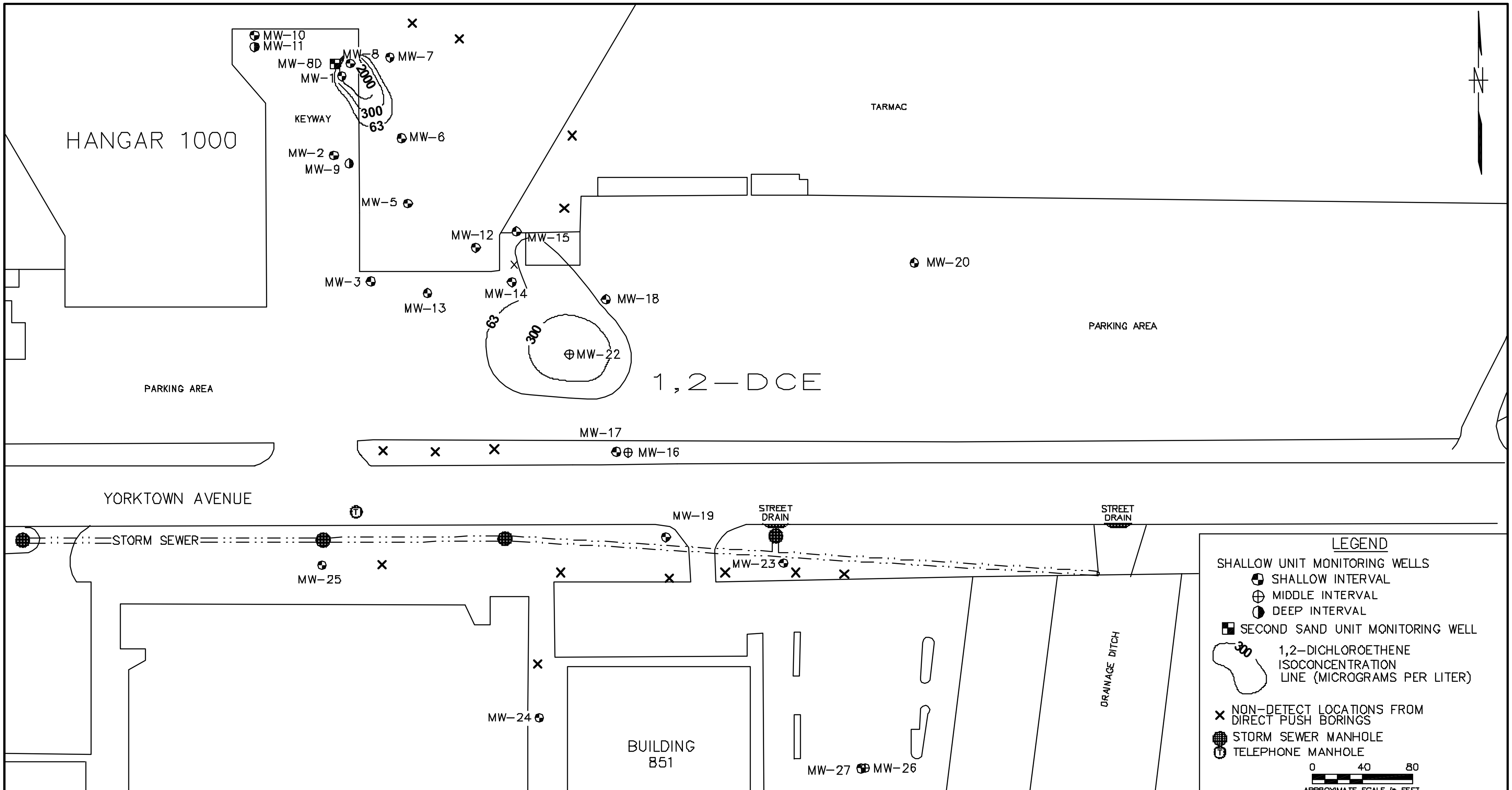

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY LLK DATE 10/21/02
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

1,2-DICHLOROETHENE (DCE) PLUME
JANUARY 2001
HANGAR 1000
NAS JACKSONVILLE
JACKSONVILLE, FLORIDA

CONTRACT NO. 0399
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 5-6 REV. 0

FORM CADD NO. SDIV_BH.DWG - REV 0 - 1/20/98

Vinyl chloride, a breakdown product of 1,1-DCE and 1,2-DCE is encountered in four monitoring wells above the GCTL value of 1 μg/L. The presence of vinyl chloride is also evidence of contaminant degradation.

Monitoring well MW-22, located near the center of the plume, generally contains the second most and second highest concentrations of contaminants at the site. Since there are no know secondary sources at the site, it is possible that this is best explained by the nature of the releases that may have been episodic resulting in “slugs” of contamination entering the subsurface.

The downgradient end of the plume has reached the storm sewer, which prevents further movement to the southeast. The lack of COPCs in the downgradient direction beyond the sewer indicates the sewer serves as the first order receptor for impacted groundwater originating at Hangar 1000.

5.4 NATURAL ATTENUATION ANALYSIS

A suite of NA parameters were measured in the field and in the laboratory during the RI field sampling effort to determine the most likely pathway for any NA to be occurring. Field parameter measurements are presented for the January 2001 sampling event on Table 5-3 and include DO, alkalinity, dissolved carbon dioxide, ferrous iron, hydrogen sulfide, pH, ORP, temperature, and specific conductivity. Fixed-base laboratory NA analytical results for the January 2001 sampling event are presented on Table 5-4. The January sampling event includes nitrogen species (nitrate/nitrite/ ammonia/total Kjeldahl nitrogen), chloride, dissolved sulfide, sulfate, dissolved iron, total organic carbon, and methane/ethane/ethene.

5.4.1 Natural Attenuation Data Analysis – Hangar 1000

The following is a parameter by parameter discussion of natural attenuation data collected during the January 2001 event.

5.4.1.1 Dissolved Oxygen

Geochemical measurements of DO were made using dual-range vacuum ampoules (CHEMetrics K-7501 and K-7512). DO acts as a primary substrate or co-substrate during the initial stages of metabolism and is the single most efficient electron acceptor responsible for the biodegradation of natural or anthropogenic organic carbon. However, for highly chlorinated hydrocarbons, anaerobic pathways (e.g., reductive dechlorination) are more efficient than aerobic pathways. If DO concentrations are greater than approximately 0.5 to 1.0 milligrams per liter (mg/L), anaerobic bacteria may not exist and

Table 5-3
Field Measurements

Remedial Investigatiion/Focused Feasibility Study for Hangar 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Parameters	Units	January 17-19, 2001									
		MW-01	MW-02	MW-03	MW-05	MW-06	MW-07	MW-08	MW-09	MW-10	MW-11
pH	S.U.	6.25	5.78	5.49	5.64	5.79	5.92	6.47	7.39	5.88	7.26
Specific Conductivity	mS/m	40.1	11.7	14.8	15.9	24.4	27.6	79.2	57.3	19.1	50.2
Temperature	^{o}C	23.3	22.4	24.9	23.6	22.5	24.5	19.9	24.0	22.6	23.8
Turbidity	NTU	-10	-10	-10	2	-10	-10	6	-10	7	21
DO	mg/L	>12	1.0	0.7	1.0	1.5	1.0	>12	2.0	1.0	1.0
ORP	mV	148	81	99	45	61	72	167	-85	98	-103
Ferrous Iron	mg/L	0.2	1.87	>3.30	1.57	0.55	0.17	0.0	0.06	0.74	0.23
Sulfide	mg/L	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.03
Hydrogen Sulfide	mg/L	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Alkalinity	mg/L	100	25	10	28	35	38	170	250	40	185
Carbon Dioxide	mg/L	70	40	90	35	25	30	60	11	45	14

Parameters	Units	January 17-19, 2001								
		MW-12	MW-13	MW-14	MW-15	MW-16	MW-17	MW-18	MW-19	MW-22
pH	S.U.	5.59	5.80	5.63	5.30	5.04	6.12	5.90	5.18	5.95
Specific Conductivity	mS/m	22.2	26.2	16.7	15.8	10.7	19.9	27.7	14.7	27.2
Temperature	^{o}C	24.4	25.3	23.8	22.6	22.9	24.5	22.0	22.5	25.1
Turbidity	NTU	-1	-10	-10	1	-10	-10	3	-10	-10
DO	mg/L	0.8	1.0	0.7	0.8	1.0	0.5	0.8	1.0	0.4
ORP	mV	-46	115	-116	-70	-10	-43	98	20	-182
Ferrous Iron	mg/L	2.57	0.36	>3.30	2.16	3.16	3.27	0.12	>3.30	>3.30
Sulfide	mg/L	0.04	0.00	0.60	0.51	0.00	0.12	0.00	0.31	>0.80
Hydrogen Sulfide	mg/L	0.7	0.0	2.0	5.0	0.0	0.3	0.0	2.0	2.0
Alkalinity	mg/L	17	60	20	NR	NR	70	50	NR	40
Carbon Dioxide	mg/L	40	85	40	40	45	30	35	40	60

See notes at end of table.

Table 5-3 (Continued)
Field Measurements

Remedial Investigatiion/Focused Feasibility Study for Hangar 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Parameters	Units	December 14, 2000				
		MW-23	**MW-24**	**MW-25**	**MW-26**	**MW-27**
pH	S.U.	5.60	NM	6.50	6.80	6.10
Specific Conductivity	mS/m	2.07	NM	1.4	1.86	1.55
Temperature	^{o}C	23.5	NM	23.9	27.1	25.5
Turbidity	NTU	7	NM	17	3	4
DO	mg/L	0.6	4.0	1.0	4.9	6.6
ORP	mV	-52	NM	-71	1	45
Ferrous Iron	mg/L	>3.30	0.29	3.04	0.74	2.30
Hydrogen Sulfide	mg/L	0.1	0.0	0.5	0.0	0.0
Alkalinity	mg/L	NR	25	100	65	45
Carbon Dioxide	mg/L	40	18	28	25	38

Notes:
S.U. = standard units
NTU = nephelometric turbidity units
NM = not measured
NR = no result due to matrix interference

Table 5-4
Fixed-Base Laboratory Natural Attenuation Parameters

Remedial Investigation/Focus Feasibility Study for Hangar 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Compound	Method	Units	MW-1	MW-2	MW-3	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11
			01/17/01	01/17/01	01/16/01	01/19/01	01/19/01	01/19/01	01/17/01	01/18/01	01/17/01	01/17/01
Methane	RSK SOP -147 & 175	µg/L	4.38	122	515	51.2	92.4	118	2.8	130	327	384
Ethane	RSK SOP -147 & 175	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethene	RSK SOP -147 & 175	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sulfide	USEPA Method 376.1	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloride	USEPA Method 300	mg/L	18	13.5	12	12.5	14	11	60.5	12.5	16.5	37.5
Nitrogen, Nitrate	USEPA Method 300	mg/L	0.88	ND	0.26	ND	0.71	0.91	1.3	0.49	0.56	ND
Sulfate	USEPA Method 300	mg/L	10	12.3	ND	19.7	36	48.9	177	ND	18	ND
TOC	USEPA Method 415.1	mg/L	NS	NS	NS	NS	NS	NS	NS	NS	5.7	NS

Compound	Method	Units	MW-12	MW-13	MW-14	MW-14D	MW-15	MW-16	MW-17	MW-18	MW-19	MW-19D	MW-22
			01/18/01	01/16/01	01/18/01	01/19/01	01/18/01	01/16/01	01/16/01	01/18/01	01/19/01	01/19/01	01/16/01
Methane	RSK SOP -147 & 175	µg/L	18.8	304	206	187	484	112	186	18.1	105	104	406
Ethane	RSK SOP -147 & 175	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.5J
Ethene	RSK SOP -147 & 175	µg/L	ND	ND	ND	ND	1.15	ND	ND	ND	ND	ND	0.46J
Sulfide	USEPA Method 376.1	mg/L	ND	ND	ND	2.0	ND	ND	ND	ND	2.7	ND	2.7
Chloride	USEPA Method 300	mg/L	22	12.5	23	21.5	24.5	12.5	13.5	11.5	19	20	44.5
Nitrogen, Nitrate	USEPA Method 300	mg/L	ND	3.2	ND	ND	ND	0.46	ND	0.75	ND	ND	ND
Sulfate	USEPA Method 300	mg/L	38.9	18.1	ND	ND	18.7	11.1	10.8	76.6	ND	ND	ND
TOC	USEPA Method 415.1	mg/L	NS	NS	5.4J	NS	NS	NS	NS	NS	3.5J	NS	NS

Compound	Method	Units	MW-23	MW-23D	MW-24	MW-25	MW-26	MW-27
			12/14/00	12/14/00	12/14/00	12/14/00	12/14/00	12/14/00
Methane	RSK SOP -147 & 175	µg/L	1.6	1.39	2.35	26.2	555	91.1
Methanol	RSK SOP -147 & 175	µg/L	ND	ND	ND	ND	ND	ND
Ethane	RSK SOP -147 & 175	µg/L	0.341	0.227	0.742	0.413	0.049	ND
Ethene	RSK SOP -147 & 175	µg/L	0.194	0.123	0.583	0.219	0.031	0.035
Isobutyl Alcohol	USEPA 8015	µg/L	ND	ND	ND	ND	ND	ND
N-Butyl Alcohol	USEPA 8015	µg/L	ND	ND	ND	ND	ND	ND
TOC	USEPA Method 415.1	mg/L	NS	NS	NS	NS	NS	NS

Notes: ND = non detect NS = not sampled TOC = Total Organic Compound reductive dechlorination may be inhibited. Fifteen of the 19 Hangar 1000 wells contain DO at or below 1.0 mg/L, suggesting that anaerobic conditions prevail over the majority of the plume.

5.4.1.2 Nitrogen

After DO has been depleted through aerobic respiration, anaerobes will utilize nitrate as an electron acceptor to anaerobically degrade hydrocarbons. This process reduces nitrate to nitrite and generates carbon dioxide. However, because chlorinated hydrocarbons are used as electron acceptors during reductive dechlorination, nitrate may actually compete as an electron acceptor if present at concentrations greater than 1.0 mg/L. The concentrations of nitrate determined in the laboratory were equal to or less than 1.0 mg/L in 19 of the 21 samples.

5.4.1.3 Ferrous Iron

Field measurements of dissolved ferrous iron were made using a high-resolution, low-range portable colorimeter (HACH®). The colorimeter utilizes the 1,10-phenanthroline iron reagent method (HACH® 8146, Modified Standard Method). The colorimeter can obtain an accurate determination (±0.017 mg/L standard deviation) of ferrous iron with an estimated minimum detection limit of 0.03 mg/L and a maximum detection of 3.30 mg/L.

After DO and nitrate reduction have occurred, anaerobic microbes will utilize ferric iron as an electron acceptor (iron reduction) to anaerobically degrade hydrocarbons, generating ferrous iron and carbon dioxide. Ferric iron is generally present in the aquifer as solid iron oxides within the aquifer matrix. The majority of ferric iron that is reduced to ferrous iron precipitates out upon contact with an oxygenated source such as surface water.

Ferrous iron ranged from 0.0 mg/L to less than 3.30 mg/L (upper limit of colorimeter) with the maximum detections generally reflecting those wells with elevated VOC concentrations. An increase in the ferrous iron concentration in the downgradient direction from the source area was also noted and is evidence of anaerobic degradation of the hydrocarbon source via the iron reduction pathway and a reduced core within the contaminant plume.

5.4.1.4 Sulfate/Sulfide

Sulfate and sulfide concentrations were analyzed at the fixed-base laboratory. After DO, nitrate, and ferric iron have been used, anaerobic microbes will use sulfate as an electron acceptor to anaerobically degrade hydrocarbons (sulfate reduction). The process of sulfate reduction results in the generation of sulfide and carbon dioxide. The pH in the aquifer will determine the distribution of dissolved sulfide among three primary forms (H_2S, HS^-, and S^-). Hydrogen sulfide was analyzed in the laboratory and field and sulfide was analyzed in the field.

Sulfate concentrations were detected in 12 of 19 monitoring wells ranging from a maximum of 177 mg/L in well MW-8 to 10 mg/L in well MW-1. Hydrogen sulfide was detected in eight wells ranging from a maximum of 5.00 mg/L in well MW-15 to 0.1 mg/L in well MW-5. Sulfide was detected in 3 of 19 monitoring wells ranging from 2 to 2.7 mg/L. The data trends indicate that sulfate reduction is functioning and further indicates a reduced core within the contaminant plume.

5.4.1.5 Oxidation-Reduction Potential

The ORP of groundwater was analyzed using a portable, water-quality probe used in conjunction with a flow-through sample chamber to reduce sample aeration and contact with the atmosphere.

The ORP of groundwater is a gross measure of the reduction/oxidation (redox) state of the groundwater environment. The ORP depends upon and influences the rates and types of biodegradation processes. Therefore, the measurement of ORP [in millivolts (mV)] can provide a guide to the type of biodegradation processes that are active in a particular plume or even within different portions of the same plume. Great care must be taken during the evaluation of ORP data since most natural waters usually include mixed potentials, which cannot be related to a single electron couple. Therefore, ORP should be used only as a qualitative indicator of the overall oxidation-reduction state.

The relative ORP measurement is proportional to the efficiency of the bioremediation pathway. For example, the most efficient bioremediation pathway for a petroleum hydrocarbon plume is aerobic respiration. During aerobic respiration, oxygen is utilized as the electron acceptor to mineralize petroleum hydrocarbons into carbon dioxide and water. The ORP value for such a reaction is theoretically in the range of +583 mV.

The following is a general comparison of common metabolic pathways and related ORP measurements, quantified under laboratory conditions:

Pathway	Electron Acceptor	ORP (mV versus Ag/AgCl)
Aerobic Respiration	Oxygen	+583
Denitrification	Nitrate	+503
Manganese Reduction	Manganese	+283
Iron Reduction	Ferric Iron	-323
Sulfate Reduction	Sulfate	-457
Methanogenesis	Carbon Dioxide	-477
Reference: Air Force Center for Environmental Excellence (AFCEE) (1996) Ag = Silver Ag/Cl = Silver (I) Chloride		

During the sampling event, ORP values across the site ranged from –182 mV to +167 mV suggesting an environment between manganese and iron reduction. There appears to be a slight trend in the ORP in groundwater values collected at the site, such that the more negative values are associated with the downgradient portion of the plume. As previously noted, iron reduction appears to be an active reductive pathway at the site and is one of the most frequently documented reduction pathways for chlorinated solvents.

5.4.1.6 pH

During the sampling event, a Horiba® Model U-22 water-quality meter was used to collect groundwater temperature, pH, turbidity, specific conductance, and DO. The meter was intended to determine general groundwater quality parameters and to assist in the determination of appropriate monitoring well purge volumes. The DO measurements collected from the Horiba® were used solely for the determination of appropriate monitoring well purge volumes.

The pH is a measurement of the hydrogen ion concentration in terms of its negative logarithm. The scale ranges from 0 to 14; values less than seven indicate acidity and values greater than seven indicate basic solutions. The pH affects the presence and efficiency of bacterial populations in natural groundwater conditions. Neutral groundwater (i.e., pH 7) is the preferred condition for most microbes.

The pH values collected during the sampling event ranged from 5.04 to 7.39. This indicates generally neutral to slightly acidic groundwater, which is conducive to intrinsic bioremediation.

5.4.1.7 Specific Conductivity

Specific conductivity [millisiemens per meter (mS/m)] is a measure of a solution's ability to carry an electrical current and is controlled by the different quantities and types of ions in the solution. Generally, conductivity increases as ion concentration increases and can fluctuate within a plume based upon the geochemistry at that particular location. Conductivity is most frequently used as an indicator of a consistent groundwater source. For example, different water sources may have significantly different conductivity values.

Specific conductivity values ranged from 10.7 mS/m to 79.2 mS/m, with most values ranging between 15 and 25 mS/m. This lack of fluctuation indicates a generally consistent supply of water in the wells sampled.

5.4.1.8 Temperature

The temperature of groundwater affects the solubility of oxygen and other geochemical species, as well as the metabolic activity of bacteria. Microbes are generally more active in warm water. The rate of hydrocarbon bioremediation doubles for every 10°C increase in temperature (referred to as the "Q_{10}" rule) in the range of 5 to 25°C (AFCEE, 1996).

Groundwater temperatures during the sampling event ranged from 19.9°C to 27.1°C. These temperatures are well within the range of values acceptable for bioremediation to take place.

5.4.1.9 Dissolved Methane

Methanogenesis is an anaerobic biodegradation process whereby methane-producing microorganisms use carbon dioxide as an electron acceptor and generate methane as a byproduct of fermentation. Because methane is not a chemical component of fuels or solvents, its presence above background concentrations are important in this evaluation because some natural sources of methane could exist (e.g., groundwater derived from infiltration into or through a peat bog or other natural methane source).

Methane concentrations ranged from 1.39 µg/L to 555 µg/L. The highest concentrations were found in downgradient monitoring wells MW-3 and MW-15. Other shallow wells (MW-01 and MW-08) contained lower levels of dissolved methane. The methanogenesis may be a reductive pathway available at this site; however, the data is not sufficient to verify this pathway.

5.4.1.10 Dissolved Carbon Dioxide

An increase of carbon dioxide in excess of background concentrations is also a strong indicator of active anaerobic biodegradation of the chlorinated solvent plume because carbon dioxide is generated in the plume from microbial respiration. However, as mentioned previously, during methanogenesis, some strains of anaerobic bacteria use carbon dioxide as an electron acceptor, generating methane as a byproduct of fermentation. Therefore, the carbon dioxide that is generated through microbial respiration may actually be underestimated because some portion of the carbon dioxide may be used by methanogens.

Dissolved carbon dioxide concentrations ranged from 11 to 90 mg/L at Hangar 1000. Review of the data indicates that some of the highest concentrations of dissolved carbon dioxide coincide with the highest concentrations of COPCs, perhaps reflecting active anaerobic biodegeneration.

5.4.1.11 Dissolved Ethene

Under abiotic conditions, ethene can be produced by the dechlorination of vinyl chloride. Concentrations of ethene greater than 0.01 mg/L (10 µg/L) provide strong evidence of such dechlorination. This abiotic process is less efficient than direct oxidation of vinyl chloride to carbon dioxide under aerobic conditions, and, therefore, may lead to the accumulation of vinyl chloride.

Ethene was analyzed in the fixed-base laboratory and was only detected in the downgradient well MW-15 at 1.15 µg/L. Therefore, ethene levels do not appear to support dechlorination of vinyl chloride over most of the site. Wells within the contaminate plume, with the exception of wells MW-15 and MW-22, did not contain detectable ethene. Wells to the southeast outside of the contaminate plume contained ethene at values ranging from 0.031 to 0.194 µg/L.

5.4.1.12 Dissolved Ethane

As mentioned previously, ethene is produced by the dechlorination of vinyl chloride. Ethane is in turn produced by the further reduction of ethene. Concentrations of ethane greater than 0.1 mg/L (100 µg/L) provide strong evidence of such degradation.

Ethane was analyzed in the fixed-base laboratory and was not detected in any of the wells sampled. Wells within the contaminate plume, with the exception of well MW-15, did not contain detectable ethane. Wells to the southeast outside of the contaminate plume contained ethane at values ranging from 0.049 to 0.742 µg/L.

5.4.1.13 Total Alkalinity

Alkalinity is a measure of the buffering (neutralizing) capacity of acids in water and is expressed as mg/L calcium carbonate. The total alkalinity can give a general indication of the amount of carbon dioxide generated during aerobic or anaerobic reduction of a chlorinated hydrocarbon plume. Usually the alkalinity is higher in the source area compared with the background concentrations (an indication of microbial respiration) and the alkalinity then decreases in the downgradient direction indicating an overall decrease in the carbon dioxide production or an increase in carbon dioxide used.

Total alkalinity values ranged from 10 mg/L to 250 mg/L with the highest values associated with source area wells and the wells directly downgradient, consistent with the biodegeneration model.

5.4.1.14 Chloride

Chloride ion is a measure of the reductive dechlorination of chlorinated solvents wherein chlorine atoms on the contaminant molecule are replaced by hydrogen. Dissolved chloride concentrations are often higher than background concentrations within contaminant plumes undergoing active reductive dechlorination.
Chloride concentrations in wells at Hangar 1000 range from 11 mg/L (MW-7) to 60.5 mg/L (MW-8). The highest concentration of chloride was found in wells with the greatest concentration of COPCs, MW-8 and MW-22. Therefore, chloride concentrations support the model that reduction dechlorination is occurring at the site. Chloride ion transport is typically not retarded by sorption to aquifer solids.

5.4.2 Natural Attenuation Summary

NA data suggests the conditions are generally favorable for anaerobic processes, and that COPCs may be utilizing a range of reduction pathways including iron reduction, sulfate reduction, and methanogenesis. Review of COPC ratios indicates the NA is occuring as evidenced by a change in the the ratio of parent constituents (1,1,1-TCA and TCE) to breakdown constituents (1,1-DCE; 1,2-DCE; and VC) downgradient of the source area. As a result, NA processes are expected to continue to reduce COPC concentrations in groundwater serving as a viable potential future remedy.

5.4.3 Stormwater and Surface Water

Groundwater data indicates that the storm sewer located on the south side of Yorktown Avenue is the primary receptor for groundwater at Hangar 1000. In order to confirm this observation, the USGS conducted a survey of the stormwater drainage system at Hangar 1000 during a dry period in which no rainfall had occurred during a three day period. The finding of this survey indicated that the storm sewer that parallels the south side of Yorktown Avenue was observed to not contain water upgradient (west) of Hangar 1000. Proceeding to the east, the storm sewer was noted to gain water, indicating groundwater infiltration. The groundwater infiltration begins slightly to the upgradient side of the contaminant plume (west) and continues until the storm sewer empties into the drainage ditch southeast of Hangar 1000.

In order to evaluate if groundwater contamination may be impacting downgradient receptors, three water samples were collected from the storm sewer in the locations shown on Figure 4-3. The samples were collected from storm sewer line locations corresponding to upgradient of the contaminant groundwater plume, near the center of the plume, and at the outfall of the sewer into the drainage ditch. The water samples were analyzed for VOCs using USEPA Method 8260B.

In addition to the storm sewer samples, a surface water sample was also collected from the drainage ditch during the DPT survey and analyzed for VOCs via the mobile laboratory. The results for all samples indicated no detectable constituents, indicating the groundwater plume is not impacting downgradient receptors.

6.0 CONTAMINANT FATE AND TRANSPORT

This chapter discusses the conceptual and numerical model of the release of COPCs at Hangar 1000, the physical and chemical processes that control the fate and transport of COPCs, and the potential impacts of remedial strategies.

6.1 SOURCE AREA

Analytical data show that the primary release area at Hangar 1000 is at the former Tank A location. Tank A consisted of an oil-water separator that directed waste oil materials to Tank B and water effluent to a nearby storm sewer. Historical documentation indicates that during periods of heavy rainfall, water in the storm sewer would back into the oil-water separator, which was not designed to prevent back flow. It is presumed that back flow into the separator may have resulted in releases to the environment. Releases may have occurred over the life span of the tank system, from the late 1960's until the time of the last waste discharge to the tanks in 1987. This type of release mechanism would likely have released "slugs" of both contaminated water and potentially non-aqueous phase hydrocarbons to the subsurface.

Tank A received runoff from the engine wash racks as well as from shop drains. Contaminant sources consisted of petroleum hydrocarbons and various solvent compounds. Primary COPCs detected in soils and groundwater at the site include 1,1,1-TCA; 1,1-DCA; TCE; 1,1-DCE; 1,2-DCE; and vinyl chloride. Other constituents have also been present to varying degrees of contamination including benzene, toluene, 3&4-methylphenol, and naphthalene.

The source area is relatively small measuring approximately 400 square ft and is located in the northeast quadrant of the Hangar 1000 Keyway at the location of Tank A (Figure 4-3). Monitoring well MW-8 is located in what is thought to be the source zone and is, therefore, considered the source area well. MW-8 is completed to a depth of 13 ft in the interval that is thought to potentially contain DNAPL. The DNAPL may extend to a depth of 24 ft where the clay unit is encountered based on work performed by J. A. Jones in 2002. Principal constituents detected in MW-8 are TCA and TCE. Daughter products 1,1-DCE and 1,2-DCE are also commonly detected in this well and other wells near source area. Total VOC concentrations in groundwater vary, but generally are between 10 and 20 mg/L in the source area and surrounding wells.

Soils above the water table containing COPCs above site-specific health risk based criteria were removed from the site during the tank closure activities conducted in the mid 1990s. However, impacted material below the water table at Tank A has recently been identified as a potential continuing source and may contain DNAPL that is absorbed in clayey sand found approximately 8 to 12 ft bls in this area.

The source area has been subjected to three rounds of chemical oxidation treatments. After each treatment, dissolved phase concentrations rebounded to baseline concentrations or greater. It is believed that DNAPL in the source area is the source for the rebound of dissolved phase constituents.

6.2 HYDROGEOLOGY

The USGS has conducted a numerical groundwater flow model to evaluate fate and transport of COPCs at Hangar 1000. The following description of the site hydrogeology is based on the USGS report provided in Appendix G. The results of the modeling effort are provided later in this section.

The surficial aquifer at Hangar 1000 consists of three units. These units are represented in the model as model layers. The shallow unit (layer 1) is composed of a heterogeneous mixture of fine-grained sands, silt, and sandy clay that were deposited by fluvial and coastal processes. The percentage of clay increases with depth until the clay unit (layer 2) is encountered at approximately 28 to 30 ft in depth. Hydraulic conductivity varies in layer 1 from 4 to 8 ft per day (Davis, 2001). The vertical hydraulic conductivity in layer 1 was estimated by Davis to be one order of magnitude lower than the hydraulic conductivity. The clay unit (layer 2) is a low permeability dry clay that prevents communication between the shallow unit and the second sand unit (layer 3). The clay unit is approximately 25 ft thick and extends to approximately 50 ft in depth. Layer 3 consists of sand and sandy clay with a hydraulic conductivity of 0.4 ft per day (Davis, 2001). Layer 3 terminates on top of the Hawthorne Formation at approximately 60 ft bls in the source area.

Shallow groundwater at Hangar 1000 flows to the southeast toward the storm sewer located on the south side of Yorktown Avenue. Groundwater data indicates that an upward gradient exists at the storm sewer, indicating there is no underflow beneath the sewer. This observation is confirmed by chemical data that show no detectable COPCs in wells to the south of the sewer. Based on the groundwater velocity estimated at 75 ft per year, groundwater will travel from the source area to the storm sewer at the downgradient end of the plume in approximately 6.5 years.

A reconnaissance of the storm sewer was performed by the USGS (Appendix G) during an extended dry period. Water was observed entering the storm drain as evidenced by sand boils and infiltration of water flowing down the walls of the piping. Water infiltration begins from a location near the west side of Hangar 1000 and extends to the east until the drain empties into a drainage ditch located southeast of Hangar 1000 (see Figure 11 in Appendix G). Water samples collected from the storm sewer and from the drainage ditch at the out-fall location indicate no detectable COPCs. It is presumed that volatilization of the constituents occurs as contaminated groundwater enters into and flows through the storm sewer resulting in the lack of detection of COPCs.

6.3 POTENTIAL ROUTES OF MIGRATION

The physical makeup of the Hangar 1000 limits the potential migration pathways for contaminants originating from the former Tank A location. The release consisting dominantly of VOCs occurred in the subsurface below pavement in the Keyway to Hangar 1000. Based on these characteristics, the following migration pathways are available at Hangar 1000.

Air. Due to the close proximity of the Hangar 1000 building, VOCs entrained in soil vapor derived from impacted soils and groundwater may enter and concentrate in interior air spaces inside of Hangar 1000. This potential exposure pathway is evaluated in the HHRA presented in Section 7.0.

Surface Water. It is possible that organic constituents in groundwater entering into the storm sewer may migrate via a surface water pathway. Since analytical results obtained from the storm sewer and drainage ditch indicate no detectable COPCs, transport of contaminants by surface water is not occurring at Hangar 1000.

Groundwater. Groundwater is capable of transporting constituents in a dissolved state. Organic compounds and elements generally reach groundwater either via soil vapor transport to the water table, by being leached from soil to the water table, or by leaking from a point source (Tank A). The migration of constituents in groundwater is a function of the fate process acting upon that individual constituent. The groundwater pathway is the most likely pathway for constituent migration at Hangar 1000.

Other migration pathways considered, but not available at Hangar 1000, include soil transport, sediment transport, and biotic activity.

6.4 COPC PERSISTENCE AND FATE

COPC persistence and fate in groundwater at Hangar 1000 was evaluated through the development of a numerical computerized fate and transport model used to verify the conceptual model and to predict the potential effects of the reduction of COPC levels in the source area. Mr. Hal Davis of the USGS conducted the modeling effort. Details regarding the model are provided in Appendix G. The results of the model are summarized below.

6.4.1 Model Construction

The modeling effort included development of a regional one layer model used to determine the direction and flow velocity of groundwater at NAS Jacksonville. This model was then used to calibrate a sub-regional model to simulate groundwater flow in the region around Hangar 1000 using the Modular Three Dimensional Finite-Difference Water Flow Model (MODFLOW). The regional model had 240 rows and 290 columns with a uniform cell size of 100 ft by 100 ft. This model was then used to establish boundary conditions for a site-specific groundwater flow model and a fate and transport model using the computer code Reactive Transport in Three Dimensions (RT3D). The RT3D model contained 161 rows and 149 columns of model cells. All cells are 5 ft long on each side.

To simulate free product (DNAPL) in the source zone, two cells were assigned constant chemical concentrations. During simulation constant concentration model cells were assigned with contaminant tracking particles represented by a cell volume-weighted mass of contamination. The movement of the particles was then tracked during each step in the simulation. The sum of masses of all particles in a cell equaled the total mass of contamination for that cell. The effects of advection, retardation, and hydrodynamic dispersion chemical decay were simulated in the model.

6.4.2 Calibration of the Model

The model was calibrated against the observed concentrations in site monitoring wells. Contamination from the source is believed to be leaching into the groundwater, which in turn is migrating along with groundwater and is discharging into the storm sewer located to the southeast. An exact release has not been documented, but records show that around the 16-year mark from the last known operation of the system, TCE concentrations had reportedly reached steady state conditions. DCE was assumed to reach steady state conditions in 14 years and vinyl chloride was assumed to have reached steady state conditions in 12 years. Vinyl chloride reached steady state conditions the earliest due to the chemical having the lowest retardation factor allowing it to be transported more conservatively with groundwater flow.

The first order decay rate for TCE was established to be 0.0002 d^{-1}. This value was determined from a similar site at OU 3 where the decay rates for TCE ranged from 0.0007 d^{-1} to 0.0002 d^{-1}. The calibrated first order decay rate for DCE was also 0.0002 d^{-1} and vinyl chloride was 0.06 d^{-1}.

6.4.3 Predicted Movement of TCE, DCE, and Vinyl Chloride

The effect of the reduction in the concentration of COPCs at the source was simulated. For these simulations, COPCs TCE, DCE, and vinyl chloride concentrations at the source area were each reduced by 50 percent and then 100 percent. In the 50 percent reduction simulation, after eight years the center of TCE, DCE, and vinyl chloride concentrations has traveled about half way to the sewer. The simulation shows that for all contaminants, steady state conditions were half of the original concentrations.

In the 100 percent source reduction scenario, vinyl chloride has been removed from the surficial aquifer in 13 years, DCE has been removed in 15 years, and TCE has been removed in 17 years.

6.4.4 Summary of Groundwater Model

A sub-regional model was calibrated to simulate the groundwater flow in the region around Hangar 1000 using the MODFLOW. This model was then used to establish the boundary conditions for a site-specific groundwater flow model and a fate and transport model using the computer code RT3D. Model results indicated that the groundwater flow velocity averaged about 75 ft per year, and it takes about six years for the groundwater to travel from the tank removal site to the storm sewer.

Modeling results indicate that the travel time from the tank removal site to the storm sewer is 16, 14, and 12 years for TCE, DCE, and vinyl chloride, respectively. TCE takes longer due to its high retardation factor of 2.5; DCE takes less time with a retardation factor of 2.0; and vinyl chloride is the quickest because it has the lowest retardation factor of 1.7. Based on the modeling results, the release of contamination in the aquifer occurred more than 16 years ago and currently all three contaminants are at steady state conditions. At the present time, the source area appears to be continuously loading contamination into the aquifer, but the system has reached steady state conditions. A simulation of the cleanup time of the aquifer after a 100 percent removal of TCE, DCE, and vinyl chloride in the source area resulted in restoration of the aquifer in approximately 17 years.

7.0 HUMAN HEALTH PRELIMINARY RISK EVALUATION

The objective of a HHRA is to characterize the risks associated with potential exposures to site-related constituents. For Hangar 1000 at NAS Jacksonville, the HHRA is being conducted as a PRE. The Human Health PRE is a screening-level evaluation of potential risks from site constituents to human receptors at the site. At Hangar 1000, the focus of the investigation is on the groundwater. The residential receptor will be used to evaluate potential risks from direct contact exposures from potable use of groundwater. The industrial receptor will be used to evaluate risks resulting from chemicals volatilizing from groundwater and migrating through building foundations into indoor air.

7.1 METHODOLOGY

The Human Health PRE for direct contact exposures from potable use of groundwater is conducted by simply generating a cancer risk or HI by creating new ratios between the analyte concentration and the appropriate screening value. Potential risks resulting from exposures to groundwater were evaluated by comparing the maximum detected concentration of a compound and the upper 95 percent confidence limit (UCL) to groundwater screening values taken from the USEPA Region 9 Preliminary Remediation Goals (PRGs) Table (USEPA, 2000a). USEPA Region 9 PRGs were used in place of FDEP GCTLs (FDEP, 1999) because the FDEP GCTLs are not always risk-based. The FDEP GCTLs also reflect the technical feasibility of removing the chemical from water and aesthetic drinking water qualities (i.e., color, odor, taste, etc.). In addition, for those chemicals where the risk-based GCTL is lower than what can reasonably be measured in the laboratory, the PQL is designated as the GCTL. Although the FDEP GCTLs are not being used to develop risk estimates, chemicals with maximum detected concentrations that exceed the GCTLs will be identified in the Human Health PRE. Groundwater samples collected during the latest sampling event (January 2001) were used in the analysis.

For carcinogenic compounds the ICR is calculated by $\text{ICR} = \dfrac{(\text{Cw})(\text{TCR})}{\text{Screening Data}}$

and for noncarcinogenic compounds the HI is calculated by $\text{HI} = \dfrac{(\text{Cw})(\text{THI})}{\text{Screening Data}}$

where:

Cw = chemical concentration in groundwater

TCR = target risk level, 1×10^{-6}

THI = target hazard index, 1.0

Cancer risks will be compared to USEPA's target risk level of 1 x 10^{-4} to 1 x 10^{-6} and FDEP's acceptable risk level of 1 x 10^{-6}. HIs will be compared to USEPA's and FDEP's acceptable level of 1.

Personnel inside of Hangar 1000 may be exposed to COPCs that have volatilized from groundwater and migrated through building foundations into indoor air. Indoor air concentrations resulting from vapor intrusion from groundwater are estimated using the Johnson and Ettinger volatilization model (Johnson & Ettinger, 1991). The model assumes that vapors of volatile chemicals are emitted from groundwater, migrate through surface and subsurface soil, migrate through cracks in the building foundation, and accumulate in air inside a building. Input values for the vapor intrusion model are presented in Table 7-1. Default values were used for the model input parameters with the following exceptions. The depth below grade to the bottom of the enclosed space floor was 28 cm (11 inches), which is the thickness of the concrete floor in Hangar 1000. The depth below grade to the water table was 244 cm (8 ft), which is the average depth to groundwater in the vicinity of Hangar 1000. The average soil/groundwater temperature was 22°C (72°F) (USEPA, 2000b). The indoor air exchange rate was assumed to be 0.83 per hour, which is the recommend value for industrial scenarios [American Society for Testing and Materials (ASTM), 1997]. A value of 3 years was used for the exposure duration, which is the length of the typical tour of duty at NAS Jacksonville.

The average concentration of chemicals in groundwater beneath Hangar 1000 was used for the exposure point concentrations in the vapor intrusion model, which are presented in Table 7-2.

7.2 RESULTS OF HUMAN HEALTH PRE

This section presents the results of the Human Health PRE for Hangar 1000. Potential cancer risks and HIs were calculated for direct contact exposures to groundwater under a residential land use scenario.

The results of the human health PRE for direct contact exposures from potable use of groundwater are presented in Table 7-3. Based on maximum detected concentrations, the ICR of 3.9 x 10^{-2} exceeds USEPA's target risk range of 10^{-4} to 10^{-6} and FDEP's target risk level of 1 x 10^{-6}. Chemical specific ICRs for benzene (2.9 x 10^{-6}); 1,2-DCA (7.8 x 10^{-5}); 1,1-DCE (3.3 x 10^{-2}); TCE (5.4 x 10^{-3}); 1,1,2-TCA (1.6 x 10^{-5}); PCE (3.1 x 10^{-5}); and vinyl chloride (3.9 x 10^{-4}) were greater than 1 x 10^{-6}. The ICR of 6.4 x 10^{-3} based on UCLs also exceeds USEPA's target risk range and FDEP's target risk level. Chemical specific ICRs for benzene (1.6 x 10^{-6}); 1,2-DCA (1.6 x 10^{-5}); 1,1-DCE (5.7 x 10^{-3}); TCE (6.0 x 10^{-4}); 1,1,2-TCA (6.6 x 10^{-6}); PCE (4.7 x 10^{-6}); and vinyl chloride (5.6 x 10^{-5}) were greater than 1 x 10^{-6}.

Table 7-1
Input Parameters for Vapor Intrusion Model

Remedial Investigation/Focused Feasibility Study for Hangar 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Parameter	Value	Definition
L_f	28 (default)	Depth below grade to bottom of enclosed space floor, (cm)
L_{wt}	244 (site-specific)	Depth below grade to water table, (cm)
	SL (site-specific)	SCS soil type directly above water table
T_s	22 (site-specific)	Average soil/groundwater temperature, (^oC)
	SL (site-specific)	Vadose zone SCS soil type
P_b	1.5 (default)	Vadose zone soil dry bulk density, (g/cm^3)
n_v	0.43 (default)	Vadose zone soil total porosity, (unitless)
θ_v	0.3 (default)	Vadose zone sol water-filled porosity, (cm^3/cm^3)
L_{crack}	28 (site-specific)	Enclosed space floor thickness, (cm)
ER	0.83 (1)	Indoor air exchange rate, (1/hour)
TR	1.0E-06 (default)	Target risk for carcinogens, (unitless)
THQ	1 (default)	Target hazard quotient for noncarcinogens, (unitless)
ATc	70	Averaging time for carcinogens, (years)
ATn	3 (2)	Averaging time for noncarcinogens, (years)
ED	3 (2)	Exposure duration, (years)
EF	250 (default for industrial scenarios)	Exposure frequency, (days/years)

Notes:
Default values are representative of site conditions.
(1) - Default value for industrial scenarios. ASTM (American Society for Testing and Materials), 1997.
E50.04 Provisional Standard Risk-Based Corrective Action Applied for Chemical Releases.
(2) - Typical tour duty length.

Table 7-2
Exposure Point Concentrations for Vapor Intrusion Model

Remedial Investigaton/Focused Feasibility Study for Hangar 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Analyte	Monitoring Well				Average Concentration (1)
	MW-5	MW-6	MW-7	MW-12	
	01/19/01	01/19/01	01/19/01	01/18/01	
VOCs (ug/L)					
1,1-DCA	3.7	5.3	4.4	49.9	15.8
1,2-DCA	< 2	< 2	< 2	1.5	1.13
1,1-DCE	19.6	5.2	4.8	133	41
1,2-DCE (Total)	2	5.8	9.7	1.8	5
TCE	18.5	36.2	25.3	94.5	44
1,1,1-TCA	77.2	6.8	7.2	62.1	38
1,1,2-TCA	< 2	< 2	< 2	1.4	1.10
PCE	< 2	0.81	0.64	< 2	0.86

Notes:
(1) - One half the detection limit was used in the calculation of the average concentration.

Table 7-3
Preliminary Risk Evaluation - Detected Chemical Constituents in Groundwater Samples

Remedial Investigation/Focused Feasibility Study for Hangar 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Analyte	Frequency of Detection (1)	Screening Concentration		FDEP GCTLs (3)	USEPA MCLs (4)	USEPA Region 9 PRGs Residential (5)	Maximum Detected		UCL		Target Organs (3)
		Maximum Detected	Normal UCL (2)				Cancer Risk Ratio (6)	HI Ratio (7)	Cancer Risk Ratio (6)	HI Index (7)	
VOCs (µg/L)											
Acetone	1/28	26.3	25.1	700	--	610 N		0.04		0.04	Kidney, Liver, Neurological
Benzene	2/28	1	0.560	1	5	0.35 C	2.9E-06		1.6E-06		Carcinogen
1,1-DCA	16/28	627	123	70	--	810 N		0.8		0.2	Kidney
1,2-DCA	6/28	9.4	1.93	3	5	0.12 C	7.8E-05		1.6E-05		Carcinogen
1,1-DCE	17/28	1500	264	7	7	0.046 C	3.3E-02		5.7E-03		Carcinogen
1,2-DCE (Total)	15/28	2780	291	63	--	61 (8) N		46		4.8	Blood
Ethylbenzene	3/28	1.5	1.04	30	700	1300 N		0.001		0.0008	Developmental, Kidney, Liver
Freon 113	14/28	1240	175	500000	--	59000 N		0.02		0.003	
TCE	19/28	8710	967	3	5	1.6 C	5.4E-03		6.0E-04		Carcinogen
1,1,1-TCA	12/28	7330	718	200	200	540 N		14		1.3	None Specified
1,1,2-TCA	5/28	3.2	1.31	5	5	0.2 C	1.6E-05		6.6E-06		Carcinogen
PCE	8/28	33.7	5.14	3	5	1.1 C	3.1E-05		4.7E-06		Carcinogen
Toluene	8/28	9.8	2.53	40	1000	720 N		0.01		0.004	Kidney, Liver, Neurological
Vinyl Chloride	6/28	15.9	2.31	1	2	0.041 C	3.9E-04		5.6E-05		Carcinogen
Xylenes, Total	2/28	8	2.12	20	10000	1400 N		0.006		0.002	Body Weight, Neurological
SVOCs (µg/L)											
3&4-Methylphenol	1/28	5.2	2.31	4 (9)	--	180 (9) N		0.03		0.01	Body Weight, Neurological
PAHs (µg/L)											
Naphthalene	6/28	11.8	4.75	20	--	6.2 N		1.9		0.8	Body Weight, Nasal

	Maximum Detected	UCL
Total Cancer Risk	3.9E-02	6.4E-03
Total HI	62	7.1
Total Body Weight HI	1.9	0.8
Total Blood HI	46	4.8
Total Nasal HI	1.9	0.8
Total Kidney HI	0.8	0.2
Total Developmental HI	0.001	0.0008
Total Neurological HI	0.09	0.06
Total None Specified	14	1.3
Total Liver HI	0.06	0.05

Notes:
(1) - Duplicates were counted as one sample in determining frequency of detection.
(2) - If UCL exceeds the maximum detected concentration then the maximum detected concentration is presented.
(3) - FDEP GCTLs, Chapter 62-777, FAC (August 1999)
(4) - USEPA Maximum Contaminant Level (MCL)
(5) - USEPA Region 9 PRGs, November 1, 2000 (Cancer Risk = 1E-6, HI = 1).
(6) - Cancer Risk = Screening concentration x 1E-6 / USEPA 9 PRG
(7) - HI = Screening concentration x 1 / USEPA 9 PRG
(8) - Value is for cis-1,2-DCE.
(9) - Value is for 4-methylphenol.

The HI for exposures to groundwater of 62 based on maximum detected concentrations exceeds the USEPA and FDEP acceptable level of 1.0. 1,2-DCE (total) [hazard quotient (HQ) = 46]; 1,1,1-TCA (HQ= 14); and naphthalene (HQ = 1.9) were the major contributors to the HI. Based on the UCL, the HI of 7.1 also exceeds the USEPA's and FDEP's acceptable level of 1.0. 1,2-DCE (total) (HQ = 4.8) and 1,1,1-TCA (HQ = 1.3) were the major contributors to the HI based on UCL concentrations.

The maximum detected concentrations of 1,1-DCA; 1,2-DCA; 1,1-DCE; 1,2-DCE (total); TCE; 1,1,1-TCA; PCE; vinyl chloride; and 3&4-methylphenol exceeded their respective FDEP GCTLs.

The results of the Human Health PRE for industrial receptors exposed to chemicals that have volatilized from groundwater and migrated through building foundations into indoor air is presented in Table 7.4. The ICR of 6.4×10^{-7} is within USEPA's target risk range of 10^{-4} to 10^{-6} and less than FDEP's target risk level of 1×10^{-6}. The HI of 0.0003 is less than USEPA's and FDEP's acceptable level of 1.0.

Table 7-4
Results of Vapor Intrusion Modeling

Remedial Investigation/Focused Feasibility Study for Hangar 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Chemical	Groundwater Concentration	Cancer Risk	HI
1,1-DCA	15.8		0.00004
1,2-DCA	1.13	3.7E-10	
1,1-DCE	40.7	6.4E-07	
cis-1,2-DCE	4.83		0.0001
TCE	43.6	8.2E-09	
1,1,1-TCA	38.3		0.0002
1,1,2-TCA	1.10	1.7E-10	
PCE	0.863	9.2E-11	
	Total	6.4E-07	0.0003

8.0 ECOLOGICAL RISK ASSESSMENT

As part of the RI, the ERA is based on the environmental data available for Hangar 1000 at NAS Jacksonville in Jacksonville, Florida. The objective of this screening-level ERA is to document potential ecological risks that may result from exposure to media at the site. Naval guidance (Navy, 1999) for ERAs, which is consistent with USEPA guidance (USEPA, 1995), states that a site either passes or fails a screening-level risk assessment. If potentially unacceptable risk is indicated, the site will either have an interim cleanup or proceed to a baseline risk assessment.

Previous investigations at Hangar 1000 (see Section 3.0) identified VOCs as the preliminary constituents of concern in groundwater. For this reason, groundwater discharging to surface water in the drainage ditch would be evaluated as a potential exposure pathway to show 1) whether or not a complete exposure pathway currently exists and 2) even if the pathway had been completed that there are significant ecological risk to receptors in the ditch. Because groundwater is the contaminated media associated with Hangar 1000, additional surface water samples were collected to confirm whether a complete exposure pathway to ecological receptors existed. It was also decided that previous sediment sample data collected by HLA would be used in place of collecting new samples because the data was relatively recent and also site-specific (i.e., toxicity testing). This decision was also based on the possibility that the drainage ditch may have received discharges from the former tank system which was connected to a storm sewer that emptied into the ditch.

This section is composed of 10 subsections. A brief description of the study site is included in Section 8.1. The fate and transport characteristics of the constituents detected in sampled media are provided in Section 8.2. The ecotoxicity of site contaminants and potential ecological receptors are outlined in Section 8.3. Section 8.4 describes complete exposure pathways, while Section 8.5 provides assessment and measurement endpoints. A summary of the data collected and used in this assessment is included in Section 8.6. Sections 8.7 and 8.8, respectively, include the toxicity evaluation and exposure estimates for Hangar 1000. The risk characterization is provided in Section 8.9. The uncertainties inherent with any ERA are discussed in Section 8.10. Section 8.11 contains an interpretation of the results and recommendations.

8.1 SITE BACKGROUND

A more detailed description of Hangar 1000, which includes physiography and local and regional hydrology, is included in Section 2 of this report. Section 3 provides a summary of the historical investigations conducted at Hangar 1000. A brief description of the site and past investigations follows.

Hangar 1000 is located on the north side of Yorktown Avenue. The Hangar 1000 regulated unit consisted of two USTs, known as Tank A and Tank B, which were operated from the late 1960's or early 1970's until they were closed in 1983. Tank A was a 750-gallon concrete tank used as an oil-water separator. Tank B (a 2,000-gallon steel tank) received overflow from Tank A, as well as waste oils and solvents discharged from other facility operations.

In 1993, a closure plan for the tanks was developed and submitted (ABB-ES, 1993). The following year, the tanks and most of their piping were removed. The remaining pipes were cleaned and abandoned in place due to obstructions. From 1995 through 1999, various assessment activities continued at the site. In January 2000, groundwater samples indicated the presence of solvent contamination, and the scope of the investigation at Hangar 1000 was expanded in order to define the extent of the groundwater plume.

Hangar 1000 is comprised almost entirely of paved areas. As such, terrestrial receptors have no exposure to site soils. A storm sewer directs surface water runoff from the site's paved areas to a 0.5-mile long drainage ditch located adjacent to Hangar 1000. This ditch stretches from Yorktown Avenue on the north to the St. Johns River to the south. Some level of water is always present. Groundwater from the site discharges into this surface water feature (see Section 3). This ditch is the focus of this screening-level ERA.

The sides of the drainage ditch are constructed of brick and concrete, much of which is in a state of disrepair. Several culverts from other smaller drainage areas also drain into the ditch. Dense reeds, grasses, and other vegetation grow in the ditch. Small fish were noted in the north section of the ditch during previous site investigations (HLA, 1999). In addition, several birds and insects were observed in the vegetated areas of the ditch.

8.2 PREVIOUS INVESTIGATIONS

Previous investigations have been conducted in the drainage ditch west of Ajax Street from 1995 through 1999. Testing of the sediment in the drainage ditch by NAS Jacksonville in 1991 indicated the presence of metal and organic chemicals. At that time, the drainage ditch was termed PSC 44 and was listed on the hazardous and solid waste amendment permit as a PSC. In December 1995, Brown and Root Environmental, Inc. collected three sediment samples from the drainage ditch for chemical analysis. It could not be determined at that time whether the source of the chemicals was due to storm water runoff from adjacent parking areas and roads or due to possible releases from tanks at Hangar 1000. HLA was contracted for the collection of additional sediment, surface soil, and surface water samples in areas along the length of the ditch, near the outfall in Mulberry Cove, and from a 20-inch drain line and storm sewer north of Yorktown Avenue. Fieldwork from the HLA sampling event was completed during two separate sampling rounds between December 17, 1997, and April 17, 1998. Samples were analyzed for TCL SVOCs, TCL pesticides, and TAL inorganics. The summary results for the analytical testing conducted by HLA are presented in Table 8-1. Additionally, sediment samples were collected for saltwater amphipod toxicity testing. The saltwater amphipod *Ampelisca abdita* was selected because it was believed that parts of the drainage ditch were tidally influenced by the brackish St. Johns River. However, results from the toxicity testing were inconclusive as it was determined by the testing laboratory that the surface water is considered freshwater. Sediment samples from the same three locations were collected on April 17, 1998, for cadmium chemical analysis and toxicity testing using the freshwater amphipod *Hyalella azteca*.

8.3 CONTAMINANT FATE AND TRANSPORT

Past investigations at the Hangar 1000 site have detected the presence of VOCs in the soil and groundwater (Section 3). In addition, two phthalates were present in groundwater samples at low levels in the source area. Metals were also detected in groundwater. However, only VOC constituents were identified in excess of FDEP GCTLs. As a result, recent monitoring activities at the site, as well as this assessment, have focused on VOC contamination.

A model was developed by the USGS to estimate the movement of the groundwater contamination from the site. A detailed description of that model and its results are included in Section 6. The model estimated that the plume would have reached the storm sewer and associated drainage ditch by mid 2001. This conclusion is confirmed by the results obtained from monitoring well MW-19, which contains VOCs and is located adjacent to the storm sewer. However, no VOCs were detected in surface water samples collected from the groundwater plume model's estimated outfall area. It is possible that any contamination in groundwater is volatized or diluted upon the discharge to surface water.

VOCs are the COPCs associated with the Hangar 1000 site. In general, VOCs volatilize to the atmosphere from surface soil and surface water. VOCs in soil will dissolve in water to varying degrees and may be transported over land with runoff or via groundwater to surface waters. Proteolysis and hydrolysis are not significant mechanisms for VOC degradation; however, aerobic biodegradation in soil, groundwater, and surface water is significant, and anaerobic degradation can also occur in these media. VOCs are not known to bioaccumulate in ecological receptors.

Table 8-1
Selection of Preliminary Contaminants of Concern - Sediment

Remedial Investigation/Focused Feasibility Study for Hangar 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Chemical	Frequency of Detection	Range of Detected Concentrations (mg/kg)		Maximum Sample Location	Background Concentration (mg/kg)	USEPA Region 4 Screening Level (mg/kg)	Source	HQ (unitless)	PCOC? (Y/N)	Notes
		Minimum	Maximum							
Pesticides										
4,4'-DDE	2/2	0.0046	0.007	44D00101	0.0019	0.0033	1	**2.1**	**Y**	
4,4'-DDT	2/2	0.0012	0.022	44D00101	ND	0.0033	1	**6.7**	**Y**	
Total DDT	2/2	0.0058	0.029	44D00101	0.0019	0.0033	1	**8.8**	**Y**	
Aldrin	1/2	0.0056	0.0056	44D00101	0.00026	0.0025	4	**2.2**	**Y**	
BHC, alpha	1/2	0.00055	0.00055	44D00101	0.0003	0.0025	4	0.22	N	
BHC, delta	1/2	0.0016	0.0016	44D00101	ND	NA	NA	NA	Y	no screening level available
Chlordane, alpha	2/2	0.001	0.0038	44D00201	0.0024	0.0017	1	**2.2**	**Y**	
Chlordane, gamma	1/2	0.0011	0.0011	44D00201	0.0033	0.0017	1	0.65	N	
Endosulfan II	1/2	0.0015	0.0015	44D00201	0.0012	0.014	2	0.11	N	
Endosulfan Sulfate	1/2	0.00087	0.00087	44D00201	0.0014	NA	NA	NA	Y	no screening level available
Endrin	1/2	0.023	0.023	44D00101	ND	0.0033	1	**7.0**	**Y**	
Endrin Ketone	1/2	0.0054	0.0054	44D00201	ND	0.0033	1	**1.6**	**Y**	screening value for endrin
Heptachlor Epoxide	1/2	0.0013	0.0013	44D00201	ND	0.0006	3	**2.2**	**Y**	
Methoxychlor	1/2	0.01	0.01	44D00101	ND	0.019	2	0.53	Y	no screening level available
SVOCs										
2-Methylnaphthalene	1/2	0.6	0.6	44D00101	ND	0.33	1	**1.8**		
Acenaphthene	2/2	0.086	1.5	44D00101	ND	0.33	1	**4.5**		
Acenaphthylene	1/2	0.082	0.082	44D00101	ND	0.33	1	0.25		
Anthracene	2/2	0.14	2.4	44D00101	ND	0.33	1	**7.3**	**Y**	
Benzo(a)anthracene	2/2	0.89	10	44D00101	0.39	0.33	1	**30**	**Y**	
Benzo(a)pyrene	2/2	1.1	8.5	44D00101	0.46	0.33	1	**26**	**Y**	
Benzo(b)fluoranthene	2/2	1.8	14	44D00101	0.93	NA	NA	NA	Y	no screening level available
Benzo(g,h,I)perylene	2/2	0.46	2.4	44D00101	0.29	NA	NA	NA	Y	no screening level available
Benzo(k)fluoranthene	2/2	0.65	16	44D00101	0.33	NA	NA	NA	Y	no screening level available
bis(2-ethylhexyl)phthalate	2/2	0.57	1.9	44D00101	0.56	0.182	1	**10**	**Y**	
Butylbenzyl Phthalate	2/2	0.073	0.35	44D00101	0.072	11	2	0.03	N	
Carbazole	2/2	0.14	5.3	44D00101	ND	NA	NA	NA	Y	no screening level available
Chrysene	2/2	0.96	11	44D00101	0.64	0.33	1	**33**	**Y**	
Dibenzofuran	1/2	1.4	1.4	44D00101	ND	2	2	0.7	N	
Fluoranthene	2/2	2.1	21	44D00101	0.89	0.33	1	**64**	**Y**	
Fluorene	2/2	0.066	1.8	44D00101	ND	0.33	1	**5.5**	**Y**	

See notes at end of table.

Table 8-1 (Continued)
Selection of Preliminary Contaminants of Concern - Sediment

Remedial Investigation/Focused Feasibility Study for Hangar 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Chemical	Frequency of Detection	Range of Detected Concentrations (mg/kg)		Maximum Sample Location	Background Concentration (mg/kg)	USEPA Region 4 Screening Level (mg/kg)	Source	HQ (unitless)	PCOC? (Y/N)	Notes
		Minimum	Maximum							
SVOCs (Continued)										
Indeno(1,2,3-cd)pyrene	2/2	0.58	2.8	44D00101	0.3	NA	NA	NA	Y	no screening level available
Naphthalene	1/2	1.3	1.3	44D00101	ND	0.33	1	**3.9**	**Y**	
Phenanthrene	2/2	0.94	17	44D00101	0.18	0.33	1	**52**	**Y**	
Pyrene	2/2	1.6	20	44D00101	0.65	0.33	1	**61**	**Y**	
Inorganics										
Aluminum	2/2	525	1100	44D00101	1700	NA	NA	NA	N	maximum less than background
Arsenic	1/2	1.7	1.7	44D00101	0.73	7.24	1	0.23	N	
Barium	2/2	7.2	25.6	44D00101	21.5	200	4	0.13	N	
Beryllium	1/2	0.11	0.11	44D00101	0.1	NA	NA	NA	N	maximum < twice background
Cadmium	4/4	0.22	6.2	44D00101	0.31 - 2.2	1	1	**6.2**	**Y**	
Calcium	2/2	805	4240	44D00101	16000	NA	NA	NA	N	nutrient
Chromium	2/2	7.4	33.3	44D00101	9	52.3	1	0.64	N	
Cobalt	2/2	1.3	2	44D00101	0.81	20	4	0.10	N	
Copper	2/2	5.8	17.5	44D00101	13	18.7	1	0.94	N	
Iron	2/2	1330	2280	44D00101	6090	NA	NA	NA	N	maximum less than background
Lead	2/2	42	130	44D00101	46.6	30.2	1	**4.3**	**Y**	
Magnesium	2/2	148	639	44D00101	701	NA	NA	NA	N	nutrient
Manganese	2/2	5.9	18.8	44D00101	34	NA	NA	NA	N	maximum less than background
Mercury	2/2	0.11	0.12	44D00101	0.13	0.67	1	0.18	N	
Nickel	2/2	1.4	3.3	44D00101	3.3	15.9	1	0.21	N	
Potassium	2/2	19	59	44D00101	40.4	NA	NA	NA	N	nutrient
Selenium	2/2			44D00101		0.81	5	0		
Silver	2/2			44D00101		2	2	0		
Sodium	2/2	172	227	44D00101	203	NA	NA	NA	N	nutrient
Vanadium	2/2	3.1	7.6	44D00101	8.5	NA	NA	NA	N	maximum less than background
Zinc	2/2	38.6	137	44D00101	159	124	1	**1.1**	N	maximum less than background

Notes:
NA = not available
ND = not detected

Source Definitions:
1 = Sediment Screening Values for Hazardous Waste Sites from USEPA Region 4 Waste Management Division (USEPA, 1995).
2 = USEPA Sediment Quality Benchmarks from EcoTox Thresholds (USEPA, 1996); assumes 1% organic carbon.
3 = Threshold Effect Levels from MacDonald, 1994.
4 = Dutch Soil Target Value from Ministry of Housing, Spatial Planning, and Environment (MHSPE), 1994.
5 = Maximum Soil Permissible Concentration from Crommentuijn et al., 1997.

Because the soils at this site were essentially “capped” by pavement, the VOCs contaminating site soils were unable to volatilize. The presence of VOCs in the groundwater beneath the site confirms their transfer from soil to groundwater. Since groundwater at the site discharges to the surface water of the storm sewer and associated drainage ditch where ecological receptors are present, potential toxicity to biological organisms is of concern.

Phthalates adsorb to soils at varying degrees depending on the soil’s organic carbon content and properties of the compound. Phthalates will leach to groundwater, and there is some volatilization to the atmosphere from both soils and surface water. Phthalates are a common laboratory contaminant and are ubiquitous in urban and commercial areas because they are often used as plasticizers. They are not likely to be an important component of the waste stream at Hangar 1000 and they are not expected to be transported in groundwater in anything other than trace quantities. Therefore, surface water and storm drain samples were not analyzed for phthalates, and they will not be considered further.

Metals are generally persistent in soil, but will leach from soil to groundwater at varying degrees depending on the pH of the infiltrating water and other factors. Metals will dissolve in water and may enter surface water via runoff or groundwater discharge. As with phthalates, metals were not likely to be an important component of the waste stream at Hangar 1000. Therefore, surface water and storm drain samples were not analyzed for metals and they will not be considered further.

8.4 ECOTOXICITY AND POTENTIAL RECEPTORS

As stated earlier, recent monitoring at the Hangar 1000 site has focused on VOCs in groundwater. Therefore, this assessment will also focus on that group of chemicals.

The VOCs detected in site groundwater samples are halogenated hydrocarbon solvents. As stated earlier, VOCs readily volatilize from soil and surface water. However, they can be acutely toxic to ecological receptors. VOCs are known central nervous system (CNS) toxins and can cause behavioral changes, impaired movement, and CNS depression. For instance, fish exposed to TCE exhibited changes in schooling behavior and erratic swimming [Hazardous Substance Data Bank (HSDB), 2001]. VOC solvents are also hepatotoxic and can produce effects ranging from mild changes such as fatty liver to more severe injuries like necrosis.

VOC solvents’ toxic effects are due to their biotransformation within a receptor. For example, haloethenes (e.g., TCE, PCE, DCE, and vinyl chloride) are transformed by microsomal enzymes to form an epoxide across the double bond. The resulting intermediate is highly reactive and can bind to various cellular structures, leading to a disruption of cellular function and possibly, if bound to cellular proteins and DNA, cause mutations and cancer in the animal host. VOCs are not known to biomagnify in terrestrial or aquatic ecosystems, but their ability to cause acute toxicity is of concern at this site.

Potential receptors include sediment-dwelling organisms (plant and animal), aquatic organisms (small fish and insects), and organisms that eat the aforementioned. Based on the environmental fate data, higher level predators are not likely to be affected by VOCs detected in sediment or surface water.

8.5 COMPLETE EXPOSURE PATHWAYS

The potentially complete exposure pathway for this assessment is leaching of VOCs from contaminated soil, transport downward through the vadose zone, and lateral movement via groundwater to surface water and sediment. Potential routes of exposure to ecological receptors include the following:

- Direct contact with sediment.
- Ingestion of sediment.
- Ingestion of contaminated organisms.

Additionally, VOCs in the groundwater may potentially discharge to surface water, which could expose aquatic organisms to VOCs in the surface water through direct contact and/or ingestion of surface water. However, as summarized in Section 5.4.3, no VOCs were detected in surface water samples indicating these exposure pathways are not complete.

8.6 ASSESSMENT AND MEASUREMENT ENDPOINTS

Regarding contamination at a site, the goal of environmental protection is to ensure that the structure and function of the living system is similar to what it would be without contamination. This is very difficult to test or measure directly, so it is assumed that if populations of native organisms are reproducing successfully, the goal will be met. Therefore, the “assessment endpoint” of this assessment is the successful reproduction of the following:

- Sediment-dwelling (benthic) invertebrates.
- Fish feeding on benthic invertebrates.
- Aquatic plants.
- Aquatic (small fish and insect) life.

Although exposure through the food chain is a potential pathway, the general lack of VOC bioaccumulation precludes the assessment of wildlife exposure. Similarly, drinking water is seldom a significant route of entry into wildlife for environmental contaminants, and this is a factor in not selecting wildlife for assessment. In addition, the area of potential exposure for wildlife, the length of the ditch, is small, and as discussed in Section 8.5, there is not a complete exposure pathway for surface water because VOCs were not detected in surface water.

Toxicological data on the tendency of COPCs to cause mortality or serious developmental or reproductive effects can be used to address the protection goal. For plants, invertebrates, and wildlife, toxicological data are typically expressed as a concentration associated with an effect (or the lack of an effect). Therefore, the "measurement endpoints" are the concentrations in sediment that are associated with no effects to the biota.

8.7 SUMMARY OF DATA COLLECTION AND ANALYSIS

As stated earlier, this screening level ERA is limited to the storm sewer and associated drainage ditch adjacent to the Hangar 1000 site. TtNUS collected three surface water samples from the storm sewer and drainage ditch in June 2001. These samples were collected to assess and characterize potential contaminant transfer from the groundwater plume originating at the Hangar 1000 site to downgradient surface water locations. The samples were analyzed for USEPA TCL VOC constituents. One background sample (SEW-1) was collected in the concrete-lined storm sewer (located south of Yorktown Avenue) just north of monitoring well MW-25. This location was chosen because it was upgradient of the groundwater plume's modeled path. A second surface water sample (SEW-2) was collected in the same storm sewer approximately 80 ft east of the background sample. The final surface water sample (SEW-3) was collected at the junction of the storm sewer and the drainage ditch located perpendicular to Yorktown Avenue. The locations of these surface water samples are depicted in Section 4 on Figure 4-3.

No sediment samples were collected from the storm sewer and drainage ditch during the 2001 sampling event because sediment samples, including site specific toxicity testing, were previously collected and analyzed from December 1997 to April 1998 as presented in HLA, 1999. The most recent sediment samples were collected by HLA at three locations during two rounds of sampling (HLA, 1999). The first sampling round occurred in December 1997, while the second round was in April of the following year. Sediment was collected from two locations within the drainage ditch (44D001 and 44D002) and from one background location approximately 400 ft west (HLA, 1999). All samples collected during the first round were analyzed for USEPA TCL SVOCs and pesticides and for TAL inorganic constituents. In the second sampling round, sediment samples collected from the same three locations were analyzed for cadmium.

HLA also submitted sediment samples from these locations for toxicity testing. In the first sampling round, the saltwater amphipod *Ampelisca abdita* was used; while in the second sampling round, the freshwater amphipod *Hyalella azteca* was used (HLA, 1999).

8.8 TOXICITY EVALUATION

At the screening level, the USEPA Region 4 Ecological Screening Values (ESVs) are used as toxicity thresholds when available values from other sources were used as the screening value for chemicals that did not have Region 4 ESVs. The Region 4 ESVs are based on contaminant levels associated with a low probability of unacceptable risks to ecological receptors. The numbers are based on conservative endpoints and sensitive ecological effects data, and they are used to determine the need for further investigation. The ESVs do not represent remediation levels.

The USEPA surface water screening values are derived from water quality criteria documents and represent chronic ambient water quality criteria values. The lowest reported effects level is used for chemicals for which there is insufficient information available to derive a criterion. A safety factor of 10 was used to derive a chronic value if only acute information was available.

The results and toxicity evaluation of the sediment samples collected by HLA were reported in the Sampling Event Report for PSC 44, which is the drainage ditch west of Ajax Street (HLA, 1999). In that document, maximum and average sediment concentrations of detected analytes were compared to the sediment quality guidelines from USEPA Region 4 (USEPA, 1995) and the FDEP threshold effects levels (TELs) and probable effects levels (PELs) (MacDonald, 1994). The USEPA Region 4 guidelines were derived from literature reported in publications from the State of Florida and the National Oceanic and Atmospheric Administration (Long and Morgan, 1991). The FDEP TEL value is a concentration of a sediment-associated contaminant that is not considered to represent a significant hazard to aquatic organisms. Within the TEL and PEL concentration range, adverse biological effects are possible. Above the PEL range, concentrations of sediment-associated contaminants are considered to represent significant hazards to aquatic organisms (HLA, 1999).

As stated earlier, sediment toxicity testing was also conducted on sediment samples collected at PSC 44. Previous investigations conducted by ABB-ES in 1993 indicated that the nearby St. Johns River water was marine in nature (HLA, 1999). A portion of the sampled drainage ditch is tidally influenced by the St. Johns River. Therefore, the saltwater amphipod *Ampelisca abdita* was used in the toxicity testing conducted in 1997. The HLA report (HLA, 1999) notes that upon arrival to the laboratory, the salinity of the sediment samples were measured and classified as freshwater. Natural seawater was added to the sediment prior to the initiation of the test, but the results from the testing were inconclusive, and it was determined that a freshwater amphipod should have been used. The toxicity testing was repeated in April 1997 using the freshwater amphipod *Hyalella azteca*. The amphipod was exposed to the reference toxicant, copper sulfate, in a 10-day graded concentration series to determine the 96-hour LC_{50} value. Survival rates and the dry weight of test organisms in background and PSC 44 samples were compared. The toxicity test results are discussed in Section 8.9, together with the risk evaluation of chemical concentrations in sediment.

8.9 EXPOSURE ESTIMATE

At this screening step, contaminant concentrations are used as exposure estimates for comparison to screening levels. The screening level ERA is generally a conservative estimation of potential ecological risk; therefore, maximum contaminant concentrations are used for comparison to guidelines.

HLA performed a Focused Ecological Risk Evaluation as part of the PSC 44 Sampling Event Report (HLA, 1999). Both average and maximum concentrations of the analytes detected in sediment were compared to the toxicity guidelines.

8.10 RISK CALCULATION

Risk in a screening level risk assessment is estimated by dividing the maximum site concentration by its Region 4 ecological screening level. This results in a HQ; HQs of one or more indicate potential risk. Because potential ecological risks due to site sediment samples have already been evaluated in the Focused Ecological Risk Evaluation conducted by HLA in 1999, the reported results of that study will be used here.

Sediment

The results of the toxicity testing using the freshwater amphipod *Hyalella azteca* indicated that the site background sample had a 96 percent survival rate, while the two sample locations, 44D001 and 44D002, had survival rates of 93 and 99 percent, respectively. Statistical analyses showed no significant decrease in survival rates between background and PSC 44 samples. In addition, the mean dry weight of test organisms from sample locations 44D001 and 44D002 were higher than background (HLA, 1999). The toxicity testing results did not indicate any adverse effects to the test organisms from sediment exposure (HLA, 1999). A comparison of the sediment data to available screening levels is included in Table 8-1.

A comparison of maximum sediment concentrations in the drainage ditch to sediment screening criteria indicated that PAHs, several pesticides, cadmium, lead, and zinc exceeded the available criteria

(HLA, 1999). Based upon the distribution of the contaminants along the drainage ditch, the likely source of these contaminants was concluded to be stormwater runoff from adjacent parking lots and roads (HLA, 1999).

The toxicity testing indicated that aquatic receptors in the PSC 44 drainage ditch were not adversely affected from exposure to sediment. These results carry more weight than comparison of chemical concentrations to guideline values, so unacceptable risks to aquatic receptors are not expected to occur from exposure to sediment in the drainage ditch.

Surface Water

No constituents were detected in any of the three surface water samples collected in and around the storm sewer adjacent to Yorktown Avenue. Therefore, a numerical estimation of risk cannot and does not need to be made. A comparison of the surface water reporting limits to available screening levels is included in Table 8-2. As shown in the table, the reporting limits for COPCs are well below their respective screening levels. However, uncertainty exists in the case of Freon 113 and vinyl chloride because screening values are not available for these chemicals.

Table 8-2
Surface Water Report Limits Versus Screening Criteria

Remedial Investigation/Focused Feasibility Study for Hangar 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Volatile Organic Compound	Report Limit (µg/L)	ORNL Secondary Chronic Value[1] (µg/L)	USEPA Region 4 Freshwater Value (µg/L)	Florida Freshwater Surface Water Cleanup Target Level (µg/L)
Acetone	50	1,500	--	1,700
Benzene	1	130	53	--
1,1-DCA	2	47	--	--
1,1-DCE	2	25	303	--
1,2-DCA	2	910	2,000	--
1,2-DCE (total)	4	590	00	7,000
Ethylbenzene	2	7.3	453	610
Freon 113	2	--	--	--
1,1,1-TCA	2	11	528	270
1,1,2-TCA	2	1,200	940	--
PCE	2	98	84	--
Toluene	2	9.8	175	480
TCE	2	47	--	--
Vinyl Chloride	1	--	--	--

Notes:
ORNL = Oak Ridge National Laboratory
-- = not available
[1]Suter, G. W. II and C. L. Tsao, 1996. Toxicological Benchmarks for Screening Potential Constituents of Concern for Effects on Aquatic Biota: 1996 Revision. Environmental Sciences Division, Oak Ridge National Laboratory. ES/ER/TM-96/R2.

8.11 UNCERTAINTY

Uncertainty is associated with all aspects of the ecological assessment methodology presented in the preceding sections. This section provides a summary of uncertainties.

Once the risk assessment is complete, the results must be reviewed and evaluated to identify the type and magnitude of uncertainty involved. Reliance on results from a risk assessment without consideration of uncertainties, limitations, and assumptions inherent in the process can be misleading. For example, to account for uncertainties in the development of exposure assumptions, conservative estimates must be made to ensure that the assumptions are protective of receptors inhabiting the area of potential exposure. If a number of conservative assumptions are combined in an exposure model, the resulting calculations will propagate the uncertainties associated with those assumptions. This uncertainty is biased toward over predicting risks. Thus, both the results of the risk assessment and the uncertainties associated with those results must be considered when making risk management decisions.

Generally, risk assessments carry two types of uncertainty – measurement and informational. Measurement uncertainty refers to the variability inherent in measured data. For example, this type of uncertainty is associated with analytical data used to characterize contaminant concentrations present in various environmental media; the risk assessment reflects the accumulated variances of the individual values used. Informational uncertainty stems from the limited availability of information needed to complete various portions of the assessment. Often this gap is significant; information regarding the effects of industrial chemicals on wildlife receptors, on the biological mechanism of action of a chemical, the impact physiological differences on exposure pathways, or the behavior of a chemical in various environmental media (e.g., soil) is often absent.

Uncertainty is associated with each of the steps of the risk assessment process, including the following:

- Uncertainty in problem definition arises from ambiguities in characterization of contaminant sources and migration pathways, as well as in the exposure pathway analysis.

- Uncertainty associated with the exposure assessment includes the methods used and the assumptions made to determine exposure concentrations.

- Uncertainty in the ecological effects characterization includes the quality of the existing data to support a determination of potential adverse impacts to ecological receptors.

- Uncertainty in risk characterization includes that associated with the potential effects of exposure to multiple chemicals and the cumulative uncertainty from combining conservative assumptions made in earlier activities.

While these and other sources contribute to uncertainty, the manner (direction) in which uncertainty impacts the final predictions produced by this assessment (i.e., over or under prediction) can be influenced by the assumptions made throughout the risk assessment process. As noted above, conservative assumptions were made so that the final calculated risk would result in an overestimation of potential risks attributable to conditions associated with the site. Thus, uncertainty is associated with the degree to which the numerical values produced as a result of this process overestimate the actual risks.

8.11.1 Uncertainty in Problem Definition

Uncertainty in the problem definition can arise as a result of contaminant source evaluation. Data gaps and incomplete or vague information regarding contaminant fate and transport (migration pathways) and the environmental receptors present and their ecology may lead to uncertainty in determining complete exposure pathways. Appropriate and reasonable assumptions should be made concerning exposure pathways (e.g., sources, points, and routes), as well as the use of appropriate and accepted sources of physico-chemical data for all preliminary COPCs.

For this screening level ERA, the site history indicates storage and disposal of solvents. The two USTs on site have been removed, and soils above target concentrations were excavated. These actions have, somewhat, remediated the site. Because the site is paved and any remaining contaminated soils are inaccessible to terrestrial receptors, the soil samples collected in assessment thus far characterize the site.

Likewise, the sediment samples collected from the drainage ditch are downgradient from the source of contamination and are likely characteristic for that medium. Although the sediment samples collected were not analyzed for VOCs, the transfer of VOCs from groundwater to surface water and subsequently to sediment is unlikely to occur given their high volatility.

The groundwater model predicted that the contamination plume would reach the storm sewer within 10 years of the release and predicts the plume has reached steady state conditions. Groundwater samples taken adjacent to the storm sewer indicate VOCs are present in groundwater, confirming the model output. The groundwater samples were collected within the areas of the sewer and ditch that the outfall was predicted and, thus, are thought to be representative of potential ground-to-surface water contamination. The absence of VOCs in surface water samples above detection limits could be a result of volatilization, stripping, or dilution.

8.11.2 Uncertainty in the Exposure Assessment

Uncertainty in the exposure assessment arises for the methods used to establish exposure point concentrations. A limited number of sediment and surface water samples within areas likely to be inhabited by ecological receptors were collected. Therefore, the degree to which the locations of these samples represent the contamination encountered by potential receptors at the site is uncertain. Moreover, the use of maximum detected values to represent site-specific contamination concentrations is conservative and overestimates risk. If inappropriate methods for taking and analyzing environmental samples are utilized, uncertainty in the results will be increased. Contaminants may be present in forms that are toxic in varying degrees or differ in bioavailability. If it is assumed that measured concentrations are 100 percent bioavailable, the contaminant concentrations are likely to overestimate risk.

8.11.3 Uncertainty in the Ecological Effects Characterization

Unlike HHRAs, ecological assessments must consider risks to many different species. The calculation of risk values for each potential receptor species is not possible. For screening level risk assessments, conservative values, protective of a wide range of ecological receptors, are used for screening. The underlying assumptions associated with the use of these values is that contaminant concentrations in excess of these guidelines are indicative of potential impacts to actual receptors inhabiting a given area. However, species-specific physiological differences that may influence an organism’s response to a contaminant or subtle behavioral differences that may increase or decrease a receptor’s contact with a contaminant are seldom known. The use of screening values, while necessary, will introduce error into the results of an assessment.

In addition to uncertainty regarding risks associated with the degree to which screening values are exceeded, uncertainty in the results of the risk assessment process arises when extrapolations are made across levels of ecological organization or from laboratory studies to field conditions in benchmark derivation. The majority of the currently available toxicological data rests on the response of individuals exposed to chemicals. Extrapolations from these simple endpoints to more complex, ecologically relevant endpoints, such as impacts to populations or communities, introduce uncertainty into the results of the risk assessment. The uncertainty associated with extrapolations from results based on laboratory test conditions to field situations have long been acknowledged, but remains difficult to quantify.

8.11.4 Uncertainty in the Risk Characterization

Uncertainty in risk characterization includes the uncertainties associated with its design and components: problem formulation, exposure assessment, and effects characterization. Other sources of uncertainty emerge at the risk characterization step, such as not taking antagonistic or synergistic effects into account. Little or no information is available to determine the potential for antagonism or synergism for the chemicals of concern. Therefore, this uncertainty cannot be discussed in terms of its impact on the risk assessment, since it may either underestimate or overestimate potential ecological risk. Also, reasonable and appropriate conclusions must be drawn from the results. Often conservative conclusions are drawn, which may tend to overestimate risk.

8.12 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The results of this Screening Level ERA do not indicate unacceptable risk to ecological receptors from contamination in the storm sewer and the drainage ditch located downgradient from Hangar 1000. Although sediment samples collected from the drainage ditch in 1999 did indicate PAHs and metals in concentrations exceeding available criteria, the presence and distribution of these analytes indicates their source is most likely stormwater runoff from adjacent parking lots and roads (HLA, 1999). Toxicity testing performed on site sediments did not indicate adverse effects to aquatic receptors (HLA, 1999). In addition, surface water samples collected from the groundwater plume model's estimated outfall area in June 2001 did not detect the presence of any site-related contamination (VOCs) above reporting limits, indicating that the pathway to ecological receptors is not complete. As such, no further ecological study is recommended for the Hangar 1000 site.

9.0 DESCRIPTION OF THE FOCUSED FEASIBILITY STUDY

The FFS, which is discussed in Sections 9.0 to 13.0 of this report, is the process for the development and evaluation of the remedial action to address the contamination at Hangar 1000. As a result of agreement of the NAS Jacksonville Partnering Team (which includes the Navy, USEPA, and FDEP), an FFS was selected for Hangar 1000. An FFS differs from a standard FS as a specific set of remedial alternatives has been pre-selected for development and screening. The remedial alternatives selected for development are discussed in detail in Sections 11.0 to 13.0.

The following sections provide a detailed determination of the RAOs. After the RAOs are decided upon, a comparative analysis of remedial alternatives is performed to determine the best viable route for remedial activities.

The information that was provided in the RI on the extent and characteristics of contamination at the Hangar 1000 is used in the FFS. The additional information provided by the human health and ecological risk assessments on the risks posed to human health and the environment by the existing site conditions made available additional data for the FFS.

9.1 THE FFS PROCESS

Development of remedial alternatives for CERCLA sites consists of a series of steps. The first step in the FFS process is to develop RAOs. RAOs are media-specific goals established to protect human health and the environment. RAOs specify the COCs, media of interest, and exposure pathways and are established such that a range of alternatives can be developed to achieve the objectives. RAOs for Hangar 1000 are developed in Section 10.0 and are based on information provided from the RI and human health and ecological risk assessments. Once RAOs are identified, GRAs are developed for each medium of interest. GRAs typically fall into the following categories: no action, containment, excavation, extraction, treatment, disposal, or other actions, singularly or in combination, which will satisfy the RAOs established for the site.

After the RAOs are developed, applicable technologies are identified and those technologies are developed into remedial alternatives to meet the RAOs. For a typical FS, the National Oil and Hazardous Substance Pollution Contingency Plan (NCP) requires that a range of alternatives be presented in the FS to the maximum practicable extent. However, for this FFS, a set of alternatives has been pre-selected by the NAS Jacksonville Partnering Team based on experience at similar sites, prior remedial actions at Hangar 1000, and current site conditions.

For a typical FS, Section 11.0 would discuss the process to identify and screen applicable technologies for each general response action. This step eliminates those technologies that cannot be implemented technically. Those technologies that pass the screening phase are then assembled into remedial alternatives. Since this is an FFS, remedial alternatives for screening have already been pre-selected. Therefore, Section 11.0 presents a brief introduction and summary of the pre-selected remedial alternatives. This FFS report does not present information on alternatives that fail to meet the RAOs, except for a no action alternative which, by law, must be considered to provide a baseline for comparison of all alternatives.

Section 12.0 describes and analyzes in detail the remedial alternatives by using the following seven criteria described in the NCP: (1) overall protection of human health and the environment; (2) reduction of toxicity, mobility, or volume of contaminants through treatment; (3) compliance with ARARs; (4) long-term effectiveness and permanence; (5) short-term effectiveness; (6) implementability; and (7) cost.

Alternatives are evaluated against the following two factors after State participation and public comment period for the FS: (1) State acceptance and (2) community acceptance.

The results of the detailed analyses (for the first seven criteria) are summarized and compared in a comparative analysis (Section 12.0). The alternatives are compared against each other with the following criteria:

Threshold criteria include the following:

- Overall protection of human health and the environment.
- Compliance with ARARs.

Primary balancing criteria include the following:

- Cost effectiveness.
- Use of permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable.
- Preference for treatment that reduces toxicity, mobility, or volume of contaminants as a principle element.

These criteria are used because Superfund Amendments and Reauthorization Act of 1986 requires them TBC during remedy selection. Modifying criteria, which included State and community acceptance, are also evaluated. State acceptance is evaluated when the State reviews and comments on the draft FFS report. A Proposed Plan is then considered based on the State's comments. Community acceptance is evaluated based on comments received on the FFS and Proposed Plan during a public comment period. Comments from the community are addressed in a Responsive Summary that is included in the Record of Decision (ROD), which documents the identification and selection of the remedy. The entire FFS process provides the technical information and analyses that form the basis for a Proposed Plan and subsequent ROD.

9.2 REMEDIAL CONSIDERATIONS

The NAS Jacksonville Partnering Team agreed that the FS for Hangar 1000 would be an FFS. This decision was made principally because the RI and subsequent field investigations (see Appendix I) identified several areas of groundwater with very high concentrations of chlorinated VOCs (up to 82,000 μg/L) that are indicative of the presence of DNAPL and act as ongoing sources of contamination. As a result, development and evaluation of remedial alternatives have been sepcifically focused upon these DNAPL source areas.

For the purpose of this FFS, the saturated soil in the DNAPL source areas is considered to be part of the groundwater medium of concern.

10.0 REMEDIAL ACTION OBJECTIVES AND GENERAL RESPONSE ACTIONS

This section develops RAOs and derives PRGs for the contaminated media. The regulatory requirements and guidance (e.g., ARARs) that may potentially govern remedial activities are presented in this section. In addition, this section presents the COCs identified during the RI, HHRA, and ERA and the conceptual pathways through which these chemicals may affect human health, and thus derives the environmental media of concern. The PRGs for the contaminated media are developed in this section and GRAs that may be suitable to achieve the PRGs are presented. Finally, this section presents an estimate of the volumes of contaminated media.

10.1 REMEDIAL ACTION OBJECTIVES

The purpose of this section is to develop RAOs for Hangar 1000 at NAS Jacksonville, Jacksonville, Florida. Development of RAOs is an important step in the FFS process. The RAOs are medium-specific goals that define the objective of conducting remedial actions to protect human health and the environment. The RAOs specify the COCs, potential exposure routes and receptors, and an acceptable range contaminant level (i.e., PRGs) for the site.

The development of PRGs takes into consideration ARARs and TBC criteria. Section 10.1.2 identifies the ARARs and TBC criteria, Section 10.1.3 identifies the media of concern, and Section 10.1.4 identifies the COCs for remediation.

10.1.1 Statement of RAOs

Site-specific RAOs specify COCs, media of interest, exposure pathways, and cleanup goals or acceptable contaminant concentrations. RAOs may be developed to permit consideration of a range of treatment and containment alternatives. This FFS addresses groundwater contamination at Hangar 1000. To protect the public from potential current and future health risks, as well as protect the environment, the following RAOs have been developed for Hangar 1000:

- Prevent unacceptable risks from human exposure to contaminated groundwater.
- Prevent contaminant migration from groundwater to surface water.

10.1.2 ARARs and TBC Criteria

ARARs consist of the following:

- Any standard, requirement, criterion, or limitation under Federal environmental law.

- Any promulgated standard, requirement, criteria, or limitation under a state environmental or facility law that is more stringent than the associated Federal standard, requirement, criterion, or limitation.

TBC criteria are non-promulgated, non-enforceable guidelines that may be useful in developing a remedial action or are necessary for determining what are protective to human health and/or the environment. Examples of TBC criteria include USEPA's Drinking Water Health Advisories, Reference Doses (RfDs) and Cancer Slope Factors (CSFs).

One of the primary concerns during the development of remedial action alternatives for hazardous waste sites under CERCLA is the degree of human health and environmental protection offered by a given remedy. Section 121 of CERCLA requires that primary consideration be given to remedial alternatives that attain or exceed ARARs. The purpose of this requirement is to make CERCLA response actions consistent with other pertinent Federal and State environmental requirements.

10.1.2.1 Definitions

The definitions of ARARs are given below:

- Applicable requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal or State law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstances at a CERCLA site.

- Relevant and Appropriate Requirements are cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal or State law, while not "applicable" to a hazardous substance, pollutant, contaminant, or remedial action, location, or other circumstances at a CERCLA site, addresses problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site.

- TBC criteria are a category created by USEPA that includes non-promulgated criteria, advisories, and guidance issued by Federal and State government that are not legally binding and do not have the status of potential ARARs. However, pertinent TBC criteria will be considered along with ARARs in determining the necessary level of cleanup or technology requirements.

Under CERCLA Section 121(d)(4), the USEPA may waive compliance with an ARAR if one of the following conditions can be demonstrated:

- The remedial action selected is only part of a total remedial action that will attain the ARAR level or standard of control upon completion.

- Compliance with the requirement will result in a greater risk to human health and the environment than other alternatives.

- Compliance with the requirement is technically impracticable from an engineering perspective.

- The remedial action selected will attain a standard of performance that is equivalent to that required by the ARAR through the use of another method or approach.

- With respect to a State requirement, the State has not consistently applied the ARAR in similar circumstances at other remedial actions within the State.

- Compliance with the ARAR will not provide a balance between protecting public health, welfare, and the environment at the facility with the availability of Superfund money for response at other facilities (fund-balancing). This condition only applies to Superfund-financed actions.

The NCP has identified three categories of ARARs [40 CFR Section 300.400 (g)]:

- <u>Chemical-Specific:</u> Health/risk-based numerical values or methodologies that establish concentration or discharge limits for particular contaminants. Examples include Maximum Contaminant Levels (MCLs) and Clean Water Act Ambient Water Quality Criteria (AWQC).

- <u>Location-Specific:</u> Restrict actions or contaminant concentrations in certain environmentally sensitive areas. Examples of these areas regulated under various Federal laws include floodplains, wetlands, and locations where endangered species or historically significant cultural resources are present.

- <u>Action-Specific:</u> Technology- or activity-based requirements, limitations on actions, or conditions involving special substances. Examples of action-specific ARARs include wastewater discharge standards.

The following section discusses contaminant- and location-specific ARARs and TBC criteria. Action-specific ARARs and TBC criteria are presented in Section 10.3 along with the discussion of GRAs.

10.1.2.2 Chemical-Specific ARARs and TBC Criteria

This section presents a summary of Federal and State chemical-specific ARARs and TBC criteria. All of these ARARs and TBC criteria provide a medium-specific guidance on "acceptable" or "permissible" concentrations of contaminants. Tables 10-1 and 10-2 present a list of Federal and State of Florida chemical-specific ARARs and TBC criteria for this FFS.

10.1.2.3 Location-Specific ARARs and TBC Critieria

This section provides a summary of Federal and State location-specific ARARs and TBC criteria. These ARARs and TBC criteria place restrictions on concentrations of contaminants or the conduct of activities based upon the site's particular characteristics or location. Tables 10-3 and 10-4 present a list of Federal and State of Florida's location-specific ARARs and TBC criteria for this FS.

10.1.3 Medium of Concern

Based upon the results of the RI, HHRA, and ERA involving toxicity and risk assessment for both human health and ecological receptors, as well as the agreements made by the NAS Jacksonville Partnering Team, the primary medium of concern at Hangar 1000 was determined to be groundwater. As noted earlier in Section 9.2, saturated soil associated with groundwater in the DNAPL source areas will be considered as groundwater.

10.1.4 COCs for Remediation

COCs for the Hangar 1000 groundwater were determined based on a human health and ecological risk assessment and based on screening of maximum concentrations with State and Federal criteria. The COC list was developed by comparing maximum detected chemical concentrations in groundwater to appropriate criteria as discussed below.

10.1.4.1 Groundwater COCs

Results of the HHRA indicated that maximum detected concentrations of six chlorinated VOCs (1,2-DCA; 1,1-DCE; TCE; 1,1,2-TCA; PCE; and vinyl chloride) and one petroleum compound (benzene) could result in ICRs that exceed USEPA's target risk range of 1.0E-04 to 1.0E-06 and FDEP's target risk level of 1.0E-06.

Table 10-1
Federal Chemical-Specific ARARs

Remedial Investigation/Focused Feasibility Study for Hangar 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Requirement	Citation	Status	Synopsis	Evaluation/Action to be Taken
Safe Drinking Water Act (SWDA) Regulations, MCLs	40 CFR Part 141	Relevant and Appropriate	Establishes enforceable standards for potable water for specific contaminants that have been determined to adversely affect human health.	Would be used as protective levels for groundwater or surface waters that are current or potential drinking water sources.
SDWA Regulations, National Secondary Drinking Water Standards (SMCLs)	40 CFR Part 143	TBC	Establishes welfare-based standards for public water systems for specific contaminants or water characteristics that may affect the aesthetic qualities of drinking water.	Would be used as protective levels for groundwater or surface waters that are current or potential drinking water sources.
USEPA Office of Drinking Water, Health Advisories		Potential TBC	Health advisories are estimates of non-carcinogenic risk due to consumption of contaminated drinking water.	These advisories would be considered for contaminants in surface water and groundwater that is or could be used as a potable water source.
CSFs		TBC	CSFs are guidance values used to evaluate the potential carcinogenic hazard caused by exposure to contaminants.	CSFs would be considered for development of human health protection PRGs for soil and groundwater at this site.
RfDs		TBC	RFDs are guidance values used to evaluate the potential non-carcinogenic hazard caused by exposure to contaminants.	RfDs would be considered for development of human health protection PRGs for soil and groundwater at this site.

Notes:
SMCLs = secondary maximum containment levels

Table 10-2
State Chemical-Specific ARARs

Remedial Investigation/Focused Feasibility Study for Hangar 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Requirement	Citation	Status	Synopsis	Evaluation/Action to be Taken
Florida Drinking Water Standards	Chapter 62-550, FAC	Applicable	Rule adopts Federal primary and secondary drinking water standards and also creates additional rules to fulfill State and Federal requirements for community water distribution systems.	These regulations would be used to determine cleanup levels for groundwater that is a potential source of drinking water.
Florida Surface Water Quality Standards	Chapter 62-302, FAC	Potentially Applicable	Rule distinguishes surface water into five classes based on designated uses and establishes ambient water quality standards (called Florida Water Quality Standards) for listed pollutants.	Because these standards are specifically tailored to Florida waters, they should be used to establish cleanup levels rather than the Federal AWQC.
Florida Groundwater Classes, Standards and Exemptions	Chapter 62-520, FAC	Applicable	This rule designates the groundwater of the state into five classes and establishes minimum “free from” criteria. This rule also specifies that Classes I and II must meet the primary and secondary drinking water standards listed in Chapter 62-550, FAC.	These regulations would be used to determine cleanup levels for groundwater that is a potential source of drinking water.
Contaminant Cleanup Target Levels Rule	Chapter 62-777, FAC	Applicable	This document provides guidance for soil, groundwater, and surface water cleanup levels that can be developed on a site-by-site basis.	These guidelines would be used in determining cleanup goals.

Table 10-3
Federal Location-Specific ARARs for Hangar 1000

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Requirement	Citation	Status	Synopsis	Evaluation/Action to be Taken
Endangered Species Act Regulations	50 CFR Parts 81, 225, 402	Potentially Applicable	This act requires Federal agencies to act to avoid jeopardizing the continued existence of federally listed endangered or threatened species.	If a site investigation or remediation could potentially affect an endangered species, these regulations would apply.
Historic Sites Act Regulations	36 CFR Part 62	Potentially Applicable	Requires Federal agencies to consider the existence and location of landmarks on the National Registry of Natural Landmarks to avoid undesirable impacts on such landmarks.	The existence of Natural Landmarks would be identified prior to remedial activities onsite including remedial investigations.
Fish and Wildlife Coordination Act Regulations	33 CFR Subsection 320.3	Potentially Applicable	Requires that the U.S. Fish and Wildlife Service, National Marine Fisheries Service, and related state agencies be consulted prior to structural modification of any body of water, including wetlands. If modifications must be conducted, the regulation requires that adequate protection be provided for fish and wildlife resources.	If a remedial alternative involves the alteration of a stream or wetland, these agencies would be consulted.

Table 10-3
Federal Location-Specific ARARs for Hangar 1000

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Requirement	Citation	Status	Synopsis	Evaluation/Action to be Taken
National Environmental Policy Act (NEPA) Regulations, Wetlands, Floodplains, etc.	40 CFR Subsection 6.302 [a]	Potentially Applicable	These regulations contain the procedures for complying with Executive Order 11990 on wetlands protection. Appendix A states that no remedial alternative adversely affect a wetland if another practicable alternative is available. If no alternative is available, impacts from implementing the chosen alternative must be mitigated.	If remedial action affects a wetland, these regulations would apply.
NEPA Regulations, Floodplain Management, Executive Order 11988	40 CFR Part 6, Appendix A	Potentially Applicable	Appendix A describes the policy for carrying out the Executive Order regarding floodplains. If no practicable alternative exists to performing cleanup in a floodplain, potential harm must be mitigated and actions taken to preserve the beneficial value of the floodplain.	If removal actions take place in a floodplain, alternatives would be considered that would reduce the risk of flood loss and restore and preserve the floodplain.
Fish and Wildlife Conservation Act	40 CFR Section 6.302	Potentially Applicable	Requires action to be taken to protect fish and wildlife from projects affecting streams or rivers.	U.S. Fish and Wildlife Service officials would be consulted on how to minimize impacts of any remedial activities on any wildlife.

Table 10-4
State Location-Specific ARARs for Hangar 1000

Remedial Investigation/Focused Feasibility Study for Hangar 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Requirement	Citation	Status	Synopsis	Evaluation/Action to be Taken
There are no State Location-Specific ARARs.				

Results of the HHRA also indicated that maximum detected concentrations of two additional chlorinated VOCs (1,2-DCE and 1,1,1-TCA) and one SVOC (naphthalene) could result in non-carcinogenic HQs greater than the USEPA and FDEP acceptable level of 1.0.

The maximum detected concentrations of 1,1-DCA; 1,2-DCA; 1,1-DCE; 1,2-DCE (total); TCE; 1,1,1-TCA; PCE; vinyl chloride; and 3- & 4-methylphenol exceeded their respective FDEP GCTLs.

10.2 PRELIMINARY REMEDIATION GOALS

PRGs are concentrations of contaminants in the environmental media that, when attained, should achieve RAOs. PRGs are developed to ensure that contaminant concentration levels remaining on site are protective of human health and ecological receptors. In general, PRGs are established with consideration given to the following:

- Protecting human receptors from adverse health effects.
- Protecting the environment from detrimental impacts from site-related contamination.
- Compliance with Federal and State ARARs.

10.2.1 PRGs for Groundwater

The groundwater PRGs were based on the following criteria:

- Protection of human health from exposure to contaminants in groundwater.
- Comply with ARARs and TBC criteria to the extent practicable.

PRGs for groundwater at Hangar 1000 are as follows:

COC	PRG[(1)] (μg/L)
Chlorinated VOCs	
1,2-DCA	3
1,1-DCE	7
1,2-DCE (total)	63
1,1,1-TCA	200
1,1,2-TCA	5
TCE	3
PCE	3
Vinyl Chloride	1
Petroleum Compounds	
Benzene	1
SVOCs	
3-methylphenol	35
4-methylphenol	3.5
Naphthalene	20

(1) FDEP GCTLs (FDEP, 1999).

10.3 GRAs AND ACTION-SPECIFIC ARARS

GRAs are broadly defined remedial approaches that may be used (by themselves or in combination with one or more of the others) to attain RAOs. Action-specific ARARs and TBC criteria are those regulations, criteria, and guidances that must be complied with or taken into consideration during remedial activities.

10.3.1 GRAs

GRAs describe categories of actions that could be implemented to satisfy or address a component of an RAO for the site. Remedial action alternatives will then be composed using GRAs singly or in combination to meet the remedial action objectives. The remedial action alternatives, composed of GRAs, will be capable of achieving the RAOs.

The following GRAs will be considered for groundwater:

- No Action.
- Limited Action (Natural Attenuation, Institutional Controls, Monitoring).
- Containment.
- Removal.
- In-Situ Treatment.
- Ex-Situ (On-Site) Treatment.
- Disposal.

10.3.2 Action-Specific ARARs

Action-specific ARARs and TBC criteria are technology- or activity-based regulatory requirements or guidance that would control or restrict remedial action. Tables 10-5 and 10-6 present a list of Federal and State action-specific ARARs and TBC criteria for this FFS.

10.4 ESTIMATED VOLUMES OF CONTAMINATED GROUNDWATER

Based on the analysis of the nature and extent of contamination presented in Section 5.3.1 and illustrated on Figures 5-4 through 5-6, the groundwater contaminant plume extends approximately 520 ft in a southeasterly direction from Hangar 1000, reaching across Yorktown Avenue. The surface area, depth, and volume of that contaminant plume are estimated at approximately 52,400 square ft, 25 ft, and 8,400,000 gallons, respectively.

Table 10-5
Synopsis of Federal Action-Specific ARARs and Guidance Materials for Hangar 1000

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Requirement	Citation	Status	Synopsis	Evaluation/Action to be Taken
RCRA Regulations, Identification and Listing of Hazardous Wastes	40 CFR Part 261	Potentially relevant and appropriate for on-site treatment, storage and disposal (TSD) facility and applicable for off-site TSD facility	Defines the listed and characteristic hazardous wastes subject to RCRA. Appendix II contains the Toxicity Characteristic Leaching Procedure.	These regulations would apply when determining whether waste on site is hazardous, either by being listed or by exhibiting a hazardous characteristic, as described in the regulations.
Clean Air Act (CAA) Regulations, National Ambient Air Quality Standards (NAAQSs)	40 CFR Part 50	Potentially relevant and appropriate for on-site TSD facility and applicable for off-site TSD facility	Establishes primary (health-based) and secondary (welfare-based) air quality standards for carbon monoxide, lead, nitrogen dioxide, particulate matter, ozone, and sulfur oxides emitted from a major source of air emissions. The NAAQSs form the basis for all regulations promulgated under the CAA. However, the NAAQSs themselves are non-enforceable and are not ARARs themselves.	Site remediation activities must comply with NAAQS. The principal application of these standards is during remedial activities resulting in exposures through dust and vapors. In general, emissions from CERCLA activities are not expected to qualify as a major source, and are therefore, not expected to be applicable requirements. However, the requirements may be determined to be relevant and appropriate for non-major sources with significantly similar emissions.
Air/Superfund National Technical Guidance	USEPA Guidance: USEPA/450/1-89/001 USEPA/450/1-89/004	Potential TBC	This guidance describes methodologies for predicting risks due to air release at a Superfund site.	These guidance documents would be considered when risks due to air releases from fugitive dust are being evaluated.
Occupational Safety and Health Administration (OSHA) Regulations, General Industry Standards	29 CFR Part 1910	Applicable	Requires establishment of programs to assure worker health and safety at hazardous waste sites, including employee-training requirements.	These regulations would apply to all response activities.

Table 10-5
Synopsis of Federal Action-Specific ARARs and Guidance Materials for Hangar 1000

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Requirement	Citation	Status	Synopsis	Evaluation/Action to be Taken
OSHA Regulations, Occupational Health and Safety Regulations	29 CFR Part 1910, Subpart Z	Potentially applicable	Establishes permissible exposure limits for workplace exposure to a specific listing of chemicals.	Standards are applicable for worker exposure to OSHA hazardous chemicals during remedial activities.
OSHA Regulations, Record Keeping, Reporting, and Related Regulations	29 CFR Part 1904	Potentially applicable	Provides record keeping and reporting requirements applicable to remedial activities.	These requirements apply to all site contractors and subcontractors and must be followed during all site work.
OSHA Regulations, Health and Safety Standards	29 CFR Part 1926	Potentially applicable	Specifies the type of safety training, equipment, and procedures to be used during the site investigation and remediation.	All phases of the remedial response project would be executed in compliance with this regulation.
RCRA Regulations, Contingency Plan and Emergency Procedures	40 CFR 264, Subpart D	Potentially relevant and appropriate	Outlines requirements for emergency procedures to be followed in case of an emergency.	The administrative requirements established in this rule would be met for remedial actions involving the management of hazardous waste.
RCRA Regulations, General Facility Standards	40 CFR Subpart B, 264.10-264.18	Potentially relevant and appropriate	Sets the general facility requirements including general waste analysis, security measures, inspections, and training requirements. Section 264.18 establishes that a facility located in a 100-year floodplain must be designed, constructed, and maintained to prevent washout of any hazardous wastes by a 100-year flood.	If the remedial action involves construction of an on-site treatment facility, such as a groundwater treatment facility, the substantive requirements of this rule would be applicable requirements. A permitted treatment facility must be selected for off site treatment.

Table 10-5
Synopsis of Federal Action-Specific ARARs and Guidance Materials for Hangar 1000

Remedial Investigation/Focused Feasibility Study for Hangar 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Requirement	Citation	Status	Synopsis	Evaluation/Action to be Taken
RCRA Regulations, Miscellaneous Units	40 CFR Part 264, Subpart X	Potentially Relevant and Appropriate	These standards are applicable to miscellaneous units not previously defined under existing RCRA regulations. Subpart X outlines performance requirements that miscellaneous units be designed, constructed, operated, and maintained to prevent releases to the subsurface, groundwater, and wetland that may have adverse effects on human health and the environment.	The design of proposed treatment alternatives, not specifically regulated under other subparts of RCRA, must prevent the release of hazardous constituents and future impacts on the environment. This subpart would apply to on-site construction of any treatment facility that is not previously defined under the RCRA regulation.
RCRA Regulations, Preparedness and Prevention	40 CFR Part 264, Subpart C	Potentially Relevant and Appropriate	Outlines requirements for safety equipment and spill control for hazardous waste facilities. Facilities must be designed, maintained, constructed, and operated to minimize the possibility of an unplanned release that could threaten human health or the environment.	Safety and communication equipment would be incorporated into all aspects of the remedial process and local authorities would be familiarized with site operations.

Table 10-6
Synopsis of State ARARs and Guidance Materials for Hangar 1000

Remedial Investigation/Focused Feasibility Study for Hangar 1000
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Requirement	Citation	Status	Synopsis	Evaluation/Action to be Taken
Florida Hazardous Waste Rules – October, 1993	Chapter 62-730, FAC	Potentially applicable	Adopts by reference sections of the Federal hazardous waste regulations and establishes minor additions to these regulations concerning the generation, storage, treatment, transportation and disposal of hazardous wastes.	These regulations would apply if waste on site were deemed hazardous and needs to be stored, transported, or disposed of properly.
Florida Drinking Water Standards	Chapter 62-550, FAC	Potentially applicable	This rule adopts Federal primary and secondary drinking water standards.	These regulations would apply to remedial activities that involve discharges to potential sources of drinking water.
Florida Air Pollution Rules – October, 1992	Chapter 62-2, FAC	Potentially relevant and appropriate	Establishes permitting requirements for owners of operators of any source that emits any air pollutant.	These requirements are appropriate for remedial action that could result in a release of regulated contaminants to the atmosphere, such as may occur during excavation.
Florida Regulation of Stormwater Discharge – May 1993	Chapter 62-25, FAC	Potentially relevant and appropriate	Establishes requirements for discharges of untreated stormwater to ensure protection of the surface water of the state.	Remedial actions would consider the impact of the discharge of untreated stormwater. The potential for discharge of contaminated groundwater to the storm sewer system should be considered.
Florida Ambient Air Quality Standards – December, 1994	Chapter 62-272, FAC	Potentially applicable	Establishes ambient air quality standards to protect human health and public welfare.	These ambient air quality standards would be met for remedial actions involving the possible release exposure of contaminants to the atmosphere.
Air pollution Episodes – September, 1994	Chapter 62-273, FAC	Potentially relevant and appropriate	This rule classifies an air episode as an air alert, warning or emergency and establishes criteria for determining the level of the air episode. It also establishes response requirements for each level.	These regulations would be adhered to if remedial actions involve air emissions.

Table 10-6
Synopsis of State ARARs and Guidance Materials for Hangar 1000

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Requirement	Citation	Status	Synopsis	Evaluation/Action to be Taken
Florida Water Well Permitting and Construction Requirements – March 1992	Chapter 62-730, FAC	Applicable	Establishes minimum standards for the location, construction, repair, and abandonment of water wells. Permitting requirements and procedures are established.	The substantive requirements for permitting would be met if remedial actions involve the construction, repair, or abandonment of monitoring, extraction, or injection wells.
Florida Rules on Hazardous Waste Warning Signs – July, 1991	Chapter 62-730, FAC	Applicable	Requires warning signs at National Priority List and FDEP identified hazardous waste sites to inform the public of the presence of potentially harmful conditions.	This requirement will be met.
Florida Rules on Permits – November, 1994	Chapter 62-4, FAC	Potentially applicable	Establishes procedures for obtaining permits for sources of pollution.	These substantive requirements would be met during remediation.

Results of the additional field investigations presented in Appendix A, Section 7 [CH2M Hill Constructors, Inc. (CCI), 2002] have shown that the majority of COCs are contained in three areas of groundwater and associated saturated soil that have been designated as DNAPL source areas. These three areas extend over a total surface of approximately 1,050 square ft and from a depth of 7 to 25 ft bls. The total weight of COCs in the DNAPL source areas has been estimated at approximately 60 pounds.

The location and size of the DNAPL source areas are illustrated on Figure 10-1. Calculations for determining the volume of contaminated groundwater and saturated soil and the quantities of COCs in the DNAPL source areas are presented in Appendix I, Figure J-1.

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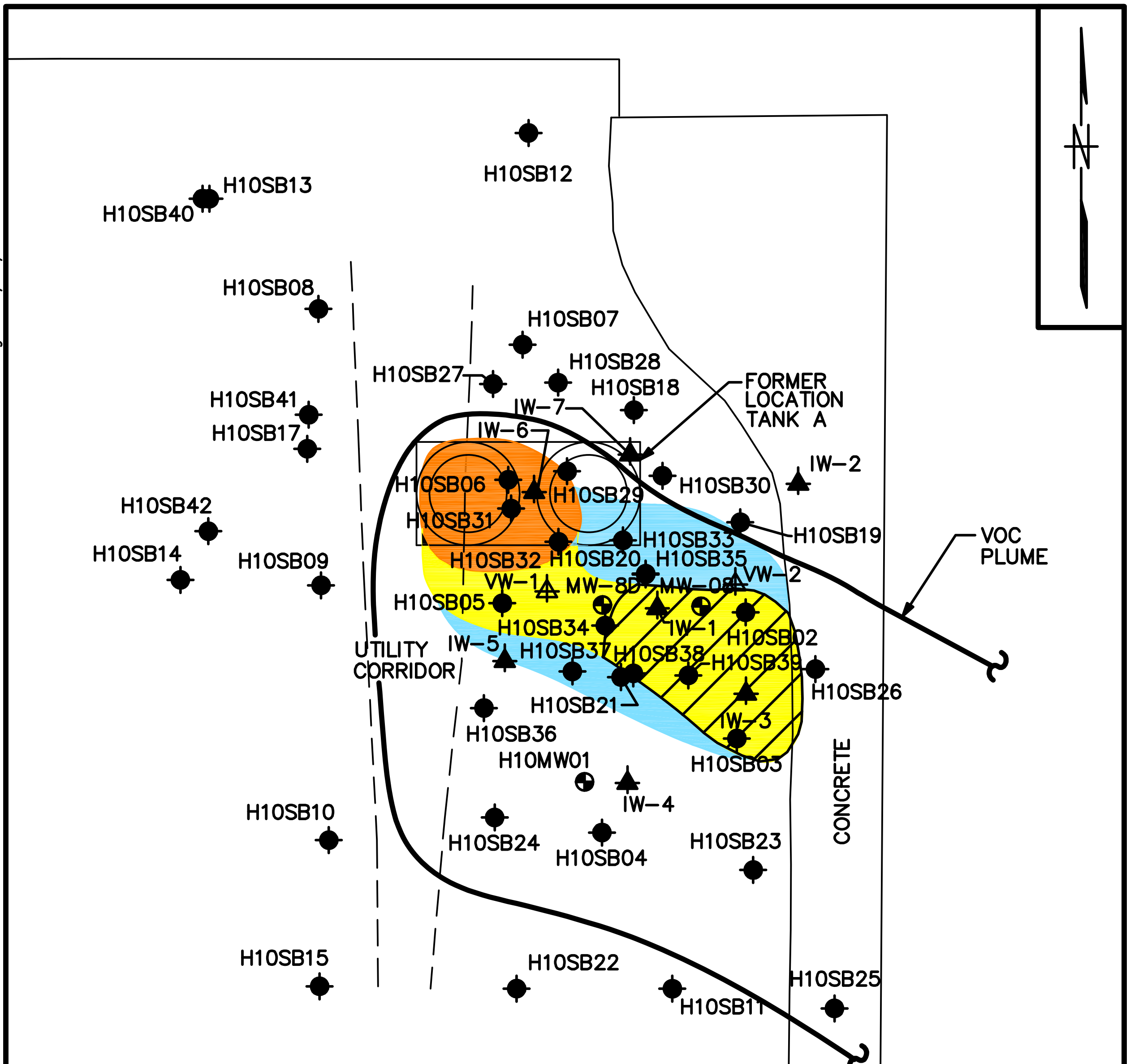

LEGEND:

Symbol	Description
H1000-04	DPT LOCATION
MW-01	MONITORING WELL LOCATION
IW-4	INJECTION WELL LOCATION
VW-2	VACUUM WELL LOCATION

DNAPL SOURCE AREAS:

AREA 1 – VOC > 5 ppm (7'–16'))

AREA 2 – VOC > 1 AND < 5 ppm (7'–25')

AREA 3 – VOC > 5 ppm (16' DEEPER)
VOC > 1 AND < 5 ppm (7'–16')

0 10 20
SCALE IN FEET

DRAWN BY DM	DATE 8/31/03		LOCATION AND SIZE OF DNAPL SOURCE AREAS HANGAR 1000 FFS NAS JACKSONVILLE JACKSONVILLE, FLORIDA	CONTRACT NO. 0399	
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11.0 DEVELOPMENT OF REMEDIAL ALTERNATIVES

This section identifies, screens, and evaluates the potential technologies and process options that have been agreed upon by the NAS Jacksonville Partnering Team for Hangar 1000 at NAS Jacksonville. The primary objective of this phase of the FFS is to develop the remedial technologies and process options that have been pre-selected for developing the preliminary remedial alternatives.

The basis for technology identification and screening began in Section 10.0 with a series of discussions that included the following:

- Identification of ARARs.
- Development of RAOs.
- Identification of GRAs.
- Identification of volumes or areas of media of concern.

Technology screening evaluation is performed in this section with the completion of the following analytical steps:

- Identification and screening of remedial technologies and process options.
- Evaluation and selection of representative process options.

Technologies and process options as previously identified under each GRA are screened. The selection of technologies and process options for initial screening is based on the "Guidance for Conducting Remedial Investigations/Feasibility Studies under CERCLA" (USEPA, 1988). The screening is first conducted at a preliminary level to focus on relevant technologies and process options. Then the screening is conducted at a more detailed level based on certain evaluation criteria. Finally, process options are selected to represent the technologies that have passed the detailed evaluation and screening.

The evaluation criteria for detailed screening of technologies and process options that have been retained after the preliminary screening are effectiveness, implementability, and cost. The following are descriptions of these criteria:

- Effectiveness
  - Protection of human health and the environment; reduction in toxicity, mobility, or volume; and permanence of solution.

  - Ability of the technology to address the estimated areas or volumes of contaminated medium.
  - Ability of the technology to attain PRGs required to meet RAOs.

- Implementability
  - Overall technical feasibility at the site.
  - Availability of vendors, mobile units, storage and disposal services, etc.
  - Administrative feasibility.
  - Special long-term O&M requirements.
- Cost (Qualitative)
  - Capital cost.
  - O&M costs.

Technologies and process options will be identified for the remediation of soil and groundwater in the following sections.

11.1 PRELIMINARY SCREENING OF GROUNDWATER TECHNOLOGIES AND PROCESS OPTIONS

As discussed in Section 10.3.1, the following GRAs were considered for groundwater remediation at Hangar 1000:

- No Action
- Limited Action
- Containment
- Removal
- In-Situ Treatment
- Ex-Situ (On-Site) Treatment
- Disposal

Consideration of the No Action GRA is mandated by law. Although Limited Action technologies such as natural attenuation, institutional controls, and monitoring would be of limited effectiveness for removal of the DNAPL source areas, they were retained for consideration because they would be effective to address contaminated groundwater outside of the DNAPL source areas. Containment and Removal technologies, as well as the removal-associated Ex-Situ Treatment and Disposal technologies, were eliminated from further consideration because these types of technologies have historically proved ineffective for the removal of DNAPL, and they do not offer substantial advantages over Limited Action technologies for the remediation of contaminated groundwater outside of the DNAPL source areas.

In-Situ Treatment technologies were retained for consideration because these types of technologies have generally proven most effective for the removal of DNAPL. Although a previous IRA failed to prove the effectiveness of in-situ oxidation with Fenton Reagent, bench-scale testing of in-situ treatment with BNP was very successful (TtNUS, 2003), and this technology is likely to be most cost-effective for the removal of the DNAPL source areas at Hangar 1000.

On that basis, the NAS Jacksonville Partnering Team has agreed to streamline the groundwater treatment technologies screening process and retain the following technologies for further consideration in this FFS:

- No Action
- Limited Action including natural attenuation, institutional controls, and monitoring
- In-Situ Treatment with BNP technology

11.2 DETAILED SCREENING OF GROUNDWATER TECHNOLOGIES AND PROCESS OPTIONS

11.2.1 No Action

No Action consists of maintaining status quo at the site. As required under CERCLA regulations, the No Action alternative is carried through the FFS to provide a baseline for comparison of alternatives and their effectiveness in mitigating risks posed by site contaminants. Since no remedial actions are taken under this alternative, there are no costs associated with "walking away from" the site. There is also no reduction in risk through exposure control or treatment. No Action would not be effective in evaluating contaminant mobility and potential migration off-site since no monitoring would be performed.

Effectiveness

No Action would not be effective in protecting human health and meeting RAOs. Although the groundwater PRGs might eventually be met through naturally-occurring processes, this would not be verified through monitoring.

Implementability

There would be no implementability concerns because no action would be implemented.

Cost

There would be no costs associated with No Action.

Conclusion

No Action is retained because of NCP requirements, although it would not be effective.

11.2.2 Limited Action

11.2.2.1 Institutional Controls

Institutional controls would consist of restricting potential for exposure to contaminated groundwater. Hangar 1000 would be added to the institutional control program at NAS Jacksonville. The institutional controls would include restrictions to prevent use of the surficial aquifer as a source of drinking water. Regular inspections would be conducted under the institutional control program to assure institutional controls remain in place. A formal request would be made to the St. Johns Water Management District to not issue permits for installation of drinking water wells at the site that would draw water from the surficial aquifer.

Effectiveness

Groundwater use restrictions would be effective, depending on the administration of controls. These controls would minimize potential human health risks associated with exposure to contaminated groundwater.

Implementability

Institutional controls would be readily implementable. An institutional control program is currently in place for NAS Jacksonville, and Hangar 1000 could be readily added to this program.

Costs

Costs of institutional controls would be low.

Conclusion

Institutional controls are retained in combination with other process options for the development of remedial alternatives.

11.2.2.2 Monitoring

Monitoring would consist of sampling and analyzing groundwater throughout the area of potential groundwater contamination to evaluate trends in concentrations of COCs. Monitoring would also consist of sampling and analyzing groundwater on the periphery of the area of potential contamination as well as any downgradient surface water body to verify that no COCs are migrating off-site.

Effectiveness

Monitoring would not of itself reduce toxicity, mobility, or volume of COCs in the groundwater, but it would allow evaluation of the reduction of groundwater COCs concentrations through natural attenuation and warn of potential off-site migration of these COCs.

Implementability

A groundwater monitoring program would be readily implementable at Hangar 1000 and such a program is already ongoing. A sufficient number of existing monitoring wells are currently in place at Hangar 1000 for this purpose.

Costs

Capital and O&M costs of monitoring would be low.

Conclusions

Monitoring is retained in combination with other process options for the development of remedial alternatives.

11.2.2.3 Natural Attenuation

Natural attenuation would consist of monitoring groundwater quality to determine the extent to which indigenous microorganisms and natural biodegradation processes would break down the COCs over time. For this purpose, samples from existing wells would be regularly collected and analyzed for natural attenuation parameters such as ORP, DO, pH, alkalinity, temperature, conductivity, biochemical and chemical oxygen demand, total organic carbon (TOC), ferrous and total iron, sulfur compounds (sulfide and sulfates), nitrogen compounds (nitrites and nitrates), orthophosphates, chloride, and metabolic gases (methane, ethane, ethene, and carbon dioxide).

Effectiveness

Naturally occurring processes are expected to reduce the concentrations of most of the Hangar 1000 groundwater COCs over the long term including chlorinated VOCs, petroleum compounds, and SVOCs. However, the presence of DNAPL source areas is expected to make the chlorinated VOC removal process extremely slow because of the recharging action of these source areas. Potentially unacceptable human health risks would remain due to ingestion of groundwater from the surficial aquifer until all cleanup goals have been met. Groundwater monitoring would provide a means of evaluating the effectiveness of natural attenuation.

Implementability

Natural attenuation would be easy to implement as it would only require groundwater monitoring and periodic site reviews. The necessary resources are available.

Costs

Capital and O&M costs for natural attenuation would be low.

Conclusion

Natural attenuation is retained in combination with other process options for the development of remedial alternatives.

11.2.3 In-Situ Treatment with BNP Technology

In-situ treatment with BNP technology would consist of injecting in the DNAPL source areas controlled amounts of a slurry of nano-scale particles of zero-valent iron (ZVI) with a trace coating of a noble metal catalyst (typically palladium).

ZVI can transform most chlorinated VOCs through reductive dechlorination. For example, ZVI can reduce TCE to ethene in accordance with the following chemical reaction:

$$2\ C_2HCl_3 + 8\ Fe^0 + 10\ H^+ \text{ -------> } 2\ C_2H_6 + 8\ Fe^{2+} + 6\ Cl^-$$

For groundwater treatment, ZVI has been mostly used in fixed-beds such as permeable reactive barriers (PRBs) constructed of iron filings. BNP technology improves upon this earlier concept in three significant aspects:

(1) Compared to the commercial grade micro- to milli-scale ZVI particles typically used in PRBs, BNP technology uses nano-scale particles. This greatly increases the specific surface area of the reactive medium and, as a consequence, its effectiveness.

(2) Compared to the plain iron particles typically used for ZVI applications, BNP technology uses iron particles coated with traces of a noble metal, such as palladium, that greatly increases reactivity per unit of metal surface.

(3) Compared to traditional fixed-bed ZVI PRBs that depend on movement of groundwater and contaminants to bring these in contact with the reactive medium, BNP technology aggressively seeks contact with the contaminants to be treated through injection of a reactive colloidal emulsion directly into the areas of known contamination.

Effectiveness

In-situ treatment with BNP technology is an innovative approach that improves on the well-proven use of ZVI for groundwater remediation. ZVI has proven effective for the treatment of a wide range of contaminants that include chlorinated VOCs, polychlorinated biphenyls, heavy metals (hexavalent chromium, nickel, and mercury), perchlorates, and nitrates. This technology has proven particularly useful for the treatment of contaminants that are not particularly mobile because of sorption on soil particles, as is often the case with DNAPL such as that present at Hangar 1000. A successful bench-scale treatability test (TtNUS, 2003) has provided preliminary confirmation of the effectiveness of this technology for the treatment of the Hangar 1000 groundwater.

Implementability

Application of BNP technology for the in-situ treatment of the DNAPL source areas would only require the installation of a limited number of relatively shallow injection wells. This technology is innovative and the number of contractors qualified to oversee its application would be limited. However, adequate resources would be available.

Costs

Capital and O&M costs for in-situ treatment with BNP technology would be moderate.

Conclusion

BNP technology is retained for the in-situ treatment of DNAPL source areas.

11.3 SELECTION OF REPRESENTATIVE PROCESS OPTIONS FOR GROUNDWATER

The following technologies and process options are retained for development of groundwater remedial alternatives:

- No Action
- Institutional Controls
- Monitoring
- Natural Attenuation
- In-Situ Treatment with BNP technology

12.0 ASSEMBLY AND DETAILED ANALYSIS OF REMEDIAL ALTERNATIVES

12.1 INTRODUCTION

This section presents an evaluation of each remedial alternative with respect to the criteria of the NCP of 40 CFR Part 300, as revised in 1990. The criteria as required by the NCP and the relative importance of these criteria are described in the following subsections.

12.1.1 Evaluation Criteria

In accordance to the NCP (40 CFR 300.430), the following nine criteria are used for the evaluation of remedial alternatives:

- Overall Protection of Human Health and the Environment.
- Compliance with ARARs.
- Long-term Effectiveness and Permanence.
- Reduction of Toxicity, Mobility, and Volume through Treatment.
- Short-term Effectiveness.
- Implementability.
- Cost.
- State Acceptance.
- Community Acceptance.

12.1.1.1 Overall Protection of Human Health and the Environment

Alternatives must be assessed for adequate protection of human health and the environment, in both short and long-term, from unacceptable risks posed by hazardous substances or contaminants present at the site by eliminating, reducing, or controlling exposure levels exceeding remediation goals. Overall protection draws on the assessments of other evaluation criteria, especially long-term effectiveness and permanence, short-term effectiveness, and compliance with ARARs.

12.1.1.2 Compliance with ARARs

Alternatives must be assessed to determine whether they attain ARARs under Federal environmental laws and State environmental laws. If one or more applicable regulations cannot be complied with, then a waiver must be invoked. Grounds for invoking a waiver would depend on the following circumstances:

- The alternative is an interim measure and will become part of a total remedial action that will attain the ARAR.

- Compliance will result in greater risk to human health and the environment.

- Compliance is technically impracticable from an engineering perspective.

- The alternative will attain a standard of performance that is equivalent to that required under the otherwise applicable standard, requirement, or limitation through use of another method or approach.

- A State requirement has not been consistently applied or the State has not demonstrated the intention to consistently apply the promulgated requirement in similar circumstances at other remedial actions within the State.

- For Fund-financed responses only, an alternative that attains the ARAR will not provide a balance between the need for protection of human health and the environment at the site and the availability of Fund monies to respond to other sites that may present a threat to human health and the environment.

12.1.1.3 Long-term Effectiveness and Permanence

Alternatives must be assessed for the long-term effectiveness and permanence they offer, along with the degree of certainty that the alternative will prove successful. Factors that will be considered as appropriate include the following:

<u>Magnitude of Residual Risk:</u>

Risk posed by untreated waste or treatment residuals at the conclusion of remedial activities. The characteristics or residuals should be considered to the degree that they remain hazardous, taking into account their volume, toxicity, mobility, and propensity to bioaccumulate.

<u>Adequacy and Reliability of Controls:</u>

Controls such as containment systems and institutional controls that are necessary to manage treatment residuals and untreated waste must be shown reliable. In particular, the uncertainties associated with land disposal for providing long-term protection of residuals; the assessment for the potential need to replace technical components of the alternative such as a cap, slurry wall, or a treatment system; and the potential exposure pathways and risks posed should the remedial action need replacement.

12.1.1.4 Reduction of Toxicity, Mobility, or Volume through Treatment

The degree to which the alternative employs recycling or treatment that reduces the toxicity, mobility, or volume will be assessed, including how treatment is used to address the principal threats posed by the site. Factors that will be considered, as appropriate, include the following:

- The treatment or recycling processes the alternative employs and the materials that they will treat.
- The amount of hazardous substances, pollutants, or contaminants that will be destroyed, treated, or recycled.
- The degree of expected reduction in toxicity, mobility, or volume of waste due to treatment or recycling and the specification of which reduction(s) are occurring.
- The degree to which the treatment is irreversible.
- The type and quantity of residuals that will remain following treatment considering persistence, toxicity, mobility, and propensity to bioaccumulate of such hazardous substances and their constituents.
- The degree to which treatment reduces the inherent hazards posed by principle threats at the site.

12.1.1.5 Short-term Effectiveness

The short-term impacts of the alternative will be assessed considering the following:

- Short-term risks that might be posed on the community during implementation.
- Potential impacts on workers during remedial action and the effectiveness and reliability of protective measures.
- Potential environmental impacts of the remedial action and the effectiveness and reliability of mitigative measures during implementation.
- Time until protection is achieved.

12.1.1.6 Implementability

The ease or difficulty of implementing the alternatives will be assessed by considering the following types of factors, as appropriate:

- Technical feasibility, including technical difficulties and unknowns associated with the construction and operation of a technology; the reliability of the technology; ease of undertaking additional remedial actions; and the ability to monitor the effectiveness of the remedy.

- Administrative feasibility, including activities needed to coordinate with other offices and agencies, and the ability and time required obtaining any necessary approvals and permits from other agencies (for off-site actions).

- Availability of services and materials, including the availability of adequate off-site treatment, storage capacity, and disposal capacity and services; the availability of necessary equipment and specialists, and provisions to ensure any necessary additional resources; the availability of services and materials; and availability of prospective technologies.

12.1.1.7 Cost

Capital cost shall include both direct and indirect costs. Annual O&M costs shall be provided. A NPW value of the capital and O&M costs shall be provided. Typically, the cost estimate accuracy range is plus 50 percent to minus 30 percent.

12.1.1.8 State Acceptance

The State’s concerns that must be assessed include the following:

- The State’s position and key concerns related to the preferred alternative and other alternatives.
- State comments on ARARs or the proposed use of waivers.

These concerns cannot be evaluated at this time in the FFS until the State has reviewed and commented on the RI/FFS. These concerns will be discussed, to the extent possible, in the Proposed Plan to be issued to the public for comment.

12.1.1.9 Community Acceptance

This assessment consists of responses of the community to the proposed plan. This assessment includes determining which components of the alternatives interested persons in the community support, have reservations about, or oppose. The assessment can be done after comments on the Proposed Plan are received from the public.

12.1.2 Relative Importance of Criteria

Among the nine criteria, the threshold criteria are considered to be:

- Overall protection of human health and the environment.
- Compliance with ARARs (excluding those that may be waived).

The threshold criteria must be satisfied in order for an alternative to be eligible for selection.

Among the remaining criteria, the following five criteria are considered to be the primary balancing criteria:

- Long-term Effectiveness and Permanence.
- Reduction in Toxicity, Mobility, and Volume.
- Short-term Effectiveness.
- Implementability.
- Cost.

The balancing criteria are used to weigh the relative merits of alternatives.

The remaining two of the nine criteria, State Acceptance and Community Acceptance, are considered to be modifying criteria that must be considered during remedy selection. These last two criteria can be evaluated after the State of Florida has reviewed the document and the Proposed Plan has been discussed in a public meeting. Therefore, this document addresses only seven out of the nine criteria.

12.1.3 Selection of Remedy

The selection of a remedy is a two-step process. The first step consists of identification of a preferred alternative and presentation of the alternative in a Proposed Plan to the community for review and comment. The preferred alternative must meet the following criteria:

- Protection of human health and the environment.
- Compliance with ARARs unless a waiver is justified.
- Cost effectiveness in protecting human health and environment and in complying with ARARs.
- Utilization of permanent solutions and alternate treatment technologies or resource recovery technologies to the maximum extent practicable.

The second step consists of the review of the comments and determination, in consultation with the State of Florida, of whether or not the preferred alternative continues to be the most appropriate remedial action for the site.

12.2 DEVELOPMENT OF GROUNDWATER REMEDIAL ALTERNATIVES

The following alternatives have been developed for groundwater remediation at Hangar 1000:

1. No Action.
2. Natural Attenuation, Institutional Controls, and Monitoring.
3. Source Removal with BNP, Natural Attenuation, Institutional Controls, and Monitoring.

Alternative 1 was developed and analyzed to serve as a baseline for other alternatives, as required by CERCLA and the NCP. Alternatives 2 and 3 were formulated based on the decisions made by the NAS Jacksonville Partnering Team.

A description and detailed analysis of these alternatives is provided in the following sections.

12.2.1 Alternative 1 – No Action

12.2.1.1 Description

This alternative is a "walk-away" alternative that is required under CERCLA to establish a basis for comparison with other alternatives. Under this alternative, the property would be released for unrestricted use. This alternative cannot be chosen if waste remains on site.

12.2.1.2 Detailed Analysis

Overall Protection of Human Health and the Environment

Alternative 1 would not provide protection of human health and the environment. Under the current industrial land use, the potential for human exposure to contaminated groundwater would remain. In addition, under a future residential land use scenario (which could occur with this alternative) unacceptable risks to human receptors from contaminated groundwater would not be reduced. Since no monitoring would be performed, potential contaminant migration would not be detected.

Compliance with ARARs

Alternative 1 would not comply with Chemical-Specific ARARs or TBC criteria (Safe Drinking Water Act, CSFs, RfDs, and GCTLs) since no action would be taken to reduce contaminant concentrations. Compliance with location-specific ARARs or TBC criteria would be purely incidental. Action-specific ARARs or TBC criteria are not applicable.

Long-term Effectiveness and Permanence

Alternative 1 would have no long-term effectiveness and permanence because contaminated groundwater would remain. As there would be no institutional controls to limit aquifer use or prevent residential development, the potential would also exist for unacceptable risk to develop for human receptors. Alternative development of Hangar 1000 could also result in unacceptable risk to a correspondingly increased population of ecological receptors. Since there would be no groundwater monitoring, potential migration would not be detected. Although contaminant concentrations might eventually decrease to acceptable levels through natural attenuation, no monitoring would verify this.

Reduction of Toxicity, Mobility, or Volume through Treatment

Alternative 1 would not reduce toxicity, mobility, or volume of contaminants through treatment since no treatment would occur. Some reduction of contaminant toxicity or volume might occur through natural dispersion, dilution, or other attenuation process, but no monitoring would be performed to verify this.

Short-term Effectiveness

Since no action would occur, implementation of Alternative 1 would not pose any risks to on-site workers or result in a short-term adverse impact to the local community and the environment. Alternative 1 would not achieve RAOs and, although groundwater PRGs might eventually be achieved through natural attenuation, it would not be known when.

Implementability

Since no action would occur, Alternative 1 would be readily implementable. The technical feasibility criteria, including constructability, operability, and reliability, are not applicable. Implementability of administrative measures is not applicable since no measures would be taken.

Costs

There would be no costs associated with the no-action alternative.

12.2.2 Alternative 2: Natural Attenuation, Institutional Controls, and Monitoring

12.2.2.1 Description

Alternative 2 is illustrated on Figure 12-1 and would consist of the following three major components: (1) Natural attenuation, (2) institutional controls, and (3) monitoring.

Component 1: Natural Attenuation

Natural attenuation would rely on naturally occurring processes within the aquifer to reduce the concentrations of COCs. Microorganisms within the surficial aquifer groundwater would use the COCs as substrate during growth processes. As a result, these COCs would be metabolized by the microorganisms into other products. Aquifer conditions would have to be continually monitored to ensure that concentrations are being adequately reduced through natural processes.

Component 2: Institutional Controls

Institutional controls would include limitation of land use to industrial purposes and prohibition of aquifer use for drinking purposes. These controls would eliminate or reduce pathways of exposure to contaminants at the site. Hangar 1000 would be incorporated into the institutional control program currently in place at NAS Jacksonville.

Use of groundwater would be controlled through deed restrictions, and a formal request would be made to the St. Johns River Management District to not issue permits for installation of drinking water wells at the site which would draw water from the surficial aquifer. The institutional controls would remain in place until COCs attain PRG levels.

Component 3: Monitoring

Monitoring would consist of regularly collecting and analyzing groundwater samples from within the contaminant plume to assess natural attenuation. Monitoring would also consist of regularly collecting groundwater and surface water samples from areas downgradient of the contaminant plume to detect potential off-site migration of COCs. Monitoring would be performed until COCs attain PRG levels. Sampling frequency would be semi-annual for the first five years of monitoring and annual thereafter. Monitoring locations are illustrated on Figure 4-2.

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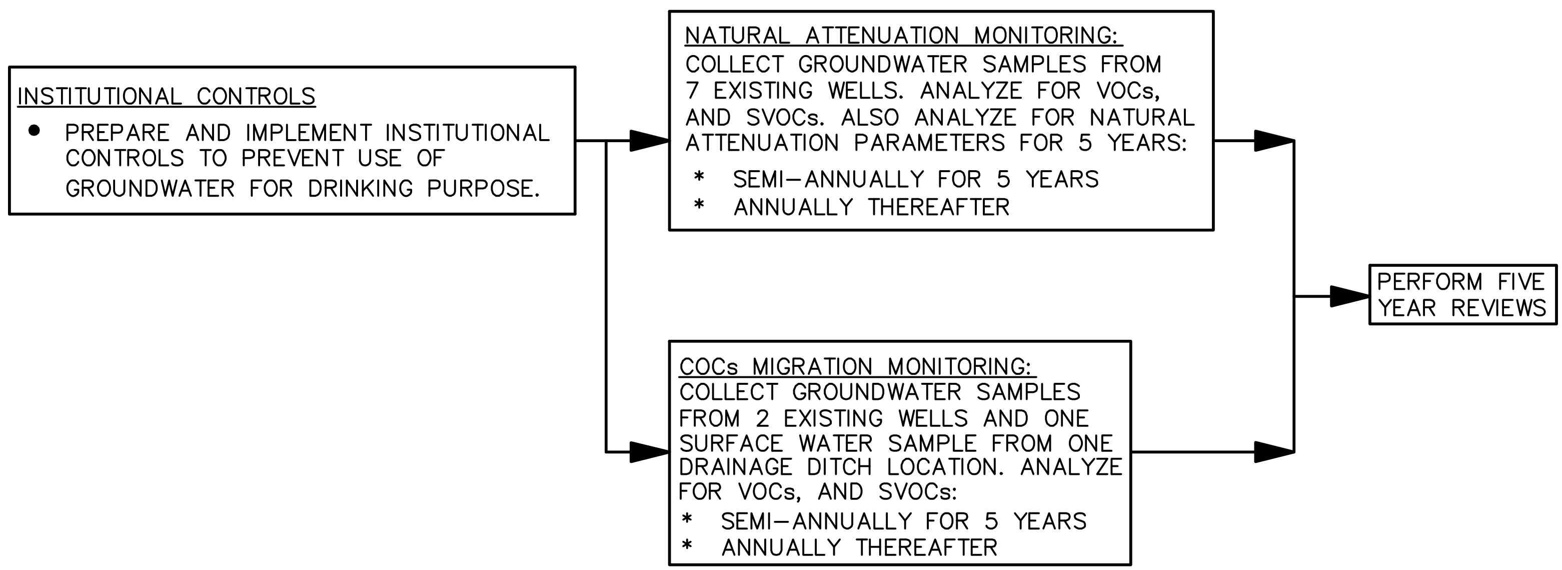
NATURAL ATTENUATION, INSTITUTIONAL CONTROLS, AND MONITORING



NOTES:

COCs CHEMICALS OF CONCERN
SVOCs SEMI-VOLATILE ORGANIC COMPOUNDS
VOC VOLATILE ORGANIC COMPOUND

DRAWN BY HJB DATE 3/12/02	BLOCK FLOW DIAGRAM ALTERNATIVE 2 HANGAR 1000 FFS NAS JACKSONVILLE JACKSONVILLE, FLORIDA	CONTRACT NO. 0399
CHECKED BY DATE		APPROVED BY DATE
COST/SCHED-AREA		APPROVED BY DATE
SCALE NOT TO SCALE		DRAWING NO. FIGURE 12-1 REV. 0

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To the maximum practicable extent, monitoring activities would be integrated within the ongoing RCRA monitoring program at Hangar 1000 to avoid duplication of effort.

Monitoring for natural attenuation would consist of collecting groundwater samples from 7 existing monitoring wells (MW-8, MW-8D, MW-14, MW-15, MW-17, MW-19, and MW-22). Samples would be analyzed for VOCs and SVOCs. For the first 5 years, samples would also be analyzed for natural attenuation indicator parameters, such as ORP, DO, pH, alkalinity, temperature, conductivity, TOC, ferrous and total iron, sulfur compounds (sulfates and sulfides), nitrogen compounds (nitrate and nitrite), orthophosphates, chlorides, and metabolic gases (methane, ethane, ethene, and carbon dioxide).

Monitoring for COC migration would consist of collecting groundwater samples from two existing monitoring wells (MW-23 and MW-24). Monitoring for COC migration would also consist of collecting one surface water sample at storm sewer location SEW-1 as illustrated on Figure 4-3. Samples would be analyzed for VOCs and SVOCs.

Five-year Reviews are performed every five years at NAS Jacksonville Installation Restoration Program sites to evaluate site status, assess the continued adequacy of remedial activities, and determine whether further action is necessary. After monitoring for five years, the milestone objectives would be compared to COC concentrations and natural attenuation conditions in groundwater to determine if any additional action is warranted at Hangar 1000.

The monitoring component would include the maintenance of the existing wells.

12.2.2.2 Detailed Analysis

<u>Overall Protection of Human Health and the Environment</u>

Alternative 2 would be protective of human health and the environment.

Although the contaminant plume would remain, natural attenuation, dispersion, and dilution would eventually reduce groundwater COCs concentrations to levels that would meet the PRGs.

Institutional controls would be protective of human health and the environment. Restricting Hangar 1000 to industrial use and preventing the use of groundwater for drinking purposes would be protective of human health by preventing unacceptable risks from exposure to contaminated groundwater.

Monitoring would be protective of the environment by evaluating the progress of remediation and detecting potential migration of contaminated groundwater so that appropriate actions can be taken, if required.

Some short-term risks could be incurred by workers, from exposure to contamination during implementation of this alternative. However, the wearing of appropriate personal protection equipment (PPE) and compliance with site-specific health and safety procedures would minimize the potential for such exposure.

No adverse short-term or cross-media effects are anticipated as a result of implementing this alternative.

Compliance with ARARs and TBC Criteria

Alternative 2 would comply with location-, and action-specific ARARs and TBC criteria. This alternative would not comply with chemical-specific ARARs, such as the MCLs or the FDEP GCTLs in the short-term, but eventually compliance would be achieved as natural processes within the aquifer reduce contaminant concentrations. It is expected that compliance with chemical-specific ARARs could require several thousands years.

Long-term Effectiveness and Permanence

Alternative 2 would provide long-term effectiveness and permanence. Although no removal of contaminated groundwater would occur and the contaminant plume would remain, risks to human health and the environment would be monitored.

Natural occurring processes would reduce contaminant concentrations in the aquifer over the long-term to levels that comply with FDEP GCTLs. Risk from exposure to contaminated groundwater would be addressed through institutional controls until PRGs are attained.

Groundwater use restrictions would effectively prevent the use of the surficial aquifer as a potable water source until the groundwater PRGs have been achieved. Restricting Hangar 1000 to industrial use would effectively and permanently prevent its development as a residential area, thereby reducing an unacceptable risk of exposure to future residents and an increased ecological population.

Long-term monitoring would be an effective means to evaluate the progress of natural attenuation and detect the potential migration of contaminated groundwater.

Reduction of Toxicity, Mobility, or Volume through Treatment

Although no active treatment is included in this alternative, contaminant volume and toxicity would be reduced over time through natural degradation processes. This alternative would not provide an immediate reduction in contaminant mobility since neither groundwater containment nor extraction is proposed. This alternative would not increase the rate of natural transformation processes that reduce the toxicity, mobility, or volume of contaminants in groundwater. Human health toxicity posed by ingestion of groundwater contaminants would remain until concentrations are reduced by natural processes. No treatment residuals would be produced if this alternative were implemented.

Short-term Effectiveness

Alternative 2 would have minimal short-term effectiveness concerns. Exposure of workers to contamination during groundwater sampling would be minimized by using appropriately trained workers, wearing of appropriate PPE, and complying with site-specific health and safety procedures. Alternative 2 would not adversely impact the surrounding community or the environment.

The RAOs would be achieved immediately upon the implementation of institutional controls and monitoring.

Although no formal modeling was conducted during this FFS to evaluate the natural attenuation of groundwater COCs, some preliminary conceptual modeling performed by the USGS indicates that several thousand years would likely be required for the groundwater PRGs to be met without prior source removal. As additional site-specific data becomes available, formal modeling may be performed to determine a more accurate remedial duration.

Implementability

Alternative 2 would be readily implementable.

Sampling and analysis of groundwater and surface water, maintenance of monitoring wells, and performance of five-year reviews could readily be accomplished. A similar monitoring program is currently ongoing at Hangar 1000. The resources, equipment, and materials required for these activities are readily available.

The administrative aspects of Alternative 2 would be relatively simple to implement. No construction permits would be required for this alternative. For institutional controls, Hangar 1000 could be easily incorporated into the institutional control program at NAS Jacksonville.

Costs

The estimated costs for Alternative 2 are:

- Capital Cost: $9,000
- 30-Year NPW of O&M Costs $211,000
- 30-Year NPW: $220,000

The above cost figures have been rounded to the nearest $1,000 to reflect the very preliminary nature of these estimates. Although the estimated duration of Alternative 2 could be several thousand years, the NPW of this alternative has been estimated on a 30-year basis because, beyond this timeframe, the impact of the discounted value of money is such that there is no significant increase in that NPW. A detailed cost estimate for this alternative is provided in Appendix J.

12.2.3 Alternative 3: Source Removal with BNP, Natural Attenuation, Institutional Controls, and Monitoring

12.2.3.1 Description

Alternative 3 is illustrated on Figure 12-2 and would consist of the following four major components: (1) Source removal with in-situ BNP technology, (2) natural attenuation, (3) institutional controls, and (4) monitoring.

Component 1: Source Removal with In-situ BNP Technology

Source removal with BNP technology would consist of injecting controlled amounts of an emulsion of catalyst-coated nano-scale ZVI particles in the DNAPL source areas to effect reductive dechlorination of the chlorinated VOCs that are the main DNAPL constituents. Based upon the results of a bench-scale treatability study (TtNUS, 2003), it is anticipated that a total of 800 to 900 pounds of BNP would have to be injected into the subsurface. To ensure good contact between the emulsion and the contaminated matrix, the BNP emulsion would be injected via two methods: (1) direct injection using DPT equipment and (2) a recirculation pumping system.

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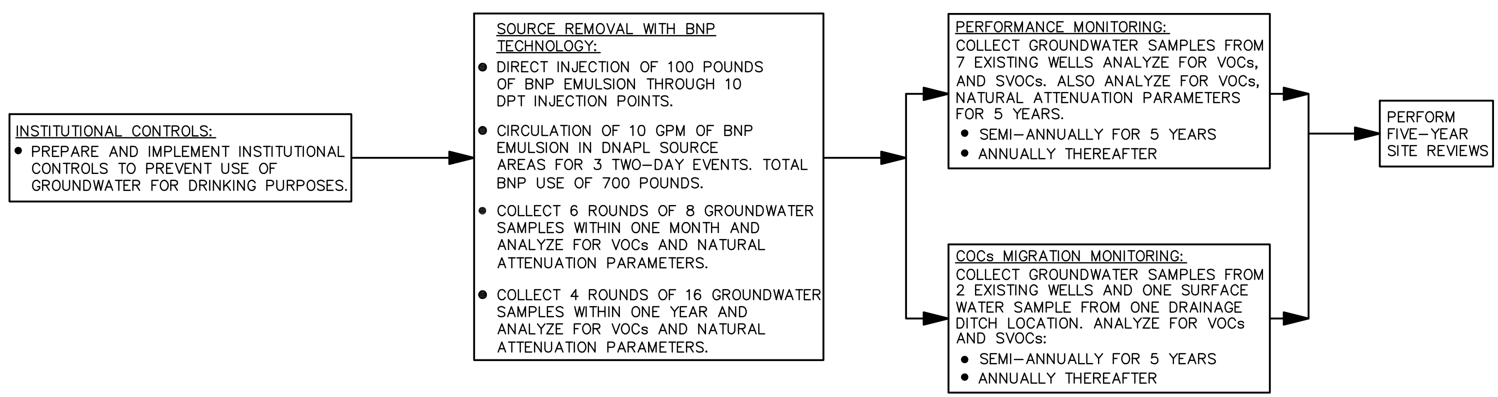
SOURCE REMOVAL WITH BNP TECHNOLOGY, NATURAL ATTENUATION, INSTITUTIONAL CONTROLS, AND MONITORING



NOTES:

BNP	BIMETALLIC NANOSCALE PARTICLES
DPT	DIRECT PUSH TECHNOLOGY
DNAPL	DENSE NON-AQUEOUS PRODUCT LAYER
GPM	GALLONS PER MINUTE
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
VOCs	VOLATILE ORGANIC COMPOUNDS

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY: HJB DATE: 7/17/03
CHECKED BY DATE
COST/SCHED-AREA
SCALE: NOT TO SCALE

BLOCK FLOW DIAGRAM
ALTERNATIVE 3
HANGAR 1000 FFS
NAS JACKSONVILLE
JACKSONVILLE, FLORIDA

CONTRACT NO. 0399
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE 12-2 REV. 0

FORM CADD NO. SDIV_BH.DWG - REV 0 - 1/20/98

Although the exact design of the treatment system would have to be verified through pilot-scale treatability testing, the following conceptual two-step treatment scheme is assumed for the purpose of this FFS:

- Direct injection of a BNP emulsion in selected areas with particularly high concentrations of chlorinated VOCs based upon site characterization data. It is anticipated that this first step would involve the injection of approximately 100 pounds of BNP through a total of approximately 10 DPT injection points.

- Recirculation of BNP emulsion through the entire suspected DNAPL source area. It is anticipated that this second step would require the installation of three BNP injection wells immediately upgradient of the DNAPL source areas and three extraction wells immediately downgradient of these areas. Depending on the results of planned modeling, the BNP emulsion would then be circulated through the system at an approximate rate of 10 gallons per minute. The recirculation system would be used to inject BNP emulsion during three 2-day events over a period of three weeks. Approximately 200 to 250 pounds of BNP would be injected during each 2-day event, for a total injected quantity of approximately 700 pounds of BNP. The proposed BNP recirculation treatment system is illustrated on Figure 12-3.

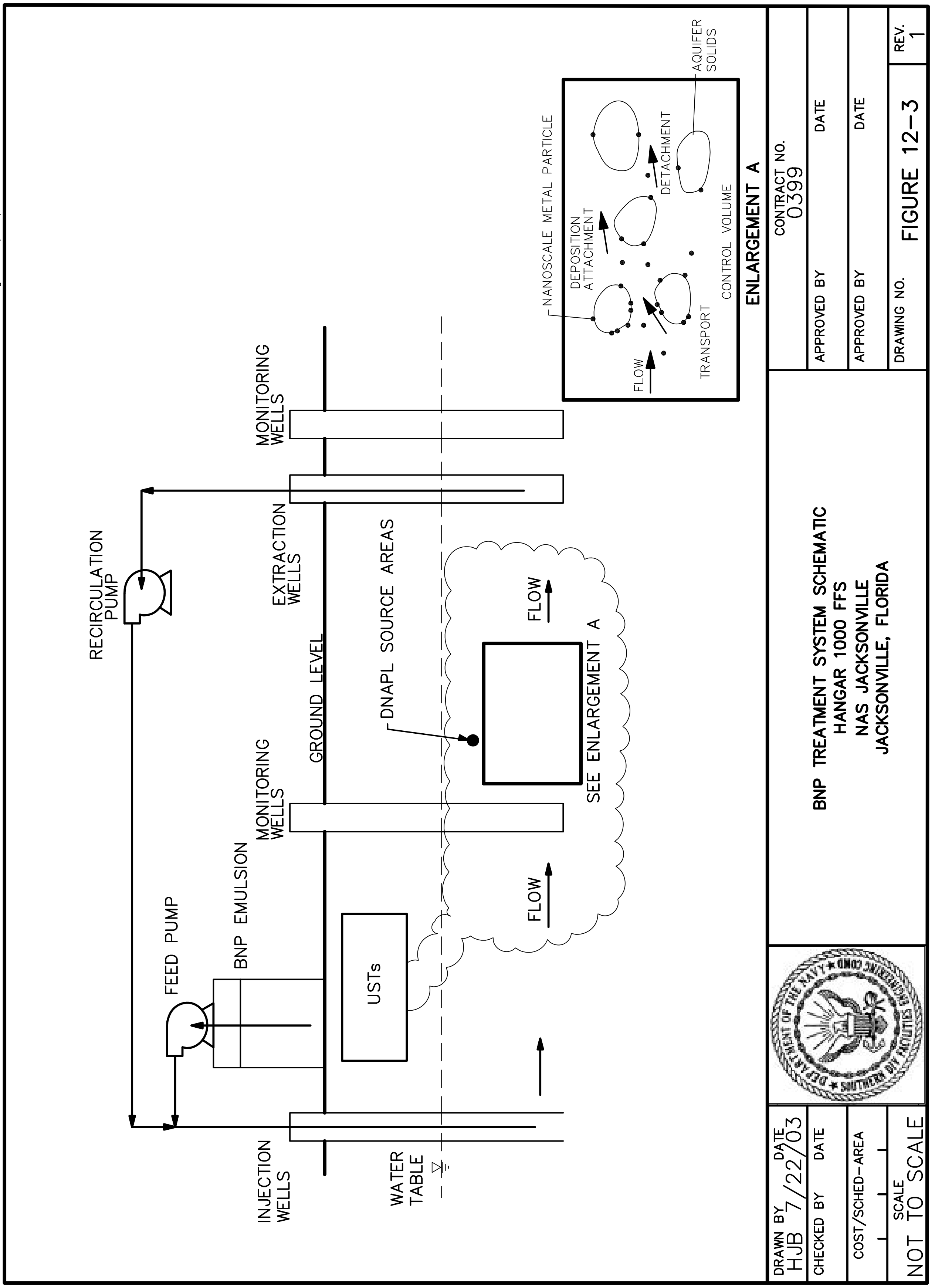
During the injection process, geochemical data would be monitored using in-situ measurement devices and data loggers. These devices would be used to monitor the anticipated relatively quick changes in groundwater resulting from BNP injection. Performance monitoring associated with the source removal component would include the collection of 10 rounds of groundwater samples over a period of one year. The first 6 rounds of samples would be collected from 8 monitoring wells during the first month. The following 4 rounds of samples would be collected quarterly from 16 wells during the remainder of the year. Samples would be analyzed for VOCs, geochemical parameters, and natural attenuation parameters.

<u>Component 2: Natural Attenuation</u>

Component 2 for Alternative 3 would be identical to Component 1 for Alternative 2, except that the effectiveness of natural attenuation would be significantly enhanced by the removal of contaminant sources.

<u>Component 3: Institutional Controls</u>

Component 3 for Alternative 3 would be identical to Component 2 for Alternative 2, except that institutional controls would not have to stay in place as long.


ACAD: 0399CF03.dwg 07/23/03 HJB PIT
RECIRCULATION PUMP
FEED PUMP
BNP EMULSION
INJECTION WELLS
WATER TABLE
MONITORING WELLS
GROUND LEVEL
EXTRACTION WELLS
MONITORING WELLS
USTs
FLOW
FLOW
DNAPL SOURCE AREAS
SEE ENLARGEMENT A
NANOSCALE METAL PARTICLE
DEPOSITION ATTACHMENT
DETACHMENT
AQUIFER SOLIDS
FLOW
TRANSPORT
CONTROL VOLUME
ENLARGEMENT A
BNP TREATMENT SYSTEM SCHEMATIC
HANGAR 1000 FFS
NAS JACKSONVILLE
JACKSONVILLE, FLORIDA
DRAWN BY HJB
DATE 7/22/03
CHECKED BY
DATE
COST/SCHED-AREA
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DATE
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FIGURE 12-3
REV. 1
FORM CADD NO. SDIV_AH.DWG - REV 0 - 1/20/98

Component 4: Monitoring

Component 4 for Alternative 3 would be identical to Component 3 for Alternative 2, except that monitoring would only last an estimated 20 years.

12.2.3.2 Detailed Analysis

Overall Protection of Human Health and the Environment

Alternative 3 would be protective of human health and the environment.

Application of BNP technology would be protective of human health and the environment as it would actively remove sources of groundwater contamination and considerably accelerate the reduction of COCs concentrations to levels that would no longer constitute an unacceptable human health risk.

Institutional controls would be protective of human health and the environment. Restricting Hangar 1000 to industrial use and preventing the use of groundwater for drinking purposes would be protective of human health by preventing unacceptable risks from exposure to contaminated groundwater.

Monitoring would be protective of the environment by evaluating the progress of remediation and detecting potential migration of contaminated groundwater so that appropriate actions can be taken, if required.

Some short-term risks could be incurred by workers, from exposure to contamination during implementation of this alternative. However, the wearing of appropriate PPE and compliance with site-specific health and safety procedures would minimize the potential for such exposure.

No adverse short-term or cross-media effects are anticipated as a result of implementing this alternative.

Compliance with ARARs and TBC Criteria

Alternative 3 would comply with location-, and action-specific ARARs and TBC criteria. This alternative would not comply with chemical-specific ARARs, such as the MCLs or the FDEP GCTLs in the short-term, but BNP technology would actively remove sources of groundwater contamination and significantly accelerate compliance through natural processes within the aquifer. It is expected that chemical-specific ARARs would be met within approximately 18 years.

Long-term Effectiveness and Permanence

Alternative 3 would provide long-term effectiveness and permanence.

BNP technology would effectively and permanently remove sources of groundwater contamination and accelerate the reduction of groundwater COCs through natural processes. Although the effectiveness of BNP technology for the removal of DNAPL at Hangar 1000 has been verified through bench-scale treatability testing (TtNUS, 2003), an additional pilot-scale test would be needed to confirm the exact design of the treatment system.

Natural occurring processes would reduce contaminant concentrations in the aquifer over the long-term to levels that comply with FDEP GCTLs. Risk from exposure to contaminated groundwater would be addressed through institutional controls until PRGs are attained.

Groundwater use restrictions would effectively prevent the use of the surficial aquifer as a potable water source until the groundwater PRGs have been achieved. Restricting Hangar 1000 to industrial use would effectively and permanently prevent its development as a residential area, thereby reducing an unacceptable risk of exposure to future residents and an increased ecological population.

Long-term monitoring would be an effective means to evaluate the progress of natural attenuation and detect the potential migration of contaminated groundwater.

Reduction of Toxicity, Mobility, or Volume through Treatment

Alternative 3 would reduce toxicity, mobility, and volume of contaminants through treatment. Source removal with BNP technology would remove an estimated 60 pounds of COCs from groundwater and associated saturated soil. Source removal would also reduce mobility by removing the driving force for contaminant migration. No treatment residuals would be produced if this alternative were implemented.

Short-term Effectiveness

Alternative 3 would have minimal short-term effectiveness concerns. Exposure of workers to contamination during application of the in-situ BNP technology and groundwater sampling would be minimized by using appropriately trained workers, wearing of appropriate PPE, and complying with site-specific health and safety procedures. Alternative 3 would not adversely impact the surrounding community or the environment.

The RAOs would be achieved immediately upon the implementation of institutional controls and monitoring.

Removal of the high concentrations of chlorinated VOCs in the DNAPL source areas with BNP technology is expected to considerably accelerate the attainment of groundwater PRGs through natural attenuation. Although no formal modeling was conducted during this FFS to evaluate the natural attenuation of groundwater COCs, some preliminary conceptual modeling performed by the USGS indicates that once the DNAPL source areas have been removed, the groundwater PRGs would be attained through natural attenuation within approximately 17 years. It is, therefore, estimated that Alternative 3 would meet PRGs within approximately 18 years.

Implementability

Alternative 3 would be readily implementable.

Application of BNP technology for the removal of DNAPL source areas would be technically implementable, but the presence of an underground utility corridor might interfere with the optimum placement of the DPT injection points and injection and extraction wells. A pilot-scale test would have to be performed to verify the design parameters for this technology. Although the number of contractors qualified for the application of BNP technology is relatively limited, the resources, equipment, and materials required for these activities are readily available.

Sampling and analysis of groundwater and surface water, maintenance of monitoring wells, and performance of five-year reviews could readily be accomplished. A similar monitoring program is currently ongoing at Hangar 1000. The resources, equipment, and materials required for these activities are readily available.

The administrative aspects of Alternative 3 would be relatively simple to implement. The substantive requirements of a UIC permit might have to be met for the injection of BNP. A construction permit might also be needed for installation of the injection and extraction wells and DPT injection points for the BNP treatment system, but such a permit would be easy to secure. For institutional controls, Hangar 1000 could be easily incorporated into the institutional control program at NAS Jacksonville.

Costs

The estimated costs for Alternative 3 are:

- Capital Cost: $418,000
- 20-Year NPW of O&M Cost $188,000
- 20-Year NPW: $606,000

The above cost figures have been rounded to the nearest $1,000 to reflect the very preliminary nature of these estimates. The NPW was estimated over a 20-year period to reflect the timeframe during which five-year site reviews would be performed. A detailed cost estimate for this alternative is provided in Appendix J.

13.0 COMPARATIVE ANALYSIS OF ALTERNATIVES

This section compares the analyses that were presented for each of the remedial alternatives in Section 12.0 of this FFS. The criteria for comparison are identical to those used for the detailed analysis of individual alternatives.

13.1 COMPARISON OF GROUNDWATER REMEDIATION ALTERNATIVES BY CRITERIA

The following remedial alternatives for groundwater are being compared in this section:

- Alternative 1: No Action.
- Alternative 2: Natural Attenuation, Institutional Controls, and Monitoring.
- Alternative 3: Source Removal with BNP, Natural Attenuation, Institutional Controls, and Monitoring.

13.1.1 Overall Protection of Health and Environment

Alternative 1 would not provide protection of human health and the environment because contaminants would remain in groundwater, and potential use of groundwater for drinking purpose could result in unacceptable risk to human receptors. Also under this alternative, no warning would be provided of the potential for migration of COCs because no monitoring would occur.

Alternatives 2 and 3 would be protective of human health and the environment. The natural attenuation component of Alternative 2 would be protective of human health and the environment because it would eventually reduce the concentrations of COCs to the PRGs. The institutional controls component of Alternative 2 would be protective of human health and the environment as it would reduce exposure to contaminated groundwater by prohibiting use of the surficial aquifer for drinking purposes until the PRGs are met. The monitoring component of Alternative 2 would be protective of human health and the environment by evaluating the progress of remediation and detecting potential migration of COCs so that appropriate contingency measures can be taken.

Alternative 3 would be more protective than Alternative 2, because in addition to the same institutional controls and monitoring components, this alternative would also include an active treatment component that would remove groundwater COCs much faster than natural attenuation.

13.1.2 Compliance with ARARs and TBC Criteria

Alternative 1 would not comply with chemical- and location-specific ARARs. Action-specific ARARs or TBC criteria would not apply.

Alternatives 2 and 3 would comply with location- and action-specific ARARs and TBC criteria. Alternatives 2 and 3 would not immediately comply with chemical-specific ARARs and TBC criteria, but these two alternatives would eventually achieve compliance as they attain PRGs either through natural attenuation alone (Alternative 2) or through active treatment (Alternative 3). Alternative 3 would achieve compliance much sooner than Alternative 2.

13.1.3 Long-Term Effectiveness and Permanence

Alternative 1 would not be effective and permanent because it would not restrict exposure to contaminated groundwater or provide monitoring for the evaluation of potential COCs migration.

Alternatives 2 and 3 would provide long-term effectiveness and permanence. The natural attenuation component of Alternative 2 would effectively and permanently reduce concentrations of groundwater COCs to PRGs, although it would do so very slowly. The institutional controls component of Alternative 2 would effectively prevent the use of the surficial aquifer as a drinking water source until the PRGs have been achieved. The long-term monitoring component of Alternative 2 would provide an effective means of evaluating the progress of remediation and verifying that no COC migration is occurring.

Alternative 3 would be more effective than Alternative 2 because, in addition to the same institutional controls and monitoring components, this alternative would also include an active treatment component that greatly accelerates the removal of COCs.

13.1.4 Reduction of Toxicity, Mobility, or Volume through Treatment

Alternatives 1 and 2 would not achieve any reduction of toxicity, mobility, or volume of COCs through treatment. Both alternatives would eventually achieve reduction of contaminant toxicity and volume through natural attenuation; however, under Alternative 1, this reduction would neither be verified nor quantified.

Alternative 3 would achieve a reduction in COC toxicity and volume through treatment. Alternative 3 would irreversibly remove an estimated 60 pounds of COCs from the DNAPL source areas through application of BNP technology. Alternative 3 would not generate treatment residues.

13.1.5 Short-Term Effectiveness

Implementation of Alternative 1 would not result in risks to site workers or adversely impact the surrounding community or environment because no remedial activities would be performed. Alternative 1 would not achieve the RAOs and, although the PRGs might eventually be attained through natural processes, this would not be verified.

Implementation of Alternative 2 would result in a slight possibility of exposing site workers to contaminated groundwater during monitoring activities. However, these risks of exposure would be effectively controlled by wearing appropriate PPE and compliance with proper site-specific health and safety procedures. Implementation of Alternative 2 would not adversely impact the surrounding community or environment. Alternative 2 would achieve RAOs immediately upon implementation of institutional controls and monitoring. Preliminary conceptual modeling indicates that attainment of PRGs would probably require several thousand years.

Implementation of Alternative 3 would result in a significant possibility of exposing construction workers to contaminated groundwater during the construction and operation of a BNP technology treatment system and long-term groundwater monitoring activities. However, these risks of exposure would be effectively controlled by wearing appropriate PPE and compliance with proper site-specific health and safety procedures. Implementation of Alternative 3 would not adversely impact the surrounding community or environment. Alternative 3 would achieve RAOs immediately upon implementation of institutional controls. Preliminary conceptual modeling indicates that PRGs would be attained within approximately 18 years.

13.1.6 Implementability

Alternative 1 would be easiest to implement because there would be no activities to implement.

Technical implementation of the various components of Alternatives 2 and 3 would be relatively simple.

The technical implementation of the natural attenuation, institutional controls, and monitoring components of Alternative 2 would be very simple. A similar monitoring program is currently ongoing at Hangar 1000. The resources, equipment, and material required for the activities associated with these components are readily available.

The technical implementation of Alternative 3 would be somewhat more difficult than that of Alternative 2 because this alternative would require the installation and O&M of a BNP technology treatment system. The presence of an underground utility corridor might interfere to some degree with the optimum placement of the BNP treatment system. Also, because BNP technology is innovative, pilot-scale testing would be required to confirm its exact design, and the number of contractors with the required expertise would be relatively limited.

Administrative implementation of the various components of Alternatives 2 and 3 would be relatively simple.

Administrative implementation of the institutional controls component of Alternative 2 would be simple because Hangar 1000 is expected to remain under military ownership for the foreseeable future. Administrative implementation of the monitoring component of Alternative 2 would also be simple and it would not require permits.

The administrative implementation of Alternative 3 would be slightly more difficult than that of Alternative 2. In addition to the same requirements as Alternative 2, Alternative 3 might have to meet the substantive requirements of a UIC permit for BNP injection. Alternative 3 might also require a construction permit for installation of the DPT injection points for the initial BNP treatment and of the injection and extraction wells for the follow-up BNP treatment. However, these requirements should be relatively easy to meet.

13.1.7 Cost

The capital and O&M costs and NPW of the alternatives are as follows:

Alternative	Capital Cost	NPW of O&M Cost	NPW Cost
1	$0	$0	$0
2	$9,000	$211,000 (30-Year)	$220,000 (30-Year)
3	$418,000	$188,000 (20-Year)	$606,000 (20-Year)

The above cost figures have been rounded to the nearest $1,000 to reflect the very preliminary nature of the estimates. Detailed cost estimates are provided in Appendix J.

13.2 SUMMARY OF COMPARATIVE ANALYSIS OF GROUNDWATER REMEDIAL ALTERNATIVES

Based on the results of evaluation of alternatives, the NAS Jacksonville Partnering Team has selected Alternative 3 as the preferred remedy. Alternative 3 was selected as the preferred remedy since it best meets the conditions for protection of human health and the environment through active removal of the sources of groundwater contamination. Alternative 3 also meets this criterion through the establishment of institutional controls to prevent human exposure to contaminated groundwater until cleanup goals have been met through natural attenuation.

Table 13-1 summarizes the comparative analysis of the two groundwater remedial alternatives.

Table 13-1
Summary of Comparative Analysis of Groundwater Remedial Alternatives

Remedial Investigation/Focused Feasibility Study for Hangar 1000
Naval Air Station Jacksonville
Jacksonville, Florida
Page 1 of 2

Evaluation Criteria	Alternative 1: No Action	Alternative 2: Natural Attenuation, Institutional Controls, and Monitoring	Alternative 3: Source Removal with BNP, Natural Attenuation, Institutional Controls, and Monitoring
Overall Protection of Human Health and Environment	Would not be protective of human health and the environment because no action would occur. Migration of COCs would continue and remain undetected.	Would be protective of human health and the environment because natural attenuation would reduce COC concentrations down to cleanup goals over a reasonable timeframe. Institutional controls and monitoring would provide immediate protection until the cleanup goals are met by restricting use of the aquifer for drinking purposes and checking for potential migration of COCs.	Would be more protective of human health and the environment than Alternative 2 because, in addition of institutional controls and monitoring, it would feature active treatment that would accelerate the removal of COCs.
Compliance with ARARs and TBC criteria: Chemical-Specific Location-Specific Action-Specific	 Would not comply. Would not comply. Not applicable.	 Would eventually comply. Would comply. Would comply.	 Would comply. Would comply. Would comply.
Long-Term Effectiveness and Permanence	Would have very limited long-term effectiveness and permanence because no action would occur. Contaminant reduction or migration would remain undetected because no monitoring would occur.	Would be long-term effective and permanent. Natural attenuation would eventually reduce COC concentrations down to cleanup goals. Institutional controls would effectively prevent unacceptable human health and ecological risk from exposure to contaminated groundwater. Monitoring would effectively evaluate the progress of remediation and detect potential migration of COCs.	Would be more long-term effective and permanent than Alternative 2 by significantly accelerating the removal of COCs through removal of DNAPL source areas. The long-term effectiveness and permanence of the institutional controls and monitoring would be the same as for Alternative 2.
Reduction of Contaminant Toxicity, Mobility, or Volume through Treatment	Would not reduce contaminant toxicity, mobility, or volume through treatment because no treatment would occur.	Would not reduce contaminant toxicity, mobility, or volume through treatment because no treatment would occur. Toxicity and volume would be reduced through natural attenuation.	Would irreversibly and permanently reduce contaminant toxicity, mobility, and volume by removing an estimated 60 pounds of COCs with BNP technology.

Table 13-1
Summary of Comparative Analysis of Groundwater Remedial Alternatives

Remedial Investigation/Focused Feasibility Study for Hangar 1000
Naval Air Station Jacksonville
Jacksonville, Florida
Page 2 of 2

Evaluation Criteria	Alternative 1: No Action	Alternative 2: Natural Attenuation, Institutional Controls, and Monitoring	Alternative 3: Source Removal with BNP, Natural Attenuation, Institutional Controls, and Monitoring
Short-Term Effectiveness	Would not result in any short-term risk to site workers or adversely impact the surrounding community or environment because no action would occur. The RAOs would never be achieved with the implementation of this alternative.	Would result in a slight possibility of exposing site workers to contaminated groundwater as a result of monitoring activities. This risk would be reduced through compliance with appropriate site-specific health and safety procedures. There would be no risk to the surrounding community and environment. RAOs would be achieved immediately upon implementation of the institutional controls and monitoring. Attainment of PRGs would require several thousand years.	Would result in a possibility of exposing site workers to contaminated groundwater as a result of bioremediation and monitoring activities. This risk would be reduced through compliance with appropriate site-specific health and safety procedures. There would be no risk to the surrounding community and environment. RAOs would be achieved immediately upon implementation of the institutional controls and monitoring. PRGs would be met within approximately 18 years.
Implementability	Technical and administrative implementation would be extremely simple because there would be no action to implement.	Technical implementation of the monitoring would be simple. Administrative implementation of the institutional controls would be simple.	Technical implementation of BNP technology would be simple although there could be interferences from existing structures. Because the technology is innovative, pilot-scale testing would be required to confirm the design, and the number of qualified contractors would be limited. Technical implementation of the monitoring would be simple. Administrative implementation of the institutional controls would be simple. Substantive requirements of a UIC permit might have to be met, and a construction permit might be required.
Costs: Capital NPW of O&M NPW	 $0 $0 $0	 $9,000 $211,000 (30-Year) $220,000 (30-Year)	 $418,000 $188,000 (20-Year) $606,000 (20-Year)

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Rev. 1
03/19/04

Remedial Investigation/ Focused Feasibility Study
for
Hangar 1000

Volume II: Appendices A Through J

Naval Air Station Jacksonville
Jacksonville, Florida

Southern Division
Naval Facilities Engineering Command
Contract Number N62467-94-D-0888
Contract Task Order CTO 0111

March 2004

APPENDIX A

PREVIOUS INVESTIGATION FIGURES AND TABLES

Section 1
Table 2-1 from Closure Plan – Hangar 1000 (ABB 1992)

Naval Air Station Jacksonville
Jacksonville, Florida

Southern Division
Naval Facilities Engineering Command
Contract Number N62467-94-D-0888

Table 2-1
Summary of Historical Soil Sampling Data[1] for Tanks A and B,
Minimum and Maximum Concentrations Detected
(Garver + Garver Rounds 1 and 2),
January and May 1990

Closure Plan
Hangar 1000
NAS Jacksonville, Florida

Parameter	Concentration Range	Unit of Measure
Onsite or downgradient samples		
Cadmium	1.6 - 25.3	mg/kg
Chromium	1.2 - 9.13	mg/kg
Lead	1.59 - 9.55	mg/kg
Barium	1.74 - 55.8	mg/kg
1,1-Dichloroethane	21 - 1,850	μg/kg
Toluene	80 - 11,350	μg/kg
Xylene	78 - 14,750	μg/kg
bis(2-Ethylhexyl) phthalate	785 - 955	μg/kg
Naphthalene	1040	μg/kg
1,1,1-Trichloroethane	151 - 52,000	μg/kg
Trichloroethylene	36 - 6,300	μg/kg
1,1-Dichloroethylene	7.26 - 1,883	μg/kg
Ethyl benzene	8.8 - 2,000	μg/kg
Tetrachloroethylene	1,400 - 31,450	μg/kg
Trichlorotrifluoroethane	235 - 783	μg/kg
Upgradient or background samples		
Cadmium	2.18	mg/kg
Chromium	1.19 - 1.88	mg/kg
Lead	1.59 - 2.11	mg/kg
Barium	8.86 - 24.6	mg/kg

[1]Summary of results above method detection limits.

Notes: mg/kg = milligrams per kilogram.
μg/kg = micrograms per kilogram.

Section 2
Figures 2-7, 2-8, and 2-9 from Site Assessment Report – Hangar 1000 (ABB 1992)

Naval Air Station Jacksonville
Jacksonville, Florida

Southern Division
Naval Facilities Engineering Command
Contract Number N62467-94-D-0888

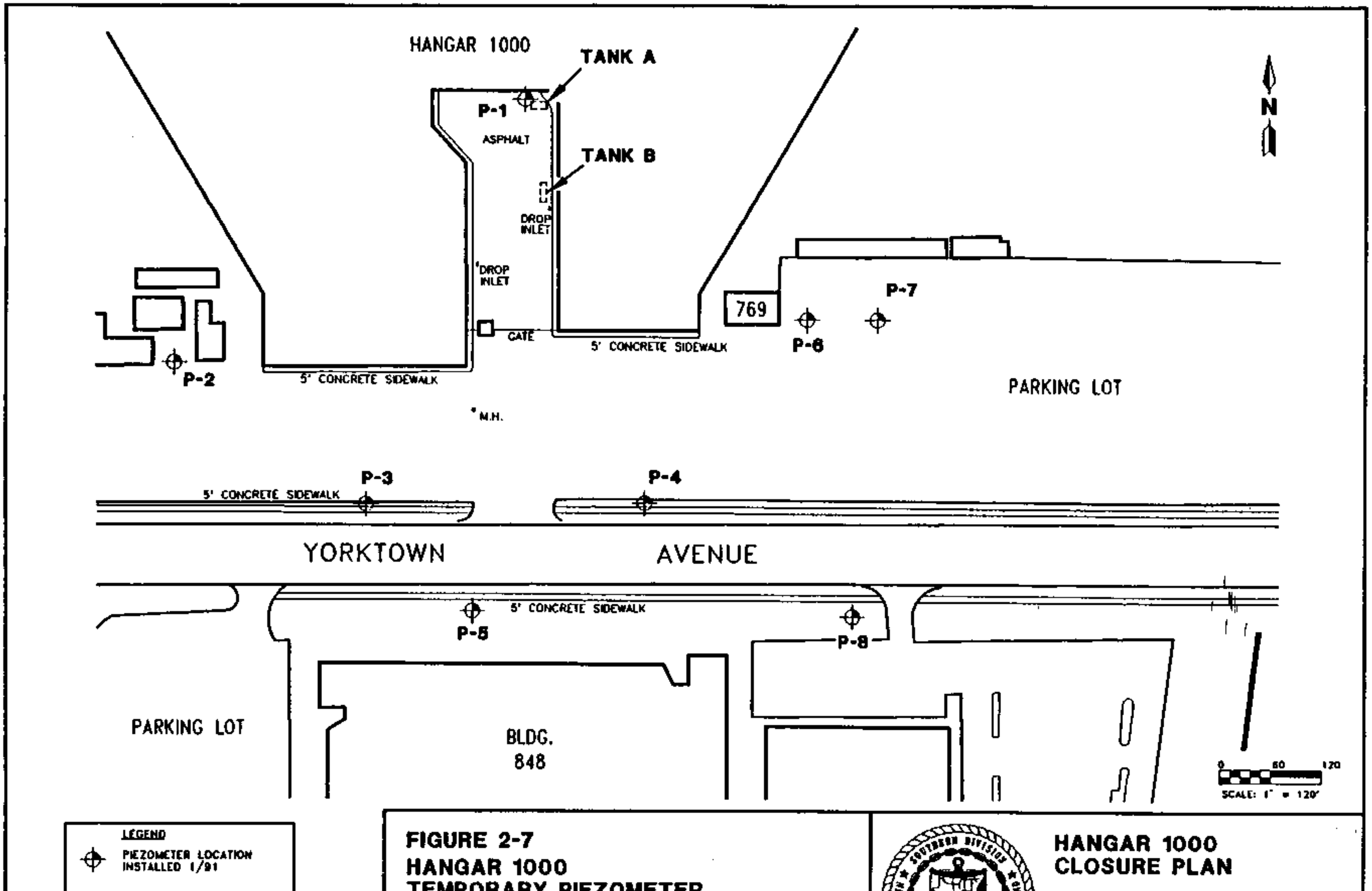


FIGURE 2-7
HANGAR 1000
TEMPORARY PIEZOMETER
LOCATIONS

HANGAR 1000
CLOSURE PLAN

NAS JACKSONVILLE
JACKSONVILLE, FLORIDA

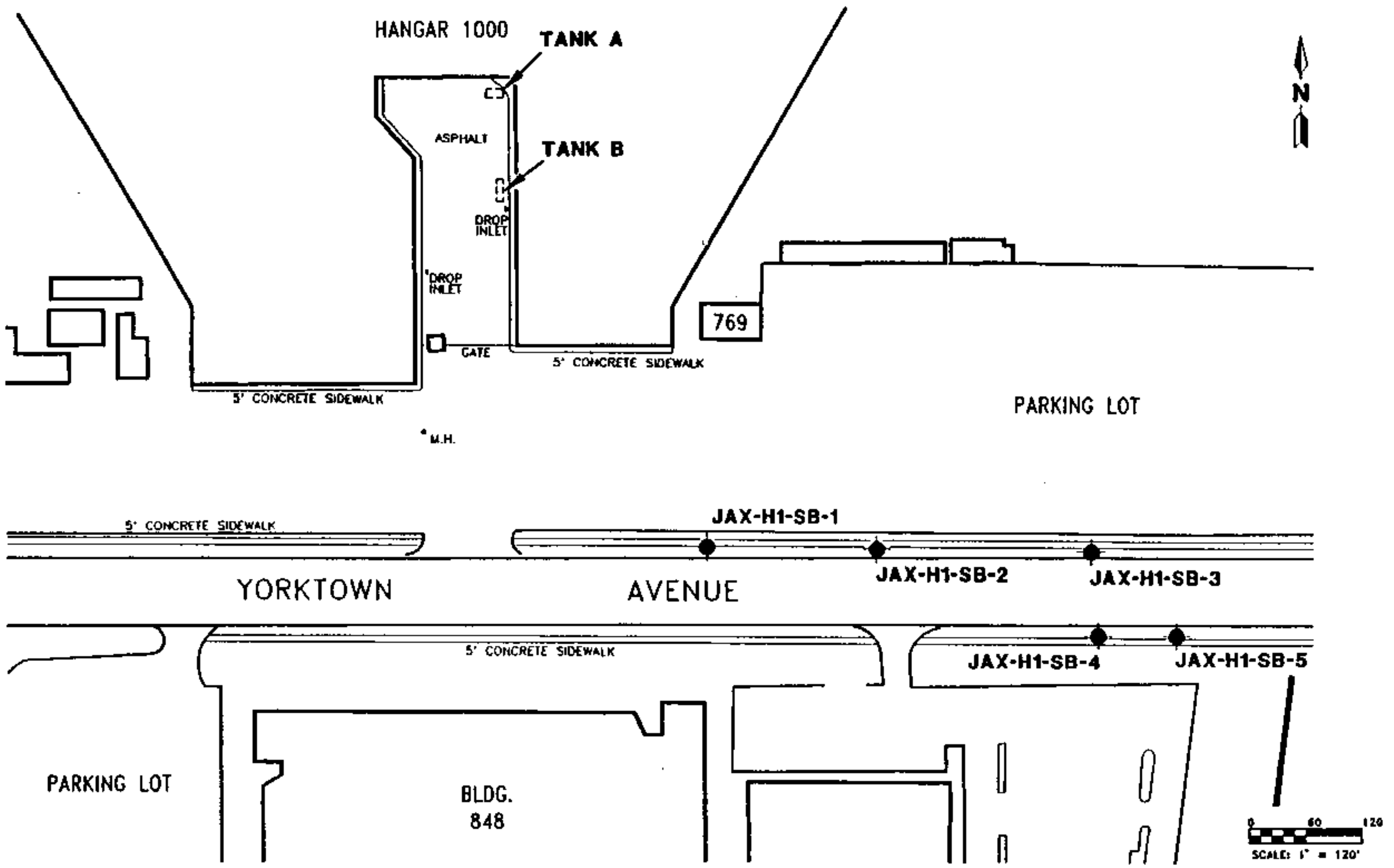


FIGURE 2-8
HANGAR 1000
SOIL BORING SAMPLE
LOCATIONS

HANGAR 1000
CLOSURE PLAN

NAS JACKSONVILLE
JACKSONVILLE, FLORIDA

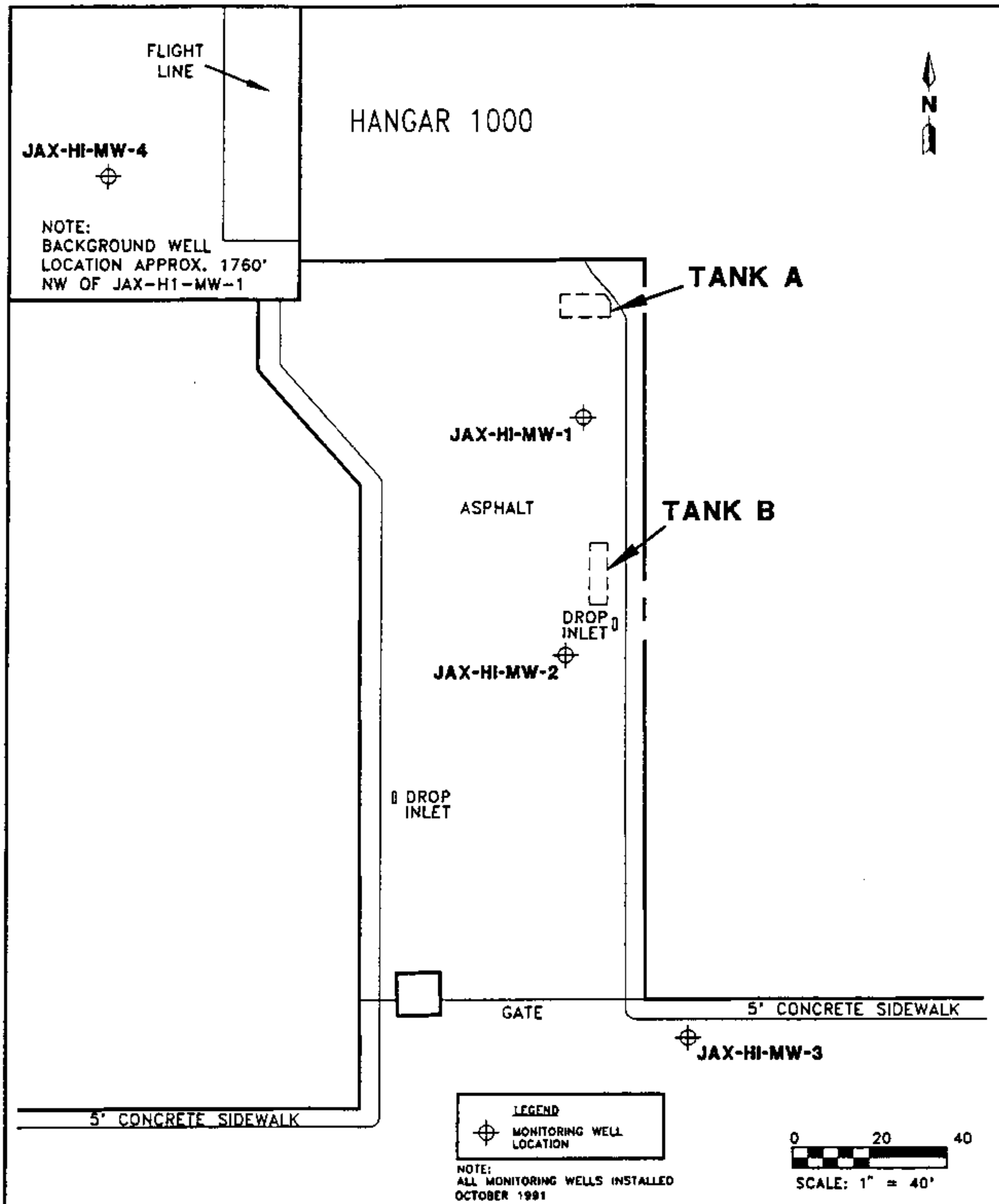


FIGURE 2-9
HANGAR 1000 MONITORING WELL LOCATIONS

HANGAR 1000 CLOSURE PLAN

NAS JACKSONVILLE
JACKSONVILLE, FLORIDA

Table 3-1
Summary of Target Contaminants Laboratory Analytical Results, Soil, October 1991

Closure Plan
Hangar 1000
NAS Jacksonville, Florida

	MW-1 5-7 ft bls	MW-1 9-11 ft bls	MW-2 5-7 ft bls	MW-2 7-9 ft bls	MW-3 5-7 ft bls	MW-3 7-9 ft bls	MW-4 5-7 ft bls	MW-4 7-9 ft bls	Target[1] Concentration (mg/kg)
Volatiles (μg/kg)									
1,1,1-Trichloroethane	--	--	--	100	--	--	--	--	4,784
1,1,Dichloroethene	--	--	--	7	--	--	--	--	534
Carbon Tetrachloride	--	--	--	18	--	--	--	--	42
Tetrachloroethene (PCE)	--	--	--	--	22	--	--	--	593
Toluene	--	--	--	--	--	--	--	--	11,866
Semivolatile (μg/kg)									
bis(2-Ethylhexyl)phthalate	--	--	52	·100	94	180	400	--	1,187

See notes at end of table.

Table 3-1 (Continued)
Summary of Target Contaminants Laboratory Analytical Results, Soil, October 1991

Closure Plan
Hangar 1000
NAS Jacksonville, Florida

	SB-1 5-7 ft bls	SB-1 7-9 ft bls	SB-2 5-7 ft bls	SB-2 7-9 ft bls	SB-3 5-7 ft bls	SB-3 9-11 ft bls	SB-4 5-7 ft bls	SB-4 9-11 ft bls	SB-5 5-7 ft bls	SB-5 9-11 ft bls	Target[1] Concentration (mg/kg)
Volatiles (µg/kg)											
1,1,1-Trichloroethane	--	--	--	--	--	--	--	--	--	--	4,784
1,1-Dichloroethene	--	--	--	--	--	--	--	--	--	--	534
Carbon Tetrachloride	--	--	--	--	--	--	--	--	--	--	42
Tetrachloroethene (PCE)	--	--	--	--	--	--	--	--	--	--	593
Toluene	--	--	--	3	--	--	--	--	--	3	11,866
Semivolatiles (µg/kg)											
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	--	--	--	--	1,187

[1]Target concentrations from "Health and Environmental Assessment," Hazardous Waste Storage Tanks, Hangar 1000 Tank System Closure, ABB-Enviromental Services, Inc., 12/92.

Notes: ft = feet.
bls = below land surface.
µg/kg = micrograms per kilogram.
NS = no standard guidance concentration available.

Table 3-2
Summary of Target Contaminants Laboratory Analytical Results, Water, October 1991 and December 1991

Closure Plan
Hangar 1000
NAS Jacksonville, Florida

	MW-1		MW-2		MW-3		MW-4		Guidance[1] Concentration (µg/ℓ)	Target[2] Concentration (mg/ℓ)
	October	December	October	December	October	December	October	December		
Volatiles (µg/ℓ)										
Acetone	15		–	–	–	–	–	–	700	36,000
1,1-Dichloroethene	18	43	6	18	6	3	–	–	7	1.1
1,1-Dichloroethane	24	51	13	22	11	5	–	–	2,400	4,000
1,2-Dichloroethene (total)	15	43	–	–	–	–	–	–	4.2	1,100
Chloroform	–	14	–	–	–	–	–	–	100	210
1,1,1-Trichloroethane	76	330	50	150	12	7	–	–	200	40,000
Trichloroethene	98	320	13	24	8	6	–	–	3	5.90
Tetrachloroethene	1	3	–	–	6	7	–	–	3	0.40
Semivolatiles (µg/ℓ)										
Di-n-butylphthalate	–	–	1	–	1	–	1	–	NS	45,000

[1]Groundwater Guidance Concentrations FDER 2/89.
[2]Health and Environmental Assessment, Hazardous Waste Storage Tanks, Hangar 1000 Tank System Closure, ABB-ES Environmental Services, Inc., 12/92.

Notes: ft = feet.
bls = below land surface.
µg/ℓ = micrograms per liter.
mg/ℓ = milligrams per liter.
NS = no standard guidance concentration available.

Section 3
Figures and Historical Data from Closure Activities Summary Report – Hangar 1000 (ABB-ES 1996)

Naval Air Station Jacksonville
Jacksonville, Florida

Southern Division
Naval Facilities Engineering Command
Contract Number N62467-94-D-0888

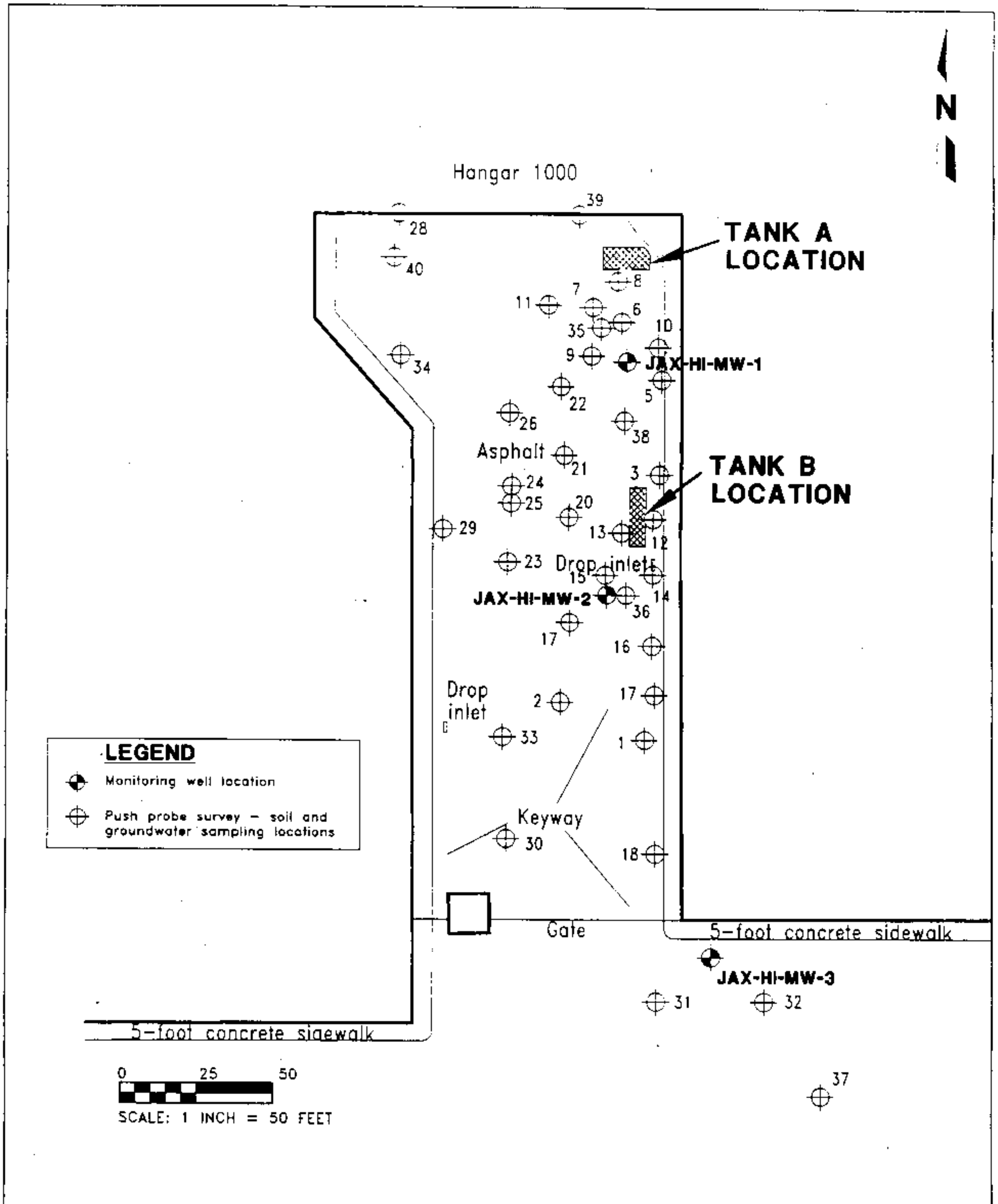
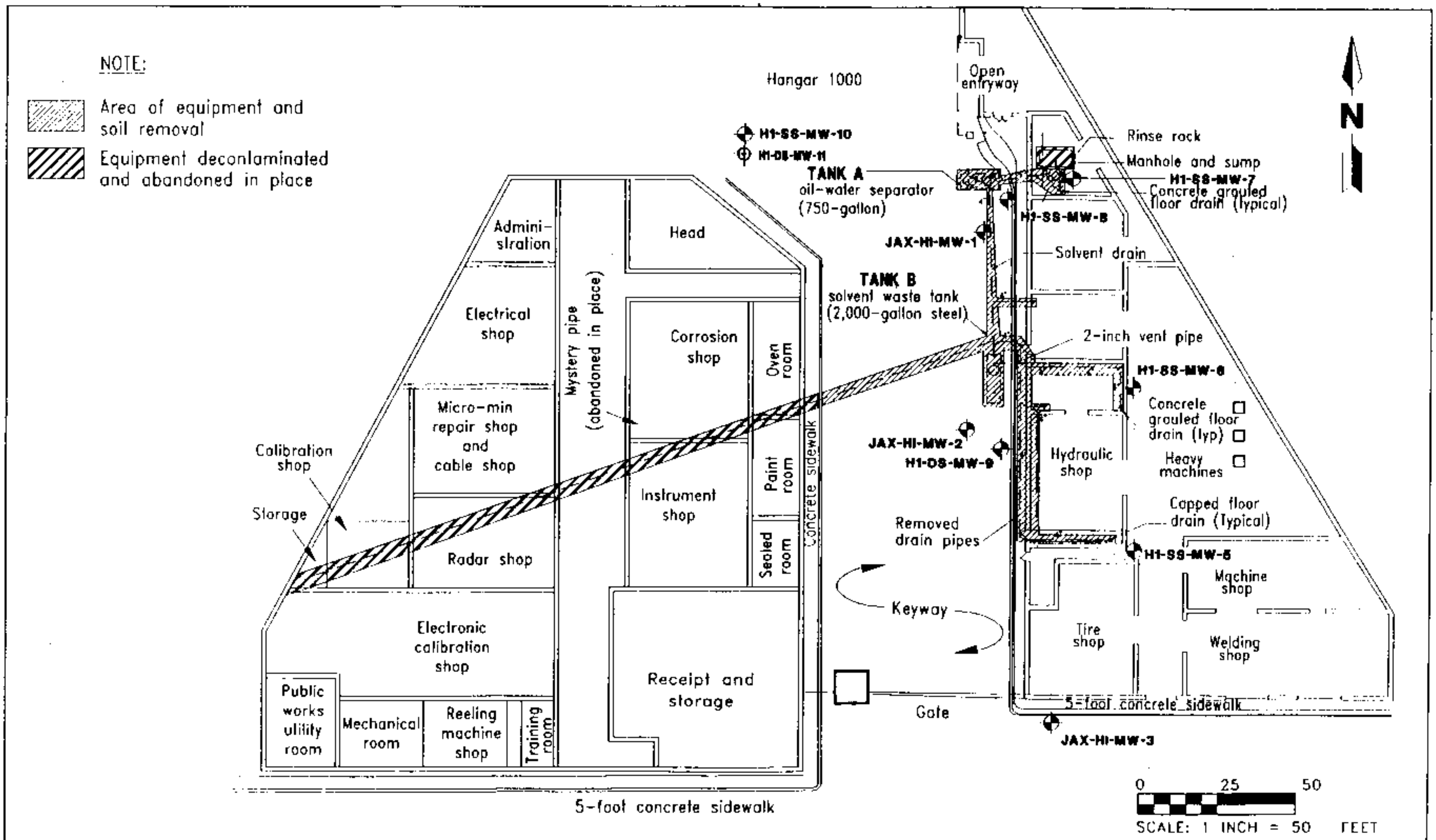


FIGURE 3-2
MONITORING WELL AND PUSH PROBE SURVEY

JAX\ MONITOR\ GLC-NAB\ 03-06-96

CLOSURE ACTIVITIES SUMMARY REPORT, HANGAR 1000

NAVAL AIR STATION JACKSONVILLE, FLORIDA



LEGEND

- H1-SS-MW-6 Existing monitoring well location
- H1-DS-MW-11 Existing deep monitoring well location
- TYP Typical

H:\9555\1105001A\NAD\03-12-95

FIGURE 3-8
HAZARDOUS WASTE STORAGE TANK SYSTEM CLOSURE

CLOSURE ACTIVITIES SUMMARY REPORT, HANGAR 1000

NAVAL AIR STATION JACKSONVILLE, FLORIDA

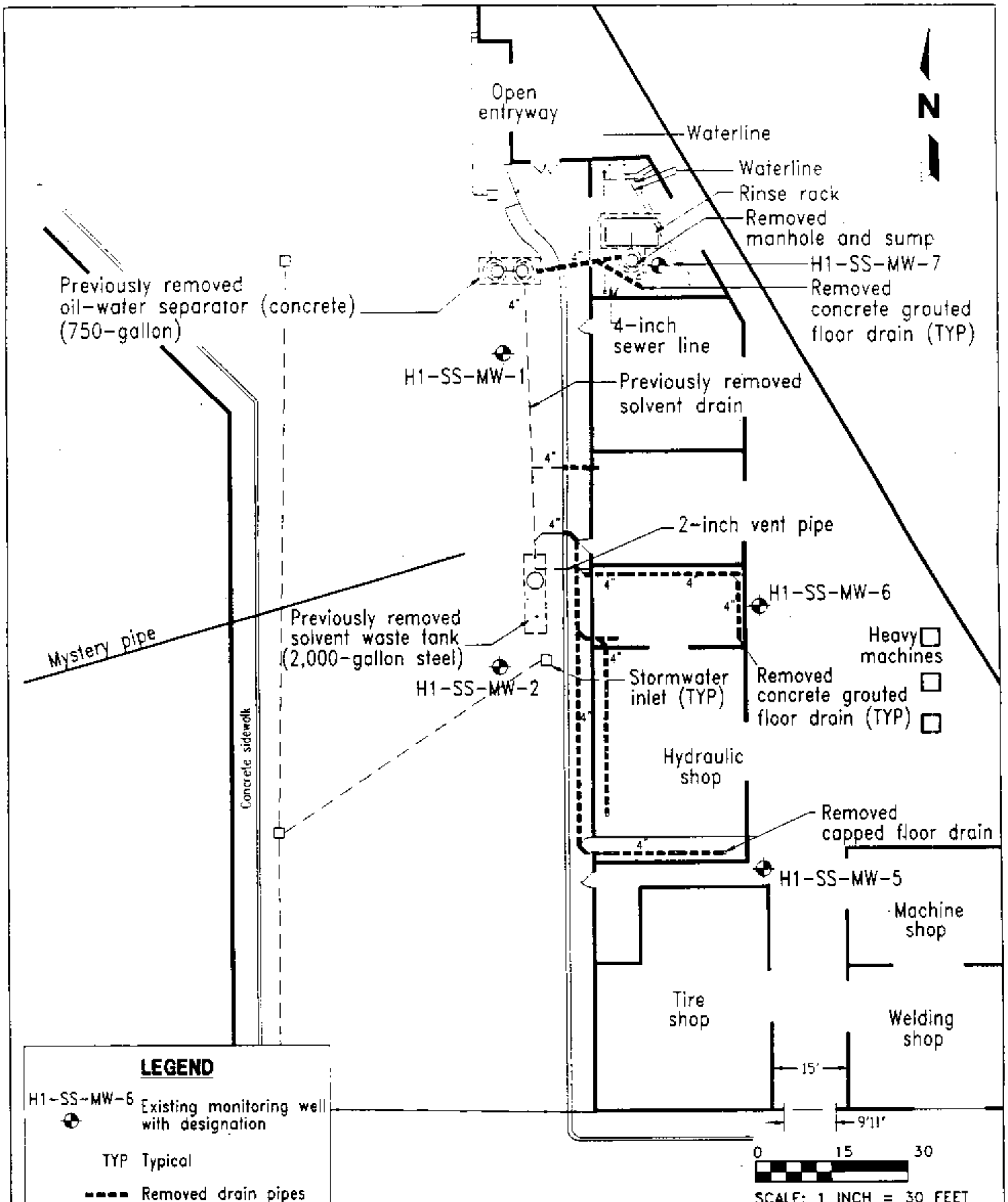


FIGURE 3-5
PIPE LOCATIONS

CLOSURE ACTIVITIES SUMMARY REPORT, HANGAR 1000

NAVAL AIR STATION JACKSONVILLE, FLORIDA

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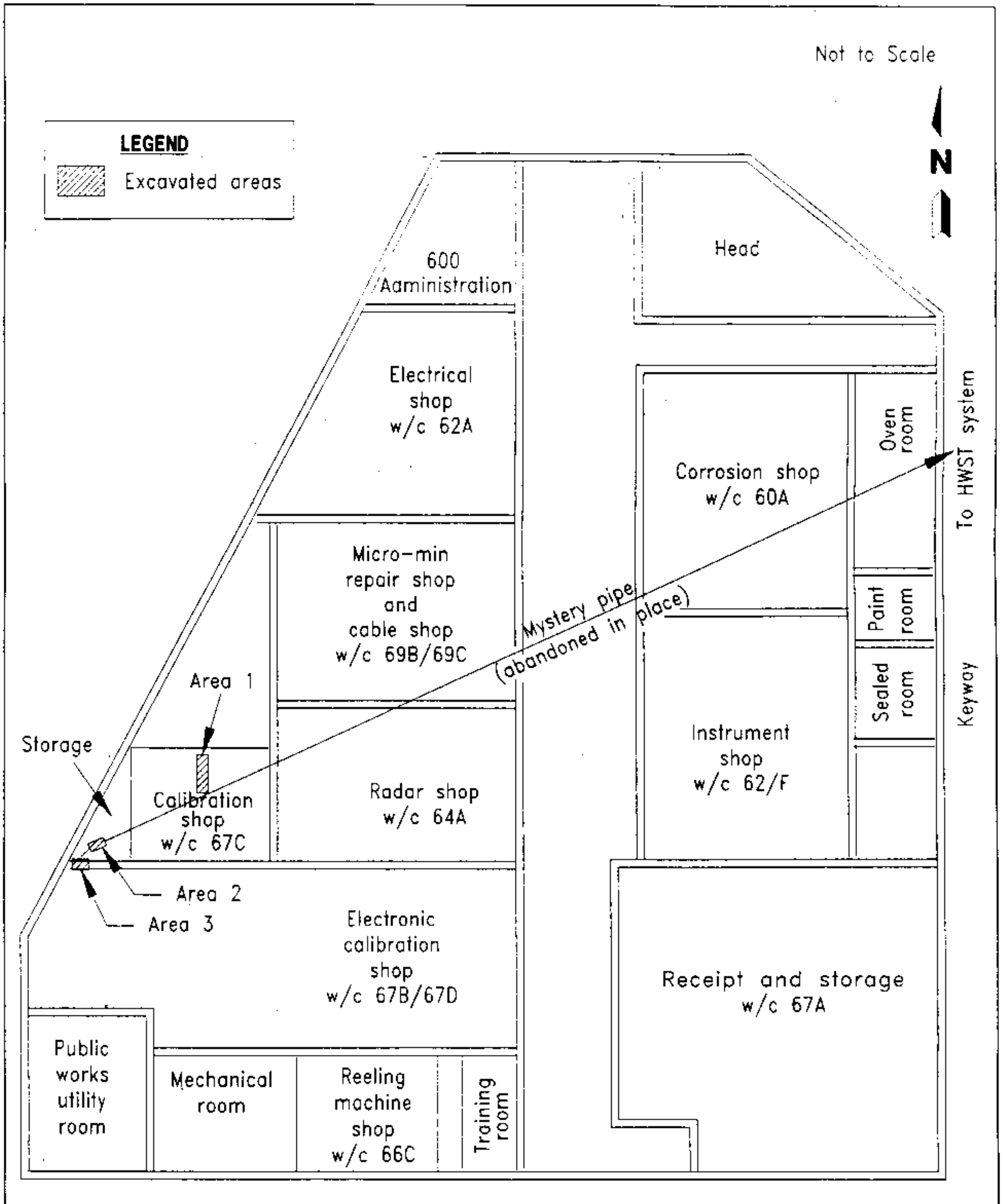

FIGURE 3-6
MYSTERY PIPE LOCATION,
WEST KEYWAY AREA

CLOSURE ACTIVITIES SUMMARY REPORT, HANGAR 1000

NAVAL AIR STATION
JACKSONVILLE, FLORIDA

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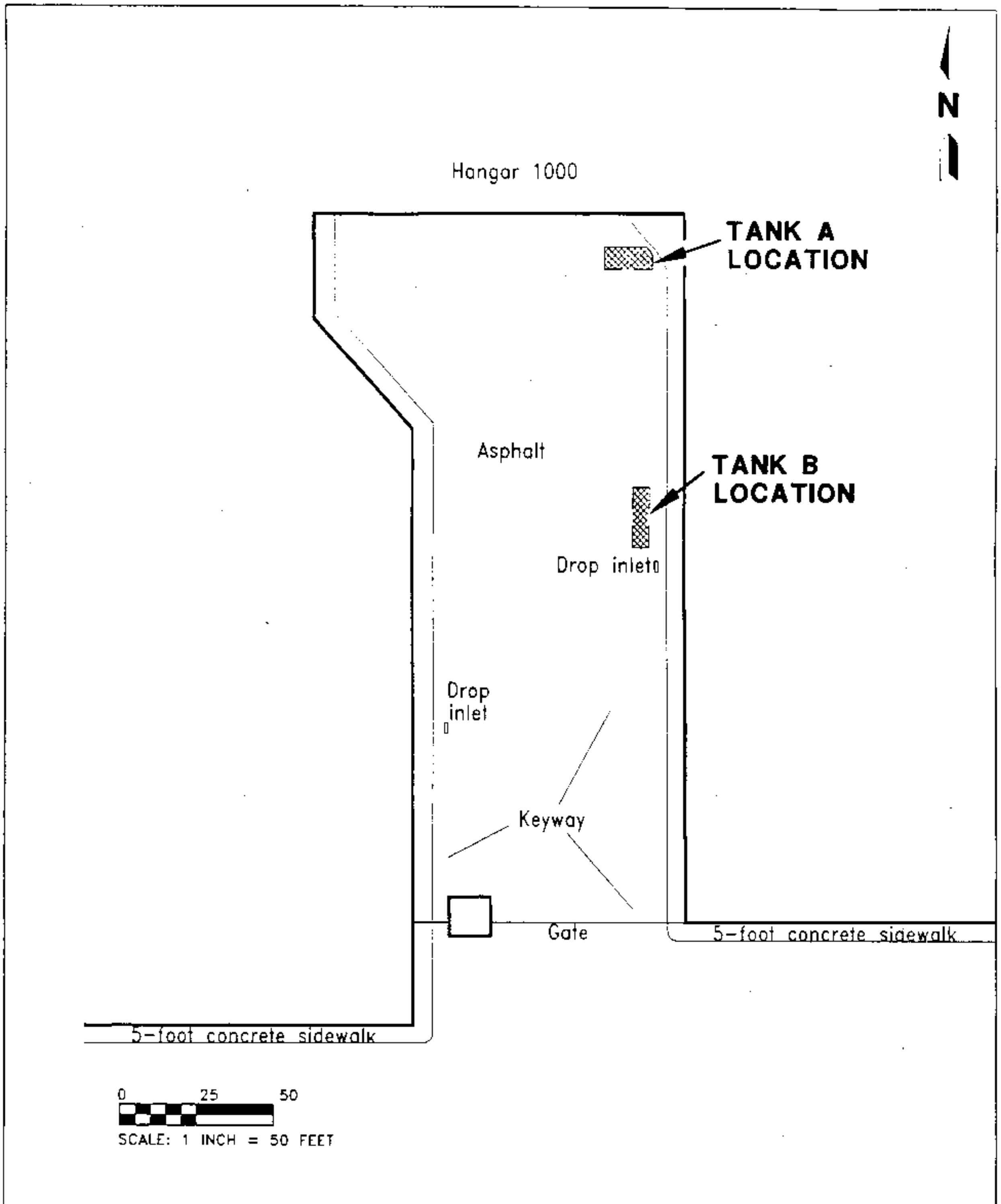
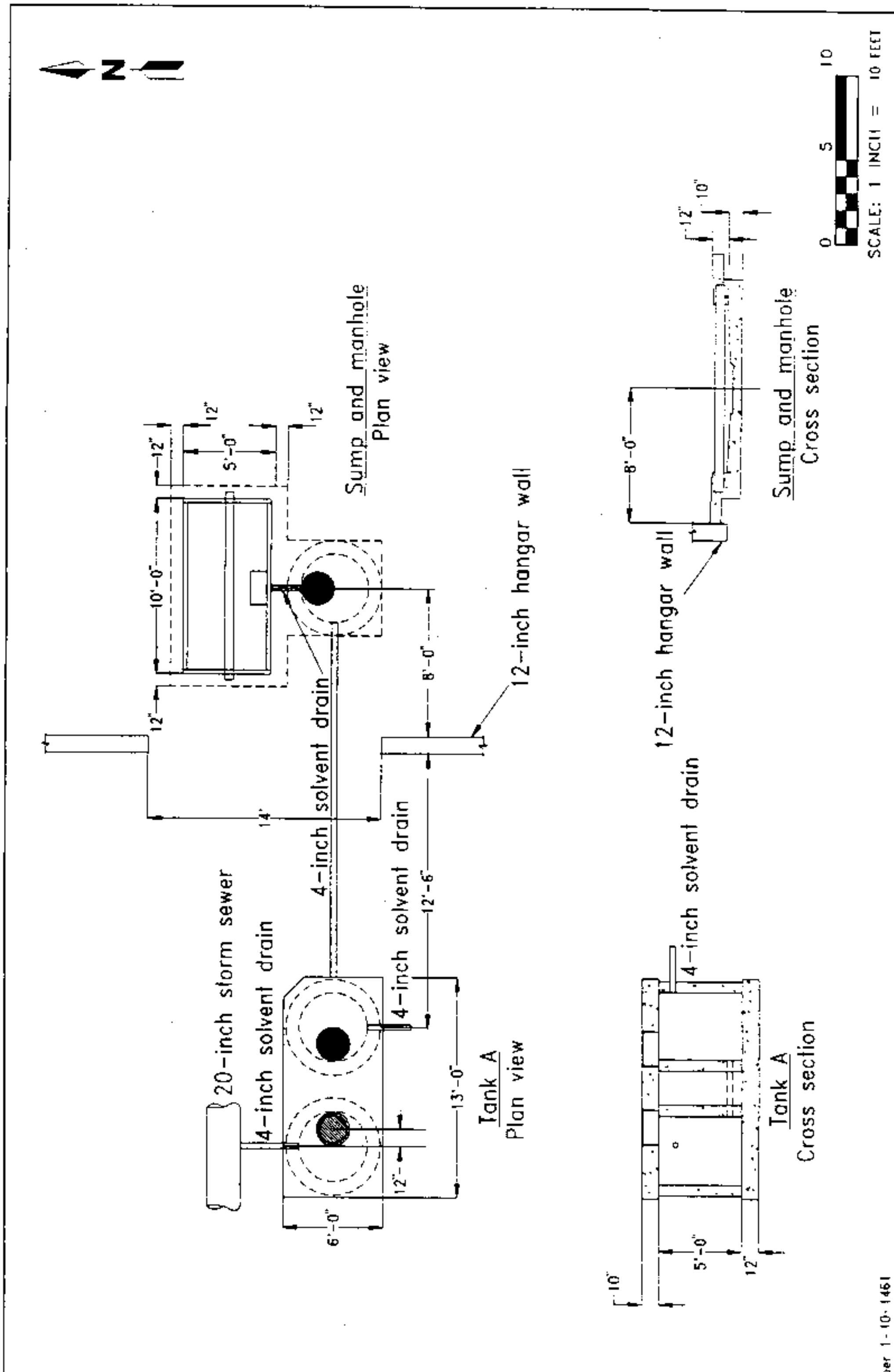


FIGURE 2-3
SITE MAP

JAX\MONITOR\GLC\02-09-96

CLOSURE ACTIVITIES SUMMARY REPORT, HANGAR 1000

NAVAL AIR STATION JACKSONVILLE, FLORIDA



Source:
NAS Jacksonville number 1-10-1461

FIGURE 2-4
TANK A AND SUMP DETAIL

CLOSURE ACTIVITIES SUMMARY
REPORT, HANGAR 1000

NAVAL AIR STATION
JACKSONVILLE, FLORIDA

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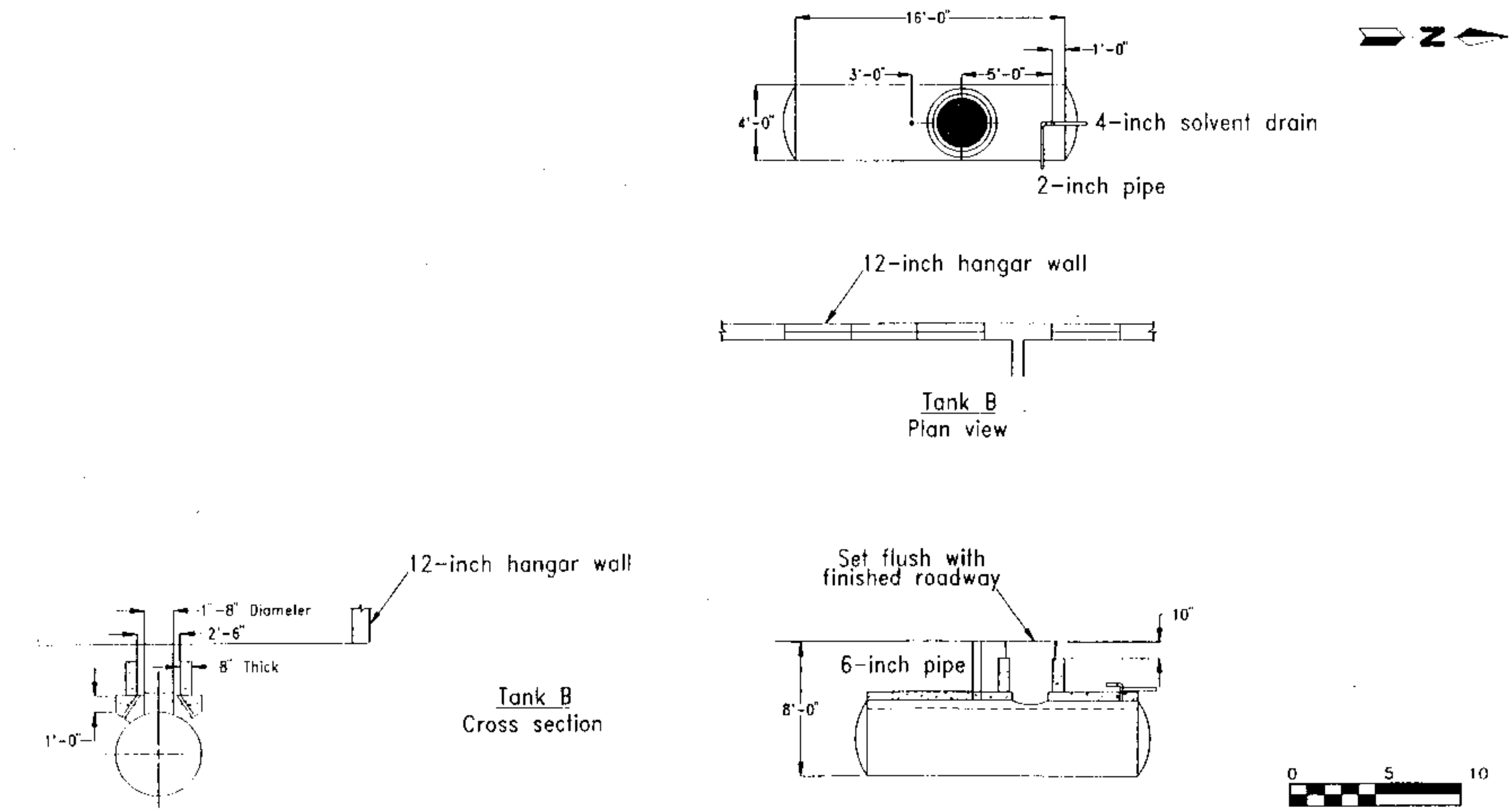

Source:
NAS Jacksonville number 1-10-1461

FIGURE 2-5
TANK B DETAIL

CLOSURE ACTIVITIES SUMMARY REPORT, HANGAR 1000

NAVAL AIR STATION JACKSONVILLE, FLORIDA

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Section 4
Closure Activities Summary Report – Hangar 1000 (ABB-ES 1996)

Naval Air Station Jacksonville
Jacksonville, Florida

Southern Division
Naval Facilities Engineering Command
Contract Number N62467-94-D-0888

CLOSURE ACTIVITIES SUMMARY REPORT

HANGAR 1000

NAVAL AIR STATION JACKSONVILLE
JACKSONVILLE, FLORIDA

UNIT IDENTIFICATION CODE: N00207
CONTRACT NO.: N62467-89-D-0317/074

MARCH 1996

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NORTH CHARLESTON, SOUTH CAROLINA
29419-9010

HG-16

CLOSURE ACTIVITIES SUMMARY REPORT
HANGAR 1000

NAVAL AIR STATION JACKSONVILLE
JACKSONVILLE, FLORIDA

Unit Identification Code: N00207

Contract No.: N62467-89-D-0317/074

Prepared by:

ABB Environmental Services, Inc.
2590 Executive Center Circle, East
Tallahassee, Florida 32301

Prepared for:

Department of the Navy, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29418

Chris Bartku, Code 1824, Engineer-in-Charge

March 1996

CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

The Contractor, 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-0317/074 are complete and accurate and comply with all requirements of this contract.

DATE: March 12, 1996

NAME AND TITLE OF CERTIFYING OFFICIAL: Phylissa Miller
Task Order Manager

NAME AND TITLE OF CERTIFYING OFFICIAL: M. Adib Rahounji
Project Technical Lead

(DFAR 252.227-7036)

FOREWORD

This report was produced in response to, and in accordance with, Consent Order No. 88-0738, issued October 4, 1988, and amended December 7, 1990, November 29, 1993, and November 30, 1995, by the Florida Department of Environmental Protection. The consent order requires the development of a closure plan and closure of the site in accordance with the Resource Conservation and Recovery Act, Volume 40, Code of Federal Regulations (CFR), Parts 265.197 (a) and (b), Subparts F "Groundwater Monitoring," G "Closure and Post-Closure," and H "Financial Requirements" are included by reference) and regular inspection of the tank system (40 CFR 265.195).

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Hangar 1000
NAS Jacksonville
Jacksonville, Florida

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Closure Activities Summary Report,
Hangar 1000
NAS Jacksonville
Jacksonville, Florida

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GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
bls	below land surface
CFR	Code of Federal Regulations
CLEAN	Comprehensive Long-Term Environmental Action, Navy
CP	Closure Plan
CPCP	Contingency Postclosure Plan
DCE	dichloroethene
GC	gas chromatograph
GWMP	Groundwater Monitoring Plan
HEA	Health and Environmental Assessment
HWST	hazardous waste storage tank
mg/kg	milligrams per kilogram
mg/ℓ	milligrams per liter
NAS	Naval Air Station
PCBs	polychlorinated biphenyls
PID	photoionization detector
PRG	preliminary remedial goals
RCRA	Resource Conservation and Recovery Act
SAR	Site Assessment Report
SOUTHNAV-FACENGCOM	Southern Division, Naval Facilities Engineering Command
SVOC	semivolatile organic compound
VOA	volatile organic analytes
VOC	volatile organic compound
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank

1.0 INTRODUCTION

This report was prepared for Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) and the Facilities and Environmental Department at Naval Air Station (NAS) Jacksonville, by ABB Environmental Services, Inc. (ABB-ES). The purpose is to summarize all closure activities completed at the Hangar 1000 Hazardous Waste Storage Tank (HWST) site to date and to recommend further activities necessary to complete the site closure.

2.0 BACKGROUND

2.1 SITE DESCRIPTION. The facility addressed in this summary report includes an underground tank system (Tank A, Tank B, and associated pipelines) formerly located in the Keyway of Hangar 1000, NAS Jacksonville, in Jacksonville, Duval County, Florida (Figures 2-1 through 2-3). Tank A was a 750-gallon concrete solvent and water separator, and Tank B was a 2,000-gallon steel storage tank. The tanks were interconnected with 2-, 4-, and 6-inch-diameter metal pipes (Figures 2-4 and 2-5). Ground cover within and surrounding Hangar 1000 is predominantly concrete and asphalt. The hangar services a large aircraft runway to the north. The St. Johns River forms the eastern border to the base and is roughly 1 mile east of the hangar. The St. Johns River is a major water body that flows north and discharges into the Atlantic Ocean.

2.2 SITE HISTORY. Tanks A and B were constructed as part of segment six of Hangar 1000 in the late 1960s and early 1970s. The two tanks received waste solvents and other substances through drain lines from the washrack and manhole as well as from shop operations. No sludge, sediment, or liquid was allowed to accumulate in the washrack, the manhole, or the piping. The last known discharge of waste into the tanks occurred in November 1987. Since then, the drain lines to the tanks have been plugged or capped, and the tanks have not been used. Precipitation runoff continued to accumulate in Tank A because rainwater from a nearby 20-inch drain was able to backflow through a 4-inch overflow line into Tank A during periods of heavy precipitation. Regular inspections were performed, and the accumulated rainwater was pumped out when necessary.

On June 21, 1988, Florida Department of Environmental Regulation (FDER) (currently named Florida Department of Environmental Protection [FDEP]) conducted a hazardous waste inspection of the NAS Jacksonville facility. As a result of the inspection, FDER issued Warning Notice No. HW-16-0013 to NAS Jacksonville on July 22, 1988, and Consent Order No. 88-0738 on October 4, 1988. All of the alleged violations were corrected except 40 Code of Federal Regulations (CFR) 265.195 (tank inspection) and 265.197 (tank closure and postclosure).

On December 7, 1990, FDER extended the tank closure completion deadline to December 1, 1993, to allow time for revision of the closure plan, further investigations, Health and Environmental Risk Assessment, and corrective action, if necessary. A request to extend the completion deadline by 24 months was submitted to FDEP by NAS Jacksonville on November 24, 1993, and approved on November 29, 1993, which set the closure completion deadline at December 1, 1995. Closure activities were not completed by that date since analyses of fourth-quarter groundwater samples collected in September 1995 (ABB-ES, 1996) indicated that volatile organic compound 1,1-dichloroethene (1.1-DCE) at monitoring wells H1SSMW-5 and H1SSMW-8 was above its target concentration. Accordingly, another extension was requested and approved, which set the closure completion deadline at December 1, 1997.

Various site assessment and closure planning activities have been undertaken and completed in response to the Consent Order as described in Chapters 3.0 and 4.0 of this report. A draft Groundwater Monitoring Plan (GWMP) was submitted to FDER in October 1991, and a final version was submitted in April 1992. In December

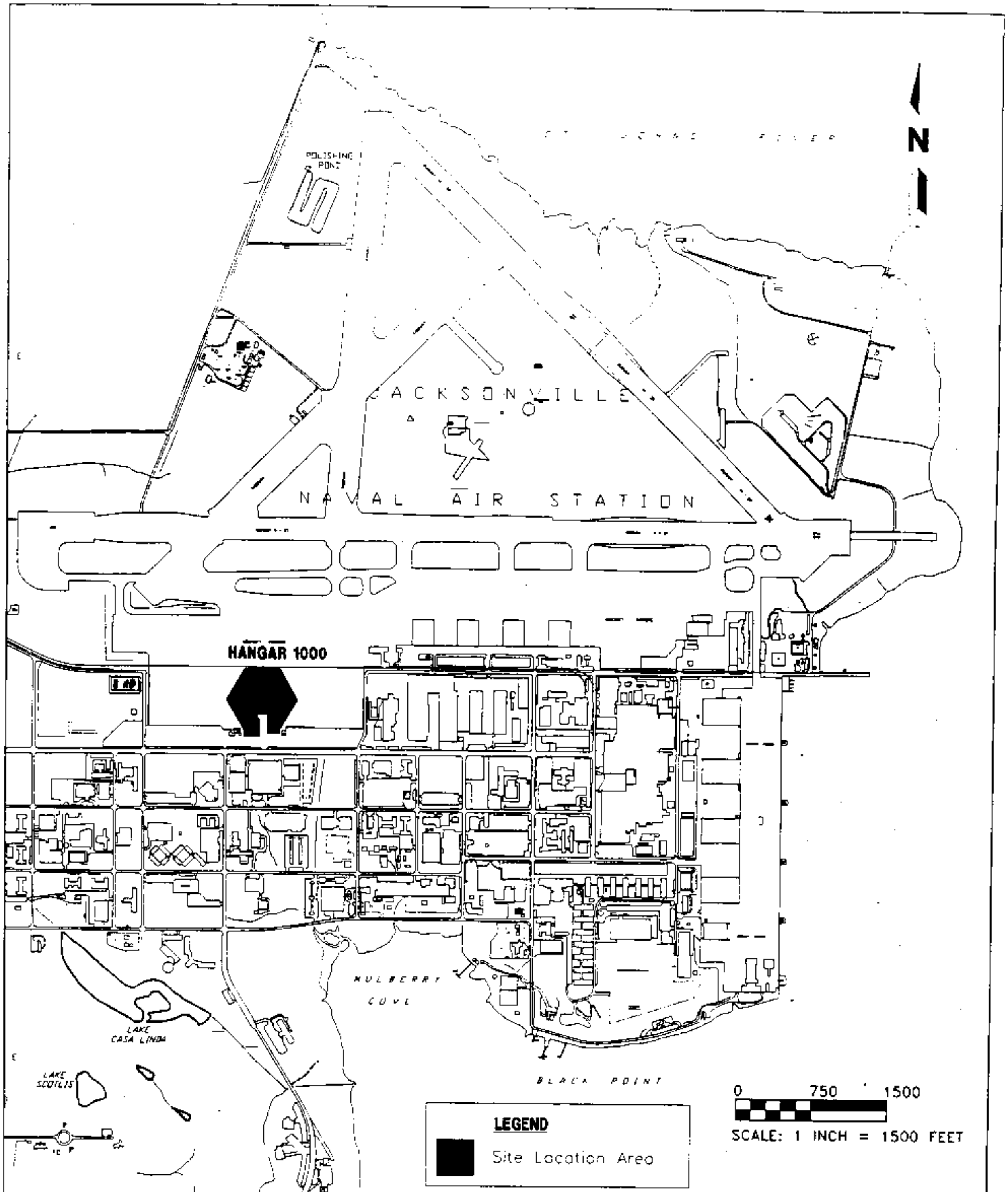


FIGURE 2-1
SITE LOCATION

H:\JAX\FIG1-2\NP-NAB\02-13-96

CLOSURE ACTIVITIES SUMMARY REPORT, HANGAR 1000

NAVAL AIR STATION
JACKSONVILLE, FLORIDA

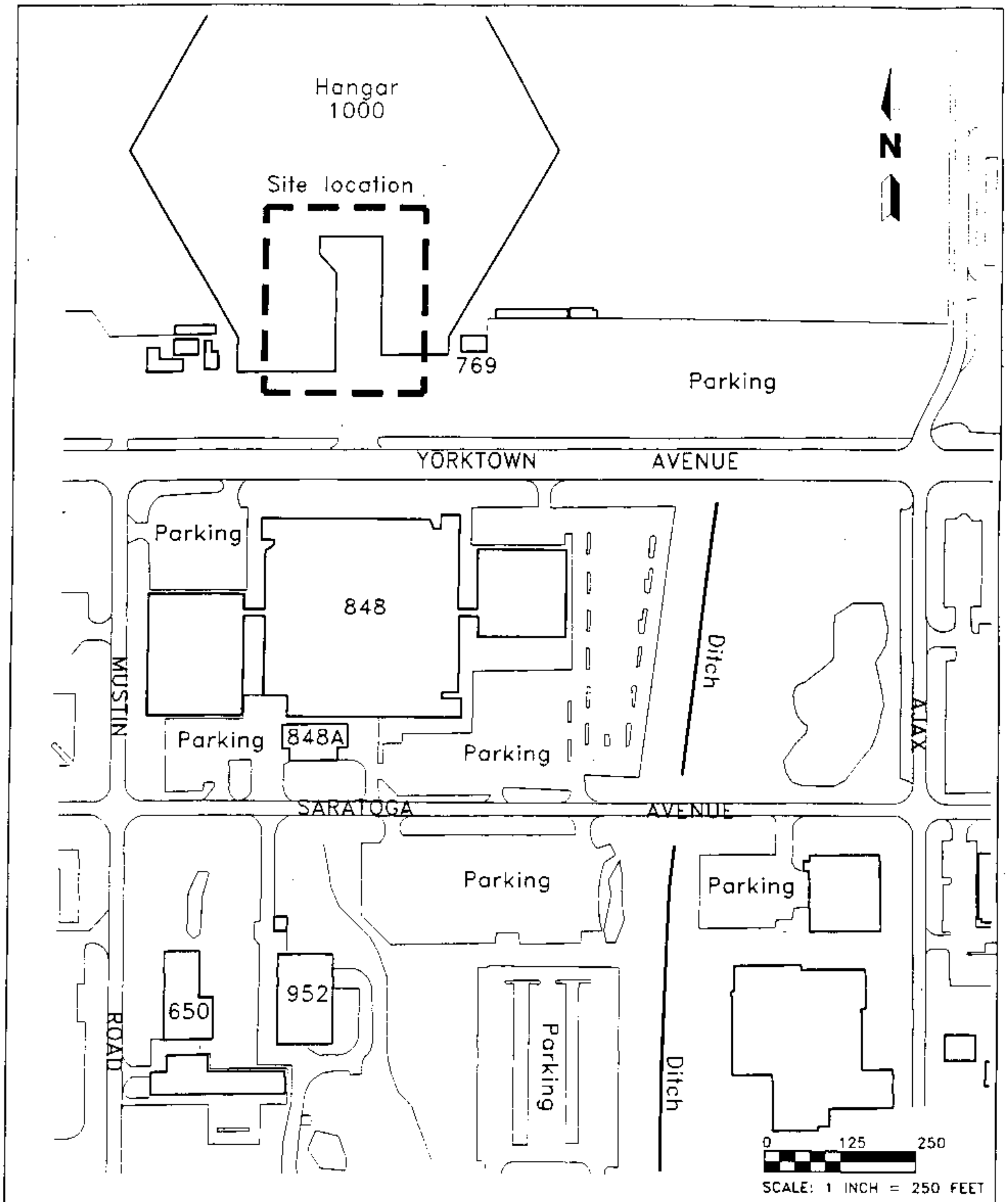


FIGURE 2-2
SITE VICINITY MAP

CLOSURE ACTIVITIES SUMMARY REPORT, HANGAR 1000

NAVAL AIR STATION JACKSONVILLE, FLORIDA

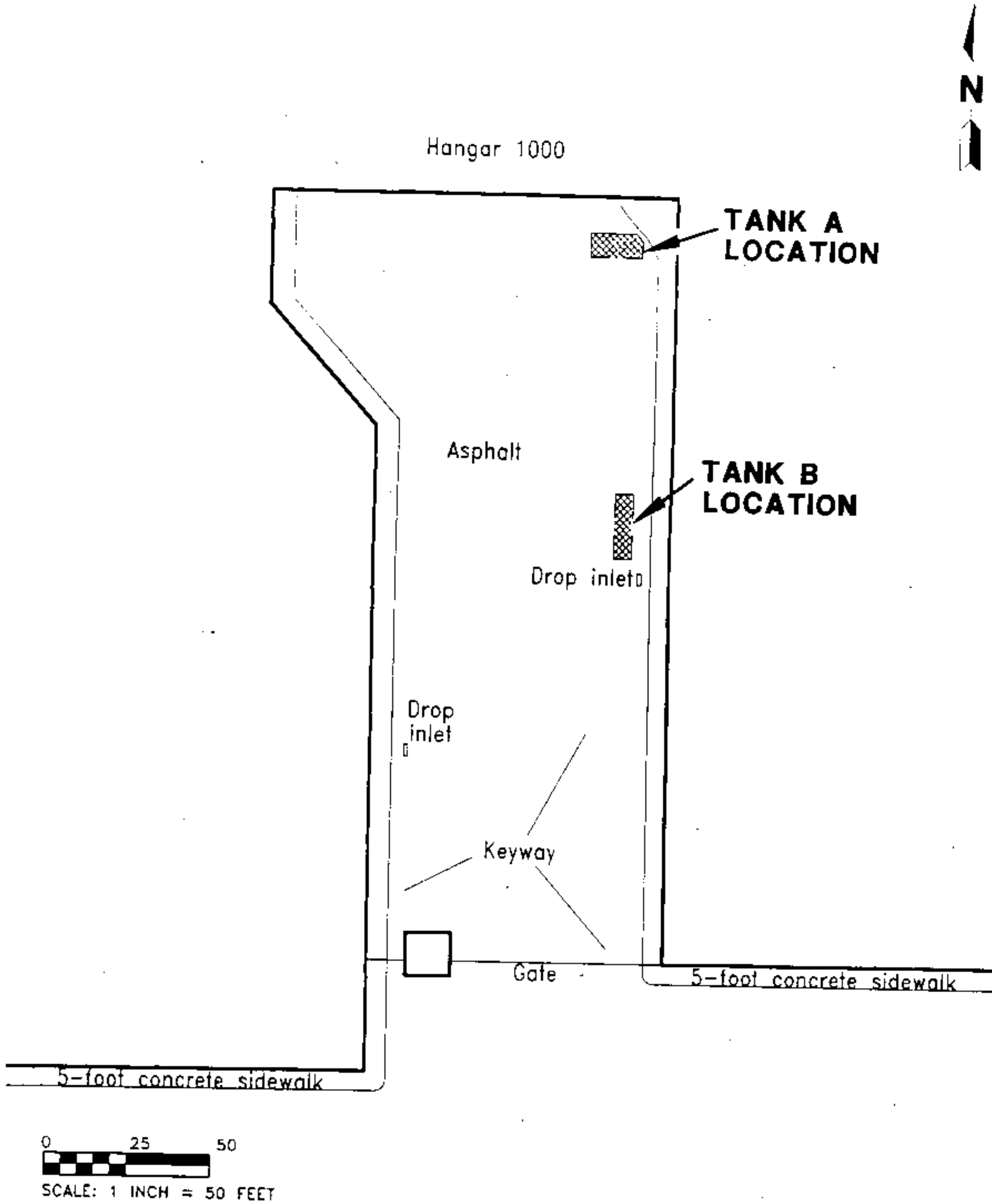
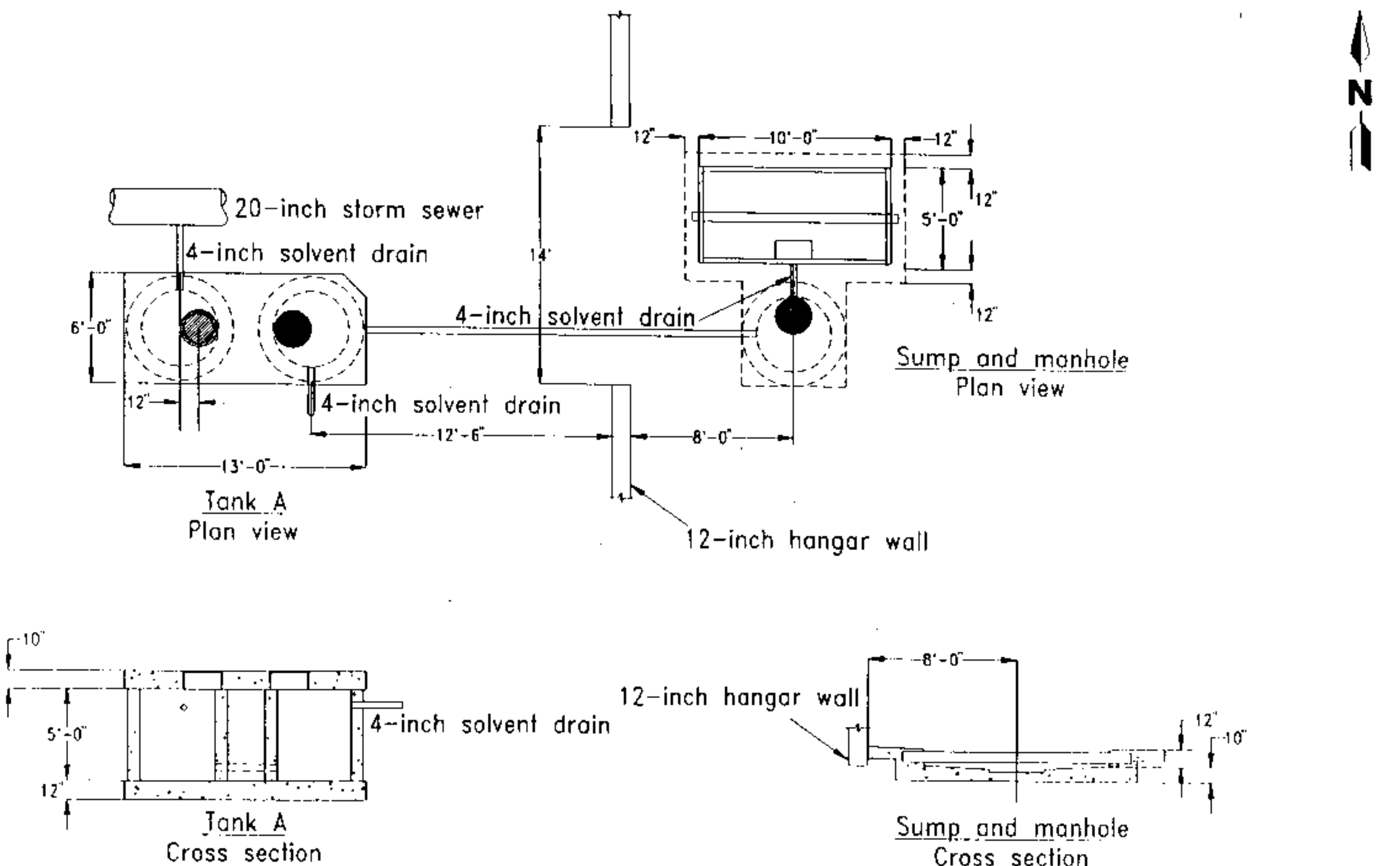


FIGURE 2-3
SITE MAP

JAX\MONITOR\GLC\02-09-96

CLOSURE ACTIVITIES SUMMARY REPORT, HANGAR 1000

NAVAL AIR STATION JACKSONVILLE, FLORIDA



Source:
NAS Jacksonville number 1-10 1461

FIGURE 2-4
TANK A AND SUMP DETAIL

CLOSURE ACTIVITIES SUMMARY REPORT, HANGAR 1000

NAVAL AIR STATION JACKSONVILLE, FLORIDA

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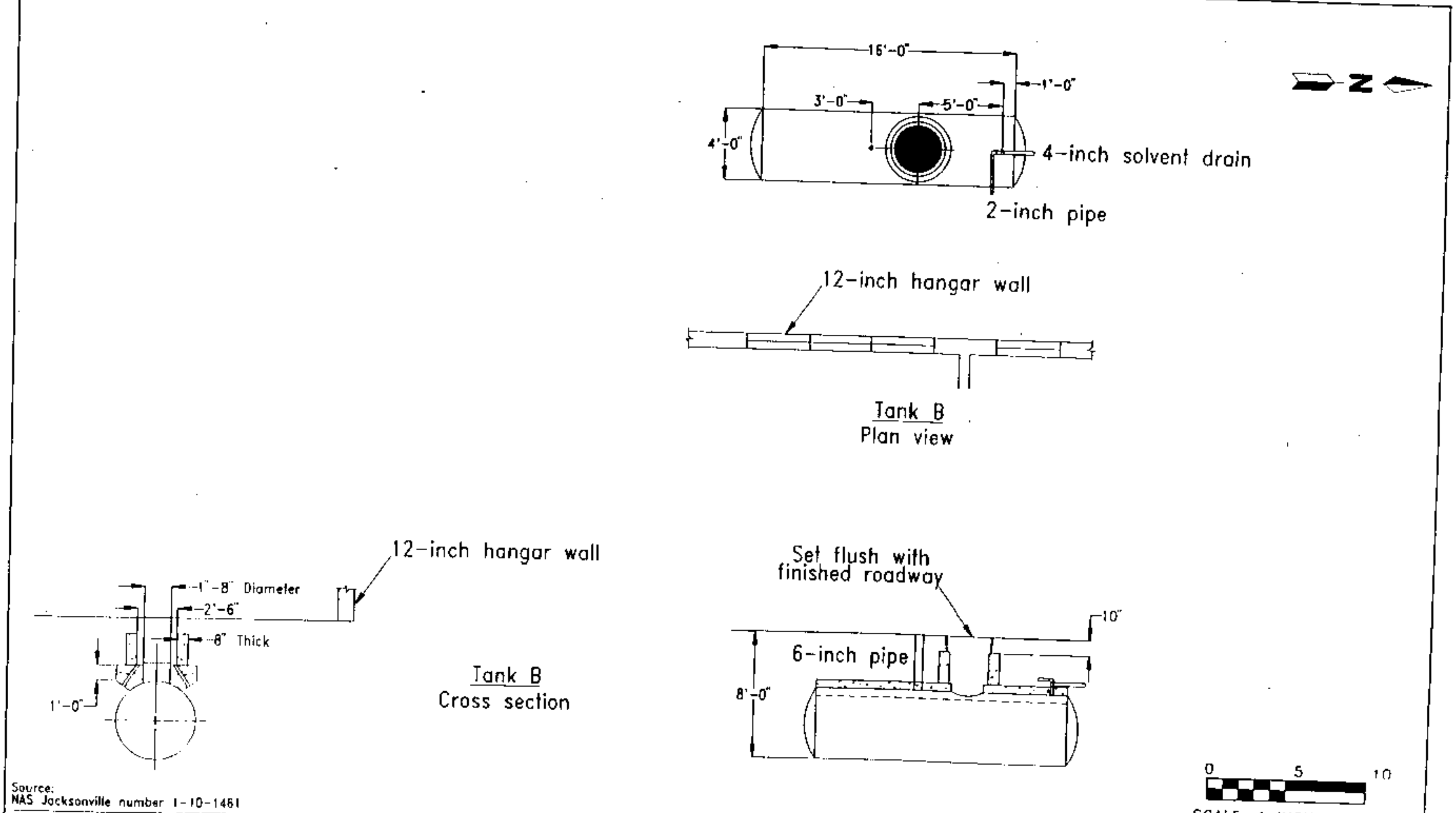


FIGURE 2-5
TANK B DETAIL

CLOSURE ACTIVITIES SUMMARY REPORT, HANGAR 1000

NAVAL AIR STATION JACKSONVILLE, FLORIDA

H\9555\110600\GLC-NP\03-06-96

1992, a Site Assessment Report (SAR), a Health and Environmental Assessment (HEA), a Closure Plan (CP), and a Contingency Post-Closure Plan (CPCP) were submitted to FDER by ABB-ES. The SAR summarized the various assessment activities completed to date and presented a list of site contaminants or potential site contaminants recommended for consideration in future closure activities. The HEA presented a list of risk-based clean closure target concentrations for the contaminants of concern based on an industrial land-use scenario. The CP described the closure procedures and actions necessary to complete a risk-based clean closure of the site. The CPCP described the steps to be taken in the event that a risk-based clean closure could not be achieved under the CP. A Technical Memorandum describing additional assessment activities was submitted in February 1993. In April 1993, a revised GWMP was submitted to address additional activities necessary for closure. The GWMP was revised in December 1993 to incorporate comments from FDEP on the CP and HEA submitted in 1992. Based on the same FDEP comments, the CP, CPCP, and HEA were also revised in December 1993. The GWMP was once again revised in October 1994 to address site monitoring requirements following the removal of Tanks A and B. Quarterly reports were prepared as required in the 1994 GWMP in March, July, and August 1995 and January 1996.

Assessment activities prior to tank removal included the following:

- installation of eight temporary piezometers and measurement of water table elevations to determine the groundwater flow direction and gradient,
- installation of four shallow groundwater monitoring wells,
- completion of five shallow soil borings and soil sample collection and analyses,
- completion of four groundwater sampling and analytical events,
- aquifer permeability testing in each monitoring well, and
- completion of a push probe survey that included shallow sample collection and screening at 32 locations, shallow sample collection and laboratory analyses at 8 locations, and deep sample collection and laboratory analyses at 2 locations.

Subsequent to the assessment activities, Tanks A and B and the pipes connecting them were excavated and removed in March 1994. Confirmatory soil samples collected from the excavation indicated that no soil contamination exceeding the risk-based target levels was present in the former tank locations.

Following removal of the tanks, seven additional monitoring wells were installed in December 1994 and monitored through 1995. The washrack and the pipe section west of the Keyway were decontaminated and abandoned in place between September and November 1995. During the same period, the manhole and remaining pipelines and floor drains on the east side of the Keyway were removed.

3.0 SITE ACTIVITIES

3.1 INITIAL MONITORING WELL INSTALLATION. During the CA, ABB-ES personnel supervised the installation of four groundwater monitoring wells, designated MW-1 through MW-4. The initial monitoring well locations are shown on Figure 3-1. One well (MW-4) was installed hydraulically upgradient to obtain background samples (i.e., samples outside the influence of the facility). Three wells were installed downgradient of, and in the immediate vicinity of, the Hangar 1000 tanks to ensure interception of effluent migration from the tanks, if any. The four monitoring wells were placed to define the extent of groundwater contamination as indicated by the field gas chromatograph (GC) results. The monitoring wells were installed in accordance with the Southern Division, Naval Facilities Engineering Command Guidelines for Groundwater Monitoring Well Installation. Soils from split-spoon samples obtained below the water table were analyzed on a portable GC for benzene, ethyl benzene, toluene, and xylenes.

3.2 SAMPLING OF ORIGINAL WELLS. The four original groundwater monitoring wells were sampled on October 21 and December 19, 1991, and March 4 and April 14, 1992. The purpose was to assess the existing groundwater conditions at the site. All groundwater samples collected during the four sampling activities were analyzed for the following potential contaminants:

- total organic carbon and total organic halogen,
- volatile organic compounds (VOCs) (U.S. Environmental Protection Agency [USEPA] Method 8240),
- semivolatile organic compounds (SVOCs) (USEPA Method 8270),
- metals (USEPA Methods 6010/7000 series), and
- polychlorinated biphenyls (PCBs) (USEPA Method 8080).

Additional groundwater samples were analyzed for chloride, iron, manganese, phenols, sodium, and sulphate. USEPA analytical methods were used as described in detail in USEPA SW-846 (USEPA,1986).

3.3 PUSH PROBE SURVEY. An assessment of soil and groundwater conditions at the Hangar 1000 Keyway using hydraulic push probe technology was conducted between January 25 and February 3, 1993. The purpose of the field program was to supplement the data presented in the SAR in support of the preparation of the tank removal plans and specifications.

Soil and groundwater samples were collected at 40 locations using hydraulic push probe technology. The sampling locations are shown on Figure 3-2. At all 40 locations, soil samples were collected from two depth intervals, typically 2 to 4 feet below land surface (bls) and 4 to 6 feet bls. Soils observed were typically fine- to very fine-grained, slightly silty to silty sands and were generally consistent across the site. Although the water table was estimated to

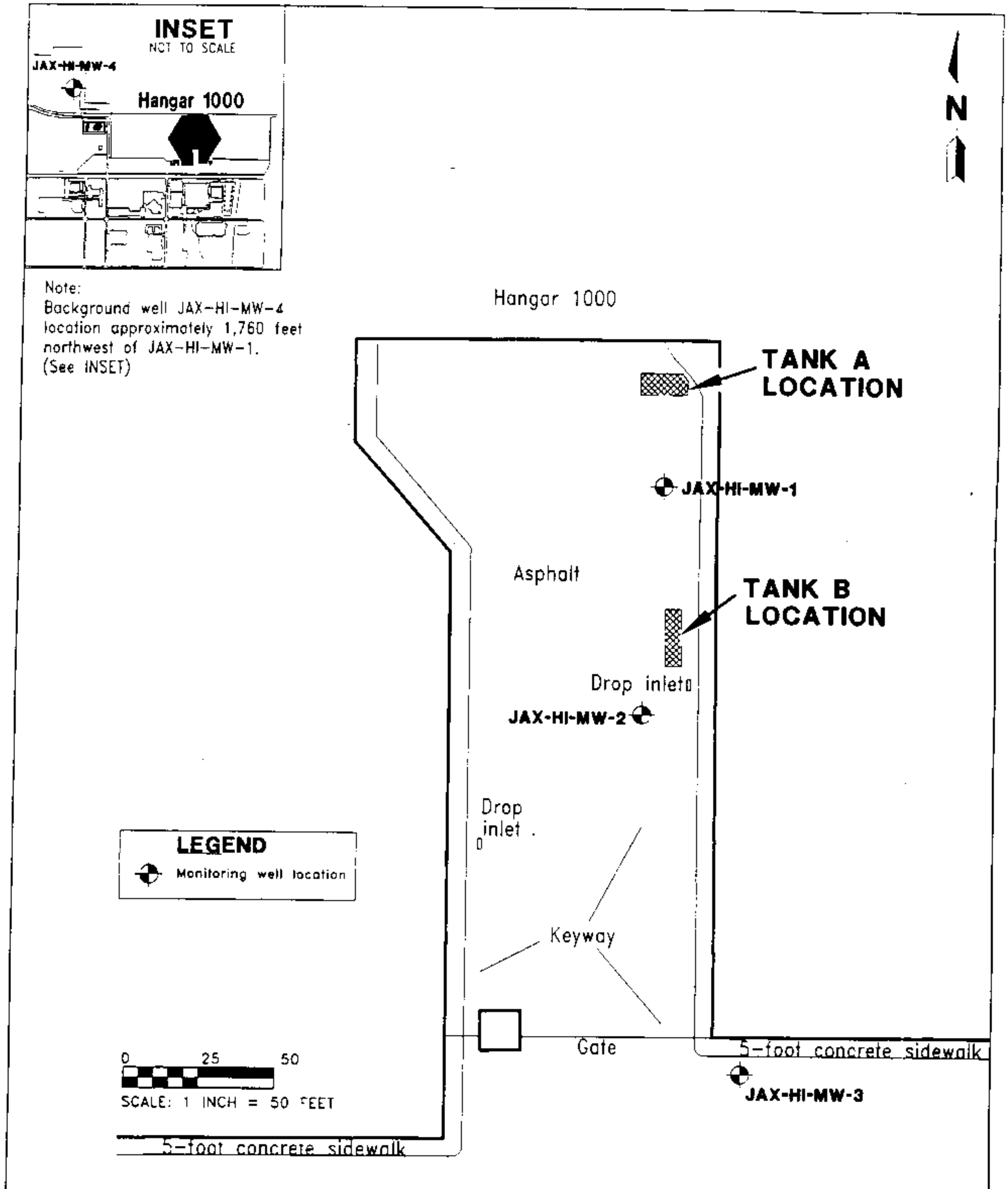


FIGURE 3-1

INITIAL MONITORING WELL LOCATIONS

JAX\MONITOR\GLC\02-09-96

CLOSURE ACTIVITIES SUMMARY REPORT, HANGAR 1000

NAVAL AIR STATION JACKSONVILLE, FLORIDA

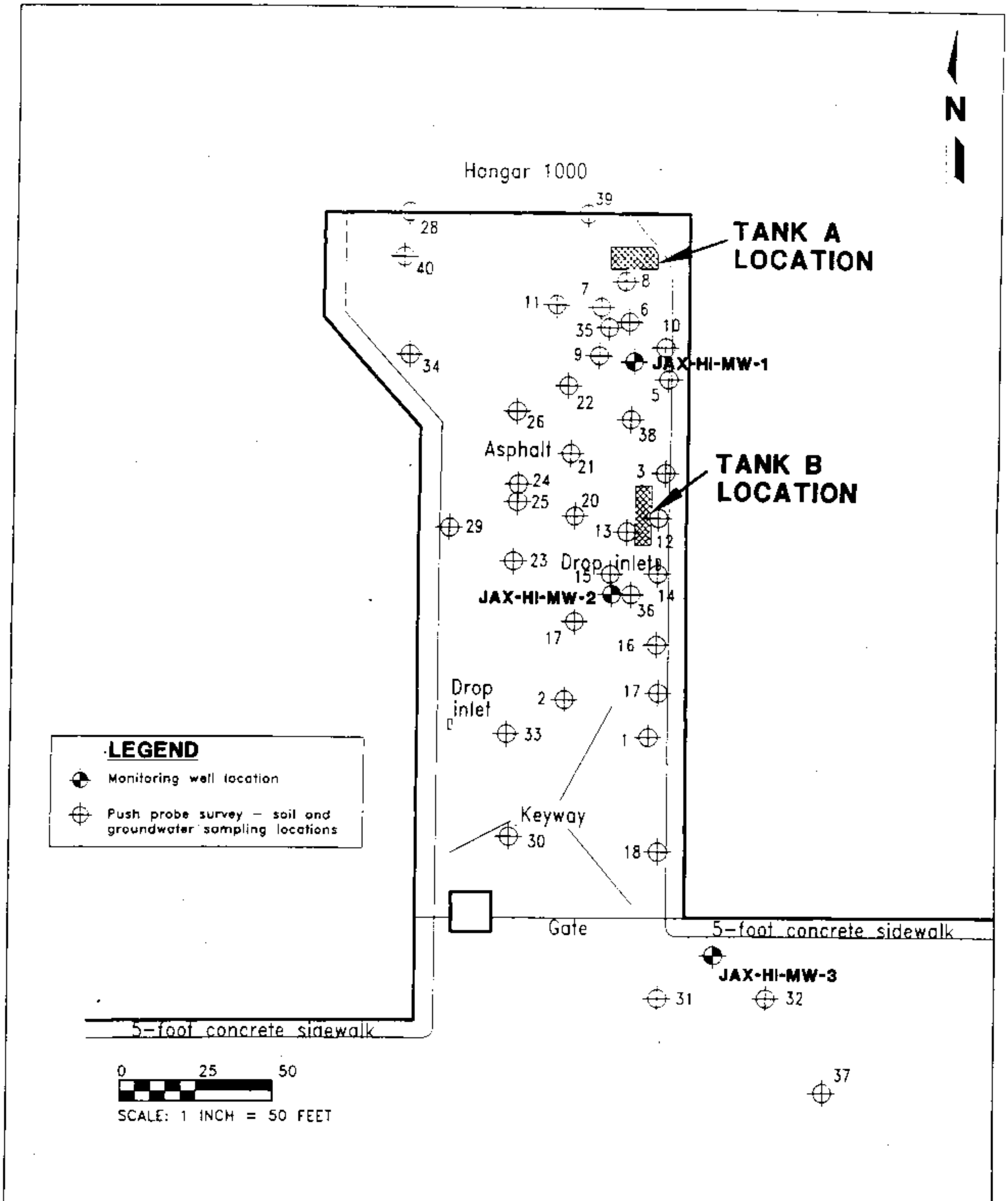


FIGURE 3-2
MONITORING WELL AND PUSH PROBE SURVEY

JAX\MONITOR\GLC-NAB\03-06-96

CLOSURE ACTIVITIES SUMMARY REPORT, HANGAR 1000

NAVAL AIR STATION JACKSONVILLE, FLORIDA

be about 5 feet bls during the push probe survey, dark mottling was consistently observed between 4 and 5 feet bls, indicating a normal high water table of about 4 feet bls.

Soil samples from all 40 locations were field screened using a GC equipped with a photoionization detector (PID). Approximately one-fourth of the samples were also field screened using an additional GC equipped with an electron capture detector. Both GCs were calibrated for 1,1-dichloroethene, 1,1,1-trichloroethane, trichloroethene, tetrachloroethene, and carbon tetrachloride. These calibration standards corresponded to the contaminants of concern identified in the CP (U.S. Navy, December, 1992).

The field screening indicated the presence of soil contamination in the vicinity of the tanks and pipelines, but the concentrations appeared to be less than the target concentrations proposed in the HEA. The laboratory analyses confirmed the presence of contamination, but at lower concentrations than the screening. Based on the available data, it appeared that removal of soil other than that incidental to the removal of the tanks and pipes would not be necessary for site decontamination within the industrial risk-based clean-closure scenario. The laboratory analysis of groundwater at the site confirmed the presence of contamination in excess of FDEP guidance concentrations for groundwater, but well below the proposed industrial risk-based scenario target levels.

3.4 TANK REMOVALS. In March 1994, ABB-ES representatives provided oversight during the removal of Tanks A and B and associated pipes at the Hangar 1000 Keyway. Removal activities generally consisted of sludge and solid materials being pumped from Tanks A and B into a holding tank and then into 55-gallon drums for disposal. The tanks were scrubbed and pressure washed in place. The 4-inch line connecting Tanks A and B was pressure washed, rinsed, removed, and disposed of. Sheet piles were installed along the east wall of the Tank B excavation area and the northwest and southwest corner of the area. Pavement, pipe debris, and excavated soils were placed into roll-off bins for testing and disposal. Attempts were made to flush the drain lines in the Hydraulic Shop with water, but some of them were clogged with cement or other obstructions. A previously unknown T-section of the four-inch steel pipeline on the north side of Tank B was discovered. The newly discovered "mystery pipe" extended from Tank B toward the west side of the Keyway. A decision was made during the tank removal process to cut and grout the mystery pipe at the edge of the excavation and not track it (Section 3.7).

3.5 INSTALLATION OF ADDITIONAL WELLS. Because the floor drains and piping under the hangar were to be abandoned in place, additional monitoring wells were required by FDEP to verify contamination levels in those areas. In 1994 ABB-ES representatives supervised the installation of seven groundwater monitoring wells (designated as H1-SS-MW-5 through H1-DS-MW-11). The monitoring well locations are shown on Figures 3-3 and 3-4. Four of the wells (MW-8 through MW-11) were installed at the hazardous waste underground storage tank (UST) site to provide a mechanism for sampling and analyzing groundwater and to support the site closure. Monitoring wells MW-10 and MW-11 were installed to depths of 14 and 39 feet bls, respectively, at the northwest corner of the Keyway to provide representative background samples. The previously installed background well, JAX-H1-MW-4, is no longer being used as a background well. The second shallow well

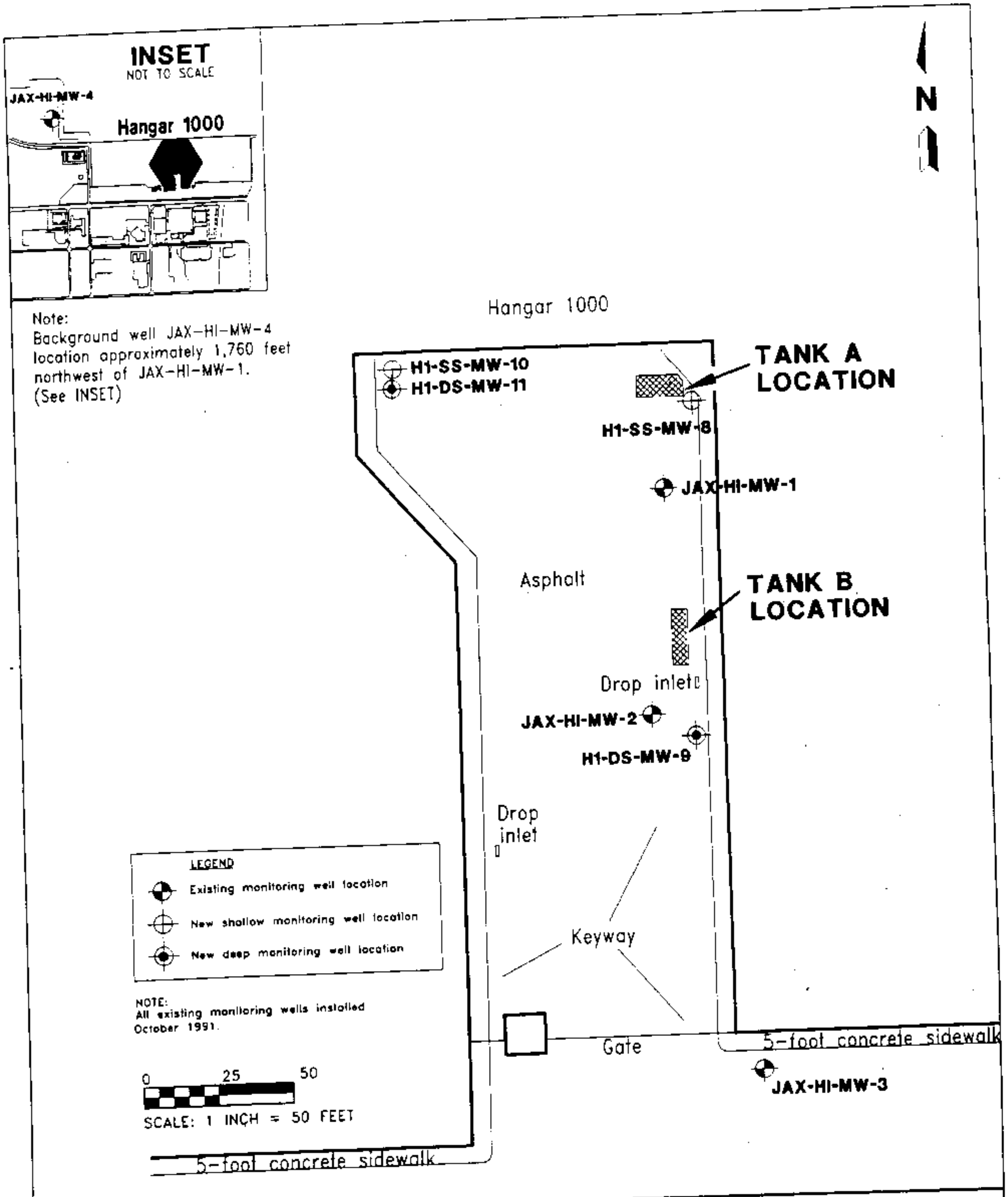


FIGURE 3-3
NEW AND EXISTING MONITORING WELL LOCATIONS

JAX\MONITOR\GLC\02-09-96

CLOSURE ACTIVITIES SUMMARY REPORT, HANGAR 1000

NAVAL AIR STATION JACKSONVILLE, FLORIDA

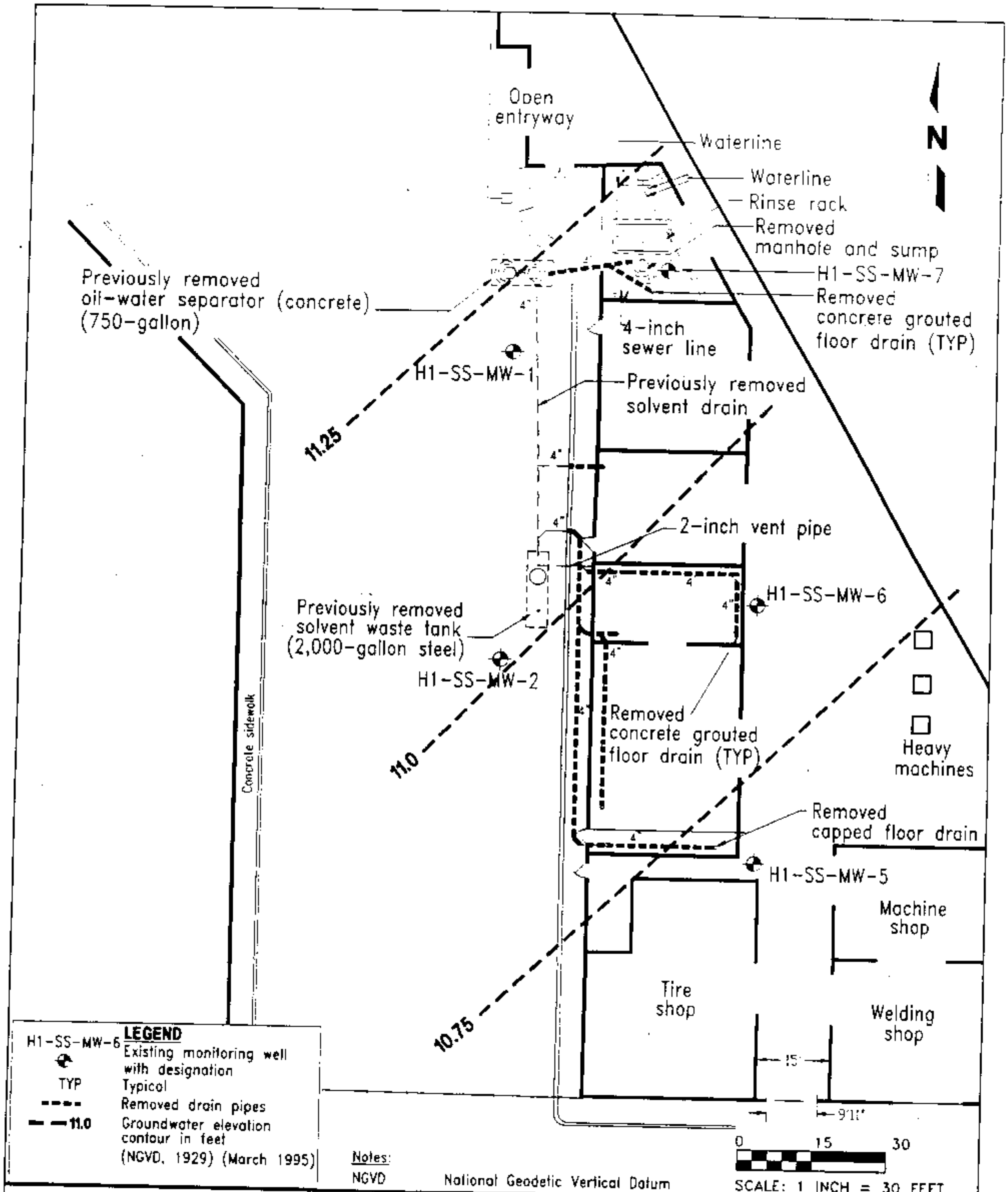


FIGURE 3-4
HAZARDOUS WASTE STORAGE TANK SYSTEM

CLOSURE ACTIVITIES SUMMARY REPORT, HANGAR 1000

NAVAL AIR STATION JACKSONVILLE, FLORIDA

H:\9555_110500\NP-NAB\03-12-96

(MW-8) was installed to a depth of 14 feet bls adjacent to the downgradient side of the former Tank A location. The second deep well (MW-9) was installed to a depth of 40 feet bls, downgradient of the former Tank B location, near well JAX-H1-MW-2.

In addition to the above-mentioned four wells, three shallow monitoring wells (MW-5, MW-6 and MW-7) were installed to a depth of 14 feet bls inside the Hangar 1000 building to confirm the presence or absence of contamination in excess of the risk-based target concentrations, in the vicinity of the floor drains and underground pipelines that lead to the USTs. Approximate well locations are shown on Figure 3-4. Groundwater elevation contours and flow direction are also shown.

3.6 <u>QUARTERLY SAMPLING OF NEW WELLS</u>. To implement the supplementary GWMP prepared by ABB-ES in October 1994 (ABB-ES, 1994), four sampling events were conducted. The GWMP was prepared to support the risk-based clean closure of the HWST system at the Hangar 1000 Keyway. These groundwater sampling activities were performed on a quarterly basis. The first sampling event was performed in December 1994, and a report was issued in March 1995. The second sampling event was performed in March 1995, and a report was issued in June 1995. The third sampling event was performed in June 1995, and a report was issued in August 1995. The fourth sampling event was performed in October 1995, and a report was issued in January 1996.

All groundwater samples collected during the four quarterly sampling activities were analyzed for the following potential contaminants, consistent with previous site activities:

- total organic carbon and total organic halogen,
- VOCs (USEPA) Method 8240),
- SVOCs (USEPA Method 8270),
- metals (USEPA Methods 6010/7000 series), and
- PCBs (USEPA Method 8080).

Additionally, groundwater samples were analyzed for chloride, iron, manganese, phenols, sodium, and sulphate. USEPA analytical methods were used as described in detail in USEPA SW-846 (USEPA,1986).

3.7 <u>PIPELINES, WASHRACK, AND MANHOLE REMOVAL</u>. Part of the remedial action necessary to decontaminate the Hangar 1000 site was to remove the abandoned floor drains and associated pipelines located at the hangar Keyway area and underlying the hydraulic shop areas on the east side of the Keyway (Figure 3-5). ABB-ES representatives provided support services to Bechtel Environmental, Inc. (BEI), during the drain line removal phase of the project. In addition, BEI was directed to locate and remove the "mystery pipe" (Figure 3-6) of unknown origin and function encountered during the tank removal activities conducted in 1994. ABB-ES also assisted BEI in locating the line's origin by the use of a magnetic survey device and ground-penetrating radar.

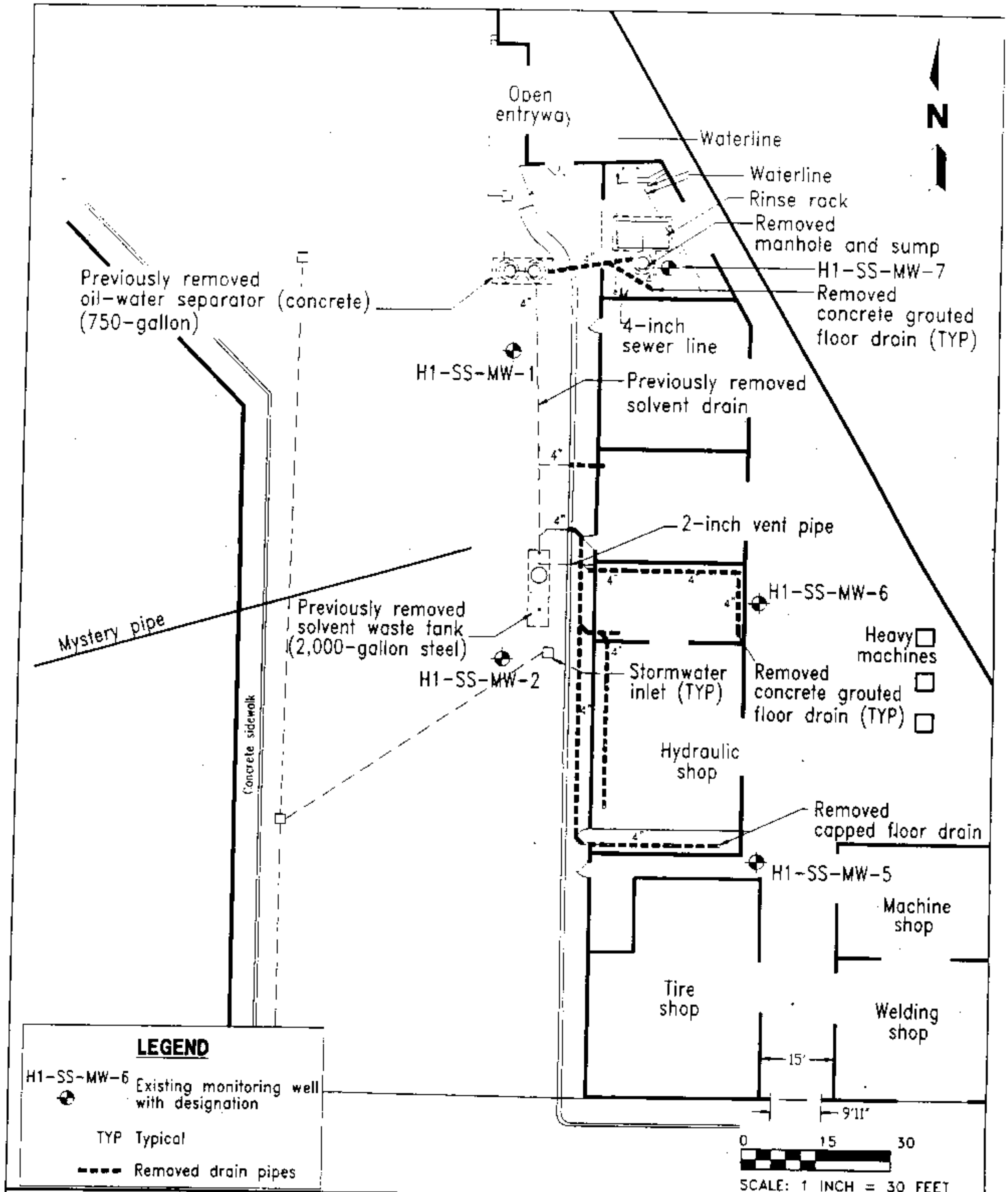


FIGURE 3-5
PIPE LOCATIONS

H:\9555\:*0500\GLC-NP\03-07-96

CLOSURE ACTIVITIES SUMMARY REPORT, HANGAR 1000

NAVAL AIR STATION JACKSONVILLE, FLORIDA

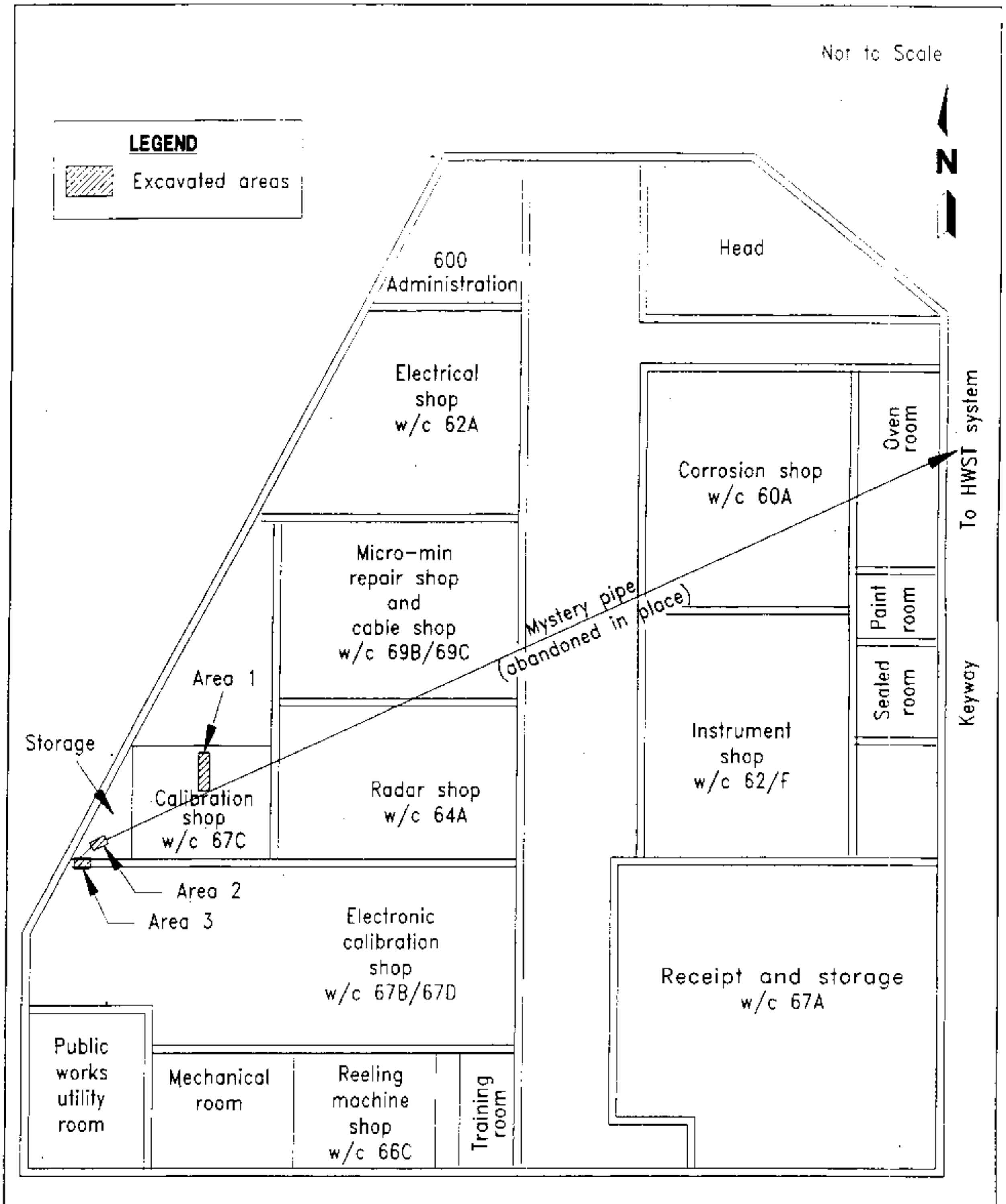


FIGURE 3-6
MYSTERY PIPE LOCATION, WEST KEYWAY AREA

H:\JAX\PIPE\JMK-GLC-NAB\03-06-96

CLOSURE ACTIVITIES SUMMARY REPORT, HANGAR 1000

NAVAL AIR STATION JACKSONVILLE, FLORIDA

The pipe removal process consisted of demolishing the concrete sidewalk on the east side of the Keyway and the concrete slab section above the pipes inside the hydraulic room area. Rubble was placed in a roll-off bin and was disposed of as hazardous material. The disposal manifests are located in Appendix A Disposal Manifests. Solvent drain pipes were removed, placed over Visqueen™, and cut into small sections and disposed of as hazardous waste. Stained and colored soils beneath and around the removed pipes were overexcavated. Solvent drain pipes that extended from the manhole to the previous location of the oil-water separator (Tank A) were also removed.

Initially, the plan was to decontaminate the washrack and manhole and to sample the final rinse, but BEI crew had difficulty in getting the stains out of the concrete surface of the washrack and manhole. Accordingly, BEI demolished the manhole and scraped the exposed surface of the bottom and sides of the washrack until fresh concrete was exposed and no stains were visible.

The mystery pipe was located close to the middle of the driveway in the Keyway area (Figure 3-6). BEI cut the asphalt pavement and excavated and disposed of the soil around the pipe. The pipe section that extended to the sidewalk was removed, placed in a roll-off bin, and disposed of as hazardous waste.

Several attempts were made by ABB-ES to trace the 4-inch steel mystery pipe in a southwest direction from where it was exposed in the Keyway through some of the offices in Hangar 1000 (Figure 3-6). BEI used a Schoenstadt cable locator and traced the pipe a distance of approximately 190 feet in a straight line southwest through the building into the Calibration Shop and marked the apparent alignment of the pipe. ABB-ES used a Fisher TW-6 pipe and cable locator instrument in the conductive mode to confirm that the alignment was correct (within the limitations of the instrument). Because the instrument could only track the pipe a limited distance from the exposed end, it was not possible to track it to its full extent. Subsequently, ABB-ES used ground- penetrating radar to trace the pipe through the Micro-Min Repair Shop and Radar Shop. Attempts to expose the pipe in the Calibration Shop based on the pipe and cable locator results were unsuccessful even after breaking through the floor in a 4-by-1.5-foot excavation approximately 2.5 feet deep (Figure 3-6) in Area 1. ABB-ES traced the pipe through the Calibration Shop into a small wedge-shaped storage shop to a point near the outside wall of the hangar (Figure 3-6). Two locations were excavated by BEI; in the Storage Room (Area 2) and under the wall between the Storage Room and the Electronic Calibration Shop (Area 3). The end of the pipe was found to be connected to a floor drain beneath the wall between the Storage Room and the Electronic Calibration Shop.

During an October 10, 1995, meeting and site visit, FDEP and the Navy agreed that removal of the mystery pipe was not practical because of its extent under the hangar and that it would be decontaminated and abandoned in place. The 90-degree elbow and hub connected to the pipe from beneath the wall were removed. A metal tape (snake) was attached to a hose and was installed inside the pipe from the west end and another one from the east end in the Keyway area. Hot water pressure was applied to remove the sludge from inside the pipe. During the snaking process, obstructions were encountered from both ends. The snake-hose was inserted to 96 feet from the east end and to 45 feet from the west end. This left about 19 feet of obstructed pipe inaccessible. Several attempts were made to clear the obstructions by pressure washing from both ends, but without success. BEI was able to flush the pipe three times (triple rinse) from both ends and placed the flushed water in 55-gallon drums for disposal as hazardous waste. Both ends of the pipe were plugged with cement-grout, the holes backfilled with the clean soil, and the floors patched. The location of the section of pipe abandoned in place is shown on Figure 3-6.

Following removal of the drain pipes in the hydraulic shop areas on the east side of the keyway, confirmatory soil samples were taken along the piping route at 25-foot intervals, at each floor drain location, and at noticeably stained areas (Figure 3-7). The samples were collected from the excavation base and sent to Quality Analytical Laboratories, Inc., for analysis by USEPA Methods 415.1, 9020, 8240, 8279, 6010/7000, and 8080 with a 3-day turnaround time. Results of these analyses for the site contaminants are summarized in Tables 3-1 through 3-3. The analyses indicated that no soil contamination was present in excess of the target concentrations and that the removal and decontamination was successful.

Figure 3-8 shows the components of the HWST system that were removed or decontaminated and abandoned in place. Also shown are areas of soil removal. Hazardous waste disposal manifests are included in Appendix A.

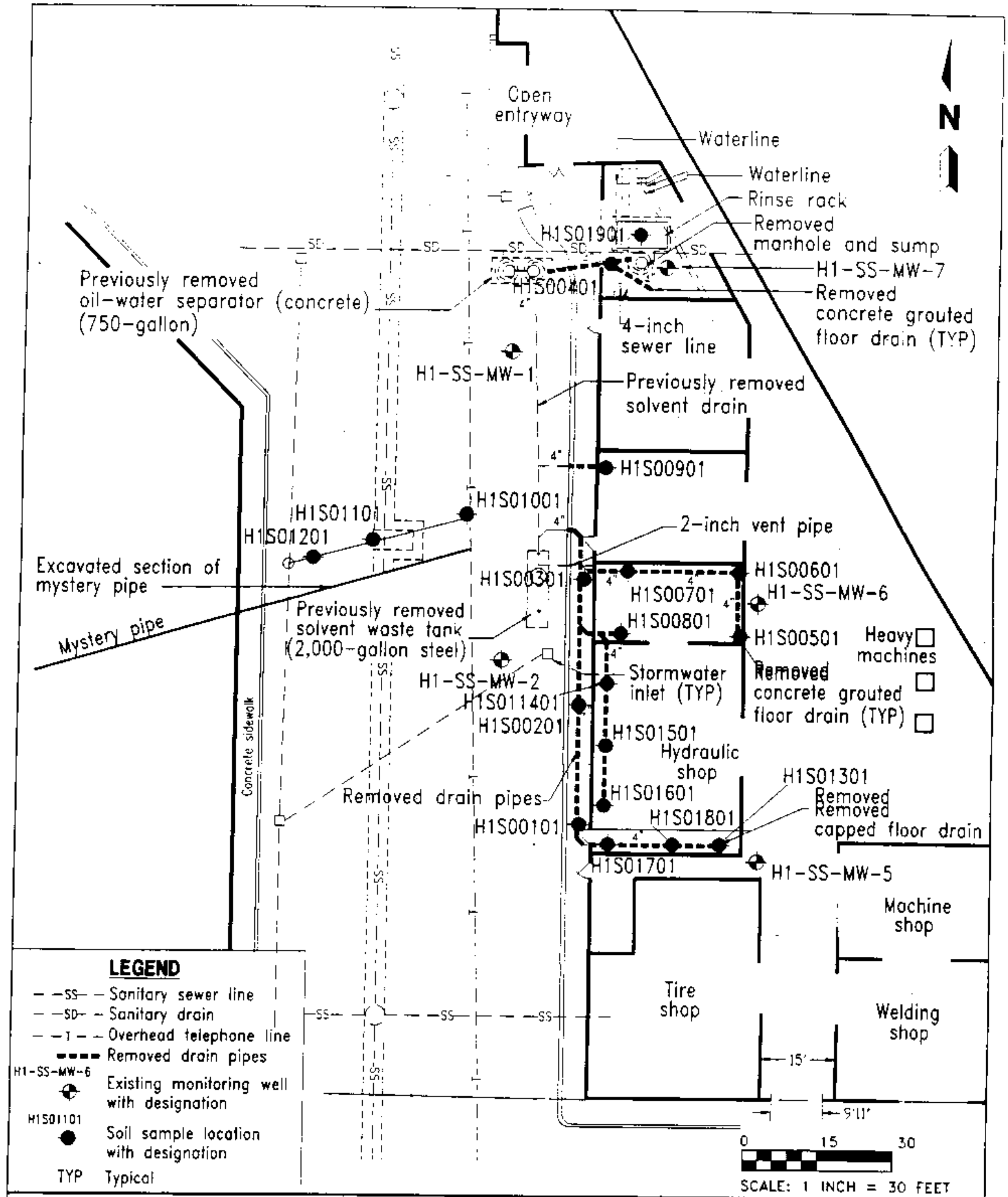


FIGURE 3-7
CONFIRMATORY SOIL SAMPLING LOCATIONS

CLOSURE ACTIVITIES SUMMARY REPORT, HANGAR 1000

NAVAL AIR STATION JACKSONVILLE, FLORIDA

Table 3-1
Soil Analytical Results for Chemicals of Concern, Volatile Organic Compounds

Closure Activities Summary Report
Hangar 1000
NAS Jacksonville
Jacksonville, Florida

Chemical Abstract Service Number:	Date	67-64-1	71-43-2	100-41-4	108-88-3	1330-20-7	56-23-5	67-66-3	78-93-3	75-09-2
Sample ID		Acetone	Benzene	Ethyl-benzene	Toluene	Xylenes (mixed)	Carbon Tetrachloride	Chloroform	Methyl ethyl ketone	Methylene Chloride
H1S00101	9/95	0.013	<0.005	<0.005	0.004 J	<0.005	<0.005	<0.005	0.005 J	<0.005
H1S00201	9/95	0.007 J	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.005
H1S00301	9/95	<0.010	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.005
H1S00401	9/95	0.010 J	<0.005	<0.005	0.001 J	<0.005	<0.005	<0.005	<0.011	0.004 J
H1S00501	9/95	<0.010	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.005
H1S00601	9/95	0.016	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.005
H1S00701	9/95	<0.010	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.005
H1S00801	10/95	<0.010	<0.005	<0.005	0.003 J	<0.005	<0.005	<0.005	<0.010	<0.005
H1S00901	10/95	0.008 J	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.011	<0.005
H1S01001	10/95	<0.011	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.011	<0.005
H1S01101	10/95	0.008 J	<0.005	<0.005	0.014	<0.005	<0.005	<0.005	<0.010	<0.005
H1S01201	10/95	0.008 J	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.011	<0.005
H1201301	10/95	0.010 J	<0.005	<0.005	<0.008	<0.005	<0.005	<0.005	<0.010	<0.005
H1S01401	10/95	0.017	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.005
H1S01501	10/95	0.010 J	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.005
H1S01601	10/95	0.021	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.005
H1S01701	10/95	0.058	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.021	<0.005
H1S01801	10/95	0.028	<0.005	<0.005	0.004 J	<0.005	<0.005	<0.005	0.003 J	<0.005
H1S01901	10/95	0.028	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.011	<0.005
Target concentration		5,900	1,600	5,900	12,000	120,000	42	600	36,000	3,600

See notes at end of table.

Table 3-1 (Continued)
Soil Analytical Results for Chemicals of Concern, Volatile Organic Compounds

Closure Activities Summary Report
Hangar 1000
NAS Jacksonville
Jacksonville, Florida

Chemical Abstract Service Number:		75-34-3	107-06-2	75-35-4	540-59-0	127-18-4	71-55-6	79-01-6	76-13-1	75-01-4
Sample ID	Date	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethene (mixed)	Tetrachloroethene	1,1,1-Trichloroethane	Trichloroethene	Trichlorotrifluoroethane	Vinyl Chloride
H1S00101	9/95	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.006	<0.01	<0.01
H1S00201	9/95	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.006	<0.01	<0.01
H1S00301	9/95	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.010
H1S00401	9/95	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.006	<0.011	<0.010
H1S00501	9/95	<0.005	<0.005	<0.005	<0.005	<0.005	0.057	<0.003	<0.010	<0.010
H1S00601	9/95	<0.005	<0.005	<0.005	<0.005	<0.005	0.004 J	<0.005	<0.010	<0.010
H1S00701	9/95	<0.005	<0.005	<0.005	<0.005	<0.005	0.002 J	<0.005	<0.010	<0.010
H1S00801	10/95	<0.005	<0.005	<0.005	<0.005	<0.005	0.061	0.004 J	0.003 J	<0.010
H1S00901	10/95	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.011	<0.010
H1S01001	9/95	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.011	<0.011
H1S01101	10/95	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.011
H1S01201	10/95	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.011	<0.010
H1S01301	10/95	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.011
H1S01401	10/95	<0.005	<0.005	<0.005	<0.005	<0.005	0.003 J	<0.005	<0.010	<0.010
H1S01501	10/95	<0.005	<0.005	<0.005	<0.005	<0.005	0.002 J	<0.005	<0.010	<0.010
H1S01601	10/95	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.010
H1S01701	10/95	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.011	<0.010
H1S01801	10/95	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.011
H1S01901	10/95	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.011	<0.010
Target concentration		5,900	490	48	530	600	5,300	4,600	1,800,000	24

Notes: Concentrations are reported in milligrams per kilogram.

NAS = Naval Air Station.
ID = identification.
< = less than.
J = detected at an estimated concentration.

Table 3-2
Soil Analytical Results for Chemicals of Concern, Semivolatile Organic Compounds and Polychlorinated Biphenyls (PCBs)

Closure Activities Summary Report
Hangar 1000
NAS Jacksonville
Jacksonville, Florida

Chemical Abstract Service Number:	Date	117-81-7	106-44-5	105-67-9	84-74-2	91-20-3	108-95-2	1336-36-3
Sample ID		bis(2-Ethylhexyl)-phthalate	Cresol (as para)	2,4-Dimethyl-phenol	di-N-Butyl- phthalate	Naphthalene	Phenol	Total PCB
H1S00101	9/95	<0.350	<0.350	<0.350	<0.350	<0.350	<0.350	ND
H1S00201	9/95	0.320 J	<0.350	<0.350	<0.350	<0.350	<0.350	ND
H1S00301	9/95	<0.350	<0.350	<0.350	<0.350	<0.350	<0.350	ND
H1S00401	9/95	<0.360	<0.360	<0.360	<0.360	<0.360	<0.360	ND
H1S00501	9/95	60.000 D	<03.500	<3.500	<3.500	<3.500	<3.500	ND
H1S00601	9/95	<3.500	<3.500	<3.500	<3.500	7.600	<3.500	ND
H1S00701	9/95	0.580	<3.500	<3.500	<3.500	<3.500	<3.500	ND
H1S00801	9/95	5.400	<3.500	<3.500	<3.500	<3.500	<3.500	ND
H1S00901	9/95	<3.500	<3.500	<3.500	<3.500	<3.500	<3.500	ND
H1S01001	9/95	<0.350	<0.350	<0.350	<0.350	<0/350	<0.350	ND
H1S01101	10/95	<0.340	<0.340	<0.340	<0.340	<0.340	<0.340	ND
H1S01201	10/95	<0.350	<0.350	<0.350	<0.350	<0.350	<0.350	ND
H1S01301	10/95	<0.340	<0.340	<0.340	<0.340	<0.340	<0.340	ND
H1S01401	10/95	0.110 J	<0.170	<0.170	<0.170	<0.170	<0.170	ND
H1S01501	10/95	0.240	<0.180	<0.180	<0.180	<0.180	<0.180	ND
H1S01601	10/95	0.370	<0.170	<0.170	<0.170	<0.170	<0.170	ND
H1S01701	10/95	0.270	<0.180	<0.180	<0.180	<0.180	<0.180	ND
H1S01801	10/95	<0.180	<0.180	<0.180	<0.180	<0.180	<0.180	ND
H1S01901	10/95	<0.180	<0.180	<0.180	<0.180	<0.180	11.000	ND
Target concentration		1,200	300	1,200	5,900	2,400	36,000	6.6

Notes: Concentrations are reported in milligrams per kilogram.

NAS = Naval Air Station.
ID = identification.
< = less than.
ND = not detected.
J = detected at an estimated concentration.
D = diluted.

Table 3-3
Soil Analytical Results for Chemicals of Concern, Inorganic Parameters

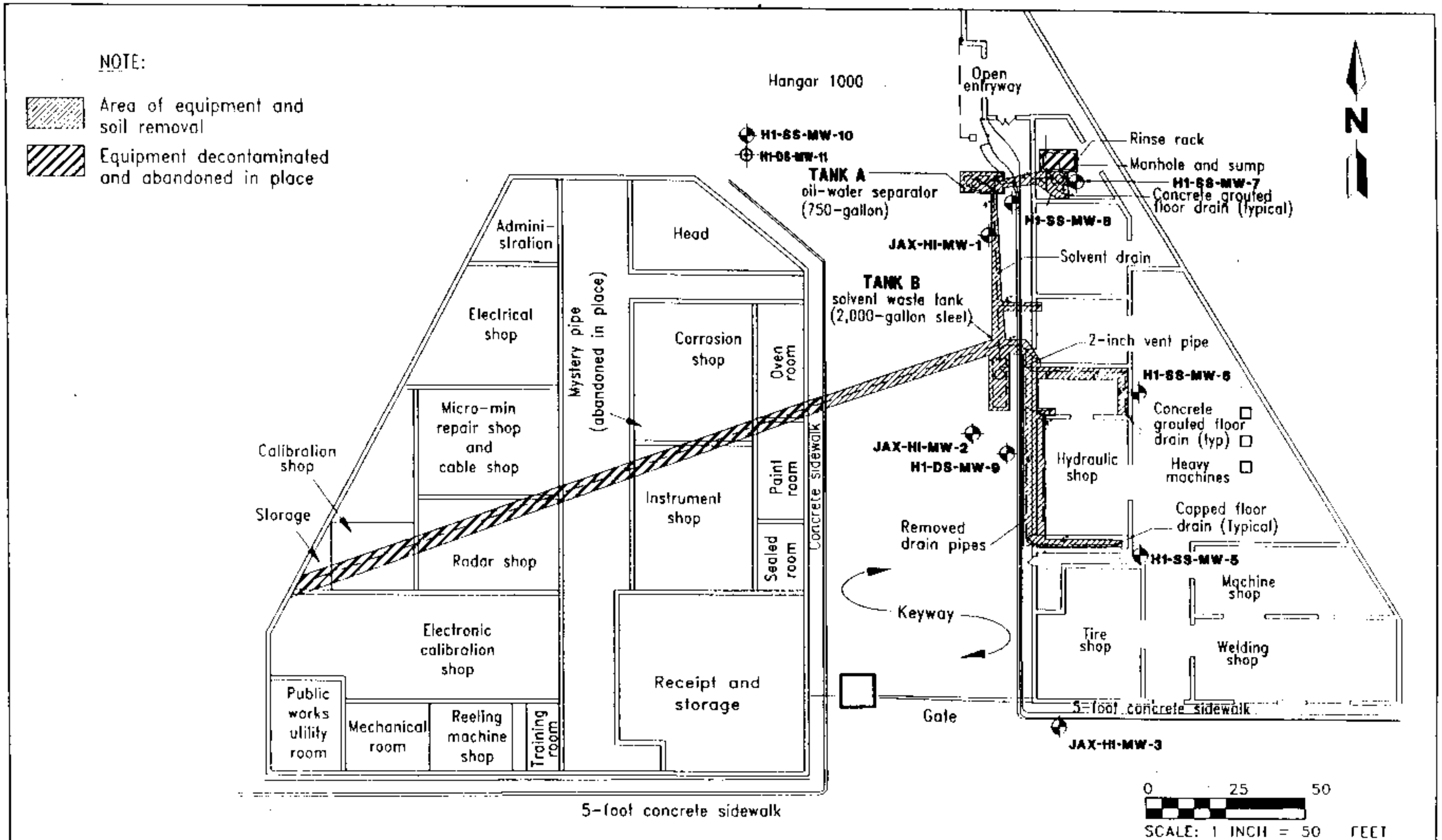
Closure Activities Summary Report
Hangar 1000
NAS Jacksonville
Jacksonville, Florida

Chemical Abstract Service Number:	Date	7440-39-3	7440-43-9	18540-29-9	7439-92-1
Sample ID		Barium	Cadmium	Chromium	Lead
H1S00101	9/95	3.4 J	<0.50	2.0 J	13.4
H1S00201	9/95	6.7 J	<0.50	1.9 J	63.5
H1S00301	9/95	4.0 J	<0.51	1.5 J	6.8 J
H1S00401	9/95	5.1 J	0.74 J	3.7	20.3
H1S00501	9/95	9.4 J	<0.50	1.3 J	<11.0 J
H1S00601	9/95	14.3 J	<0.50	2.5	<19.7 J
H1S00701	9/95	5.0 J	<0.50	1.7 J	<6.8 J
H1S00801	9/95	20.9 J	<0.49	2.7	<13.4 J
H1S00901	9/95	4.4 J	<0.51	3.9	<9.4 J
H1S01001	9/95	3.7 J	<0.64	2.0 J	<6.5
H1S01101	10/95	2.4 J	<0.62	1.4 J	<6.4
H1S01201	10/95	2.0 J	0.91 J	1.7 J	<6.6
H1S01301	10/95	3.0 J	<0.62	1.7 J	<6.4
H1S01401	10/95	4.5 J	<0.62	2.0 J	<6.4
H1S01501	10/95	4.8 J	<0.62	2.3	9.7
H1S01601	10/95	3.8 J	<0.62	2.1	<6.4
H1S01701	10/95	4.8 J	<0.65	2.6	8.1 J
H1S01801	10/95	6.3 J	<0.63	2.9	14.6
H1S01901	10/95	3.8 J	<0.65	2.5	<6.7
Target concentration		3,000	30	[1]300	[2]500

[1] Chromium as VI.
[2] Lower lead cleanup level recommended in Office of Solid Waste and Emergency Response Directive No. 9355.4-02 (U.S. Environmental Protection Agency, 1989e).

Notes: All concentrations are reported in milligrams per kilogram.

NAS = Naval Air Station.
ID = identification.
J = detected at an estimated concentration.
< = less than.



LEGEND

H1-SS-MW-6 Existing monitoring well location

H1-DS-MW-11 Existing deep monitoring well location

TYP Typical

H\3555\11050\A\NAS\03-13-95

FIGURE 3-8
HAZARDOUS WASTE STORAGE TANK SYSTEM CLOSURE

CLOSURE ACTIVITIES SUMMARY REPORT, HANGAR 1000

NAVAL AIR STATION JACKSONVILLE, FLORIDA

4.0 PREVIOUS REPORTS

4.1 GROUNDWATER MONITORING PLANS. ABB-ES has prepared four Hangar 1000 Groundwater Monitoring Plans for SOUTHNAVFACENGCOM under the Comprehensive Long-Term Environmental Action, Navy (CLEAN) contract number N62467-89-D-0317. The documents generally provide a plan for data collection and site activities to support the closure of the UST system in the Hangar 1000 Keyway at NAS Jacksonville, Jacksonville, Florida.

The purpose of the documents was to provide plans to complete the groundwater monitoring activities necessary to support the risk-based clean closure of the hazardous waste storage tank system at Hangar 1000.

The four GWMPs were issued at different dates in response to changing requirements as closure progressed. The purpose of issuing the GWMP dated October, 1991, was to provide a plan for an assessment of potential environmental contamination surrounding the Hangar 1000 tanks. The data collected were used to perform a risk assessment, which evaluated potential risks to human health and the environment and which determined acceptable target levels for contaminants. A revised final version of the GWMP was submitted in April 1992.

The purpose of issuing the GWMP in April 1993 was to supplement the existing FDER-approved GWMP prepared by ABB-ES in April 1992, and to address additional necessary activities. The April 1993 GWMP included the following:

- Analytical results for site contaminants in groundwater at four existing monitoring wells (MW-1 through MW-4).
- Description of and proposed locations for the placement of four additional wells: two deep and two shallow in the Keyway area.
- Proposed hydraulic conductivity testing at the four additional wells.
- Sampling and analysis plan.
- Guidelines for groundwater monitoring well installation.

The October 1994 GWMP was supplementary to the April 1993 GWMP. The plan addressed additional necessary activities, primarily the proposed locations of three additional wells inside Hangar 1000. The plan also listed the results of the analyses for the site contaminants of groundwater samples collected from the existing monitoring wells (MW-1 through MW-4). The results of the analyses on the samples taken on October 21, 1991, December 19, 1991, March 4, 1992, and April 14, 1992, are summarized in Table 4-1.

4.2 SITE ASSESSMENT REPORT. The purpose of the SAR, dated December 1992, was to present the findings and conclusions of the SA completed at that time, to describe the assessment activities in progress at that time, and to recommend further activities necessary to complete the site assessment. Information developed from the SA was used in conjunction with the site HEA to determine the need for further site closure activities.

Table 4-1
Analytical Results for Site Contaminants in Groundwater

Closure Activities Summary Report
Hangar 1000
NAS Jacksonville
Jacksonville, Florida

Analytical Parameter	10/21/91	12/19/91	03/04/92	04/14/92	Target Concentration from HEA
MW-1					
1,1-Dichloroethene	18	66	49	63	110
1,1-Dichloroethane	24	73	46	50	4,200,000
1,2-Dichloroethene (total)	15	59	54	57	340,000
Chloroform	5.0 U	3.0 J	2	2 J	19,000
1,1,1-Trichloroethane	76	420	380	440	2,000,000
Carbon tetrachloride	5.0 U	12 U	12	12 U	370
Trichloroethene (TCE)	98	370	300	370	6,000
Tetrachloroethene (PCE)	1.0 J	4 J	4	5 J	430
di-n-Butylphthalate	10 U	10 U	10	10 U	1,100,000
Toluene	5.0 U	12 U	12	12 U	1,700,000
bis(2-Ethylhexyl)phthalate	3.0 J	7 JR	10	2 J	2,300
Barium	96.0	71.7	69.3	55.2	24,000,000
Cadmium	1.0 U	1.0 U	1.0	1.0 U	240,000
Chromium	9.3	16.5	6.8	2.6	2,400,000
Lead	4.4	4.7	3.0	3.0 U	2,000
Xylene	5.0 U	12 U	12	12 U	9,400,000
Naphthalene	10 U	10 UJ	10	10 U	220,000
Ethylbenzene	5.0 U	12 U	12	12 U	510,000
Trichlorotrifluoroethane	---	---			14,000,000,000
Methyl ethyl ketone	10 UJ	25 U	25	25 U	210,000,000
Methylene chloride	5.0 U	6.0 J	12	12 U	31,000
PCBs	NA (R)	0.50 U	---	---	0.11
Cresylic acid	10 U	10 U	10	10 U	190,000
2,4-Dimethylphenol	10 U	10 U	10	10 U	500,000
Phenol	10 U	10 U	10	10 U	41,000,000
Acetone	15 J	25 U	25	25 U	38,000,000
MW-2					
1,1-Dichloroethene	6.0	18	8	12	110
1,1-Dichloroethane	13	22	17	21	4,200,000
1,2-Dichloroethene (total)	5.0 U	5.0 U	0.9	2 J	340,000
Chloroform	5.0 U	5.0 U	0.6	5 U	19,000
1,1,1-Trichloroethane	50	150	120	140	2,000,000
Carbon tetrachloride	5.0 U	5.0 U	5	5 U	370
TCE	13	24	20	27	6,000
PCE	5.0 U	5.0 U	5	5 U	430
di-n-Butylphthalate	1.0 J	10 UJ	10	10 U	1,100,000
Toluene	5.0 U	5.0 U	5	5 U	1,700,000
bis(2-Ethylhexyl)phthalate	3.0 J	5.0 J	10	10 U	2,300
Barium	105	120	114	80.4	24,000,000

See notes at end of table.

Table 4-1 (Continued)
Analytical Results for Site Contaminants in Groundwater

Closure Activities Summary Report
Hangar 1000
NAS Jacksonville
Jacksonville, Florida

Analytical Parameter	10/21/91	12/19/91	03/04/92	04/14/92	Target Concentration from HEA
MW-2–continued					
Cadmium	1.0	1.0 U	1.0 U	1.0 U	240,000
Chromium	12.3	26.3	13.1	2.3	2,400,000
Lead	4.0	5.3	9.0	3.0 U	2,000
Xylene	5.0 U	5.0 U	5 U	5 U	9,400,000
Naphthalene	11 U	10 UJ	10 U	10 U	220,000
Ethylbenzene	5.0 U	5.0 U	5 U	5 U	510,000
Trichlorotrifluoroethane	—	—	—	---	14,000,000,000
Methyl ethyl ketone	10 UJ	10 U	10 U	10 U	210,000,000
Methylene chloride	5.0U	5.0 U	5 U	5 U	31,000
PCBs	NA (R)	NA (R)	—	---	0.11
Cresylic acid	11 U	10 UJ	10 U	10 U	190,000
2,4-Dimethylphenol	11 U	10 UJ	10 U	10 U	500,000
Phenol	11 U	10 UJ	10 U	10 U	41,000,000
Acetone	10 UJ	10 U	10 U	10 U	38,000,000
MW-3					
1,1-Dichloroethene	6.0	3.0 J	5 U	2 J	110
1,1-Dichloroethane	11	5.0 J	3 J	3 J	4,200,000
1,2-Dichloroethene (total)	5.0 U	5.0 U	5 U	5 U	340,000
Chloroform	5.0 U	5.0 U	0.4 BJ	5 U	19,000
1,1,1-Trichloroethane	12	7.0	5	4 J	2,000,000
Carbon tetrachloride	5.0 U	5.0 U	5 U	5 U	370
TCE	8.0	6.0	4 J	3 J	6,000
PCE	6.0 J	7.0	5	5	430
di-n-Butylphthalate	1.0 J	10 UJ	10 U	10 U	1,100,000
Toluene	5.0 U	5.0 U	5 U	5 U	1,700,000
bis(2-Ethylhexyl)phthalate	4.0 J	3.0 J	10 U	10 U	2,300
Barium	90.4	72.5	89	72.9	24,000,000
Cadmium	1.0 U	1.0 U	1.0 U	1.0 U	240,000
Chromium	12.0	15.1	15.9	2.1	2,400,000
Lead	6.4	8.1	15.6	3.0 U	2,000
Xylene	5.0 U	5.0 U	5 U	5 U	9,400,000
Naphthalene	10 U	10 UJ	10 U	10 U	220,000
Ethylbenzene	5.0 U	5.0 U	5 U	5 U	510,000
Trichlorotrifluoroethane	---	---	---	—	14,000,000,000
Methyl ethyl ketone	10 UJ	10 U	10 U	10 U	210,000,000
Methylene chloride	5.0 U	5.0 U	5 U	5 U	31,000
PCBs	NA (R)	NA (R)	—	—	0.11

See notes at end of table.

Table 4-1 (Continued)
Analytical Results for Site Contaminants in Groundwater

Closure Activities Summary Report
Hangar 1000
NAS Jacksonville
Jacksonville, Florida

Analytical Parameter	10/21/91	12/19/91	03/04/92	04/14/92	Target Concentration from HEA
MW-3--continued					
Cresylic acid	10 U	10 UJ	10 U	10 U	190,000
2,4-Dimethylphenol	10 U	10 UJ	10 U	10 U	500,000
Phenol	10 U	10 UJ	10 U	10 U	41,000,000
Acetone	10 UJ	10 U	10 U	10 U	38,000,000
MW-4					
1,1-Dichloroethene	5.0 U	1.0 U	5 U	5 U	110
1,1-Dichloroethane	5.0 U	1.0 U	5 U	5 U	4,200,000
1,2-Dichloroethene (total)	5.0 U	1.0 U	5 U	5 U	340,000
Chloroform	5.0 U	1.0 U	5 U	5 U	19,000
1,1,1-Trichloroethane	5.0 U	1.0 U	5 U	5 U	2,000,000
Carbon tetrachloride	5.0 U	1.0 U	5 U	5 U	370
TCE	5.0 U	1.0 U	5 U	5 U	6,000
PCE	5.0 UJ	1.0 U	5 U	5 U	430
di-n-Butylphthalate	10 U	10 U	10 U	10 U	1,100,000
Toluene	5.0 U	1.0 U	5 U	5 U	1,700,000
bis(2-Ethylhexyl)phthalate	2.0 J	3 J	10 U	10 U	2,300
Barium	87.9	199	139	132	24,000,000
Cadmium	1.0 U	1.0 U	1.0 U	1.0 U	240,000
Chromium	3.0 U	6.7 J	4.0	3.6	2,400,000
Lead	3.0 U	3.6	3.6	3.0 U	2,000
Xylene	5.0 U	1.0 U	5 U	5 U	9,400,000
Naphthalene	10 U	10 U	10 U	10 U	220,000
Ethylbenzene	5.0 U	1.0 U	5 U	5 U	510,000
Methyl ethyl ketone	10 UJ	10 U	10 U	10 U	210,000,000
Methylene chloride	5.0 U	1.0 U	5 U	5 U	31,000
PCBs	NA (R)	0.50 U	--	--	0.11
Cresylic acid	10 U	10 U	10 U	10 U	190,000
2,4-Dimethylphenol	10 U	10 UJ	10 U	10 U	500,000
Phenol	10 U	10 U	10 U	10 U	41,000,000
Acetone	10 UJ	10 U	10 U	10 U	38,000,000

Notes: All concentrations reported as micrograms per liter ($\mu g/\ell$).

NAS = Naval Air Station.
HEA = Health and Environmental Assessment.
MW = monitoring well.
U = indicates compounds not detected above the Contract-Required Quantitation Limit (CRQL).
J = estimated concentration.
R = rejected concentration.
-- = data not available.
PCB = polychlorinated biphenyl.
B = compound also detected in blanks.

During the SA, the geology beneath the site was found to consist generally of white to off-white very fine-grained sand with trace clay lenses to 4 feet bls and light grey to light brown very fine-grained well-sorted sand to 11 feet bls. Groundwater beneath the site was encountered between 5 and 8 feet bls, and water table elevation data indicated the groundwater flow was to the east-southeast. The hydraulic gradient across the site was calculated to be 0.0036 foot per foot. The average horizontal hydraulic conductivity calculated from slug tests at the site was 2.0 feet per day. The calculated average pore velocity across the site was approximately 0.029 foot per day.

Laboratory analyses of soil and groundwater samples collected from the site during the assessment detected the following compounds in samples at concentrations above the method detection limits:

- Acetone
- 1,1-Dichloroethene
- 1,1-Dichloroethane
- 1,2-Dichloroethene (total)
- Chloroform
- 1,1,1-Trichloroethane
- Carbon tetrachloride
- Trichloroethene
- Tetrachloroethene
- Di-n-butylphthalate
- Toluene
- bis(2-Ethylhexyl)phthalate
- Arsenic
- Barium
- Total chromium
- Cobalt
- Copper
- Lead
- Vanadium
- Zinc

Acetone was identified in several of the soil samples, but was not detected in the groundwater samples. The acetone in the soil samples was believed to be an artifact of the failure to completely remove, by rinsing and/or air drying, all isopropanol used during the equipment decontamination process. Therefore, acetone was not considered a site contaminant. The metals detected all appeared to be within normal background levels and were, therefore, not considered site contaminants. Based on the site assessment, the following compounds were considered site contaminants or potential contaminants that should be considered in future site closure activities:

- 1,1-Dichloroethene
- 1,1-Dichloroethane
- 1,2-Dichloroethene (total)
- Chloroform
- 1,1,1-Trichloroethane
- Carbon tetrachloride
- Trichloroethene
- Tetrachloroethene
- Di-n-butylphthalate
- Toluene
- bis(2-Ethylhexyl)phthalate

ABB-ES recommended the following tasks to be implemented at Hangar 1000 to facilitate closure of the site:

1. removal of tanks, pipelines, and contaminated soils as determined by field conditions and target cleanup levels; and

2. replacement of excavated soils with clean soils and replacement of asphalt cover.

Specific closure activities were described in the Closure Plan. If field conditions indicated that the Closure Plan was not feasible, the Contingency Post-closure Plan was to be implemented.

4.3 TECHNICAL MEMORANDUM. An assessment of soil and groundwater conditions at the Hangar 1000 Keyway was conducted between January 25 and February 3, 1993. The purpose of the field program was to supplement the data presented in the SAR in support of the preparation of the tank removal plans and specifications.

Soil and groundwater samples were collected at 40 locations using hydraulic push probe technology. Soil samples from all 40 locations were field screened using a portable GC equipped with a PID. Soil samples from two depth intervals at eight locations were collected and shipped to Wadsworth Alert Laboratories, Canton, Ohio, for analysis for volatile organic analytes (VOAs) and semivolatile organic analytes by USEPA SW846 Methods 8240 and 8270, respectively.

Groundwater samples were collected at all 40 locations from a depth interval of 6.5 to 8.5 feet bls. Samples from all 40 locations were field screened using a portable GC equipped with a PID.

Groundwater samples from eight locations were collected and shipped to Wadsworth Alert Laboratories, Canton, Ohio, for analysis for VOAs by USEPA Method 624 and SW846 Method 8240.

4.4 HEALTH AND ENVIRONMENTAL ASSESSMENT REPORT. In January 1992, ABB-ES prepared an HEA to develop target soil and groundwater concentrations or preliminary remedial goals (PRGs) based upon risks estimated from potential exposure to contaminants from the hazardous waste storage tank system in the Hangar 1000 Keyway at NAS Jacksonville.

As part of the risk-based clean closure, the HEA was performed using recent and historical analytical data, current toxicity data on the chemicals identified at the site, and applicable health and environmental criteria. The goal of the HEA was to provide an evaluative basis for achieving a clean closure or risk-based clean closure of the site (i.e., to establish acceptable target concentrations that would maintain potential exposures within acceptable risk levels).

A clean closure or risk-based clean closure of the facility would be achieved if: (1) no contaminants were detected, (2) contamination detected was within acceptable risk levels, or (3) the site was remediated to meet the criteria of (1) or (2). The HEA established a set of risk-based target soil concentrations for the site-related chemicals. Exposure to those chemical concentrations would not result in unacceptable health risks.

The HEA was conducted following USEPA and FDEP guidance. Sources of this guidance include: Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Guidance (USEPA, 1989d); Risk Assessment Guidance for Superfund: Volume I, Human Health Evaluation Manual Parts A and B (USEPA, 1989a; 1991b); Risk Assessment Guidance for Superfund: Volume II, Environmental Evaluation Manual

(USEPA, 1989b); Supplemental Region IV Risk Assessment Guidance (USEPA, 1991f); the Risk Assessment Guidelines for Non-Superfund Sites (FDER, 1990); the Exposure Factors Handbook (USEPA, 1990a); the Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors (USEPA, 1991a); and the Superfund Exposure and Assessment Manual (USEPA, 1988).

The HEA was conducted in two phases. In the first phase, potential exposure scenarios were developed based upon present and projected future uses of the site. In the second phase of the HEA, those scenarios were used to develop chemical-specific risk-based target soil and groundwater concentrations for evaluating requirements for remedial activity at the site. The target soil concentrations, or PRGs, were soil concentration levels considered to be protective of human health against contaminant exposure.

A habitat-based quantitative environmental assessment was not conducted because contaminant exposure of ecological receptors was considered minimal. The site is in an industrial area located in the Keyway of the Hangar. The site is paved and is surrounded by paved areas used for parking vehicles and maintaining aircraft. Asphalt and concrete cover precludes exposure of ecological receptors to subsurface soil contaminants. No surface soil is exposed at this site. Biotic receptors, including terrestrial and aquatic fauna, may be found at the NAS; however, their current or future presence in the Hangar 1000 area would be unlikely due to activities along the flightline, the lack of natural cover, and lack of food resources. Therefore, this site was not considered to present a risk to ecological receptors.

Based on the current and likely future land use at the site, two exposure scenarios were developed to estimate potential contaminant exposure: (1) concurrent exposure through dermal contact and incidental ingestion of subsurface soils and inhalation of soil particulates and (2) dermal contact with groundwater. Appropriate toxicity information was obtained for the site-related contaminants and combined with these two potential exposure scenarios to derive target concentrations.

The target concentrations for groundwater contaminants ranged from 0.00011 to 14,000,000 milligrams per liter (mg/ℓ) and for soil contaminants ranged from approximately 251 milligrams per kilogram (mg/kg) to greater than 10 percent concentration (i.e., greater than 100,000 mg/kg). These relatively high concentrations were a function of the limited possible exposure at the site and relatively low toxicity exhibited by some of the site-related contaminants. The soil target concentrations were similar to the soil criteria developed by USEPA Region III.

4.5 **CLOSURE PLAN**. ABB-ES prepared the HWST Closure Plan in December 1993, to provide a plan for closure of the HWST system in the Hangar 1000 Keyway at NAS Jacksonville. The plan was developed in accordance with 40 CFR 265 "Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities," Subpart G "Closure and Post-Closure." The document provided a methodology for the closure of the HWST system through the removal of the wastes, tanks, and pipes, decontamination and abandonment of the washrack and manhole, and restoring the site.

A summary of the HEA risk-based target cleanup levels was incorporated into the CP in Paragraph 3.3.2.4(k) and Table 3-1. According to the plan, the site would be initially remediated by removing the tank system and adjacent contaminated soils. If contaminant concentrations onsite were not within target levels following the initial remediation, further remedial actions would be considered. A flowchart of the major decisions involved in implementing the Closure Plan is presented as Figure 4-1.

<u>4.6 CONTINGENCY POSTCLOSURE PLAN</u>. ABB-ES prepared in December 1993 a CPCP as required by the CP. The purpose of this document was to provide a contingency plan for regulatory agency review and approval, and to provide the Navy with the guidance and details to execute the contingency plan for the closure of the HWST system in the event that implementation of the Closure Plan failed to result in clean closure or risk-based clean closure.

The CPCP assumed that:

1. Tanks A and B at Hangar 1000 and associated pipelines have been removed in accordance with the approved Closure Plan;

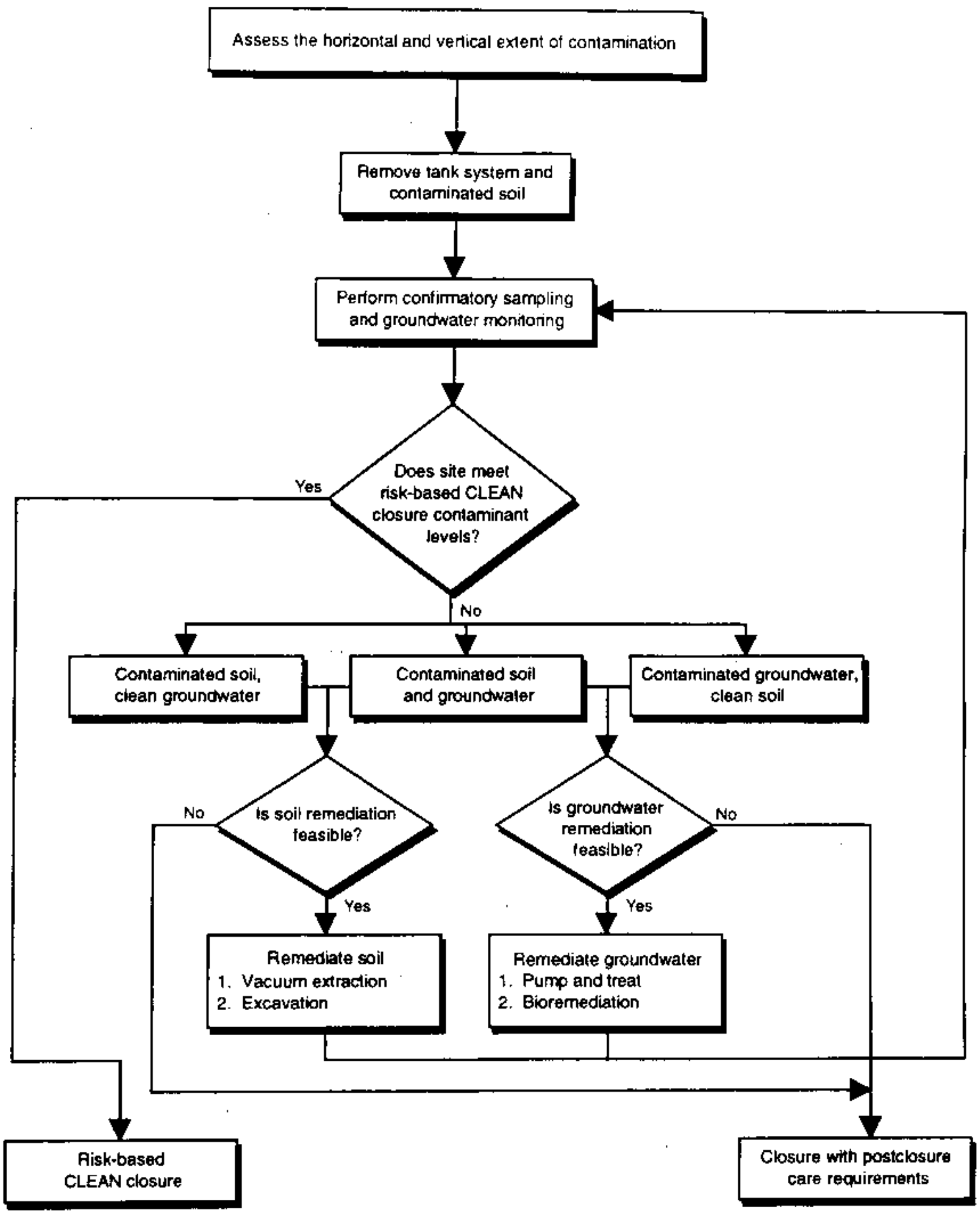
2. the washrack and manhole have been decontaminated and abandoned in accordance with the approved Closure Plan;

3. soil and/or groundwater contaminated in excess of the target concentrations for risk-based clean closure, as described in the HEA dated December 1993, were present after removal and backfilling, which initiates the Contingency Postclosure Plan; and

4. NAS Jacksonville is a Federal installation and is therefore exempt from the financial requirements and closure/postclosure cost estimate requirements of 40 CFR 265 Subpart H by 40 CFR 265.140(c).

The CPCP requires the site to be capped with a final cover and maintained throughout the postclosure care period. Groundwater monitoring is also required. The postclosure care period will be 30 years, as per 40 CFR265.117(a)(1).

<u>4.7 GROUNDWATER MONITORING ACTIVITY REPORTS</u>. The seven additional monitoring wells installed in 1994 (see Section 3.5) were sampled in December 1994, and March, June, and September 1995 by ABB-ES. The results of these monitoring activities were reported in Groundwater Monitoring Activity Reports dated March, July, and August 1995, and January 1996 and summarized in Tables 4-2 through 4-6. The monitoring indicated that 1,1-dichloroethene (DCE) was present in MW-5 in excess of the risk-based target concentrations. All other results were below the target concentrations except for 1,1-DCE in MW-8 in September 1995.



NOTES:
CLEAN = Comprehensive Long-term Environmental Action, Navy

FIGURE 4-1
CLOSURE FLOWCHART

CLOSURE ACTIVITIES SUMMARY REPORT, HANGAR 1000

NAVAL AIR STATION JACKSONVILLE, FLORIDA

8584-07 FIG 4-1 021296MAW

Table 4-2
Groundwater Analytical Results for Chemicals of Concern, Volatile Organic Compounds

Closure Activities Summary Report
Hangar 1000, Naval Air Station Jacksonville
Jacksonville, Florida

Chemical Abstract Service Number:		67-64-1	71-43-2	100-41-4	108-88-3	1330-20-7	56-23-5	67-66-3	78-93-3	75-09-2
Sample ID	Date	Acetone	Benzene	Ethyl benzene	Toluene	Xylenes (mixed)	Carbon tetrachloride	Chloroform	Methylethyl ketone	Methylene chloride
H1SSMW-5	12/94	<0.010	<0.010	<0.010	0.027	<0.010	<0.010	<0.010	0.008 J	<0.010
	3/95	<0.010	<0.010	<0.010	0.020	<0.010	<0.010	<0.010	0.008 J	<0.010
	6/95	<0.100	<0.050	<0.050	<0.059	<0.050	<0.050	<0.050	<0.100	<0.050
	9/95	<0.010	<0.005	<0.005	0.094	<0.005	<0.005	<0.005	<0.014	<0.005
H1SSMW-6	12/94	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
	3/95	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
	6/95	<0.010	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.050
	9/95	<0.010	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.005
H1SSMW-7	12/94	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
	3/95	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
	6/95	<0.010	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.010	<0.050
	9/95	<0.010	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
H1SSMW-8	12/94	<0.010	<0.010	<0.010	0.007 J	<0.010	<0.010	<0.010	0.005 J	0.01
	3/95	<0.010	<0.010	<0.010	0.002 J	<0.010	<0.010	<0.010	0.005 J	<0.010
	6/95	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.010
	9/95	<0.010	<0.005	<0.005	0.008	<0.005	<0.005	<0.005	0.005 J	<0.005
H1DSMW-9	12/94	0.14	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
	3/95	0.018	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
	6/95	<0.010	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.005
	9/95	0.009 J	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.005
H1SSMW-10	12/94	0.016	0.008 J	0.007 J	0.031	0.016	<0.010	<0.010	<0.010	<0.010
	3/95	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
	6/95	<0.100	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.100	<0.050
	9/95	<0.010	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	0.003 J
H1DSMW-11	12/94	0.021	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
	3/95	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
	6/95	<0.010	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.005
	9/95	<0.010	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	0.002 J
Target concentration		38,000	1.7	510	1,700	9,400	0.37	19	210,000	31

See notes at end of table.

Table 4-2 Continued)
Groundwater Analytical Results for Chemicals of Concern, Volatile Organic Compounds

Closure Activities Summary Report
Hangar 1000, Naval Air Station Jacksonville
Jacksonville, Florida

Chemical Abstract Service Number:		75-34-3	107-06-2	75-35-4	540-59-0	127-18-4	71-55-6	79-01-6	76-13-1	75-01-4
Sample ID	Date	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethene (mixed)	Tetrachloroethene	1,1,1-Trichloroethane	Trichloroethene	Trichlorotrifluoroethane	Vinyl chloride
H1SSMW-5	12/94	0.250	<0.010	0.530	0.004 J	<0.010	1.80	0.32	2.600	<0.010
	3/95	0.120	<0.010	0.260 D	0.001 J	0.001 J	1.4 D	0.170	0.780 D	<0.010
	6/95	0.260	<0.050	0.800	<0.050	<0.050	3.700 D	0.440	2.700 D	0.100
	9/95	0.410 J	<0.0500	1.200 D	0.004 J	0.004 J	<0.005	0.700 D	3.500 D	<0.010
H1SSMW-6	12/94	0.039	<0.010	0.060	0.032	<0.010	0.013	0.18	0.032	<0.010
	3/95	0.033	<0.010	0.046	0.030	0.002 J	0.270 d	0.180	0.016	<0.010
	6/95	0.075	<0.005	0.100	0.065	0.004 J	0.190	0.410 D	0.051	<0.010
	9/95	0.060	<0.010	0.088	0.059	0.004 J	0.200 D	0.320 D	0.040	<0.010
H1SSMW-7	12/94	0.012	<0.010	0.015	0.004 J	<0.010	0.02	0.048	<0.010	<0.010
	3/95	0.007 J	<0.010	0.008 J	0.002 J	<0.010	0.008 J	0.024	<0.010	<0.010
	6/95	0.011	<0.005	0.010	<0.005	<0.005	0.010	0.030	<0.010	<0.010
	9/95	0.010	<0.005	0.010	<0.005	<0.005	0.010	0.031	<0.010	<0.010
H1SSMW-8	12/94	0.200	<0.010	0.016	1.1	0.004 J	0.460	0.071	0.12	<0.010
	3/95	0.082	<0.010	0.054	0.510 D	0.002 J	0.160	0.028	0.050	<0.010
	6/95	0.160	<0.010	0.100	0.930 D	<0.010	0.290	0.035	0.094	<0.010
	9/95	0.270 D	<0.005	0.190	1.500 D	0.004 J	0.470 D	0.033	0.072 J	<0.010
H1DSMW-9	12/94	0.003 J	<0.010	<0.010	<0.010	<0.010	0.004 J	<0.010	0.003 J	<0.010
	3/95	0.002 J	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
	6/95	0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.010
	9/95	0.008	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.010
H1SSMW-10	12/94	<0.010	<0.010	<0.010	<0.010	<0.010	0.01	0.007 J	0.008 J	<0.010
	3/95	<0.010	<0.010	<0.010	<0.010	<0.010	0.003	0.003 J	0.003 J	<0.010
	6/95	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.100	<0.100
	9/95	<0.005	<0.005	<0.005	<0.005	0.005	0.009	0.009	0.005 J	<0.010
H1DSMW-11	12/94	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
	3/95	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
	6/95	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.010
	9/95	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	<0.010
Target concentration		4,200	2.3	0.11	340	0.43	2,000	6.0	14,000,000	0.07

Notes: Concentrations are reported in milligrams per liter.
ID = identification.
J = detected at an estimated concentration.
D = diluted.
< = less than.

Table 4-3
Groundwater Analytical Results for Chemicals of Concern, Semivolatile Organic Compounds and Polychlorinated Biphenyls (PCBs)

Closure Activities Summary Report
Hangar 1000, Naval Air Station Jacksonville
Jacksonville, Florida

Chemical Abstract Service Number:		117-81-7	106-44-5	105-67-9	84-74-2	91-20-3	108-95-2	1336-36-3
Sample ID	Date	bis(2-ethylhexyl)-phthalate	Cresol (as para)	2,4-Dimethyl-phenol	di-N-Butyl phthalate	Naphthalene	Phenol	Total PCBs
H1SSMW-5	12/94	<0.010 J	<0.010 J	<0.010 J	<0.010 J	<0.010 J	0.010 J	ND
	3/95	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	ND
	6/95	<0.010	0.014	<0.010	<0.010	<0.010	<0.010	ND
	9/95	<0.010	0.029	0.003 J	<0.010	<0.010	0.005 J	ND
H1SSMW-6	12/94	0.006 J	<0.010 J	<0.010 J	<0.010 J	<0.010 J	<0.010 J	ND
	3/95	0.006 J	<0.010	<0.010	<0.010	<0.010	<0.010	ND
	6/95	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	ND
	9/95	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	ND
H1SSMW-7	12/94	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	ND
	3/95	0.002 J	<0.010	<0.011	<0.011	<0.010	<0.010	ND
	6/95	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	ND
	9/95	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	ND
H1SSMW-8	12/94	<0.011	0.065	0.009 J	<0.011	0.013	<0.011	NA
	3/95	0.008 J	0.025	0.005 J	<0.010	0.010	<0.010	ND
	6/95	<0.010	0.022	0.006 J	<0.010	0.016	<0.010	ND
	9/95	<0.010	0.001	0.018	<0.010	0.043	<0.010	ND
H1DSMW-9	12/94	0.007 J	<0.010 J	<0.010 J	<0.010 J	<0.010 J	<0.010 J	ND
	3/95	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	ND
	6/95	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	ND
	9/95	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	ND
H1SSMW-10	12/94	0.025	<0.011	<0.011	<0.011	<0.011	<0.011	ND

See notes at end of table.

Table 4-3 Continued)
Groundwater Analytical Results for Chemicals of Concern, Semivolatile Organic Compounds and Polychlorinated Biphenyls (PCBs)

Closure Activities Summary Report
Hangar 1000, Naval Air Station Jacksonville
Jacksonville, Florida

Chemical Abstract Service Number:		117-81-7	106-44-5	105-67-9	84-74-2	91-20-3	108-95-2	1336-36-3
Sample ID	Date	bis(2-ethylhexyl)-phthalate	Cresol (as para)	2,4-Dimethyl-phenol	di-N-Butyl phthalate	Naphthalene	Phenol	Total PCBs
	3/95	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	ND
	6/95	0.005 J	<0.010	<0.010	<0.010	<0.010	<0.010	ND
	9/95	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	ND
H1DSMW-11	12/94	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	ND
	3/95	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	ND
	6/95	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	ND
	9/95	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	ND
Target concentration		2.3	190	500	1,100	220	41,000	0.00011

Notes: Concentrations in milligrams per liter.
ID = identification.
NA = not available.
ND = not detected in any of the samples collected at Hangar 1000.
J = detected at an estimated concentration.
< = less than.
B = detected in the associated blank.

Table 4-4
Groundwater Analytical Results for Chemicals of Concern, Inorganic Parameters

Closure Activities Summary Report
Hangar 1000, Naval Air Station Jacksonville
Jacksonville, Florida

Chemical Abstract Service Number:		7440-39-3	7440-43-9	18540-29-9	7439-92-1
Sample ID	Date	Barium	Cadmium	Chromium	Lead
H1SSMW-5	12/94	0.220	<0.00306 J	<0.0952 J	0.057
	3/95	0.148 J	<0.0013	0.0632 J	0.020 B
	6/95	0.151 J	0.0051	0.0[illegible]19	0.0101
	9/95	0.0594 J	<0.0024	<0.002	<0.0171
H1SSMW-6	12/94	0.432	<0.00306 J	0.213 J	0.143
	3/95	0.454	<0.0013	0.229 J	0.179
	6/95	0.0565 J	0.0031	0.0095 J	0.003
	9/95	0.0515 J	<0.0024	0.0071 J	<0.0171
H1SSMW-7	12/94	0.095 J	<0.00306 J	0.0193 J	<0.0222
	3/95	0.167 J	<0.0013	0.0446 J	0.046 B
	6/95	0.0696 J	0.0031	0.0031	0.0016 J
	9/95	0.0807 J	<0.0024	0.0032 J	<0.0171
H1SSMW-8	12/94	0.0838 J	<0.00306 J	0.0156 J	<0.0222
	3/95	0.0875 J	<0.0013	0.0201	<0.019
	6/95	0.0362 J	<0.0031	<0.0031	<0.00095
	9/95	0.0321 J	<0.0024	<0.0020	<0.0171
H1SSMW-9	12/94	0.246	0.0023 J	0.211 J	0.105
	3/95	0.0122 J	<0.0013	<0.0021 J	<0.019
	6/95	0.0131 J	<0.0013	<0.0031	0.00095
	9/95	0.0205 J	<0.0024	<0.0020	<0.0171
H1SSMW-10	12/94	0.0568	<0.0021	0.0059	<0.0222
	3/95	0.0458 J	<0.0013	<0.0021	<0.019
	6/95	0.043 J	<0.0031	<0.0031	<0.00095
	9/95	0.0366 J	<0.0024	<0.002	<0.017
H1SSMW-11	12/94	0.0418 J	<0.00306 J	<0.0019 J	<0.0222
	3/95	0.0263 J	<0.0013	<0.0021	<0.019
	6/95	0.0251 J	0.0036 J	0.0031	<0.00095
	9/95	0.0236 J	0.0026 J	<0.002	<0.0171
Target concentration		24,000	240	[1]2,400	2.0

[1] Chromium as VI.

Notes: Concentrations reported in milligrams per liter.
ID = identification.
B = detected in the associated blank.
J = detected at an estimated concentration.
< = less than.

Table 4-5
Groundwater Analytical Results for Additional Inorganic Parameters

Closure Activities Summary Report
Hangar 1000, Naval Air Station Jacksonville
Jacksonville, Florida

Sample ID	Date	Manganese	Sodium	Iron
		Unfiltered	Unfiltered	Unfiltered
CAS Number		7439-96-5	7440-23-5	7439-89-6
H1SSMW-5	12/94	0.178 J	16.50	41.100
	3/95	0.124	13.600	28.100 J
	6/95	0.107	15.500 J	26.400
	9/95	0.0743	12.800	10.200 J
H1SSMW-6	12/94	0.138 J	14.100	37.200
	3/95	0.0932	12.200	37.500 J
	6/95	0.0184	13.000 J	3.140
	9/95	0.012 J	11.800	2.310 J
H1SSMW-7	12/94	0.0723 J	17.400	4.770
	3/95	0.0510	13.000	10.600 J
	6/95	0.0251	14.100 J	1.280
	9/95	0.0127 J	12.300	1.120 J
H1SSMW-8	12/94	0.144 J	12.4	7.530
	3/95	0.0588	12.700	12.400 J
	6/95	0.0283	13.000	6.270
	9/95	0.0217	12.500	2.230 J
H1DSMW-9	12/94	1.400 J	15.200	136.000
	3/95	0.161	14.300	0.336 J
	6/95	0.189	15.200	0.906
	9/95	0.0207	15.100	0.890 J
H1SSMW-10	12/94	0.0384	15.200	1.750
	3/95	0.042	14.600	2.060
	6/95	0.0188	15.000	1.480
	9/95	0.0028 J	15.100	0.348
H1DSMW-11	12/94	0.117 J	11.100	2.040
	3/95	0.105	11.000	1.640
	6/95	0.114	13.200	2.310
	9/95	0.0941	14.900	1.630

Notes: Concentrations reported in milligrams per liter.
ID = identification.
CAS = Chemical Abstract Service.
B = detected in the associated blank.
J = detected at an estimated concentration.

Table 4-6
Groundwater Analytical Results for Additional Parameters

Closure Activities Summary Report
Hangar 1000, Naval Air Station Jacksonville
Jacksonville, Florida

USEPA Method Number:		420.2	325.2	375.4	415.1	450.1
Sample ID	Date	4AAP Phenol	Chloride	Sulphate	Total Organic Carbon	Total Organic Halides
Groundwater						
H1SSMW-5	12/94	0.007	37	44	8.3	NA
	3/95	<0.18	37.8	23.4	8.8	2,400
	6/95	0.019	43.4	19.9	10.4	3.021
	9/95	0.023	58.1	24.0 J	8.4	3
H1SSMW-6	12/94	<0.005	17	46	10.1	NA
	3/95	<0.20	14.5	36.4	14.5	410
	6/95	<0.005	17.8	34.6	9.2	0.609
	9/95	<0.005	17.1	34.6 J	6.4	1.5
H1SSMW-7	12/94	NA	NA	NA	9.2	0.075 J
	3/95	<0.20	11.8	38.2	11.8	80
	6/95	<0.005	12.8	39.0	10.1	0.084
	9/95	<0.005	12.4	40.6 J	8.8	0.27
H1SSMW-8	12/94	NA	NA	NA	12.7	1.8 J
	3/95	<0.20	27.6	27.9	6.9	610
	6/95	0.016	20.0	26.4	7.7	0.962
	9/95	0.045	24.2	28.4 J	9.3	1.4
H1DSMW-9	12/94	<0.005	15	46	6.9	NA
	3/95	<0.20	12.3	8.80	6.3	30
	6/95	<0.005	12.7	13.2	7.3	0.055
	9/95	<0.005	13.1	12.3 J	7.9	0.11
H1SSMW-10	12/94	NA	NA	NA	7.2	0.029 J
	3/95	<0.19	20.0	28.50	6.9	60
	6/95	0.007	21.6	26.0	7.5	0.244
	9/95	0.005	10.7	26.6	3.5	0.081
H1DSMW-11	12/94	NA	NA	NA	6.1	<0.008 J
	3/95	<0.19	26.1	0.25	3.1	30
	6/95	<0.005	29.8	<1.0	4.9	0.246
	9/95	<0.005	27.7	3.2	4.3	0.037

Notes: Concentrations reported in milligrams per liter.
USEPA = U.S. Environmental Protection Agency.
ID = identification.
< = less than.
NA = not available.

5.0 CONCLUSIONS

Based on the site activities and reports completed to date, the following conclusions relative to the site closure can be drawn:

1. In accordance with the FDEP-approved 1993 Closure Plan, all elements of the HWST system have been removed from the site and properly disposed of.

2. A "mystery" pipe not anticipated in the 1993 Closure Plan was remediated in accordance with the FDEP-agreed procedure outlined in the October 10, 1995, meeting.

3. In accordance with the FDEP-approved 1993 Closure Plan, soil contamination in excess of the risk-based target concentrations is not present at the site.

4. Groundwater contamination in excess of the risk-based target concentrations for 1,1-DCE is present in MW-5. It has also been detected and may be present in MW-8.

5. The extent of the 1,1-DCE plume is known to be limited in the area of the HWST system, but is unknown downgradient of the site.

6. The source of the 1,1-DCE plume is unknown.

6.0 RECOMMENDATIONS

The approved closure plan, dated December 1993, provides guidance for the closure of the HWST system at Hangar 1000. Because the HWST system has been removed and groundwater contamination in excess of the target concentrations has been found, the flowchart of closure activities and options from the CP (Figure 4-1) indicates two general courses of action. First, a groundwater remediation activity can be conducted followed by confirmatory monitoring. The second option is to proceed with a "dirty" closure and implement the CPCP.

ABB-ES believes the site can be remediated to the target concentrations based on the properties and concentrations of the contaminants. 1,1-DCE is a breakdown product of 1,1,1-trichloroethane (1,1,1-TCA), which is present at the site (below the target concentration). Both of these compounds are volatile and therefore susceptible to several remedial technologies. By removing the existing 1,1-DCE and a significant portion of its parent, 1,1,1-TCA, relatively short-term remedial actions can reduce concentrations and minimize any rebound effects. Therefore, ABB-ES recommends the first option.

In general, this option would include the following activities:

1. Assess the extent of the 1,1-DCE hot spot identified at MW-5.
2. Install one downgradient monitoring well and additional characterization wells as necessary.
3. Implement remedial actions to reduce hot spot concentrations.
4. Perform confirmatory monitoring.

Currently, available data indicate the presence of a hot spot around MW-5. Push probe technology would be used to assess the horizontal extent of the plume. This technology is recommended because the desired sampling locations are inside the hangar (Figure 6-1). A truck-mounted probe would maneuver within the hangar to allow the collection of samples at appropriate locations. These samples would be field screened using a portable GC calibrated for 1,1-DCE, 1,1,1-trichloroethane, trichloroethene, and tetrachloroethene, which represents the contaminants most likely to be present based on previous monitoring. Laboratory confirmation of 30 percent of the samples would be used to verify the results. Based on the results of the screening, permanent shallow groundwater monitoring wells would be installed within and downgradient of the plume to later be used for remediation purposes and clean closure confirmation. No further deep groundwater investigations are proposed because the contaminants of concern have not been detected in the existing deep wells.

Because the observed 1,1-DCE concentrations only exceed the target concentration by an order of magnitude or less, and the target concentration is well above the practical limits of our potential ability to remediate, a limited scope remedial action to reduce the hot spot concentrations appears feasible. The objective of the action would be to remove contaminated groundwater from the hot spot area and flush sorbed contaminants from the soil in the saturated zone to minimize the rebounding of the contaminant concentrations. The remedial action must take into

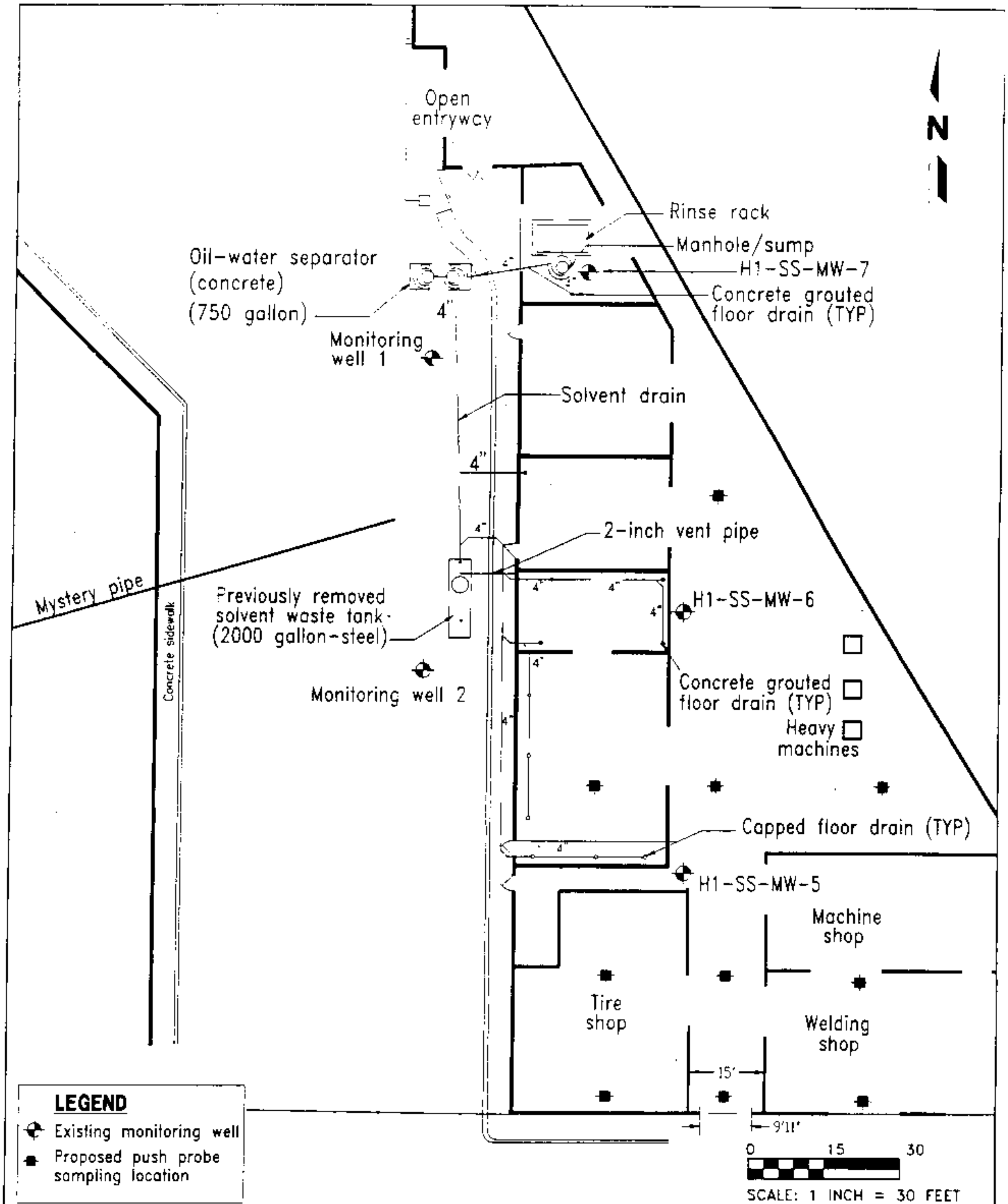


FIGURE 6-1
PROPOSED PUSH PROBE LOCATIONS

CLOSURE ACTIVITIES SUMMARY REPORT, HANGAR 1000

NAVAL AIR STATION JACKSONVILLE, FLORIDA

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account the relatively low hydraulic conductivity at the site and the physical constraints of operating inside the hangar shops. The action should, to theextent possible, minimize disruptions to ongoing site operations. To meet these criteria, ABB-ES recommends the use of a multiphase vacuum-enhanced recovery system.

The recommended process would use a mobile vacuum extraction system to remove groundwater from MW-5 and MW-8, if affected. Because the wells at Hangar 1000 have historically had low groundwater production rates, intermittent operation of the system would be conducted. An industrial-use vacuum truck with a liquid ring vacuum pump would be used to minimize vapor emissions.

The recommended procedure would be to periodically attach temporary well head assemblies to the affected monitoring wells and withdraw groundwater through hoses to a vacuum truck in the Keyway. The well heads would include adjustable drop tubes which can be used to control the well drawdown and groundwater removal rate. All extracted fluids would be contained by the truck for proper disposal. The system would operate approximately 4 to 6 hours per visit. The frequency and duration of the visits would be determined following the plume assessment. Field GC screening would be used to monitor the progress of the remediation. When 1,1-DCE concentrations appear to have been sufficiently reduced, the remediation will be discontinued and quarterly monitoring would begin. If, during the monitoring period, concentrations return to above the target levels, remediation can be resumed.

The recommended monitoring period is 1 year with quarterly sampling events. It is recommended the samples be analyzed by USEPA Method 8240 only, to monitor the 1,1-DCE concentrations. Previous monitoring has confirmed the absence of any other site contaminants of concern in excess of the target concentrations. All 1,1-DCE- contaminated wells plus a downgradient well will be monitored.

The recommended schedule is based on the Navy contract award date as follows:

Day 1 - START - Navy Contract Award
Day 30 - Begin push probe survey
Day 45 - Complete push probe survey, begin monitoring well installation upon receipt of confirmatory laboratory analytical results.
Day 75 - Complete monitoring well installation
Day 90 - Sample monitoring wells
Day 105 - Begin hot spot remediation
Remediation is estimated to continue for 6 months.
Upon completion of remediation, monitor quarterly for 1 year.
Submit certification of closure.

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APPENDIX A

DISPOSAL MANIFESTS

HAZARDOUS WASTE MANIFEST

(As Required By The Alabama Department of Environmental Management)

#GR 1022 BC

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) TRK# 1043 BX# C05436-D Form Approved, OMB No. 2050-0039 Expires 9-30-91

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No. FL6170024412 Manifest Document No. 60046	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
NAVAL AIR STATION
CODE 300, PO BOX 5
JACKSONVILLE, FL 32212-0005

4. Generator's Phone (904) 772-5479

A. State Manifest Document Number CWMA 703308

B. State Generator's ID

5. Transporter 1 Company Name: ENVIRONMENTAL TRANSPORTATION SERVICES

6. US EPA ID Number: OKD981605863

C. State Transporter's ID

D. Transporter's Phone 800-677-1772

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
CHEMICAL WASTE MANAGEMENT, INC
Emelle Facility
Alabama Highway 17 at Mile Marker 163
Emelle, Alabama 35459

10. US EPA ID Number: ALD000622464

G. State Facility's ID

H. Facility's Phone 205/652-9721

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RQ HAZARDOUS WASTE SOLID, N.O.S. 9 III (F001, F002, F003, F005, F006, F007, D029, D028, D034, D040) Disposal Approval # 121196-0011 CWM Profile # BU2850	001	CM	27860	P	F001, F002, F003, F005, F007, D006, D029, D028, D034, D040
b. Disposal Approval # CWM Profile #					
c. Disposal Approval # CWM Profile #					
d. Disposal Approval # CWM Profile #					

J. Additional Descriptions for Materials Listed Above

State of Generation

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information SD4400-95-A-0063 DA#0017-0003

Remit Invoices to OES 4161 Hammond Mill Rd - Ste B Tucker, GA 30084

Purchase Order #

Work Order # 60431

800-424-9300 EMERGENCY CONTACT

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name: WAYNE C. HAGWOOD Signature: Wayne C. Hagwood Month Day Year: 01 1996

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Fred Rehmert Signature: Fred Rehmert Month Day Year: 01 V 1996

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name Signature Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19

Printed/Typed Name Signature Month Day Year

Form 8700-22 (Rev. 9-86) Previous edition is obsolete. STATE OF ALABAMA (Must Accompany Shipment)

HAZARDOUS WASTE MANIFEST

(As Required By The Alabama Department of Environmental Management)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039 Expires 9-30-9?

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No: FL1 7 0 0 2 4 4 1 1 2 — Manifest Document No: 2 6 0 4 5

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address:
US NAVAL AIR STATION
CODE 300 PO BOX 5
JACKSONVILLE, FL 32212-0005

4. Generator's Phone (904 772-5971 ~~414 +790-5780~~

A. State Manifest Document Number: CWMA 803472

5. Transporter 1 Company Name: Environmental Transportation Service

6. US EPA ID Number: OKD 9 8 1 6 0 5 8 6 3

B. State Generator's ID

C. State Transporter's ID

D. Transporter's Phone

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address:
CHEMICAL WASTE MANAGEMENT, INC.
Emelle Facility
Alabama Highway 17 at Mile Marker 163
Emelle, Alabama 35459

10. US EPA ID Number: A L D 0 0 0 6 2 2 4 6 4

G. State Facility's ID

H. Facility's Phone: 205/652-9721

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. RQ, HAZARDOUS WASTE SOLID, N.O.S., 9, III, (F001,F002,F003,F005) D006, D007, D028, D029, D039, D040 — Disposal Approval # ______ CWM Profile # RU2854	0 0 1	C M	3 6 6 6 0	P
b. Disposal Approval # ______ CWM Profile # ______				
c. Disposal Approval # ______ CWM Profile # ______				
d. Disposal Approval # ______ CWM Profile # ______				

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

State of Generation

15. Special Handling Instructions and Additional Information: SDLM00-45-D-0063 Remit Invoices to: OES 4661 Hammermill RD - STE-B Tucker GA 30084
DOA 0017-002
Truck # 96 Box # CDS446-D

Purchase Order #

Work Order #

EMERGENCY CONTACT: CHEMTREC 1-800-424-9300 ERG 31

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name: WAYNE C. HAGWOOD — Signature: Wayne C. Hagwood — Month Day Year: 01 1996

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: John Longos — Signature: [signature] — Month Day Year: 01 1996

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name — Signature — Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19

Printed/Typed Name — Signature — Month Day Year

Form 8700-22 (Rev. 9-86) Previous edition is obsolete.

STATE OF ALABAMA ...

HGR 1000 100

HAZARDOUS WASTE MANIFEST

(As Required By The Alabama Department of Environmental Management)

...r type. *(Form designed for use on elite (12-pitch) typewriter.)*

Form Approved. OMB No. 2050-0039. Expires 9-30-91

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No. FL6170024412	Manifest Document No. 00312	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.

Generator's Name and Mailing Address
US NAVAL AIR STATION
CODE 300 PO BOX 5
JACKSONVILLE, FL 32212-0005

Generator's Phone (904) 790-3200

A. State Manifest Document Number: CWMA 803470

B. State Generator's ID

5. Transporter 1 Company Name: Environmental Transportation Serv — US EPA ID Number: OKD981588612

C. State Transporter's ID

D. Transporter's Phone

7. Transporter 2 Company Name — US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address — US EPA ID Number
CHEMICAL WASTE MANAGEMENT, INC
Emelle Facility
Alabama Highway 17 at Mile Marker 163
Emelle, Alabama 35459
ALD000622464

G. State Facility's ID

H. Facility's Phone: 205/652-9721

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RQ. HAZARDOUS WASTE SOLID, N.O.S., 9, III. (F001,F002,F003,F005) D006, D007, D008, D010, D011, D040; Disposal Approval # ___ CWM Profile # 2V2854	001	CM	16180	P	F001,F002,F003,F005
Disposal Approval # ___ CWM Profile # ___					
Disposal Approval # ___ CWM Profile # ___					
Disposal Approval # ___ CWM Profile # ___					

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

...of Generation

15. Special Handling Instructions and Additional Information SD4400-95-D-0065
Release Order # ___ D.O. 0017-0001
Work Order # ___

Remit Invoice to: OES 4661 Hammermill Rd STE B Tucker, GA 30084

(#100) Box# (2,252-D)

EMERGENCY CONTACT: CHEMTREC 1-800-424-9300 ERG 31

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name: WAYNE C. HAGWOOD — Signature: Wayne C. Hagwood — Month Day Year: 01 16 96

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Velma Hersch — Signature: Velma Hersch — Month Day Year: 01 16 96

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name — Signature — Month Day Year

HAZARDOUS WASTE MANIFEST

(As Required By The Alabama Department of Environmental Management)

...e print or type. *(Form designed for use on elite (12-pitch) typewriter.)* Form Approved. OMB No. 2050-0039. Expires 9-30-91

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No. FL6170024412 / Manifest Document No. 26031	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: US NAVAL AIR STATION PWC / CODE 300 PO BOX 5 / JACKSONVILLE, FL 32212-0005

A. [illegible] CWMA [illegible]

B. [illegible]

4. Generator's Phone (~~414~~ 904) ~~790-1700~~ 772-4553 x 8322

5. Transporter 1 Company Name: Environmental Transportation Services — 6. US EPA ID Number: OKD981605368

C. [illegible]

D. [illegible]

7. Transporter 2 Company Name — 8. US EPA ID Number

E. [illegible]

F. [illegible]

9. Designated Facility Name and Site Address: CHEMICAL WASTE MANAGEMENT, INC. / Emelle Facility / Alabama Highway 17 at Mile Marker 163 / Emelle, Alabama 35459 — 10. US EPA ID Number: ALD000622464

G. [illegible]

H. Facility's Phone: 205/652-[illegible]

11. US DOT Description *(Including Proper Shipping Name, Hazard Class, and ID Number)*	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	
a. RQ, HAZARDOUS WASTE SOLID, N.O.S., 9, III, (F001,F002,F003,F005) D004, D007, D028, D035, D021, D040 — Disposal Approval # ____ CWM Profile # BV2854	001	CM	28960 ~~[illegible]~~	P	
b. Disposal Approval # ____ CWM Profile # ____					
c. Disposal Approval # ____ CWM Profile # ____					
d. Disposal Approval # ____ CWM Profile # ____					

J. Additional Descriptions for Materials Listed Above: [illegible] — State of Generation [illegible]

K. Handling Codes for Wastes [illegible]

15. Special Handling Instructions and Additional Information SP4400-95-D-0063 PO#15-0001 — Remit Invoices to OES, 4661 Hammond Hill RD-STE 8 Tucker GA 30084 D. Brady

Purchase Order # ____

Work Order # ____ EMERGENCY CONTACT: CHEMTREC 1-800-424-9300 ERG 31

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name	Signature	Month Day Year
Kenneth E Hendl Sr.	[signature]	01 16 96

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year
John Kongos	[signature]	01 16 96

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month Day Year

GENERATOR — TRANSPORTER — FACILITY

HAZARDOUS WASTE MANIFEST

(As Required By The Alabama Department of Environmental Management)

(Form designed for use on elite (12-pitch) typewriter.)

Form Approved, OMB No. 2050-0039, Expires 9-30-91

N...RM HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No. F L 6 1 7 0 0 2 4 6 1 2 3 — Manifest Document No. 8 7 4	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.

...ator's Name and Mailing Address

US NAVAL AIR STATION
PUBLIC WORKS CENTER CODE 300
JACKSONVILLE, FL 32212-0005

...ator's Phone (404) 621-9419

State Manifest Document Number: CWMAL 798749

...sporter 1 Company Name: Environmental Transportation Services, Inc — 6. US EPA ID Number: OKD981165774

...sporter 2 Company Name — 8. US EPA ID Number

...signated Facility Name and Site Address — 10. US EPA ID Number

...EMICAL WASTE MANAGEMENT, INC.
...e Facility
...ma Highway 17 at Mile Marker 163
...ville, Alabama 35459

A L D 0 0 0 6 2 2 4 6 4

Facility's Phone: 205/652-9721

... DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
...DOUS WASTE SOLID, N.O.S., 9, NA3077, III ...002 F003 F005 F00~~6~~ ~~F009~~ D006, D007 D008, D029, D039, D040 ...l Approval # ~~080796-0003~~ 121196-0011 CWM Profile # ~~DV2255~~ DV2850	001	CM	~~33000~~ 27280	P
...l Approval # ______ CWM Profile # ______				
...l Approval # ______ CWM Profile # ______				
...l Approval # ______ CWM Profile # ______				

Additional Descriptions for Materials Listed Above

Handling Codes for Wastes Listed Above: NAC

...l Handling Instructions and Additional Information SP4400-95-D-0065

...se Order # ______ Remit invoices to: OES 4661 Hammermill RD - STE-B Tucker GA 30084

...r # ______ Truck #96 Box 1A258 B23584B EMERGENCY CONTACT: 1-800-424-9300 CHEMTREC ERG 31

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Printed/Typed Name	Signature	Month Day Year
John Brennett	Joel B...	12 13 95

...ansporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year
MICHEAL HARE	Michael Hare	12 13 95

...ansporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

...repancy Indication Space

...cility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month Day Year
Anne Davis	Anne Davis	12 14 95

H GRC 1010

Please print or type (Form designed for use on elite (12-pitch) typewriter) Form Approved OMB No. 2050-0039 Expires 9-30-94

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. FL6170024412
Manifest Document No. 25852
2. Page 1 of 1
Information in the shaded areas is not required by Federal law

3. Generator's Name and Mailing Address
NAVAL AIR STA. JACKSONVILLE
PUBLIC WORKS CENTER BOX 30, CODE 300
JACKSONVILLE, FL 32212
4. Generator's Phone (904)772-4551

A. State Manifest Document Number FL528901
B. State Generator's ID

5. Transporter 1 Company Name ENVIRONMENTAL TRANS. SERVICE
6. US EPA ID Number OKD981605363
C. State Transporter's ID
D. Transporter's Phone (405) 677-8781

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
CHEMICAL CONSERVATION CORPS.
10100 ROCKET BLVD.
ORLANDO, FL 32824
10. US EPA ID Number FLD980559728
G. State Facility's ID FLD980559728
H. Facility's Phone (407) 859-4441

	11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	RQ, HAZARDOUS WASTE LIQUID, N.O.S., 9, NA 3082, PG III (D006,D007,D028,D029,D039,D040,F001,F002,F003,F005)	023	DM	09180	P	D007 D028 D029 D039 D040 F001 D006 F002 F003 F005
b.	RQ, HAZARDOUS WASTE LIQUID, N.O.S., 9, NA 3082, PG III (D006,D007,D028,D029,D039,D040,F001,F002,F003,F005)	009	DM	03820	P	D007 D028 D029 D039 D040 F001 F002 F003 D006 F005
c.	RQ, HAZARDOUS WASTE SOLID, N.O.S., 9, NA 3077, PG III (D006,D007,D028,D029,D039,D040,F001,F002,F003,F005)	005	DM	00920	P	D007 D028 D029 D039 D040 F001 F002 D006 F003 F005
d.						

J. Additional Descriptions for Materials Listed Above
W. Baity 12/28/95
11A) DRMF3716 -1,2,3,4,5,6,7,8,9,10,11,42,43,44,45,46,47,49,51,52,53,54,55 23X55 (9502) D039,D040,F001,F002,F003,F005
11B) DRMF3716 -56,57,58,59,63,64,65,66,67 9X55 (9502) D039,D040,F001,F002,F003,F005
11C) DRMF3707 -48,50,60,61,62 5X55 (9504) D039,D040,F001,F002,F003,F005
11D)

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information 11A)ERG31 11B)ERG31
24 HOUR EMERGENCY RESPONSE: 11C)ERG31 11D)ERG
JEFF SKARZENSKI (800) 275-3658
SP4400-94-D-0075-0289

SEND PHOTOCOPY OF MANIFEST TO:
ALLWASTE OF SOUTHERN CALIFORNIA
1105 WEST GAYLORD STREET T.P.O. #:............
LONG BEACH, CA 90813-1333 D.P.O. #:............

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Printed/Typed Name: Kenneth R. Hendl Sr. | Signature: [signature] | Month Day Year: 12 28 95

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Mark A. Hunter | Signature: [signature] | Month Day Year: 12 28 95

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name | Signature | Month Day Year

Style CF17-6 LABELMASTER, AN AMERICAN LABELMARK CO., CHICAGO, IL 60646 (800)621-5808
EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete

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ORIGINAL-RETURN TO GENERATOR

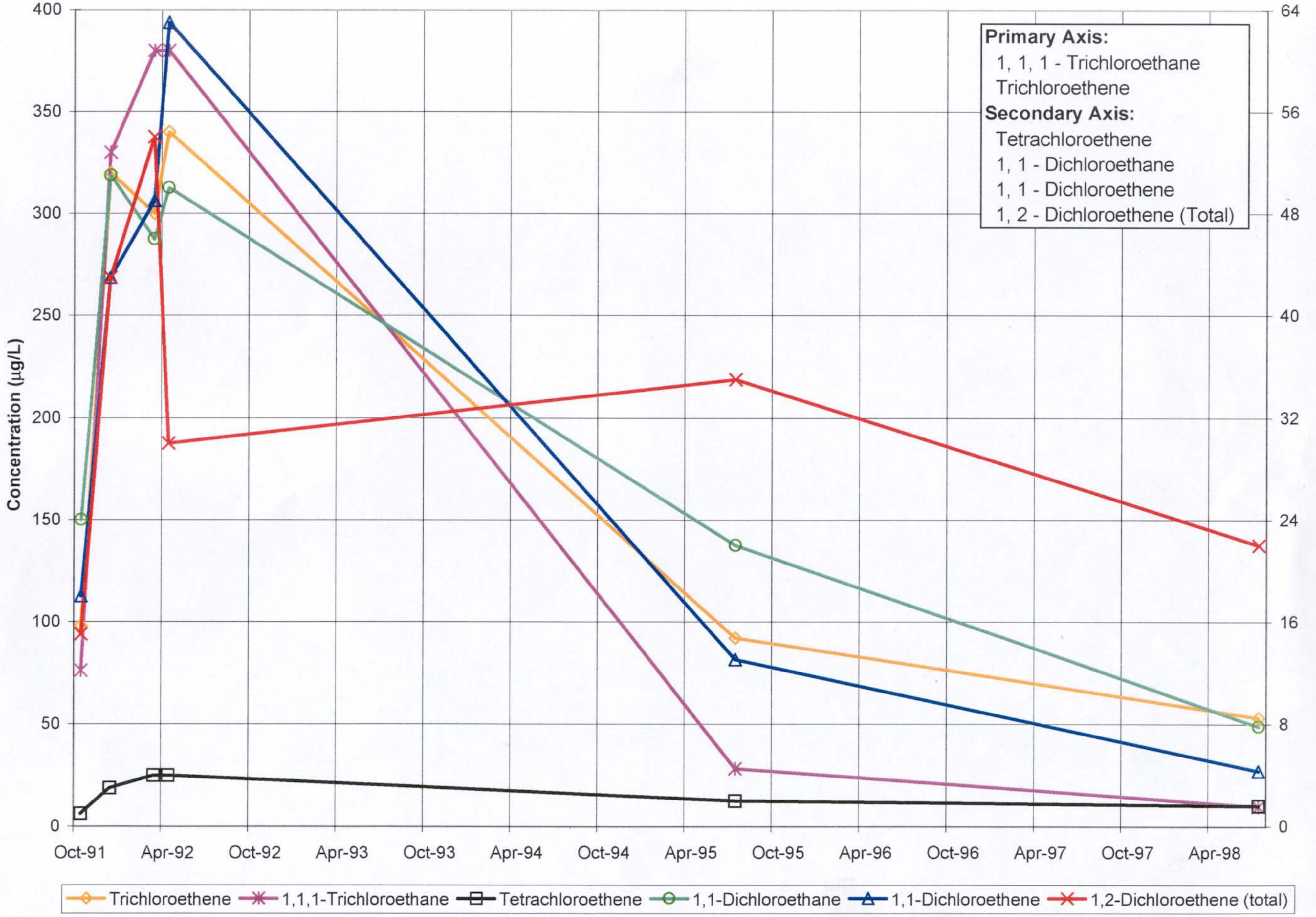
Section 5
Chlorinated Solvent Concentration Versus Time Graphs

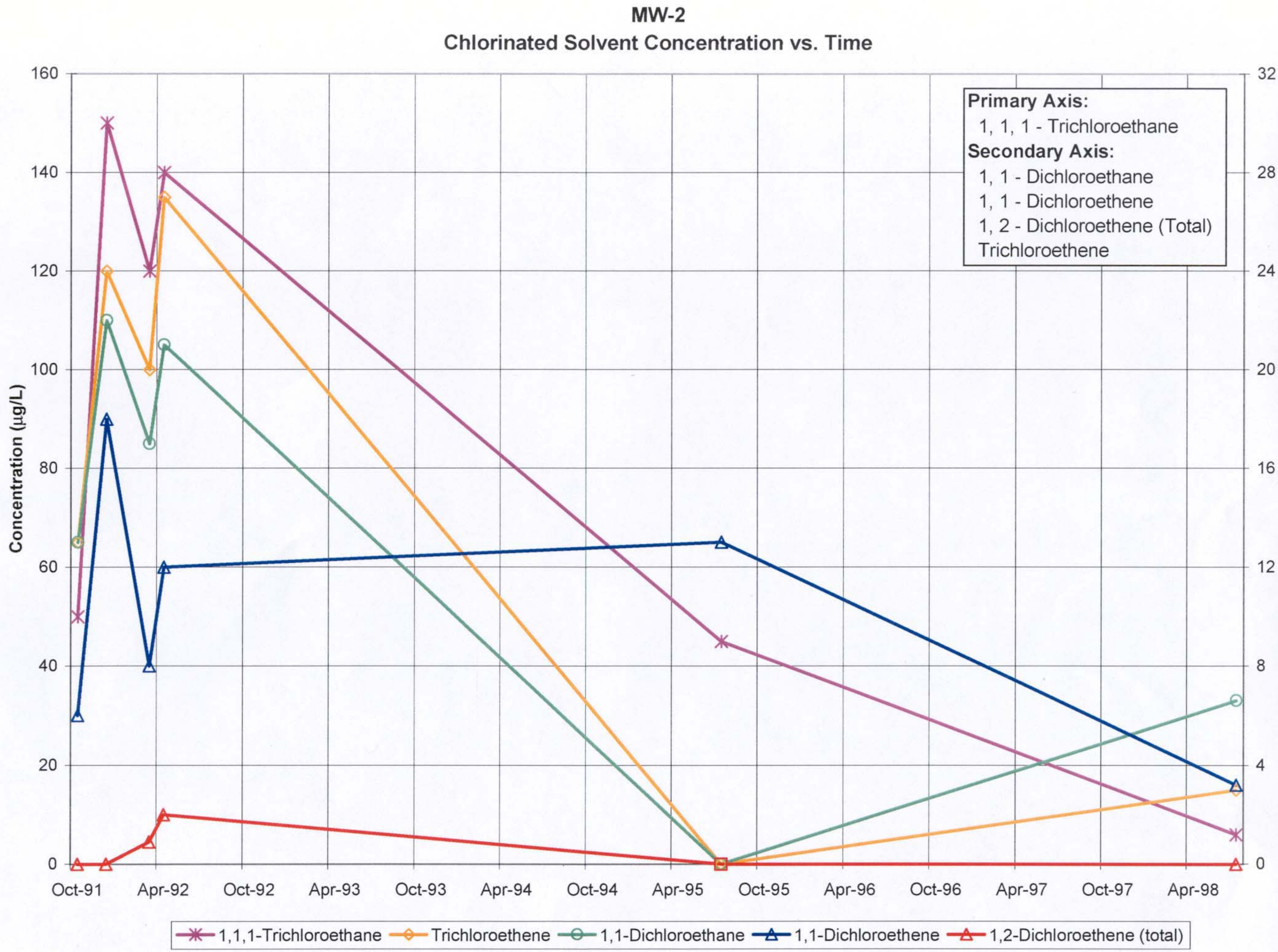
Naval Air Station Jacksonville
Jacksonville, Florida

Southern Division
Naval Facilities Engineering Command
Contract Number N62467-94-D-0888

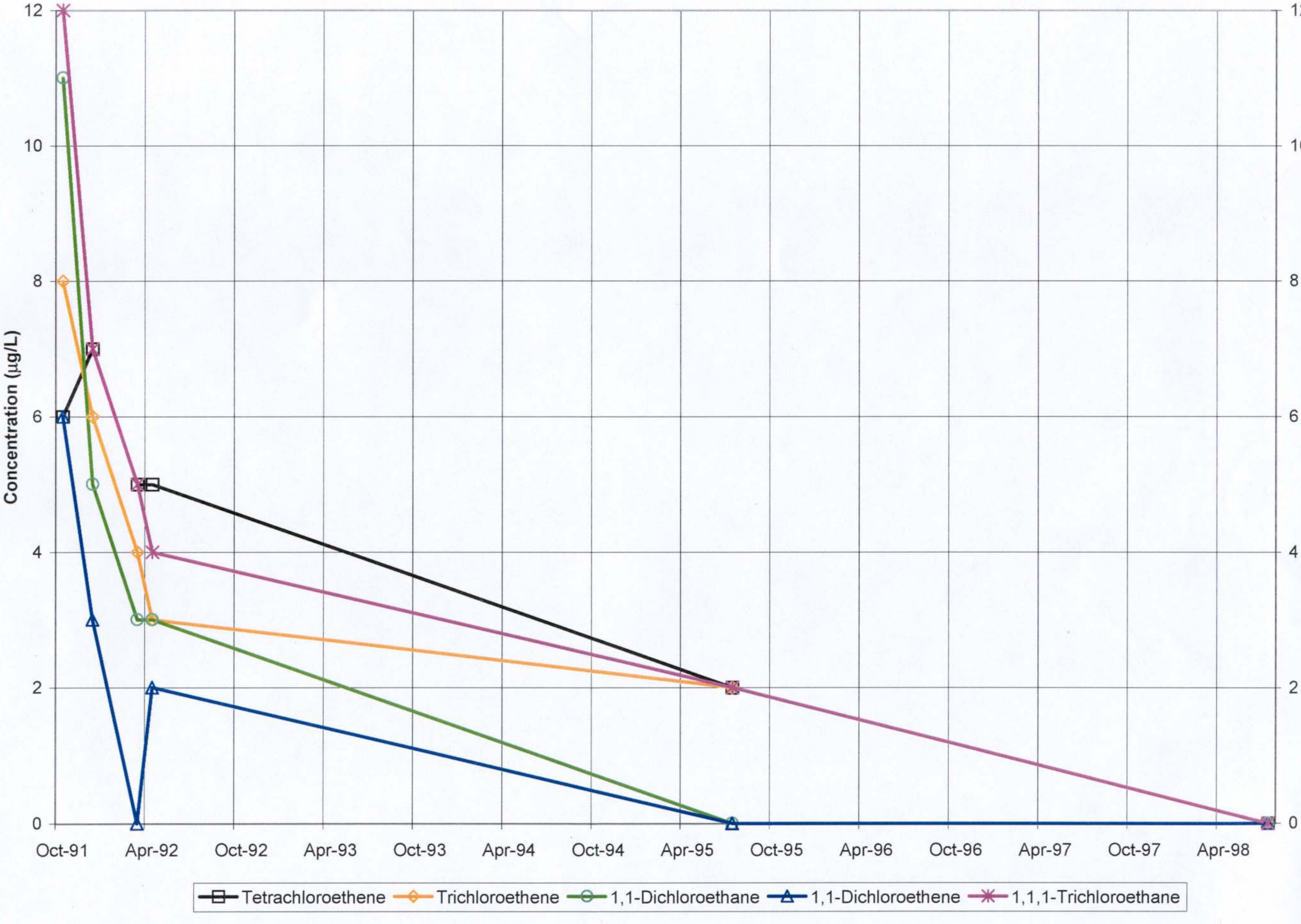
MW-1

Chlorinated Solvent Concentration vs. Time

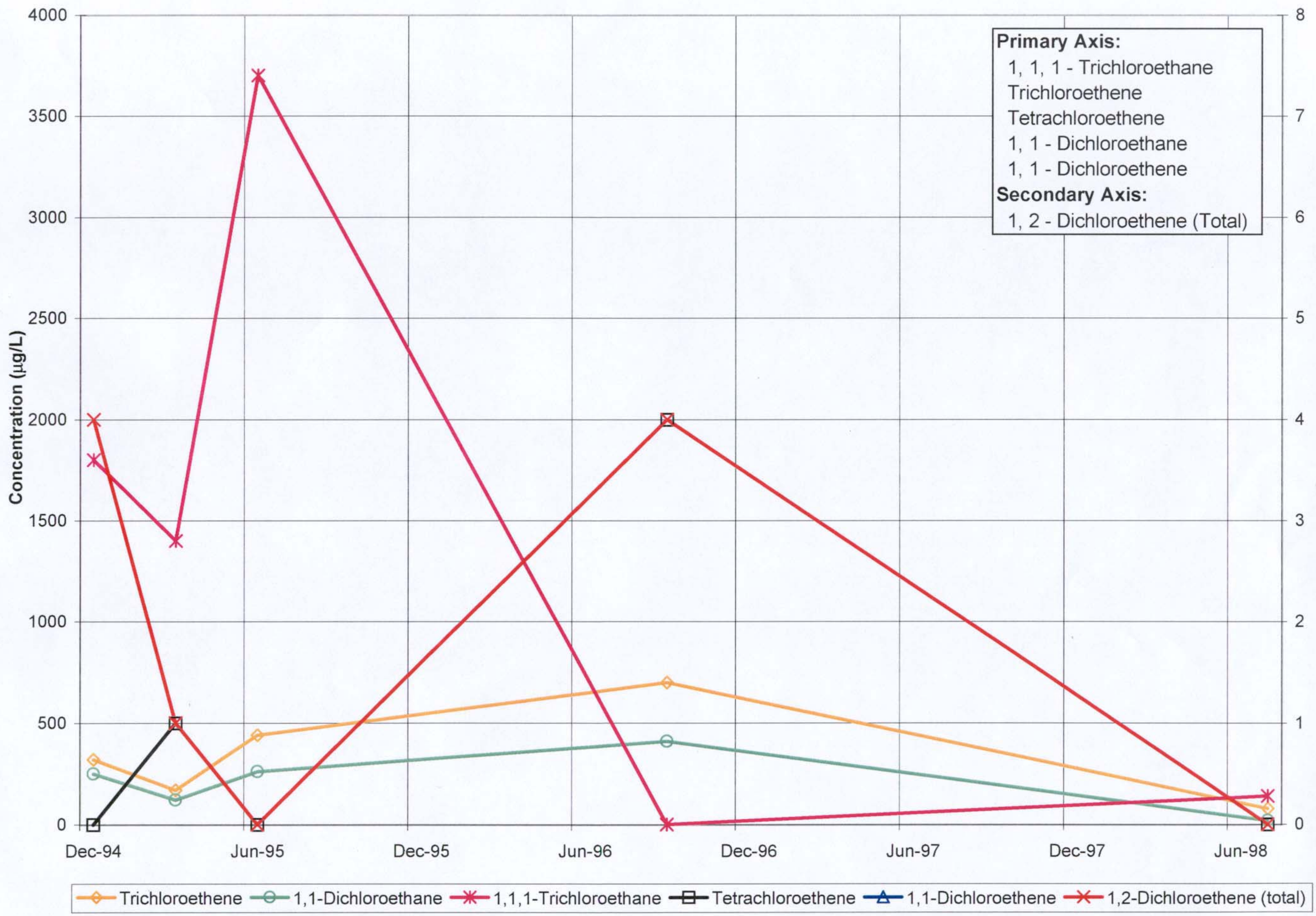


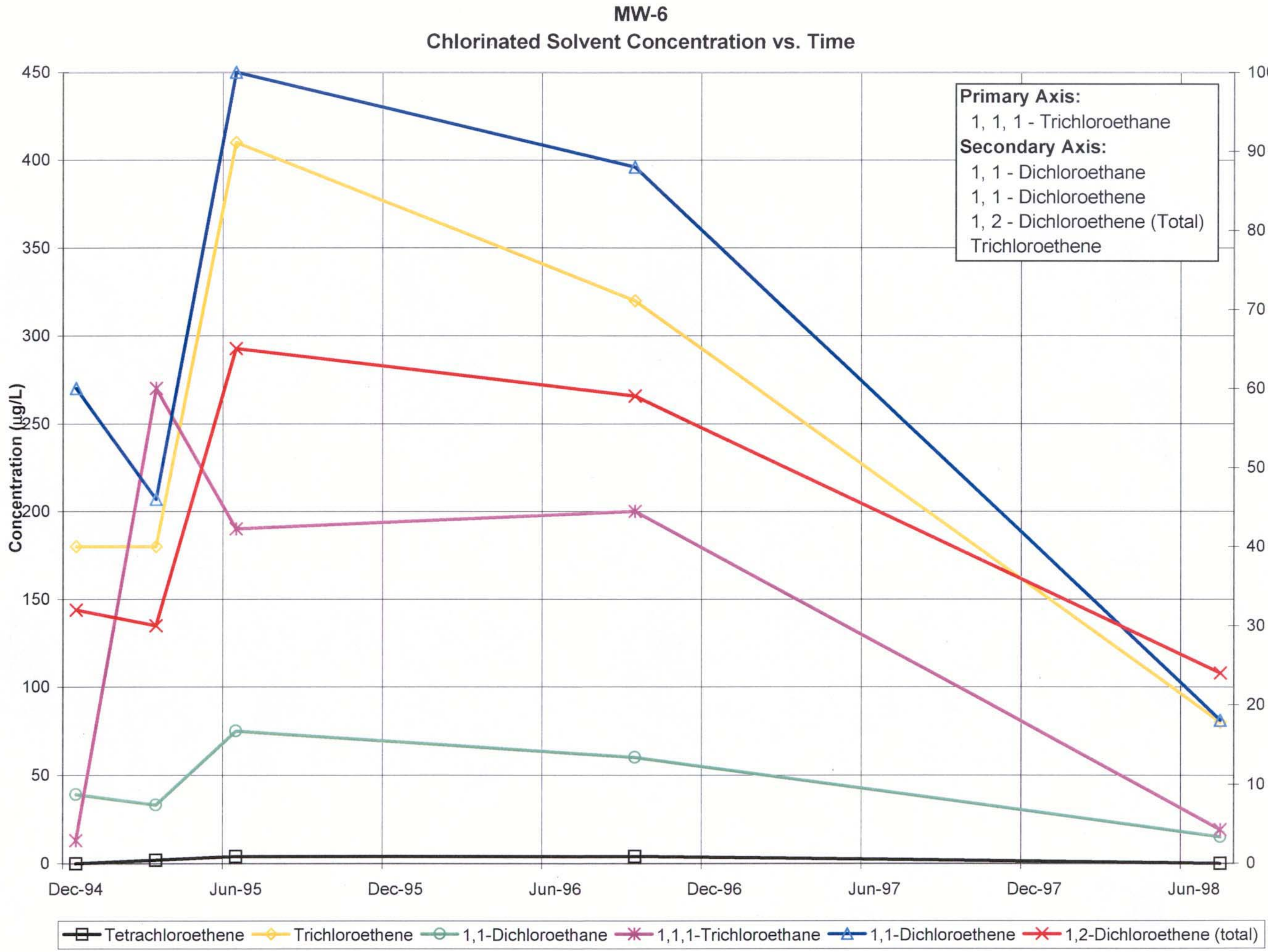

MW-2
Chlorinated Solvent Concentration vs. Time
Concentration (µg/L)
160
140
120
100
80
60
40
20
0
32
28
24
20
16
12
8
4
0
Oct-91
Apr-92
Oct-92
Apr-93
Oct-93
Apr-94
Oct-94
Apr-95
Oct-95
Apr-96
Oct-96
Apr-97
Oct-97
Apr-98
Primary Axis:
1, 1, 1 - Trichloroethane
Secondary Axis:
1, 1 - Dichloroethane
1, 1 - Dichloroethene
1, 2 - Dichloroethene (Total)
Trichloroethene
1,1,1-Trichloroethane
Trichloroethene
1,1-Dichloroethane
1,1-Dichloroethene
1,2-Dichloroethene (total)

MW-3
Chlorinated Solvent Concentration vs. Time

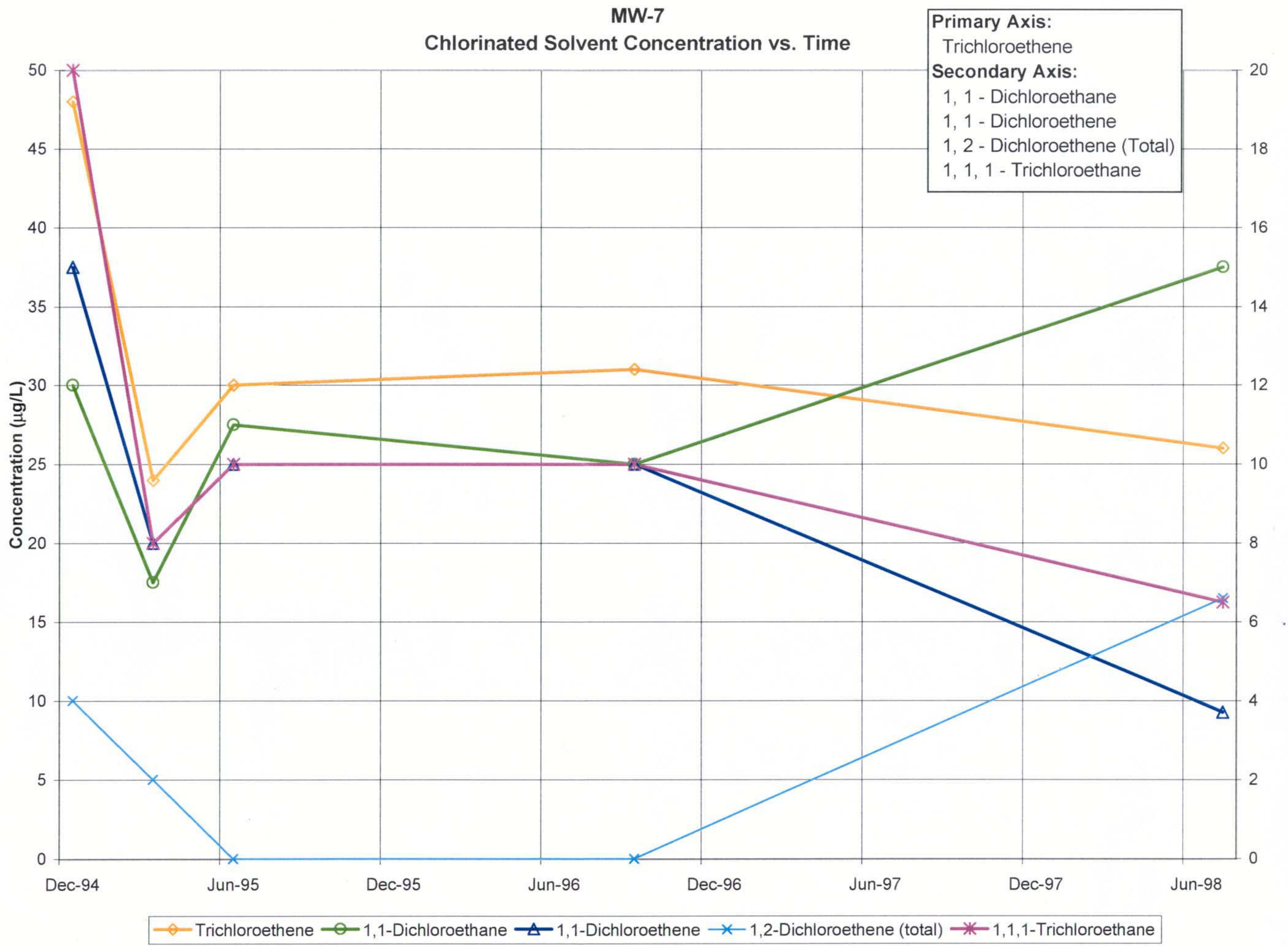


MW-5
Chlorinated Solvent Concentration vs. Time

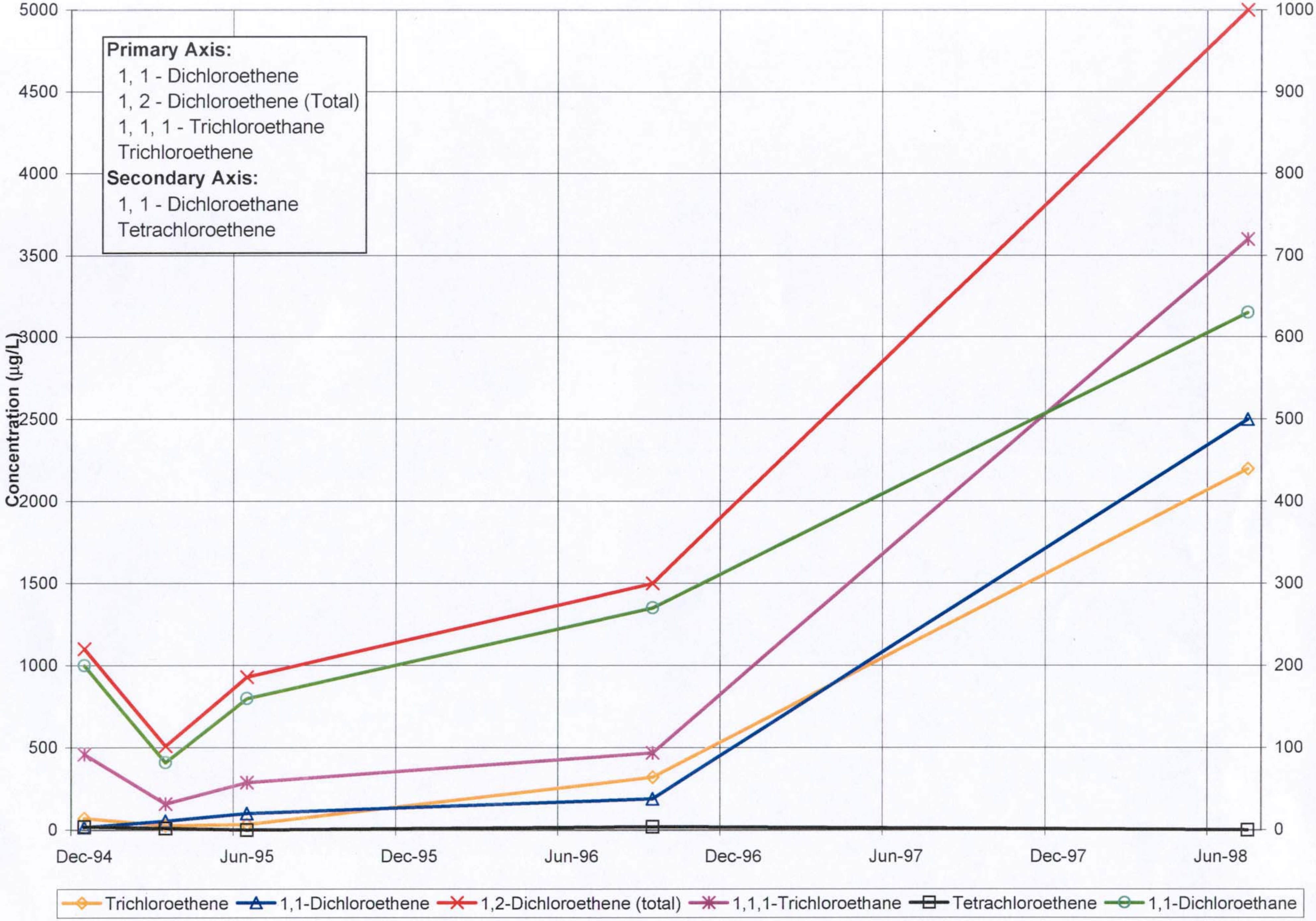




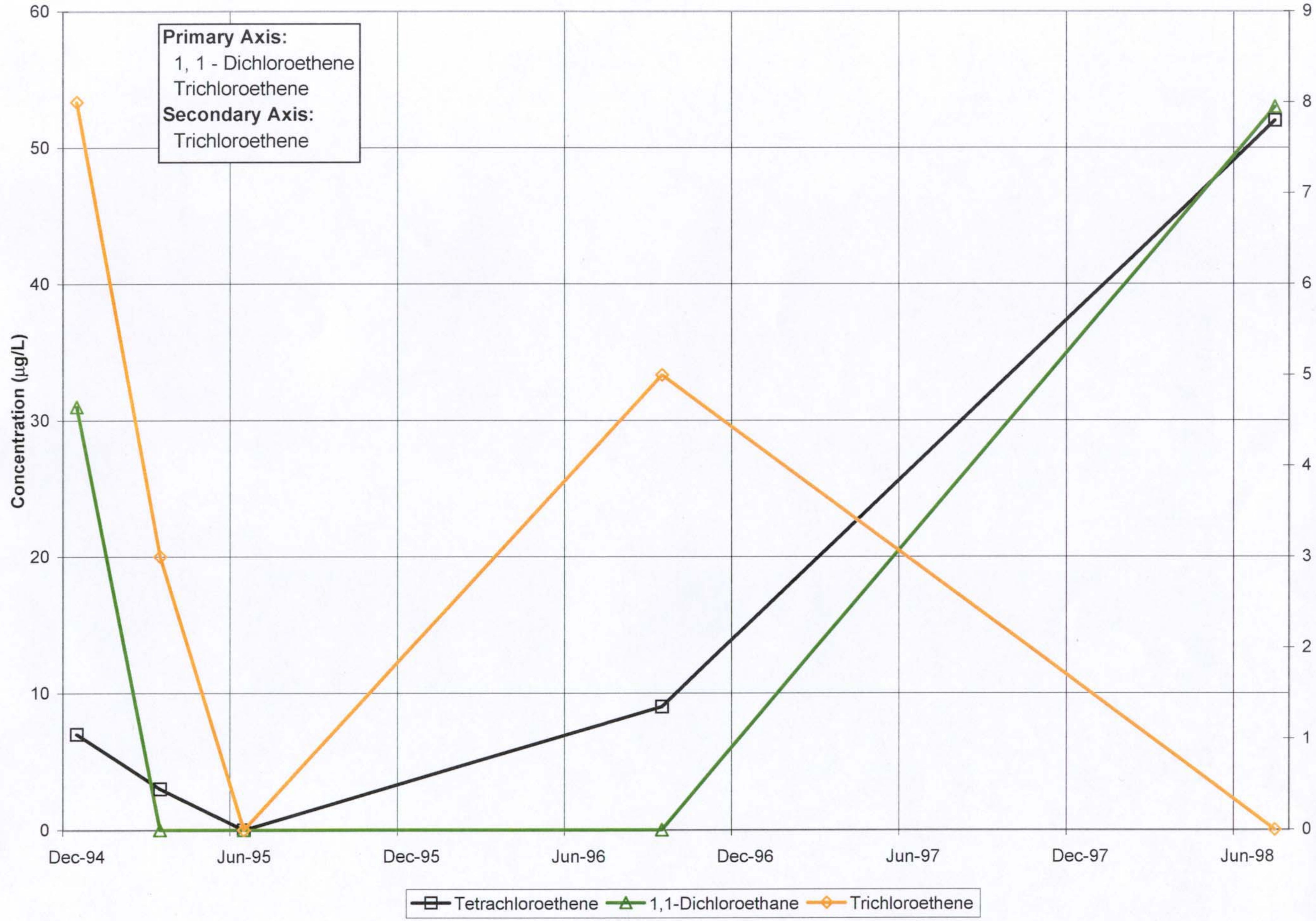
MW-6
Chlorinated Solvent Concentration vs. Time
Concentration (µg/L)
450
400
350
300
250
200
150
100
50
0
100
90
80
70
60
50
40
30
20
10
0
Dec-94
Jun-95
Dec-95
Jun-96
Dec-96
Jun-97
Dec-97
Jun-98
Primary Axis:
1, 1, 1 - Trichloroethane
Secondary Axis:
1, 1 - Dichloroethane
1, 1 - Dichloroethene
1, 2 - Dichloroethene (Total)
Trichloroethene
Tetrachloroethene
Trichloroethene
1,1-Dichloroethane
1,1,1-Trichloroethane
1,1-Dichloroethene
1,2-Dichloroethene (total)


MW-7
Chlorinated Solvent Concentration vs. Time
Primary Axis:
Trichloroethene
Secondary Axis:
1, 1 - Dichloroethane
1, 1 - Dichloroethene
1, 2 - Dichloroethene (Total)
1, 1, 1 - Trichloroethane
Concentration (µg/L)
50
45
40
35
30
25
20
15
10
5
0
20
18
16
14
12
10
8
6
4
2
0
Dec-94
Jun-95
Dec-95
Jun-96
Dec-96
Jun-97
Dec-97
Jun-98
Trichloroethene
1,1-Dichloroethane
1,1-Dichloroethene
1,2-Dichloroethene (total)
1,1,1-Trichloroethane

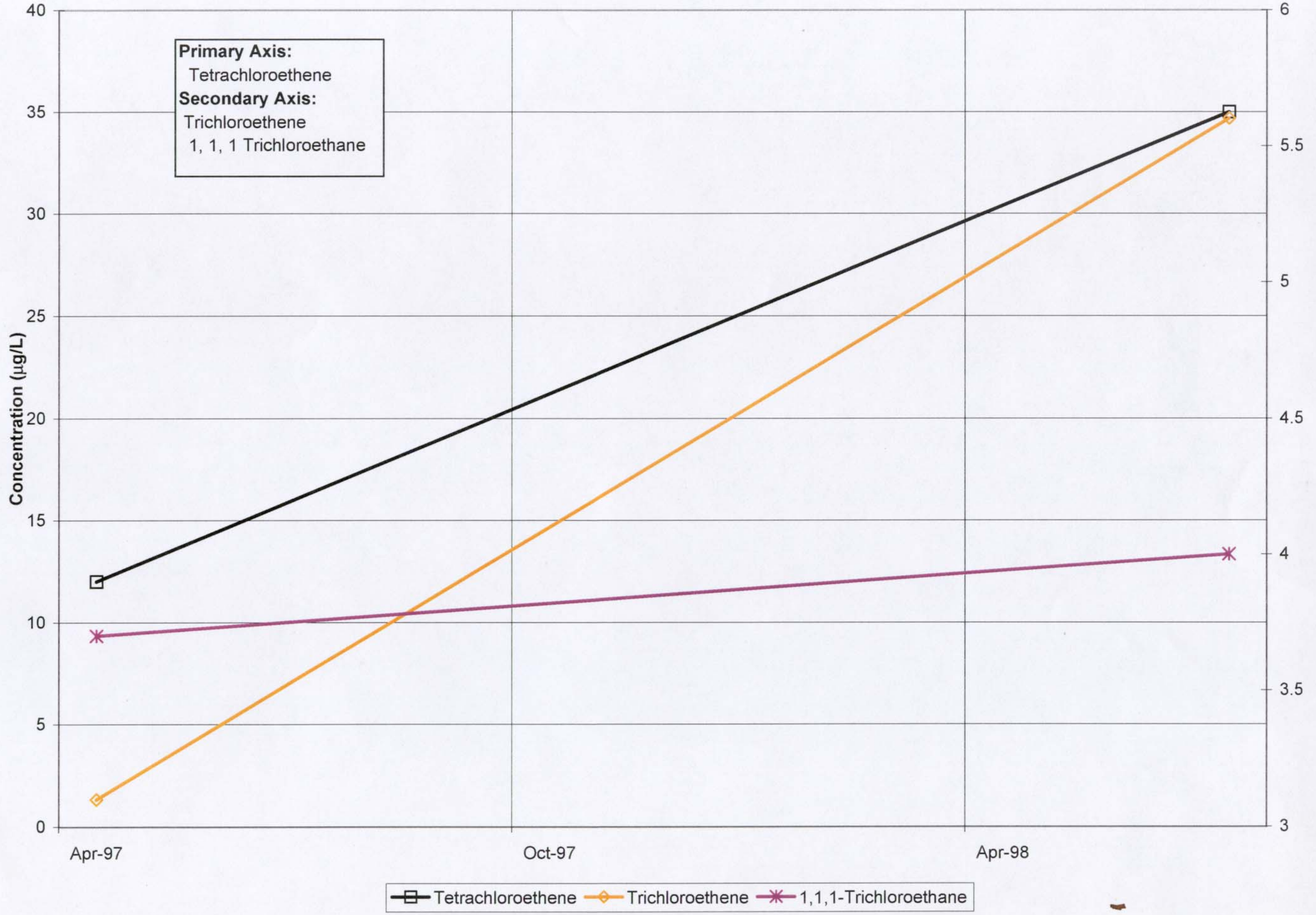
MW-8
Chlorinated Solvent Concentration vs. Time



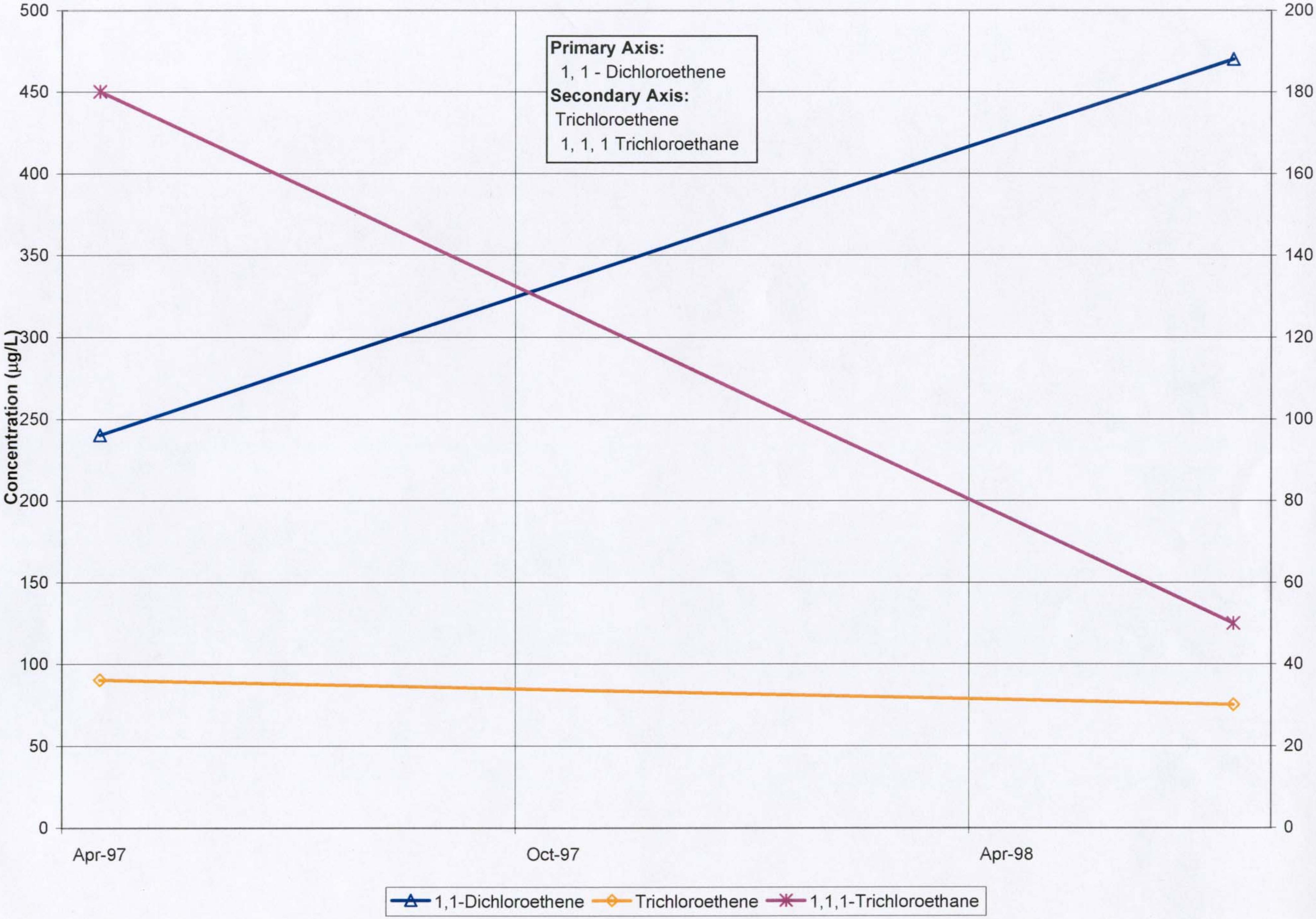
MW-10
Chlorinated Solvent Concentration vs. Time

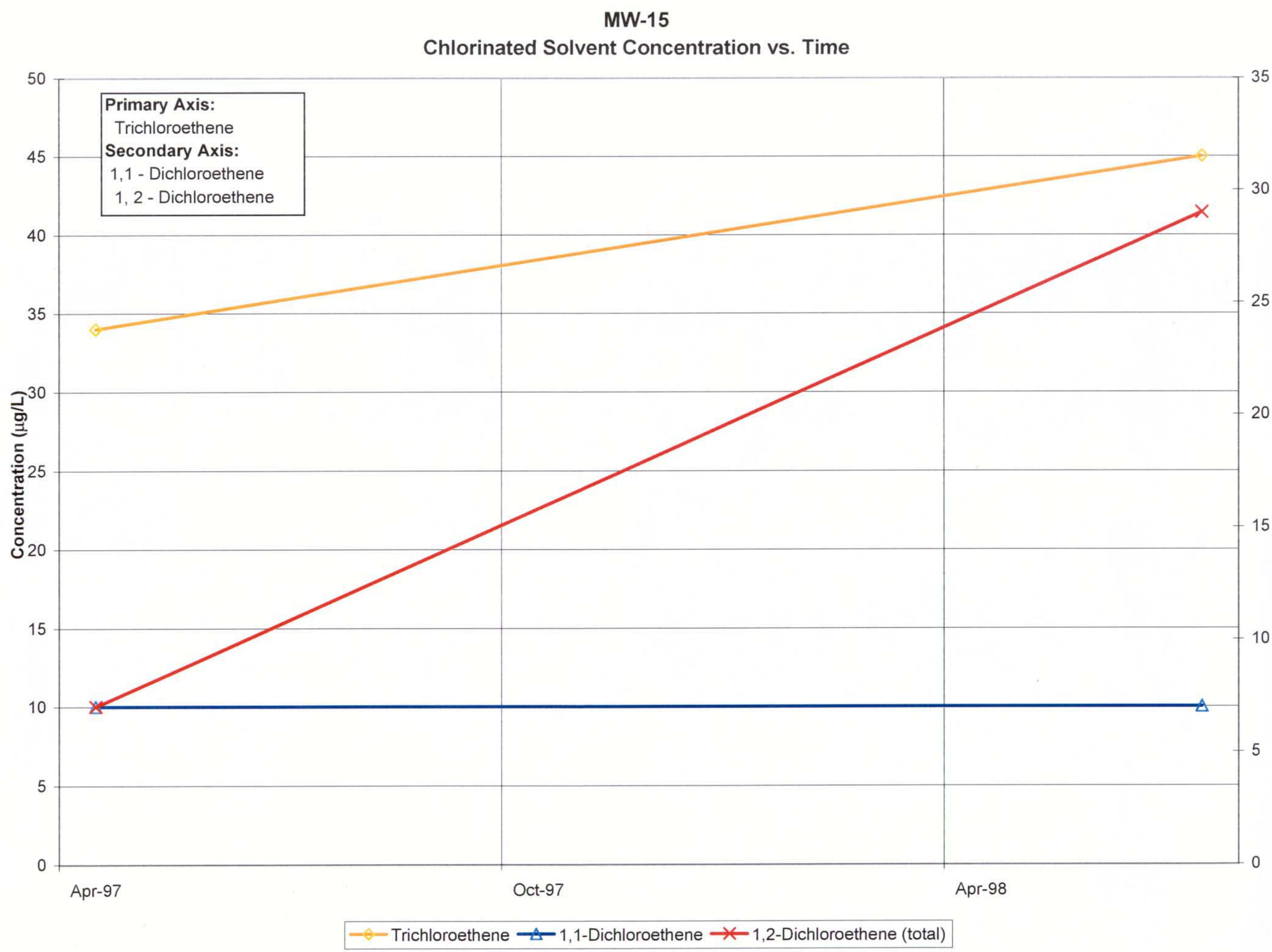


MW-13
Chlorinated Solvent Concentration vs. Time



MW-14
Chlorinated Solvent Concentration vs. Time

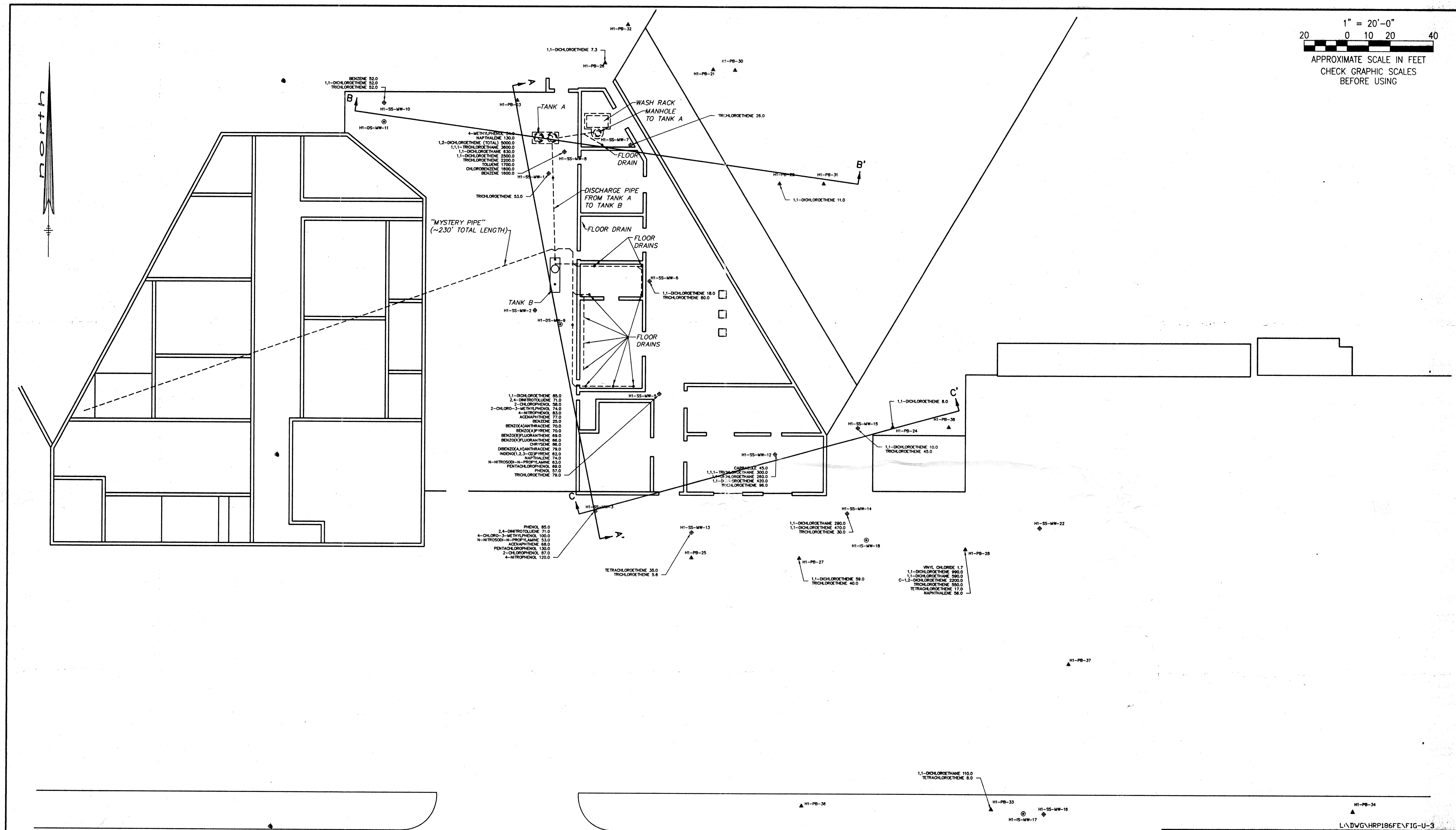



MW-15
Chlorinated Solvent Concentration vs. Time
Primary Axis:
Trichloroethene
Secondary Axis:
1,1 - Dichloroethene
1, 2 - Dichloroethene
Concentration (µg/L)
50
45
40
35
30
25
20
15
10
5
0
35
30
25
20
15
10
5
0
Apr-97
Oct-97
Apr-98
Trichloroethene
1,1-Dichloroethene
1,2-Dichloroethene (total)

Section 6
Harding Lawson Associates
Assessment Results
Figure

Naval Air Station Jacksonville
Jacksonville, Florida

Southern Division
Naval Facilities Engineering Command
Contract Number N62467-94-D-0888



L:\DWG\HRP186FE\FIG-U-3

LEGEND

- HAZARDOUS WASTE STORAGE TANK SYSTEM
- H1-DS-MW-11 - DEEP MONITORING WELL
- H1-SS-MW-2 - SHALLOW MONITORING WELL
- H1-PB-22 - DPT GROUND WATER SAMPLE LOCATION (7/98 & 8/98)
- A A' - CROSS SECTIONS

NOTE: COMPOUNDS LISTED WERE DETECTED ABOVE THEIR RESPECTIVE MCL'S. RESULTS ARE IN UG/L.

H1-SS-MW-19

REVISIONS

NO.	DATE	DESCRIPTION
1	2/99	ADD CROSS SECTIONS, 5 NEW WELLS

GROUNDWATER CONTAMINATION IN SHALLOW AQUIFER-SUMMER 1998 SAMPLES

NAVAL AIR STATION - JACKSONVILLE
HANGAR 1000 SITE

JACKSONVILLE, FLORIDA

HRP ASSOCIATES, INC.
167 New Britain Avenue
Plainville, CT 06062
(860) 793-6899
FAX: (860) 793-6871

C.R.S. DESIGNED	R.D.M. APPROVED	1" = 20' SCALE
B.O.B. DRAWN	SEPT., 1998 DATE	FIG.U-3 SHEET NO.
C.R.S. CHECKED	HRP0186.FE PROJECT NO.	

Section 7
Site Characterization
Sampling and Analysis Letter Report
(CH2M Hill, 2002)

Naval Air Station Jacksonville
Jacksonville, Florida

Southern Division
Naval Facilities Engineering Command
Contract Number N62467-94-D-0888

CCI NAVY RAC

CH2M Hill Constructors Inc.
115 Perimeter Center Place, NE
Suite 700
Atlanta, GA
30346-1278
TEL 770.604.9182
FAX 770.604.9282

May 10, 2002

Contract Task Order 0028

Commanding Officer
Department of the Navy
SOUTHNAVFACENGCOM
ATTN: Mr. Dana Gaskins
2155 Eagle Drive
North Charleston, South Carolina 29406

Reference: Hangar 1000
Naval Air Station (NAS) Jacksonville
Jacksonville, Florida

Subject: **Site Characterization Sampling and Analysis Letter Report**

Dear Mr. Gaskins:

CH2M HILL Constructors, Inc. (CCI) with J.A. Jones Environmental Services Company (J.A. Jones) is pleased to submit this Site Characterization Sampling and Analysis Letter Report for the referenced Contract Task Order (CTO). This report was prepared for the United States Navy Southern Division Naval Facilities Engineering Command under CTO 0028, for the Remedial Action Contract (RAC) Number N62467-98-D-0995. The contents of this report document the field work, results, and conclusions for the site characterization sampling and analysis effort performed at Hangar 1000, NAS Jacksonville, Jacksonville, Florida.

The site characterization sampling and analysis effort was performed at Hangar 1000 from March 7-19, 2002 to determine the cause of the groundwater contaminant rebounds experienced following chemical oxidation injections, as well as to provide supplemental soil and groundwater data for the design and implementation by Tetra Tech NUS, Inc. (TtNUS) of a bimetallic nano-particle pilot test at the site. The site characterization sampling and analysis effort included the following:

Monitoring Well Sampling and Analytical Summary

1. Monitoring Wells MW-2, MW-5, MW-6, MW-8, MW-9, MW-10, MW-11, MW-12, MW-14, MW-15, MW-16, MW-17, MW-19, and MW-22 were sampled and analyzed for the following:
   - Volatile Organic Compounds (VOCs) by United States Environmental Protection Agency (USEPA) Method 8260B;
   - Volatile Fatty Acids (Acetic, Butyric, Lactic, Propionic, and Pyruvic);
   - Total and Dissolved Iron and Total and Dissolved Manganese by USEPA Method 6010B;
   - Nitrate and Nitrite by USEPA Method 353.2;
   - Sulfate by USEPA Method 375.4;
   - Sulfide by USEPA Method 376.2;
   - Chloride by USEPA Method 300.0;
   - Total Alkalinity by USEPA Method 310.1;
   - Carbon Dioxide, Dissolved Ethane, Dissolved Ethene, and Dissolved Methane by Method RSK 175;
   - Dissolved Oxygen and Ferrous Iron by field Chemetrics Kits; and
   - Hydrogen Sulfide by field Hack Kit.
2. Monitoring Wells MW-10 and MW-11 were additionally sampled and analyzed for Total Organic Carbon by USEPA Method 9060.
3. Monitoring Wells MW-1 and MW-7 were sampled and analyzed for Total and Dissolved Iron and Total and Dissolved Manganese by USEPA Method 6010B.
4. The following field parameters were recorded using direct-read meters during monitoring well sampling:
   - Temperature;
   - pH;
   - Turbidity;
   - Conductivity; and
   - Oxidation-Reduction Potential.

The analytical summary table for the monitoring well sampling effort is provided as **Table 1** included in **Enclosure 1**.

Direct Push Technology (DPT) Sampling and Analytical Summary

1. Utilized membrane interface probe (MIP) technology adjacent to monitoring well MW-22 to verify the presence of the clay layer. The MIP probe was advanced by the DPT rig at 1-foot intervals from the ground surface to a depth of 30 feet below land surface (bls). The clay layer was verified to begin at an approximate depth of 22 to 24 feet bls as shown by the increased conductivity response on the MIP result for DPT sample location H1000-01 provided in **Enclosure 3**. In addition, one groundwater sample was collected from 17 to 19 feet bls, which was the depth interval with the highest MIP detector response, and analyzed for VOCs by USEPA Method 8260B.
2. Completed 24 MIP borings, labeled as H1000-02 to H1000-15 and H1000-17 to H1000-26, in the vicinity of monitoring well MW-8 within the Hangar 1000 keyway to verify the

horizontal and vertical extents of the groundwater contaminant source area. At each boring location, the MIP probe was advanced by the DPT rig at 1-foot intervals from the ground surface to an approximate depth of 30 feet bls. The MIP results were utilized to determine the locations and depth intervals for soil and groundwater sample collection. The MIP boring locations are shown on the site survey provided in **Enclosure 2** and the MIP results are provided in **Enclosure 3**.

3. Groundwater samples were collected from the following DPT sample locations and depth intervals and analyzed for VOCs by USEPA Method 8260B.
   - H1000-02 from 18 to 20 feet bls and 24 to 26 feet bls;
   - H1000-03 from 18 to 20 feet bls and 23 to 25 feet bls;
   - H1000-04 from 20 to 22 feet bls and 24 to 26 feet bls;
   - H1000-05 from 19 to 21 feet bls and 22 to 24 feet bls;
   - H1000-06 from 9 to 11 feet bls, 17 to 19 feet bls, and 22 to 24 feet bls;
   - H1000-07 from 18 to 20 feet bls;
   - H1000-08 from 18 to 20 feet bls;
   - H1000-09 from 18 to 20 feet bls;
   - H1000-10 from 18 to 20 feet bls;
   - H1000-11 from 18 to 20 feet bls;
   - H1000-18 from 18 to 20 feet bls;
   - H1000-19 from 17 to 19 feet bls;
   - H1000-25 from 20 to 22 feet bls; and
   - H1000-26 from 10 to 12 feet bls and 18 to 20 feet bls.
4. Soil samples were collected from the following DPT sample locations and depth intervals and analyzed for VOCs by USEPA Method 8260B and Total Organic Carbon by USEPA Method 9060.
   - H1000-02 from 18 to 20 feet bls and 24 to 26 feet bls;
   - H1000-03 from 18 to 20 feet bls and 23 to 25 feet bls;
   - H1000-04 from 20 to 22 feet bls and 24 to 26 feet bls;
   - H1000-05 from 20 to 22 feet bls;
   - H1000-06 from 10 to 12 feet bls and 20 to 22 feet bls; and
   - H1000-26 from 9 to 11 feet bls.

The analytical summary tables for the DPT soil and groundwater sampling effort are provided as **Tables 2** and **3** included in **Enclosure 1**. The DPT sampling locations are shown on the site survey provided in **Enclosure 2**.

CCI/J.A. Jones derived the following conclusions from the site characterization sampling and analytical results:

- The monitoring well VOC analytical results were consistent with historical analytical data.
- Based on the MIP and DPT groundwater analytical results for sample location H1000-01, monitoring well MW-22 is providing accurate location-specific dissolved VOC analytical data.

- Based on the MIP results and VOC analytical data for DPT sample locations H1000-19, H1000-18, H1000-07, H1000-08, H1000-17, H1000-09, H1000-10, H1000-15, H1000-22 and H1000-11, the horizontal limits of dissolved groundwater contamination were verified in the northeast, north, northwest, west, southwest, and south directions from monitoring well MW-8. This data shows the contaminant source area does not extend upgradient from the historical tank location.
- The vertical limit of dissolved groundwater contamination was verified to be at approximately 24 to 26 feet bls, which corresponds to the top of the clay layer existing at the site.
- Based on the analytical data for DPT sample locations H1000-25 and H1000-26, elevated dissolved VOC concentrations in the groundwater extend from the source area under the Hangar 1000 structure.
- The VOC groundwater analytical data collected by DPT showed significant differences from the VOC analytical data collected from the chemical oxidation injection points. This can be explained by the injection points being heavily silted causing the collected samples to be turbid, therefore not providing accurate analytical results.
- Based on VOC soil analytical data collected from DPT sample location H1000-06, a possible DNAPL source may remain in the historical tank location at a depth of approximately 10 to 12 feet bls.

If you have any questions with regard to this submittal, please contact Michael Halil at (904) 777-4812 x. 223.

Respecfully,

Michael D. Halil

Michael D. Halil, P.E.
Contract Task Order Manager

Enclosures (3)

Cc: Mr. Tim Curtin (NAS Jacksonville)
Mr. Jorge Caspary (FDEP)
Mr. Tim Woolheater (USEPA)
Mr. Greg Roof (TtNUS)
Mr. Hal Davis (USGS)
Mr. Keith Henn (TtNUS)
Project File No. 154280

Enclosure 1

Sampling and Analytical Summary Tables

TABLE 1

HANGAR 1000 SITE CHARACTERIZATION ANALYTICAL SUMMARY-MONITORING WELLS

Sample Location:	MW-1	MW-2	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-14	MW-15	MW-16	MW-17	MW-19	MW-22
Analyte																
1,1,1-Trichloroethane	--	**12.5**	**39**	**8.17**	--	**7,070**	**2.47 J**	**3.42 J**	5 U	**7.29**	**13.4 J**	25 U	5 U	5 U	10 U	50 U
1,1,2,2-Tetrachloroethane	--	0.2 U	0.2 U	0.2 U	--	20 U	0.2 U	0.2 U	0.2 U	0.2 U	1 U	1 U	0.2 U	0.2 U	0.4 U	2 U
1,1,2-Trichloroethane	--	5 U	5 U	5 U	--	500 U	5 U	5 U	5 U	5 U	25 U	25 U	5 U	5 U	10 U	50 U
1,1-Dichloroethane	--	5 U	**1.47 J**	**4.79 J**	--	**644**	**2.25 J**	5 U	5 U	**10.2**	**361**	**26.3**	**20.4**	**37**	**121**	**590**
1,1-Dichloroethene	--	5 U	**11.9**	**5.21**	--	**1,260**	5 U	5 U	5 U	**24.9**	**520**	**37.6**	**32.2**	**61.9**	**160**	**1,260**
1,2,4-Trichlorobenzene	--	5 U	5 U	5 U	--	500 U	5 U	5 U	5 U	5 U	25 U	25 U	5 U	5 U	10 U	50 U
1,2-Dibromo-3-chloropropane	--	0.2 U	0.2 U	0.2 U	--	20 U	0.2 U	0.2 U	0.2 U	0.2 U	1 U	1 U	0.2 U	0.2 U	0.4 U	2 U
1,2-Dibromoethane	--	0.2 U	0.2 U	0.2 U	--	20 U	0.2 U	0.2 U	0.2 U	0.2 U	1 U	1 U	0.2 U	0.2 U	0.4 U	2 U
1,2-Dichlorobenzene	--	5 U	5 U	5 U	--	500 U	5 U	5 U	5 U	5 U	25 U	25 U	5 U	5 U	10 U	50 U
1,2-Dichloroethane	--	3 U	3 U	3 U	--	300 U	3 U	3 U	3 U	3 U	15 U	15 U	3 U	3 U	6 U	30 U
1,2-Dichloropropane	--	5 U	5 U	5 U	--	500 U	5 U	5 U	5 U	5 U	25 U	25 U	5 U	5 U	10 U	50 U
1,3-Dichlorobenzene	--	5 U	5 U	5 U	--	500 U	5 U	5 U	5 U	5 U	25 U	25 U	5 U	5 U	10 U	50 U
1,4-Dichlorobenzene	--	5 U	5 U	5 U	--	500 U	5 U	5 U	5 U	5 U	25 U	25 U	5 U	5 U	10 U	50 U
2-Butanone	--	10 U	10 U	10 U	--	1,000 U	10 U	10 U	10 U	10 U	50 U	50 U	10 U	10 U	20 U	100 U
2-Hexanone	--	10 U	10 U	10 U	--	1,000 U	10 U	10 U	10 U	10 U	50 U	50 U	10 U	10 U	20 U	100 U
4-Methyl-2-pentanone	--	10 U	10 U	10 U	--	1,000 U	10 U	10 U	10 U	10 U	50 U	50 U	10 U	10 U	20 U	100 U
Acetone	--	10 U	10 U	10 U	--	1,000 U	**9.82 J**	10 U	10 U	10 U	50 U	50 U	10 U	10 U	20 U	100 U
Benzene	--	1 U	1 U	1 U	--	100 U	1 U	1 U	1 U	1 U	5 U	5 U	1 U	1 U	2 U	10 U
Bromodichloromethane	--	0.6 U	0.6 U	0.6 U	--	60 U	0.6 U	0.6 U	0.6 U	0.6 U	3 U	3 U	0.6 U	0.6 U	1.2 U	6 U
Bromoform	--	4 U	4 U	4 U	--	400 U	4 U	4 U	4 U	4 U	20 U	20 U	4 U	4 U	8 U	40 U
Bromomethane	--	5 U	5 U	5 U	--	500 U	5 U	5 U	5 U	5 U	25 U	25 U	5 U	5 U	10 U	50 U
Carbon disulfide	--	5 U	5 U	5 U	--	500 U	5 U	5 U	5 U	5 U	25 U	25 U	5 U	5 U	10 U	50 U
Carbon tetrachloride	--	3 U	3 U	3 U	--	300 U	3 U	3 U	3 U	3 U	15 U	15 U	5 U	5 U	6 U	30 U
Chlorobenzene	--	5 U	5 U	5 U	--	500 U	5 U	5 U	5 U	5 U	25 U	25 U	3 U	3 U	10 U	50 U
Chloroethane	--	5 U	5 U	5 U	--	500 U	5 U	5 U	5 U	5 U	25 U	25 U	5 U	5 U	10 U	50 U
Chloroform	--	5 U	5 U	5 U	--	500 U	5 U	5 U	5 U	5 U	25 U	25 U	5 U	5 U	10 U	50 U
Chloromethane	--	2.7 U	2.7 U	2.7 U	--	270 U	3 U	2.7 U	2.7 U	2.7 U	13.5 U	13.5 U	5 U	5 U	5.4 U	27 U
Cyclohexane	--	100 U	100 U	100 U	--	10,000 U	5 U	100 U	100 U	100 U	500 U	500 U	2.7 U	2.7 U	200 U	1000 U
Dibromochloromethane	--	0.4 U	0.4 U	0.4 U	--	40 U	5 U	0.4 U	0.4 U	0.4 U	2 U	2 U	100 U	100 U	0.8 U	4 U
Dichlorodifluoromethane	--	5 U	5 U	5 U	--	500 U	5 U	5 U	5 U	5 U	25 U	25 U	0.4 U	0.4 U	10 U	50 U

TABLE 1
HANGAR 1000 SITE CHARACTERIZATION ANALYTICAL SUMMARY-MONITORING WELLS

Sample Location:	MW-1	MW-2	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-14	MW-15	MW-16	MW-17	MW-19	MW-22
Analyte																
cis-1,3-Dichloropropene	--	5 U	5 U	5 U	--	500 U	5 U	5 U	5 U	5 U	25 U	25 U	5 U	5 U	10 U	50 U
trans-1,3-Dichloropropene	--	5 U	5 U	5 U	--	500 U	5 U	5 U	5 U	5 U	25 U	25 U	5 U	5 U	10 U	50 U
Ethylbenzene	--	5 U	5 U	5 U	--	500 U	5 U	5 U	5 U	5 U	25 U	25 U	5 U	5 U	10 U	50 U
Isopropylbenzene (Cumene)	--	5 U	5 U	5 U	--	500 U	5 U	5 U	5 U	5 U	25 U	25 U	5 U	5 U	10 U	50 U
Methyl Acetate	--	5 U	5 U	5 U	--	500 U	5 U	5 U	5 U	5 U	25 U	25 U	5 U	5 U	10 U	50 U
Methylcyclohexane	--	5 U	5 U	5 U	--	500 U	5 U	5 U	5 U	5 U	25 U	25 U	5 U	5 U	10 U	50 U
Methylene chloride	--	5 U	5 U	5 U	--	500 U	5 U	5 U	5 U	5 U	25 U	25 U	5 U	5 U	10 U	50 U
Styrene	--	5 U	5 U	5 U	--	500 U	5 U	5 U	5 U	5 U	25 U	25 U	5 U	5 U	10 U	50 U
Tetrachloroethene	--	3 U	3 U	3 U	--	**173 J**	3 U	3 U	3 U	3 U	15 U	15 U	3 U	**7.92**	**4.74 J**	**11.3 J**
Toluene	--	5 U	5 U	5 U	--	**118 J**	5 U	5 U	5 U	5 U	**6.13 J**	25 U	5 U	5 U	10 U	**12.9 J**
Trichloroethene	--	**2.00 J**	**10.5**	**25.3**	--	**5,520**	3 U	**2.43 J**	3 U	**23.2**	**179**	**389**	**24.6**	**55.5**	**166**	**1,610**
Trichlorofluoromethane	--	5 U	5 U	5 U	--	500 U	5 U	5 U	5 U	5 U	25 U	25 U	5 U	5 U	10 U	50 U
Trichlorotrifluoroethane	--	5 U	**5.06**	**16**	--	**274 J**	5 U	**14.1**	5 U	**22.7**	**469**	**103**	**6.34**	**66.7**	**457**	**1,830**
Vinyl chloride	--	1 U	1 U	1 U	--	100 U	1 U	1 U	1 U	1 U	5 U	5 U	1 U	1 U	2 U	10 U
Xylene (total)	--	5 U	5 U	5 U	--	500 U	5 U	5 U	5 U	5 U	25 U	25 U	5 U	5 U	10 U	50 U
cis-1,2-Dichloroethene	--	5 U	5 U	**3.92 J**	--	**1,350**	5 U	5 U	5 U	5 U	25 U	**28.9**	**1.62 J**	**14.8**	**41.4**	**348**
tert-Butyl methyl ether (MTBE)	--	5 U	5 U	5 U	--	500 U	5 U	5 U	5 U	5 U	25 U	25 U	5 U	5 U	10 U	50 U
trans-1,2-Dichloroethene	--	5 U	5 U	5 U	--	500 U	5 U	5 U	5 U	5 U	25 U	25 U	5 U	5 U	10 U	50 U
Total Organic Carbon (mg/L)	--	--	--	--	--	--	--	**9.5**	**2.6**	--	--	--	--	--	--	--
Chloride (mg/L)	--	**11.8**	**12.2**	**13.9**	--	**28.7**	**12.6**	**14.1**	**36.6**	**18**	**21.1**	**22.4**	**13.9**	**14.7**	**18.8**	**40.1**
Nitrate (mg/L-N)	--	**0.06**	**0.26**	**0.46**	--	**0.05**	0.01 U	**0.74**	0.01 U	**0.01**	0.01 U	0.01 U	0.01 U	**0.82**	0.01 U	0.01 U
Nitrite (mg/L-N)	--	0.01 U	**0.06**	**0.02**	--	**0.03**	**0.04**	**0.01**	0.01 U	**0.02**	**0.02**	**0.01**	**0.01**	**0.01**	**0.03**	0.01 U
Sulfate (mg/L)	--	10 U	**10.1**	**27.6**	--	**22.2**	10 U	**16.2**	10 U	**32.2**	10 U	**10.6**	10 U	10 U	**12.2**	10 U
Sulfide (mg/L)	--	**0.24**	0.02 U	0.02 U	--	0.02 U	0.02 U	**0.23**	**0.21**	0.02 U	**0.21**	**0.22**	0.02 U	0.02 U	**0.25**	0.02 U
Total Alkalinity (mg/L)	--	**33.6**	**43.9**	**51.7**	--	**194**	**306**	**65.5**	**202**	**25.5**	**37.7**	**23.9**	**77.4**	**10.4**	**24.1**	**72.4**
Total Iron (mg/L)	**0.06**	**2.2**	**1.79**	**0.83**	**0.27**	**6.82**	**12.4**	**0.72**	**1.26**	**2**	**4.66**	**2.77**	**4.48**	**1.97**	**4.94**	**6.03**
Dissolved Iron (mg/L)	0.05 U	**1.76**	**1.15**	**0.47**	**0.21**	**0.13**	**0.019**	**0.3600**	**0.048**	**1.39**	**4**	**2.41**	**2.87**	**1.47**	**4.12**	**0.54**
Total Manganese (mg/L)	**0.038**	**0.0048**	**0.04**	**0.00097**	**0.0064**	**0.025**	**0.16**	**0.0012**	**0.096**	**0.0031**	**0.013**	**0.006**	**0.037**	**0.0038**	**0.0046**	**0.048**
Dissolved Manganese (mg/L)	**0.039**	**0.0034**	**0.036**	0.015 U	**0.0038**	**0.02**	**0.058**	0.015 U	**0.093**	0.015 U	**0.012**	**0.0046**	**0.03**	**0.0003**	**0.0031**	**0.045**
Carbon Dioxide	--	**66,000**	**84,900**	**90,400**	--	**190,000**	**8,920**	47,400	**18,000**	**90,700**	**100,000**	**123,000**	**77,600**	**156,000**	**111,000**	**88,300**

TABLE 1
HANGAR 1000 SITE CHARACTERIZATION ANALYTICAL SUMMARY-MONITORING WELLS

Sample Location: / Analyte	MW-1	MW-2	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-14	MW-15	MW-16	MW-17	MW-19	MW-22
Dissolved Ethane	--	20 U	20 U	20 U	--	20 U	1 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Dissolved Ethene	--	20 U	20 U	20 U	--	20 U	1 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Dissolved Methane	--	**113**	**57.9**	**49.2**	--	**246**	**10.2**	**411**	**1,060**	**62.2**	**288**	**886**	**314**	**333**	**202**	**612**
Acetic Acid (mg/L)	--	1 U	1 U	1 U	--	**14**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Butyric Acid (mg/L)	--	1 U	1 U	1 U	--	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Lactic Acid (mg/L)	--	25 U	25 U	25 U	--	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Propionic Acid (mg/L)	--	1 U	1 U	1 U	--	**1.8**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Pyruvic Acid (mg/L)	--	10 U	10 U	10 U	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dissolved Oxygen (mg/L)	--	1	2	3	--	6	1	1.5	1.5	3	1	2	1.5	2	1	1
Ferrous Iron (mg/L)	--	2	6	0.5	--	9	1	1	1	1.5	3	3	4	2	3	5
Hydrogen Sulfide (mg/L)	--	0	0.1	0	--	0.7	0	0	0	0.1	0.7	0.3	0	0	0.3	2
Temperature (°C)	23.5	21.9	22.8	22.1	23.8	23.6	23.4	23.0	24.5	23.1	23.3	22.7	24.1	22.9	22.9	24.0
pH	6.10	5.73	5.95	5.94	6.30	6.30	7.27	6.06	7.43	5.69	5.69	5.42	6.11	4.98	5.42	6.01
Turbidity (NTU)	0	3	121	3	1	2	0	10	0	7	2	0	2	0	8	5
Conductivity (mS/cm)	0.249	0.112	0.139	0.195	0.237	0.480	0.491	0.190	0.446	0.186	0.151	0.144	0.176	0.104	0.131	0.245
Oxidation-Reduction Potential	72	62	88	83	53	0	0	24	0	64	10	61	24	100	68	0

Note:
1. All concentrations reported in micrograms per liter (ug/L) unless otherwise noted.
2. U denotes analyte not detected above reported detection limit.
3. J denotes analyte concentration is estimated.
4. Bold and shaded denotes detected concentration.
5. "--" denotes analyte/parameter not analyzed at the sample location.

TABLE 2
HANGAR 1000 SITE CHARACTERIZATION ANALYTICAL SUMMARY-DPT GROUNDWATER

Sample Location with Sample Depth in feet bls:	H1000-01	H1000-02	H1000-02	H1000-03	H1000-03	H1000-04	H1000-04	H1000-05	H1000-05	H1000-06	H1000-06	H1000-06	H1000-07	H1000-08	H1000-09	H1000-10	H1000-11	H1000-18	H1000-19	H1000-25	H1000-25	H1000-26
Analyte	16'	19'	26'	18'	24'	21'	25'	20'	23'	10'	18'	23'	19'	19'	19'	19'	19'	18'	18'	21'	11'	19'
1,1,1-Trichloroethane	100 U	**1,180**	**29.7**	**147**	1,250 U	**29.6**	5 U	625 U	100 U	**3.34**	**132**	**160**	5.00 U	5 U	5 U	5 U	5.00 U	5 U	5 U	500 U	**2,880**	100 U
1,1,2,2-Tetrachloroethane	4.00 U	20.0 U	0.200 U	2 U	50 U	0.2 U	0.2 U	25.0 U	4.00 U	0.2 U	2.00 U	0.400 U	0.200 U	0.2 U	0.2 U	0.2 U	0.200 U	0.2 U	0.2 U	20 U	20 U	4 U
1,1,2-Trichloroethane	100 U	500 U	5.00 U	50 U	1,250 U	5 U	5 U	625 U	100 U	5 U	50 U	10 U	5.00 U	5 U	5 U	5 U	5.00 U	5 U	5 U	500 U	500 U	100 U
1,1-Dichloroethane	**369**	**1,140**	**19.9**	**63.7**	**2,000**	**1.03 J**	**7.82**	**1,840**	**290**	**1.10 J**	**24.3 J**	**12.7**	5.00 U	5 U	5 U	**1.97 J**	5.00 U	5 U	5 U	**826**	**879**	**146**
1,1-Dichloroethene	**668**	**1,280**	**8.46**	**147**	**2,140**	**11.6**	**3.06 J**	**1,080**	**110**	5 U	**90.6**	10 U	5.00 U	5 U	5 U	5 U	5.00 U	5 U	5 U	**632**	**2,270**	100 U
1,2,4-Trichlorobenzene	100 U	500 U	5.00 U	50 U	1250 U	5 U	5 U	825 U	100 U	5 U	50.0 U	10 U	5.00 U	5 U	5 U	5 U	5.00 U	5 U	5 U	500 U	500 U	100 U
1,2-Dibromo-3-chloropropane	4.00 U	20.0 U	0.200 U	2 U	50 U	0.2 U	2 U	25.0 U	4.00 U	0.2 U	2.00 U	4 U	0.200 U	2 U	2 U	2 U	0.200 U	0.2 U	0.2 U	20 U	20 U	4 U
1,2-Dibromoethane	4.00 U	20.0 U	0.200 U	2 U	50 U	0.2 U	2 U	25.0 U	4.00 U	0.2 U	2.00 U	4 U	0.200 U	2 U	2 U	2 U	0.200 U	0.2 U	0.2 U	20 U	20 U	4 U
1,2-Dichlorobenzene	100 U	500 U	5.00 U	50 U	1250 U	5 U	5 U	825 U	100 U	5 U	50.0 U	10 U	5.00 U	5 U	5 U	5 U	5.00 U	5 U	5 U	500 U	500 U	100 U
1,2-Dichloroethane	60.0 U	300 U	3.00 U	**30**	750 U	3 U	3 U	375 U	60.0 U	3 U	30.0 U	6 U	3.00 U	3 U	3 U	3 U	3.00 U	3 U	3 U	300 U	300 U	60 U
1,2-Dichloropropane	100 U	500 U	5.00 U	50 U	1,250 U	5 U	5 U	625 U	100 U	5 U	50.0 U	10 U	5.00 U	5 U	5 U	5 U	5.00 U	5 U	5 U	500 U	500 U	100 U
1,3-Dichlorobenzene	100 U	500 U	5.00 U	50 U	1,250 U	5 U	5 U	625 U	100 U	5 U	50.0 U	10 U	5.00 U	5 U	5 U	5 U	5.00 U	5 U	5 U	500 U	500 U	100 U
1,4-Dichlorobenzene	100 U	500 U	5.00 U	50 U	1,250 U	5 U	5 U	825 U	100 U	5 U	50.0 U	10 U	5.00 U	5 U	5 U	5 U	5.00 U	5 U	5 U	500 U	500 U	100 U
2-Butanone	200 U	1,000 U	10.0 U	100 U	2,500 U	10 U	10 U	1,250 U	200 U	10 U	100 U	20 U	10.0 U	10 U	10 U	10 U	10.0 U	10 U	10 U	1,000 U	1,000 U	200 U
2-Hexanone	200 U	1,000 U	10.0 U	100 U	2,500 U	10 U	10 U	1,250 U	200 U	10 U	100 U	20 U	10.0 U	10 U	10 U	10 U	10.0 U	10 U	10 U	1,000 U	1,000 U	200 U
4-Methyl-2-pentanone	200 U	1,000 U	10.0 U	100 U	2,500 U	10 U	10 U	1,250 U	200 U	10 U	100 U	20 U	10.0 U	10 U	10 U	10 U	10.0 U	10 U	10 U	1,000 U	1,000 U	200 U
Acetone	200 U	1,000 U	10.0 U	100 U	2,500 U	10 U	10 U	1,250 U	200 U	10 U	100 U	20 U	10.0 U	10 U	10 U	10 U	10.0 U	10 U	10 U	1,000 U	1,000 U	200 U
Benzene	20.0 U	100 U	1.00 U	10 U	250 U	1 U	1 U	125 U	20.0 U	1 U	10 U	2 U	1.00 U	1 U	1 U	1 U	1.00 U	1 U	1 U	100 U	100 U	20 U
Bromodichloromethane	12.0 U	60.0 U	0.600 U	6 U	150 U	0.6 U	0.6 U	75.0 U	12 U	6 U	6.00 U	1.2 U	0.600 U	4 U	6 U	2 U	0.600 U	6 U	6 U	60 U	60 U	12 U
Bromoform	80.0 U	400 U	4.00 U	40 U	1000 U	4 U	4 U	500 U	80 U	4 U	40.0 U	8 U	4.00 U	4 U	4 U	4 U	4.00 U	4 U	4 U	400 U	400 U	80 U
Bromomethane	100 U	500 U	5.00 U	50 U	1250 U	5 U	5 U	625 U	100 U	5 U	50.0 U	10 U	5.00 U	5 U	5 U	5 U	5.00 U	5 U	5 U	500 U	500 U	100 U
Carbon disulfide	100 U	500 U	5.00 U	50 U	1250 U	6 U	**2.42 J**	625 U	100 U	**1.82 J**	50.0 U	10 U	5.00 U	5 U	5 U	5 U	5.00 U	5 U	5 U	500 U	500 U	100 U
Carbon tetrachloride	60.0 U	300 U	3.00 U	30 U	750 U	3 U	3 U	375 U	60.0 U	3 U	30.0 U	6 U	3.00 U	3 U	3 U	3 U	3.00 U	3 U	3 U	300 U	300 U	60 U
Chlorobenzene	100 U	500 U	5.00 U	50 U	1,250 U	5 U	5 U	625 U	100 U	5 U	50.0 U	10 U	5.00 U	5 U	5 U	5 U	5.00 U	5 U	5 U	500 U	500 U	100 U
Chloroethane	100 U	500 U	5.00 U	50 U	1,250 U	5 U	5 U	625 U	100 U	5 U	50.0 U	10 U	5.00 U	5 U	5 U	5 U	5.00 U	5 U	5 U	500 U	500 U	100 U
Chloroform	100 U	500 U	5.00 U	50 U	1,250 U	5 U	5 U	625 U	100 U	5 U	50.0 U	10 U	5.00 U	5 U	5 U	5 U	5.00 U	5 U	5 U	500 U	500 U	100 U
Chloromethane	54.0 U	270 U	2.70 U	27 U	675 U	2.7 U	2.7 U	338 U	54.0 U	2.7 U	27.0 U	5.4 U	2.70 U	2.7 U	2.7 U	2.7 U	2.70 U	2.7 U	2.7 U	270 U	270 U	54 U
Cyclohexane	2,000 U	10,000 U	100 U	1,000 U	25,000 U	100 U	100 U	12,500 U	2,000 U	100 U	1,000 U	200 U	100 U	100 U	100 U	100 U	100 U	100 U	100 U	10,000 U	10,000 U	2,000 U
Dibromochloromethane	8.00 U	40.0 U	0.400 U	4 U	100 U	0.4 U	0.4 U	50 U	8.00 U	4 U	4.00 U	8 U	0.400 U	4 U	4 U	4 U	0.400 U	0.4 U	0.4 U	40 U	40 U	8 U
Dichlorodifluoromethane	100 U	500 U	5.00 U	50 U	1,250 U	5 U	5 U	625 U	100 U	5 U	50.0 U	10 U	5.00 U	5 U	5 U	5 U	5.00 U	5 U	5 U	500 U	500 U	100 U
cis-1,3-Dichloropropene	100 U	500 U	5.00 U	50 U	1,250 U	5 U	5 U	625 U	100 U	5 U	50.0 U	10 U	5.00 U	5 U	5 U	5 U	5.00 U	5 U	5 U	500 U	500 U	100 U
trans-1,3-Dichloropropene	100 U	500 U	5.00 U	50 U	1,250 U	5 U	5 U	625 U	100 U	5 U	50.0 U	10 U	5.00 U	5 U	5 U	5 U	5.00 U	5 U	5 U	500 U	500 U	100 U
Ethylbenzene	100 U	500 U	5.00 U	50 U	1,250 U	5 U	5 U	625 U	100 U	5 U	50.0 U	10 U	5.00 U	5 U	5 U	5 U	5.00 U	5 U	5 U	500 U	500 U	100 U
Isopropylbenzene (Cumene)	100 U	500 U	5.00 U	50 U	1,250 U	5 U	5 U	625 U	100 U	5 U	50.0 U	10 U	5.00 U	5 U	5 U	5 U	5.00 U	5 U	5 U	500 U	500 U	100 U
Methyl Acetate	100 U	500 U	5.00 U	50 U	1,250 U	5 U	5 U	625 U	100 U	5 U	50.0 U	10 U	5.00 U	5 U	5 U	5 U	5.00 U	5 U	5 U	500 U	500 U	100 U
Methylcyclohexane	100 U	500 U	5.00 U	50 U	1,250 U	5 U	5 U	625 U	100 U	5 U	50.0 U	10 U	5.00 U	5 U	5 U	5 U	5.00 U	5 U	5 U	500 U	500 U	100 U
Methylene chloride	100 U	500 U	5.00 U	50 U	1,250 U	5 U	5 U	625 U	100 U	5 U	50.0 U	10 U	5.00 U	5 U	5 U	5 U	5.00 U	5 U	5 U	500 U	500 U	100 U
Styrene	100 U	500 U	5.00 U	50 U	1,250 U	5 U	5 U	625 U	100 U	5 U	50.0 U	10 U	5.00 U	5 U	5 U	5 U	5.00 U	5 U	5 U	500 U	500 U	100 U
Tetrachloroethene	60.0 U	300 U	3.00 U	30 U	750 U	3 U	3 U	375 U	60 U	3 U	**23.9 J**	**5.87**	3.00 U	3 U	3 U	3 U	3.00 U	3 U	3 U	300 U	**178 J**	60 U
Toluene	100 U	500 U	**1.28 J**	50 U	1,250 U	5 U	5 U	625 U	100 U	**1.02 J**	50.0 U	**4.48 J**	3.00 U	5 U	5 U	5 U	5.00 U	5 U	5 U	500 U	**184 J**	100 U

TABLE 2

HANGAR 1000 SITE CHARACTERIZATION ANALYTICAL SUMMARY-DPT GROUNDWATER

Sample Location with Sample Depth in feet bls:	H1000-01	H1000-02	H1000-02	H1000-03	H1000-03	H1000-04	H1000-04	H1000-05	H1000-05	H1000-06	H1000-06
Analyte	18'	19'	25'	18'	24'	21'	25'	20'	23'	10'	18'
Trichloroethene	**1,440**	**7,340**	**48.7**	**1,160**	**1,880**	**110**	**40.6**	**11,800**	**2,170**	**16.5**	**834**
Trichlorofluoromethane	100 U	500 U	5.00 U	50 U	1,250 U	5 U	5 U	625 U	100 U	5 U	50.0 U
Trichlorotrifluoroethane	**814**	500 U	5.00 U	**180**	1,250 U	**20.4**	5 U	**280 J**	100 U	**82.3**	**36.4 J**
Vinyl chloride	20.0 U	100 U	1.00 U	10 U	250 U	1 U	1 U	125 U	20.0 U	1 U	10.0 U
Xylene (total)	100 U	500 U	5.00 U	50 U	1250 U	5 U	5 U	625 U	100 U	5 U	50.0 U
cis-1,2-Dichloroethene	**692**	**13,100**	**53.7**	**922**	**40,800**	**16.7**	**6.24**	**18,100**	**903**	5 U	**24.8 J**
tert-Butyl methyl ether (MTBE)	100 U	500 U	5.00 U	50 U	1,250 U	5 U	5 U	625 U	100 U	5 U	50.0 U
trans-1,2-Dichloroethene	100 U	**228 J**	5.00 U	50 U	1,250 U	5 U	5 U	625 U	100 U	5 U	50.0 U

Sample Location with Sample Depth in feet bls:	H1000-06	H1000-07	H1000-08	H1000-09	H1000-10	H1000-11	H1000-18	H1000-19	H1000-25	H1000-28	H1000-26
Analyte	23'	18'	19'	19'	19'	19'	19'	18'	21'	11'	19'
Trichloroethene	**343**	3.00 U	3 U	3 U	**30.4**	3 U	3 U	3 U	**16,300**	**8,480**	**2,840**
Trichlorofluoromethane	10 U	5.00 U	5 U	5 U	5 U	5.00 U	5 U	5 U	500 U	500 U	100 U
Trichlorotrifluoroethane	**2.32 J**	**18.3**	**2.2 J**	**8.80**	**31**	**20.3**	**4.16**	**11.1**	500 U	**290 J**	**270**
Vinyl chloride	2 U	1.00 U	1 U	1 U	1 U	1.00 U	1 U	1 U	100 U	100 U	20 U
Xylene (total)	10 U	5.00 U	5 U	5 U	5 U	5.00 U	5 U	5 U	500 U	500 U	100 U
cis-1,2-Dichloroethene	**13.3**	5.00 U	5 U	5 U	**21.1**	5.00 U	5 U	5 U	**2,700**	**1,820**	**201**
tert-Butyl methyl ether (MTBE)	10.0 U	5.00 U	5 U	5 U	5 U	5.00 U	5 U	5 U	500 U	500 U	100 U
trans-1,2-Dichloroethene	10.0 U	5.00 U	5 U	5 U	5 U	5.00 U	5 U	5 U	500 U	500 U	**188**

Notes:

1. All concentrations reported in micrograms per liter (ug/L).
2. U denotes analyte not detected above reported detection limit.
3. J denotes analyte concentration is estimated.
4. Bold and shaded denotes detected concentration.

TABLE 3
HANGAR 1000 SITE CHARACTERIZATION ANALYTICAL SUMMARY-DPT SOIL

Sample Location with Sample Depth in feet bls:	H1000-02	H1000-02	H1000-03	H1000-03	H1000-04	H1000-04	H1000-05	H1000-06	H1000-06	H1000-26
Analyte	19'	25'	19'	24'	21'	25'	21'	11'	21'	10'
1,1,1-Trichloroethane	**1,480**	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	**25,300**	**3,610**	5.64 U
1,1,2,2-Tetrachloroethane	6.69 U	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	820 U	5.64 U
1,1,2-Trichloroethane	6.69 U	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	820 U	5.64 U
1,1-Dichloroethane	**221**	**8.04**	**561 J**	**1,070**	34.5 U	9.08 U	**585 J**	3,100 U	820 U	5.64 U
1,1-Dichloroethene	**597**	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	**1,100**	5.64 U
1,2,4-Trichlorobenzene	6.69 U	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	820 U	5.64 U
1,2-Dibromo-3-chloropropane	6.69 U	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	820 U	5.64 U
1,2-Dibromoethane	6.69 U	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	820 U	5.64 U
1,2-Dichlorobenzene	6.69 U	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	820 U	5.64 U
1,2-Dichloroethane	6.69 U	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	820 U	5.64 U
1,2-Dichloropropane	6.69 U	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	820 U	5.64 U
1,3-Dichlorobenzene	6.69 U	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	820 U	5.64 U
1,4-Dichlorobenzene	6.69 U	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	820 U	5.64 U
2-Butanone	13.4 U	**6.77 J**	1,660 U	1,750 U	69 U	**17.7 J**	1,800 U	6,200 U	1,640 U	11.3 U
2-Hexanone	13.4 U	15.4 U	1,660 U	1,750 U	69 U	18.2 U	1,800 U	6,200 U	1,640 U	11.3 U
4-Methyl-2-pentanone	13.4 U	15.4 U	1,660 U	1,750 U	69 U	18.2 U	1,800 U	6,200 U	1,640 U	**5.02 J**
Acetone	**128**	**40.1**	1,660 U	1,750 U	69 U	**162**	1,800 U	6,200 U	1,640 U	**35.80**
Benzene	6.69 U	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	**365 J**	5.64 U
Bromodichloromethane	6.69 U	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	820 U	5.64 U
Bromoform	6.69 U	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	820 U	5.64 U
Bromomethane	6.69 U	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	820 U	5.64 U
Carbon disulfide	6.69 U	**2.41 J**	831 U	875 U	34.5 U	**19.6**	898 U	3,100 U	820 U	5.64 U
Carbon tetrachloride	6.69 U	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	820 U	5.64 U
Chlorobenzene	6.69 U	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	820 U	5.64 U
Chloroethane	6.69 U	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	820 U	5.64 U
Chloroform	**1.89 J**	7.69 U	831 U	875 U	34.5 U	**2.40 J**	898 U	3,100 U	820 U	5.64 U
Chloromethane	6.69 U	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	820 U	5.64 U
Cyclohexane	6.69 U	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	820 U	5.64 U
Dibromochloromethane	6.69 U	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	820 U	5.64 U
Dichlorodifluoromethane	6.69 U	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	820 U	5.64 U
cis-1,3-Dichloropropene	6.69 U	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	820 U	5.64 U
trans-1,3-Dichloropropene	6.69 U	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	820 U	5.64 U
Ethylbenzene	**5.59 J**	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	820 U	5.64 U
Isopropylbenzene (Cumene)	6.69 U	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	820 U	5.64 U
Methyl Acetate	6,690 U	7,690 U	831,000 U	875,000 U	34,500 U	9,080 U	898,000 U	3,100,000 U	820,000 U	5,640 U
Methylcyclohexane	6,690 U	7,690 U	831,000 U	875,000 U	34,500 U	9,080 U	898,000 U	3,100,000 U	820,000 U	5,640 U
Methylene chloride	6.69 U	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	820 U	5.64 U
Styrene	6.69 U	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	820 U	5.64 U
Tetrachloroethene	**156**	7.69 U	831 U	875 U	34.5 U	**4.38 J**	**246 J**	**4,360**	**799 J**	**2.47 J**
Toluene	**66.7**	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	820 U	5.64 U
Trichloroethene	**8,450**	**76**	**11,300**	**1,220**	**115**	9.08 U	**15,700**	**60,100**	**15,900**	**4.68 J**
Trichlorofluoromethane	6.69 U	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	820 U	5.64 U
Trichlorotrifluoroethane	6.69 U	7.69 U	831 U	875 U	34.5 U	9.08 U	**306 J**	**2,790 J**	**1,940**	5.64 U
Vinyl chloride	2.67 U	3.08 U	333 U	350 U	34.5 U	9.08 U	359 U	1,240 U	**364**	5.64 U
Xylene (total)	**28.5**	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	**820**	5.64 U

TABLE 3
HANGAR 1000 SITE CHARACTERIZATION ANALYTICAL SUMMARY-DPT SOIL

Sample Location with Sample Depth in feet bls:	H1000-02	H1000-02	H1000-03	H1000-03	H1000-04	H1000-04	H1000-05	H1000-06	H1000-06	H1000-26
Analyte	**19'**	**25'**	**19'**	**24'**	**21'**	**25'**	**21'**	**11'**	**21'**	**10'**
cis-1,2-Dichloroethene	**2,270**	**7.8**	**3,270**	**14,800**	34.5 U	9.08 U	**1,760**	3,100 U	**5,220**	5.64 U
tert-Butyl methyl ether (MTBE)	6.69 U	7.69 U	831 U	875 U	34 5 U	9.08 U	898 U	3,100 U	820 U	5.64 U
trans-1,2-Dichloroethene	6.69 U	7.69 U	831 U	875 U	34.5 U	9.08 U	898 U	3,100 U	820 U	5.64 U
Total Organic Carbon (mg/kg)	267 U	308 U	200 U	200 U	200 U	200 U	287 U	248 U	262 U	200 U

Notes:

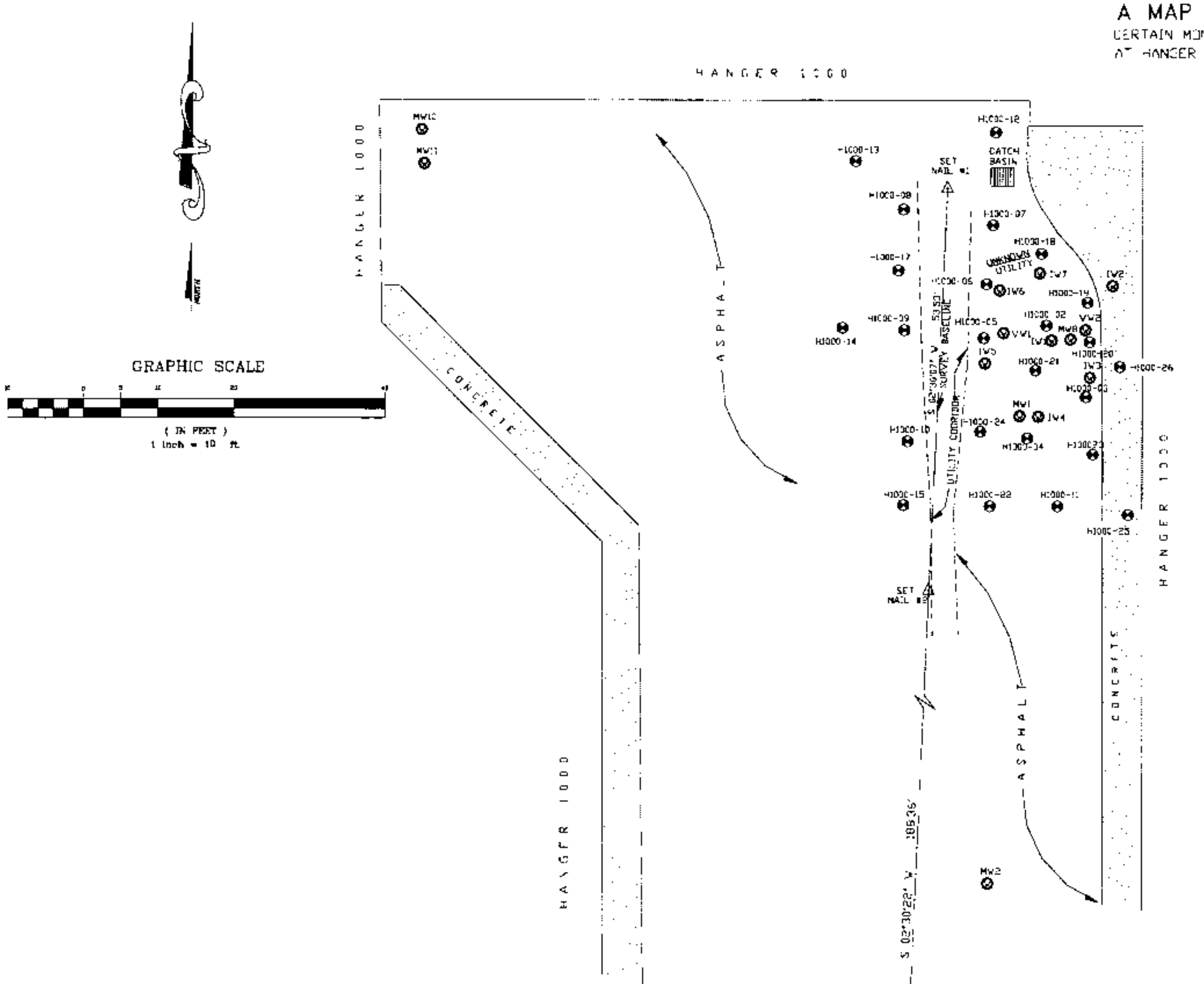
1. All concentrations reported in micrograms per kilogram (ug/kg) unless otherwise noted.
2. U denotes analyte not detected above reported detection limit.
3. J denotes analyte concentration is estimated.
4. Bold and shaded denotes detected concentration.

Enclosure 2

Site Survey

A MAP SHOWING A SPECIFIC PURPOSE SURVEY OF

CERTAIN MONITORING WELLS AND CORE TEST HOLES AS SPECIFIED BY THE CLIENT AT HANGER # 1000 AT NAVAL AIR STATION JACKSONVILLE, FLORIDA



COORDINATES

NAME	NORTHING	EASTING
MW1	2142915.5505	440697.2258
MW2	2142853.2259	440693.0956
MW8	2142925.7520	440703.9946
MW10	2142953.6885	440617.8064
MW11	2142949.1910	440618.1689
VW1	2142926.6089	440695.0411
VW2	2142927.0038	440705.9903
IW1	2142925.6303	440701.4542
IW2	2142932.8561	440709.6416
IW3	2142920.6581	440706.6082
IW4	2142915.4895	440699.7179
IW5	2142922.5643	440692.5896
IW7	2142934.5555	440699.8731
H1000-01	2142716.9474	440879.5899
H1000-02	2142925.0965	440706.5805
H1000-03	2142918.2714	440706.0752
H1000-04	2142912.6083	440698.2352
H1000-05	2142925.9268	440692.4442
H1000-06	2142933.0970	440692.7919
H1000-07	2142940.9412	440693.6302
H1000-08	2142943.0142	440681.7652
H1000-09	2142926.9694	440681.9167
H1000-10	2142912.1665	440682.3622
H1000-11	2142903.5387	440702.3271
H1000-12	2142953.2366	440693.9682
H1000-13	2142949.4141	440675.4214
H1000-14	2142927.2806	440673.7432
H1000-15	2142903.5750	440681.8269
H1000-17	2142934.8943	440681.1116
H1000-18	2142937.1357	440703.0921
H1000-19	2142930.6259	440706.2770
H1000-20	2142927.5978	440700.7734
H1000-21	2142921.6389	440699.3392
H1000-22	2142903.5431	440693.2756
H1000-23	2142910.4320	440707.0248
H1000-24	2142913.4816	440691.9990
H1000-25	2142902.3925	440711.7457
H1000-26	2142922.0999	440710.6376

CONTROL

NAME	NORTHING	EASTING
NAIL#1	2142945.7799	440687.5914
NAIL#2	2142892.3009	440685.2547
NAIL#3	2142704.1087	440677.0190
NAIL#4	2142587.6470	441605.6720
NAIL#5	2142584.9290	440290.6740

ARNOLD L. JOHNS
FLORIDA REGISTERED LAND SURVEYOR NO. 4422
NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER

H1000-01
(NOT TO SCALE)

NOTES
1.) THIS IS NOT A BOUNDARY SURVEY
2.) COORDINATES SHOWN HEREON ARE BASED ON THE NORTH AMERICAN DATUM OF 1983 AND WERE FURNISHED BY BOATWRIGHT LAND SURVEYORS.
3.) NO UNDERGROUND OR ABOVE GROUND UTILITIES OR IMPROVEMENTS, OTHER THAN SHOWN LOCATED BY THIS SURVEY.
4.) WELL IDENTIFICATION NAMES SHOWN WAS PROVIDED TO THIS OFFICE BY J.A. JONES ENVIRONMENTAL SERVICES.

FOUND PK NAIL & DISK "LB 3672" NAIL #5 — S 04°01'57" W 379.87' — SET NAIL #3 — S 87°45'07" E 937.93' — FOUND PK NAIL & DISK "LB 3672" NAIL #4

N 89°52'56" E 1315.07'

S 02°30'22" W 188.36'

L.D. BRADLEY LAND SURVEYORS
5773 NORMANDY BOULEVARD, JACKSONVILLE, FLORIDA 32205
PHONE (904) 786-6400 FAX (904) 786-1479
LICENSED BUSINESS No. 6866

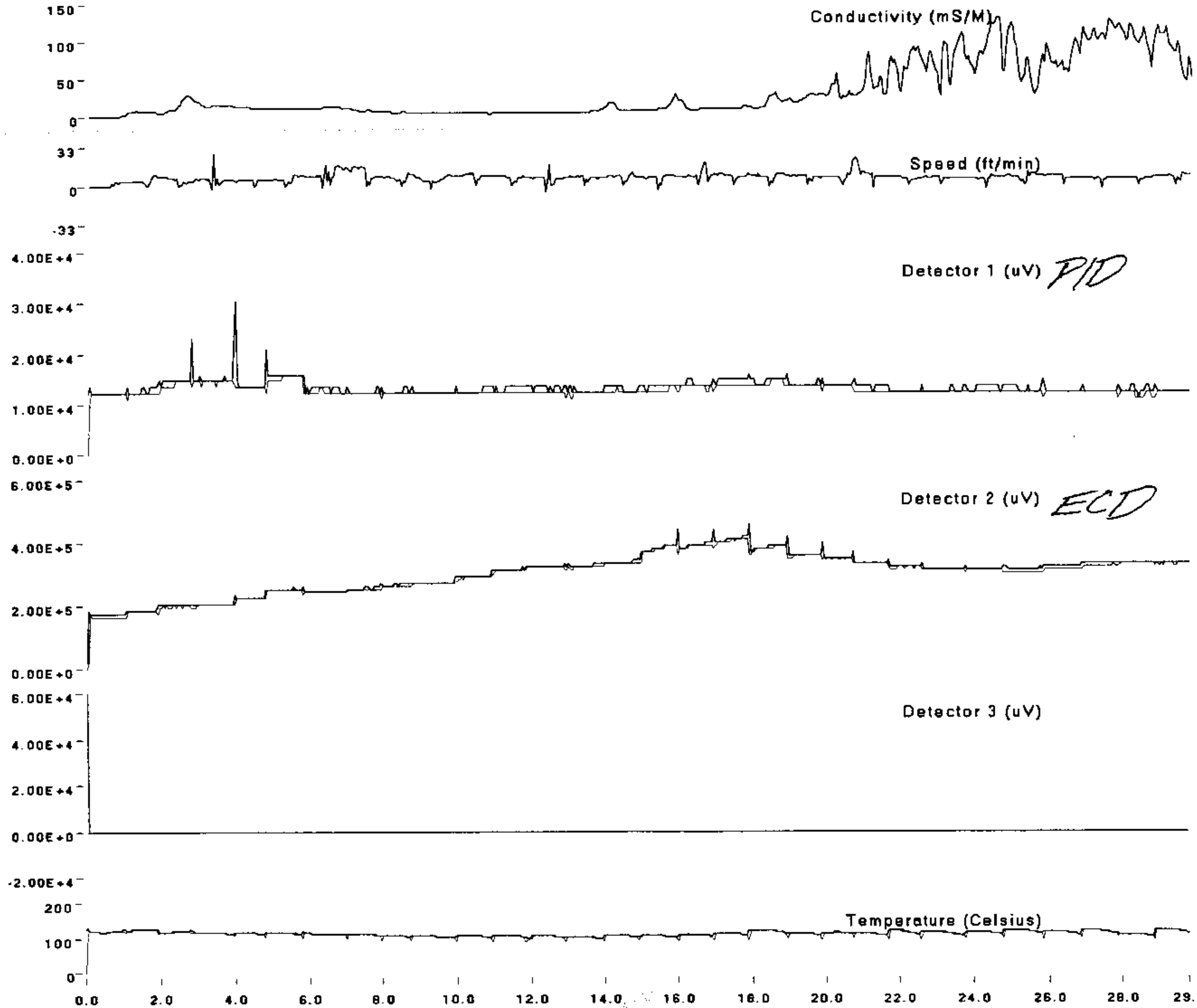
W.O. NO.: 02-136	SURVEY DATE: 3/19/02	DRAFTED BY: J. WEINERT
CHECKED BY: D. JOHNSON	CAD FILE: 02136.DWG	FB 383 PG 53-56

W.O. NO.: C-02-136

Enclosure 3

MIP Results

Log: C:\DIRIM95\LOGFILES\h1000-01.dat



3-7-02 AMD

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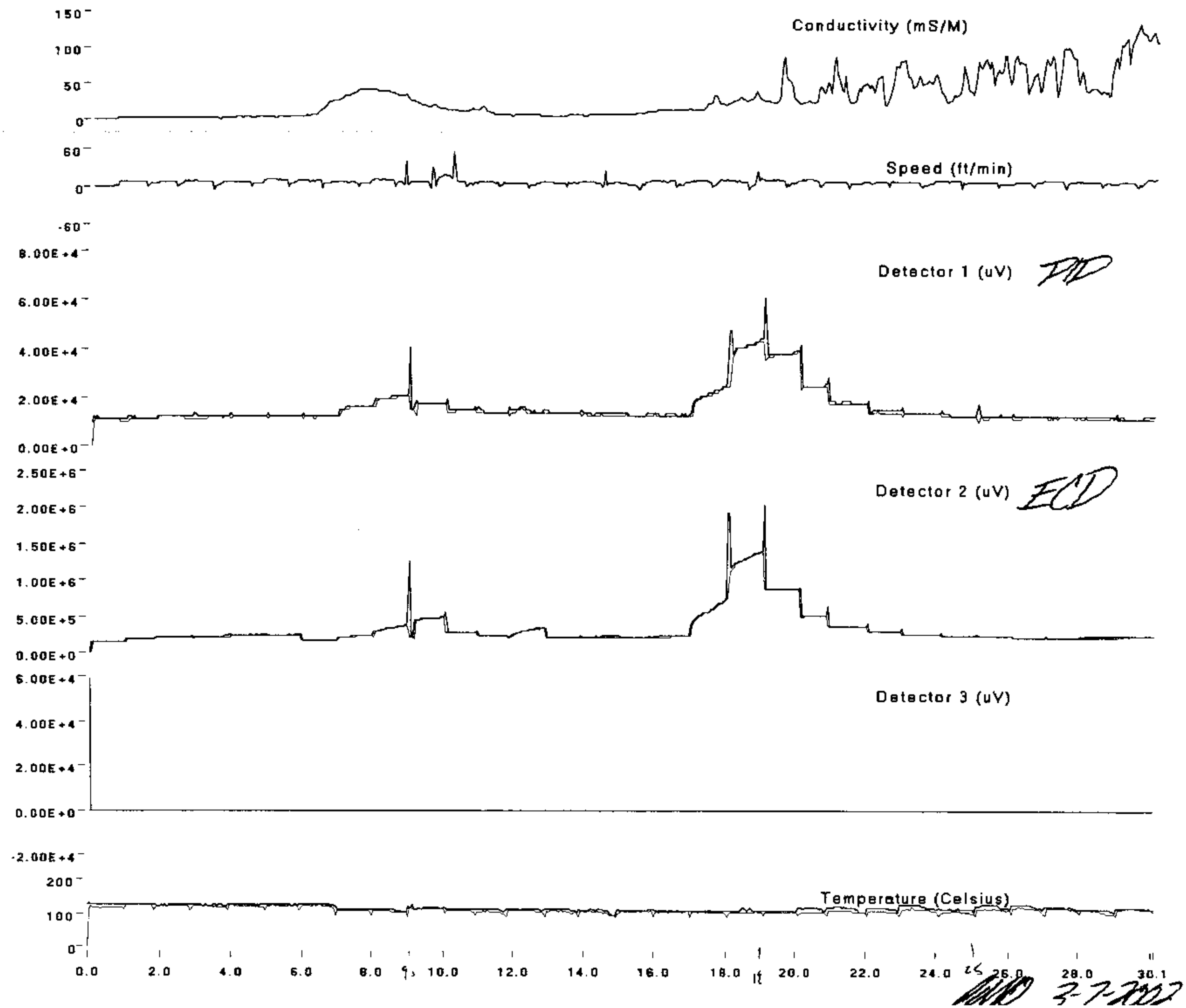

3-7-2002

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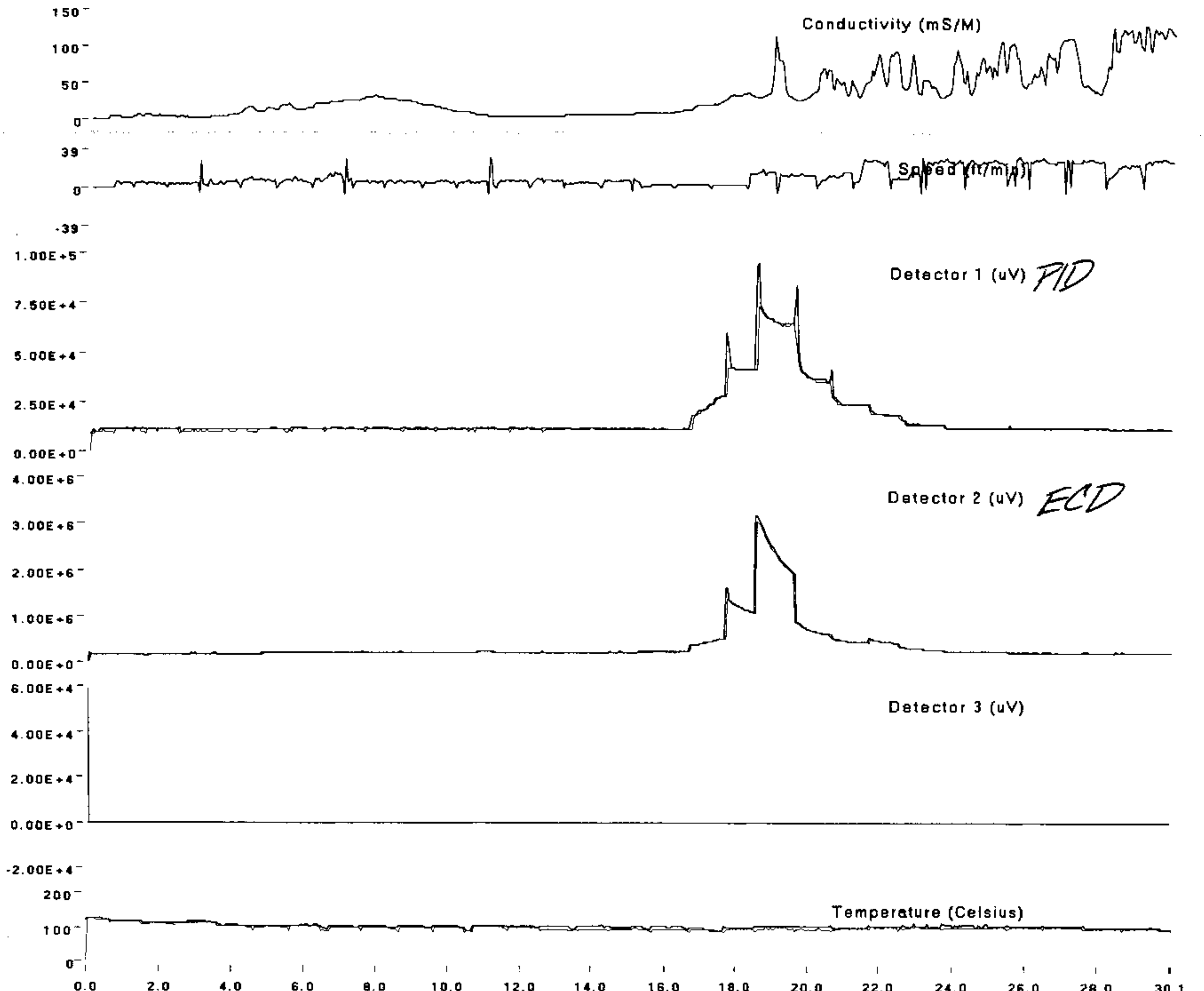

AMO 3-13-2002

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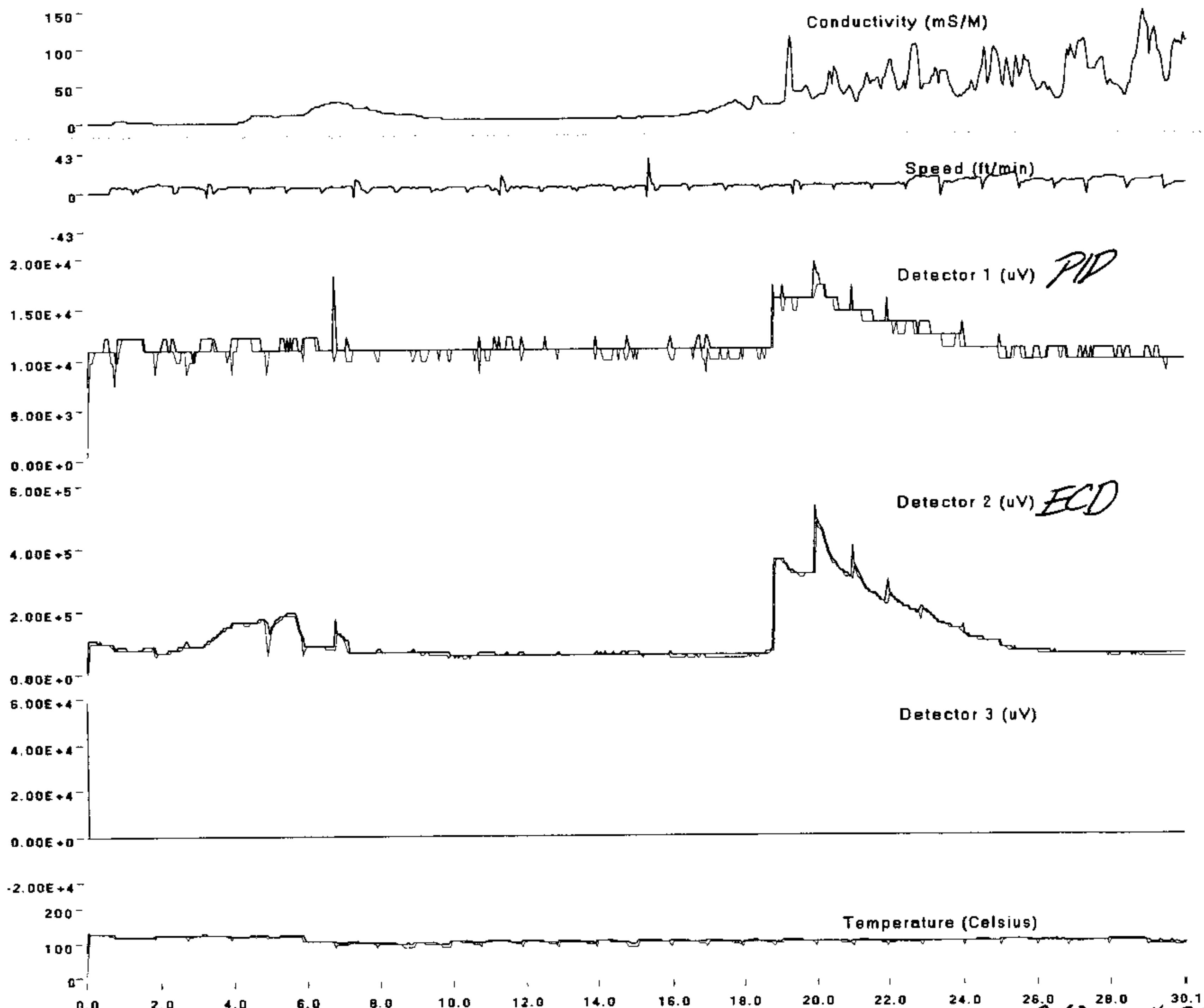

AMO 3-11-2002

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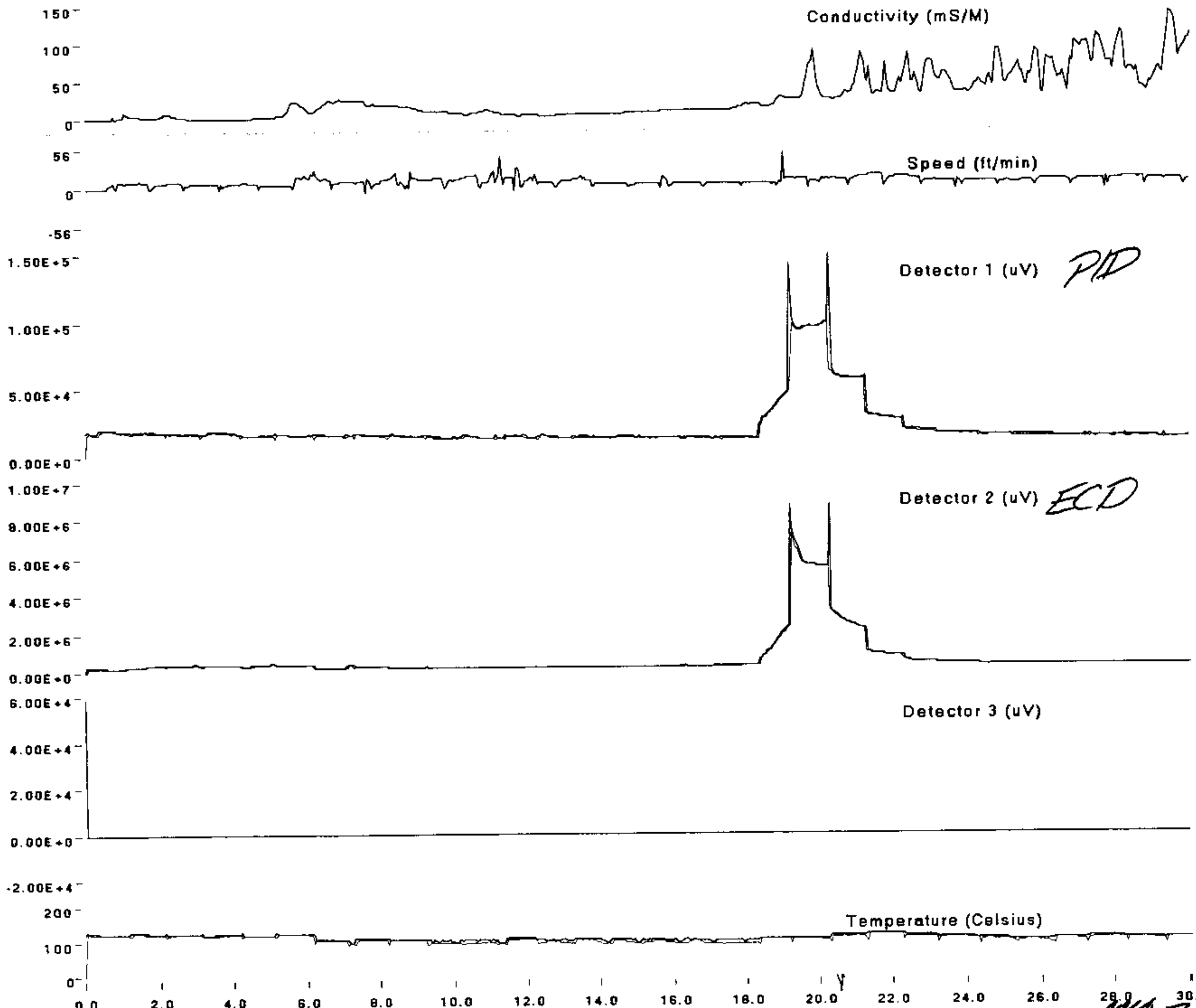

MMO 3-11-2002

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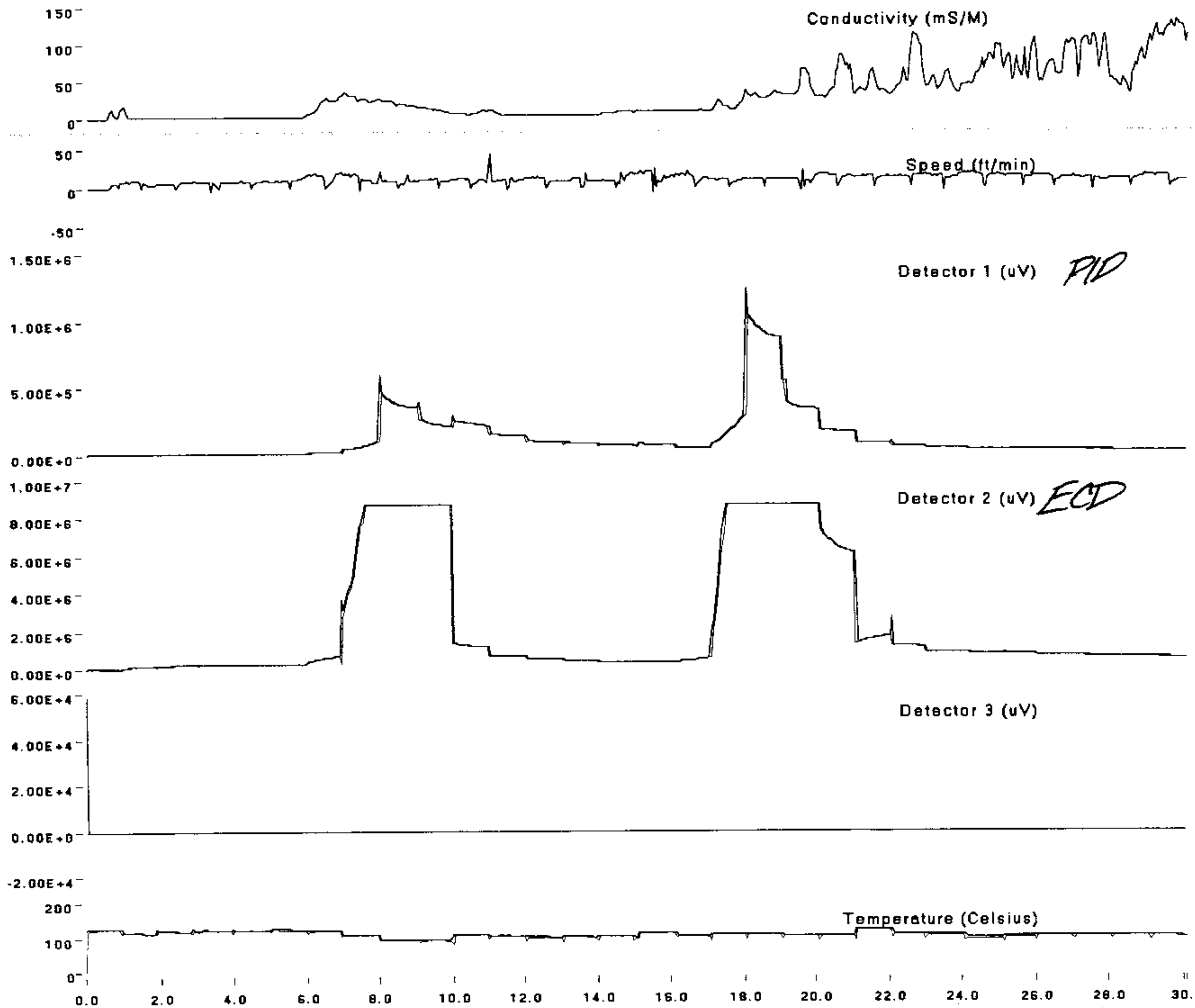

AW 3-11-02

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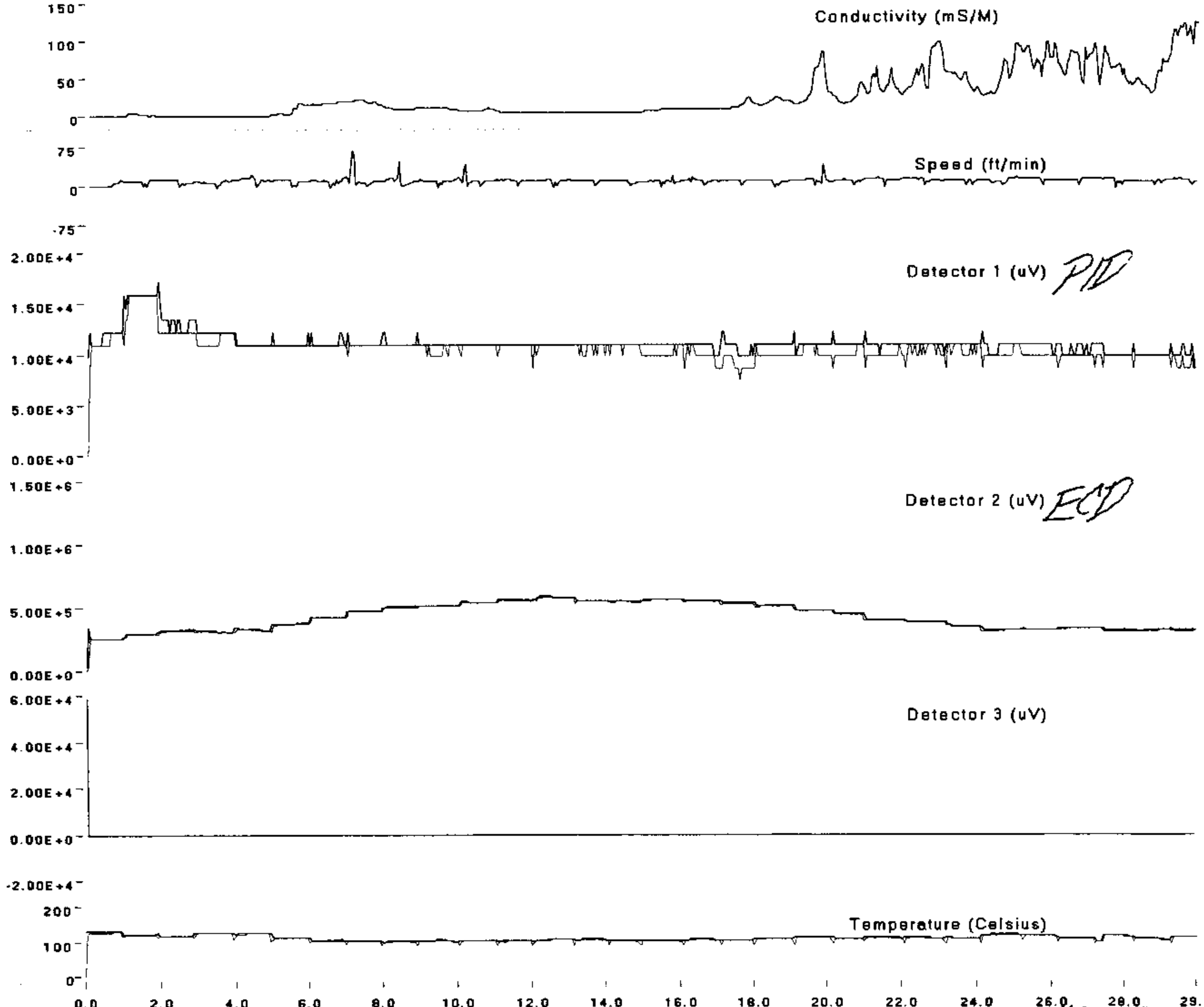

3-8-2007

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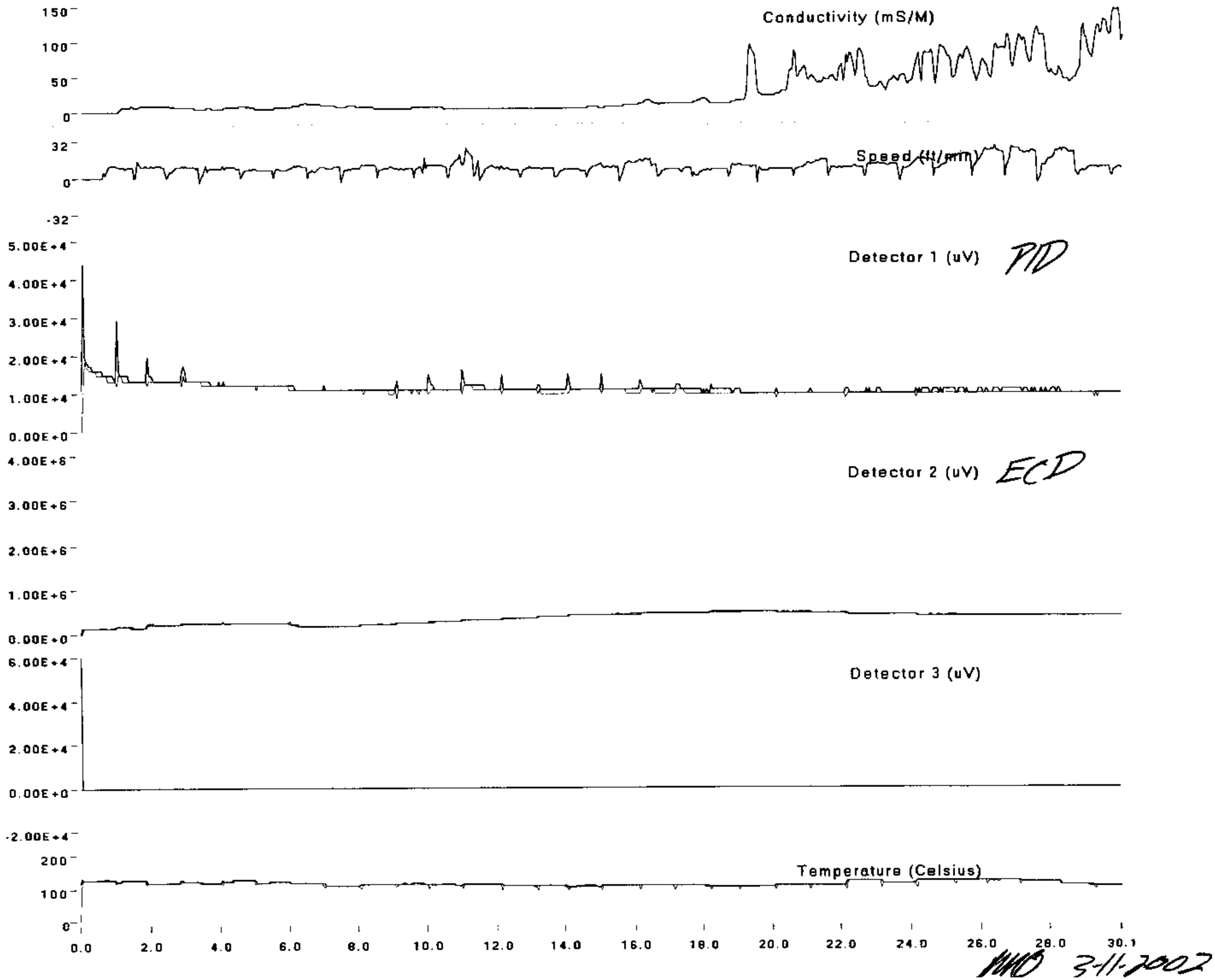

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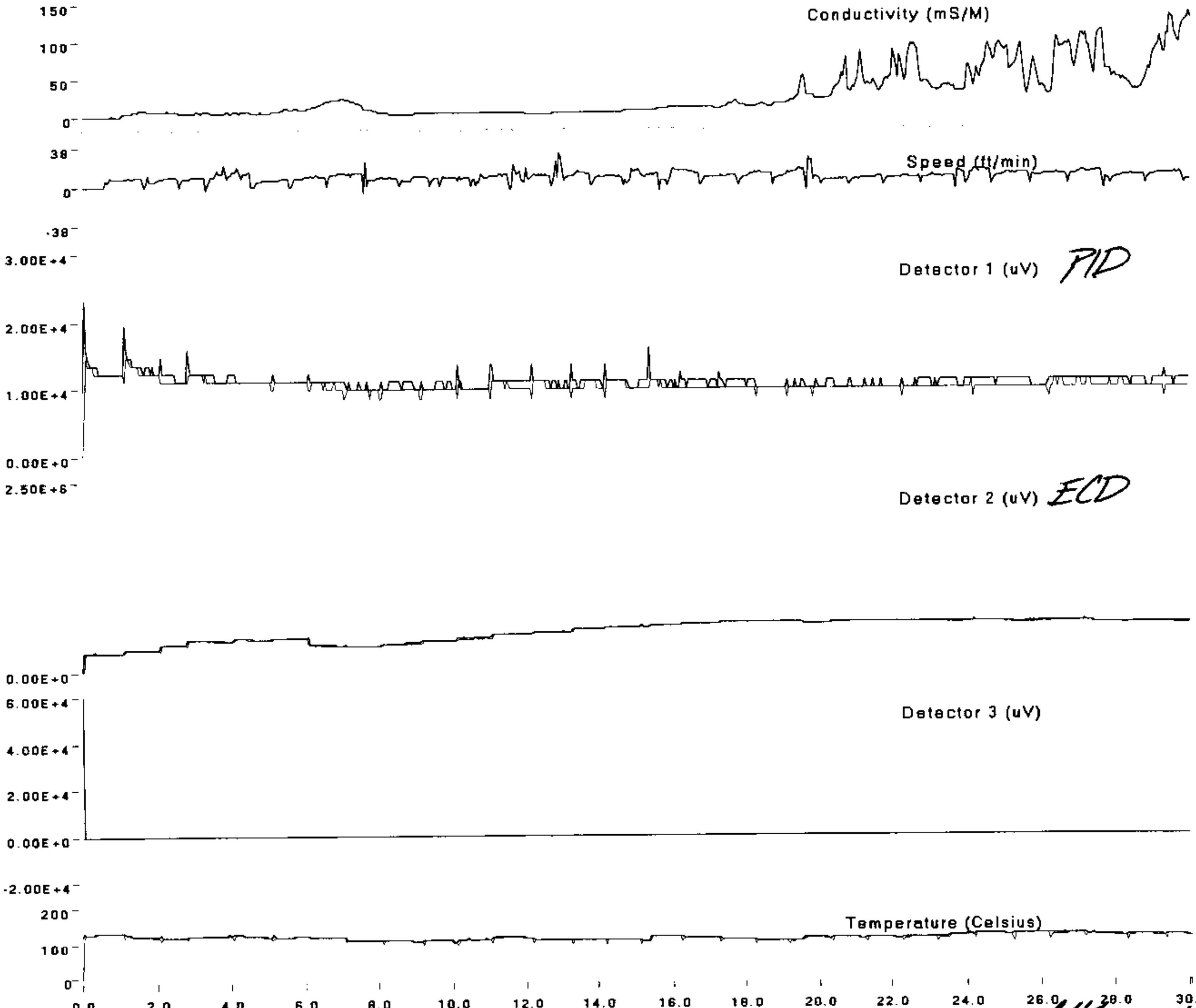

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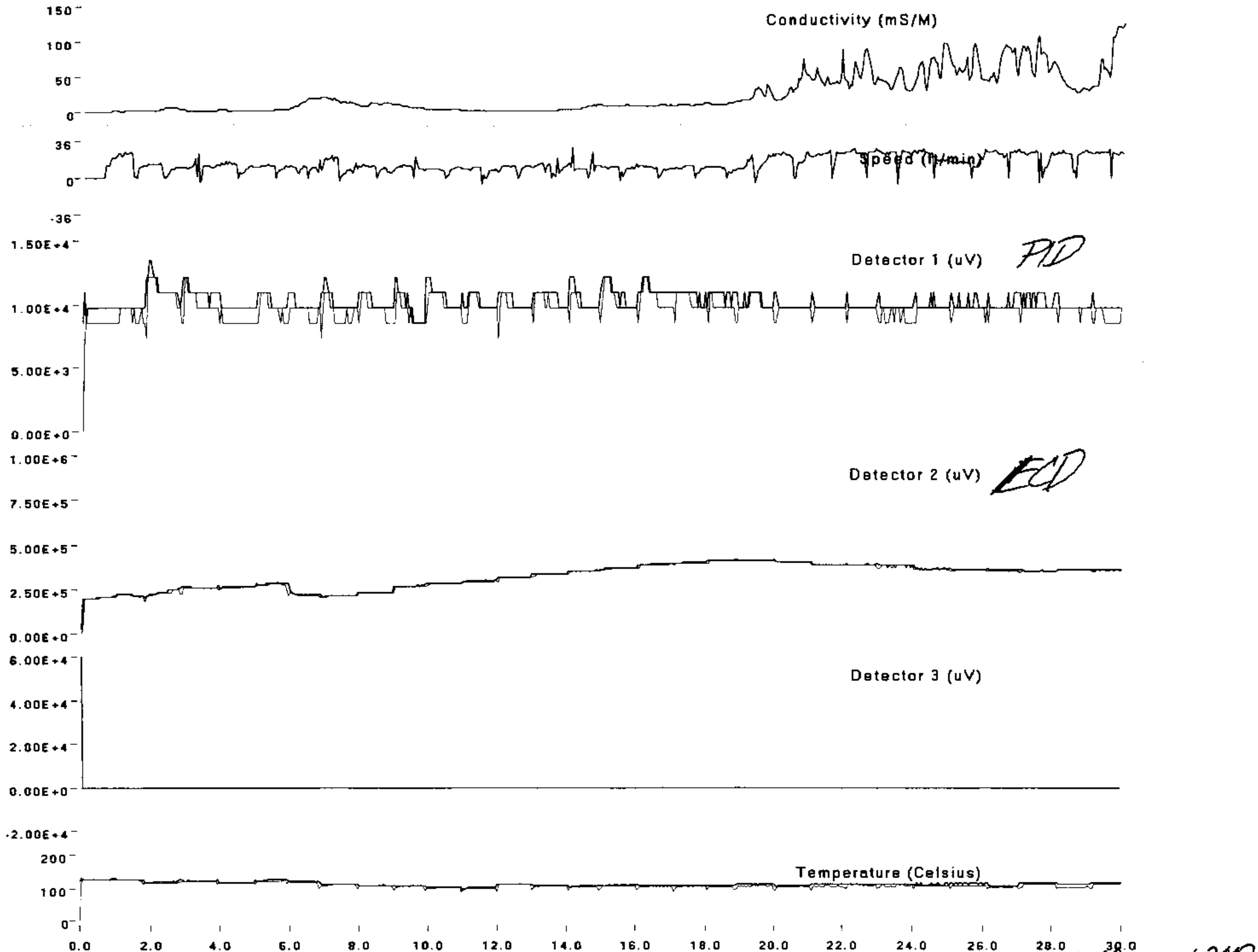

AMC 3-11-2002

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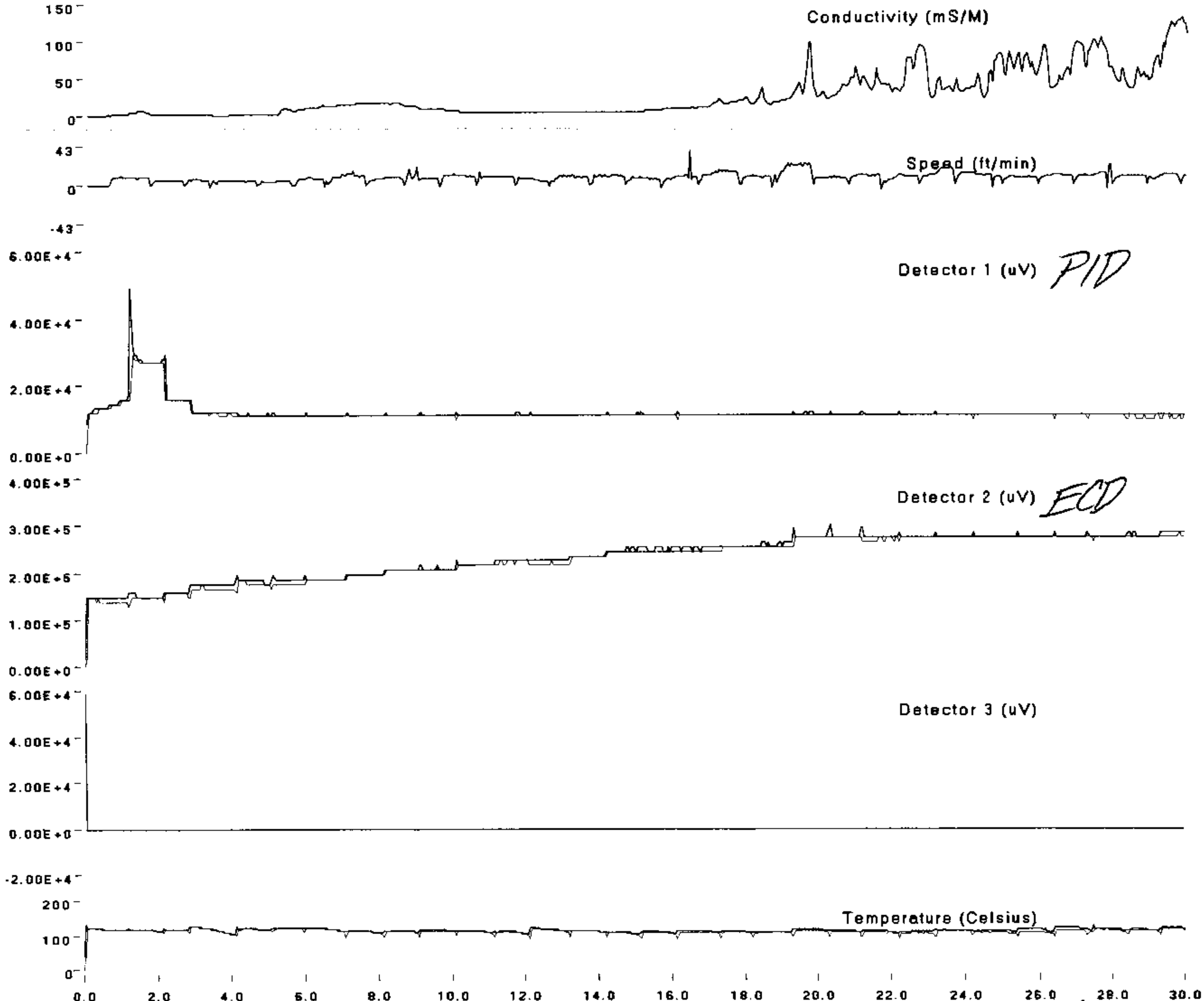

MO 3-8-2002

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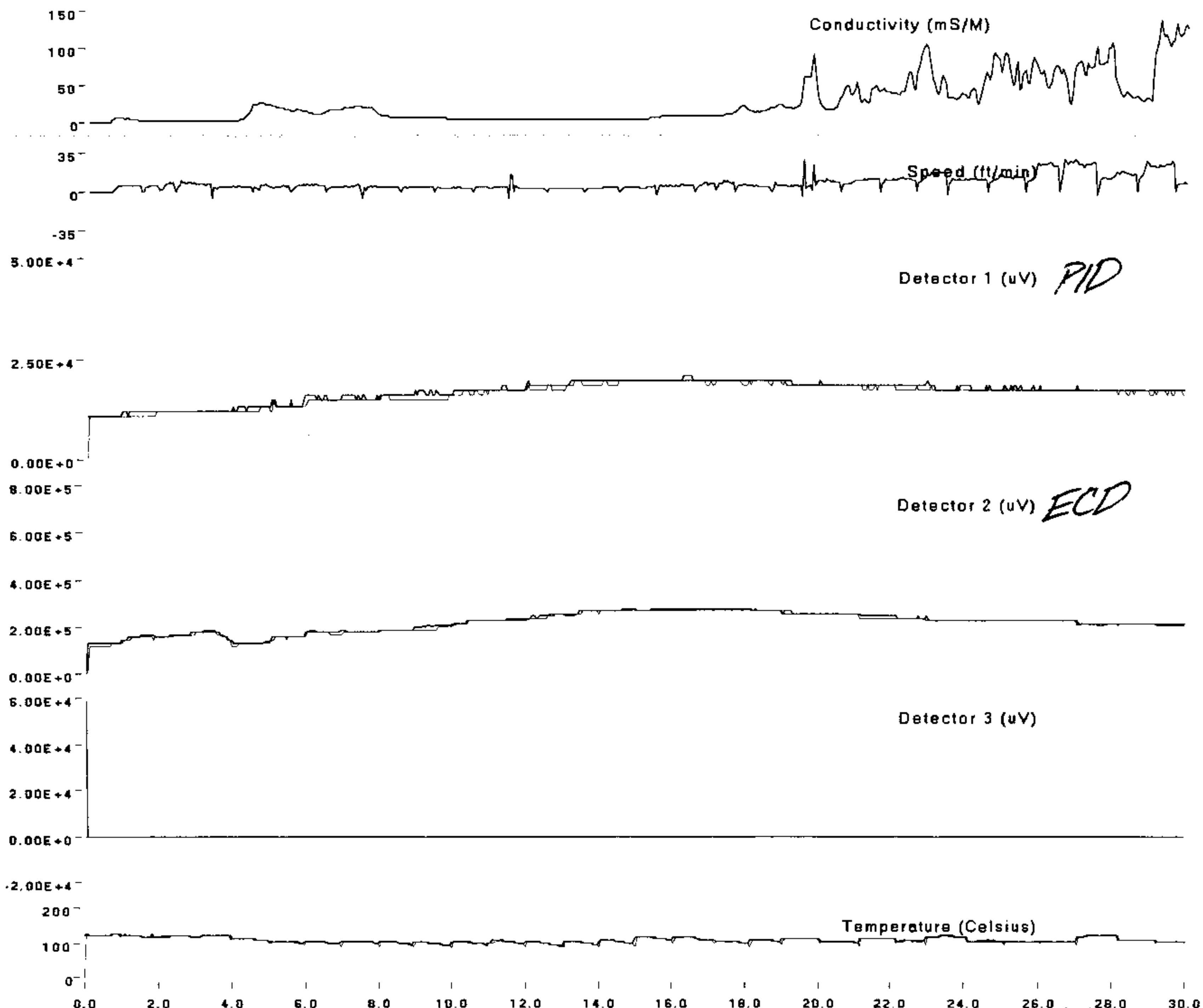

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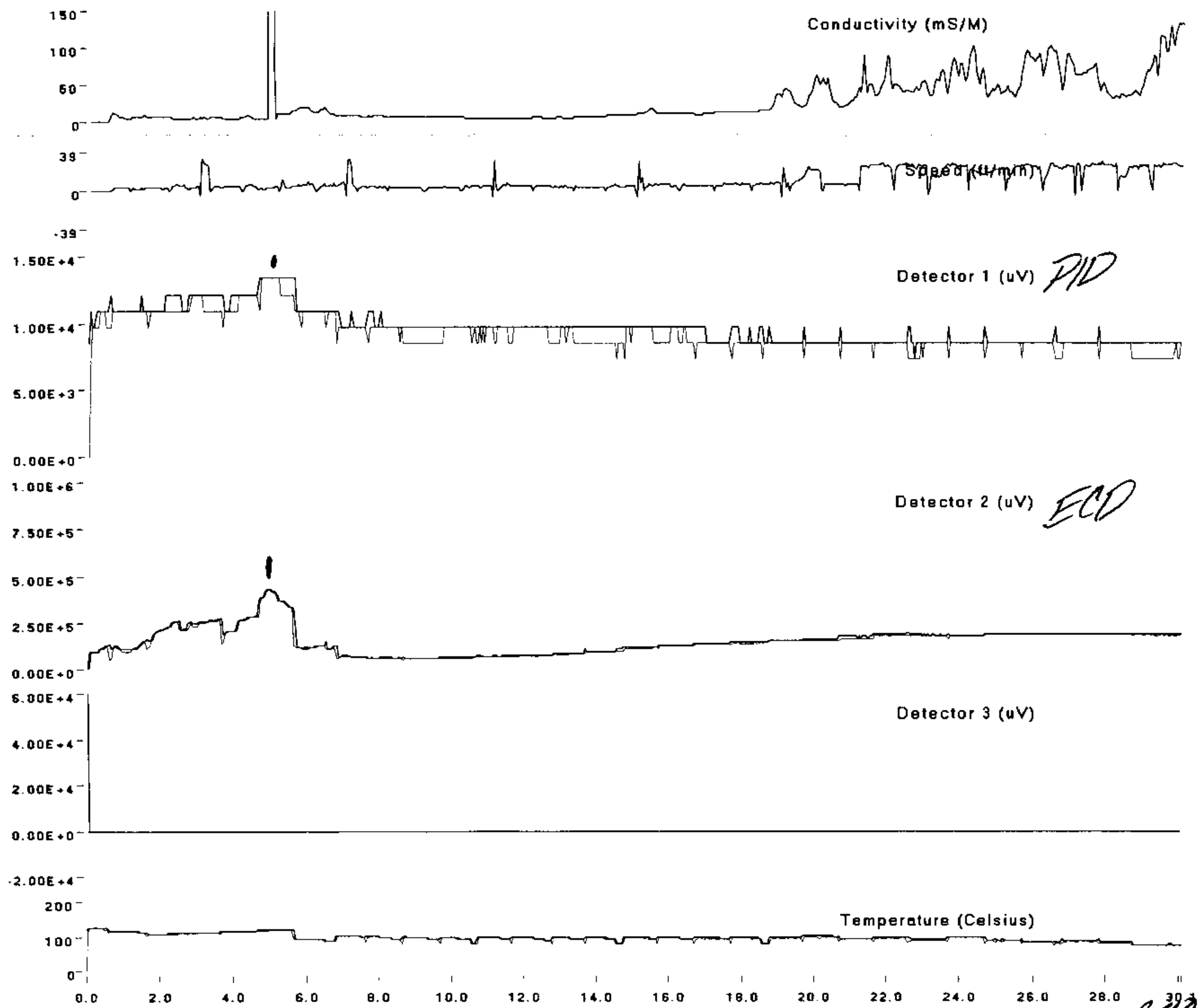

AMO 3-14-2002

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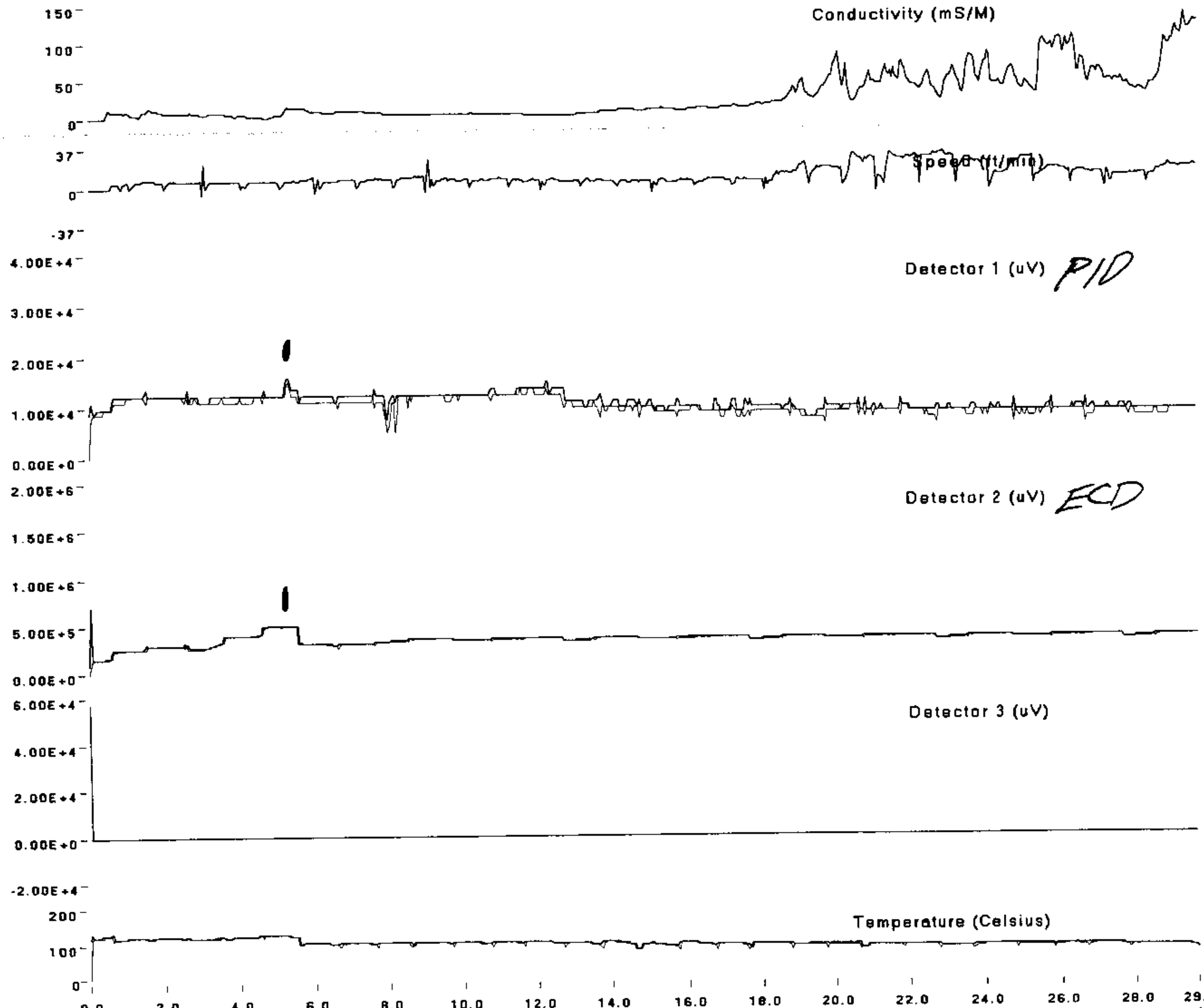

DMO 3-14-2002

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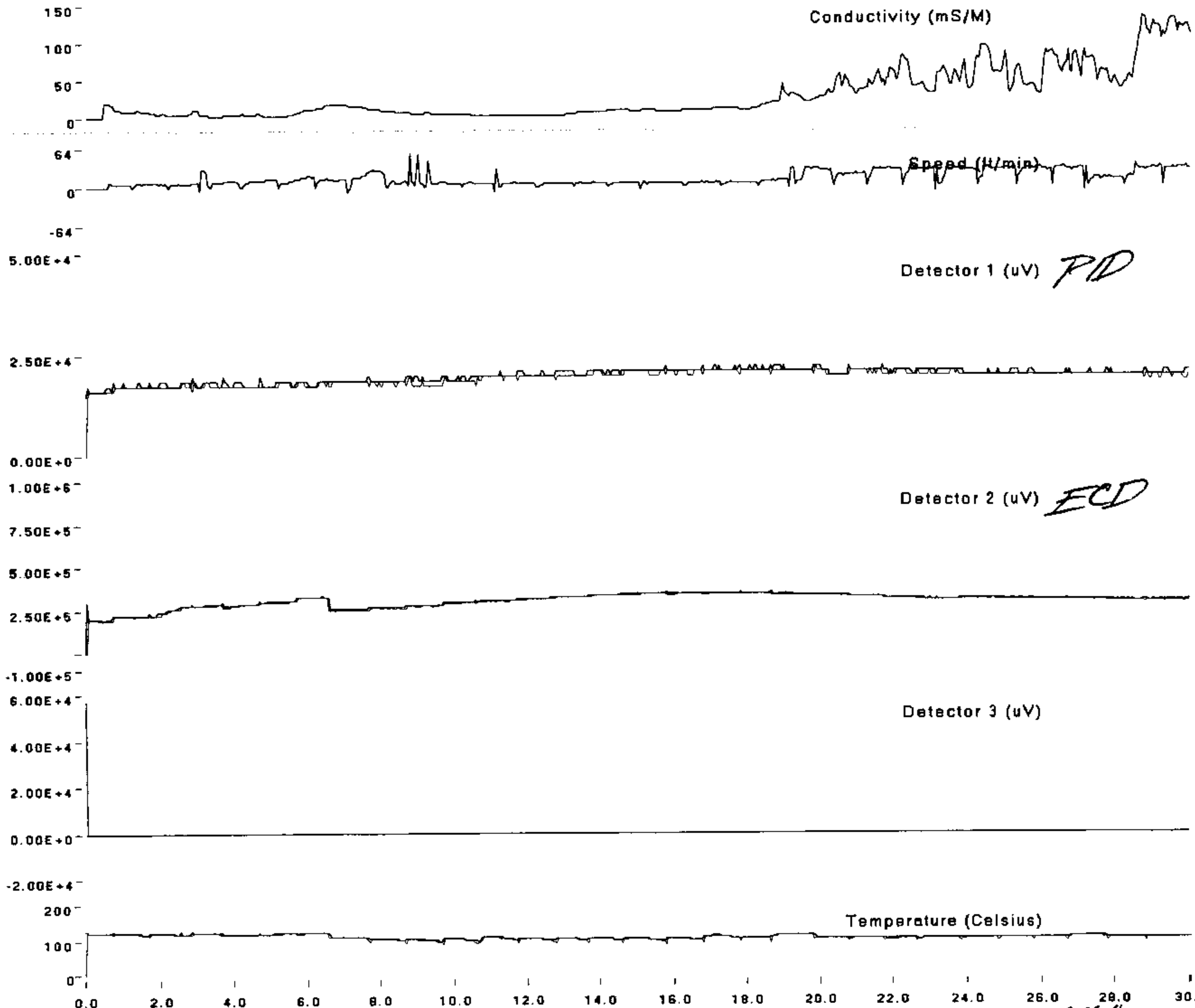

AWA 3-14-2002

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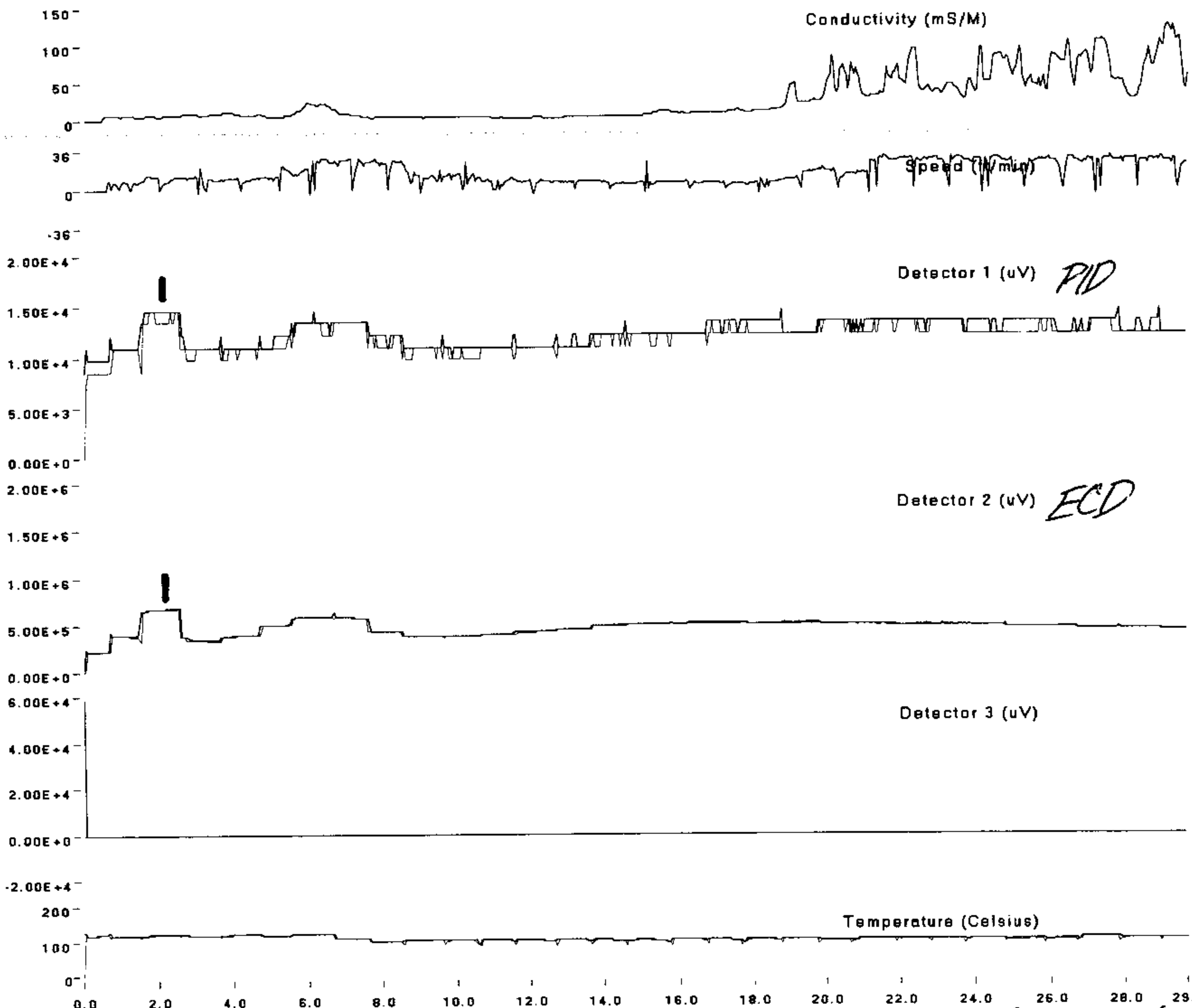

DMO 3-14-2002

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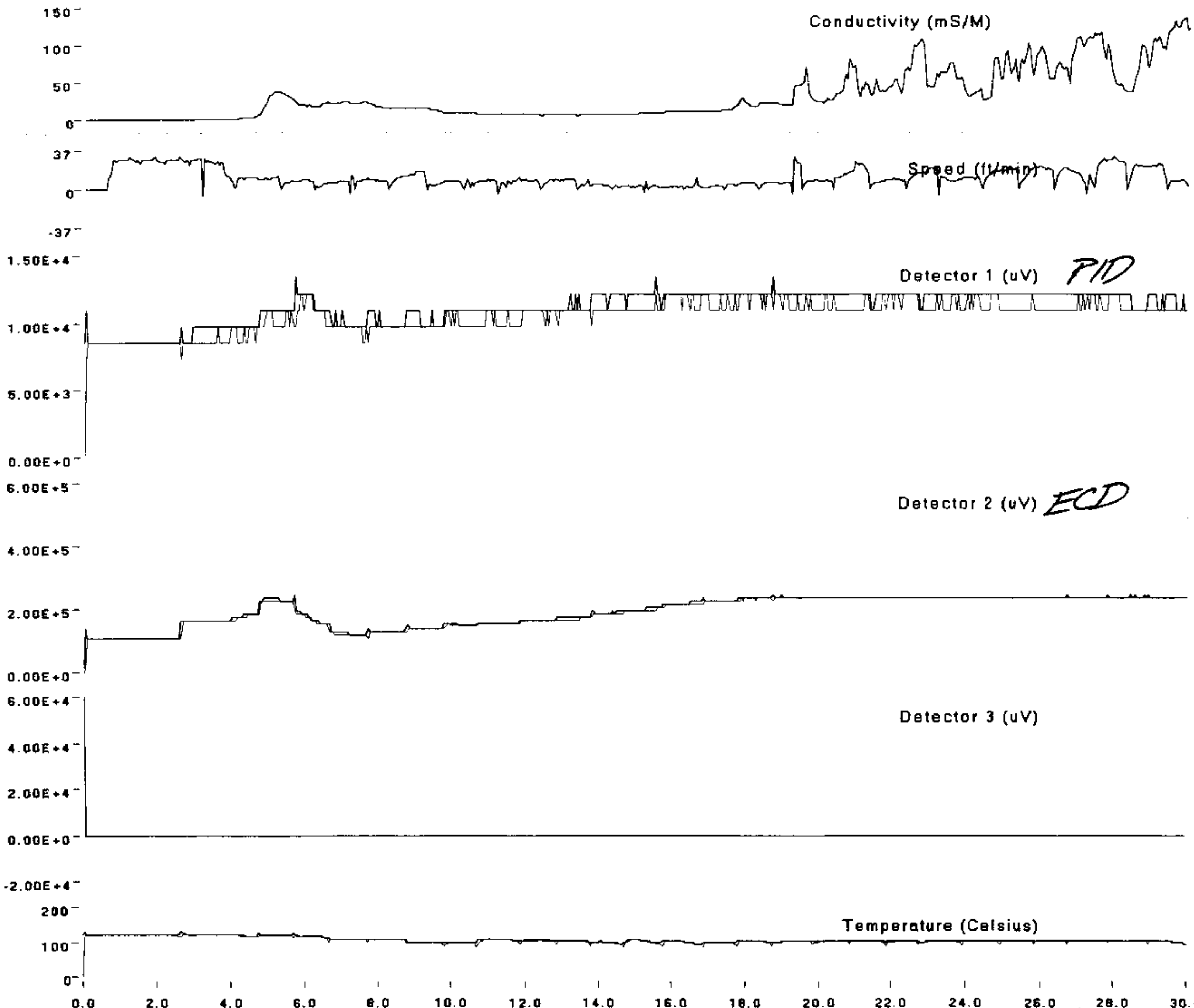

MO 3-13-2002

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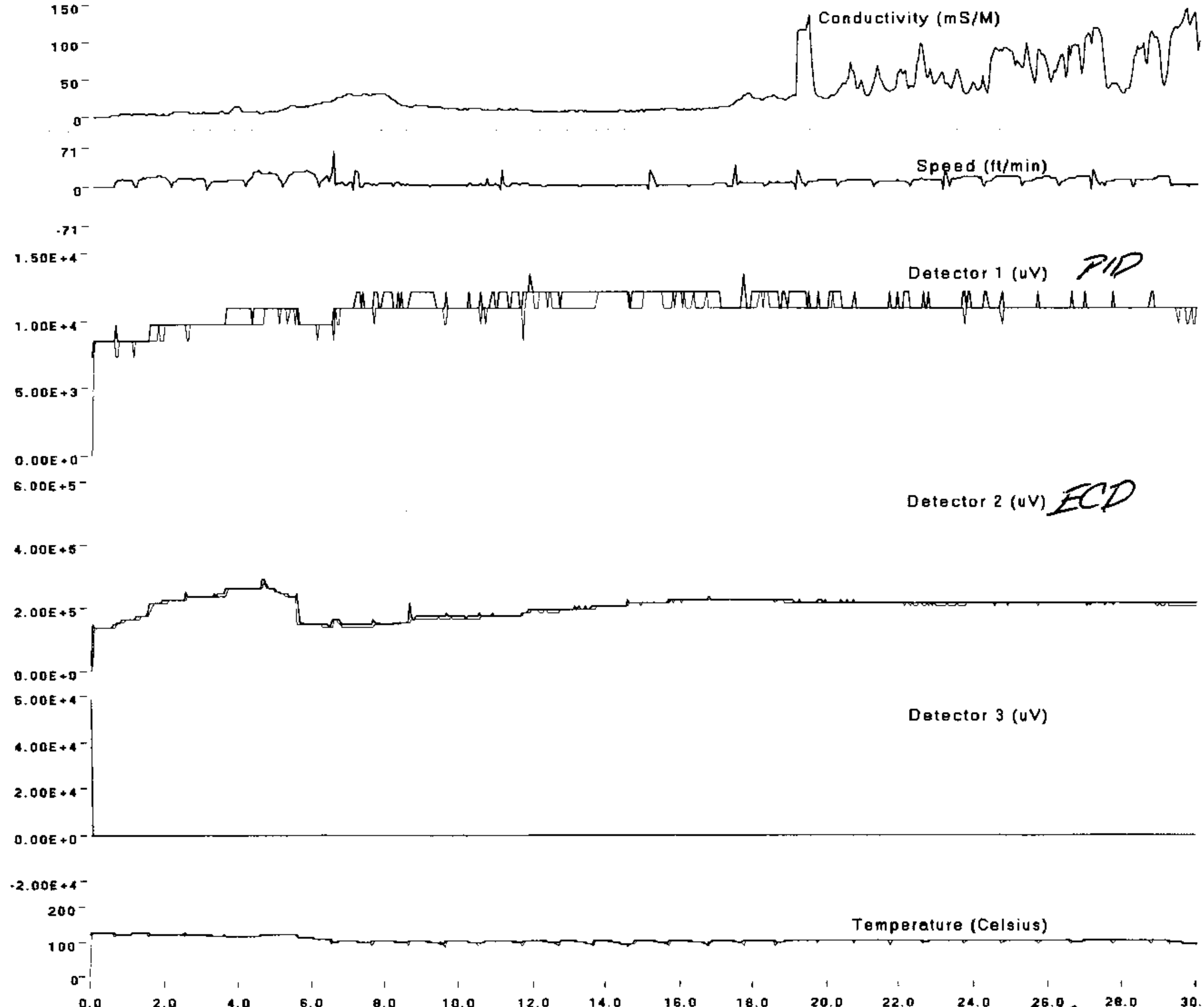

AMO 3-13-2002

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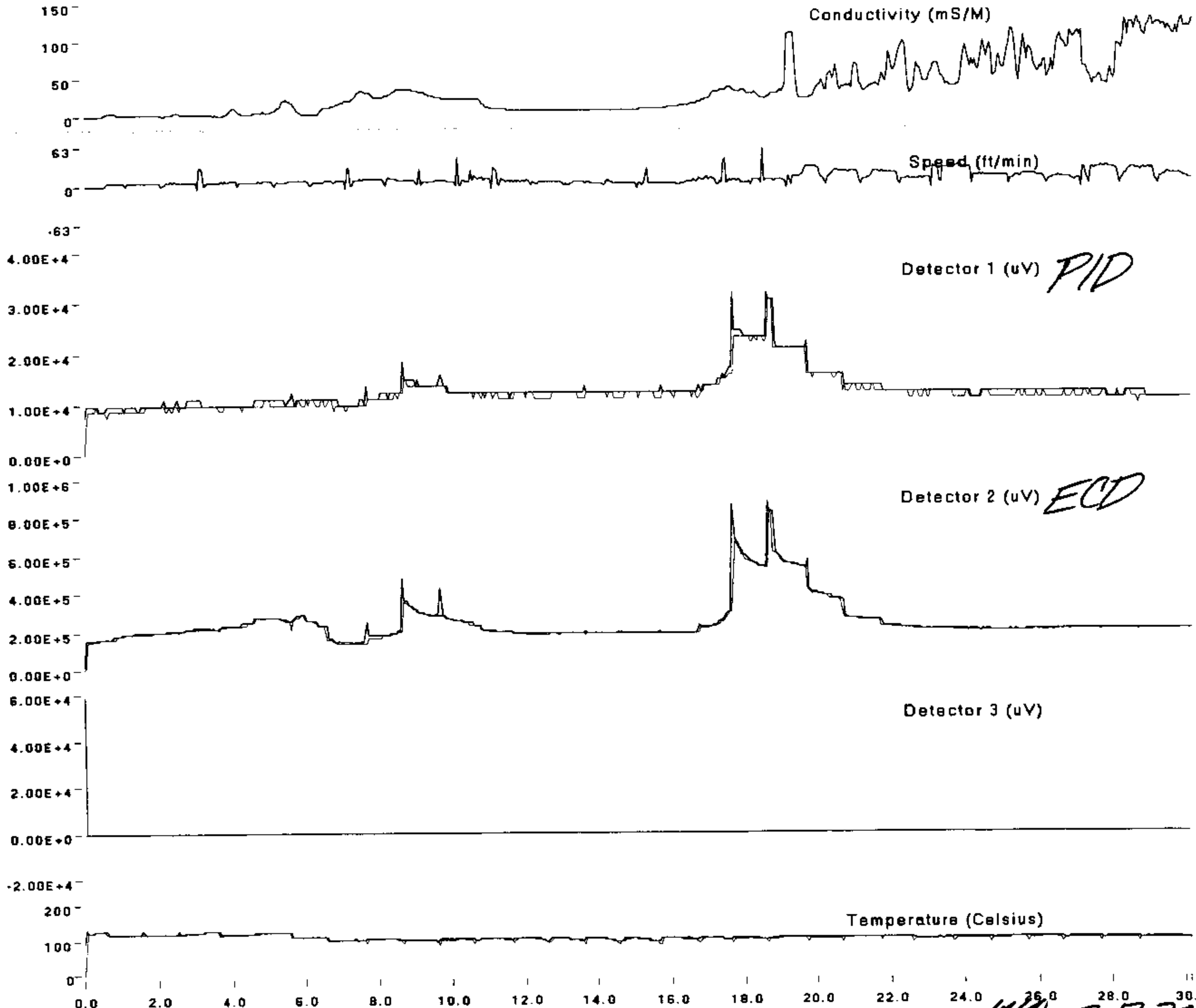

MO 3-13-2007

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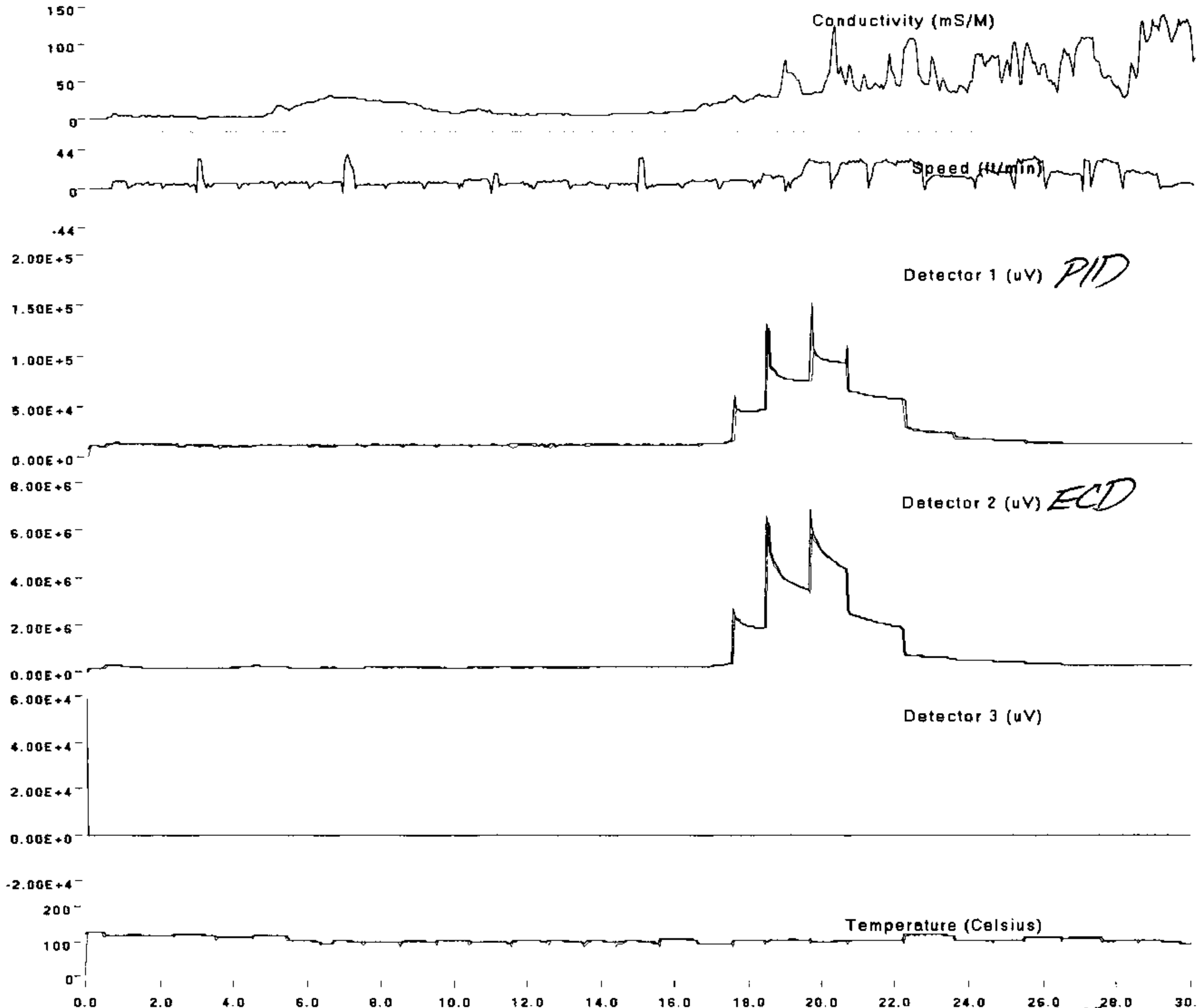

AWO 3-13-2002

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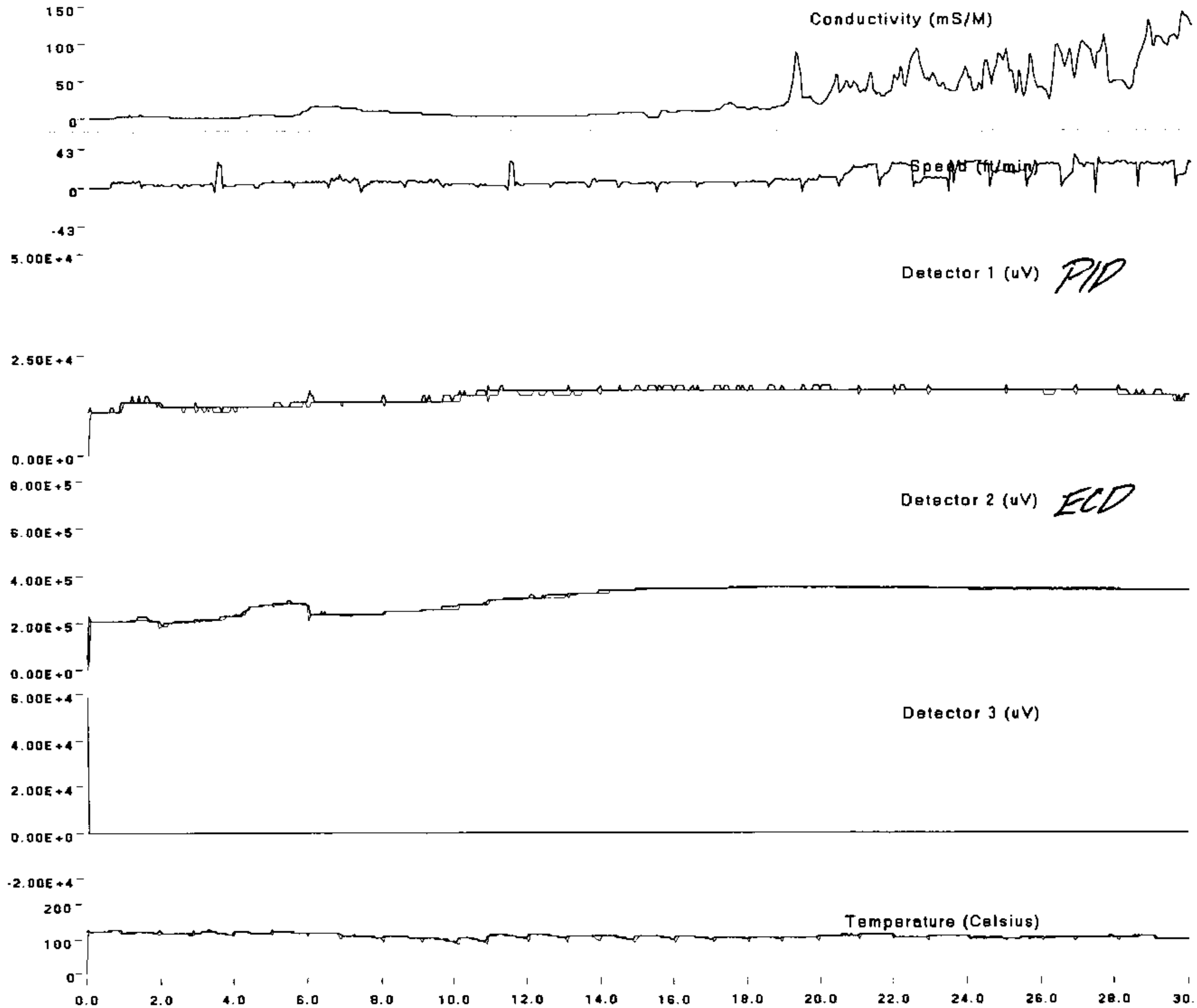

AUD 3-15-2002

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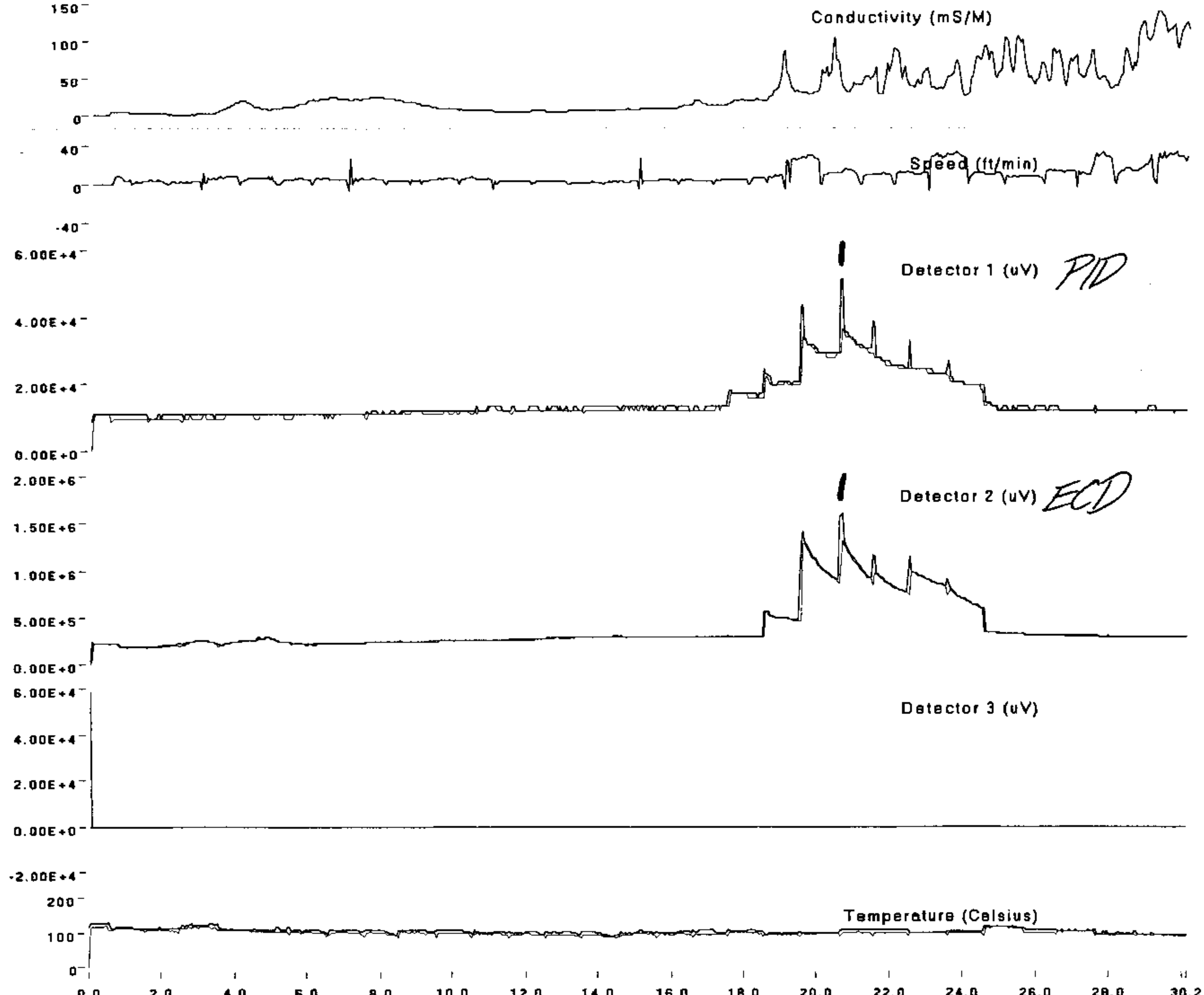

MMO 3-13-2002

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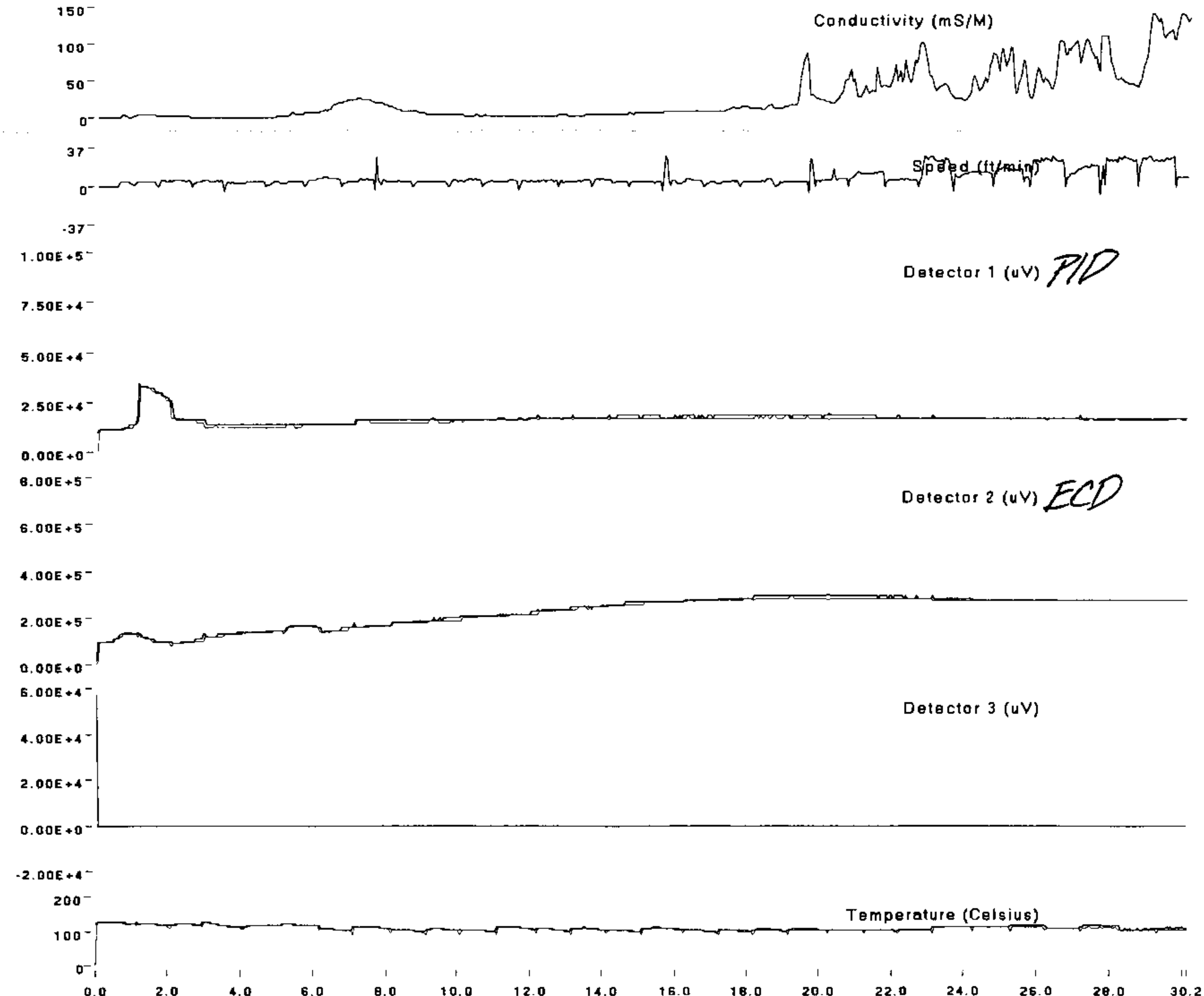

MWD 3-15-2002

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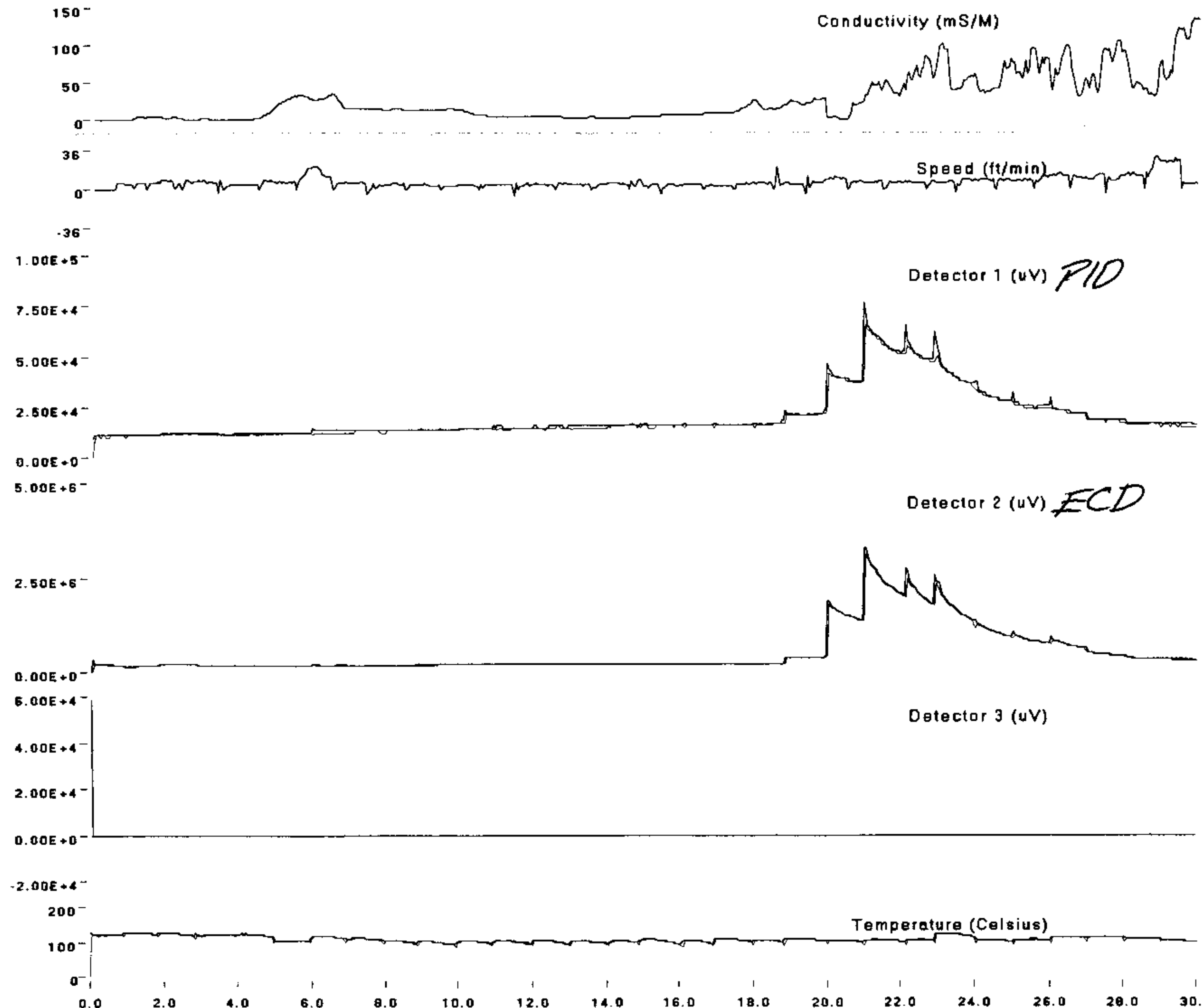

MD 3-15-2002

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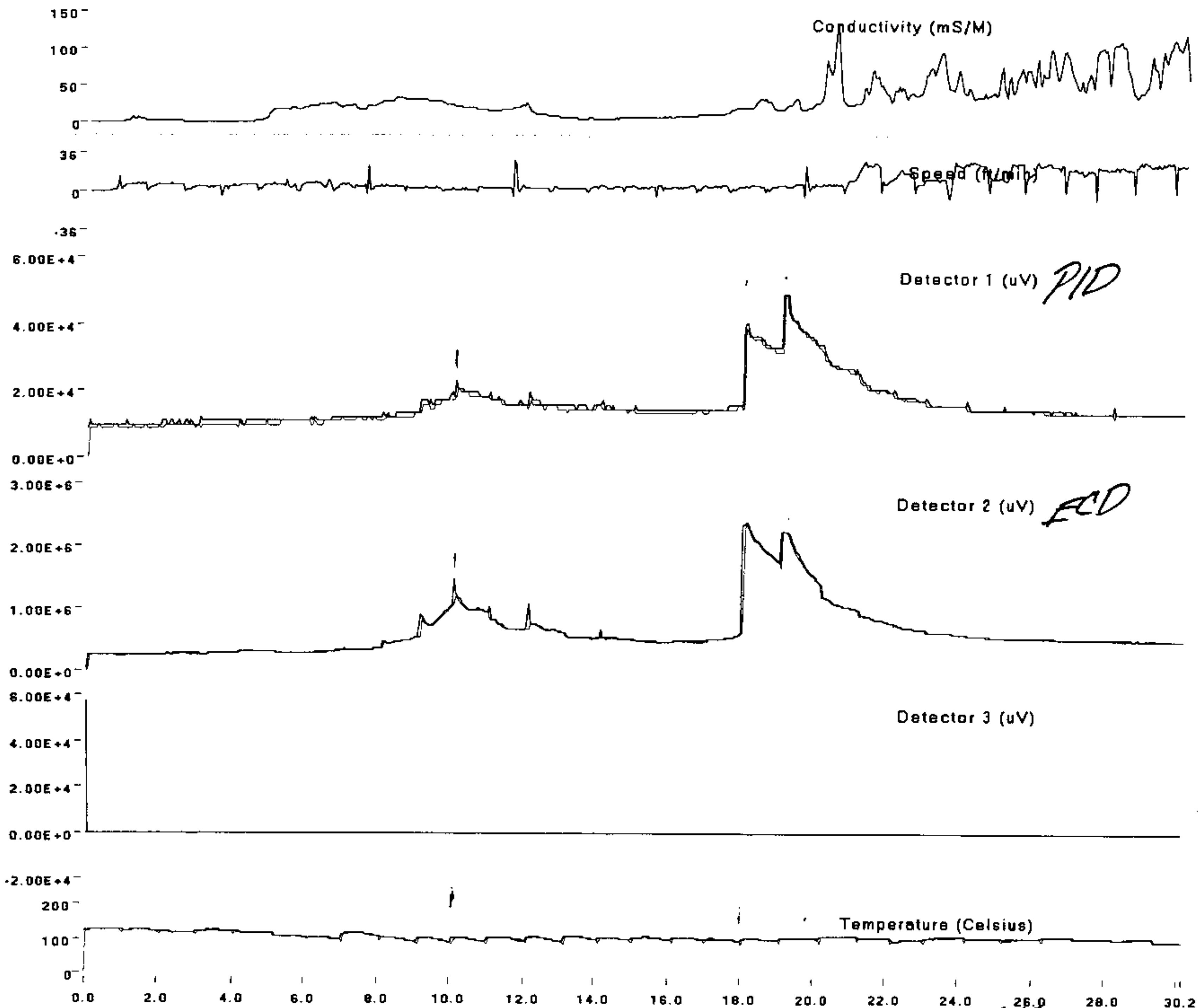
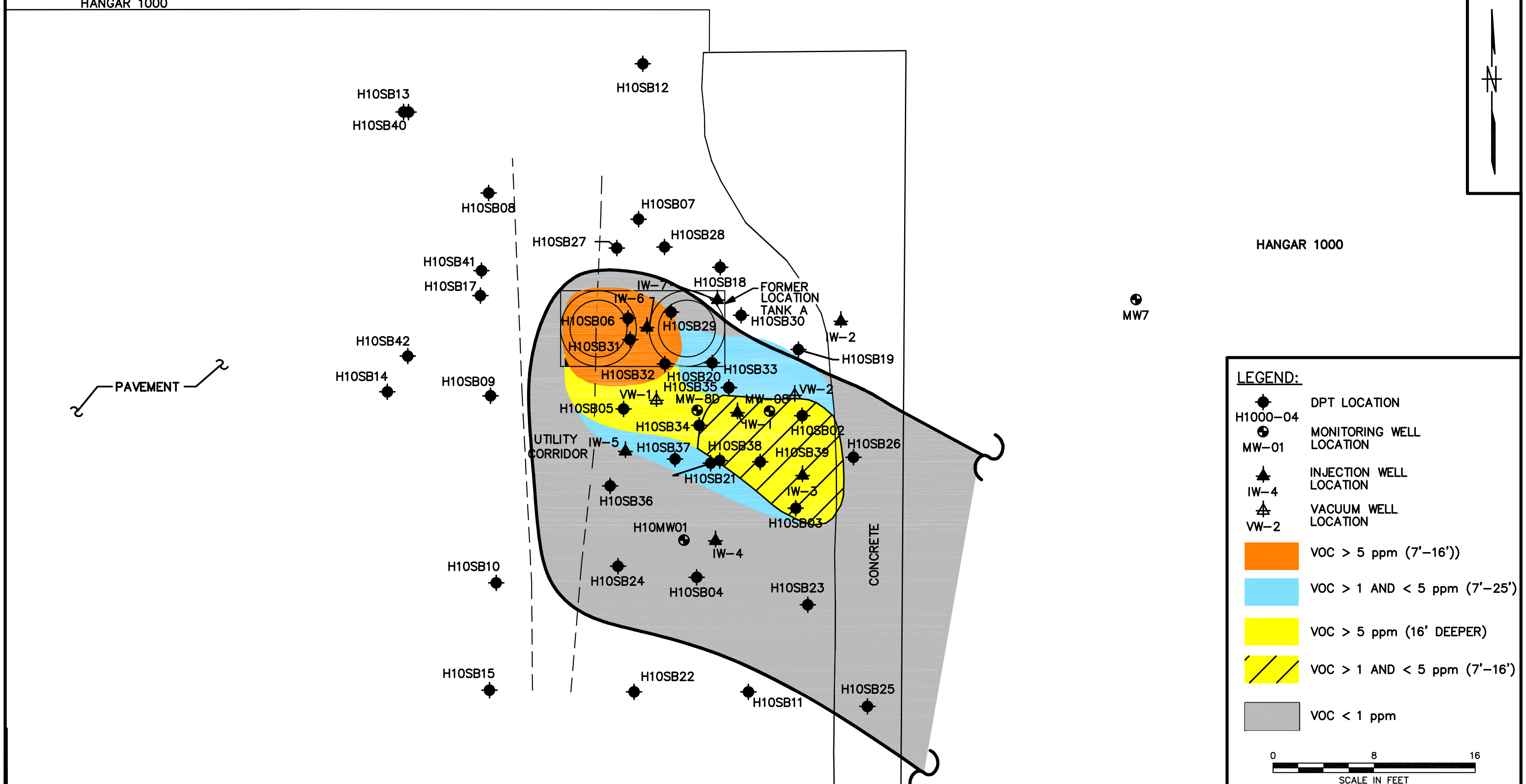


AMO 3-15-2002

ACAD: 0399CM02.dwg 08/06/03 DM PIT



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY DM DATE 8/1/03
CHECKED BY DATE
COST/SCHED-AREA
SCALE AS NOTED

DNAPL SOURCE AREAS DELINEATION
HANGAR 1000
NAS JACKSONVILLE
JACKSONVILLE, FLORIDA

CONTRACT NO. 0399
APPROVED BY DATE
APPROVED BY DATE
DRAWING NO. FIGURE J-1 REV. 0

FORM CADD NO. SDIV_BH.DWG - REV 0 - 1/20/98

APPENDIX B

SURVEY DATA

LETTER OF TRANSMITTAL

DATE: ____________ JOB# ____________

FROM: ____________

Arc Surveying and Mapping, Inc.
PROFESSIONAL LAND & MARINE ENGINEERING SURVEYORS
5202 SAN JUAN AVENUE, JACKSONVILLE, FLORIDA 32210
TELEPHONE (904) 384-8377 – FAX (904) 384-8388

TO: [illegible]
[illegible]
[illegible]
[illegible]

WE ARE TRANSMITTING:

☐ SHOP DRAWINGS ☐ PRINTS ☐ PLANS ☐ SAMPLES ☐ SPECIFICATIONS

☐ COPY OF LETTER ☐ CHANGE ORDER ☐ ____________

DESCRIPTION
[illegible] MONITORING WELL SURVEY
[illegible] JACKSONVILLE FL
ONE COPY OF [illegible] LETTER
ONE [illegible] COORDINATE [illegible] ON
DIGITAL BASE FOR [illegible] MONITORING
WELL
ONE [illegible]

THESE ARE TRANSMITTED AS CHECK BELOW:

☐ FOR APPROVAL ☐ APPROVED AS SUBMITTED ☐ RESUBMIT ______ COPIES FOR APPROVAL

☐ FOR YOUR USE ☐ APPROVED AS NOTED ☐ SUBMIT ______ COPIES FOR DISTRIBUTION

☐ AS REQUESTED ☐ RETURNED FOR CORRECTIONS ☐ RETURN ______ CORRECTED PRINTS

☐ FOR REVIEW AND COMMENT ☐ ____________

☐ FOR BIDS DUE ____________, 20____ ☐ PRINTS RETURNED AFTER LOAN TO US

COMMENTS
PLEASE DISREGARD PREVIOUS EDITIONS!
DIGITAL FILE ALSO EMAILED THIS DATE.

COPY TO: ____________ BY: [illegible]

LETTER OF TRANSMITTAL

DATE: ________________ JOB# ____________________

FROM: ______________________________

Arc Surveying and Mapping, Inc.
PROFESSIONAL LAND & MARINE ENGINEERING SURVEYORS
5202 SAN JUAN AVENUE, JACKSONVILLE, FLORIDA 32210
TELEPHONE (904) 384-8377 – FAX (904) 384-8388

TO: ______________________________

____

____

____

WE ARE TRANSMITTING:

☐ SHOP DRAWINGS ☐ PRINTS ☐ PLANS ☐ SAMPLES ☐ SPECIFICATIONS

☐ COPY OF LETTER ☐ CHANGE ORDER ☐ ______________________________

DESCRIPTION

THESE ARE TRANSMITTED AS CHECK BELOW:

☐ FOR APPROVAL ☐ APPROVED AS SUBMITTED ☐ RESUBMIT ______ COPIES FOR APPROVAL

☐ FOR YOUR USE ☐ APPROVED AS NOTED ☐ SUBMIT ______ COPIES FOR DISTRIBUTION

☐ AS REQUESTED ☐ RETURNED FOR CORRECTIONS ☐ RETURN ______ CORRECTED PRINTS

☐ FOR REVIEW AND COMMENT ☐ ______________________________

☐ FOR BIDS DUE ________________, 20____ ☐ PRINTS RETURNED AFTER LOAN TO US

COMMENTS

COPY TO: ______________________ BY: ______________________

TETRA TECH NUS, INC.
HANGER 100
MONITORING WELL LOCATIONS
DATE: 3/29/01
ARC SURVEYING MAPPING, INC.
JOB # 00-07-02

X (EASTING)	Y (NORTHING)	DESCRIPTION	ELEVATION
440695.67	2142915.31	MW-1	
		ON ASPHALT	16.74
		TOP CONCRETE	16.76
		N.RIM TOP PVC	16.32
440691.36	2142853.15	MW-2	
		ON ASPHALT	16.53
		TOP CONCRETE	16.61
		N.RIM TOP PVC	16.19
440723.43	2142753.68	MW-3	
		ON ASPHALT	16.68
		TOP CONCRETE	16.77
		N.RIM TOP PVC	16.4
440751.58	2142810.21	MW-5	
		CONCRETE FLOOR	17.24
		N.RIM TOP PVC	16.93
440751.09	2142863.99	MW-6	
		CONCRETE FLOOR	17.24
		N.RIM TOP PVC	16.96
440731.38	2142934.39	MW-7	
		CONCRETE FLOOR	17.19
		N.RIM TOP PVC	16.93
440702.47	2142925.57	MW-8	
		ON ASPHALT	16.56
		TOP CONCRETE	16.61
		N.RIM TOP PVC	16.46
440701.02	2142846.18	MW-9	
		ON ASPHALT	16.39
		TOP CONCRETE	16.44
		N.RIM TOP PVC	16.21

TETRA TECH NUS, INC.
HANGER 100
MONITORING WELL LOCATIONS
DATE: 3/29/01
ARC SURVEYING MAPPING, INC.
JOB # 00-07-02

440616.14	2142953.44	MW-10	
		ON ASPHALT	16.67
		TOP CONCRETE	16.71
		N.RIM TOP PVC	16.37
440616.5	2142948.94	MW-11	
		ON ASPHALT	16.71
		TOP CONCRETE	16.67
		N.RIM TOP PVC	16.35
440806.23	2142787.19	MW-12	
		CONCRETE FLOOR	17.25
		N.RIM TOP PVC	17.01
440758.63	2142753.52	MW-13	
		ON ASPHALT	16.7
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		N.RIM TOP PVC	16.56
440828.08	2142756.98	MW-14	
		ON ASPHALT	16.51
		TOP CONCRETE	16.59
		N.RIM TOP PVC	16.35
440840.41	2142807.76	MW-15	
		ON ASPHALT	15.78
		TOP CONCRETE	15.84
		N.RIM TOP PVC	15.67
440892	2142628.85	MW-16	
		ON ASPHALT	14.39
		TOP CONCRETE	14.39
		N.RIM TOP PVC	14.14
440887.98	2142629.03	MW-17	
		ON ASPHALT	14.45
		TOP CONCRETE	14.45
		N.RIM TOP PVC	14.13
440880.21	2142698.08	MW-18	
		ON ASPHALT	14.48
		TOP CONCRETE	14.48
		N.RIM TOP PVC	14.17

TETRA TECH NUS, INC.
HANGER 100
MONITORING WELL LOCATIONS
DATE: 3/29/01
ARC SURVEYING MAPPING, INC.
JOB # 00-07-02

440941.2	2142556.46	MW-19	
		GROUND	14.5
		TOP CONCRETE	14.58
		N.RIM TOP PVC	14.24
441080.27	2142770.97	MW-20	
		ON ASPHALT	12.62
		TOP CONCRETE	12.62
		N.RIM TOP PVC	12.28
440314.7	2142777.35	MW-21	
		ON ASPHALT	14.87
		TOP CONCRETE	14.89
		N.RIM TOP PVC	14.59
440909.49	2142742.63	MW-22	
		ON ASPHALT	14.84
		TOP CONCRETE	14.84
		N.RIM TOP PVC	14.48
2142532.08	441051.08	MW-23	
		GROUND	12.77
		TOP CONCRETE	12.74
		N.RIM TOP PVC	12.62
2142408.50	440858.65	MW-24	
		GROUND	17.17
		TOP CONCRETE	17.14
		N.RIM TOP PVC	17.01
2142530.98	440685.20	MW-25	
		GROUND	16.49
		TOP CONCRETE	16.49
		N.RIM TOP PVC	16.38
2142368.70	441115.18	MW-26	
		ON ASPHALT	10.02
		N.RIM TOP PVC	9.50
2142369.00	441118.00	MW-27	
		ON ASPHALT	9.86
		N.RIM TOP PVC	9.70

APPENDIX C

SOIL BORING LOGS
WELL COMPLETION RECORDS

Tetra Tech NUS, Inc.

WELL No.: MW 23

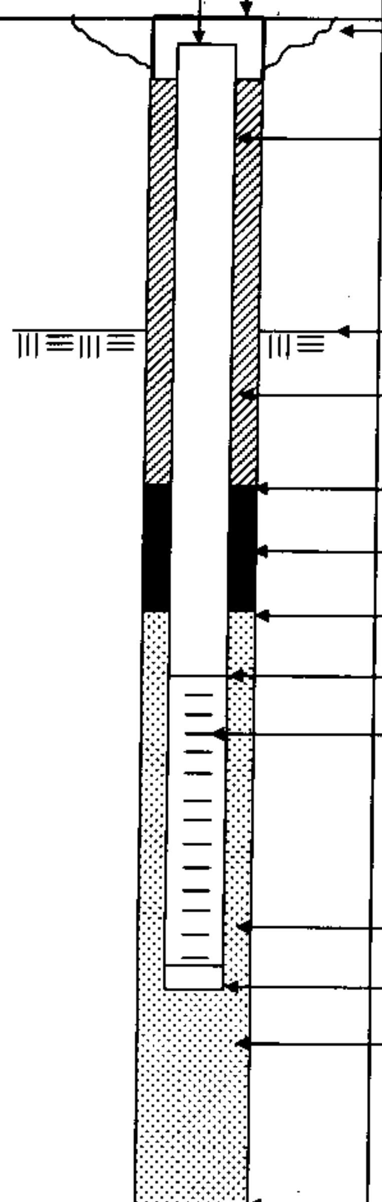
MONITORING WELL SHEET

PROJECT:	HANGAR 1000	DRILLING Co.:	ALL DRILLING	BORING No.:	
PROJECT No.:	N0399	DRILLER:	MARK MURRAY	DATE COMPLETED:	12/8/00
SITE:	HANGAR 1000	DRILLING METHOD:	DPT	NORTHING:	
GEOLOGIST:	A. PATE	DEV. METHOD:	~~SUBMERSIBLE~~ PERISTALTIC	EASTING:	

MICROWELL

Ground Elevation =

Datum:



Not to Scale

Elevation / Depth of Top of Riser: /

Elevation / Height of Top of Surface Casing: /

I.D. of Surface Casing: 8"

Type of Surface Casing: STEEL

Type of Surface Seal: GROUT

I.D. of Riser: 1"

Type of Riser: PVC

Borehole Diameter: 2"

Elevation / Depth Top of Rock: NA /

Type of Backfill: GROUT

Elevation / Depth of Seal: 1' /

Type of Seal: 30-65 SAND

Elevation / Depth of Top of Filter Pack: 2' /

Elevation / Depth of Top of Screen: 3' /

Type of Screen: PRE CONSTRUCTED PVC SLOTTED

Slot Size x Length: /12'

I.D. of Screen: 1"

Type of Filter Pack: 20-30 SAND

Elevation / Depth of Bottom of Screen: 15' /

Elevation / Depth of Bottom of Filter Pack: 15' /

Type of Backfill Below Well: 20-30 SAND

Elevation / Total Depth of Borehole: 15' /

Tetra Tech NUS, Inc.

WELL No.: MW-24

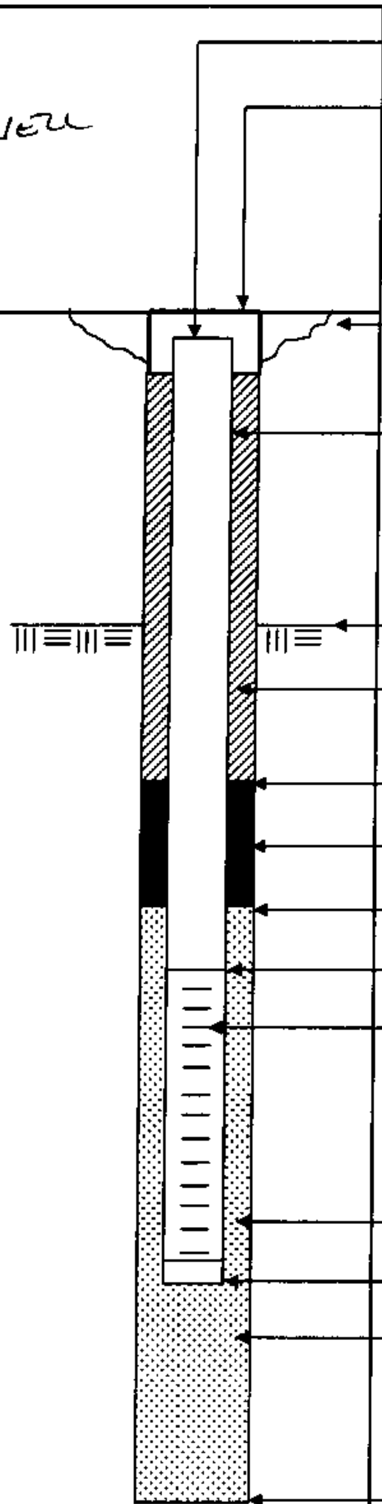
MONITORING WELL SHEET

PROJECT:	HANGAR 1000	DRILLING Co.:	ATI DRILLING	BORING No.:	
PROJECT No.:	N0399	DRILLER:	Mark Murray	DATE COMPLETED:	12/8/00
SITE:	NAS JAX	DRILLING METHOD:	DPT	NORTHING:	
GEOLOGIST:	A. PATE	DEV. METHOD:	~~Surge~~ Peristaltic	EASTING:	

MICROWELL

Ground Elevation =

Datum:



Elevation / Depth of Top of Riser: /

Elevation / Height of Top of Surface Casing: /

I.D. of Surface Casing: 8"

Type of Surface Casing: STEEL

Type of Surface Seal: GROUT

I.D. of Riser: 1"

Type of Riser: PVC

Borehole Diameter: 2"

Elevation / Depth Top of Rock: NA /

Type of Backfill: GROUT

Elevation / Depth of Seal: .6IN /

Type of Seal: 30-65 SAND

Elevation / Depth of Top of Filter Pack: 1½ /

Elevation / Depth of Top of Screen: 2½' /

Type of Screen: PRE CONSTRUCTED PVC SLOTTED

Slot Size x Length: 12'

I.D. of Screen: 1"

Type of Filter Pack: 20-30 SAND

Elevation / Depth of Bottom of Screen: 14½' /

Elevation / Depth of Bottom of Filter Pack: 14½' /

Type of Backfill Below Well: 20-30 SAND

Elevation / Total Depth of Borehole: 14½' /

Tetra Tech NUS, Inc.

WELL No.: MW 25

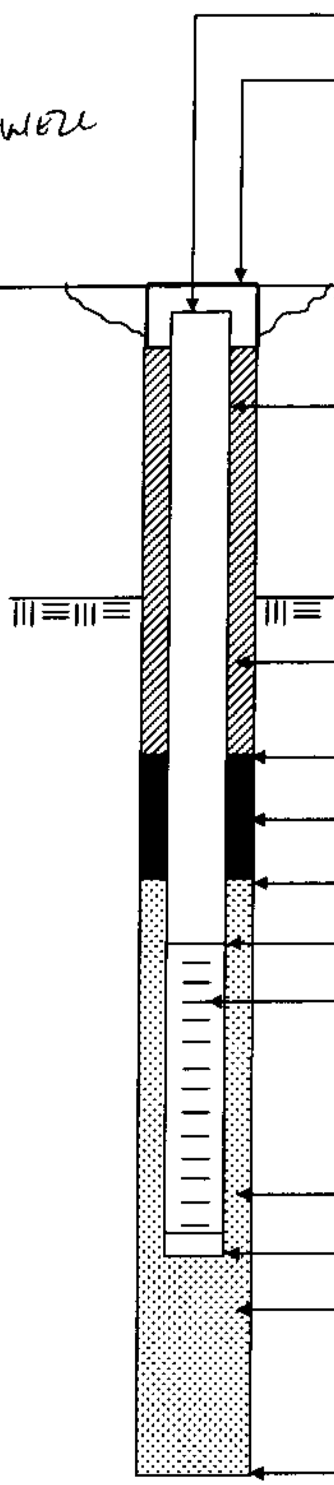
MONITORING WELL SHEET

PROJECT:	HANGAR 1000	DRILLING Co.:	ATL DRILLING	BORING No.:	
PROJECT No.:	N0399	DRILLER:	MARK MURRAY	DATE COMPLETED:	12/8/00
SITE:	NAS JAX	DRILLING METHOD:	DPT	NORTHING:	
GEOLOGIST:	A. PATE	DEV. METHOD:	PERISTALTIC	EASTING:	

MICROWELL

Ground Elevation =

Datum:



Not to Scale

Elevation / Depth of Top of Riser:	/
Elevation / Height of Top of Surface Casing:	/
I.D. of Surface Casing:	8"
Type of Surface Casing:	STEEL
Type of Surface Seal:	GROUT
I.D. of Riser:	1"
Type of Riser:	PVC
Borehole Diameter:	2"
Elevation / Depth Top of Rock:	NA /
Type of Backfill:	GROUT
Elevation / Depth of Seal:	1' /
Type of Seal:	30-65 SAND
Elevation / Depth of Top of Filter Pack:	2' /
Elevation / Depth of Top of Screen:	3' /
Type of Screen:	PRECONSTRUCTED PVC SLOTTED
Slot Size x Length:	9'
I.D. of Screen:	1"
Type of Filter Pack:	20-30 SAND
Elevation / Depth of Bottom of Screen:	12' /
Elevation / Depth of Bottom of Filter Pack:	12' /
Type of Backfill Below Well:	20-30 SAND
Elevation / Total Depth of Borehole:	12' /

Tetra Tech NUS, Inc.

BORING LOG

Page ___ of ___

PROJECT NAME: HANGAR 1000 RI/FS
PROJECT NUMBER: N0399
DRILLING COMPANY: ATI DRILLING
DRILLING RIG:

BORING NUMBER: MW 26
DATE: 12/12/00
GEOLOGIST:
DRILLER: MARK MURRAY

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	4ft.								1st 3ft. LOOKED				
							MED-FINE SAND		TO BE FILL				
							NO FRAGMENTATION		MATERIAL				
							Lt. BROWN-GREY						
	14ft						NO COHESION						
							SANDY CLAY-HIGHER						
	20ft.						SAND CONTENT						
	24ft						MED-FINE SAND W/CLAY Lt GREY IN COLOR						
	26ft						GREEN-GREY CLAY						
							W/ SHELLS-HARD PACKED						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: ______

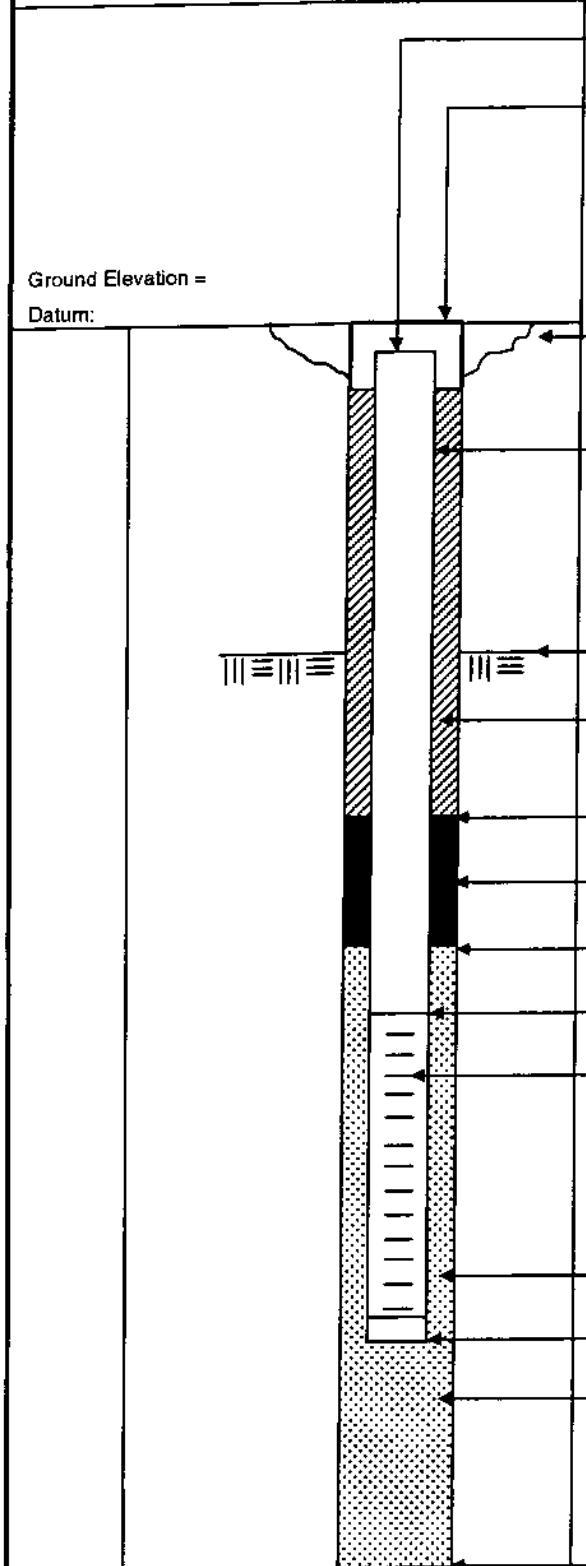
Drilling Area
Background (ppm): ______

Tetra Tech NUS, Inc.

WELL No.: MW-~~27~~ 26 AP

MONITORING WELL SHEET

PROJECT:	HANGAR 1000	DRILLING Co.:	ATI-DRILLING	BORING No.:	
PROJECT No.:	N0399	DRILLER:	MARK MURRAY	DATE COMPLETED:	12/12/00
SITE:		DRILLING METHOD:	HOLLOW-STEM	NORTHING:	
GEOLOGIST:		DEV. METHOD:	SUBMERSIBLE	EASTING:	



Not to Scale

Elevation / Depth of Top of Riser: /

Elevation / Height of Top of Surface Casing: /

I.D. of Surface Casing: 8"

Type of Surface Casing: Steel

Type of Surface Seal: GROUT

I.D. of Riser: 3/4"

Type of Riser: PVC

Borehole Diameter: 2"

Elevation / Depth Top of Rock: / NA

Type of Backfill: GROUT

Elevation / Depth of Seal: / 17ft. bgs

Type of Seal: 30/65 Sand

Elevation / Depth of Top of Filter Pack: / 18ft. bgs

Elevation / Depth of Top of Screen: / 20ft. bgs

Type of Screen: PVC

Slot Size x Length: 0.01/5ft.

I.D. of Screen: 2"

Type of Filter Pack: Prepacked

Elevation / Depth of Bottom of Screen: / 25ft.

Elevation / Depth of Bottom of Filter Pack: / 26ft.

Type of Backfill Below Well:

Elevation / Total Depth of Borehole: / 26ft.

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: HANGAR 1000 RI/FS
BORING NUMBER: MW 27
PROJECT NUMBER: N0399
DATE: 12/12/00
DRILLING COMPANY: ATI DRILLING
GEOLOGIST:
DRILLING RIG:
DRILLER: MARK MURRAY

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	4ft.												
							MED-FINE SAND						
							NO FRAGMENTATION						
							Lt BROWN-GREY						
	14ft.						NO COHESION						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

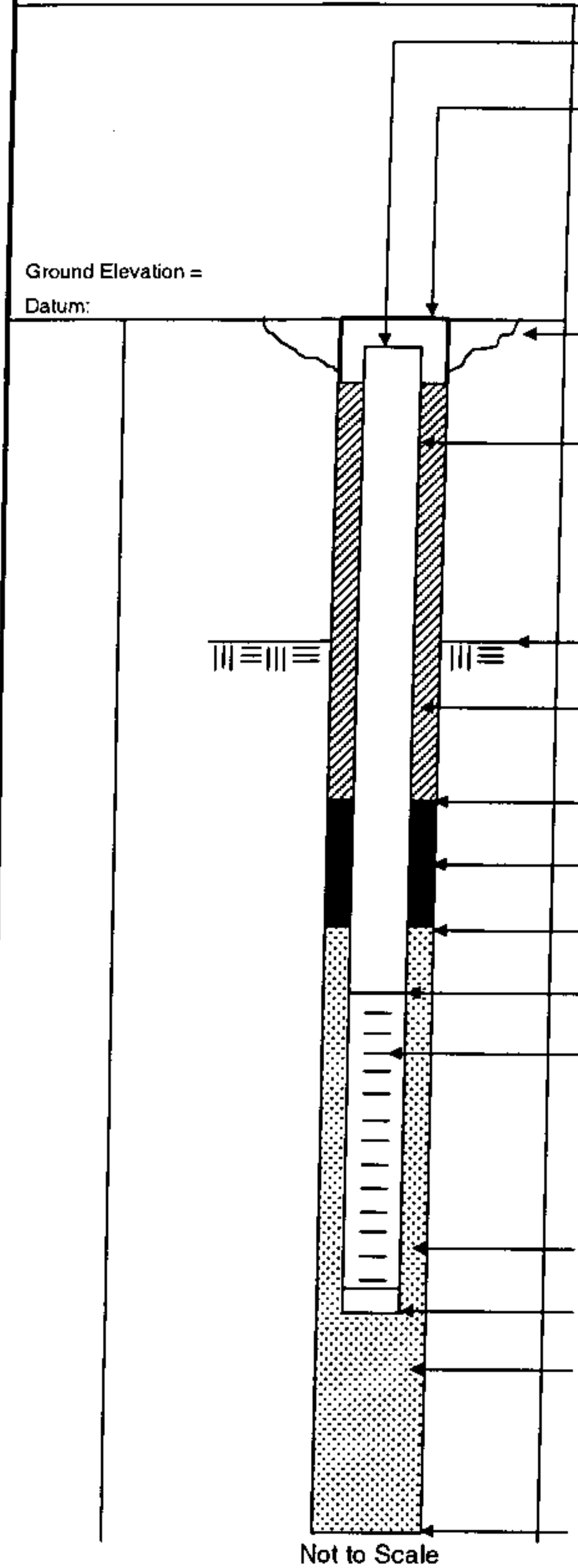
Drilling Area Background (ppm):

Tetra Tech NUS, Inc.

WELL No.: 4P MW-~~26~~ 27

MONITORING WELL SHEET

PROJECT:	HANGAR 1000	DRILLING Co.:	ATI-DRILLING	BORING No.:	
PROJECT No.:	N0399	DRILLER:	MARK MURRAY	DATE COMPLETED:	12/12/00
SITE:		DRILLING METHOD:	HOLLOW-STEM	NORTHING:	
GEOLOGIST:		DEV. METHOD:	SUBMERSIBLE	EASTING:	



Elevation / Depth of Top of Riser:		/
Elevation / Height of Top of Surface Casing:		/
I.D. of Surface Casing:	8"	
Type of Surface Casing:	Steel	
Type of Surface Seal:	GROUT	
I.D. of Riser:	~~3/4"~~ 2"	
Type of Riser:	PVC	
Borehole Diameter:	2"	
Elevation / Depth Top of Rock:		/ NA
Type of Backfill:	GROUT	
Elevation / Depth of Seal:		/ 1ft.
Type of Seal:	30/65 Sand	
Elevation / Depth of Top of Filter Pack:		/ 2ft.
Elevation / Depth of Top of Screen:		/ 4ft.
Type of Screen:	PVC	
Slot Size x Length:	0.01 / 10ft.	
I.D. of Screen:	2"	
Type of Filter Pack:	Prepacked	
Elevation / Depth of Bottom of Screen:		/ 14ft.
Elevation / Depth of Bottom of Filter Pack:		/ 15ft.
Type of Backfill Below Well:		
Elevation / Total Depth of Borehole:		/ 15ft.

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: Hangar 1000
BORING NUMBER: H10 MW-8D
PROJECT NUMBER: N3995
DATE: 8/4/2000
DRILLING COMPANY: Partridge Well Drilling
GEOLOGIST: Hal Davis
DRILLING RIG:
DRILLER:

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0-4'						**Sandy fill**						
	4-8'												
	8-12'												
	12-16'						**Gray sand w/silt and clay**						
	16-20'												
	20-24'												
	24-24.2'						2-inch clay stringer						
	24.2-27'												
	27-28'												
	28-32'						**Dark gray clay w/shells**						
	32-37'												
	37-41'												
	41-44'												
	44-48'												
	48-51'												
	51-54'												
	54-55'						**Light green, medium to fine sand**						
	55-56'												
	56-57'												
	57-58'						(5-inch streak of white, coarse to fine sand						

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm):

Remarks:

Converted to Well: Yes No Well I.D. #:

APPENDIX D

FIELD FORMS

Tetra Tech NUS, Inc

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: HANGAR 1000 **Project No.:** N3995
Location: NAS JAX **Personnel:** AP/LM
Weather Conditions: CLEAR ~50° **Measuring Device:** SLOPE INDICATOR
Tidally Influenced: Yes ___ No ___ **Remarks:**

Well or Piezometer Number	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	Comments
MW1	1/17/01			13.85	7.12			
MW2	1/17/01			13.75	7.06			
MW3	1/16/01			13.89	7.49			
MW5	1/19/01			13.10	8.04			
MW6	1/19/01			12.70	7.90			
MW7	1/19/01			14.03	7.77			
MW8	1/17/01			13.0	7.29			
MW9	1/18/01			39.60	7.00			
MW10	1/17/01			12.40	6.99			
MW11	1/17/01			33.90	6.83			
MW12	1/18/01			14.53	8.33			
MW13	1/16/01			14.31	7.78			
MW14	1/17/01			16.08	7.83			
MW15	1/18/01			15.75	7.10			
MW16	1/16/01			20.15	9.17			
MW17	1/16/01			11.60	6.13			
MW18	1/18/01			11.69	6.11			
MW19	1/19/01			11.59 ~~7.45~~	7.45			
MW22	1/16/01			20.5	5.70			

* All measurements to the nearest 0.01 foot

Page ___ of ___

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name: HANGAR 1000
Project No.: N3895

Sample ID No.: H10-GW-MW01-01
Sample Location: MW01
Sampled By: AP/CM
C.O.C. No.:

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 1/17/01 Time: 1400	Color Visual	pH Standard	S.C. mS/~~cm~~ m	Temp. °C	Turbidity NTU	DO mg/l	~~Salinity~~ %	~~Other~~ ORP
Method: Low Flow Peristaltic	CLEAR	6.25	40.1	23.3	<10	19.9	–	148

PURGE DATA

Date: 1/17/01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm):								
Well Casing Diameter: 4"	see low flow purge data sheet							
Well Casing Material: PVC								
Total Well Depth (TD): 13.85								
Static Water Level (WL): 7.12								
One Casing Volume(gal/L): 4.4								
Start Purge (hrs): 1235								
End Purge (hrs): 1355								
Total Purge Time (min): 80								
Total Vol. Purged (gal/L): 13.2								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOCs	HCL	G	YES
MEE	HCL	G	
ALCOHOLS	–	G	
SVOCs	–	G	
PAHs	–	G	
METALS: Cd/Cr	HNO3	P	
SULFIDES	NaOH	P	
ANIONS: SO4/Cl/NO3	–	P	

OBSERVATIONS / NOTES

13.85
7.12
6.73

4.4 = 1 vol
13.2 = 3 vols

Circle If Applicable:

Signature(s): Alan Pate

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: HANGAR 1000
PROJECT NUMBER: N3995

WELL ID.: H10-MW01
DATE: 1/17/01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1235	7.12								
1240	7.38	600	6.20	35.9	-10	19.9	23.3	193	
1245	7.51	600	6.19	35.4	39	19.9	23.3	197	
1250	7.56	600	6.16	34.9	25	19.9	23.3	201	
1255	7.62	600	6.16	34.8	8	19.9	23.3	203	
1300	7.58	600	6.17	35.7	21	19.9	23.3	204	
1305	7.58	600	6.18	36.5	-10	19.9	23.3	205	
1310	7.60	600	6.19	36.8	6	19.9	23.2	199	
1315	7.63	600	6.21	38.0	-10	19.9	23.2	190	
1320	7.60	600	6.22	38.5	-10	19.9	23.2	189	
1325	7.62	600	6.22	38.8	-10	19.9	23.2	189	
1330	7.60	600	6.24	39.5	-10	19.9	23.2	187	
1335	7.60	600	6.25	40.0	3	19.9	23.3	194	
1340	7.60	600	6.25	40.1	1	19.9	23.3	181	
1345	7.60	600	6.25	40.0	-1	19.9	23.3	164	
1350	7.61	600	6.25	40.3	-10	19.9	23.3	149	
1355	7.63	600	6.25	40.1	-10	19.7	23.3	148	

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name: HANGAR 1000
Project No.: N2465

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: H10-GW-MW02-01
Sample Location: MW02
Sampled By: AP/CMM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 1/17/01 Time: 1545	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	~~Salinity~~ %	~~Other~~ ORP
Method: Low Flow Peristaltic	CLEAR	5.78	11.7	22.4	<10	4.1	–	81

PURGE DATA

Date: 1/17/01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm):								
Well Casing Diameter: 4"	see low flow purge data sheet							
Well Casing Material: PVC								
Total Well Depth (TD): 13.75								
Static Water Level (WL): 7.06								
One Casing Volume(gal/L): 4.4								
Start Purge (hrs): 1425								
End Purge (hrs): 1545								
Total Purge Time (min): 80								
Total Vol. Purged (gal/L): 13.2								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOCs	HCL	G	YES
MEE	HCL	G	
ALCOHOLS	–	G	
SVOCs	–	G	
PAHS	–	G	
METALS: Cd/Cr	HNO3	P	
SULFIDE	NaOH	P	
ANIONS: SO4/Cl/NO3		P	

OBSERVATIONS / NOTES

13.75 − 7.06 = 6.69

4.4 = 1 vol
13.2 = 3 vol

Circle if Applicable:

Signature(s): Alan Pate

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: HANGAR 1000
PROJECT NUMBER: N3995

WELL ID.: H10-MW02
DATE: 1/17/01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1425	7.06	—	—	—	—	—	—	—	
1430	7.15	600	5.83	12.4	210	0.8	22.5	109	
1435	7.15	600	5.83	12.4	200	0.2	22.5	109	
1440	7.18	600	5.84	12.7	150	0.1	22.5	96	
1445	7.18	600	5.84	15.7	120	0.0	22.6	91	
1450	7.18	600	5.87	17.3	100	0.0	22.7	87	
1455	7.15	600	5.84	18.1	89	0.0	22.7	86	
1500	7.18	600	5.85	17.1	58	0.2	22.7	81	
1505	7.20	600	5.83	11.0	55	0.1	22.5	82	
1510	7.2	600	5.83	16.6	53	0.1	22.5	81	
1515	7.2	600	5.70	16.3	56	0.1	22.5	83	
1520	7.2	600	5.80	12.4	28	0.2	22.5	83	
1525	7.2	600	5.90	11.9	14	0.1	22.4	83	
1530	7.2	600	5.80	11.9	-0	0.1	22.4	82	
1535	7.2	600	5.78	12.7	-10	0.9	22.3	82	
1540	7.2	600	5.79	11.8	-10	0.1	22.4	82	
1545	7.2	600	5.78	11.7	-10	0.1	22.4	81	
	END PURGE								

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name: MANGAI [illegible]
Project No.: N3995

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: [illegible]-MW3-[illegible]
Sample Location: MW3
Sampled By: AP/[illegible]
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 1/16/01 Time: 1200	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	~~Salinity~~ %	~~Other~~ ORP
Method: Low Flow Peristaltic	CLEAR	5.49	14.8	~~40~~ 9.49	-10	0.0		97

PURGE DATA

Date: 1/16/01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm):								
Well Casing Diameter: 4"								
Well Casing Material: PVC		see low (flow) purge data sheets						
Total Well Depth (TD): 13.89								
Static Water Level (WL): 7.49								
One Casing Volume(gal/L): 4.2								
Start Purge (hrs): 1015								
End Purge (hrs): 1155								
Total Purge Time (min): 100								
Total Vol. Purged (gal/L): 12.5								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOCs	HCL	G	YES
MEE	-	G	
ALCOHOLS	-	G	
SVOCs	-	G	
PAHs	-	G	
METALS Cd/CR	HNO3	P	
SULFIDE	NaOH	P	
ANIONS: SO4/Cl/NO3	-	P	

OBSERVATIONS / NOTES

13.89
7.49
6.40

4.2
3
12.6

Circle if Applicable:

Signature(s): [illegible]
for [illegible]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: HANGAR 1000
PROJECT NUMBER: N3995

WELL ID.: H10-MW03
DATE: 1/16/01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1015	7.49	—	—	—	—	—	—	—	
1020	7.57	400	5.41	12.4	210	0.6	24.5	136	
1030	7.61	400	5.47	12.7	230	0.0	24.4	113	
1040	7.64	400	5.47	13.4	230	0.0	24.5	102	
1050	7.64	400	5.43	13.8	260	0.0	24.6	102	
1100	7.63	400	5.47	13.8	-10	0.0	24.6	98	
1110	7.65	400	5.47	14.2	-10	0.0	24.7	92	
1120	7.65	400	5.48	14.5	-10	0.0	24.7	89	
1130	7.65	400	5.48	14.5	-10	0.0	24.7	87	
1140	7.65	400	5.47	14.7	-10	0.0	24.9	93	
1150	7.65	400	5.44	14.6	-10	0.0	25.0	98	
1155	7.65	400	5.49	14.8	-10	0.0	24.9	97	
	END PURGE								

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name: HANGAR 1000
Project No.: N3995

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: NIG-GW-MW105-05
Sample Location: MW105
Sampled By: AP/CM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 1/19/01 / Time: 1215 / Method: Low Flow Peristaltic	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	Salinity %	Other ORP
	CLEAR	5.64	15.9	23.6	2	0.2	—	45

PURGE DATA

Date: 1/19/01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm):								
Well Casing Diameter: 4"		see low flow purge data sheet						
Well Casing Material: PVC								
Total Well Depth (TD): 13.10								
Static Water Level (WL): 8.04								
One Casing Volume(gal/L): 3.3								
Start Purge (hrs): 1035								
End Purge (hrs): 1210								
Total Purge Time (min): 95								
Total Vol. Purged (gal/L): 10								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOCs	HCL	G	YES
MEE	HCL	G	
ALCOHOLS	—	G	
SVOCs	—	G	
PAHs	—	G	
METALS Cd/Cr	HNO3	P	
SULFIDE	NaOH	P	
ANIONS SO4/Cl/NO3	--	P	

OBSERVATIONS / NOTES

13.10
8.04
5.06

gal
3.3 = 1 vol
9.9 = 3 vol

Circle if Applicable:

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: HANGAR 1000
PROJECT NUMBER: N3995

WELL ID.: H10 - MW05
DATE: 1/19/01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1035	8.04	–	–	–	–	–	–	–	
1040	8.52	400	5.86	11.9	2	5.6	23.3	184	
1050	8.88	400	5.59	12.1	11	3.1	23.4	139	
1100	8.98	400	5.53	12.4	13	2.1	23.5	111	
1110	8.80	400	5.52	12.8	21	1.6	23.5	97	
1120	8.85	400	5.48	12.6	18	1.5	23.5	93	
1130	8.95	400	5.59	14.4	17	1.8	23.5	74	
1140	9.00	400	5.57	14.5	6	1.0	23.5	69	
1150	8.98	400	5.57	14.5	-1	0.8	23.6	63	
1200	9.10	450	5.64	15.7	-2	0.3	23.6	50	
1210	9.10	450	5.64	15.9	2	0.2	23.6	45	
	END PURGE								

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name: HANGAR 1000
Project No.: N3995

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: H10-GW-MW06-05
Sample Location: MW06
Sampled By: AP/LM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

	Color	pH	S.C.	Temp.	Turbidity	DO	~~Salinity~~	~~Other~~ ORP
Date: 1/19/01 / Time: 1015	Visual	Standard	mS/cm	°C	NTU	mg/l	%	
Method: Low Flow Peristaltic	CLEAR	5.79	24.4	22.5	~10	1.2	—	61

PURGE DATA

Date: 1/19/01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm):								
Well Casing Diameter: 4"		See low flow purge datasheet						
Well Casing Material: PVC								
Total Well Depth (TD): 12.70								
Static Water Level (WL): 7.90								
One Casing Volume(gal/L): 3.1								
Start Purge (hrs): 0900								
End Purge (hrs): 1005								
Total Purge Time (min): 65								
Total Vol. Purged(gal/L): 9.3								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOCs	HCL	G	YES
MEE	HCL	G	
ALCOHOLS	–	G	
SVOCs	–	G	
PAHs	–	G	
METALS Cd/Cr	HNO3	P	
SULFIDE	NaOH	P	
ANIONS SO4/Cl/NO3	–	P	

OBSERVATIONS / NOTES

12.70
7.90
4.80

3.1 = 1 vol
9.3 = 3 vol

Circle if Applicable:

Signature(s): [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: HANGAR 1000
PROJECT NUMBER: N3995
WELL ID.: H10-MW06
DATE: 1/19/01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
0900	7.9	–	–	–	–	–	–	–	
0905	8.3	500	5.65	20.6	18	2.3	22.5	195	
0915	8.32	500	5.66	21.7	1	1.2	22.5	121	
0925	8.34	500	5.72	23.4	-2	1.2	22.5	96	
0935	8.33	500	5.76	23.6	-4	1.3	22.5	81	
0945	8.34	500	5.75	23.6	-10	1.3	22.5	75	
0955	8.37	500	5.78	24.2	-10	1.2	22.5	66	
1005	8.4	550	5.79	24.4	-10	1.2	22.5	61	
1010	END PURGE	~~550~~							

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name:	HANGAR 1000	Sample ID No.:	CAM-MW07-05 ~~H10-~~
Project No.:	N3995	Sample Location:	MW07
		Sampled By:	AP/LM
[ ] Domestic Well Data		C.O.C. No.:	
[X] Monitoring Well Data		Type of Sample:	
[ ] Other Well Type:		[X] Low Concentration	
[ ] QA Sample Type:		[ ] High Concentration	

SAMPLING DATA

Date: 1/19/01 / Time: 0835	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	Salinity %	Other ORP
Method: Low Flow Peristaltic	CLEAR	5.92	27.6	24.5	-10	0.2	—	72

PURGE DATA

Date: 1/19/01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm):								
Well Casing Diameter: 4"		see low flow purge data sheet						
Well Casing Material: PVC								
Total Well Depth (TD): 14.03								
Static Water Level (WL): 7.77								
One Casing Volume(gal/L): 4.0								
Start Purge (hrs): 0700								
End Purge (hrs): 0830								
Total Purge Time (min): 90								
Total Vol. Purged (gal/L): 12								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOCs	HCL	G	YES
MEE	HCL	G	
ALCOHOLS	—	G	
SVOCs	—	G	
PAHs	—	G	
METALS Cd/Cr	HNO_3	P	
SULFIDE	NaOH	P	
ANIONS SO_4/Cl/NO_3	—	P	

OBSERVATIONS / NOTES

14.03
7.77
6.26

6.26×0.66
4.0 = 1 vol
12.0 = 3 vol

Circle if Applicable:

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: HANGAR 1000
PROJECT NUMBER: N3995

WELL ID.: H10-MW07
DATE: 1/19/01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
0700	7.77	—	—	—	—	—	—	—	
0705	8.11	400	6.04	29.4	58	1.9	24.5	185	
0715	8.17	400	6.05	28.5	17	1.1	24.6	132	
0725	8.25	400	6.03	36.5	78	0.8	24.6	115	
0735	8.25	400	6.00	32.6	-10	0.6	24.6	98	
0745	8.22	400	6.01	30.1	8	0.5	24.6	98	
0755	8.25	500	5.97	28.8	-10	0.4	24.6	87	
0805	8.25	500	5.94	27.7	-10	0.2	24.6	80	
0815	8.28	500	5.94	22.7	-10	0.3	24.6	75	
0825	8.30	600	5.93	27.6	-10	0.1	24.6	72	
0830	8.30	500	5.92	22.6	-10	0.2	24.5	72	
	END PURGE								

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name:	HANGAR 1000	Sample ID No.:	H10-GW-MW08
Project No.:	N3995	Sample Location:	MW08
		Sampled By:	AP/KM
[ ] Domestic Well Data		C.O.C. No.:	
[X] Monitoring Well Data		Type of Sample:	
[ ] Other Well Type:		[X] Low Concentration	
[ ] QA Sample Type:		[ ] High Concentration	

SAMPLING DATA

Date: 1/17/01 Time: 1200	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	~~Salinity~~ %	~~Other~~ ORP
Method: Low Flow Peristaltic	CLEAR	6.47	79.2	19.9	6	19.9	–	167

PURGE DATA

Date: 1/17/01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm):								
Well Casing Diameter: 4" Well Casing Material: PVC	See low flow data sheet							
Total Well Depth (TD): 13.0								
Static Water Level (WL): 7.29								
One Casing Volume(gal/L): 3.7								
Start Purge (hrs): 1045								
End Purge (hrs): 1155								
Total Purge Time (min): 65								
Total Vol. Purged (gal/L): 11.1								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOCs	HCL	G	YES
MEE	HCL	G	
ALCOHOLS	–	G	
SVOCs	–	G	
PAHs	–	G	
METALS: Cd/Cr	HNO_3	P	
SULFIDE	NaOH	P	
ANIONS: SO_4/Cl/NO_3		P	

OBSERVATIONS / NOTES

13.00
7.29
5.71

3.7 = 1 vol
11.1 = 3 vol

Circle if Applicable:

Signature(s): [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: HANGAR1000
PROJECT NUMBER: N3995

WELL ID.: H10-MW08
DATE: 1/17/01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1045	7.29	–	–	–	–	–	–	–	
1050	7.56	500	6.42	73.4	8	19.9	23.3	170	
1055	7.70	500	6.43	74.0	17	19.9	23.4	173	
1100	7.78	500	6.44	75.2	18	19.9	23.3	177	
1105	7.78	500	6.45	75.9	23	19.9	23.4	172	
1110	7.83	500	6.45	76.0	21	19.9	23.4	174	
1115	7.85	500	6.45	76.1	25	19.9	23.4	179	
1120	7.88	500	6.47	77.0	25	19.9	23.3	171	
1125	7.91	500	6.46	77.6	31	19.9	23.4	161	
1130		500							
1135	7.91	500	6.46	77.7	31	19.9	23.3	160	
1140	7.99	500	6.46	79.0	7	19.9	23.4	166	
1145	8.01	500	6.45	79.2	11	19.9	23.4	164	
1150	8.01	500	6.50	79.1	3	19.9	23.3	173	
1155	8.01	500	6.47	79.2	6	19.9	23.3	167	

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name: HANGAR 100C
Project No.: N3995

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: H1C-GW-MW09-05
Sample Location: MW09
Sampled By: PP/LM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 1/18/01 / Time: 1430 / Method: Low Flow Peristaltic	Color Visual	pH Standard	S.C. mS/m	Temp. °C	Turbidity NTU	DO mg/l	Salinity %	~~Other~~ ORP
	CLEAR	7.39	57.3	24.0	-10	0.8	—	-85

PURGE DATA

Date: 1/18/01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm):								
Well Casing Diameter: 4"		See low flow purge data sheet						
Well Casing Material: PVC								
Total Well Depth (TD): 39.6								
Static Water Level (WL): 7.00								
One Casing Volume(gal/L): 3.3								
Start Purge (hrs): 1245								
End Purge (hrs): 1425								
Total Purge Time (min): 100								
Total Vol. Purged (gal/L): 10								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOCs	HCL	G	YES
MEE	HCL	G	
ALCOHOLS	—	G	
SVOCs	—	G	
PAHs	—	G	
METALS Cd/Cr	HNO3	P	
SULFIDE	NaOH	P	
ANIONS: SO4/Cl/NO3	—	P	

OBSERVATIONS / NOTES

SCREEN (5FT)
9.9 gal = 3 vols

Circle if Applicable:

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Hangar 1000
PROJECT NUMBER: N3995

WELL ID.: H10-GW-MW09-05
DATE: 1/18/01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1245	7.00	—	—	—	—	—	—	—	
1250	7.85	400	7.08	57.3	-7	2.3	23.6	-131	
1255	7.90	400	7.22	57.8	3	1.0	23.7	-156	
1300	8.85	400	7.27	58.0	2	0.5	23.7	-164	
1305	9.60	400	7.28	58.1	-4	1.5	23.7	-155	
1310	10.37	400	7.27	58.5	-10	0.0	23.8	-158	
1315	11.47	400	7.26	58.3	39	1.4	23.6	-145	GREY, CLOUDY, SANDY
1320	11.68	400	7.26	58.4	550	0.1	23.6	-155	
1325	12.32	400	7.30	58.2	980	0.3	23.6	-159	
1330	12.55	400	7.29	58.4	680	0.0	23.7	-160	
1335	12.91	300	7.28	58.3	240	0.0	23.8	-161	
1340	13.5	300	7.28	56.6	26	1.4	23.8	-138	CLEARED UP
1345	14.1	300	7.27	58.2	-10	0.0	23.9	-143	
1350	14.48	300	7.29	58.1	-10	0.0	23.9	-139	
1355	14.75	300	7.30	58.0	-10	0.1	24.0	-134	
1400	15.25	300	7.32	57.8	-10	0.2	24.0	-125	
1405	15.65	300	7.34	57.7	-10	0.4	24.0	-116	
1410	15.90	300	7.36	57.6	-10	0.6	24.0	-106	
1415	16.45	300	7.38	57.5	-10	0.7	24.0	-97	
1420	16.82	300	7.39	57.4	-10	0.8	24.0	-92	
1425		300	7.39	57.3	-10	0.8	24.0	-85	
	END PURGE								

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name: HANGAR 1000
Project No.: N3995

Sample ID No.: H10-GW-MW10-05
Sample Location: MW10
Sampled By: AP/LM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[ ] High Concentration

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

SAMPLING DATA

Date: 1/17/01 Time: 1005	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	~~Salinity~~ %	~~Other~~ ORP
Method: Low Flow Peristaltic	CLEAR	5.88	19.1	22.6	7	1.6	–	98

PURGE DATA

Date: 1/17/01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): -								
Well Casing Diameter: 4"								
Well Casing Material: PVC		See low flow purge data sheet						
Total Well Depth (TD): 12.4								
Static Water Level (WL): 6.99								
One Casing Volume(gal/L): 3.7								
Start Purge (hrs): 0850								
End Purge (hrs): 1000								
Total Purge Time (min): 70								
Total Vol. Purged (gal/L): 11.1								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOCs	HCL	G	YES
MEE	HCL	G	
ALCOHOLS	–	G	
SVOCs	–	G	
PAH	–	G	
METALS Cd/Cr	HNO_3	P	
SULFIDE	NaOH	P	
ANIONS SO_4/Cl/NO_3	–	P	
TOC		G	

OBSERVATIONS / NOTES

12.~~4~~ 15 ~~10~~
6.99
5.61

3.7 gal = 1 vol
11.1 gal = 3 vols

Circle if Applicable:

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: HANGAR 1000
PROJECT NUMBER: N3995

WELL ID.: H10-MW10
DATE: 1/17/01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
0850	6.99	—	—	—	—	—	—	—	
0855	7.39	500	5.86	18.2	120	1.5	22.4	104	
0900	7.49	500	5.83	18.1	100	1.0	22.5	110	
0905	7.55	500	5.84	18.2	88	1.2	22.6	113	
0910	7.60	500	5.86	18.5	49	1.8	22.6	111	
0915	7.63	500	5.86	18.5	38	1.4	22.6	107	
0920	7.65	500	5.88	18.5	30	1.6	22.6	107	
0925	7.67	500	5.88	18.6	25	1.5	22.6	104	
0930	7.67	500	5.88	18.7	25	2.5	22.5	100	
0935	7.67	500	5.86	18.7	18	1.8	22.5	106	
0940	7.69	500	5.86	18.5	15	1.6	22.5	102	
0945	7.71	500	5.86	18.7	13	1.7	22.5	102	
0950	7.71	500	5.87	19.1	11	1.7	22.6	101	
0955	7.65	500	5.89	19.3	9	1.6	22.6	99	
1000	7.65	500	5.88	19.1	7	1.6	22.6	98	
	END PURGE								

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name: HANGAR 1000
Project No.: N3995

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: H10-GW-MW11-05
Sample Location: MW11
Sampled By: AP/CM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 1/17/01 Time: 0820	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	~~Salinity~~ %	~~Other~~ ORP
Method: Low Flow Peristaltic	CLEAR	7.26	50.2	23.8	21	0.1	–	-103

PURGE DATA

Date: 1/17/01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm):								
Well Casing Diameter: 4"								
Well Casing Material: PVC	See low flow purge data sheets							
Total Well Depth (TD): 33.9								
Static Water Level (WL): 6.83								
One Casing Volume(gal/L):								
Start Purge (hrs): 0715								
End Purge (hrs): 0820								
Total Purge Time (min): 65								
Total Vol. Purged (gal/L): 10.0								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOCs	HCL	G	YES
MEE	HCL	G	
ALCOHOLS	–	G	
SVOCs	–	G	
PAHs	–	G	
METALS Cd/Cr	HNO3	P	
SULFIDE	NaOH	P	
ANIONS SO4/Cl/NO3		P	

OBSERVATIONS / NOTES

33.90
6.83
27.07

5ft. SCREEN

5x.66=3.3 1 vol
9.9=3 vol

Circle if Applicable:

Signature(s): Mark Peter

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: HANGAR 1000
PROJECT NUMBER: N3995

WELL ID.: H10-MW11
DATE: 1/17/01

Time (Hrs)	Water Level (Ft. below TOC)	Flow (mL/Min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
0715	6.83	—	—	—	—	—	—	—	
0720	8.20	600	6.91	53.5	22	0.6	23.2	-131	
0730	8.85	600	7.12	53.3	39	0.0	23.7	-138	
0735	9.48	600	7.14	52.4	90	0.0	23.7	-124	
0740	9.83	600	7.20	57.6	23	0.1	23.7	-101	
0745	10.27	600	7.21	51.4	34	0.0	23.8	-93	
0750	10.55	600	7.23	50.3	20	0.7	23.7	-71	
0755	10.66	600	7.25	50.3	22	0.2	23.8	-79	
0800	10.85	600	7.25	50.3	22	0.2	23.8	-87	
0805	10.95	600	7.25	50.2	20	0.2	23.8	-90	
0810	11.12	600	7.26	50.3	23	0.1	23.8	-94	
0815	11.19	600	7.26	50.2	23	0.1	23.8	-100	
0820	11.21	600	7.26	50.2	21	0.1	23.8	-103	
	END PURGE								

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name: HANGAR 1000
Project No.:

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: H10-GW-MW12-05
Sample Location: MW12
Sampled By: AP/cm
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

	Color Visual	pH Standard	S.C. mS/m	Temp. °C	Turbidity NTU	DO mg/l	Salinity %	~~Other~~ ORP
Date: 1/18/01 Time: 1215								
Method: Low Flow Peristaltic	LT Brown	5.59	22.2	24.4	-1	0.0	—	-46

PURGE DATA

Date: 1/18/01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm):								
Well Casing Diameter: 2"	see low flow purge data sheets							
Well Casing Material: PVC								
Total Well Depth (TD): 14.53								
Static Water Level (WL): 8.33								
One Casing Volume(gal/L): 1.0								
Start Purge (hrs): 1130								
End Purge (hrs): 1210								
Total Purge Time (min): 40								
Total Vol. Purged (gal/L): 3.0								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOCs	HCL	G	YES
MEE	HCL	G	
ALCOHOLS	—	G	
SVOCs	—	G	
PAHs	—	G	
METALS: Cd/Cr	HNO3	P	
SULFIDE	NaOH	P	
ANIONS: SO4/Cl/NO3	—	P	

OBSERVATIONS / NOTES

14.53
8.33
6.20

Circle if Applicable:

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Hangar 1000
PROJECT NUMBER: N3995

WELL ID.: H10-MW12
DATE: 1/18/01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min)	pH (SU)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1130	8.33	—	—	—	—	—	—	—	
1135	8.52	300	5.43	20.2	160	5.2	24.2	64	Lt Brown, Cloudy
1140	8.55	300	5.56	21.0	120	1.3	24.4	30	
1145	8.55	300	5.60	21.5	63	0.7	24.4	8	
1150	8.59	300	5.61	21.8	44	0.3	24.4	-8	
1155	8.59	300	5.62	22.1	23	0.1	24.4	-29	Pulled up ½' of Tubing
1200	8.58	300	5.62	22.3	-2	1.5	24.4	-29	
1205	8.58	300	5.62	22.2	-4	0.3	24.4	-38	
1210	8.58	300	5.59	22.2	-1	0.0	24.4	-46	
	End Purge								

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name: HANGAR 1000	Sample ID No.: H10-GW-MW13-05
Project No.: N3995	Sample Location: MW13
	Sampled By: AP/CM
[ ] Domestic Well Data	C.O.C. No.:
[X] Monitoring Well Data	Type of Sample:
[ ] Other Well Type:	[X] Low Concentration
[ ] QA Sample Type:	[ ] High Concentration

SAMPLING DATA

Date: 1/16/01 / Time: 1310	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	Salinity %	~~Other~~ ORP
Method: Low Flow Peristaltic	CLEAR	5.80	26.2	25.3	-10	0.0	-	115

PURGE DATA

Date: 1/16/01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm):								
Well Casing Diameter: 2"	See low flow purge data sheets							
Well Casing Material: PVC								
Total Well Depth (TD): 14.31								
Static Water Level (WL): 7.78								
One Casing Volume(gal/L): 1.0								
Start Purge (hrs): 1225								
End Purge (hrs): 1305								
Total Purge Time (min): 40								
Total Vol. Purged (gal/L): 3.3								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOCs	HCL	G	YES
MEE	HCL	G	
ALCOHOLS	-	G	
SVOCs	-	G	
PAHs	-	G	
METALS: Cd/Cr	HNO_3	P	
SULFIDE	NaOH	P	
ANIONS: SO_4/Cl/NO_3	-	P	

OBSERVATIONS / NOTES

3.12
14.31
7.78
6.53

1.1 = 1 vol
3.3 = 3 vol

Circle if Applicable:

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: HANGAR 1000
PROJECT NUMBER: N3995

WELL ID.: H10-MW13
DATE: 1/16/01

Time (Hrs)	Water Level (Ft. below TOC)	Flow (mL/Min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1225	7.78	—	—	—	—	—	—	—	
1230	7.98	400	6.14	34.0	-5	2.4	25.2	161	
1235	8.08	400	6.11	33.7	-10	0.9	25.3	155	
1240	8.08	400	6.04	33.0	-10	0.6	25.3	137	
1245	7.85	400	6.00	31.6	-10	0.4	25.3	132	
1250	8.20	400	5.92	29.3	-10	0.3	25.3	130	
1255	8.21	400	5.89	28.6	-10	0.2	25.2	125	
1300	8.23	400	5.87	27.2	-10	0.1	25.3	118	
1305	8.23	400	5.80	26.2	-10	0.0	25.3	115	
	END PURGE								

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name: HANGAR 1000	Sample ID No.: H10-GW-MW14-05
Project No.: N3995	Sample Location: MW14
	Sampled By: AP/LM
[ ] Domestic Well Data	C.O.C. No.:
[X] Monitoring Well Data	Type of Sample:
[ ] Other Well Type:	[X] Low Concentration
[ ] QA Sample Type:	[ ] High Concentration

SAMPLING DATA

Date: 1/17/01	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	~~Other~~
Time: 0805	Visual	Standard	mS/cm	°C	NTU	mg/l	%	ORP
Method: Low Flow Peristaltic	CLEAR	5.63	16.7	23.8	-10	0.1	-	-116

PURGE DATA

Date: 1/17/01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm):								
Well Casing Diameter: 2"								
Well Casing Material: PVC	See low flow purge data sheet							
Total Well Depth (TD): 16.08								
Static Water Level (WL): 7.83								
One Casing Volume(gal/L): 1.4								
Start Purge (hrs): 0715								
End Purge (hrs): 0800								
Total Purge Time (min): 45								
Total Vol. Purged (gal/L): 4.2								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOCs	HCL	G	YES
MEE	HCL	G	
ALCOHOLS	-	G	
SVOCs	-	G	
PAH	-	G	
METALS Cd/Cr	HNO3	P	
SULFIDE	NaOH	P	
ANIONS: SO4/Cl/NO3	-	P	
TOC	NEED PRESERVATIVE	G	

OBSERVATIONS / NOTES

15.16.08
7.83
8.25 =

gal
1.4 = 1 vol
4.2 = 3 vol

TAKE
H10-DUP1-05 @ MW14

Circle if Applicable:

Signature(s): [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: HANGAR 1000
PROJECT NUMBER: N3995
WELL ID.: H10-MW14
DATE: 1/17/01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
0715	7.83	–	–	–	–	–	–	-	
0720	7.96	300	5.55	21.5	120	1.4	23.4	-41	
0725	7.99	300	5.64	19.5	49	0.3	23.7	-64	
0730	8.04	300	5.68	18.6	25	0.0	23.8	-85	
0735	8.04	300	5.69	18.7	20	0.0	23.9	-96	
0740	8.00	300	5.69	18.2	16	0.0	23.8	-104	
0745	8.02	300	5.68	17.1	7	0.2	23.9	-108	
0750	8.01	300	5.67	16.9	2	0.0	23.8	-113	
0755	8.01	300	5.66	16.8	1	0.1	23.8	-115	
0800	8.01	300	5.63	16.7	-10	0.1	23.8	-116	
END PURGE									

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name:	HANGAR 1000	Sample ID No.:	H10-GW-MW15-05
Project No.:	N3995	Sample Location:	MW15
		Sampled By:	AP/LM
[ ] Domestic Well Data		C.O.C. No.:	
[X] Monitoring Well Data		Type of Sample:	
[ ] Other Well Type:		[X] Low Concentration	
[ ] QA Sample Type:		[ ] High Concentration	

SAMPLING DATA

Date: 1/18/01	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time: 1055	Visual	Standard	mS/in	°C	NTU	mg/l	%	ORP
Method: Low Flow Peristaltic	CLEAR	5.30	15.8	22.6	1	0.5	—	-70

PURGE DATA

Date: 1/18/01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm):								
Well Casing Diameter: 2"	See low flow purge data sheet							
Well Casing Material: PVC								
Total Well Depth (TD): 15.75								
Static Water Level (WL): 7.1								
One Casing Volume(gal/L): 1.4								
Start Purge (hrs): 1010								
End Purge (hrs): 1050								
Total Purge Time (min): 40								
Total Vol. Purged (gal/L): 4.2								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOCs	HCL	G	YES
MEE	HCL	G	
ALCOHOLS	—	G	
SVOCs	—	G	
PAHs	—	G	
METALS Cd/Cr	HNO_3	P	
SULFIDE	NaOH	P	
ANIONS SO_4/CL/NO_3	-	P	

OBSERVATIONS / NOTES

15.75
7.10
8.65

1.4 = 1 vol
4.2 = 3 vol

Circle if Applicable:

Signature(s): Mark G. [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: HANGAR 1000
PROJECT NUMBER: N13995

WELL ID.: H10-MW115
DATE: 1/18/01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1010	7.10	—	—	—	—	—	—	—	
1015	7.39	400	5.25	16.6	130	1.3	22.3	-2	CLOUDY GREY, SULFUR SMELL
1020	7.39	400	5.21	16.2	57	0.2	22.5	-24	
1025	7.41	400	5.25	16.0	41	0.0	22.6	-40	CLEARING UP
1030	7.41	400	5.26	15.9	41	0.0	22.6	-51	
1035	7.48	400	5.27	16.0	22	0.0	22.7	-57	
1040	7.45	400	5.29	15.9	-1	0.5	22.6	-63	
1045	7.45	400	5.29	15.9	-10	0.0	22.7	-69	
1050	7.49	400	5.30	15.8	1	0.5	22.6	-70	
~~1055~~	END PURGE	~~400~~							
~~1100~~		~~400~~							

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name: HANGAR 1000 NAS JAX
Project No.: N3995

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: H10-GW-MW-16-05
Sample Location: MW-16
Sampled By: L.MIDDLETON/A.PATE
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 1/16/01 Time: 0925	Color Visual	pH Standard	S.C. mS/m	Temp. °C	Turbidity NTU	DO mg/l	~~Salinity~~ %	~~Other~~ ORP
Method: Low Flow Peristaltic	CLEAR	5.04	10.7	22.9	-10	0.0	—	100

PURGE DATA

Date: 1/16/01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): —								
Well Casing Diameter: Micro								
Well Casing Material: PVC	See low flow purge data sheets							
Total Well Depth (TD): 20.15								
Static Water Level (WL): 9.17								
One Casing Volume(gal/L): 0.8								
Start Purge (hrs): 0855								
End Purge (hrs): 0920								
Total Purge Time (min): 25								
Total Vol. Purged (gal/L): 2.5								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOCs	G	3-40 mL VIALS	YES
MEE	G	"	YES
ALCOHOLS	G	"	YES
SVOCs	G	2-1L AMBER	YES
PAHs	G	2-1L AMBER	YES
METALS Cd/CR	P	1-250 mL PLASTIC	YES
SULFIDE	P	1-250 mL PLASTIC	YES
ANIONS SO4/Cl/NO3	P	1-500 mL PLASTIC	

OBSERVATIONS / NOTES

Circle if Applicable:

Signature(s): [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: HANGAR 1000 NAS JAX
PROJECT NUMBER: N3995

WELL ID.: H10-MW-16
DATE: 1/16/01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
0845	9.17	—	—	—	—	—	—	—	
0850	—	400	5.24	11.5	300	3.3	21.6	170	
0900	—	400	5.03	11.1	140	1.1	22.3	167	
0905	—	400	5.01	10.8	13	0.2	22.7	138	
0910	—	400	5.04	10.7	-7	0.0	22.8	121	
0915	—	400	5.05	10.7	-9	0.0	22.8	108	
0920	—	400	5.04	10.7	-10	0.0	22.9	100	
	END PURGE								

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name: HANGAR 1000 - NAS JAX
Project No.: N3995

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type: MICRO WELL
[ ] QA Sample Type:

Sample ID No.: H10-GW-MW17-05
Sample Location: MW17
Sampled By: AP/LM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 1/16/01 Time: 0815	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	Salinity %	~~Other~~ ORP
Method: Low Flow Peristaltic	CLEAR	6.12	19.9	24.5	-10	0.0	–	-43

PURGE DATA

Date: 1/16/01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): –								
Well Casing Diameter: MICRO								
Well Casing Material: PVC	See low flow purge data sheets							
Total Well Depth (TD): 11.60								
Static Water Level (WL): 6.13								
One Casing Volume(gal/L): 0.5								
Start Purge (hrs): 0750								
End Purge (hrs): 0815								
Total Purge Time (min): 25								
Total Vol. Purged (gal/L): 1.5								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOC	HCl	3 - 40mL VIALS	YES
MEE	–	3 - " "	YES
ALCOHOLS	–	3 - " "	YES
SVOCs	–	2 - 1L AMBER	YES
PAHS	–	2 - 1L AMBER	YES
METALS Cd/Cr	HNO3	1 - 250mL PLASTIC	YES
ANIONS SO4/Cl/NO3	NaOH	1 - 250mL PLASTIC	YES

OBSERVATIONS / NOTES

~~11.60~~ 11.65
6.13
5.47

Circle if Applicable:

Signature(s): [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: H1000 -NAS JAX
PROJECT NUMBER: N 3995

WELL ID.: H10 -MW17
DATE: 1/16/01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
0750	6.13	–	–	–	–	–	–	–	
0255	–	400	5.85	21.1	34	2.4	23.8	-5	
0800	–		6.06	20.0	7	0.6	24.3	-26	
0805			6.16	20.0	-10	0.0	24.4	-38	
0810			6.16	20.0	-10	0.0	24.4	-42	
0815			6.12	19.9	-10	0.0	24.5	-43	
END	PURGE								

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name:	HANGAR 1000	Sample ID No.:	H10-GW-MW18-05
Project No.:	N3995	Sample Location:	MW18
[ ] Domestic Well Data		Sampled By:	AP/LM
[X] Monitoring Well Data		C.O.C. No.:	
[ ] Other Well Type:		Type of Sample:	
[ ] QA Sample Type:		[X] Low Concentration	
		[ ] High Concentration	

SAMPLING DATA

Date: 1/18/01 / Time: 0930 / Method: Low Flow Peristaltic	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	~~Salinity~~ %	~~Other~~ ORP
	CLEAR	5.90	27.7	22.0	3	0.2	—	98

PURGE DATA

Date: 1/18/01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm):								
Well Casing Diameter: MICRO								
Well Casing Material: PVC	See low flow purge data sheets							
Total Well Depth (TD): 11.69								
Static Water Level (WL): 6.11								
One Casing Volume(gal/L): 0.5								
Start Purge (hrs): 0900								
End Purge (hrs): 0930								
Total Purge Time (min): 30								
Total Vol. Purged (gal/L): 1.5								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOCs	HCL	G	YES
MEE	HCL	G	
ALCOHOLS	—	G	
SVOCs	—	G	
PAHs	—	G	
METALS: Cd/Cr	HNO3	P	
SULFIDE	NaOH	P	
ANIONS: SO4/Cl/NO3	—	P	

OBSERVATIONS / NOTES

Circle if Applicable:

Signature(s): [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: HANGAR 1000
PROJECT NUMBER: N3995

WELL ID.: H10 - MW18
DATE: 1/18/01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
0900	Go !!	—	—	—	—	—	—	—	
0905	—	300	6.28	38.1	42	1.7	21.5	113	
0910	—	300	6.04	30.5	17	1.0	21.8	127	
0915	—	300	5.95	41.1	7	0.5	21.9	121	
0920	—	300	5.92	27.3	4	0.2	22.0	110	
0925	—	300	5.91	27.6	3	0.2	22.0	101	
0930	—	300	5.90	27.7	3	0.2	22.0	98	
	END PURGE								

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name: HANGAR 1000
Project No.: N3495

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: H10-GW-MW19-05
Sample Location: MW 19
Sampled By: AP/LM
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 1/19/01 / Time: 1305	Color Visual	pH Standard	S.C. mS/m	Temp. °C	Turbidity NTU	DO mg/l	Salinity %	~~Other~~ ORP
Method: Low Flow Peristaltic	CLEAN	5.18	14.7	22.5	-10	0.0	–	20

PURGE DATA

Date: 1/19/01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm):								
Well Casing Diameter: MICRO								
Well Casing Material: PVC	See low flow purge data sheet							
Total Well Depth (TD): 11.59								
Static Water Level (WL): 7.45								
One Casing Volume(gal/L): 0.5								
Start Purge (hrs): 1240								
End Purge (hrs): 1300								
Total Purge Time (min): 20								
Total Vol. Purged (gal/L): 2								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOCs	HCL	G	YES
MEE	HCL	G	
ALCOHOLS	-	G	
SVOCs	-	G	
PAHs	-	G	
METALS Cd/Cr	HNO3	P	
SULFIDE	NaOH	P	
ANIONS SO4/Cl/NO3	-	P	

OBSERVATIONS / NOTES

11.59
7.45
4.14

COLLECTED
H10-DUP2-05
&
H10-MSMSD1-05

Circle if Applicable:

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: HANGAR 1000
PROJECT NUMBER: N3995

WELL ID.: H10-MW19
DATE: 1/19/01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1240	7.45	—	—	—	—	—	—	—	
1245	—	300	4.81	30.1	58	2.0	22.6	88	
1250	—	300	5.10	16.1	2	0.5	22.5	46	
1255	—	300	5.17	15.5	-10	0.1	22.5	29	
1300	—	300	5.18	14.7	-10	0.0	22.5	20	
	END PURGE								

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name: HANGAR 1000 NAS JAX
Project No.: N3495

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type: MICRO
[ ] QA Sample Type:

Sample ID No.: H10-MW-GW-22-05
Sample Location: HANGAR 1000
Sampled By: LM / AP
C.O.C. No.:
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 1/16/01 Time: 1420	Color Visual	pH Standard	S.C. mS/m	Temp. °C	Turbidity NTU	DO mg/l	Salinity %	~~Other~~ ORP
Method: Low Flow Peristaltic	CLEAR	5.95	27.2	25.1	-10	0.0	—	-182

PURGE DATA

Date: 1/16/01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm):								
Well Casing Diameter: MICRO 0.5								
Well Casing Material: PVC	see low flow purge datasheets							
Total Well Depth (TD): 20.5								
Static Water Level (WL): 5.7								
One Casing Volume(gal/L): 0.5								
Start Purge (hrs): 1340								
End Purge (hrs): 1415								
Total Purge Time (min): 35								
Total Vol. Purged (gal/L): 3.0								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
VOCS	HCL	G	YES
MEE	HCL	G	
ALCOHOLS	—	G	
SVOCs	—	G	
PAHs	—	G	
METALS Cd/Cr	HNO_3	P	
SULFIDE	NaOH	P	
ANIONS SO_4/Cl/NO_3	—	P	

OBSERVATIONS / NOTES

20.5
5.7
14.8

Circle if Applicable:

Signature(s): Alan L Pate

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: Hangar 1000 NASJax
PROJECT NUMBER: N3995

WELL ID.: H10-MW-22
DATE: 1/16/01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1340	5.75	—	—	—	—	—	—	—	
1345	—	400	6.01	28.3	84	0.7	25.2	-85	
1350	—	400	6.01	28.1	90	0.3	25.3	-93	
1355	—	400	5.99	27.9	72	0.1	25.4	-107	
1400	—	400	5.99	27.6	83	0.0	25.3	-135	
1405	—	400	5.95	27.5	-10	0.6	25.2	-150	
1410	—	400	5.95	27.4	-10	0.0	25.2	-169	
1415	—	400	5.95	27.2	-10	0.0	25.1	-82	

Tetra Tech NUS, Inc.

GROUNDWATER LEVEL MEASUREMENT SHEET

Project Name: NAS Jacksonville
Location: HANGAR 1000
Weather Conditions:
Tidally Influenced: Yes ___ No _X_

Project No.: N3995
Personnel: A PATE / M. ONEILL
Measuring Device: HERON DIPPER T
Remarks:

Well or Piezometer Number	Date	Time	Elevation of Reference Point (feet)*	Total Well Depth (feet)*	Water Level Indicator Reading (feet)*	Thickness of Free Product (feet)*	Groundwater Elevation (feet)*	Comments
MW01	7/11	0725			6.75			
MW02	7/11	0726			6.75			
MW03	7/11	0734			7.16			
MW05	7/11	0829			7.76			
MW06	7/11	0837			7.70			
MW07	7/11	0839			7.49			
MW08	7/11	0723			6.97			
MW09	7/11	0727			6.81			
MW10	7/11	0720			6.64			
MW11	7/11	0721			6.43			
MW12	7/11	0827			8.08			
MW13	7/11	0735			7.50			
MW14	7/11	0736			7.59			
MW15	7/11	0845			6.83			
MW16	7/11	0756			5.91			
MW17	7/11	0751			6.17			
MW18	7/11	0745			5.59			
MW19	7/11	0823			7.50			
MW22	7/11	0747			5.60			
MW23	7/11	0818			6.99			
MW24	7/11	0804			8.66			
MW25	7/11	0811			7.32			
MW26	7/11	0850			3.79			
MW27	7/11	0852			3.56			

* All measurements to the nearest 0.01 foot

MW8D 7/11 0722 7.89

Page ___ of ___

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name: *NASJAX Hangar 1000*
Project No.: *N3995, CTO 167*

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: H10-GW-MW -06
Sample Location: H10-MW
Sampled By: A.Pate/L.Middleton
C.O.C. No.: H10-
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 7/ /01	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	ORP mV	Other
Time:								
Method: Low Flow Peristaltic								

PURGE DATA

Date: 7/ /01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	ORP	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm):								
Well Casing Diameter:	See attached Low Flow Purge Data Sheet							
Well Casing Material: PVC								
Total Well Depth (TD):								
Static Water Level (WL):								
One Casing Volume(gal/L):								
Start Purge (hrs):								
End Purge (hrs):								
Total Purge Time (min):								
Total Vol. Purged (gal/L):								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Metals: Cd, Cr	HNO_3	1-500ml HDPE	
Anions: SO4, NO3, NO2, Cl	~~	1-500ml plastic	
Sulfide	NaOH, ZnAcetate	1-500 ml HDPE	
SVOC - 8270C	~~	2-1L Amber	
PAH - 8310	~~	2-1L Amber	
VOC - 8260B	HCl	3-40ml vials	
Alcohols - 8015B	~~	3-40ml vials	
Methane/Ethane/Ethene	~~	3-40ml vials	

OBSERVATIONS / NOTES

Laboratory: Accutest
4405 Vineland Rd. #C-15
Orlando, FL 32811
phone: 407-425-6700
fax: 407-425-0707

13.85
6.81
7.04
29.3
519

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NASJAX Hangar 1000
PROJECT NUMBER: N3995, CTO 167

WELL ID.: H10-MW 01
DATE: 7/ /01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
0900	6.81	—	—	—	—		—	—	
0910	6.97	500	5.64	0.433	0	>1999	24.7	221	
0920	7.05	500	5.63	0.411	0	>19.99	25.0	244	
0930	7.07	500	5.68	0.395	0	>19.99	25.4	247	
0940	7.07	500	5.76	0.415	0	>19.99	25.2	244	
0950	7.07	500	5.86	0.437	0	>19.99	25.2	257	
1000	7.07	500	5.88	0.440	0	>19.99	25.2	250	
1010	7.07	500	5.88	0.443	0	>19.99	25.2	243	
1020	7.07	500	5.90	0.443	0	>19.99	25.2	21[illegible]	
1030	7.07	500	5.90	0.446	0	>19.99	25.2	[illegible]	
1040	7.07	500	5.91	0.445	0	>19.99	25.2	[illegible]	
1045	7.07	300	5.91	0.445	0	>19.99	25.2	[illegible]	
END PURGE [illegible]									

SIGNATURE(S): [illegible]

PAGE___OF___

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name: *NASJAX Hangar 1000*
Project No.: *N3995, CTO 167*

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: H10-GW-MW -06
Sample Location: H10-MW
Sampled By: A.Pate/L.Middleton
C.O.C. No.: H10-
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 8/... /01	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	ORP mV	Other
Time: 0835								
Method: Low Flow Peristaltic	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

PURGE DATA

Date: 8/... /01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	ORP	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): [illegible]								
Well Casing Diameter: 4"	See attached Low Flow Purge Data Sheet							
Well Casing Material: PVC								
Total Well Depth (TD): 13.7[illegible]								
Static Water Level (WL): 6.78								
One Casing Volume(gal/L): 4.[illegible]								
Start Purge (hrs): 0705								
End Purge (hrs): 0835								
Total Purge Time (min): 90								
Total Vol. Purged (gal/L): 45								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Metals: Cd, Cr	HNO_3	*1-500ml HDPE*	yes
Anions: SO4, NO3, NO2, Cl	~~	*1-500ml plastic*	
Sulfide	*NaOH, ZnAcetate*	*1-500 ml HDPE*	
SVOC - 8270C	~~	*2-1L Amber*	
PAH - 8310	~~	*2-1L Amber*	
VOC - 8260B	*HCl*	*3-40ml vials*	
Alcohols - 8015B	~~	*3-40ml vials*	
Methane/Ethane/Ethene	~~	*3-40ml vials*	

OBSERVATIONS / NOTES

Laboratory: **Accutest**
4405 Vineland Rd. #C-15
Orlando, FL 32811
phone: 407-425-6700
fax: 407-425-0707

13.6
13.70
6.78
6.97

Circle If Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
		[signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NASJAX Hangar 1000
PROJECT NUMBER: N3995, CTO 167

WELL ID.: H10-MW(
DATE: 7/ /01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
0705	6.78								
0715	6.87	500	5.41	0.177	247.0	1.26	23.4	19	
0725	6.89	500	5.25	0.146	123.4	1.42	23.61	39	
0735	6.89	500	5.15	0.137	48.4	0.69	23.6	43	
0745	6.89	500	5.00	0.125	15.3	0.84	23.6	55	
0755	6.89	500	4.88	0.119	4.8	[illegible]	[illegible]	60	
0805	6.89	[illegible]	4.8[illegible]	0.118	2.1	[illegible]	[illegible]	[illegible]	
0815	6.89	[illegible]	4.8[illegible]	0.117	3.2	[illegible]	[illegible]	[illegible]	
0825	6.89	500	4.79	0.118	2.6	[illegible]	[illegible]	[illegible]	
0835	6.89	500	4.81	0.118	[illegible]	[illegible]	[illegible]	[illegible]	
END	PURGE + COLLECT SAMPLE								

SIGNATURE(S): Alan Pate

PAGE___OF___

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: NASJAX Hangar 1000
Project No.: N3995, CTO 167

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: H10-GW-MW -06
Sample Location: H10-MW
Sampled By: A.Pate/L.Middleton
C.O.C. No.: H10-
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 7/ /01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 0840	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	
Method: Low Flow Peristaltic	Clear	4.82	0.131	24.49	[illegible]	[illegible]	[illegible]	

PURGE DATA

Date: 7/ /01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	ORP	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): [illegible]								
Well Casing Diameter: [illegible]	See attached Low Flow Purge Data Sheet							
Well Casing Material: PVC								
Total Well Depth (TD): 13.90								
Static Water Level (WL): 6.18								
One Casing Volume(gal/L): 4.0								
Start Purge (hrs): 0710								
End Purge (hrs): 0840								
Total Purge Time (min): 90								
Total Vol. Purged (gal/L): 12.0								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Metals: Cd, Cr	HNO_3	1-500ml HDPE	TE
Anions: SO4, NO3, NO2, Cl	~~	1-500ml plastic	
Sulfide	NaOH, ZnAcetate	1-500 ml HDPE	
SVOC - 8270C	~~	2-1L Amber	
PAH - 8310	~~	2-1L Amber	
VOC - 8260B	HCl	3-40ml vials	
Alcohols - 8015B	~~	3-40ml vials	
Methane/Ethane/Ethene	~~	3-40ml vials	

OBSERVATIONS / NOTES

Laboratory: Accutest
4405 Vineland Rd. #C-15
Orlando, FL 32811
phone: 407-425-6700
fax: 407-425-0707

13.90 − 6.18 = 6.91   4.0 gal = 8 [illegible]

Circle If Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
		[signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NASJAX Hangar 1000
PROJECT NUMBER: N3995, CTO 167

WELL ID.: H10-MW03
DATE: 7/31 /01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
0710	7.18	—	—	—	—	—	—	—	
0715	7.31	500	5.28	0.141	0	2.38	24.45	98	
0725	7.32	500	4.88	0.131	0	1.78	24.49	108	
0735	7.32	500	5.04	0.151	0	0.55	24.25	82	
0745	7.33	500	4.80	0.131	0	0.58	24.42	99	
0755	7.33	508	4.77	0.132	0	0.61	24.43	96	
0805	7.33	500	[illegible]	0.152	0	[illegible]	24.46	[illegible]	
0815	7.33	500	4.82	[illegible]	0	[illegible]	[illegible]	88	
0825	7.33	500	4.80	0.131	0	0.54	24.49	88	
0835	7.33	500	4.80	0.131	0	[illegible]	24.49	86	
0840	7.33	500	4.80	0.131	0	[illegible]	[illegible]	83	
END PURGE									

SIGNATURE(S): [signature]

PAGE___OF___

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name:	*NASJAX Hangar 1000*	Sample ID No.:	H10-GW-MW -06
Project No.:	*N3995, CTO 167*	Sample Location:	H10-MW
		Sampled By:	A.Pate/L.Middleton
		C.O.C. No.:	H10-

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type: ______
[ ] QA Sample Type: ______

Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 7/ [illegible] /01	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	ORP mV	Other
Time: [illegible]								
Method: Low Flow Peristaltic	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	

PURGE DATA

Date: 7/ 31 /01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	ORP	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0.0	See attached Low Flow Purge Data Sheet							
Well Casing Diameter: 4"								
Well Casing Material: PVC								
Total Well Depth (TD): 13.10								
Static Water Level (WL): 7.72								
One Casing Volume(gal/L): 3.5								
Start Purge (hrs): 0915								
End Purge (hrs): 1050								
Total Purge Time (min): [illegible]								
Total Vol. Purged (gal/L): 38.0								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Metals: Cd, Cr	*HNO_3*	*1-500ml HDPE*	YES
Anions: SO4, NO3, NO2, Cl	~~	*1-500ml plastic*	
Sulfide	*NaOH, ZnAcetate*	*1-500 ml HDPE*	
SVOC - 8270C	~~	*2-1L Amber*	
PAH - 8310	~~	*2-1L Amber*	
VOC - 8260B	*HCl*	*3-40ml vials*	
Alcohols - 8015B	~~	*3-40ml vials*	
Methane/Ethane/Ethene	~~	*3-40ml vials*	

OBSERVATIONS / NOTES

Laboratory: **Accutest**
4405 Vineland Rd. #C-15
Orlando, FL 32811
phone: 407-425-6700
fax: 407-425-0707

13.10
7.72
5.38

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s): Allen Pate

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NASJAX Hangar 1000
PROJECT NUMBER: N3995, CTO 167

WELL ID.: H10-MW-05
DATE: 7/31/01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
0915	7.72	—	—	—	—	—	—	—	
0920 2.0	8.15	400	5.56	0.110	5.7	3.18	20.81	150	
0930 6.0	8.16	400	5.01	0.106	4.8	2.98	20.78	139	
0940 10.0	8.17	400	5.11	0.117	1.0	0.55	20.77	106	
0950 14.0	8.17	400	5.23	0.131	0.9	0.40	20.76	70	
1000 18.0	8.17	400	5.29	0.136	0.5	0.39	20.76	62	
1010 22.0	8.17	400	5.47	0.149	0.8	0.99	20.75	54	
1020 26.0	8.17	400	5.49	0.152	0.6	0.59	20.76	41	
1030 30	8.17	400	5.50	0.153	0.4	0.56	20.76	34	
1040 34.0	8.17	400	5.56	0.160	0.3	0.52	20.77	23	
1050 38.0	8.17	400	5.57	0.160	0.3	0.50	20.76	20	
END PURGE									
SAMPLE	@ 1055								

SIGNATURE(S): Allen Pate

PAGE___OF___

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Page___ of ___

Project Site Name:	*NASJAX Hangar 1000*	Sample ID No.:	H10-GW-MW -06
Project No.:	*N3995, CTO 167*	Sample Location:	H10-MW
		Sampled By:	A.Pate/L.Middleton
[ ] Domestic Well Data		C.O.C. No.:	H10-
[X] Monitoring Well Data		Type of Sample:	
[ ] Other Well Type:		[X] Low Concentration	
[ ] QA Sample Type:		[ ] High Concentration	

SAMPLING DATA

Date: 7/31/01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1305	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	
Method: Low Flow Peristaltic	Clear	5.72	0.231	19.9	1.1	0.57	5	

PURGE DATA

Date: 7/31/01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	ORP	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0.0	See attached Low Flow Purge Data Sheet							
Well Casing Diameter: 4"								
Well Casing Material: PVC								
Total Well Depth (TD): 12.70								
Static Water Level (WL): 7.67								
One Casing Volume(gal/L): 12.4								
Start Purge (hrs): 1130								
End Purge (hrs): 1305								
Total Purge Time (min): 95								
Total Vol. Purged (gal/L): 38.0								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Metals: Cd, Cr	*HNO_3*	*1-500ml HDPE*	YES
Anions: SO4, NO3, NO2, Cl	~~	*1-500ml plastic*	
Sulfide	*NaOH, ZnAcetate*	*1-500 ml HDPE*	
SVOC - 8270C	~~	*2-1L Amber*	
PAH - 8310	~~	*2-1L Amber*	
VOC - 8260B	*HCl*	*3-40ml vials*	
Alcohols - 8015B	~~	*3-40ml vials*	
Methane/Ethane/Ethene	~~	*3-40ml vials*	

OBSERVATIONS / NOTES

Laboratory: **Accutest**
4405 Vineland Rd. #C-15
Orlando, FL 32811

phone: 407-425-6700
fax: 407-425-0707

12.70 − 7.67 = 5.03

12.4 × 3 = 37.2

Circle if Applicable:		Signature(s):
MS/MSD	Duplicate ID No.:	Alan Pate

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NASJAX Hangar 1000
PROJECT NUMBER: N3995, CTO 167

WELL ID.: H10-MW-[illegible]
DATE: 7/31/01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1130	7.67	—	—	—	—	—	—	—	
1140 4.0	7.95	400	5.45	0.204	50.3	1.32	20.04	124	
1150 8.0	7.96	400	5.40	0.205	20.1	1.40	20.01	78	
1200 12.0	7.96	400	5.55	0.218	5.0	0.48	20.0	58	
1210 16.0	7.96	400	5.63	0.227	2.6	0.37	20.0	43	
1220 20.0	7.96	400	5.65	0.228	1.4	0.42	20.0	40	
1230 24.0	7.96	400	5.70	0.230	1.7	0.38	20.0	[illegible]	
1240 28.0	7.96	400	5.72	0.228	0.3	0.37	20.0	14	
1250 32.0	7.96	400	5.71	0.229	2.1	0.49	19.9	13	
1300 36.0	7.96	400	5.71	0.231	1.5	0.39	19.9	7	
1305 38.0	7.96	400	5.72	0.231	1.1	0.38	19.9	5	
	@ END PURGE								

SIGNATURE(S): [signature]

PAGE___OF___

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name:	*NASJAX Hangar 1000*	Sample ID No.:	H10-GW-MW -06
Project No.:	*N3995, CTO 167*	Sample Location:	H10-MW
		Sampled By:	A.Pate/L.Middleton
[ ] Domestic Well Data		C.O.C. No.:	H10-
[X] Monitoring Well Data		Type of Sample:	
[ ] Other Well Type:		[X] Low Concentration	
[ ] QA Sample Type:		[ ] High Concentration	

SAMPLING DATA

Date: 7/ 31 /01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1515	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	
Method: Low Flow Peristaltic								

PURGE DATA

Date: 7/ 31 /01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	ORP	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0.0	See attached Low Flow Purge Data Sheet							
Well Casing Diameter: 4"								
Well Casing Material: PVC								
Total Well Depth (TD): 13.39								
Static Water Level (WL): 7.48								
One Casing Volume(gal/L): 13								
Start Purge (hrs): 1340								
End Purge (hrs): 1515								
Total Purge Time (min): 95								
Total Vol. Purged (gal/L): 40								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Metals: Cd, Cr	HNO_3	1-500ml HDPE	YES
Anions: SO4, NO3, NO2, Cl	~~	1-500ml plastic	
Sulfide	NaOH, ZnAcetate	1-500 ml HDPE	
SVOC - 8270C	~~	2-1L Amber	
PAH - 8310	~~	2-1L Amber	
VOC - 8260B	HCl	3-40ml vials	
Alcohols - 8015B	~~	3-40ml vials	
Methane/Ethane/Ethene	~~	3-40ml vials	

OBSERVATIONS / NOTES

Laboratory: **Accutest**
4405 Vineland Rd. #C-15
Orlando, FL 32811
phone: 407-425-6700
fax: 407-425-0707

12
~~13~~.39
7.78
5.91

38
13.0
.3

13
3
39.0

Circle if Applicable:		Signature(s):
MS/MSD	Duplicate ID No.:	Alan Pate

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NASJAX Hangar 1000
PROJECT NUMBER: N3995, CTO 167

WELL ID.: H10-MW-[illegible]
DATE: 7/31/01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1340	7.48	—	—	—	—	—	—	—	
1350 4.0	7.88	400	6.01	0.263	10.5	1.38	22.1	147	
1400 8.0	7.91	400	6.00	0.260	9.1	0.88	22.3	83	
1410 12.0	7.93	400	6.03	0.261	7.6	0.88	22.3	60	
1420 18.0	7.93	400	6.06	0.262	1.4	1.21	22.3	60	
1430 22.0	7.93	400	6.09	0.261	2.1	0.60	22.3	47	
1440 26.0	7.95	400	6.10	0.262	1.7	0.59	22.2	43	
1450 30.0	7.95	400	6.12	0.262	1.0	0.58	22.2	35	
1500 34.0	7.95	400	6.10	0.261	1.4	1.23	22.2	42	
1510 38.0	7.95	400	6.10	0.262	1.9	0.62	22.2	46	
1515 40.0	7.95	400	6.10	0.261	2.3	0.57	22.2	41	

SIGNATURE(S): Allan [signature]

PAGE__ OF__

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name: *NASJAX Hangar 1000*
Project No.: *N3995, CTO 167*

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: H10-GW-MW -06
Sample Location: H10-MW
Sampled By: A.Pate/M.O'Neill
C.O.C. No.: H10-
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Date: 7/11/01	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	
Time: 1210								
Method: Low Flow Peristaltic	CLEAR	6.15	0.896	26.1	0	18	298	

PURGE DATA

Date: 7/11/01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	ORP	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0.0	See attached Low Flow Purge Data Sheet							
Well Casing Diameter: 4"								
Well Casing Material: PVC								
Total Well Depth (TD): 13.00								
Static Water Level (WL): 6.97								
One Casing Volume(gal/L): 3.9								
Start Purge (hrs): 0932								
End Purge (hrs): 1200								
Total Purge Time (min): 148								
Total Vol. Purged (gal/L): 12								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Metals: Cd, Cr	*HNO_3*	*1-500ml HDPE*	X
Anions: SO4, NO3, NO2, Cl	~~	*1-500ml plastic*	X
Sulfide	*NaOH, ZnAcetate*	*1-500 ml HDPE*	X
SVOC - 8270C	~~	*2-1L Amber*	X
PAH - 8310 Pd T	~~	*2-1L Amber*	X
VOC - 8260B	*HCl*	*3-40ml vials*	X
Alcohols - 8015B	~~	*3-40ml vials*	X
Methane/Ethane/Ethene	~~	*3-40ml vials*	X

OBSERVATIONS / NOTES

Laboratory: **Accutest**
4405 Vineland Rd. #C-15
Orlando, FL 32811

phone: 407-425-6700
fax: 407-425-0707

12.90
6.97
6.03

6.03

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NASJAX Hangar 1000
PROJECT NUMBER: N3995, CTO 167

WELL ID.: H10-MW 8
DATE: 7/11 /01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
0932	6.97	Start purge							
0937	7.15	15	5.72	0.663	3.7	16.93	27.0	379	[illegible]
0942	7.26	1.6	5.76	0.691	2.8	>20	26.3	378	[illegible]
0950	7.22	1.8	5.80	0.691	0	>20	26.2	370	
1000	7.25	2.5	5.83	0.689	0	>20	26.2	361	
1010	7.25	3.2	5.86	0.687	0	>20	26.3	355	
1020	7.25	4	5.89	0.690	0	>20	26.1	351	[illegible]
1030	7.25	4.5	6.01	0.691	3.4	>20	26.0	343	
1040	7.26	5.4	6.06	0.694	0	>20	26.0	335	
1050	7.26	6.0	6.12	0.697	0	19.80	26.0	331	
1100	7.27	6.4	6.10	0.698	0	>20	26.1	329	
1110	7.26	7.4	6.08	0.701	0	>20	26.1	328	
1120	7.26	8.2	6.08	0.700	0	>20	26.3	329	[illegible]
1130	7.41	10	6.12	0.712	207.0	>20	26.1	323	[illegible]
1200	7.26	12	6.15	0.696	0	18	26.1	298	
END PURGE									

SIGNATURE(S): [signature]

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name:	*NASJAX Hangar 1000*	Sample ID No.:	H10-GW-MW 08D -06
Project No.:	*N3995, CTO 167*	Sample Location:	H10-MW 08D
		Sampled By:	A.Pate/M.O'Neill
		C.O.C. No.:	H10-

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 7/11/01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1008	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	
Method: Low Flow Peristaltic	Cloudy	7.00	0.459	25.6	266	1.07	-175	

PURGE DATA

Date: 7/11/01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	ORP	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0.0	See attached Low Flow Purge Data Sheet							
Well Casing Diameter:								
Well Casing Material: PVC								
Total Well Depth (TD):								
Static Water Level (WL): 7.89								
One Casing Volume(gal/L): 0.85								
Start Purge (hrs): 0930								
End Purge (hrs): 1005								
Total Purge Time (min): 35								
Total Vol. Purged (gal/L): 4.25								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Metals: Cd, Cr	*HNO_3*	*1-500ml HDPE*	YES
Anions: SO4, NO3, NO2, Cl	~~	*1-500ml plastic*	
Sulfide	*NaOH, ZnAcetate*	*1-500 ml HDPE*	
SVOC - 8270C	~~	*2-1L Amber*	
PAH - 8310	~~	*2-1L Amber*	
VOC - 8260B	*HCl*	*3-40ml vials*	
Alcohols - 8015B	~~	*3-40ml vials*	
Methane/Ethane/Ethene	~~	*3-40ml vials*	

OBSERVATIONS / NOTES

Laboratory: **Accutest**
4405 Vineland Rd. #C-15
Orlando, FL 32811

5.00
.17
3500
500
.8500

0.85
5
425

phone: 407-425-6700
fax: 407-425-0707

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NASJAX Hangar 1000
PROJECT NUMBER: N3995, CTO 167

WELL ID.: H10-MW08D
DATE: 7/ 4 /01

Time (Hrs)	Water Level (Ft below TOC)	Flow (mL/Min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
0930	7.89	—	—	—	—	—	—	—	
0935	8.42	—	6.92	0.454	630.0	2.77	25.9	-69	
0945	8.60	—	6.87	0.462	415.0	1.58	25.7	-114	
0955	8.69	—	6.90	0.460	350.0	1.20	25.6	-154	
1005	8.73	—	7.00	0.459	266.0	1.07	25.6	-175	
END PURGED									
	PURGED 5 vols @ Very Low RATE								
	WATER WILL NOT CLEAR-UP								

SIGNATURE(S): Alan K. Pate

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name: *NASJAX Hangar 1000*
Project No.: *N3995, CTO 167*

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type: ____________
[ ] QA Sample Type: ____________

Sample ID No.: H10-GW-MW [illegible] -06
Sample Location: H10-MW [illegible]
Sampled By: A.Pate/L.Middleton
C.O.C. No.: H10-
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 8/2/01 ~~7/ /01~~	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	ORP mV	Other
Time: 0855								
Method: Low Flow Peristaltic	Clear	7.25	0.537	21.5	3.7	0.50	-157	

PURGE DATA

Date: 8/2/01 ~~7/ /01~~	Time	pH	S.C.	Temp (°C)	Turbidity	DO	ORP	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0.0	See attached Low Flow Purge Data Sheet							
Well Casing Diameter: 4"								
Well Casing Material: PVC								
Total Well Depth (TD): 39.58								
Static Water Level (WL): 6.90								
One Casing Volume(gal/L): 3.3								
Start Purge (hrs): 0650								
End Purge (hrs): 0855								
Total Purge Time (min): 125								
Total Vol. Purged (gal/L): 37.5								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Metals: Cd, Cr	*HNO₃*	*1-500ml HDPE*	YES
Anions: SO4, NO3, NO2, Cl	~~	*1-500ml plastic*	
Sulfide	*NaOH, ZnAcetate*	*1-500 ml HDPE*	
SVOC - 8270C	~~	*2-1L Amber*	
PAH - 8310	~~	*2-1L Amber*	
VOC - 8260B	*HCl*	*3-40ml vials*	
Alcohols - 8015B	~~	*3-40ml vials*	
Methane/Ethane/Ethene	~~	*3-40ml vials*	

OBSERVATIONS / NOTES

Laboratory: **Accutest**
4405 Vineland Rd. #C-15
Orlando, FL 32811

phone: 407-425-6700
fax: 407-425-0707

12.4
3
37.2

Circle if Applicable:
MS/MSD | Duplicate ID No.:

Signature(s): Alan L Pate

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NASJAX Hangar 1000
PROJECT NUMBER: N3995, CTO 167

WELL ID.: H10-MW09
DATE: ~~7/ 10/~~ 8/2/01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
0650	6.90	—	—	—	—	—	—	—	
0700 3.0	7.90	300	7.13	0.530	7.4	1.47	23.7	-99	
0710 6.0	8.73	300	7.10	0.539	27.8	1.92	23.7	-123	
0720 [illegible]	9.55	300	7.06	0.542	35.7	0.75	21.6	-137	WELL HAS [illegible]
0730 [illegible]	10.62	300	7.08	0.542	32.4	0.41	21.6	-143	[illegible]
0740 [illegible]	11.65	300	7.11	0.541	27.8	0.35	21.6	-147	[illegible]
0750 18.0	12.43	300	7.11	0.541	31.6	0.31	21.6	-149	
0800 21.0	13.50	300	7.20	0.539	42.8	0.30	21.6	-133	
0810 24.0	14.61	300	7.19	0.538	17.6	0.35	21.6	-147	
0820 27.0	15.45	300	7.21	0.537	12.5	0.42	21.5	-149	
0830 30.0	16.24	300	7.21	0.537	4.8	0.48	21.5	-149	
0840 33.0	17.36	300	7.26	0.537	4.2	0.51	21.5	-149	
0850 36.0	18.19	300	7.26	0.537	4.0	0.49	21.5	-153	
0855 37.5	19.47	300	7.25	0.537	3.7	0.50	21.5	-157	
END	PURGE & COLLECT SAMPLE								[illegible]

SIGNATURE(S): Allan Bate

PAGE __ OF

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name:	*NASJAX Hangar 1000*	Sample ID No.:	H10-GW-MW 10 -06
Project No.:	*N3995, CTO 167*	Sample Location:	H10-MW 10
		Sampled By:	A.Pate/M.O'Neill
[ ] Domestic Well Data		C.O.C. No.:	H10-
[X] Monitoring Well Data		Type of Sample:	
[ ] Other Well Type:		[X] Low Concentration	
[ ] QA Sample Type:		[ ] High Concentration	

SAMPLING DATA

Date: 7/ 11 /01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1215	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	
Method: Low Flow Peristaltic	Clear	5.64	0.200	26.9	0	1.57	93	

PURGE DATA

Date: 7/ 11 /01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	ORP	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0.0	See attached Low Flow Purge Data Sheet							
Well Casing Diameter: 4"								
Well Casing Material: PVC								
Total Well Depth (TD): 12.40								
Static Water Level (WL): 6.64								
One Casing Volume(gal/L): 3.0								
Start Purge (hrs): 11:20								
End Purge (hrs): 1215								
Total Purge Time (min): 55								
Total Vol. Purged (gal/L): 9.0								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Metals: Cd, Cr	HNO_3	1-500ml HDPE	YES
Anions: SO4, NO3, NO2, Cl	~~	1-500ml plastic	
Sulfide	NaOH, ZnAcetate	1-500 ml HDPE	
SVOC - 8270C	~~	2-1L Amber	
PAH - 8310	~~	2-1L Amber	
VOC - 8260B	HCl	3-40ml vials	
Alcohols - 8015B	~~	3-40ml vials	
Methane/Ethane/Ethene	~~	3-40ml vials	

OBSERVATIONS / NOTES

Laboratory: **Accutest**
4405 Vineland Rd. #C-15
Orlando, FL 32811
phone: 407-425-6700
fax: 407-425-0707

12.40
6.64
5.76

5.76

Circle if Applicable:		Signature(s):
MS/MSD	Duplicate ID No.:	Allan L Pate

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NASJAX Hangar 1000
PROJECT NUMBER: N3995, CTO 167

WELL ID.: H10-MW 10
DATE: 7/ 11 /01

Time (Hrs)	Water Level (Ft. below TOC)	Flow (mL/Min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1120	6.64	—	—	—	—	—	—	—	
1125	6.86	—	5.92	0.202	20.6	6.36	26.3	97	
1135	7.11	—	5.75	0.199	10.5	2.31	26.8	86	
1145	7.11	—	5.71	0.198	9.2	2.30	26.8	86	
1155	7.10	—	5.68	0.195	4.7	2.03	26.9	96	
1205	7.10	—	5.64	0.194	0	1.91	26.6	76	
1215	7.10		5.64	0.200	0	1.57	26.9	93	

SIGNATURE(S): Alan L. Bate

PAGE 2 OF 2

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name:	*NASJAX Hangar 1000*	Sample ID No.:	H10-GW-MW -06
Project No.:	*N3995, CTO 167*	Sample Location:	H10-MW
		Sampled By:	A.Pate/L.Middleton
[ ] Domestic Well Data		C.O.C. No.:	H10-
[X] Monitoring Well Data		Type of Sample:	
[ ] Other Well Type:		[X] Low Concentration	
[ ] QA Sample Type:		[ ] High Concentration	

SAMPLING DATA

Date: 8/1/01 ~~7/ /01~~	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1230	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	
Method: Low Flow Peristaltic								

PURGE DATA

Date: 8/1/01 ~~7/ /01~~	Time	pH	S.C.	Temp (°C)	Turbidity	DO	ORP	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0.0	See attached Low Flow Purge Data Sheet							
Well Casing Diameter: 4"								
Well Casing Material: PVC								
Total Well Depth (TD): 33.90								
Static Water Level (WL): 6.45								
One Casing Volume(gal/L): 3.0								
Start Purge (hrs): 1115								
End Purge (hrs): 1230								
Total Purge Time (min): 75								
Total Vol. Purged (gal/L): 37.5								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Metals: Cd, Cr	*HNO_3*	*1-500ml HDPE*	YES
Anions: SO4, NO3, NO2, Cl	~~	*1-500ml plastic*	
Sulfide	*NaOH, ZnAcetate*	*1-500 ml HDPE*	
SVOC - 8270C	~~	*2-1L Amber*	
PAH - 8310	~~	*2-1L Amber*	
VOC - 8260B	*HCl*	*3-40ml vials*	
Alcohols - 8015B	~~	*3-40ml vials*	
Methane/Ethane/Ethene	~~	*3-40ml vials*	

OBSERVATIONS / NOTES

Laboratory: **Accutest**
4405 Vineland Rd. #C-15
Orlando, FL 32811

phone: 407-425-6700
fax: 407-425-0707

12.3
3.6

Circle if Applicable:		Signature(s):
MS/MSD	Duplicate ID No.:	

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NASJAX Hangar 1000
PROJECT NUMBER: N3995, CTO 167

WELL ID.: H10-MW11
DATE: 7/ /01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1115	6.48	—	—	—	—	—	—	—	
1125 5.0	6.80	500	6.94	0.510	10.7	0.75	21.8	-148	
1135 10.0	6.93	500	6.93	0.503	5.4	0.95	21.7	-141	
1145 15.0	7.25	500	6.97	0.504	6.3	0.62	21.6	-143	
1155 20.0	7.80	500	6.99	0.506	4.2	0.49	21.6	-145	
1205 25.0	8.13	500	6.99	0.510	1.7	0.51	21.4	-137	
1215 30.0	8.17	500	7.01	0.508	1.3	0.67	21.4	-137	
1225 35.0	8.26	500	7.01	0.508	0	0.51	21.5	-139	
1230 37.5	8.33	500	7.04	0.507	0	0.47	21.4	-139	
END	PURGE + COLLECT SAMPLE								

SIGNATURE(S): Alan Pate

PAGE___OF___

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name:	*NASJAX Hangar 1000*	Sample ID No.:	H10-GW-MW 12 -06
Project No.:	*N3995, CTO 167*	Sample Location:	H10-MW 12
		Sampled By:	A.Pate/L.Middleton
[ ] Domestic Well Data		C.O.C. No.:	H10-
[X] Monitoring Well Data		Type of Sample:	
[ ] Other Well Type:		[X] Low Concentration	
[ ] QA Sample Type:		[ ] High Concentration	

SAMPLING DATA

Date: 8/1/01 ~~7/ /01~~ Time: 1330	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	ORP mV	Other
Method: Low Flow Peristaltic	CLEAR	5.44	0.216	21.6	2.6	0.45	3	

PURGE DATA

Date: 8/1/01 ~~7/ /01~~	Time	pH	S.C.	Temp (°C)	Turbidity	DO	ORP	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0.0	See attached Low Flow Purge Data Sheet							
Well Casing Diameter: 2"								
Well Casing Material: PVC								
Total Well Depth (TD): 14.53								
Static Water Level (WL): 7.75								
One Casing Volume(gal/L): 1.2								
Start Purge (hrs): 1300								
End Purge (hrs): 1330								
Total Purge Time (min): 30								
Total Vol. Purged (gal/L): 4								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Metals: Cd, Cr	*HNO_3*	*1-500ml HDPE*	YES
Anions: SO4, NO3, NO2, Cl	~~	*1-500ml plastic*	
Sulfide	*NaOH, ZnAcetate*	*1-500 ml HDPE*	
SVOC - 8270C	~~	*2-1L Amber*	
PAH - 8310	~~	*2-1L Amber*	
VOC - 8260B	*HCl*	*3-40ml vials*	
Alcohols - 8015B	~~	*3-40ml vials*	
Methane/Ethane/Ethene	~~	*3-40ml vials*	

OBSERVATIONS / NOTES

Laboratory: **Accutest**
4405 Vineland Rd. #C-15
Orlando, FL 32811
phone: 407-425-6700
fax: 407-425-0707

14.53
7.75
6.78

6.78
4.7
4746
678
11546

1.2
3
36

6.78

Circle if Applicable:		Signature(s):
MS/MSD	Duplicate ID No.:	

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NASJAX Hangar 1000
PROJECT NUMBER: N3995, CTO 167

WELL ID.: H10-MW12
DATE: ~~7/ /01~~ 8/1/01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1300	7.75	-	-	-	-	-	-	-	
1305 1.5	8.10	300	5.51	0.221	63.5	1.20	21.6	50	
1310 3.0	8.10	300	5.49	0.215	13.1	1.10	21.6	37	
1320 6.0	8.10	300	5.43	0.215	6.2	1.03	21.6	31	
1330 9.0	8.10	300	5.43	0.215	4.1	0.55	21.6	23	
1340 12.0	8.10	300	5.45	0.215	3.2	0.47	21.6	8	
1350 15.0	8.10	300	5.44	0.216	2.6	0.45	21.6	3	
END PURGE + COLLECT SAMPLE									

SIGNATURE(S): Alan Pate

PAGE___OF___

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name:	*NASJAX Hangar 1000*	Sample ID No.:	H10-GW-MW 13 -06
Project No.:	*N3995, CTO 167*	Sample Location:	H10-MW 13
		Sampled By:	A.Pate/L.Middleton
[ ] Domestic Well Data		C.O.C. No.:	H10-
[X] Monitoring Well Data		Type of Sample:	
[ ] Other Well Type:		[X] Low Concentration	
[ ] QA Sample Type:		[ ] High Concentration	

SAMPLING DATA

Date: 8/2/01 ~~7/ /01~~ Time: 0955	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	ORP mV	Other
Method: Low Flow Peristaltic	clear	5.93	0.306	26.0	2.2	1.20	105	

PURGE DATA

Date: 8/2/01 ~~7/ /01~~	Time	pH	S.C.	Temp (°C)	Turbidity	DO	ORP	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0.0	See attached Low Flow Purge Data Sheet							
Well Casing Diameter: 2"								
Well Casing Material: PVC								
Total Well Depth (TD): 14.31								
Static Water Level (WL): 7.38								
One Casing Volume(gal/L): 1.1								
Start Purge (hrs): 0920								
End Purge (hrs): 0955								
Total Purge Time (min): 35								
Total Vol. Purged (gal/L): 14.0								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Metals: Cd, Cr	*HNO_3*	*1-500ml HDPE*	YES
Anions: SO4, NO3, NO2, Cl	~~	*1-500ml plastic*	
Sulfide	*NaOH, ZnAcetate*	*1-500 ml HDPE*	
SVOC - 8270C	~~	*2-1L Amber*	
PAH - 8310	~~	*2-1L Amber*	
VOC - 8260B	*HCl*	*3-40ml vials*	
Alcohols - 8015B	~~	*3-40ml vials*	
Methane/Ethane/Ethene	~~	*3-40ml vials*	

OBSERVATIONS / NOTES

Laboratory: **Accutest**
4405 Vineland Rd. #C-15
Orlando, FL 32811
phone: 407-425-6700
fax: 407-425-0707

13 12
14.31
7.38
6.93

6.93
1.17
4851
693
1.1781

1.1
3
3.3

12.46

Circle if Applicable:		Signature(s):
MS/MSD	Duplicate ID No.:	

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NASJAX Hangar 1000
PROJECT NUMBER: N3995, CTO 167

WELL ID.: H10-MW13
DATE: ~~7/ /01~~ 8/2/01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
0920	7.38	–	–	–	–	–	–	–	
0925 2.0	7.56	400	6.22	0.327	30.7	2.50	24.8	155	
0930 4.0	7.61	400	5.88	0.292	8.2	1.10	25.5	144	
0935 6.0	7.61	400	5.90	0.302	3.2	1.24	25.9	124	
0940 8.0	7.61	400	5.93	0.308	3.1	1.29	25.9	113	
0945 10.0	7.61	400	5.94	0.307	2.3	1.24	26.0	110	
0950 12.0	7.61	400	5.93	0.307	0	1.22	26.0	108	
0955 14.0	7.61	400	5.93	0.306	2.2	1.20	26.0	105	
END PURGE & COLLECT SAMPLE									

SIGNATURE(S): [signature]

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Page 1 of 2

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name:	*NASJAX Hangar 1000*	Sample ID No.:	H10-GW-MW 14 -06
Project No.:	*N3995, CTO 167*	Sample Location:	H10-MW 14
		Sampled By:	A.Pate/M.O'Neill
[ ] Domestic Well Data		C.O.C. No.:	H10-
[X] Monitoring Well Data		Type of Sample:	
[ ] Other Well Type:		[X] Low Concentration	
[ ] QA Sample Type:		[ ] High Concentration	

SAMPLING DATA

Date: 7/12/01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1000	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	
Method: Low Flow Peristaltic	Clear	4.97	0.166	27.3	0	1.27	-130	

PURGE DATA

Date: 7/12/01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	ORP	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0.0	See attached Low Flow Purge Data Sheet							
Well Casing Diameter: 2"								
Well Casing Material: PVC								
Total Well Depth (TD): 16.08								
Static Water Level (WL): 7.59								
One Casing Volume(gal/L): 1.4								
Start Purge (hrs): 0910								
End Purge (hrs): 1000								
Total Purge Time (min): 50								
Total Vol. Purged (gal/L): 4.5								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Metals: Cd, Cr	*HNO_3*	*1-500ml HDPE*	YES
Anions: SO4, NO3, NO2, Cl	~~	*1-500ml plastic*	|
Sulfide	*NaOH, ZnAcetate*	*1-500 ml HDPE*	|
SVOC - 8270C	~~	*2-1L Amber*	|
PAH - 8310	~~	*2-1L Amber*	|
VOC - 8260B	*HCl*	*3-40ml vials*	|
Alcohols - 8015B	~~	*3-40ml vials*	|
Methane/Ethane/Ethene	~~	*3-40ml vials*	|

OBSERVATIONS / NOTES

Laboratory: **Accutest**
4405 Vineland Rd. #C-15
Orlando, FL 32811

phone: 407-425-6700
fax: 407-425-0707

16.08
7.59
8.49

8.49
11.13
5943
849
14433

1.4
3
4.2

Circle if Applicable:		Signature(s):
MS/MSD H10-GW-MSMSD1-06	Duplicate ID No.:	Alan Pate

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NASJAX Hangar 1000
PROJECT NUMBER: N3995, CTO 167

WELL ID.: H10-MW14
DATE: 7/12/01

Time (Hrs)	Water Level (Ft. below TOC)	Flow (mL/Min)	pH (S.U)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
0910	7.59	–	–	–	–	–	–	–	
0915	7.75	–	5.17	0.178	10.8	4.35	26.9	-143	
0925	7.75	–	5.16	0.175	3.0	1.63	26.9	-137	
0935	7.75	–	5.03	0.175	0	1.24	27.0	-139	
0945	7.75	–	4.96	0.169	0.9	1.00	27.1	-133	
0955	7.75	–	4.97	0.167	0	1.22	27.3	-131	
1000	7.75	–	4.97	0.166	0	1.27	27.3	-130	
END	PURGE								

SIGNATURE(S): Alan Pate

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name: *NASJAX Hangar 1000*
Project No.: *N3995, CTO 167*

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Sample ID No.: H10-GW-MW15-06
Sample Location: H10-MW15
Sampled By: A.Pate/M.O'Neill
C.O.C. No.: H10-
Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Date: 7/12/01	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	
Time: 0828								
Method: Low Flow Peristaltic	Clear	4.78	0.159	25.6	0	1.00	-120	

PURGE DATA

Date: 7/12/01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	ORP	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0.0	See attached Low Flow Purge Data Sheet							
Well Casing Diameter: 2''								
Well Casing Material: PVC								
Total Well Depth (TD): 15.60								
Static Water Level (WL): 6.83								
One Casing Volume(gal/L): 1.4								
Start Purge (hrs): 0740								
End Purge (hrs): 0825								
Total Purge Time (min): 45								
Total Vol. Purged (gal/L): 4.5								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Metals: Cd, Cr	*HNO_3*	*1-500ml HDPE*	YES
Anions: SO4, NO3, NO2, Cl	~~	*1-500ml plastic*	
Sulfide	*NaOH, ZnAcetate*	*1-500 ml HDPE*	
SVOC - 8270C	~~	*2-1L Amber*	
PAH - 8310	~~	*2-1L Amber*	
VOC - 8260B	*HCl*	*3-40ml vials*	
Alcohols - 8015B	~~	*3-40ml vials*	
Methane/Ethane/Ethene	~~	*3-40ml vials*	

OBSERVATIONS / NOTES

Laboratory: **Accutest**
4405 Vineland Rd. #C-15
Orlando, FL 32811

phone: 407-425-6700
fax: 407-425-0707

14.5
15.60
6.83
8.77

1.4

1.4
3
4.2

Circle if Applicable:

MS/MSD	Duplicate ID No.:

Signature(s): [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NASJAX Hangar 1000
PROJECT NUMBER: N3995, CTO 167

WELL ID.: H10-MW 15
DATE: 7/12/01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
0740	6.83	–	–	–	–	–	–	–	
0745	7.01	–	4.73	0.160	0	2.70	25.4	-90	
0755	7.01	–	4.72	0.162	0	1.33	25.4	-116	
0805	7.03	–	4.76	0.160	0	1.13	25.5	-117	
0815	7.05	–	4.78	0.160	0	1.02	25.6	-121	
0825	7.05	–	4.78	0.159	0	1.00	25.6	-120	
END	PURGE								

SIGNATURE(S): [signature]

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name:	NASJAX Hangar 1000	Sample ID No.:	H10-GW-MW16 -06
Project No.:	N3995, CTO 167	Sample Location:	H10-MW
		Sampled By:	A.Pate/L.Middleton
		C.O.C. No.:	H10-

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type: ______
[ ] QA Sample Type: ______

Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 8/2/01 ~~7/ /01~~	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1200	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	
Method: Low Flow Peristaltic	Clear	5.93	0.194	23.3	0	0.87	-21	

PURGE DATA

Date: 8/2/01 ~~7/ /01~~	Time	pH	S.C.	Temp (°C)	Turbidity	DO	ORP	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0.0	See attached Low Flow Purge Data Sheet							
Well Casing Diameter: MICRO								
Well Casing Material: PVC								
Total Well Depth (TD): 20.15								
Static Water Level (WL): 6.01								
One Casing Volume(gal/L): 0.5								
Start Purge (hrs): 1130								
End Purge (hrs): 1200								
Total Purge Time (min): 30								
Total Vol. Purged (gal/L): 2.5								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Metals: Cd, Cr	*HNO_3*	*1-500ml HDPE*	YES
Anions: SO4, NO3, NO2, Cl	~~	*1-500ml plastic*	
Sulfide	*NaOH, ZnAcetate*	*1-500 ml HDPE*	
SVOC - 8270C	~~	*2-1L Amber*	
PAH - 8310	~~	*2-1L Amber*	
VOC - 8260B	*HCl*	*3-40ml vials*	
Alcohols - 8015B	~~	*3-40ml vials*	
Methane/Ethane/Ethene	~~	*3-40ml vials*	

OBSERVATIONS / NOTES

Laboratory: **Accutest**
4405 Vineland Rd. #C-15
Orlando, FL 32811

phone: 407-425-6700
fax: 407-425-0707

Circle if Applicable:		Signature(s):
MS/MSD	Duplicate ID No.:	Alan Pate

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NASJAX Hangar 1000
PROJECT NUMBER: N3995, CTO 167

WELL ID.: H10-MW 16
DATE: ~~7/ /01~~ 8/2/01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1130	6.01	—	—	—	—	—	—	—	
1135	—	—	6.11	0.199	14.7	3.81	23.5	-8	
1140	—	—	5.99	0.198	3.7	1.82	23.3	-8	
1145	—	—	5.95	0.196	0	1.22	23.2	-10	
1150	—	—	5.93	0.194	1.2	0.92	23.3	-14	
1155	—	—	5.93	0.193	0	0.84	23.3	-17	
1200	—	—	5.93	0.194	0	0.87	23.3	-21	
END PURGE & COLLECT SAMPLE									

SIGNATURE(S): Allan Pate

PAGE 2 OF __

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name:	*NASJAX Hangar 1000*	Sample ID No.:	H10-GW-MW17 -06
Project No.:	*N3995, CTO 167*	Sample Location:	H10-MW17
		Sampled By:	A.Pate/M.O'Neill
		C.O.C. No.:	H10-0711

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 7/11/01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1445	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	
Method: Low Flow Peristaltic	Clear	4.52	0.110	25.0	0.1	2.41	147	

PURGE DATA

Date: 7/11/01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	ORP	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0.0	See attached Low Flow Purge Data Sheet							
Well Casing Diameter: MICRO								
Well Casing Material: PVC								
Total Well Depth (TD): 11.60								
Static Water Level (WL): 6.17								
One Casing Volume(gal/L): 0.5								
Start Purge (hrs): 1425								
End Purge (hrs): 1445								
Total Purge Time (min): 25								
Total Vol. Purged (gal/L): 3.0								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Metals: Cd, Cr	*HNO_3*	*1-500ml HDPE*	✓
Anions: SO4, NO3, NO2, Cl	~~	*1-500ml plastic*	✓
Sulfide	NaOH, ZnAcetate	*1-500 ml HDPE*	✓
SVOC - 8270C	~~	*2-1L Amber*	✓
PAH - 8310	~~	*2-1L Amber*	✓
VOC - 8260B	*HCl*	*3-40ml vials*	✓
Alcohols - 8015B	~~	*3-40ml vials*	✓
Methane/Ethane/Ethene	~~	*3-40ml vials*	✓

OBSERVATIONS / NOTES

Laboratory: **Accutest**
4405 Vineland Rd. #C-15
Orlando, FL 32811
phone: 407-425-6700
fax: 407-425-0707

Circle if Applicable:		Signature(s):
MS/MSD	Duplicate ID No.:	[signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NASJAX Hangar 1000
PROJECT NUMBER: N3995, CTO 167

WELL ID.: H10-MW17
DATE: 7/ [illegible] /01

Time	Water Level	Flow	pH	Cond.	Turb.	DO	Temp.	ORP	Comments
(Hrs)	(Ft. below TOC)	(mL/Min)	(S.U.)	(mS/cm)	(NTU)	(mg/L)	(Celsius)	(mV)	
1425	6.17	—	—	—	—	—	—	—	
1430	—	~~4.65~~ AF	4.65	0.122	60.4	2.64	25.8	148	
1435	—	—	4.52	0.111	2.5	3.20	24.9	151	
1440	—	—	4.54	0.110	0.6	2.58	25.0	143	
1445	—	—	4.52	0.110	0.1	2.41	25.0	147	
END	PURGE								

SIGNATURE(S): [signature]

PAGE 2 OF 2

Page___ of ___

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET

Project Site Name:	NASJAX Hangar 1000	Sample ID No.:	H10-GW-MW 18 -06
Project No.:	N3995, CTO 167	Sample Location:	H10-MW 18
		Sampled By:	A.Pate/L.Middleton
		C.O.C. No.:	H10-

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 8/2/01 ~~7/ /01~~	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	ORP mV	Other
Time: 1100								
Method: Low Flow Peristaltic	Clear	5.79	0.255	25.1	0	0.76	73	

PURGE DATA

Date: 8/2/01 ~~7/ /01~~	Time	pH	S.C.	Temp (°C)	Turbidity	DO	ORP	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm):	See attached Low Flow Purge Data Sheet							
Well Casing Diameter: MICRO								
Well Casing Material: PVC								
Total Well Depth (TD): 11.69								
Static Water Level (WL): 5.54								
One Casing Volume(gal/L): 0.5								
Start Purge (hrs): 1030								
End Purge (hrs): 1100								
Total Purge Time (min): 30								
Total Vol. Purged (gal/L): 2.5								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Metals: Cd, Cr	HNO_3	1-500ml HDPE	YES
Anions: SO4, NO3, NO2, Cl	~~	1-500ml plastic	
Sulfide	NaOH, ZnAcetate	1-500 ml HDPE	
SVOC - 8270C	~~	2-1L Amber	
PAH - 8310	~~	2-1L Amber	
VOC - 8260B	HCl	3-40ml vials	
Alcohols - 8015B	~~	3-40ml vials	
Methane/Ethane/Ethene	~~	3-40ml vials	

OBSERVATIONS / NOTES

Laboratory: **Accutest**
4405 Vineland Rd. #C-15
Orlando, FL 32811

phone: 407-425-6700
fax: 407-425-0707

0.5
3
1.5

Circle if Applicable:		Signature(s):
MS/MSD	Duplicate ID No.:	Alan Pate

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NASJAX Hangar 1000
PROJECT NUMBER: N3995, CTO 167

WELL ID.: H10-MW18
DATE: ~~7/ /01~~ 8/2/01

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1030	5.54	—	—	—	—	—	—	—	
1035	—	—	6.06	0.296	56.2	2.35	25.4	148	
1040	—	-	5.93	0.270	2.8	2.35	25.2	99	
1045	—	—	5.79	0.262	1.3	0.73	25.1	82	
1050	—	—	5.80	0.259	1.7	0.77	25.1	79	
1055	—	—	5.79	0.256	0	0.75	25.1	76	
1100	—	—	5.79	0.255	0	0.76	25.1	73	
END PURGE & COLLECT SAMPLE									

SIGNATURE(S): Allen Pate

PAGE 2 OF 2

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name:	*NASJAX Hangar 1000*	Sample ID No.:	H10-GW-MW 19 -06
Project No.:	*N3995, CTO 167*	Sample Location:	H10-MW 19
		Sampled By:	A.Pate/M.O'Neill
		C.O.C. No.:	H10-0712

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 7/ 12 /01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	Other
Time: 1200	Visual	Standard	mS/cm	°C	NTU	mg/l	mV	
Method: Low Flow Peristaltic	Clear	4.57	0.134	28.4	0	0.93	-85	—

PURGE DATA

Date: 7/ 12 /01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	ORP	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0	See attached Low Flow Purge Data Sheet							
Well Casing Diameter: MICRO								
Well Casing Material: PVC								
Total Well Depth (TD): 11.59								
Static Water Level (WL): 7.50								
One Casing Volume(gal/L): .5								
Start Purge (hrs): 1130								
End Purge (hrs): 1155								
Total Purge Time (min): 25								
Total Vol. Purged (gal/L): 3.0								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Metals: Cd, Cr	*HNO_3*	*1-500ml HDPE*	YES
Anions: SO4, NO3, NO2, Cl	~~	*1-500ml plastic*	
Sulfide	*NaOH, ZnAcetate*	*1-500 ml HDPE*	
SVOC - 8270C	~~	*2-1L Amber*	
PAH - 8310	~~	*2-1L Amber*	
VOC - 8260B	*HCl*	*3-40ml vials*	
Alcohols - 8015B	~~	*3-40ml vials*	
Methane/Ethane/Ethene	~~	*3-40ml vials*	

OBSERVATIONS / NOTES

Laboratory: **Accutest**
4405 Vineland Rd. #C-15
Orlando, FL 32811

11.59
7.50
4.09 - MICROWELL

phone: 407-425-6700
fax: 407-425-0707

Circle if Applicable:		Signature(s):
MS/MSD	Duplicate ID No.: H10-GW-DUP1-06	Alan Pate

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NASJAX Hangar 1000
PROJECT NUMBER: N3995, CTO 167

WELL ID.: H10-MW 19
DATE: 7/ 12 /01

Time	Water Level	Flow	pH	Cond.	Turb.	DO	Temp.	ORP	Comments
(Hrs)	(Ft. below TOC)	(mL/Min.)	(S.U.)	(mS/cm)	(NTU)	(mg/L)	(Celsius)	(mV)	
1130	—	—	—	—	—	—	—	—	
1135	—	—	4.81	0.132	0	2.75	28.0	-89	
1140	—	—	4.64	0.134	0	1.44	28.2	-89	
1145	—	—	4.59	0.135	0	1.21	28.2	-87	
1150	—	—	4.57	0.134	0	1.07	28.2	-89	
1155	—	—	4.57	0.134	0	0.93	28.4	-85	
END	PURGE								

SIGNATURE(S): [signature]

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name:	*NASJAX Hangar 1000*	Sample ID No.:	H10-GW-MW 22 -06
Project No.:	*N3995, CTO 167*	Sample Location:	H10-MW 22
		Sampled By:	A.Pate/M.O'Neill
		C.O.C. No.:	H10- 0711

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:
[ ] QA Sample Type:

Type of Sample:
[X] Low Concentration
[ ] High Concentration

SAMPLING DATA

Date: 7/ 11 /01	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	ORP mV	Other
Time: 1345								
Method: Low Flow Peristaltic	Clear	5.60	0.264	25.8	3.9	1.82	-65	

PURGE DATA

Date: 7/ 11 /01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	ORP	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm): 0.0	See attached Low Flow Purge Data Sheet							
Well Casing Diameter: MICRO								
Well Casing Material: PVC								
Total Well Depth (TD): 20.50								
Static Water Level (WL): 5.60								
One Casing Volume(gal/L): 0.5								
Start Purge (hrs): 1325								
End Purge (hrs): 1345								
Total Purge Time (min): 20								
Total Vol. Purged (gal/L): 3.0								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Metals: Cd, Cr	*HNO_3*	*1-500ml HDPE*	YES
Anions: SO4, NO3, NO2, Cl	~~	*1-500ml plastic*	
Sulfide	*NaOH, ZnAcetate*	*1-500 ml HDPE*	
SVOC - 8270C	~~	*2-1L Amber*	
PAH - 8310	~~	*2-1L Amber*	
VOC - 8260B	*HCl*	*3-40ml vials*	
Alcohols - 8015B	~~	*3-40ml vials*	
Methane/Ethane/Ethene	~~	*3-40ml vials*	

OBSERVATIONS / NOTES

Laboratory: **Accutest**
4405 Vineland Rd. #C-15
Orlando, FL 32811
phone: 407-425-6700
fax: 407-425-0707

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NASJAX Hangar 1000
PROJECT NUMBER: N3995, CTO 167

WELL ID.: H10-MW22-06
DATE: 7/ 11 /01

Time (Hrs)	Water Level (Ft below TOC)	Flow (mL/Min)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1325	5.60	—	—	—	—	—	—	—	
1330	—	—	5.82	0.271	4.2	2.87	26.1	-70	
1335	—	—	5.71	0.267	3.7	2.22	25.9	-70	
1340	—	—	5.61	0.264	3.2	1.85	25.8	-66	
1345	—		5.60	0.264	3.9	1.82	25.8	-65	
END PURGE									

SIGNATURE(S): ______________________

PAGE___OF___

Tetra Tech NUS, Inc. **GROUNDWATER SAMPLE LOG SHEET**

Project Site Name:	HANGAR 1000 - NAS JAX	Sample ID No.:	H10-GW-MW23-06
Project No.:	N3995	Sample Location:	MW23
		Sampled By:	AP
[ ] Domestic Well Data		C.O.C. No.:	—
[X] Monitoring Well Data		Type of Sample:	
[ ] Other Well Type:	MICROWELL	[X] Low Concentration	
[ ] QA Sample Type:		[ ] High Concentration	

SAMPLING DATA

Date: 7/12/01 / Time: 1330	Color Visual	pH Standard	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/l	Salinity %	Other ORP
Method: Low Flow Peristaltic	Clear	4.81	0.375	25.2	0.5	0.85	—	-30

PURGE DATA

Date: 7/12/01	Time	pH	S.C.	Temp (°C)	Turbidity	DO	Salinity	ORP
Method: Low Flow Peristaltic								
Monitor Reading (ppm):								
Well Casing Diameter: MICRO								
Well Casing Material: PVC								
Total Well Depth (TD): 14.86								
Static Water Level (WL): 6.99								
One Casing Volume(gal/L): .5								
Start Purge (hrs): 1300								
End Purge (hrs): 1330								
Total Purge Time (min): 30								
Total Vol. Purged(gal/L): 3.0								

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
METALS: Cd, Cr	HNO_3	1-500 mL HDPE	YES
ANIONS, SO_4, NO_3, NO_2, Cl	—	1-500 mL PLASTIC	
SULFIDE	NaOH, Zn Acetate	1-500 mL HDPE	
SVOC - 8270C	—	2-1L AMBER	
PAH - 8310	—	2-1L AMBER	
VOC - 8260B	HCL	3-40mL VIALS	
ALCOHOLS - 8015B	—	3-40mL VIALS	
METHANE/ETHANE/ETHENE	—	3-40mL VIALS	

OBSERVATIONS / NOTES

ACCUTEST
4405 VINELAND Rd C-15
ORLANDO, FL 32811

PH: 407-425-6700
FAX: 407-425-0707

Circle if Applicable:		Signature(s):
MS/MSD	Duplicate ID No.:	Alan [signature]

Tetra Tech NUS, Inc.

LOW FLOW PURGE DATA SHEET

PROJECT SITE NAME: NAS JAX - HANGAR 1000
PROJECT NUMBER: N3995

WELL ID.: MW 23
DATE: 7/12/01

Time (Hrs)	Water Level (Ft. below TOC)	Flow (mL/Min.)	pH (S.U.)	Cond. (mS/cm)	Turb. (NTU)	DO (mg/L)	Temp. (Celsius)	ORP (mV)	Comments
1300	–	–	–	–	–	–	–	–	
1305	–	–	4.99	0.373	29.2 ~~0.369~~ AP	2.08 ~~0.374~~ AP	25.3	-18	
1310	–	–	4.84	0.369	0	1.94	25.1	-18	
1315	–	–	4.83	0.374	0	1.55	25.1	-19	
1320	–	–	4.81	0.374	0	1.17	25.1	-21	
1325	–	–	4.81	0.374	0.8	0.90	25.2	-28	
1330	–	–	4.81	0.375	0.5	0.85	25.2	-30	

SIGNATURE(S): Allan L Pate

APPENDIX E

VALIDATED LABORATORY DATA PACKAGES

Tetra Tech NUS

INTERNAL CORRESPONDENCE

TO: **Mr. Mark Peterson**

DATE: **March 12, 2001**

COPIES: **DV FILE**

FROM: **Elena Rodriguez**

SUBJECT: **DATA VALIDATION - ORGANICS**
CTO 167, NASJAX
SDG F8681

SAMPLES: 6/Aqueous/

H10-GW-MW03-05
H10-GW-MW13-05
H10-GW-MW16-05
H10-GW-MW17-05
H10-GW-MW22-05
Trip Blank

OVERVIEW

The sample set for CTO 167, NASJAX, SDG F8681 consists of 5 aqueous environmental samples and one aqueous field quality control sample (one trip blank). All groundwater samples were analyzed for select volatile organic compounds, semi-volatile organic compounds, polynuclear aromatic hydrocarbons, alcohols, and dissolved gasses. The trip blank was analyzed for volatile organic compounds.

The samples were collected by TetraTech NUS on January 16, 2001 and analyzed by Accutest Laboratories. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria using the following analytical and reporting protocols: SW-846 Methods 8260B, 8270C, 8310, 8015 and RSK SOP 147/175. The data contained in this SDG were validated with regard to the following parameters:

- * Data completeness
- * Holding times
- * Initial/continuing calibrations
- * Laboratory method and field quality control blank results
- * Surrogate recoveries
- * Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A.

Volatile Organics

Data reported for this fraction were found to be acceptable.

Semi-Volatile Organics

Data reported for this fraction were found to be acceptable.

Polynuclear Aromatic Hydrocarbons

Data reported for this fraction were found to be acceptable.

Dissolved Gases (Methane-Ethane-Ethene)

Data reported for this fraction were found to be acceptable.

Additional Comments

Positive results below the reporting limit (RL) were qualified as estimated, J, due to uncertainty near the detection limit.

The laboratory did not initially report methanol. Upon request, the laboratory provided the missing results.

EXECUTIVE SUMMARY

Laboratory Performance Issues: None.

Other Factors Affecting Data Quality: None

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99), and the Navy IRCDQM (9/99) NFESC guidelines. The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC guidelines and the Quality Assurance Project Plan (QAPP)."

Elena Rodriguez
Tetra Tech NUS

Elena Rodriguez

Tetra Tech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

Tetra Tech NUS INTERNAL CORRESPONDENCE

TO:	Mr. Mark Peterson	DATE:	March 12, 2001
FROM:	Elena Rodriguez	COPIES:	DV FILE

SUBJECT: **DATA VALIDATION - INORGANICS**
CTO 167, NASJAX
SDG F8744

SAMPLES: 5/Aqueous/

H10-DUP2-05
H10-GW-MW05-05
H10-GW-MW06-05
H10-GW-MW07-05
H10-GW-MW19-05

OVERVIEW

The sample set for CTO 167, NASJAX, SDG F8744 consists of four aqueous environmental samples and one aqueous quality control sample (one field duplicate pair: H10-DUP2-05 and H10-GW-MW19-05). All samples were analyzed for cadmium and chromium and for natural attenuation parameters: chloride, nitrate, sulfate, and sulfide. Sample H10-GW-MW19-05 was also analyzed for total organic carbon (TOC).

The samples were collected by TetraTech NUS on January 19, 2001 and analyzed by Accutest Laboratories. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria using the following analytical and reporting protocols: SW-846 Methods 6010B, EPA 300, 325.3, 375.4, 376.1, and 415.1. The data contained in this SDG were validated with regard to the following parameters:

- * Data completeness
- * Holding times
- * Initial/continuing calibrations
- * Laboratory method blank results
- * Field duplicate sample results
- * Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A.

Metals

The following contaminant was detected in the laboratory method blanks:

Analyte	Maximum Concentration (ug/L)	Action Level (aqueous) (ug/L)
Chromium	6.6	33.0

Method Blank Summary

Job Number: F8744
Account: TETRFLJX Tetra-Tech.NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2634-MB	EE001607.D	1	01/29/01	MRE	01/26/01	OP2634	GEE81

The QC reported here applies to the following samples:

Method: EPA 8310

F8744-1, F8744-2, F8744-3, F8744-4, F8744-5

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	88%	29-133%
92-94-4	p-Terphenyl	85%	33-133%

Method Blank Summary

Job Number: F8744
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GXY3-MB	XY000068.D	1	01/25/01	RAW	n/a	n/a	GXY3

The QC reported here applies to the following samples: **Method: RSKSOP-147/175**

F8744-1, F8744-2, F8744-3, F8744-4, F8744-5

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	ND	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

Method Blank Summary

Job Number: F8744
Account: TETRFLJX Tetra-Tech NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2625-MB	L006317.D	1	01/31/01	ME	01/24/01	OP2625	SL380

The QC reported here applies to the following samples:

Method: SW846 8270C

F8744-1, F8744-2, F8744-3, F8744-4, F8744-5

CAS No.	Compound	Result	RL	Units	Q
87-86-5	Pentachlorophenol	ND	1.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.20	ug/l	

Method Blank Summary

Job Number: F8744
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2623-MB	L006257.D	1	01/29/01	ME	01/24/01	OP2623	SL377

The QC reported here applies to the following samples: **Method:** SW846 8270C

F8744-1, F8744-2, F8744-3, F8744-4, F8744-5

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	ug/l	
	3&4-Methylphenol	ND	5.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
86-74-8	Carbazole	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	75%	21-100%
4165-62-2	Phenol-d5	50%	10-94%
118-79-6	2,4,6-Tribromophenol	110%	10-123%
4165-60-0	Nitrobenzene-d5	113%	35-114%
321-60-8	2-Fluorobiphenyl	106%	43-116%
1718-51-0	Terphenyl-d14	98%	33-141%

Method Blank Summary

Job Number: F8744
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VB137-MB	B003586.D	1	01/23/01	JG	n/a	n/a	VB137

The QC reported here applies to the following samples:

Method: SW846 8260B

F8744-1, F8744-2, F8744-3, F8744-4, F8744-5, F8744-6

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	104%	80-120%
17060-07-0	1,2-Dichloroethane-D4	99%	69-128%
2037-26-5	Toluene-D8	97%	80-120%
460-00-4	4-Bromofluorobenzene	97%	80-120%

Method Blank Summary

Job Number: F8744
Account: ALSE Accutest Laboratories Southeast, Inc.
Project: TETRFLJX: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGH699-MB2	GH24865.D	1	01/31/01	XPL	n/a	n/a	GGH699

The QC reported here applies to the following samples: **Method: DAI**

F8744-1

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries		Limits
111-27-3	Hexanol	80%	75-125%

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER | PAGE ___ OF ___

PROJECT NO: N3995	SITE NAME: NAS JAX HANGAR 1000	PROJECT MANAGER AND PHONE NUMBER: MARK PETERSON 281-0400	LABORATORY NAME AND CONTACT: ACCUTEST - LINDA WILLIAMS
SAMPLERS (SIGNATURE): Alan Pate		FIELD OPERATIONS LEADER AND PHONE NUMBER: ALAN PATE 281-0400	ADDRESS: 4405 VINELAND Rd #C15
		CARRIER/WAYBILL NUMBER: FED EX	CITY, STATE: ORLANDO, FL 32811

STANDARD TAT ☒ RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	** VOCS	METHANE/ETHANE/ETHENE ** RSK 147/175	** ALCOHOLS 8015B	SVOCs 8270C	PAHs 8310	METALS Cd/Cr 6010B	SULFIDE	ANIONS SO4/Cl/NO3	COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)						G	G	G	G	G	P	P	P	
PRESERVATIVE USED						HCL	HCL	-	-	-	HNO3	NaOH	-	
1/18	1305	H10-GW-MW19-05	H_2O	G	16	3	3	3	2	2	1	1	1	COOL TO 4°C
1/18	0000	H10-DUP2-05	H_2O	G	16	3	3	3	2	2	1	1	1	

SEE ATTACHED QAPP TABLE FOR ANALYTICAL REQUIREMENTS

** ALL VIALS IN SEPARATE COOLER

*EXTRA AMBER FOR TOC ANALYSIS - NEEDS PRESERVATIVE

1. RELINQUISHED BY: Alan Pate	DATE: 1/19/01	TIME: 1630	1. RECEIVED BY: [signature]	DATE: 1/20/01	TIME: 1100
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS: 3.8

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/99 FORM NO. TtNUS-001

TETRA TECH NUS, INC. — CHAIN OF CUSTODY — NUMBER H10-011901A1

PROJECT NO:	N3995
SITE NAME:	Hangar 1000
PROJECT MANAGER AND PHONE NUMBER	Mark Peterson 9042810400
LABORATORY NAME AND CONTACT:	Accutest H. Behzadi
SAMPLERS (SIGNATURE)	Alan Pate
FIELD OPERATIONS LEADER AND PHONE NUMBER	Alan Pate 9042810400
ADDRESS	4405 Vineland Rd #C15
CARRIER/WAYBILL NUMBER	Fedex
CITY, STATE	Orlando, FL 32811

STANDARD TAT ☒
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

		CONTAINER TYPE PLASTIC (P) or GLASS (G)			G	G	G	G	G	P	P	P	
		PRESERVATIVE USED			HCl	—	—	—	—	HNO3	NaOH	—	
TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: *VOCs (8260B)	*SVOCs (8270C)	PAHs (8310)	*Methane-Ethane Ethene RSK147/175	*Alcohols 8015B	Metals 6010B	Sulfide 376.1	Anions 300.0 SO4, Cl, NO3	COMMENTS
1215	H10-GW-MW05-05	H2O	G	16	3	2	2	3	3	1	1	1	Cool to 4°C
1305	H10-MSMSD1-05	H2O	G	16	3	2	2	3	3	1	1	1	See attached QAPP Table for analytical requirements

*All vials in seperate cooler

1. RELINQUISHED BY Allan Pate	DATE 1/19/01	TIME 1630	1. RECEIVED BY [signature]	DATE 1/20/01	TIME 1100
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

4.0

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/99 FORM NO. TINUS-001

TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER H10-011901B

PAGE 2 OF 2

PROJECT NO: N 3995	SITE NAME: Hangar 1000
SAMPLERS (SIGNATURE)	Alan Pate / [signature]
PROJECT MANAGER AND PHONE NUMBER	Mark Peterson 9042810400
FIELD OPERATIONS LEADER AND PHONE NUMBER	Alan Pate 9042810400
CARRIER/WAYBILL NUMBER	Fedex
LABORATORY NAME AND CONTACT	Accutest H Behzadi
ADDRESS	4405 Vineland Rd #C15
CITY, STATE	Orlando, FL 32811

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	**VOCs (8260B)	SVOCs (8270C)	PAHs (8310)	**Methane Ethane Ethene FSF 147/175	**alcohols 8015B	Metals 6010B	Sulfide 376.1	Anions: 300.0 SO4, Cl, NO3	COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)						G	G	G	G	G	P	P	P	
PRESERVATIVE USED						HCl	—	—	—	—	HNO3	NaOH	—	
1/19	1015	H10-GW-MW06-05	H2O	G	16	3	2	2	3	3	1	1	1	Cool to 4°C
1/19	0835	H10-GW-MW07-05	H2O	G	16	3	2	2	3	3	1	1	1	See attach QAPP table for analytical requirements

** ALL VIALS IN SEPARATE COOLER

1. RELINQUISHED BY Alan Pate	DATE 1/19/01	TIME 1630	1. RECEIVED BY [signature]	DATE 1/20/01	TIME 1100
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS 2.8

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

TETRA TECH NUS, INC. **CHAIN OF CUSTODY** | NUMBER | PAGE ____ OF ____

PROJECT NO: N3995	SITE NAME: HANGAR 1000 - NAS JAX
PROJECT MANAGER AND PHONE NUMBER	MARK PETERSON 281-0400
FIELD OPERATIONS LEADER AND PHONE NUMBER	ALAN PATE 281-0400
CARRIER/WAYBILL NUMBER	FEDEX
LABORATORY NAME AND CONTACT:	ACCUTEST
ADDRESS	4405 VINELAND Rd #C15
CITY, STATE	ORLANDO, FL 32811

SAMPLERS (SIGNATURE) Alan Pate

STANDARD TAT ☐
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G | G | G

PRESERVATIVE USED: HCL | HCL | —

DATE YEAR	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	VOCS 8260B	METHANE/ETHANE/ETHENE RSK 147/175	ALCOHOLS 8015B						COMMENTS
1/19	1015	H10-GW-MW06-05	H_2O	G	9	3	3	3						COOL TO 4°C
1/19	0835	H10-GW-MW07-05	H_2O	G	9	3	3	3						
1/19	1215	H10-GW-MW05-05	H_2O	G	9	3	3	3						*SEE ATTACHED
1/19	1305	H10-GW-MWA-05	H_2O	G	9	3	3	3						QAPP TABLE
1/19	0000	H10-DUP2-05	H_2O	G	9	3	3	3						FOR ANALYTICAL
1/19	1305	H10-MSMSD1-05	H_2O	C	9	3	3	3						REQUIREMENTS
1/19		TRIP BLANK	H_2O											

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY Alan Pate	1/19/01	1630	1. RECEIVED BY [signature]	1/20/01	1100
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

3.2

DISTRIB[redacted]N: WHITE (ACCOMPANIES SAMPLE) YELLOW (F[redacted]D COPY) PINK (FILE COPY)

3/99
FO[redacted]O. TtNUS-001

ACCUTEST®

CHAIN OF CUSTODY

4405 VINELAND ROAD • SUITE C-15
ORLANDO, FL 32811
TEL: 407-425-6700 • FAX: 407-425-0707

ACCUTEST JOB #:

ACCUTEST QUOTE #:

CLIENT INFORMATION

ALSE

NAME

ADDRESS

CITY STATE ZIP

SEND REPORT TO:
PHONE #

FACILITY INFORMATION

F8744

PROJECT NAME

LOCATION

PROJECT NO.

FAX #

ANALYTICAL INFORMATION: alcohols, TOC

ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	DATE	TIME	SAMPLED BY:	MATRIX	# OF BOTTLES	HCl	NaOH	HNO3	H2SO4	NONE	alcohols	TOC
	F8744-1	1/19/01		TTVUS	W						3	✓	
	-2	↓		↓	↓						3	✓	
	-3	↓		↓	↓						3	✓	
	-4	↓		↓	↓		1				3	✓	✓
	-5	↓		↓	↓						3	✓	

MATRIX CO[DES]
DW - DRINK[ING] WATE[R]
GW - GROU[ND] WATE[R]
WW - WAST[E] WATE[R]
SO - SOIL
SL - SLUD[GE]
OI - OIL
LIQ - OTHE[R] LIQUI[D]
SOL - OTHE[R] SOLID

LAB USE O[NLY]

DATA TURNAROUND INFORMATION

☒ STANDARD 14day APPROVED BY:
☐ 48 HOUR RUSH
☐ 24 HOUR EMERGENCY
☐ OTHER

EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED

DATA DELIVERABLE INFORMATION

☒ STANDARD FTI
☐ COMMERCIAL "B"
☐ DISK DELIVERABLE
☐ STATE FORMS
☐ OTHER (SPECIFY)

COMMENTS/REMARKS

NT

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESION, INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER:	DATE TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
1. [signature]	1/24/01 14:10	1.	2.		2.
RELINQUISHED BY: 3.	DATE TIME:	RECEIVED BY: 3.	RELINQUISHED BY: 4.	DATE TIME:	RECEIVED BY: 4.
RELINQUISHED BY:	DATE TIME:	RECEIVED BY: 5	SE[AL]	PRESERVE WHERE APPLICABLE ☐	ON ICE ☐ TEMPE[RATURE]

ACCUTEST LABORATORIES SOUTHEAST
SAMPLE RECEIPT CONFIRMATION

Accutest Job Number: F8744

Client/Project: TTWUS

Date/Time Received: 1/20/01 1100

Method of Delivery: Fed Ex Greyhound UPS Pickup Delivery Other

Air Bill Number: 791950425133, 791950354090, 790450394119 & 792655237841

Cooler Temperatures: 3.2, 2.8, 4.0, 3.8

Custody Seals Intact?	YES	NO
Chain Of Custody Provided?	YES	NO
Chain Of Custody Match Bottles?	YES	NO
Sample Labels Present?	YES	NO
Are All Bottles Unbroken?	YES	NO *
Proper Preservative?	~~YES~~ AF 3/7/01	NO **
Correct Containers Used?	YES	NO
Sufficient Sample Volume?	YES	NO
Number of Encores:	—	

COMMENTS:

* 1 - 8310 bottle of MW05 (H10-GW-MW05-05) was broken

** Bottle for TOC was preserved with HCl by lab AF 3/7/01

Signature: [signature] Date: 1/20/01

FIELD DUPLICATE SAMPLES

January 2001

Hangar 1000, NAS Jacksonville

Jacksonville, FL

Fraction	Analyte	H10-MW14-05	H10-DUP1-05	RPD
Volatiles	1,1-Dichloroethane	182	188	3%
	1,1-Dichloroethene	424	431	2%
	1,2-Dichloroethane	1.9 J	2	5%
	1,2-Dichloroethene (total)	1.4 J	1.5 J	7%
	Freon 113	87.9	99.1	12%
	1,1,1-Trichloroethane	17.0	17.5	3%
	1,1,2-Trichloroethane	1.9 J	2.0	5%
	Toluene	1.9 J	2.1	10%
	Trichlorethene	266	273	3%
Gases	Methane	206	187	10%
Misc.	Chloride	23.0	21.5	7%
	Hydrogen Sulfide	ND	2.0	NC
	TOC	5.4	NS	NC

Fraction	Analyte	H10-MW19-05	H10-DUP2-05	RPD
SVOCs	Napthalene	1.9 J	2.1 J	10%
VOCs	1,1-Dichloroethane	98.9	110	11%
	1,1-Dichloroethene	190	188	1%
	1,2-Dichloroethane	1.5 J	1.4 J	7%
	1,2-Dichloroethene (total)	52.7	52.4	1%
	Freon 113	447	438	2%
	Tetrachloroethene	3	3	0%
	1,1,2-Trichloroethane	2.0 U	1.0 J	NC
	Toluene	1.8 J	1.7 J	6%
	Trichlorethene	229	226	1%
	Vinyl chloride	0.60 J	0.60 J	0%
Gases	Methane	105	104	1%
Metals	Chromium	3.2 B	3.6 B	12%
Misc.	Chloride	19	20	5%
	Hydrogen Sulfide	2.7	ND	NC
	TOC	3.5	NS	NC

NS = not sampled

ND = not detected

NC = not calculated

J = estimated

RPD = Relative Percent Difference

Acceptable RPD: 0-30% aqueous

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	F8744-6	Date Sampled:	01/19/01
Matrix:	AQ - Trip Blank Water	Date Received:	01/20/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	B003602.D	1	01/23/01	JG	n/a	n/a	VB137
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	**Cyclohexanone**	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	**Freon 113**	ND	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	**2-Nitropropane**	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		80-120%
17060-07-0	1,2-Dichloroethane-D4	88%		69-128%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	94%		80-120%

(a) Sample was not preserved to a pH < 2; reported results are considered minimum values.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

APPENDIX C

ATION

Report of Analysis

Client Sample ID:	H10-DUP2-05		
Lab Sample ID:	F8744-5	Date Sampled:	01/19/01
Matrix:	AQ - Ground Water	Date Received:	01/20/01
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE001612.D	1	01/29/01	MRE	01/26/01	OP2634	GEE81
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.4	ug/l	
208-96-8	Acenaphthylene	ND	4.4	ug/l	
120-12-7	Anthracene	ND	2.2	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.22	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.22	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.22	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.22	ug/l	
218-01-9	Chrysene	ND	2.2	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.22	ug/l	
206-44-0	Fluoranthene	ND	2.2	ug/l	
86-73-7	Fluorene	ND	2.2	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.22	ug/l	
91-20-3	Naphthalene	2.1	2.2	ug/l	J
90-12-0	1-Methylnaphthalene	ND	2.2	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.2	ug/l	
85-01-8	Phenanthrene	ND	2.2	ug/l	
129-00-0	Pyrene	ND	2.2	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	86%		29-133%
92-94-4	p-Terphenyl	60%		33-133%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-DUP2-05	Date Sampled:	01/19/01
Lab Sample ID:	F8744-5	Date Received:	01/20/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	RSKSOP-147/175		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000082.D	1	01/25/01	RAW	n/a	n/a	GXY3
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	104	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-DUP2-05		
Lab Sample ID:	F8744-5	Date Sampled:	01/19/01
Matrix:	AQ - Ground Water	Date Received:	01/20/01
Method:	DAI	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH24854.D	1	01/30/01	ANJ	n/a	n/a	N:GGH699
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	82%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Client Sample ID:	H10-DUP2-05	Date Sampled:	01/19/01
Lab Sample ID:	F8744-5	Date Received:	01/20/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L006265.D	1	01/29/01	ME	01/24/01	OP2623	SL377
Run #2	L006324.D	1	01/31/01	ME	01/24/01	OP2625	SL380

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	ug/l	
	3&4-Methylphenol	ND	4.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	ug/l	
87-86-5	Pentachlorophenol	ND [a]	1.0	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
86-74-8	Carbazole	ND	4.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND [a]	0.20	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	4.0	ug/l	
110-86-1	Pyridine	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	45% [b]		21-100%
4165-62-2	Phenol-d5	30% [b]		10-94%
118-79-6	2,4,6-Tribromophenol	86% [b]		10-123%
4165-60-0	Nitrobenzene-d5	74% [b]		35-114%
321-60-8	2-Fluorobiphenyl	70% [b]		43-116%
1718-51-0	Terphenyl-d14	91% [b]		33-141%

(a) Result is from Run# 2
(b) Surrogate recoveries corrected for double spike.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-DUP2-05		
Lab Sample ID:	F8744-5	Date Sampled:	01/19/01
Matrix:	AQ - Ground Water	Date Received:	01/20/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B003607.D	1	01/23/01	JG	n/a	n/a	VB137
Run #2	B003616.D	5	01/24/01	JG	n/a	n/a	VB138

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	110 a	10	ug/l	
75-35-4	1,1-Dichloroethylene	188 a	10	ug/l	
107-06-2	1,2-Dichloroethane	1.4	2.0	ug/l	J
540-59-0	1,2-Dichloroethene (total)	52.4	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	438 a	10	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	1.0	2.0	ug/l	J
127-18-4	Tetrachloroethylene	3.0	2.0	ug/l	
108-88-3	Toluene	1.7	2.0	ug/l	J
79-01-6	Trichloroethylene	226 a	10	ug/l	
75-01-4	Vinyl chloride	0.60	1.0	ug/l	J
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%	100%	80-120%
17060-07-0	1,2-Dichloroethane-D4	90%	90%	69-128%
2037-26-5	Toluene-D8	99%	98%	80-120%
460-00-4	4-Bromofluorobenzene	96%	96%	80-120%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW19-05		
Lab Sample ID:	F8744-4	Date Sampled:	01/19/01
Matrix:	AQ - Ground Water	Date Received:	01/20/01
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE001611.D	1	01/29/01	MRE	01/26/01	OP2634	GEE81
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.4	ug/l	
208-96-8	Acenaphthylene	ND	4.4	ug/l	
120-12-7	Anthracene	ND	2.2	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.22	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.22	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.22	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.22	ug/l	
218-01-9	Chrysene	ND	2.2	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.22	ug/l	
206-44-0	Fluoranthene	ND	2.2	ug/l	
86-73-7	Fluorene	ND	2.2	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.22	ug/l	
91-20-3	Naphthalene	1.9	2.2	ug/l	J
90-12-0	1-Methylnaphthalene	ND	2.2	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.2	ug/l	
85-01-8	Phenanthrene	ND	2.2	ug/l	
129-00-0	Pyrene	ND	2.2	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	84%		29-133%
92-94-4	p-Terphenyl	57%		33-133%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW19-05		
Lab Sample ID:	F8744-4	Date Sampled:	01/19/01
Matrix:	AQ - Ground Water	Date Received:	01/20/01
Method:	RSKSOP-147/175	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000080.D	1	01/25/01	RAW	n/a	n/a	GXY3
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	105	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW19-05		
Lab Sample ID:	F8744-4	Date Sampled:	01/19/01
Matrix:	AQ - Ground Water	Date Received:	01/20/01
Method:	DAI	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH24851.D	1	01/30/01	ANJ	n/a	n/a	N:GGH699
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	91%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW19-05		
Lab Sample ID:	F8744-4	Date Sampled:	01/19/01
Matrix:	AQ - Ground Water	Date Received:	01/20/01
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L006262.D	1	01/29/01	ME	01/24/01	OP2623	SL377
Run #2	L006321.D	1	01/31/01	ME	01/24/01	OP2625	SL380

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	ug/l	
	3&4-Methylphenol	ND	4.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	ug/l	
87-86-5	Pentachlorophenol	ND a	1.0	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
86-74-8	Carbazole	ND	4.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND a	0.20	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	4.0	ug/l	
110-86-1	Pyridine	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	41%		21-100%
4165-62-2	Phenol-d5	27%		10-94%
118-79-6	2,4,6-Tribromophenol	87%		10-123%
4165-60-0	Nitrobenzene-d5	68%		35-114%
321-60-8	2-Fluorobiphenyl	69%		43-116%
1718-51-0	Terphenyl-d14	92%		33-141%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW19-05	Date Sampled:	01/19/01
Lab Sample ID:	F8744-4	Date Received:	01/20/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B003606.D	1	01/23/01	JG	n/a	n/a	VB137
Run #2	B003615.D	5	01/24/01	JG	n/a	n/a	VB138

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	98.9	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	190 [a]	10	ug/l	
107-06-2	1,2-Dichloroethane	1.5	2.0	ug/l	J
540-59-0	1,2-Dichloroethene (total)	52.7	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	447 [a]	10	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	3.0	2.0	ug/l	
108-88-3	Toluene	1.8	2.0	ug/l	J
79-01-6	Trichloroethylene	229 [a]	10	ug/l	
75-01-4	Vinyl chloride	0.60	1.0	ug/l	J
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%	100%	80-120%
17060-07-0	1,2-Dichloroethane-D4	91%	92%	69-128%
2037-26-5	Toluene-D8	97%	98%	80-120%
460-00-4	4-Bromofluorobenzene	97%	96%	80-120%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW05-05			
Lab Sample ID:	F8744-3		Date Sampled:	01/19/01
Matrix:	AQ - Ground Water		Date Received:	01/20/01
Method:	EPA 8310 SW846 3510C		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE001610.D	1	01/29/01	MRE	01/26/01	OP2634	GEE81
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.4	ug/l	
208-96-8	Acenaphthylene	ND	4.4	ug/l	
120-12-7	Anthracene	ND	2.2	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.22	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.22	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.22	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.22	ug/l	
218-01-9	Chrysene	ND	2.2	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.22	ug/l	
206-44-0	Fluoranthene	ND	2.2	ug/l	
86-73-7	Fluorene	ND	2.2	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.22	ug/l	
91-20-3	Naphthalene	ND	2.2	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.2	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.2	ug/l	
85-01-8	Phenanthrene	ND	2.2	ug/l	
129-00-0	Pyrene	ND	2.2	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	76%		29-133%
92-94-4	p-Terphenyl	56%		33-133%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW05-05		
Lab Sample ID:	F8744-3	Date Sampled:	01/19/01
Matrix:	AQ - Ground Water	Date Received:	01/20/01
Method:	RSKSOP-147/175	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000079.D	1	01/25/01	RAW	n/a	n/a	GXY3
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	51.2	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW05-05		
Lab Sample ID:	F8744-3	Date Sampled:	01/19/01
Matrix:	AQ - Ground Water	Date Received:	01/20/01
Method:	DAI	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH24850.D	1	01/30/01	ANJ	n/a	n/a	N:GGH699
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	86%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW05-05		
Lab Sample ID:	F8744-3	Date Sampled:	01/19/01
Matrix:	AQ - Ground Water	Date Received:	01/20/01
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L006261.D	1	01/29/01	ME	01/24/01	OP2623	SL377
Run #2	L006320.D	1	01/31/01	ME	01/24/01	OP2625	SL380

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	ug/l	
	3&4-Methylphenol	ND	4.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	ug/l	
87-86-5	Pentachlorophenol	ND [a]	1.0	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
86-74-8	Carbazole	ND	4.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND [a]	0.20	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	4.0	ug/l	
110-86-1	Pyridine	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	40%		21-100%
4165-62-2	Phenol-d5	25%		10-94%
118-79-6	2,4,6-Tribromophenol	87%		10-123%
4165-60-0	Nitrobenzene-d5	65%		35-114%
321-60-8	2-Fluorobiphenyl	67%		43-116%
1718-51-0	Terphenyl-d14	76%		33-141%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW05-05			
Lab Sample ID:	F8744-3		Date Sampled:	01/19/01
Matrix:	AQ - Ground Water		Date Received:	01/20/01
Method:	SW846 8260B		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B003601.D	1	01/23/01	JG	n/a	n/a	VB137
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	3.7	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	19.6	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	6.7	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	77.2	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	18.5	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		80-120%
17060-07-0	1,2-Dichloroethane-D4	89%		69-128%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	95%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW07-05		
Lab Sample ID:	F8744-2	Date Sampled:	01/19/01
Matrix:	AQ - Ground Water	Date Received:	01/20/01
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE001609.D	1	01/29/01	MRE	01/26/01	OP2634	GEE81
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.4	ug/l	
208-96-8	Acenaphthylene	ND	4.4	ug/l	
120-12-7	Anthracene	ND	2.2	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.22	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.22	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.22	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.22	ug/l	
218-01-9	Chrysene	ND	2.2	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.22	ug/l	
206-44-0	Fluoranthene	ND	2.2	ug/l	
86-73-7	Fluorene	ND	2.2	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.22	ug/l	
91-20-3	Naphthalene	ND	2.2	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.2	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.2	ug/l	
85-01-8	Phenanthrene	ND	2.2	ug/l	
129-00-0	Pyrene	ND	2.2	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	92%		29-133%
92-94-4	p-Terphenyl	70%		33-133%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: H10-GW-MW07-05
Lab Sample ID: F8744-2
Matrix: AQ - Ground Water
Method: DAI
Project: NAS Jax-Hanger 1000

Date Sampled: 01/19/01
Date Received: 01/20/01
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH24849.D	1	01/30/01	ANJ	n/a	n/a	N:GGH699
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	101%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW07-05	Date Sampled:	01/19/01
Lab Sample ID:	F8744-2	Date Received:	01/20/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	RSKSOP-147/175		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000077.D	1	01/25/01	RAW	n/a	n/a	GXY3
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	118	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW07-05		
Lab Sample ID:	F8744-2	Date Sampled:	01/19/01
Matrix:	AQ - Ground Water	Date Received:	01/20/01
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L006260.D	1	01/29/01	ME	01/24/01	OP2623	SL377
Run #2	L006319.D	1	01/31/01	ME	01/24/01	OP2625	SL380

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	ug/l	
	3&4-Methylphenol	ND	4.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	ug/l	
87-86-5	Pentachlorophenol	ND a	1.0	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
86-74-8	Carbazole	ND	4.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND a	0.20	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	4.0	ug/l	
110-86-1	Pyridine	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	52%		21-100%
4165-62-2	Phenol-d5	34%		10-94%
118-79-6	2,4,6-Tribromophenol	90%		10-123%
4165-60-0	Nitrobenzene-d5	84%		35-114%
321-60-8	2-Fluorobiphenyl	82%		43-116%
1718-51-0	Terphenyl-d14	92%		33-141%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Client Sample ID:	H10-GW-MW07-05		
Lab Sample ID:	F8744-2	Date Sampled:	01/19/01
Matrix:	AQ - Ground Water	Date Received:	01/20/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B003600.D	1	01/23/01	JG	n/a	n/a	VB137
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	**Cyclohexanone**	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	4.4	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	4.8	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	9.7	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	**Freon 113**	47.3	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	**2-Nitropropane**	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	7.2	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	0.64	2.0	ug/l	J
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	25.3	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		80-120%
17060-07-0	1,2-Dichloroethane-D4	89%		69-128%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	94%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW06-05			
Lab Sample ID:	F8744-1		Date Sampled:	01/19/01
Matrix:	AQ - Ground Water		Date Received:	01/20/01
Method:	EPA 8310 SW846 3510C		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE001608.D	1	01/29/01	MRE	01/26/01	OP2634	GEE81
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.4	ug/l	
208-96-8	Acenaphthylene	ND	4.4	ug/l	
120-12-7	Anthracene	ND	2.2	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.22	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.22	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.22	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.22	ug/l	
218-01-9	Chrysene	ND	2.2	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.22	ug/l	
206-44-0	Fluoranthene	ND	2.2	ug/l	
86-73-7	Fluorene	ND	2.2	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.22	ug/l	
91-20-3	Naphthalene	ND	2.2	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.2	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.2	ug/l	
85-01-8	Phenanthrene	ND	2.2	ug/l	
129-00-0	Pyrene	ND	2.2	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	91%		29-133%
92-94-4	p-Terphenyl	71%		33-133%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW06-05		
Lab Sample ID:	F8744-1	Date Sampled:	01/19/01
Matrix:	AQ - Ground Water	Date Received:	01/20/01
Method:	RSKSOP-147/175	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000076.D	1	01/25/01	RAW	n/a	n/a	GXY3
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	92.4	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW06-05		
Lab Sample ID:	F8744-1	**Date Sampled:**	01/19/01
Matrix:	AQ - Ground Water	**Date Received:**	01/20/01
Method:	DAI	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH24867.D	1	01/31/01	ANJ	n/a	n/a	N:GGH699
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	81%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW06-05	Date Sampled:	01/19/01
Lab Sample ID:	F8744-1	Date Received:	01/20/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L006259.D	1	01/29/01	ME	01/24/01	OP2623	SL377
Run #2	L006318.D	1	01/31/01	ME	01/24/01	OP2625	SL380

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	ug/l	
	3&4-Methylphenol	ND	4.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	ug/l	
87-86-5	Pentachlorophenol	ND [a]	1.0	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
86-74-8	Carbazole	ND	4.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND [a]	0.20	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	4.0	ug/l	
110-86-1	Pyridine	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	44%		21-100%
4165-62-2	Phenol-d5	29%		10-94%
118-79-6	2,4,6-Tribromophenol	91%		10-123%
4165-60-0	Nitrobenzene-d5	71%		35-114%
321-60-8	2-Fluorobiphenyl	72%		43-116%
1718-51-0	Terphenyl-d14	92%		33-141%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW06-05		
Lab Sample ID:	F8744-1	Date Sampled:	01/19/01
Matrix:	AQ - Ground Water	Date Received:	01/20/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B003599.D	1	01/23/01	JG	n/a	n/a	VB137
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	5.3	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	5.2	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	5.8	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	29.6	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	6.8	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	0.81	2.0	ug/l	J
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	36.2	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		80-120%
17060-07-0	1,2-Dichloroethane-D4	88%		69-128%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	93%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

02/26/0?

Technical Report for

Tetra-Tech,NUS

NAS Jax-Hanger 1000

N3995

Accutest Job Number: F8744

Report to:

Tetra-Tech,NUS
7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

ATTN: Mark Peterson

Total number of pages in report: 689

Harry Behzadi, Ph.D.
Laboratory Director

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

CTO16[illegible] NAS JACKSONVILLE
WATER [illegible]TA
Accutest, NJ
SDG: F8744

SAMPLE NUMBER:	H10-GW-MW19-05										
SAMPLE DATE:	01/19/01			/ /			/ /			/ /	
LABORATORY ID:	F8744-4										
QC_TYPE:	NORMAL										
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %	
UNITS:	UG/L										
FIELD DUPLICATE OF:											

POLYNUCLEAR AROMATIC HYDROCARBONS	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
1-METHYLNAPHTHALENE	2.2	U										
2-METHYLNAPHTHALENE	2.2	U										
ACENAPHTHENE	4.4	U										
ACENAPHTHYLENE	4.4	U										
ANTHRACENE	2.2	U										
BENZO(A)ANTHRACENE	0.22	U										
BENZO(A)PYRENE	0.22	U										
BENZO(B)FLUORANTHENE	0.22	U										
BENZO(G,H,I)PERYLENE	0.22	U										
BENZO(K)FLUORANTHENE	0.22	U										
CHRYSENE	2.2	U										
DIBENZO(A,H)ANTHRACENE	0.22	U										
FLUORANTHENE	2.2	U										
FLUORENE	2.2	U										
INDENO(1,2,3-CD)PYRENE	0.22	U										
NAPHTHALENE	1.9	J	P									
PHENANTHRENE	2.2	U										
PYRENE	2.2	U										

CTO167[illegible]AS JACKSONVILLE
WATER D[illegible]A
Accutest, NJ
SDG: F8744

SAMPLE NUMBER:	H10-DUP2-05			H10-GW-MW05-05			H10-GW-MW06-05			H10-GW-MW07-05		
SAMPLE DATE:	01/19/01			01/19/01			01/19/01			01/19/01		
LABORATORY ID:	F8744-5			F8744-3			F8744-1			F8744-2		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:	H10-GW-MW19-05											
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	2.2	U		2.2	U		2.2	U		2.2	U	
2-METHYLNAPHTHALENE	2.2	U		2.2	U		2.2	U		2.2	U	
ACENAPHTHENE	4.4	U		4.4	U		4.4	U		4.4	U	
ACENAPHTHYLENE	4.4	U		4.4	U		4.4	U		4.4	U	
ANTHRACENE	2.2	U		2.2	U		2.2	U		2.2	U	
BENZO(A)ANTHRACENE	0.22	U		0.22	U		0.22	U		0.22	U	
BENZO(A)PYRENE	0.22	U		0.22	U		0.22	U		0.22	U	
BENZO(B)FLUORANTHENE	0.22	U		0.22	U		0.22	U		0.22	U	
BENZO(G,H,I)PERYLENE	0.22	U		0.22	U		0.22	U		0.22	U	
BENZO(K)FLUORANTHENE	0.22	U		0.22	U		0.22	U		0.22	U	
CHRYSENE	2.2	U		2.2	U		2.2	U		2.2	U	
DIBENZO(A,H)ANTHRACENE	0.22	U		0.22	U		0.22	U		0.22	U	
FLUORANTHENE	2.2	U		2.2	U		2.2	U		2.2	U	
FLUORENE	2.2	U		2.2	U		2.2	U		2.2	U	
INDENO(1,2,3-CD)PYRENE	0.22	U		0.22	U		0.22	U		0.22	U	
NAPHTHALENE	2.1	J	P	2.2	U		2.2	U		2.2	U	
PHENANTHRENE	2.2	U		2.2	U		2.2	U		2.2	U	
PYRENE	2.2	U		2.2	U		2.2	U		2.2	U	

CTO16[redacted]AS JACKSONVILLE
WATER [redacted]TA
Accutest, NJ
SDG: F8744

SAMPLE NUMBER:	H10-GW-MW19-05											
SAMPLE DATE:	01/19/01			/ /			/ /			/ /		
LABORATORY ID:	F8744-4											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:												
SEMIVOLATILES	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	QUAL	CODE
2,4-DINITROTOLUENE	0.2	U										
2-CHLOROPHENOL	5	U										
2-METHYLPHENOL	5	U										
3&4-METHYLPHENOL	4	U										
4-NITROPHENOL	25	U										
CARBAZOLE	4	U										
N-NITROSO-DI-N-PROPYLAMINE	4	U										
PENTACHLOROPHENOL	1	U										
PHENOL	5	U										
PYRIDINE	5	U										

CTO16[illegible] NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8744

SAMPLE NUMBER:	H10-DUP2-05			H10-GW-MW05-05			H10-GW-MW06-05			H10-GW-MW07-05		
SAMPLE DATE:	01/19/01			01/19/01			01/19/01			01/19/01		
LABORATORY ID:	F8744-5			F8744-3			F8744-1			F8744-2		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:	H10-GW-MW19-05											
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
2,4-DINITROTOLUENE	0.2	U		0.2	U		0.2	U		0.2	U	
2-CHLOROPHENOL	5	U		5	U		5	U		5	U	
2-METHYLPHENOL	5	U		5	U		5	U		5	U	
3&4-METHYLPHENOL	4	U		4	U		4	U		5	U	
4-NITROPHENOL	25	U		25	U		25	U		4	U	
CARBAZOLE	4	U		4	U		4	U		25	U	
N-NITROSO-DI-N-PROPYLAMINE	4	U		4	U		4	U		4	U	
PENTACHLOROPHENOL	1	U		1	U		1	U		4	U	
PHENOL	5	U		5	U		5	U		1	U	
PYRIDINE	5	U		5	U		5	U		5	U	

CTO167 NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8744

SAMPLE NUMBER:	H10-GW-MW19-05											
SAMPLE DATE:	01/19/01			/ /			/ /			/ /		
LABORATORY ID:	F8744-4											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:												
DISSOLVED GASES	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
ETHANE	1	U										
ETHENE	1	U										
METHANE	105											

CTO167 NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8744

SAMPLE NUMBER:	H10-DUP2-05			H10-GW-MW05-05			H10-GW-MW06-05			H10-GW-MW07-05		
SAMPLE DATE:	01/19/01			01/19/01			01/19/01			01/19/01		
LABORATORY ID:	F8744-5			F8744-3			F8744-1			F8744-2		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:	H10-GW-MW19-05											
	RESULT	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
DISSOLVED GASES												
ETHANE	1	U		1	U		1	U		1	U	
ETHENE	1	U		1	U		1	U		1	U	
METHANE	104			51.2			92.4			118		

CTO167[illegible]AS JACKSONVILLE
WATER D[illegible]A
Accutest, NJ
SDG: F8744

SAMPLE NUMBER:	H10-GW-MW19-05			TRIP BLANK-011901								
SAMPLE DATE:	01/19/01			01/19/01			/ /			/ /		
LABORATORY ID:	F8744-4			F8744-6								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	0.0 %			0.0 %			100.0 %			100.0 %		
UNITS:	UG/L			UG/L								
FIELD DUPLICATE OF:												
VOLATILES	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
1,1,1-TRICHLOROETHANE	2	U		2	U							
1,1,2-TRICHLOROETHANE	2	U		2	U							
1,1-DICHLOROETHANE	98.9			2	U							
1,1-DICHLOROETHENE	190			2	U							
1,2-DICHLOROETHANE	1.5	J	P	2	U							
1,2-DICHLOROETHENE (TOTAL)	52.7			4	U							
2-NITROPROPANE	10	U		10	U							
ACETONE	50	U		50	U							
BENZENE	1	U		1	U							
CARBON DISULFIDE	10	U		10	U							
CARBON TETRACHLORIDE	2	U		2	U							
CHLOROBENZENE	2	U		2	U							
CYCLOHEXANONE	10	U		10	U							
ETHYLBENZENE	2	U		2	U							
FREON-113	447			2	U							
ISOBUTYL ALCOHOL	500	U										
METHANOL	500	U										
METHYLENE CHLORIDE	5	U		5	U							
N-BUTYL ALCOHOL	500	U										
TETRACHLOROETHENE	3			2	U							
TOLUENE	1.8	J	P	2	U							
TRICHLOROETHENE	229			2	U							
VINYL CHLORIDE	0.6	J	P	1	U							
XYLENES, TOTAL	6	U		6	U							

SAMPLE NUMBER:	H10-DUP2-05			H10-GW-MW05-05			H10-GW-MW06-05			H10-GW-MW07-05		
SAMPLE DATE:	01/19/01			01/19/01			01/19/01			01/19/01		
LABORATORY ID:	F8744-5			F8744-3			F8744-1			F8744-2		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:	H10-GW-MW19-05											
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	2	U		77.2			6.8			7.2		
1,1,2-TRICHLOROETHANE	1	J	P	2	U		2	U		2	U	
1,1-DICHLOROETHANE	110			3.7			5.3			4.4		
1,1-DICHLOROETHENE	188			19.6			5.2			4.8		
1,2-DICHLOROETHANE	1.4	J	P	2	U		2	U		2	U	
1,2-DICHLOROETHENE (TOTAL)	52.4			4	U		5.8			9.7		
2-NITROPROPANE	10	U		10	U		10	U		10	U	
ACETONE	50	U		50	U		50	U		50	U	
BENZENE	1	U		1	U		1	U		1	U	
CARBON DISULFIDE	10	U		10	U		10	U		10	U	
CARBON TETRACHLORIDE	2	U		2	U		2	U		2	U	
CHLOROBENZENE	2	U		2	U		2	U		2	U	
CYCLOHEXANONE	10	U		10	U		10	U		10	U	
ETHYLBENZENE	2	U		2	U		2	U		2	U	
FREON-113	438			6.7			29.6			47.3		
ISOBUTYL ALCOHOL	500	U		500	U		500	U		500	U	
METHANOL	500	U		500	U		500	U		500	U	
METHYLENE CHLORIDE	5	U		5	U		5	U		5	U	
N-BUTYL ALCOHOL	500	U		500	U		500	U		500	U	
TETRACHLOROETHENE	3			2	U		0.81	J	P	0.64	J	P
TOLUENE	1.7	J	P	2	U		2	U		2	U	
TRICHLOROETHENE	226			18.5			36.2			25.3		
VINYL CHLORIDE	0.6	J	P	1	U		1	U		1	U	
XYLENES, TOTAL	6	U		6	U		6	U		6	U	

Qualifier Codes:

A = Lab Blank Contamination

B = Field Blank contamination

C = Calibration (i.e. %RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance

D = MS/MSD Noncompliance

E = LCS/LCSD Noncompliance

F = Lab Duplicate Imprecision

G = Field Duplicate Imprecision

H = Holding Time Exceedance

I = ICP Serial Dilution Noncompliance

J = GFAA PDS – GFAA MSAs r<0.995

K = ICP Interference – include ICSAB %Rs

L = Instrument Calibration Range Exceedance

M = Sample Preservation

N = Internal Standard Noncompliance

O = Poor Instrument Performance (I.E. base-time drifting)

P = Uncertainty near detection limit (<2 x IDL for Inorganics and < CRQL for Organics)

Q = Other problems (can encompass a number of issues)

R = Surrogates Recovery Noncompliance

S = Pesticide/PCB Resolution

T = % Breakdown Noncompliance for DDT and Endrin

U = Pest/PCB D% between columns for positive results

V = Non-Linear calibrations, tuning r< 0.995 (correlation coefficient)

W = EMPC result

X = Signal to noise response drop

Y = % Solid content is less than 30%

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Tetra Tech NUS

INTERNAL CORRESPONDENCE

TO:	Mr. Mark Peterson	DATE:	March 12, 2001
FROM:	Elena Rodriguez	COPIES:	DV FILE

SUBJECT: DATA VALIDATION - ORGANICS
CTO 167, NASJAX
SDG F8744

SAMPLES: 6/Aqueous/

H10-DUP2-05
H10-GW-MW05-05
H10-GW-MW06-05
H10-GW-MW07-05
H10-GW-MW19-05
Trip Blank

OVERVIEW

The sample set for CTO 167, NASJAX, SDG F8744 consists of four aqueous environmental samples and two aqueous quality control samples (one trip blank and one field duplicate pair: H10-DUP2-05 and H10-GW-MW19-05). All groundwater samples were analyzed for select volatile organic compounds, semi-volatile organic compounds, polynuclear aromatic hydrocarbons, alcohols, and dissolved gasses. The trip blank was analyzed for volatile organic compounds.

The samples were collected by TetraTech NUS on January 19, 2001 and analyzed by Accutest Laboratories. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria using the following analytical and reporting protocols: SW-846 Methods 8260B, 8270C, 8310, 8015 and RSK SOP 147/175. The data contained in this SDG were validated with regard to the following parameters:

- * Data completeness
- * Holding times
- * Initial/continuing calibrations
- * Laboratory method and field quality control blank results
- * Surrogate recoveries
- * Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A.

Volatile Organics

Data reported for this fraction were found to be acceptable. Samples H10-GW-MW19-05 and H10-DUP2-05 were re-analyzed at a 5x dilution factor to quantify 4 compounds that had exceeded the calibration range during the first analysis.

Alcohols

Data reported for this fraction were found to be acceptable.

Semi-Volatile Organics

Data reported for this fraction were found to be acceptable.

Polynuclear Aromatic Hydrocarbons

Data reported for this fraction were found to be acceptable.

Dissolved Gases (Methane-Ethane-Ethene)

Data reported for this fraction were found to be acceptable.

Additional Comments

Positive results below the reporting limit (RL) were qualified as estimated, J, due to uncertainty near the detection limit.

EXECUTIVE SUMMARY

Laboratory Performance Issues: None.

Other Factors Affecting Data Quality: None

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99), and the Navy IRCDQM (9/99) NFESC guidelines. The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC guidelines and the Quality Assurance Project Plan (QAPP)."

Elena F. Rodriguez

Tetra Tech NUS

Elena Rodriguez

Tetra Tech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:
1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F8739
Account: TETRFLOX - Tetra-Tech,NUS
Project: TETRFLOX1724 - NAS Jax-Hanger 1000

Analyte	Batch ID	RL	MB Result	Units	BSP %Recov	QC Limits
Chloride	GP2038	1.0	<1.0	mg/l	105.0	88-122%
Nitrogen, Nitrate	GP2039	0.10	<0.10	mg/l	90.0	90-110%
Nitrogen, Nitrate	GP2040	0.10	<0.10	mg/l	89.0	90-110%
Phosphate, Ortho	GP2040	0.10	<0.10	mg/l	102.0	90-110%
Sulfate	GP2044	10	<10	mg/l	100.0	80-120%
Sulfate	GP2059	10	<10	mg/l	97.2	80-120%

Associated Samples:
Batch GP2038: F8739-1, F8739-2, F8739-3, F8739-4, F8739-5, F8739-6
Batch GP2039: F8739-1, F8739-2, F8739-3, F8739-4, F8739-5
Batch GP2040: F8739-6
Batch GP2044: F8739-1, F8739-2, F8739-3, F8739-4
Batch GP2059: F8739-5, F8739-6

[illegible]
[illegible] Method Blank

Login Number: F8[illegible]
Account: TETRFL[illegible] - Tetra-Tech,NUS
Project: TETRFLJX[illegible] - NAS Jax-Hangar 1000

QC Batch ID: MP3273
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 01/22/01

Metal	RL	IDL	ME raw	final
Aluminum	200	9.4	anr	
Antimony	5.0	2.6	anr	
Arsenic	10.0	3.2	anr	
Barium	200	.94	anr	
Beryllium	5.0	.22	anr	
Cadmium	5.0	.27	-0.12	<5.0
Calcium	1000	10.2	anr	
Chromium	10.0	.35	0.21	<10.0
Cobalt	50.0	.55	anr	
Copper	25.0	.71	anr	
Iron	300	9	anr	
Lead	5.0	1.2	anr	
Magnesium	5000	25.5	anr	
Manganese	15.0	.26	anr	
Molybdenum	50.0	1		
Nickel	40.0	.8	anr	
Potassium	5000	49	anr	
Selenium	10.0	2.5	anr	
Silver	10.0	.59	anr	
Sodium	5000	173	anr	
Thallium	10.0	2.1	anr	
Tin	50.0	1		
Vanadium	50.0	.58	anr	
Zinc	20.0	.36	anr	

Associated samples MP3273: F8739-1, F8739-2, F8739-3, F8739-4, F8739-5, F8739-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

[illegible]
[illegible] Initial and Continuing Calibration [illegible]

Login Number: [illegible]
Account: TETRFLOX - Tetra-Tech,NUS
Project: TETRFLOX1724 - NAS Jax-Hanger 100[illegible]

File ID: IR0123M1.ASC
QC Limits: result < RL

Date Analyzed: 01/23/01
Run ID: MA2175

Methods: SW846 6010B
Units: ug/l

Metal	RL	IDL	CCE raw	final	CCE raw	final	CCE raw	final
Aluminum	200	9.44						
Antimony	5.0	2.56						
Arsenic	10	3.15	anr					
Barium	200	.94	anr					
Beryllium	5.0	.22						
Cadmium	5.0	.27	0.19	<5.0	0.29	<5.0	0.37	<5.0
Calcium	1000	10.2						
Chromium	10	.35	1.3	<10<	0.66	<10	0.40	<10
Cobalt	50	.55						
Copper	25	.71						
Iron	300	9.02						
Lead	5.0	1.16	anr					
Magnesium	5000	25.5						
Manganese	15	.26						
Molybdenum	50	1.01						
Nickel	40	.8						
Potassium	5000	49						
Selenium	10	2.5	anr					
Silver	10	.59	anr					
Sodium	5000	173	anr					
Thallium	10	2.07						
Tin	50	1.03						
Vanadium	50	.58						
Zinc	20	.36						

(*) Outside of QC limits
(anr) Analyte not requested

[illegible]
[illegible]

Login Number: F8729
Account: TETRFLOR - Tetra-Tech NUS
Project: TETRFLORX1724 - NAS Cax-Hanger 2000

File ID: 1R0123M1.ASC
QC Limits: result < RL

Date Analyzed: 01/23/01
Run ID: MA2179

Methods: SW846 6010B
Units: ug/l

Metal	RL	IDL	ICB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	9.44								
Antimony	5.0	2.56								
Arsenic	10	3.15	anr							
Barium	200	.94	anr							
Beryllium	5.0	.22								
Cadmium	5.0	.27	0.43	<5.0	0.46	<5.0	0.12	<5.0	0.30	<5.0
Calcium	1000	10.2								
Chromium	10	.35	-0.18	<10	1.0	<10	1.4	<10	4.2	<10
Cobalt	50	.55								
Copper	25	.71								
Iron	300	9.02								
Lead	5.0	1.16	anr							
Magnesium	5000	25.5								
Manganese	15	.26								
Molybdenum	50	1.01								
Nickel	40	.8								
Potassium	5000	49								
Selenium	10	2.5	anr							
Silver	10	.59	anr							
Sodium	5000	173	anr							
Thallium	10	2.07								
Tin	50	1.03								
Vanadium	50	.58								
Zinc	20	.36								

(*) Outside of QC limits
(anr) Analyte not requested

[illegible]

[illegible] Initial and Continuing Calibration Blanks

Login Number: F8735
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

File ID: IR0124M1.ASC
QC Limits: result < RL

Date Analyzed: 01/24/01
Run ID: MA2182

Methods: SW846 6010B
Units: ug/l

Metal	RL	IDL	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	9.44	-7.5	<200	-1.6	<200	-2.6	<200
Antimony	5.0	2.56	4.7	<5.0	5.6	<5.0<	4.1	<5.0
Arsenic	10	3.15	4.4	<10	1.7	<10	4.6	<10
Barium	200	.94	0.21	<200	0.23	<200	0.32	<200
Beryllium	5.0	.22	0.42	<5.0	0.46	<5.0	0.84	<5.0
Cadmium	5.0	.27	0.20	<5.0	0.24	<5.0	0.25	<5.0
Calcium	1000	10.2	32.2	<1000	40.6	<1000	51.1	<1000
Chromium	10	.35	2.5	<10<	6.0	<10<	6.6	<10<
Cobalt	50	.55	0.22	<50	0.35	<50	0.34	<50
Copper	25	.71	0.81	<25	0.72	<25	0.45	<25
Iron	300	9.02	34.6	<300<	49.7	<300<	55.9	<300<
Lead	5.0	1.16	1.0	<5.0	1.5	<5.0	2.0	<5.0
Magnesium	5000	25.5	8.9	<5000	11.3	<5000	11.8	<5000
Manganese	15	.26	0.85	<15	1.4	<15	1.6	<15<
Molybdenum	50	1.01						
Nickel	40	.8	2.8	<40	5.2	<40<	5.5	<40<
Potassium	5000	49	434	<5000	413	<5000	382	<5000
Selenium	10	2.5	2.9	<10	1.1	<10	4.1	<10
Silver	10	.59	-1.4	<10	-1.0	<10	-1.3	<10
Sodium	5000	173	108	<5000	122	<5000	-22	<5000
Thallium	10	2.07	2.6	<10	1.9	<10	3.9	<10
Tin	50	1.03						
Vanadium	50	.58	0.27	<50	0.16	<50	0.23	<50
Zinc	20	.36	0.41	<20	0.51	<20	0.52	<20

(*) Outside of QC limits
(anr) Analyte not requested

[illegible]
[illegible] Initial and Continuing Calibration [illegible]

Login Number: [illegible]
Account TETRFLWA - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

File ID: JR0124M1.ASC
QC Limits: result < RL

Date Analyzed: 01/24/01
Run ID: MA2182

Methods: SW846 6010B
Units: ug/l

Metal	RL	IDL	CCE raw	final	CCE raw	final	CCE raw	final	CCE raw	final
Aluminum	200	9.44	-0.040	<200	8.1	<200	12.4	<200	16.1	<200
Antimony	5.0	2.56	-0.040	<5.0	3.9	<5.0	0.22	<5.0	6.0	6.0*
Arsenic	10	3.15	0.75	<10	3.8	<10	1.5	<10	3.5	<10
Barium	200	.94	0.050	<200	0.15	<200	0.090	<200	0.18	<200
Beryllium	5.0	.22	0.18	<5.0	0.020	<5.0	0.37	<5.0	0.71	<5.0
Cadmium	5.0	.27	-0.050	<5.0	-0.050	<5.0	-0.030	<5.0	-0.090	<5.0
Calcium	1000	10.2	12.6	<1000	-3.6	<1000	14.6	<1000	21.5	<1000
Chromium	10	.35	0.31	<10	0.25	<10	0.25	<10	0.40	<10
Cobalt	50	.55	-0.050	<50	0.15	<50	0.12	<50	0.21	<50
Copper	25	.71	0.30	<25	-0.10	<25	-0.59	<25	-0.76	<25
Iron	300	9.02	28.2	<300	26.7	<300	22.2	<300	21.0	<300
Lead	5.0	1.16	0.91	<5.0	0.27	<5.0	1.4	<5.0	0.94	<5.0
Magnesium	5000	25.5	5.6	<5000	4.4	<5000	3.0	<5000	5.7	<5000
Manganese	15	.26	0.48	<15	0.20	<15	0.17	<15	0.25	<15
Molybdenum	50	1.01								
Nickel	40	.8	0.35	<40	0.35	<40	0.22	<40	0.77	<40
Potassium	5000	49	432	<5000	448	<5000	389	<5000	440	<5000
Selenium	10	2.5	-1.2	<10	1.7	<10	-0.72	<10	1.8	<10
Silver	10	.59	-0.27	<10	0.16	<10	0.31	<10	0.050	<10
Sodium	5000	173	91.8	<5000	76.0	<5000	-19	<5000	143	<5000
Thallium	10	2.07	0.020	<10	1.4	<10	1.5	<10	2.5	<10
Tin	50	1.03								
Vanadium	50	.58	0.19	<50	0.13	<50	-0.030	<50	0.28	<50
Zinc	20	.36	0.0	<20	-0.10	<20	0.070	<20	0.14	<20

(*) Outside of QC limits
(anr) Analyte not requested

Login Number: F[illegible]
Account: TETRFLJX - Tetra-Tech, NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

File ID: 1RC124MJ.ASC Date Analyzed: 01/24/01 Methods: SW846 6010B
QC Limits: result < RL Run ID: MA2182 Units: ug/l

Metal	RL	IDL	ICB raw	final	ICB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	9.44			-0.29	<200			-0.70	<200
Antimony	5.0	2.56			2.2	<5.0			0.24	<5.0
Arsenic	10	3.15			0.31	<10			1.1	<10
Barium	200	.94			0.090	<200			0.050	<200
Beryllium	5.0	.22			-0.020	<5.0			0.15	<5.0
Cadmium	5.0	.27			-0.070	<5.0			-0.11	<5.0
Calcium	1000	10.2			-0.49	<1000			0.17	<1000
Chromium	10	.35			0.34	<10			0.54	<10
Cobalt	50	.55			0.32	<50			0.15	<50
Copper	25	.71			0.23	<25			0.11	<25
Iron	300	9.02			16.5	<300			12.9	<300
Lead	5.0	1.16			0.54	<5.0			0.90	<5.0
Magnesium	5000	25.5			2.1	<5000			1.3	<5000
Manganese	15	.26			0.98	<15			0.46	<15
Molybdenum	50	1.01								
Nickel	40	.8			2.1	<40			1.0	<40
Potassium	5000	49			428	<5000			402	<5000
Selenium	10	2.5			-0.83	<10			1.8	<10
Silver	10	.59			0.090	<10			-0.28	<10
Sodium	5000	173			98.6	<5000			61.6	<5000
Thallium	10	2.07			-0.15	<10			0.43	<10
Tin	50	1.03								
Vanadium	50	.58			0.25	<50			-0.030	<50
Zinc	20	.36			-0.15	<20			-0.090	<20

(*) Outside of QC limits
(anr) Analyte not requested

TETRA TECH NUS, INC. **CHAIN OF CUSTODY** | NUMBER | PAGE ____ OF ____

PROJECT NO: N3995

SITE NAME: NAS JAX - HANGAR 1000

PROJECT MANAGER AND PHONE NUMBER: MARK PETERSON 904-281-0400

LABORATORY NAME AND CONTACT: ACCUTEST LABS - LINDA WILLIAMS

SAMPLERS (SIGNATURE): Alan L Pate

FIELD OPERATIONS LEADER AND PHONE NUMBER: ALAN PATE 904-281-0400

ADDRESS: 4405 VINELAND Rd #C-15

CARRIER/WAYBILL NUMBER: FEDEX

CITY, STATE: ORLANDO, FL 32811

STANDARD TAT ☒
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

Alan Pate

F8739

					CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	G	G	G	G	P	P	P	
					PRESERVATIVE USED	HCL	HCL	—	—	—	HNO3	NaOH	—	
DATE YEAR	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS ** VOCs 8260B	** METHANE/ETHANE/ETHENE BK 147/175	** ALCOHOLS 8015B	SVOCs 8270C	PAHs 8310	METALS: Cd/Cr 6010B	SULFIDE	ANIONS: SO4, CL NO3	COMMENTS
1/18	0930	H10-GW-MW18-05	H_2O	G	16	3	3	3	2	2	1	1	1	COOL TO 4°C
1/18	1055	H10-GW-MW15-05	H_2O	G	16	3	3	3	2	2	1	1	1	
														SEE ATTACHED QAPP TABLE FOR ANALYTICAL REQUIREMENTS

** ALL VIALS IN SEPARATE COOLER

1. RELINQUISHED BY Alan L Pate	DATE 1/18/01	TIME 1630	1. RECEIVED BY [signature]	DATE 1/19/01	TIME 1015
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

4.8°C

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/99 FORM NO. TtNUS-001

TETRA TECH NUS, INC. — CHAIN OF CUSTODY — NUMBER ____ — PAGE ____ OF ____

PROJECT NO: N3995	SITE NAME: NAS JAX-HANGAR 1000	PROJECT MANAGER AND PHONE NUMBER: MARK PETERSON 904-281-0400	LABORATORY NAME AND CONTACT: ACCUTEST - LINDA WILLIAMS
SAMPLERS (SIGNATURE): Alan Pate		FIELD OPERATIONS LEADER AND PHONE NUMBER: ALAN PATE 904-281-0400	ADDRESS: 4405 VINELAND Rd #C-15
		CARRIER/WAYBILL NUMBER: FEX EX	CITY, STATE: ORLANDO, FL 32811

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

F8739

						CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	G	G	G	G	P	P	P	
						PRESERVATIVE USED	HCL	HCL	-	-	-	HNO3/NaOH			
DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS	** VOCS 8260B	** METHANE/ETHANE/ETHENE RSK 147/175	** ALCOHOLS 8015B	SVOCS 8270	PAHS 8310	METALS Cd/Cr 6010B	SULFIDE	ANIONS SO4/Cl/NO3	COMMENTS
1/18	1430	H10-GW-MW09-05	H2O	G	16		3	3	3	2	2	1	1	1	COOL TO 4°C
1/18	1215	H10-GW-MW12-05	H2O	G	16		3	3	3	2	2	1	1	1	
															SEE ATTACHED
															QAPP TABLE
															FOR ANALYTICAL
		** ALL VIALS IN SEPARATE COOLER													REQUIREMENTS

1. RELINQUISHED BY Alan Pate	DATE 7/18/01	TIME 1430	1. RECEIVED BY Mike [illegible]	DATE 7/19/01	TIME 1015
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

4.6 C

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3/99
FORM NO. TINUS-001

TETRA TECH NUS, INC. **CHAIN OF CUSTODY** | NUMBER | PAGE ____ OF ____

PROJECT NO: N3995	SITE NAME: WAS JAX - HANGAR 1000	PROJECT MANAGER AND PHONE NUMBER: MARK PETERSON 904-281-0400	LABORATORY NAME AND CONTACT: ACCUTEST LABS / LINDA WILLIAMS
SAMPLERS (SIGNATURE): Alan Pate		FIELD OPERATIONS LEADER AND PHONE NUMBER: ALAN PATE 904-281-0400	ADDRESS: 4405 VINELAND Rd #C-15
		CARRIER/WAYBILL NUMBER: FED EX	CITY, STATE: ORLANDO, FL 32811

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

F8739

						CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	G	G	G	G	P	P	P	
						PRESERVATIVE USED	HCL	—	—	—	—	HNO_3	NaOH	—	
	DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: VOCs 8260B	METHANE/ETHANE/ETHENE RSK 147/175	ALCOHOLS 8015B	SVOCs 8270C	PAHs 8310	METALS: Cd/Cr 6010B	SULFIDE	ANIONS: SO_4, Cl, NO_3	COMMENTS
1	1/18	0805	H10-GW-MW14-05*	H_2O	G	16	3	3	3	2	2	1	1	1	COOL TO 4°C
			~~H10-GW-MW~~												
2	1/18	0000	H10-DUP1-05	H_2O	G	16	3	3	3	2	2	1	1	1	
3	1/18	0930	H10-GW-MW18-05	H_2O	G	9	3	3	3	2	2	1	1	1	SEE ATTACHED
4	1/18	1055	H10-GW-MW15-05	H_2O	G	9	3	3	3	2	2	1	1	1	QAPP TABLE
5	1/18	1430	H10-GW-MW09-05	H_2O	G	9	3	3	3	2	2	1	1	1	FOR ANALYTICAL
6	1/18	1215	H10-GW-MW12-05	H_2O	G	9	3	3	3	2	2	1	1	1	REQUIREMENTS
7	1/18		TRIP BLANK	H_2O		1	1								

*EXTRA AMBER FOR TOC ANALYSIS NEEDS PRESERVATIVE

1. RELINQUISHED BY: Alan Pate	DATE: 1/18/01	TIME: 1030	1. RECEIVED BY: Mike [illegible]	DATE: 1/19/01	TIME: 1015
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME
COMMENTS					4.8°C

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/99
FO[illegible]NO. TtNUS-001

ACCUTEST

CHAIN OF CUSTODY

4405 VINELAND ROAD • SUITE C-15
ORLANDO, FL 32811
TEL: 407-425-6700 • FAX: 407-425-0707

ACCUTEST JOB #:
ACCUTEST QUOTE #:

CLIENT INFORMATION

NAME: ALSE
ADDRESS
CITY, STATE ZIP
SEND REPORT TO:
PHONE #

FACILITY INFORMATION

F8739
PROJECT NAME
LOCATION
PROJECT NO.
FAX #

ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	DATE	TIME	SAMPLED BY:	MATRIX	# OF BOTTLES	HCl	NaOH	HNO3	H2SO4	NONE	Chlorides	TOC
	F8734-1	1/18/01		TMS	W	4	X				X	X	X
	-2	↓		↓	↓	3					X	X	
	-3	↓		↓	↓	↓					↓	X	
	-4	↓		↓	↓	↓					↓	X	
	-5	↓		↓	↓	↓					↓	X	
	-6	↓		↓	↓	↓					↓	X	

MATRIX CODES

DW - DRINKING WATER
GW - GROUND WATER
WW - WASTE WATER
SO - SOIL
SL - SLUDGE
OI - OIL
LIQ - OTHER LIQUID
SOL - OTHER SOLID

LAB USE ONLY

DATA TURNAROUND INFORMATION

☒ STANDARD (14 Days)
☐ 48 HOUR RUSH
☐ 24 HOUR EMERGENCY
☐ OTHER

APPROVED BY:

EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED

DATA DELIVERABLE INFORMATION

☒ STANDARD FTI
☐ COMMERCIAL "B"
☐ DISK DELIVERABLE
☐ STATE FORMS
☐ OTHER (SPECIFY)

COMMENTS/REMARKS

NJ

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESION, INCLUDING COURIER DELIVERY

RELINQUISHED BY	DATE TIME	RECEIVED BY	RELINQUISHED BY	DATE TIME	RECEIVED BY
RELINQUISHED BY SAMPLER: 1. [signature]	1/19/01 1501	1.	2.		2.
3.		3.	4.		4.
5.		5.	SEAL #	PRESERVE WHERE APPLICABLE ☐	ON ICE ☐ TEMPERATURE

ACCUTEST LABORATORIES SOUTHEAST
SAMPLE RECEIPT CONFIRMATION

Accutest Job Number: F8739

Client/Project: ITNUS N3995

Date/Time Received: 1/19/01 1015

Method of Delivery: Fed Ex Greyhound UPS Pickup Delivery Other

Air Bill Number: 8219540 72335

Cooler Temperatures: 4.8, 4.8, 4.6

Custody Seals Intact? YES NO

Chain Of Custody Provided? YES NO

Chain Of Custody Match Bottles? YES NO

Sample Labels Present? YES NO

Are All Bottles Unbroken? YES NO

Proper Preservative? ~~YES~~ NO * MF 3/5/01

Correct Containers Used? YES NO

Sufficient Sample Volume? YES NO

Number of Encores: Ø

COMMENTS:

*An extra amber was sent for TOC for F8739-1. Was ~~preserved in house~~ at the lab with HCl. MF 3/5/01

Signature: Mike Ford Date: 1/19/01

FIELD DUPLICATE SAMPLES

January 2001

Hangar 1000, NAS Jacksonville

Jacksonville, FL

Fraction	Analyte	H10-MW14-05	H10-DUP1-05	RPD
Volatiles	1,1-Dichloroethane	182	188	3%
	1,1-Dichloroethene	424	431	2%
	1,2-Dichloroethane	1.9 J	2	5%
	1,2-Dichloroethene (total)	1.4 J	1.5 J	7%
	Freon 113	87.9	99.1	12%
	1,1,1-Trichloroethane	17.0	17.5	3%
	1,1,2-Trichloroethane	1.9 J	2.0	5%
	Toluene	1.9 J	2.1	10%
	Trichlorethene	266	273	3%
Gases	Methane	206	187	10%
Misc.	Chloride	23.0	21.5	7%
	Hydrogen Sulfide	ND	2.0	NC
	TOC	5.4	NS	NC

Fraction	Analyte	H10-MW19-05	H10-DUP2-05	RPD
SVOCs	Napthalene	1.9 J	2.1 J	10%
VOCs	1,1-Dichloroethane	98.9	110	11%
	1,1-Dichloroethene	190	188	1%
	1,2-Dichloroethane	1.5 J	1.4 J	7%
	1,2-Dichloroethene (total)	52.7	52.4	1%
	Freon 113	447	438	2%
	Tetrachloroethene	3	3	0%
	1,1,2-Trichloroethane	2.0 U	1.0 J	NC
	Toluene	1.8 J	1.7 J	6%
	Trichlorethene	229	226	1%
	Vinyl chloride	0.60 J	0.60 J	0%
Gases	Methane	105	104	1%
Metals	Chromium	3.2 B	3.6 B	12%
Misc.	Chloride	19	20	5%
	Hydrogen Sulfide	2.7	ND	NC
	TOC	3.5	NS	NC

NS = not sampled

ND = not detected

NC = not calculated

J = estimated

RPD = Relative Percent Difference

Acceptable RPD: 0-30% aqueous

Units	Nsample	Lab Id	Qc Type	Sdg	t	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	P_DATE TO ANAL_DATE
UG/L	H10-GW-MW14-05	F8739-1	NORMAL	F8739	OS	01/18/01	01/23/01	01/26/01	5	3	8
UG/L	H10-GW-MW15-05	F8739-4	NORMAL	F8739	OS	01/18/01	01/23/01	01/27/01	5	4	9
UG/L	H10-GW-MW18-05	F8739-3	NORMAL	F8739	OS	01/18/01	01/23/01	01/27/01	5	4	9
UG/L	H10-DUP1-05	F8739-2	NORMAL	F8739	OV	01/18/01	/ /	01/22/01	0	0	4
UG/L	H10-GW-MW09-05	F8739-5	NORMAL	F8739	OV	01/18/01	/ /	01/22/01	0	0	4
UG/L	H10-GW-MW12-05	F8739-6	NORMAL	F8739	OV	01/18/01	/ /	01/22/01	0	0	4
UG/L	H10-GW-MW14-05	F8739-1	NORMAL	F8739	OV	01/18/01	/ /	01/22/01	0	0	4
UG/L	H10-GW-MW15-05	F8739-4	NORMAL	F8739	OV	01/18/01	/ /	01/22/01	0	0	4
UG/L	H10-GW-MW18-05	F8739-3	NORMAL	F8739	OV	01/18/01	/ /	01/23/01	0	0	5
UG/L	TRIP BLANK-011801	F8739-7	NORMAL	F8739	OV	01/18/01	/ /	01/22/01	0	0	4
UG/L	H10-DUP1-05	F8739-2	NORMAL	F8739	PAH	01/18/01	01/25/01	01/26/01	7	1	8
UG/L	H10-GW-MW09-05	F8739-5	NORMAL	F8739	PAH	01/18/01	01/25/01	01/26/01	7	1	8
UG/L	H10-GW-MW12-05	F8739-6	NORMAL	F8739	PAH	01/18/01	01/25/01	01/26/01	7	1	8
UG/L	H10-GW-MW14-05	F8739-1	NORMAL	F8739	PAH	01/18/01	01/25/01	01/26/01	7	1	8
UG/L	H10-GW-MW15-05	F8739-4	NORMAL	F8739	PAH	01/18/01	01/25/01	01/26/01	7	1	8
UG/L	H10-GW-MW18-05	F8739-3	NORMAL	F8739	PAH	01/18/01	01/25/01	01/26/01	7	1	8
MG/L	H10-DUP1-05	F8739-2	NORMAL	F8739	SO4	01/18/01	01/24/01	01/24/01	6	0	6
MG/L	H10-GW-MW09-05	F8739-5	NORMAL	F8739	SO4	01/18/01	01/29/01	01/29/01	11	0	11
MG/L	H10-GW-MW12-05	F8739-6	NORMAL	F8739	SO4	01/18/01	01/29/01	01/29/01	11	0	11
MG/L	H10-GW-MW14-05	F8739-1	NORMAL	F8739	SO4	01/18/01	01/24/01	01/24/01	6	0	6
MG/L	H10-GW-MW15-05	F8739-4	NORMAL	F8739	SO4	01/18/01	01/24/01	01/24/01	6	0	6
MG/L	H10-GW-MW18-05	F8739-3	NORMAL	F8739	SO4	01/18/01	01/24/01	01/24/01	6	0	6
MG/L	H10-GW-MW14-05	F8739-1	NORMAL	F8739	TOC	01/18/01	02/03/01	02/03/01	16	0	16

Units	Sample	Lab Id	Qc Type	Sdg		Samp Date	Extr Date	Anal Date	TO EXTR_DATE	TO ANAL_DATE	_DATE
MG/L	H10-DUP1-05	F8739-2	NORMAL	F8739	HSUL	01/18/01	/ /	01/22/01	0	0	4
MG/L	H10-GW-MW09-05	F8739-5	NORMAL	F8739	HSUL	01/18/01	/ /	01/22/01	0	0	4
MG/L	H10-GW-MW12-05	F8739-6	NORMAL	F8739	HSUL	01/18/01	/ /	01/22/01	0	0	4
MG/L	H10-GW-MW14-05	F8739-1	NORMAL	F8739	HSUL	01/18/01	/ /	01/22/01	0	0	4
MG/L	H10-GW-MW15-05	F8739-4	NORMAL	F8739	HSUL	01/18/01	/ /	01/22/01	0	0	4
MG/L	H10-GW-MW18-05	F8739-3	NORMAL	F8739	HSUL	01/18/01	/ /	01/22/01	0	0	4
UG/L	H10-DUP1-05	F8739-2	NORMAL	F8739	M	01/18/01	01/22/01	01/23/01	4	1	5
UG/L	H10-GW-MW09-05	F8739-5	NORMAL	F8739	M	01/18/01	01/22/01	01/23/01	4	1	5
UG/L	H10-GW-MW12-05	F8739-6	NORMAL	F8739	M	01/18/01	01/22/01	01/23/01	4	1	5
UG/L	H10-GW-MW14-05	F8739-1	NORMAL	F8739	M	01/18/01	01/22/01	01/23/01	4	1	5
UG/L	H10-GW-MW15-05	F8739-4	NORMAL	F8739	M	01/18/01	01/22/01	01/23/01	4	1	5
UG/L	H10-GW-MW18-05	F8739-3	NORMAL	F8739	M	01/18/01	01/22/01	01/23/01	4	1	5
UG/L	H10-DUP1-05	F8739-2	NORMAL	F8739	METH	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-GW-MW09-05	F8739-5	NORMAL	F8739	METH	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-GW-MW12-05	F8739-6	NORMAL	F8739	METH	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-GW-MW14-05	F8739-1	NORMAL	F8739	METH	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-GW-MW15-05	F8739-4	NORMAL	F8739	METH	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-GW-MW18-05	F8739-3	NORMAL	F8739	METH	01/18/01	/ /	01/25/01	0	0	7
MG/L	H10-DUP1-05	F8739-2	NORMAL	F8739	NTA	01/18/01	01/20/01	01/20/01	2	0	2
MG/L	H10-GW-MW09-05	F8739-5	NORMAL	F8739	NTA	01/18/01	01/20/01	01/20/01	2	0	2
MG/L	H10-GW-MW12-05	F8739-6	NORMAL	F8739	NTA	01/18/01	01/21/01	01/21/01	3	0	3
MG/L	H10-GW-MW14-05	F8739-1	NORMAL	F8739	NTA	01/18/01	01/20/01	01/20/01	2	0	2
MG/L	H10-GW-MW15-05	F8739-4	NORMAL	F8739	NTA	01/18/01	01/20/01	01/20/01	2	0	2
MG/L	H10-GW-MW18-05	F8739-3	NORMAL	F8739	NTA	01/18/01	01/20/01	01/20/01	2	0	2
UG/L	H10-DUP1-05	F8739-2	NORMAL	F8739	OS	01/18/01	01/23/01	01/27/01	5	4	9
UG/L	H10-GW-MW09-05	F8739-5	NORMAL	F8739	OS	01/18/01	01/23/01	01/27/01	5	4	9
UG/L	H10-GW-MW12-05	F8739-6	NORMAL	F8739	OS	01/18/01	01/23/01	01/27/01	5	4	9

F8739

HOLDING TIME

02/28/01

Units	Nsample .	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UG/L	H10-DUP1-05	F8739-2	NORMAL	F8739	ALC	01/18/01	/ /	01/26/01	0	0	8
UG/L	H10-GW-MW09-05	F8739-5	NORMAL	F8739	ALC	01/18/01	/ /	01/26/01	0	0	8
UG/L	H10-GW-MW12-05	F8739-6	NORMAL	F8739	ALC	01/18/01	/ /	01/26/01	0	0	8
UG/L	H10-GW-MW14-05	F8739-1	NORMAL	F8739	ALC	01/18/01	/ /	01/29/01	0	0	11
UG/L	H10-GW-MW15-05	F8739-4	NORMAL	F8739	ALC	01/18/01	/ /	01/26/01	0	0	8
UG/L	H10-GW-MW18-05	F8739-3	NORMAL	F8739	ALC	01/18/01	/ /	02/02/01	0	0	15
MG/L	H10-DUP1-05	F8739-2	NORMAL	F8739	CL	01/18/01	01/22/01	01/22/01	4	0	4
MG/L	H10-GW-MW09-05	F8739-5	NORMAL	F8739	CL	01/18/01	01/22/01	01/22/01	4	0	4
MG/L	H10-GW-MW12-05	F8739-6	NORMAL	F8739	CL	01/18/01	01/22/01	01/22/01	4	0	4
MG/L	H10-GW-MW14-05	F8739-1	NORMAL	F8739	CL	01/18/01	01/22/01	01/22/01	4	0	4
MG/L	H10-GW-MW15-05	F8739-4	NORMAL	F8739	CL	01/18/01	01/22/01	01/22/01	4	0	4
MG/L	H10-GW-MW18-05	F8739-3	NORMAL	F8739	CL	01/18/01	01/22/01	01/22/01	4	0	4
UG/L	H10-DUP1-05	F8739-2	NORMAL	F8739	ETHA	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-GW-MW09-05	F8739-5	NORMAL	F8739	ETHA	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-GW-MW12-05	F8739-6	NORMAL	F8739	ETHA	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-GW-MW14-05	F8739-1	NORMAL	F8739	ETHA	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-GW-MW15-05	F8739-4	NORMAL	F8739	ETHA	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-GW-MW18-05	F8739-3	NORMAL	F8739	ETHA	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-DUP1-05	F8739-2	NORMAL	F8739	ETHE	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-GW-MW09-05	F8739-5	NORMAL	F8739	ETHE	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-GW-MW12-05	F8739-6	NORMAL	F8739	ETHE	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-GW-MW14-05	F8739-1	NORMAL	F8739	ETHE	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-GW-MW15-05	F8739-4	NORMAL	F8739	ETHE	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-GW-MW18-05	F8739-3	NORMAL	F8739	ETHE	01/18/01	/ /	01/25/01	0	0	7

APPENDIX C

SUPPORT DOCUMENTATION

Report of Analysis

Client Sample ID:	H10-GW-MW18-05		
Lab Sample ID:	F8739-3	Date Sampled:	01/18/01
Matrix:	AQ - Ground Water	Date Received:	01/19/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	11.5	1.0	mg/l	1	01/22/01	SJL	EPA 325.3
Hydrogen Sulfide	<2.0	2.0	mg/l	1	01/22/01	AL	SM18 4500/EPA 376.1
Nitrogen, Nitrate	0.75	0.10	mg/l	1	01/20/01	EM	EPA 300/SW846 9056
Sulfate	76.6	50	mg/l	5	01/24/01	SJL	EPA 375.4

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW15-05		
Lab Sample ID:	F8739-4	Date Sampled:	01/18/01
Matrix:	AQ - Ground Water	Date Received:	01/19/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	24.5	1.0	mg/l	1	01/22/01	SJL	EPA 325.3
Hydrogen Sulfide	<2.0	2.0	mg/l	1	01/22/01	AL	SM18 4500/EPA 376.1
Nitrogen, Nitrate	<0.10	0.10	mg/l	1	01/20/01	EM	EPA 300/SW846 9056
Sulfate	18.7	10	mg/l	1	01/24/01	SJL	EPA 375.4

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW14-05		
Lab Sample ID:	F8739-1	Date Sampled:	01/18/01
Matrix:	AQ - Ground Water	Date Received:	01/19/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	23.0	1.0	mg/l	1	01/22/01	SJL	EPA 325.3
Hydrogen Sulfide	<2.0	2.0	mg/l	1	01/22/01	AL	SM18 4500/EPA 376.1
Nitrogen, Nitrate	<0.10	0.10	mg/l	1	01/20/01	EM	EPA 300/SW846 9056
Sulfate	<10	10	mg/l	1	01/24/01	SJL	EPA 375.4
Total Organic Carbon	5.4	1.0	mg/l	1	02/03/01	ANJ	EPA415.1/SW8469060M

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW12-05		
Lab Sample ID:	F8739-6	Date Sampled:	01/18/01
Matrix:	AQ - Ground Water	Date Received:	01/19/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	22.0	1.0	mg/l	1	01/22/01	SJL	EPA 325.3
Hydrogen Sulfide	<2.0	2.0	mg/l	1	01/22/01	AL	SM18 4500/EPA 376.1
Nitrogen, Nitrate	<0.10	0.10	mg/l	1	01/21/01	EM	EPA 300/SW846 9056
Sulfate	38.9	10	mg/l	1	01/29/01	SJL	EPA 375.4

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW09-05	Date Sampled:	01/18/01
Lab Sample ID:	F8739-5	Date Received:	01/19/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	12.5	1.0	mg/l	1	01/22/01	SJL	EPA 325.3
Hydrogen Sulfide	<2.0	2.0	mg/l	1	01/22/01	AL	SM18 4500/EPA 376.1
Nitrogen, Nitrate	0.49	0.10	mg/l	1	01/20/01	EM	EPA 300/SW846 9056
Sulfate	<10	10	mg/l	1	01/29/01	SJL	EPA 375.4

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-DUP1-05	**Date Sampled:**	01/18/01
Lab Sample ID:	F8739-2	**Date Received:**	01/19/01
Matrix:	AQ - Ground Water	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	21.5	1.0	mg/l	1	01/22/01	SJL	EPA 325.3
Hydrogen Sulfide	2.0	2.0	mg/l	1	01/22/01	AL	SM18 4500/EPA 376.1
Nitrogen, Nitrate	<0.10	0.10	mg/l	1	01/20/01	EM	EPA 300/SW846 9056
Sulfate	<10	10	mg/l	1	01/24/01	SJL	EPA 375.4

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW18-05		
Lab Sample ID:	F8739-3	**Date Sampled:**	01/18/01
Matrix:	AQ - Ground Water	**Date Received:**	01/19/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B
Chromium	0.40 B	10.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW15-05		
Lab Sample ID:	F8739-4	Date Sampled:	01/18/01
Matrix:	AQ - Ground Water	Date Received:	01/19/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B
Chromium	0.43 B	10.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW14-05		
Lab Sample ID:	F8739-1	Date Sampled:	01/18/01
Matrix:	AQ - Ground Water	Date Received:	01/19/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B
Chromium	0.35 U	10.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW12-05		
Lab Sample ID:	F8739-6	**Date Sampled:**	01/18/01
Matrix:	AQ - Ground Water	**Date Received:**	01/19/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B
Chromium	1.1 B	10.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW09-05		
Lab Sample ID:	F8739-5	Date Sampled:	01/18/01
Matrix:	AQ - Ground Water	Date Received:	01/19/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B
Chromium	0.35 U	10.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B

RL = Reporting Limit

Report of Analysis

Client Sample ID: H10-DUP1-05
Lab Sample ID: F8739-2
Matrix: AQ - Ground Water
Project: NAS Jax-Hanger 1000

Date Sampled: 01/18/01
Date Received: 01/19/01
Percent Solids: n/a

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B
Chromium	0.38 B	10.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B

RL = Reporting Limit

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

CTO167 [illegible]AS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8739

SAMPLE NUMBER:	H10-GW-MW15-05			H10-GW-MW18-05							
SAMPLE DATE:	01/18/01			01/18/01			/ /			/ /		
LABORATORY ID:	F8739-4			F8739-3							
QC_TYPE:	NORMAL			NORMAL							
% SOLIDS:	0.0 %			0.0 %			100.0 %			100.0 %		
FIELD DUPLICATE OF:											
MISCELLANEOUS PARAMETERS	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
CHLORIDE(MG/L)	24.5			11.5								
HYDROGEN SULFIDE(MG/L)	2	U		2	U							
NITRATE, AS NITROGEN(MG/L)	0.1	U		0.75								
SULFATE(MG/L)	18.7			76.6								

CTO16[redacted]AS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8739

SAMPLE NUMBER:	H10-GW-MW09-05			H10-GW-MW12-05			H10-GW-MW14-05			H10-DUP1-05		
SAMPLE DATE:	01/18/01			01/18/01			01/18/01			01/18/01		
LABORATORY ID:	F8739-5			F8739-6			F8739-1			F8739-2		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
FIELD DUPLICATE OF:										H10-GW-MW14-05		
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
MISCELLANEOUS PARAMETERS												
CHLORIDE(MG/L)	12.5			22			23			21.5		
HYDROGEN SULFIDE(MG/L)	2	U		2	U		2	U		2		
NITRATE, AS NITROGEN(MG/L)	0.49			0.1	U		0.1	U		0.1	U	
SULFATE(MG/L)	10	U		38.9			10	U		10	U	
TOTAL ORGANIC CARBON(MG/L)							5.4	J	M			

CTO16[illegible]AS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8739

SAMPLE NUMBER:	H10-GW-MW15-05			H10-GW-MW18-05								
SAMPLE DATE:	01/18/01			01/18/01			/ /			/ /		
LABORATORY ID:	F8739-4			F8739-3								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	0.0 %			0.0 %			100.0 %			100.0 %		
UNITS:	UG/L			UG/L								
FIELD DUPLICATE OF:												
INORGANICS	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
CADMIUM	0.27	U		0.27	U							
CHROMIUM	0.43	U	A	0.40	U	A						

CTO167[illegible]AS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8739

SAMPLE NUMBER:	H10-DUP1-05			H10-GW-MW09-05			H10-GW-MW12-05			H10-GW-MW14-05		
SAMPLE DATE:	01/18/01			01/18/01			01/18/01			01/18/01		
LABORATORY ID:	F8739-2			F8739-5			F8739-6			F8739-1		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:	H10-GW-MW14-05											
INORGANICS	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
CADMIUM	0.27	U		0.27	U		0.27	U		0.27	U	
CHROMIUM	0.38	U	A	0.35	U		1.1	U	A	0.35	U	

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank contamination
C = Calibration (i.e. %RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS – GFAA MSAs $r<0.995$
K = ICP Interference – Include ICSAB %Rs
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (I.E. base-time drifting)
P = Uncertainty near detection limit (<2 x IDL for Inorganics and < CRQL for Organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCB D% between columns for positive results
V = Non-Linear calibrations, tuning $r< 0.995$ (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = % Solid content is less than 30%

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Tetra Tech NUS INTERNAL CORRESPONDENCE

TO: Mr. Mark Peterson DATE: March 12, 2001

FROM: Elena Rodriguez COPIES: DV FILE

SUBJECT: DATA VALIDATION - INORGANICS
CTO 167, NASJAX
SDG F8739

SAMPLES: 6/Aqueous/

H10-DUP1-05
H10-GW-MW09-05
H10-GW-MW12-05
H10-GW-MW14-05
H10-GW-MW15-05
H10-GW-MW18-05

OVERVIEW

The sample set for CTO 167, NASJAX, SDG F8739 consists of 5 aqueous environmental samples and one aqueous quality control sample (one field duplicate pair: H10-DUP1-05 and H10-GW-MW14-05). All samples were analyzed for cadmium and chromium and for natural attenuation parameters: chloride, nitrate, sulfate, and sulfide. Sample H10-GW-MW14-05 was also analyzed for total organic carbon (TOC).

The samples were collected by TetraTech NUS on January 18, 2001 and analyzed by Accutest Laboratories. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria using the following analytical and reporting protocols: SW-846 Methods 6010B, EPA 300, 325.3, 375.4, 376.1, and 415.1. The data contained in this SDG were validated with regard to the following parameters:

- * Data completeness
- * Holding times
- * Initial/continuing calibrations
- * Laboratory method blank results
- * Field duplicate sample results
- * Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A.

Metals

The following contaminants were detected in the laboratory method blanks:

Analyte	Maximum Concentration (ug/L)	Action Level (aqueous) (ug/L)
Cadmium	0.46	2.3
Chromium	6.6	33.0

An action level of 5X the maximum concentration has been used to evaluate the sample data for blank contamination. Sample aliquot and dilution factors were taken into consideration when determining blank contamination. Positive results less than the blank action levels were qualified, "U", as nondetected due to blank contamination.

General Chemistry: Chloride, Sulfate, Sulfide, Nitrate

Data reported for this fraction were found to be acceptable.

Total Organic Carbon

TOC fraction for H10-GW-MW14-05 was preserved upon receipt by the laboratory. The positive result was qualified as estimated, "J". It should also be noted that the field duplicate sample was neither analyzed for TOC nor was it requested on the Chain of Custody record.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Metals were detected in the laboratory blanks.

Other Factors Affecting Data Quality: TOC fraction for H10-GW-MW14-05 was preserved upon receipt by the laboratory.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Inorganic Data Validation (2/94), and the Navy IRCDQM (9/99) NFESC guidelines. The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC guidelines and the Quality Assurance Project Plan (QAPP)."

Elena Rodriguez
Tetra Tech NUS

Elena Rodriguez

TetraTech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:
1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

Method Blank Summary

Job Number: F8739
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2630-MB	AA006166.D	1	01/26/01	MRE	01/25/01	OP2630	GAA228

The QC reported here applies to the following samples:

Method: EPA 8310

F8739-1, F8739-2, F8739-3, F8739-4, F8739-5, F8739-6

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	81%	29-133%
92-94-4	p-Terphenyl	68%	33-133%

Method Blank Summary

Job Number: F8759
Account: ALSE Accutest Laboratories Southeast, Inc.
Project: TETRFLJX: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGH697-MB1	GH24811.D	1	01/29/01	XPL	n/a	n/a	GGH697

The QC reported here applies to the following samples: **Method: DAI**

GGH697-BS, E84768-17MS, E84768-17MSD

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	

CAS No.	Surrogate Recoveries		Limits
111-27-3	Hexanol	107%	75-125%

Method Blank Summary

Job Number: F8739
Account: ALSE Accutest Laboratories Southeast, Inc.
Project: TETRFLJX: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGH696-MB1	GH24760.D	1	01/24/01	XPL	n/a	n/a	GGH696

The QC reported here applies to the following samples: **Method:** DAI

GGH696-BS, E84580-7MS, E84580-7MSD

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	

CAS No.	Surrogate Recoveries		Limits
111-27-3	Hexanol	76%	75-125%

Method Blank Summary

Job Number: F8739
Account: ALSE Accutest Laboratories Southeast, Inc.
Project: TETRFLJX: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGH696-MB4	GH24807.D	1	01/29/01	XPL	n/a	n/a	GGH696

The QC reported here applies to the following samples: **Method: DAI**

F8739-1

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	

CAS No.	Surrogate Recoveries		Limits
111-27-3	Hexanol	80%	75-125%

Method Blank Summary

Job Number: F8739
Account: ALSE Accutest Laboratories Southeast, Inc.
Project: TETRFLJX: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGH696-MB3	GH24798.D	1	01/26/01	XPL	n/a	n/a	GGH696

The QC reported here applies to the following samples: **Method: DAI**

F8739-2, F8739-4, F8739-5, F8739-6

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	

CAS No.	Surrogate Recoveries		Limits
111-27-3	Hexanol	78%	75-125%

Method Blank Summary

Job Number: F8739
Account: ALSE Accutest Laboratories Southeast, Inc.
Project: TETRFLJX: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGH697-MB1	GH24811.D	1	01/29/01	XPL	n/a	n/a	GGH697

The QC reported here applies to the following samples: **Method: DAI**

GGH697-BS, E84768-17MS, E84768-17MSD

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries		Limits
111-27-3	Hexanol	107%	75-125%

Method Blank Summary

Job Number: F8739
Account: ALSE Accutest Laboratories Southeast, Inc.
Project: TETRFLJX: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGH696-MB1	GH24760.D	1	01/24/01	XPL	n/a	n/a	GGH696

The QC reported here applies to the following samples: **Method: DAI**

GGH696-BS, E84580-7MS, E84580-7MSD

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries		Limits
111-27-3	Hexanol	76%	75-125%

Method Blank Summary

Job Number: F8739
Account: ALSE Accutest Laboratories Southeast, Inc.
Project: TETRFLUX: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGH696-MB4	GH24807.D	1	01/29/01	XPL	n/a	n/a	GGH696

The QC reported here applies to the following samples: **Method: DAI**

F8739-1

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries		Limits
111-27-3	Hexanol	80%	75-125%

Method Blank Summary

Job Number: F8739
Account: ALSE Accutest Laboratories Southeast, Inc.
Project: TETRFLJX: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGH696-MB3	GH24798.D	1	01/26/01	XPL	n/a	n/a	GGH696

The QC reported here applies to the following samples: **Method: DAI**

F8739-2, F8739-4, F8739-5, F8739-6

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries		Limits
111-27-3	Hexanol	78%	75-125%

Method Blank Summary

Job Number: F8739
Account: TETRFLJX Tetra-Tech, NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GXY3-MB	XY000068.D1		01/25/01	RAW	n/a	n/a	GXY3

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

F8739-1, F8739-2, F8739-3, F8739-4, F8739-5, F8739-6

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	ND	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

Method Blank Summary

Job Number: F8739
Account: TETRFLJX Tetra-Tech.NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2613-MB	L006208.D	1	01/26/01	ME	01/23/01	OP2613	SL375

The QC reported here applies to the following samples: **Method: SW846 8270C**

F8739-1, F8739-2, F8739-3, F8739-4, F8739-5, F8739-6

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	ug/l	
	3&4-Methylphenol	ND	5.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
86-74-8	Carbazole	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	57%	21-100%
4165-62-2	Phenol-d5	38%	10-94%
118-79-6	2,4,6-Tribromophenol	91%	10-123%
4165-60-0	Nitrobenzene-d5	89%	35-114%
321-60-8	2-Fluorobiphenyl	79%	43-116%
1718-51-0	Terphenyl-d14	88%	33-141%

Method Blank Summary

Job Number: F8739
Account: TETRFLJX Tetra-Tech.NUS
Project: NAS Jax-Hange: 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VC99-MB	C0002188.D	1	01/22/01	JG	n/a	n/a	VC99

The QC reported here applies to the following samples: **Method: SW846 8260B**

F8739-1, F8739-2, F8739-4, F8739-5, F8739-6, F8739-7

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	103%	80-120%
17060-07-0	1,2-Dichloroethane-D4	104%	69-128%
2037-26-5	Toluene-D8	99%	80-120%
460-00-4	4-Bromofluorobenzene	98%	80-120%

Method Blank Summary

Job Number: F8739
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VB137-MB	B003586.D	1	01/23/01	JG	n/a	n/a	VB137

The QC reported here applies to the following samples: **Method:** SW846 8260B

F8739-1, F8739-2, F8739-3, F8739-6

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	104%	80-120%
17060-07-0	1,2-Dichloroethane-D4	99%	69-128%
2037-26-5	Toluene-D8	97%	80-120%
460-00-4	4-Bromofluorobenzene	97%	80-120%

Units	Sample	Lab Id	Qc Type	Sdg	Sor	Samp Date	Extr Date	Anal Date	TO EXTR_DATE	TO ANAL_DATE	TO ANAL
UG/L	H10-GW-MW14-05	F8739-1	NORMAL	F8739	OS	01/18/01	01/23/01	01/26/01	5	3	8
UG/L	H10-GW-MW15-05	F8739-4	NORMAL	F8739	OS	01/18/01	01/23/01	01/27/01	5	4	9
UG/L	H10-GW-MW18-05	F8739-3	NORMAL	F8739	OS	01/18/01	01/23/01	01/27/01	5	4	9
UG/L	H10-DUP1-05	F8739-2	NORMAL	F8739	OV	01/18/01	/ /	01/22/01	0	0	4
UG/L	H10-GW-MW09-05	F8739-5	NORMAL	F8739	OV	01/18/01	/ /	01/22/01	0	0	4
UG/L	H10-GW-MW12-05	F8739-6	NORMAL	F8739	OV	01/18/01	/ /	01/22/01	0	0	4
UG/L	H10-GW-MW14-05	F8739-1	NORMAL	F8739	OV	01/18/01	/ /	01/22/01	0	0	4
UG/L	H10-GW-MW15-05	F8739-4	NORMAL	F8739	OV	01/18/01	/ /	01/22/01	0	0	4
UG/L	H10-GW-MW18-05	F8739-3	NORMAL	F8739	OV	01/18/01	/ /	01/23/01	0	0	5
UG/L	TRIP BLANK-011801	F8739-7	NORMAL	F8739	OV	01/18/01	/ /	01/22/01	0	0	4
UG/L	H10-DUP1-05	F8739-2	NORMAL	F8739	PAH	01/18/01	01/25/01	01/26/01	7	1	8
UG/L	H10-GW-MW09-05	F8739-5	NORMAL	F8739	PAH	01/18/01	01/25/01	01/26/01	7	1	8
UG/L	H10-GW-MW12-05	F8739-6	NORMAL	F8739	PAH	01/18/01	01/25/01	01/26/01	7	1	8
UG/L	H10-GW-MW14-05	F8739-1	NORMAL	F8739	PAH	01/18/01	01/25/01	01/26/01	7	1	8
UG/L	H10-GW-MW15-05	F8739-4	NORMAL	F8739	PAH	01/18/01	01/25/01	01/26/01	7	1	8
UG/L	H10-GW-MW18-05	F8739-3	NORMAL	F8739	PAH	01/18/01	01/25/01	01/26/01	7	1	8
MG/L	H10-DUP1-05	F8739-2	NORMAL	F8739	SO4	01/18/01	01/24/01	01/24/01	6	0	6
MG/L	H10-GW-MW09-05	F8739-5	NORMAL	F8739	SO4	01/18/01	01/29/01	01/29/01	11	0	11
MG/L	H10-GW-MW12-05	F8739-6	NORMAL	F8739	SO4	01/18/01	01/29/01	01/29/01	11	0	11
MG/L	H10-GW-MW14-05	F8739-1	NORMAL	F8739	SO4	01/18/01	01/24/01	01/24/01	6	0	6
MG/L	H10-GW-MW15-05	F8739-4	NORMAL	F8739	SO4	01/18/01	01/24/01	01/24/01	6	0	6
MG/L	H10-GW-MW18-05	F8739-3	NORMAL	F8739	SO4	01/18/01	01/24/01	01/24/01	6	0	6
MG/L	H10-GW-MW14-05	F8739-1	NORMAL	F8739	TOC	01/18/01	02/03/01	02/03/01	16	0	16

Units	Sample	Lab Id	Qc Type	Sdg		Samp Date	Extr Date	Anls Date	TO EXTR_DATE	TO ANAL_DATE	TO [illegible]DATE
MG/L	H10-DUP1-05	F8739-2	NORMAL	F8739	HSUL	01/18/01	/ /	01/22/01	0	0	4
MG/L	H10-GW-MW09-05	F8739-5	NORMAL	F8739	HSUL	01/18/01	/ /	01/22/01	0	0	4
MG/L	H10-GW-MW12-05	F8739-6	NORMAL	F8739	HSUL	01/18/01	/ /	01/22/01	0	0	4
MG/L	H10-GW-MW14-05	F8739-1	NORMAL	F8739	HSUL	01/18/01	/ /	01/22/01	0	0	4
MG/L	H10-GW-MW15-05	F8739-4	NORMAL	F8739	HSUL	01/18/01	/ /	01/22/01	0	0	4
MG/L	H10-GW-MW18-05	F8739-3	NORMAL	F8739	HSUL	01/18/01	/ /	01/22/01	0	0	4
UG/L	H10-DUP1-05	F8739-2	NORMAL	F8739	M	01/18/01	01/22/01	01/23/01	4	1	5
UG/L	H10-GW-MW09-05	F8739-5	NORMAL	F8739	M	01/18/01	01/22/01	01/23/01	4	1	5
UG/L	H10-GW-MW12-05	F8739-6	NORMAL	F8739	M	01/18/01	01/22/01	01/23/01	4	1	5
UG/L	H10-GW-MW14-05	F8739-1	NORMAL	F8739	M	01/18/01	01/22/01	01/23/01	4	1	5
UG/L	H10-GW-MW15-05	F8739-4	NORMAL	F8739	M	01/18/01	01/22/01	01/23/01	4	1	5
UG/L	H10-GW-MW18-05	F8739-3	NORMAL	F8739	M	01/18/01	01/22/01	01/23/01	4	1	5
UG/L	H10-DUP1-05	F8739-2	NORMAL	F8739	METH	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-GW-MW09-05	F8739-5	NORMAL	F8739	METH	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-GW-MW12-05	F8739-6	NORMAL	F8739	METH	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-GW-MW14-05	F8739-1	NORMAL	F8739	METH	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-GW-MW15-05	F8739-4	NORMAL	F8739	METH	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-GW-MW18-05	F8739-3	NORMAL	F8739	METH	01/18/01	/ /	01/25/01	0	0	7
MG/L	H10-DUP1-05	F8739-2	NORMAL	F8739	NTA	01/18/01	01/20/01	01/20/01	2	0	2
MG/L	H10-GW-MW09-05	F8739-5	NORMAL	F8739	NTA	01/18/01	01/20/01	01/20/01	2	0	2
MG/L	H10-GW-MW12-05	F8739-6	NORMAL	F8739	NTA	01/18/01	01/21/01	01/21/01	3	0	3
MG/L	H10-GW-MW14-05	F8739-1	NORMAL	F8739	NTA	01/18/01	01/20/01	01/20/01	2	0	2
MG/L	H10-GW-MW15-05	F8739-4	NORMAL	F8739	NTA	01/18/01	01/20/01	01/20/01	2	0	2
MG/L	H10-GW-MW18-05	F8739-3	NORMAL	F8739	NTA	01/18/01	01/20/01	01/20/01	2	0	2
UG/L	H10-DUP1-05	F8739-2	NORMAL	F8739	OS	01/18/01	01/23/01	01/27/01	5	4	9
UG/L	H10-GW-MW09-05	F8739-5	NORMAL	F8739	OS	01/18/01	01/23/01	01/27/01	5	4	9
UG/L	H10-GW-MW12-05	F8739-6	NORMAL	F8739	OS	01/18/01	01/23/01	01/27/01	5	4	9
UG/L	H10-GW-MW12-05	F8739-6									2

F8739

HOLDING TIME

02/28/01

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UG/L	H10-DUP1-05	F8739-2	NORMAL	F8739	ALC	01/18/01	/ /	01/26/01	0	0	8
UG/L	H10-GW-MW09-05	F8739-5	NORMAL	F8739	ALC	01/18/01	/ /	01/26/01	0	0	8
UG/L	H10-GW-MW12-05	F8739-6	NORMAL	F8739	ALC	01/18/01	/ /	01/26/01	0	0	8
UG/L	H10-GW-MW14-05	F8739-1	NORMAL	F8739	ALC	01/18/01	/ /	01/29/01	0	0	11
UG/L	H10-GW-MW15-05	F8739-4	NORMAL	F8739	ALC	01/18/01	/ /	01/26/01	0	0	8
UG/L	H10-GW-MW18-05	F8739-3	NORMAL	F8739	ALC	01/18/01	/ /	02/02/01	0	0	15
MG/L	H10-DUP1-05	F8739-2	NORMAL	F8739	CL	01/18/01	01/22/01	01/22/01	4	0	4
MG/L	H10-GW-MW09-05	F8739-5	NORMAL	F8739	CL	01/18/01	01/22/01	01/22/01	4	0	4
MG/L	H10-GW-MW12-05	F8739-6	NORMAL	F8739	CL	01/18/01	01/22/01	01/22/01	4	0	4
MG/L	H10-GW-MW14-05	F8739-1	NORMAL	F8739	CL	01/18/01	01/22/01	01/22/01	4	0	4
MG/L	H10-GW-MW15-05	F8739-4	NORMAL	F8739	CL	01/18/01	01/22/01	01/22/01	4	0	4
MG/L	H10-GW-MW18-05	F8739-3	NORMAL	F8739	CL	01/18/01	01/22/01	01/22/01	4	0	4
UG/L	H10-DUP1-05	F8739-2	NORMAL	F8739	ETHA	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-GW-MW09-05	F8739-5	NORMAL	F8739	ETHA	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-GW-MW12-05	F8739-6	NORMAL	F8739	ETHA	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-GW-MW14-05	F8739-1	NORMAL	F8739	ETHA	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-GW-MW15-05	F8739-4	NORMAL	F8739	ETHA	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-GW-MW18-05	F8739-3	NORMAL	F8739	ETHA	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-DUP1-05	F8739-2	NORMAL	F8739	ETHE	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-GW-MW09-05	F8739-5	NORMAL	F8739	ETHE	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-GW-MW12-05	F8739-6	NORMAL	F8739	ETHE	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-GW-MW14-05	F8739-1	NORMAL	F8739	ETHE	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-GW-MW15-05	F8739-4	NORMAL	F8739	ETHE	01/18/01	/ /	01/25/01	0	0	7
UG/L	H10-GW-MW18-05	F8739-3	NORMAL	F8739	ETHE	01/18/01	/ /	01/25/01	0	0	7

TETRA TECH NUS, INC.

CHAIN OF CUSTODY | NUMBER

PAGE ___ OF ___

PROJECT NO: N3995	SITE NAME: NAS JAX - HANGAR 1000
SAMPLERS (SIGNATURE) Alan Pate	
PROJECT MANAGER AND PHONE NUMBER	MARK PETERSON 904-281-0400
FIELD OPERATIONS LEADER AND PHONE NUMBER	ALAN PATE 904-281-0400
CARRIER/WAYBILL NUMBER	FED EX
LABORATORY NAME AND CONTACT:	ACCUTEST - LINDA WILLIAMS
ADDRESS	4405 VINELAND Rd #C-15
CITY, STATE	ORLANDO, FL 32811

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

F8739

	VOCs 8260B	METHANE/ETHANE/ETHENE RSK 147/175	ALCOHOLS 8015B	SVOCs 8270	PAHs 8310	METALS Cd/Cr 6010B	SULFIDE	ANIONS SO4/Cl/NO3
CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	G	G	G	G	P	P	P
PRESERVATIVE USED	HCL	HCL	—	—	—		HNO3/NaOH	

DATE	YEAR 2001 TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	** VOCs 8260B	** METHANE/ETHANE/ETHENE RSK 147/175	** ALCOHOLS 8015B	SVOCs 8270	PAHs 8310	METALS Cd/Cr 6010B	SULFIDE	ANIONS SO4/Cl/NO3	COMMENTS
1/18	1430	H10-GW-MW09-05	H_2O	G	16	3	3	3	2	2	1	1	1	COOL TO 4°C
1/18	1215	H10-GW-MW12-05	H_2O	G	16	3	3	3	2	2	1	1	1	

SEE ATTACHED QAPP TABLE FOR ANALYTICAL REQUIREMENTS

** ALL VIALS IN SEPARATE COOLER

1. RELINQUISHED BY Alan Pate	DATE 1/18/01	TIME 1430	1. RECEIVED BY Mike [illegible]	DATE 1/19/01	TIME 1015
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

4.6 C°

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3

FORM NO. TINUS-

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER | PAGE ___ OF ___

PROJECT NO: N3995

SITE NAME: NAS JAX - HANGAR 1000

PROJECT MANAGER AND PHONE NUMBER: MARK PETERSON 904-281-0400

LABORATORY NAME AND CONTACT: ACCUTEST LABS - LINDA WILLIAMS

SAMPLERS (SIGNATURE): Alan G Pate

FIELD OPERATIONS LEADER AND PHONE NUMBER: ALAN PATE 904-281-0400

ADDRESS: 4405 VINELAND Rd #C-15

CARRIER/WAYBILL NUMBER: FEDEX

CITY, STATE: ORLANDO, FL 32811

STANDARD TAT ☒
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

Alan Pate

F8739

		VOCs 8260B	METHANE/ETHANE/ETHENE RSK 147/175	ALCOHOLS 8015B	SVOCs 8270C	PAHs 8310	METALS: Cd/Cr 6010B	SULFIDE	ANIONS: SO4, Cl NO3	
CONTAINER TYPE PLASTIC (P) or GLASS (G)		G	G	G	G	G	P	P	P	
PRESERVATIVE USED		HCL	HCL	—	—	—	HNO3	NaOH	—	

DATE YEAR	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	**VOCs 8260B	**METHANE/ETHANE/ETHENE RSK 147/175	**ALCOHOLS 8015B	SVOCs 8270C	PAHs 8310	METALS: Cd/Cr 6010B	SULFIDE	ANIONS: SO4, Cl NO3	COMMENTS
1/18	0930	H10-GW-MW18-05	H2O	G	16	3	3	3	2	2	1	1	1	COOL TO 4°C
1/18	1055	H10-GW-MW15-05	H2O	G	16	3	3	3	2	2	1	1	1	
														SEE ATTACHED
														QAPP TABLE
														FOR ANALYTICAL
														REQUIREMENTS

** ALL VIALS IN SEPARATE COOLER

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY Alan G Pate	1/18/01	1630	1. RECEIVED BY Mike [illegible]	1/19/01	1015
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

4.8

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/99
FORM NO. TtNUS-001

TETRA TECH NUS, INC. **CHAIN OF CUSTODY** | **NUMBER** | **PAGE ____ OF ____**

PROJECT NO: N3995	SITE NAME: WASJAX - HANGAR 1000
PROJECT MANAGER AND PHONE NUMBER	MARK PETERSON 904-281-0400
FIELD OPERATIONS LEADER AND PHONE NUMBER	ALAN PATE 904-281-0400
CARRIER/WAYBILL NUMBER	FED EX
LABORATORY NAME AND CONTACT:	ACCUTEST LABS / LINDA WILLIAMS
ADDRESS	4405 VINELAND Rd #C-15
CITY, STATE	ORLANDO, FL 32811

SAMPLERS (SIGNATURE) Alan L Pate

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

F8739

DATE YEAR 200_	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	VOCS 8260B	METHANE/ETHANE/ETHENE RSK 147/175	ALCOHOLS 8015B	SVOCS 8270C	PAHS 8310	METALS: Cd/Cr 6010B	SULFIDE	ANIONS: SO4, Cl NO3	COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)						G	G	G	G	C	P	P	P	
PRESERVATIVE USED						HCL	—	—	—	—	HNO3	NaOH	—	
1/18	0805	H10-GW-MW14-05*	H2O	G	16	3	3	3	2	2	1	1	1	COOL TO 4°C
		~~H10-GW-MH~~												
1/18	0000	H10-DUP1-05	H2O	G	16	3	3	3	2	2	1	1	1	SEE ATTACHED
1/18	0930	H10-GW-MW18-05	H2O	G	9	3	3	3	2	2	1	1	1	QAPP TABLE
1/18	1055	H10-GW-MW15-05	H2O	G	9	3	3	3	2	2	1	1	1	FOR ANALYTICAL
1/18	1430	H10-GW-MW09-05	H2O	G	9	3	3	3	2	2	1	1	1	REQUIREMENTS
1/18	1215	H10-GW-MW12-05	H2O	G	9	3	3	3	2	2	1	1	1	
1/18		TRIP BLANK	H2O		1	1								

*EXTRA AMBER FOR TOC ANALYSIS NEEDS PRESERVATIVE

1. RELINQUISHED BY Alan Pate	DATE 1/18/01	TIME 1030	1. RECEIVED BY Mike Fenell	DATE 1/19/01	TIME 1015
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS 4.8°C

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/9

FORM NO. TINUS-0

ACCUTEST®

CHAIN OF CUSTODY

4405 VINELAND ROAD • SUITE C-15
ORLANDO, FL 32811
TEL: 407-425-6700 • FAX: 407-425-0707

ACCUTEST JOB #:

ACCUTEST QUOTE #:

CLIENT INFORMATION

NAME: ALSE

ADDRESS

CITY STATE ZIP

SEND REPORT TO:

PHONE #

FACILITY INFORMATION

F8739

PROJECT NAME

LOCATION

PROJECT NO.

FAX #

ANALYTICAL INFORMATION

ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	COLLECTION DATE	COLLECTION TIME	SAMPLED BY:	MATRIX	# OF BOTTLES	HCl	NaOH	HNO3	H2SO4	NONE	Chloride	TOC
	F8739-1	1/18/01		TMVS	W	4	X				X	X	X
	-2					3					X	X	
	-3											X	
	-4											X	
	-5											X	
	-6											X	

MATRIX CODES

DW - DRINKING WATER
GW - GROUND WATER
WW - WASTE WATER
SO - SOIL
SL - SLUDGE
OI - OIL
LIQ - OTHER LIQUID
SOL - OTHER SOLID

LAB USE ONLY

DATA TURNAROUND INFORMATION

- ☒ STANDARD (14 Days)
- ☐ 48 HOUR RUSH
- ☐ 24 HOUR EMERGENCY
- ☐ OTHER

APPROVED BY:

EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED

DATA DELIVERABLE INFORMATION

- ☒ STANDARD FT1
- ☐ COMMERCIAL "B"
- ☐ DISK DELIVERABLE
- ☐ STATE FORMS
- ☐ OTHER (SPECIFY)

COMMENTS/REMARKS

NJ

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESION, INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER:	DATE TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
1. [signature]	1/19/01 1501	1.	2.		2.
RELINQUISHED BY: 3.	DATE TIME:	RECEIVED BY: 3.	RELINQUISHED BY: 4.	DATE TIME:	RECEIVED BY: 4.
RELINQUISHED BY: 5.	DATE TIME:	RECEIVED BY: 5.	SEAL #	PRESERVE WHERE APPLICABLE	ON ICE / TEMPERATURE

ACCUTEST LABORATORIES SOUTHEAST
SAMPLE RECEIPT CONFIRMATION

Accutest Job Number: F8739

Client/Project: ITNUS N3995

Date/Time Received: 1/19/01 1015

Method of Delivery: Fed Ex Greyhound UPS Pickup Delivery Other

Air Bill Number: 8219540722335

Cooler Temperatures: 4.8, 4.8, 4.6

Custody Seals Intact?	YES	NO
Chain Of Custody Provided?	YES	NO
Chain Of Custody Match Bottles?	YES	NO
Sample Labels Present?	YES	NO
Are All Bottles Unbroken?	YES	NO
Proper Preservative?	~~YES~~ * 3/5/01	NO *
Correct Containers Used?	YES	NO
Sufficient Sample Volume?	YES	NO

Number of Encores: Ø

COMMENTS:
* An extra amber was sent for TOC for F8739-1. Was preserved ~~in house~~ at the lab with HCl on 3/5/01

Signature: [signature] Date: 1/19/01

FIELD DUPLICATE SAMPLES

January 2001

Hangar 1000, NAS Jacksonville

Jacksonville, FL

Fraction	Analyte	H10-MW14-05	H10-DUP1-05	RPD
Volatiles	1,1-Dichloroethane	182	188	3%
	1,1-Dichloroethene	424	431	2%
	1,2-Dichloroethane	1.9 J	2	5%
	1,2-Dichloroethene (total)	1.4 J	1.5 J	7%
	Freon 113	87.9	99.1	12%
	1,1,1-Trichloroethane	17.0	17.5	3%
	1,1,2-Trichloroethane	1.9 J	2.0	5%
	Toluene	1.9 J	2.1	10%
	Trichlorethene	266	273	3%
Gases	Methane	206	187	10%
Misc.	Chloride	23.0	21.5	7%
	Hydrogen Sulfide	ND	2.0	NC
	TOC	5.4	NS	NC

Fraction	Analyte	H10-MW19-05	H10-DUP2-05	RPD
SVOCs	Napthalene	1.9 J	2.1 J	10%
VOCs	1,1-Dichloroethane	98.9	110	11%
	1,1-Dichloroethene	190	188	1%
	1,2-Dichloroethane	1.5 J	1.4 J	7%
	1,2-Dichloroethene (total)	52.7	52.4	1%
	Freon 113	447	438	2%
	Tetrachloroethene	3	3	0%
	1,1,2-Trichloroethane	2.0 U	1.0 J	NC
	Toluene	1.8 J	1.7 J	6%
	Trichlorethene	229	226	1%
	Vinyl chloride	0.60 J	0.60 J	0%
Gases	Methane	105	104	1%
Metals	Chromium	3.2 B	3.6 B	12%
Misc.	Chloride	19	20	5%
	Hydrogen Sulfide	2.7	ND	NC
	TOC	3.5	NS	NC

NS = not sampled

ND = not detected

NC = not calculated

J = estimated

RPD = Relative Percent Difference

Acceptable RPD: 0-30% aqueous

APPENDIX C

SUPPORT DOCUMENTATION

Report of Analysis

Client Sample ID:	H10-GW-MW18-05		
Lab Sample ID:	F8739-3	Date Sampled:	01/18/01
Matrix:	AQ - Ground Water	Date Received:	01/19/01
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA006175.D	1	01/26/01	MRE	01/25/01	OP2630	GAA228
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	90%		29-133%
92-94-4	p-Terphenyl	78%		33-133%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW15-05			
Lab Sample ID:	F8739-4		Date Sampled:	01/18/01
Matrix:	AQ - Ground Water		Date Received:	01/19/01
Method:	EPA 8310 SW846 3510C		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA006177.D	1	01/26/01	MRE	01/25/01	OP2630	GAA228
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	2.6	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	86%		29-133%
92-94-4	p-Terphenyl	74%		33-133%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW14-05	Date Sampled:	01/18/01
Lab Sample ID:	F8739-1	Date Received:	01/19/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	EPA 8310 SW846 3510C		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA006173.D	1	01/26/01	MRE	01/25/01	OP2630	GAA228
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	83%		29-133%
92-94-4	p-Terphenyl	71%		33-133%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW12-05		
Lab Sample ID:	F8739-6	Date Sampled:	01/18/01
Matrix:	AQ - Ground Water	Date Received:	01/19/01
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	AA006179.D	1	01/26/01	MRE	01/25/01	OP2630	GAA228
Run #2 [b]	EE001633.D	1	01/30/01	MRE	01/29/01	OP2649	GEE83

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	18%	92%	29-133%
92-94-4	p-Terphenyl	17%	65%	33-133%

(a) Confirmed by re-extraction and reanalysis.
(b) Re-extracted out of hold time.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW09-05		
Lab Sample ID:	F8739-5	Date Sampled:	01/18/01
Matrix:	AQ - Ground Water	Date Received:	01/19/01
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA006178.D	1	01/26/01	MRE	01/25/01	OP2630	GAA228
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	85%		29-133%
92-94-4	p-Terphenyl	84%		33-133%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-DUP1-05			
Lab Sample ID:	F8739-2		Date Sampled:	01/18/01
Matrix:	AQ - Ground Water		Date Received:	01/19/01
Method:	EPA 8310 SW846 3510C		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA006174.D	1	01/26/01	MRE	01/25/01	OP2630	GAA228
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	84%		29-133%
92-94-4	p-Terphenyl	80%		33-133%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW18-05		
Lab Sample ID:	F8739-3	Date Sampled:	01/18/01
Matrix:	AQ - Ground Water	Date Received:	01/19/01
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L006231.D	1	01/27/01	ME	01/23/01	OP2613	SL376
Run #2	L006339.D	1	02/01/01	ME	01/23/01	OP2614	SL380

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	ug/l	
	3&4-Methylphenol	ND	4.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	ug/l	
87-86-5	Pentachlorophenol	ND a	1.0	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
86-74-8	Carbazole	ND	4.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND a	0.20	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	4.0	ug/l	
110-86-1	Pyridine	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	55%		21-100%
4165-62-2	Phenol-d5	37%		10-94%
118-79-6	2,4,6-Tribromophenol	98%		10-123%
4165-60-0	Nitrobenzene-d5	93%		35-114%
321-60-8	2-Fluorobiphenyl	84%		43-116%
1718-51-0	Terphenyl-d14	90%		33-141%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW15-05		
Lab Sample ID:	F8739-4	Date Sampled:	01/18/01
Matrix:	AQ - Ground Water	Date Received:	01/19/01
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L006232.D	1	01/27/01	ME	01/23/01	OP2613	SL376
Run #2	L006340.D	1	02/01/01	ME	01/23/01	OP2614	SL380

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.5	ug/l	
95-48-7	2-Methylphenol	ND	5.5	ug/l	
	3&4-Methylphenol	ND	4.4	ug/l	
100-02-7	4-Nitrophenol	ND	28	ug/l	
87-86-5	Pentachlorophenol	ND a	1.1	ug/l	
108-95-2	Phenol	ND	5.5	ug/l	
86-74-8	Carbazole	ND	4.4	ug/l	
121-14-2	2,4-Dinitrotoluene	ND a	0.22	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	4.4	ug/l	
110-86-1	Pyridine	ND	5.5	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	50%		21-100%
4165-62-2	Phenol-d5	34%		10-94%
118-79-6	2,4,6-Tribromophenol	86%		10-123%
4165-60-0	Nitrobenzene-d5	81%		35-114%
321-60-8	2-Fluorobiphenyl	72%		43-116%
1718-51-0	Terphenyl-d14	78%		33-141%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW14-05		
Lab Sample ID:	F8739-1	Date Sampled:	01/18/01
Matrix:	AQ - Ground Water	Date Received:	01/19/01
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L006221.D	1	01/26/01	ME	01/23/01	OP2613	SL375
Run #2	L006337.D	1	02/01/01	ME	01/23/01	OP2614	SL380

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.5	ug/l	
95-48-7	2-Methylphenol	ND	5.5	ug/l	
	3&4-Methylphenol	ND	4.4	ug/l	
100-02-7	4-Nitrophenol	ND	28	ug/l	
87-86-5	Pentachlorophenol	ND a	1.1	ug/l	
108-95-2	Phenol	ND	5.5	ug/l	
86-74-8	Carbazole	ND	4.4	ug/l	
121-14-2	2,4-Dinitrotoluene	ND a	0.22	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	4.4	ug/l	
110-86-1	Pyridine	ND	5.5	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	40%		21-100%
4165-62-2	Phenol-d5	27%		10-94%
118-79-6	2,4,6-Tribromophenol	89%		10-123%
4165-60-0	Nitrobenzene-d5	66%		35-114%
321-60-8	2-Fluorobiphenyl	62%		43-116%
1718-51-0	Terphenyl-d14	83%		33-141%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW12-05		
Lab Sample ID:	F8739-6	Date Sampled:	01/18/01
Matrix:	AQ - Ground Water	Date Received:	01/19/01
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L006234.D	1	01/27/01	ME	01/23/01	OP2613	SL376
Run #2	L006344.D	1	02/01/01	ME	01/23/01	OP2614	SL380

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	ug/l	
	3&4-Methylphenol	ND	4.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	ug/l	
87-86-5	Pentachlorophenol	ND a	1.0	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
86-74-8	Carbazole	ND	4.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND a	0.20	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	4.0	ug/l	
110-86-1	Pyridine	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	41%		21-100%
4165-62-2	Phenol-d5	26%		10-94%
118-79-6	2,4,6-Tribromophenol	81%		10-123%
4165-60-0	Nitrobenzene-d5	70%		35-114%
321-60-8	2-Fluorobiphenyl	66%		43-116%
1718-51-0	Terphenyl-d14	73%		33-141%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW09-05		
Lab Sample ID:	F8739-5	Date Sampled:	01/18/01
Matrix:	AQ - Ground Water	Date Received:	01/19/01
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L006233.D	1	01/27/01	ME	01/23/01	OP2613	SL376
Run #2	L006341.D	1	02/01/01	ME	01/23/01	OP2614	SL380

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.5	ug/l	
95-48-7	2-Methylphenol	ND	5.5	ug/l	
	3&4-Methylphenol	ND	4.4	ug/l	
100-02-7	4-Nitrophenol	ND	28	ug/l	
87-86-5	Pentachlorophenol	ND a	1.0	ug/l	
108-95-2	Phenol	ND	5.5	ug/l	
86-74-8	Carbazole	ND	4.4	ug/l	
121-14-2	2,4-Dinitrotoluene	ND a	0.20	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	4.4	ug/l	
110-86-1	Pyridine	ND	5.5	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	37%		21-100%
4165-62-2	Phenol-d5	28%		10-94%
118-79-6	2,4,6-Tribromophenol	75%		10-123%
4165-60-0	Nitrobenzene-d5	62%		35-114%
321-60-8	2-Fluorobiphenyl	55%		43-116%
1718-51-0	Terphenyl-d14	72%		33-141%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-DUP1-05			
Lab Sample ID:	F8739-2		Date Sampled:	01/18/01
Matrix:	AQ - Ground Water		Date Received:	01/19/01
Method:	SW846 8270C SW846 3510C		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L006222.D	1	01/27/01	ME	01/23/01	OP2613	SL375
Run #2	L006338.D	1	02/01/01	ME	01/23/01	OP2614	SL380

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	ug/l	
	3&4-Methylphenol	ND	4.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	ug/l	
87-86-5	Pentachlorophenol	ND a	1.0	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
86-74-8	Carbazole	ND	4.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND a	0.20	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	4.0	ug/l	
110-86-1	Pyridine	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	44%		21-100%
4165-62-2	Phenol-d5	29%		10-94%
118-79-6	2,4,6-Tribromophenol	84%		10-123%
4165-60-0	Nitrobenzene-d5	75%		35-114%
321-60-8	2-Fluorobiphenyl	69%		43-116%
1718-51-0	Terphenyl-d14	83%		33-141%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	HJ0-GW-MW18-05		
Lab Sample ID:	F8739-3	Date Sampled:	01/18/01
Matrix:	AQ - Ground Water	Date Received:	01/19/01
Method:	RSKSOP-147/175	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000072.D	1	01/25/01	RAW	n/a	n/a	GXY3
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	18.1	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW15-05	Date Sampled:	01/18/01
Lab Sample ID:	F8739-4	Date Received:	01/19/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	RSKSOP-147/175		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000073.D	1	01/25/01	RAW	n/a	n/a	GXY3
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	484	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	1.2	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW14-05		
Lab Sample ID:	F8739-1	Date Sampled:	01/18/01
Matrix:	AQ - Ground Water	Date Received:	01/19/01
Method:	RSKSOP-147/175	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XYO00070.D	1	01/25/01	RAW	n/a	n/a	GXY3
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	206	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW12-05	Date Sampled:	01/18/01
Lab Sample ID:	F8739-6	Date Received:	01/19/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	RSKSOP-147/175		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000075.D	1	01/25/01	RAW	n/a	n/a	GXY3
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	18.8	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW09-05		
Lab Sample ID:	F8739-5	Date Sampled:	01/18/01
Matrix:	AQ - Ground Water	Date Received:	01/19/01
Method:	RSKSOP-147/175	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000074.D	1	01/25/01	RAW	n/a	n/a	GXY3
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	130	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-DUP1-05	Date Sampled:	01/18/01
Lab Sample ID:	F8739-2	Date Received:	01/19/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	RSKSOP-147/175		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000071.D	1	01/25/01	RAW	n/a	n/a	GXY3
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	187	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

Report of Analysis

Client Sample ID:	H10-DUP1-05	Date Sampled:	01/18/01
Lab Sample ID:	F8739-2	Date Received:	01/19/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0002200.D	1	01/22/01	JG	n/a	n/a	VC99
Run #2	B003596.D	5	01/23/01	JG	n/a	n/a	VB137

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	188 a	10	ug/l	
75-35-4	1,1-Dichloroethylene	431 a	10	ug/l	
107-06-2	1,2-Dichloroethane	2.0	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	1.5	4.0	ug/l	J
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	99.1 a	10	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	17.5	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	2.0	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	2.1	2.0	ug/l	
79-01-6	Trichloroethylene	273 a	10	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%	99%	80-120%
17060-07-0	1,2-Dichloroethane-D4	102%	88%	69-128%
2037-26-5	Toluene-D8	97%	100%	80-120%
460-00-4	4-Bromofluorobenzene	101%	95%	80-120%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW09-05	Date Sampled:	01/18/01
Lab Sample ID:	F8739-5	Date Received:	01/19/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0002203.D	1	01/22/01	JG	n/a	n/a	VC99
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	3.5	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	1.8	2.0	ug/l	J
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	3.7	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	59.5	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	5.2	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		80-120%
17060-07-0	1,2-Dichloroethane-D4	103%		69-128%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	98%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW12-05	Date Sampled:	01/18/01
Lab Sample ID:	F8739-6	Date Received:	01/19/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0002204.D	1	01/22/01	JG	n/a	n/a	VC99
Run #2	B003598.D	2	01/23/01	JG	n/a	n/a	VB137

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	49.9	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	133 a	4.0	ug/l	
107-06-2	1,2-Dichloroethane	1.5	2.0	ug/l	J
540-59-0	1,2-Dichloroethene (total)	1.8	4.0	ug/l	J
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	95.1	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	62.1	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	1.4	2.0	ug/l	J
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	94.5	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%	98%	80-120%
17060-07-0	1,2-Dichloroethane-D4	102%	88%	69-128%
2037-26-5	Toluene-D8	97%	99%	80-120%
460-00-4	4-Bromofluorobenzene	98%	96%	80-120%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW14-05		
Lab Sample ID:	F8739-1	Date Sampled:	01/18/01
Matrix:	AQ - Ground Water	Date Received:	01/19/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0002199.D	1	01/22/01	JG	n/a	n/a	VC99
Run #2	B003595.D	5	01/23/01	JG	n/a	n/a	VB137

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	182 a	10	ug/l	
75-35-4	1,1-Dichloroethylene	424 a	10	ug/l	
107-06-2	1,2-Dichloroethane	1.9	2.0	ug/l	J
540-59-0	1,2-Dichloroethene (total)	1.4	4.0	ug/l	J
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	87.9	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	17.0	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	1.9	2.0	ug/l	J
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	1.9	2.0	ug/l	J
79-01-6	Trichloroethylene	266 a	10	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%	99%	80-120%
17060-07-0	1,2-Dichloroethane-D4	103%	90%	69-128%
2037-26-5	Toluene-D8	98%	98%	80-120%
460-00-4	4-Bromofluorobenzene	99%	94%	80-120%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW15-05		
Lab Sample ID:	F8739-4	Date Sampled:	01/18/01
Matrix:	AQ - Ground Water	Date Received:	01/19/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0002202.D	1	01/22/01	JG	n/a	n/a	VC99
Run #2	B003617.D	10	01/24/01	JG	n/a	n/a	VB138

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	39.9	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	65.5	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	65.2	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	50.8	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	2.7	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND [a]	20	ug/l	
108-88-3	Toluene	0.71	2.0	ug/l	J
79-01-6	Trichloroethylene	578 [a]	20	ug/l	
75-01-4	Vinyl chloride	4.7	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%	100%	80-120%
17060-07-0	1,2-Dichloroethane-D4	102%	90%	69-128%
2037-26-5	Toluene-D8	98%	99%	80-120%
460-00-4	4-Bromofluorobenzene	99%	96%	80-120%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW18-05		
Lab Sample ID:	F8739-3	Date Sampled:	01/18/01
Matrix:	AQ - Ground Water	Date Received:	01/19/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B003603.D	1	01/23/01	JG	n/a	n/a	VB137
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	2.3	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	1.6	2.0	ug/l	J
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	1.1	4.0	ug/l	J
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	8.6	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		80-120%
17060-07-0	1,2-Dichloroethane-D4	89%		69-128%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	93%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	F8739-7	Date Sampled:	01/18/01
Matrix:	AQ - Trip Blank Water	Date Received:	01/19/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0002205.D	1	01/22/01	JG	n/a	n/a	VC99
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		80-120%
17060-07-0	1,2-Dichloroethane-D4	103%		69-128%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	98%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-DUP1-05	Date Sampled:	01/18/01
Lab Sample ID:	F8739-2	Date Received:	01/19/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	DAI		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH24800.D	1	01/26/01	ANJ	n/a	n/a	N:GGH696
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	82%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW09-05		
Lab Sample ID:	F8739-5	Date Sampled:	01/18/01
Matrix:	AQ - Ground Water	Date Received:	01/19/01
Method:	DAI	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH24802.D	1	01/26/01	ANJ	n/a	n/a	N:GGH696
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	86%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW12-05	Date Sampled:	01/18/01
Lab Sample ID:	F8739-6	Date Received:	01/19/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	DAI		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH24803.D	1	01/26/01	ANJ	n/a	n/a	N:GGH696
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	106%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW14-05		
Lab Sample ID:	F8739-1	Date Sampled:	01/18/01
Matrix:	AQ - Ground Water	Date Received:	01/19/01
Method:	DAI	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH24808.D	1	01/29/01	ANJ	n/a	n/a	N:GGH696
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	86%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW15-05	Date Sampled:	01/18/01
Lab Sample ID:	F8739-4	Date Received:	01/19/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	DAI		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH24801.D	1	01/26/01	ANJ	n/a	n/a	N:GGH696
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	99%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW18-05		
Lab Sample ID:	F8739-3	Date Sampled:	01/18/01
Matrix:	AQ - Ground Water	Date Received:	01/19/01
Method:	DAI	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GH24921.D	1	02/03/01	ANJ	n/a	n/a	N:GGH697
Run #2 [b]	GH24911.D	1	02/02/01	ANJ	n/a	n/a	N:GGH697

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND [c]	500	ug/l	
71-36-3	n-Butyl Alcohol	ND [c]	500	ug/l	
67-56-1	Methanol	ND [c]	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	55% [d]	58% [d]	75-125%

(a) confirmation run.
(b) Sample analyzed outside the holding time due to schedule error.
(c) Result is from Run# 2
(d) Outside control limits due to matrix interference. Confirmed by reanalysis.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

CTO167 NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8739

SAMPLE NUMBER:	H10-GW-MW15-05			H10-GW-MW18-05								
SAMPLE DATE:	01/18/01			01/18/01			/ /			/ /		
LABORATORY ID:	F8739-4			F8739-3								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	0.0 %			0.0 %			100.0 %			100.0 %		
UNITS:	UG/L			UG/L								
FIELD DUPLICATE OF:												
POLYNUCLEAR AROMATIC HYDROCARBONS	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
1-METHYLNAPHTHALENE	2	U		2	U							
2-METHYLNAPHTHALENE	2	U		2	U							
ACENAPHTHENE	4	U		4	U							
ACENAPHTHYLENE	4	U		4	U							
ANTHRACENE	2	U		2	U							
BENZO(A)ANTHRACENE	0.2	U		2	U							
BENZO(A)PYRENE	0.2	U		0.2	U							
BENZO(B)FLUORANTHENE	0.2	U		0.2	U							
BENZO(G,H,I)PERYLENE	0.2	U		0.2	U							
BENZO(K)FLUORANTHENE	0.2	U		0.2	U							
CHRYSENE	2	U		0.2	U							
DIBENZO(A,H)ANTHRACENE	0.2	U		2	U							
FLUORANTHENE	2	U		0.2	U							
FLUORENE	2	U		2	U							
INDENO(1,2,3-CD)PYRENE	0.2	U		2	U							
NAPHTHALENE	2.6			0.2	U							
PHENANTHRENE	2	U		2	U							
PYRENE	2	U		2	U							

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SAMPLE NUMBER:	H10-DUP1-05			H10-GW-MW09-05			H10-GW-MW12-05			H10-GW-MW14-05		
SAMPLE DATE:	01/18/01			01/18/01			01/18/01			01/18/01		
LABORATORY ID:	F8739-2			F8739-5			F8739-6			F8739-1		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:	H10-GW-MW14-05											
POLYNUCLEAR AROMATIC HYDROCARBONS	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	RESULT	QUAL	CODE
1-METHYLNAPHTHALENE	2	U		2	U		2	U		2	U	
2-METHYLNAPHTHALENE	2	U		2	U		2	U		2	U	
ACENAPHTHENE	4	U		4	U		4	U		4	U	
ACENAPHTHYLENE	4	U		4	U		4	U		4	U	
ANTHRACENE	2	U		2	U		2	U		2	U	
BENZO(A)ANTHRACENE	0.2	U		0.2	U		0.2	U		0.2	U	
BENZO(A)PYRENE	0.2	U		0.2	U		0.2	U		0.2	U	
BENZO(B)FLUORANTHENE	0.2	U		0.2	U		0.2	U		0.2	U	
BENZO(G,H,I)PERYLENE	0.2	U		0.2	U		0.2	U		0.2	U	
BENZO(K)FLUORANTHENE	0.2	U		0.2	U		0.2	U		0.2	U	
CHRYSENE	2	U		2	U		2	U		2	U	
DIBENZO(A,H)ANTHRACENE	0.2	U		0.2	U		0.2	U		0.2	U	
FLUORANTHENE	2	U		2	U		2	U		2	U	
FLUORENE	2	U		2	U		2	U		2	U	
INDENO(1,2,3-CD)PYRENE	0.2	U		0.2	U		0.2	U		0.2	U	
NAPHTHALENE	2	U		2	U		2	U		2	U	
PHENANTHRENE	2	U		2	U		2	U		2	U	
PYRENE	2	U		2	U		2	U		2	U	

SAMPLE NUMBER:	H10-GW-MW15-05			H10-GW-MW18-05								
SAMPLE DATE:	01/18/01			01/18/01			/ /			/ /		
LABORATORY ID:	F8739-4			F8739-3								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	0.0 %			0.0 %			100.0 %			100.0 %		
UNITS:	UG/L			UG/L								
FIELD DUPLICATE OF:												
SEMIVOLATILES	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
2,4-DINITROTOLUENE	0.22	U		0.2	U							
2-CHLOROPHENOL	5.5	U		5	U							
2-METHYLPHENOL	5.5	U		5	U							
3&4-METHYLPHENOL	4.4	U		4	U							
4-NITROPHENOL	28	U		25	U							
CARBAZOLE	4.4	U		4	U							
N-NITROSO-DI-N-PROPYLAMINE	4.4	U		4	U							
PENTACHLOROPHENOL	1.1	U		1	U							
PHENOL	5.5	U		5	U							
PYRIDINE	5.5	U		5	U							

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SAMPLE NUMBER:	H10-DUP1-05			H10-GW-MW09-05			H10-GW-MW12-05			H10-GW-MW14-05		
SAMPLE DATE:	01/18/01			01/18/01			01/18/01			01/18/01		
LABORATORY ID:	F8739-2			F8739-5			F8739-6			F8739-1		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:	H10-GW-MW14-05											
SEMIVOLATILES	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
2,4-DINITROTOLUENE	0.2	U		0.2	U		0.2	U		0.22	U	
2-CHLOROPHENOL	5	U		5.5	U		5	U		5.5	U	
2-METHYLPHENOL	5	U		5.5	U		5	U		5.5	U	
3&4-METHYLPHENOL	4	U		4.4	U		4	U		4.4	U	
4-NITROPHENOL	25	U		28	U		25	U		28	U	
CARBAZOLE	4	U		4.4	U		4	U		4.4	U	
N-NITROSO-DI-N-PROPYLAMINE	4	U		4.4	U		4	U		4.4	U	
PENTACHLOROPHENOL	1	U		1	U		1	U		1.1	U	
PHENOL	5	U		5.5	U		5	U		5.5	U	
PYRIDINE	5	U		5.5	U		5	U		5.5	U	

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SAMPLE NUMBER:	H10-GW-MW15-05			H10-GW-MW18-05								
SAMPLE DATE:	01/18/01			01/18/01			/ /			/ /		
LABORATORY ID:	F8739-4			F8739-3								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	0.0 %			0.0 %			100.0 %			100.0 %		
UNITS:	UG/L			UG/L								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
DISSOLVED GASES												
ETHANE	1	U		1	U							
ETHENE	1.15			1	U							
METHANE	484			18.1								

CTO16[illegible]AS JACKSONVILLE
WATER [illegible]TA
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SDG: F8739

SAMPLE NUMBER:	H10-DUP1-05			H10-GW-MW09-05			H10-GW-MW12-05			H10-GW-MW14-05		
SAMPLE DATE:	01/18/01			01/18/01			01/18/01			01/18/01		
LABORATORY ID:	F8739-2			F8739-5			F8739-6			F8739-1		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:	H10-GW-MW14-05											
	RESULT	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	RESULT	QUAL	CODE
DISSOLVED GASES												
ETHANE	1	U		1	U		1	U		1	U	
ETHENE	1	U		1	U		1	U		1	U	
METHANE	187			130			18.8			206		

CTO16[redacted]AS JACKSONVILLE
WATER [redacted]A
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SAMPLE NUMBER:	H10-GW-MW15-05			H10-GW-MW18-05			TRIP BLANK-011801					
SAMPLE DATE:	01/18/01			01/18/01			01/18/01			/ /		
LABORATORY ID:	F8739-4			F8739-3			F8739-7					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	0.0 %			0.0 %			0.0 %			100.0 %		
UNITS:	UG/L			UG/L			UG/L					
FIELD DUPLICATE OF:												
VOLATILES	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
1,1,1-TRICHLOROETHANE	2	U		2	U		2	U				
1,1,2-TRICHLOROETHANE	2	U		2	U		2	U				
1,1-DICHLOROETHANE	39.9			2.3			2	U				
1,1-DICHLOROETHENE	65.5			1.6	J	P	2	U				
1,2-DICHLOROETHANE	2	U		2	U		2	U				
1,2-DICHLOROETHENE (TOTAL)	65.2			1.1	J	P	2	U				
2-NITROPROPANE	10	U		10	U		4	U				
ACETONE	50	U		50	U		10	U				
BENZENE	1	U		1	U		50	U				
CARBON DISULFIDE	10	U		10	U		1	U				
CARBON TETRACHLORIDE	2	U		2	U		10	U				
CHLOROBENZENE	2	U		2	U		2	U				
CYCLOHEXANONE	10	U		10	U		2	U				
ETHYLBENZENE	2	U		2	U		10	U				
FREON-113	50.8			2	U		2	U				
ISOBUTYL ALCOHOL	500	U		500	UJ	H	2	U				
METHANOL	500	U		500	UJ	H						
METHYLENE CHLORIDE	5	U		5	U		5	U				
N-BUTYL ALCOHOL	500	U		500	UJ	H						
TETRACHLOROETHENE	2.7			2	U		2	U				
TOLUENE	0.71	J	P	2	U		2	U				
TRICHLOROETHENE	578			8.6			2	U				
VINYL CHLORIDE	4.7			1	U		1	U				
XYLENES, TOTAL	6	U		6	U		6	U				

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WATER DATA
Accutest, NJ
SDG: F8739

SAMPLE NUMBER:	H10-DUP1-05			H10-GW-MW09-05			H10-GW-MW12-05			H10-GW-MW14-05		
SAMPLE DATE:	01/18/01			01/18/01			01/18/01			01/18/01		
LABORATORY ID:	F8739-2			F8739-5			F8739-6			F8739-1		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:	H10-GW-MW14-05											
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	17.5			59.5			62.1			17		
1,1,2-TRICHLOROETHANE	2			2	U		1.4	J	P	1.9	J	P
1,1-DICHLOROETHANE	188			3.5			49.9			182		
1,1-DICHLOROETHENE	431			1.8	J	P	133			424		
1,2-DICHLOROETHANE	2			2	U		1.5	J	P	1.9	J	P
1,2-DICHLOROETHENE (TOTAL)	1.5	J	P	4	U		1.8	J	P	1.4	J	P
2-NITROPROPANE	10	U		10	U		10	U		10	U	
ACETONE	50	U		50	U		50	U		50	U	
BENZENE	1	U		1	U		1	U		1	U	
CARBON DISULFIDE	10	U		10	U		10	U		10	U	
CARBON TETRACHLORIDE	2	U		2	U		2	U		2	U	
CHLOROBENZENE	2	U		2	U		2	U		2	U	
CYCLOHEXANONE	10	U		10	U		10	U		10	U	
ETHYLBENZENE	2	U		2	U		2	U		2	U	
FREON-113	99.1			3.7			95.1			87.9		
ISOBUTYL ALCOHOL	500	U		500	U		500	U		500	U	
METHANOL	500	U		500	U		500	U		500	U	
METHYLENE CHLORIDE	5	U		5	U		5	U		5	U	
N-BUTYL ALCOHOL	500	U		500	U		500	U		500	U	
TETRACHLOROETHENE	2	U		2	U		2	U		2	U	
TOLUENE	2.1			2	U		2	U		1.9	J	P
TRICHLOROETHENE	273			5.2			94.5			266		
VINYL CHLORIDE	1	U		1	U		1	U		1	U	
XYLENES, TOTAL	6	U		6	U		6	U		6	U	

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank contamination
C = Calibration (i.e. %RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS – GFAA MSAs r<0.995
K = ICP Interference – include ICSAB %Rs
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (I.E. base-time drifting)
P = Uncertainty near detection limit (<2 x IDL for Inorganics and < CRQL for Organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCB D% between columns for positive results
V = Non-Linear calibrations, tuning r< 0.995 (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = % Solid content is less than 30%

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Tetra Tech NUS

INTERNAL CORRESPONDENCE

TO:	Mr. Mark Peterson	DATE:	March 12, 2001
FROM:	Elena Rodriguez	COPIES:	DV FILE

SUBJECT: **DATA VALIDATION - ORGANICS**
CTO 167, NASJAX
SDG F8739

SAMPLES: 7/Aqueous/

H10-DUP1-05
H10-GW-MW09-05
H10-GW-MW12-05
H10-GW-MW14-05
H10-GW-MW15-05
H10-GW-MW18-05
Trip Blank-011801

OVERVIEW

The sample set for CTO 167, NASJAX, SDG F8739 consists of 5 aqueous environmental samples and two aqueous quality control samples (one trip blank and one field duplicate pair: H10-DUP1-05 and H10-GW-MW14-05). All groundwater samples were analyzed for select volatile organic compounds, semi-volatile organic compounds, polynuclear aromatic hydrocarbons, alcohols, and dissolved gasses. The trip blank was analyzed for volatile organic compounds.

The samples were collected by TetraTech NUS on January 18, 2001 and analyzed by Accutest Laboratories. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria using the following analytical and reporting protocols: SW-846 Methods 8260B, 8270C, 8310, 8015 and RSK SOP 147/175. The data contained in this SDG were validated with regard to the following parameters:

- * Data completeness
- Holding times
- * Initial/continuing calibrations
- * Laboratory method and field quality control blank results
- * Surrogate recoveries
- * Field duplicate sample results
- * Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A.

Volatile Organics

Data reported for this fraction were found to be acceptable.

Alcohols

Sample H10-GW-MW18-05 was analyzed outside of the 14-day holding time. The nondetected results for H10-GW-MW18-05 for isobutyl alcohol, methanol, and n-butyl alcohol were qualified as estimated, UJ, due to the holding time exceedance.

Semi-Volatile Organics

Data reported for this fraction were found to be acceptable.

Polynuclear Aromatic Hydrocarbons

Surrogate recoveries fell below the lower quality control limits in sample H10-GW-MW12-05 for o-terphenyl and p-terphenyl. The sample was re-extracted 11 days after sample collection. No positive results were reported in either the original extraction or the re-extraction. No validation actions were taken.

Dissolved Gases (Methane-Ethane-Ethene)

Data reported for this fraction were found to be acceptable.

Additional Comments

Positive results below the reporting limit (RL) were qualified as estimated, J, due to uncertainty near the detection limit.

EXECUTIVE SUMMARY

Laboratory Performance Issues: The holding time until analysis was exceeded for alcohols on sample H10-GW-MW18-05. Surrogate recoveries fell below the lower QC limit for PAH analysis for sample H10-GW-MW12-05. No action was taken since the PAH sample was re-extracted and yielded acceptable surrogate recoveries.

Other Factors Affecting Data Quality: None

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99), and the Navy IRCDQM (9/99) NFESC guidelines. The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC guidelines and the Quality Assurance Project Plan (QAPP)."

Elena Rodriguez

Tetra Tech NUS
Elena Rodriguez

Tetra Tech NUS
Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UG/L	H10-GW-MW01-05	F8711-5	NORMAL	F8711	PAH	01/17/01	01/24/01	01/25/01	7	1	8
UG/L	H10-GW-MW02-05	F8711-1	NORMAL	F8711	PAH	01/17/01	01/24/01	01/25/01	7	1	8
UG/L	H10-GW-MW08-05	F8711-4	NORMAL	F8711	PAH	01/17/01	01/24/01	01/25/01	7	1	8
UG/L	H10-GW-MW10-05	F8711-2	NORMAL	F8711	PAH	01/17/01	01/24/01	01/25/01	7	1	8
UG/L	H10-GW-MW11-05	F8711-3	NORMAL	F8711	PAH	01/17/01	01/24/01	01/25/01	7	1	8
MG/L	H10-GW-MW01-05	F8711-5	NORMAL	F8711	SO4	01/17/01	01/24/01	01/24/01	7	0	7
MG/L	H10-GW-MW02-05	F8711-1	NORMAL	F8711	SO4	01/17/01	01/24/01	01/24/01	7	0	7
MG/L	H10-GW-MW08-05	F8711-4	NORMAL	F8711	SO4	01/17/01	01/24/01	01/24/01	7	0	7
MG/L	H10-GW-MW10-05	F8711-2	NORMAL	F8711	SO4	01/17/01	01/24/01	01/24/01	7	0	7
MG/L	H10-GW-MW11-05	F8711-3	NORMAL	F8711	SO4	01/17/01	01/24/01	01/24/01	7	0	7
MG/L	H10-GW-MW10-05	F8711-2	NORMAL	F8711	TOC	01/17/01	02/03/01	02/03/01	17	0	17

Units	[illegible]mple	Lab Id	Qc Type	Sdg	[illegible]	Samp Date	Extr Date	Anal Date	TO EXTR_DATE	TO ANAL_DATE	TO ANA[illegible]
MG/L	H10-GW-MW11-05	F8711-3	NORMAL	F8711	HSUL	01/17/01	/ /	01/22/01	0	0	5
UG/L	H10-GW-MW01-05	F8711-5	NORMAL	F8711	M	01/17/01	01/22/01	01/23/01	5	1	6
UG/L	H10-GW-MW02-05	F8711-1	NORMAL	F8711	M	01/17/01	01/22/01	01/23/01	5	1	6
UG/L	H10-GW-MW08-05	F8711-4	NORMAL	F8711	M	01/17/01	01/22/01	01/23/01	5	1	6
UG/L	H10-GW-MW10-05	F8711-2	NORMAL	F8711	M	01/17/01	01/22/01	01/23/01	5	1	6
UG/L	H10-GW-MW11-05	F8711-3	NORMAL	F8711	M	01/17/01	01/22/01	01/23/01	5	1	6
UG/L	H10-GW-MW01-05	F8711-5	NORMAL	F8711	METH	01/17/01	/ /	01/23/01	0	0	6
UG/L	H10-GW-MW02-05	F8711-1	NORMAL	F8711	METH	01/17/01	/ /	01/23/01	0	0	6
UG/L	H10-GW-MW08-05	F8711-4	NORMAL	F8711	METH	01/17/01	/ /	01/23/01	0	0	6
UG/L	H10-GW-MW10-05	F8711-2	NORMAL	F8711	METH	01/17/01	/ /	01/23/01	0	0	6
UG/L	H10-GW-MW11-05	F8711-3	NORMAL	F8711	METH	01/17/01	/ /	01/23/01	0	0	6
MG/L	H10-GW-MW01-05	F8711-5	NORMAL	F8711	NTA	01/17/01	01/18/01	01/18/01	1	0	1
MG/L	H10-GW-MW02-05	F8711-1	NORMAL	F8711	NTA	01/17/01	01/18/01	01/18/01	1	0	1
MG/L	H10-GW-MW08-05	F8711-4	NORMAL	F8711	NTA	01/17/01	01/18/01	01/18/01	1	0	1
MG/L	H10-GW-MW10-05	F8711-2	NORMAL	F8711	NTA	01/17/01	01/18/01	01/18/01	1	0	1
MG/L	H10-GW-MW11-05	F8711-3	NORMAL	F8711	NTA	01/17/01	01/18/01	01/18/01	1	0	1
UG/L	H10-GW-MW01-05	F8711-5	NORMAL	F8711	OS	01/17/01	01/23/01	01/26/01	6	3	9
UG/L	H10-GW-MW02-05	F8711-1	NORMAL	F8711	OS	01/17/01	01/23/01	01/26/01	6	3	9
UG/L	H10-GW-MW08-05	F8711-4	NORMAL	F8711	OS	01/17/01	01/23/01	01/26/01	6	3	9
UG/L	H10-GW-MW10-05	F8711-2	NORMAL	F8711	OS	01/17/01	01/23/01	01/26/01	6	3	9
UG/L	H10-GW-MW11-05	F8711-3	NORMAL	F8711	OS	01/17/01	01/23/01	01/26/01	6	3	9
UG/L	H10-GW-MW01-05	F8711-5	NORMAL	F8711	OV	01/17/01	/ /	01/23/01	0	0	6
UG/L	H10-GW-MW02-05	F8711-1	NORMAL	F8711	OV	01/17/01	/ /	01/22/01	0	0	5
UG/L	H10-GW-MW08-05	F8711-4	NORMAL	F8711	OV	01/17/01	/ /	01/24/01	0	0	7
UG/L	H10-GW-MW10-05	F8711-2	NORMAL	F8711	OV	01/17/01	/ /	01/22/01	0	0	5
UG/L	H10-GW-MW11-05	F8711-3	NORMAL	F8711	OV	01/17/01	/ /	01/22/01	0	0	5
UG/L	TRIP BLANK-011701	F8711-6	NORMAL	F8711	OV	01/17/01	/ /	01/23/01	0	0	6

2

1

DING TIME

/01

ts	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
L	H10-GW-MW01-05	F8711-5	NORMAL	F8711	ALC	01/17/01	/ /	01/25/01	0	0	8
/L	H10-GW-MW02-05	F8711-1	NORMAL	F8711	ALC	01/17/01	/ /	01/25/01	0	0	8
/L	H10-GW-MW08-05	F8711-4	NORMAL	F8711	ALC	01/17/01	/ /	01/25/01	0	0	8
G/L	H10-GW-MW10-05	F8711-2	NORMAL	F8711	ALC	01/17/01	/ /	01/25/01	0	0	8
G/L	H10-GW-MW11-05	F8711-3	NORMAL	F8711	ALC	01/17/01	/ /	01/25/01	0	0	8
G/L	H10-GW-MW01-05	F8711-5	NORMAL	F8711	CL	01/17/01	01/22/01	01/22/01	5	0	5
G/L	H10-GW-MW02-05	F8711-1	NORMAL	F8711	CL	01/17/01	01/22/01	01/22/01	5	0	5
MG/L	H10-GW-MW08-05	F8711-4	NORMAL	F8711	CL	01/17/01	01/22/01	01/22/01	5	0	5
MG/L	H10-GW-MW10-05	F8711-2	NORMAL	F8711	CL	01/17/01	01/22/01	01/22/01	5	0	5
MG/L	H10-GW-MW11-05	F8711-3	NORMAL	F8711	CL	01/17/01	01/22/01	01/22/01	5	0	5
UG/L	H10-GW-MW01-05	F8711-5	NORMAL	F8711	ETHA	01/17/01	/ /	01/23/01	0	0	6
UG/L	H10-GW-MW02-05	F8711-1	NORMAL	F8711	ETHA	01/17/01	/ /	01/23/01	0	0	6
UG/L	H10-GW-MW08-05	F8711-4	NORMAL	F8711	ETHA	01/17/01	/ /	01/23/01	0	0	6
UG/L	H10-GW-MW10-05	F8711-2	NORMAL	F8711	ETHA	01/17/01	/ /	01/23/01	0	0	6
UG/L	H10-GW-MW11-05	F8711-3	NORMAL	F8711	ETHA	01/17/01	/ /	01/23/01	0	0	6
UG/L	H10-GW-MW01-05	F8711-5	NORMAL	F8711	ETHE	01/17/01	/ /	01/23/01	0	0	6
UG/L	H10-GW-MW02-05	F8711-1	NORMAL	F8711	ETHE	01/17/01	/ /	01/23/01	0	0	6
UG/L	H10-GW-MW08-05	F8711-4	NORMAL	F8711	ETHE	01/17/01	/ /	01/23/01	0	0	6
UG/L	H10-GW-MW10-05	F8711-2	NORMAL	F8711	ETHE	01/17/01	/ /	01/23/01	0	0	6
UG/L	H10-GW-MW11-05	F8711-3	NORMAL	F8711	ETHE	01/17/01	/ /	01/23/01	0	0	6
MG/L	H10-GW-MW01-05	F8711-5	NORMAL	F8711	HSUL	01/17/01	/ /	01/22/01	0	0	5
MG/L	H10-GW-MW02-05	F8711-1	NORMAL	F8711	HSUL	01/17/01	/ /	01/22/01	0	0	5
MG/L	H10-GW-MW08-05	F8711-4	NORMAL	F8711	HSUL	01/17/01	/ /	01/22/01	0	0	5
MG/L	H10-GW-MW10-05	F8711-2	NORMAL	F8711	HSUL	01/17/01	/ /	01/22/01	0	0	5

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F8711
Account: TETRFLJX - Tetra-Tech,NJS
Project: TETRFLJX1724 - NAS Jax-Range: 1000

Analyte	Batch ID	RL	MB Result	Units	BSP %Recov	QC Limits
Chloride	GP2038	1.0	<1.0	mg/l	105.0	88-122%
Fluoride	GP2028	0.10	<0.10	mg/l	108.0	90-110%
Nitrogen, Nitrate	GP2028	0.10	<0.10	mg/l	95.0	90-110%
Sulfate	GP2044	10	<10	mg/l	100.0	80-120%

Associated Samples:
Batch GP2028: F8711-1, F8711-2, F8711-3, F8711-4, F8711-5
Batch GP2038: F8711-1, F8711-2, F8711-3, F8711-4, F8711-5
Batch GP2044: F8711-1, F8711-2, F8711-3, F8711-4, F8711-5

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: F8711
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hangar 1000

QC Batch ID: MP3273
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 01/22/01

Metal	RL	IDL	MB raw	final
Aluminum	200	9.4	anr	
Antimony	5.0	2.6	anr	
Arsenic	10.0	3.2	anr	
Barium	200	.94	anr	
Beryllium	5.0	.22	anr	
Cadmium	5.0	.27	-0.12	<5.0
Calcium	1000	10.2	anr	
Chromium	10.0	.35	0.21	<10.0
Cobalt	50.0	.55	anr	
Copper	25.0	.71	anr	
Iron	300	9	anr	
Lead	5.0	1.2	anr	
Magnesium	5000	25.5	anr	
Manganese	15.0	.26	anr	
Molybdenum	50.0	1		
Nickel	40.0	.8	anr	
Potassium	5000	49	anr	
Selenium	10.0	2.5	anr	
Silver	10.0	.59	anr	
Sodium	5000	173	anr	
Thallium	10.0	2.1	anr	
Tin	50.0	1		
Vanadium	50.0	.58	anr	
Zinc	20.0	.36	anr	

Associated samples MP3273: F8711-1, F8711-2, F8711-3, F8711-4, F8711-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

[illegible]
[illegible]

Login Number: [illegible]
Account: TETRFLOX - Tetra-Tech,NJF
Project: TETRFLOX1724 - NAS Sax-Hanger 1000

File ID: IR0123M1.ASC
QC Limits: result < RL

Date Analyzed: 01/23/01
Run ID: MA2175

Methods: SW846 6010B
Units: ug/l

Metal	RL	IDL	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	9.44						
Antimony	5.0	2.56						
Arsenic	10	3.15	anr					
Barium	200	.94	anr					
Beryllium	5.0	.22						
Cadmium	5.0	.27	0.19	<5.0	0.29	<5.0	0.37	<5.0
Calcium	1000	10.2						
Chromium	10	.35	1.3	<10<	0.66	<10	0.40	<10
Cobalt	50	.55						
Copper	25	.71						
Iron	300	9.02						
Lead	5.0	1.16	anr					
Magnesium	5000	25.5						
Manganese	15	.26						
Molybdenum	50	1.01						
Nickel	40	.8						
Potassium	5000	49						
Selenium	10	2.5	anr					
Silver	10	.59	anr					
Sodium	5000	173	anr					
Thallium	10	2.07						
Tin	50	1.03						
Vanadium	50	.58						
Zinc	20	.36						

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
[illegible] Initial and Continuing Calibration Blanks

Login Number: [illegible]
Account: TETRFL[illegible] - Tetra-Tech,NUS
Project: TETRFLOX1724 - NAS Jax-Hanger 1000

File ID: 1R0123M1.ASC
QC Limits: result < RL

Date Analyzed: 01/23/01
Run ID: MA2175

Methods: SW846 6010B
Units: ug/l

Metal	RL	IDL	ICB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	5.44								
Antimony	5.0	2.56								
Arsenic	10	3.15	anr							
Barium	200	.94	anr							
Beryllium	5.0	.22								
Cadmium	5.0	.27	0.43	<5.0	0.46	<5.0	0.12	<5.0	0.30	<5.0
Calcium	1000	10.2								
Chromium	10	.35	-0.18	<10	1.0	<10	1.4	<10<	4.2	<10<
Cobalt	50	.55								
Copper	25	.71								
Iron	300	9.02								
Lead	5.0	1.16	anr							
Magnesium	5000	25.5								
Manganese	15	.26								
Molybdenum	50	1.01								
Nickel	40	.8								
Potassium	5000	49								
Selenium	10	2.5	anr							
Silver	10	.59	anr							
Sodium	5000	173	anr							
Thallium	10	2.07								
Tin	50	1.03								
Vanadium	50	.58								
Zinc	20	.36								

(*) Outside of QC limits
(anr) Analyte not requested

[illegible]
[illegible]

Login Number: [illegible]
Account: TETRFL[illegible] - Tetra-Tech [illegible]
Project: TETRFL[illegible] - NAS [illegible]

File ID: IRC124M1.ASC
QC Limits: result < RL

Date Analyzed: [illegible]
Run ID: MA[illegible]

Methods: SW846 6010B
Units: ug/l

Metal	RL	IDL	CCE raw	final	CCE raw	final	CCE raw	final
Aluminum	200	9.44	-7.5	<200	-1.6	<200	-2.6	<200
Antimony	5.0	2.56	4.7	<5.0	5.6	<6.0<	4.1	<5.0
Arsenic	10	3.15	4.4	<10	1.7	<10	4.6	<10
Barium	200	.94	0.21	<200	0.23	<200	0.32	<200
Beryllium	5.0	.22	0.42	<5.0	0.46	<5.0	0.84	<5.0
Cadmium	5.0	.27	0.20	<5.0	0.24	<5.0	0.25	<5.0
Calcium	1000	10.2	32.2	<1000	40.6	<1000	51.1	<1000
Chromium	10	.35	2.5	<10<	6.0	<10<	6.6	<10<
Cobalt	50	.55	0.22	<50	0.35	<50	0.34	<50
Copper	25	.71	0.81	<25	0.72	<25	0.45	<25
Iron	300	9.02	34.6	<300<	49.7	<300<	55.9	<300<
Lead	5.0	1.16	1.0	<5.0	1.5	<5.0	2.0	<5.0
Magnesium	5000	25.5	8.9	<5000	11.3	<5000	11.8	<5000
Manganese	15	.26	0.85	<15	1.4	<15	1.6	<15<
Molybdenum	50	1.01						
Nickel	40	.8	2.8	<40	5.2	<40<	5.5	<40<
Potassium	5000	49	434	<5000	413	<5000	382	<5000
Selenium	10	2.5	2.9	<10	1.1	<10	4.1	<10
Silver	10	.59	-1.4	<10	-1.0	<10	-1.3	<10
Sodium	5000	173	108	<5000	122	<5000	-22	<5000
Thallium	10	2.07	2.6	<10	1.9	<10	3.9	<10
Tin	50	1.03						
Vanadium	50	.58	0.27	<50	0.16	<50	0.23	<50
Zinc	20	.36	0.41	<20	0.51	<20	0.52	<20

(*) Outside of QC limits
(anr) Analyte not requested

METALS RESULTS SUMMARY
Part 2 - Initial and Continuing Calibration Blank

Login Number: [illegible]
Account: TETRFLX - Tetra-Tech,NUS
Project: TETRFLX1724 - NAS [illegible]

File ID: JR0124M1.ASC
QC Limits: result < RL

Date Analyzed: 01/24/01
Run ID: MA2182

Methods: SW846 6010B
Units: ug/l

Metal	RL	IDL	CCB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	5.44	-0.040	<200	8.1	<200	12.4	<200	16.1	<200
Antimony	5.0	2.56	-0.040	<5.0	3.9	<5.0	0.22	<5.0	6.0	<6.0*
Arsenic	10	3.15	0.75	<10	3.8	<10	1.5	<10	3.5	<10
Barium	200	.94	0.050	<200	0.15	<200	0.090	<200	0.18	<200
Beryllium	5.0	.22	0.18	<5.0	0.020	<5.0	0.37	<5.0	0.71	<5.0
Cadmium	5.0	.27	-0.050	<5.0	-0.050	<5.0	-0.030	<5.0	-0.090	<5.0
Calcium	1000	10.2	12.6	<1000	-3.6	<1000	14.6	<1000	21.5	<1000
Chromium	10	.35	0.31	<10	0.25	<10	0.25	<10	0.40	<10
Cobalt	50	.55	-0.050	<50	0.15	<50	0.12	<50	0.21	<50
Copper	25	.71	0.30	<25	-0.10	<25	-0.59	<25	-0.76	<25
Iron	300	9.02	28.2	<300	26.7	<300	22.2	<300	21.0	<300
Lead	5.0	1.16	0.91	<5.0	0.27	<5.0	1.4	<5.0	0.94	<5.0
Magnesium	5000	25.5	5.6	<5000	4.4	<5000	3.0	<5000	5.7	<5000
Manganese	15	.26	0.48	<15	0.20	<15	0.17	<15	0.25	<15
Molybdenum	50	1.01								
Nickel	40	.8	0.35	<40	0.35	<40	0.22	<40	0.77	<40
Potassium	5000	49	432	<5000	448	<5000	389	<5000	440	<5000
Selenium	10	2.5	-1.2	<10	1.7	<10	-0.72	<10	1.8	<10
Silver	10	.59	-0.27	<10	0.16	<10	0.31	<10	0.050	<10
Sodium	5000	173	91.8	<5000	76.0	<5000	-19	<5000	143	<5000
Thallium	10	2.07	0.020	<10	1.4	<10	1.5	<10	2.5	<10
Tin	50	1.03								
Vanadium	50	.58	0.19	<50	0.13	<50	-0.030	<50	0.28	<50
Zinc	20	.36	0.0	<20	-0.10	<20	0.070	<20	0.14	<20

(*) Outside of QC limits
(anr) Analyte not requested

Login Number: [illegible]
Account: TETRFLOR - Tetra-Tech,[illegible]
Project: TETRFLO[illegible] - NAS Jax-Hanger 1000

File ID: IR0124M1.ASC
QC Limits: result < RL

Date Analyzed: [illegible]
Run ID: [illegible]

Methods: SW846 6010B
Units: [illegible]

Metal	RL	IDL	ICE raw	final	ICE raw	final	CCE raw	final	CCE raw	final
Aluminum	200	5.44			-0.29	<200			-0.70	<200
Antimony	5.0	2.56			2.2	<5.0			0.24	<5.0
Arsenic	10	3.15			0.31	<10			1.1	<10
Barium	200	.94			0.090	<200			0.050	<200
Beryllium	5.0	.22			-0.020	<5.0			0.15	<5.0
Cadmium	5.0	.27			-0.070	<5.0			-0.11	<5.0
Calcium	1000	10.2			-0.49	<1000			0.17	<1000
Chromium	10	.35			0.34	<10			0.54	<10
Cobalt	50	.55			0.32	<50			0.15	<50
Copper	25	.71			0.23	<25			0.11	<25
Iron	300	9.02			16.5	<300			12.9	<300
Lead	5.0	1.16			0.54	<5.0			0.90	<5.0
Magnesium	5000	25.5			2.1	<5000			1.3	<5000
Manganese	15	.26			0.98	<15			0.46	<15
Molybdenum	50	1.01								
Nickel	40	.8			2.1	<40			1.0	<40
Potassium	5000	49			428	<5000			402	<5000
Selenium	10	2.5			-0.83	<10			1.8	<10
Silver	10	.59			0.090	<10			-0.28	<10
Sodium	5000	173			98.6	<5000			61.6	<5000
Thallium	10	2.07			-0.15	<10			0.43	<10
Tin	50	1.03								
Vanadium	50	.58			0.25	<50			-0.030	<50
Zinc	20	.36			-0.15	<20			-0.090	<20

(*) Outside of QC limits
(anr) Analyte not requested

ACCUTEST

CHAIN OF CUSTODY

4405 VINELAND ROAD • SUITE C-15
ORLANDO, FL 32811
TEL: 407-425-6700 • FAX: 407-425-0707

ACCUTEST JOB #:

ACCUTEST QUOTE #:

CLIENT INFORMATION

ALSE

...SS

STATE ZIP

...ORT TO:

#

FACILITY INFORMATION

F-8711

PROJECT NAME

LOCATION

PROJECT NO.

FAX #

ANALYTICAL INFORMATION

...EST ...E #	FIELD ID / POINT OF COLLECTION	COLLECTION DATE	COLLECTION TIME	SAMPLED BY:	MATRIX	# OF BOTTLES	HCl	NaOH	HNO3	H2SO4	NONE	Metals 6015B	TOC
	F8711-1	1/17/01	1545	TT	W	3						X	
	-2	↓	1005	↓	↓	4						X	X
	-3	↓	0820	↓	↓	3						X	
	-4	↓	1200	↓	↓	3						X	
	-5	↓	1400	↓	↓	3						X	

MATRIX CODES

DW - DRINKING WATER
GW - GROUND WATER
WW - WASTE WATER
SO - SOIL
SL - SLUDGE
OI - OIL
LIQ - OTHER LIQUID
SOL - OTHER SOLID

LAB USE ONLY

DATA TURNAROUND INFORMATION

...TANDARD 14 Days APPROVED BY:
...HOUR RUSH
...HOUR EMERGENCY
...THER

...GENCY OR RUSH IS FAX DATA
...SS PREVIOUSLY APPROVED

DATA DELIVERABLE INFORMATION

☒ STANDARD F71
☐ COMMERCIAL "B"
☐ DISK DELIVERABLE
☐ STATE FORMS
☐ OTHER (SPECIFY)

COMMENTS/REMARKS

NJ

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESION, INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER:	DATE TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
Mike Fall	1/18/01 1247	1.	2.		2.
RELINQUISHED BY:	DATE TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
		3.	4.		4.
RELINQUISHED BY:	DATE TIME:	RECEIVED BY:	SEAL #	PRESERVE WHERE APPLICABLE ☐	ON ICE ☐ TEMPERATURE
		5.			

CHAIN OF CUSTODY | NUMBER

PAGE ___ OF ___

...745

SITE NAME: NASJAX-HANGAR 1000

SAMPLERS (SIGNATURE) Alan Pate; [signature]

PROJECT MANAGER AND PHONE NUMBER: MARK PETERSON 904-281-0400

FIELD OPERATIONS LEADER AND PHONE NUMBER: ALAN PATE 904-281-0400

CARRIER/WAYBILL NUMBER: FED EX

LABORATORY NAME AND CONTACT: ACCUTEST LABS - LINDA WILLIAMS

ADDRESS: 4405 VINELAND Rd #C-15

CITY, STATE: ORLANDO, FL 32811

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G, G, G, G, G, P, P, P

PRESERVATIVE USED: HCL, –, –, –, –, HNO3, Above

TYPE OF ANALYSIS

DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	** VOCs 8260B	METHANE/ETHANE/ETHENE ** RSK 147/175	** ALCOHOLS 8015B	SVOCs 8270C	PAHs 8310	METALS Cd/Cr 6010B	SULFIDE	ANIONS SO4, Cl NO3	COMMENTS
1/17	1200	H10-GW-MW08-05	H_2O	G	16	3	3	3	2	2	1	1	1	COOL TO 4°C
1/17	1400	H10-GW-MW01-05	H_2O	G	16	3	3	3	2	2	1	1	1	

SEE ATTACHED QAPP TABLE FOR ANALYTICAL REQUIREMENTS

ALL VIALS IN SEPARATE COOLER

1. RELINQUISHED BY Alan Pate	DATE 1/17/01	TIME 1730	1. RECEIVED BY [signature]	DATE 1/18/01	TIME 1000
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

TETRA TECH NUS, INC. CHAIN OF COSTODY | NUMBER | PAGE ___ OF ___

PROJECT NO: N3995

SITE NAME: NAS JAX - HANGAR 1000

PROJECT MANAGER AND PHONE NUMBER: MARK PETERSON 904-281-0400

FIELD OPERATIONS LEADER AND PHONE NUMBER: ALAN PATE 904-281-0400

CARRIER/WAYBILL NUMBER: FED EX

LABORATORY NAME AND CONTACT: ACCUTEST LABS - LINDA WILLIAMS

ADDRESS: 4405 VINELAND Rd # C-15

CITY, STATE: ORLANDO, FL 32811

SAMPLERS (SIGNATURE): Alan L Pate

STANDARD TAT ☒
RUSH TAT ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

					CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	G	G	G	G	P	P	P	
					PRESERVATIVE USED	HCL	—	—	—	—	HNO3	NaOH		
YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: ** VOC's 8260B	** METHANE/ETHANE/ETHENE RSK 147/175	** ALCOHOLS 8015B	SVOCs 8270C	PAHs 8310	METALS Cd/Cr 6010B	SULFIDE	ANIONS SO4, Cl, NO3	COMMENTS
7	1005	H10-GW-MW10-05	H2O	G	16	3	3	3	2	2	1	1	1	COOL TO 4°C
17	0820	H10-GW-MW11-05	H2O	G	16	3	3	3	2	2	1	1	1	

** ALL VIALS IN SEPARATE COOLER

SEE ATTACHED QAPP TABLE FOR ANALYTICAL REQUIREMENTS

* MW10 - EXTRA AMBER FOR TOC ANALYSIS NEEDS PRESERVATIVE

1. RELINQUISHED BY: Alan L Pate	DATE 1/17/01	TIME 1730	1. RECEIVED BY: Mike [illegible]	DATE 1/18/01	TIME 1000
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

FORM NO. [illegible]

TETRA TECH NUS, INC.

CHAIN OF COUSTODY

CHAIN OF CUSTODY | NUMBER | PAGE ___ OF ___

PROJECT NO: N3995	SITE NAME: NAS JAX - HANGAR 1000
SAMPLERS (SIGNATURE)	
PROJECT MANAGER AND PHONE NUMBER	MARK PETERSON 904-281-0400
FIELD OPERATIONS LEADER AND PHONE NUMBER	ALAN PATE 904-281-0400
CARRIER/WAYBILL NUMBER	FED EX
LABORATORY NAME AND CONTACT:	ACCUTEST - LINDA WILLIAMS
ADDRESS	4405 VINELAND Rd
CITY, STATE	ORLANDO, FL 32811

STANDARD TAT ☒ RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

F8711

DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	VOCs 8260B	METHANE/ETHANE/ETHENE RSK 147/175	ALCOHOLS 8015B	SVOCs 8270C	PAHs 8310	METALS CALC 6010B	SULFIDE	ANIONS: SO4, Cl, NO3	COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)						G	G	G	G	G	P	P	P	
PRESERVATIVE USED						HCL	-	-	-	-	HNO3	NaOH	-	
1/17	1545	H10-GW-MW02-05	H_2O	G	16	3	3	3	2	2	1	1	1	COOL TO 4°C
1/17	1005	H10-GW-MW10-05	H_2O	G	9	3	3	3						
1/17	0820	H10-GW-MW11-05	H_2O	G	9	3	3	3						SEE ATTACHED
1/17	1200	H10-GW-MW08-05	H_2O	G	9	3	3	3						QAPP TABLE
1/17	1400	H10-GW-MW01-05	H_2O	G	9	3	3	3						FOR ANALYTICAL
1/17		TRIP BLANK	H_2O		2	2								REQUIREMENTS

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY Alan Pate	1/17/01	1730	1. RECEIVED BY Mike Farrell	1/18/01	10:00
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

YELLOW (FIELD COPY) PINK (FILE COPY)

ACCUTEST LABORATORIES SOUTHEAST
SAMPLE RECEIPT CONFIRMATION

Accutest Job Number: F8711

Client/Project: TTNUS N 3995

Date/Time Received: 1/18/01 1000

Method of Delivery: Fed Ex Greyhound UPS Pickup Delivery Other

Air Bill Number: 8219 5407 2276

Cooler Temperatures: 2.3, 2.4 4.0

Custody Seals Intact? YES NO

Chain Of Custody Provided? YES NO

Chain Of Custody Match Bottles? YES NO #

Sample Labels Present? YES NO

Are All Bottles Unbroken? YES NO

Proper Preservative? ~~YES~~ NO ##

Correct Containers Used? YES NO

Sufficient Sample Volume? YES NO

Number of Encores:

COMMENTS:

an extra bottle was sent for TOC for -2 but was not on chain

needed to add preservative to TOC

APPENDIX C

SUPPORT DOCUMENTATION

ACCUTEST

Report of Analysis

Client Sample ID:	H10-GW-MW11-05	Date Sampled:	01/17/01
Lab Sample ID:	F8711-3	Date Received:	01/18/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	37.5	1.0	mg/l	1	01/22/01	SJL	EPA 325.3
Hydrogen Sulfide	<2.0	2.0	mg/l	1	01/22/01	AL	SM18 4500/EPA 376.1
Nitrogen, Nitrate	<0.10	0.10	mg/l	1	01/18/01	SJL	EPA 300/SW846 9056
Sulfate	<10	10	mg/l	1	01/24/01	SJL	EPA 375.4

ACCUTEST

Report of Analysis

Client Sample ID:	H10-GW-MW11-05		
Lab Sample ID:	F8711-3	Date Sampled:	01/17/01
Matrix:	AQ - Ground Water	Date Received:	01/18/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B
Chromium	0.35 U	10.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B

RL = Reporting Limit

ACCUTEST

Report of Analysis

Client Sample ID:	H10-GW-MW10-05		
Lab Sample ID:	F8711-2	Date Sampled:	01/17/01
Matrix:	AQ - Ground Water	Date Received:	01/18/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	16.5	1.0	mg/l	1	01/22/01	SJL	EPA 325.3
Hydrogen Sulfide	< 2.0	2.0	mg/l	1	01/22/01	AL	SM18 4500/EPA 376.1
Nitrogen, Nitrate	0.56	0.10	mg/l	1	01/18/01	SJL	EPA 300/SW846 9056
Sulfate	18.0	10	mg/l	1	01/24/01	SJL	EPA 375.4
Total Organic Carbon	5.7	1.0	mg/l	1	02/03/01	ANJ	EPA415.1/SW8469060M

RL = Reporting Limit

ACCUTEST

Report of Analysis

Client Sample ID:	H10-GW-MW10-05		
Lab Sample ID:	F8711-2	Date Sampled:	01/17/01
Matrix:	AQ - Ground Water	Date Received:	01/18/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B
Chromium	0.73 B	10.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B

RL = Reporting Limit

ACCUTEST

Report of Analysis

Client Sample ID:	H10-GW-MW08-05		
Lab Sample ID:	F8711-4	Date Sampled:	01/17/01
Matrix:	AQ - Ground Water	Date Received:	01/18/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	60.5	1.0	mg/l	1	01/22/01	SJL	EPA 325.3
Hydrogen Sulfide	<2.0	2.0	mg/l	1	01/22/01	AL	SM18 4500/EPA 376.1
Nitrogen, Nitrate	1.3	0.10	mg/l	1	01/18/01	SJL	EPA 300/SW846 9056
Sulfate	177	50	mg/l	5	01/24/01	SJL	EPA 375.4

RL = Reporting Limit

ACCUTEST

Report of Analysis

Client Sample ID:	H10-GW-MW08-05			
Lab Sample ID:	F8711-4		Date Sampled:	01/17/01
Matrix:	AQ - Ground Water		Date Received:	01/18/01
			Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000			

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.33 B	5.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B
Chromium	0.69 B	10.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B

RL = Reporting Limit

ACCUTEST

Report of Analysis

Client Sample ID:	H10-GW-MW02-05	Date Sampled:	01/17/01
Lab Sample ID:	F8711-1	Date Received:	01/18/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	13.5	1.0	mg/l	1	01/22/01	SJL	EPA 325.3
Hydrogen Sulfide	<2.0	2.0	mg/l	1	01/22/01	AL	SM18 4500/EPA 376.1
Nitrogen, Nitrate	<0.10	0.10	mg/l	1	01/18/01	SJL	EPA 300/SW846 9056
Sulfate	12.3	10	mg/l	1	01/24/01	SJL	EPA 375.4

RL = Reporting Limit

ACCUTEST

Report of Analysis

Client Sample ID:	H10-GW-MW02-05			
Lab Sample ID:	F8711-1		Date Sampled:	01/17/01
Matrix:	AQ - Ground Water		Date Received:	01/18/01
			Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000			

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B
Chromium	1.9 B	10.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B

RL = Reporting Limit

ACCUTEST

Report of Analysis

Client Sample ID:	H10-GW-MW01-05		
Lab Sample ID:	F8711-5	Date Sampled:	01/17/01
Matrix:	AQ - Ground Water	Date Received:	01/18/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	18.0	1.0	mg/l	1	01/22/01	SJL	EPA 325.3
Hydrogen Sulfide	< 2.0	2.0	mg/l	1	01/22/01	AL	SM18 4500/EPA 376.1
Nitrogen, Nitrate	0.88	0.10	mg/l	1	01/18/01	SJL	EPA 300/SW846 9056
Sulfate	10.0	10	mg/l	1	01/24/01	SJL	EPA 375.4

RL = Reporting Limit

ACCUTEST

Report of Analysis

Client Sample ID:	H10-GW-MW01-05		
Lab Sample ID:	F8711-5	Date Sampled:	01/17/01
Matrix:	AQ - Ground Water	Date Received:	01/18/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B
Chromium	2.2 B	10.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B

RL = Reporting Limit

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

CTO16[illegible]AS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8711

SAMPLE NUMBER:	H10-GW-MW11-05											
SAMPLE DATE:	01/17/01			/ /			/ /			/ /		
LABORATORY ID:	F8711-3											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
FIELD DUPLICATE OF:												
MISCELLANEOUS PARAMETERS	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
CHLORIDE(MG/L)	37.5											
HYDROGEN SULFIDE(MG/L)	2	U										
NITRATE, AS NITROGEN(MG/L)	0.1	U										
SULFATE(MG/L)	10	U										

CTO167[illegible]AS JACKSONVILLE
WATER D[illegible]A
Accutest, NJ
SDG: F8711

SAMPLE NUMBER:	H10-GW-MW01-05			H10-GW-MW02-05			H10-GW-MW08-05			H10-GW-MW10-05		
SAMPLE DATE:	01/17/01			01/17/01			01/17/01			01/17/01		
LABORATORY ID:	F8711-5			F8711-1			F8711-4			F8711-2		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
MISCELLANEOUS PARAMETERS												
CHLORIDE(MG/L)	18			13.5			60.5			16.5		
HYDROGEN SULFIDE(MG/L)	2	U		2	U		2	U		2	U	
NITRATE, AS NITROGEN(MG/L)	0.88			0.1	U		1.3			0.56		
SULFATE(MG/L)	10			12.3			177			18		
TOTAL ORGANIC CARBON(MG/L)										5.7	J	M

[redacted]AS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8711

SAMPLE NUMBER:	H10-GW-MW11-05											
SAMPLE DATE:	01/17/01			/ /			/ /			/ /		
LABORATORY ID:	F8711-3											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:												
INORGANICS	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
CADMIUM	0.27	U										
CHROMIUM	0.35	U										

WAM_RES.DBF

CTO167[illegible]AS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8711

SAMPLE NUMBER:	H10-GW-MW01-05			H10-GW-MW02-05			H10-GW-MW08-05			H10-GW-MW10-05		
SAMPLE DATE:	01/17/01			01/17/01			01/17/01			01/17/01		
LABORATORY ID:	F8711-5			F8711-1			F8711-4			F8711-2		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
INORGANICS												
CADMIUM	0.27	U		0.27	U		0.33	U	A	0.27	U	
CHROMIUM	2.2	U	A	1.9	U	A	0.69	U	A	0.73	U	A

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank contamination
C = Calibration (i.e. %RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS – GFAA MSAs r<0.995
K = ICP Interference – Include ICSAB %Rs
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (I.E. base-time drifting)
P = Uncertainty near detection limit (<2 x IDL for Inorganics and < CRQL for Organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCB D% between columns for positive results
V = Non-Linear calibrations, tuning r< 0.995 (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = % Solid content is less than 30%

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Tetra Tech NUS

INTERNAL CORRESPONDENCE

TO:	Mr. Mark Peterson	DATE:	March 12, 2001
FROM:	Elena Rodriguez	COPIES:	DV FILE

SUBJECT: **DATA VALIDATION - INORGANICS**
CTO 167, NASJAX
SDG F8739

SAMPLES: 6/Aqueous/

H10-DUP1-05
H10-GW-MW09-05
H10-GW-MW12-05
H10-GW-MW14-05
H10-GW-MW15-05
H10-GW-MW18-05

OVERVIEW

The sample set for CTO 167, NASJAX, SDG F8739 consists of 5 aqueous environmental samples and one aqueous quality control sample (one field duplicate pair: H10-DUP1-05 and H10-GW-MW14-05). All samples were analyzed for cadmium and chromium and for natural attenuation parameters: chloride, nitrate, sulfate, and sulfide. Sample H10-GW-MW14-05 was also analyzed for total organic carbon (TOC).

The samples were collected by TetraTech NUS on January 18, 2001 and analyzed by Accutest Laboratories. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria using the following analytical and reporting protocols: SW-846 Methods 6010B, EPA 300, 325.3, 375.4, 376.1, and 415.1. The data contained in this SDG were validated with regard to the following parameters:

- * Data completeness
- * Holding times
- * Initial/continuing calibrations
- * Laboratory method blank results
- * Field duplicate sample results
- * Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A.

Metals

The following contaminants were detected in the laboratory method blanks:

Analyte	Maximum Concentration (ug/L)	Action Level (aqueous) (ug/L)
Cadmium	0.46	2.3
Chromium	6.6	33.0

An action level of 5X the maximum concentration has been used to evaluate the sample data for blank contamination. Sample aliquot and dilution factors were taken into consideration when determining blank contamination. Positive results less than the blank action levels were qualified, "U", as nondetected due to blank contamination.

General Chemistry: Chloride, Sulfate, Sulfide, Nitrate

Data reported for this fraction were found to be acceptable.

Total Organic Carbon

TOC fraction for sample H10-GW-MW10-05 was preserved upon receipt by the laboratory. Results were qualified, "J", as estimated. All other data reported for this fraction were found to be acceptable.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Metals were detected in the laboratory blanks.

Other Factors Affecting Data Quality: TOC fraction for sample H10-GW-MW10-05 was preserved upon receipt by the laboratory.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Inorganic Data Validation (2/94), and the Navy IRCDQM (9/99) NFESC guidelines. The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC guidelines and the Quality Assurance Project Plan (QAPP)."

Elena Rodriguez

Tetra Tech NUS

Elena Rodriguez

TetraTech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

Method Blank Summary

Job Number: F8711
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2620-MB	AA006137.D1		01/25/01	MRE	01/24/01	OP2620	GAA227

The QC reported here applies to the following samples: **Method: EPA 8310**

F8711-1, F8711-2, F8711-3, F8711-4, F8711-5

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	86%	29-133%
92-94-4	p-Terphenyl	74%	33-133%

Method Blank Summary

Job Number: F8711
Account: ALSE Accutest Laboratories Southeast, Inc.
Project: TETRFLIX: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGH696-MB2	GH24769.D	1	01/25/01	XPL	n/a	n/a	GGH696

The QC reported here applies to the following samples:

Method: DAI

F8711-1, F8711-2, F8711-3, F8711-4, F8711-5

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	

CAS No.	Surrogate Recoveries		Limits
111-27-3	Hexanol	88%	75-125%

Method Blank Summary

Job Number: F8711
Account: ALSE Accutest Laboratories Southeast, Inc.
Project: TETRFLJX: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGH696-MB1	GH24760.D	1	01/24/01	XPL	n/a	n/a	GGH696

The QC reported here applies to the following samples: **Method: DAI**

GGH696-BS, E84580-7MS, E84580-7MSD

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries		Limits
111-27-3	Hexanol	76%	75-125%

Method Blank Summary

Job Number: F8711
Account: ALSE Accutest Laboratories Southeast, Inc.
Project: TETRFLIX: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGH696-MB2	GH24769.D	1	01/25/01	XPL	n/a	n/a	GGH696

The QC reported here applies to the following samples: **Method: DAI**

F8711-1, F8711-2, F8711-3, F8711-4, F8711-5

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries		Limits
111-27-3	Hexanol	88%	75-125%

Method Blank Summary

Job Number: F8711
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GXY2-MB	XY000044.D1		01/23/01	RAW	n/a	n/a	GXY2

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

F8711-1, F8711-2, F8711-3, F8711-4, F8711-5

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	ND	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

Method Blank Summary

Job Number: F8711
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2613-MB	L006230.D	1	01/27/01	ME	01/23/01	OP2613	SL376

The QC reported here applies to the following samples:

Method: SW846 8270C

F8711-1, F8711-2, F8711-3, F8711-4, F8711-5

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	ug/l	
	3&4-Methylphenol	ND	5.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
86-74-8	Carbazole	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	55%	21-100%
4165-62-2	Phenol-d5	38%	10-94%
118-79-6	2,4,6-Tribromophenol	87%	10-123%
4165-60-0	Nitrobenzene-d5	86%	35-114%
321-60-8	2-Fluorobiphenyl	80%	43-116%
1718-51-0	Terphenyl-d14	83%	33-141%

Method Blank Summary

Job Number: F8711
Account: TETRFLJX Tetra-Tech NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2613-MB	L006208.D	1	01/26/01	ME	01/23/01	OP2613	SL375

The QC reported here applies to the following samples: **Method:** SW846 8270C

F8711-1, F8711-2, F8711-3, F8711-4, F8711-5

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	ug/l	
	3&4-Methylphenol	ND	5.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
86-74-8	Carbazole	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	57%	21-100%
4165-62-2	Phenol-d5	38%	10-94%
118-79-6	2,4,6-Tribromophenol	91%	10-123%
4165-60-0	Nitrobenzene-d5	89%	35-114%
321-60-8	2-Fluorobiphenyl	79%	43-116%
1718-51-0	Terphenyl-d14	88%	33-141%

Method Blank Summary

Job Number: F8711
Account: TETRFLJX Tetra-Tech.NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VB138-MB	B003614.D	1	01/24/01	JG	n/a	n/a	VB138

The QC reported here applies to the following samples: **Method:** SW846 8260B

F8711-4

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	101%	80-120%
17060-07-0	1,2-Dichloroethane-D4	94%	69-128%
2037-26-5	Toluene-D8	98%	80-120%
460-00-4	4-Bromofluorobenzene	98%	80-120%

Method Blank Summary

Job Number: F871.
Account: TETREFLIX Tetra-Tech.NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VB137-MB	B003586.D	1	01/23/01	JG	n/a	n/a	VB137

The QC reported here applies to the following samples: **Method:** SW846 8260B

F8711-5, F8711-6

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	104%	80-120%
17060-07-0	1,2-Dichloroethane-D4	99%	69-128%
2037-26-5	Toluene-D8	97%	80-120%
460-00-4	4-Bromofluorobenzene	97%	80-120%

Method Blank Summary

Job Number: F8711
Account: TETRFLJX Tetra-Tech.NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VB136-MB	B003558.D	1	01/22/01	JG	n/a	n/a	VB136

The QC reported here applies to the following samples:

Method: SW846 8260B

F8711-1, F8711-2, F8711-3

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	101%	80-120%
17060-07-0	1,2-Dichloroethane-D4	96%	69-128%
2037-26-5	Toluene-D8	99%	80-120%
460-00-4	4-Bromofluorobenzene	99%	80-120%

ACCUTEST

CHAIN OF CUSTODY

4405 VINELAND ROAD • SUITE C-15
ORLANDO, FL 32811
TEL: 407-425-6700 • FAX: 407-425-0707

ACCUTEST JOB #:

ACCUTEST QUOTE #:

CLIENT INFORMATION

NAME: ALSE
ADDRESS
CITY, STATE ZIP
SEND REPORT TO:
PHONE #

FACILITY INFORMATION

F8711
PROJECT NAME
LOCATION
PROJECT NO.
FAX #

ANALYTICAL INFORMATION

ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	DATE	TIME	SAMPLED BY:	MATRIX	# OF BOTTLES	HCl	NaOH	HNO3	H2SO4	NONE	Metals 6015B	TOC
	F8711-1	1/17/01	1545	TT	W	3						X	
	-2	↓	1005	↓	↓	4						X	X
	-3	↓	0820	↓	↓	3						X	
	-4	↓	1200	↓	↓	3						X	
	-5	↓	1400	↓	↓	3						X	

MATRIX CODES
DW - DRINKING WATER
GW - GROUND WATER
WW - WASTE WATER
SO - SOIL
SL - SLUDGE
OI - OIL
LIQ - OTHER LIQUID
SOL - OTHER SOLID

LAB USE ONLY

DATA TURNAROUND INFORMATION

☐ STANDARD 14 Days
☐ 48 HOUR RUSH
☐ 24 HOUR EMERGENCY
☐ OTHER

APPROVED BY:

EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED

DATA DELIVERABLE INFORMATION

☒ STANDARD FTI
☐ COMMERCIAL "B"
☐ DISK DELIVERABLE
☐ STATE FORMS
☐ OTHER (SPECIFY)

COMMENTS/REMARKS

NJ

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESION, INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER:	DATE TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
1. Mike Ball	1/18/01 1247	1.	2.		2.
RELINQUISHED BY: 3.	DATE TIME:	RECEIVED BY: 3.	RELINQUISHED BY: 4.	DATE TIME:	RECEIVED BY: 4.
RELINQUISHED BY: 5.	DATE TIME:	RECEIVED BY: 5.	SEAL #	PRESERVE WHERE APPLICABLE ☐	ON ICE ☐ TEMPERATURE

CHAIN OF CUSTODY | NUMBER

PAGE ____ OF ____

...745

SITE NAME: NASJAX-HANGAR 1000

SAMPLERS (SIGNATURE) Alan E Pate, R. L. Mullen

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

PROJECT MANAGER AND PHONE NUMBER: MARK PETERSON 904-281-0400

FIELD OPERATIONS LEADER AND PHONE NUMBER: ALAN PATE 904-281-0400

CARRIER/WAYBILL NUMBER: FED EX

LABORATORY NAME AND CONTACT: ACCUTEST LABS - LINDA WILLIAMS

ADDRESS: 4405 VINELAND Rd #C-15

CITY, STATE: ORLANDO, FL 32811

DATE / YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) / COMP (C)	No. OF CONTAINERS	**VOCs 8260B	METHANE/ETHANE/ETHENE RSK 147/175 **	** ALCOHOLS 8015B	SVOCs 8270C	PAHs 8310	METALS Cd/Cr 6010B	SULFIDE	ANIONS SO4, Cl, NO3	COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)						G	G	G	G	G	P	P	P	
PRESERVATIVE USED						HCL	—	—	—	—	HNO3	NaOH	—	
1/17	1200	H10-GW-MW08-05	H2O	G	16	3	3	3	2	2	1	1	1	COOL TO 4°C
1/17	1400	H10-GW-MW01-05	H2O	G	16	3	3	3	2	2	1	1	1	

TYPE OF ANALYSIS

SEE ATTACHED QAPP TABLE FOR ANALYTICAL REQUIREMENTS

** ALL VIALS IN SEPARATE COOLER

RELINQUISHED BY Alan E Pate	DATE 1/17/01	TIME 1730	1. RECEIVED BY Mike [illegible]	DATE 1/18/01	TIME 1000
RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER

PAGE ___ OF ___

PROJECT NO: N3995	SITE NAME: NAS JAX - HANGAR 1000
SAMPLERS (SIGNATURE)	Alan L Pate; [illegible]
PROJECT MANAGER AND PHONE NUMBER	MARK PETERSON 904-281-0400
FIELD OPERATIONS LEADER AND PHONE NUMBER	ALAN PATE 904-281-0400
CARRIER/WAYBILL NUMBER	FED EX
LABORATORY NAME AND CONTACT:	ACCUTEST LABS - LINDA WILLIAMS
ADDRESS	4405 VINELAND Rd # C-15
CITY, STATE	ORLANDO, FL 32811

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

					CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	G	G	G	G	P	P	P	
					PRESERVATIVE USED	HCL	–	–	–	–	HNO3	NaOH		
DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	** VOC's 8260B	** METHANE/ETHANE/ETHENE RSK 147/175	** ALCOHOLS 8015B	SVOCs 8270C	PAHs 8310	METALS Cd/Cr 6010B	SULFIDE	ANIONS SO4, Cl, NO3	COMMENTS
1/17	1005	H10-GW-MW10-05	H2O	G	16	3	3	3	2	2	1	1	1	COOL TO 4°C
1/17	0820	H10-GW-MW11-05	H2O	G	16	3	3	3	2	2	1	1	1	
														SEE ATTACHED
														QAPP TABLE
														FOR ANALYTICAL
														REQUIREMENTS
		** ALL VIALS IN SEPARATE COOLER												
													*MW10-	EXTRA AMBER
														FOR TOC ANALYSIS
														NEEDS PRESERVATIVE

1. RELINQUISHED BY Alan L Pate	DATE 1/17/01	TIME 1730	1. RECEIVED BY [illegible]	DATE 1/18/01	TIME 1000
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

FORM NO. [illegible]

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER | PAGE ____ OF ____

PROJECT NO: N3995	SITE NAME: NAS JAX - HANGAR 1000	PROJECT MANAGER AND PHONE NUMBER: MARK PETERSON 904-281-0400	LABORATORY NAME AND CONTACT: ACCUTEST - LINDA WILLIAMS
SAMPLERS (SIGNATURE): Alan J Pate		FIELD OPERATIONS LEADER AND PHONE NUMBER: ALAN PATE 904-281-0400	ADDRESS: 4405 VINELAND Rd
		CARRIER/WAYBILL NUMBER: FED EX	CITY, STATE: ORLANDO, FL 32811

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

F8711

						VOCs 8260B	METHANE/ETHANE/ETHENE RSK 147/175	ALCOHOLS 8015B	SVOCs 8270C	PAHs 8310	METALS Cd/Cr 6010B	SULFIDE	ANIONS: SO4, Cl, NO3	
					CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	G	G	G	G	P	P	P	
					PRESERVATIVE USED	HCL	—	—	—	—	HNO3	NaOH	—	
DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS								COMMENTS
1/17	1545	H10-GW-MW02-05	H_2O	G	16	3	3	3	2	2	1	1	1	COOL TO 4°C
1/17	1005	H10-GW-MW10-05	H_2O	G	9	3	3	3						
1/17	0820	H10-GW-MW11-05	H_2O	G	9	3	3	3						SEE ATTACHED
1/17	1200	H10-GW-MW08-05	H_2O	G	9	3	3	3						QAPP TABLE
1/17	1400	H10-GW-MW01-05	H_2O	G	9	3	3	3						FOR ANALYTICAL
1/17		TRIP BLANK	H_2O		2	2								REQUIREMENTS

1. RELINQUISHED BY: Alan Pate	DATE 1/17/01	TIME 1730	1. RECEIVED BY: Mike [illegible]	DATE 1/18/01	TIME 1000
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

ACCUTEST LABORATORIES SOUTHEAST
SAMPLE RECEIPT CONFIRMATION

Accutest Job Number: F8711

Client/Project: TTNUS N 3995

Date/Time Received: 1/18/01 1000

Method of Delivery: Fed Ex Greyhound UPS Pickup Delivery Other

Air Bill Number: 8219 5407 2276

Cooler Temperatures: 2.3, 2.4 4.0

Custody Seals Intact?	YES	NO
Chain Of Custody Provided?	YES	NO
Chain Of Custody Match Bottles?	YES	NO #
Sample Labels Present?	YES	NO
Are All Bottles Unbroken?	YES	NO
Proper Preservative?	~~YES~~	NO ##
Correct Containers Used?	YES	NO
Sufficient Sample Volume?	YES	NO

Number of Encores: ________

COMMENTS:

an extra bottle was sent for TOC for -2 but was not on chain

needed to add preservative to TOC

Signature: Mike [signature] Date: 1/18/01

Units	Nsample	Lab Id	Qc Type	Sdg		Samp Date	Extr Date	Anal Date	TO EXTR_DATE	TO ANAL_DATE	[illegible]
UG/L	H10-GW-MW01-05	F8711-5	NORMAL	F8711	PAH	01/17/01	01/24/01	01/25/01	7	1	8
UG/L	H10-GW-MW02-05	F8711-1	NORMAL	F8711	PAH	01/17/01	01/24/01	01/25/01	7	1	8
UG/L	H10-GW-MW08-05	F8711-4	NORMAL	F8711	PAH	01/17/01	01/24/01	01/25/01	7	1	8
UG/L	H10-GW-MW10-05	F8711-2	NORMAL	F8711	PAH	01/17/01	01/24/01	01/25/01	7	1	8
UG/L	H10-GW-MW11-05	F8711-3	NORMAL	F8711	PAH	01/17/01	01/24/01	01/25/01	7	1	8
MG/L	H10-GW-MW01-05	F8711-5	NORMAL	F8711	SO4	01/17/01	01/24/01	01/24/01	7	0	7
MG/L	H10-GW-MW02-05	F8711-1	NORMAL	F8711	SO4	01/17/01	01/24/01	01/24/01	7	0	7
MG/L	H10-GW-MW08-05	F8711-4	NORMAL	F8711	SO4	01/17/01	01/24/01	01/24/01	7	0	7
MG/L	H10-GW-MW10-05	F8711-2	NORMAL	F8711	SO4	01/17/01	01/24/01	01/24/01	7	0	7
MG/L	H10-GW-MW11-05	F8711-3	NORMAL	F8711	SO4	01/17/01	01/24/01	01/24/01	7	0	7
MG/L	H10-GW-MW10-05	F8711-2	NORMAL	F8711	TOC	01/17/01	02/03/01	02/03/01	17	0	17

Units	Nsample	Lab Id	Qc Type	Sdg		Samp Date	Extr Date	Anal Date	TO EXTR_DATE	TO ANAL_DATE	ANAL[illegible]E
MG/L	H10-GW-MW11-05	F8711-3	NORMAL	F8711	HSUL	01/17/01	/ /	01/22/01	0	0	5
UG/L	H10-GW-MW01-05	F8711-5	NORMAL	F8711	M	01/17/01	01/22/01	01/23/01	5	1	6
UG/L	H10-GW-MW02-05	F8711-1	NORMAL	F8711	M	01/17/01	01/22/01	01/23/01	5	1	6
UG/L	H10-GW-MW08-05	F8711-4	NORMAL	F8711	M	01/17/01	01/22/01	01/23/01	5	1	6
UG/L	H10-GW-MW10-05	F8711-2	NORMAL	F8711	M	01/17/01	01/22/01	01/23/01	5	1	6
UG/L	H10-GW-MW11-05	F8711-3	NORMAL	F8711	M	01/17/01	01/22/01	01/23/01	5	1	6
UG/L	H10-GW-MW01-05	F8711-5	NORMAL	F8711	METH	01/17/01	/ /	01/23/01	0	0	6
UG/L	H10-GW-MW02-05	F8711-1	NORMAL	F8711	METH	01/17/01	/ /	01/23/01	0	0	6
UG/L	H10-GW-MW08-05	F8711-4	NORMAL	F8711	METH	01/17/01	/ /	01/23/01	0	0	6
UG/L	H10-GW-MW10-05	F8711-2	NORMAL	F8711	METH	01/17/01	/ /	01/23/01	0	0	6
UG/L	H10-GW-MW11-05	F8711-3	NORMAL	F8711	METH	01/17/01	/ /	01/23/01	0	0	6
MG/L	H10-GW-MW01-05	F8711-5	NORMAL	F8711	NTA	01/17/01	01/18/01	01/18/01	1	0	1
MG/L	H10-GW-MW02-05	F8711-1	NORMAL	F8711	NTA	01/17/01	01/18/01	01/18/01	1	0	1
MG/L	H10-GW-MW08-05	F8711-4	NORMAL	F8711	NTA	01/17/01	01/18/01	01/18/01	1	0	1
MG/L	H10-GW-MW10-05	F8711-2	NORMAL	F8711	NTA	01/17/01	01/18/01	01/18/01	1	0	1
MG/L	H10-GW-MW11-05	F8711-3	NORMAL	F8711	NTA	01/17/01	01/18/01	01/18/01	1	0	1
UG/L	H10-GW-MW01-05	F8711-5	NORMAL	F8711	OS	01/17/01	01/23/01	01/26/01	6	3	9
UG/L	H10-GW-MW02-05	F8711-1	NORMAL	F8711	OS	01/17/01	01/23/01	01/26/01	6	3	9
UG/L	H10-GW-MW08-05	F8711-4	NORMAL	F8711	OS	01/17/01	01/23/01	01/26/01	6	3	9
UG/L	H10-GW-MW10-05	F8711-2	NORMAL	F8711	OS	01/17/01	01/23/01	01/26/01	6	3	9
UG/L	H10-GW-MW11-05	F8711-3	NORMAL	F8711	OS	01/17/01	01/23/01	01/26/01	6	3	9
UG/L	H10-GW-MW01-05	F8711-5	NORMAL	F8711	OV	01/17/01	/ /	01/23/01	0	0	6
UG/L	H10-GW-MW02-05	F8711-1	NORMAL	F8711	OV	01/17/01	/ /	01/22/01	0	0	5
UG/L	H10-GW-MW08-05	F8711-4	NORMAL	F8711	OV	01/17/01	/ /	01/24/01	0	0	7
UG/L	H10-GW-MW10-05	F8711-2	NORMAL	F8711	OV	01/17/01	/ /	01/22/01	0	0	5
UG/L	H10-GW-MW11-05	F8711-3	NORMAL	F8711	OV	01/17/01	/ /	01/22/01	0	0	5
UG/L	TRIP BLANK-011701	F8711-6	NORMAL	F8711	OV	01/17/01	/ /	01/23/01	0	0	6

F8711

HOLDING TIME

02/26/01

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UG/L	H10-GW-MW01-05	F8711-5	NORMAL	F8711	ALC	01/17/01	/ /	01/25/01	0	0	8
UG/L	H10-GW-MW02-05	F8711-1	NORMAL	F8711	ALC	01/17/01	/ /	01/25/01	0	0	8
UG/L	H10-GW-MW08-05	F8711-4	NORMAL	F8711	ALC	01/17/01	/ /	01/25/01	0	0	8
UG/L	H10-GW-MW10-05	F8711-2	NORMAL	F8711	ALC	01/17/01	/ /	01/25/01	0	0	8
UG/L	H10-GW-MW11-05	F8711-3	NORMAL	F8711	ALC	01/17/01	/ /	01/25/01	0	0	8
MG/L	H10-GW-MW01-05	F8711-5	NORMAL	F8711	CL	01/17/01	01/22/01	01/22/01	5	0	5
MG/L	H10-GW-MW02-05	F8711-1	NORMAL	F8711	CL	01/17/01	01/22/01	01/22/01	5	0	5
MG/L	H10-GW-MW08-05	F8711-4	NORMAL	F8711	CL	01/17/01	01/22/01	01/22/01	5	0	5
MG/L	H10-GW-MW10-05	F8711-2	NORMAL	F8711	CL	01/17/01	01/22/01	01/22/01	5	0	5
MG/L	H10-GW-MW11-05	F8711-3	NORMAL	F8711	CL	01/17/01	01/22/01	01/22/01	5	0	5
UG/L	H10-GW-MW01-05	F8711-5	NORMAL	F8711	ETHA	01/17/01	/ /	01/23/01	0	0	6
UG/L	H10-GW-MW02-05	F8711-1	NORMAL	F8711	ETHA	01/17/01	/ /	01/23/01	0	0	6
UG/L	H10-GW-MW08-05	F8711-4	NORMAL	F8711	ETHA	01/17/01	/ /	01/23/01	0	0	6
UG/L	H10-GW-MW10-05	F8711-2	NORMAL	F8711	ETHA	01/17/01	/ /	01/23/01	0	0	6
UG/L	H10-GW-MW11-05	F8711-3	NORMAL	F8711	ETHA	01/17/01	/ /	01/23/01	0	0	6
UG/L	H10-GW-MW01-05	F8711-5	NORMAL	F8711	ETHE	01/17/01	/ /	01/23/01	0	0	6
UG/L	H10-GW-MW02-05	F8711-1	NORMAL	F8711	ETHE	01/17/01	/ /	01/23/01	0	0	6
UG/L	H10-GW-MW08-05	F8711-4	NORMAL	F8711	ETHE	01/17/01	/ /	01/23/01	0	0	6
UG/L	H10-GW-MW10-05	F8711-2	NORMAL	F8711	ETHE	01/17/01	/ /	01/23/01	0	0	6
UG/L	H10-GW-MW11-05	F8711-3	NORMAL	F8711	ETHE	01/17/01	/ /	01/23/01	0	0	6
MG/L	H10-GW-MW01-05	F8711-5	NORMAL	F8711	HSUL	01/17/01	/ /	01/22/01	0	0	5
MG/L	H10-GW-MW02-05	F8711-1	NORMAL	F8711	HSUL	01/17/01	/ /	01/22/01	0	0	5
MG/L	H10-GW-MW08-05	F8711-4	NORMAL	F8711	HSUL	01/17/01	/ /	01/22/01	0	0	5
MG/L	H10-GW-MW10-05	F8711-2	NORMAL	F8711	HSUL	01/17/01	/ /	01/22/01	0	0	5

APPENDIX C

SUPPORT DOCUMENTATION

ACCUTEST

Report of Analysis

Client Sample ID:	H10-GW-MW11-05		
Lab Sample ID:	F8711-3	Date Sampled:	01/17/01
Matrix:	AQ - Ground Water	Date Received:	01/18/01
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA006140.D	1	01/25/01	MRE	01/24/01	OP2620	GAA227
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	87%		29-133%
92-94-4	p-Terphenyl	82%		33-133%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Client Sample ID:	H10-GW-MW10-05		
Lab Sample ID:	F8711-2	Date Sampled:	01/17/01
Matrix:	AQ - Ground Water	Date Received:	01/18/01
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA006139.D	1	01/25/01	MRE	01/24/01	OP2620	GAA227
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	65%		29-133%
92-94-4	p-Terphenyl	57%		33-133%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

ACCUTEST

Report of Analysis

Client Sample ID:	H10-GW-MW08-05		
Lab Sample ID:	F8711-4	Date Sampled:	01/17/01
Matrix:	AQ - Ground Water	Date Received:	01/18/01
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA006141.D	1	01/25/01	MRE	01/24/01	OP2620	GAA227
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	2.0	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	93%		29-133%
92-94-4	p-Terphenyl	86%		33-133%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

ACCUTEST

Report of Analysis

Client Sample ID:	H10-GW-MW02-05		
Lab Sample ID:	F8711-1	Date Sampled:	01/17/01
Matrix:	AQ - Ground Water	Date Received:	01/18/01
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA006138.D	1	01/25/01	MRE	01/24/01	OP2620	GAA227
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	86%		29-133%
92-94-4	p-Terphenyl	69%		33-133%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

ACCUTEST

Report of Analysis

Client Sample ID:	H10-GW-MW01-05		
Lab Sample ID:	F8711-5	Date Sampled:	01/17/01
Matrix:	AQ - Ground Water	Date Received:	01/18/01
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	AA006142.D	1	01/25/01	MRE	01/24/01	OP2620	GAA227
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	85%		29-133%
92-94-4	p-Terphenyl	66%		33-133%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

ACCUTEST

Report of Analysis

Client Sample ID:	H10-GW-MW11-05		
Lab Sample ID:	F8711-3	Date Sampled:	01/17/01
Matrix:	AQ - Ground Water	Date Received:	01/18/01
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L006218.D	1	01/26/01	ME	01/23/01	OP2613	SL375
Run #2	L006334.D	1	02/01/01	ME	01/23/01	OP2614	SL380

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.5	ug/l	
95-48-7	2-Methylphenol	ND	5.5	ug/l	
	3&4-Methylphenol	ND	4.4	ug/l	
100-02-7	4-Nitrophenol	ND	28	ug/l	
87-86-5	Pentachlorophenol	ND a	1.1	ug/l	
108-95-2	Phenol	ND	5.5	ug/l	
86-74-8	Carbazole	ND	4.4	ug/l	
121-14-2	2,4-Dinitrotoluene	ND a	0.22	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	4.4	ug/l	
110-86-1	Pyridine	ND	5.5	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	42%		21-100%
4165-62-2	Phenol-d5	28%		10-94%
118-79-6	2,4,6-Tribromophenol	80%		10-123%
4165-60-0	Nitrobenzene-d5	69%		35-114%
321-60-8	2-Fluorobiphenyl	64%		43-116%
1718-51-0	Terphenyl-d14	75%		33-141%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

ACCUTEST

Report of Analysis

Client Sample ID:	H10-GW-MW10-05		
Lab Sample ID:	F8711-2	Date Sampled:	01/17/01
Matrix:	AQ - Ground Water	Date Received:	01/18/01
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L006217.D	1	01/26/01	ME	01/23/01	OP2613	SL375
Run #2	L006333.D	1	02/01/01	ME	01/23/01	OP2614	SL380

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.5	ug/l	
95-48-7	2-Methylphenol	ND	5.5	ug/l	
	3&4-Methylphenol	ND	4.4	ug/l	
100-02-7	4-Nitrophenol	ND	28	ug/l	
87-86-5	Pentachlorophenol	ND [a]	1.1	ug/l	
108-95-2	Phenol	ND	5.5	ug/l	
86-74-8	Carbazole	ND	4.4	ug/l	
121-14-2	2,4-Dinitrotoluene	ND [a]	0.22	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	4.4	ug/l	
110-86-1	Pyridine	ND	5.5	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	42%		21-100%
4165-62-2	Phenol-d5	28%		10-94%
118-79-6	2,4,6-Tribromophenol	80%		10-123%
4165-60-0	Nitrobenzene-d5	71%		35-114%
321-60-8	2-Fluorobiphenyl	65%		43-116%
1718-51-0	Terphenyl-d14	78%		33-141%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

ACCUTEST

Report of Analysis

Client Sample ID:	H10-GW-MW08-05		
Lab Sample ID:	F8711-4	Date Sampled:	01/17/01
Matrix:	AQ - Ground Water	Date Received:	01/18/01
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L006219.D	1	01/26/01	ME	01/23/01	OP2613	SL375
Run #2	L006335.D	1	02/01/01	ME	01/23/01	OP2614	SL380

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	ug/l	
	3&4-Methylphenol	5.2	4.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	ug/l	
87-86-5	Pentachlorophenol	ND [a]	1.0	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
86-74-8	Carbazole	ND	4.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND [a]	0.20	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	4.0	ug/l	
110-86-1	Pyridine	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	40%		21-100%
4165-62-2	Phenol-d5	26%		10-94%
118-79-6	2,4,6-Tribromophenol	90%		10-123%
4165-60-0	Nitrobenzene-d5	70%		35-114%
321-60-8	2-Fluorobiphenyl	64%		43-116%
1718-51-0	Terphenyl-d14	86%		33-141%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

ACCUTEST

Report of Analysis

Client Sample ID:	H10-GW-MW02-05			
Lab Sample ID:	F8711-1		Date Sampled:	01/17/01
Matrix:	AQ - Ground Water		Date Received:	01/18/01
Method:	SW846 8270C SW846 3510C		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L006216.D	1	01/26/01	ME	01/23/01	OP2613	SL375
Run #2	L006332.D	1	02/01/01	ME	01/23/01	OP2614	SL380

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	ug/l	
	3&4-Methylphenol	ND	4.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	ug/l	
87-86-5	Pentachlorophenol	ND [a]	1.0	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
86-74-8	Carbazole	ND	4.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND [a]	0.20	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	4.0	ug/l	
110-86-1	Pyridine	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	44%		21-100%
4165-62-2	Phenol-d5	28%		10-94%
118-79-6	2,4,6-Tribromophenol	96%		10-123%
4165-60-0	Nitrobenzene-d5	74%		35-114%
321-60-8	2-Fluorobiphenyl	69%		43-116%
1718-51-0	Terphenyl-d14	90%		33-141%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

ACCUTEST

Report of Analysis

Client Sample ID:	H10-GW-MW01-05		
Lab Sample ID:	F8711-5	Date Sampled:	01/17/01
Matrix:	AQ - Ground Water	Date Received:	01/18/01
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L006220.D	1	01/26/01	ME	01/23/01	OP2613	SL375
Run #2	L006336.D	1	02/01/01	ME	01/23/01	OP2614	SL380

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	ug/l	
	3&4-Methylphenol	ND	4.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	ug/l	
87-86-5	Pentachlorophenol	ND [a]	1.0	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
86-74-8	Carbazole	ND	4.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND [a]	0.20	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	4.0	ug/l	
110-86-1	Pyridine	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	44%		21-100%
4165-62-2	Phenol-d5	30%		10-94%
118-79-6	2,4,6-Tribromophenol	86%		10-123%
4165-60-0	Nitrobenzene-d5	75%		35-114%
321-60-8	2-Fluorobiphenyl	68%		43-116%
1718-51-0	Terphenyl-d14	82%		33-141%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW11-05		
Lab Sample ID:	F8711-3	Date Sampled:	01/17/01
Matrix:	AQ - Ground Water	Date Received:	01/18/01
Method:	RSKSOP-147/175	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000055.D	1	01/23/01	RAW	n/a	n/a	GXY2
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	384	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

ACCUTEST

Report of Analysis

Client Sample ID:	H10-GW-MW10-05		
Lab Sample ID:	F8711-2	Date Sampled:	01/17/01
Matrix:	AQ - Ground Water	Date Received:	01/18/01
Method:	RSKSOP-147/175	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000052.D	1	01/23/01	RAW	n/a	n/a	GXY2
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	327	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

ACCUTEST

Report of Analysis

Client Sample ID:	H10-GW-MW08-05		
Lab Sample ID:	F8711-4	Date Sampled:	01/17/01
Matrix:	AQ - Ground Water	Date Received:	01/18/01
Method:	RSKSOP-147/175	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000056.D	1	01/23/01	RAW	n/a	n/a	GXY2
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	2.80	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

ACCUTEST

Report of Analysis

Client Sample ID:	H10-GW-MW02-05		
Lab Sample ID:	F8711-1	Date Sampled:	01/17/01
Matrix:	AQ - Ground Water	Date Received:	01/18/01
Method:	RSKSOP-147/175	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000051.D	1	01/23/01	RAW	n/a	n/a	GXY2
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	122	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

ACCUTEST

Report of Analysis

Client Sample ID: H10-GW-MW01-05
Lab Sample ID: F8711-5
Matrix: AQ - Ground Water
Method: RSKSOP-147/175
Project: NAS Jax-Hanger 1000

Date Sampled: 01/17/01
Date Received: 01/18/01
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000057.D	1	01/23/01	RAW	n/a	n/a	GXY2
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	4.38	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

ACCUTEST

Report of Analysis

Client Sample ID:	H10-GW-MW11-05		
Lab Sample ID:	F8711-3	Date Sampled:	01/17/01
Matrix:	AQ - Ground Water	Date Received:	01/18/01
Method:	DAI	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH24777.D	1	01/25/01	ANJ	n/a	n/a	N:GGH696
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	81%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

ACCUTEST

Report of Analysis

Client Sample ID:	H10-GW-MW10-05		
Lab Sample ID:	F8711-2	Date Sampled:	01/17/01
Matrix:	AQ - Ground Water	Date Received:	01/18/01
Method:	DAI	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH24776.D	1	01/25/01	ANJ	n/a	n/a	N:GGH696
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	83%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW08-05		
Lab Sample ID:	F8711-4	Date Sampled:	01/17/01
Matrix:	AQ - Ground Water	Date Received:	01/18/01
Method:	DAI	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH24781.D	1	01/25/01	ANJ	n/a	n/a	N:GGH696
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	105%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

ACCUTEST

Report of Analysis

Client Sample ID:	H10-GW-MW10-05		
Lab Sample ID:	F8711-2	Date Sampled:	01/17/01
Matrix:	AQ - Ground Water	Date Received:	01/18/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B003569.D	1	01/22/01	JG	n/a	n/a	VB136
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	11.6	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	1.1	2.0	ug/l	J
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	0.97	2.0	ug/l	J
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		80-120%
17060-07-0	1,2-Dichloroethane-D4	89%		69-128%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	96%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

ACCUTEST

Report of Analysis

Client Sample ID:	H10-GW-MW08-05		
Lab Sample ID:	F8711-4	Date Sampled:	01/17/01
Matrix:	AQ - Ground Water	Date Received:	01/18/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B003618.D	100	01/24/01	JG	n/a	n/a	VB138
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5000	ug/l	
71-43-2	Benzene	ND	100	ug/l	
108-90-7	Chlorobenzene	ND	200	ug/l	
75-15-0	Carbon disulfide	ND	1000	ug/l	
56-23-5	Carbon tetrachloride	ND	200	ug/l	
108-94-1	Cyclohexanone	ND	1000	ug/l	
75-34-3	1,1-Dichloroethane	600	200	ug/l	
75-35-4	1,1-Dichloroethylene	1500	200	ug/l	
107-06-2	1,2-Dichloroethane	ND	200	ug/l	
540-59-0	1,2-Dichloroethene (total)	2780	400	ug/l	
100-41-4	Ethylbenzene	ND	200	ug/l	
76-13-1	Freon 113	ND	200	ug/l	
75-09-2	Methylene chloride	ND	500	ug/l	
79-46-9	2-Nitropropane	ND	1000	ug/l	
71-55-6	1,1,1-Trichloroethane	7330	200	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	200	ug/l	
127-18-4	Tetrachloroethylene	ND	200	ug/l	
108-88-3	Toluene	ND	200	ug/l	
79-01-6	Trichloroethylene	8710	200	ug/l	
75-01-4	Vinyl chloride	ND	100	ug/l	
1330-20-7	Xylene (total)	ND	600	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		80-120%
17060-07-0	1,2-Dichloroethane-D4	90%		69-128%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	95%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

ACCUTEST

Report of Analysis

Client Sample ID:	H10-GW-MW02-05		
Lab Sample ID:	F8711-1	Date Sampled:	01/17/01
Matrix:	AQ - Ground Water	Date Received:	01/18/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B003568.D	1	01/22/01	JG	n/a	n/a	VB136
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	5.6	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	1.0	2.0	ug/l	J
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		80-120%
17060-07-0	1,2-Dichloroethane-D4	90%		69-128%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	95%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

ACCUTEST

Report of Analysis

Client Sample ID:	H10-GW-MW01-05			
Lab Sample ID:	F8711-5		Date Sampled:	01/17/01
Matrix:	AQ - Ground Water		Date Received:	01/18/01
Method:	SW846 8260B		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B003589.D	1	01/23/01	JG	n/a	n/a	VB137
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	1.5	2.0	ug/l	J
75-35-4	1,1-Dichloroethylene	1.4	2.0	ug/l	J
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	3.2	4.0	ug/l	J
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	22.0	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	20.7	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	7.8	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		80-120%
17060-07-0	1,2-Dichloroethane-D4	93%		69-128%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	96%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8711

SAMPLE NUMBER:	H10-GW-MW11-05											
SAMPLE DATE:	01/17/01			/ /			/ /			/ /		
LABORATORY ID:	F8711-3											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	2	U										
2-METHYLNAPHTHALENE	2	U										
ACENAPHTHENE	4	U										
ACENAPHTHYLENE	4	U										
ANTHRACENE	2	U										
BENZO(A)ANTHRACENE	0.2	U										
BENZO(A)PYRENE	0.2	U										
BENZO(B)FLUORANTHENE	0.2	U										
BENZO(G,H,I)PERYLENE	0.2	U										
BENZO(K)FLUORANTHENE	0.2	U										
CHRYSENE	2	U										
DIBENZO(A,H)ANTHRACENE	0.2	U										
FLUORANTHENE	2	U										
FLUORENE	2	U										
INDENO(1,2,3-CD)PYRENE	0.2	U										
NAPHTHALENE	2	U										
PHENANTHRENE	2	U										
PYRENE	2	U										

CTO167-[illegible]S JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8711

SAMPLE NUMBER:	H10-GW-MW01-05			H10-GW-MW02-05			H10-GW-MW08-05			H10-GW-MW10-05		
SAMPLE DATE:	01/17/01			01/17/01			01/17/01			01/17/01		
LABORATORY ID:	F8711-5			F8711-1			F8711-4			F8711-2		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	2	U		2	U		2	U		2	U	
2-METHYLNAPHTHALENE	2	U		2	U		2	U		2	U	
ACENAPHTHENE	4	U		4	U		4	U		4	U	
ACENAPHTHYLENE	4	U		4	U		4	U		4	U	
ANTHRACENE	2	U		2	U		2	U		2	U	
BENZO(A)ANTHRACENE	0.2	U		0.2	U		0.2	U		0.2	U	
BENZO(A)PYRENE	0.2	U		0.2	U		0.2	U		0.2	U	
BENZO(B)FLUORANTHENE	0.2	U		0.2	U		0.2	U		0.2	U	
BENZO(G,H,I)PERYLENE	0.2	U		0.2	U		0.2	U		0.2	U	
BENZO(K)FLUORANTHENE	0.2	U		0.2	U		0.2	U		0.2	U	
CHRYSENE	2	U		2	U		2	U		2	U	
DIBENZO(A,H)ANTHRACENE	0.2	U		0.2	U		0.2	U		0.2	U	
FLUORANTHENE	2	U		2	U		2	U		2	U	
FLUORENE	2	U		2	U		2	U		2	U	
INDENO(1,2,3-CD)PYRENE	0.2	U		0.2	U		0.2	U		0.2	U	
NAPHTHALENE	2	U		2	U		2			2	U	
PHENANTHRENE	2	U		2	U		2	U		2	U	
PYRENE	2	U		2	U		2	U		2	U	

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8711

SAMPLE NUMBER:	H10-GW-MW11-05											
SAMPLE DATE:	01/17/01			/ /			/ /			/ /		
LABORATORY ID:	F8711-3											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
2,4-DINITROTOLUENE	0.22	U										
2-CHLOROPHENOL	5.5	U										
2-METHYLPHENOL	5.5	U										
3&4-METHYLPHENOL	4.4	U										
4-NITROPHENOL	28	U										
CARBAZOLE	4.4	U										
N-NITROSO-DI-N-PROPYLAMINE	4.4	U										
PENTACHLOROPHENOL	1.1	U										
PHENOL	5.5	U										
PYRIDINE	5.5	U										

CTO167-[illegible]S JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8711

	H10-GW-MW01-06			H10-GW-MW02-05			H10-GW-MW08-05			H10-GW-MW10-05		
SAMPLE NUMBER:	H10-GW-MW01-06			H10-GW-MW02-05			H10-GW-MW08-05			H10-GW-MW10-05		
SAMPLE DATE:	01/17/01			01/17/01			01/17/01			01/17/01		
LABORATORY ID:	F8711-5			F8711-1			F8711-4			F8711-2		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
2,4-DINITROTOLUENE	0.2	U		0.2	U		0.2	U		0.22	U	
2-CHLOROPHENOL	5	U		5	U		5	U		5.5	U	
2-METHYLPHENOL	5	U		5	U		5	U		5.5	U	
3&4-METHYLPHENOL	4	U		4	U		5.2			4.4	U	
4-NITROPHENOL	25	U		25	U		25	U		28	U	
CARBAZOLE	4	U		4	U		4	U		4.4	U	
N-NITROSO-DI-N-PROPYLAMINE	4	U		4	U		4	U		4.4	U	
PENTACHLOROPHENOL	1	U		1	U		1	U		1.1	U	
PHENOL	5	U		5	U		5	U		5.5	U	
PYRIDINE	5	U		5	U		5	U		5.5	U	

CTO167-[redacted]S JACKSONVILLE

WATER DATA
Accutest, NJ
SDG: F8711

SAMPLE NUMBER:	H10-GW-MW11-05											
SAMPLE DATE:	01/17/01			/ /			/ /			/ /		
LABORATORY ID:	F8711-3											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
DISSOLVED GASES												
ETHANE	1	U										
ETHENE	1	U										
METHANE	384											

CTO157-NAS JACKSONVILLE

WATER DATA
Accutest, NJ
SDG: F8711

SAMPLE NUMBER:	H10-GW-MW01-05			H10-GW-MW02-05			H10-GW-MW08-05			H10-GW-MW10-05		
SAMPLE DATE:	01/17/01			01/17/01			01/17/01			01/17/01		
LABORATORY ID:	F8711-5			F8711-1			F8711-4			F8711-2		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
DISSOLVED GASES												
ETHANE	1	U		1	U		1	U		1	U	
ETHENE	1	U		1	U		1	U		1	U	
METHANE	4.38			122			2.8			327		

CTO16[redacted]AS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8711

SAMPLE NUMBER:	H1D-GW-MW11-05			TRIP BLANK-011701			/ /			/ /		
SAMPLE DATE:	01/17/01			01/17/01								
LABORATORY ID:	F8711-3			F8711-6								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	0.0 %			0.0 %			100.0 %			100.0 %		
UNITS:	UG/L			UG/L								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	2	U		2	U							
1,1,2-TRICHLOROETHANE	2	U		2	U							
1,1-DICHLOROETHANE	2	U		2	U							
1,1-DICHLOROETHENE	2	U		2	U							
1,2-DICHLOROETHANE	2	U		2	U							
1,2-DICHLOROETHENE (TOTAL)	4	U		4	U							
2-NITROPROPANE	10	U		10	U							
ACETONE	50	U		50	U							
BENZENE	1	U		1	U							
CARBON DISULFIDE	10	U		10	U							
CARBON TETRACHLORIDE	2	U		2	U							
CHLOROBENZENE	2	U		2	U							
CYCLOHEXANONE	10	U		10	U							
ETHYLBENZENE	2	U		2	U							
FREON-113	2	U		2	U							
ISOBUTYL ALCOHOL	500	U										
METHANOL	500	U										
METHYLENE CHLORIDE	5	U		5	U							
N-BUTYL ALCOHOL	500	U										
TETRACHLOROETHENE	2	U		2	U							
TOLUENE	2	U		2	U							
TRICHLOROETHENE	2	U		2	U							
VINYL CHLORIDE	1	U		1	U							
XYLENES, TOTAL	6	U		6	U							

CTO167 [illegible]AS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8711

SAMPLE NUMBER:	H10-GW-MW01-05			H10-GW-MW02-05			H10-GW-MW08-05			H10-GW-MW10-05		
SAMPLE DATE:	01/17/01			01/17/01			01/17/01			01/17/01		
LABORATORY ID:	F8711-5			F8711-1			F8711-4			F8711-2		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	20.7			5.8			7330			1.1	J	P
1,1,2-TRICHLOROETHANE	2	U		2	U		200	U		2	U	
1,1-DICHLOROETHANE	1.5	J	P	2	U		600			2	U	
1,1-DICHLOROETHENE	1.4	J	P	2	U		1500			2	U	
1,2-DICHLOROETHANE	2	U		2	U		200	U		2	U	
1,2-DICHLOROETHENE (TOTAL)	3.2	J	P	4	U		2780			4	U	
2-NITROPROPANE	10	U		10	U		1000	U		10	U	
ACETONE	50	U		50	U		5000	U		50	U	
BENZENE	1	U		1	U		100	U		1	U	
CARBON DISULFIDE	10	U		10	U		1000	U		10	U	
CARBON TETRACHLORIDE	2	U		2	U		200	U		2	U	
CHLOROBENZENE	2	U		2	U		200	U		2	U	
CYCLOHEXANONE	10	U		10	U		1000	U		10	U	
ETHYLBENZENE	2	U		2	U		200	U		2	U	
FREON-113	22			2	U		200	U		11.6		
ISOBUTYL ALCOHOL	500	U		500	U		500	U		500	U	
METHANOL	500	U		500	U		500	U		500	U	
METHYLENE CHLORIDE	5	U		5	U		500	U		5	U	
N-BUTYL ALCOHOL	500	U		500	U		500	U		500	U	
TETRACHLOROETHENE	2	U		2	U		200	U		2	U	
TOLUENE	2	U		2	U		200	U		2	U	
TRICHLOROETHENE	7.8			1	J	P	8710			0.97	J	P
VINYL CHLORIDE	1	U		1	U		100	U		1	U	
XYLENES, TOTAL	6	U		6	U		500	U		6	U	

Qualifier Codes:

A = Lab Blank Contamination

B = Field Blank contamination

C = Calibration (i.e. %RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance

D = MS/MSD Noncompliance

E = LCS/LCSD Noncompliance

F = Lab Duplicate Imprecision

G = Field Duplicate Imprecision

H = Holding Time Exceedance

I = ICP Serial Dilution Noncompliance

J = GFAA PDS – GFAA MSAs r<0.995

K = ICP Interference – Include ICSAB %Rs

L = Instrument Calibration Range Exceedance

M = Sample Preservation

N = Internal Standard Noncompliance

O = Poor Instrument Performance (I.E. base-time drifting)

P = Uncertainty near detection limit (<2 x IDL for Inorganics and < CRQL for Organics)

Q = Other problems (can encompass a number of issues)

R = Surrogates Recovery Noncompliance

S = Pesticide/PCB Resolution

T = % Breakdown Noncompliance for DDT and Endrin

U = Pest/PCB D% between columns for positive results

V = Non-Linear calibrations, tuning r< 0.995 (correlation coefficient)

W = EMPC result

X = Signal to noise response drop

Y = % Solid content is less than 30%

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Tetra Tech NUS

INTERNAL CORRESPONDENCE

TO:	Mr. Mark Peterson	DATE:	March 12, 2001
FROM:	Elena Rodriguez	COPIES:	DV FILE

SUBJECT: **DATA VALIDATION - ORGANICS**
CTO 167, NASJAX
SDG F8711

SAMPLES: 6/Aqueous/

H10-GW-MW01-05
H10-GW-MW02-05
H10-GW-MW08-05
H10-GW-MW10-05
H10-GW-MW11-05
Trip Blank

OVERVIEW

The sample set for CTO 167, NASJAX, SDG F8711 consists of 5 aqueous environmental samples and one aqueous quality control sample (trip blank). All groundwater samples were analyzed for select volatile organic compounds, semi-volatile organic compounds, polynuclear aromatic hydrocarbons, alcohols, and dissolved gasses. The trip blank was analyzed for volatile organic compounds.

The samples were collected by TetraTech NUS on January 17, 2001 and analyzed by Accutest Laboratories. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria using the following analytical and reporting protocols: SW-846 Methods 8260B, 8270C, 8310, 8015 and RSK SOP 147/175. The data contained in this SDG were validated with regard to the following parameters:

- * Data completeness
- * Holding times
- * Initial/continuing calibrations
- * Laboratory method and field quality control blank results
- * Surrogate recoveries
- * Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A.

Volatile Organics

Due to the presence of several target compounds at high concentrations, sample H10-GW-MW08-05 was analyzed at a 1:100 dilution factor and was reported with elevated detection limits

Semi-Volatile Organics

Data reported for this fraction were found to be acceptable.

Polynuclear Aromatic Hydrocarbons

Data reported for this fraction were found to be acceptable.

Dissolved Gases (Methane-Ethane-Ethene)

Data reported for this fraction were found to be acceptable.

Additional Comments

Positive results below the reporting limit (RL) were qualified as estimated, J, due to uncertainty near the detection limit.

EXECUTIVE SUMMARY

Laboratory Performance Issues: None.

Other Factors Affecting Data Quality: None

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99), and the Navy IRCDQM (9/99) NFESC guidelines. The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC guidelines and the Quality Assurance Project Plan (QAPP)."

Elena L Rodriguez
Tetra Tech NUS

Elena Rodriguez

Tetra Tech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F8681
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Ranger 100

Analyte	Batch ID	RL	MB Result	Units	BSP %Recov	QC Limits
Chloride	GP2026	1.0	<1.0	mg/l	105.0	88-122%
Chloride	GP2038	1.0	<1.0	mg/l	105.0	88-122%
Fluoride	GP2028	0.10	<0.10	mg/l	108.0	90-110%
Nitrogen, Nitrate	GP2028	0.10	<0.10	mg/l	95.0	90-110%
Sulfate	GP2044	10	<10	mg/l	100.0	80-120%

Associated Samples:
Batch GP2026: F8681-1
Batch GP2028: F8681-1, F8681-2, F8681-3, F8681-4, F8681-5
Batch GP2038: F8681-2, F8681-3, F8681-4, F8681-5
Batch GP2044: F8681-1, F8681-2, F8681-3, F8681-4, F8681-5

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F8681
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

Analyte	Batch ID	RL	MB Result	Units	BSP %Recov	QC Limits
Chloride	GP2026	1.0	<1.0	mg/l	105.0	88-122%
Chloride	GP2038	1.0	<1.0	mg/l	105.0	88-122%
Fluoride	GP2028	0.10	<0.10	mg/l	108.0	90-110%
Nitrogen, Nitrate	GP2028	0.10	<0.10	mg/l	95.0	90-110%
Sulfate	GP2044	10	<10	mg/l	100.0	80-120%

Associated Samples:
Batch GP2026: F8681-1
Batch GP2028: F8681-1, F8681-2, F8681-3, F8681-4, F8681-5
Batch GP2038: F8681-2, F8681-3, F8681-4, F8681-5
Batch GP2044: F8681-1, F8681-2, F8681-3, F8681-4, F8681-5

[illegible]
[illegible]

Login Number: F8681
Account: TETRFLNJ - Tetra-Tech NUS
Project: TETRFLNJ3124 - NAS Jax-Hangar 1000

QC Batch ID: MP3272
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 01/22/01

Metal	RL	IDL	MB raw	final
Aluminum	200	9.44		
Antimony	5.0	2.56		
Arsenic	10	3.15	anr	
Barium	200	.94	anr	
Beryllium	5.0	.22		
Cadmium	5.0	.27	0.23	<5.0
Calcium	1000	10.2		
Chromium	10	.35	-0.33	<10
Cobalt	50	.55		
Copper	25	.71		
Iron	300	9.02		
Lead	5.0	1.16	anr	
Magnesium	5000	25.5		
Manganese	15	.26		
Molybdenum	50	1.01		
Nickel	40	.8		
Potassium	5000	49		
Selenium	10	2.5	anr	
Silver	10	.59	anr	
Sodium	5000	173		
Thallium	10	2.07		
Tin	50	1.03		
Vanadium	50	.58		
Zinc	20	.36		

Associated samples MP3272: F8681-1, F8681-2, F8681-3, F8681-4, F8681-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

[illegible]

Part [illegible] - Initial and Continuing Calibration Blanks

Login Number: [illegible]

Account: TETRFLCX - Tetra-Tech,NUS

Project: TETRFLJX1724 - NAS Jax-Hanger 1000

File ID: IR0123M1.ASC
QC Limits: result < RL

Date Analyzed: 01/23/01
Run ID: MA2179

Methods: SW846 6010B
Units: ug/l

Metal	RL	IDL	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	9.44						
Antimony	5.0	2.56						
Arsenic	10	3.15	anr					
Barium	200	.94	anr					
Beryllium	5.0	.22						
Cadmium	5.0	.27	0.19	<5.0	0.29	<5.0	0.37	<5.0
Calcium	1000	10.2						
Chromium	10	.35	1.3	<10	0.66	<10	0.40	<10
Cobalt	50	.55						
Copper	25	.71						
Iron	300	9.02						
Lead	5.0	1.26	anr					
Magnesium	5000	25.5						
Manganese	15	.26						
Molybdenum	50	1.01						
Nickel	40	.8						
Potassium	5000	49						
Selenium	10	2.5	anr					
Silver	10	.59	anr					
Sodium	5000	173	anr					
Thallium	10	2.07						
Tin	50	1.03						
Vanadium	50	.58						
Zinc	20	.36						

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Initial and Continuing Calibration Blanks

Login Number: [illegible]
Account: TETRFLCO - Tetra Tech NUS
Project: TETRFLDX172- - NAS Jax-Hangar 1000

File ID: IRC123M1.ASC
QC Limits: result < RL

Date Analyzed: 01/23/01
Run ID: MA2179

Methods: SW846 6010B
Units: ug/l

Metal	RL	IDL	ICB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	9.44								
Antimony	5.0	2.56								
Arsenic	10	3.15	anr							
Barium	200	.94	anr							
Beryllium	5.0	.22								
Cadmium	5.0	.27	0.43	<5.0	0.46	<5.0	0.12	<5.0	0.30	<5.0
Calcium	1000	10.2								
Chromium	10	.35	-0.18	<10	1.0	<10	1.4	<10	4.2	<10
Cobalt	50	.55								
Copper	25	.71								
Iron	300	9.02								
Lead	5.0	1.16	anr							
Magnesium	5000	25.5								
Manganese	15	.26								
Molybdenum	50	1.01								
Nickel	40	.8								
Potassium	5000	49								
Selenium	10	2.5	anr							
Silver	10	.59	anr							
Sodium	5000	173	anr							
Thallium	10	2.07								
Tin	50	1.03								
Vanadium	50	.58								
Zinc	20	.36								

(*) Outside of QC limits
(anr) Analyte not requested

TETRA TECH NUS, INC. — CHAIN OF CUSTODY — NUMBER — PAGE ___ OF ___

PROJECT NO:	SITE NAME:	PROJECT MANAGER AND PHONE NUMBER	LABORATORY NAME AND CONTACT:
N3995	NAS JAX - HANGAR 1000	MARK PETERSON 904-281-0400	ACCUTEST - LINDA WILLIAMS
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER	ADDRESS
		ALAN PATE 904-281-0400	4405 VINELAND Rd #C-15
		CARRIER/WAYBILL NUMBER	CITY, STATE
		FED EX	ORLANDO, FL 32811

STANDARD TAT ☒ RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

F8681

					CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	G	G	G	G	P	P	P	
					PRESERVATIVE USED	HCL	HCl	–	–	–	HNO3	NaOH	–	
DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS ** VOCs 8260B	METHANE/ETHANE/ETHENE ** RSK 147/175	** ALCOHOLS 8015B	SVOCs 8270C	PAHs 8310	METALS: Ca, Cr 6010B	SULFIDE	ANIONS: SO_4, Cl, NO_3	COMMENTS
1/16	1200	H10-GW-MW03-05	H_2O	G	16	3	3	3	2	2	1	1	1	COOL TO 4°C
1/16	1310	H10-GW-MW13-05	H_2O	G	16	3	3	3	2	2	1	1	1	
														SEE ATTACHED QAPP TABLE FOR ANALYTICAL REQUIREMENTS

** ALL VIALS IN SEPARATE COOLER

1. RELINQUISHED BY	DATE 1/16/01	TIME 1630	1. RECEIVED BY	DATE	TIME
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DIST TION: WHITE (ACCOMPANIES SAMPLE) YELLOW IELD COPY) PINK (FILE COPY)

RM NO. TtNU

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER | PAGE ___ OF ___

PROJECT NO: N3995	SITE NAME: NAS JAX - HANGAR 1000
PROJECT MANAGER AND PHONE NUMBER	MARK PETERSON 904-281-0400
FIELD OPERATIONS LEADER AND PHONE NUMBER	ALAN PATE 904-281-0400
CARRIER/WAYBILL NUMBER	FED EX
LABORATORY NAME AND CONTACT:	ACCUTEST LABS - LINDA WILLIAMS
ADDRESS	4405 VINELAND Rd # C-15
CITY, STATE	ORLANDO, FL 32811

SAMPLERS (SIGNATURE) Alan L Pate

STANDARD TAT ☒
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

F8681

CONTAINER TYPE PLASTIC (P) or GLASS (G): G, G, G, G, G, P, P, P
PRESERVATIVE USED: HCL, HCL, –, –, –, HNO3, NaOH, –

TYPE OF ANALYSIS

DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	** VOCs 8260B	** METHANE/ETHANE/ETHENE RSK 147/175	** ALCOHOLS 8015B	SVOCs 8270C	PAHs 8310	METALS: Cd/Cr	COD/TOD B	SULFIDE	ANIONS: SO4, Cl NO3	COMMENTS
1/16	0925	H10-GW-MW16-05	H2O	G	16	3	3	3	2	2	1	1	1		COOL TO 4°C
1/16	0815	H10-GW-MW17-05	H2O	G	16	3	3	3	2	2	1	1	1		

** ALL VIALS IN SEPARATE COOLER

SEE ATTACHED QAPP TABLE FOR ANALYTICAL REQUIREMENTS

1. RELINQUISHED BY Alan L Pate	DATE 1/16/01	TIME 1630	1. RECEIVED BY	DATE	TIME
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRI[redacted]ION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) it TETRA TECH NUS, INC. — CHAIN OF CUSTODY — NUMBER — PAGE ____ OF ____

PROJECT NO: N3995	SITE NAME: NAS JAX - HANGAR 1000
PROJECT MANAGER AND PHONE NUMBER	MARK PETERSON 904-281-0400
FIELD OPERATIONS LEADER AND PHONE NUMBER	ALAN PATE 904-281-0400
CARRIER/WAYBILL NUMBER	FED EX
LABORATORY NAME AND CONTACT:	ACCUTEST LABS - LINDA WILLIAMS
ADDRESS	4405 VINELAND Rd # C-15
CITY, STATE	ORLANDO, FL 32811

SAMPLERS (SIGNATURE) Alan Pate

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

F8681

					CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	G	G	G	G	P	P	P	
					PRESERVATIVE USED	HCL	HCL	–	–	–	HNO3	NaOH	—	
DATE YEAR	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	VOCs 8260B	METHANE/ETHANE/ETHENE RSK 147/175	ALCOHOLS 8015B	SVOCs 8270C	PAHs 8310	METALS: Ca/Cr 6010B	SULFIDE	ANIONS: SO4, Cl NO3	COMMENTS
1/16	1420	H10-GW-MW22-05	H_2O	G	16	3	3	3	2	2	1	1	1	COOL TO 4°C
1/16	0925	H10-GW-MW16-05	H_2O	G	9	3	3	3						
1/16	0815	H10-GW-MW17-05	H_2O	G	9	3	3	3						SEE ATTACHED
1/16	1200	H10-GW-MW03-05	H_2O	G	9	3	3	3						QAPP TABLE
1/16	1310	H10-GW-MW13-05	H_2O	G	9	3	3	3						FOR ANALYTICAL
1/16	—	TRIP BLANK				2								REQUIREMENTS

1. RELINQUISHED BY Alan Pate	DATE 1/16/01	TIME 1630	1. RECEIVED BY	DATE	TIME
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTR[redacted]ON: WHITE (ACCOMPANIES SAMPLE) YELLOW [redacted]D COPY) PINK (FILE COPY)

3/
[redacted] NO. TINUS-0

ACCUTEST

CHAIN OF CUSTODY

4405 VINELAND ROAD • SUITE C-15
ORLANDO, FL 32811
TEL: 407-425-6700 • FAX: 407-425-0707

ACCUTEST JOB #:

ACCUTEST QUOTE #:

CLIENT INFORMATION

NAME: ALSE

ADDRESS

CITY, STATE, ZIP

SEND REPORT TO

PHONE #

FACILITY INFORMATION

PROJECT NAME: F8681

LOCATION

PROJECT NO.

FAX #

ANALYTICAL INFORMATION

ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	DATE	TIME	SAMPLED BY:	MATRIX	# OF BOTTLES	HCl	NaOH	HNO3	H2SO4	NONE	[illegible]	LAB USE
	F8681-1	1/16/01		TTMK	W	5					X	X	
	-2	↓		↓	↓	↓					X	X	
	-3										X	X	
	-4										X	X	
	-5										X	X	
											X	X	

MATRIX CODES

DW - DRINKING WATER
GW - GROUND WATER
WW - WASTE WATER
SO - SOIL
SL - SLUDGE
OI - OIL
LIQ - OTHER LIQUID
SOL - OTHER SOLID

DATA TURNAROUND INFORMATION

- STANDARD 14 Days
- 48 HOUR RUSH
- 24 HOUR EMERGENCY
- OTHER

APPROVED BY:

EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED

DATA DELIVERABLE INFORMATION

- ☒ STANDARD
- ☐ COMMERCIAL "B" ETI
- ☐ DISK DELIVERABLE
- ☐ STATE FORMS
- ☐ OTHER (SPECIFY)

COMMENTS/REMARKS

NJ

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESION, INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER:	DATE TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
1. [illegible]	1/19/01 1603	1.	2.		2.
RELINQUISHED BY: 3	DATE TIME:	RECEIVED BY: 3.	RELINQUISHED BY: 4	DATE TIME:	RECEIVED BY: 4.
RELINQUISHED BY: 5	DATE TIME:	RECEIVED BY: 5.			

PRESERVE WHERE APPLICABLE

ACCUTEST LABORATORIES SOUTHEAST
SAMPLE RECEIPT CONFIRMATION

Accutest Job Number: F8681

Client/Project: TTNUS N3995

Date/Time Received: 1/17/01 1000

Method of Delivery: Fed Ex Greyhound UPS Pickup Delivery Other

Air Bill Number: 8219 5407 2379

Cooler Temperatures: 3.0, 4.0, 2.8

Chain Of Custody Provided? YES NO

Chain Of Custody Match Bottles? YES NO

Sample Labels Present? YES NO

Are All Bottles Unbroken? YES NO

Proper Preservative? YES NO

Correct Containers Used? YES NO

Sufficient Sample Volume? YES NO

Number of Encores: 0

COMMENTS:

Units		Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	P_DATE TO ANAL_DATE
UG/L		H10-GW-MW03-05	F8681-4	NORMAL	F8681	PAH	01/16/01	01/23/01	01/24/01	7	1	8
UG/L		H10-GW-MW13-05	F8681-5	NORMAL	F8681	PAH	01/16/01	01/23/01	01/24/01	7	1	8
UG/L		H10-GW-MW16-05	F8681-2	NORMAL	F8681	PAH	01/16/01	01/23/01	01/24/01	7	1	8
UG/L		H10-GW-MW17-05	F8681-3	NORMAL	F8681	PAH	01/16/01	01/23/01	01/24/01	7	1	8
UG/L		H10-GW-MW22-05	F8681-1	NORMAL	F8681	PAH	01/16/01	01/23/01	01/24/01	7	1	8
MG/L		H10-GW-MW03-05	F8681-4	NORMAL	F8681	SO4	01/16/01	01/23/01	01/24/01	7	1	8
MG/L		H10-GW-MW13-05	F8681-5	NORMAL	F8681	SO4	01/16/01	01/24/01	01/24/01	8	0	8
MG/L		H10-GW-MW16-05	F8681-2	NORMAL	F8681	SO4	01/16/01	01/24/01	01/24/01	8	0	8
MG/L		H10-GW-MW17-05	F8681-3	NORMAL	F8681	SO4	01/16/01	01/24/01	01/24/01	8	0	8
MG/L		H10-GW-MW22-05	F8681-1	NORMAL	F8681	SO4	01/16/01	01/24/01	01/24/01	8	0	8

Units	Sample	Lab Id	Qc Type	Sdg	[illegible]	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/L	H10-GW-MW22-05	F8681-1	NORMAL	F8681	HSUL	01/16/01	/ /	01/22/01	0	0	6
UG/L	H10-GW-MW03-05	F8681-4	NORMAL	F8681	M	01/16/01	01/22/01	01/23/01	6	1	7
UG/L	H10-GW-MW13-05	F8681-5	NORMAL	F8681	M	01/16/01	01/22/01	01/23/01	6	1	7
UG/L	H10-GW-MW16-05	F8681-2	NORMAL	F8681	M	01/16/01	01/22/01	01/23/01	6	1	7
UG/L	H10-GW-MW17-05	F8681-3	NORMAL	F8681	M	01/16/01	01/22/01	01/23/01	6	1	7
UG/L	H10-GW-MW22-05	F8681-1	NORMAL	F8681	M	01/16/01	01/22/01	01/23/01	6	1	7
UG/L	H10-GW-MW03-05	F8681-4	NORMAL	F8681	METH	01/16/01	/ /	01/23/01	0	0	7
UG/L	H10-GW-MW13-05	F8681-5	NORMAL	F8681	METH	01/16/01	/ /	01/23/01	0	0	7
UG/L	H10-GW-MW16-05	F8681-2	NORMAL	F8681	METH	01/16/01	/ /	01/23/01	0	0	7
UG/L	H10-GW-MW17-05	F8681-3	NORMAL	F8681	METH	01/16/01	/ /	01/23/01	0	0	7
UG/L	H10-GW-MW22-05	F8681-1	NORMAL	F8681	METH	01/16/01	/ /	01/23/01	0	0	7
MG/L	H10-GW-MW03-05	F8681-4	NORMAL	F8681	NTA	01/16/01	01/18/01	01/18/01	2	0	2
MG/L	H10-GW-MW13-05	F8681-5	NORMAL	F8681	NTA	01/16/01	01/18/01	01/18/01	2	0	2
MG/L	H10-GW-MW16-05	F8681-2	NORMAL	F8681	NTA	01/16/01	01/18/01	01/18/01	2	0	2
MG/L	H10-GW-MW17-05	F8681-3	NORMAL	F8681	NTA	01/16/01	01/18/01	01/18/01	2	0	2
MG/L	H10-GW-MW22-05	F8681-1	NORMAL	F8681	NTA	01/16/01	01/18/01	01/18/01	2	0	2
UG/L	H10-GW-MW03-05	F8681-4	NORMAL	F8681	OS	01/16/01	01/23/01	01/26/01	7	3	10
UG/L	H10-GW-MW13-05	F8681-5	NORMAL	F8681	OS	01/16/01	01/23/01	01/26/01	7	3	10
UG/L	H10-GW-MW16-05	F8681-2	NORMAL	F8681	OS	01/16/01	01/23/01	01/26/01	7	3	10
UG/L	H10-GW-MW17-05	F8681-3	NORMAL	F8681	OS	01/16/01	01/23/01	01/26/01	7	3	10
UG/L	H10-GW-MW22-05	F8681-1	NORMAL	F8681	OS	01/16/01	01/19/01	01/30/01	3	11	14
UG/L	H10-GW-MW03-05	F8681-4	NORMAL	F8681	OV	01/16/01	/ /	01/22/01	0	0	6
UG/L	H10-GW-MW13-05	F8681-5	NORMAL	F8681	OV	01/16/01	/ /	01/22/01	0	0	6
UG/L	H10-GW-MW16-05	F8681-2	NORMAL	F8681	OV	01/16/01	/ /	01/22/01	0	0	6
UG/L	H10-GW-MW17-05	F8681-3	NORMAL	F8681	OV	01/16/01	/ /	01/22/01	0	0	6
UG/L	H10-GW-MW22-05	F8681-1	NORMAL	F8681	OV	01/16/01	/ /	01/22/01	0	0	6
UG/L	TRIP BLANK	F8681-6	NORMAL	F8681	OV	01/16/01	/ /	01/22/01	0	0	6

F8681

HOLDING TIME

02/23/01

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UG/L	H10-GW-MW03-05	F8681-4	NORMAL	F8681	ALC	01/16/01	/ /	01/25/01	0	0	9
UG/L	H10-GW-MW13-05	F8681-5	NORMAL	F8681	ALC	01/16/01	/ /	01/25/01	0	0	9
UG/L	H10-GW-MW16-05	F8681-2	NORMAL	F8681	ALC	01/16/01	/ /	01/25/01	0	0	9
UG/L	H10-GW-MW17-05	F8681-3	NORMAL	F8681	ALC	01/16/01	/ /	01/25/01	0	0	9
UG/L	H10-GW-MW22-05	F8681-1	NORMAL	F8681	ALC	01/16/01	/ /	01/25/01	0	0	9
MG/L	H10-GW-MW03-05	F8681-4	NORMAL	F8681	CL	01/16/01	01/22/01	01/22/01	6	0	6
MG/L	H10-GW-MW13-05	F8681-5	NORMAL	F8681	CL	01/16/01	01/22/01	01/22/01	6	0	6
MG/L	H10-GW-MW16-05	F8681-2	NORMAL	F8681	CL	01/16/01	01/22/01	01/22/01	6	0	6
MG/L	H10-GW-MW17-05	F8681-3	NORMAL	F8681	CL	01/16/01	01/22/01	01/22/01	6	0	6
MG/L	H10-GW-MW22-05	F8681-1	NORMAL	F8681	CL	01/16/01	01/18/01	01/18/01	2	0	2
UG/L	H10-GW-MW03-05	F8681-4	NORMAL	F8681	ETHA	01/16/01	/ /	01/23/01	0	0	7
UG/L	H10-GW-MW13-05	F8681-5	NORMAL	F8681	ETHA	01/16/01	/ /	01/23/01	0	0	7
UG/L	H10-GW-MW16-05	F8681-2	NORMAL	F8681	ETHA	01/16/01	/ /	01/23/01	0	0	7
UG/L	H10-GW-MW17-05	F8681-3	NORMAL	F8681	ETHA	01/16/01	/ /	01/23/01	0	0	7
UG/L	H10-GW-MW22-05	F8681-1	NORMAL	F8681	ETHA	01/16/01	/ /	01/23/01	0	0	7
UG/L	H10-GW-MW03-05	F8681-4	NORMAL	F8681	ETHE	01/16/01	/ /	01/23/01	0	0	7
UG/L	H10-GW-MW13-05	F8681-5	NORMAL	F8681	ETHE	01/16/01	/ /	01/23/01	0	0	7
UG/L	H10-GW-MW16-05	F8681-2	NORMAL	F8681	ETHE	01/16/01	/ /	01/23/01	0	0	7
UG/L	H10-GW-MW17-05	F8681-3	NORMAL	F8681	ETHE	01/16/01	/ /	01/23/01	0	0	7
UG/L	H10-GW-MW22-05	F8681-1	NORMAL	F8681	ETHE	01/16/01	/ /	01/23/01	0	0	7
MG/L	H10-GW-MW03-05	F8681-4	NORMAL	F8681	HSUL	01/16/01	/ /	01/22/01	0	0	6
MG/L	H10-GW-MW13-05	F8681-5	NORMAL	F8681	HSUL	01/16/01	/ /	01/22/01	0	0	6
MG/L	H10-GW-MW16-05	F8681-2	NORMAL	F8681	HSUL	01/16/01	/ /	01/22/01	0	0	6
MG/L	H10-GW-MW17-05	F8681-3	NORMAL	F8681	HSUL	01/16/01	/ /	01/22/01	0	0	6

APPENDIX C

SUPPORT DOCUMENTATION

Report of Analysis

Client Sample ID:	H10-GW-MW22-05	Date Sampled:	01/16/01
Lab Sample ID:	F8681-1	Date Received:	01/17/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	44.5	1.0	mg/l	1	01/18/01	AL	EPA 325.3
Hydrogen Sulfide	2.7	2.0	mg/l	1	01/22/01	AL	SM18 4500/EPA 376.1
Nitrogen, Nitrate	<0.10	0.10	mg/l	1	01/18/01	SJL	EPA 300/SW846 9056
Sulfate	<10	10	mg/l	1	01/24/01	SJL	EPA 375.4

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW17-05		
Lab Sample ID:	F8681-3	Date Sampled:	01/16/01
Matrix:	AQ - Ground Water	Date Received:	01/17/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	13.5	1.0	mg/l	1	01/22/01	SJL	EPA 325.3
Hydrogen Sulfide	<2.0	2.0	mg/l	1	01/22/01	AL	SM18 4500/EPA 376.1
Nitrogen, Nitrate	<0.10	0.10	mg/l	1	01/18/01	SJL	EPA 300/SW846 9056
Sulfate	10.8	10	mg/l	1	01/24/01	SJL	EPA 375.4

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW16-05			
Lab Sample ID:	F8681-2		Date Sampled:	01/16/01
Matrix:	AQ - Ground Water		Date Received:	01/17/01
			Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000			

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	12.5	1.0	mg/l	1	01/22/01	SJL	EPA 325.3
Hydrogen Sulfide	<2.0	2.0	mg/l	1	01/22/01	AL	SM18 4500/EPA 376.1
Nitrogen, Nitrate	0.46	0.10	mg/l	1	01/18/01	SJL	EPA 300/SW846 9056
Sulfate	11.1	10	mg/l	1	01/24/01	SJL	EPA 375.4

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW13-05	Date Sampled:	01/16/01
Lab Sample ID:	F8681-5	Date Received:	01/17/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	12.5	1.0	mg/l	1	01/22/01	SJL	EPA 325.3
Hydrogen Sulfide	<2.0	2.0	mg/l	1	01/22/01	AL	SM18 4500/EPA 376.1
Nitrogen, Nitrate	3.2	0.10	mg/l	1	01/18/01	SJL	EPA 300/SW846 9056
Sulfate	18.1	10	mg/l	1	01/24/01	SJL	EPA 375.4

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW03-05		
Lab Sample ID:	F8681-4	Date Sampled:	01/16/01
Matrix:	AQ - Ground Water	Date Received:	01/17/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	12.0	1.0	mg/l	1	01/22/01	SJL	EPA 325.3
Hydrogen Sulfide	<2.0	2.0	mg/l	1	01/22/01	AL	SM18 4500/EPA 376.1
Nitrogen, Nitrate	0.26	0.10	mg/l	1	01/18/01	SJL	EPA 300/SW846 9056
Sulfate	<10	10	mg/l	1	01/24/01	SJL	EPA 375.4

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW22-05		
Lab Sample ID:	F8681-1	Date Sampled:	01/16/01
Matrix:	AQ - Ground Water	Date Received:	01/17/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B
Chromium	0.66 B	10.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW17-05			
Lab Sample ID:	F8681-3		Date Sampled:	01/16/01
Matrix:	AQ - Ground Water		Date Received:	01/17/01
			Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000			

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B
Chromium	1.7 B	10.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW16-05		
Lab Sample ID:	F8681-2	Date Sampled:	01/16/01
Matrix:	AQ - Ground Water	Date Received:	01/17/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B
Chromium	1.1 B	10.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW13-05			
Lab Sample ID:	F8681-5		Date Sampled:	01/16/01
Matrix:	AQ - Ground Water		Date Received:	01/17/01
			Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000			

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B
Chromium	0.43 B	10.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW03-05		
Lab Sample ID:	F8681-4	Date Sampled:	01/16/01
Matrix:	AQ - Ground Water	Date Received:	01/17/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By		Method
Cadmium	0.27 U	5.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B
Chromium	0.85 B	10.0	ug/l	1	01/22/01	01/23/01	JK	SW846 6010B

RL = Reporting Limit

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

CTO167 NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8681

SAMPLE NUMBER:	H10-GW-MW22-05											
SAMPLE DATE:	01/16/01			/ /			/ /			/ /		
LABORATORY ID:	F8681-1											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
FIELD DUPLICATE OF:												
MISCELLANEOUS PARAMETERS	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	CODE
CHLORIDE(MG/L)	44.5											
HYDROGEN SULFIDE(MG/L)	2.7											
NITRATE, AS NITROGEN(MG/L)	0.1	U										
SULFATE(MG/L)	10	U										

CTO16[illegible]AS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8681

	H10-GW-MW03-05			H10-GW-MW13-05			H10-GW-MW16-05			H10-GW-MW17-05		
SAMPLE NUMBER:	H10-GW-MW03-05			H10-GW-MW13-05			H10-GW-MW16-05			H10-GW-MW17-05		
SAMPLE DATE:	01/16/01			01/16/01			01/16/01			01/16/01		
LABORATORY ID:	F8681-4			F8681-5			F8681-2			F8681-3		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
MISCELLANEOUS PARAMETERS												
CHLORIDE(MG/L)	12			12.5			12.5			13.5		
HYDROGEN SULFIDE(MG/L)	2	U		2	U		2	U		2	U	
NITRATE, AS NITROGEN(MG/L)	0.26			3.2			0.46			0.1	U	
SULFATE(MG/L)	10	U		18.1			11.1			10.8		

CTO16[illegible]AS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8681

SAMPLE NUMBER:	H10-GW-MW22-05											
SAMPLE DATE:	01/16/01			/ /			/ /			/ /		
LABORATORY ID:	F8681-1											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:												
	RESULT	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	RESULT	QUAL	CODE
INORGANICS												
CADMIUM	0.27	U										
CHROMIUM	0.66	U	A									

WATER [redacted]TA
Accutest, NJ
SDG: F8681

SAMPLE NUMBER:	H10-GW-MW03-05			H10-GW-MW13-05			H10-GW-MW16-05			H10-GW-MW17-05		
SAMPLE DATE:	01/16/01			01/16/01			01/16/01			01/16/01		
LABORATORY ID:	F8681-4			F8681-5			F8681-2			F8681-3		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
INORGANICS	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	RESULT	QUAL	CODE
CADMIUM	0.27	U		0.27	U		0.27	U		0.27	U	
CHROMIUM	0.85	U	A	0.43	U	A	1.1	U	A	1.7	U	A

Qualifier Codes:

A	=	Lab Blank Contamination
B	=	Field Blank contamination
C	=	Calibration (i.e. %RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D	=	MS/MSD Noncompliance
E	=	LCS/LCSD Noncompliance
F	=	Lab Duplicate Imprecision
G	=	Field Duplicate Imprecision
H	=	Holding Time Exceedance
I	=	ICP Serial Dilution Noncompliance
J	=	GFAA PDS – GFAA MSAs r<0.995
K	=	ICP Interference – Include ICSAB %Rs
L	=	Instrument Calibration Range Exceedance
M	=	Sample Preservation
N	=	Internal Standard Noncompliance
O	=	Poor Instrument Performance (I.E. base-time drifting)
P	=	Uncertainty near detection limit (<2 x IDL for Inorganics and < CRQL for Organics)
Q	=	Other problems (can encompass a number of issues)
R	=	Surrogates Recovery Noncompliance
S	=	Pesticide/PCB Resolution
T	=	% Breakdown Noncompliance for DDT and Endrin
U	=	Pest/PCB D% between columns for positive results
V	=	Non-Linear calibrations, tuning r< 0.995 (correlation coefficient)
W	=	EMPC result
X	=	Signal to noise response drop
Y	=	% Solid content is less than 30%

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Tetra Tech NUS

INTERNAL CORRESPONDENCE

TO:	Mr. Mark Peterson	DATE:	March 12, 2001
FROM:	Elena Rodriguez	COPIES:	DV FILE

SUBJECT: **DATA VALIDATION - INORGANICS**
CTO 167, NASJAX
SDG F8681

SAMPLES: 5/Aqueous/

H10-GW-MW03-05
H10-GW-MW13-05
H10-GW-MW16-05
H10-GW-MW17-05
H10-GW-MW22-05

OVERVIEW

The sample set for CTO 167, NASJAX, SDG F8681 consists of 5 aqueous environmental samples. All samples were analyzed for cadmium and chromium and for natural attenuation parameters: chloride, nitrate, sulfate, and sulfide.

The samples were collected by TetraTech NUS on January 16, 2001 and analyzed by Accutest Laboratories. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria using the following analytical and reporting protocols: SW-846 Methods 6010B, EPA 300, 325.3, 375.4, and 376.1. The data contained in this SDG were validated with regard to the following parameters:

- * Data completeness
- * Holding times
- * Initial/continuing calibrations
- * Laboratory method blank results
- * Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A.

Metals

The following contaminants were detected in the laboratory method blanks:

Analyte	Maximum Concentration (ug/L)	Action Level (aqueous) (ug/L)
Cadmium	0.46	2.3
Chromium	4.2	21.0

An action level of 5X the maximum concentration has been used to evaluate the sample data for blank contamination. Sample aliquot and dilution factors were taken into consideration when determining blank contamination. Positive results less than the blank action levels were qualified, "U", as nondetected due to blank contamination.

General Chemistry: Chloride, Sulfate, Sulfide, Nitrate

Data reported for this fraction were found to be acceptable.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Metals were detected in the laboratory blanks.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Inorganic Data Validation (2/94), and the Navy IRCDQM (9/99) NFESC guidelines. The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC guidelines and the Quality Assurance Project Plan (QAPP)."

Elena Rodriguez

Tetra Tech NUS

Elena Rodriguez

TetraTech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

Report of Analysis

Client Sample ID:	H10-GW-MW22-05		
Lab Sample ID:	F8681-1	Date Sampled:	01/16/01
Matrix:	AQ - Ground Water	Date Received:	01/17/01
Method:	DAI	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH24770.D	1	01/25/01	ANJ	n/a	n/a	N:GGH696
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	79%		75-125%

~~ND = Not detected~~
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
~~B = Indicates analyte found in associated method blank~~
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW17-05		
Lab Sample ID:	F8681-3	Date Sampled:	01/16/01
Matrix:	AQ - Ground Water	Date Received:	01/17/01
Method:	DAI	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH24772.D	1	01/25/01	ANJ	n/a	n/a	N:GGH696
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	94%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW16-05	Date Sampled:	01/16/01
Lab Sample ID:	F8681-2	Date Received:	01/17/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	DAI		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH24771.D	1	01/25/01	ANJ	n/a	n/a	N:GGH696
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	90%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW13-05		
Lab Sample ID:	F8681-5	Date Sampled:	01/16/01
Matrix:	AQ - Ground Water	Date Received:	01/17/01
Method:	DAI	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH24780.D	1	01/25/01	ANJ	n/a	n/a	N:GGH696
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	82%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW03-05	Date Sampled:	01/16/01
Lab Sample ID:	F8681-4	Date Received:	01/17/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	DAI		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH24773.D	1	01/25/01	ANJ	n/a	n/a	N:GGH696
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	94%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Method Blank Summary

Job Number: F8681
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2612-MB	EE001548.D	1	01/24/01	MRE	01/23/01	OP2612	GEE77

The QC reported here applies to the following samples: **Method: EPA 8310**

F8681-1, F8681-2, F8681-3, F8681-4, F8681-5

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	98%	29-133%
92-94-4	p-Terphenyl	82%	33-133%

Method Blank Summary

Job Number: F8681
Account: ALSE Accutest Laboratories Southeast, Inc.
Project: TETRFLJX: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGH696-MB2	GH24769.D	1	01/25/01	XPL	n/a	n/a	GGH696

Method: DAI

The QC reported here applies to the following samples:

F8681-1, F8681-2, F8681-3, F8681-4, F8681-5

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	

CAS No.	Surrogate Recoveries		Limits
111-27-3	Hexanol	88%	75-125%

Method Blank Summary

Job Number: F8681
Account: ALSE Accutest Laboratories Southeast, Inc.
Project: TETRFLIX: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGH696-MB1	GH24760.D	1	01/24/01	XPL	n/a	n/a	GGH696

The QC reported here applies to the following samples: **Method: DAI**

GGH696-BS, E84580-7MS, E84580-7MSD

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1'	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries		Limits
111-27-3	Hexanol	76%	75-125%

Method Blank Summary

Job Number: F8681
Account: ALSE Accutest Laboratories Southeast, Inc.
Project: TETRFLIX: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGH696-MB2	GH24769.D	1	01/25/01	XPL	n/a	n/a	GGH696

The QC reported here applies to the following samples: **Method: DAI**

F8681-1, F8681-2, F8681-3, F8681-4, F8681-5

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries		Limits
111-27-3	Hexanol	88%	75-125%

Method Blank Summary

Job Number: F8681
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GXY2-MB	XY000044.D1		01/23/01	RAW	n/a	n/a	GXY2

The QC reported here applies to the following samples:

Method: RSKSOP-147/175

F8681-1, F8681-2, F8681-3, F8681-4, F8681-5

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	ND	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

Method Blank Summary

Job Number: F8681
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2614-MB	L006327.D	1	01/31/01	ME	01/23/01	OP2614	SL380

The QC reported here applies to the following samples: **Method: SW846 8270C**

F8681-2, F8681-3, F8681-4, F8681-5

CAS No.	Compound	Result	RL	Units	Q
87-86-5	Pentachlorophenol	ND	1.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.20	ug/l	

Method Blank Summary

Job Number: F8681
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2613-MB	L006230.D	1	01/27/01	ME	01/23/01	OP2613	SL376

The QC reported here applies to the following samples: **Method:** SW846 8270C

F8681-2, F8681-3, F8681-4, F8681-5

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	ug/l	
	3&4-Methylphenol	ND	5.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
86-74-8	Carbazole	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	55%	21-100%
4165-62-2	Phenol-d5	38%	10-94%
118-79-6	2,4,6-Tribromophenol	87%	10-123%
4165-60-0	Nitrobenzene-d5	86%	35-114%
321-60-8	2-Fluorobiphenyl	80%	43-116%
1718-51-0	Terphenyl-d14	83%	33-141%

Method Blank Summary

Job Number: F8681
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2613-MB	L006208.D	1	01/26/01	ME	01/23/01	OP2613	SL375

Method: SW846 8270C

The QC reported here applies to the following samples:

F8681-2, F8681-3, F8681-4, F8681-5

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	ug/l	
	3&4-Methylphenol	ND	5.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
86-74-8	Carbazole	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	57%	21-100%
4165-62-2	Phenol-d5	38%	10-94%
118-79-6	2,4,6-Tribromophenol	91%	10-123%
4165-60-0	Nitrobenzene-d5	89%	35-114%
321-60-8	2-Fluorobiphenyl	79%	43-116%
1718-51-0	Terphenyl-d14	88%	33-141%

Method Blank Summary

Job Number: F8681
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2600-MB	L006312.D	1	01/31/01	ME	01/19/01	OP2600	SL380

The QC reported here applies to the following samples: **Method:** SW846 8270C

F8681-1

CAS No.	Compound	Result	RL	Units	Q
87-86-5	Pentachlorophenol	ND	1.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.20	ug/l	

Method Blank Summary

Job Number: F8681
Account: TETRFLJX Tetra-Tech.NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2595-MB	L006286.D	1	01/30/01	ME	01/19/01	OP2595	SL378

The QC reported here applies to the following samples:

Method: SW846 8270C

F8681-1

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	ug/l	
	3&4-Methylphenol	ND	5.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
86-74-8	Carbazole	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	43%	21-100%
4165-62-2	Phenol-d5	26%	10-94%
118-79-6	2,4,6-Tribromophenol	88%	10-123%
4165-60-0	Nitrobenzene-d5	76%	35-114%
321-60-8	2-Fluorobiphenyl	78%	43-116%
1718-51-0	Terphenyl-d14	94%	33-141%

Method Blank Summary

Job Number: F8681
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VB137-MB	B003586.D	1	01/23/01	JG	n/a	n/a	VB137

The QC reported here applies to the following samples:

Method: SW846 8260B

F8681-1

CAS No.	Compound	Result	RL	Units	Q
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	104%	80-120%
17060-07-0	1,2-Dichloroethane-D4	99%	69-128%
2037-26-5	Toluene-D8	97%	80-120%
460-00-4	4-Bromofluorobenzene	97%	80-120%

Method Blank Summary

Job Number: F8681
Account: TETRFLJX Tetra-Tech.NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VB136-MB	B003558.D	1	01/22/01	JG	n/a	n/a	VB136

The QC reported here applies to the following samples:

Method: SW846 8260B

F8681-1, F8681-2, F8681-3, F8681-4, F8681-5, F8681-6

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	101%	80-120%
17060-07-0	1,2-Dichloroethane-D4	96%	69-128%
2037-26-5	Toluene-D8	99%	80-120%
460-00-4	4-Bromofluorobenzene	99%	80-120%

TETRA TECH NUS, INC. — CHAIN OF CUSTODY — NUMBER — PAGE ____ OF ____

PROJECT NO:	SITE NAME:	PROJECT MANAGER AND PHONE NUMBER	LABORATORY NAME AND CONTACT:
N3995	NAS JAX - HANGAR 1000	MARK PETERSON 904-281-0400	ACCUTEST - LINDA WILLIAMS
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER	ADDRESS
[signature] [signature]		ALAN PATE 904-281-0400	4405 VINELAND Rd #C-15
		CARRIER/WAYBILL NUMBER	CITY, STATE
		FED EX	ORLANDO, FL 32811

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

F8681

						**VOCs 8260B	Methane/Ethane/Ethene RSK 147/175	**Alcohols 8015B	SVOCs 8270C	PAHs 8310	Metals: Ca, Cr 6010B	Sulfide	Anions: SO4, Cl NO3	
					CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	G	G	G	G	P	P	P	
					PRESERVATIVE USED	HCL	HCL	—	—	—	HNO3	NaOH	—	
DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS								COMMENTS
1/16	1200	H10-GW-MW03-05	H_2O	G	#16	3	3	3	2	2	1	1	1	COOL TO 4°C
1/16	1310	H10-GW-MW13-05	H_2O	G	#16	3	3	3	2	2	1	1	1	
														SEE ATTACHED QAPP TABLE FOR ANALYTICAL REQUIREMENTS

** ALL VIALS IN SEPARATE COOLER

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY [signature] Alan Pate	1/16/01	1630	1. RECEIVED BY		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

DIS[illegible]UTION: WHITE (ACCOMPANIES SAMPLE) YELL[illegible] FIELD COPY) PINK (FILE COPY)

[illegible]RM NO. TINUS-

TETRA TECH NUS, INC. — **CHAIN OF CUSTODY** | NUMBER | PAGE ____ OF ____

PROJECT NO: N3995	SITE NAME: NAS JAX - HANGAR 1000	PROJECT MANAGER AND PHONE NUMBER: MARK PETERSON 904-281-0400	LABORATORY NAME AND CONTACT: ACCUTEST LABS - LINDA WILLIAMS
SAMPLERS (SIGNATURE): Alan L Pate; [signature]		FIELD OPERATIONS LEADER AND PHONE NUMBER: ALAN PATE 904-281-0400	ADDRESS: 4405 VINELAND Rd # C-15
		CARRIER/WAYBILL NUMBER: FED EX	CITY, STATE: ORLANDO, FL 32811

STANDARD TAT ☒
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

F8681

						** VOCs 8260B	METHANE/ETHANE/ETHENE ** RSK 147/175	** ALCOHOLS 8015B	SVOCs 8270C	PAHs 8310	METALS: Cd/Cr	COND & SULFIDE	ANIONS: SO4, Cl NO3	
					CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	G	G	G	G	P	P	P	
					PRESERVATIVE USED	HCL	HCL	—	—	—	HNO3	NaOH	—	
DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS								COMMENTS
1/16	0925	H10-GW-MW16-05	H2O	G	16 7	3	3	3	2	2	1	1	1	COOL TO 4°C
1/16	0815	H10-GW-MW17-05	H2O	G	16 7	3	3	3	2	2	1	1	1	
														SEE ATTACHED QAPP TABLE FOR ANALYTICAL REQUIREMENTS

** ALL VIALS IN SEPARATE COOLER

1. RELINQUISHED BY Alan L Pate	DATE 1/16/01	TIME 1630	1. RECEIVED BY	DATE	TIME
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

FORM NO. TtNUS-

TETRA TECH NUS, INC. **CHAIN OF CUSTODY** | NUMBER | PAGE ___ OF ___

PROJECT NO: N3995	SITE NAME: NAS JAX - HANGAR 1000	PROJECT MANAGER AND PHONE NUMBER: MARC PETERSON 904-281-0400	LABORATORY NAME AND CONTACT: ACCUTEST LABS - LINDA WILLIAMS
SAMPLERS (SIGNATURE) Alan S Pate		FIELD OPERATIONS LEADER AND PHONE NUMBER: ALAN PATE 904-281-0400	ADDRESS: 4405 VINELAND Rd # C-15
		CARRIER/WAYBILL NUMBER: FED EX	CITY, STATE: ORLANDO, FL 32811

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

F8681

CONTAINER TYPE PLASTIC (P) or GLASS (G)					
PRESERVATIVE USED					

DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	VOCs 8260B	METHANE/ETHANE/ETHENE RSK 147/175	ALCOHOLS 8015B	SVOCs 8270C	PAHs 8310	METALS: Ca, Cr 6010B	SULFIDE	ANIONS: SO4, Cl NO3	COMMENTS
Container type						G	G	G	G	G	P	P	P	
Preservative						HCL	HCL	-	-	-	HNO3	NaOH	-	
1/16	1420	H10-GW-MW22-05	H_2O	G	16	3	3	3	2	2	1	1	1	COOL TO 4°C
1/16	0925	H10-GW-MW16-05	H_2O	G	9	3	3	3						
1/16	0815	H10-GW-MW17-05	H_2O	G	9	3	3	3						SEE ATTACHED
1/16	1200	H10-GW-MW03-05	H_2O	G	9	3	3	3						QAPP TABLE
1/16	1310	H10-GW-MW13-05	H_2O	G	9	3	3	3						FOR ANALYTICAL
1/16		TRIP BLANK				2								REQUIREMENTS

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY Alan S Pate	1/16/01	1630	1. RECEIVED BY		
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

DIS TION: ITE (ACCOMPANIES SAMPLE) YELLO ELD COPY) PINK (FILE COPY)

ACCUTEST

CHAIN OF CUSTODY

4405 VINELAND ROAD • SUITE C-15
ORLANDO, FL 32811
TEL: 407-425-6700 • FAX: 407-425-0707

ACCUTEST JOB #:

ACCUTEST QUOTE #:

CLIENT INFORMATION

NAME: ALSE

ADDRESS

CITY, STATE ZIP

SEND REPORT TO:

PHONE #

FACILITY INFORMATION

PROJECT NAME: F8681

LOCATION

PROJECT NO.

FAX #

ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	DATE	TIME	SAMPLED BY:	MATRIX	# OF BOTTLES	HCl	NaOH	HNO3	H2SO4	NONE	ANALYTICAL INFORMATION: 8260 (?)	LAB USE
	F8681-1	1/16/01		TTMK	W	3					X	X	
	-2	↓		↓	↓	↓					X	X	
	-3										X	X	
	-4										X	X	
	-5										X	X	

MATRIX CODES: DW - DRI[NKING] WA[TER]; GW - GR[OUND] WA[TER]; WW - WA[STE] WA[TER]; SO - SOI[L]; SL - SL[UDGE]; OI - OIL; LIQ - OT[HER] LIQ[UID]; SOL - OT[HER] SO[LID]

DATA TURNAROUND INFORMATION

☐ STANDARD 14 Days
☐ 48 HOUR RUSH
☐ 24 HOUR EMERGENCY
☐ OTHER

EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED

APPROVED BY:

DATA DELIVERABLE INFORMATION

☒ STANDARD FTI
☐ COMMERCIAL "B"
☐ DISK DELIVERABLE
☐ STATE FORMS
☐ OTHER (SPECIFY)

COMMENTS/REMARKS

NJ

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESION, INCLUDING COURIER DELIVERY

RELINQUISHED BY SAMPLER:	DATE TIME:	RECEIVED BY:	RELINQUISHED BY:	DATE TIME:	RECEIVED BY:
1. [signature]	1/19/01 1603	1.	2.		2.
RELINQUISHED BY: 3.	DATE TIME:	RECEIVED BY: 3.	RELINQUISHED BY: 4.	DATE TIME:	RECEIVED BY: 4.
RELINQUISHED BY: 5.	DATE TIME:	RECEIVED BY: 5.	SEAL #	PRESERVE WHERE APPLICABLE ☐	ON ICE ☐ TEMP

ACCUTEST LABORATORIES SOUTHEAST
SAMPLE RECEIPT CONFIRMATION

Accutest Job Number: F8681

Client/Project: TTNUS N3995

Date/Time Received: 1/17/01 1000

Method of Delivery: Fed Ex Greyhound UPS Pickup Delivery Other

Air Bill Number: 8219 5407 2379

Cooler Temperatures: 3.0, 4.0, 2.8

Chain Of Custody Provided? YES NO

Chain Of Custody Match Bottles? YES NO

Sample Labels Present? YES NO

Are All Bottles Unbroken? YES NO

Proper Preservative? YES NO

Correct Containers Used? YES NO

Sufficient Sample Volume? YES NO

Number of Encores: 0

COMMENTS:

Units	Sample	Lab Id	Qc Type	Sdg		Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UG/L	H10-GW-MW03-05	F8681-4	NORMAL	F8681	PAH	01/16/01	01/23/01	01/24/01	7	1	8
UG/L	H10-GW-MW13-05	F8681-5	NORMAL	F8681	PAH	01/16/01	01/23/01	01/24/01	7	1	8
UG/L	H10-GW-MW16-05	F8681-2	NORMAL	F8681	PAH	01/16/01	01/23/01	01/24/01	7	1	8
UG/L	H10-GW-MW17-05	F8681-3	NORMAL	F8681	PAH	01/16/01	01/23/01	01/24/01	7	1	8
UG/L	H10-GW-MW22-05	F8681-1	NORMAL	F8681	PAH	01/16/01	01/23/01	01/24/01	7	1	8
MG/L	H10-GW-MW03-05	F8681-4	NORMAL	F8681	SO4	01/16/01	01/24/01	01/24/01	8	0	8
MG/L	H10-GW-MW13-05	F8681-5	NORMAL	F8681	SO4	01/16/01	01/24/01	01/24/01	8	0	8
MG/L	H10-GW-MW16-05	F8681-2	NORMAL	F8681	SO4	01/16/01	01/24/01	01/24/01	8	0	8
MG/L	H10-GW-MW17-05	F8681-3	NORMAL	F8681	SO4	01/16/01	01/24/01	01/24/01	8	0	8
MG/L	H10-GW-MW22-05	F8681-1	NORMAL	F8681	SO4	01/16/01	01/24/01	01/24/01	8	0	8

Units	sample	Lab Id	Qc Type	Sdg	[illegible]t	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	[illegible]_DATE TO [illegible]_DATE
MG/L	H10-GW-MW22-05	F8681-1	NORMAL	F8681	HSUL	01/16/01	/ /	01/22/01	0	0	6
UG/L	H10-GW-MW03-05	F8681-4	NORMAL	F8681	M	01/16/01	01/22/01	01/23/01	6	1	7
UG/L	H10-GW-MW13-05	F8681-5	NORMAL	F8681	M	01/16/01	01/22/01	01/23/01	6	1	7
UG/L	H10-GW-MW16-05	F8681-2	NORMAL	F8681	M	01/16/01	01/22/01	01/23/01	6	1	7
UG/L	H10-GW-MW17-05	F8681-3	NORMAL	F8681	M	01/16/01	01/22/01	01/23/01	6	1	7
UG/L	H10-GW-MW22-05	F8681-1	NORMAL	F8681	M	01/16/01	01/22/01	01/23/01	6	1	7
UG/L	H10-GW-MW03-05	F8681-4	NORMAL	F8681	METH	01/16/01	/ /	01/23/01	0	0	7
UG/L	H10-GW-MW13-05	F8681-5	NORMAL	F8681	METH	01/16/01	/ /	01/23/01	0	0	7
UG/L	H10-GW-MW16-05	F8681-2	NORMAL	F8681	METH	01/16/01	/ /	01/23/01	0	0	7
UG/L	H10-GW-MW17-05	F8681-3	NORMAL	F8681	METH	01/16/01	/ /	01/23/01	0	0	7
UG/L	H10-GW-MW22-05	F8681-1	NORMAL	F8681	METH	01/16/01	/ /	01/23/01	0	0	7
MG/L	H10-GW-MW03-05	F8681-4	NORMAL	F8681	NTA	01/16/01	01/18/01	01/18/01	2	0	2
MG/L	H10-GW-MW13-05	F8681-5	NORMAL	F8681	NTA	01/16/01	01/18/01	01/18/01	2	0	2
MG/L	H10-GW-MW16-05	F8681-2	NORMAL	F8681	NTA	01/16/01	01/18/01	01/18/01	2	0	2
MG/L	H10-GW-MW17-05	F8681-3	NORMAL	F8681	NTA	01/16/01	01/18/01	01/18/01	2	0	2
MG/L	H10-GW-MW22-05	F8681-1	NORMAL	F8681	NTA	01/16/01	01/18/01	01/18/01	2	0	2
UG/L	H10-GW-MW03-05	F8681-4	NORMAL	F8681	OS	01/16/01	01/23/01	01/26/01	7	3	10
UG/L	H10-GW-MW13-05	F8681-5	NORMAL	F8681	OS	01/16/01	01/23/01	01/26/01	7	3	10
UG/L	H10-GW-MW16-05	F8681-2	NORMAL	F8681	OS	01/16/01	01/23/01	01/26/01	7	3	10
UG/L	H10-GW-MW17-05	F8681-3	NORMAL	F8681	OS	01/16/01	01/23/01	01/26/01	7	3	10
UG/L	H10-GW-MW22-05	F8681-1	NORMAL	F8681	OS	01/16/01	01/19/01	01/30/01	3	11	14
UG/L	H10-GW-MW03-05	F8681-4	NORMAL	F8681	OV	01/16/01	/ /	01/22/01	0	0	6
UG/L	H10-GW-MW13-05	F8681-5	NORMAL	F8681	OV	01/16/01	/ /	01/22/01	0	0	6
UG/L	H10-GW-MW16-05	F8681-2	NORMAL	F8681	OV	01/16/01	/ /	01/22/01	0	0	6
UG/L	H10-GW-MW17-05	F8681-3	NORMAL	F8681	OV	01/16/01	/ /	01/22/01	0	0	6
UG/L	H10-GW-MW22-05	F8681-1	NORMAL	F8681	OV	01/16/01	/ /	01/22/01	0	0	6
UG/L	TRIP BLANK	F8681-6	NORMAL	F8681	OV	01/16/01	/ /	01/22/01	0	0	6

F8681
HOLDING TIME
02/23/01

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UG/L	H10-GW-MW03-05	F8681-4	NORMAL	F8681	ALC	01/16/01	/ /	01/25/01	0	0	9
UG/L	H10-GW-MW13-05	F8681-5	NORMAL	F8681	ALC	01/16/01	/ /	01/25/01	0	0	9
UG/L	H10-GW-MW16-05	F8681-2	NORMAL	F8681	ALC	01/16/01	/ /	01/25/01	0	0	9
UG/L	H10-GW-MW17-05	F8681-3	NORMAL	F8681	ALC	01/16/01	/ /	01/25/01	0	0	9
UG/L	H10-GW-MW22-05	F8681-1	NORMAL	F8681	ALC	01/16/01	/ /	01/25/01	0	0	9
MG/L	H10-GW-MW03-05	F8681-4	NORMAL	F8681	CL	01/16/01	01/22/01	01/22/01	6	0	6
MG/L	H10-GW-MW13-05	F8681-5	NORMAL	F8681	CL	01/16/01	01/22/01	01/22/01	6	0	6
MG/L	H10-GW-MW16-05	F8681-2	NORMAL	F8681	CL	01/16/01	01/22/01	01/22/01	6	0	6
MG/L	H10-GW-MW17-05	F8681-3	NORMAL	F8681	CL	01/16/01	01/22/01	01/22/01	6	0	6
MG/L	H10-GW-MW22-05	F8681-1	NORMAL	F8681	CL	01/16/01	01/18/01	01/18/01	2	0	2
UG/L	H10-GW-MW03-05	F8681-4	NORMAL	F8681	ETHA	01/16/01	/ /	01/23/01	0	0	7
UG/L	H10-GW-MW13-05	F8681-5	NORMAL	F8681	ETHA	01/16/01	/ /	01/23/01	0	0	7
UG/L	H10-GW-MW16-05	F8681-2	NORMAL	F8681	ETHA	01/16/01	/ /	01/23/01	0	0	7
UG/L	H10-GW-MW17-05	F8681-3	NORMAL	F8681	ETHA	01/16/01	/ /	01/23/01	0	0	7
UG/L	H10-GW-MW22-05	F8681-1	NORMAL	F8681	ETHA	01/16/01	/ /	01/23/01	0	0	7
UG/L	H10-GW-MW03-05	F8681-4	NORMAL	F8681	ETHE	01/16/01	/ /	01/23/01	0	0	7
UG/L	H10-GW-MW13-05	F8681-5	NORMAL	F8681	ETHE	01/16/01	/ /	01/23/01	0	0	7
UG/L	H10-GW-MW16-05	F8681-2	NORMAL	F8681	ETHE	01/16/01	/ /	01/23/01	0	0	7
UG/L	H10-GW-MW17-05	F8681-3	NORMAL	F8681	ETHE	01/16/01	/ /	01/23/01	0	0	7
UG/L	H10-GW-MW22-05	F8681-1	NORMAL	F8681	ETHE	01/16/01	/ /	01/23/01	0	0	7
MG/L	H10-GW-MW03-05	F8681-4	NORMAL	F8681	HSUL	01/16/01	/ /	01/22/01	0	0	6
MG/L	H10-GW-MW13-05	F8681-5	NORMAL	F8681	HSUL	01/16/01	/ /	01/22/01	0	0	6
MG/L	H10-GW-MW16-05	F8681-2	NORMAL	F8681	HSUL	01/16/01	/ /	01/22/01	0	0	6
MG/L	H10-GW-MW17-05	F8681-3	NORMAL	F8681	HSUL	01/16/01	/ /	01/22/01	0	0	6

APPENDIX C

SUPPORT DOCUMENTATION

Report of Analysis

Client Sample ID:	H10-GW-MW22-05		
Lab Sample ID:	F8681-1	Date Sampled:	01/16/01
Matrix:	AQ - Ground Water	Date Received:	01/17/01
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE001559.D	1	01/24/01	MRE	01/23/01	OP2612	GEE77
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.4	ug/l	
208-96-8	Acenaphthylene	ND	4.4	ug/l	
120-12-7	Anthracene	ND	2.2	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.22	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.22	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.22	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.22	ug/l	
218-01-9	Chrysene	ND	2.2	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.22	ug/l	
206-44-0	Fluoranthene	ND	2.2	ug/l	
86-73-7	Fluorene	ND	2.2	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.22	ug/l	
91-20-3	Naphthalene	11.8	2.2	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.2	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.2	ug/l	
85-01-8	Phenanthrene	ND	2.2	ug/l	
129-00-0	Pyrene	ND	2.2	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	99%		29-133%
92-94-4	p-Terphenyl	82%		33-133%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Client Sample ID:	H10-GW-MW17-05		
Lab Sample ID:	F8681-3	Date Sampled:	01/16/01
Matrix:	AQ - Ground Water	Date Received:	01/17/01
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE001561.D	1	01/24/01	MRE	01/23/01	OP2612	GEE77
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.4	ug/l	
208-96-8	Acenaphthylene	ND	4.4	ug/l	
120-12-7	Anthracene	ND	2.2	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.22	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.22	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.22	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.22	ug/l	
218-01-9	Chrysene	ND	2.2	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.22	ug/l	
206-44-0	Fluoranthene	ND	2.2	ug/l	
86-73-7	Fluorene	ND	2.2	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.22	ug/l	
91-20-3	Naphthalene	ND	2.2	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.2	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.2	ug/l	
85-01-8	Phenanthrene	ND	2.2	ug/l	
129-00-0	Pyrene	ND	2.2	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	100%		29-133%
92-94-4	p-Terphenyl	64%		33-133%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW16-05	Date Sampled:	01/16/01
Lab Sample ID:	F8681-2	Date Received:	01/17/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	EPA 8310 SW846 3510C		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE001560.D	1	01/24/01	MRE	01/23/01	OP2612	GEE77
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.4	ug/l	
208-96-8	Acenaphthylene	ND	4.4	ug/l	
120-12-7	Anthracene	ND	2.2	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.22	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.22	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.22	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.22	ug/l	
218-01-9	Chrysene	ND	2.2	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.22	ug/l	
206-44-0	Fluoranthene	ND	2.2	ug/l	
86-73-7	Fluorene	ND	2.2	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.22	ug/l	
91-20-3	Naphthalene	ND	2.2	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.2	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.2	ug/l	
85-01-8	Phenanthrene	ND	2.2	ug/l	
129-00-0	Pyrene	ND	2.2	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	95%		29-133%
92-94-4	p-Terphenyl	87%		33-133%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW13-05		
Lab Sample ID:	F8681-5	Date Sampled:	01/16/01
Matrix:	AQ - Ground Water	Date Received:	01/17/01
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE001563.D	1	01/24/01	MRE	01/23/01	OP2612	GEE77
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.4	ug/l	
208-96-8	Acenaphthylene	ND	4.4	ug/l	
120-12-7	Anthracene	ND	2.2	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.22	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.22	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.22	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.22	ug/l	
218-01-9	Chrysene	ND	2.2	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.22	ug/l	
206-44-0	Fluoranthene	ND	2.2	ug/l	
86-73-7	Fluorene	ND	2.2	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.22	ug/l	
91-20-3	Naphthalene	ND	2.2	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.2	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.2	ug/l	
85-01-8	Phenanthrene	ND	2.2	ug/l	
129-00-0	Pyrene	ND	2.2	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	101%		29-133%
92-94-4	p-Terphenyl	81%		33-133%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Client Sample ID:	H10-GW-MW03-05		
Lab Sample ID:	F8681-4	Date Sampled:	01/16/01
Matrix:	AQ - Ground Water	Date Received:	01/17/01
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE001562.D	1	01/24/01	MRE	01/23/01	OP2612	GEE77
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.4	ug/l	
208-96-8	Acenaphthylene	ND	4.4	ug/l	
120-12-7	Anthracene	ND	2.2	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.22	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.22	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.22	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.22	ug/l	
218-01-9	Chrysene	ND	2.2	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.22	ug/l	
206-44-0	Fluoranthene	ND	2.2	ug/l	
86-73-7	Fluorene	ND	2.2	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.22	ug/l	
91-20-3	Naphthalene	ND	2.2	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.2	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.2	ug/l	
85-01-8	Phenanthrene	ND	2.2	ug/l	
129-00-0	Pyrene	ND	2.2	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	97%		29-133%
92-94-4	p-Terphenyl	87%		33-133%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW22-05		
Lab Sample ID:	F8681-1	Date Sampled:	01/16/01
Matrix:	AQ - Ground Water	Date Received:	01/17/01
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L006294.D	1	01/30/01	ME	01/19/01	OP2595	SL378
Run #2	L006313.D	1	01/31/01	ME	01/19/01	OP2600	SL380

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	ug/l	
	3&4-Methylphenol	ND	4.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	ug/l	
87-86-5	Pentachlorophenol	ND a	1.0	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
86-74-8	Carbazole	ND	4.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND a	0.20	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	4.0	ug/l	
110-86-1	Pyridine	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	40%		21-100%
4165-62-2	Phenol-d5	26%		10-94%
118-79-6	2,4,6-Tribromophenol	91%		10-123%
4165-60-0	Nitrobenzene-d5	68%		35-114%
321-60-8	2-Fluorobiphenyl	71%		43-116%
1718-51-0	Terphenyl-d14	91%		33-141%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW17-05		
Lab Sample ID:	F8681-3	Date Sampled:	01/16/01
Matrix:	AQ - Ground Water	Date Received:	01/17/01
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L006213.D	1	01/26/01	ME	01/23/01	OP2613	SL375
Run #2	L006329.D	1	02/01/01	ME	01/23/01	OP2614	SL380

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.5	ug/l	
95-48-7	2-Methylphenol	ND	5.5	ug/l	
	3&4-Methylphenol	ND	4.4	ug/l	
100-02-7	4-Nitrophenol	ND	28	ug/l	
87-86-5	Pentachlorophenol	ND [a]	1.1	ug/l	
108-95-2	Phenol	ND	5.5	ug/l	
86-74-8	Carbazole	ND	4.4	ug/l	
121-14-2	2,4-Dinitrotoluene	ND [a]	0.22	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	4.4	ug/l	
110-86-1	Pyridine	ND	5.5	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	53%		21-100%
4165-62-2	Phenol-d5	34%		10-94%
118-79-6	2,4,6-Tribromophenol	92%		10-123%
4165-60-0	Nitrobenzene-d5	88%		35-114%
321-60-8	2-Fluorobiphenyl	81%		43-116%
1718-51-0	Terphenyl-d14	87%		33-141%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW16-05		
Lab Sample ID:	F8681-2	Date Sampled:	01/16/01
Matrix:	AQ - Ground Water	Date Received:	01/17/01
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L006212.D	1	01/26/01	ME	01/23/01	OP2613	SL375
Run #2	L006328.D	1	02/01/01	ME	01/23/01	OP2614	SL380

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.5	ug/l	
95-48-7	2-Methylphenol	ND	5.5	ug/l	
	3&4-Methylphenol	ND	4.4	ug/l	
100-02-7	4-Nitrophenol	ND	28	ug/l	
87-86-5	Pentachlorophenol	ND [a]	1.1	ug/l	
108-95-2	Phenol	ND	5.5	ug/l	
86-74-8	Carbazole	ND	4.4	ug/l	
121-14-2	2,4-Dinitrotoluene	ND [a]	0.22	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	4.4	ug/l	
110-86-1	Pyridine	ND	5.5	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	42%		21-100%
4165-62-2	Phenol-d5	28%		10-94%
118-79-6	2,4,6-Tribromophenol	79%		10-123%
4165-60-0	Nitrobenzene-d5	71%		35-114%
321-60-8	2-Fluorobiphenyl	64%		43-116%
1718-51-0	Terphenyl-d14	78%		33-141%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW13-05		
Lab Sample ID:	F8681-5	Date Sampled:	01/16/01
Matrix:	AQ - Ground Water	Date Received:	01/17/01
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L006215.D	1	01/26/01	ME	01/23/01	OP2613	SL375
Run #2	L006331.D	1	02/01/01	ME	01/23/01	OP2614	SL380

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.5	ug/l	
95-48-7	2-Methylphenol	ND	5.5	ug/l	
	3&4-Methylphenol	ND	4.4	ug/l	
100-02-7	4-Nitrophenol	ND	28	ug/l	
87-86-5	Pentachlorophenol	ND a	1.1	ug/l	
108-95-2	Phenol	ND	5.5	ug/l	
86-74-8	Carbazole	ND	4.4	ug/l	
121-14-2	2,4-Dinitrotoluene	ND a	0.22	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	4.4	ug/l	
110-86-1	Pyridine	ND	5.5	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	42%		21-100%
4165-62-2	Phenol-d5	28%		10-94%
118-79-6	2,4,6-Tribromophenol	85%		10-123%
4165-60-0	Nitrobenzene-d5	73%		35-114%
321-60-8	2-Fluorobiphenyl	68%		43-116%
1718-51-0	Terphenyl-d14	82%		33-141%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW03-05		
Lab Sample ID:	F8681-4	Date Sampled:	01/16/01
Matrix:	AQ - Ground Water	Date Received:	01/17/01
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L006214.D	1	01/26/01	ME	01/23/01	OP2613	SL375
Run #2	L006330.D	1	02/01/01	ME	01/23/01	OP2614	SL380

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.5	ug/l	
95-48-7	2-Methylphenol	ND	5.5	ug/l	
	3&4-Methylphenol	ND	4.4	ug/l	
100-02-7	4-Nitrophenol	ND	28	ug/l	
87-86-5	Pentachlorophenol	ND [a]	1.1	ug/l	
108-95-2	Phenol	ND	5.5	ug/l	
86-74-8	Carbazole	ND	4.4	ug/l	
121-14-2	2,4-Dinitrotoluene	ND [a]	0.22	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	4.4	ug/l	
110-86-1	Pyridine	ND	5.5	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	44%		21-100%
4165-62-2	Phenol-d5	29%		10-94%
118-79-6	2,4,6-Tribromophenol	88%		10-123%
4165-60-0	Nitrobenzene-d5	74%		35-114%
321-60-8	2-Fluorobiphenyl	70%		43-116%
1718-51-0	Terphenyl-d14	84%		33-141%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: H10-GW-MW22-05
Lab Sample ID: F8681-1
Matrix: AQ - Ground Water
Method: RSKSOP-147/175
Project: NAS Jax-Hanger 1000

Date Sampled: 01/16/01
Date Received: 01/17/01
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000046.D	1	01/23/01	RAW	n/a	n/a	GXY2
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	406	0.50	ug/l	
74-84-0	Ethane	0.50	1.0	ug/l	J
74-85-1	Ethene	0.46	1.0	ug/l	J

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW17-05		
Lab Sample ID:	F8681-3	Date Sampled:	01/16/01
Matrix:	AQ - Ground Water	Date Received:	01/17/01
Method:	RSKSOP-147/175	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000048.D	1	01/23/01	RAW	n/a	n/a	GXY2
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	186	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW16-05		
Lab Sample ID:	F8681-2	Date Sampled:	01/16/01
Matrix:	AQ - Ground Water	Date Received:	01/17/01
Method:	RSKSOP-147/175	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000047.D	1	01/23/01	RAW	n/a	n/a	GXY2
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	112	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW13-05		
Lab Sample ID:	F8681-5	Date Sampled:	01/16/01
Matrix:	AQ - Ground Water	Date Received:	01/17/01
Method:	RSKSOP-147/175	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000050.D	1	01/23/01	RAW	n/a	n/a	GXY2
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	304	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW03-05			
Lab Sample ID:	F8681-4		Date Sampled:	01/16/01
Matrix:	AQ - Ground Water		Date Received:	01/17/01
Method:	RSKSOP-147/175		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000049.D	1	01/23/01	RAW	n/a	n/a	GXY2
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	515	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW22-05		
Lab Sample ID:	F8681-1	Date Sampled:	01/16/01
Matrix:	AQ - Ground Water	Date Received:	01/17/01
Method:	DAI	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH24770.D	1	01/25/01	ANJ	n/a	n/a	N:GGH696
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	79%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW17-05		
Lab Sample ID:	F8681-3	Date Sampled:	01/16/01
Matrix:	AQ - Ground Water	Date Received:	01/17/01
Method:	DAI	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH24772.D	1	01/25/01	ANJ	n/a	n/a	N:GGH696
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	94%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW16-05		
Lab Sample ID:	F8681-2	Date Sampled:	01/16/01
Matrix:	AQ - Ground Water	Date Received:	01/17/01
Method:	DAI	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH24771.D	1	01/25/01	ANJ	n/a	n/a	N:GGH696
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	90%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW13-05	Date Sampled:	01/16/01
Lab Sample ID:	F8681-5	Date Received:	01/17/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	DAI		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH24780.D	1	01/25/01	ANJ	n/a	n/a	N:GGH696
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	82%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW03-05		
Lab Sample ID:	F8681-4	Date Sampled:	01/16/01
Matrix:	AQ - Ground Water	Date Received:	01/17/01
Method:	DAI	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH24773.D	1	01/25/01	ANJ	n/a	n/a	N:GGH696
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	94%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	F8681-6	Date Sampled:	01/16/01
Matrix:	AQ - Trip Blank Water	Date Received:	01/17/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B003567.D	1	01/22/01	JG	n/a	n/a	VB136
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		80-120%
17060-07-0	1,2-Dichloroethane-D4	91%		69-128%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	97%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW22-05		
Lab Sample ID:	F8681-1	Date Sampled:	01/16/01
Matrix:	AQ - Ground Water	Date Received:	01/17/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B003562.D	1	01/22/01	JG	n/a	n/a	VB136
Run #2	B003587.D	20	01/23/01	JG	n/a	n/a	VB137

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	26.3	50	ug/l	J
71-43-2	Benzene	0.75	1.0	ug/l	J
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	627 a	40	ug/l	
75-35-4	1,1-Dichloroethylene	1140 a	40	ug/l	
107-06-2	1,2-Dichloroethane	9.4	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	376 a	80	ug/l	
100-41-4	Ethylbenzene	0.52	2.0	ug/l	J
76-13-1	Freon 113	1240 a	40	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	3.2	2.0	ug/l	
127-18-4	Tetrachloroethylene	8.9	2.0	ug/l	
108-88-3	Toluene	9.8	2.0	ug/l	
79-01-6	Trichloroethylene	1610 a	40	ug/l	
75-01-4	Vinyl chloride	3.3	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%	102%	80-120%
17060-07-0	1,2-Dichloroethane-D4	93%	96%	69-128%
2037-26-5	Toluene-D8	99%	98%	80-120%
460-00-4	4-Bromofluorobenzene	97%	98%	80-120%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW17-05	Date Sampled:	01/16/01
Lab Sample ID:	F8681-3	Date Received:	01/17/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B003564.D	1	01/22/01	JG	n/a	n/a	VB136
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	19.3	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	42.6	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	29.5	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		80-120%
17060-07-0	1,2-Dichloroethane-D4	92%		69-128%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	97%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW16-05		
Lab Sample ID:	F8681-2	Date Sampled:	01/16/01
Matrix:	AQ - Ground Water	Date Received:	01/17/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B003563.D	1	01/22/01	JG	n/a	n/a	VB136
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	24.4	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	47.4	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	13.8	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	37.1	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	10.6	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	48.1	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		80-120%
17060-07-0	1,2-Dichloroethane-D4	93%		69-128%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	97%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW13-05		
Lab Sample ID:	F8681-5	Date Sampled:	01/16/01
Matrix:	AQ - Ground Water	Date Received:	01/17/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B003566.D	1	01/22/01	JG	n/a	n/a	VB136
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	1.3	2.0	ug/l	J
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	6.8	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	1.4	2.0	ug/l	J
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	33.7	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	3.1	2.0	ug/l	
75-01-4	Vinyl chloride	1.4	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		80-120%
17060-07-0	1,2-Dichloroethane-D4	91%		69-128%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	96%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW03-05		
Lab Sample ID:	F8681-4	Date Sampled:	01/16/01
Matrix:	AQ - Ground Water	Date Received:	01/17/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B003565.D	1	01/22/01	JG	n/a	n/a	VB136
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	11.0	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	0.92	2.0	ug/l	J
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	15.9	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		80-120%
17060-07-0	1,2-Dichloroethane-D4	90%		69-128%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	96%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

OTO[redacted]AS JACKSONVILLE
WATER [redacted]TA
Accutest, NJ
SDG: F8681

SAMPLE NUMBER:	H10-GW-MW22-05			
SAMPLE DATE:	01/16/01	/ /	/ /	/ /
LABORATORY ID:	F8681-1			
QC_TYPE:	NORMAL			
% SOLIDS:	0.0 %	100.0 %	100.0 %	100.0 %
UNITS:	UG/L			
FIELD DUPLICATE OF:				

POLYNUCLEAR AROMATIC HYDROCARBONS	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
1-METHYLNAPHTHALENE	2.2	U										
2-METHYLNAPHTHALENE	2.2	U										
ACENAPHTHENE	4.4	U										
ACENAPHTHYLENE	4.4	U										
ANTHRACENE	2.2	U										
BENZO(A)ANTHRACENE	0.22	U										
BENZO(A)PYRENE	0.22	U										
BENZO(B)FLUORANTHENE	0.22	U										
BENZO(G,H,I)PERYLENE	0.22	U										
BENZO(K)FLUORANTHENE	0.22	U										
CHRYSENE	2.2	U										
DIBENZO(A,H)ANTHRACENE	0.22	U										
FLUORANTHENE	2.2	U										
FLUORENE	2.2	U										
INDENO(1,2,3-CD)PYRENE	0.22	U										
NAPHTHALENE	11.8											
PHENANTHRENE	2.2	U										
PYRENE	2.2	U										

CTO16[illegible] NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8681

SAMPLE NUMBER:	H10-GW-MW03-05			H10-GW-MW13-05			H10-GW-MW16-05			H10-GW-MW17-05		
SAMPLE DATE:	01/16/01			01/16/01			01/16/01			01/16/01		
LABORATORY ID:	F8681-4			F8681-5			F8681-2			F8681-3		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	2.2	U		2.2	U		2.2	U		2.2	U	
2-METHYLNAPHTHALENE	2.2	U		2.2	U		2.2	U		2.2	U	
ACENAPHTHENE	4.4	U		4.4	U		4.4	U		4.4	U	
ACENAPHTHYLENE	4.4	U		4.4	U		4.4	U		4.4	U	
ANTHRACENE	2.2	U		2.2	U		2.2	U		2.2	U	
BENZO(A)ANTHRACENE	0.22	U		0.22	U		0.22	U		0.22	U	
BENZO(A)PYRENE	0.22	U		0.22	U		0.22	U		0.22	U	
BENZO(B)FLUORANTHENE	0.22	U		0.22	U		0.22	U		0.22	U	
BENZO(G,H,I)PERYLENE	0.22	U		0.22	U		0.22	U		0.22	U	
BENZO(K)FLUORANTHENE	0.22	U		0.22	U		0.22	U		0.22	U	
CHRYSENE	2.2	U		2.2	U		2.2	U		2.2	U	
DIBENZO(A,H)ANTHRACENE	0.22	U		0.22	U		0.22	U		0.22	U	
FLUORANTHENE	2.2	U		2.2	U		2.2	U		2.2	U	
FLUORENE	2.2	U		2.2	U		2.2	U		2.2	U	
INDENO(1,2,3-CD)PYRENE	0.22	U		0.22	U		0.22	U		0.22	U	
NAPHTHALENE	2.2	U		2.2	U		2.2	U		2.2	U	
PHENANTHRENE	2.2	U		2.2	U		2.2	U		2.2	U	
PYRENE	2.2	U		2.2	U		2.2	U		2.2	U	

CTO16[redacted]AS JACKSONVILLE
WATER [redacted]ATA
Accutest, NJ
SDG: F8681

SAMPLE NUMBER:	H10-GW-MW22-05											
SAMPLE DATE:	01/16/01			/ /			/ /			/ /		
LABORATORY ID:	F8681-1											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:												
SEMIVOLATILES	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	RESULT	QUAL	CODE
2,4-DINITROTOLUENE	0.2	U										
2-CHLOROPHENOL	5	U										
2-METHYLPHENOL	5	U										
3&4-METHYLPHENOL	4	U										
4-NITROPHENOL	25	U										
CARBAZOLE	4	U										
N-NITROSO-DI-N-PROPYLAMINE	4	U										
PENTACHLOROPHENOL	1	U										
PHENOL	5	U										
PYRIDINE	5	U										

	H10-GW-MW03-05			H10-GW-MW13-05			H10-GW-MW16-05			H10-GW-MW17-05		
SAMPLE NUMBER:	H10-GW-MW03-05			H10-GW-MW13-05			H10-GW-MW16-05			H10-GW-MW17-05		
SAMPLE DATE:	01/16/01			01/16/01			01/16/01			01/16/01		
LABORATORY ID:	F8681-4			F8681-5			F8681-2			F8681-3		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
SEMIVOLATILES	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
2,4-DINITROTOLUENE	0.22	U		0.22	U		0.22	U		0.22	U	
2-CHLOROPHENOL	5.5	U		5.5	U		5.5	U		5.5	U	
2-METHYLPHENOL	5.5	U		5.5	U		5.5	U		5.5	U	
3&4-METHYLPHENOL	4.4	U		4.4	U		4.4	U		4.4	U	
4-NITROPHENOL	28	U		28	U		28	U		28	U	
CARBAZOLE	4.4	U		4.4	U		4.4	U		4.4	U	
N-NITROSO-DI-N-PROPYLAMINE	4.4	U		4.4	U		4.4	U		4.4	U	
PENTACHLOROPHENOL	1.1	U		1.1	U		1.1	U		1.1	U	
PHENOL	5.5	U		5.5	U		5.5	U		5.5	U	
PYRIDINE	5.5	U		5.5	U		5.5	U		5.5	U	

CTO16[illegible] NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8681

SAMPLE NUMBER:	H10-GW-MW22-05											
SAMPLE DATE:	01/16/01			/ /			/ /			/ /		
LABORATORY ID:	F8681-1											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:												
DISSOLVED GASES	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
ETHANE	0.5	J	P									
ETHENE	0.46	J	P									
METHANE	406											

CTO1[illegible] NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8681

SAMPLE NUMBER:	H10-GW-MW03-05			H10-GW-MW13-05			H10-GW-MW16-05			H10-GW-MW17-05		
SAMPLE DATE:	01/16/01			01/16/01			01/16/01			01/16/01		
LABORATORY ID:	F8681-4			F8681-5			F8681-2			F8681-3		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
DISSOLVED GASES												
ETHANE	1	U		1	U		1	U		1	U	
ETHENE	1	U		1	U		1	U		1	U	
METHANE	515			304			112			186		

CTO16[redacted]AS JACKSONVILLE
WATER [redacted]ATA
Accutest, NJ
SDG: F8681

SAMPLE NUMBER:	H10-GW-MW22-05			TRIP BLANK								
SAMPLE DATE:	01/16/01			01/16/01			/ /			/ /		
LABORATORY ID:	F8681-1			F8681-6								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	0.0 %			0.0 %			100.0 %			100.0 %		
UNITS:	UG/L			UG/L								
FIELD DUPLICATE OF:												
VOLATILES	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
1,1,1-TRICHLOROETHANE	2	U		2	U							
1,1,2-TRICHLOROETHANE	3.2			2	U							
1,1-DICHLOROETHANE	627			2	U							
1,1-DICHLOROETHENE	1140			2	U							
1,2-DICHLOROETHANE	9.4			2	U							
1,2-DICHLOROETHENE (TOTAL)	376			2	U							
2-NITROPROPANE	10	U		4	U							
ACETONE	26.3	J	P	10	U							
BENZENE	0.75	J	P	50	U							
CARBON DISULFIDE	10	U		1	U							
CARBON TETRACHLORIDE	2	U		10	U							
CHLOROBENZENE	2	U		2	U							
CYCLOHEXANONE	10	U		2	U							
ETHYLBENZENE	0.52	J	P	10	U							
FREON-113	1240			2	U							
ISOBUTYL ALCOHOL	500	U		2	U							
METHANOL	500	U										
METHYLENE CHLORIDE	5	U		5	U							
N-BUTYL ALCOHOL	500	U										
TETRACHLOROETHENE	8.9			2	U							
TOLUENE	9.8			2	U							
TRICHLOROETHENE	1610			2	U							
VINYL CHLORIDE	3.3			1	U							
XYLENES, TOTAL	6	U		6	U							

CTO16[illegible]NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8681

SAMPLE NUMBER:	H10-GW-MW03-05			H10-GW-MW13-05			H10-GW-MW16-05			H10-GW-MW17-05		
SAMPLE DATE:	01/16/01			01/16/01			01/16/01			01/16/01		
LABORATORY ID:	F8681-4			F8681-5			F8681-2			F8681-3		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
VOLATILES	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
1,1,1-TRICHLOROETHANE	2	U		1.4	J	P	2	U		2	U	
1,1,2-TRICHLOROETHANE	2	U		2	U		2	U		2	U	
1,1-DICHLOROETHANE	2	U		2	U		24.4			19.3		
1,1-DICHLOROETHENE	2	U		1.3	J	P	47.4			42.6		
1,2-DICHLOROETHANE	2	U		2	U		2	U		2	U	
1,2-DICHLOROETHENE (TOTAL)	11			6.8			13.8			4	U	
2-NITROPROPANE	10	U		10	U		10	U		10	U	
ACETONE	50	U		50	U		50	U		50	U	
BENZENE	1	U		1	U		1	U		1	U	
CARBON DISULFIDE	10	U		10	U		10	U		10	U	
CARBON TETRACHLORIDE	2	U		2	U		2	U		2	U	
CHLOROBENZENE	2	U		2	U		2	U		2	U	
CYCLOHEXANONE	10	U		10	U		10	U		10	U	
ETHYLBENZENE	2	U		2	U		2	U		2	U	
FREON-113	2	U		2	U		37.1			2	U	
ISOBUTYL ALCOHOL	500	U		500	U		500	U		500	U	
METHANOL	500	U		500	U		500	U		500	U	
METHYLENE CHLORIDE	5	U		5	U		5	U		5	U	
N-BUTYL ALCOHOL	500	U		500	U		500	U		500	U	
TETRACHLOROETHENE	0.92	J	P	33.7			10.6			2	U	
TOLUENE	2	U		2	U		2	U		2	U	
TRICHLOROETHENE	2	U		3.1			48.1			29.5		
VINYL CHLORIDE	15.9			1.4			1	U		1	U	
XYLENES, TOTAL	6	U		6	U		6	U		6	U	

Qualifier Codes:

A = Lab Blank Contamination

B = Field Blank contamination

C = Calibration (i.e. %RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance

D = MS/MSD Noncompliance

E = LCS/LCSD Noncompliance

F = Lab Duplicate Imprecision

G = Field Duplicate Imprecision

H = Holding Time Exceedance

I = ICP Serial Dilution Noncompliance

J = GFAA PDS – GFAA MSAs r<0.995

K = ICP Interference – Include ICSAB %Rs

L = Instrument Calibration Range Exceedance

M = Sample Preservation

N = Internal Standard Noncompliance

O = Poor Instrument Performance (I.E. base-time drifting)

P = Uncertainty near detection limit (<2 x IDL for Inorganics and < CRQL for Organics)

Q = Other problems (can encompass a number of issues)

R = Surrogates Recovery Noncompliance

S = Pesticide/PCB Resolution

T = % Breakdown Noncompliance for DDT and Endrin

U = Pest/PCB D% between columns for positive results

V = Non-Linear calibrations, tuning r< 0.995 (correlation coefficient)

W = EMPC result

X = Signal to noise response drop

Y = % Solid content is less than 30%

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

An action level of 5X the maximum concentration has been used to evaluate the sample data for blank contamination. Sample aliquot and dilution factors were taken into consideration when determining blank contamination. Positive results less than the blank action levels were qualified, "U", as nondetected due to blank contamination.

General Chemistry: Chloride, Sulfate, Sulfide, Nitrate

Data reported for this fraction were found to be acceptable.

Total Organic Carbon

TOC fraction for H10-GW-MW19-05 was preserved upon receipt by the laboratory. Results were qualified, "J", as estimated. All other data reported for this fraction were found to be acceptable.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Metals were detected in the laboratory blanks.

Other Factors Affecting Data Quality: TOC fraction for H10-GW-MW19-05 was preserved upon receipt by the laboratory.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Inorganic Data Validation (2/94), and the Navy IRCDQM (9/99) NFESC guidelines. The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC guidelines and the Quality Assurance Project Plan (QAPP)."

Elena Rodriguez

Tetra Tech NUS

Elena Rodriguez

Tetra Tech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:
1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank contamination
C = Calibration (i.e. %RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS – GFAA MSAs r<0.995
K = ICP Interference – Include ICSAB %Rs
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (I.E. base-time drifting)
P = Uncertainty near detection limit (<2 x IDL for inorganics and < CRQL for Organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCB D% between columns for positive results
V = Non-Linear calibrations, tuning r< 0.995 (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = % Solid content is less than 30%

WATER [redacted]A
Accutest, NJ
SDG: F8744

SAMPLE NUMBER:	H10-DUP2-05			H10-GW-MW05-05			H10-GW-MW06-05			H10-GW-MW07-05		
SAMPLE DATE:	01/19/01			01/19/01			01/19/01			01/19/01		
LABORATORY ID:	F8744-5			F8744-3			F8744-1			F8744-2		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:	H10-GW-MW19-05											
INORGANICS	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
CADMIUM	0.27	U		0.27	U		0.27	U		0.27	U	
CHROMIUM	3.6	U	A	1.8	U	A	2.2	U	A	1.1	U	A

CTO167 NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8744

SAMPLE NUMBER:	H10-GW-MW19-05											
SAMPLE DATE:	01/19/01			/ /			/ /			/ /		
LABORATORY ID:	F8744-4											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
CADMIUM	0.27	U										
CHROMIUM	3.2	U	A									

[redacted]S JACKSONVILLE
WATER D[redacted]A
Accutest, NJ
SDG: F8744

SAMPLE NUMBER:	H10-GW-MW05-05			H10-GW-MW06-05			H10-GW-MW07-05			H10-GW-MW19-05		
SAMPLE DATE:	01/19/01			01/19/01			01/19/01			01/19/01		
LABORATORY ID:	F8744-3			F8744-1			F8744-2			F8744-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
FIELD DUPLICATE OF:												
MISCELLANEOUS PARAMETERS	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
CHLORIDE(MG/L)	12.5			14			11			19		
HYDROGEN SULFIDE(MG/L)	2	U		2	U		2	U		2.7		
NITRATE, AS NITROGEN(MG/L)	0.1	U		0.71			0.91			0.1	U	
SULFATE(MG/L)	19.7			36			48.9			10	U	
TOTAL ORGANIC CARBON(MG/L)										3.5	J	M

CTO167 NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8744

SAMPLE NUMBER:	H10-DUP2-05										
SAMPLE DATE:	01/19/01			/ /			/ /			/ /	
LABORATORY ID:	F8744-5										
QC_TYPE:	NORMAL										
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %	
FIELD DUPLICATE OF:	H10-GW-MW19-05										
	RESULT	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	RESULT	QUAL	CODE
MISCELLANEOUS PARAMETERS												
CHLORIDE(MG/L)	20											
HYDROGEN SULFIDE(MG/L)	2	U										
NITRATE, AS NITROGEN(MG/L)	0.1	U										
SULFATE(MG/L)	10	U										

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

Method Blank Summary

Job Number: F8744
Account: TETRFLJX Tetra-Tech.NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VB138-MB	B003614.D	1	01/24/01	JG	n/a	n/a	VB138

The QC reported here applies to the following samples: **Method: SW846 8260B**

F8744-4, F8744-5

CAS No.	Compound	Result	RL	Units	Q
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	101%	80-120%
17060-07-0	1,2-Dichloroethane-D4	94%	69-128%
2037-26-5	Toluene-D8	98%	80-120%
460-00-4	4-Bromofluorobenzene	98%	80-120%

Method Blank Summary

Job Number: F8744
Account: ALSE Accutest Laboratories Southeast, Inc.
Project: TETRFLIX: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGH699-MB1	GH24847.D	1	01/30/01	XPL	n/a	n/a	GGH699

The QC reported here applies to the following samples: **Method: DAI**

F8744-2, F8744-3, F8744-4, F8744-5

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries		Limits
111-27-3	Hexanol	82%	75-125%

Report of Analysis

Client Sample ID:	H10-GW-MW05-05		
Lab Sample ID:	F8744-3	Date Sampled:	01/19/01
Matrix:	AQ - Ground Water	Date Received:	01/20/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	ug/l	1	01/23/01	01/24/01	JK	SW846 6010B
Chromium	1.8 B	10.0	ug/l	1	01/23/01	01/24/01	JK	SW846 6010B

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW05-05		
Lab Sample ID:	F8744-3	Date Sampled:	01/19/01
Matrix:	AQ - Ground Water	Date Received:	01/20/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	12.5	1.0	mg/l	1	01/23/01	SJL	EPA 325.3
Hydrogen Sulfide	<2.0	2.0	mg/l	1	01/24/01	AL	SM18 4500/EPA 376.1
Nitrogen, Nitrate	<0.10	0.10	mg/l	1	01/21/01	EM	EPA 300/SW846 9056
Sulfate	19.7	10	mg/l	1	01/28/01	SJL	EPA 375.4

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW06-05	Date Sampled:	01/19/01
Lab Sample ID:	F8744-1	Date Received:	01/20/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	ug/l	1	01/23/01	01/24/01	JK	SW846 6010B
Chromium	2.2 B	10.0	ug/l	1	01/23/01	01/24/01	JK	SW846 6010B

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW06-05		
Lab Sample ID:	F8744-1	Date Sampled:	01/19/01
Matrix:	AQ - Ground Water	Date Received:	01/20/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	14.0	1.0	mg/l	1	01/23/01	SJL	EPA 325.3
Hydrogen Sulfide	<2.0	2.0	mg/l	1	01/24/01	AL	SM18 4500/EPA 376.1
Nitrogen, Nitrate	0.71	0.10	mg/l	1	01/21/01	EM	EPA 300/SW846 9056
Sulfate	36.0	10	mg/l	1	01/28/01	SJL	EPA 375.4

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW07-05	Date Sampled:	01/19/01
Lab Sample ID:	F8744-2	Date Received:	01/20/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	ug/l	1	01/23/01	01/24/01	JK	SW846 6010B
Chromium	1.1 B	10.0	ug/l	1	01/23/01	01/24/01	JK	SW846 6010B

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW07-05			
Lab Sample ID:	F8744-2		Date Sampled:	01/19/01
Matrix:	AQ - Ground Water		Date Received:	01/20/01
			Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000			

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	11.0	1.0	mg/l	1	01/23/01	SJL	EPA 325.3
Hydrogen Sulfide	<2.0	2.0	mg/l	1	01/24/01	AL	SM18 4500/EPA 376.1
Nitrogen, Nitrate	0.91	0.10	mg/l	1	01/21/01	EM	EPA 300/SW846 9056
Sulfate	48.9	10	mg/l	1	01/28/01	SJL	EPA 375.4

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW19-05			
Lab Sample ID:	F8744-4		Date Sampled:	01/19/01
Matrix:	AQ - Ground Water		Date Received:	01/20/01
			Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000			

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	19.0	1.0	mg/l	1	01/23/01	SJL	EPA 325.3
Hydrogen Sulfide	2.7	2.0	mg/l	1	01/24/01	AL	SM18 4500/EPA 376.1
Nitrogen, Nitrate	<0.10	0.10	mg/l	1	01/21/01	EM	EPA 300/SW846 9056
Sulfate	<10	10	mg/l	1	01/28/01	SJL	EPA 375.4
Total Organic Carbon	3.5	1.0	mg/l	1	02/03/01	ANJ	EPA415.1/SW8469060M

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW19-05		
Lab Sample ID:	F8744-4	Date Sampled:	01/19/01
Matrix:	AQ - Ground Water	Date Received:	01/20/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	ug/l	1	01/23/01	01/24/01	JK	SW846 6010B
Chromium	3.2 B	10.0	ug/l	1	01/23/01	01/24/01	JK	SW846 6010B

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-DUP2-05	Date Sampled:	01/19/01
Lab Sample ID:	F8744-5	Date Received:	01/20/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	ug/l	1	01/23/01	01/24/01	JK	SW846 6010B
Chromium	3.6 B	10.0	ug/l	1	01/23/01	01/24/01	JK	SW846 6010B

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-DUP2-05		
Lab Sample ID:	F8744-5	Date Sampled:	01/19/01
Matrix:	AQ - Ground Water	Date Received:	01/20/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	20.0	1.0	mg/l	1	01/23/01	SJL	EPA 325.3
Hydrogen Sulfide	<2.0	2.0	mg/l	1	01/24/01	AL	SM18 4500/EPA 376.1
Nitrogen, Nitrate	<0.10	0.10	mg/l	1	01/21/01	EM	EPA 300/SW846 9056
Sulfate	<10	10	mg/l	1	01/28/01	SJL	EPA 375.4

RL = Reporting Limit

Technical Report for

Tetra-Tech,NUS

NAS Jax-Hanger 1000

N3995

Accutest Job Number: F8744

Report to:

Tetra-Tech,NUS
7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

ATTN: Mark Peterson

Total number of pages in report: 689

Harry Behzadi, Ph.D.
Laboratory Director

F8744

HOLDING TIME

02/28/01

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UG/L	H10-DUP2-05	F8744-5	NORMAL	F8744	ALC	01/19/01	/ /	01/30/01	0	0	11
UG/L	H10-GW-MW05-05	F8744-3	NORMAL	F8744	ALC	01/19/01	/ /	01/30/01	0	0	11
UG/L	H10-GW-MW06-05	F8744-1	NORMAL	F8744	ALC	01/19/01	/ /	01/31/01	0	0	12
UG/L	H10-GW-MW07-05	F8744-2	NORMAL	F8744	ALC	01/19/01	/ /	01/30/01	0	0	11
UG/L	H10-GW-MW19-05	F8744-4	NORMAL	F8744	ALC	01/19/01	/ /	01/30/01	0	0	11
MG/L	H10-DUP2-05	F8744-5	NORMAL	F8744	CL	01/19/01	01/23/01	01/23/01	4	0	4
MG/L	H10-GW-MW05-05	F8744-3	NORMAL	F8744	CL	01/19/01	01/23/01	01/23/01	4	0	4
MG/L	H10-GW-MW06-05	F8744-1	NORMAL	F8744	CL	01/19/01	01/23/01	01/23/01	4	0	4
MG/L	H10-GW-MW07-05	F8744-2	NORMAL	F8744	CL	01/19/01	01/23/01	01/23/01	4	0	4
MG/L	H10-GW-MW19-05	F8744-4	NORMAL	F8744	CL	01/19/01	01/23/01	01/23/01	4	0	4
UG/L	H10-DUP2-05	F8744-5	NORMAL	F8744	ETHA	01/19/01	/ /	01/25/01	0	0	6
UG/L	H10-GW-MW05-05	F8744-3	NORMAL	F8744	ETHA	01/19/01	/ /	01/25/01	0	0	6
UG/L	H10-GW-MW06-05	F8744-1	NORMAL	F8744	ETHA	01/19/01	/ /	01/25/01	0	0	6
UG/L	H10-GW-MW07-05	F8744-2	NORMAL	F8744	ETHA	01/19/01	/ /	01/25/01	0	0	6
UG/L	H10-GW-MW19-05	F8744-4	NORMAL	F8744	ETHA	01/19/01	/ /	01/25/01	0	0	6
UG/L	H10-DUP2-05	F8744-5	NORMAL	F8744	ETHE	01/19/01	/ /	01/25/01	0	0	6
UG/L	H10-GW-MW05-05	F8744-3	NORMAL	F8744	ETHE	01/19/01	/ /	01/25/01	0	0	6
UG/L	H10-GW-MW06-05	F8744-1	NORMAL	F8744	ETHE	01/19/01	/ /	01/25/01	0	0	6
UG/L	H10-GW-MW07-05	F8744-2	NORMAL	F8744	ETHE	01/19/01	/ /	01/25/01	0	0	6
UG/L	H10-GW-MW19-05	F8744-4	NORMAL	F8744	ETHE	01/19/01	/ /	01/25/01	0	0	6
MG/L	H10-DUP2-05	F8744-5	NORMAL	F8744	HSUL	01/19/01	/ /	01/24/01	0	0	5
MG/L	H10-GW-MW05-05	F8744-3	NORMAL	F8744	HSUL	01/19/01	/ /	01/24/01	0	0	5
MG/L	H10-GW-MW06-05	F8744-1	NORMAL	F8744	HSUL	01/19/01	/ /	01/24/01	0	0	5
MG/L	H10-GW-MW07-05	F8744-2	NORMAL	F8744	HSUL	01/19/01	/ /	01/24/01	0	0	5

Units	Sample	Lab Id	Qc Type	Sdg	Sed	Samp Date			TO EXTR_DATE	TO ANAL_DATE	DATE
MG/L	H10-GW-MW19-05	F8744-4	NORMAL	F8744	HSUL	01/19/01	/ /	01/24/01	0	0	5
UG/L	H10-DUP2-05	F8744-5	NORMAL	F8744	M	01/19/01	01/23/01	01/24/01	4	1	5
UG/L	H10-GW-MW05-05	F8744-3	NORMAL	F8744	M	01/19/01	01/23/01	01/24/01	4	1	5
UG/L	H10-GW-MW06-05	F8744-1	NORMAL	F8744	M	01/19/01	01/23/01	01/24/01	4	1	5
UG/L	H10-GW-MW07-05	F8744-2	NORMAL	F8744	M	01/19/01	01/23/01	01/24/01	4	1	5
UG/L	H10-GW-MW19-05	F8744-4	NORMAL	F8744	M	01/19/01	01/23/01	01/24/01	4	1	5
UG/L	H10-DUP2-05	F8744-5	NORMAL	F8744	METH	01/19/01	/ /	01/25/01	0	0	6
UG/L	H10-GW-MW05-05	F8744-3	NORMAL	F8744	METH	01/19/01	/ /	01/25/01	0	0	6
UG/L	H10-GW-MW06-05	F8744-1	NORMAL	F8744	METH	01/19/01	/ /	01/25/01	0	0	6
UG/L	H10-GW-MW07-05	F8744-2	NORMAL	F8744	METH	01/19/01	/ /	01/25/01	0	0	6
UG/L	H10-GW-MW19-05	F8744-4	NORMAL	F8744	METH	01/19/01	/ /	01/25/01	0	0	6
MG/L	H10-DUP2-05	F8744-5	NORMAL	F8744	NTA	01/19/01	01/21/01	01/21/01	2	0	2
MG/L	H10-GW-MW05-05	F8744-3	NORMAL	F8744	NTA	01/19/01	01/21/01	01/21/01	2	0	2
MG/L	H10-GW-MW06-05	F8744-1	NORMAL	F8744	NTA	01/19/01	01/21/01	01/21/01	2	0	2
MG/L	H10-GW-MW07-05	F8744-2	NORMAL	F8744	NTA	01/19/01	01/21/01	01/21/01	2	0	2
MG/L	H10-GW-MW19-05	F8744-4	NORMAL	F8744	NTA	01/19/01	01/21/01	01/21/01	2	0	2
UG/L	H10-DUP2-05	F8744-5	NORMAL	F8744	OS	01/19/01	01/24/01	01/29/01	5	5	10
UG/L	H10-GW-MW05-05	F8744-3	NORMAL	F8744	OS	01/19/01	01/24/01	01/29/01	5	5	10
UG/L	H10-GW-MW06-05	F8744-1	NORMAL	F8744	OS	01/19/01	01/24/01	01/29/01	.5	5	10
UG/L	H10-GW-MW07-05	F8744-2	NORMAL	F8744	OS	01/19/01	01/24/01	01/29/01	5	5	10
UG/L	H10-GW-MW19-05	F8744-4	NORMAL	F8744	OS	01/19/01	01/24/01	01/29/01	5	5	10
UG/L	H10-DUP2-05	F8744-5	NORMAL	F8744	OV	01/19/01	/ /	01/23/01	0	0	4
UG/L	H10-GW-MW05-05	F8744-3	NORMAL	F8744	OV	01/19/01	/ /	01/23/01	0	0	4
UG/L	H10-GW-MW06-05	F8744-1	NORMAL	F8744	OV	01/19/01	/ /	01/23/01	0	0	4
UG/L	H10-GW-MW07-05	F8744-2	NORMAL	F8744	OV	01/19/01	/ /	01/23/01	0	0	4
UG/L	H10-GW-MW19-05	F8744-4	NORMAL	F8744	OV	01/19/01	/ /	01/23/01	0	0	4
UG/L	TRIP BLANK-011901	F8744-6	NORMAL	F8744	OV	01/19/01	/ /	01/23/01	0	0	4

2

Units	[illegible]ample	Lab Id	Qc Type	Sdg	[illegible]	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UG/L	H10-DUP2-05	F8744-5	NORMAL	F8744	PAH	01/19/01	01/26/01	01/29/01	7	3	10
UG/L	H10-GW-MW05-05	F8744-3	NORMAL	F8744	PAH	01/19/01	01/26/01	01/29/01	7	3	10
UG/L	H10-GW-MW06-05	F8744-1	NORMAL	F8744	PAH	01/19/01	01/26/01	01/29/01	7	3	10
UG/L	H10-GW-MW07-05	F8744-2	NORMAL	F8744	PAH	01/19/01	01/26/01	01/29/01	7	3	10
UG/L	H10-GW-MW19-05	F8744-4	NORMAL	F8744	PAH	01/19/01	01/26/01	01/29/01	7	3	10
MG/L	H10-DUP2-05	F8744-5	NORMAL	F8744	SO4	01/19/01	01/28/01	01/28/01	9	0	9
MG/L	H10-GW-MW05-05	F8744-3	NORMAL	F8744	SO4	01/19/01	01/28/01	01/28/01	9	0	9
MG/L	H10-GW-MW06-05	F8744-1	NORMAL	F8744	SO4	01/19/01	01/28/01	01/28/01	9	0	9
MG/L	H10-GW-MW07-05	F8744-2	NORMAL	F8744	SO4	01/19/01	01/28/01	01/28/01	9	0	9
MG/L	H10-GW-MW19-05	F8744-4	NORMAL	F8744	SO4	01/19/01	01/28/01	01/28/01	9	0	9
MG/L	H10-GW-MW19-05	F8744-4	NORMAL	F8744	TOC	01/19/01	02/03/01	02/03/01	15	0	15

ACCUTEST LABORATORIES SOUTHEAST
SAMPLE RECEIPT CONFIRMATION

Accutest Job Number: F8744

Client/Project: TTNUS

Date/Time Received: 1/20/01 1100

Method of Delivery: Fed Ex Greyhound UPS Pickup Delivery Other

Air Bill Number: 791950425733, 791950354090, 790450394419 & 792655237841

Cooler Temperatures: 3.2, 2.8, 4.0, 3.8

Custody Seals Intact?	YES	NO
Chain Of Custody Provided?	YES	NO
Chain Of Custody Match Bottles?	YES	NO
Sample Labels Present?	YES	NO
Are All Bottles Unbroken?	YES	NO *
Proper Preservative?	~~YES~~ NF 3/7/01	NO **
Correct Containers Used?	YES	NO
Sufficient Sample Volume?	YES	NO

Number of Encores: ____

COMMENTS:

* 1 - 8310 bottle of MW05 (H10-GW-MW05-05) was broken

** Bottle for TOC was preserved with HCl by lab NF 3/7/01

Date: 1/20/01

TET[illegible]ECH NUS, INC. — CHAIN OF CUSTODY — [illegible]MBER H10-011901A1 — PAGE 1 OF 4

PROJECT NO: N3995	SITE NAME: Hangar 1000	PROJECT MANAGER AND PHONE NUMBER: Mark Peterson 904 2810400	LABORATORY NAME AND CONTACT: Accutest H. Behzadi
SAMPLERS (SIGNATURE): Allan Pate		FIELD OPERATIONS LEADER AND PHONE NUMBER: Allan Pate 904 2810400	ADDRESS: 4405 Vineland Rd #C15
		CARRIER/WAYBILL NUMBER: FedEx	CITY, STATE: Orlando, FL 32811

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	*VOCs (8260B)	*SVOCs (8270C)	PAHs (8310)	*Methane-Ethane-Ethene RSK147/175	*alcohols 8015B	Metals 6010B	Sulfide 376.1	Anions 300.0 SO4, Cl, NO3	COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)						G	G	G	G	G	P	P	P	
PRESERVATIVE USED						HCl	—	—	—	—	HNO3	NaOH	—	
1/19	1215	H10-GW-MW05-05	H2O	G	16	3	2	2	3	3	1	1	1	Cool to 4°C
1/19	1305	H10-MSMSD1-05	H2O	G	16	3	2	2	3	3	1	1	1	See attached QAPP Table for analytical requirements

*All vials in seperate cooler

1. RELINQUISHED BY: Allan Pate	DATE 1/19/01	TIME 1630	1. RECEIVED BY: [signature]	DATE 1/20/01	TIME 1100
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS 4.0

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

FORM NO. TNUS-001 3/99

TET[...]TECH NUS, INC.

CHAIN OF CUSTODY

[...]MBER H10-01190113

PAGE __ OF __

PROJECT NO: N3995	SITE NAME: Hangar 1000	PROJECT MANAGER AND PHONE NUMBER: Mark Peterson 9042810400	LABORATORY NAME AND CONTACT: Accutest H Bebzadeh
SAMPLERS (SIGNATURE): Alan Pate		FIELD OPERATIONS LEADER AND PHONE NUMBER: Alan Pate 9042810400	ADDRESS: 4405 Vineland Rd #C15
		CARRIER/WAYBILL NUMBER: Fedex	CITY, STATE: Orlando, FL 32811

STANDARD TAT ☒
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

						CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	G	G	G	G	P	P	P
						PRESERVATIVE USED	HCl	—	—	—	—	HNO3	NaOH	—
DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS	** VOCs (8260B)	SVOCs (8270C)	PAHs (8310)	** Methane Ethane Ethene FSL 147/175	** Alcohols 8015B	Metals 6010B	Sulfide 376.1	Anions: 300.0 SO4, Cl, NO3
1/19	1015	H10-GW-MW06-05 ✓	H2O	G	16		3	2	2	3	3	1	1	1
1/19	0835	H10-GW-MW07-05 ✓	H2O	G	16		3	2	2	3	3	1	1	1

COMMENTS: Cool to 4°C

See attached QAPP tables for analytical requirements

** ALL VIALS IN SEPARATE COOLER

1. RELINQUISHED BY Alan Pate	DATE 1/19/01	TIME 1630	1. RECEIVED BY [signature]	DATE 1/20/01	TIME 1100
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS 2.8

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

FORM NO. TINUS-001

TETRA TECH NUS, INC. CHAIN OF CUSTODY NUMBER PAGE ___ OF ___

PROJECT NO: N3995

SITE NAME: NAS JAX HANGAR 1000

SAMPLERS (SIGNATURE): Alan Pate

PROJECT MANAGER AND PHONE NUMBER: MARK PETERSON 281-0400

FIELD OPERATIONS LEADER AND PHONE NUMBER: ALAN PATE 281-0400

CARRIER/WAYBILL NUMBER: FED EX

LABORATORY NAME AND CONTACT: ACCUTEST - LINDA WILLIAMS

ADDRESS: 4405 VINELAND Rd #C15

CITY, STATE: ORLANDO, FL 32811

STANDARD TAT ☒
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

						CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	G	G	G	G	P	P	P
						PRESERVATIVE USED	HCL	HCL	-	-	-	HNO_3	NaOH	-
DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS	** VOCS	METHANE/ETHANE/ETHENE RSK 147/175	** ALCOHOLS 8015B	SVOCs 8270C	PAHs 8310	METALS Cd/Cr 6010B	SULFIDE	ANIONS SO_4/Cl/NO_3	COMMENTS
1/18	1305	H10-GW-MW19-05	H_2O	G	16		3	3	3	2	2	1	1	1	COOL TO 4°C
1/18	0000	H10-DUP2-05	H_2O	G	16		3	3	3	2	2	1	1	1	

** ALL VIALS IN SEPARATE COOLER

SEE ATTACHED QAPP TABLE FOR ANALYTICAL REQUIREMENTS

*EXTRA AMBER FOR TOC ANALYSIS - NEEDS PRESERVATIVE

1. RELINQUISHED BY Alan Pate	DATE 1/19/01	TIME 1630	1. RECEIVED BY [signature]	DATE 1/20/01	TIME 1100
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

3.2

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

FORM NO. TNUS-001

[illegible] Number: [illegible]
Account: TETRFL[illegible] - Tetra-Tech,N[illegible]
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

File ID: IR0124M1.ASC
QC Limits: result < RL

Date Analyzed: 01/24/01
Run ID: MA2182

Methods: SW846 6010B
Units: ug/l

Metal	RL	IDL	CCE raw	final	CCE raw	final	CCE raw	final	CCE raw	final
Aluminum	200	5.44	anr							
Antimony	5.0	2.56	anr							
Arsenic	10	3.15	anr							
Barium	200	.94	anr							
Beryllium	5.0	.22	anr							
Cadmium	5.0	.27	-0.050	<5.0	-0.050	<5.0	-0.030	<5.0	-0.090	<5.0
Calcium	1000	10.2	anr							
Chromium	10	.35	0.31	<10	0.25	<10	0.25	<10	0.40	<10
Cobalt	50	.55	anr							
Copper	25	.71	anr							
Iron	300	9.02	anr							
Lead	5.0	1.16	anr							
Magnesium	5000	25.5	anr							
Manganese	15	.26	anr							
Molybdenum	50	1.01								
Nickel	40	.8	anr							
Potassium	5000	49	anr							
Selenium	10	2.5	anr							
Silver	10	.59	anr							
Sodium	5000	173	anr							
Thallium	10	2.07	anr							
Tin	50	1.03								
Vanadium	50	.58	anr							
Zinc	20	.36	anr							

(*) Outside of QC limits
(anr) Analyte not requested

[illegible]

Login Number: [illegible]
Account: TETRFLO, [illegible]
Project: TETRFLO[illegible] - NAS Jax-Hanger 1000

File ID: JR0124M1.ASC
QC Limits: result < RL

Date Analyzed: 0[illegible]/24/0[illegible]
Run ID: MA21[illegible]

Methods: SW846 6010B
Units: ug/l

Metal	RL	IDL	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	9.44	anr					
Antimony	5.0	2.56	anr					
Arsenic	10	3.15	anr					
Barium	200	.94	anr					
Beryllium	5.0	.22	anr					
Cadmium	5.0	.27	0.20	<5.0	0.24	<5.0	0.25	<5.0
Calcium	1000	10.2	anr					
Chromium	10	.35	2.5	<10<	6.0	<10<	6.6	<10<
Cobalt	50	.55	anr					
Copper	25	.71	anr					
Iron	300	9.02	anr					
Lead	5.0	1.16	anr					
Magnesium	5000	25.5	anr					
Manganese	15	.26	anr					
Molybdenum	50	1.01						
Nickel	40	.8	anr					
Potassium	5000	49	anr					
Selenium	10	2.5	anr					
Silver	10	.59	anr					
Sodium	5000	173	anr					
Thallium	10	2.07	anr					
Tin	50	1.03						
Vanadium	50	.58	anr					
Zinc	20	.36	anr					

(*) Outside of QC limits
(anr) Analyte not requested

[illegible]
[illegible]

Login Number: F8744
Account: TETRFLOY - Tetra-Tech NUS
Project: TETRFLCX1724 - NAS Jax-Hanger 1000

QC Batch ID: MP3275
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 01/23/01

Metal	RL	IDL	MB raw	final
Aluminum	200	9.4		
Antimony	5.0	2.6		
Arsenic	10.0	3.2		
Barium	200	.94		
Beryllium	5.0	.22		
Cadmium	5.0	.27	-0.15	<5.0
Calcium	1000	10.2		
Chromium	10.0	.35	0.72	<10.0
Cobalt	50.0	.55		
Copper	25.0	.71		
Iron	300	9		
Lead	5.0	1.2	anr	
Magnesium	5000	25.5		
Manganese	15.0	.26		
Molybdenum	50.0	1		
Nickel	40.0	.8		
Potassium	5000	49		
Selenium	10.0	2.5		
Silver	10.0	.59		
Sodium	5000	173		
Thallium	10.0	2.1		
Tin	50.0	1		
Vanadium	50.0	.58		
Zinc	20.0	.36		

Associated samples MP3275: F8744-1, F8744-2, F8744-3, F8744-4, F8744-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

[illegible]
[illegible]

Login Number: [illegible]
Account: TETRAFLX - Tetra-Tech,NJ [illegible]
Project: TETRFLUX[illegible] - NAS Gas-Hanger 1000 [illegible]

File ID: IR0124M1.ASC
QC Limits: result < RL

Date Analyzed: 01/24/0[illegible]
Run ID: MA7187

Methods: SW846 6010B
Units: ug/l

Metal	RL	IDL	ICB raw	final	ICB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	9.44								
Antimony	5.0	2.56								
Arsenic	10	3.15								
Barium	200	.94								
Beryllium	5.0	.22								
Cadmium	5.0	.27			-0.070	<5.0			-0.11	<5.0
Calcium	1000	10.2								
Chromium	10	.35			0.34	<10			0.54	<10
Cobalt	50	.55								
Copper	25	.71								
Iron	300	9.02								
Lead	5.0	1.16								
Magnesium	5000	25.5								
Manganese	15	.26								
Molybdenum	50	1.01								
Nickel	40	.8								
Potassium	5000	49								
Selenium	10	2.5								
Silver	10	.59								
Sodium	5000	173								
Thallium	10	2.07								
Tin	50	1.03								
Vanadium	50	.58								
Zinc	20	.36								

(*) Outside of QC limits
(anr) Analyte not requested

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F8744
Account: TETRFLJX - Tetra-Tech.NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

Analyte	Batch ID	RL	MB Result	Units	BSP %Recov	QC Limits
Chloride	GP2041	1.0	<1.0	mg/l	105.0	88-122%
Nitrogen, Nitrate	GP2040	0.10	<0.10	mg/l	89.0	90-110%
Phosphate, Ortho	GP2040	0.10	<0.10	mg/l	102.0	90-110%
Sulfate	GP2057	10	<10	mg/l	97.6	80-120%

Associated Samples:
Batch GP2040: F8744-1, F8744-2, F8744-3, F8744-4, F8744-5
Batch GP2041: F8744-1, F8744-2, F8744-3, F8744-4, F8744-5
Batch GP2057: F8744-1, F8744-2, F8744-3, F8744-4, F8744-5

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F8744
Account: ALSE - Accutest Laboratories Southeast, Inc.
Project: ALSE12467 - TETRFLJX: NAS Jax-Hanger 1000

Analyte	Batch ID	RL	MB Result	Units	BSP %Recov	QC Limits
Total Organic Carbon	GP11859	1.0	<1.0	mg/l	105.0	90-110%

Associated Samples:
Batch GP11859: F8744-4

FIELD DUPLICATE SAMPLES

January 2001

Hangar 1000, NAS Jacksonville

Jacksonville, FL

Fraction	Analyte	H10-MW14-05	H10-DUP1-05	RPD
Volatiles	1,1-Dichloroethane	182	188	3%
	1,1-Dichloroethene	424	431	2%
	1,2-Dichloroethane	1.9 J	2	5%
	1,2-Dichloroethene (total)	1.4 J	1.5 J	7%
	Freon 113	87.9	99.1	12%
	1,1,1-Trichloroethane	17.0	17.5	3%
	1,1,2-Trichloroethane	1.9 J	2.0	5%
	Toluene	1.9 J	2.1	10%
	Trichlorethene	266	273	3%
Gases	Methane	206	187	10%
Misc.	Chloride	23.0	21.5	7%
	Hydrogen Sulfide	ND	2.0	NC
	TOC	5.4	NS	NC

Fraction	Analyte	H10-MW19-05	H10-DUP2-05	RPD
SVOCs	Napthalene	1.9 J	2.1 J	10%
VOCs	1,1-Dichloroethane	98.9	110	11%
	1,1-Dichloroethene	190	188	1%
	1,2-Dichloroethane	1.5 J	1.4 J	7%
	1,2-Dichloroethene (total)	52.7	52.4	1%
	Freon 113	447	438	2%
	Tetrachloroethene	3	3	0%
	1,1,2-Trichloroethane	2.0 U	1.0 J	NC
	Toluene	1.8 J	1.7 J	6%
	Trichlorethene	229	226	1%
	Vinyl chloride	0.60 J	0.60 J	0%
Gases	Methane	105	104	1%
Metals	Chromium	3.2 B	3.6 B	12%
Misc.	Chloride	19	20	5%
	Hydrogen Sulfide	2.7	ND	NC
	TOC	3.5	NS	NC

NS = not sampled

ND = not detected

NC = not calculated

J = estimated

RPD = Relative Percent Difference

Acceptable RPD: 0-30% aqueous

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	Mr. Mark Peterson	DATE:	September 20, 2001
FROM:	Elena Rodriguez	COPIES:	DV FILE

SUBJECT: **DATA VALIDATION - ORGANICS**
CTO 167, NASJAX
SDG F10469

SAMPLES: 6/Aqueous/

H10-GW-MW03-06
H10-GW-MW05-06
H10-GW-MW06-06
H10-GW-MW07-06
H10-GW-TB03-06

OVERVIEW

The sample set for CTO 167, NASJAX, SDG F10469 consists of four aqueous environmental samples and one aqueous quality control sample (trip blank). All groundwater samples were analyzed for select volatile organic compounds, semi-volatile organic compounds, polynuclear aromatic hydrocarbons, alcohols, and dissolved gasses. The trip blank (H10-GW-TB03-06) was analyzed for volatile organic compounds.

The samples were collected by TetraTech NUS on July 31, 2001 and analyzed by Accutest Laboratories. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria using the following analytical and reporting protocols: SW-846 Methods 8260B, 8270C, 8310, 8015 and RSK SOP 147/175. The data contained in this SDG were validated with regard to the following parameters:

- * Data completeness
- * Holding times
- * Initial/continuing calibrations
- * Laboratory method and field quality control blank results
- * Surrogate recoveries
- * Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A.

Volatile Organics

Data reported for this fraction were found to be acceptable.

Alcohols

Data reported for this fraction were found to be acceptable.

Semi-Volatile Organics

Data reported for this fraction were found to be acceptable.

Polynuclear Aromatic Hydrocarbons

Data reported for this fraction were found to be acceptable.

Dissolved Gases (Methane-Ethane-Ethene)

Data reported for this fraction were found to be acceptable.

Additional Comments

Positive results below the reporting limit (RL) were qualified as estimated, J, due to uncertainty near the detection limit.

EXECUTIVE SUMMARY

Laboratory Performance Issues: None.

Other Factors Affecting Data Quality: None

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99), and the Navy IRCDQM (9/99) NFESC guidelines. The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC guidelines and the Quality Assurance Project Plan (QAPP)."

Elena Rodriguez

Tetra Tech NUS

Elena Rodriguez

E Rodriguez for J Samchuck

Tetra Tech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:
1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank contamination
C = Calibration (i.e. %RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS – GFAA MSAs r<0.995
K = ICP Interference – Include ICSAB %Rs
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (I.E. base-time drifting)
P = Uncertainty near detection limit (<2 x IDL for Inorganics and < CRQL for Organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCB D% between columns for positive results
V = Non-Linear calibrations, tuning r< 0.995 (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = % Solid content is less than 30%

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10469

SAMPLE NUMBER:	H10-GW-MW03-06			H10-GW-MW05-06			H10-GW-MW06-06			H10-GW-MW07-06		
SAMPLE DATE:	07/31/01			07/31/01			07/31/01			07/31/01		
LABORATORY ID:	F10469-1			F10469-2			F10469-3			F10469-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	2	U		37.1			4.8			9		
1,1,2-TRICHLOROETHANE	2	U		2	U		2	U		2	U	
1,1-DICHLOROETHANE	2	U		1.4	J	P	3.5			4		
1,1-DICHLOROETHENE	2	U		11.9			3.7			5.6		
1,2-DICHLOROETHANE	2	U		2	U		2	U		2	U	
1-BUTANOL	5000	UJ	Q	5000	UJ	Q	5000	UJ	Q	5000	UJ	Q
2-NITROPROPANE	10	U		10	U		10	U		10	U	
ACETONE	50	U		50	U		50	U		50	U	
BENZENE	1	U		1	U		1	U		1	U	
CYCLOHEXANONE	10	U		10	U		10	U		10	U	
ETHYLBENZENE	2	U		2	U		2	U		2	U	
FREON 113	2	U		3.6			20.6			37.7		
ISOBUTANOL	5000	UJ	Q	5000	UJ	Q	5000	UJ	Q	5000	UJ	Q
METHANOL	5000	UJ	Q	5000	UJ	Q	5000	UJ	Q	5000	UJ	Q
TETRACHLOROETHENE	2	U		2	U		0.68	J	P	0.71	J	P
TOLUENE	2	U		2	U		2	U		2	U	
TOTAL 1,2-DICHLOROETHENE	2.6	J	P	4	U		3.8	J	P	8		
TRICHLOROETHENE	2	U		10.1			24.1			23		
VINYL CHLORIDE	3.3			1	U		1	U		1	U	

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10469

SAMPLE NUMBER:	H10-TB03			
SAMPLE DATE:	07/31/01	/ /	/ /	/ /
LABORATORY ID:	F10469-5			
QC_TYPE:	NORMAL			
% SOLIDS:	0.0 %	100.0 %	100.0 %	100.0 %
UNITS:	UG/L			
FIELD DUPLICATE OF:				

VOLATILES	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
1,1,1-TRICHLOROETHANE	2	U										
1,1,2-TRICHLOROETHANE	2	U										
1,1-DICHLOROETHANE	2	U										
1,1-DICHLOROETHENE	2	U										
1,2-DICHLOROETHANE	2	U										
2-NITROPROPANE	10	U										
ACETONE	50	U										
BENZENE	1	U										
CYCLOHEXANONE	10	U										
ETHYLBENZENE	2	U										
FREON 113	2	U										
TETRACHLOROETHENE	2	U										
TOLUENE	2	U										
TOTAL 1,2-DICHLOROETHENE	4	U										
TRICHLOROETHENE	2	U										
VINYL CHLORIDE	1	U										

WATER DATA
Accutest, NJ
SDG: F10469

SAMPLE NUMBER:	H10-GW-MW03-06			H10-GW-MW05-06			H10-GW-MW06-06			H10-GW-MW07-06		
SAMPLE DATE:	07/31/01			07/31/01			07/31/01			07/31/01		
LABORATORY ID:	F10469-1			F10469-2			F10469-3			F10469-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
SEMIVOLATILES	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
2,4-DINITROTOLUENE	0.2	U		0.2	U		0.2	U		0.2	U	
3&4-METHYLPHENOL	4	U		4.4	U		4.4	U		4.4	U	
PENTACHLOROPHENOL	1	U		1	U		1	U		1	U	

WATER DATA
Accutest, NJ
SDG: F10469

SAMPLE NUMBER:	H10-GW-MW03-06			H10-GW-MW05-06			H10-GW-MW06-06			H10-GW-MW07-06		
SAMPLE DATE:	07/31/01			07/31/01			07/31/01			07/31/01		
LABORATORY ID:	F10469-1			F10469-2			F10469-3			F10469-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
DISSOLVED GASES	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
ETHANE	1.12			1	U		1	U		1	U	
ETHENE	1	U		1	U		1	U		1	U	
METHANE	344			47.9			87.8			96.1		

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10469

SAMPLE NUMBER:	H10-GW-MW03-06			H10-GW-MW05-06			H10-GW-MW06-06			H10-GW-MW07-06		
SAMPLE DATE:	07/31/01			07/31/01			07/31/01			07/31/01		
LABORATORY ID:	F10469-1			F10469-2			F10469-3			F10469-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	2.2	U		2	U		2.2	U		2	U	
2-METHYLNAPHTHALENE	2.2	U		2	U		2.2	U		2	U	
ACENAPHTHENE	4.4	U		4	U		4.4	U		2	U	
ACENAPHTHYLENE	4.4	U		4	U		4.4	U		4	U	
ANTHRACENE	2.2	U		2	U		2.2	U		4	U	
BENZO(A)ANTHRACENE	0.22	U		0.2	U		0.22	U		2	U	
BENZO(A)PYRENE	0.22	U		0.2	U		0.22	U		0.2	U	
BENZO(B)FLUORANTHENE	0.22	U		0.2	U		0.22	U		0.2	U	
BENZO(G,H,I)PERYLENE	0.22	U		0.2	U		0.22	U		0.2	U	
BENZO(K)FLUORANTHENE	0.22	U		0.2	U		0.22	U		0.2	U	
CHRYSENE	2.2	U		2	U		2.2	U		0.2	U	
DIBENZO(A,H)ANTHRACENE	0.22	U		0.2	U		0.22	U		2	U	
FLUORANTHENE	2.2	U		2	U		2.2	U		0.2	U	
FLUORENE	2.2	U		2	U		2.2	U		2	U	
INDENO(1,2,3-CD)PYRENE	0.22	U		0.2	U		0.22	U		2	U	
NAPHTHALENE	2.2	U		2	U		2.2	U		0.2	U	
PHENANTHRENE	2.2	U		2	U		2.2	U		2	U	
PYRENE	2.2	U		2	U		2.2	U		2	U	

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

Report of Analysis

Client Sample ID:	H10-GW-MW03-06		
Lab Sample ID:	F10469-1	**Date Sampled:**	07/31/01
Matrix:	AQ - Ground Water	**Date Received:**	08/01/01
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0004975.D	1	08/04/01	NAF	n/a	n/a	VC234
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	2.6	4.0	ug/l	J
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	3.3	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		80-120%
17060-07-0	1,2-Dichloroethane-D4	99%		80-120%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	89%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	H10-GW-MW05-06		
Lab Sample ID:	F10469-2	**Date Sampled:**	07/31/01
Matrix:	AQ - Ground Water	**Date Received:**	08/01/01
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0004976.D	1	08/04/01	NAF	n/a	n/a	VC234
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	1.4	2.0	ug/l	J
75-35-4	1,1-Dichloroethylene	11.9	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	3.6	2.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	37.1	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	10.1	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		80-120%
17060-07-0	1,2-Dichloroethane-D4	99%		80-120%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	89%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW06-06		
Lab Sample ID:	F10469-3	**Date Sampled:**	07/31/01
Matrix:	AQ - Ground Water	**Date Received:**	08/01/01
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0004979.D	1	08/04/01	NAF	n/a	n/a	VC234
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	3.5	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	3.7	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	3.8	4.0	ug/l	J
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	20.6	2.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	4.8	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	0.68	2.0	ug/l	J
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	24.1	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		80-120%
17060-07-0	1,2-Dichloroethane-D4	99%		80-120%
2037-26-5	Toluene-D8	102%		80-120%
460-00-4	4-Bromofluorobenzene	90%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW07-06			
Lab Sample ID:	F10469-4		**Date Sampled:**	07/31/01
Matrix:	AQ - Ground Water		**Date Received:**	08/01/01
Method:	SW846 8260B		**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0004980.D	1	08/04/01	NAF	n/a	n/a	VC234
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-94-1	**Cyclohexanone**	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	4.0	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	5.6	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	8.0	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	**Freon 113**	37.7	2.0	ug/l	
79-46-9	**2-Nitropropane**	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	9.0	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	0.71	2.0	ug/l	J
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	23.0	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		80-120%
17060-07-0	1,2-Dichloroethane-D4	100%		80-120%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	88%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-TB03		
Lab Sample ID:	F10469-5	**Date Sampled:**	07/31/01
Matrix:	AQ - Trip Blank Water	**Date Received:**	08/01/01
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0004981.D	1	08/04/01	NAF	n/a	n/a	VC234
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-94-1	**Cyclohexanone**	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	**Freon 113**	ND	2.0	ug/l	
79-46-9	**2-Nitropropane**	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		80-120%
17060-07-0	1,2-Dichloroethane-D4	100%		80-120%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	89%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW03-06		
Lab Sample ID:	F10469-1	**Date Sampled:**	07/31/01
Matrix:	AQ - Ground Water	**Date Received:**	08/01/01
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W006119.D	1	08/03/01	ME	08/02/01	OP3590	SW333
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
	3&4-Methylphenol	ND	4.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	43%		20-125%
4165-62-2	Phenol-d5	28%		10-125%
118-79-6	2,4,6-Tribromophenol	78%		35-140%
4165-60-0	Nitrobenzene-d5	61%		46-125%
321-60-8	2-Fluorobiphenyl	63%		46-125%
1718-51-0	Terphenyl-d14	81%		49-126%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW05-06		
Lab Sample ID:	F10469-2	**Date Sampled:**	07/31/01
Matrix:	AQ - Ground Water	**Date Received:**	08/01/01
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W006120.D	1	08/03/01	ME	08/02/01	OP3590	SW333
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
	3&4-Methylphenol	ND	4.4	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	58%		20-125%
4165-62-2	Phenol-d5	38%		10-125%
118-79-6	2,4,6-Tribromophenol	85%		35-140%
4165-60-0	Nitrobenzene-d5	79%		46-125%
321-60-8	2-Fluorobiphenyl	77%		46-125%
1718-51-0	Terphenyl-d14	86%		49-126%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW06-06		
Lab Sample ID:	F10469-3	**Date Sampled:**	07/31/01
Matrix:	AQ - Ground Water	**Date Received:**	08/01/01
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W006121.D	1	08/03/01	ME	08/02/01	OP3590	SW333
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
	3&4-Methylphenol	ND	4.4	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	58%		20-125%
4165-62-2	Phenol-d5	37%		10-125%
118-79-6	2,4,6-Tribromophenol	88%		35-140%
4165-60-0	Nitrobenzene-d5	80%		46-125%
321-60-8	2-Fluorobiphenyl	76%		46-125%
1718-51-0	Terphenyl-d14	86%		49-126%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	H10-GW-MW07-06		
Lab Sample ID:	F10469-4	**Date Sampled:**	07/31/01
Matrix:	AQ - Ground Water	**Date Received:**	08/01/01
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W006124.D	1	08/03/01	ME	08/02/01	OP3590	SW333
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
	3&4-Methylphenol	ND	4.4	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	55%		20-125%
4165-62-2	Phenol-d5	34%		10-125%
118-79-6	2,4,6-Tribromophenol	79%		35-140%
4165-60-0	Nitrobenzene-d5	79%		46-125%
321-60-8	2-Fluorobiphenyl	77%		46-125%
1718-51-0	Terphenyl-d14	80%		49-126%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW03-06		
Lab Sample ID:	F10469-1	**Date Sampled:**	07/31/01
Matrix:	AQ - Ground Water	**Date Received:**	08/01/01
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L008470.D	1	08/03/01	ME	08/02/01	OP3585	SL486
Run #2							

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
87-86-5	Pentachlorophenol	ND	1.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.20	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW05-06		
Lab Sample ID:	F10469-2	**Date Sampled:**	07/31/01
Matrix:	AQ - Ground Water	**Date Received:**	08/01/01
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L008471.D	1	08/03/01	ME	08/02/01	OP3585	SL486
Run #2							

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
87-86-5	Pentachlorophenol	ND	1.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.20	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW06-06		
Lab Sample ID:	F10469-3	**Date Sampled:**	07/31/01
Matrix:	AQ - Ground Water	**Date Received:**	08/01/01
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L008472.D	1	08/03/01	ME	08/02/01	OP3585	SL486
Run #2							

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
87-86-5	Pentachlorophenol	ND	1.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.20	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW07-06		
Lab Sample ID:	F10469-4	**Date Sampled:**	07/31/01
Matrix:	AQ - Ground Water	**Date Received:**	08/01/01
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L008475.D	1	08/03/01	ME	08/02/01	OP3585	SL486
Run #2							

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
87-86-5	Pentachlorophenol	ND	1.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.20	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW03-06		
Lab Sample ID:	F10469-1	**Date Sampled:**	07/31/01
Matrix:	AQ - Ground Water	**Date Received:**	08/01/01
Method:	DA1	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH6099.D	1	08/13/01	AMA	n/a	n/a	M:GGH1476
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	5000	ug/l	
71-36-3	n-Butyl Alcohol	ND	5000	ug/l	
67-56-1	Methanol	ND	5000	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW05-06		
Lab Sample ID:	F10469-2	**Date Sampled:**	07/31/01
Matrix:	AQ - Ground Water	**Date Received:**	08/01/01
Method:	DAI	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH6100.D	1	08/13/01	AMA	n/a	n/a	M:GGH1476
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	5000	ug/l	
71-36-3	n-Butyl Alcohol	ND	5000	ug/l	
67-56-1	Methanol	ND	5000	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	H10-GW-MW06-06		
Lab Sample ID:	F10469-3	**Date Sampled:**	07/31/01
Matrix:	AQ - Ground Water	**Date Received:**	08/01/01
Method:	DAI	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH6101.D	1	08/13/01	AMA	n/a	n/a	M:GGH1476
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	5000	ug/l	
71-36-3	n-Butyl Alcohol	ND	5000	ug/l	
67-56-1	Methanol	ND	5000	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW07-06		
Lab Sample ID:	F10469-4	**Date Sampled:**	07/31/01
Matrix:	AQ - Ground Water	**Date Received:**	08/01/01
Method:	DAI	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH6102.D	1	08/13/01	AMA	n/a	n/a	M:GGH1476
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	5000	ug/l	
71-36-3	n-Butyl Alcohol	ND	5000	ug/l	
67-56-1	Methanol	ND	5000	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW03-06		
Lab Sample ID:	F10469-1	**Date Sampled:**	07/31/01
Matrix:	AQ - Ground Water	**Date Received:**	08/01/01
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000777.D	1	08/07/01	RA	n/a	n/a	GXY41
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	344	0.50	ug/l	
74-84-0	Ethane	1.1	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	H10-GW-MW05-06		
Lab Sample ID:	F10469-2	**Date Sampled:**	07/31/01
Matrix:	AQ - Ground Water	**Date Received:**	08/01/01
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000778.D	1	08/07/01	RA	n/a	n/a	GXY41
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	47.9	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW06-06	**Date Sampled:**	07/31/01
Lab Sample ID:	F10469-3	**Date Received:**	08/01/01
Matrix:	AQ - Ground Water	**Percent Solids:**	n/a
Method:	RSKSOP-147/175		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000779.D	1	08/07/01	RA	n/a	n/a	GXY41
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	87.8	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW07-06		
Lab Sample ID:	F10469-4	**Date Sampled:**	07/31/01
Matrix:	AQ - Ground Water	**Date Received:**	08/01/01
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000781.D	1	08/07/01	RA	n/a	n/a	GXY41
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	96.1	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW03-06		
Lab Sample ID:	F10469-1	**Date Sampled:**	07/31/01
Matrix:	AQ - Ground Water	**Date Received:**	08/01/01
Method:	EPA 8310 SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE004478.D	1	08/02/01	MRE	08/02/01	OP3587	GEE206
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.4	ug/l	
208-96-8	Acenaphthylene	ND	4.4	ug/l	
120-12-7	Anthracene	ND	2.2	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.22	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.22	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.22	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.22	ug/l	
218-01-9	Chrysene	ND	2.2	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.22	ug/l	
206-44-0	Fluoranthene	ND	2.2	ug/l	
86-73-7	Fluorene	ND	2.2	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.22	ug/l	
91-20-3	Naphthalene	ND	2.2	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.2	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.2	ug/l	
85-01-8	Phenanthrene	ND	2.2	ug/l	
129-00-0	Pyrene	ND	2.2	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	102%		33-141%
92-94-4	p-Terphenyl	98%		31-122%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW05-06		
Lab Sample ID:	F10469-2	**Date Sampled:**	07/31/01
Matrix:	AQ - Ground Water	**Date Received:**	08/01/01
Method:	EPA 8310 SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE004479.D	1	08/02/01	MRE	08/02/01	OP3587	GEE206
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	82%		33-141%
92-94-4	p-Terphenyl	76%		31-122%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW07-06		
Lab Sample ID:	F10469-4	**Date Sampled:**	07/31/01
Matrix:	AQ - Ground Water	**Date Received:**	08/01/01
Method:	EPA 8310 SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE004481.D	1	08/02/01	MRE	08/02/01	OP3587	GEE206
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	98%		33-141%
92-94-4	p-Terphenyl	99%		31-122%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW06-06		
Lab Sample ID:	F10469-3	Date Sampled:	07/31/01
Matrix:	AQ - Ground Water	Date Received:	08/01/01
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE004480.D	1	08/02/01	MRE	08/02/01	OP3587	GEE206
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.4	ug/l	
208-96-8	Acenaphthylene	ND	4.4	ug/l	
120-12-7	Anthracene	ND	2.2	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.22	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.22	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.22	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.22	ug/l	
218-01-9	Chrysene	ND	2.2	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.22	ug/l	
206-44-0	Fluoranthene	ND	2.2	ug/l	
86-73-7	Fluorene	ND	2.2	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.22	ug/l	
91-20-3	Naphthalene	ND	2.2	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.2	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.2	ug/l	
85-01-8	Phenanthrene	ND	2.2	ug/l	
129-00-0	Pyrene	ND	2.2	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	101%		33-141%
92-94-4	p-Terphenyl	103%		31-122%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

APPENDIX C

SUPPORT DOCUMENTATION

F10469

HOLDING TIME

09/05/01

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UG/L	H10-GW-MW03-06	F10469-1	NORMAL	F10469	ALC	07/31/01	/ /	08/13/01	0	0	13
UG/L	H10-GW-MW05-06	F10469-2	NORMAL	F10469	ALC	07/31/01	/ /	08/13/01	0	0	13
UG/L	H10-GW-MW06-06	F10469-3	NORMAL	F10469	ALC	07/31/01	/ /	08/13/01	0	0	13
UG/L	H10-GW-MW07-06	F10469-4	NORMAL	F10469	ALC	07/31/01	/ /	08/13/01	0	0	13
MG/L	H10-GW-MW03-06	F10469-1	NORMAL	F10469	CL	07/31/01	/ /	08/13/01	0	0	13
MG/L	H10-GW-MW05-06	F10469-2	NORMAL	F10469	CL	07/31/01	08/13/01	08/14/01	13	1	14
MG/L	H10-GW-MW06-06	F10469-3	NORMAL	F10469	CL	07/31/01	08/13/01	08/14/01	13	1	14
MG/L	H10-GW-MW07-06	F10469-4	NORMAL	F10469	CL	07/31/01	08/13/01	08/14/01	13	1	14
UG/L	H10-GW-MW03-06	F10469-1	NORMAL	F10469	ETHA	07/31/01	08/13/01	08/14/01	13	1	14
UG/L	H10-GW-MW05-06	F10469-2	NORMAL	F10469	ETHA	07/31/01	/ /	08/07/01	0	0	7
UG/L	H10-GW-MW06-06	F10469-3	NORMAL	F10469	ETHA	07/31/01	/ /	08/07/01	0	0	7
UG/L	H10-GW-MW07-06	F10469-4	NORMAL	F10469	ETHA	07/31/01	/ /	08/07/01	0	0	7
UG/L	H10-GW-MW03-06	F10469-1	NORMAL	F10469	ETHE	07/31/01	/ /	08/07/01	0	0	7
UG/L	H10-GW-MW05-06	F10469-2	NORMAL	F10469	ETHE	07/31/01	/ /	08/07/01	0	0	7
UG/L	H10-GW-MW06-06	F10469-3	NORMAL	F10469	ETHE	07/31/01	/ /	08/07/01	0	0	7
UG/L	H10-GW-MW07-06	F10469-4	NORMAL	F10469	ETHE	07/31/01	/ /	08/07/01	0	0	7
UG/L	H10-GW-MW03-06	F10469-1	NORMAL	F10469	M	07/31/01	08/02/01	08/14/01	2	12	14
UG/L	H10-GW-MW05-06	F10469-2	NORMAL	F10469	M	07/31/01	08/02/01	08/14/01	2	12	14
UG/L	H10-GW-MW06-06	F10469-3	NORMAL	F10469	M	07/31/01	08/02/01	08/14/01	2	12	14
UG/L	H10-GW-MW07-06	F10469-4	NORMAL	F10469	M	07/31/01	08/02/01	08/14/01	2	12	14
UG/L	H10-GW-MW03-06	F10469-1	NORMAL	F10469	METH	07/31/01	/ /	08/07/01	0	0	7
UG/L	H10-GW-MW05-06	F10469-2	NORMAL	F10469	METH	07/31/01	/ /	08/07/01	0	0	7
UG/L	H10-GW-MW06-06	F10469-3	NORMAL	F10469	METH	07/31/01	/ /	08/07/01	0	0	7
UG/L	H10-GW-MW07-06	F10469-4	NORMAL	F10469	METH	07/31/01	/ /	08/07/01	0	0	7

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/L	H10-GW-MW03-06	F10469-1	NORMAL	F10469	NTA	07/31/01	08/02/01	08/02/01	2	0	2
MG/L	H10-GW-MW05-06	F10469-2	NORMAL	F10469	NTA	07/31/01	08/02/01	08/02/01	2	0	2
MG/L	H10-GW-MW06-06	F10469-3	NORMAL	F10469	NTA	07/31/01	08/02/01	08/02/01	2	0	2
MG/L	H10-GW-MW07-06	F10469-4	NORMAL	F10469	NTA	07/31/01	08/02/01	08/02/01	2	0	2
MG/L	H10-GW-MW03-06	F10469-1	NORMAL	F10469	NTI	07/31/01	08/02/01	08/02/01	2	0	2
MG/L	H10-GW-MW05-06	F10469-2	NORMAL	F10469	NTI	07/31/01	08/02/01	08/02/01	2	0	2
MG/L	H10-GW-MW06-06	F10469-3	NORMAL	F10469	NTI	07/31/01	08/02/01	08/02/01	2	0	2
MG/L	H10-GW-MW07-06	F10469-4	NORMAL	F10469	NTI	07/31/01	08/02/01	08/02/01	2	0	2
UG/L	H10-GW-MW03-06	F10469-1	NORMAL	F10469	OS	07/31/01	08/02/01	08/02/01	2	0	2
UG/L	H10-GW-MW05-06	F10469-2	NORMAL	F10469	OS	07/31/01	08/02/01	08/03/01	2	1	3
UG/L	H10-GW-MW06-06	F10469-3	NORMAL	F10469	OS	07/31/01	08/02/01	08/03/01	2	1	3
UG/L	H10-GW-MW07-06	F10469-4	NORMAL	F10469	OS	07/31/01	08/02/01	08/03/01	2	1	3
UG/L	H10-GW-MW03-06	F10469-1	NORMAL	F10469	OS	07/31/01	08/02/01	08/03/01	2	1	3
UG/L	H10-GW-MW03-06	F10469-1	NORMAL	F10469	OV	07/31/01	/ /	08/04/01	0	0	4
UG/L	H10-GW-MW05-06	F10469-2	NORMAL	F10469	OV	07/31/01	/ /	08/04/01	0	0	4
UG/L	H10-GW-MW06-06	F10469-3	NORMAL	F10469	OV	07/31/01	/ /	08/04/01	0	0	4
UG/L	H10-GW-MW07-06	F10469-4	NORMAL	F10469	OV	07/31/01	/ /	08/04/01	0	0	4
UG/L	H10-TB03	F10469-5	NORMAL	F10469	OV	07/31/01	/ /	08/04/01	0	0	4
UG/L	H10-GW-MW03-06	F10469-1	NORMAL	F10469	PAH	07/31/01	08/02/01	08/02/01	2	0	2
UG/L	H10-GW-MW05-06	F10469-2	NORMAL	F10469	PAH	07/31/01	08/02/01	08/02/01	2	0	2
UG/L	H10-GW-MW06-06	F10469-3	NORMAL	F10469	PAH	07/31/01	08/02/01	08/02/01	2	0	2
UG/L	H10-GW-MW07-06	F10469-4	NORMAL	F10469	PAH	07/31/01	08/02/01	08/02/01	2	0	2
UG/L	H10-GW-MW03-06	F10469-1	NORMAL	F10469	SIM	07/31/01	08/02/01	08/03/01	2	1	3
UG/L	H10-GW-MW05-06	F10469-2	NORMAL	F10469	SIM	07/31/01	08/02/01	08/03/01	2	1	3
UG/L	H10-GW-MW06-06	F10469-3	NORMAL	F10469	SIM	07/31/01	08/02/01	08/03/01	2	1	3
UG/L	H10-GW-MW07-06	F10469-4	NORMAL	F10469	SIM	07/31/01	08/02/01	08/03/01	2	1	3
MG/L	H10-GW-MW03-06	F10469-1	NORMAL	F10469	SO4	07/31/01	08/13/01	08/14/01	13	1	14
MG/L	H10-GW-MW05-06	F10469-2	NORMAL	F10469	SO4	07/31/01	08/13/01	08/14/01	13	1	14

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/L	H10-GW-MW06-06	F10469-3	NORMAL	F10469	SO4	07/31/01	08/13/01	08/14/01	13	1	14
MG/L	H10-GW-MW07-06	F10469-4	NORMAL	F10469	SO4	07/31/01	08/13/01	08/14/01	13	1	14
MG/L	H10-GW-MW03-06	F10469-1	NORMAL	F10469	SUL	07/31/01	/ /	08/07/01	0	0	7
MG/L	H10-GW-MW05-06	F10469-2	NORMAL	F10469	SUL	07/31/01	/ /	08/07/01	0	0	7
MG/L	H10-GW-MW06-06	F10469-3	NORMAL	F10469	SUL	07/31/01	/ /	08/07/01	0	0	7
MG/L	H10-GW-MW07-06	F10469-4	NORMAL	F10469	SUL	07/31/01	/ /	08/07/01	0	0	7

ACCUTEST LABORATORIES SOUTHEAST
SAMPLE RECEIPT CONFIRMATION

Accutest Job Number: F10469

Client/Project: Tetra tech NUS, INC.

Date/Time Received: 08/01/01 · 1000

Method of Delivery: Fed Ex Greyhound UPS Pickup Delivery Other

Air Bill Number: 8287 2074 0330

Cooler Temperatures: 2.8, 2.6.

Custody Seals Intact?	YES	NO
Chain Of Custody Provided?	YES	NO
Chain Of Custody Match Bottles?	YES	NO
Sample Labels Present?	YES	NO
Are All Bottles Unbroken?	YES	NO
Proper Preservative?	YES	NO
Correct Containers Used?	YES	NO
Sufficient Sample Volume?	YES	NO

Number of Encores: Ø

COMMENTS:

COC states to see attached tables, however there are no tables attached

Signature: [signature] Date: 08/01/01

000

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER H10073101A | PAGE ____ OF ____

PROJECT NO: N3995	SITE NAME: NAS JAX-HANGAR 1000
SAMPLERS (SIGNATURE) Alan Pate	
PROJECT MANAGER AND PHONE NUMBER	Mark Peterson 904-281-0400
FIELD OPERATIONS LEADER AND PHONE NUMBER	Alan Pate 904-281-0400
CARRIER/WAYBILL NUMBER	FEDEX
LABORATORY NAME AND CONTACT:	Accutest - Linda Williams
ADDRESS	4405 Vineland Rd #C-15
CITY, STATE	ORLANDO, FL 32811

STANDARD TAT ☒ RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G)						G	G	G	G	P	P	P		
PRESERVATIVE USED						HCL	HCL	/	/	HNO3	NaOH	/		
DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS VOCs (8260B)	Methane/Ethane/Ethene RSK 147/175	Alcohols 8015B	SVOCs (8270C) PAHs (8310)	Metals Cd/Cr 6010B	Sulfide 376.1	Anions SO_4, Cl, NO_2, NO_3		COMMENTS
7/31	0845	H10-GW-MW103-06	H_2O	G	3	3	[illegible]	[illegible]						Cool to 4°C
7/31	1055	H10-GW-MW105-06	H_2O	G	3	3	[illegible]	[illegible]						
7/31	1305	H10-GW-MW06-06	H_2O	G	16	3	3	3	4	1	1	1		See Attached
7/31	1515	H10-GW-MW07-06	H_2O	G	16	3	3	3	4	1	1	1		QAPP table
		~~TRIP BL~~												for analytical
		H10-TB03	H_2O		.									requirements

1. RELINQUISHED BY Alan Pate	DATE 7/31/01	TIME 1700	1. RECEIVED BY [signature]	DATE 08/01/01	TIME 1000
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME
COMMENTS					

Temp 2.8

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/99 FORM NO. TtNUS 001

TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER H1D073101

PAGE ___ OF ___

PROJECT NO: N3995

SITE NAME: NAS JAX-HANGAR1000

SAMPLERS (SIGNATURE): Alan Pate

PROJECT MANAGER AND PHONE NUMBER: Mark Peterson 904-281-0400

FIELD OPERATIONS LEADER AND PHONE NUMBER: Alan Pate 904-281-0400

CARRIER/WAYBILL NUMBER: FEDEX

LABORATORY NAME AND CONTACT: Accutest - Linda Williams

ADDRESS: 4405 Vineland Rd #C-15

CITY, STATE: Orlando, FL 32811

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

						TYPE OF ANALYSIS							
					CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	G	G	G	P	P	P	
					PRESERVATIVE USED	HCL	HCL	/	/	HNO3	NaOH	/	
DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	VOCs (8260B)	Methane/Ethane/Ethene RSK 147/175	Alcohols 8015B	SVOCs (8270C) PAHs (8310)	Metals Cd/Cr 6010B	Sulfide 376.1	Anions SO4, Cl, NO2, NO3	COMMENTS
7/31	0845	H10-GW-MW03-06	H_2O	G	13	3	3	4	1	1	1		Cool to 4°C
7/31	1055	H10-GW-MW05-06	H_2O	G	13	3	3	4	1	1	1		See attached QAPP table for analytical requirements

1. RELINQUISHED BY Alan L Pate	DATE 7/31/01	TIME 1700	1. RECEIVED BY [signature]	DATE 08/01/01	TIME 1000
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

temp 2.6

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/99
FORM NO. TINUS-001

Method Blank Summary

Job Number: F10469
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VC234-MB	C0004970.D	1	08/04/01	NAF	n/a	n/a	VC234

The QC reported here applies to the following samples: **Method: SW846 8260B**

F10469-1, F10469-2, F10469-3, F10469-4, F10469-5

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	97%	80-120%
17060-07-0	1,2-Dichloroethane-D4	98%	80-120%
2037-26-5	Toluene-D8	102%	80-120%
460-00-4	4-Bromofluorobenzene	91%	80-120%

Response Factor Report MS[illegible]

Method : C:\MSDCHEM\2\METHODS\8260APP1.M (RTE Integrator)
Title : EPA 624 & SWA 5030B/8260B
Last Update : Thu Jul 19 14:26:48 2001
Response via : Initial Calibration

Calibration Files

1	=C0004625.D	2	=C0004626.D	3	=C0004627.D
4	=C0004628.D	5	=C0004629.D	6	=C0004630.D

		Compound	1	2	3	4	5	6	Avg	%RSD
1)	I	Fluorobenzene	------------	------	------	ISTD	------	------	------	
2)		Dichlorodifluorom		0.215	0.209	0.205	0.204	0.190	0.205	4.46
3)	P	Chloromethane	0.360	0.421	0.425	0.411	0.393	0.368	0.396	6.96
4)	C	Vinyl Chloride	0.262	0.380	0.356	0.356	0.343	0.319	0.336	12.32
5)		Bromomethane	0.163	0.193	0.184	0.174	0.159	0.136	0.168	12.09
6)		Chloroethane	0.163	0.205	0.192	0.193	0.180	0.163	0.183	9.33
7)		Trichlorofluorome		0.224	0.249	0.235	0.244	0.240	0.239	3.99
8)		Acrolein	0.007	0.008	0.013	0.013	0.013	0.014	0.011	25.96
9)	C	1,1-Dichloroethen	0.400	0.499	0.497	0.513	0.498	0.472	0.480	8.59
10)		Freon 113	0.212	0.266	0.257	0.264	0.259	0.248	0.251	8.10
11)		Acetone		0.063	0.065	0.062	0.058	0.058	0.061	5.47
12)		Iodomethane	0.300	0.384	0.360	0.381	0.378	0.371	0.362	8.78
13)		Methyl Acetate	0.206	0.171	0.180	0.174	0.160	0.159	0.175	9.87
14)		Carbon Disulfide	0.852	1.030	0.990	1.001	0.966	0.908	0.958	6.88
15)		Methylene Chlorid		0.562	0.488	0.486	0.463	0.446	0.489	9.07
16)		Tert-Butyl Alcoho	0.021	0.017	0.021	0.020	0.020	0.021	0.020	7.04
17)		trans-1,2-Dichlor	0.415	0.501	0.493	0.485	0.482	0.467	0.474	6.50
18)		Acrylonitrile	0.076	0.072	0.084	0.081	0.076	0.077	0.078	5.30
19)		Methyl Tert Butyl	0.598	0.616	0.655	0.649	0.639	0.641	0.633	3.44
20)	P	1,1-Dichloroethan	0.492	0.560	0.561	0.545	0.532	0.510	0.533	5.22
21)		Vinyl acetate	0.493	0.546	0.642	0.653	0.614	0.600	0.591	10.32
22)		Di-isopropyl ethe	1.037	1.174	1.181	1.155	1.114	1.062	1.120	5.39
23)		ETBE	0.795	0.853	0.898	0.891	0.877	0.878	0.865	4.39
24)		2,2-Dichloropropa	0.157	0.203	0.202	0.199	0.196	0.189	0.191	9.01
25)		cis-1,2-Dichloroe	0.225	0.260	0.253	0.252	0.251	0.246	0.248	4.81
26)		2-Butanone	0.113	0.100	0.109	0.103	0.097	0.099	0.104	6.16
27)		Bromochloromethan	0.077	0.112	0.109	0.110	0.109	0.111	0.105	12.95
28)	C	Chloroform	0.398	0.450	0.440	0.433	0.436	0.427	0.431	4.11
29)		Tetrahydrofuran		0.069	0.071	0.070	0.065	0.067	0.069	3.29
30)		1,1,1-Trichloroet	0.231	0.310	0.300	0.298	0.303	0.301	0.291	10.17
31)		Cyclohexane	0.425	0.560	0.563	0.560	0.565	0.545	0.536	10.29
32)	S	Dibromofluorometh	0.222	0.218	0.221	0.219	0.220	0.221	0.220	0.67
33)		1,1-Dichloroprope	0.277	0.366	0.365	0.359	0.362	0.352	0.347	9.94
34)		Carbon Tetrachlor	0.195	0.260	0.257	0.261	0.265	0.267	0.251	11.05
35)	S	1,2-Dichloroethan	0.288	0.266	0.277	0.267	0.261	0.263	0.270	3.80
36)		Benzene	1.076	1.205	1.156	1.137	1.105	1.044	1.120	5.19
37)		TAME	0.649	0.688	0.724	0.724	0.705	0.695	0.698	3.98
38)		1,2-Dichloroethan	0.441	0.370	0.363	0.354	0.339	0.334	0.367	10.56
39)		Trichloroethene	0.237	0.272	0.271	0.263	0.265	0.261	0.261	4.88
40)		Methylcyclohexane	0.347	0.428	0.443	0.428	0.440	0.423	0.418	8.54
41)	C	1,2-Dichloropropa	0.279	0.339	0.331	0.327	0.319	0.307	0.317	6.83
42)		Dibromomethane	0.131	0.149	0.152	0.146	0.143	0.143	0.14[illegible]	4.90
43)		1,4-Dioxane		0.002	0.002	0.002	0.002	0.002	0.00[illegible]	8.55
44)		Bromodichlorometh	0.291	0.319	0.325	0.325	0.328	0.327	0.31[illegible]	4.52
[illegible]		2-Nitropropane	0.053	0.048	0.058	0.058	0.054	0.055	0.055	6.84
			[illegible]	0.154	0.166	0.165	0.153	0.147	0.155	5.83
							[illegible]	0.222	0.228	4.20

49)	I	Chlorobenzene-d5	-------------------	ISTD	-------------------					
50)	S	Toluene-d8	1.371	1.382	1.364	1.357	1.346	1.340	1.360	1.14
51)	C	Toluene	1.435	1.685	1.643	1.628	1.611	1.549	1.592	5.57
52)		trans-1,3-Dichlor	0.460	0.500	0.524	0.521	0.519	0.518	0.507	4.83
53)		1,1,2-Trichloroet	0.262	0.261	0.267	0.264	0.254	0.252	0.260	2.24
54)		Tetrachloroethene	0.285	0.353	0.346	0.341	0.340	0.333	0.333	7.40
55)		2-hexanone	0.224	0.209	0.231	0.225	0.209	0.211	0.218	4.60
56)		1,3-Dichloropropa	0.542	0.564	0.574	0.561	0.541	0.531	0.552	3.00
57)		Dibromochlorometh	0.242	0.263	0.273	0.279	0.280	0.285	0.270	5.91
58)		1,2-Dibromoethane	0.252	0.262	0.282	0.277	0.270	0.275	0.270	4.08
59)		1-Chlorohexane	0.427	0.524	0.533	0.545	0.547	0.535	0.519	8.75
60)	P	Chlorobenzene	0.845	1.010	0.990	0.975	0.973	0.952	0.958	6.09
61)		1,1,1,2-Tetrachlo	0.223	0.297	0.291	0.297	0.287	0.275	0.278	10.12
62)	C	Ethylbenzene	1.454	1.842	1.824	1.798	1.750	1.652	1.720	8.55
63)		m,p-Xylene	1.116	1.431	1.411	1.391	1.342	1.261	1.325	9.01
64)		o-Xylene	1.190	1.489	1.488	1.480	1.403	1.313	1.394	8.70
65)		Styrene	0.788	1.046	1.124	1.144	1.090	1.020	1.035	12.54
66)	P	Bromoform	0.146	0.151	0.187	0.192	0.190	0.198	0.177	12.85
67)	I	1,4-Dichlorobenzene-d	-------------------	ISTD	-------------------					
68)		Isopropylbenzene	2.493	3.271	3.228	3.223	3.305	3.236	3.126	9.96
69)	S	4-Bromofluorobenz	1.100	1.102	1.079	1.079	1.105	1.109	1.096	1.21
70)		Bromobenzene	0.658	0.809	0.799	0.778	0.774	0.731	0.758	7.40
71)		Cyclohexanone		0.017	0.019	0.018	0.018	0.018	0.018	3.58
72)	P	1,1,2,2-Tetrachlo	0.627	0.606	0.636	0.635	0.634	0.633	0.628	1.85
73)		trans-1,4-Dichlor	0.215	0.217	0.249	0.244	0.237	0.241	0.234	6.15
74)		1,2,3-Trichloropr	0.172	0.164	0.179	0.168	0.165	0.170	0.169	3.27
75)		n-Propylbenzene	3.321	4.362	4.267	4.169	4.140	3.917	4.029	9.37
76)		2-Chlorotoluene	2.284	2.946	2.886	2.844	2.750	2.590	2.717	9.04
77)		4-Chlorotoluene	2.205	2.729	2.645	2.634	2.663	2.607	2.581	7.31
78)		1,3,5-Trimethylbe	2.054	2.677	2.731	2.702	2.638	2.477	2.547	10.10
79)		sec-Butylbenzene	2.593	3.425	3.494	3.475	3.502	3.383	3.312	10.72
80)		1,3-Dichlorobenze	1.147	1.508	1.454	1.440	1.465	1.421	1.406	9.24
81)		4-Isopropyltoluen	1.814	2.402	2.481	2.458	2.501	2.426	2.347	11.22
82)		1,4-Dichlorobenze	1.310	1.552	1.496	1.477	1.484	1.441	1.460	5.61
83)		tert-Butylbenzene	1.483	1.918	1.914	1.903	1.898	1.816	1.822	9.34
84)		n-Butylbenzene	2.260	2.825	2.916	2.873	2.919	2.820	2.769	9.14
85)		1,2-Dichlorobenze	1.113	1.385	1.380	1.374	1.372	1.333	1.326	8.00
86)		1,2,4-Trimethylbe	2.100	2.807	2.829	2.827	2.834	2.733	2.688	10.82
87)		1,2-Dibromo-3-Chl	0.123	0.105	0.107	0.112	0.108	0.110	0.111	5.61
88)		1,2,4-Trichlorobe	0.728	0.915	0.897	0.956	0.949	0.946	0.899	9.66
89)		Hexachlorobutadie	0.331	0.395	0.362	0.377	0.380	0.386	0.372	6.13
90)		Naphthalene	1.513	1.564	1.652	1.737	1.689	1.745	1.650	5.71
91)		1,2,3-Trichlorobe	0.990	0.788	0.775	0.805	0.797	0.808	0.827	9.77

(#) = Out of Range

8260APP1.M Thu Jul 19 14:27:28 2001 RPT1

Evaluate Continuing Calibration Report

Data File : C:\MSDCHEM\2\DATA\080401\C0064968.D
Acq On : 4 Aug 2001 9:09 am
Sample : CC220-40
Misc :
MS Integration Params: Rteint.p

Vial: 1
Operator: NancyF
Inst : MSVOA5
Multiplr: 1.00

Method : C:\MSDCHEM\2\METHODS\8260APP1.M (RTE Integrator)
Title : EPA 624 & SWA 5030B/8260B
Last Update : Mon Jul 23 11:28:44 2001
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

NAF 8-6-01

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Fluorobenzene	1.000	1.000	0.0	80	0.00
2		Dichlorodifluoromethane	0.205	0.182	11.2	71	0.00
3	P	Chloromethane	0.396	0.380	4.0	74	0.00
4	C	Vinyl Chloride	0.336	0.314	6.5	71	0.01
5		Bromomethane	0.168	0.204	-21.4#	94	0.00
6		Chloroethane	0.183	0.201	-9.8	84	0.00
7		Trichlorofluoromethane	0.239	0.289	-20.9#	99	0.00
8		Acrolein	0.011	0.022	-100.0#	140	0.00
9	C	1,1-Dichloroethene	0.480	0.429	10.6	67	0.00
10		Freon 113	0.251	0.226	10.0	69	0.00
11		Acetone	0.061	0.061	0.0	79	0.00
12		Iodomethane	0.362	0.338	6.6	71	0.00
13		Methyl Acetate	0.175	0.168	4.0	78	0.00
14		Carbon Disulfide	0.958	0.839	12.4	67	0.01
15		Methylene Chloride	0.489	0.426	12.9	70	0.00
16		Tert-Butyl Alcohol	0.020	0.019	5.0	73	0.00
17		trans-1,2-Dichloroethene	0.474	0.416	12.2	69	0.00
18		Acrylonitrile	0.078	0.079	-1.3	79	0.00
19		Methyl Tert Butyl Ether	0.633	0.584	7.7	72	0.00
20	P	1,1-Dichloroethane	0.533	0.486	8.8	72	0.00
21		Vinyl acetate	0.591	0.630	-6.6	78	0.00
22		Di-isopropyl ether	1.120	1.061	5.3	74	0.00
23		ETBE	0.865	0.763	11.8	69	0.00
24		2,2-Dichloropropane	0.191	0.181	5.2	73	0.00
25		cis-1,2-Dichloroethene	0.248	0.231	6.9	74	0.00
26		2-Butanone	0.104	0.102	1.9	79	0.00
27		Bromochloromethane	0.105	0.105	0.0	76	0.00
28	C	Chloroform	0.431	0.391	9.3	73	0.00
29		Tetrahydrofuran	0.069	0.065	5.8	75	0.00
30		1,1,1-Trichloroethane	0.291	0.274	5.8	74	0.00
31		Cyclohexane	0.536	0.468	12.7	67	0.00
32	S	Dibromofluoromethane	0.220	0.218	0.9	80	0.00
33		1,1-Dichloropropene	0.347	0.308	11.2	69	0.00
34		Carbon Tetrachloride	0.251	0.236	6.0	73	0.00
35	S	1,2-Dichloroethane-d4	0.270	0.266	1.5	80	0.00
36		Benzene	1.120	1.001	10.6	71	0.00
37		TAME	0.698	0.647	7.3	72	0.00
38		1,2-Dichloroethane	0.367	0.329	10.4	75	0.00
39		Trichloroethene	0.261	0.224	14.2	69	0.00
40		Methylcyclohexane	0.418	0.381	8.9	72	0.00
41	C	1,2-Dichloropropane	0.317	0.291	8.2	72	0.00
42		Dibromomethane	0.144	0.136	5.6	75	0.00
43		1,4-Dioxane	0.002	0.002	0.0	76	0.00
44		Bromodichloromethane	0.319	0.296	7.2	73	0.00
[illegible]		[illegible]	0.055	0.063	-14.5	86	[illegible]

1700

46		2-Chloroethyl vinyl ether	[illegible]	[illegible]	1.3	75	0.00
47		4-Methyl-2-pentanone	0.228	[illegible]	-1.3	79	0.00
48		cis-1,3-Dichloropropene	0.420	0.386	8.1	71	0.00
49	I	Chlorobenzene-d5	1.000	1.000	0.0	82	0.00
50	S	Toluene-d8	1.360	1.356	0.3	82	0.00
51	C	Toluene	1.592	1.416	11.1	71	0.00
52		trans-1,3-Dichloropropene	0.507	0.482	4.9	76	0.00
53		1,1,2-Trichloroethane	0.260	0.246	5.4	77	0.00
54		Tetrachloroethene	0.333	0.319	4.2	77	0.00
55		2-hexanone	0.218	0.220	-0.9	80	0.00
56		1,3-Dichloropropane	0.552	0.520	5.8	76	0.00
57		Dibromochloromethane	0.270	0.263	2.6	78	0.00
58		1,2-Dibromoethane	0.270	0.269	0.4	80	0.00
59		1-Chlorohexane	0.519	0.453	12.7	68	0.00
60	P	Chlorobenzene	0.958	0.882	7.9	74	0.00
61		1,1,1,2-Tetrachloroethane	0.278	0.276	0.7	76	0.00
62	C	Ethylbenzene	1.720	1.580	8.1	72	0.00
63		m,p-Xylene	1.325	1.243	6.2	73	0.00
64		o-Xylene	1.394	1.335	4.2	74	0.00
65		Styrene	1.035	1.042	-0.7	75	0.00
66	P	Bromoform	0.177	0.208	-17.5	89	0.00
67	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	94	0.00
68		Isopropylbenzene	3.126	2.472	20.9#	72	0.00
69	S	4-Bromofluorobenzene	1.096	0.946	13.7	83	0.00
70		Bromobenzene	0.758	0.661	12.8	80	0.00
71		Cyclohexanone	0.018	0.015	16.7	79	0.00
72	P	1,1,2,2-Tetrachloroethane	0.628	0.612	2.5	91	0.00
73		trans-1,4-Dichloro-2-butene	0.234	0.189	19.2	73	0.00
74		1,2,3-Trichloropropane	0.169	0.151	10.7	85	0.00
75		n-Propylbenzene	4.029	3.296	18.2	75	0.00
76		2-Chlorotoluene	2.717	2.229	18.0	74	0.00
77		4-Chlorotoluene	2.581	2.006	22.3#	72	0.00
78		1,3,5-Trimethylbenzene	2.547	2.167	14.9	76	0.00
79		sec-Butylbenzene	3.312	2.768	16.4	75	0.00
80		1,3-Dichlorobenzene	1.406	1.247	11.3	82	0.00
81		4-Isopropyltoluene	2.347	2.168	7.6	83	0.00
82		1,4-Dichlorobenzene	1.460	1.264	13.4	81	0.00
83		tert-Butylbenzene	1.822	1.468	19.4	73	0.00
84		n-Butylbenzene	2.769	2.372	14.3	78	0.00
85		1,2-Dichlorobenzene	1.326	1.200	9.5	83	0.00
86		1,2,4-Trimethylbenzene	2.688	2.256	16.1	75	0.00
87		1,2-Dibromo-3-Chloropropane	0.111	0.098	11.7	82	0.00
88		1,2,4-Trichlorobenzene	0.899	0.872	3.0	86	0.00
89		Hexachlorobutadiene	0.372	0.363	2.4	91	0.00
90		Naphthalene	1.650	1.548	6.2	84	0.00
91		1,2,3-Trichlorobenzene	0.827	0.761	8.0	89	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

C0004628.D 8260APP1.M Sat Aug 04 11:26:21 2001 RPT1

Method Blank Summary

Job Number: F10469
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GXY41-MB	XY000775.D1	1	08/07/01	RA	n/a	n/a	GXY41

The QC reported here applies to the following samples: **Method: RSKSOP-147/175**

F10469-1, F10469-2, F10469-3, F10469-4

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	ND	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

Response Factor Report VOA5

Method : C:\HPCHEM\2\METHODS\DGMEE.M (Chemstation Integrator)
Title : Dissolved Gases in Water
Last Update : Fri Aug 03 13:55:05 2001
Response via : Initial Calibration

Calibration Files
1 =XY000738.D 2 =XY000739.D 3 =XY000740.D
4 =XY000741.D 5 =XY000742.D 6 =XY000743.D 7 =XY000744.D

	Compound	1	2	3	4	5	6	7	Avg		%RSD
1)	Methane	1.327	1.268	0.972	0.730	0.879	0.895	0.960	1.004	E4	21.49
2)	Ethylene	1.920	2.303	1.904	1.450	1.697	1.714	1.826	1.831	E4	14.32
3)	Ethane	1.832	2.365	1.907	1.466	1.706	1.739	1.856	1.839	E4	14.86

Average % RSD = 16.8903 < 30 ·/·

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\2\DATA\080701\XY000773.D
Acq On : 7 Aug 2001 8:10 am
Sample : CC33-500ppmv
Misc : gc1414,gxy41,,,,,
IntFile : EVENTS.E

Vial: 100
Operator: RachidA
Inst : VOA5
Multiplr: 1.00

Method : C:\HPCHEM\2\METHODS\DGMEE.M (Chemstation Integrator)
Title : Dissolved Gases in Water
Last Update : Fri Aug 03 13:55:05 2001
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	Methane	500.000	412.256	17.5	107	0.00
2	Ethylene	500.000	421.492	15.7	105	0.00
3	Ethane	500.000	420.899	15.8	105	0.00

Average % D = 16.3569

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Method Blank Summary

Job Number: F10469
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP3590-MB	W006112.D	1	08/03/01	ME	08/02/01	OP3590	SW333

The QC reported here applies to the following samples:

Method: SW846 8270C

F10469-1, F10469-2, F10469-3, F10469-4

CAS No.	Compound	Result	RL	Units	Q
	3&4-Methylphenol	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	63%	20-125%
4165-62-2	Phenol-d5	42%	10-125%
118-79-6	2,4,6-Tribromophenol	80%	35-140%
4165-60-0	Nitrobenzene-d5	83%	46-125%
321-60-8	2-Fluorobiphenyl	80%	46-125%
1718-51-0	Terphenyl-d14	83%	49-126%

GC/MS QA-QC Check Report

ne File : C:\HPCHEM\1\DATA\071601\W005886.D
ne Time : 16 Jul 2001 8:43 am

aily Calibration File : C:\HPCHEM\1\DATA\071601\W005887.D 7/17/01

						245291	843102	427735
						540306	245353	130019
ile	Sample	Surrogate Recovery %				Internal Standard Responses		
005894.D	op3464-mb	93	94	93	90	196057	659989	337768
		89	82			474626	287150	175365
005895.D	f10253-1,2	89	90	84	104	257019	838192	382960
		99	88			431286	191101	179383
005896.D	f10260-1,1	52	63	64	80	161630	529575	273459
		67	68			342562	186092	173247
005897.D	f10260-2,2	64	67	74	83	260645	811232	375960
		74	66			405349	216004	224589
005898.D	f10253-3	72	71	78	84	264239	819317	380321
		82	64			423060	220839	227780
005899.D	op3479-bs	87	88	94	97	323166	1105692	537454
		88	97			573021	212376	225685
005900.D	op3479-mb	76	75	79	83	295702	955215	450840
		71	99			485385	185478	197426
005901.D	f10276-2	78	77	83	87	324910	1033759	482057
		73	93			515373	193275	202536
005902.D	op3479-ms	68	71	75	85	341145	1162403	550103
		79	89			575716	199555	209896
005903.D	op3479-msd	79	78	86	88	317130	1068404	521533
		82	94			566836	205673	206120
005904.D	f10281-1	74	77	82	92	308046	980279	435052
		79	76			440764	187905	206466
005905.D	f10281-2	78	81	84	87	333547	1110334	522884
		84	84			516542	190567	207854
005906.D	f10281-3	69	71	74	84	307117	984994	443069
		78	76			462230	210847	220514
005907.D	f10281-4	75	74	77	82	237783	771161	368825
		82	76			418569	202122	207666
W005908.D	solvent bl	89	87	93	97	297290	956929	434312
		87	86			434901	184918	207101

+ - fails 12hr time check * - fails criteria

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\080301\W006110.D
Acq On : 3 Aug 2001 1:07 pm
Sample : cc321-50
Misc : op3576,sw333,1000,,,1,1,water
MS Integration Params: LSCINT.P

Vial: 2
Operator: marke
Inst : MSBNA01
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\8270C.M (RTE Integrator)
Title : SW846 8270C OR EPA 625
Last Update : Fri Jul 27 09:46:39 2001
Response via : Multiple Level Calibration

8/7/01

Min. RRF : 0.001 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	83	0.00
2		1,4-Dioxane	0.438	0.433	1.1	83	-0.08
3		N-nitrosodimethylamine	0.628	0.580	7.6	78	-0.07
4		Pyridine	1.019	1.015	0.4	81	-0.07
5		Benzaldehyde	0.397	0.429	-8.1	79	0.00
6		Aniline	1.630	1.641	-0.7	81	0.00
7	S	2-Fluorophenol	1.059	0.993	6.2	81	-0.01
8		bis(2-Chloroethyl)ether	1.106	1.056	4.5	80	0.00
9	S	Phenol-d5	1.343	1.238	7.8	78	0.00
10	C	Phenol	1.512	1.416	6.3	78	0.00
11		2-Chlorophenol	1.352	1.224	9.5	74	0.00
12		1,3-Dichlorobenzene	1.486	1.459	1.8	81	0.00
13	C	1,4-Dichlorobenzene	1.524	1.488	2.4	81	0.00
14		1,2-Dichlorobenzene	1.423	1.378	3.2	79	0.00
15		Benzyl alcohol	0.831	0.777	6.5	75	0.00
16		bis(2-chloroisopropyl)ether	2.090	2.134	-2.1	83	0.00
17		2-Methylphenol	1.123	1.069	4.8	77	0.00
18		Acetophenone	1.610	1.458	9.4	74	0.00
19		Hexachloroethane	0.522	0.499	4.4	79	0.00
20	P	N-Nitroso-di-n-propylamine	0.785	0.721	8.2	73	0.00
21		3&4-Methylphenol	1.141	1.028	9.9	73	0.00
22	I	Naphthalene-d8	1.000	1.000	0.0	79	0.00
23	S	Nitrobenzene-d5	0.354	0.332	6.2	73	0.00
24		Nitrobenzene	0.341	0.333	2.3	77	0.00
25		Isophorone	0.622	0.590	5.1	75	0.00
26	C	2-Nitrophenol	0.212	0.207	2.4	76	0.00
27		2,4-Dimethylphenol	0.351	0.323	8.0	72	0.00
28		bis(2-Chloroethoxy)methane	0.371	0.351	5.4	74	0.00
29		Benzoic Acid	0.285	0.271	4.9	71	0.00
30	C	2,4-Dichlorophenol	0.315	0.303	3.8	74	0.00
31		1,2,4-Trichlorobenzene	0.313	0.306	2.2	77	0.00
32		Naphthalene	1.007	0.975	3.2	76	0.00
33		4-Chloroaniline	0.398	0.397	0.3	77	0.00
34		2,6-Dichlorophenol	0.304	0.294	3.3	76	0.00
35	C	Hexachlorobutadiene	0.173	0.165	4.6	77	0.00
36		Caprolactam	0.166	0.159	4.2	75	0.00
37	C	4-Chloro-3-methylphenol	0.288	0.268	6.9	73	0.01
38		2-Methylnaphthalene	0.707	0.673	4.8	74	0.01
39		1-Methylnaphthalene	0.687	0.649	5.5	73	0.01
40		1,2,4,5-Tetrachlorobenzene	0.293	0.269	8.2	71	0.00
		naphthene-d10	1.000	1.000	0.0	76	0.00
					11.4	66	0.00

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44		2,4,5-Trichlorophenol	0.41[illegible]	0.39[illegible]	4.8	71	0.0[illegible]
45	S	2-Fluorobiphenyl	1.43[illegible]	1.392	2.9	74	0.00
46		1,1'-Biphenyl	1.606	1.540	4.1	72	0.00
47		2-Chloronaphthalene	1.196	1.175	1.8	75	0.00
48		2-Nitroaniline	0.339	0.321	5.3	71	0.00
49		Acenaphthylene	1.800	1.702	5.4	71	0.00
50		Dimethylphthalate	1.285	1.259	2.0	75	0.00
51		2,6-Dinitrotoluene	0.290	0.287	1.0	74	0.00
52	C	Acenaphthene	1.156	1.168	-1.0	76	0.00
53		3-Nitroaniline	0.334	0.334	0.0	74	0.00
54	P	2,4-Dinitrophenol	0.192	0.156	18.8	61	0.00
55		Dibenzofuran	1.626	1.582	2.7	74	0.00
56		2,4-Dinitrotoluene	0.368	0.367	0.3	76	0.00
57	P	4-Nitrophenol	0.170	0.155	8.8	69	0.00
58		2,3,4,6-Tetrachlorophenol	0.271	0.257	5.2	71	0.00
59		Fluorene	1.239	1.239	0.0	76	0.00
60		4-Chlorophenyl-phenylether	0.566	0.573	-1.2	76	0.00
61		Diethylphthalate	1.230	1.198	2.6	74	0.00
62		4-Nitroaniline	0.301	0.317	-5.3	78	0.00
63	I	Phenanthrene-d10	1.000	1.000	0.0	80	0.00
64		4,6-Dinitro-2-methylphenol	0.167	0.152	9.0	68	0.00
65	C	n-Nitrosodiphenylamine	0.653	0.613	6.1	73	0.00
66		1,2-Diphenylhydrazine	0.857	0.831	3.0	75	0.00
67	S	2,4,6-Tribromophenol	0.090	0.084	6.7	73	0.00
68		4-Bromophenyl-phenylether	0.196	0.185	5.6	74	0.00
69		Hexachlorobenzene	0.202	0.190	5.9	75	0.00
70		Atrazine	0.171	0.212	-24.0#	98	0.00
71	C	Pentachlorophenol	0.132	0.122	7.6	71	0.00
72		Phenanthrene	1.192	1.143	4.1	76	0.00
73		Anthracene	1.197	1.167	2.5	77	0.00
74		Carbazole	1.102	1.076	2.4	77	0.00
75		Di-n-butylphthalate	1.282	1.301	-1.5	79	0.01
76	C	Fluoranthene	0.957	0.986	-3.0	82	0.01
77	I	Chrysene-d12	1.000	1.000	0.0	90	0.00
78		Benzidine	0.284	0.428	-50.7#	118	0.00
79		Pyrene	2.093	1.903	9.1	83	0.00
80	S	Terphenyl-d14	1.219	1.053	13.6	79	0.00
81		Butylbenzylphthalate	0.929	0.858	7.6	82	0.00
82		3,3'-Dichlorobenzidine	0.375	0.378	-0.8	90	0.00
83		Benzo[a]anthracene	1.242	1.182	4.8	86	0.00
84		Chrysene	1.231	1.181	4.1	87	0.00
85		bis(2-Ethylhexyl)phthalate	1.205	1.136	5.7	83	0.00
86	I	Perylene-d12	1.000	1.000	0.0	99	0.00
87	C	Di-n-octylphthalate	3.004	2.945	2.0	89	0.00
88		Benzo[b]fluoranthene	1.511	1.455	3.7	93	0.00
89		Benzo[k]fluoranthene	1.597	1.543	3.4	91	0.00
90	C	Benzo[a]pyrene	1.324	1.253	5.4	93	0.00
91		Indeno[1,2,3-cd]pyrene	0.990	1.050	-6.1	111	0.01
92		Dibenz[a,h]anthracene	1.061	1.113	-4.9	109	0.01
93		Benzo[g,h,i]perylene	1.155	1.283	-11.1	116	0.00

Average % D = 5.7

SPCC's out = 0 CCC's out = 0

(#) = Out of Range

W005890.D 8270C.M Fri Aug 03 13:31:16 2001 MSBNA01

Method Blank Summary

Job Number: F10469
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP3587-MB	EE004477.D	1	08/02/01	MRE	08/02/01	OP3587	GEE206

The QC reported here applies to the following samples: **Method: EPA 8310**

F10469-1, F10469-2, F10469-3, F10469-4

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	92%	33-141%
92-94-4	p-Terphenyl	97%	31-122%

Response Factor Report G1315A

ethod : C:\HPCHEM\2\METHODS\8310_32.M (Chemstation Integrator)
.tle : PAH's BY EPA 8310
ast Update : Thu Jul 12 10:56:30 2001
esponse via : Initial Calibration

MKE 7/12/01

alibration Files
1 =EE004277.D L2 =EE004278.D L3 =EE004279.D
4 =EE004280.D L5 =EE004281.D L6 =EE004282.D

		Compound	L1	L2	L3	L4	L5	L6	Avg		%RSD
)		Naphthalene	9.212	8.306	8.041	7.579	7.771	7.658	8.095	E5	7.53
)		Acenaphthylene	3.630	3.238	3.132	2.973	3.037	3.184	3.199	E5	7.25
)		1-Methyl Naphthalen	7.830	7.008	6.794	6.421	6.494	6.791	6.890	E5	7.38
)		2-Methyl Naphthalen	7.846	7.031	6.822	6.470	6.527	6.822	6.920	E5	7.21
)		Acenaphthene	6.071	5.502	5.357	5.056	5.109	5.346	5.407	E5	6.76
)		Fluorene	2.215	1.998	1.941	1.836	1.858	1.935	1.964	E6	6.96
)		Phenanthrene	1.953	1.777	1.713	1.615	1.634	1.696	1.731	E6	7.10
)	S	O-Terphenyl	7.248	6.782	6.589	6.219	6.286	6.544	6.611	E5	5.66
)		Anthracene		2.217	1.932	1.709	1.649	1.624	1.826	E5	13.68
)		Fluoranthene	1.634	1.543	1.502	1.411	1.390	1.445	1.488	E6	6.16
)		Pyrene	2.622	2.394	2.293	2.136	2.130	2.173	2.291	E6	8.38
)	S	P-Terphenyl	2.856	2.553	2.483	2.347	2.382	2.473	2.516	E6	7.25
)		Benzo(a)Anthracene	4.831	4.260	4.131	3.911	3.949	4.090	4.196	E6	8.01
)		Chrysene		5.807	5.524	5.192	5.154	5.254	5.386	E6	5.12
)		Benzo(b)Fluoranthen	2.630	2.302	2.243	2.118	2.153	2.254	2.283	E6	8.02
)		Benzo(k)Fluoranthen	1.532	1.354	1.348	1.275	1.295	1.349	1.359	E6	6.70
)		Benzo(a) Pyrene	3.071	2.760	2.694	2.558	2.593	2.688	2.727	E6	6.74
)		Dibenzo(a,h)anthrac	2.416	2.146	2.096	1.995	2.029	2.114	2.133	E6	7.02
)		Benzo(g,h,i) Peryle	1.684	1.527	1.504	1.427	1.451	1.514	1.518	E6	5.93
)		Indeno(1,2,3-cd)pyr	1.303	1.196	1.220	1.156	1.177	1.230	1.214	E6	4.24

gnal #2 Calibration Files
L1 =EE004277.D L2 =EE004278.D L3 =EE004279.D
L4 =EE004280.D L5 =EE004281.D L6 =EE004282.D

		Compound	L1	L2	L3	L4	L5	L6	Avg		%RSD
1)		Naphthalene	5.495	5.105	4.905	4.572	4.958	4.693	4.955	E5	6.58
2)		Acenaphthylene	3.783	3.366	3.221	3.042	3.079	3.228	3.286	E5	8.21
3)		1-Methyl Naphthalen	3.484	3.119	2.991	2.820	2.841	2.973	3.038	E5	8.04
4)		2-Methyl Naphthalen	4.831	4.320	4.171	3.949	3.972	4.151	4.232	E5	7.65
5)		Acenaphthene	2.112	2.018	1.965	1.838	1.840	1.920	1.949	E5	5.45
6)		Fluorene	2.484	2.224	2.160	2.047	2.069	2.156	2.190	E6	7.21
7)		Phenanthrene	6.729	5.996	5.756	5.387	5.377	5.449	5.782	E6	9.06
8)	S	O-Terphenyl	1.259	1.120	1.097	1.040	1.050	1.094	1.110	E6	7.12
9)		Anthracene	1.436	1.259	1.106	0.895	0.758	0.659	1.019	E7	~~29.54~~ QUAD MKS 7/12/01
10)		Fluoranthene	1.597	1.504	1.447	1.364	1.385	1.439	1.456	E6	5.82
11)		Pyrene	1.470	1.358	1.321	1.254	1.270	1.317	1.332	E6	5.81
12)	S	P-Terphenyl	1.389	1.244	1.214	1.148	1.167	1.214	1.229	E6	6.97
13)		Benzo(a)Anthracene	3.469	3.152	3.075	2.901	2.941	3.057	3.099	E6	6.56
14)		Chrysene	5.288	4.729	4.586	4.317	4.346	4.508	4.629	E6	7.72
15)		Benzo(b)Fluoranthen	3.852	3.385	3.239	3.055	3.106	3.251	3.315	E6	8.69
16)		Benzo(k)Fluoranthen	2.903	2.678	2.511	2.401	2.438	2.536	2.578	E6	7.21
17)		Benzo(a) Pyrene	3.276	2.956	2.896	2.737	2.776	2.878	2.920	E6	6.58
18)		Dibenzo(a,h)anthrac	7.386	6.784	6.698	6.348	6.458	6.734	6.735	E5	5.37
19)		Benzo(g,h,i) Peryle	1.223	1.106	1.094	1.039	1.057	1.103	1.104	E6	5.85
		Indeno(1,2,3-cd)pyr	3.046	2.756	2.710	2.568	2.608	2.719	2.734	E6	6.17

Signal #1 : E:\HPCHEM\1\DATA\0802APAH\EE004468.D\DAD1B.CH Vial: 1
Signal #2 : E:\HPCHEM\1\DATA\0802APAH\EE004468.D\DAD1A.CH
Acq On : 02-Aug-2001, 15:23:20 Operator: MIKEE
Sample : ACN Inst : G1315A
Misc : op3583,gee206,1000,,,1,,water Multiplr: 1.00
IntFile Signal #1: EVENTS.E IntFile Signal #2: events2.e
Quant Time: Aug 3 8:49 2001 Quant Results File: 8310_32.RES

Quant Method : C:\HPCHEM\2\METHODS\8310_32.M (Chemstation Integrator)
Title : PAH's BY EPA 8310
Last Update : Fri Aug 03 08:48:42 2001
Response via : Initial Calibration
DataAcq Meth : 8310_32.M

Volume Inj. : 10ul
Signal #1 Phase : Envirosep PP Signal #2 Phase: Envirosep PP
Signal #1 Info : DAD 270nm Signal #2 Info : DAD 254nm

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppm	ppm
	System Monitoring Compounds						
8) S	O-Terphenyl	0.00	0.00	0	0	N.D.	N.D.
	Spiked Amount	20.000 Range	33 - 141	Recovery	=	0.00%#	0.00%#
12) S	P-Terphenyl	0.00	0.00	0	0	N.D.	N.D.
	Spiked Amount	20.000 Range	31 - 122	Recovery	=	0.00%#	0.00%#
	Target Compounds						
1)	Naphthalene	0.00	0.00	0	0	N.D.	N.D.
2)	Acenaphthylene	0.00	0.00	0	0	N.D.	N.D.
3)	1-Methyl Naphtha	0.00	0.00	0	0	N.D.	N.D.
4)	2-Methyl Naphtha	0.00	0.00	0	0	N.D.	N.D.
5)	Acenaphthene	0.00	0.00	0	0	N.D.	N.D.
6)	Fluorene	0.00	0.00	0	0	N.D.	N.D.
7)	Phenanthrene	0.00	0.00	0	0	N.D.	N.D.
9)	Anthracene	0.00	0.00	0	0	N.D.	N.D.
10)	Fluoranthene	0.00	0.00	0	0	N.D.	N.D.
11)	Pyrene	0.00	0.00	0	0	N.D.	N.D.
13)	Benzo(a)Anthrace	0.00	0.00	0	0	N.D.	N.D.
14)	Chrysene	0.00	0.00	0	0	N.D.	N.D.
15)	Benzo(b)Fluorant	0.00	0.00	0	0	N.D.	N.D.
16)	Benzo(k)Fluorant	0.00	0.00	0	0	N.D.	N.D.
17)	Benzo(a) Pyrene	0.00	0.00	0	0	N.D.	N.D.
18)	Dibenzo(a,h)anth	0.00	0.00	0	0	N.D.	N.D.
19)	Benzo(g,h,i) Per	0.00	0.00	0	0	N.D.	N.D.
20)	Indeno(1,2,3-cd)	0.00	0.00	0	0	N.D.	N.D.

MK 8/3/01

Tetra Tech NUS

INTERNAL CORRESPONDENCE

TO:	**Mr. Mark Peterson**	**DATE:**	**September 20, 2001**
FROM:	**Elena Rodriguez**	**COPIES:**	**DV FILE**

SUBJECT: **DATA VALIDATION - INORGANICS**
CTO 167, NASJAX
SDG F10296

SAMPLES: 5/Aqueous/

H10-GW-DUP1-06
H10-GW-MW14-06
H10-GW-MW15-06
H10-GW-MW19-06
H10-GW-MW23-06

OVERVIEW

The sample set for CTO 167, NASJAX, SDG F10296 consists of four aqueous environmental samples and one aqueous quality control sample (field duplicate pair: H10-GW-DUP1-06 and H10-GW-MW19-06). All samples were analyzed for cadmium and chromium and for natural attenuation parameters: chloride, nitrate, nitrite, sulfate, and sulfide.

The samples were collected by TetraTech NUS on July 12, 2001 and analyzed by Accutest Laboratories. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria using the following analytical and reporting protocols: SW-846 Methods 6010B, EPA 300, 325.3, and 376.1. The data contained in this SDG were validated with regard to the following parameters:

- * Data completeness
- * Holding times
- * Initial/continuing calibrations
- * Laboratory method blank results
- * Field duplicate sample results
- * Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A.

Metals

The following contaminants were detected in the laboratory method blanks:

Analyte	Maximum Concentration (ug/L)	Action Level (aqueous) (ug/L)
Cadmium	0.33	1.65
Chromium	0.51	2.55

An action level of 5X the maximum concentration has been used to evaluate the sample data for blank contamination. Sample aliquot and dilution factors were taken into consideration when determining blank contamination. Positive results less than the blank action levels were qualified, "U", as nondetected due to blank contamination.

General Chemistry: Chloride, Sulfate, Sulfide, Nitrate, Nitrite

Data reported for this fraction were found to be acceptable.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Metals were detected in the laboratory blanks.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Inorganic Data Validation (2/94), and the Navy IRCDQM (9/99) NFESC guidelines. The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC guidelines and the Quality Assurance Project Plan (QAPP)."

Elena Rodriguez

Tetra Tech NUS

Elena Rodriguez

E Rodriguez for Samchuck

TetraTech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:
1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank contamination
C = Calibration (i.e. %RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS – GFAA MSAs r<0.995
K = ICP Interference – Include ICSAB %Rs
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (I.E. base-time drifting)
P = Uncertainty near detection limit (<2 x IDL for Inorganics and < CRQL for Organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCB D% between columns for positive results
V = Non-Linear calibrations, tuning r< 0.995 (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = % Solid content is less than 30%

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10296

SAMPLE NUMBER:	H10-GW-DUP1-06			H10-GW-MW14-06			H10-GW-MW15-06			H10-GW-MW19-06		
SAMPLE DATE:	07/12/01			07/12/01			07/12/01			07/12/01		
LABORATORY ID:	F10296-2			F10296-4			F10296-3			F10296-1		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:	H10-GW-MW19-06											
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
CADMIUM	0.27	U		0.27	U		0.27	U		0.27	U	
CHROMIUM	4.1			0.35	U		0.35	U		4.2		

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10296

SAMPLE NUMBER:	H10-GW-MW23-06											
SAMPLE DATE:	07/12/01			/ /			/ /			/ /		
LABORATORY ID:	F10296-5											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
CADMIUM	0.27	U										
CHROMIUM	0.35	U										

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10296

SAMPLE NUMBER:	H10-GW-DUP1-06			H10-GW-MW14-06			H10-GW-MW15-06			H10-GW-MW19-06		
SAMPLE DATE:	07/12/01			07/12/01			07/12/01			07/12/01		
LABORATORY ID:	F10296-2			F10296-4			F10296-3			F10296-1		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
FIELD DUPLICATE OF:	H10-GW-MW19-06											
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
CHLORIDE(MG/L)	27			25.5			28.5			22.5		
NITRATE(MG/L)	0.1	U		0.1			0.1	U		0.1	U	
NITRITE(MG/L)	0.01	U		0.01	U		0.01	U		0.01	U	
SULFATE(MG/L)	18.2			9.7			18.1			18.2		
SULFIDE(MG/L)	2	U		2	U		2	U		2	U	

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10296

SAMPLE NUMBER:	H10-GW-MW23-06											
SAMPLE DATE:	07/12/01			/ /			/ /			/ /		
LABORATORY ID:	F10296-5											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANIC PARAMETERS												
CHLORIDE(MG/L)	17											
NITRATE(MG/L)	0.1	U										
NITRITE(MG/L)	0.01	U										
SULFATE(MG/L)	134											
SULFIDE(MG/L)	2	U										

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

Report of Analysis

Client Sample ID: H10-GW-DUP1-06
Lab Sample ID: F10296-2
Matrix: AQ - Ground Water
Date Sampled: 07/12/01
Date Received: 07/13/01
Percent Solids: n/a
Project: NAS Jax-Hanger 1000

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	0.27	ug/l	1	07/16/01	07/17/01	JK	SW846 6010B
Chromium	4.1 B	10	0.35	ug/l	1	07/16/01	07/17/01	JK	SW846 6010B

RL = Reporting Limit
IDL = Instrument Detection Limit

U = Indicates a result < IDL
B = Indicates a result >= IDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	H10-GW-MW14-06		
Lab Sample ID:	F10296-4	**Date Sampled:**	07/12/01
Matrix:	AQ - Ground Water	**Date Received:**	07/13/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	0.27	ug/l	1	07/16/01	07/18/01	JK	SW846 6010B
Chromium	0.35 U	10	0.35	ug/l	1	07/16/01	07/18/01	JK	SW846 6010B

RL = Reporting Limit
IDL = Instrument Detection Limit

U = Indicates a result < IDL
B = Indicates a result > = IDL but < RL

Report of Analysis

Client Sample ID:	H10-GW-MW15-06			
Lab Sample ID:	F10296-3		Date Sampled:	07/12/01
Matrix:	AQ - Ground Water		Date Received:	07/13/01
			Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000			

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	0.27	ug/l	1	07/16/01	07/17/01	JK	SW846 6010B
Chromium	0.35 U	10	0.35	ug/l	1	07/16/01	07/17/01	JK	SW846 6010B

RL = Reporting Limit
IDL = Instrument Detection Limit

U = Indicates a result < IDL
B = Indicates a result >= IDL but < RL

Report of Analysis

Client Sample ID:	H10-GW-MW19-06		
Lab Sample ID:	F10296-1	**Date Sampled:**	07/12/01
Matrix:	AQ - Ground Water	**Date Received:**	07/13/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed By		Method
Cadmium	0.27 U	5.0	0.27	ug/l	1	07/16/01	07/17/01	JK	SW846 6010B
Chromium	4.2 B	10	0.35	ug/l	1	07/16/01	07/17/01	JK	SW846 6010B

RL = Reporting Limit
IDL = Instrument Detection Limit

U = Indicates a result < IDL
B = Indicates a result >= IDL but < RL

Report of Analysis

Client Sample ID:	H10-GW-MW23-06		
Lab Sample ID:	F10296-5	**Date Sampled:**	07/12/01
Matrix:	AQ - Ground Water	**Date Received:**	07/13/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed By	Method
Cadmium	0.27 U	5.0	0.27	ug/l	1	07/16/01	07/18/01 JK	SW846 6010B
Chromium	0.35 U	10	0.35	ug/l	1	07/16/01	07/18/01 JK	SW846 6010B

RL = Reporting Limit
IDL = Instrument Detection Limit

U = Indicates a result < IDL
B = Indicates a result >= IDL but < RL

Report of Analysis

Client Sample ID:	H10-GW-DUP1-06		
Lab Sample ID:	F10296-2	**Date Sampled:**	07/12/01
Matrix:	AQ - Ground Water	**Date Received:**	07/13/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	27.0	1.0	mg/l	1	07/16/01	AL	EPA 325.3
Nitrogen, Nitrate	<0.10	0.10	mg/l	1	07/13/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrite	<0.010	0.010	mg/l	1	07/13/01	AL	EPA 300/SW846 9056
Sulfate	18.2	5.0	mg/l	1	07/13/01	AL	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	07/19/01	AL	EPA 376.1

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW14-06		
Lab Sample ID:	F10296-4	Date Sampled:	07/12/01
Matrix:	AQ - Ground Water	Date Received:	07/13/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	25.5	1.0	mg/l	1	07/16/01	AL	EPA 325.3
Nitrogen, Nitrate	0.10	0.10	mg/l	1	07/13/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrite	<0.010	0.010	mg/l	1	07/13/01	AL	EPA 300/SW846 9056
Sulfate	9.7	5.0	mg/l	1	07/13/01	AL	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	07/19/01	AL	EPA 376.1

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	H10-GW-MW15-06		
Lab Sample ID:	F10296-3	**Date Sampled:**	07/12/01
Matrix:	AQ - Ground Water	**Date Received:**	07/13/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	28.5	1.0	mg/l	1	07/16/01	AL	EPA 325.3
Nitrogen, Nitrate	<0.10	0.10	mg/l	1	07/13/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrite	<0.010	0.010	mg/l	1	07/13/01	AL	EPA 300/SW846 9056
Sulfate	18.1	5.0	mg/l	1	07/13/01	AL	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	07/19/01	AL	EPA 376.1

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW19-06		
Lab Sample ID:	F10296-1	Date Sampled:	07/12/01
Matrix:	AQ - Ground Water	Date Received:	07/13/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	22.5	1.0	mg/l	1	07/16/01	AL	EPA 325.3
Nitrogen, Nitrate	<0.10	0.10	mg/l	1	07/13/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrite	<0.010	0.010	mg/l	1	07/13/01	AL	EPA 300/SW846 9056
Sulfate	18.2	5.0	mg/l	1	07/13/01	AL	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	07/19/01	AL	EPA 376.1

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW23-06		
Lab Sample ID:	F10296-5	**Date Sampled:**	07/12/01
Matrix:	AQ - Ground Water	**Date Received:**	07/13/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	17.0	1.0	mg/l	1	07/16/01	AL	EPA 325.3
Nitrogen, Nitrate	<0.10	0.10	mg/l	1	07/13/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrite	<0.010	0.010	mg/l	1	07/13/01	AL	EPA 300/SW846 9056
Sulfate	134	5.0	mg/l	1	07/13/01	AL	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	07/19/01	AL	EPA 376.1

RL = Reporting Limit

APPENDIX C

SUPPORT DOCUMENTATION

F10296

HOLDING TIME

08/14/01

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UG/L	H10-GW-DUP1-06	F10296-2	NORMAL	F10296	ALC	07/12/01	/ /	07/25/01	0	0	13
UG/L	H10-GW-MW14-06	F10296-4	NORMAL	F10296	ALC	07/12/01	/ /	07/25/01	0	0	13
UG/L	H10-GW-MW15-06	F10296-3	NORMAL	F10296	ALC	07/12/01	/ /	07/25/01	0	0	13
UG/L	H10-GW-MW19-06	F10296-1	NORMAL	F10296	ALC	07/12/01	/ /	07/25/01	0	0	13
UG/L	H10-GW-MW23-06	F10296-5	NORMAL	F10296	ALC	07/12/01	/ /	07/25/01	0	0	13
MG/L	H10-GW-DUP1-06	F10296-2	NORMAL	F10296	CL	07/12/01	07/16/01	07/16/01	4	0	4
MG/L	H10-GW-MW14-06	F10296-4	NORMAL	F10296	CL	07/12/01	07/16/01	07/16/01	4	0	4
MG/L	H10-GW-MW15-06	F10296-3	NORMAL	F10296	CL	07/12/01	07/16/01	07/16/01	4	0	4
MG/L	H10-GW-MW19-06	F10296-1	NORMAL	F10296	CL	07/12/01	07/16/01	07/16/01	4	0	4
MG/L	H10-GW-MW23-06	F10296-5	NORMAL	F10296	CL	07/12/01	07/16/01	07/16/01	4	0	4
UG/L	H10-GW-DUP1-06	F10296-2	NORMAL	F10296	ETHA	07/12/01	/ /	07/17/01	0	0	5
UG/L	H10-GW-MW14-06	F10296-4	NORMAL	F10296	ETHA	07/12/01	/ /	07/17/01	0	0	5
UG/L	H10-GW-MW15-06	F10296-3	NORMAL	F10296	ETHA	07/12/01	/ /	07/17/01	0	0	5
UG/L	H10-GW-MW19-06	F10296-1	NORMAL	F10296	ETHA	07/12/01	/ /	07/17/01	0	0	5
UG/L	H10-GW-MW23-06	F10296-5	NORMAL	F10296	ETHA	07/12/01	/ /	07/17/01	0	0	5
UG/L	H10-GW-DUP1-06	F10296-2	NORMAL	F10296	ETHE	07/12/01	/ /	07/17/01	0	0	5
UG/L	H10-GW-MW14-06	F10296-4	NORMAL	F10296	ETHE	07/12/01	/ /	07/17/01	0	0	5
UG/L	H10-GW-MW15-06	F10296-3	NORMAL	F10296	ETHE	07/12/01	/ /	07/17/01	0	0	5
UG/L	H10-GW-MW19-06	F10296-1	NORMAL	F10296	ETHE	07/12/01	/ /	07/17/01	0	0	5
UG/L	H10-GW-MW23-06	F10296-5	NORMAL	F10296	ETHE	07/12/01	/ /	07/17/01	0	0	5
UG/L	H10-GW-DUP1-06	F10296-2	NORMAL	F10296	M	07/12/01	07/16/01	07/17/01	4	1	5
UG/L	H10-GW-MW14-06	F10296-4	NORMAL	F10296	M	07/12/01	07/16/01	07/18/01	4	2	6
UG/L	H10-GW-MW15-06	F10296-3	NORMAL	F10296	M	07/12/01	07/16/01	07/17/01	4	1	5
UG/L	H10-GW-MW19-06	F10296-1	NORMAL	F10296	M	07/12/01	07/16/01	07/17/01	4	1	5

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UG/L	H10-GW-MW23-06	F10296-5	NORMAL	F10296	M	07/12/01	07/16/01	07/18/01	4	2	6
UG/L	H10-GW-DUP1-06	F10296-2	NORMAL	F10296	METH	07/12/01	/ /	07/17/01	0	0	5
UG/L	H10-GW-MW14-06	F10296-4	NORMAL	F10296	METH	07/12/01	/ /	07/17/01	0	0	5
UG/L	H10-GW-MW15-06	F10296-3	NORMAL	F10296	METH	07/12/01	/ /	07/17/01	0	0	5
UG/L	H10-GW-MW19-06	F10296-1	NORMAL	F10296	METH	07/12/01	/ /	07/17/01	0	0	5
UG/L	H10-GW-MW23-06	F10296-5	NORMAL	F10296	METH	07/12/01	/ /	07/17/01	0	0	5
MG/L	H10-GW-DUP1-06	F10296-2	NORMAL	F10296	NTA	07/12/01	07/13/01	07/13/01	1	0	1
MG/L	H10-GW-MW14-06	F10296-4	NORMAL	F10296	NTA	07/12/01	07/13/01	07/13/01	1	0	1
MG/L	H10-GW-MW15-06	F10296-3	NORMAL	F10296	NTA	07/12/01	07/13/01	07/13/01	1	0	1
MG/L	H10-GW-MW19-06	F10296-1	NORMAL	F10296	NTA	07/12/01	07/13/01	07/13/01	1	0	1
MG/L	H10-GW-MW23-06	F10296-5	NORMAL	F10296	NTA	07/12/01	07/13/01	07/13/01	1	0	1
MG/L	H10-GW-DUP1-06	F10296-2	NORMAL	F10296	NTI	07/12/01	07/13/01	07/13/01	1	0	1
MG/L	H10-GW-MW14-06	F10296-4	NORMAL	F10296	NTI	07/12/01	07/13/01	07/13/01	1	0	1
MG/L	H10-GW-MW15-06	F10296-3	NORMAL	F10296	NTI	07/12/01	07/13/01	07/13/01	1	0	1
MG/L	H10-GW-MW19-06	F10296-1	NORMAL	F10296	NTI	07/12/01	07/13/01	07/13/01	1	0	1
MG/L	H10-GW-MW23-06	F10296-5	NORMAL	F10296	NTI	07/12/01	07/13/01	07/13/01	1	0	1
UG/L	H10-GW-DUP1-06	F10296-2	NORMAL	F10296	OS	07/12/01	07/16/01	07/24/01	4	8	12
UG/L	H10-GW-MW14-06	F10296-4	NORMAL	F10296	OS	07/12/01	07/16/01	07/24/01	4	8	12
UG/L	H10-GW-MW15-06	F10296-3	NORMAL	F10296	OS	07/12/01	07/16/01	07/24/01	4	8	12
UG/L	H10-GW-MW19-06	F10296-1	NORMAL	F10296	OS	07/12/01	07/16/01	07/24/01	4	8	12
UG/L	H10-GW-MW23-06	F10296-5	NORMAL	F10296	OS	07/12/01	07/16/01	07/24/01	4	8	12
UG/L	H10-GW-DUP1-06	F10296-2	NORMAL	F10296	OV	07/12/01	/ /	07/19/01	0	0	7
UG/L	H10-GW-MW14-06	F10296-4	NORMAL	F10296	OV	07/12/01	/ /	07/18/01	0	0	6
UG/L	H10-GW-MW15-06	F10296-3	NORMAL	F10296	OV	07/12/01	/ /	07/18/01	0	0	6
UG/L	H10-GW-MW19-06	F10296-1	NORMAL	F10296	OV	07/12/01	/ /	07/20/01	0	0	8
UG/L	H10-GW-MW23-06	F10296-5	NORMAL	F10296	OV	07/12/01	/ /	07/18/01	0	0	6
UG/L	H10-GW-TB02-06	F10296-6	NORMAL	F10296	OV	07/12/01	/ /	07/23/01	0	0	11

TETRA TECH NUS, INC.

CHAIN OF CUSTODY | NUMBER H10 -

PAGE ___ OF ___

PROJECT NO: N3995

SITE NAME: NAS JAX HANGAR 1000

PROJECT MANAGER AND PHONE NUMBER: MARK PETERSON 904-281-0400

LABORATORY NAME AND CONTACT: ACCUTEST LINDA WILLIAMS

SAMPLERS (SIGNATURE): Alan Pate

FIELD OPERATIONS LEADER AND PHONE NUMBER: ALAN PATE 904 281-0400

ADDRESS: 4405 VINELAND Rd #C-15

CARRIER/WAYBILL NUMBER: FED-EX

CITY, STATE: ORLANDO, FL 32811

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

						VOCs (8260B)	METHANE/ETHANE/ETHENE RSK 147/175	ALCOHOLS (8015B)	SVOCs (8270C) PAHs (8310)	METALS Cd/CR (6010 D)	SULFIDE 376-1	ANIONS (300.0) SO4, Cl, NO2, NO3		
CONTAINER TYPE PLASTIC (P) or GLASS (G)						G	G	G	G	P	P	P		
PRESERVATIVE USED						HCL	HCL	NONE	N	HNO3	NaOH	N		
DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS								COMMENTS
7/12	1200	H10-GW-MW19-06	GW	G		3	3	3	4	1	1	1		COOL TO 4°C
7/12	0000	H10-GW-DUP1-06				3	3	3	4	1	1	1		
7/12	0825	H10-GW-MW15-06				3								SEE ATTACHED
7/12	1000	H10-GW-MW14-06				3								QAPP TABLE
7/12	1330	H10-GW-MW23-06				3								FOR ANALYTICAL
7/12	1000	H10-GW-MSMSD1-06				3								REQUIREMENTS
7/12	-	H10-GW-TB02-06												

1. RELINQUISHED BY Alan L Pate	DATE 7/12/01	TIME 1730	1. RECEIVED BY [signature]	DATE 7/13/01	TIME 1000
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER H10-

PAGE ___ OF ___

PROJECT NO: N3995	SITE NAME: NAS JAX HANGAR 1000
PROJECT MANAGER AND PHONE NUMBER	Mark Peterson 904-281-0400
LABORATORY NAME AND CONTACT:	Accutest L. Williams
SAMPLERS (SIGNATURE)	Alan Pate
FIELD OPERATIONS LEADER AND PHONE NUMBER	Alan Pate 904-281-0400
ADDRESS	4405 Vineland Rd #C15
CARRIER/WAYBILL NUMBER	FEDEX
CITY, STATE	Orlando, FL 32811

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

					CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	G	G	G	P	P	P	
					PRESERVATIVE USED	HCl	HCl	none	none	HNO3	NaOH	none	
DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	VOC's (8260B)	Methane-Ethane-Ethene RSK 175	Alcohols (8015B)	SVOCs (8270C) PAHs (8310)	Metals: Cd, Cr (6010B)	Sulfide 376.1	Anions (300.0) Cl, NO2, NO3, SO4	COMMENTS
7/12	1000	H10-GW-MW14-06	GW	G	13		3	3	4	1	1	1	Cool to 4°C
7/12	1000	H10-GW-MSMSD1-06	GW	G	13		3	3	4	1	1	1	See attached QAPP table for analytical requirements

1. RELINQUISHED BY Alan Pate	DATE 7/12/01	TIME 1730	1. RECEIVED BY [signature]	DATE 7/13/01	TIME 1000
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS N3995.JF0050115

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/90
FORM NO. TtNUS-001

TETRA TECH NUS, INC. CHAIN OF CUSTODY NUMBER PAGE ____ OF ____

PROJECT NO:	SITE NAME:	PROJECT MANAGER AND PHONE NUMBER	LABORATORY NAME AND CONTACT:
N3995	NAS JAX HANGAR 1000	MARK PETERSON 904-281-0400	ACCUTEST LINDA WILLIAMS
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER	ADDRESS
Alan Pate		ALAN PATE 904-281-0400	4405 VINELAND Rd #C-15
		CARRIER/WAYBILL NUMBER	CITY, STATE
		FED-EX	ORLANDO, FL 32811

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

						CONTAINER TYPE PLASTIC (P) or GLASS (G)		G	G	G	G	P	P	P	
						PRESERVATIVE USED		HCl	HCl	N	N	HNO3	NaOH	N	
DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS	VOCs 8260B	METHANE/ETHANE/ETHENE RSK147/175	ALCOHOLS 8015B	SVOCs (8270C)	PAHs (8310)	METALS Ca/Cr 6010B	SULFIDE 376-1	ANIONS (300.0) SO4, Cl, NO2, NO3	COMMENTS
7/12	0825	H10-GW-MW15-06	GW	G	13			3	3	4	1	1	1		COOL TO 4°C
7/12	1330	H10-GW-MW23-06	GW	G	13			3	3	4	1	1	1		SEE ATTACHED QAPP TABLE FOR ANALYTICAL REQUIREMENTS

1. RELINQUISHED BY Alan Pate	DATE 7/12/01	TIME 1330	1. RECEIVED BY [signature]	DATE 7/13/01	TIME 1000
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F10256
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

File ID: IR0717M1.ASC
QC Limits: result < RL

Date Analyzed: 07/17/01
Run ID: MA2411

Methods: SW846 6010B
Units: ug/l

Metal	RL	IDL	ICB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	9.44								
Antimony	5.0	2.56								
Arsenic	10	3.15	anr							
Barium	200	.94	anr							
Beryllium	5.0	.22								
Cadmium	5.0	.27	-0.080	<5.0	-0.030	<5.0	-0.040	<5.0	0.020	<5.0
Calcium	1000	10.2								
Chromium	10	.35	-0.26	<10	0.27	<10	0.26	<10	0.51	<10
Cobalt	50	.55								
Copper	25	.71								
Iron	300	9.02								
Lead	5.0	1.16	anr							
Magnesium	5000	25.5								
Manganese	15	.26								
Molybdenum	50	1.01								
Nickel	40	.8	anr							
Potassium	5000	49								
Selenium	10	2.5	anr							
Silver	10	.59	anr							
Sodium	5000	173								
Thallium	10	2.07								
Tin	50	1.03								
Vanadium	50	.58								
Zinc	20	.36								

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F10296
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

File ID: IR0717M1.ASC　　Date Analyzed: 07/17/01　　Methods: SW846 6010B
QC Limits: result < RL　　Run ID: MA2411　　Units: ug/l

Metal	RL	IDL	CCB raw	final
Aluminum	200	9.44		
Antimony	5.0	2.56		
Arsenic	10	3.15	anr	
Barium	200	.94	anr	
Beryllium	5.0	.22		
Cadmium	5.0	.27	-0.25	<5.0
Calcium	1000	10.2		
Chromium	10	.35	0.010	<10
Cobalt	50	.55		
Copper	25	.71		
Iron	300	9.02		
Lead	5.0	1.16	anr	
Magnesium	5000	25.5		
Manganese	15	.26		
Molybdenum	50	1.01		
Nickel	40	.8	anr	
Potassium	5000	49		
Selenium	10	2.5	anr	
Silver	10	.59	anr	
Sodium	5000	173		
Thallium	10	2.07		
Tin	50	1.03		
Vanadium	50	.58		
Zinc	20	.36		

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULT SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F10296
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

File ID: IR0718M1.ASC
QC Limits: result < RL

Date Analyzed: 07/18/01
Run ID: MA2412

Methods: SW846 6010B
Units: ug/l

Metal	RL	IDL	ICB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	9.44								
Antimony	5.0	2.56								
Arsenic	10	3.15	anr							
Barium	200	.94								
Beryllium	5.0	.22								
Cadmium	5.0	.27	-0.23	<5.0	-0.19	<5.0	-0.11	<5.0	-0.25	<5.0
Calcium	1000	10.2								
Chromium	10	.35	-0.74	<10	-0.63	<10	-0.31	<10	-0.64	<10
Cobalt	50	.55								
Copper	25	.71								
Iron	300	9.02								
Lead	5.0	1.16	anr							
Magnesium	5000	25.5								
Manganese	15	.26								
Molybdenum	50	1.01								
Nickel	40	.8								
Potassium	5000	49								
Selenium	10	2.5								
Silver	10	.59								
Sodium	5000	173								
Thallium	10	2.07								
Tin	50	1.03								
Vanadium	50	.58								
Zinc	20	.36								

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Initial and Continuing Calibration Blanks

Login Number: [illegible]
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

File ID: IR0718M1.ASC
QC Limits: result < RL

Date Analyzed: 07/18/01
Run ID: MA2412

Methods: SW846 6010B
Units: ug/L

Metal	RL	IDL	CCB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	9.44								
Antimony	5.0	2.56								
Arsenic	10	3.15	anr							
Barium	200	.94								
Beryllium	5.0	.22								
Cadmium	5.0	.27	0.020	<5.0	-0.080	<5.0	0.33	<5.0	0.20	<5.0
Calcium	1000	10.2								
Chromium	10	.35	-0.22	<10	-0.18	<10	-0.020	<10	0.12	<10
Cobalt	50	.55								
Copper	25	.71								
Iron	300	9.02								
Lead	5.0	1.16	anr							
Magnesium	5000	25.5								
Manganese	15	.26								
Molybdenum	50	1.01								
Nickel	40	.8								
Potassium	5000	49								
Selenium	10	2.5								
Silver	10	.59								
Sodium	5000	173								
Thallium	10	2.07								
Tin	50	1.03								
Vanadium	50	.58								
Zinc	20	.36								

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Initial and Continuing Calibration Blanks

Login Number: F10296
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

File ID: IR0718M1.ASC
QC Limits: result < RL

Date Analyzed: 07/18/01
Run ID: MA2412

Methods: SW846 6010B
Units: ug/l

Metal	RL	IDL	CCB raw	final
Aluminum	200	9.44		
Antimony	5.0	2.56		
Arsenic	10	3.15	anr	
Barium	200	.94		
Beryllium	5.0	.22		
Cadmium	5.0	.27	0.26	<5.0
Calcium	1000	10.2		
Chromium	10	.35	0.12	<10
Cobalt	50	.55		
Copper	25	.71		
Iron	300	9.02		
Lead	5.0	1.16	anr	
Magnesium	5000	25.5		
Manganese	15	.26		
Molybdenum	50	1.01		
Nickel	40	.8		
Potassium	5000	49		
Selenium	10	2.5		
Silver	10	.59		
Sodium	5000	173		
Thallium	10	2.07		
Tin	50	1.03		
Vanadium	50	.58		
Zinc	20	.36		

(*) Outside of QC limits
(anr) Analyte not requested

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F10296
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

Analyte	Batch ID	RL	MB Result	Units	BSP %Recov	QC Limits
Chloride	GP2452	1.0	<1.0	mg/l	105.0	88-122%
Nitrogen, Nitrate	GP2445	0.10	<0.10	mg/l	108.0	90-110%
Nitrogen, Nitrite	GP2445	0.010	<0.010	mg/l	98.0	90-110%
Sulfate	GP2445	5.0	<5.0	mg/l	115.6	90-110%
Sulfide	GN7807	2.0	<2.0	mg/l		

Associated Samples:
Batch GN7807: F10296-1, F10296-2, F10296-3, F10296-4, F10296-5
Batch GP2445: F10296-1, F10296-2, F10296-3, F10296-4, F10296-5
Batch GP2452: F10296-1, F10296-2, F10296-3, F10296-4, F10296-5

FIELD DUPLICATE SAMPLES

July 2001

Hangar 1000, NAS Jacksonville

Jacksonville, FL

Fraction	Analyte	H10-MW19-06	H10-DUP1-06	RPD
Volatiles	Cyclohexanone	ND	30 J	NC
	1,1-Dichloroethane	104	108	4%
	1,1-Dichloroethene	169	165	2%
	1,2-Dichloroethene (total)	53.9	58.7	9%
	Freon 113	366	366	0%
	Trichlorethene	211	227	7%
	Tetrachloroethene	4.6 J	5 J	8%
Gases	Methane	112	125	11%
Misc.	Chloride	22.5	27	18%
	Sulfate	18.2	18.2	0%

NS = not sampled

ND = not detected

NC = not calculated

J = estimated

RPD = Relative Percent Difference

Acceptable RPD: 0-30% aqueous

Tetra Tech NUS

INTERNAL CORRESPONDENCE

TO:	**Mr. Mark Peterson**	**DATE:**	**September 20, 2001**
FROM:	**Elena Rodriguez**	**COPIES:**	**DV FILE**
SUBJECT:	**DATA VALIDATION - ORGANICS CTO 167, NASJAX SDG F10479**		
SAMPLES:	6/Aqueous/ H10-GW-MW01-06 H10-GW-MW02-06 H10-GW-MW11-06 H10-GW-MW12-06 H10-GW-TB04-06		

OVERVIEW

The sample set for CTO 167, NASJAX, SDG F10479 consists of four aqueous environmental samples and one aqueous quality control sample (trip blank). All groundwater samples were analyzed for select volatile organic compounds, semi-volatile organic compounds, polynuclear aromatic hydrocarbons, alcohols, and dissolved gasses. The trip blank (H10-GW-TB04-06) was analyzed for volatile organic compounds.

The samples were collected by TetraTech NUS on August 1, 2001 and analyzed by Accutest Laboratories. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria using the following analytical and reporting protocols: SW-846 Methods 8260B, 8270C, 8310, 8015 and RSK SOP 147/175. The data contained in this SDG were validated with regard to the following parameters:

- * • Data completeness
- * • Holding times
- * • Initial/continuing calibrations
- * • Laboratory method and field quality control blank results
- * • Surrogate recoveries
- * • Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A.

Volatile Organics

Data reported for this fraction were found to be acceptable. Sample H10-GW-MW12-06 was re-analyzed at a 5x dilution factor to quantify compounds that had exceeded the calibration range during the first analysis.

Alcohols

Data reported for this fraction were found to be acceptable.

Semi-Volatile Organics

Two of six surrogate recoveries for sample H10-GW-MW12-06 were below the control limits for the acid fraction. The sample was re-extracted two days beyond holding time and recoveries in the re-extraction were acceptable. The re-extraction results were used for validation. No action was taken.

All other data reported for this fraction were found to be acceptable.

Polynuclear Aromatic Hydrocarbons

Data reported for this fraction were found to be acceptable.

Dissolved Gases (Methane-Ethane-Ethene)

Data reported for this fraction were found to be acceptable.

Additional Comments

Positive results below the reporting limit (RL) were qualified as estimated, J, due to uncertainty near the detection limit.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Surrogate failure during Semi-volatile Organics analysis of sample H10-GW-MW12-06 required re-extraction and reanalysis which was performed beyond the holding time.

Other Factors Affecting Data Quality: None

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99), and the Navy IRCDQM (9/99) NFESC guidelines. The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC guidelines and the Quality Assurance Project Plan (QAPP)."

Elena Rodriguez

Tetra Tech NUS

Elena Rodriguez

E Rodriguez for J Samchuck

Tetra Tech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:
1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank contamination
C = Calibration (i.e. %RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS – GFAA MSAs r<0.995
K = ICP Interference – Include ICSAB %Rs
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (I.E. base-time drifting)
P = Uncertainty near detection limit (<2 x IDL for Inorganics and < CRQL for Organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCB D% between columns for positive results
V = Non-Linear calibrations, tuning r< 0.995 (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = % Solid content is less than 30%

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10479

SAMPLE NUMBER:	H10-GW-MW01-06			H10-GW-MW02-06			H10-GW-MW11-06			H10-GW-MW12-06		
SAMPLE DATE:	08/01/01			08/01/01			08/01/01			08/01/01		
LABORATORY ID:	F10479-3			F10479-4			F10479-1			F10479-2		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
VOLATILES	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
1,1,1-TRICHLOROETHANE	58.4			1.3	J	P	2	U		129		
1,1,2-TRICHLOROETHANE	2	U		2	U		2	U		3.2		
1,1,2-TRICHLOROTRIFLUOROETHANE	11.1			2	U		2	U		276		
1,1-DICHLOROETHANE	3.9			2	U		2	U		78		
1,1-DICHLOROETHENE	2.2			2	U		2	U		210		
1,2-DICHLOROETHANE	2	U		2	U		2	U		1	J	P
1-BUTANOL	500	U		500	U		500	U		500	U	
2-NITROPROPANE	10	U		10	U		10	U		10	U	
ACETONE	50	U		50	U		50	U		50	U	
BENZENE	1	U		1	U		1	U		1	U	
CYCLOHEXANONE	10	U		10	U		10	U		10	U	
ETHYLBENZENE	2	U		2	U		2	U		2	U	
ISOBUTANOL	500	U		500	U		500	U		500	U	
METHANOL	500	U		500	U		500	U		500	U	
TETRACHLOROETHENE	0.81	J	P	2	U		2	U		0.77	J	P
TOLUENE	2	U		2	U		2	U		2	U	
TOTAL 1,2-DICHLOROETHENE	5.3			0.68	J	P	4	U		0.97	J	P
TRICHLOROETHENE	28.4			2	U		2	U		161		
VINYL CHLORIDE	1	U		1	U		1	U		1	U	

NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10479

SAMPLE NUMBER:	H10-TB04			
SAMPLE DATE:	08/01/01	/ /	/ /	/ /
LABORATORY ID:	F10479-5			
QC_TYPE:	NORMAL			
% SOLIDS:	0.0 %	100.0 %	100.0 %	100.0 %
UNITS:	UG/L			
FIELD DUPLICATE OF:				

VOLATILES	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
1,1,1-TRICHLOROETHANE	2	U										
1,1,2-TRICHLOROETHANE	2	U										
1,1,2-TRICHLOROTRIFLUOROETHANE	2	U										
1,1-DICHLOROETHANE	2	U										
1,1-DICHLOROETHENE	2	U										
1,2-DICHLOROETHANE	2	U										
2-NITROPROPANE	10	U										
ACETONE	50	U										
BENZENE	1	U										
CYCLOHEXANONE	10	U										
ETHYLBENZENE	2	U										
TETRACHLOROETHENE	2	U										
TOLUENE	2	U										
TOTAL 1,2-DICHLOROETHENE	4	U										
TRICHLOROETHENE	2	U										
VINYL CHLORIDE	1	U										

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10479

SAMPLE NUMBER:	H10-GW-MW01-06			H10-GW-MW02-06			H10-GW-MW11-06			H10-GW-MW12-06		
SAMPLE DATE:	08/01/01			08/01/01			08/01/01			08/01/01		
LABORATORY ID:	F10479-3			F10479-4			F10479-1			F10479-2		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	2.2	U		2	U		2	U		2	U	
2-METHYLNAPHTHALENE	2.2	U		2	U		2	U		2	U	
ACENAPHTHENE	4.4	U		4	U		4	U		4	U	
ACENAPHTHYLENE	4.4	U		4	U		4	U		4	U	
ANTHRACENE	2.2	U		2	U		2	U		2	U	
BENZO(A)ANTHRACENE	0.22	U		0.2	U		0.2	U		0.2	U	
BENZO(A)PYRENE	0.22	U		0.2	U		0.2	U		0.2	U	
BENZO(B)FLUORANTHENE	0.22	U		0.2	U		0.2	U		0.2	U	
BENZO(G,H,I)PERYLENE	0.22	U		0.2	U		0.2	U		0.2	U	
BENZO(K)FLUORANTHENE	0.22	U		0.2	U		0.2	U		0.2	U	
CHRYSENE	2.2	U		2	U		2	U		2	U	
DIBENZO(A,H)ANTHRACENE	0.22	U		0.2	U		0.2	U		0.2	U	
FLUORANTHENE	2.2	U		2	U		2	U		2	U	
FLUORENE	2.2	U		2	U		2	U		2	U	
INDENO(1,2,3-CD)PYRENE	0.22	U		0.2	U		0.2	U		0.2	U	
NAPHTHALENE	2.2	U		2	U		2	U		2	U	
PHENANTHRENE	2.2	U		2	U		2	U		2	U	
PYRENE	2.2	U		2	U		2	U		2	U	

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10479

SAMPLE NUMBER:	H10-GW-MW01-06			H10-GW-MW02-06			H10-GW-MW11-06			H10-GW-MW12-06		
SAMPLE DATE:	08/01/01			08/01/01			08/01/01			08/01/01		
LABORATORY ID:	F10479-3			F10479-4			F10479-1			F10479-2		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
2,4-DINITROTOLUENE	0.2	U		0.2	U		0.2	U		0.2	U	
3&4-METHYLPHENOL	4	U		4	U		4	U		4	U	
PENTACHLOROPHENOL	1	U		1	U		1	U		1	U	

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10479

SAMPLE NUMBER:	H10-GW-MW01-06			H10-GW-MW02-06			H10-GW-MW11-06			H10-GW-MW12-06		
SAMPLE DATE:	08/01/01			08/01/01			08/01/01			08/01/01		
LABORATORY ID:	F10479-3			F10479-4			F10479-1			F10479-2		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
DISSOLVED GASES	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
ETHANE	1	U		1	U		1	U		1	U	
ETHENE	1	U		1	U		1	U		1	U	
METHANE	8.07			184			980			25		

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

Report of Analysis

Client Sample ID:	H10-GW-MW01-06	Date Sampled:	08/01/01
Lab Sample ID:	F10479-3	Date Received:	08/02/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H012995.D	1	08/08/01	NAF	n/a	n/a	VH384
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	3.9	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	2.2	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	5.3	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	11.1	2.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	58.4	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	0.81	2.0	ug/l	J
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	28.4	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		80-120%
17060-07-0	1,2-Dichloroethane-D4	105%		80-120%
2037-26-5	Toluene-D8	103%		80-120%
460-00-4	4-Bromofluorobenzene	100%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW02-06		
Lab Sample ID:	F10479-4	Date Sampled:	08/01/01
Matrix:	AQ - Ground Water	Date Received:	08/02/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H012998.D	1	08/08/01	NAF	n/a	n/a	VH384
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	0.68	4.0	ug/l	J
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	1.3	2.0	ug/l	J
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		80-120%
17060-07-0	1,2-Dichloroethane-D4	104%		80-120%
2037-26-5	Toluene-D8	104%		80-120%
460-00-4	4-Bromofluorobenzene	101%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW11-06	**Date Sampled:**	08/01/01
Lab Sample ID:	F10479-1	**Date Received:**	08/02/01
Matrix:	AQ - Ground Water	**Percent Solids:**	n/a
Method:	SW846 8260B		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H012993.D	1	08/08/01	NAF	n/a	n/a	VH384
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		80-120%
17060-07-0	1,2-Dichloroethane-D4	104%		80-120%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	102%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW12-06		
Lab Sample ID:	F10479-2	**Date Sampled:**	08/01/01
Matrix:	AQ - Ground Water	**Date Received:**	08/02/01
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H012994.D	1	08/08/01	NAF	n/a	n/a	VH384
Run #2	H013022.D	5	08/10/01	NAF	n/a	n/a	VH385

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-94-1	**Cyclohexanone**	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	78.0	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	210 [a]	10	ug/l	
107-06-2	1,2-Dichloroethane	1.0	2.0	ug/l	J
540-59-0	1,2-Dichloroethene (total)	0.97	4.0	ug/l	J
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	**Freon 113**	276 [a]	10	ug/l	
79-46-9	**2-Nitropropane**	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	129 [a]	10	ug/l	
79-00-5	1,1,2-Trichloroethane	3.2	2.0	ug/l	
127-18-4	Tetrachloroethylene	0.77	2.0	ug/l	J
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	161 [a]	10	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%	102%	80-120%
17060-07-0	1,2-Dichloroethane-D4	106%	106%	80-120%
2037-26-5	Toluene-D8	101%	103%	80-120%
460-00-4	4-Bromofluorobenzene	101%	100%	80-120%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-TB04	Date Sampled:	08/01/01
Lab Sample ID:	F10479-5	Date Received:	08/02/01
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H013004.D	1	08/08/01	NAF	n/a	n/a	VH384
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		80-120%
17060-07-0	1,2-Dichloroethane-D4	112%		80-120%
2037-26-5	Toluene-D8	103%		80-120%
460-00-4	4-Bromofluorobenzene	102%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW01-06	Date Sampled:	08/01/01
Lab Sample ID:	F10479-3	Date Received:	08/02/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W006159.D	1	08/08/01	ME	08/06/01	OP3605	SW335
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
	3&4-Methylphenol	ND	4.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	54%		20-125%
4165-62-2	Phenol-d5	36%		10-125%
118-79-6	2,4,6-Tribromophenol	88%		35-140%
4165-60-0	Nitrobenzene-d5	80%		46-125%
321-60-8	2-Fluorobiphenyl	79%		46-125%
1718-51-0	Terphenyl-d14	96%		49-126%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW01-06		
Lab Sample ID:	F10479-3	**Date Sampled:**	08/01/01
Matrix:	AQ - Ground Water	**Date Received:**	08/02/01
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L008500.D	1	08/07/01	ME	08/06/01	OP3602	SL488
Run #2							

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
87-86-5	Pentachlorophenol	ND	1.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.20	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW02-06		
Lab Sample ID:	F10479-4	**Date Sampled:**	08/01/01
Matrix:	AQ - Ground Water	**Date Received:**	08/02/01
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W006162.D	1	08/08/01	ME	08/06/01	OP3605	SW335
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
	3&4-Methylphenol	ND	4.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	20%		20-125%
4165-62-2	Phenol-d5	15%		10-125%
118-79-6	2,4,6-Tribromophenol	37%		35-140%
4165-60-0	Nitrobenzene-d5	72%		46-125%
321-60-8	2-Fluorobiphenyl	73%		46-125%
1718-51-0	Terphenyl-d14	92%		49-126%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	H10-GW-MW02-06		
Lab Sample ID:	F10479-4	Date Sampled:	08/01/01
Matrix:	AQ - Ground Water	Date Received:	08/02/01
Method:	SW846 8270C BY SIM SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L008503.D	1	08/07/01	ME	08/06/01	OP3602	SL488
Run #2							

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
87-86-5	Pentachlorophenol	ND	1.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.20	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW11-06		
Lab Sample ID:	F10479-1	Date Sampled:	08/01/01
Matrix:	AQ - Ground Water	Date Received:	08/02/01
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W006157.D	1	08/08/01	ME	08/06/01	OP3605	SW335
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
	3&4-Methylphenol	ND	4.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	57%		20-125%
4165-62-2	Phenol-d5	37%		10-125%
118-79-6	2,4,6-Tribromophenol	92%		35-140%
4165-60-0	Nitrobenzene-d5	89%		46-125%
321-60-8	2-Fluorobiphenyl	88%		46-125%
1718-51-0	Terphenyl-d14	102%		49-126%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of compound

Report of Analysis

Client Sample ID:	H10-GW-MW11-06	**Date Sampled:**	08/01/01
Lab Sample ID:	F10479-1	**Date Received:**	08/02/01
Matrix:	AQ - Ground Water	**Percent Solids:**	n/a
Method:	SW846 8270C BY SIM SW846 3510C		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L008498.D	1	08/07/01	ME	08/06/01	OP3602	SL488
Run #2							

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
87-86-5	Pentachlorophenol	ND	1.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.20	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW12-06		
Lab Sample ID:	F10479-2	Date Sampled:	08/01/01
Matrix:	AQ - Ground Water	Date Received:	08/02/01
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	W006158.D	1	08/08/01	ME	08/06/01	OP3605	SW335
Run #2 [b]	W006182.D	1	08/13/01	ME	08/10/01	OP3605	SW337

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
	3&4-Methylphenol [c]	ND	4.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	18%	54%	20-125%
4165-62-2	Phenol-d5	14%	36%	10-125%
118-79-6	2,4,6-Tribromophenol	34%	84%	35-140%
4165-60-0	Nitrobenzene-d5	68%	77%	46-125%
321-60-8	2-Fluorobiphenyl	69%	79%	46-125%
1718-51-0	Terphenyl-d14	96%	94%	49-126%

(a) Surrogates outside of control limits, all values should be considered estimated.
(b) Sample extracted beyond hold time; reported results are considered minimum values.
(c) Confirmed by re-extraction and reanalysis.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW12-06		
Lab Sample ID:	F10479-2	**Date Sampled:**	08/01/01
Matrix:	AQ - Ground Water	**Date Received:**	08/02/01
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	L008499.D	1	08/07/01	ME	08/06/01	OP3602	SL488
Run #2							

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
87-86-5	Pentachlorophenol [b]	ND	1.0	ug/l	
121-14-2	2,4-Dinitrotoluene [b]	ND	0.20	ug/l	

(a) Surrogates outside of control limits, all values should be considered estimated.
(b) Confirmed by re-extraction and reanalysis.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW01-06		
Lab Sample ID:	F10479-3	Date Sampled:	08/01/01
Matrix:	AQ - Ground Water	Date Received:	08/02/01
Method:	DAI	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH25991.D	1	08/08/01	ANJ	n/a	n/a	N:GGH733
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	102%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW02-06	Date Sampled:	08/01/01
Lab Sample ID:	F10479-4	Date Received:	08/02/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	DAI		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH25992.D	1	08/08/01	ANJ	n/a	n/a	N:GGH733
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	105%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: H10-GW-MW11-06
Lab Sample ID: F10479-1
Matrix: AQ - Ground Water
Method: DAI
Project: NAS Jax-Hanger 1000

Date Sampled: 08/01/01
Date Received: 08/02/01
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH25989.D	1	08/08/01	ANJ	n/a	n/a	N:GGH733
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	89%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW12-06		
Lab Sample ID:	F10479-2	**Date Sampled:**	08/01/01
Matrix:	AQ - Ground Water	**Date Received:**	08/02/01
Method:	DAI	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH25990.D	1	08/08/01	ANJ	n/a	n/a	N:GGH733
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	106%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW01-06		
Lab Sample ID:	F10479-3	**Date Sampled:**	08/01/01
Matrix:	AQ - Ground Water	**Date Received:**	08/02/01
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000819.D	1	08/09/01	RA	n/a	n/a	GXY43
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	8.07	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW02-06		
Lab Sample ID:	F10479-4	Date Sampled:	08/01/01
Matrix:	AQ - Ground Water	Date Received:	08/02/01
Method:	RSKSOP-147/175	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000820.D	1	08/09/01	RA	n/a	n/a	GXY43
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	184.	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW11-06	Date Sampled:	08/01/01
Lab Sample ID:	F10479-1	Date Received:	08/02/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	RSKSOP-147/175		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000824.D	1	08/09/01	RA	n/a	n/a	GXY43
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	980	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	H10-GW-MW12-06	Date Sampled:	08/01/01
Lab Sample ID:	F10479-2	Date Received:	08/02/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	RSKSOP-147/175		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000818.D	1	08/09/01	RA	n/a	n/a	GXY43
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	25.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW01-06	**Date Sampled:**	08/01/01
Lab Sample ID:	F10479-3	**Date Received:**	08/02/01
Matrix:	AQ - Ground Water	**Percent Solids:**	n/a
Method:	EPA 8310 SW846 3510C		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE004444.D	1	08/06/01	MRE	08/04/01	OP3601	GEE209
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.4	ug/l	
208-96-8	Acenaphthylene	ND	4.4	ug/l	
120-12-7	Anthracene	ND	2.2	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.22	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.22	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.22	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.22	ug/l	
218-01-9	Chrysene	ND	2.2	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.22	ug/l	
206-44-0	Fluoranthene	ND	2.2	ug/l	
86-73-7	Fluorene	ND	2.2	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.22	ug/l	
91-20-3	Naphthalene	ND	2.2	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.2	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.2	ug/l	
85-01-8	Phenanthrene	ND	2.2	ug/l	
129-00-0	Pyrene	ND	2.2	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	99%		33-141%
92-94-4	p-Terphenyl	107%		31-122%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW02-06		
Lab Sample ID:	F10479-4	**Date Sampled:**	08/01/01
Matrix:	AQ - Ground Water	**Date Received:**	08/02/01
Method:	EPA 8310 SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE004445.D	1	08/06/01	MRE	08/04/01	OP3601	GEE209
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	98%		33-141%
92-94-4	p-Terphenyl	76%		31-122%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW11-06			
Lab Sample ID:	F10479-1		Date Sampled:	08/01/01
Matrix:	AQ - Ground Water		Date Received:	08/02/01
Method:	EPA 8310 SW846 3510C		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE004442.D	1	08/06/01	MRE	08/04/01	OP3601	GEE209
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	97%		33-141%
92-94-4	p-Terphenyl	104%		31-122%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW12-06		
Lab Sample ID:	F10479-2	**Date Sampled:**	08/01/01
Matrix:	AQ - Ground Water	**Date Received:**	08/02/01
Method:	EPA 8310 SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE004443.D	1	08/06/01	MRE	08/04/01	OP3601	GEE209
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	105%		33-141%
92-94-4	p-Terphenyl	101%		31-122%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

APPENDIX C

SUPPORT DOCUMENTATION

TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER

PAGE ____ OF ____

PROJECT NO: N3995	SITE NAME: NAS JAX-HANGAR 1000	PROJECT MANAGER AND PHONE NUMBER: HARK PETERSON 904-281-0400	LABORATORY NAME AND CONTACT: ACCUTEST - LINDA WILLIAMS
SAMPLERS (SIGNATURE): Alan Pate		FIELD OPERATIONS LEADER AND PHONE NUMBER: ALAN PATE 904-281-0400	ADDRESS: 4405 VINELAND Rd, # C-15
		CARRIER/WAYBILL NUMBER: FEDEX	CITY, STATE: ORLANDO, FL 32811

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

	VOCs (8260B)	METHANE/ETHANE/ETHENE RSK 147/175	ALCOHOLS (8015B)	SVOCs (8270C)	PAHs (8310)	METALS-Cd/Cr (6010B)	SULFIDE 376.1	ANIONS (300.0) SO_4, Cl, NO_2, NO_3
CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	G	G	G	P	P	P	
PRESERVATIVE USED	HCL	HCL	/	/	HNO3	NaOH	/	/

DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	VOCs (8260B)	METHANE/ETHANE/ETHENE RSK 147/175	ALCOHOLS (8015B)	SVOCs (8270C)	PAHs (8310)	METALS-Cd/Cr (6010B)	SULFIDE 376.1	ANIONS (300.0)	COMMENTS
8/1	1230	H10-GW-MW11-06	H_2O	G			3	3	4	1	1	1		COOL TO 4°C
8/1	1330	H10-GW-MW12-06	H_2O	G			3	3	4	1	1	1		
														SEE ATTACHED QAPP TABLE FOR ANALYTICAL REQUIREMENTS

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY Alan Pate	8/1/01	1630	1. RECEIVED BY [illegible signature]	8-2-01	10:00
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS 2.6°, 3.8°

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/99
FORM NO. TINUS-001

TETRA TECH NUS, INC. CHAIN OF CUSTODY NUMBER PAGE ____ OF ____

PROJECT NO: N3995	SITE NAME: NAS JAX - HANGAR 1000
SAMPLERS (SIGNATURE)	Alan L Pate
PROJECT MANAGER AND PHONE NUMBER	MARK PETERSON 904-281-0400
FIELD OPERATIONS LEADER AND PHONE NUMBER	ALAN PATE 904-281-0400
CARRIER/WAYBILL NUMBER	FEDEX
LABORATORY NAME AND CONTACT:	ACCUTEST - LINDA WILLIAMS
ADDRESS	4405 VINELAND Rd. # C-15
CITY, STATE	ORLANDO, FL 32811

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

					CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	G	G	G	P	P	P			
					PRESERVATIVE USED	HCL	HCL	/	/	HNO_3	NaOH	/			
DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: VOC's (8260B)	METHANE/ETHANE/ETHENE RSK 147/175	ALCOHOLS (8015B)	SVOC's (8270C) PAHs (8310)	METALS Cd/Cr (6010B)	SULFIDE 376.1	ANIONS (300.0) SO_4, Cl, NO_2, NO_3		COMMENTS
8/1	1045	H10-GW-MW01-06	H_2O	G	16	3	3	3	4	1	1	1		Cool To 4°C
8/1	0835	H10-GW-MW02-06	H_2O	G	16	3	3	3	4	1	1	1		
8/1	1230	H10-GW-MW11-06	H_2O	G	3	3								SEE ATTACHED
8/1	1330	H10-GW-MW12-06	H_2O	G	3	3								QAPP TABLE FOR
	0000	H10-TB04	H_2O		2									ANALYTICAL
														REQUIREMENTS

1. RELINQUISHED BY Alan L Pate	DATE 8/1/01	TIME 1630	1. RECEIVED BY [signature]	DATE 8-2-01	TIME 10:00
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS 2.6°, 3.8°

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/99
FORM NO. TtNUS-001

HOLDING TIME
08/27/01

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UG/L	H10-GW-MW01-06	F10479-3	NORMAL	F10479	ALC	08/01/01	/ /	08/08/01	0	0	7
UG/L	H10-GW-MW02-06	F10479-4	NORMAL	F10479	ALC	08/01/01	/ /	08/08/01	0	0	7
UG/L	H10-GW-MW11-06	F10479-1	NORMAL	F10479	ALC	08/01/01	/ /	08/08/01	0	0	7
UG/L	H10-GW-MW12-06	F10479-2	NORMAL	F10479	ALC	08/01/01	/ /	08/08/01	0	0	7
MG/L	H10-GW-MW01-06	F10479-3	NORMAL	F10479	CL	08/01/01	08/13/01	08/14/01	12	1	13
MG/L	H10-GW-MW02-06	F10479-4	NORMAL	F10479	CL	08/01/01	08/13/01	08/14/01	12	1	13
MG/L	H10-GW-MW11-06	F10479-1	NORMAL	F10479	CL	08/01/01	08/13/01	08/14/01	12	1	13
MG/L	H10-GW-MW12-06	F10479-2	NORMAL	F10479	CL	08/01/01	08/13/01	08/14/01	12	1	13
UG/L	H10-GW-MW01-06	F10479-3	NORMAL	F10479	ETHA	08/01/01	/ /	08/09/01	0	0	8
UG/L	H10-GW-MW02-06	F10479-4	NORMAL	F10479	ETHA	08/01/01	/ /	08/09/01	0	0	8
UG/L	H10-GW-MW11-06	F10479-1	NORMAL	F10479	ETHA	08/01/01	/ /	08/09/01	0	0	8
UG/L	H10-GW-MW12-06	F10479-2	NORMAL	F10479	ETHA	08/01/01	/ /	08/09/01	0	0	8
UG/L	H10-GW-MW01-06	F10479-3	NORMAL	F10479	ETHE	08/01/01	/ /	08/09/01	0	0	8
UG/L	H10-GW-MW02-06	F10479-4	NORMAL	F10479	ETHE	08/01/01	/ /	08/09/01	0	0	8
UG/L	H10-GW-MW11-06	F10479-1	NORMAL	F10479	ETHE	08/01/01	/ /	08/09/01	0	0	8
UG/L	H10-GW-MW12-06	F10479-2	NORMAL	F10479	ETHE	08/01/01	/ /	08/09/01	0	0	8
UG/L	H10-GW-MW01-06	F10479-3	NORMAL	F10479	M	08/01/01	08/03/01	08/06/01	2	3	5
UG/L	H10-GW-MW02-06	F10479-4	NORMAL	F10479	M	08/01/01	08/03/01	08/06/01	2	3	5
UG/L	H10-GW-MW11-06	F10479-1	NORMAL	F10479	M	08/01/01	08/03/01	08/06/01	2	3	5
UG/L	H10-GW-MW12-06	F10479-2	NORMAL	F10479	M	08/01/01	08/03/01	08/06/01	2	3	5
UG/L	H10-GW-MW01-06	F10479-3	NORMAL	F10479	METH	08/01/01	/ /	08/09/01	0	0	8
UG/L	H10-GW-MW02-06	F10479-4	NORMAL	F10479	METH	08/01/01	/ /	08/09/01	0	0	8
UG/L	H10-GW-MW11-06	F10479-1	NORMAL	F10479	METH	08/01/01	/ /	08/09/01	0	0	8
UG/L	H10-GW-MW12-06	F10479-2	NORMAL	F10479	METH	08/01/01	/ /	08/09/01	0	0	8
MG/L	H10-GW-MW01-06	F10479-3	NORMAL	F10479	NTA	08/01/01	08/03/01	08/03/01	2	0	2

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/L	H10-GW-MW02-06	F10479-4	NORMAL	F10479	NTA	08/01/01	08/03/01	08/03/01	2	0	2
MG/L	H10-GW-MW11-06	F10479-1	NORMAL	F10479	NTA	08/01/01	08/03/01	08/03/01	2	0	2
MG/L	H10-GW-MW12-06	F10479-2	NORMAL	F10479	NTA	08/01/01	08/03/01	08/03/01	2	0	2
MG/L	H10-GW-MW01-06	F10479-3	NORMAL	F10479	NTI	08/01/01	08/03/01	08/03/01	2	0	2
MG/L	H10-GW-MW02-06	F10479-4	NORMAL	F10479	NTI	08/01/01	08/03/01	08/03/01	2	0	2
MG/L	H10-GW-MW11-06	F10479-1	NORMAL	F10479	NTI	08/01/01	08/03/01	08/03/01	2	0	2
MG/L	H10-GW-MW12-06	F10479-2	NORMAL	F10479	NTI	08/01/01	08/03/01	08/03/01	2	0	2
UG/L	H10-GW-MW01-06	F10479-3	NORMAL	F10479	OS	08/01/01	08/06/01	08/08/01	5	2	7
UG/L	H10-GW-MW02-06	F10479-4	NORMAL	F10479	OS	08/01/01	08/06/01	08/08/01	5	2	7
UG/L	H10-GW-MW11-06	F10479-1	NORMAL	F10479	OS	08/01/01	08/06/01	08/08/01	5	2	7
UG/L	H10-GW-MW12-06	F10479-2	NORMAL	F10479	OS	08/01/01	08/06/01	08/08/01	5	2	7
UG/L	H10-GW-MW01-06	F10479-3	NORMAL	F10479	OV	08/01/01	/ /	08/08/01	0	0	7
UG/L	H10-GW-MW02-06	F10479-4	NORMAL	F10479	OV	08/01/01	/ /	08/08/01	0	0	7
UG/L	H10-GW-MW11-06	F10479-1	NORMAL	F10479	OV	08/01/01	/ /	08/08/01	0	0	7
UG/L	H10-GW-MW12-06	F10479-2	NORMAL	F10479	OV	08/01/01	/ /	08/08/01	0	0	7
UG/L	H10-TB04	F10479-5	NORMAL	F10479	OV	08/01/01	/ /	08/08/01	0	0	7
UG/L	H10-GW-MW01-06	F10479-3	NORMAL	F10479	PAH	08/01/01	08/04/01	08/06/01	3	2	5
UG/L	H10-GW-MW02-06	F10479-4	NORMAL	F10479	PAH	08/01/01	08/04/01	08/06/01	3	2	5
UG/L	H10-GW-MW11-06	F10479-1	NORMAL	F10479	PAH	08/01/01	08/04/01	08/06/01	3	2	5
UG/L	H10-GW-MW12-06	F10479-2	NORMAL	F10479	PAH	08/01/01	08/04/01	08/06/01	3	2	5
UG/L	H10-GW-MW01-06	F10479-3	NORMAL	F10479	SIM	08/01/01	08/06/01	08/07/01	5	1	6
UG/L	H10-GW-MW02-06	F10479-4	NORMAL	F10479	SIM	08/01/01	08/06/01	08/07/01	5	1	6
UG/L	H10-GW-MW11-06	F10479-1	NORMAL	F10479	SIM	08/01/01	08/06/01	08/07/01	5	1	6
UG/L	H10-GW-MW12-06	F10479-2	NORMAL	F10479	SIM	08/01/01	08/06/01	08/07/01	5	1	6
MG/L	H10-GW-MW01-06	F10479-3	NORMAL	F10479	SO4	08/01/01	08/13/01	08/14/01	12	1	13
MG/L	H10-GW-MW02-06	F10479-4	NORMAL	F10479	SO4	08/01/01	08/13/01	08/14/01	12	1	13
MG/L	H10-GW-MW11-06	F10479-1	NORMAL	F10479	SO4	08/01/01	08/13/01	08/14/01	12	1	13

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/L	H10-GW-MW12-06	F10479-2	NORMAL	F10479	SO4	08/01/01	08/13/01	08/14/01	12	1	13
MG/L	H10-GW-MW01-06	F10479-3	NORMAL	F10479	SUL	08/01/01	/ /	08/07/01	0	0	6
MG/L	H10-GW-MW02-06	F10479-4	NORMAL	F10479	SUL	08/01/01	/ /	08/07/01	0	0	6
MG/L	H10-GW-MW11-06	F10479-1	NORMAL	F10479	SUL	08/01/01	/ /	08/07/01	0	0	6
MG/L	H10-GW-MW12-06	F10479-2	NORMAL	F10479	SUL	08/01/01	/ /	08/07/01	0	0	6

Method Blank Summary

Job Number: F10479
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VH384-MB	H012992.D	1	08/08/01	NAF	n/a	n/a	VH384

The QC reported here applies to the following samples:

Method: SW846 8260B

F10479-1, F10479-2, F10479-3, F10479-4, F10479-5

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	98%	80-120%
17060-07-0	1,2-Dichloroethane-D4	102%	80-120%
2037-26-5	Toluene-D8	104%	80-120%
460-00-4	4-Bromofluorobenzene	101%	80-120%

GC/MS QA-QC Check Report

Tune File : C:\HPCHEM\1\DATA\072701\H012880.D
Tune Time : 27 Jul 2001 11:50 am

Daily Calibration File : C:\HPCHEM\1\DATA\072701\H012881.D

File	Sample	Surrogate Recovery %				Internal Standard Responses		
						1409540	1339980	963815
H012881.D	IC375-1	100	98	98	100	1409544	1339982	963815
H012882.D	IC375-5	100	103	101	100	1501045	1410513	1010268
H012883.D	IC375-20	99	99	100	99	1510262	1419266	1007762
H012884.D	ICC375-40	101	99	101	100	1504204	1440229	1011666
H012885.D	IC375-70	98	96	101	100	1517371	1412071	991579
H012886.D	IC375-100	98	94	103	103	1530400	1385535	976505
H012887.D	ICV,5ml	98	96	99	99	1437094	1364190	956896
H012888.D	MB,5ml	97	98	101	101	1478325	1365766	961836
H012889.D	t1698-1,5m	100	101	100	101	1428157	1356861	944246
H012890.D	t1698-2,5m	103	102	100	100	1445743	1357482	957123
H012891.D	t1698-3,5m	101	104	102	97	1435222	1310276	937284
H012892.D	t1698-3ms,	102	103	98	100	1436684	1376676	968586
H012893.D	t1698-3msd	106	103	99	99	1450107	1361204	992282
H012894.D	t1698-4,5m	103	105	100	99	1441797	1340372	956063
H012895.D	t1698-5,5m	102	103	100	101	1434225	1355503	936450
H012896.D	t1698-6,5m	102	106	99	99	1434512	1321641	937611
H012897.D	t1698-7,5m	101	106	101	100	1421829	1326262	919156
H012898.D	t1698-8,5m	104	107	99	100	1375022	1308845	920741
H012899.D	t1698-9,5m	101	108	101	99	1398978	1291087	898151
H012900.D	t1698-10,5	102	111	101	98	1377697	1279845	917253

t - fails 12hr time check * - fails criteria

Created: Mon Jul 30 12:46:54 2001 MSVOA3

GC/MS QA-QC Check Report

Tune File : C:\HPCHEM\1\DATA\080801\H012989.D
Tune Time : 8 Aug 2001 10:11 am

Daily Calibration File : C:\HPCHEM\1\DATA\080801\H012990.D

File	Sample	Surrogate Recovery %				Internal Standard Responses		
						1325110	1229290	872654
H012990.D	CC375-70	102	101	99	100	1325106	1229286	872654
H012991.D	BS,5ml	100	100	103	100	1338049	1217369	852525
H012992.D	MB,5ml	98	102	104	101	1412154	1255596	862577
H012993.D	f10479-1,5	100	104	101	103	1301557	1173840	812583
H012994.D	f10479-2,5	100	106	101	101	1344814	1219728	832735
H012995.D	f10479-3,5	99	105	103	100	1337317	1182428	824516
H012996.D	f10479-1ms	103	105	104	97	1309775	1187070	867037
H012997.D	f10479-1ms	101	106	102	100	1337970	1202144	845947
H012998.D	f10479-4,5	102	105	104	101	1325360	1133123	771842
H012999.D	f10487-1,5	102	106	102	103	1282194	1169040	803336
H013000.D	f10487-2,5	103	107	101	103	1320277	1183608	804403
H013001.D	f10487-3,5	101	108	104	98	1310830	1153974	820185
H013002.D	f10487-4,5	103	109	101	101	1284827	1165090	818729
H013003.D	f10479-2,1	103	109	105	102	1310937	1185709	797700
H013004.D	f10479-5,5	103	112	103	103	1304152	1167855	814864
H013005.D	f10487-5,5	104	110	104	99	1301281	1159368	790588

t - fails 12hr time check * - fails criteria

Created: Thu Aug 09 11:53:11 2001 MSVOA3

Method Blank Summary

Job Number: F10479
Account: ALSE Accutest Laboratories Southeast, Inc.
Project: TETRFLJX: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGH733-MB3	GH25988.D	1	08/08/01	XPL	n/a	n/a	GGH733

The QC reported here applies to the following samples: **Method: DAI**

F10479-1, F10479-2, F10479-3, F10479-4

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries		Limits
111-27-3	Hexanol	102%	75-125%

Response Factor Report GCCH

Method : C:\HPCHEM\1\METHODS\MGH731.M (Chemstation Integrator)
Title : D8015
Last Update : Thu Jul 26 14:54:19 2001

Calibration Files

0.5	=GH25932.D	1	=GH25933.D	5	=GH25934.D
10	=GH25935.D	50	=GH25936.D	100	=GH25937.D

		Compound	0.5	1	5	10	50	100	Avg		%RSD
1)	TM	Methanol	2.394	2.334	2.498	2.318	2.042	2.033	2.270	E1	8.41
2)	TM	Ethanol	3.258	3.157	3.537	3.284	3.024	2.993	3.209	E1	6.22
3)	TM	Tert-Butyl Alcohol	4.767	4.668	5.318	4.900	4.484	4.466	4.767	E1	6.65
4)	TM	1-Propanol	3.954	3.879	4.446	4.084	3.711	3.689	3.960	E1	7.08
5)	TM	2-Propanol	3.386	3.300	3.750	3.483	3.182	3.167	3.378	E1	6.47
6)	MT	Isobutanol	4.660	4.593	5.204	4.843	4.405	4.388	4.682	E1	6.55
7)	TM	1-Butanol	4.481	4.240	4.748	4.448	4.069	4.054	4.340	E1	6.21
8)	TM	2-Butanol	3.874	3.806	4.358	4.022	3.660	3.646	3.894	E1	6.85
9)	S	Hexanol	5.056	4.996	4.942	4.904	4.905	4.893	4.949	E1	1.30

Signal #2 Calibration Files

0.5	=GH25932.D	1	=GH25933.D	5	=GH25934.D
10	=GH25935.D	50	=GH25936.D	100	=GH25937.D

		Compound	0.5	1	5	10	50	100	Avg		%RSD
1)	TM	Methanol	1.834	1.721	1.849	1.700	1.559	1.556	1.703	E1	7.48
2)	TM	Ethanol	2.333	2.305	2.610	2.428	2.252	2.236	2.361	E1	5.94
3)	TM	Tert-Butyl Alcohol	3.565	3.511	3.913	3.688	3.407	3.363	3.574	E1	5.66
4)	TM	1-Propanol	2.921	2.868	3.189	2.985	2.762	2.735	2.910	E1	5.71
5)	TM	2-Propanol	2.557	2.500	2.805	2.627	2.426	2.402	2.553	E1	5.83
6)	MT	Isobutanol	3.117	3.197	3.652	3.446	3.178	3.161	3.292	E1	6.41
7)	TM	1-Butanol	2.696	2.794	3.302	3.142	2.927	2.930	2.965	E1	7.53
8)	TM	2-Butanol	2.844	2.863	3.162	2.971	2.733	2.706	2.880	E1	5.83
9)	S	Hexanol	2.966	3.151	3.116	3.122	3.176	3.225	3.126	E1	2.81

Evaluate Continuing Calibration Report

```
Data File : C:\HPCHEM\3\DATA\gh25939.D\FID1A.CH          Vial: 9
Acq On    : 26 Jul 2001   2:53 pm                    Operator: XULIU
Sample    : CC731-10,000                             Inst    : GCGH
Misc      : GC13086,GGH731,1,,,,1                    Multiplr: 1.00
IntFile   : EVENTS.E

Data File : C:\HPCHEM\3\DATA\gh25939.D\FID2B.CH          Vial: 9
Acq On    : 26 Jul 2001   3:14 pm                    Operator: XULIU
Sample    : CC731-10,000                             Inst    : GCGH
Misc      : GC13086,GGH731,1,,,,1                    Multiplr: 1.00
IntFile   : AUTOINT2.E

Method         : C:\HPCHEM\1\METHODS\MGH731.M (Chemstation Integrator)
Title          : D8015
Last Update    : Thu Jul 26 14:34:36 2001
Response via : Multiple Level Calibration

Min. RRF     :   0.000  Min. Rel. Area :  50%  Max. R.T. Dev  0.50min
Max. RRF Dev :  15%     Max. Rel. Area : 150%
```

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(Min)
1 TM	Methanol	22.698	22.712	-0.1	98	0.00
2 TM	Ethanol	32.089	33.119	-3.2	101	0.00
3 TM	Tert-Butyl Alcohol	47.673	48.957	-2.7	100	0.00
4 TM	1-Propanol	39.604	40.756	-2.9	100	0.00
5 TM	2-Propanol	33.784	34.738	-2.8	100	0.00
6 MT	Isobutanol	46.821	48.351	-3.3	100	0.00
7 TM	1-Butanol	43.401	44.324	-2.1	100	0.00
8 TM	2-Butanol	38.944	40.151	-3.1	100	0.00
9 S	Hexanol	49.492	48.702	1.6	99	0.00

Signal #2

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(Min)
1 TM	Methanol	17.033	16.912	0.7	99	0.02
2 TM	Ethanol	23.608	24.072	-2.0	99	0.02
3 TM	Tert-Butyl Alcohol	35.745	36.200	-1.3	98	0.02
4 TM	1-Propanol	29.102	29.473	-1.3	99	0.02
5 TM	2-Propanol	25.526	25.861	-1.3	98	0.02
6 MT	Isobutanol	32.919	33.932	-3.1	98	0.02
7 TM	1-Butanol	29.650	30.962	-4.4	99	0.02
8 TM	2-Butanol	28.801	29.212	-1.4	98	0.02
9 S	Hexanol	31.261	30.967	0.9	99	0.02

Method Blank Summary

Job Number: F10479
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP3605-MB	W006156.D	1	08/08/01	ME	08/06/01	OP3605	SW335

Method: SW846 8270C

The QC reported here applies to the following samples:

F10479-1, F10479-2, F10479-3, F10479-4

CAS No.	Compound	Result	RL	Units	Q
	3&4-Methylphenol	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	58%	20-125%
4165-62-2	Phenol-d5	38%	10-125%
118-79-6	2,4,6-Tribromophenol	88%	35-140%
4165-60-0	Nitrobenzene-d5	86%	46-125%
321-60-8	2-Fluorobiphenyl	82%	46-125%
1718-51-0	Terphenyl-d14	99%	49-126%

GC/MS QA-QC Check Report

Tune File : C:\HPCHEM\1\DATA\080801\W006153.D
Tune Time : 8 Aug 2001 1:56 pm

Daily Calibration File : C:\HPCHEM\1\DATA\080801\W006154.D

8/9/01

						204067	680137	314865
						403387	210353	144970
File	**Sample**	**Surrogate Recovery %**				**Internal Standard Responses**		
W006155.D	op3605-b	55	36	81	79	191223	679819	321448
		93	100			404337	210018	137525
W006156.D	op3605-m	58	38	86	82	179812	606536	286215
		88	99			374717	205944	138243
W006157.D	f10479-1	57	37	89	88	191380	638589	300385
		92	102			395029	216365	145956
W006158.D	f10479-2	18*	14	68	69	202811	676129	323685
		35*	96			415997	223528	142861
W006159.D	f10479-3	54	36	80	79	220793	728420	347359
		88	96			441658	235500	146588
W006160.D	op3605-m	49	55	94	93	232173	824518	381409
		73	106			458227	222271	149940
W006161.D	op3605-m	76	60	90	87	209610	733089	350474
		93	102			419410	201054	136697
W006162.D	f10479-4	20	15	72	73	192791	645326	307531
		37	92			392604	202772	138337
W006163.D	f10487-1	19*	16	78	76	213454	716358	345214
		~~36~~	99			446225	235659	152503
W006164.D	f10487-2	55	36	80	76	221697	745494	363385
		83	93			474745	251437	160337
W006165.D	f10487-3	54	37	79	78	206514	685238	330070
		86	96			431072	237474	161636
W006166.D	f10487-4	23	17	77	77	207920	696955	329578
		37	88			437198	240319	156554
W006167.D	op3614-1	55	34	91	86	186891	661246	311364
		100	95			379795	210735	144407
W006168.D	op3614-1	58	37	90	79	174272	578190	272758
		91	101			355171	206001	135732
W006169.D	f10474-1	57	37	89	79	223382	752574	362920
		93	106			462824	242355	150957
[illegible]	op3614-m	57	37	87	81	197567	689112	329485
						[illegible]	199843	135817

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]972	418024
		98	100			[illegible]	244508	151192

t - fails 12hr time check   * - fails criteria

Created: Thu Aug 09 15:17:32 2001 MSBNA01

Method Blank Summary

Job Number: F10479
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GXY43-MB	XY000812.D	1	08/09/01	RA	n/a	n/a	GXY43

The QC reported here applies to the following samples: **Method: RSKSOP-147/175**

F10479-1, F10479-2, F10479-3, F10479-4

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	ND	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

Response Factor Report VCAL

Method : C:\HPCHEM\2\METHODS\DGMEE.M (Chemstation Integrator)
Title : Dissolved Gases in Water
Last Update : Fri Aug 03 13:55:05 2001
Response via : Initial Calibration

Calibration Files
1 =XY000738.D 2 =XY000739.D 3 =XY000740.D
4 =XY000741.D 5 =XY000742.D 6 =XY000743.D 7 =XY000744.D

	Compound	1	2	3	4	5	6	7	Avg		%RSD
1)	Methane	1.327	1.268	0.972	0.730	0.879	0.895	0.960	1.004	E4	21.49
2)	Ethylene	1.920	2.303	1.904	1.450	1.697	1.714	1.826	1.831	E4	14.32
3)	Ethane	1.832	2.365	1.907	1.466	1.706	1.739	1.856	1.839	E4	14.86

Average % RSD = 16.8903 < 30.1.

Gom

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\2\DATA\080901\XY000810.D
Acq On : 9 Aug 2001 8:39 am
Sample : CC33-1000ppmv
Misc : gc1418,gxy43,,,,,
IntFile : EVENTS.E

Vial: 100
Operator: RachidA
Inst : VOA5
Multiplr: 1.00

Method : C:\HPCHEM\2\METHODS\DGMEE.M (Chemstation Integrator)
Title : Dissolved Gases in Water
Last Update : Fri Aug 03 13:55:05 2001
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	Methane	1000.000	883.720	11.6	95	0.00
2	Ethylene	1000.000	917.836	8.2	97	-0.03
3	Ethane	1000.000	923.150	7.7	99	-0.04

Average % D = 9.2

(#) = Out of Range SPCC's out = 0 CCC's out = 0
XY000742.D DGMEE.M Fri Aug 10 09:39:03 2001 PIDHALL2

Method Blank Summary

Job Number: F10479
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP3601-MB	EE004437.D	1	08/06/01	MRE	08/04/01	OP3601	GEE209

The QC reported here applies to the following samples: **Method:** EPA 8310

F10479-1, F10479-2, F10479-3, F10479-4

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	92%	33-141%
92-94-4	p-Terphenyl	104%	31-122%

Response Factor Report G1315A

ethod : C:\HPCHEM\2\METHODS\8310_32.M (Chemstation Integrator)
.tle : PAH's BY EPA 8310
ast Update : Thu Jul 12 10:56:30 2001
esponse via : Initial Calibration

MKE 7/12/01

alibration Files
1 =EE004277.D L2 =EE004278.D L3 =EE004279.D
4 =EE004280.D L5 =EE004281.D L6 =EE004282.D

		Compound	L1	L2	L3	L4	L5	L6	Avg		%RSD
)		Naphthalene	9.212	8.306	8.041	7.579	7.771	7.658	8.095	E5	7.53
)		Acenaphthylene	3.630	3.238	3.132	2.973	3.037	3.184	3.199	E5	7.25
)		1-Methyl Naphthalen	7.830	7.008	6.794	6.421	6.494	6.791	6.890	E5	7.38
)		2-Methyl Naphthalen	7.846	7.031	6.822	6.470	6.527	6.822	6.920	E5	7.21
)		Acenaphthene	6.071	5.502	5.357	5.056	5.109	5.346	5.407	E5	6.76
)		Fluorene	2.215	1.998	1.941	1.836	1.858	1.935	1.964	E6	6.96
)		Phenanthrene	1.953	1.777	1.713	1.615	1.634	1.696	1.731	E6	7.10
)	S	O-Terphenyl	7.248	6.782	6.589	6.219	6.286	6.544	6.611	E5	5.66
)		Anthracene		2.217	1.932	1.709	1.649	1.624	1.826	E5	13.68
)		Fluoranthene	1.634	1.543	1.502	1.411	1.390	1.445	1.488	E6	6.16
)		Pyrene	2.622	2.394	2.293	2.136	2.130	2.173	2.291	E6	8.38
)	S	P-Terphenyl	2.856	2.553	2.483	2.347	2.382	2.473	2.516	E6	7.25
)		Benzo(a)Anthracene	4.831	4.260	4.131	3.911	3.949	4.090	4.196	E6	8.01
)		Chrysene		5.807	5.524	5.192	5.154	5.254	5.386	E6	5.12
)		Benzo(b)Fluoranthen	2.630	2.302	2.243	2.118	2.153	2.254	2.283	E6	8.02
5)		Benzo(k)Fluoranthen	1.532	1.354	1.348	1.275	1.295	1.349	1.359	E6	6.70
5)		Benzo(a) Pyrene	3.071	2.760	2.694	2.558	2.593	2.688	2.727	E6	6.74
7)		Dibenzo(a,h)anthrac	2.416	2.146	2.096	1.995	2.029	2.114	2.133	E6	7.02
3)		Benzo(g,h,i) Peryle	1.684	1.527	1.504	1.427	1.451	1.514	1.518	E6	5.93
9)		Indeno(1,2,3-cd)pyr	1.303	1.196	1.220	1.156	1.177	1.230	1.214	E6	4.24

gnal #2 Calibration Files
L1 =EE004277.D L2 =EE004278.D L3 =EE004279.D
L4 =EE004280.D L5 =EE004281.D L6 =EE004282.D

		Compound	L1	L2	L3	L4	L5	L6	Avg		%RSD
1)		Naphthalene	5.495	5.105	4.905	4.572	4.958	4.693	4.955	E5	6.58
2)		Acenaphthylene	3.783	3.366	3.221	3.042	3.079	3.228	3.286	E5	8.21
3)		1-Methyl Naphthalen	3.484	3.119	2.991	2.820	2.841	2.973	3.038	E5	8.04
4)		2-Methyl Naphthalen	4.831	4.320	4.171	3.949	3.972	4.151	4.232	E5	7.65
5)		Acenaphthene	2.112	2.018	1.965	1.838	1.840	1.920	1.949	E5	5.45
6)		Fluorene	2.484	2.224	2.160	2.047	2.069	2.156	2.190	E6	7.21
7)		Phenanthrene	6.729	5.996	5.756	5.387	5.377	5.449	5.782	E6	9.06
8)	S	O-Terphenyl	1.259	1.120	1.097	1.040	1.050	1.094	1.110	E6	7.12
9)		Anthracene	1.436	1.259	1.106	0.895	0.758	0.659	1.019	E7	~~29.54~~ [illegible] MKE 7/12/01
10)		Fluoranthene	1.597	1.504	1.447	1.364	1.385	1.439	1.456	E6	5.82
11)		Pyrene	1.470	1.358	1.321	1.254	1.270	1.317	1.332	E6	5.81
12)	S	P-Terphenyl	1.389	1.244	1.214	1.148	1.167	1.214	1.229	E6	6.97
13)		Benzo(a)Anthracene	3.469	3.152	3.075	2.901	2.941	3.057	3.099	E6	6.56
14)		Chrysene	5.288	4.729	4.586	4.317	4.346	4.508	4.629	E6	7.72
15)		Benzo(b)Fluoranthen	3.852	3.385	3.239	3.055	3.106	3.251	3.315	E6	8.69
16)		Benzo(k)Fluoranthen	2.903	2.678	2.511	2.401	2.438	2.536	2.578	E6	7.21
17)		Benzo(a) Pyrene	3.276	2.956	2.896	2.737	2.776	2.878	2.920	E6	6.58
18)		Dibenzo(a,h)anthrac	7.386	6.784	6.698	6.348	6.458	6.734	6.735	E5	5.37
19)		Benzo(g,h,i) Peryle	1.223	1.106	1.094	1.039	1.057	1.103	1.104	E6	5.85
		...(1,2,3-cd)pyr	3.046	2.756	2.710	2.568	2.608	2.719	2.734	E6	6.17

ACCUTEST LABORATORIES SOUTHEAST
SAMPLE RECEIPT CONFIRMATION

Accutest Job Number: F10479

Client/Project: TT NUS / N3995 NAS JAX - Hangar 1000

Date/Time Received: 8-2-01 / 10100

Method of Delivery: Fed Ex Greyhound UPS Pickup Delivery Other

Air Bill Number: 8287 2074 0329

Cooler Temperatures: 2.6°, 3.8°

Custody Seals Intact? YES NO

Chain Of Custody Provided? YES NO

Chain Of Custody Match Bottles? YES NO

Sample Labels Present? YES NO

Are All Bottles Unbroken? YES NO

Proper Preservative? YES NO

Correct Containers Used? YES NO

Sufficient Sample Volume? YES NO

Number of Encores: Ø

COMMENTS:

Signature: [signature] Date: 8-2-01

Quantitation Report (QT Reviewed)

Signal #1 : E:\HPCHEM\1\DATA\0806PAH\EE004434.D\DAD1B.CH Vial: 1
Signal #2 : E:\HPCHEM\1\DATA\0806PAH\EE004434.D\DAD1A.CH
Acq On : 06-Aug-2001, 15:48:36
Sample : ACN
Misc : op3601,gee209,1000,,,1,,water
IntFile Signal #1: EVENTS.E IntFile Signal #2: events2.e
Quant Time: Aug 7 10:59 2001 Quant Results File: 8310_32.RES

Operator: MIKEE
Inst : G1315A
Multiplr: 1.00

Quant Method : C:\HPCHEM\2\METHODS\8310_32.M (Chemstation Integrator)
Title : PAH's BY EPA 8310
Last Update : Fri Aug 03 09:05:59 2001
Response via : Initial Calibration
DataAcq Meth : 8310_32.M

Volume Inj. : 10ul
Signal #1 Phase : Envirosep PP
Signal #1 Info : DAD 270nm
Signal #2 Phase: Envirosep PP
Signal #2 Info : DAD 254nm

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppm	ppm
	System Monitoring Compounds						
8) S	O-Terphenyl	0.00	0.00	0	0	N.D.	N.D.
	Spiked Amount	20.000 Range	33 - 141	Recovery	=	0.00%#	0.00%#
12) S	P-Terphenyl	0.00	0.00	0	0	N.D.	N.D.
	Spiked Amount	20.000 Range	31 - 122	Recovery	=	0.00%#	0.00%#
	Target Compounds						
1)	Naphthalene	0.00	0.00	0	0	N.D.	N.D.
2)	Acenaphthylene	0.00	0.00	0	0	N.D.	N.D.
3)	1-Methyl Naphtha	0.00	0.00	0	0	N.D.	N.D.
4)	2-Methyl Naphtha	0.00	0.00	0	0	N.D.	N.D.
5)	Acenaphthene	0.00	0.00	0	0	N.D.	N.D.
6)	Fluorene	0.00	0.00	0	0	N.D.	N.D.
7)	Phenanthrene	0.00	0.00	0	0	N.D.	N.D.
9)	Anthracene	0.00	0.00	0	0	N.D.	N.D.
10)	Fluoranthene	0.00	0.00	0	0	N.D.	N.D.
11)	Pyrene	0.00	0.00	0	0	N.D.	N.D.
13)	Benzo(a)Anthrace	0.00	0.00	0	0	N.D. d	N.D. d
14)	Chrysene	0.00	0.00	0	0	N.D.	N.D.
15)	Benzo(b)Fluorant	0.00	0.00	0	0	N.D.	N.D.
16)	Benzo(k)Fluorant	0.00	0.00	0	0	N.D.	N.D.
17)	Benzo(a) Pyrene	0.00	0.00	0	0	N.D.	N.D.
18)	Dibenzo(a,h)anth	0.00	0.00	0	0	N.D.	N.D.
19)	Benzo(g,h,i) Per	0.00	0.00	0	0	N.D.	N.D.
20)	Indeno(1,2,3-cd)	0.00	0.00	0	0	N.D.	N.D.

MRS 8/7/01

Tetra Tech NUS

INTERNAL CORRESPONDENCE

TO:	**Mr. Mark Peterson**	**DATE:**	**September 20, 2001**
FROM:	**Elena Rodriguez**	**COPIES:**	**DV FILE**

SUBJECT: **DATA VALIDATION - INORGANICS**
CTO 167, NASJAX
SDG F10291

SAMPLES: 5/Aqueous/

H10-GW-MW08-06
H10-GW-MW08D-06
H10-GW-MW10-06
H10-GW-MW17-06
H10-GW-MW22-06

OVERVIEW

The sample set for CTO 167, NASJAX, SDG F10291 consists of five aqueous environmental samples. All samples were analyzed for cadmium and chromium and for natural attenuation parameters: chloride, nitrate, nitrite, sulfate, and sulfide.

The samples were collected by TetraTech NUS on July 11, 2001 and analyzed by Accutest Laboratories. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria using the following analytical and reporting protocols: SW-846 Methods 6010B, EPA 300, 325.3, and 376.1. The data contained in this SDG were validated with regard to the following parameters:

- * Data completeness
- * Holding times
- * Initial/continuing calibrations
- * Laboratory method blank results
- * Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A.

Metals

Data reported for this fraction were found to be acceptable.

General Chemistry: Chloride, Sulfate, Sulfide, Nitrate, Nitrite

Data reported for this fraction were found to be acceptable.

EXECUTIVE SUMMARY

Laboratory Performance Issues: None.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Inorganic Data Validation (2/94), and the Navy IRCDQM (9/99) NFESC guidelines. The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC guidelines and the Quality Assurance Project Plan (QAPP)."

Elena Rodriguez

Tetra Tech NUS

Elena Rodriguez

Elena Rodriguez for Joe Samchuck

TetraTech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank contamination
C = Calibration (i.e. %RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS – GFAA MSAs r<0.995
K = ICP Interference – Include ICSAB %Rs
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (I.E. base-time drifting)
P = Uncertainty near detection limit (<2 x IDL for Inorganics and < CRQL for Organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCB D% between columns for positive results
V = Non-Linear calibrations, tuning r< 0.995 (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = % Solid content is less than 30%

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10291

SAMPLE NUMBER:	H10-GW-MW08-06			H10-GW-MW08D-06			H10-GW-MW10-06			H10-GW-MW17-06		
SAMPLE DATE:	07/11/01			07/11/01			07/11/01			07/11/01		
LABORATORY ID:	F10291-1			F10291-2			F10291-3			F10291-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
INORGANICS	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
CADMIUM	0.27	U		0.27	U		0.27	U		0.27	U	
CHROMIUM	3.0			2.8			0.89			0.35	U	

SAMPLE NUMBER:	H10-GW-MW22-06											
SAMPLE DATE:	07/11/01			/ /			/ /			/ /		
LABORATORY ID:	F10291-5											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:												
INORGANICS	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
CADMIUM	0.27	U										
CHROMIUM	3.5											

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10291

SAMPLE NUMBER:	H10-GW-MW08-06			H10-GW-MW08D-06			H10-GW-MW10-06			H10-GW-MW17-06		
SAMPLE DATE:	07/11/01			07/11/01			07/11/01			07/11/01		
LABORATORY ID:	F10291-1			F10291-2			F10291-3			F10291-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
MISCELLANEOUS PARAMETERS												
CHLORIDE(MG/L)	39.5			16			20.5			19.5		
NITRATE AS NITROGEN(MG/L)	2.4			0.1	U		0.88			0.65		
NITRITE AS NITROGEN(MG/L)	0.12			0.01	U		0.01	U		0.01	U	
SULFATE(MG/L)	190			7.1			17.8			18.1		
SULFIDE(MG/L)	2	U		2	U		2	U		2	U	

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10291

SAMPLE NUMBER:	H10-GW-MW22-06											
SAMPLE DATE:	07/11/01			/ /			/ /			/ /		
LABORATORY ID:	F10291-5											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
MISCELLANEOUS PARAMETERS												
CHLORIDE(MG/L)	52.5											
NITRATE AS NITROGEN(MG/L)	0.1	U										
NITRITE AS NITROGEN(MG/L)	0.01	U										
SULFATE(MG/L)	7.7											
SULFIDE(MG/L)	2	U										

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

Report of Analysis

Client Sample ID:	H10-GW-MW08-06		
Lab Sample ID:	F10291-1	**Date Sampled:**	07/11/01
Matrix:	AQ - Ground Water	**Date Received:**	07/12/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	0.27	ug/l	1	07/16/01	07/18/01	JK	SW846 6010B
Chromium	3.0 B	10	0.35	ug/l	1	07/16/01	07/18/01	JK	SW846 6010B

RL = Reporting Limit
IDL = Instrument Detection Limit

U = Indicates a result < IDL
B = Indicates a result >= IDL but < RL

Report of Analysis

Client Sample ID:	H10-GW-MW08D-06		
Lab Sample ID:	F10291-2	Date Sampled:	07/11/01
Matrix:	AQ - Ground Water	Date Received:	07/12/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	0.27	ug/l	1	07/16/01	07/18/01	JK	SW846 6010B
Chromium	2.8 B	10	0.35	ug/l	1	07/16/01	07/18/01	JK	SW846 6010B

RL = Reporting Limit
IDL = Instrument Detection Limit

U = Indicates a result < IDL
B = Indicates a result >= IDL but < RL

Report of Analysis

Client Sample ID:	H10-GW-MW10-06		
Lab Sample ID:	F10291-3	**Date Sampled:**	07/11/01
Matrix:	AQ - Ground Water	**Date Received:**	07/12/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	0.27	ug/l	1	07/16/01	07/18/01	JK	SW846 6010B
Chromium	0.89 B	10	0.35	ug/l	1	07/16/01	07/18/01	JK	SW846 6010B

RL = Reporting Limit
IDL = Instrument Detection Limit

U = Indicates a result < IDL
B = Indicates a result >= IDL but < RL

Report of Analysis

Client Sample ID:	H10-GW-MW17-06		
Lab Sample ID:	F10291-4	**Date Sampled:**	07/11/01
Matrix:	AQ - Ground Water	**Date Received:**	07/12/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	0.27	ug/l	1	07/16/01	07/18/01	JK	SW846 6010B
Chromium	0.35 U	10	0.35	ug/l	1	07/16/01	07/18/01	JK	SW846 6010B

RL = Reporting Limit
IDL = Instrument Detection Limit

U = Indicates a result < IDL
B = Indicates a result >= IDL but < RL

Report of Analysis

Client Sample ID:	H10-GW-MW22-06		
Lab Sample ID:	F10291-5	**Date Sampled:**	07/11/01
Matrix:	AQ - Ground Water	**Date Received:**	07/12/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	0.27	ug/l	1	07/16/01	07/18/01	JK	SW846 6010B
Chromium	3.5 B	10	0.35	ug/l	1	07/16/01	07/18/01	JK	SW846 6010B

RL = Reporting Limit
IDL = Instrument Detection Limit

U = Indicates a result < IDL
B = Indicates a result >= IDL but < RL

Report of Analysis

Client Sample ID:	H10-GW-MW08-06			
Lab Sample ID:	F10291-1		**Date Sampled:**	07/11/01
Matrix:	AQ - Ground Water		**Date Received:**	07/12/01
			Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000			

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	39.5	1.0	mg/l	1	07/16/01	SJL	EPA 325.3
Nitrogen, Nitrate	2.4	0.10	mg/l	1	07/12/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrite	0.12	0.010	mg/l	1	07/12/01	AL	EPA 300/SW846 9056
Sulfate	190	5.0	mg/l	1	07/12/01	AL	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	07/13/01	AL	EPA 376.1

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW08D-06			
Lab Sample ID:	F10291-2		**Date Sampled:**	07/11/01
Matrix:	AQ - Ground Water		**Date Received:**	07/12/01
			Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000			

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	16.0	1.0	mg/l	1	07/16/01	SJL	EPA 325.3
Nitrogen, Nitrate	<0.10	0.10	mg/l	1	07/12/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrite	<0.010	0.010	mg/l	1	07/12/01	AL	EPA 300/SW846 9056
Sulfate	7.1	5.0	mg/l	1	07/12/01	AL	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	07/13/01	AL	EPA 376.1

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	H10-GW-MW17-06		
Lab Sample ID:	F10291-4	**Date Sampled:**	07/11/01
Matrix:	AQ - Ground Water	**Date Received:**	07/12/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	19.5	1.0	mg/l	1	07/16/01	SJL	EPA 325.3
Nitrogen, Nitrate	0.65	0.10	mg/l	1	07/12/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrite	<0.010	0.010	mg/l	1	07/12/01	AL	EPA 300/SW846 9056
Sulfate	18.1	5.0	mg/l	1	07/12/01	AL	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	07/13/01	AL	EPA 376.1

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW22-06			
Lab Sample ID:	F10291-5		**Date Sampled:**	07/11/01
Matrix:	AQ - Ground Water		**Date Received:**	07/12/01
			Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000			

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	52.5	1.0	mg/l	1	07/16/01	SJL	EPA 325.3
Nitrogen, Nitrate	<0.10	0.10	mg/l	1	07/12/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrite	<0.010	0.010	mg/l	1	07/12/01	AL	EPA 300/SW846 9056
Sulfate	7.7	5.0	mg/l	1	07/12/01	AL	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	07/13/01	AL	EPA 376.1

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW10-06		
Lab Sample ID:	F10291-3	**Date Sampled:**	07/11/01
Matrix:	AQ - Ground Water	**Date Received:**	07/12/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	20.5	1.0	mg/l	1	07/16/01	SJL	EPA 325.3
Nitrogen, Nitrate	0.88	0.10	mg/l	1	07/12/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrite	<0.010	0.010	mg/l	1	07/12/01	AL	EPA 300/SW846 9056
Sulfate	17.8	5.0	mg/l	1	07/12/01	AL	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	07/13/01	AL	EPA 376.1

RL = Reporting Limit

APPENDIX C

SUPPORT DOCUMENTATION

F10291

HOLDING TIME

08/14/01

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UG/L	H10-GW-MW08-06	F10291-1	NORMAL	F10291	ALC	07/11/01	/ /	07/25/01	0	0	14
UG/L	H10-GW-MW08D-06	F10291-2	NORMAL	F10291	ALC	07/11/01	/ /	07/25/01	0	0	14
UG/L	H10-GW-MW10-06	F10291-3	NORMAL	F10291	ALC	07/11/01	/ /	07/25/01	0	0	14
UG/L	H10-GW-MW17-06	F10291-4	NORMAL	F10291	ALC	07/11/01	/ /	07/25/01	0	0	14
UG/L	H10-GW-MW22-06	F10291-5	NORMAL	F10291	ALC	07/11/01	/ /	07/25/01	0	0	14
MG/L	H10-GW-MW08-06	F10291-1	NORMAL	F10291	CL	07/11/01	07/14/01	07/16/01	3	2	5
MG/L	H10-GW-MW08D-06	F10291-2	NORMAL	F10291	CL	07/11/01	07/14/01	07/16/01	3	2	5
MG/L	H10-GW-MW10-06	F10291-3	NORMAL	F10291	CL	07/11/01	07/14/01	07/16/01	3	2	5
MG/L	H10-GW-MW17-06	F10291-4	NORMAL	F10291	CL	07/11/01	07/14/01	07/16/01	3	2	5
MG/L	H10-GW-MW22-06	F10291-5	NORMAL	F10291	CL	07/11/01	07/14/01	07/16/01	3	2	5
UG/L	H10-GW-MW08-06	F10291-1	NORMAL	F10291	ETHA	07/11/01	/ /	07/13/01	0	0	2
UG/L	H10-GW-MW08D-06	F10291-2	NORMAL	F10291	ETHA	07/11/01	/ /	07/13/01	0	0	2
UG/L	H10-GW-MW10-06	F10291-3	NORMAL	F10291	ETHA	07/11/01	/ /	07/13/01	0	0	2
UG/L	H10-GW-MW17-06	F10291-4	NORMAL	F10291	ETHA	07/11/01	/ /	07/13/01	0	0	2
UG/L	H10-GW-MW22-06	F10291-5	NORMAL	F10291	ETHA	07/11/01	/ /	07/13/01	0	0	2
UG/L	H10-GW-MW08-06	F10291-1	NORMAL	F10291	ETHE	07/11/01	/ /	07/13/01	0	0	2
UG/L	H10-GW-MW08D-06	F10291-2	NORMAL	F10291	ETHE	07/11/01	/ /	07/13/01	0	0	2
UG/L	H10-GW-MW10-06	F10291-3	NORMAL	F10291	ETHE	07/11/01	/ /	07/13/01	0	0	2
UG/L	H10-GW-MW17-06	F10291-4	NORMAL	F10291	ETHE	07/11/01	/ /	07/13/01	0	0	2
UG/L	H10-GW-MW22-06	F10291-5	NORMAL	F10291	ETHE	07/11/01	/ /	07/13/01	0	0	2
UG/L	H10-GW-MW08-06	F10291-1	NORMAL	F10291	M	07/11/01	07/16/01	07/18/01	5	2	7
UG/L	H10-GW-MW08D-06	F10291-2	NORMAL	F10291	M	07/11/01	07/16/01	07/18/01	5	2	7
UG/L	H10-GW-MW10-06	F10291-3	NORMAL	F10291	M	07/11/01	07/16/01	07/18/01	5	2	7
UG/L	H10-GW-MW17-06	F10291-4	NORMAL	F10291	M	07/11/01	07/16/01	07/18/01	5	2	7

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UG/L	H10-GW-MW22-06	F10291-5	NORMAL	F10291	M	07/11/01	07/16/01	07/18/01	5	2	7
UG/L	H10-GW-MW08-06	F10291-1	NORMAL	F10291	METH	07/11/01	/ /	07/13/01	0	0	2
UG/L	H10-GW-MW08D-06	F10291-2	NORMAL	F10291	METH	07/11/01	/ /	07/13/01	0	0	2
UG/L	H10-GW-MW10-06	F10291-3	NORMAL	F10291	METH	07/11/01	/ /	07/13/01	0	0	2
UG/L	H10-GW-MW17-06	F10291-4	NORMAL	F10291	METH	07/11/01	/ /	07/13/01	0	0	2
UG/L	H10-GW-MW22-06	F10291-5	NORMAL	F10291	METH	07/11/01	/ /	07/13/01	0	0	2
MG/L	H10-GW-MW08-06	F10291-1	NORMAL	F10291	NTA	07/11/01	07/13/01	07/12/01	2	-1	1
MG/L	H10-GW-MW08D-06	F10291-2	NORMAL	F10291	NTA	07/11/01	07/13/01	07/12/01	2	-1	1
MG/L	H10-GW-MW10-06	F10291-3	NORMAL	F10291	NTA	07/11/01	07/13/01	07/12/01	2	-1	1
MG/L	H10-GW-MW17-06	F10291-4	NORMAL	F10291	NTA	07/11/01	07/13/01	07/12/01	2	-1	1
MG/L	H10-GW-MW22-06	F10291-5	NORMAL	F10291	NTA	07/11/01	07/13/01	07/12/01	2	-1	1
MG/L	H10-GW-MW08-06	F10291-1	NORMAL	F10291	NTI	07/11/01	07/13/01	07/12/01	2	-1	1
MG/L	H10-GW-MW08D-06	F10291-2	NORMAL	F10291	NTI	07/11/01	07/13/01	07/12/01	2	-1	1
MG/L	H10-GW-MW10-06	F10291-3	NORMAL	F10291	NTI	07/11/01	07/13/01	07/12/01	2	-1	1
MG/L	H10-GW-MW17-06	F10291-4	NORMAL	F10291	NTI	07/11/01	07/13/01	07/12/01	2	-1	1
MG/L	H10-GW-MW22-06	F10291-5	NORMAL	F10291	NTI	07/11/01	07/13/01	07/12/01	2	-1	1
UG/L	H10-GW-MW08-06	F10291-1	NORMAL	F10291	OS	07/11/01	07/16/01	07/24/01	5	8	13
UG/L	H10-GW-MW08D-06	F10291-2	NORMAL	F10291	OS	07/11/01	07/16/01	07/24/01	5	8	13
UG/L	H10-GW-MW10-06	F10291-3	NORMAL	F10291	OS	07/11/01	07/16/01	07/24/01	5	8	13
UG/L	H10-GW-MW17-06	F10291-4	NORMAL	F10291	OS	07/11/01	07/16/01	07/24/01	5	8	13
UG/L	H10-GW-MW22-06	F10291-5	NORMAL	F10291	OS	07/11/01	07/16/01	07/24/01	5	8	13
UG/L	H10-GW-MW08-06	F10291-1	NORMAL	F10291	OV	07/11/01	/ /	07/18/01	0	0	7
UG/L	H10-GW-MW08D-06	F10291-2	NORMAL	F10291	OV	07/11/01	/ /	07/18/01	0	0	7
UG/L	H10-GW-MW10-06	F10291-3	NORMAL	F10291	OV	07/11/01	/ /	07/18/01	0	0	7
UG/L	H10-GW-MW17-06	F10291-4	NORMAL	F10291	OV	07/11/01	/ /	07/18/01	0	0	7
UG/L	H10-GW-MW22-06	F10291-5	NORMAL	F10291	OV	07/11/01	/ /	07/19/01	0	0	8
UG/L	H10-GW-TB01-06	F10291-6	NORMAL	F10291	OV	07/11/01	/ /	07/18/01	0	0	7

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UG/L	H10-GW-MW08-06	F10291-1	NORMAL	F10291	PAH	07/11/01	07/16/01	07/17/01	5	1	6
UG/L	H10-GW-MW08D-06	F10291-2	NORMAL	F10291	PAH	07/11/01	07/16/01	07/17/01	5	1	6
UG/L	H10-GW-MW10-06	F10291-3	NORMAL	F10291	PAH	07/11/01	07/16/01	07/17/01	5	1	6
UG/L	H10-GW-MW17-06	F10291-4	NORMAL	F10291	PAH	07/11/01	07/16/01	07/17/01	5	1	6
UG/L	H10-GW-MW22-06	F10291-5	NORMAL	F10291	PAH	07/11/01	07/16/01	07/17/01	5	1	6
UG/L	H10-GW-MW08-06	F10291-1	NORMAL	F10291	SIM	07/11/01	07/16/01	07/23/01	5	7	12
UG/L	H10-GW-MW08D-06	F10291-2	NORMAL	F10291	SIM	07/11/01	07/16/01	07/23/01	5	7	12
UG/L	H10-GW-MW10-06	F10291-3	NORMAL	F10291	SIM	07/11/01	07/16/01	07/23/01	5	7	12
UG/L	H10-GW-MW17-06	F10291-4	NORMAL	F10291	SIM	07/11/01	07/16/01	07/23/01	5	7	12
UG/L	H10-GW-MW22-06	F10291-5	NORMAL	F10291	SIM	07/11/01	07/16/01	07/23/01	5	7	12
MG/L	H10-GW-MW08-06	F10291-1	NORMAL	F10291	SO4	07/11/01	07/13/01	07/12/01	2	-1	1
MG/L	H10-GW-MW08D-06	F10291-2	NORMAL	F10291	SO4	07/11/01	07/13/01	07/12/01	2	-1	1
MG/L	H10-GW-MW10-06	F10291-3	NORMAL	F10291	SO4	07/11/01	07/13/01	07/12/01	2	-1	1
MG/L	H10-GW-MW17-06	F10291-4	NORMAL	F10291	SO4	07/11/01	07/13/01	07/12/01	2	-1	1
MG/L	H10-GW-MW22-06	F10291-5	NORMAL	F10291	SO4	07/11/01	07/13/01	07/12/01	2	-1	1
MG/L	H10-GW-MW08-06	F10291-1	NORMAL	F10291	SUL	07/11/01	/ /	07/13/01	0	0	2
MG/L	H10-GW-MW08D-06	F10291-2	NORMAL	F10291	SUL	07/11/01	/ /	07/13/01	0	0	2
MG/L	H10-GW-MW10-06	F10291-3	NORMAL	F10291	SUL	07/11/01	/ /	07/13/01	0	0	2
MG/L	H10-GW-MW17-06	F10291-4	NORMAL	F10291	SUL	07/11/01	/ /	07/13/01	0	0	2
MG/L	H10-GW-MW22-06	F10291-5	NORMAL	F10291	SUL	07/11/01	/ /	07/13/01	0	0	2

BLANK RESULTS SUMMARY
Part [illegible] Initial and Continuing Calibration Blanks

Login Number: F10291
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

File ID: IR0718M1.ASC
QC Limits: result < RL

Date Analyzed: 07/18/01
Run ID: MA2412

Methods: SW846 6010B
Units: ug/l

Metal	RL	IDL	ICB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	9.44								
Antimony	5.0	2.56								
Arsenic	10	3.15	anr							
Barium	200	.94								
Beryllium	5.0	.22								
Cadmium	5.0	.27	-0.23	<5.0	-0.19	<5.0	-0.11	<5.0	-0.25	<5.0
Calcium	1000	10.2								
Chromium	10	.35	-0.74	<10	-0.63	<10	-0.31	<10	-0.64	<10
Cobalt	50	.55								
Copper	25	.71								
Iron	300	9.02								
Lead	5.0	1.16	anr							
Magnesium	5000	25.5								
Manganese	15	.26								
Molybdenum	50	1.01								
Nickel	40	.8								
Potassium	5000	49								
Selenium	10	2.5								
Silver	10	.59								
Sodium	5000	173								
Thallium	10	2.07								
Tin	50	1.03								
Vanadium	50	.58								
Zinc	20	.36								

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F10291
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

File ID: IR0718M1.ASC　Date Analyzed: 07/18/01　Methods: SW846 6010B
QC Limits: result < RL　Run ID: MA2412　Units: ug/l

Metal	RL	IDL	CCB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	9.44								
Antimony	5.0	2.56								
Arsenic	10	3.15	anr							
Barium	200	.94								
Beryllium	5.0	.22								
Cadmium	5.0	.27	0.020	<5.0	-0.080	<5.0	0.33	<5.0	0.20	<5.0
Calcium	1000	10.2								
Chromium	10	.35	-0.22	<10	-0.18	<10	-0.020	<10	0.12	<10
Cobalt	50	.55								
Copper	25	.71								
Iron	300	9.02								
Lead	5.0	1.16	anr							
Magnesium	5000	25.5								
Manganese	15	.26								
Molybdenum	50	1.01								
Nickel	40	.8								
Potassium	5000	49								
Selenium	10	2.5								
Silver	10	.59								
Sodium	5000	173								
Thallium	10	2.07								
Tin	50	1.03								
Vanadium	50	.58								
Zinc	20	.36								

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F10291
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

File ID: IR0718M1.ASC
QC Limits: result < RL

Date Analyzed: 07/18/01
Run ID: MA2412

Methods: SW846 6010B
Units: ug/l

Metal	RL	IDL	CCB raw	final
Aluminum	200	9.44		
Antimony	5.0	2.56		
Arsenic	10	3.15	anr	
Barium	200	.94		
Beryllium	5.0	.22		
Cadmium	5.0	.27	0.26	<5.0
Calcium	1000	10.2		
Chromium	10	.35	0.12	<10
Cobalt	50	.55		
Copper	25	.71		
Iron	300	9.02		
Lead	5.0	1.16	anr	
Magnesium	5000	25.5		
Manganese	15	.26		
Molybdenum	50	1.01		
Nickel	40	.8		
Potassium	5000	49		
Selenium	10	2.5		
Silver	10	.59		
Sodium	5000	173		
Thallium	10	2.07		
Tin	50	1.03		
Vanadium	50	.58		
Zinc	20	.36		

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F10291
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

File ID: IR0718M1.ASC   Date Analyzed: 07/18/01   Methods: SW846 6010B
QC Limits: 90 to 110 % Recovery   Run ID: MA2412   Units: ug/l

Metal	ICV True	ICV Results	% Rec	CCV True	CCV Results	% Rec	CCV True	CCV Results	% Rec
Aluminum									
Antimony									
Arsenic	anr								
Barium									
Beryllium									
Cadmium	2000	2030	101.5	2000	2020	101.0	2000	2040	102.0
Calcium									
Chromium	2000	2020	101.0	2000	2010	100.5	2000	2030	101.5
Cobalt									
Copper									
Iron									
Lead	anr								
Magnesium									
Manganese									
Molybdenum									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Tin									
Vanadium									
Zinc									

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F10291
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

File ID: IR0718M1.ASC
QC Limits: 90 to 110 % Recovery

Date Analyzed: 07/18/01
Run ID: MA2412

Methods: SW846 6010B
Units: ug/l

Metal	CCV True	CCV Results	% Rec	CCV True	CCV Results	% Rec	CCV True	CCV Results	% Rec
Aluminum									
Antimony									
Arsenic	anr								
Barium									
Beryllium									
Cadmium	2000	2060	103.0	2000	2060	103.0	2000	2110	105.5
Calcium									
Chromium	2000	2040	102.0	2000	2040	102.0	2000	2080	104.0
Cobalt									
Copper									
Iron									
Lead	anr								
Magnesium									
Manganese									
Molybdenum									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Tin									
Vanadium									
Zinc									

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F10291
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

File ID: IR0718M1.ASC
QC Limits: 90 to 110 % Recovery

Date Analyzed: 07/18/01
Run ID: MA2412

Methods: SW846 6010B
Units: ug/l

Metal	CCV True	CCV Results	% Rec	CCV True	CCV Results	% Rec	CCV True	CCV Results	% Rec
Aluminum									
Antimony									
Arsenic	anr								
Barium									
Beryllium									
Cadmium	2000	2120	106.0	2000	2120	106.0	2000	2160	108.0
Calcium									
Chromium	2000	2090	104.5	2000	2100	105.0	2000	2120	106.0
Cobalt									
Copper									
Iron									
Lead	anr								
Magnesium									
Manganese									
Molybdenum									
Nickel									
Potassium									
Selenium									
Silver									
Sodium									
Thallium									
Tin									
Vanadium									
Zinc									

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: F10291
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

QC Batch ID: MP3668
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 07/16/01

Metal	RL	IDL	MB raw	final
Aluminum	200	9.44		
Antimony	5.0	2.56		
Arsenic	10	3.15	anr	
Barium	200	.94		
Beryllium	5.0	.22		
Cadmium	5.0	.27	-0.35	<5.0
Calcium	1000	10.2		
Chromium	10	.35	-0.94	<10
Cobalt	50	.55		
Copper	25	.71		
Iron	300	9.02		
Lead	5.0	1.16		
Magnesium	5000	25.5		
Manganese	15	.26		
Molybdenum	50	1.01		
Nickel	40	.8		
Potassium	5000	49		
Selenium	10	2.5		
Silver	10	.59		
Sodium	5000	173		
Thallium	10	2.07		
Tin	50	1.03		
Vanadium	50	.58		
Zinc	20	.36		

Associated samples MP3668: F10291-1, F10291-2, F10291-3, F10291-4, F10291-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F10291
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

Analyte	Batch ID	RL	MB Result	Units	BSP %Recov	QC Limits
Chloride	GP2441	1.0	<1.0	mg/l	100.0	88-122%
Nitrogen, Nitrate	GP2439	0.10	<0.10	mg/l	110.0	90-110%
Nitrogen, Nitrite	GP2439	0.010	<0.010	mg/l	99.0	90-110%
Sulfate	GP2439	5.0	<5.0	mg/l	117.2	90-110%
Sulfide	GN7777	2.0	<2.0	mg/l		

Associated Samples:
Batch GN7777: F10291-1, F10291-2, F10291-3, F10291-4, F10291-5
Batch GP2439: F10291-1, F10291-2, F10291-3, F10291-4, F10291-5
Batch GP2441: F10291-1, F10291-2, F10291-3, F10291-4, F10291-5

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F10291
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

Analyte	Batch ID	RL	MB Result	Units	BSP %Recov	QC Limits
Chloride	GP2441	1.0	<1.0	mg/l	100.0	88-122%
Nitrogen, Nitrate	GP2439	0.10	<0.10	mg/l	110.0	90-110%
Nitrogen, Nitrite	GP2439	0.010	<0.010	mg/l	99.0	90-110%
Sulfate	GP2439	5.0	<5.0	mg/l	117.2	90-110%
Sulfide	GN7777	2.0	<2.0	mg/l		

Associated Samples:
Batch GN7777: F10291-1, F10291-2, F10291-3, F10291-4, F10291-5
Batch GP2439: F10291-1, F10291-2, F10291-3, F10291-4, F10291-5
Batch GP2441: F10291-1, F10291-2, F10291-3, F10291-4, F10291-5

Southeast
ACCUTEST

08/10/01

Technical Report for

Tetra-Tech, NUS

NAS Jax-Hanger 1000

N3995

Accutest Job Number: F10291

Report to:

Tetra-Tech, NUS
7018 A.C. Skinner Parkway
Suite 250
Jacksonville, FL 32256

ATTN: Mark Peterson

Total number of pages in report: 680

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

H Behzadi
Harry Behzadi, Ph.D.
Laboratory Director

TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER H10-0711C

PAGE ___ OF ___

PROJECT NO: N3995

SITE NAME: NASJAX Hangar 1000

PROJECT MANAGER AND PHONE NUMBER: Mark Peterson 904-281-0400

LABORATORY NAME AND CONTACT: Accutest L. Williams

SAMPLERS (SIGNATURE): Alan L Pate, R. [illegible]

FIELD OPERATIONS LEADER AND PHONE NUMBER: Alan Pate 904-281-0400

ADDRESS: 4405 Vineland Rd #C-15

CARRIER/WAYBILL NUMBER: FEDEX

CITY, STATE: Orlando, FL 32811

STANDARD TAT ☒ RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

					CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	G	G	G	P	P	P	
					PRESERVATIVE USED	HCl	HCl	none	none	HNO_3	NaOH	none	
DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS / TYPE OF ANALYSIS	VOC's (8260B)	Methane Ethane Ethene (RSK147/175)	Alcohols (8015B)	SVOCs (8270C)/PAHs (8310)	Metals: Ca, Fe (6010B)	Sulfide (376.1)	Anions: SO_4, Cl^-, NO_2+NO_3 (300.0)	COMMENTS
7/11	12:10	H10-GW-MW08-06	GW	G		3							Cool to 4°C
7/11	10:08	H10-GW-MW080-06	GW			3							
7/11	12:25	H10-GW-MW10-06	GW			3							See attached SAP table for analytical requirements
7/11	14:45	H10-GW-MW117-06	GW			3	3	3	4	1	1	1	
7/11	13:45	H10-GW-MW22-06	GW			3							
		~~TRIP BLANK 01~~	~~GW~~										
7/11		H10-GW-TB01-06				2							

1. RELINQUISHED BY Alan L Pate	DATE 7/11/01	TIME 1500	1. RECEIVED BY [illegible] SGS	DATE 7-12-01	TIME 10:00
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS N3995 JE0050115 2.4°, 3.4°, 3.6°

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/99

FORM NO. TINUS-001

TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER H10-0711A

PAGE ____ OF ____

PROJECT NO: N3995

SITE NAME: NASJAX Hangar 1000

PROJECT MANAGER AND PHONE NUMBER: Mark Peterson 904 281 0400

FIELD OPERATIONS LEADER AND PHONE NUMBER: Alan Pate 904 281 0400

CARRIER/WAYBILL NUMBER: FEDEX

LABORATORY NAME AND CONTACT: Accutest L. Williams

ADDRESS: 4405 Vineland Rd #C-15

CITY, STATE: Orlando FL 32811

SAMPLERS (SIGNATURE): Alan L Pate, Rob [signature]

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

						CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	G	G	G	P	P	P	
						PRESERVATIVE USED	HCl	HCl	none	none	HNO3	NaOH	none	
DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS	VOC's (8260B)	Methane Ethane Ethene (RSK147/175)	Alcohols (8015B)	SVOC's (8270C) & PAH's (8310)	Metals: Cd, Cr (6010B)	Sulfide (376.1)	Anions: SO4, Cl-, NO2, NO3 (300.0)	COMMENTS
7/11	1008	H10-GW-MW08D-06	GW	G			3	3	4	1	1	1		Cool to 4°C
7/11	1215	H10-GW10-06	GW	G			3	3	4	1	1	1		See attached QAPP Table for analytical requirements

1. RELINQUISHED BY Alan L Pate	DATE 7/11/01	TIME 1700	1. RECEIVED BY [signature]		DATE 7-12-01	TIME 10:00
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY		DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY		DATE	TIME

COMMENTS N3995 JF0050115

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FORM NO. TINUS-001

TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER H10-0711B

PAGE ___ OF ___

PROJECT NO: N3995	SITE NAME: NASJAX HANGAR 1000
SAMPLERS (SIGNATURE)	Alan L Pate / [signature]
PROJECT MANAGER AND PHONE NUMBER	Mark Peterson 904 281 0400
FIELD OPERATIONS LEADER AND PHONE NUMBER	Alan Pate 904 281 0400
CARRIER/WAYBILL NUMBER	FEDEX
LABORATORY NAME AND CONTACT:	Accutest L. Williams
ADDRESS	4405 Vineland Rd #C-15
CITY, STATE	Orlando FL 32811

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

						CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	G	G	G	P	NaOH	P
						PRESERVATIVE USED	HCl	HCl	none	none	HNO3	NaOH	none
DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS	VOCs (8260B)	Methane Ethane Ethene (RSK147/175)	Alcohols (8015B)	SVOCs (8270C) & PAHs (8310)	Metals (6010B)	Sulfide (376.1)	Anions: SO4 Cl- NO2, NO3 (300.0)	COMMENTS
7/11	1210	H10-GW-MW108-06	GW	G	13		3	3	4	1	1	1		Cool to 4°C
7/11	1345	H10-GW-MW122-06	GW	G	13		3	3	4	1	1	1		See attached QAPP table for analytical requirements

1. RELINQUISHED BY Alan L Pate	DATE 7/11/01	TIME 1500	1. RECEIVED BY [signature] ASRS	DATE 7-12-01	TIME [illegible]
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS N3995 JF0050115

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3/99
FORM NO. TINUS-001

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**Mr. Mark Peterson**	**DATE:**	**September 20, 2001**
FROM:	**Elena Rodriguez**	**COPIES:**	**DV FILE**

SUBJECT: **DATA VALIDATION - ORGANICS**
CTO 167, NASJAX
SDG F10291

SAMPLES: 6/Aqueous/

H10-GW-MW08-06
H10-GW-MW08D-06
H10-GW-MW10-06
H10-GW-MW17-06
H10-GW-MW22-06
H10-GW-TB01-06

OVERVIEW

The sample set for CTO 167, NASJAX, SDG F10291 consists of five aqueous environmental samples and one aqueous quality control sample (trip blank). All groundwater samples were analyzed for select volatile organic compounds, semi-volatile organic compounds, polynuclear aromatic hydrocarbons, alcohols, and dissolved gasses. The trip blank (H10-GW-TB01-06) was analyzed for volatile organic compounds.

The samples were collected by TetraTech NUS on July 11, 2001 and analyzed by Accutest Laboratories. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria using the following analytical and reporting protocols: SW-846 Methods 8260B, 8270C, 8310, 8015 and RSK SOP 147/175. The data contained in this SDG were validated with regard to the following parameters:

* • Data completeness
* • Holding times
* • Initial/continuing calibrations
* • Laboratory method and field quality control blank results
* • Surrogate recoveries
* • Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A.

Volatile Organics

Data reported for this fraction were found to be acceptable. Samples H10-GW-MW08-06 and H10-GW-MW22-06 were re-analyzed at a 20x dilution factor to quantify compounds that had exceeded the calibration range during the first analysis. This resulted in elevated reporting limits.

Alcohols

Data reported for this fraction were found to be acceptable.

Semi-Volatile Organics

Data reported for this fraction were found to be acceptable.

Polynuclear Aromatic Hydrocarbons

Data reported for this fraction were found to be acceptable.

Dissolved Gases (Methane-Ethane-Ethene)

Data reported for this fraction were found to be acceptable.

Additional Comments

Positive results below the reporting limit (RL) were qualified as estimated, J, due to uncertainty near the detection limit.

EXECUTIVE SUMMARY

Laboratory Performance Issues: None.

Other Factors Affecting Data Quality: None

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99), and the Navy IRCDQM (9/99) NFESC guidelines. The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC guidelines and the Quality Assurance Project Plan (QAPP)."

Elena Rodriguez
Tetra Tech NUS

Elena Rodriguez

E Rodriguez for J Samchuck
Tetra Tech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:
1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank contamination
C = Calibration (i.e. %RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS – GFAA MSAs r<0.995
K = ICP Interference – Include ICSAB %Rs
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (I.E. base-time drifting)
P = Uncertainty near detection limit (<2 x IDL for Inorganics and < CRQL for Organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCB D% between columns for positive results
V = Non-Linear calibrations, tuning r< 0.995 (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = % Solid content is less than 30%

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10291

SAMPLE NUMBER:	H10-GW-MW08-06			H10-GW-MW08D-06			H10-GW-MW10-06			H10-GW-MW17-06		
SAMPLE DATE:	07/11/01			07/11/01			07/11/01			07/11/01		
LABORATORY ID:	F10291-1			F10291-2			F10291-3			F10291-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
VOLATILES	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
1,1,1-TRICHLOROETHANE	628			2	U		2	U		2	U	
1,1,2-TRICHLOROETHANE	40	U		2	U		2	U		2	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	40	U		2	U		8.3			30.7		
1,1-DICHLOROETHANE	72.6			2	U		2	U		22.2		
1,1-DICHLOROETHENE	88.4			0.77	J	P	2	U		42.8		
1,2-DICHLOROETHANE	40	U		2	U		2	U		2	U	
1-BUTANOL	5000	U		5000	U		5000	U		5000	U	
2-NITROPROPANE	200	U		10	U		10	U		10	U	
ACETONE	1000	U		50	U		50	U		50	U	
BENZENE	20	U		1	U		1	U		1	U	
CYCLOHEXANONE	200	U		10	U		10	U		10	U	
ETHYLBENZENE	40	U		2	U		2	U		2	U	
ISOBUTANOL	5000	U		5000	U		5000	U		5000	U	
METHANOL	5000	U		5000	U		5000	U		5000	U	
TETRACHLOROETHENE	14.5	J	P	2	U		2	U		12.5		
TOLUENE	40	U		2	U		2	U		2	U	
TOTAL 1,2-DICHLOROETHENE	320			4	U		4	U		12.5		
TRICHLOROETHENE	692			2	U		0.58	J	P	38.2		
VINYL CHLORIDE	20	U		1	U		1	U		1.1		

SAMPLE NUMBER:	H10-GW-MW22-06			H10-GW-TB01-06								
SAMPLE DATE:	07/11/01			07/11/01			/ /			/ /		
LABORATORY ID:	F10291-5			F10291-6								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	0.0 %			0.0 %			100.0 %			100.0 %		
UNITS:	UG/L			UG/L								
FIELD DUPLICATE OF:												
VOLATILES	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
1,1,1-TRICHLOROETHANE	40	U		2	U							
1,1,2-TRICHLOROETHANE	40	U		2	U							
1,1,2-TRICHLOROTRIFLUOROETHANE	1030			2	U							
1,1-DICHLOROETHANE	501			2	U							
1,1-DICHLOROETHENE	889			2	U							
1,2-DICHLOROETHANE	40	U		2	U							
1-BUTANOL	5000	U										
2-NITROPROPANE	200	U		10	U							
ACETONE	1000	U		50	U							
BENZENE	20	U		1	U							
CYCLOHEXANONE	200	U		10	U							
ETHYLBENZENE	40	U		2	U							
ISOBUTANOL	5000	U										
METHANOL	5000	U										
TETRACHLOROETHENE	40	U		2	U							
TOLUENE	40	U		2	U							
TOTAL 1,2-DICHLOROETHENE	244			4	U							
TRICHLOROETHENE	1160			2	U							
VINYL CHLORIDE	20	U		1	U							

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10291

SAMPLE NUMBER:	H10-GW-MW08-06			H10-GW-MW08D-06			H10-GW-MW10-06			H10-GW-MW17-06		
SAMPLE DATE:	07/11/01			07/11/01			07/11/01			07/11/01		
LABORATORY ID:	F10291-1			F10291-2			F10291-3			F10291-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
SEMIVOLATILES	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
2,4-DINITROTOLUENE	0.22	U		0.22	U		0.2	U		0.22	U	
3&4-METHYLPHENOL	4.4	U		4.4	U		4	U		4.4	U	
PENTACHLOROPHENOL	1.1	U		1.1	U		1	U		1.1	U	

[illegible]-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10291

SAMPLE NUMBER:	H10-GW-MW22-06											
SAMPLE DATE:	07/11/01			/ /			/ /			/ /		
LABORATORY ID:	F10291-5											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:												
SEMIVOLATILES	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
2,4-DINITROTOLUENE	0.2	U										
3&4-METHYLPHENOL	4	U										
PENTACHLOROPHENOL	1	U										

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10291

SAMPLE NUMBER:	H10-GW-MW08-06			H10-GW-MW08D-06			H10-GW-MW10-06			H10-GW-MW17-06		
SAMPLE DATE:	07/11/01			07/11/01			07/11/01			07/11/01		
LABORATORY ID:	F10291-1			F10291-2			F10291-3			F10291-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
DISSOLVED GASES												
ETHANE	1	U		2	U		1	U		1	U	
ETHENE	1	U		2	U		1	U		1	U	
METHANE	0.97			1580			390			170		

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10291

SAMPLE NUMBER:	H10-GW-MW22-06										
SAMPLE DATE:	07/11/01			/ /			/ /			/ /		
LABORATORY ID:	F10291-5											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
DISSOLVED GASES												
ETHANE	1	U										
ETHENE	0.98	J	P									
METHANE	177											

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10291

SAMPLE NUMBER:	H10-GW-MW08-06			H10-GW-MW08D-06			H10-GW-MW10-06			H10-GW-MW17-06		
SAMPLE DATE:	07/11/01			07/11/01			07/11/01			07/11/01		
LABORATORY ID:	F10291-1			F10291-2			F10291-3			F10291-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	2	U		2	U		2	U		2	U	
2-METHYLNAPHTHALENE	2	U		2	U		2	U		2	U	
ACENAPHTHENE	4	U		4	U		4	U		4	U	
ACENAPHTHYLENE	4	U		4	U		4	U		4	U	
ANTHRACENE	2	U		2	U		2	U		2	U	
BENZO(A)ANTHRACENE	0.2	U		0.2	U		0.2	U		0.2	U	
BENZO(A)PYRENE	0.2	U		0.2	U		0.2	U		0.2	U	
BENZO(B)FLUORANTHENE	0.2	U		0.2	U		0.2	U		0.2	U	
BENZO(G,H,I)PERYLENE	0.2	U		0.2	U		0.2	U		0.2	U	
BENZO(K)FLUORANTHENE	0.2	U		0.2	U		0.2	U		0.2	U	
CHRYSENE	2	U		2	U		2	U		2	U	
DIBENZO(A,H)ANTHRACENE	0.2	U		0.2	U		0.2	U		0.2	U	
FLUORANTHENE	2	U		2	U		2	U		2	U	
FLUORENE	2	U		2	U		2	U		2	U	
INDENO(1,2,3-CD)PYRENE	0.2	U		0.2	U		0.2	U		0.2	U	
NAPHTHALENE	2	U		2	U		2	U		2	U	
PHENANTHRENE	2	U		2	U		2	U		2	U	
PYRENE	2	U		2	U		2	U		2	U	

NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10291

SAMPLE NUMBER:	H10-GW-MW22-06											
SAMPLE DATE:	07/11/01			/ /			/ /			/ /		
LABORATORY ID:	F10291-5											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:												
POLYNUCLEAR AROMATIC HYDROCARBONS	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
1-METHYLNAPHTHALENE	2	U										
2-METHYLNAPHTHALENE	2	U										
ACENAPHTHENE	4	U										
ACENAPHTHYLENE	4	U										
ANTHRACENE	2	U										
BENZO(A)ANTHRACENE	0.2	U										
BENZO(A)PYRENE	0.2	U										
BENZO(B)FLUORANTHENE	0.2	U										
BENZO(G,H,I)PERYLENE	0.2	U										
BENZO(K)FLUORANTHENE	0.2	U										
CHRYSENE	2	U										
DIBENZO(A,H)ANTHRACENE	0.2	U										
FLUORANTHENE	2	U										
FLUORENE	2	U										
INDENO(1,2,3-CD)PYRENE	0.2	U										
NAPHTHALENE	9.7											
PHENANTHRENE	2	U										
PYRENE	2	U										

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

Report of Analysis

Client Sample ID:	HJ0-GW-MW08-06		
Lab Sample ID:	F10291-1	Date Sampled:	07/11/01
Matrix:	AQ - Ground Water	Date Received:	07/12/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0004682.D	20	07/18/01	JG	n/a	n/a	VC222
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	1000	ug/l	
71-43-2	Benzene	ND	20	ug/l	
108-94-1	Cyclohexanone	ND	200	ug/l	
75-34-3	1,1-Dichloroethane	72.6	40	ug/l	
75-35-4	1,1-Dichloroethylene	88.4	40	ug/l	
107-06-2	1,2-Dichloroethane	ND	40	ug/l	
540-59-0	1,2-Dichloroethene (total)	320	80	ug/l	
100-41-4	Ethylbenzene	ND	40	ug/l	
76-13-1	Freon 113	ND	40	ug/l	
79-46-9	2-Nitropropane	ND	200	ug/l	
71-55-6	1,1,1-Trichloroethane	628	40	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	40	ug/l	
127-18-4	Tetrachloroethylene	14.5	40	ug/l	J
108-88-3	Toluene	ND	40	ug/l	
79-01-6	Trichloroethylene	692	40	ug/l	
75-01-4	Vinyl chloride	ND	20	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		80-120%
17060-07-0	1,2-Dichloroethane-D4	104%		80-120%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	87%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW08D-06		
Lab Sample ID:	F10291-2	Date Sampled:	07/11/01
Matrix:	AQ - Ground Water	Date Received:	07/12/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0004672.D	1	07/18/01	JG	n/a	n/a	VC222
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	0.77	2.0	ug/l	J
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		80-120%
17060-07-0	1,2-Dichloroethane-D4	106%		80-120%
2037-26-5	Toluene-D8	100%		80-120%
460-00-4	4-Bromofluorobenzene	86%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW10-06		
Lab Sample ID:	F10291-3	**Date Sampled:**	07/11/01
Matrix:	AQ - Ground Water	**Date Received:**	07/12/01
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0004673.D	1	07/18/01	JG	n/a	n/a	VC222
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	8.3	2.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	0.58	2.0	ug/l	J
75-01-4	Vinyl chloride	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		80-120%
17060-07-0	1,2-Dichloroethane-D4	106%		80-120%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	84%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW17-06		
Lab Sample ID:	F10291-4	Date Sampled:	07/11/01
Matrix:	AQ - Ground Water	Date Received:	07/12/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0004674.D	1	07/18/01	JG	n/a	n/a	VC222
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-94-1	**Cyclohexanone**	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	22.2	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	42.8	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	12.5	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	**Freon 113**	30.7	2.0	ug/l	
79-46-9	**2-Nitropropane**	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	12.5	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	38.2	2.0	ug/l	
75-01-4	Vinyl chloride	1.1	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		80-120%
17060-07-0	1,2-Dichloroethane-D4	104%		80-120%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	87%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW22-06		
Lab Sample ID:	F10291-5	**Date Sampled:**	07/11/01
Matrix:	AQ - Ground Water	**Date Received:**	07/12/01
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0004696.D	20	07/19/01	JG	n/a	n/a	VC223
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	1000	ug/l	
71-43-2	Benzene	ND	20	ug/l	
108-94-1	**Cyclohexanone**	ND	200	ug/l	
75-34-3	1,1-Dichloroethane	501	40	ug/l	
75-35-4	1,1-Dichloroethylene	889	40	ug/l	
107-06-2	1,2-Dichloroethane	ND	40	ug/l	
540-59-0	1,2-Dichloroethene (total)	244	80	ug/l	
100-41-4	Ethylbenzene	ND	40	ug/l	
76-13-1	**Freon 113**	1030	40	ug/l	
79-46-9	**2-Nitropropane**	ND	200	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	40	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	40	ug/l	
127-18-4	Tetrachloroethylene	ND	40	ug/l	
108-88-3	Toluene	ND	40	ug/l	
79-01-6	Trichloroethylene	1160	40	ug/l	
75-01-4	Vinyl chloride	ND	20	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		80-120%
17060-07-0	1,2-Dichloroethane-D4	102%		80-120%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	94%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-TB01-06		
Lab Sample ID:	F10291-6	**Date Sampled:**	07/11/01
Matrix:	AQ - Trip Blank Water	**Date Received:**	07/12/01
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0004671.D	1	07/18/01	JG	n/a	n/a	VC222
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		80-120%
17060-07-0	1,2-Dichloroethane-D4	106%		80-120%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	87%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW08-06		
Lab Sample ID:	F10291-1	**Date Sampled:**	07/11/01
Matrix:	AQ - Ground Water	**Date Received:**	07/12/01
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W005989.D	1	07/24/01	ME	07/16/01	OP3507	SW326
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
	3&4-Methylphenol	ND	4.4	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	45%		20-125%
4165-62-2	Phenol-d5	28%		10-125%
118-79-6	2,4,6-Tribromophenol	85%		35-140%
4165-60-0	Nitrobenzene-d5	66%		46-125%
321-60-8	2-Fluorobiphenyl	67%		46-125%
1718-51-0	Terphenyl-d14	77%		49-126%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW08D-06			
Lab Sample ID:	F10291-2		**Date Sampled:**	07/11/01
Matrix:	AQ - Ground Water		**Date Received:**	07/12/01
Method:	SW846 8270C SW846 3510C		**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W005990.D	1	07/24/01	ME	07/16/01	OP3507	SW326
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
	3&4-Methylphenol	ND	4.4	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	45%		20-125%
4165-62-2	Phenol-d5	29%		10-125%
118-79-6	2,4,6-Tribromophenol	85%		35-140%
4165-60-0	Nitrobenzene-d5	65%		46-125%
321-60-8	2-Fluorobiphenyl	67%		46-125%
1718-51-0	Terphenyl-d14	81%		49-126%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW10-06		
Lab Sample ID:	F10291-3	Date Sampled:	07/11/01
Matrix:	AQ - Ground Water	Date Received:	07/12/01
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W005991.D	1	07/24/01	ME	07/16/01	OP3507	SW326
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
	3&4-Methylphenol	ND	4.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	49%		20-125%
4165-62-2	Phenol-d5	31%		10-125%
118-79-6	2,4,6-Tribromophenol	93%		35-140%
4165-60-0	Nitrobenzene-d5	77%		46-125%
321-60-8	2-Fluorobiphenyl	80%		46-125%
1718-51-0	Terphenyl-d14	90%		49-126%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW17-06		
Lab Sample ID:	F10291-4	Date Sampled:	07/11/01
Matrix:	AQ - Ground Water	Date Received:	07/12/01
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W005992.D	1	07/24/01	ME	07/16/01	OP3507	SW326
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
	3&4-Methylphenol	ND	4.4	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	53%		20-125%
4165-62-2	Phenol-d5	34%		10-125%
118-79-6	2,4,6-Tribromophenol	86%		35-140%
4165-60-0	Nitrobenzene-d5	78%		46-125%
321-60-8	2-Fluorobiphenyl	76%		46-125%
1718-51-0	Terphenyl-d14	80%		49-126%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW22-06		
Lab Sample ID:	F10291-5	**Date Sampled:**	07/11/01
Matrix:	AQ - Ground Water	**Date Received:**	07/12/01
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W005993.D	1	07/24/01	ME	07/16/01	OP3507	SW326
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
	3&4-Methylphenol	ND	4.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	47%		20-125%
4165-62-2	Phenol-d5	29%		10-125%
118-79-6	2,4,6-Tribromophenol	89%		35-140%
4165-60-0	Nitrobenzene-d5	74%		46-125%
321-60-8	2-Fluorobiphenyl	74%		46-125%
1718-51-0	Terphenyl-d14	82%		49-126%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW08-06		
Lab Sample ID:	F10291-1	**Date Sampled:**	07/11/01
Matrix:	AQ - Ground Water	**Date Received:**	07/12/01
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L008334.D	1	07/23/01	ME	07/16/01	OP3497	SL478
Run #2							

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
87-86-5	Pentachlorophenol	ND	1.1	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.22	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW08D-06		
Lab Sample ID:	F10291-2	Date Sampled:	07/11/01
Matrix:	AQ - Ground Water	Date Received:	07/12/01
Method:	SW846 8270C BY SIM SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L008335.D	1	07/23/01	ME	07/16/01	OP3497	SL478
Run #2							

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
87-86-5	Pentachlorophenol	ND	1.1	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.22	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW10-06	**Date Sampled:**	07/11/01
Lab Sample ID:	F10291-3	**Date Received:**	07/12/01
Matrix:	AQ - Ground Water	**Percent Solids:**	n/a
Method:	SW846 8270C BY SIM SW846 3510C		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L008336.D	1	07/23/01	ME	07/16/01	OP3497	SL478
Run #2							

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
87-86-5	Pentachlorophenol	ND	1.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.20	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW17-06		
Lab Sample ID:	F10291-4	**Date Sampled:**	07/11/01
Matrix:	AQ - Ground Water	**Date Received:**	07/12/01
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L008337.D	1	07/23/01	ME	07/16/01	OP3497	SL478
Run #2							

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
87-86-5	Pentachlorophenol	ND	1.1	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.22	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW22-06		
Lab Sample ID:	F10291-5	**Date Sampled:**	07/11/01
Matrix:	AQ - Ground Water	**Date Received:**	07/12/01
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L008338.D	1	07/23/01	ME	07/16/01	OP3497	SL478
Run #2							

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
87-86-5	Pentachlorophenol	ND	1.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.20	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW08-06		
Lab Sample ID:	F10291-1	Date Sampled:	07/11/01
Matrix:	AQ - Ground Water	Date Received:	07/12/01
Method:	DAI	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH5761.D	1	07/25/01	AMA	n/a	n/a	M:GGH1458
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	5000	ug/l	
71-36-3	n-Butyl Alcohol	ND	5000	ug/l	
67-56-1	Methanol	ND	5000	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW08D-06	Date Sampled:	07/11/01
Lab Sample ID:	F10291-2	Date Received:	07/12/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	DAI		
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH5762.D	1	07/25/01	AMA	n/a	n/a	M:GGH1458
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	5000	ug/l	
71-36-3	n-Butyl Alcohol	ND	5000	ug/l	
67-56-1	Methanol	ND	5000	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW10-06		
Lab Sample ID:	F10291-3	**Date Sampled:**	07/11/01
Matrix:	AQ - Ground Water	**Date Received:**	07/12/01
Method:	DAI	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH5763.D	1	07/25/01	AMA	n/a	n/a	M:GGH1458
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	5000	ug/l	
71-36-3	n-Butyl Alcohol	ND	5000	ug/l	
67-56-1	Methanol	ND	5000	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW17-06		
Lab Sample ID:	F10291-4	**Date Sampled:**	07/11/01
Matrix:	AQ - Ground Water	**Date Received:**	07/12/01
Method:	DAI	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH5764.D	1	07/25/01	AMA	n/a	n/a	M:GGH1458
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	5000	ug/l	
71-36-3	n-Butyl Alcohol	ND	5000	ug/l	
67-56-1	Methanol	ND	5000	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW22-06		
Lab Sample ID:	F10291-5	Date Sampled:	07/11/01
Matrix:	AQ - Ground Water	Date Received:	07/12/01
Method:	DAI	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH5765.D	1	07/25/01	AMA	n/a	n/a	M:GGH1458
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	5000	ug/l	
71-36-3	n-Butyl Alcohol	ND	5000	ug/l	
67-56-1	Methanol	ND	5000	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW08-06		
Lab Sample ID:	F10291-1	**Date Sampled:**	07/11/01
Matrix:	AQ - Ground Water	**Date Received:**	07/12/01
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000589.D	1	07/13/01	RA	n/a	n/a	GXY30
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	0.97	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW08D-06		
Lab Sample ID:	F10291-2	Date Sampled:	07/11/01
Matrix:	AQ - Ground Water	Date Received:	07/12/01
Method:	RSKSOP-147/175	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000591.D	2	07/13/01	RA	n/a	n/a	GXY30
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	1580	1.0	ug/l	
74-84-0	Ethane	ND	2.0	ug/l	
74-85-1	Ethene	ND	2.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW10-06		
Lab Sample ID:	F10291-3	**Date Sampled:**	07/11/01
Matrix:	AQ - Ground Water	**Date Received:**	07/12/01
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000592.D	1	07/13/01	RA	n/a	n/a	GXY30
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	390	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW17-06		
Lab Sample ID:	F10291-4	**Date Sampled:**	07/11/01
Matrix:	AQ - Ground Water	**Date Received:**	07/12/01
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000594.D	1	07/13/01	RA	n/a	n/a	GXY30
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	170	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW22-06		
Lab Sample ID:	F10291-5	**Date Sampled:**	07/11/01
Matrix:	AQ - Ground Water	**Date Received:**	07/12/01
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000595.D	1	07/13/01	RA	n/a	n/a	GXY30
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	177	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	0.98	1.0	ug/l	J

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW08-06		
Lab Sample ID:	F10291-1	Date Sampled:	07/11/01
Matrix:	AQ - Ground Water	Date Received:	07/12/01
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE004329.D	1	07/17/01	MRE	07/16/01	OP3505	GEE198
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	81%		33-141%
92-94-4	p-Terphenyl	86%		31-122%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	H10-GW-MW08D-06		
Lab Sample ID:	F10291-2	Date Sampled:	07/11/01
Matrix:	AQ - Ground Water	Date Received:	07/12/01
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE004330.D	1	07/17/01	MRE	07/16/01	OP3505	GEE198
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	82%		33-141%
92-94-4	p-Terphenyl	83%		31-122%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW10-06			
Lab Sample ID:	F10291-3		Date Sampled:	07/11/01
Matrix:	AQ - Ground Water		Date Received:	07/12/01
Method:	EPA 8310 SW846 3510C		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE004331.D	1	07/17/01	MRE	07/16/01	OP3505	GEE198
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	79%		33-141%
92-94-4	p-Terphenyl	81%		31-122%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW17-06		
Lab Sample ID:	F10291-4	**Date Sampled:**	07/11/01
Matrix:	AQ - Ground Water	**Date Received:**	07/12/01
Method:	EPA 8310 SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE004332.D	1	07/17/01	MRE	07/16/01	OP3505	GEE198
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	81%		33-141%
92-94-4	p-Terphenyl	86%		31-122%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW22-06		
Lab Sample ID:	F10291-5	Date Sampled:	07/11/01
Matrix:	AQ - Ground Water	Date Received:	07/12/01
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	EE004333.D	1	07/17/01	MRE	07/16/01	OP3505	GEE198
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	9.7	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	81%		33-141%
92-94-4	p-Terphenyl	79%		31-122%

(a) All hits confirmed by spectral match using a diode array detector.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

APPENDIX C

SUPPORT DOCUMENTATION

Method Blank Summary

Job Number: F10291
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VC223-MB	C0004692.D	1	07/19/01	JG	n/a	n/a	VC223

The QC reported here applies to the following samples: **Method:** SW846 8260B

F10291-5

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	98%	80-120%
17060-07-0	1,2-Dichloroethane-D4	104%	80-120%
2037-26-5	Toluene-D8	102%	80-120%
460-00-4	4-Bromofluorobenzene	96%	80-120%

Response Factor Report MSVOA

Method : C:\MSDCHEM\2\METHODS\8260APP1.M (RTE Integrator)
Title : EPA 624 & SW8 5030B/8260B
Last Update : Thu Jul 19 14:26:48 2001
Response via : Initial Calibration

Calibration Files
1 =C0004625.D 2 =C0004626.D 3 =C0004627.D
4 =C0004628.D 5 =C0004629.D 6 =C0004630.D

		Compound	1	2	3	4	5	6	Avg	%RSD
1)	I	Fluorobenzene	------------	------------	------------	ISTD	------------	------------	------------	------------
2)		Dichlorodifluorom		0.215	0.209	0.205	0.204	0.190	0.205	4.46
3)	P	Chloromethane	0.360	0.421	0.425	0.411	0.393	0.368	0.396	6.96
4)	C	Vinyl Chloride	0.262	0.380	0.356	0.356	0.343	0.319	0.336	12.32
5)		Bromomethane	0.163	0.193	0.184	0.174	0.159	0.136	0.168	12.09
6)		Chloroethane	0.163	0.205	0.192	0.193	0.180	0.163	0.183	9.33
7)		Trichlorofluorome		0.224	0.249	0.235	0.244	0.240	0.239	3.99
8)		Acrolein	0.007	0.008	0.013	0.013	0.013	0.014	0.011	25.96
9)	C	1,1-Dichloroethen	0.400	0.499	0.497	0.513	0.498	0.472	0.480	8.59
10)		Freon 113	0.212	0.266	0.257	0.264	0.259	0.248	0.251	8.10
11)		Acetone		0.063	0.065	0.062	0.058	0.058	0.061	5.47
12)		Iodomethane	0.300	0.384	0.360	0.381	0.378	0.371	0.362	8.78
13)		Methyl Acetate	0.206	0.171	0.180	0.174	0.160	0.159	0.175	9.87
14)		Carbon Disulfide	0.852	1.030	0.990	1.001	0.966	0.908	0.958	6.88
15)		Methylene Chlorid		0.562	0.488	0.486	0.463	0.446	0.489	9.07
16)		Tert-Butyl Alcoho	0.021	0.017	0.021	0.020	0.020	0.021	0.020	7.04
17)		trans-1,2-Dichlor	0.415	0.501	0.493	0.485	0.482	0.467	0.474	6.50
18)		Acrylonitrile	0.076	0.072	0.084	0.081	0.076	0.077	0.078	5.30
19)		Methyl Tert Butyl	0.598	0.616	0.655	0.649	0.639	0.641	0.633	3.44
20)	P	1,1-Dichloroethan	0.492	0.560	0.561	0.545	0.532	0.510	0.533	5.22
21)		Vinyl acetate	0.493	0.546	0.642	0.653	0.614	0.600	0.591	10.32
22)		Di-isopropyl ethe	1.037	1.174	1.181	1.155	1.114	1.062	1.120	5.39
23)		ETBE	0.795	0.853	0.898	0.891	0.877	0.878	0.865	4.39
24)		2,2-Dichloropropa	0.157	0.203	0.202	0.199	0.196	0.189	0.191	9.01
25)		cis-1,2-Dichloroe	0.225	0.260	0.253	0.252	0.251	0.246	0.248	4.81
26)		2-Butanone	0.113	0.100	0.109	0.103	0.097	0.099	0.104	6.16
27)		Bromochloromethan	0.077	0.112	0.109	0.110	0.109	0.111	0.105	12.95
28)	C	Chloroform	0.398	0.450	0.440	0.433	0.436	0.427	0.431	4.11
29)		Tetrahydrofuran		0.069	0.071	0.070	0.065	0.067	0.069	3.29
30)		1,1,1-Trichloroet	0.231	0.310	0.300	0.298	0.303	0.301	0.291	10.17
31)		Cyclohexane	0.425	0.560	0.563	0.560	0.565	0.545	0.536	10.29
32)	S	Dibromofluorometh	0.222	0.218	0.221	0.219	0.220	0.221	0.220	0.67
33)		1,1-Dichloroprope	0.277	0.366	0.365	0.359	0.362	0.352	0.347	9.94
34)		Carbon Tetrachlor	0.195	0.260	0.257	0.261	0.265	0.267	0.251	11.05
35)	S	1,2-Dichloroethan	0.288	0.266	0.277	0.267	0.261	0.263	0.270	3.80
36)		Benzene	1.076	1.205	1.156	1.137	1.105	1.044	1.120	5.19
37)		TAME	0.649	0.688	0.724	0.724	0.705	0.695	0.698	3.98
38)		1,2-Dichloroethan	0.441	0.370	0.363	0.354	0.339	0.334	0.367	10.56
39)		Trichloroethene	0.237	0.272	0.271	0.263	0.265	0.261	0.261	4.88
40)		Methylcyclohexane	0.347	0.428	0.443	0.428	0.440	0.423	0.418	8.54
41)	C	1,2-Dichloropropa	0.279	0.339	0.331	0.327	0.319	0.307	0.317	6.83
42)		Dibromomethane	0.131	0.149	0.152	0.146	0.143	0.143	0.144	4.90
43)		1,4-Dioxane		0.002	0.002	0.002	0.002	0.002	0.002	8.55
44)		Bromodichlorometh	0.291	0.319	0.325	0.325	0.328	0.327	0.319	4.52
45)		2-Nitropropane	0.053	0.048	0.058	0.058	0.054	0.055	0.055	6.84
46)		2-Chloroethyl vin	0.144	0.154	0.166	0.165	0.153	0.147	0.155	5.83
		4-Methyl-2-pentan	0.233	0.218	0.241	0.235	0.219	0.222	0.228	4.20
							[illegible]	[illegible]	0.420	[illegible]

GC/MS QA-QC Check Report

Tune File : C:\MSDCHEM\2\DATA\071801\C0004666.D
Tune Time : 18 Jul 2001 10:47 am

Daily Calibration File : C:\MSDCHEM\2\DATA\071801\C0004667.D

File	Sample	Surrogate Recovery %				Internal Standard Responses		
						941024	673256	400874
No Quant Results for C:\MSDCHEM\2\DATA\071801\C0004666.D								
C0004667.D	CC220-40	100	104	98	86	941024	673256	400874
C0004668.D	BS	101	104	99	86	944283	666885	395196
C0004669.D	MB	99	106	99	89	936182	652788	364041
C0004670.D	F10309-4,2	99	103	99	87	904133	627173	358455
C0004671.D	F10291-6,5	100	106	99	87	874416	611862	348241
C0004672.D	F10291-2,5	99	106	100	86	853346	590648	337989
C0004673.D	F10291-3,5	100	106	99	85	829195	578713	333682
C0004674.D	F10291-4,5	99	104	99	87	863650	597023	331600
C0004675.D	F10291-5,5	100	105	98	84	825033	574391	332679
C0004676.D	F10291-4MS	100	104	100	83	850073	598456	365161
C0004677.D	F10291-4MS	99	104	99	83	863999	605272	369713
C0004678.D	F10296-2,5	100	104	99	86	873947	608884	348111
C0004679.D	F10296-3,5	100	105	98	86	847472	590239	338218
C0004680.D	F10296-4,5	100	106	99	85	826248	580555	335834
C0004681.D	F10296-5,5	100	105	99	85	824505	573114	330601
C0004682.D	F10291-1,2	99	105	99	87	853709	591273	328781
C0004683.D	F10296-1,2	98	105	100	86	829549	570144	322184
C0004684.D	F10291-5,2	99	106	98	84	813636	572673	330236
C0004685.D	MB	99	104	99	85	814461	568013	324161
C0004686.Dt	MB	98	104	100	85	817497	565393	319782
C0004687.Dt	F10294-20,	100	106	97	83	779671	550872	320116
C0004688.Dt	F10303-3,1	99	104	98	84	819324	572154	330976

t - fails 12hr time check * - fails criteria

Created: Thu Jul 19 08:38:08 2001 MSVOA5

Method Blank Summary

Job Number: F10291
Account: ALSE Accutest Labs Southeast
Project: TETRFLJX: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GC2823-MB	GH5757.D	1	07/25/01	NM	n/a	n/a	GGH1458

The QC reported here applies to the following samples: **Method:** DAI

F10291-1, F10291-2, F10291-3, F10291-4, F10291-5

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	5000	ug/l	
71-36-3	n-Butyl Alcohol	ND	5000	ug/l	
67-56-1	Methanol	ND	5000	ug/l	

Calibration Status Report gc13

Method : C:\HPCHEM\1\METHODS\ALC72501.M (Chemstation Integrator)
Title :
Last Update : Wed Jul 25 10:21:38 2001
Response via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	810.00	0.00	C:\HPCHEM\1\DATA\GH5750.D
2	2	405.00	0.00	C:\HPCHEM\1\DATA\GH5751.D
3	3	81.00	0.00	C:\HPCHEM\1\DATA\GH5752.D
4	4	40.50	0.00	C:\HPCHEM\1\DATA\GH5753.D
5	5	8.10	0.00	C:\HPCHEM\1\DATA\GH5754.D
6	6	4.05	0.00	C:\HPCHEM\1\DATA\GH5755.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Jul 25 12:11 2001	Jul 25 12:09 19101	25 Jul 2001 9:39 am
2	2	Jul 25 12:12 2001	Jul 25 12:12 19101	25 Jul 2001 9:57 am
3	3	Jul 25 12:13 2001	Jul 25 12:13 19101	25 Jul 2001 10:11 am
4	4	Jul 25 12:14 2001	Jul 25 12:14 19101	25 Jul 2001 10:24 am
5	5	Jul 25 12:16 2001	Jul 25 12:15 19101	25 Jul 2001 10:37 am
6	6	Jul 25 12:18 2001	Jul 25 12:18 19101	25 Jul 2001 10:51 am

ALC72501.M Wed Jul 25 12:19:53 2001 RPT1

zn 7/25/01

07/30/01

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\GH5771.D
Acq On : 25 Jul 2001 2:21 pm
Sample : mix BA 100 ppm
Misc :
IntFile : events.e

Vial: 96
Operator: nancym
Inst : gc13
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\ALC72501.M (Chemstation Integrator)
Title :
Last Update : Wed Jul 25 10:21:38 2001
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	methanol	13.224	12.816 E3	3.1	100	0.00
2	IBA	27.508	27.881 E3	-1.4	102	0.00
3	1-Butanol	27.253	27.351 E3	-0.4	101	0.00

7/30/01

2ɒ 7/25/01

Method Blank Summary

Job Number: F10291
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GXY30-MB	XY000588.D	1	07/13/01	RA	n/a	n/a	GXY30

The QC reported here applies to the following samples: **Method: RSKSOP-147/175**

F10291-1, F10291-2, F10291-3, F10291-4, F10291-5

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	ND	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

Response Factor Report VOA1

Method : C:\HPCHEM\2\METHODS\DGMEE.M (Chemstation Integrator)
Title : Dissolved Gases in Water
Last Update : Tue Jul 03 10:52:34 2001
Response via : Initial Calibration

Calibration Files
1 =XY000550.D 2 =XY000551.D 3 =XY000552.D
4 =XY000553.D 5 =XY000554.D 6 =XY000555.D 7 =XY000556.D

	Compound	1	2	3	4	5	6	7	Avg		%RSD
1)	Methane	1.418	1.142	1.146	1.182	1.113	1.055	1.162	1.174	E4	9.80
2)	Ethylene	1.974	2.060	2.178	2.266	2.160	2.042	2.221	2.129	E4	4.97
3)	Ethane	2.645	2.285	2.212	2.281	2.153	2.058	2.244	2.269	E4	8.12

Average % RSD = 7.6

(#) = Out of Range

Evaluate Continuing Calibration Report

```
Data File : C:\HPCHEM\2\DATA\071301\XY0005[illegible].D      Vial: 100
Acq On    : 13 Jul 2001   9:51 am                          Operator: RachidA
Sample    : CC24-100ppmv                                   Inst     : VOA5
Misc      : gc1381,gxy30,,,,,                              Multiplr: 1.00
IntFile   : EVENTS.E

Method        : C:\HPCHEM\2\METHODS\DGMEE.M (Chemstation Integrator)
Title         : Dissolved Gases in Water
Last Update   : Thu Jul 12 13:33:34 2001
Response via  : Multiple Level Calibration

Min. RRF      :   0.000  Min. Rel. Area :  50%  Max. R.T. Dev  0.50min
Max. RRF Dev  :  30%     Max. Rel. Area : 150%
```

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	Methane	100.000	95.143	4.9	104	-0.05
2	Ethylene	100.000	94.257	5.7	104	-0.02
3	Ethane	100.000	93.001	7.0	100	-0.02

Average % D = 5.9

(#) = Out of Range SPCC's out = 0 CCC's out = 0

XY000570.D DGMEE.M Sat Jul 14 11:52:43 2001 PIDHALL2

Method Blank Summary

Job Number: F10291
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP3507-MB	W005988.D	1	07/24/01	ME	07/16/01	OP3507	SW326

The QC reported here applies to the following samples: **Method:** SW846 8270C

F10291-1, F10291-2, F10291-3, F10291-4, F10291-5

CAS No.	Compound	Result	RL	Units	Q
	3&4-Methylphenol	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	57%	20-125%
4165-62-2	Phenol-d5	34%	10-125%
118-79-6	2,4,6-Tribromophenol	93%	35-140%
4165-60-0	Nitrobenzene-d5	89%	46-125%
321-60-8	2-Fluorobiphenyl	77%	46-125%
1718-51-0	Terphenyl-d14	83%	49-126%

GC/MS QA-QC Check Report

Tune File : C:\HPCHEM\1\DATA\071601\W005886.D
Tune Time : 16 Jul 2001   8:43 am

~~Daily Calibration File : C:\HPCHEM\1\DATA\071601\W005887.D~~ 7/17/01

						Internal Standard Responses		
						245291	843102	427735
						540306	245353	130019
File	Sample	Surrogate Recovery %				Internal Standard Responses		
W005894.D	op3464-mb	93 89	94 82	93	90	196057 474626	659989 287150	337768 175365
W005895.D	f10253-1,2	89 99	90 88	84	104	257019 431286	838192 191101	382960 179383
W005896.D	f10260-1,1	52 67	63 68	64	80	161630 342562	529575 186092	273459 173247
W005897.D	f10260-2,2	64 74	67 66	74	83	260645 405349	811232 216004	375960 224589
W005898.D	f10253-3	72 82	71 64	78	84	264239 423060	819317 220839	380321 227780
W005899.D	op3479-bs	87 88	88 97	94	97	323166 573021	1105692 212376	537454 225685
W005900.D	op3479-mb	76 71	75 99	79	83	295702 485385	955215 185478	450840 197426
W005901.D	f10276-2	78 73	77 93	83	87	324910 515373	1033759 193275	482057 202536
W005902.D	op3479-ms	68 79	71 89	75	85	341145 575716	1162403 199555	550103 209896
W005903.D	op3479-msd	79 82	78 94	86	88	317130 566836	1068404 205673	521533 206120
W005904.D	f10281-1	74 79	77 76	82	92	308046 440764	980279 187905	435052 206466
W005905.D	f10281-2	78 84	81 84	84	87	333547 516542	1110334 190567	522884 207854
W005906.D	f10281-3	69 78	71 76	74	84	307117 462230	984994 210847	443069 220514
W005907.D	f10281-4	75 82	74 76	77	82	237783 418569	771161 202122	368825 207666
W005908.D	solvent bl	89 87	87 86	93	97	297290 434901	956929 184918	434312 207101

t - fails 12hr time check   * - fails criteria

GC/MS QA-QC Check Report

Tune File : C:\HPCHEM\1\DATA\072401\W005983.D
Tune Time : 24 Jul 2001 10:11 am

Daily Calibration File : C:\HPCHEM\1\DATA\072401\W005984.D

(M) 7/25/01

						203536	683720	330838
						418879	208382	130495
File	Sample	Surrogate Recovery %				Internal Standard Responses		
W005985.D	op3528-m	96	97	95	97	189880	636121	318330
		93	85			436139	263261	160410
W005986.D	f10315-1	81	83	76	85	195038	679685	340378
		84	80			463989	259768	153474
W005987.D	op3507-b	60	41	83	79	168851	593937	289211
		94	87			368031	189796	119174
W005988.D	op3507-m	57	35	89	77	178509	596224	298421
		93	83			393844	235725	154525
W005989.D	f10291-1	45	28	66	67	185393	612711	298862
		85	77			394334	227484	144156
W005990.D	f10291-2	45	29	65	67	204165	676324	333037
		85	81			445191	246413	157128
W005991.D	f10291-3	49	31	77	81	203627	684134	345369
		93	90			475210	248722	144205
W005992.D	f10291-4	53	34	78	76	223581	752500	382144
		86	80			513278	288004	164034
W005993.D	f10291-5	47	29	74	74	204248	675642	336063
		89	82			446533	258850	151456
W005994.D	f10296-1	52	33	78	77	220781	728768	360949
		85	79			480886	264927	149128
W005995.D	f10296-2	46	29	67	68	221181	748784	368727
		78	76			494676	265583	151172
W005996.D	f10296-3	48	30	72	73	208945	702942	350598
		83	80			473454	263448	149979
W005997.D	f10296-4	47	30	71	71	225577	754683	377924
		82	78			494168	263527	155954
W005998.D	op3507-m	74	56	88	92	200160	684195	331619
		98	88			413424	213636	123111
W005999.D	op3507-m	73	55	83	84	209516	725251	350294
		89	81			440358	218206	125066
W006000.D	f10296-5	48	34	83	81	227759	768804	391183
		[illegible]	[illegible]			521364	296561	[illegible]

W006001.D	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	626987	299881
		85	[illegible]			374633	192512	119287
W006002.D	op3536-m	58	31	64	64	184999	620576	310459
		89	87			415910	234432	140262
W006003.D	f10365-1	43	26	67	68	194162	652765	325395
		85	86			432361	234264	138827
W006004.D	f10365-2	48	30	72	72	207402	700311	350046
		84	80			481707	269482	158319
W006005.D	op3536-m	73	56	84	86	224693	798415	406238
		93	89			534585	264596	153621
W006006.D	op3536-m	74	56	87	88	206022	721099	354597
		96	89			437963	212609	127443
W006007.D	f10365-3	47	30	71	73	205166	696286	339246
		88	86			441389	232860	137744
W006008.D	tf10365-4	40	25	60	61	200590	682175	340769
		77	76			459869	254677	147449
W006009.D	tf10365-5	46	30	71	74	192788	636577	316126
		84	84			422167	213628	130100
W006010.D	tf10357-1	44	39	83	94	192699	649295	303402
		99	93			401842	217819	133538

t - fails 12hr time check   * - fails criteria

Created: Wed Jul 25 11:07:19 2001 MSBNA01

Method Blank Summary

Job Number: F10291
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP3505-MB	EE004328.D	1	07/17/01	MRE	07/16/01	OP3505	GEE198

The QC reported here applies to the following samples:

Method: EPA 8310

F10291-1, F10291-2, F10291-3, F10291-4, F10291-5

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	79%	33-141%
92-94-4	p-Terphenyl	85%	31-122%

Signal #1 : E:\HPCHEM\1\DATA\0717PAH\EE004325.D\DAD1B.CH Vial: 1
Signal #2 : E:\HPCHEM\1\DATA\0717PAH\EE004325.D\DAD1A.CH
Acq On : 17-Jul-2001, 11:19:19
Operator: MIKEE
Inst : G1315A
Multiplr: 1.00
Sample : ACN
Misc : op3505,gee198,1000,,,1,,water
IntFile Signal #1: EVENTS.E IntFile Signal #2: events2.e
Quant Time: Jul 17 11:45 2001 Quant Results File: 8310_32.RES

Quant Method : C:\HPCHEM\2\METHODS\8310_32.M (Chemstation Integrator)
Title : PAH's BY EPA 8310
Last Update : Fri Jul 13 08:10:26 2001
Response via : Initial Calibration
DataAcq Meth : 8310_32.M

Volume Inj. : 10ul
Signal #1 Phase : Envirosep PP
Signal #1 Info : DAD 270nm
Signal #2 Phase: Envirosep PP
Signal #2 Info : DAD 254nm

	Compound	RT#1	RT#2	Resp#1	Resp#2	ppm	ppm
	System Monitoring Compounds						
8) S	O-Terphenyl	0.00	0.00	0	0	N.D.	N.D.
	Spiked Amount	20.000 Range	33 - 141	Recovery	=	0.00%#	0.00%#
12) S	P-Terphenyl	0.00	0.00	0	0	N.D.	N.D.
	Spiked Amount	20.000 Range	31 - 122	Recovery	=	0.00%#	0.00%#
	Target Compounds						
1)	Naphthalene	0.00	0.00	0	0	N.D.	N.D.
2)	Acenaphthylene	0.00	0.00	0	0	N.D.	N.D.
3)	1-Methyl Naphtha	0.00	0.00	0	0	N.D.	N.D.
4)	2-Methyl Naphtha	0.00	0.00	0	0	N.D.	N.D.
5)	Acenaphthene	0.00	0.00	0	0	N.D.	N.D.
6)	Fluorene	0.00	0.00	0	0	N.D.	N.D.
7)	Phenanthrene	0.00	0.00	0	0	N.D.	N.D.
9)	Anthracene	0.00	0.00	0	0	N.D.	N.D.
10)	Fluoranthene	0.00	0.00	0	0	N.D.	N.D.
~~11)~~	~~Pyrene~~	~~0.00~~	~~0.00~~	~~0~~	~~0~~	~~N.D.~~	~~N.D.~~
13)	Benzo(a)Anthrace	0.00	0.00	0	0	N.D.	N.D.
14)	Chrysene	0.00	0.00	0	0	N.D.	N.D.
15)	Benzo(b)Fluorant	0.00	0.00	0	0	N.D.	N.D.
16)	Benzo(k)Fluorant	0.00	0.00	0	0	N.D.	N.D.
17)	Benzo(a) Pyrene	0.00	0.00	0	0	N.D.	N.D.
18)	Dibenzo(a,h)anth	0.00	0.00	0	0	N.D.	N.D.
19)	Benzo(g,h,i) Per	0.00	0.00	0	0	N.D.	N.D.
20)	Indeno(1,2,3-cd)	0.00	0.00	0	0	N.D.	N.D.

MKG 7/18/01

(#)=Amounts differ by > 40% (m)=manual int

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER H10-0711 | PAGE ___ OF ___

PROJECT NO: N3995 | SITE NAME: NASJAX Hangar1000 | PROJECT MANAGER AND PHONE NUMBER: Mark Peterson 904-281-0400 | LABORATORY NAME AND CONTACT: Accutest L. Williams

SAMPLERS (SIGNATURE): Alan L Pate

FIELD OPERATIONS LEADER AND PHONE NUMBER: Alan Pate 904-281-0400

ADDRESS: 4405 Vineland Rd #C-15

CARRIER/WAYBILL NUMBER: FEDEX

CITY, STATE: Orlando, FL 32811

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

						VOC's (8260B)	Methane Ethane Ethene (RSK 147/175)	Alcohols (8015B)	SVOCs (8270C) PAHs (8310)	Metals: Cd, Cr (6010B)	Sulfide (376.1)	Anions: SO4, Cl, NO2+NO3 (300.0)	
					CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	G	G	G	P	P	P	
					PRESERVATIVE USED	HCl	HCl	none	none	HNO3	NaOH	none	
2001 DATE	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS								COMMENTS
7/11	12:10	H10-GW-MW08-06	GW	G		3							Cool to 4°C
7/11	10:08	H10-GW-MW08D-06	GW			3							
7/11	12:15	H10-GW-MW10-06	GW			3							
7/11	14:45	H10-GW-MW17-06	GW			3	3	3	4	1	1	1	See attached QAPP table
7/11	13:45	H10-GW-MW22-06	GW			3							for analytical
		~~TRIP BLANK 01~~	~~GW~~										requirements
7/11		H10-GW-TB01-06				2							

1. RELINQUISHED BY: Alan L Pate	DATE 7/11/01	TIME 1500	1. RECEIVED BY: [signature]	DATE 7-12-01	TIME 10:00
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS: N3995 JF0050115 2.4°, 3.4°, 3.6°

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/99
FORM NO. TtNUS-001

TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER H10-0711A

PAGE ___ OF ___

PROJECT NO: N3995	SITE NAME: NASJAX Hangar 1000
PROJECT MANAGER AND PHONE NUMBER	Mark Peterson 904 281 0400
FIELD OPERATIONS LEADER AND PHONE NUMBER	Alan Pate 904 281 0400
CARRIER/WAYBILL NUMBER	FEDEX
LABORATORY NAME AND CONTACT	Accutest L. Williams
ADDRESS	4405 Vineland Rd #C-15
CITY, STATE	Orlando FL 32811

SAMPLERS (SIGNATURE) Alan L Pate, Rob M[illegible]

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

					CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	G	G	G	P	P	P	
					PRESERVATIVE USED	HCl	HCl	none	none	HNO3	NaOH	none	
DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS / TYPE OF ANALYSIS	VOCs (8260B)	Methane Ethane Ethene (RSK147/175)	Alcohols (8015B)	SVOCs (8270C) & PAH's (8310)	Metals: Cd, Cr (6010B)	Sulfide (376.1)	Anions: SO4, Cl-, NO2, NO3 (300.0)	COMMENTS
7/11	1008	H10-GW-MW08D-06	GW	G		3	3	4	1	1	1		Cool to 4°C
7/11	1215	H10-GW10-06	GW	G		3	3	4	1	1	1		See attached QAPP Table for analytical requirements.

1. RELINQUISHED BY Alan L Pate	DATE 7/11/01	TIME 1700	1. RECEIVED BY [illegible signature]	DATE 7-12-01	TIME 10:00
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS N3995 JF0050115

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/99
FORM NO. TINUS-001

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER H10-0711B | PAGE ___ OF ___

PROJECT NO: 3995 | SITE NAME: NASJAX HANGAR 1000

SAMPLERS (SIGNATURE): Alan L Pate

PROJECT MANAGER AND PHONE NUMBER: Mark Peterson 904 281 0400

FIELD OPERATIONS LEADER AND PHONE NUMBER: Alan Pate 904 281 0400

CARRIER/WAYBILL NUMBER: FEDEX

LABORATORY NAME AND CONTACT: Accutest L. Williams

ADDRESS: 4405 Vineland Rd #C-15

CITY, STATE: Orlando FL 32811

STANDARD TAT ☒
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

						VOCs (8260B)	Methane Ethane Ethene (RSK 147/175)	Alcohols (8015B)	SVOCs (8270C) & PAHs (8310)	Metals (6010B)	Sulfide (376.1)	Anions: SO4, Cl-, NO2, NO3 (300.0)	
CONTAINER TYPE PLASTIC (P) or GLASS (G)						G	G	G	G	P	P	P	
PRESERVATIVE USED						HCl	HCl	none	none	HNO3	NaOH	none	
YEAR 2001 TIME		SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS							COMMENTS
7/11	1210	H10-GW-MW108-06	GW	G	13		3	3	4	1	1	1	Cool to 4°C
7/11	1345	H10-GW-MW122-06	GW	G	13		3	3	4	1	1	1	See attached QAPP table for analytical requirements

1. RELINQUISHED BY Alan L Pate	DATE 7/11/01	TIME 1500	1. RECEIVED BY [illegible]	DATE 7-12-01	TIME [illegible]
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS N3995JF0050115

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3/99
FORM NO. TINUS-001

Tetra Tech NUS

INTERNAL CORRESPONDENCE

TO:	**Mr. Mark Peterson**	**DATE:**	**September 20, 2001**
FROM:	**Elena Rodriguez**	**COPIES:**	**DV FILE**

SUBJECT: **DATA VALIDATION - INORGANICS**
CTO 167, NASJAX
SDG F10469

SAMPLES: 4/Aqueous/

H10-GW-MW03-06
H10-GW-MW05-06
H10-GW-MW06-06
H10-GW-MW07-06

OVERVIEW

The sample set for CTO 167, NASJAX, SDG F10469 consists of four aqueous environmental samples. All samples were analyzed for cadmium and chromium and for natural attenuation parameters: chloride, nitrate, nitrite, sulfate, and sulfide.

The samples were collected by TetraTech NUS on July 31, 2001 and analyzed by Accutest Laboratories. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria using the following analytical and reporting protocols: SW-846 Methods 6010B, EPA 300, 325.3, and 376.1. The data contained in this SDG were validated with regard to the following parameters:

- * Data completeness
- * Holding times
- * Initial/continuing calibrations
- Laboratory method blank results
- * Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A.

Metals

The following contaminants were detected in the laboratory method blanks:

Analyte	Maximum Concentration (ug/L)	Action Level (aqueous) (ug/L)
Cadmium	0.56	2.8
Chromium	0.60	3.0

An action level of 5X the maximum concentration has been used to evaluate the sample data for blank contamination. Sample aliquot and dilution factors were taken into consideration when determining blank contamination. Positive results less than the blank action levels were qualified, "U", as nondetected due to blank contamination.

General Chemistry: Chloride, Sulfate, Sulfide, Nitrate, Nitrite

Data reported for this fraction were found to be acceptable.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Metals were detected in the laboratory blanks.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Inorganic Data Validation (2/94), and the Navy IRCDQM (9/99) NFESC guidelines. The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC guidelines and the Quality Assurance Project Plan (QAPP)."

Elena Rodriguez

Tetra Tech NUS

Elena Rodriguez

E Rodriguez - for J Samchuck

Tetra Tech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:
1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank contamination
C = Calibration (i.e. %RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS – GFAA MSAs r<0.995
K = ICP Interference – Include ICSAB %Rs
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (I.E. base-time drifting)
P = Uncertainty near detection limit (<2 x IDL for Inorganics and < CRQL for Organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCB D% between columns for positive results
V = Non-Linear calibrations, tuning r< 0.995 (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = % Solid content is less than 30%

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10469

SAMPLE NUMBER:	H10-GW-MW03-06			H10-GW-MW05-06			H10-GW-MW06-06			H10-GW-MW07-06		
SAMPLE DATE:	07/31/01			07/31/01			07/31/01			07/31/01		
LABORATORY ID:	F10469-1			F10469-2			F10469-3			F10469-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
INORGANICS												
CADMIUM	0.27	U		0.27	U		0.27	U		0.27	U	
CHROMIUM	0.88	U	A	0.40	U	A	0.35	U		1.0	U	A

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10469

SAMPLE NUMBER:	H10-GW-MW03-06			H10-GW-MW05-06			H10-GW-MW06-06			H10-GW-MW07-06		
SAMPLE DATE:	07/31/01			07/31/01			07/31/01			07/31/01		
LABORATORY ID:	F10469-1			F10469-2			F10469-3			F10469-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
MISCELLANEOUS PARAMETERS												
CHLORIDE(MG/L)	20	U		20	U		20	U		20	U	
NITRATE AS NITROGEN(MG/L)	0.5			0.37			0.43			1.1		
NITRITE AS NITROGEN(MG/L)	0.1	U		0.1	U		0.1	U		0.1	U	
SULFATE(MG/L)	520	U		20	U		29.2			36.1		
SULFIDE(MG/L)	2	U		2	U		2	U		2	U	

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

Accutest Laboratories

Report of Analysis

Client Sample ID:	H10-GW-MW03-06		
Lab Sample ID:	F10469-1	**Date Sampled:**	07/31/01
Matrix:	AQ - Ground Water	**Date Received:**	08/01/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed By		Method
Cadmium	0.27 U	5.0	0.27	ug/l	1	08/02/01	08/14/01	JK	SW846 6010B
Chromium	0.88 B	10	0.35	ug/l	1	08/02/01	08/14/01	JK	SW846 6010B

RL = Reporting Limit
IDL = Instrument Detection Limit

U = Indicates a result < IDL
B = Indicates a result >= IDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	H10-GW-MW05-06	**Date Sampled:**	07/31/01
Lab Sample ID:	F10469-2	**Date Received:**	08/01/01
Matrix:	AQ - Ground Water	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	0.27	ug/l	1	08/02/01	08/14/01	JK	SW846 6010B
Chromium	0.40 B	10	0.35	ug/l	1	08/02/01	08/14/01	JK	SW846 6010B

RL = Reporting Limit
IDL = Instrument Detection Limit

U = Indicates a result < IDL
B = Indicates a result >= IDL but < RL

Report of Analysis

Client Sample ID:	H10-GW-MW06-06			
Lab Sample ID:	F10469-3		**Date Sampled:**	07/31/01
Matrix:	AQ - Ground Water		**Date Received:**	08/01/01
			Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000			

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	0.27	ug/l	1	08/02/01	08/14/01	JK	SW846 6010B
Chromium	0.35 U	10	0.35	ug/l	1	08/02/01	08/14/01	JK	SW846 6010B

RL = Reporting Limit
IDL = Instrument Detection Limit

U = Indicates a result < IDL
B = Indicates a result >= IDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	H10-GW-MW07-06		
Lab Sample ID:	F10469-4	**Date Sampled:**	07/31/01
Matrix:	AQ - Ground Water	**Date Received:**	08/01/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	0.27	ug/l	1	08/02/01	08/14/01	JK	SW846 6010B
Chromium	1.0 B	10	0.35	ug/l	1	08/02/01	08/14/01	JK	SW846 6010B

RL = Reporting Limit
IDL = Instrument Detection Limit

U = Indicates a result < IDL
B = Indicates a result >= IDL but < RL

Report of Analysis

Client Sample ID:	H10-GW-MW03-06		
Lab Sample ID:	F10469-1	**Date Sampled:**	07/31/01
Matrix:	AQ - Ground Water	**Date Received:**	08/01/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	<20	20	mg/l	1	08/14/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrate	0.50	0.10	mg/l	1	08/02/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrite	<0.10	0.10	mg/l	1	08/02/01	AL	EPA 300/SW846 9056
Sulfate	<20	20	mg/l	1	08/14/01	AL	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	08/07/01	AL	EPA 376.1

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	H10-GW-MW05-06			
Lab Sample ID:	F10469-2		**Date Sampled:**	07/31/01
Matrix:	AQ - Ground Water		**Date Received:**	08/01/01
			Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000			

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	<20	20	mg/l	1	08/14/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrate	0.37	0.10	mg/l	1	08/02/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrite	<0.10	0.10	mg/l	1	08/02/01	AL	EPA 300/SW846 9056
Sulfate	<20	20	mg/l	1	08/14/01	AL	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	08/07/01	AL	EPA 376.1

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW06-06		
Lab Sample ID:	F10469-3	**Date Sampled:**	07/31/01
Matrix:	AQ - Ground Water	**Date Received:**	08/01/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	<20	20	mg/l	1	08/14/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrate	0.43	0.10	mg/l	1	08/02/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrite	<0.10	0.10	mg/l	1	08/02/01	AL	EPA 300/SW846 9056
Sulfate	29.2	20	mg/l	1	08/14/01	AL	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	08/07/01	AL	EPA 376.1

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	H10-GW-MW07-06		
Lab Sample ID:	F10469-4	**Date Sampled:**	07/31/01
Matrix:	AQ - Ground Water	**Date Received:**	08/01/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	<20	20	mg/l	1	08/14/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrate	1.1	0.10	mg/l	1	08/02/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrite	<0.10	0.10	mg/l	1	08/02/01	AL	EPA 300/SW846 9056
Sulfate	36.1	20	mg/l	1	08/14/01	AL	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	08/07/01	AL	EPA 376.1

RL = Reporting Limit

APPENDIX C

SUPPORT DOCUMENTATION

F10469

HOLDING TIME
09/05/01

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UG/L	H10-GW-MW03-06	F10469-1	NORMAL	F10469	ALC	07/31/01	/ /	08/13/01	0	0	13
UG/L	H10-GW-MW05-06	F10469-2	NORMAL	F10469	ALC	07/31/01	/ /	08/13/01	0	0	13
UG/L	H10-GW-MW06-06	F10469-3	NORMAL	F10469	ALC	07/31/01	/ /	08/13/01	0	0	13
UG/L	H10-GW-MW07-06	F10469-4	NORMAL	F10469	ALC	07/31/01	/ /	08/13/01	0	0	13
MG/L	H10-GW-MW03-06	F10469-1	NORMAL	F10469	CL	07/31/01	08/13/01	08/14/01	13	1	14
MG/L	H10-GW-MW05-06	F10469-2	NORMAL	F10469	CL	07/31/01	08/13/01	08/14/01	13	1	14
MG/L	H10-GW-MW06-06	F10469-3	NORMAL	F10469	CL	07/31/01	08/13/01	08/14/01	13	1	14
MG/L	H10-GW-MW07-06	F10469-4	NORMAL	F10469	CL	07/31/01	08/13/01	08/14/01	13	1	14
UG/L	H10-GW-MW03-06	F10469-1	NORMAL	F10469	ETHA	07/31/01	/ /	08/07/01	0	0	7
UG/L	H10-GW-MW05-06	F10469-2	NORMAL	F10469	ETHA	07/31/01	/ /	08/07/01	0	0	7
UG/L	H10-GW-MW06-06	F10469-3	NORMAL	F10469	ETHA	07/31/01	/ /	08/07/01	0	0	7
UG/L	H10-GW-MW07-06	F10469-4	NORMAL	F10469	ETHA	07/31/01	/ /	08/07/01	0	0	7
UG/L	H10-GW-MW03-06	F10469-1	NORMAL	F10469	ETHE	07/31/01	/ /	08/07/01	0	0	7
UG/L	H10-GW-MW05-06	F10469-2	NORMAL	F10469	ETHE	07/31/01	/ /	08/07/01	0	0	7
UG/L	H10-GW-MW06-06	F10469-3	NORMAL	F10469	ETHE	07/31/01	/ /	08/07/01	0	0	7
UG/L	H10-GW-MW07-06	F10469-4	NORMAL	F10469	ETHE	07/31/01	/ /	08/07/01	0	0	7
UG/L	H10-GW-MW03-06	F10469-1	NORMAL	F10469	M	07/31/01	08/02/01	08/14/01	2	12	14
UG/L	H10-GW-MW05-06	F10469-2	NORMAL	F10469	M	07/31/01	08/02/01	08/14/01	2	12	14
UG/L	H10-GW-MW06-06	F10469-3	NORMAL	F10469	M	07/31/01	08/02/01	08/14/01	2	12	14
UG/L	H10-GW-MW07-06	F10469-4	NORMAL	F10469	M	07/31/01	08/02/01	08/14/01	2	12	14
UG/L	H10-GW-MW03-06	F10469-1	NORMAL	F10469	METH	07/31/01	/ /	08/07/01	0	0	7
UG/L	H10-GW-MW05-06	F10469-2	NORMAL	F10469	METH	07/31/01	/ /	08/07/01	0	0	7
UG/L	H10-GW-MW06-06	F10469-3	NORMAL	F10469	METH	07/31/01	/ /	08/07/01	0	0	7
UG/L	H10-GW-MW07-06	F10469-4	NORMAL	F10469	METH	07/31/01	/ /	08/07/01	0	0	7

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/L	H10-GW-MW03-06	F10469-1	NORMAL	F10469	NTA	07/31/01	08/02/01	08/02/01	2	0	2
MG/L	H10-GW-MW05-06	F10469-2	NORMAL	F10469	NTA	07/31/01	08/02/01	08/02/01	2	0	2
MG/L	H10-GW-MW06-06	F10469-3	NORMAL	F10469	NTA	07/31/01	08/02/01	08/02/01	2	0	2
MG/L	H10-GW-MW07-06	F10469-4	NORMAL	F10469	NTA	07/31/01	08/02/01	08/02/01	2	0	2
MG/L	H10-GW-MW03-06	F10469-1	NORMAL	F10469	NTI	07/31/01	08/02/01	08/02/01	2	0	2
MG/L	H10-GW-MW05-06	F10469-2	NORMAL	F10469	NTI	07/31/01	08/02/01	08/02/01	2	0	2
MG/L	H10-GW-MW06-06	F10469-3	NORMAL	F10469	NTI	07/31/01	08/02/01	08/02/01	2	0	2
MG/L	H10-GW-MW07-06	F10469-4	NORMAL	F10469	NTI	07/31/01	08/02/01	08/02/01	2	0	2
UG/L	H10-GW-MW03-06	F10469-1	NORMAL	F10469	OS	07/31/01	08/02/01	08/03/01	2	1	3
UG/L	H10-GW-MW05-06	F10469-2	NORMAL	F10469	OS	07/31/01	08/02/01	08/03/01	2	1	3
UG/L	H10-GW-MW06-06	F10469-3	NORMAL	F10469	OS	07/31/01	08/02/01	08/03/01	2	1	3
UG/L	H10-GW-MW07-06	F10469-4	NORMAL	F10469	OS	07/31/01	08/02/01	08/03/01	2	1	3
UG/L	H10-GW-MW03-06	F10469-1	NORMAL	F10469	OV	07/31/01	/ /	08/04/01	0	0	4
UG/L	H10-GW-MW05-06	F10469-2	NORMAL	F10469	OV	07/31/01	/ /	08/04/01	0	0	4
UG/L	H10-GW-MW06-06	F10469-3	NORMAL	F10469	OV	07/31/01	/ /	08/04/01	0	0	4
UG/L	H10-GW-MW07-06	F10469-4	NORMAL	F10469	OV	07/31/01	/ /	08/04/01	0	0	4
UG/L	H10-TB03	F10469-5	NORMAL	F10469	OV	07/31/01	/ /	08/04/01	0	0	4
UG/L	H10-GW-MW03-06	F10469-1	NORMAL	F10469	PAH	07/31/01	08/02/01	08/02/01	2	0	2
UG/L	H10-GW-MW05-06	F10469-2	NORMAL	F10469	PAH	07/31/01	08/02/01	08/02/01	2	0	2
UG/L	H10-GW-MW06-06	F10469-3	NORMAL	F10469	PAH	07/31/01	08/02/01	08/02/01	2	0	2
UG/L	H10-GW-MW07-06	F10469-4	NORMAL	F10469	PAH	07/31/01	08/02/01	08/02/01	2	0	2
UG/L	H10-GW-MW03-06	F10469-1	NORMAL	F10469	SIM	07/31/01	08/02/01	08/03/01	2	1	3
UG/L	H10-GW-MW05-06	F10469-2	NORMAL	F10469	SIM	07/31/01	08/02/01	08/03/01	2	1	3
UG/L	H10-GW-MW06-06	F10469-3	NORMAL	F10469	SIM	07/31/01	08/02/01	08/03/01	2	1	3
UG/L	H10-GW-MW07-06	F10469-4	NORMAL	F10469	SIM	07/31/01	08/02/01	08/03/01	2	1	3
MG/L	H10-GW-MW03-06	F10469-1	NORMAL	F10469	SO4	07/31/01	08/13/01	08/14/01	13	1	14
MG/L	H10-GW-MW05-06	F10469-2	NORMAL	F10469	SO4	07/31/01	08/13/01	08/14/01	13	1	14

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/L	H10-GW-MW06-06	F10469-3	NORMAL	F10469	SO4	07/31/01	08/13/01	08/14/01	13	1	14
MG/L	H10-GW-MW07-06	F10469-4	NORMAL	F10469	SO4	07/31/01	08/13/01	08/14/01	13	1	14
MG/L	H10-GW-MW03-06	F10469-1	NORMAL	F10469	SUL	07/31/01	/ /	08/07/01	0	0	7
MG/L	H10-GW-MW05-06	F10469-2	NORMAL	F10469	SUL	07/31/01	/ /	08/07/01	0	0	7
MG/L	H10-GW-MW06-06	F10469-3	NORMAL	F10469	SUL	07/31/01	/ /	08/07/01	0	0	7
MG/L	H10-GW-MW07-06	F10469-4	NORMAL	F10469	SUL	07/31/01	/ /	08/07/01	0	0	7

ACCUTEST LABORATORIES SOUTHEAST
SAMPLE RECEIPT CONFIRMATION

Accutest Job Number: F10469

Client/Project: Tetra tech NUS, INC.

Date/Time Received: 08/01/01 - 1000

Method of Delivery: Fed Ex (circled) Greyhound UPS Pickup Delivery Other

Air Bill Number: 8287 2074 0330

Cooler Temperatures: 2.8, 2.6.

Custody Seals Intact?	YES	NO
Chain Of Custody Provided?	YES	NO
Chain Of Custody Match Bottles?	YES	NO
Sample Labels Present?	YES	NO
Are All Bottles Unbroken?	YES	NO
Proper Preservative?	YES	NO
Correct Containers Used?	YES	NO
Sufficient Sample Volume?	YES	NO

Number of Encores: Ø

COMMENTS:

COC states to see attached tables, however there are no tables attached

Signature: [signature] Date: 08/01/01

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TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER H10073101A | PAGE ___ OF ___

PROJECT NO: V3995
SITE NAME: WAS JAX-HANGAR 1000
PROJECT MANAGER AND PHONE NUMBER: Mark Peterson 904-281-0400
FIELD OPERATIONS LEADER AND PHONE NUMBER: Alan Pate 904-281-0400
CARRIER/WAYBILL NUMBER: FEDEX
LABORATORY NAME AND CONTACT: Accutest - Linda Williams
ADDRESS: 4405 Vineland Rd #C-15
CITY, STATE: ORLANDO, FL 32811

SAMPLERS (SIGNATURE): Alan Pate

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

						VOCs (8260B)	Methane/Ethane/Ethene RSK 147/175	Alcohols 8015B	SVOCs (8270C) PAHs (8310)	Metals Ca/Cr 6010B	Sulfide 376.1	Anions SO4, Cl, NO2, NO3	
CONTAINER TYPE PLASTIC (P) or GLASS (G)						G	G	G	G	P	P	P	
PRESERVATIVE USED						HCL	HCL	/	/	HNO3	NaOH	/	
DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS								COMMENTS
1/31	0845	H10-GW-MW103-06	H_2O	G	3	3	[illegible]	[illegible]					Cool to 4°C
1/31	1055	H10-GW-MW105-06	H_2O	G	3	3	[illegible]	[illegible]					
1/31	1305	H10-GW-MW106-06	H_2O	G	16	3	3	3	4	1	1	1	See Attached
1/31	1515	H10-GW-MW107-06	H_2O	G	16	3	3	3	4	1	1	1	QAPP table
		~~TRIP BC~~											for analytical
		H10-TB03	H_2O		.								requirements

1. RELINQUISHED BY Alan Pate	DATE 1/31/01	TIME 1700	1. RECEIVED BY [signature]	DATE 08/01/01	TIME 1000
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS: Temp 2.8

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/99
FORM NO. TINUS-001

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER H1D07310| | PAGE ____ OF ____

PROJECT NO:	SITE NAME:	PROJECT MANAGER AND PHONE NUMBER	LABORATORY NAME AND CONTACT:
N3995	NAS JAX-HANGAR1000	Mark Peterson 904-281-0400	Accutest - Linda Williams
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER	ADDRESS
Alan Pate		Alan Pate 904-281-0400	4405 Vineland Rd #C-15
		CARRIER/WAYBILL NUMBER	CITY, STATE
		FEDEX	Orlando, FL 32811

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

						CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	G	G	G	P	P	P	
						PRESERVATIVE USED	HCL	HCL	/	/	HNO_3	NaOH	/	
DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS	VOCs (8260B)	Methane/Ethane/Ethene RSK 147/175	Alcohols 8015B	SVOCs (8270C) PAHs (8310)	Metals 6010B Cd/Cr	Sulfide 376.1	Anions SO_4, Cl, NO_2, NO_3	COMMENTS
7/31	0845	H10-GW-MW03-06	H_2O	G	13		3	3	4	1	1	1		Cool to 4°C
7/31	1055	H10-GW-MW05-06	H_2O	G	13		3	3	4	1	1	1		
														See attached QAPP table for analytical requirements

1. RELINQUISHED BY	DATE	TIME	1. RECEIVED BY	DATE	TIME
Alan L Pate	7/31/01	1700	[signature]	08/01/01	1000
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS temp 2.6

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/99
FORM NO. TtNUS-001

BLANK RESULTS SUMMARY
Part 1 Initial and Continuing Calibration Blank

Login Number: F10469
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

File ID: IR0810M1.ASC
QC Limits: result < RL

Date Analyzed: 08/10/01
Run ID: MA2439

Methods: SW846 6010B
Units: ug/l

Metal	RL	IDL	ICB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	9.44	0.31	<200	1.9	<200				
Antimony	5.0	2.56	-1.6	<5.0	-0.80	<5.0				
Arsenic	10	3.15	-1.5	<10	-2.8	<10				
Barium	200	.94	-0.12	<200	-0.030	<200				
Beryllium	5.0	.22	-0.090	<5.0	0.010	<5.0				
Cadmium	5.0	.27	-0.17	<5.0	-0.050	<5.0				
Calcium	1000	10.2	-2.9	<1000	-0.010	<1000				
Chromium	10	.35	-0.29	<10	-0.27	<10				
Cobalt	50	.55	0.14	<50	-0.020	<50				
Copper	25	.71	-0.38	<25	-0.24	<25				
Iron	300	9.02	-3.3	<300	-0.46	<300				
Lead	5.0	1.16	1.5	<5.0	2.0	<5.0				
Magnesium	5000	25.5	-0.55	<5000	1.7	<5000				
Manganese	15	.26	-0.17	<15	-0.050	<15				
Molybdenum	50	1.01								
Nickel	40	.8	-0.42	<40	0.27	<40				
Potassium	5000	49	5.4	<5000	1.1	<5000				
Selenium	10	2.5	-0.84	<10	-0.32	<10				
Silver	10	.59	0.080	<10	-0.38	<10				
Sodium	5000	173	-70	<5000	26.9	<5000				
Thallium	10	2.07	0.72	<10	1.3	<10				
Tin	50	1.03								
Vanadium	50	.58	-0.11	<50	0.060	<50				
Zinc	20	.36	0.040	<20	-0.11	<20				

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F10469
Account: TETRFLJX - Tetra-Tech,NJS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

File ID: JR0810M1.ASC　　Date Analyzed: 08/10/01　　Methods: SW846 6010B
QC Limits: result < RL　　Run ID: MA2439　　Units: ug/l

Metal	RL	IDL	CCB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	9.44	1.7	<200	12.4	<200	14.7	<200	10.9	<200
Antimony	5.0	2.56	-3.3	<5.0	-1.4	<5.0	-1.6	<5.0	-2.5	<5.0
Arsenic	10	3.15	-2.5	<10	-0.85	<10	0.38	<10	-3.2	<10
Barium	200	.94	-0.26	<200	-0.13	<200	-0.12	<200	-0.17	<200
Beryllium	5.0	.22	-0.19	<5.0	-0.030	<5.0	0.20	<5.0	0.34	<5.0
Cadmium	5.0	.27	-0.47	<5.0	-0.35	<5.0	-0.47	<5.0	-0.42	<5.0
Calcium	1000	10.2	-4.8	<1000	-4.8	<1000	-6.8	<1000	-0.12	<1000
Chromium	10	.35	-0.22	<10	-0.040	<10	-0.27	<10	-0.17	<10
Cobalt	50	.55	-0.23	<50	-0.060	<50	0.060	<50	0.0	<50
Copper	25	.71	-0.27	<25	-0.35	<25	-0.65	<25	-0.77	<25
Iron	300	9.02	-2.4	<300	0.93	<300	-1.6	<300	-4.2	<300
Lead	5.0	1.16	1.2	<5.0	1.6	<5.0	1.4	<5.0	1.0	<5.0
Magnesium	5000	25.5	-0.89	<5000	0.61	<5000	-2.2	<5000	-0.89	<5000
Manganese	15	.26	-0.29	<15	-0.16	<15	-0.25	<15	-0.18	<15
Molybdenum	50	1.01								
Nickel	40	.8	-0.65	<40	0.010	<40	-0.30	<40	-0.32	<40
Potassium	5000	49	14.1	<5000	36.7	<5000	13.9	<5000	25.4	<5000
Selenium	10	2.5	-0.35	<10	0.36	<10	-1.1	<10	-0.82	<10
Silver	10	.59	-0.19	<10	0.26	<10	0.10	<10	0.43	<10
Sodium	5000	173	-9.2	<5000	52.0	<5000	14.4	<5000	-39	<5000
Thallium	10	2.07	1.6	<10	1.6	<10	0.94	<10	0.84	<10
Tin	50	1.03								
Vanadium	50	.58	-0.44	<50	-0.060	<50	-0.26	<50	-0.26	<50
Zinc	20	.36	-0.50	<20	-0.15	<20	-0.16	<20	-0.050	<20

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F10469
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

File ID: IR0614M1.ASC
QC Limits: result < RL

Date Analyzed: 06/14/01
Run ID: MA2443

Methods: SW846 6010B
Units: ug/l

Metal	RL	IDL	ICB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	9.44	anr							
Antimony	5.0	2.56	anr							
Arsenic	10	3.15	anr							
Barium	200	.94	anr							
Beryllium	5.0	.22								
Cadmium	5.0	.27	0.56	<5.0	0.25	<5.0			0.080	<5.0
Calcium	1000	10.2								
Chromium	10	.35	0.60	<10	0.25	<10			-0.020	<10
Cobalt	50	.55								
Copper	25	.71	anr							
Iron	300	9.02	anr							
Lead	5.0	1.16	anr							
Magnesium	5000	25.5								
Manganese	15	.26	anr							
Molybdenum	50	1.01								
Nickel	40	.8								
Potassium	5000	49								
Selenium	10	2.5								
Silver	10	.59								
Sodium	5000	173	anr							
Thallium	10	2.07								
Tin	50	1.03								
Vanadium	50	.58	anr							
Zinc	20	.36	anr							

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F10469
Account: TETRFLJX - Tetra-Tech, NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

File ID: IR0814M1.ASC
QC Limits: result < RL

Date Analyzed: 08/14/01
Run ID: MA2443

Methods: SW846 6010B
Units: ug/l

Metal	RL	IDL	CCB raw	final	CCB raw	final
Aluminum	200	9.44	anr			
Antimony	5.0	2.56	anr			
Arsenic	10	3.15	anr			
Barium	200	.94	anr			
Beryllium	5.0	.22				
Cadmium	5.0	.27	0.040	<5.0	0.070	<5.0
Calcium	1000	10.2				
Chromium	10	.35	-0.11	<10	-0.10	<10
Cobalt	50	.55				
Copper	25	.71	anr			
Iron	300	9.02	anr			
Lead	5.0	1.16	anr			
Magnesium	5000	25.5				
Manganese	15	.26	anr			
Molybdenum	50	1.01				
Nickel	40	.8				
Potassium	5000	49				
Selenium	10	2.5				
Silver	10	.59				
Sodium	5000	173	anr			
Thallium	10	2.07				
Tin	50	1.03				
Vanadium	50	.58	anr			
Zinc	20	.36	anr			

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: F10469
Account: TETRFLJX - Tetra-Tech, NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

QC Batch ID: MP3707
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 08/02/01

Metal	RL	IDL	MB raw	final
Aluminum	200	9.44	anr	
Antimony	5.0	2.56	anr	
Arsenic	10	3.15	anr	
Barium	200	.94	anr	
Beryllium	5.0	.22	anr	
Cadmium	5.0	.27	-0.51	<5.0
Calcium	1000	10.2	anr	
Chromium	10	.35	8.40	<10
Cobalt	50	.55	anr	
Copper	25	.71	anr	
Iron	300	9.02	anr	
Lead	5.0	1.16	anr	
Magnesium	5000	25.5	anr	
Manganese	15	.26	anr	
Molybdenum	50	1.01		
Nickel	40	.8	anr	
Potassium	5000	49	anr	
Selenium	10	2.5	anr	
Silver	10	.59	anr	
Sodium	5000	173	anr	
Thallium	10	2.07	anr	
Tin	50	1.03		
Vanadium	50	.58	anr	
Zinc	20	.36	anr	

Associated samples MP3707: F10469-1, F10469-2, F10469-3, F10469-4

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F10469
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

Analyte	Batch ID	RL	MB Result	Units	BSP %Recov	QC Limits
Chloride	GP2526	20	<20	mg/l	98.0	90-110%
Nitrogen, Nitrate	GP2497	0.10	<0.10	mg/l	93.0	90-110%
Nitrogen, Nitrite	GP2497	0.10	<0.10	mg/l	95.0	90-110%
Sulfate	GP2526	20	<20	mg/l	94.7	90-110%
Sulfide	GN7884	2.0	<2.0	mg/l		

Associated Samples:
Batch GN7884: F10469-1, F10469-2, F10469-3, F10469-4
Batch GP2497: F10469-1, F10469-2, F10469-3, F10469-4
Batch GP2526: F10469-1, F10469-2, F10469-3, F10469-4

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F10469
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

Analyte	Batch ID	RL	MB Result	Units	BSP %Recov	QC Limits
Chloride	GP2526	20	<20	mg/l	98.0	90-110%
Nitrogen, Nitrate	GP2497	0.10	<0.10	mg/l	93.0	90-110%
Nitrogen, Nitrite	GP2497	0.10	<0.10	mg/l	95.0	90-110%
Sulfate	GP2526	20	<20	mg/l	94.7	90-110%
Sulfide	GN7884	2.0	<2.0	mg/l		

Associated Samples:
Batch GN7884: F10469-1, F10469-2, F10469-3, F10469-4
Batch GP2497: F10469-1, F10469-2, F10469-3, F10469-4
Batch GP2526: F10469-1, F10469-2, F10469-3, F10469-4

Tetra Tech NUS

INTERNAL CORRESPONDENCE

TO:	**Mr. Mark Peterson**	**DATE:**	**September 20, 2001**
FROM:	**Elena Rodriguez**	**COPIES:**	**DV FILE**

SUBJECT: **DATA VALIDATION - INORGANICS**
CTO 167, NASJAX
SDG F10479

SAMPLES: 4/Aqueous/

H10-GW-MW01-06
H10-GW-MW02-06
H10-GW-MW11-06
H10-GW-MW12-06

OVERVIEW

The sample set for CTO 167, NASJAX, SDG F10479 consists of four aqueous environmental samples. All samples were analyzed for cadmium and chromium and for natural attenuation parameters: chloride, nitrate, nitrite, sulfate, and sulfide.

The samples were collected by TetraTech NUS on August 1, 2001 and analyzed by Accutest Laboratories. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria using the following analytical and reporting protocols: SW-846 Methods 6010B, EPA 300, 325.3, and 376.1. The data contained in this SDG were validated with regard to the following parameters:

* • Data completeness
* • Holding times
* • Initial/continuing calibrations
  • Laboratory method blank results
* • Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A.

Metals

The following contaminants were detected in the laboratory method blanks:

Analyte	Maximum Concentration (ug/L)	Action Level (aqueous) (ug/L)
Chromium	16.6	83

An action level of 5X the maximum concentration has been used to evaluate the sample data for blank contamination. Sample aliquot and dilution factors were taken into consideration when determining blank contamination. Positive results less than the blank action levels were qualified, "U", as nondetected due to blank contamination.

General Chemistry: Chloride, Sulfate, Sulfide, Nitrate, Nitrite

Data reported for this fraction were found to be acceptable.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Metals were detected in the laboratory blanks.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Inorganic Data Validation (2/94), and the Navy IRCDQM (9/99) NFESC guidelines. The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC guidelines and the Quality Assurance Project Plan (QAPP)."

Elena Rodriguez
Tetra Tech NUS

Elena Rodriguez

E Rodriguez for J Samchuck
TetraTech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:
1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank contamination
C = Calibration (i.e. %RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS – GFAA MSAs r<0.995
K = ICP Interference – Include ICSAB %Rs
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (I.E. base-time drifting)
P = Uncertainty near detection limit (<2 x IDL for Inorganics and < CRQL for Organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCB D% between columns for positive results
V = Non-Linear calibrations, tuning r< 0.995 (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = % Solid content is less than 30%

CTO167-NAS JACKSONVILLE

WATER DATA
Accutest, NJ
SDG: F10479

SAMPLE NUMBER:	H10-GW-MW01-06			H10-GW-MW02-06			H10-GW-MW11-06			H10-GW-MW12-06		
SAMPLE DATE:	08/01/01			08/01/01			08/01/01			08/01/01		
LABORATORY ID:	F10479-3			F10479-4			F10479-1			F10479-2		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
CADMIUM	0.27	U		0.27	U		0.27	U		0.27	U	
CHROMIUM	1.8	U	A	1.3	U	A	0.35	U		0.35	U	

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10479

SAMPLE NUMBER:	H10-GW-MW01-06			H10-GW-MW02-06			H10-GW-MW11-06			H10-GW-MW12-06		
SAMPLE DATE:	08/01/01			08/01/01			08/01/01			08/01/01		
LABORATORY ID:	F10479-3			F10479-4			F10479-1			F10479-2		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
FIELD DUPLICATE OF:												
	RESULT	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
MISCELLANEOUS PARAMETERS												
CHLORIDE(MG/L)	23.7			0.5	U		37.8			22.3		
NITRATE AS NITROGEN(MG/L)	4			0.1	U		0.1	U		0.1	U	
NITRITE AS NITROGEN(MG/L)	0.19			0.1	U		0.25			0.1	U	
SULFATE(MG/L)	44.2			20	U		20	U		31.9		
SULFIDE(MG/L)	2	U		2	U		2	U		2	U	

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

Report of Analysis

Client Sample ID: H10-GW-MW01-06
Lab Sample ID: F10479-3
Matrix: AQ - Ground Water
Date Sampled: 08/01/01
Date Received: 08/02/01
Percent Solids: n/a
Project: NAS Jax-Hanger 1000

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	23.7	20	mg/l	1	08/14/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrate	4.0	0.10	mg/l	1	08/03/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrite	0.19	0.10	mg/l	1	08/03/01	AL	EPA 300/SW846 9056
Sulfate	44.2	20	mg/l	1	08/14/01	AL	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	08/07/01	AL	EPA 376.1

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW11-06		
Lab Sample ID:	F10479-1	**Date Sampled:**	08/01/01
Matrix:	AQ - Ground Water	**Date Received:**	08/02/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	37.8	20	mg/l	1	08/14/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrate	0.25	0.10	mg/l	1	08/03/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrite	<0.10	0.10	mg/l	1	08/03/01	AL	EPA 300/SW846 9056
Sulfate	<20	20	mg/l	1	08/14/01	AL	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	08/07/01	AL	EPA 376.1

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW12-06		
Lab Sample ID:	F10479-2	**Date Sampled:**	08/01/01
Matrix:	AQ - Ground Water	**Date Received:**	08/02/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	22.3	20	mg/l	1	08/14/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrate	<0.10	0.10	mg/l	1	08/03/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrite	<0.10	0.10	mg/l	1	08/03/01	AL	EPA 300/SW846 9056
Sulfate	31.9	20	mg/l	1	08/14/01	AL	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	08/07/01	AL	EPA 376.1

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW11-06		
Lab Sample ID:	F10479-1	**Date Sampled:**	08/01/01
Matrix:	AQ - Ground Water	**Date Received:**	08/02/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	0.27	ug/l	1	08/03/01	08/06/01	JK	SW846 6010B
Chromium	0.35 U	10	0.35	ug/l	1	08/03/01	08/06/01	JK	SW846 6010B

RL = Reporting Limit
IDL = Instrument Detection Limit

U = Indicates a result < IDL
B = Indicates a result >= IDL but < RL

Report of Analysis

Client Sample ID:	H10-GW-MW12-06		
Lab Sample ID:	F10479-2	**Date Sampled:**	08/01/01
Matrix:	AQ - Ground Water	**Date Received:**	08/02/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	0.27	ug/l	1	08/03/01	08/06/01	JK	SW846 6010B
Chromium	0.35 U	10	0.35	ug/l	1	08/03/01	08/06/01	JK	SW846 6010B

RL = Reporting Limit
IDL = Instrument Detection Limit

U = Indicates a result < IDL
B = Indicates a result >= IDL but < RL

Report of Analysis

Client Sample ID:	H10-GW-MW01-06		
Lab Sample ID:	F10479-3	**Date Sampled:**	08/01/01
Matrix:	AQ - Ground Water	**Date Received:**	08/02/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	0.27	ug/l	1	08/03/01	08/06/01	JK	SW846 6010B
Chromium	1.8 B	10	0.35	ug/l	1	08/03/01	08/06/01	JK	SW846 6010B

RL = Reporting Limit
IDL = Instrument Detection Limit

U = Indicates a result < IDL
B = Indicates a result >= IDL but < RL

Report of Analysis

Client Sample ID:	H10-GW-MW02-06		
Lab Sample ID:	F10479-4	Date Sampled:	08/01/01
Matrix:	AQ - Ground Water	Date Received:	08/02/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	0.27	ug/l	1	08/03/01	08/06/01	JK	SW846 6010B
Chromium	1.3 B	10	0.35	ug/l	1	08/03/01	08/06/01	JK	SW846 6010B

RL = Reporting Limit
IDL = Instrument Detection Limit

U = Indicates a result < IDL
B = Indicates a result >= IDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	H10-GW-MW02-06		
Lab Sample ID:	F10479-4	**Date Sampled:**	08/01/01
Matrix:	AQ - Ground Water	**Date Received:**	08/02/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	<20	20	mg/l	1	08/14/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrate	<0.10	0.10	mg/l	1	08/03/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrite	<0.10	0.10	mg/l	1	08/03/01	AL	EPA 300/SW846 9056
Sulfate	<20	20	mg/l	1	08/14/01	AL	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	08/07/01	AL	EPA 376.1

RL = Reporting Limit

APPENDIX C

SUPPORT DOCUMENTATION

F10479

HOLDING TIME
08/27/01

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UG/L	H10-GW-MW01-06	F10479-3	NORMAL	F10479	ALC	08/01/01	/ /	08/08/01	0	0	7
UG/L	H10-GW-MW02-06	F10479-4	NORMAL	F10479	ALC	08/01/01	/ /	08/08/01	0	0	7
UG/L	H10-GW-MW11-06	F10479-1	NORMAL	F10479	ALC	08/01/01	/ /	08/08/01	0	0	7
UG/L	H10-GW-MW12-06	F10479-2	NORMAL	F10479	ALC	08/01/01	/ /	08/08/01	0	0	7
MG/L	H10-GW-MW01-06	F10479-3	NORMAL	F10479	CL	08/01/01	08/13/01	08/14/01	12	1	13
MG/L	H10-GW-MW02-06	F10479-4	NORMAL	F10479	CL	08/01/01	08/13/01	08/14/01	12	1	13
MG/L	H10-GW-MW11-06	F10479-1	NORMAL	F10479	CL	08/01/01	08/13/01	08/14/01	12	1	13
MG/L	H10-GW-MW12-06	F10479-2	NORMAL	F10479	CL	08/01/01	08/13/01	08/14/01	12	1	13
UG/L	H10-GW-MW01-06	F10479-3	NORMAL	F10479	ETHA	08/01/01	/ /	08/09/01	0	0	8
UG/L	H10-GW-MW02-06	F10479-4	NORMAL	F10479	ETHA	08/01/01	/ /	08/09/01	0	0	8
UG/L	H10-GW-MW11-06	F10479-1	NORMAL	F10479	ETHA	08/01/01	/ /	08/09/01	0	0	8
UG/L	H10-GW-MW12-06	F10479-2	NORMAL	F10479	ETHA	08/01/01	/ /	08/09/01	0	0	8
UG/L	H10-GW-MW01-06	F10479-3	NORMAL	F10479	ETHE	08/01/01	/ /	08/09/01	0	0	8
UG/L	H10-GW-MW02-06	F10479-4	NORMAL	F10479	ETHE	08/01/01	/ /	08/09/01	0	0	8
UG/L	H10-GW-MW11-06	F10479-1	NORMAL	F10479	ETHE	08/01/01	/ /	08/09/01	0	0	8
UG/L	H10-GW-MW12-06	F10479-2	NORMAL	F10479	ETHE	08/01/01	/ /	08/09/01	0	0	8
UG/L	H10-GW-MW01-06	F10479-3	NORMAL	F10479	M	08/01/01	08/03/01	08/06/01	2	3	5
UG/L	H10-GW-MW02-06	F10479-4	NORMAL	F10479	M	08/01/01	08/03/01	08/06/01	2	3	5
UG/L	H10-GW-MW11-06	F10479-1	NORMAL	F10479	M	08/01/01	08/03/01	08/06/01	2	3	5
UG/L	H10-GW-MW12-06	F10479-2	NORMAL	F10479	M	08/01/01	08/03/01	08/06/01	2	3	5
UG/L	H10-GW-MW01-06	F10479-3	NORMAL	F10479	METH	08/01/01	/ /	08/09/01	0	0	8
UG/L	H10-GW-MW02-06	F10479-4	NORMAL	F10479	METH	08/01/01	/ /	08/09/01	0	0	8
UG/L	H10-GW-MW11-06	F10479-1	NORMAL	F10479	METH	08/01/01	/ /	08/09/01	0	0	8
UG/L	H10-GW-MW12-06	F10479-2	NORMAL	F10479	METH	08/01/01	/ /	08/09/01	0	0	8
MG/L	H10-GW-MW01-06	F10479-3	NORMAL	F10479	NTA	08/01/01	08/03/01	08/03/01	2	0	2

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/L	H10-GW-MW02-06	F10479-4	NORMAL	F10479	NTA	08/01/01	08/03/01	08/03/01	2	0	2
MG/L	H10-GW-MW11-06	F10479-1	NORMAL	F10479	NTA	08/01/01	08/03/01	08/03/01	2	0	2
MG/L	H10-GW-MW12-06	F10479-2	NORMAL	F10479	NTA	08/01/01	08/03/01	08/03/01	2	0	2
MG/L	H10-GW-MW01-06	F10479-3	NORMAL	F10479	NTI	08/01/01	08/03/01	08/03/01	2	0	2
MG/L	H10-GW-MW02-06	F10479-4	NORMAL	F10479	NTI	08/01/01	08/03/01	08/03/01	2	0	2
MG/L	H10-GW-MW11-06	F10479-1	NORMAL	F10479	NTI	08/01/01	08/03/01	08/03/01	2	0	2
MG/L	H10-GW-MW12-06	F10479-2	NORMAL	F10479	NTI	08/01/01	08/03/01	08/03/01	2	0	2
UG/L	H10-GW-MW01-06	F10479-3	NORMAL	F10479	OS	08/01/01	08/06/01	08/08/01	5	2	7
UG/L	H10-GW-MW02-06	F10479-4	NORMAL	F10479	OS	08/01/01	08/06/01	08/08/01	5	2	7
UG/L	H10-GW-MW11-06	F10479-1	NORMAL	F10479	OS	08/01/01	08/06/01	08/08/01	5	2	7
UG/L	H10-GW-MW12-06	F10479-2	NORMAL	F10479	OS	08/01/01	08/06/01	08/08/01	5	2	7
UG/L	H10-GW-MW01-06	F10479-3	NORMAL	F10479	OV	08/01/01	/ /	08/08/01	0	0	7
UG/L	H10-GW-MW02-06	F10479-4	NORMAL	F10479	OV	08/01/01	/ /	08/08/01	0	0	7
UG/L	H10-GW-MW11-06	F10479-1	NORMAL	F10479	OV	08/01/01	/ /	08/08/01	0	0	7
UG/L	H10-GW-MW12-06	F10479-2	NORMAL	F10479	OV	08/01/01	/ /	08/08/01	0	0	7
UG/L	H10-TB04	F10479-5	NORMAL	F10479	OV	08/01/01	/ /	08/08/01	0	0	7
UG/L	H10-GW-MW01-06	F10479-3	NORMAL	F10479	PAH	08/01/01	08/04/01	08/06/01	3	2	5
UG/L	H10-GW-MW02-06	F10479-4	NORMAL	F10479	PAH	08/01/01	08/04/01	08/06/01	3	2	5
UG/L	H10-GW-MW11-06	F10479-1	NORMAL	F10479	PAH	08/01/01	08/04/01	08/06/01	3	2	5
UG/L	H10-GW-MW12-06	F10479-2	NORMAL	F10479	PAH	08/01/01	08/04/01	08/06/01	3	2	5
UG/L	H10-GW-MW01-06	F10479-3	NORMAL	F10479	SIM	08/01/01	08/06/01	08/07/01	5	1	6
UG/L	H10-GW-MW02-06	F10479-4	NORMAL	F10479	SIM	08/01/01	08/06/01	08/07/01	5	1	6
UG/L	H10-GW-MW11-06	F10479-1	NORMAL	F10479	SIM	08/01/01	08/06/01	08/07/01	5	1	6
UG/L	H10-GW-MW12-06	F10479-2	NORMAL	F10479	SIM	08/01/01	08/06/01	08/07/01	5	1	6
MG/L	H10-GW-MW01-06	F10479-3	NORMAL	F10479	SO4	08/01/01	08/13/01	08/14/01	12	1	13
MG/L	H10-GW-MW02-06	F10479-4	NORMAL	F10479	SO4	08/01/01	08/13/01	08/14/01	12	1	13
MG/L	H10-GW-MW11-06	F10479-1	NORMAL	F10479	SO4	08/01/01	08/13/01	08/14/01	12	1	13

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/L	H10-GW-MW12-06	F10479-2	NORMAL	F10479	SO4	08/01/01	08/13/01	08/14/01	12	1	13
MG/L	H10-GW-MW01-06	F10479-3	NORMAL	F10479	SUL	08/01/01	/ /	08/07/01	0	0	6
MG/L	H10-GW-MW02-06	F10479-4	NORMAL	F10479	SUL	08/01/01	/ /	08/07/01	0	0	6
MG/L	H10-GW-MW11-06	F10479-1	NORMAL	F10479	SUL	08/01/01	/ /	08/07/01	0	0	6
MG/L	H10-GW-MW12-06	F10479-2	NORMAL	F10479	SUL	08/01/01	/ /	08/07/01	0	0	6

BLANK RESULTS SUMMARY
Part 2 - Initial and Continuing Calibration Blanks

Login Number: J10475
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

File ID: IR0806M1.ASC
QC Limits: result < RL

Date Analyzed: 08/06/01
Run ID: MA2434

Methods: SW846 6010B
Units: ug/l

Metal	RL	IDL	ICB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	9.44	anr							
Antimony	5.0	2.56	anr							
Arsenic	10	3.15	anr							
Barium	200	.94	anr							
Beryllium	5.0	.22	anr							
Cadmium	5.0	.27	-0.070	<5.0	0.0	<5.0	-0.17	<5.0	-0.39	<5.0
Calcium	1000	10.2	anr						16.6	<20<
Chromium	10	.35	-0.48	<10	-0.21	<10	-0.21	<10		
Cobalt	50	.55	anr							
Copper	25	.71	anr							
Iron	300	9.02	anr							
Lead	5.0	1.16	anr							
Magnesium	5000	25.5	anr							
Manganese	15	.26	anr							
Molybdenum	50	1.01	anr							
Nickel	40	.8	anr							
Potassium	5000	49	anr							
Selenium	10	2.5	anr							
Silver	10	.59	anr							
Sodium	5000	173	anr							
Thallium	10	2.07	anr							
Tin	50	1.03								
Vanadium	50	.58	anr							
Zinc	20	.36	anr							

(*) Outside of QC limits
(anr) Analyte not requested

[illegible]
[illegible] Initial and Continuing Calibration Blanks

Login Number: F10475
Account: TETRFLOX - Tetra-Tech,NUS
Project: TETRFLOX1724 - NAS Jax-Hanger 1000

File ID: 1R0806M1.ASC
QC Limits: result < RL

Date Analyzed: 06/06/01
Run ID: MA2434

Methods: SW846 6010B
Units: ug/l

Metal	RL	IDL	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	9.44	anr					
Antimony	5.0	2.56	anr					
Arsenic	10	3.15	anr					
Barium	200	.94	anr					
Beryllium	5.0	.22	anr					
Cadmium	5.0	.27	-0.36	<5.0	-0.26	<5.0	-0.050	<5.0
Calcium	1000	10.2	anr					
Chromium	10	.35	-0.17	<10	-0.24	<10	0.66	<10
Cobalt	50	.55	anr					
Copper	25	.71	anr					
Iron	300	9.02	anr					
Lead	5.0	1.16	anr					
Magnesium	5000	25.5	anr					
Manganese	15	.26	anr					
Molybdenum	50	1.01	anr					
Nickel	40	.8	anr					
Potassium	5000	49	anr					
Selenium	10	2.5	anr					
Silver	10	.59	anr					
Sodium	5000	173	anr					
Thallium	10	2.07	anr					
Tin	50	1.03						
Vanadium	50	.58	anr					
Zinc	20	.36	anr					

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: F10479
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

QC Batch ID: MP3710
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 08/03/01

Metal	RL	IDL	MB raw	final
Aluminum	200	9.44	anr	
Antimony	5.0	2.56	anr	
Arsenic	10	3.15	anr	
Barium	200	.94	anr	
Beryllium	5.0	.22	anr	
Cadmium	5.0	.27	-0.080	<5.0
Calcium	1000	10.2	anr	
Chromium	10	.35	1.5	<10
Cobalt	50	.55	anr	
Copper	25	.71	anr	
Iron	300	9.02	anr	
Lead	5.0	1.16	anr	
Magnesium	5000	25.5	anr	
Manganese	15	.26	anr	
Molybdenum	50	1.01	anr	
Nickel	40	.8	anr	
Potassium	5000	49	anr	
Selenium	10	2.5	anr	
Silver	10	.59	anr	
Sodium	5000	173	anr	
Thallium	10	2.07	anr	
Tin	50	1.03		
Vanadium	50	.58	anr	
Zinc	20	.36	anr	

Associated samples MP3710: F10479-1, F10479-2, F10479-3, F10479-4

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F10479
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 100

Analyte	Batch ID	RL	MB Result	Units	BSP %Recov	QC Limits
Chloride	GP2526	20	<20	mg/l	98.0	90-110%
Nitrogen, Nitrate	GP2499	0.10	<0.10	mg/l	95.0	90-110%
Nitrogen, Nitrite	GP2499	0.10	<0.10	mg/l	93.0	90-110%
Sulfate	GP2526	20	<20	mg/l	94.7	90-110%
Sulfide	GN7884	2.0	<2.0	mg/l		

Associated Samples:
Batch GN7884: F10479-1, F10479-2, F10479-3, F10479-4
Batch GP2499: F10479-1, F10479-2, F10479-3, F10479-4
Batch GP2526: F10479-1, F10479-2, F10479-3, F10479-4

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F10479
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

Analyte	Batch ID	RL	MB Result	Units	BSP %Recov	QC Limits
Chloride	GP2526	20	<20	mg/l	98.0	90-110%
Nitrogen, Nitrate	GP2499	0.10	<0.10	mg/l	95.0	90-110%
Nitrogen, Nitrite	GP2499	0.10	<0.10	mg/l	93.0	90-110%
Sulfate	GP2526	20	<20	mg/l	94.7	90-110%
Sulfide	GN7884	2.0	<2.0	mg/l		

Associated Samples:
Batch GN7884: F10479-1, F10479-2, F10479-3, F10479-4
Batch GP2499: F10479-1, F10479-2, F10479-3, F10479-4
Batch GP2526: F10479-1, F10479-2, F10479-3, F10479-4

ACCUTEST LABORATORIES SOUTHEAST
SAMPLE RECEIPT CONFIRMATION

Accutest Job Number: F10479

Client/Project: TTNUS / N3995 NAS JAX - Hangar 1000

Date/Time Received: 8-2-01 / 10100

Method of Delivery: Fed Ex Greyhound UPS Pickup Delivery Other

Air Bill Number: 8287 2074 0329

Cooler Temperatures: 2.6°, 3.8°

Custody Seals Intact?	YES	NO
Chain Of Custody Provided?	YES	NO
Chain Of Custody Match Bottles?	YES	NO
Sample Labels Present?	YES	NO
Are All Bottles Unbroken?	YES	NO
Proper Preservative?	YES	NO
Correct Containers Used?	YES	NO
Sufficient Sample Volume?	YES	NO

Number of Encores: Ø

COMMENTS:

8-2-01

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER | PAGE ___ OF ___

PROJECT NO: N3995

SITE NAME: NAS JAX-HANGAR 1000

SAMPLERS (SIGNATURE) Alan Pate

PROJECT MANAGER AND PHONE NUMBER: MARK PETERSON 904-281-0400

FIELD OPERATIONS LEADER AND PHONE NUMBER: ALAN PATE 904-281-0400

CARRIER/WAYBILL NUMBER: FEDEX

LABORATORY NAME AND CONTACT: ACCUTEST - LINDA WILLIAMS

ADDRESS: 4405 VINELAND Rd. #C-15

CITY, STATE: ORLANDO, FL 32811

STANDARD TAT ☒
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G, G, G, G, P, P, P

PRESERVATIVE USED: HCL, HCL, /, /, HNO_3, NaOH, /

TYPE OF ANALYSIS

DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	VOCs (8260 B)	METHANE/ETHANE/ETHENE RSK 147/175	ALCOHOLS (8015 B)	SVOCs (8270C)	PAHs (8310)	METALS-Cd/Cr (6010 B)	SULFIDE 376.1	ANIONS (300.0) SO_4, Cl, NO_2, NO_3	COMMENTS
3/1	1230	H10-GW-MW11-06	H_2O	G		3	3	4	1	1	1			COOL TO 4°C
3/1	1330	H10-GW-MW12-06	H_2O	G		3	3	4	1	1	1			
														SEE ATTACHED
														QAPP TABLE
														FOR ANALYTICAL
														REQUIREMENTS

1. RELINQUISHED BY Alan Pate	DATE 8/1/01	TIME 1630	1. RECEIVED BY [illegible signature]	DATE 8-2-01	TIME 10:00
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

2.6°, 3.8°

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/99 FORM NO. TINUS-001

TETRA TECH NUS, INC. — CHAIN OF CUSTODY — NUMBER

PAGE ____ OF ____

PROJECT NO:	N3995
SITE NAME:	NAS JAX - HANGAR 1000
SAMPLERS (SIGNATURE)	Alan L Pate
PROJECT MANAGER AND PHONE NUMBER	MARK PETERSON 904-281-0400
FIELD OPERATIONS LEADER AND PHONE NUMBER	ALAN PATE 904-281-0400
CARRIER/WAYBILL NUMBER	FEDEX
LABORATORY NAME AND CONTACT:	ACCUTEST - LINDA WILLIAMS
ADDRESS	4405 VINELAND Rd. # C-15
CITY, STATE	ORLANDO, FL 32811

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

						VOC's (8260B)	METHANE/ETHANE/ETHENE RSK 147/175	ALCOHOLS (8015B)	SVOC's (8270C) PAHs (8310)	METALS Cd/Cr (6010B)	SULFIDE 376.1	ANIONS (300.0) SO_4, Cl, NO_2, NO_3		
					CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	G	G	G	P	P	P		
					PRESERVATIVE USED	HCL	HCL	/	/	HNO_3	NaOH	/		
YEAR	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS								COMMENTS
1	1045	H10-GW-MW01-06	H_2O	G	16	3	3	3	4	1	1	1		Cool To 4°C
1	0835	H10-GW-MW02-06	H_2O	G	16	3	3	3	4	1	1	1		
1	1230	H10-GW-MW11-06	H_2O	G	3	3								SEE ATTACHED
1	1330	H10-GW-MW12-06	H_2O	G	3	3								QAPP TABLE FOR
	0000	H10-TB04	H_2O		2									ANALYTICAL
														REQUIREMENTS

1. RELINQUISHED BY Alan L Pate	DATE 8/1/01	TIME 1630	1. RECEIVED BY [signature]	DATE 8-2-01	TIME 10:00
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS 2.6°, 3.8°

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/00 FORM NO. TINUS-001

Tetra Tech NUS

INTERNAL CORRESPONDENCE

TO:	**Mr. Mark Peterson**	**DATE:**	**September 20, 2001**
FROM:	**Elena Rodriguez**	**COPIES:**	**DV FILE**
SUBJECT:	**DATA VALIDATION - INORGANICS CTO 167, NASJAX SDG F10487**		
SAMPLES:	4/Aqueous/ H10-GW-MW09-06 H10-GW-MW13-06 H10-GW-MW16-06 H10-GW-MW18-06		

OVERVIEW

The sample set for CTO 167, NASJAX, SDG F10487 consists of four aqueous environmental samples. All samples were analyzed for cadmium and chromium and for natural attenuation parameters: chloride, nitrate, nitrite, sulfate, and sulfide.

The samples were collected by TetraTech NUS on August 2, 2001 and analyzed by Accutest Laboratories. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria using the following analytical and reporting protocols: SW-846 Methods 6010B, EPA 300, 325.3, and 376.1. The data contained in this SDG were validated with regard to the following parameters:

* * Data completeness
* Holding times
* * Initial/continuing calibrations
* * Laboratory method blank results
* * Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A.

Metals

Data reported for this fraction were found to be acceptable.

General Chemistry: Chloride, Sulfate, Sulfide, Nitrate, Nitrite

Sample H10-GW-MW13-06 was analyzed for nitrate and nitrite beyond the acceptable holding time. The nitrate result was qualified, J, as estimated and the undetected Nitrite result was qualified, R, as rejected.

All other data reported for this fraction were found to be acceptable.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Holding time for nitrate and nitrite was exceeded on Sample H10-GW-MW13-06.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Inorganic Data Validation (2/94), and the Navy IRCDQM (9/99) NFESC guidelines. The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC guidelines and the Quality Assurance Project Plan (QAPP)."

Elena Rodriguez

Tetra Tech NUS

Elena Rodriguez

E Rodriguez for J Samchuck

TetraTech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:
1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank contamination
C = Calibration (i.e. %RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS – GFAA MSAs r<0.995
K = ICP Interference – Include ICSAB %Rs
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (I.E. base-time drifting)
P = Uncertainty near detection limit (<2 x IDL for Inorganics and < CRQL for Organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCB D% between columns for positive results
V = Non-Linear calibrations, tuning r< 0.995 (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = % Solid content is less than 30%

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10487

SAMPLE NUMBER:	H10-GW-MW09-06			H10-GW-MW13-06			H10-GW-MW16-06			H10-GW-MW18-06		
SAMPLE DATE:	08/02/01			08/02/01			08/02/01			08/02/01		
LABORATORY ID:	F10487-1			F10487-2			F10487-3			F10487-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
INORGANICS												
CADMIUM	0.27	U		0.27	U		0.27	U		0.27	U	
CHROMIUM	0.49			0.35	U		0.35	U		0.35	U	

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10487

SAMPLE NUMBER:	H10-GW-MW09-06			H10-GW-MW13-06			H10-GW-MW16-06			H10-GW-MW18-06		
SAMPLE DATE:	08/02/01			08/02/01			08/02/01			08/02/01		
LABORATORY ID:	F10487-1			F10487-2			F10487-3			F10487-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
FIELD DUPLICATE OF:												
	RESULT	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
MISCELLANEOUS PARAMETERS												
CHLORIDE(MG/L)	20	U		20	U		20	U		20	U	
NITRATE AS NITROGEN(MG/L)	0.1	U		5.3	J	H	0.1	U		0.61		
NITRITE AS NITROGEN(MG/L)	0.1	U		0.2	UR	H	0.1	U		0.1	U	
SULFATE(MG/L)	20	U		20	U		20	U		41.2		
SULFIDE(MG/L)	2	U		2	U		2	U		2	U	

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

Report of Analysis

Client Sample ID:	H10-GW-MW09-06		
Lab Sample ID:	F10487-1	**Date Sampled:**	08/02/01
Matrix:	AQ - Ground Water	**Date Received:**	08/03/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	0.27	ug/l	1	08/06/01	08/21/01	JK	SW846 6010B
Chromium	0.49 B	10	0.35	ug/l	1	08/06/01	08/21/01	JK	SW846 6010B

RL = Reporting Limit
IDL = Instrument Detection Limit

U = Indicates a result < IDL
B = Indicates a result >= IDL but < RL

Report of Analysis

Client Sample ID:	H10-GW-MW13-06		
Lab Sample ID:	F10487-2	**Date Sampled:**	08/02/01
Matrix:	AQ - Ground Water	**Date Received:**	08/03/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	0.27	ug/l	1	08/06/01	08/21/01	JK	SW846 6010B
Chromium	0.35 U	10	0.35	ug/l	1	08/06/01	08/21/01	JK	SW846 6010B

RL = Reporting Limit
IDL = Instrument Detection Limit

U = Indicates a result < IDL
B = Indicates a result >= IDL but < RL

Report of Analysis

Client Sample ID:	H10-GW-MW16-06		
Lab Sample ID:	F10487-3	Date Sampled:	08/02/01
Matrix:	AQ - Ground Water	Date Received:	08/03/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	0.27	ug/l	1	08/06/01	08/21/01	JK	SW846 6010B
Chromium	0.35 U	10	0.35	ug/l	1	08/06/01	08/21/01	JK	SW846 6010B

RL = Reporting Limit
IDL = Instrument Detection Limit

U = Indicates a result < IDL
B = Indicates a result >= IDL but < RL

Report of Analysis

Client Sample ID: H10-GW-MW18-06
Lab Sample ID: F10487-4
Matrix: AQ - Ground Water
Project: NAS Jax-Hanger 1000

Date Sampled: 08/02/01
Date Received: 08/03/01
Percent Solids: n/a

Metals Analysis

Analyte	Result	RL	IDL	Units	DF	Prep	Analyzed	By	Method
Cadmium	0.27 U	5.0	0.27	ug/l	1	08/06/01	08/21/01	JK	SW846 6010B
Chromium	0.35 U	10	0.35	ug/l	1	08/06/01	08/21/01	JK	SW846 6010B

RL = Reporting Limit
IDL = Instrument Detection Limit

U = Indicates a result < IDL
B = Indicates a result > = IDL but < RL

Report of Analysis

Client Sample ID:	H10-GW-MW09-06		
Lab Sample ID:	F10487-1	**Date Sampled:**	08/02/01
Matrix:	AQ - Ground Water	**Date Received:**	08/03/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	<20	20	mg/l	1	08/14/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrate	<0.10	0.10	mg/l	1	08/03/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrite	<0.10	0.10	mg/l	1	08/03/01	AL	EPA 300/SW846 9056
Sulfate	<20	20	mg/l	1	08/14/01	AL	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	08/07/01	AL	EPA 376.1

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	H10-GW-MW13-06		
Lab Sample ID:	F10487-2	**Date Sampled:**	08/02/01
Matrix:	AQ - Ground Water	**Date Received:**	08/03/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	<20	20	mg/l	1	08/14/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrate	5.3	0.20	mg/l	2	08/08/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrite	<0.20	0.20	mg/l	2	08/08/01	AL	EPA 300/SW846 9056
Sulfate	<20	20	mg/l	1	08/14/01	AL	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	08/07/01	AL	EPA 376.1

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW16-06		
Lab Sample ID:	F10487-3	**Date Sampled:**	08/02/01
Matrix:	AQ - Ground Water	**Date Received:**	08/03/01
		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	<20	20	mg/l	1	08/14/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrate	<0.10	0.10	mg/l	1	08/03/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrite	<0.10	0.10	mg/l	1	08/03/01	AL	EPA 300/SW846 9056
Sulfate	<20	20	mg/l	1	08/14/01	AL	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	08/07/01	AL	EPA 376.1

RL = Reporting Limit

Report of Analysis

Client Sample ID:	H10-GW-MW18-06	Date Sampled:	08/02/01
Lab Sample ID:	F10487-4	Date Received:	08/03/01
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	<20	20	mg/l	1	08/14/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrate	0.61	0.10	mg/l	1	08/03/01	AL	EPA 300/SW846 9056
Nitrogen, Nitrite	<0.10	0.10	mg/l	1	08/03/01	AL	EPA 300/SW846 9056
Sulfate	41.2	20	mg/l	1	08/14/01	AL	EPA 300/SW846 9056
Sulfide	<2.0	2.0	mg/l	1	08/07/01	AL	EPA 376.1

RL = Reporting Limit

APPENDIX C

SUPPORT DOCUMENTATION

F10487

HOLDING TIME

09/04/01

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UG/L	H10-GW-MW09-06	F10487-1	NORMAL	F10487	ALC	08/02/01	/ /	08/08/01	0	0	6
UG/L	H10-GW-MW13-06	F10487-2	NORMAL	F10487	ALC	08/02/01	/ /	08/08/01	0	0	6
UG/L	H10-GW-MW16-06	F10487-3	NORMAL	F10487	ALC	08/02/01	/ /	08/08/01	0	0	6
UG/L	H10-GW-MW18-06	F10487-4	NORMAL	F10487	ALC	08/02/01	/ /	08/08/01	0	0	6
MG/L	H10-GW-MW09-06	F10487-1	NORMAL	F10487	CL	08/02/01	08/13/01	08/14/01	11	1	12
MG/L	H10-GW-MW13-06	F10487-2	NORMAL	F10487	CL	08/02/01	08/13/01	08/14/01	11	1	12
MG/L	H10-GW-MW16-06	F10487-3	NORMAL	F10487	CL	08/02/01	08/13/01	08/14/01	11	1	12
MG/L	H10-GW-MW18-06	F10487-4	NORMAL	F10487	CL	08/02/01	08/13/01	08/14/01	11	1	12
UG/L	H10-GW-MW09-06	F10487-1	NORMAL	F10487	ETHA	08/02/01	/ /	08/09/01	0	0	7
UG/L	H10-GW-MW13-06	F10487-2	NORMAL	F10487	ETHA	08/02/01	/ /	08/10/01	0	0	8
UG/L	H10-GW-MW16-06	F10487-3	NORMAL	F10487	ETHA	08/02/01	/ /	08/10/01	0	0	8
UG/L	H10-GW-MW18-06	F10487-4	NORMAL	F10487	ETHA	08/02/01	/ /	08/10/01	0	0	8
UG/L	H10-GW-MW09-06	F10487-1	NORMAL	F10487	ETHE	08/02/01	/ /	08/09/01	0	0	7
UG/L	H10-GW-MW13-06	F10487-2	NORMAL	F10487	ETHE	08/02/01	/ /	08/10/01	0	0	8
UG/L	H10-GW-MW16-06	F10487-3	NORMAL	F10487	ETHE	08/02/01	/ /	08/10/01	0	0	8
UG/L	H10-GW-MW18-06	F10487-4	NORMAL	F10487	ETHE	08/02/01	/ /	08/10/01	0	0	8
UG/L	H10-GW-MW09-06	F10487-1	NORMAL	F10487	M	08/02/01	08/06/01	08/21/01	4	15	19
UG/L	H10-GW-MW13-06	F10487-2	NORMAL	F10487	M	08/02/01	08/06/01	08/21/01	4	15	19
UG/L	H10-GW-MW16-06	F10487-3	NORMAL	F10487	M	08/02/01	08/06/01	08/21/01	4	15	19
UG/L	H10-GW-MW18-06	F10487-4	NORMAL	F10487	M	08/02/01	08/06/01	08/21/01	4	15	19
UG/L	H10-GW-MW09-06	F10487-1	NORMAL	F10487	METH	08/02/01	/ /	08/09/01	0	0	7
UG/L	H10-GW-MW13-06	F10487-2	NORMAL	F10487	METH	08/02/01	/ /	08/10/01	0	0	8
UG/L	H10-GW-MW16-06	F10487-3	NORMAL	F10487	METH	08/02/01	/ /	08/10/01	0	0	8
UG/L	H10-GW-MW18-06	F10487-4	NORMAL	F10487	METH	08/02/01	/ /	08/10/01	0	0	8

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/L	H10-GW-MW09-06	F10487-1	NORMAL	F10487	NTA	08/02/01	08/03/01	08/03/01	1	0	1
MG/L	H10-GW-MW13-06	F10487-2	NORMAL	F10487	NTA	08/02/01	08/03/01	08/08/01	1	5	6
MG/L	H10-GW-MW16-06	F10487-3	NORMAL	F10487	NTA	08/02/01	08/03/01	08/03/01	1	0	1
MG/L	H10-GW-MW18-06	F10487-4	NORMAL	F10487	NTA	08/02/01	08/03/01	08/03/01	1	0	1
MG/L	H10-GW-MW09-06	F10487-1	NORMAL	F10487	NTI	08/02/01	08/03/01	08/03/01	1	0	1
MG/L	H10-GW-MW13-06	F10487-2	NORMAL	F10487	NTI	08/02/01	08/03/01	08/03/01	1	0	1
MG/L	H10-GW-MW16-06	F10487-3	NORMAL	F10487	NTI	08/02/01	08/03/01	08/08/01	1	5	6
MG/L	H10-GW-MW18-06	F10487-4	NORMAL	F10487	NTI	08/02/01	08/03/01	08/03/01	1	0	1
UG/L	H10-GW-MW09-06	F10487-1	NORMAL	F10487	OS	08/02/01	08/03/01	08/03/01	1	0	1
UG/L	H10-GW-MW13-06	F10487-2	NORMAL	F10487	OS	08/02/01	08/06/01	08/08/01	4	2	6
UG/L	H10-GW-MW16-06	F10487-3	NORMAL	F10487	OS	08/02/01	08/06/01	08/08/01	4	2	6
UG/L	H10-GW-MW18-06	F10487-4	NORMAL	F10487	OS	08/02/01	08/06/01	08/08/01	4	2	6
UG/L	H10-GW-MW09-06	F10487-1	NORMAL	F10487	OS	08/02/01	08/06/01	08/08/01	4	2	6
UG/L	H10-GW-MW13-06	F10487-2	NORMAL	F10487	OV	08/02/01	/ /	08/08/01	0	0	6
UG/L	H10-GW-MW16-06	F10487-3	NORMAL	F10487	OV	08/02/01	/ /	08/08/01	0	0	6
UG/L	H10-GW-MW18-06	F10487-4	NORMAL	F10487	OV	08/02/01	/ /	08/08/01	0	0	6
UG/L	H10-TB05	F10487-5	NORMAL	F10487	OV	08/02/01	/ /	08/08/01	0	0	6
UG/L	H10-GW-MW09-06	F10487-1	NORMAL	F10487	OV	08/02/01	/ /	08/08/01	0	0	6
UG/L	H10-GW-MW13-06	F10487-2	NORMAL	F10487	PAH	08/02/01	08/04/01	08/06/01	2	2	4
UG/L	H10-GW-MW16-06	F10487-3	NORMAL	F10487	PAH	08/02/01	08/04/01	08/06/01	2	2	4
UG/L	H10-GW-MW18-06	F10487-4	NORMAL	F10487	PAH	08/02/01	08/04/01	08/06/01	2	2	4
UG/L	H10-GW-MW09-06	F10487-1	NORMAL	F10487	PAH	08/02/01	08/04/01	08/06/01	2	2	4
UG/L	H10-GW-MW13-06	F10487-2	NORMAL	F10487	SIM	08/02/01	08/06/01	08/07/01	4	1	5
UG/L	H10-GW-MW16-06	F10487-3	NORMAL	F10487	SIM	08/02/01	08/06/01	08/07/01	4	1	5
UG/L	H10-GW-MW18-06	F10487-4	NORMAL	F10487	SIM	08/02/01	08/06/01	08/07/01	4	1	5
UG/L	H10-GW-MW09-06	F10487-1	NORMAL	F10487	SIM	08/02/01	08/06/01	08/07/01	4	1	5
MG/L	H10-GW-MW09-06	F10487-1	NORMAL	F10487	SO4	08/02/01	08/13/01	08/14/01	11	1	12
MG/L	H10-GW-MW13-06	F10487-2	NORMAL	F10487	SO4	08/02/01	08/13/01	08/14/01	11	1	12

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/L	H10-GW-MW16-06	F10487-3	NORMAL	F10487	SO4	08/02/01	08/13/01	08/14/01	11	1	12
MG/L	H10-GW-MW18-06	F10487-4	NORMAL	F10487	SO4	08/02/01	08/13/01	08/14/01	11	1	12
MG/L	H10-GW-MW09-06	F10487-1	NORMAL	F10487	SUL	08/02/01	/ /	08/07/01	0	0	5
MG/L	H10-GW-MW13-06	F10487-2	NORMAL	F10487	SUL	08/02/01	/ /	08/07/01	0	0	5
MG/L	H10-GW-MW16-06	F10487-3	NORMAL	F10487	SUL	08/02/01	/ /	08/07/01	0	0	5
MG/L	H10-GW-MW18-06	F10487-4	NORMAL	F10487	SUL	08/02/01	/ /	08/07/01	0	0	5

ACCUTEST LABORATORIES SOUTHEAST
SAMPLE RECEIPT CONFIRMATION

Accutest Job Number: F10487

Client/Project: TetraTech / N3995 - Hangar 1000

Date/Time Received: 8-3-01 10:00

Method of Delivery: Fed Ex Greyhound UPS Pickup Delivery Other

Air Bill Number: 791627280753

Cooler Temperatures: 2.8°, 2.2°

Custody Seals Intact?	YES	NO
Chain Of Custody Provided?	YES	NO
Chain Of Custody Match Bottles?	YES	NO
Sample Labels Present?	YES	NO
Are All Bottles Unbroken?	YES	NO
Proper Preservative?	YES	NO
Correct Containers Used?	YES	NO
Sufficient Sample Volume?	YES	NO

Number of Encores: Ø

COMMENTS:

Signature: [signature] Date: 8-3-01

TETRA TECH NUS, INC.

CHAIN OF CUSTODY | NUMBER F10487 | PAGE ____ OF ____

PROJECT NO: N3995	SITE NAME: NASJAX-HANGAR 1000	PROJECT MANAGER AND PHONE NUMBER: Mark Peterson 904-281-0400	LABORATORY NAME AND CONTACT: Accutest - Linda Williams
SAMPLERS (SIGNATURE): Alan Pate		FIELD OPERATIONS LEADER AND PHONE NUMBER: Alan Pate 904-281-0400	ADDRESS: 4405 Vineland Rd #C-15
		CARRIER/WAYBILL NUMBER: FEDEX	CITY, STATE: Orlando, FL 32811

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

						CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	G	G	G	P	P	P	
						PRESERVATIVE USED	HCL	HCL	/	/	HNO3	NaOH	/	
DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS	VOCs (8260B)	Methane/Ethane/Ethene RSK147/175	Alcohols (8015B)	SVOCs (8270C) PAHs (8310)	Metals (6010B Cd/Cr)	SULFIDE 376.1	ANIONS (300.0) SO4, Cl, NO2/NO3	COMMENTS
8/2	0855	H10-GW-MW09-06	H_2O	G	3		3							Cool to 4°C
8/2	0955	H10-GW-MW13-06	H_2O	G	3		3							
8/2	1200	H10-GW-MW16-06	H_2O	G	16		3	3	3	4	1	1	1	See Attached
8/2	1100	H10-GW-MW18-06	H_2O	G	16		3	3	3	4	1	1	1	QAPP table
8/2	0000	H10-TB05	H_2O	G										for analytical
														requirements

1. RELINQUISHED BY: Alan Pate	DATE: 8/2/01	TIME: 1630	1. RECEIVED BY: [illegible]	DATE: 8-3-01	TIME: 10:00
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS: 2.8°, 2.2°

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/99

TETRA TECH NUS, INC. — **CHAIN OF CUSTODY** — NUMBER F10487 — PAGE ____ OF ____

PROJECT NO:	SITE NAME:	PROJECT MANAGER AND PHONE NUMBER	LABORATORY NAME AND CONTACT:
N3995	NASJAX-HANGAR1000	Mark Peterson 904-281-0400	Accutest - Linda Williams

SAMPLERS (SIGNATURE): Alan Pate, [signature]

FIELD OPERATIONS LEADER AND PHONE NUMBER: Alan Pate 904-281-0400

ADDRESS: 4405 Vineland Rd # C-15

CARRIER/WAYBILL NUMBER: FEDEX

CITY, STATE: Orlando, FL 32811

STANDARD TAT ☒
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G): G, G, G, G, P, P, P

PRESERVATIVE USED: HCL, HCL, /, /, HNO3, NaOH, /

TYPE OF ANALYSIS: VOCs (8260B); Methane/Ethane/Ethene RSK 147/175; Alcohols (8015B); SVOCs (8270C); PAHs (8310); Metals Cd/Cr 6010B; SULFIDE 376.1; ANIONS (300.0) SO4, Cl, NO2, NO3

DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	VOCs (8260B)	Methane/Ethane/Ethene RSK 147/175	Alcohols (8015B)	SVOCs (8270C)	PAHs (8310)	Metals Cd/Cr 6010B	SULFIDE 376.1	ANIONS (300.0) SO4, Cl, NO2, NO3	COMMENTS
8/2	0855	H10-GW-MW09-06	H2O	G	13		3	3	4	1	1	1		Cool To 4°C
8/2	0955	H10-GW-MW13-06	H2O	G	13		3	3	4	1	1	1		
														See attached QAPP table for analytical requirements

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY Alan Pate	8/2/01	1600	1. RECEIVED BY [signature]	8-3-01	10:00
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS

2.8°, 2.2°

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/99

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F10487
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

File ID: IR0815M1.ASC
QC Limits: result < RL

Date Analyzed: 08/15/01
Run ID: MA2444

Methods: SW846 6010B
Units: ug/l

Metal	RL	IDL	ICB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	9.44	-1.9	<200	0.55	<200	11.6	<200	4.8	<200
Antimony	5.0	2.56	1.0	<5.0	-0.24	<5.0	0.34	<5.0	0.88	<5.0
Arsenic	10	3.15	0.72	<10	-0.14	<10	-0.41	<10	1.4	<10
Barium	200	.94	-0.050	<200	-0.030	<200	0.0	<200	-0.010	<200
Beryllium	5.0	.22	-0.19	<5.0	-0.070	<5.0	-0.12	<5.0	0.070	<5.0
Cadmium	5.0	.27	-0.34	<5.0	-0.16	<5.0	-0.20	<5.0	-0.38	<5.0
Calcium	1000	10.2	-5.7	<1000	-6.3	<1000	5.0	<1000	-1.8	<1000
Chromium	10	.35	-0.20	<10	-0.37	<10	-0.060	<10	-0.21	<10
Cobalt	50	.55	-0.14	<50	-0.21	<50	0.030	<50	-0.27	<50
Copper	25	.71	0.21	<25	-0.030	<25	0.15	<25	-0.16	<25
Iron	300	9.02	-1.8	<300	-0.87	<300	5.6	<300	0.15	<300
Lead	5.0	1.16	0.58	<5.0	0.33	<5.0	0.010	<5.0	0.38	<5.0
Magnesium	5000	25.5	-2.3	<5000	-1.8	<5000	13.0	<5000	1.6	<5000
Manganese	15	.26	-0.20	<15	-0.14	<15	-0.16	<15	-0.080	<15
Molybdenum	50	1.01								
Nickel	40	.8	0.23	<40	0.13	<40	0.80	<40	0.69	<40
Potassium	5000	49	33.3	<5000	21.3	<5000	80.3	<5000	39.2	<5000
Selenium	10	2.5	1.9	<10	2.8	<10	1.0	<10	4.4	<10
Silver	10	.59	-0.23	<10	-0.18	<10	0.24	<10	-0.040	<10
Sodium	5000	173	50.9	<5000	88.9	<5000	154	<5000	12.5	<5000
Thallium	10	2.07	-3.2	<10	-0.76	<10	-0.25	<10	0.83	<10
Tin	50	1.03								
Vanadium	50	.58	0.090	<50	0.090	<50	0.41	<50	0.41	<50
Zinc	20	.36	-0.22	<20	-0.24	<20	-0.36	<20	-0.060	<20

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F10487
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

File ID: IR0821M1.ASC
QC Limits: result < RL

Date Analyzed: 08/21/01
Run ID: MA2452

Methods: SW846 6010B
Units: ug/l

Metal	RL	IDL	ICB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	9.44								
Antimony	5.0	2.56								
Arsenic	10	3.15	anr							
Barium	200	.94								
Beryllium	5.0	.22								
Cadmium	5.0	.27	-0.10	<5.0	-0.16	<5.0	-0.11	<5.0	-0.28	<5.0
Calcium	1000	10.2								
Chromium	10	.35	-1.3	<10<	-1.5	<10<	-1.4	<10<	-1.6	<10<
Cobalt	50	.55								
Copper	25	.71								
Iron	300	9.02								
Lead	5.0	1.16	anr							
Magnesium	5000	25.5								
Manganese	15	.26								
Molybdenum	50	1.01								
Nickel	40	.8								
Potassium	5000	49								
Selenium	10	2.5								
Silver	10	.59								
Sodium	5000	173	anr							
Thallium	10	2.07								
Tin	50	1.03								
Vanadium	50	.58								
Zinc	20	.36								

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F10487
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

File ID: IR0621M1.ASC
QC Limits: result < RL

Date Analyzed: 08/21/01
Run ID: MA2452

Methods: SW846 6010B
Units: ug/l

Metal	RL	IDL	CCB raw	final	CCB raw	final	CCB raw	final	CCB raw	final
Aluminum	200	9.44								
Antimony	5.0	2.56								
Arsenic	10	3.15	anr							
Barium	200	.94								
Beryllium	5.0	.22								
Cadmium	5.0	.27	-0.29	<5.0	-0.17	<5.0	0.0	<5.0	-0.11	<5.0
Calcium	1000	10.2								
Chromium	10	.35	-1.4	<10<	-1.0	<10	-1.4	<10<	-1.1	<10<
Cobalt	50	.55								
Copper	25	.71								
Iron	300	9.02								
Lead	5.0	1.16	anr							
Magnesium	5000	25.5								
Manganese	15	.26								
Molybdenum	50	1.01								
Nickel	40	.8								
Potassium	5000	49								
Selenium	10	2.5								
Silver	10	.59								
Sodium	5000	173	anr							
Thallium	10	2.07								
Tin	50	1.03								
Vanadium	50	.58								
Zinc	20	.36								

(*) Outside of QC limits
(anr) Analyte not requested

[illegible]

Part 2 - Initial and Continuing Calibration Blanks

Login Number: F10457
Account: TETRFLJX Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

File ID: JR0821M1.ASC
QC Limits: result < RL

Date Analyzed: 06/21/01
Run ID: MA2452

Methods: SW846 6010B
Units: ug/l

Metal	RL	IDL	CCB raw	final
Aluminum	200	9.44		
Antimony	5.0	2.56		
Arsenic	10	3.15	anr	
Barium	200	.94		
Beryllium	5.0	.22		
Cadmium	5.0	.27	-0.23	<5.0
Calcium	1000	10.2		
Chromium	10	.35	-1.1	<10<
Cobalt	50	.55		
Copper	25	.71		
Iron	300	9.02		
Lead	5.0	1.16	anr	
Magnesium	5000	25.5		
Manganese	15	.26		
Molybdenum	50	1.01		
Nickel	40	.8		
Potassium	5000	49		
Selenium	10	2.5		
Silver	10	.59		
Sodium	5000	173	anr	
Thallium	10	2.07		
Tin	50	1.03		
Vanadium	50	.58		
Zinc	20	.36		

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 Method Blanks

Login Number: F10487
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

QC Batch ID: MP3717
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 08/06/01

Metal	RL	IDL	MB raw	final
Aluminum	200	9.44	anr	
Antimony	5.0	2.56	anr	
Arsenic	10	3.15	anr	
Barium	200	.94	anr	
Beryllium	5.0	.22	anr	
Cadmium	5.0	.27	-0.31	<5.0
Calcium	1000	10.2	anr	
Chromium	10	.35	-0.43	<10
Cobalt	50	.55	anr	
Copper	25	.71	anr	
Iron	300	9.02	anr	
Lead	5.0	1.16	anr	
Magnesium	5000	25.5	anr	
Manganese	15	.26	anr	
Molybdenum	50	1.01		
Nickel	40	.8	anr	
Potassium	5000	49	anr	
Selenium	10	2.5	anr	
Silver	10	.59	anr	
Sodium	5000	173	anr	
Thallium	10	2.07	anr	
Tin	50	1.03		
Vanadium	50	.58	anr	
Zinc	20	.36	anr	

Associated samples MP3717: F10487-1, F10487-2, F10487-3, F10487-4

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F10487
Account: TETRFLJX - Tetra-Tech,NUS
Project: TETRFLJX1724 - NAS Jax-Hanger 1000

Analyte	Batch ID	RL	MB Result	Units	BSP %Recov	QC Limits
Chloride	GP2526	20	<20	mg/l	98.0	90-110%
Nitrogen, Nitrate	GP2499	0.10	<0.10	mg/l	95.0	90-110%
Nitrogen, Nitrite	GP2499	0.10	<0.10	mg/l	93.0	90-110%
Sulfate	GP2526	20	<20	mg/l	94.7	90-110%
Sulfide	GN7884	2.0	<2.0	mg/l		

Associated Samples:
Batch GN7884: F10487-1, F10487-2, F10487-3, F10487-4
Batch GP2499: F10487-1, F10487-2, F10487-3, F10487-4
Batch GP2526: F10487-1, F10487-2, F10487-3, F10487-4

Tetra Tech NUS

INTERNAL CORRESPONDENCE

TO:	**Mr. Mark Peterson**	**DATE:**	**September 20, 2001**
FROM:	**Elena Rodriguez**	**COPIES:**	**DV FILE**

SUBJECT: **DATA VALIDATION - ORGANICS**
CTO 167, NASJAX
SDG F10487

SAMPLES: 5/Aqueous/

H10-GW-MW09-06
H10-GW-MW13-06
H10-GW-MW16-06
H10-GW-MW18-06
H10-GW-TB05-06

OVERVIEW

The sample set for CTO 167, NASJAX, SDG F10487 consists of four aqueous environmental samples and one aqueous quality control sample (trip blank). All groundwater samples were analyzed for select volatile organic compounds, semi-volatile organic compounds, polynuclear aromatic hydrocarbons, alcohols, and dissolved gasses. The trip blank (H10-GW-TB05-06) was analyzed for volatile organic compounds.

The samples were collected by TetraTech NUS on August 3, 2001 and analyzed by Accutest Laboratories. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria using the following analytical and reporting protocols: SW-846 Methods 8260B, 8270C, 8310, 8015 and RSK SOP 147/175. The data contained in this SDG were validated with regard to the following parameters:

- * Data completeness
- * Holding times
- * Initial/continuing calibrations
- * Laboratory method and field quality control blank results
- Surrogate recoveries
- * Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A.

Volatile Organics

Data reported for this fraction were found to be acceptable.

Alcohols

Data reported for this fraction were found to be acceptable.

Semi-Volatile Organics

Acid fraction surrogate recoveries were low in sample H10-GW-MW09-06. The sample was re-extracted one day outside of the holding time and all surrogate recoveries were acceptable. The re-extraction data was used for validation.

All other data reported for this fraction were found to be acceptable.

Polynuclear Aromatic Hydrocarbons

Data reported for this fraction were found to be acceptable.

Dissolved Gases (Methane-Ethane-Ethene)

Data reported for this fraction were found to be acceptable.

Additional Comments

Positive results below the reporting limit (RL) were qualified as estimated, J, due to uncertainty near the detection limit.

EXECUTIVE SUMMARY

Laboratory Performance Issues: Surrogate failure during Semi-volatile Organics analysis of sample H10-GW-MW09-06 required re-extraction and reanalysis which was performed beyond the holding time.

Other Factors Affecting Data Quality: None

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99), and the Navy IRCDQM (9/99) NFESC guidelines. The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC guidelines and the Quality Assurance Project Plan (QAPP)."

Elena Rodriguez

Tetra Tech NUS

Elena Rodriguez

E Rodriguez for J Samchuck

Tetra Tech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank contamination
C = Calibration (i.e. %RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS – GFAA MSAs r<0.995
K = ICP Interference – Include ICSAB %Rs
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (I.E. base-time drifting)
P = Uncertainty near detection limit (<2 x IDL for Inorganics and < CRQL for Organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCB D% between columns for positive results
V = Non-Linear calibrations, tuning r< 0.995 (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = % Solid content is less than 30%

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10487

SAMPLE NUMBER:	H10-GW-MW09-06			H10-GW-MW13-06			H10-GW-MW16-06			H10-GW-MW18-06		
SAMPLE DATE:	08/02/01			08/02/01			08/02/01			08/02/01		
LABORATORY ID:	F10487-1			F10487-2			F10487-3			F10487-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
VOLATILES	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
1,1,1-TRICHLOROETHANE	13.6			1.7	J	P	2	U		2	U	
1,1,2-TRICHLOROETHANE	2	U		2	U		2	U		2	U	
1,1-DICHLOROETHANE	10.7			2	U		19.1			20.9		
1,1-DICHLOROETHENE	1.2	J	P	2	U		38.8			16.9		
1,2-DICHLOROETHANE	2	U		2	U		0.5	J	P	2	U	
1-BUTANOL	500	U		500	U		500	U		500	U	
2-NITROPROPANE	10	U		10	U		10	U		10	U	
ACETONE	50	U		50	U		50	U		50	U	
BENZENE	1	U		1	U		1	U		1	U	
CYCLOHEXANONE	10	U		10	U		10	U		10	U	
ETHYLBENZENE	2	U		2	U		2	U		2	U	
FREON 113	0.96	J	P	2	U		9.7			2.6		
ISOBUTANOL	500	U		500	U		500	U		500	U	
METHANOL	500	U		500	U		500	U		500	U	
TETRACHLOROETHENE	2	U		67.9			2	U		1.8	J	P
TOLUENE	2	U		2	U		2	U		2	U	
TOTAL 1,2-DICHLOROETHENE	4	U		5.4			1.8	J	P	65		
TRICHLOROETHENE	3			3.8			28			60.6		
VINYL CHLORIDE	1	U		2.7			1	U		1	U	

SAMPLE NUMBER:	H10-TB05										
SAMPLE DATE:	08/02/01			/ /			/ /			/ /	
LABORATORY ID:	F10487-5										
QC_TYPE:	NORMAL										
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %	
UNITS:	UG/L										
FIELD DUPLICATE OF:											

VOLATILES	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
1,1,1-TRICHLOROETHANE	2	U										
1,1,2-TRICHLOROETHANE	2	U										
1,1-DICHLOROETHANE	2	U										
1,1-DICHLOROETHENE	2	U										
1,2-DICHLOROETHANE	2	U										
2-NITROPROPANE	10	U										
ACETONE	50	U										
BENZENE	1	U										
CYCLOHEXANONE	10	U										
ETHYLBENZENE	2	U										
FREON 113	2	U										
TETRACHLOROETHENE	2	U										
TOLUENE	2	U										
TOTAL 1,2-DICHLOROETHENE	4	U										
TRICHLOROETHENE	2	U										
VINYL CHLORIDE	1	U										

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10487

SAMPLE NUMBER:	H10-GW-MW09-06			H10-GW-MW13-06			H10-GW-MW16-06			H10-GW-MW18-06		
SAMPLE DATE:	08/02/01			08/02/01			08/02/01			08/02/01		
LABORATORY ID:	F10487-1			F10487-2			F10487-3			F10487-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
SEMIVOLATILES												
2,4-DINITROTOLUENE	0.22	U		0.2	U		0.22	U		0.2	U	
3&4-METHYLPHENOL	4.4	U		4	U		4.4	U		4	U	
PENTACHLOROPHENOL	1.1	U		1	U		1.1	U		1	U	

NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10487

SAMPLE NUMBER:	H10-GW-MW09-06			H10-GW-MW13-06			H10-GW-MW16-06			H10-GW-MW18-06		
SAMPLE DATE:	08/02/01			08/02/01			08/02/01			08/02/01		
LABORATORY ID:	F10487-1			F10487-2			F10487-3			F10487-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
DISSOLVED GASES	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	CODE
ETHANE	1	U		1	U		1	U		1	U	
ETHENE	1	U		1	U		1	U		1	U	
METHANE	880			268			259			92		

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10487

SAMPLE NUMBER:	H10-GW-MW09-06			H10-GW-MW13-06			H10-GW-MW16-06			H10-GW-MW18-06		
SAMPLE DATE:	08/02/01			08/02/01			08/02/01			08/02/01		
LABORATORY ID:	F10487-1			F10487-2			F10487-3			F10487-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	2.2	U		2.2	U		2.2	U		2	U	
2-METHYLNAPHTHALENE	2.2	U		2.2	U		2.2	U		2	U	
ACENAPHTHENE	4.4	U		4.4	U		4.4	U		4	U	
ACENAPHTHYLENE	4.4	U		4.4	U		4.4	U		4	U	
ANTHRACENE	2.2	U		2.2	U		2.2	U		2	U	
BENZO(A)ANTHRACENE	0.22	U		0.22	U		0.22	U		0.2	U	
BENZO(A)PYRENE	0.22	U		0.22	U		0.22	U		0.2	U	
BENZO(B)FLUORANTHENE	0.22	U		0.22	U		0.22	U		0.2	U	
BENZO(G,H,I)PERYLENE	0.22	U		0.22	U		0.22	U		0.2	U	
BENZO(K)FLUORANTHENE	0.22	U		0.22	U		0.22	U		0.2	U	
CHRYSENE	2.2	U		2.2	U		2.2	U		2	U	
DIBENZO(A,H)ANTHRACENE	0.22	U		0.22	U		0.22	U		0.2	U	
FLUORANTHENE	2.2	U		2.2	U		2.2	U		2	U	
FLUORENE	2.2	U		2.2	U		2.2	U		2	U	
INDENO(1,2,3-CD)PYRENE	0.22	U		0.22	U		0.22	U		0.2	U	
NAPHTHALENE	2.2	U		2.2	U		2.2	U		2	U	
PHENANTHRENE	2.2	U		2.2	U		2.2	U		2	U	
PYRENE	2.2	U		2.2	U		2.2	U		2	U	

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

Report of Analysis

Client Sample ID:	H10-GW-MW09-06		
Lab Sample ID:	F10487-1	**Date Sampled:**	08/02/01
Matrix:	AQ - Ground Water	**Date Received:**	08/03/01
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H012999.D	1	08/08/01	NAF	n/a	n/a	VH384
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-94-1	**Cyclohexanone**	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	10.7	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	1.2	2.0	ug/l	J
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	**Freon 113**	0.96	2.0	ug/l	J
79-46-9	**2-Nitropropane**	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	13.6	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	3.0	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		80-120%
17060-07-0	1,2-Dichloroethane-D4	106%		80-120%
2037-26-5	Toluene-D8	102%		80-120%
460-00-4	4-Bromofluorobenzene	103%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW13-06		
Lab Sample ID:	F10487-2	**Date Sampled:**	08/02/01
Matrix:	AQ - Ground Water	**Date Received:**	08/03/01
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H013000.D	1	08/08/01	NAF	n/a	n/a	VH384
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	5.4	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	1.7	2.0	ug/l	J
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	67.9	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	3.8	2.0	ug/l	
75-01-4	Vinyl chloride	2.7	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		80-120%
17060-07-0	1,2-Dichloroethane-D4	107%		80-120%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	102%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW16-06		
Lab Sample ID:	F10487-3	**Date Sampled:**	08/02/01
Matrix:	AQ - Ground Water	**Date Received:**	08/03/01
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H013001.D	1	08/08/01	NAF	n/a	n/a	VH384
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	19.1	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	38.8	2.0	ug/l	
107-06-2	1,2-Dichloroethane	0.50	2.0	ug/l	J
540-59-0	1,2-Dichloroethene (total)	1.8	4.0	ug/l	J
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	9.7	2.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	28.0	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		80-120%
17060-07-0	1,2-Dichloroethane-D4	108%		80-120%
2037-26-5	Toluene-D8	104%		80-120%
460-00-4	4-Bromofluorobenzene	98%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW18-06		
Lab Sample ID:	F10487-4	**Date Sampled:**	08/02/01
Matrix:	AQ - Ground Water	**Date Received:**	08/03/01
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H013002.D	1	08/08/01	NAF	n/a	n/a	VH384
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-94-1	**Cyclohexanone**	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	20.9	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	16.9	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	65.0	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	**Freon 113**	2.6	2.0	ug/l	
79-46-9	**2-Nitropropane**	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	1.8	2.0	ug/l	J
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	60.6	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		80-120%
17060-07-0	1,2-Dichloroethane-D4	109%		80-120%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	100%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-TB05		
Lab Sample ID:	F10487-5	**Date Sampled:**	08/02/01
Matrix:	AQ - Trip Blank Water	**Date Received:**	08/03/01
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H013005.D	1	08/08/01	NAF	n/a	n/a	VH384
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-94-1	**Cyclohexanone**	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	**Freon 113**	ND	2.0	ug/l	
79-46-9	**2-Nitropropane**	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		80-120%
17060-07-0	1,2-Dichloroethane-D4	110%		80-120%
2037-26-5	Toluene-D8	104%		80-120%
460-00-4	4-Bromofluorobenzene	99%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW09-06		
Lab Sample ID:	F10487-1	**Date Sampled:**	08/02/01
Matrix:	AQ - Ground Water	**Date Received:**	08/03/01
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	W006163.D	1	08/08/01	ME	08/06/01	OP3605	SW335
Run #2 [b]	W006183.D	1	08/13/01	ME	08/10/01	OP3605	SW337

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
	3&4-Methylphenol [c]	ND	4.4	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	19%	52%	20-125%
4165-62-2	Phenol-d5	16%	35%	10-125%
118-79-6	2,4,6-Tribromophenol	36%	84%	35-140%
4165-60-0	Nitrobenzene-d5	78%	77%	46-125%
321-60-8	2-Fluorobiphenyl	76%	76%	46-125%
1718-51-0	Terphenyl-d14	99%	93%	49-126%

(a) Surrogates outside of control limits, all values should be considered estimated.
(b) Sample extracted beyond hold time; reported results are considered minimum values.
(c) Confirmed by re-extraction and reanalysis.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW09-06		
Lab Sample ID:	F10487-1	**Date Sampled:**	08/02/01
Matrix:	AQ - Ground Water	**Date Received:**	08/03/01
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	L008504.D	1	08/07/01	ME	08/06/01	OP3602	SL488
Run #2							

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
87-86-5	Pentachlorophenol [b]	ND	1.1	ug/l	
121-14-2	2,4-Dinitrotoluene [b]	ND	0.22	ug/l	

(a) Surrogates outside of control limits, all values should be considered estimated.
(b) Confirmed by re-extraction and reanalysis.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW13-06		
Lab Sample ID:	F10487-2	Date Sampled:	08/02/01
Matrix:	AQ - Ground Water	Date Received:	08/03/01
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W006164.D	1	08/08/01	ME	08/06/01	OP3605	SW335
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
	3&4-Methylphenol	ND	4.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	55%		20-125%
4165-62-2	Phenol-d5	36%		10-125%
118-79-6	2,4,6-Tribromophenol	83%		35-140%
4165-60-0	Nitrobenzene-d5	80%		46-125%
321-60-8	2-Fluorobiphenyl	76%		46-125%
1718-51-0	Terphenyl-d14	92%		49-126%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW13-06		
Lab Sample ID:	F10487-2	**Date Sampled:**	08/02/01
Matrix:	AQ - Ground Water	**Date Received:**	08/03/01
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L008505.D	1	08/07/01	ME	08/06/01	OP3602	SL488
Run #2							

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
87-86-5	Pentachlorophenol	ND	1.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.20	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW16-06		
Lab Sample ID:	F10487-3	**Date Sampled:**	08/02/01
Matrix:	AQ - Ground Water	**Date Received:**	08/03/01
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W006165.D	1	08/08/01	ME	08/06/01	OP3605	SW335
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
	3&4-Methylphenol	ND	4.4	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	54%		20-125%
4165-62-2	Phenol-d5	37%		10-125%
118-79-6	2,4,6-Tribromophenol	86%		35-140%
4165-60-0	Nitrobenzene-d5	79%		46-125%
321-60-8	2-Fluorobiphenyl	78%		46-125%
1718-51-0	Terphenyl-d14	96%		49-126%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW16-06		
Lab Sample ID:	F10487-3	**Date Sampled:**	08/02/01
Matrix:	AQ - Ground Water	**Date Received:**	08/03/01
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L008506.D	1	08/07/01	ME	08/06/01	OP3602	SL488
Run #2							

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
87-86-5	Pentachlorophenol	ND	1.1	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.22	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW18-06		
Lab Sample ID:	F10487-4	**Date Sampled:**	08/02/01
Matrix:	AQ - Ground Water	**Date Received:**	08/03/01
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W006166.D	1	08/08/01	ME	08/06/01	OP3605	SW335
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
	3&4-Methylphenol	ND	4.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	23%		20-125%
4165-62-2	Phenol-d5	17%		10-125%
118-79-6	2,4,6-Tribromophenol	37%		35-140%
4165-60-0	Nitrobenzene-d5	77%		46-125%
321-60-8	2-Fluorobiphenyl	77%		46-125%
1718-51-0	Terphenyl-d14	88%		49-126%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW18-06		
Lab Sample ID:	F10487-4	**Date Sampled:**	08/02/01
Matrix:	AQ - Ground Water	**Date Received:**	08/03/01
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L008507.D	1	08/07/01	ME	08/06/01	OP3602	SL488
Run #2							

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
87-86-5	Pentachlorophenol	ND	1.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.20	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW09-06		
Lab Sample ID:	F10487-1	**Date Sampled:**	08/02/01
Matrix:	AQ - Ground Water	**Date Received:**	08/03/01
Method:	DAI	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH25995.D	1	08/08/01	ANJ	n/a	n/a	N:GGH733
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	112%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW13-06		
Lab Sample ID:	F10487-2	**Date Sampled:**	08/02/01
Matrix:	AQ - Ground Water	**Date Received:**	08/03/01
Method:	DAI	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH25996.D	1	08/08/01	ANJ	n/a	n/a	N:GGH733
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	110%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW16-06		
Lab Sample ID:	F10487-3	**Date Sampled:**	08/02/01
Matrix:	AQ - Ground Water	**Date Received:**	08/03/01
Method:	DAI	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH25997.D	1	08/08/01	ANJ	n/a	n/a	N:GGH733
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	97%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	H10-GW-MW18-06		
Lab Sample ID:	F10487-4	**Date Sampled:**	08/02/01
Matrix:	AQ - Ground Water	**Date Received:**	08/03/01
Method:	DAI	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH25998.D	1	08/08/01	ANJ	n/a	n/a	N:GGH733
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	102%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW09-06		
Lab Sample ID:	F10487-1	**Date Sampled:**	08/02/01
Matrix:	AQ - Ground Water	**Date Received:**	08/03/01
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000821.D	1	08/09/01	RA	n/a	n/a	GXY43
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	880	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW13-06		
Lab Sample ID:	F10487-2	**Date Sampled:**	08/02/01
Matrix:	AQ - Ground Water	**Date Received:**	08/03/01
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000829.D	1	08/10/01	RA	n/a	n/a	GXY45
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	268	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW16-06		
Lab Sample ID:	F10487-3	**Date Sampled:**	08/02/01
Matrix:	AQ - Ground Water	**Date Received:**	08/03/01
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000831.D	1	08/10/01	RA	n/a	n/a	GXY45
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	259	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW18-06		
Lab Sample ID:	F10487-4	**Date Sampled:**	08/02/01
Matrix:	AQ - Ground Water	**Date Received:**	08/03/01
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000832.D	1	08/10/01	RA	n/a	n/a	GXY45
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	92.0	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW09-06		
Lab Sample ID:	F10487-1	**Date Sampled:**	08/02/01
Matrix:	AQ - Ground Water	**Date Received:**	08/03/01
Method:	EPA 8310 SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE004447.D	1	08/06/01	MRE	08/04/01	OP3601	GEE209
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.4	ug/l	
208-96-8	Acenaphthylene	ND	4.4	ug/l	
120-12-7	Anthracene	ND	2.2	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.22	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.22	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.22	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.22	ug/l	
218-01-9	Chrysene	ND	2.2	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.22	ug/l	
206-44-0	Fluoranthene	ND	2.2	ug/l	
86-73-7	Fluorene	ND	2.2	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.22	ug/l	
91-20-3	Naphthalene	ND	2.2	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.2	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.2	ug/l	
85-01-8	Phenanthrene	ND	2.2	ug/l	
129-00-0	Pyrene	ND	2.2	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	102%		33-141%
92-94-4	p-Terphenyl	108%		31-122%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW13-06			
Lab Sample ID:	F10487-2		**Date Sampled:**	08/02/01
Matrix:	AQ - Ground Water		**Date Received:**	08/03/01
Method:	EPA 8310 SW846 3510C		**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE004448.D	1	08/06/01	MRE	08/04/01	OP3601	GEE209
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.4	ug/l	
208-96-8	Acenaphthylene	ND	4.4	ug/l	
120-12-7	Anthracene	ND	2.2	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.22	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.22	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.22	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.22	ug/l	
218-01-9	Chrysene	ND	2.2	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.22	ug/l	
206-44-0	Fluoranthene	ND	2.2	ug/l	
86-73-7	Fluorene	ND	2.2	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.22	ug/l	
91-20-3	Naphthalene	ND	2.2	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.2	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.2	ug/l	
85-01-8	Phenanthrene	ND	2.2	ug/l	
129-00-0	Pyrene	ND	2.2	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	92%		33-141%
92-94-4	p-Terphenyl	94%		31-122%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW16-06		
Lab Sample ID:	F10487-3	**Date Sampled:**	08/02/01
Matrix:	AQ - Ground Water	**Date Received:**	08/03/01
Method:	EPA 8310 SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE004449.D	1	08/06/01	MRE	08/04/01	OP3601	GEE209
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.4	ug/l	
208-96-8	Acenaphthylene	ND	4.4	ug/l	
120-12-7	Anthracene	ND	2.2	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.22	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.22	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.22	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.22	ug/l	
218-01-9	Chrysene	ND	2.2	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.22	ug/l	
206-44-0	Fluoranthene	ND	2.2	ug/l	
86-73-7	Fluorene	ND	2.2	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.22	ug/l	
91-20-3	Naphthalene	ND	2.2	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.2	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.2	ug/l	
85-01-8	Phenanthrene	ND	2.2	ug/l	
129-00-0	Pyrene	ND	2.2	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	98%		33-141%
92-94-4	p-Terphenyl	101%		31-122%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW18-06		
Lab Sample ID:	F10487-4	Date Sampled:	08/02/01
Matrix:	AQ - Ground Water	Date Received:	08/03/01
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE004450.D	1	08/06/01	MRE	08/04/01	OP3601	GEE209
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	96%		33-141%
92-94-4	p-Terphenyl	100%		31-122%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

APPENDIX C

SUPPORT DOCUMENTATION

F10487

HOLDING TIME

09/04/01

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UG/L	H10-GW-MW09-06	F10487-1	NORMAL	F10487	ALC	08/02/01	/ /	08/08/01	0	0	6
UG/L	H10-GW-MW13-06	F10487-2	NORMAL	F10487	ALC	08/02/01	/ /	08/08/01	0	0	6
UG/L	H10-GW-MW16-06	F10487-3	NORMAL	F10487	ALC	08/02/01	/ /	08/08/01	0	0	6
UG/L	H10-GW-MW18-06	F10487-4	NORMAL	F10487	ALC	08/02/01	/ /	08/08/01	0	0	6
MG/L	H10-GW-MW09-06	F10487-1	NORMAL	F10487	CL	08/02/01	08/13/01	08/14/01	11	1	12
MG/L	H10-GW-MW13-06	F10487-2	NORMAL	F10487	CL	08/02/01	08/13/01	08/14/01	11	1	12
MG/L	H10-GW-MW16-06	F10487-3	NORMAL	F10487	CL	08/02/01	08/13/01	08/14/01	11	1	12
MG/L	H10-GW-MW18-06	F10487-4	NORMAL	F10487	CL	08/02/01	08/13/01	08/14/01	11	1	12
UG/L	H10-GW-MW09-06	F10487-1	NORMAL	F10487	ETHA	08/02/01	/ /	08/09/01	0	0	7
UG/L	H10-GW-MW13-06	F10487-2	NORMAL	F10487	ETHA	08/02/01	/ /	08/10/01	0	0	8
UG/L	H10-GW-MW16-06	F10487-3	NORMAL	F10487	ETHA	08/02/01	/ /	08/10/01	0	0	8
UG/L	H10-GW-MW18-06	F10487-4	NORMAL	F10487	ETHA	08/02/01	/ /	08/10/01	0	0	8
UG/L	H10-GW-MW09-06	F10487-1	NORMAL	F10487	ETHE	08/02/01	/ /	08/09/01	0	0	7
UG/L	H10-GW-MW13-06	F10487-2	NORMAL	F10487	ETHE	08/02/01	/ /	08/10/01	0	0	8
UG/L	H10-GW-MW16-06	F10487-3	NORMAL	F10487	ETHE	08/02/01	/ /	08/10/01	0	0	8
UG/L	H10-GW-MW18-06	F10487-4	NORMAL	F10487	ETHE	08/02/01	/ /	08/10/01	0	0	8
UG/L	H10-GW-MW09-06	F10487-1	NORMAL	F10487	M	08/02/01	08/06/01	08/21/01	4	15	19
UG/L	H10-GW-MW13-06	F10487-2	NORMAL	F10487	M	08/02/01	08/06/01	08/21/01	4	15	19
UG/L	H10-GW-MW16-06	F10487-3	NORMAL	F10487	M	08/02/01	08/06/01	08/21/01	4	15	19
UG/L	H10-GW-MW18-06	F10487-4	NORMAL	F10487	M	08/02/01	08/06/01	08/21/01	4	15	19
UG/L	H10-GW-MW09-06	F10487-1	NORMAL	F10487	METH	08/02/01	/ /	08/09/01	0	0	7
UG/L	H10-GW-MW13-06	F10487-2	NORMAL	F10487	METH	08/02/01	/ /	08/10/01	0	0	8
UG/L	H10-GW-MW16-06	F10487-3	NORMAL	F10487	METH	08/02/01	/ /	08/10/01	0	0	8
UG/L	H10-GW-MW18-06	F10487-4	NORMAL	F10487	METH	08/02/01	/ /	08/10/01	0	0	8

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/L	H10-GW-MW09-06	F10487-1	NORMAL	F10487	NTA	08/02/01	08/03/01	08/03/01	1	0	1
MG/L	H10-GW-MW13-06	F10487-2	NORMAL	F10487	NTA	08/02/01	08/03/01	08/08/01	1	5	6
MG/L	H10-GW-MW16-06	F10487-3	NORMAL	F10487	NTA	08/02/01	08/03/01	08/03/01	1	0	1
MG/L	H10-GW-MW18-06	F10487-4	NORMAL	F10487	NTA	08/02/01	08/03/01	08/03/01	1	0	1
MG/L	H10-GW-MW09-06	F10487-1	NORMAL	F10487	NTI	08/02/01	08/03/01	08/03/01	1	0	1
MG/L	H10-GW-MW13-06	F10487-2	NORMAL	F10487	NTI	08/02/01	08/03/01	08/08/01	1	5	6
MG/L	H10-GW-MW16-06	F10487-3	NORMAL	F10487	NTI	08/02/01	08/03/01	08/03/01	1	0	1
MG/L	H10-GW-MW18-06	F10487-4	NORMAL	F10487	NTI	08/02/01	08/03/01	08/03/01	1	0	1
UG/L	H10-GW-MW09-06	F10487-1	NORMAL	F10487	OS	08/02/01	08/06/01	08/08/01	4	2	6
UG/L	H10-GW-MW13-06	F10487-2	NORMAL	F10487	OS	08/02/01	08/06/01	08/08/01	4	2	6
UG/L	H10-GW-MW16-06	F10487-3	NORMAL	F10487	OS	08/02/01	08/06/01	08/08/01	4	2	6
UG/L	H10-GW-MW18-06	F10487-4	NORMAL	F10487	OS	08/02/01	08/06/01	08/08/01	4	2	6
UG/L	H10-GW-MW09-06	F10487-1	NORMAL	F10487	OV	08/02/01	/ /	08/08/01	0	0	6
UG/L	H10-GW-MW13-06	F10487-2	NORMAL	F10487	OV	08/02/01	/ /	08/08/01	0	0	6
UG/L	H10-GW-MW16-06	F10487-3	NORMAL	F10487	OV	08/02/01	/ /	08/08/01	0	0	6
UG/L	H10-GW-MW18-06	F10487-4	NORMAL	F10487	OV	08/02/01	/ /	08/08/01	0	0	6
UG/L	H10-TB05	F10487-5	NORMAL	F10487	OV	08/02/01	/ /	08/08/01	0	0	6
UG/L	H10-GW-MW09-06	F10487-1	NORMAL	F10487	PAH	08/02/01	08/04/01	08/06/01	2	2	4
UG/L	H10-GW-MW13-06	F10487-2	NORMAL	F10487	PAH	08/02/01	08/04/01	08/06/01	2	2	4
UG/L	H10-GW-MW16-06	F10487-3	NORMAL	F10487	PAH	08/02/01	08/04/01	08/06/01	2	2	4
UG/L	H10-GW-MW18-06	F10487-4	NORMAL	F10487	PAH	08/02/01	08/04/01	08/06/01	2	2	4
UG/L	H10-GW-MW09-06	F10487-1	NORMAL	F10487	SIM	08/02/01	08/06/01	08/07/01	4	1	5
UG/L	H10-GW-MW13-06	F10487-2	NORMAL	F10487	SIM	08/02/01	08/06/01	08/07/01	4	1	5
UG/L	H10-GW-MW16-06	F10487-3	NORMAL	F10487	SIM	08/02/01	08/06/01	08/07/01	4	1	5
UG/L	H10-GW-MW18-06	F10487-4	NORMAL	F10487	SIM	08/02/01	08/06/01	08/07/01	4	1	5
MG/L	H10-GW-MW09-06	F10487-1	NORMAL	F10487	SO4	08/02/01	08/13/01	08/14/01	11	1	12
MG/L	H10-GW-MW13-06	F10487-2	NORMAL	F10487	SO4	08/02/01	08/13/01	08/14/01	11	1	12

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/L	H10-GW-MW16-06	F10487-3	NORMAL	F10487	SO4	08/02/01	08/13/01	08/14/01	11	1	12
MG/L	H10-GW-MW18-06	F10487-4	NORMAL	F10487	SO4	08/02/01	08/13/01	08/14/01	11	1	12
MG/L	H10-GW-MW09-06	F10487-1	NORMAL	F10487	SUL	08/02/01	/ /	08/07/01	0	0	5
MG/L	H10-GW-MW13-06	F10487-2	NORMAL	F10487	SUL	08/02/01	/ /	08/07/01	0	0	5
MG/L	H10-GW-MW16-06	F10487-3	NORMAL	F10487	SUL	08/02/01	/ /	08/07/01	0	0	5
MG/L	H10-GW-MW18-06	F10487-4	NORMAL	F10487	SUL	08/02/01	/ /	08/07/01	0	0	5

ACCUTEST LABORATORIES SOUTHEAST
SAMPLE RECEIPT CONFIRMATION

Accutest Job Number: F10487

Client/Project: Tetra Tech / N3995 - Hangar 1000

Date/Time Received: 8-3-01 10:00

Method of Delivery: Fed Ex Greyhound UPS Pickup Delivery Other

Air Bill Number: 791627280753

Cooler Temperatures: 2.8°, 2.2°

Custody Seals Intact? YES NO

Chain Of Custody Provided? YES NO

Chain Of Custody Match Bottles? YES NO

Sample Labels Present? YES NO

Are All Bottles Unbroken? YES NO

Proper Preservative? YES NO

Correct Containers Used? YES NO

Sufficient Sample Volume? YES NO

Number of Encores: Ø

COMMENTS:

Signature: [signature] Date: 8-3-01

TETRA TECH NUS, INC.

CHAIN OF CUSTODY | NUMBER F10487 | PAGE ___ OF ___

PROJECT NO: N3995
SITE NAME: NASJAX-HANGAR 1000
SAMPLERS (SIGNATURE) Alan Pate

PROJECT MANAGER AND PHONE NUMBER: Mark Peterson 904-281-0400
FIELD OPERATIONS LEADER AND PHONE NUMBER: Alan Pate 904-281-0400
CARRIER/WAYBILL NUMBER: FEDEX

LABORATORY NAME AND CONTACT: Accutest - Linda Williams
ADDRESS: 4405 Vineland Rd #C-15
CITY, STATE: Orlando, FL 32811

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

						CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	G	G	G	P	P	P	
						PRESERVATIVE USED	HCL	HCL	/	/	HNO3	NaOH	/	
DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: VOCs (8260B)	Methane/Ethane/Ethene RSK147/175	Alcohols (8015B)	SVOCs (8270C) PAHs (8310)	Metals 6010B Cd/Cr	SULFIDE 376.1	ANIONS (300.0) SO4, Cl, NO2/NO3		COMMENTS
8/2	0855	H10-GW-MW09-06	H_2O	G	3	3								Cool to 4°C
8/2	0955	H10-GW-MW13-06	H_2O	G	3	3								
8/2	1200	H10-GW-MW16-06	H_2O	G	16	3	3	3	4	1	1	1		See attached QAPP table for analytical requirements
8/2	1100	H10-GW-MW18-06	H_2O	G	16	3	3	3	4	1	1	1		
8/2	0000	H10-TB05	H_2O	G										

1. RELINQUISHED BY Alan Pate	DATE 8/2/01	TIME 1630	1. RECEIVED BY [signature]	DATE 8-3-01	TIME 1000
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS 2.8°, 2.2°

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/99
FORM NO. TINUS-001

TETRA TECH NUS, INC.

CHAIN OF CUSTODY | NUMBER F10487 | PAGE ___ OF ___

PROJECT NO:	N3995
SITE NAME:	NASJAX-HANGAR1000
SAMPLERS (SIGNATURE)	Alan Pate; [signature]
PROJECT MANAGER AND PHONE NUMBER	Mark Peterson 904-281-0400
FIELD OPERATIONS LEADER AND PHONE NUMBER	Alan Pate 904-281-0400
CARRIER/WAYBILL NUMBER	FEDEX
LABORATORY NAME AND CONTACT:	Accutest - Linda Williams
ADDRESS	4405 Vineland Rd # C-15
CITY, STATE	Orlando, FL 32811

STANDARD TAT ☒ RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	VOCs (8260B)	Methane/Ethane/Ethene RSK 147/175	Alcohols (8015B)	SVOCs (8270C) PAHs (8310)	Metals Cd/Cr 6010B	SULFIDE 376.1	ANIONS (300.0) SO4, Cl, NO2, NO3		COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)						G	G	G	G	P	P	P		
PRESERVATIVE USED						HCL	HCL	/	/	HNO3	NaOH	/		
8/2	0855	H10-GW-MW09-06	H_2O	G	13		3	3	4	1	1	1		Cool To 4°C
8/2	0955	H10-GW-MW13-06	H_2O	G	13		3	3	4	1	1	1		See attached QAPP table for analytical requirements.

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY Alan Pate	8/2/01	1600	1. RECEIVED BY [signature]	8-3-01	10:00
2. RELINQUISHED BY			2. RECEIVED BY		
3. RELINQUISHED BY			3. RECEIVED BY		

COMMENTS 2.8°, 2.2°

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/99

Method Blank Summary

Job Number: F10487
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VH384-MB	H012992.D	1	08/08/01	NAF	n/a	n/a	VH384

The QC reported here applies to the following samples:

Method: SW846 8260B

F10487-1, F10487-2, F10487-3, F10487-4, F10487-5

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	98%	80-120%
17060-07-0	1,2-Dichloroethane-D4	102%	80-120%
2037-26-5	Toluene-D8	104%	80-120%
460-00-4	4-Bromofluorobenzene	101%	80-120%

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\080801\H012990.D
Acq On : 8 Aug 2001 10:29 am
Sample : CC375-70
Misc :
MS Integration Params: RTEINT.P

Vial: 1
Operator: NancyF
Inst : MSVOA3
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\8260W.M (RTE Integrator)
Title : SWA 5035/8260B
Last Update : Wed Aug 08 15:04:24 2001
Response via : Multiple Level Calibration

Min. RRF : 0.001 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

NHF 8-9-01

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	Fluorobenzene	1.000	1.000	0.0	87	0.00
2		Dichlorodifluoromethane	0.175	0.169	3.4	84	0.00
3	P	Chloromethane	0.275	0.250	9.1	78	0.00
4	C	Vinyl Chloride	0.235	0.207	11.9	77	0.00
5		Bromomethane	0.166	0.154	7.2	86	0.00
6		Chloroethane	0.148	0.143	3.4	83	0.00
7		Trichlorofluoromethane	0.378	0.406	-7.4	93	-0.01
8		Acrolein	0.034	0.030	11.8	76	-0.01
9	C	1,1-Dichloroethene	0.459	0.410	10.7	77	-0.01
10		Freon 113	0.281	0.270	3.9	85	0.00
11		Acetone	0.095	0.094	1.1	83	0.00
12		Iodomethane	0.602	0.572	5.0	83	0.00
13		Methyl acetate	0.254	0.240	5.5	81	0.00
14		Carbon Disulfide	0.840	0.812	3.3	84	-0.01
15		Methylene Chloride	0.443	0.380	14.2	78	0.00
16		Tert Butyl Alcohol	0.027	0.027	0.0	87	0.00
17		trans-1,2-Dichloroethene	0.529	0.477	9.8	79	0.00
18		Acrylonitrile	0.089	0.088	1.1	82	-0.01
19		Methyl Tert Butyl Ether	0.806	0.785	2.6	85	-0.01
20	P	1,1-Dichloroethane	0.526	0.486	7.6	80	0.00
21		Vinyl acetate	0.765	0.751	1.8	83	-0.01
22		Di-isopropyl ether	1.179	1.119	5.1	81	-0.01
23		Ethyl tert-butyl ether	0.984	0.970	1.4	83	0.00
24		2,2-Dichloropropane	0.307	0.294	4.2	87	0.00
25		cis-1,2-Dichloroethene	0.316	0.288	8.9	79	0.00
26		2-Butanone	0.149	0.145	2.7	83	0.00
27		Bromochloromethane	0.216	0.205	5.1	83	0.00
28	C	Chloroform	0.563	0.545	3.2	83	0.00
29		Tetrahydrofuran	0.096	0.089	7.3	79	0.00
30		1,1,1-Trichloroethane	0.477	0.436	8.6	81	0.00
31	S	Dibromofluoromethane	0.294	0.299	-1.7	90	-0.01
32		Cyclohexane	0.532	0.481	9.6	77	-0.01
33		1,1-Dichloropropene	0.412	0.382	7.3	77	0.00
34		Carbon Tetrachloride	0.479	0.447	6.7	81	-0.01
35	S	1,2-Dichloroethane-d4	0.361	0.366	-1.4	91	-0.01
36		Benzene	1.107	1.017	8.1	78	0.00
37		1,2-Dichloroethane	0.526	0.486	7.6	83	0.00
38		tert-amyl methyl ether	0.849	0.847	0.2	84	0.00
39		Trichloroethene	0.341	0.319	6.5	81	0.00
40		Methylcyclohexane	0.451	0.411	8.9	79	0.00
41	C	1,2-Dichloropropane	0.303	0.279	7.9	79	0.00
42		Dibromomethane	0.202	0.197	2.5	83	-0.01
43		1,4-Dioxane	0.003	0.003	0.0	90	0.00
44		Bromodichloromethane	0.444	0.430	3.2	83	0.00

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46		2-Chloroethyl vinyl ether	0.181	0.178	1.7	85	0.00
47		4-Methyl-2-pentanone	0.342	0.329	3.8	83	-0.01
48		cis-1,3-Dichloropropene	0.503	0.495	1.6	84	-0.01
49	I	Chlorobenzene-d5	1.000	1.000	0.0	87	0.00
50	S	Toluene-d8	1.105	1.092	1.2	86	0.00
51	C	Toluene	1.379	1.253	9.1	79	0.00
52		trans-1,3-Dichloropropene	0.498	0.498	0.0	84	-0.01
53		1,1,2-Trichloroethane	0.256	0.241	5.9	83	0.00
54		Tetrachloroethene	0.601	0.549	8.7	80	0.00
55		2-hexanone	0.246	0.245	0.4	84	0.00
56		1,3-Dichloropropane	0.525	0.513	2.3	84	0.00
57		Dibromochloromethane	0.422	0.427	-1.2	83	0.00
58		1,2-Dibromoethane	0.343	0.340	0.9	85	0.00
59		1-Chlorohexane	0.455	0.435	4.4	81	0.00
60	P	Chlorobenzene	0.997	0.955	4.2	81	-0.01
61		1,1,1,2-Tetrachloroethane	0.425	0.412	3.1	83	0.00
62	C	Ethylbenzene	1.587	1.459	8.1	81	0.00
63		m,p-Xylene	1.336	1.191	10.9	81	0.00
64		o-Xylene	1.412	1.256	11.0	83	0.00
65		Styrene	0.995	0.959	3.6	83	0.00
66	P	Bromoform	0.370	0.391	-5.7	84	0.00
67	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	88	0.00
68		Isopropylbenzene	2.133	2.079	2.5	83	-0.01
69		Cyclohexanone	0.012	0.012	0.0	83	0.00
70	S	4-Bromofluorobenzene	0.895	0.899	-0.4	88	0.00
71		Bromobenzene	0.827	0.810	2.1	82	0.00
72	P	1,1,2,2-Tetrachloroethane	0.523	0.515	1.5	86	-0.01
73		trans-1,4-Dichloro-2-Butene	0.184	0.198	-7.6	89	0.00
74		1,2,3-Trichloropropane	0.189	0.191	-1.1	91	0.00
75		n-Propylbenzene	2.464	2.376	3.6	83	-0.01
76		2-Chlorotoluene	1.729	1.689	2.3	85	0.00
77		4-Chlorotoluene	1.793	1.769	1.3	84	0.00
78		1,3,5-Trimethylbenzene	1.995	1.888	5.4	84	-0.01
79		sec-Butylbenzene	2.190	2.128	2.8	84	-0.01
80		1,3-Dichlorobenzene	1.416	1.407	0.6	85	0.00
81		4-Isopropyltoluene	1.936	1.908	1.4	86	0.00
82		1,4-Dichlorobenzene	1.488	1.450	2.6	85	0.00
83		tert-Butylbenzene	1.190	1.133	4.8	83	0.00
84		n-Butylbenzene	1.612	1.594	1.1	85	0.00
85		1,2-Dichlorobenzene	1.353	1.355	-0.1	85	0.00
86		1,2,4-Trimethylbenzene	2.052	1.916	6.6	83	0.00
87		1,2-Dibromo-3-Chloropropane	0.098	0.106	-8.2	85	0.00
88		1,2,4-Trichlorobenzene	1.218	1.207	0.9	83	0.00
89		Hexachlorobutadiene	0.725	0.660	9.0	79	0.00
90		Naphthalene	1.743	1.716	1.5	82	0.00
91		1,2,3-Trichlorobenzene	1.132	1.054	6.9	80	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0
H012885.D 8260W.M Thu Aug 09 16:07:56 2001 RPT1

Method Blank Summary

Job Number: F10487
Account: ALSE Accutest Laboratories Southeast, Inc.
Project: TETRFLJX: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGH733-MB4	GH25994.D	1	08/08/01	XPL	n/a	n/a	GGH733

The QC reported here applies to the following samples: **Method:** DAI

F10487-1, F10487-2, F10487-3, F10487-4

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries		Limits
111-27-3	Hexanol	103%	75-125%

Response Factor Report GCGH

Method : C:\HPCHEM\1\METHODS\MGH731.M (Chemstation Integrator)
Title : D8015
Last Update : Thu Jul 26 14:54:19 2001

Calibration Files

0.5	=GH25932.D	1	=GH25933.D	5	=GH25934.D
10	=GH25935.D	50	=GH25936.D	100	=GH25937.D

		Compound	0.5	1	5	10	50	100	Avg		%RSD
1)	TM	Methanol	2.394	2.334	2.498	2.318	2.042	2.033	2.270	E1	8.41
2)	TM	Ethanol	3.258	3.157	3.537	3.284	3.024	2.993	3.209	E1	6.22
3)	TM	Tert-Butyl Alcohol	4.767	4.668	5.318	4.900	4.484	4.466	4.767	E1	6.65
4)	TM	1-Propanol	3.954	3.879	4.446	4.084	3.711	3.689	3.960	E1	7.08
5)	TM	2-Propanol	3.386	3.300	3.750	3.483	3.182	3.167	3.378	E1	6.47
6)	MT	Isobutanol	4.660	4.593	5.204	4.843	4.405	4.388	4.682	E1	6.55
7)	TM	1-Butanol	4.481	4.240	4.748	4.448	4.069	4.054	4.340	E1	6.21
8)	TM	2-Butanol	3.874	3.806	4.358	4.022	3.660	3.646	3.894	E1	6.85
9)	S	Hexanol	5.056	4.996	4.942	4.904	4.905	4.893	4.949	E1	1.30

Signal #2 Calibration Files

0.5	=GH25932.D	1	=GH25933.D	5	=GH25934.D
10	=GH25935.D	50	=GH25936.D	100	=GH25937.D

		Compound	0.5	1	5	10	50	100	Avg		%RSD
1)	TM	Methanol	1.834	1.721	1.849	1.700	1.559	1.556	1.703	E1	7.48
2)	TM	Ethanol	2.333	2.305	2.610	2.428	2.252	2.236	2.361	E1	5.94
3)	TM	Tert-Butyl Alcohol	3.565	3.511	3.913	3.688	3.407	3.363	3.574	E1	5.66
4)	TM	1-Propanol	2.921	2.868	3.189	2.985	2.762	2.735	2.910	E1	5.71
5)	TM	2-Propanol	2.557	2.500	2.805	2.627	2.426	2.402	2.553	E1	5.83
6)	MT	Isobutanol	3.117	3.197	3.652	3.446	3.178	3.161	3.292	E1	6.41
7)	TM	1-Butanol	2.696	2.794	3.302	3.142	2.927	2.930	2.965	E1	7.53
8)	TM	2-Butanol	2.844	2.863	3.162	2.971	2.733	2.706	2.880	E1	5.83
9)	S	Hexanol	2.966	3.151	3.116	3.122	3.176	3.225	3.126	E1	2.81

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\3\DATA\GH26002.D\FID1A.CH
Acq On : 8 Aug 2001 8:24 pm
Sample : ECC731-5000
Misc : GC13169,GGH733,1,,,,1
IntFile : EVENTS.E

Vial: 17
Operator: XULIU
Inst : GCGH
Multiplr: 1.00

Data File : C:\HPCHEM\3\DATA\GH26002.D\FID2B.CH
Acq On : 8 Aug 2001 8:44 pm
Sample : ECC731-5000
Misc : GC13169,GGH733,1,,,,1
IntFile : AUTOINT2.E

Vial: 17
Operator: XULIU
Inst : GCGH
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\MGH731.M (Chemstation Integrator)
Title : D8015
Last Update : Thu Jul 26 14:34:36 2001
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 15% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	TM	Methanol	22.698	26.874	-18.4#	108	0.00
2	TM	Ethanol	32.089	32.202	-0.4	91	0.00
3	TM	Tert-Butyl Alcohol	47.673	49.547	-3.9	93	0.00
4	TM	1-Propanol	39.604	41.841	-5.6	94	0.00
5	TM	2-Propanol	33.784	33.561	0.7	89	0.00
6	MT	Isobutanol	46.821	49.716	-6.2	96	0.00
7	TM	1-Butanol	43.401	44.527	-2.6	94	0.00
8	TM	2-Butanol	38.944	41.329	-6.1	95	0.00
9	S	Hexanol	49.492	52.850	-6.8	107	0.00
		Signal #2					
1	TM	Methanol	17.033	17.056	-0.1	92	0.00
2	TM	Ethanol	23.608	20.426	13.5	78	0.00
3	TM	Tert-Butyl Alcohol	35.745	31.889	10.8	81	0.00
4	TM	1-Propanol	29.102	25.906	11.0	81	-0.01
5	TM	2-Propanol	25.526	21.754	14.8	78	0.00
6	MT	Isobutanol	32.919	30.716	6.7	84	-0.02
7	TM	1-Butanol	29.650	27.259	8.1	83	-0.02
8	TM	2-Butanol	28.801	25.456	11.6	81	-0.01
9	S	Hexanol	31.261	31.686	-1.4	102	-0.01

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Method Blank Summary

Job Number: F10487
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GXY43-MB	XY000812.D	1	08/09/01	RA	n/a	n/a	GXY43

The QC reported here applies to the following samples: **Method:** RSKSOP-147/175

F10487-1

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	ND	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

Response Factor Report VOA5

Method : C:\HPCHEM\2\METHODS\DGMEE.M (Chemstation Integrator)
Title : Dissolved Gases in Water
Last Update : Fri Aug 03 13:55:05 2001
Response via : Initial Calibration

Calibration Files
1 =XY000738.D 2 =XY000739.D 3 =XY000740.D
4 =XY000741.D 5 =XY000742.D 6 =XY000743.D 7 =XY000744.D

	Compound	1	2	3	4	5	6	7	Avg	%RSD
1)	Methane	1.327	1.268	0.972	0.730	0.879	0.895	0.960	1.004 E4	21.49
2)	Ethylene	1.920	2.303	1.904	1.450	1.697	1.714	1.826	1.831 E4	14.32
3)	Ethane	1.832	2.365	1.907	1.466	1.706	1.739	1.856	1.839 E4	14.86

Average % RSD = 16.8903 < 30 ✓

ESM

(#) = Out of Range
DGMEE.M Mon Aug 06 09:43:48 2001 PIDHALL2 Page 1

Quantitation Report (Not Reviewed)

```
Data File : C:\HPCHEM\2\DATA\080901\XY000825.D          Vial: 100
Acq On    :  9 Aug 2001   5:05 pm                   Operator: RachidA
Sample    : ECC33-15ppmv                            Inst    : VOA5
Misc      : gc1418,gxy43,,,,,                       Multiplr: 1.00
IntFile   : EVENTS.E
Quant Time: Aug  9 17:13 2001  Quant Results File: DGMEE.RES

Quant Method : C:\HPCHEM\2\METHODS\DGMEE.M (Chemstation Integrator)
Title        : Dissolved Gases in Water
Last Update  : Fri Aug 03 13:54:37 2001
Response via : Initial Calibration
DataAcq Meth : DGMEE.M

Volume Inj.  : manual
Signal Phase : Carboxen-1006 PLOT
Signal Info  : 0.53
```

	Compound	R.T.	Response	Conc Units
	Target Compounds			
1)	Methane	1.31	167954	17.745 ppmv
2)	Ethylene	3.59	295509	16.401 ppmv
3)	Ethane	4.11	341287	18.642 ppmv

375

(f)=RT Delta > 1/2 Window (m)=manual int.

Method Blank Summary

Job Number: F10487
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP3605-MB	W006156.D	1	08/08/01	ME	08/06/01	OP3605	SW335

The QC reported here applies to the following samples: **Method:** SW846 8270C

F10487-1, F10487-2, F10487-3, F10487-4

CAS No.	Compound	Result	RL	Units	Q
	3&4-Methylphenol	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	58%	20-125%
4165-62-2	Phenol-d5	38%	10-125%
118-79-6	2,4,6-Tribromophenol	88%	35-140%
4165-60-0	Nitrobenzene-d5	86%	46-125%
321-60-8	2-Fluorobiphenyl	82%	46-125%
1718-51-0	Terphenyl-d14	99%	49-126%

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\080801\W006154.D
Acq On : 8 Aug 2001 2:15 pm
Sample : cc334-50
Misc : op3595,sw335,1000,,,1,1,water
MS Integration Params: LSCINT.P

Vial: 2
Operator: marke
Inst : MSBNA01
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\8270C.M (RTE Integrator)
Title : SW846 8270C OR EPA 625
Last Update : Wed Aug 08 13:02:32 2001
Response via : Multiple Level Calibration

Min. RRF : 0.001 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	101	0.00
2		1,4-Dioxane	0.430	0.441	-2.6	107	-0.01
3		N-nitrosodimethylamine	0.582	0.575	1.2	102	-0.02
4		Pyridine	1.025	1.026	-0.1	101	0.00
5		Benzaldehyde	0.484	0.496	-2.5	93	0.00
6		Aniline	1.634	1.637	-0.2	99	0.00
7	S	2-Fluorophenol	1.026	1.017	0.9	98	0.00
8		bis(2-Chloroethyl)ether	1.075	1.047	2.6	98	0.00
9	S	Phenol-d5	1.262	1.241	1.7	97	0.00
10	C	Phenol	1.451	1.425	1.8	97	0.00
11		2-Chlorophenol	1.266	1.246	1.6	99	0.00
12		1,3-Dichlorobenzene	1.478	1.453	1.7	98	0.00
13	C	1,4-Dichlorobenzene	1.497	1.500	-0.2	100	0.00
14		1,2-Dichlorobenzene	1.392	1.374	1.3	99	0.00
15		Benzyl alcohol	0.767	0.759	1.0	97	0.00
16		bis(2-chloroisopropyl)ether	2.133	2.152	-0.9	101	0.00
17		2-Methylphenol	1.061	1.055	0.6	100	0.00
18		Acetophenone	1.477	1.463	0.9	98	0.00
19		Hexachloroethane	0.515	0.512	0.6	100	0.00
20	P	N-Nitroso-di-n-propylamine	0.718	0.704	1.9	98	0.00
21		3&4-Methylphenol	1.048	1.039	0.9	99	0.00
22	I	Naphthalene-d8	1.000	1.000	0.0	98	0.00
23	S	Nitrobenzene-d5	0.333	0.330	0.9	96	0.00
24		Nitrobenzene	0.327	0.325	0.6	96	0.00
25		Isophorone	0.556	0.563	-1.3	97	0.00
26	C	2-Nitrophenol	0.199	0.199	0.0	96	0.00
27		2,4-Dimethylphenol	0.330	0.324	1.8	97	0.00
28		bis(2-Chloroethoxy)methane	0.351	0.360	-2.6	100	0.00
29		Benzoic Acid	0.248	0.251	-1.2	95	-0.03
30	C	2,4-Dichlorophenol	0.295	0.300	-1.7	98	0.00
31		1,2,4-Trichlorobenzene	0.309	0.312	-1.0	100	0.00
32		Naphthalene	0.971	0.994	-2.4	98	0.00
33		4-Chloroaniline	0.376	0.392	-4.3	99	0.00
34		2,6-Dichlorophenol	0.287	0.290	-1.0	97	0.00
35	C	Hexachlorobutadiene	0.169	0.170	-0.6	100	0.00
36		Caprolactam	0.136	0.137	-0.7	96	-0.02
37	C	4-Chloro-3-methylphenol	0.251	0.253	-0.8	97	0.00
38		2-Methylnaphthalene	0.649	0.659	-1.5	99	0.00
39		1-Methylnaphthalene	0.624	0.625	-0.2	97	0.00
40		1,2,4,5-Tetrachlorobenzene	0.262	0.267	-1.9	99	0.00
41	I	Acenaphthene-d10	1.000	1.000	0.0	97	0.00
		[illegible]	0.317	0.320	-0.9	95	0.00

44		2,4,5-Trichlorophenol	0.401	0.415	-3.5	99	0.00
45	S	2-Fluorobiphenyl	1.407	1.455	-3.4	99	0.00
46		1,1'-Biphenyl	1.585	1.628	-2.7	98	0.00
47		2-Chloronaphthalene	1.203	1.236	-2.7	98	0.00
48		2-Nitroaniline	0.310	0.320	-3.2	97	0.00
49		Acenaphthylene	1.687	1.722	-2.1	98	0.00
50		Dimethylphthalate	1.198	1.227	-2.4	98	0.00
51		2,6-Dinitrotoluene	0.272	0.275	-1.1	93	0.00
52	C	Acenaphthene	1.171	1.185	-1.2	97	0.00
53		3-Nitroaniline	0.314	0.326	-3.8	96	0.00
54	P	2,4-Dinitrophenol	0.164	0.152	7.3	90	0.00
55		Dibenzofuran	1.563	1.584	-1.3	97	0.00
56		2,4-Dinitrotoluene	0.340	0.350	-2.9	97	0.00
57	P	4-Nitrophenol	0.147	0.148	-0.7	94	-0.01
58		2,3,4,6-Tetrachlorophenol	0.248	0.250	-0.8	96	0.00
59		Fluorene	1.182	1.207	-2.1	95	0.00
60		4-Chlorophenyl-phenylether	0.549	0.564	-2.7	98	0.00
61		Diethylphthalate	1.137	1.163	-2.3	97	0.00
62		4-Nitroaniline	0.289	0.300	-3.8	96	-0.02
63	I	Phenanthrene-d10	1.000	1.000	0.0	96	0.00
64		4,6-Dinitro-2-methylphenol	0.161	0.154	4.3	95	0.00
65	C	n-Nitrosodiphenylamine	0.616	0.618	-0.3	98	0.00
66		1,2-Diphenylhydrazine	0.840	0.852	-1.4	98	0.00
67	S	2,4,6-Tribromophenol	0.085	0.085	0.0	97	0.00
68		4-Bromophenyl-phenylether	0.190	0.189	0.5	98	0.00
69		Hexachlorobenzene	0.195	0.190	2.6	98	0.00
70		Atrazine	0.198	0.200	-1.0	97	0.00
71	C	Pentachlorophenol	0.120	0.120	0.0	95	0.00
72		Phenanthrene	1.151	1.158	-0.6	97	0.00
73		Anthracene	1.166	1.167	-0.1	97	0.00
74		Carbazole	1.061	1.059	0.2	97	0.00
75		Di-n-butylphthalate	1.241	1.235	0.5	97	0.00
76	C	Fluoranthene	0.963	0.935	2.9	94	0.00
77	I	Chrysene-d12	1.000	1.000	0.0	95	0.00
78		Benzidine	0.465	0.507	-9.0	86	0.00
79		Pyrene	1.779	1.893	-6.4	98	0.00
80	S	Terphenyl-d14	0.992	1.022	-3.0	97	0.00
81		Butylbenzylphthalate	0.777	0.811	-4.4	95	0.00
82		3,3'-Dichlorobenzidine	0.393	0.393	0.0	92	0.00
83		Benzo[a]anthracene	1.175	1.180	-0.4	94	0.00
84		Chrysene	1.207	1.213	-0.5	96	0.00
85		bis(2-Ethylhexyl)phthalate	1.042	1.061	-1.8	94	0.00
86	I	Perylene-d12	1.000	1.000	0.0	93	0.00
87	C	Di-n-octylphthalate	2.208	2.348	-6.3	92	0.00
88		Benzo[b]fluoranthene	1.332	1.376	-3.3	95	0.00
89		Benzo[k]fluoranthene	1.399	1.465	-4.7	95	-0.01
90	C	Benzo[a]pyrene	1.231	1.255	-1.9	92	0.00
91		Indeno[1,2,3-cd]pyrene	1.111	1.061	4.5	88	0.00
92		Dibenz[a,h]anthracene	1.182	1.165	1.4	92	0.00
93		Benzo[g,h,i]perylene	1.275	1.269	0.5	92	-0.01

Average % D = 1.9

(#) = Out of Range SPCC's out = 0 CCC's out = 0

W006132.D 8270C.M Wed Aug 08 14:38:20 2001 MSBNA01

Method Blank Summary

Job Number: F10487
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP3601-MB	EE004437.D	1	08/06/01	MRE	08/04/01	OP3601	GEE209

The QC reported here applies to the following samples: **Method:** EPA 8310

F10487-1, F10487-2, F10487-3, F10487-4

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	92%	33-141%
92-94-4	p-Terphenyl	104%	31-122%

Response Factor Report G1315A

:thod : C:\HPCHEM\2\METHODS\8310_32.M (Chemstation Integrator)
.tle : PAH's BY EPA 8310
ast Update : Thu Jul 12 10:56:30 2001
esponse via : Initial Calibration

MKE 7/12/01

alibration Files
1 =EE004277.D L2 =EE004278.D L3 =EE004279.D
4 =EE004280.D L5 =EE004281.D L6 =EE004282.D

		Compound	L1	L2	L3	L4	L5	L6	Avg		%RSD
)		Naphthalene	9.212	8.306	8.041	7.579	7.771	7.658	8.095	E5	7.53
)		Acenaphthylene	3.630	3.238	3.132	2.973	3.037	3.184	3.199	E5	7.25
)		1-Methyl Naphthalen	7.830	7.008	6.794	6.421	6.494	6.791	6.890	E5	7.38
)		2-Methyl Naphthalen	7.846	7.031	6.822	6.470	6.527	6.822	6.920	E5	7.21
)		Acenaphthene	6.071	5.502	5.357	5.056	5.109	5.346	5.407	E5	6.76
)		Fluorene	2.215	1.998	1.941	1.836	1.858	1.935	1.964	E6	6.96
)		Phenanthrene	1.953	1.777	1.713	1.615	1.634	1.696	1.731	E6	7.10
)	S	O-Terphenyl	7.248	6.782	6.589	6.219	6.286	6.544	6.611	E5	5.66
)		Anthracene		2.217	1.932	1.709	1.649	1.624	1.826	E5	13.68
)		Fluoranthene	1.634	1.543	1.502	1.411	1.390	1.445	1.488	E6	6.16
)		Pyrene	2.622	2.394	2.293	2.136	2.130	2.173	2.291	E6	8.38
)	S	P-Terphenyl	2.856	2.553	2.483	2.347	2.382	2.473	2.516	E6	7.25
)		Benzo(a)Anthracene	4.831	4.260	4.131	3.911	3.949	4.090	4.196	E6	8.01
)		Chrysene		5.807	5.524	5.192	5.154	5.254	5.386	E6	5.12
)		Benzo(b)Fluoranthen	2.630	2.302	2.243	2.118	2.153	2.254	2.283	E6	8.02
)		Benzo(k)Fluoranthen	1.532	1.354	1.348	1.275	1.295	1.349	1.359	E6	6.70
)		Benzo(a) Pyrene	3.071	2.760	2.694	2.558	2.593	2.688	2.727	E6	6.74
7)		Dibenzo(a,h)anthrac	2.416	2.146	2.096	1.995	2.029	2.114	2.133	E6	7.02
3)		Benzo(g,h,i) Peryle	1.684	1.527	1.504	1.427	1.451	1.514	1.518	E6	5.93
0)		Indeno(1,2,3-cd)pyr	1.303	1.196	1.220	1.156	1.177	1.230	1.214	E6	4.24

gnal #2 Calibration Files
L1 =EE004277.D L2 =EE004278.D L3 =EE004279.D
L4 =EE004280.D L5 =EE004281.D L6 =EE004282.D

		Compound	L1	L2	L3	L4	L5	L6	Avg		%RSD
1)		Naphthalene	5.495	5.105	4.905	4.572	4.958	4.693	4.955	E5	6.58
2)		Acenaphthylene	3.783	3.366	3.221	3.042	3.079	3.228	3.286	E5	8.21
3)		1-Methyl Naphthalen	3.484	3.119	2.991	2.820	2.841	2.973	3.038	E5	8.04
4)		2-Methyl Naphthalen	4.831	4.320	4.171	3.949	3.972	4.151	4.232	E5	7.65
5)		Acenaphthene	2.112	2.018	1.965	1.838	1.840	1.920	1.949	E5	5.45
6)		Fluorene	2.484	2.224	2.160	2.047	2.069	2.156	2.190	E6	7.21
7)		Phenanthrene	6.729	5.996	5.756	5.387	5.377	5.449	5.782	E6	9.06
8)	S	O-Terphenyl	1.259	1.120	1.097	1.040	1.050	1.094	1.110	E6	7.12
9)		Anthracene	1.436	1.259	1.106	0.895	0.758	0.659	1.019	E7	~~29.54~~ QUAD MAS 7/12/01
10)		Fluoranthene	1.597	1.504	1.447	1.364	1.385	1.439	1.456	E6	5.82
11)		Pyrene	1.470	1.358	1.321	1.254	1;270	1.317	1.332	E6	5.81
12)	S	P-Terphenyl	1.389	1.244	1.214	1.148	1.167	1.214	1.229	E6	6.97
13)		Benzo(a)Anthracene	3.469	3.152	3.075	2.901;	2.941	3.057	3.099	E6	6.56
14)		Chrysene	5.288	4.729	4.586	4.317	4.346	4.508	4.629	E6	7.72
15)		Benzo(b)Fluoranthen	3.852	3.385	3.239	3.055	3.106	3.251	3.315	E6	8.69
16)		Benzo(k)Fluoranthen	2.903	2.678	2.511	2.401	2.438	2.536	2.578	E6	7.21
17)		Benzo(a) Pyrene	3.276	2.956	2.896	2.737	2.776	2.878	2.920	E6	6.58
18)		Dibenzo(a,h)anthrac	7.386	6.784	6.698	6.348	6.458	6.734	6.735	E5	5.37
19)		Benzo(g,h,i) Peryle	1.223	1.106	1.094	1.039	1.057	1.103	1.104	E6	5.85
		[illegible]ndeno(1,2,3-cd)pyr	3.046	2.756	2.710	2.568	2.608	2.719	2.734	E6	6.17

Tetra Tech NUS **INTERNAL CORRESPONDENCE**

TO:	**Mr. Mark Peterson**	**DATE:**	**September 20, 2001**
FROM:	**Elena Rodriguez**	**COPIES:**	**DV FILE**

SUBJECT: **DATA VALIDATION - ORGANICS**
CTO 167, NASJAX
SDG F10296

SAMPLES: 6/Aqueous/

H10-GW-DUP1-06
H10-GW-MW14-06
H10-GW-MW15-06
H10-GW-MW19-06
H10-GW-MW23-06
H10-GW-TB02-06

OVERVIEW

The sample set for CTO 167, NASJAX, SDG F10296 consists of four aqueous environmental samples and two aqueous quality control samples (one trip blank and one field duplicate pair: H10-GW-DUP1-06 and H10-GW-MW19-06). All groundwater samples were analyzed for select volatile organic compounds, semi-volatile organic compounds, polynuclear aromatic hydrocarbons, alcohols, and dissolved gasses. The trip blank (H10-GW-TB02-06) was analyzed for volatile organic compounds.

The samples were collected by TetraTech NUS on July 12, 2001 and analyzed by Accutest Laboratories. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria using the following analytical and reporting protocols: SW-846 Methods 8260B, 8270C, 8310, 8015 and RSK SOP 147/175. The data contained in this SDG were validated with regard to the following parameters:

- * Data completeness
- * Holding times
- * Initial/continuing calibrations
- * Laboratory method and field quality control blank results
- * Surrogate recoveries
- * Field duplicate sample results
- * Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A.

Volatile Organics

Data reported for this fraction were found to be acceptable. Samples H10-GW-MW19-06 and H10-GW-DUP1-06 were re-analyzed at a 5x dilution factor to quantify compounds that had exceeded the calibration range during the first analysis. Elevated detection limits were reported.

Alcohols

Data reported for this fraction were found to be acceptable.

Semi-Volatile Organics

Data reported for this fraction were found to be acceptable.

Polynuclear Aromatic Hydrocarbons

Data reported for this fraction were found to be acceptable.

Dissolved Gases (Methane-Ethane-Ethene)

Data reported for this fraction were found to be acceptable. Sample H10-GW-MW19-06 was not preserved to a pH <2. No action was taken because duplicate sample compared well.

Additional Comments

Positive results below the reporting limit (RL) were qualified as estimated, J, due to uncertainty near the detection limit.

EXECUTIVE SUMMARY

Laboratory Performance Issues: None.

Other Factors Affecting Data Quality: None

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99), and the Navy IRCDQM (9/99) NFESC guidelines. The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC guidelines and the Quality Assurance Project Plan (QAPP)."

Elena Rodriguez
Tetra Tech NUS

Elena Rodriguez

E Rodriguez for J Samchuck
Tetra Tech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:
1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank contamination
C = Calibration (i.e. %RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D = MS/MSD Noncompliance
E = LCS/LCSD Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = GFAA PDS – GFAA MSAs r<0.995
K = ICP Interference – Include ICSAB %Rs
L = Instrument Calibration Range Exceedance
M = Sample Preservation
N = Internal Standard Noncompliance
O = Poor Instrument Performance (I.E. base-time drifting)
P = Uncertainty near detection limit (<2 x IDL for Inorganics and < CRQL for Organics)
Q = Other problems (can encompass a number of issues)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = Pest/PCB D% between columns for positive results
V = Non-Linear calibrations, tuning r< 0.995 (correlation coefficient)
W = EMPC result
X = Signal to noise response drop
Y = % Solid content is less than 30%

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10296

SAMPLE NUMBER:	H10-GW-DUP1-06			H10-GW-MW14-06			H10-GW-MW15-06			H10-GW-MW19-06		
SAMPLE DATE:	07/12/01			07/12/01			07/12/01			07/12/01		
LABORATORY ID:	F10296-2			F10296-4			F10296-3			F10296-1		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:	H10-GW-MW19-06											
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	10	U		15.6			2	U		10	U	
1,1,2-TRICHLOROETHANE	10	U		2.7			2	U		10	U	
1,1,2-TRICHLOROTRIFLUOROETHANE	366			67.4			25.8			366		
1,1-DICHLOROETHANE	108			218			21.9			104		
1,1-DICHLOROETHENE	165			366			37.8			169		
1,2-DICHLOROETHANE	10	U		1.8	J	P	2	U		10	U	
1-BUTANOL	5000	U		5000	U		5000	U		5000	U	
2-NITROPROPANE	50	U		10	U		10	U		50	U	
ACETONE	250	U		50	U		50	U		250	U	
BENZENE	5	U		1	U		1	U		5	U	
CYCLOHEXANONE	30	J	P	32.4			10	U		50	U	
ETHYLBENZENE	10	U		2	U		2	U		10	U	
ISOBUTANOL	5000	U		5000	U		5000	U		5000	U	
METHANOL	5000	U		5000	U		5000	U		5000	U	
TETRACHLOROETHENE	5	J	P	2	U		1.9	J	P	4.6	J	P
TOLUENE	10	U		1.9	J	P	2	U		10	U	
TOTAL 1,2-DICHLOROETHENE	58.7			1.6	J	P	20			53.9		
TRICHLOROETHENE	227			332			492			211		
VINYL CHLORIDE	5	U		0.8	J	P	1.9			5	U	

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10296

SAMPLE NUMBER:	H10-GW-MW23-06			H10-GW-TB02-06								
SAMPLE DATE:	07/12/01			07/12/01			/ /			/ /		
LABORATORY ID:	F10296-5			F10296-6								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	0.0 %			0.0 %			100.0 %			100.0 %		
UNITS:	UG/L			UG/L								
FIELD DUPLICATE OF:												
VOLATILES	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
1,1,1-TRICHLOROETHANE	2	U		2	U							
1,1,2-TRICHLOROETHANE	2	U		2	U							
1,1,2-TRICHLOROTRIFLUOROETHANE	2	U		2	U							
1,1-DICHLOROETHANE	2	U		2	U							
1,1-DICHLOROETHENE	2	U		2	U							
1,2-DICHLOROETHANE	2	U		2	U							
1-BUTANOL	5000	U										
2-NITROPROPANE	10	U		10	U							
ACETONE	50	U		50	U							
BENZENE	1	U		1	U							
CYCLOHEXANONE	10	U		10	U							
ETHYLBENZENE	2	U		2	U							
ISOBUTANOL	5000	U										
METHANOL	5000	U										
TETRACHLOROETHENE	2	U		2	U							
TOLUENE	2	U		2	U							
TOTAL 1,2-DICHLOROETHENE	4	U		4	U							
TRICHLOROETHENE	2	U		2	U							
VINYL CHLORIDE	1	U		1	U							

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10296

SAMPLE NUMBER:	H10-GW-DUP1-06			H10-GW-MW14-06			H10-GW-MW15-06			H10-GW-MW19-06		
SAMPLE DATE:	07/12/01			07/12/01			07/12/01			07/12/01		
LABORATORY ID:	F10296-2			F10296-4			F10296-3			F10296-1		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:	H10-GW-MW19-06											
	RESULT	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
SEMIVOLATILES												
2,4-DINITROTOLUENE	0.22	U		0.22	U		0.22	U		0.22	U	
3&4-METHYLPHENOL	4.4	U		4.4	U		4.4	U		4.4	U	
PENTACHLOROPHENOL	1.1	U		1.1	U		1.1	U		1.1	U	

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10296

SAMPLE NUMBER:	H10-GW-MW23-06											
SAMPLE DATE:	07/12/01			/ /			/ /			/ /		
LABORATORY ID:	F10296-5											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:												
SEMIVOLATILES	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
2,4-DINITROTOLUENE	0.22	U										
3&4-METHYLPHENOL	4.4	U										
PENTACHLOROPHENOL	1.1	U										

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10296

SAMPLE NUMBER:	H10-GW-DUP1-06			H10-GW-MW14-06			H10-GW-MW15-06			H10-GW-MW19-06		
SAMPLE DATE:	07/12/01			07/12/01			07/12/01			07/12/01		
LABORATORY ID:	F10296-2			F10296-4			F10296-3			F10296-1		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:	H10-GW-MW19-06											
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
DISSOLVED GASES												
ETHANE	1	U		1	U		1	U		1	U	
ETHENE	1	U		1	U		1	U		1	U	
METHANE	125			202			486			112		

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10296

SAMPLE NUMBER:	H10-GW-MW23-06											
SAMPLE DATE:	07/12/01			/ /			/ /			/ /		
LABORATORY ID:	F10296-5											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:												
	RESULT	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
DISSOLVED GASES												
ETHANE	1	U										
ETHENE	1	U										
METHANE	1.63											

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10296

SAMPLE NUMBER:	H10-GW-DUP1-06			H10-GW-MW14-06			H10-GW-MW15-06			H10-GW-MW19-06		
SAMPLE DATE:	07/12/01			07/12/01			07/12/01			07/12/01		
LABORATORY ID:	F10296-2			F10296-4			F10296-3			F10296-1		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:	H10-GW-MW19-06											
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	2	U		2	U		2	U		2	U	
2-METHYLNAPHTHALENE	2	U		2	U		2	U		2	U	
ACENAPHTHENE	4	U		4	U		4	U		4	U	
ACENAPHTHYLENE	4	U		4	U		4	U		4	U	
ANTHRACENE	2	U		2	U		2	U		2	U	
BENZO(A)ANTHRACENE	0.2	U		0.2	U		0.2	U		0.2	U	
BENZO(A)PYRENE	0.2	U		0.2	U		0.2	U		0.2	U	
BENZO(B)FLUORANTHENE	0.2	U		0.2	U		0.2	U		0.2	U	
BENZO(G,H,I)PERYLENE	0.2	U		0.2	U		0.2	U		0.2	U	
BENZO(K)FLUORANTHENE	0.2	U		0.2	U		0.2	U		0.2	U	
CHRYSENE	2	U		2	U		2	U		2	U	
DIBENZO(A,H)ANTHRACENE	0.2	U		0.2	U		0.2	U		0.2	U	
FLUORANTHENE	2	U		2	U		2	U		2	U	
FLUORENE	2	U		2	U		2	U		2	U	
INDENO(1,2,3-CD)PYRENE	0.2	U		0.2	U		0.2	U		0.2	U	
NAPHTHALENE	1.6	J	P	2	U		1.5	J	P	1.7	J	P
PHENANTHRENE	2	U		2	U		2	U		2	U	
PYRENE	2	U		2	U		2	U		2	U	

CTO167-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F10296

SAMPLE NUMBER:	H10-GW-MW23-06											
SAMPLE DATE:	07/12/01			/ /			/ /			/ /		
LABORATORY ID:	F10296-5											
QC_TYPE:	NORMAL											
% SOLIDS:	0.0 %			100.0 %			100.0 %			100.0 %		
UNITS:	UG/L											
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	2	U										
2-METHYLNAPHTHALENE	2	U										
ACENAPHTHENE	4	U										
ACENAPHTHYLENE	4	U										
ANTHRACENE	2	U										
BENZO(A)ANTHRACENE	0.2	U										
BENZO(A)PYRENE	0.2	U										
BENZO(B)FLUORANTHENE	0.2	U										
BENZO(G,H,I)PERYLENE	0.2	U										
BENZO(K)FLUORANTHENE	0.2	U										
CHRYSENE	2	U										
DIBENZO(A,H)ANTHRACENE	0.2	U										
FLUORANTHENE	2	U										
FLUORENE	2	U										
INDENO(1,2,3-CD)PYRENE	0.2	U										
NAPHTHALENE	2	U										
PHENANTHRENE	2	U										
PYRENE	2	U										

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

Report of Analysis

Client Sample ID:	H10-GW-DUP1-06		
Lab Sample ID:	F10296-2	**Date Sampled:**	07/12/01
Matrix:	AQ - Ground Water	**Date Received:**	07/13/01
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0004693.D	5	07/19/01	JG	n/a	n/a	VC223
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	250	ug/l	
71-43-2	Benzene	ND	5.0	ug/l	
108-94-1	**Cyclohexanone**	30.0	50	ug/l	J
75-34-3	1,1-Dichloroethane	108	10	ug/l	
75-35-4	1,1-Dichloroethylene	165	10	ug/l	
107-06-2	1,2-Dichloroethane	ND	10	ug/l	
540-59-0	1,2-Dichloroethene (total)	58.7	20	ug/l	
100-41-4	Ethylbenzene	ND	10	ug/l	
76-13-1	**Freon 113**	366	10	ug/l	
79-46-9	**2-Nitropropane**	ND	50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	10	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	10	ug/l	
127-18-4	Tetrachloroethylene	5.0	10	ug/l	J
108-88-3	Toluene	ND	10	ug/l	
79-01-6	Trichloroethylene	227	10	ug/l	
75-01-4	Vinyl chloride	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		80-120%
17060-07-0	1,2-Dichloroethane-D4	104%		80-120%
2037-26-5	Toluene-D8	102%		80-120%
460-00-4	4-Bromofluorobenzene	95%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	H10-GW-MW14-06		
Lab Sample ID:	F10296-4	**Date Sampled:**	07/12/01
Matrix:	AQ - Ground Water	**Date Received:**	07/13/01
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0004680.D	1	07/18/01	JG	n/a	n/a	VC222
Run #2	C0004695.D	5	07/19/01	JG	n/a	n/a	VC223

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-94-1	**Cyclohexanone**	32.4	10	ug/l	
75-34-3	1,1-Dichloroethane	218 [a]	10	ug/l	
75-35-4	1,1-Dichloroethylene	366 [a]	10	ug/l	
107-06-2	1,2-Dichloroethane	1.8	2.0	ug/l	J
540-59-0	1,2-Dichloroethene (total)	1.6	4.0	ug/l	J
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	**Freon 113**	67.4	2.0	ug/l	
79-46-9	**2-Nitropropane**	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	15.6	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	2.7	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	1.9	2.0	ug/l	J
79-01-6	Trichloroethylene	332 [a]	10	ug/l	
75-01-4	Vinyl chloride	0.80	1.0	ug/l	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%	97%	80-120%
17060-07-0	1,2-Dichloroethane-D4	106%	104%	80-120%
2037-26-5	Toluene-D8	99%	102%	80-120%
460-00-4	4-Bromofluorobenzene	85%	94%	80-120%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW15-06		
Lab Sample ID:	F10296-3	Date Sampled:	07/12/01
Matrix:	AQ - Ground Water	Date Received:	07/13/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0004679.D	1	07/18/01	JG	n/a	n/a	VC222
Run #2	C0004694.D	5	07/19/01	JG	n/a	n/a	VC223

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	21.9	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	37.8	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	20.0	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	25.8	2.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	1.9	2.0	ug/l	J
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	492 a	10	ug/l	
75-01-4	Vinyl chloride	1.9	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%	97%	80-120%
17060-07-0	1,2-Dichloroethane-D4	105%	103%	80-120%
2037-26-5	Toluene-D8	98%	102%	80-120%
460-00-4	4-Bromofluorobenzene	86%	95%	80-120%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW19-06		
Lab Sample ID:	F10296-1	Date Sampled:	07/12/01
Matrix:	AQ - Ground Water	Date Received:	07/13/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0004722.D	5	07/20/01	JG	n/a	n/a	VC224
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	250	ug/l	
71-43-2	Benzene	ND	5.0	ug/l	
108-94-1	**Cyclohexanone**	ND	50	ug/l	
75-34-3	1,1-Dichloroethane	104	10	ug/l	
75-35-4	1,1-Dichloroethylene	169	10	ug/l	
107-06-2	1,2-Dichloroethane	ND	10	ug/l	
540-59-0	1,2-Dichloroethene (total)	53.9	20	ug/l	
100-41-4	Ethylbenzene	ND	10	ug/l	
76-13-1	**Freon 113**	366	10	ug/l	
79-46-9	**2-Nitropropane**	ND	50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	10	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	10	ug/l	
127-18-4	Tetrachloroethylene	4.6	10	ug/l	J
108-88-3	Toluene	ND	10	ug/l	
79-01-6	Trichloroethylene	211	10	ug/l	
75-01-4	Vinyl chloride	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		80-120%
17060-07-0	1,2-Dichloroethane-D4	102%		80-120%
2037-26-5	Toluene-D8	101%		80-120%
460-00-4	4-Bromofluorobenzene	90%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW23-06		
Lab Sample ID:	F10296-5	Date Sampled:	07/12/01
Matrix:	AQ - Ground Water	Date Received:	07/13/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0004681.D	1	07/18/01	JG	n/a	n/a	VC222
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		80-120%
17060-07-0	1,2-Dichloroethane-D4	105%		80-120%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	85%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-TB02-06		
Lab Sample ID:	F10296-6	**Date Sampled:**	07/12/01
Matrix:	AQ - Trip Blank Water	**Date Received:**	07/13/01
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0004762.D	1	07/23/01	JG	n/a	n/a	VC225
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-94-1	**Cyclohexanone**	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	**Freon 113**	ND	2.0	ug/l	
79-46-9	**2-Nitropropane**	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		80-120%
17060-07-0	1,2-Dichloroethane-D4	104%		80-120%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	96%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-DUP1-06		
Lab Sample ID:	F10296-2	**Date Sampled:**	07/12/01
Matrix:	AQ - Ground Water	**Date Received:**	07/13/01
Method:	DAI	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH5767.D	1	07/25/01	AMA	n/a	n/a	M:GGH1458
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	5000	ug/l	
71-36-3	n-Butyl Alcohol	ND	5000	ug/l	
67-56-1	Methanol	ND	5000	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	H10-GW-MW14-06		
Lab Sample ID:	F10296-4	Date Sampled:	07/12/01
Matrix:	AQ - Ground Water	Date Received:	07/13/01
Method:	DAI	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH5769.D	1	07/25/01	AMA	n/a	n/a	M:GGH1458
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	5000	ug/l	
71-36-3	n-Butyl Alcohol	ND	5000	ug/l	
67-56-1	Methanol	ND	5000	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW15-06		
Lab Sample ID:	F10296-3	**Date Sampled:**	07/12/01
Matrix:	AQ - Ground Water	**Date Received:**	07/13/01
Method:	DAI	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH5768.D	1	07/25/01	AMA	n/a	n/a	M:GGH1458
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	5000	ug/l	
71-36-3	n-Butyl Alcohol	ND	5000	ug/l	
67-56-1	Methanol	ND	5000	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	H10-GW-MW19-06		
Lab Sample ID:	F10296-1	**Date Sampled:**	07/12/01
Matrix:	AQ - Ground Water	**Date Received:**	07/13/01
Method:	DAI	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH5766.D	1	07/25/01	AMA	n/a	n/a	M:GGH1458
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	5000	ug/l	
71-36-3	n-Butyl Alcohol	ND	5000	ug/l	
67-56-1	Methanol	ND	5000	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW23-06		
Lab Sample ID:	F10296-5	Date Sampled:	07/12/01
Matrix:	AQ - Ground Water	Date Received:	07/13/01
Method:	DAI	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH5770.D	1	07/25/01	AMA	n/a	n/a	M:GGH1458
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	5000	ug/l	
71-36-3	n-Butyl Alcohol	ND	5000	ug/l	
67-56-1	Methanol	ND	5000	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	H10-GW-DUP1-06		
Lab Sample ID:	F10296-2	Date Sampled:	07/12/01
Matrix:	AQ - Ground Water	Date Received:	07/13/01
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W005995.D	1	07/24/01	ME	07/16/01	OP3507	SW326
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
	3&4-Methylphenol	ND	4.4	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	46%		20-125%
4165-62-2	Phenol-d5	29%		10-125%
118-79-6	2,4,6-Tribromophenol	78%		35-140%
4165-60-0	Nitrobenzene-d5	67%		46-125%
321-60-8	2-Fluorobiphenyl	68%		46-125%
1718-51-0	Terphenyl-d14	76%		49-126%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-DUP1-06		
Lab Sample ID:	F10296-2	**Date Sampled:**	07/12/01
Matrix:	AQ - Ground Water	**Date Received:**	07/13/01
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L008340.D	1	07/23/01	ME	07/16/01	OP3497	SL478
Run #2							

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
87-86-5	Pentachlorophenol	ND	1.1	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.22	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW14-06		
Lab Sample ID:	F10296-4	Date Sampled:	07/12/01
Matrix:	AQ - Ground Water	Date Received:	07/13/01
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W005997.D	1	07/24/01	ME	07/16/01	OP3507	SW326
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
	3&4-Methylphenol	ND	4.4	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	47%		20-125%
4165-62-2	Phenol-d5	30%		10-125%
118-79-6	2,4,6-Tribromophenol	82%		35-140%
4165-60-0	Nitrobenzene-d5	71%		46-125%
321-60-8	2-Fluorobiphenyl	71%		46-125%
1718-51-0	Terphenyl-d14	78%		49-126%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW14-06		
Lab Sample ID:	F10296-4	**Date Sampled:**	07/12/01
Matrix:	AQ - Ground Water	**Date Received:**	07/13/01
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L008342.D	1	07/23/01	ME	07/16/01	OP3497	SL478
Run #2							

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
87-86-5	Pentachlorophenol	ND	1.1	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.22	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	H10-GW-MW15-06		
Lab Sample ID:	F10296-3	**Date Sampled:**	07/12/01
Matrix:	AQ - Ground Water	**Date Received:**	07/13/01
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W005996.D	1	07/24/01	ME	07/16/01	OP3507	SW326
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
	3&4-Methylphenol	ND	4.4	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	48%		20-125%
4165-62-2	Phenol-d5	30%		10-125%
118-79-6	2,4,6-Tribromophenol	82%		35-140%
4165-60-0	Nitrobenzene-d5	72%		46-125%
321-60-8	2-Fluorobiphenyl	73%		46-125%
1718-51-0	Terphenyl-d14	80%		49-126%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW15-06		
Lab Sample ID:	F10296-3	Date Sampled:	07/12/01
Matrix:	AQ - Ground Water	Date Received:	07/13/01
Method:	SW846 8270C BY SIM SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L008341.D	1	07/23/01	ME	07/16/01	OP3497	SL478
Run #2							

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
87-86-5	Pentachlorophenol	ND	1.1	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.22	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW19-06		
Lab Sample ID:	F10296-1	**Date Sampled:**	07/12/01
Matrix:	AQ - Ground Water	**Date Received:**	07/13/01
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W005994.D	1	07/24/01	ME	07/16/01	OP3507	SW326
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
	3&4-Methylphenol	ND	4.4	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	52%		20-125%
4165-62-2	Phenol-d5	33%		10-125%
118-79-6	2,4,6-Tribromophenol	85%		35-140%
4165-60-0	Nitrobenzene-d5	78%		46-125%
321-60-8	2-Fluorobiphenyl	77%		46-125%
1718-51-0	Terphenyl-d14	79%		49-126%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW19-06		
Lab Sample ID:	F10296-1	Date Sampled:	07/12/01
Matrix:	AQ - Ground Water	Date Received:	07/13/01
Method:	SW846 8270C BY SIM SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L008339.D	1	07/23/01	ME	07/16/01	OP3497	SL478
Run #2							

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
87-86-5	Pentachlorophenol	ND	1.1	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.22	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW23-06		
Lab Sample ID:	F10296-5	**Date Sampled:**	07/12/01
Matrix:	AQ - Ground Water	**Date Received:**	07/13/01
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W006000.D	1	07/24/01	ME	07/16/01	OP3507	SW326
Run #2							

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
	3&4-Methylphenol	ND	4.4	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	48%		20-125%
4165-62-2	Phenol-d5	34%		10-125%
118-79-6	2,4,6-Tribromophenol	72%		35-140%
4165-60-0	Nitrobenzene-d5	83%		46-125%
321-60-8	2-Fluorobiphenyl	81%		46-125%
1718-51-0	Terphenyl-d14	82%		49-126%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW23-06		
Lab Sample ID:	F10296-5	**Date Sampled:**	07/12/01
Matrix:	AQ - Ground Water	**Date Received:**	07/13/01
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L008345.D	1	07/23/01	ME	07/16/01	OP3497	SL478
Run #2							

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
87-86-5	Pentachlorophenol	ND	1.1	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.22	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-DUP1-06		
Lab Sample ID:	F10296-2	**Date Sampled:**	07/12/01
Matrix:	AQ - Ground Water	**Date Received:**	07/13/01
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000606.D	1	07/17/01	RA	n/a	n/a	GXY31
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	125	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW14-06		
Lab Sample ID:	F10296-4	**Date Sampled:**	07/12/01
Matrix:	AQ - Ground Water	**Date Received:**	07/13/01
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000603.D	1	07/17/01	RA	n/a	n/a	GXY31
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	202	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW15-06		
Lab Sample ID:	F10296-3	**Date Sampled:**	07/12/01
Matrix:	AQ - Ground Water	**Date Received:**	07/13/01
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000607.D	1	07/17/01	RA	n/a	n/a	GXY31
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	486	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW19-06		
Lab Sample ID:	F10296-1	Date Sampled:	07/12/01
Matrix:	AQ - Ground Water	Date Received:	07/13/01
Method:	RSKSOP-147/175	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	XY000605.D	1	07/17/01	RA	n/a	n/a	GXY31
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	112	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

(a) Sample was not preserved to a pH < 2; reported results are considered minimum values.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW23-06		
Lab Sample ID:	F10296-5	**Date Sampled:**	07/12/01
Matrix:	AQ - Ground Water	**Date Received:**	07/13/01
Method:	RSKSOP-147/175	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XY000608.D	1	07/17/01	RA	n/a	n/a	GXY31
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	1.63	0.50	ug/l	
74-84-0	Ethane	ND	1.0	ug/l	
74-85-1	Ethene	ND	1.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-DUP1-06		
Lab Sample ID:	F10296-2	Date Sampled:	07/12/01
Matrix:	AQ - Ground Water	Date Received:	07/13/01
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	EE004335.D	1	07/17/01	MRE	07/16/01	OP3505	GEE198
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	1.6	2.0	ug/l	J
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	78%		33-141%
92-94-4	p-Terphenyl	80%		31-122%

(a) All hits confirmed by spectral match using a diode array detector.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	H10-GW-MW14-06		
Lab Sample ID:	F10296-4	**Date Sampled:**	07/12/01
Matrix:	AQ - Ground Water	**Date Received:**	07/13/01
Method:	EPA 8310 SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE004338.D	1	07/17/01	MRE	07/16/01	OP3505	GEE198
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	77%		33-141%
92-94-4	p-Terphenyl	77%		31-122%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW15-06		
Lab Sample ID:	F10296-3	Date Sampled:	07/12/01
Matrix:	AQ - Ground Water	Date Received:	07/13/01
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	EE004337.D	1	07/17/01	MRE	07/16/01	OP3505	GEE198
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	1.5	2.0	ug/l	J
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	81%		33-141%
92-94-4	p-Terphenyl	81%		31-122%

(a) All hits confirmed by spectral match using a diode array detector.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW19-06		
Lab Sample ID:	F10296-1	Date Sampled:	07/12/01
Matrix:	AQ - Ground Water	Date Received:	07/13/01
Method:	EPA 8310 SW846 3510C	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	EE004334.D	1	07/17/01	MRE	07/16/01	OP3505	GEE198
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	1.7	2.0	ug/l	J
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	78%		33-141%
92-94-4	p-Terphenyl	74%		31-122%

(a) All hits confirmed by spectral match using a diode array detector.

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW23-06			
Lab Sample ID:	F10296-5		Date Sampled:	07/12/01
Matrix:	AQ - Ground Water		Date Received:	07/13/01
Method:	EPA 8310 SW846 3510C		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE004341.D	1	07/17/01	MRE	07/16/01	OP3505	GEE198
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	81%		33-141%
92-94-4	p-Terphenyl	87%		31-122%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

APPENDIX C

SUPPORT DOCUMENTATION

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER H10 - | PAGE ___ OF ___

PROJECT NO: N3995	SITE NAME: NAS JAX HANGAR 1000
SAMPLERS (SIGNATURE) Alan Pate	
PROJECT MANAGER AND PHONE NUMBER	MARK PETERSON 904-281-0400
FIELD OPERATIONS LEADER AND PHONE NUMBER	ALAN PATE 904 281-0400
CARRIER/WAYBILL NUMBER	FED-EX
LABORATORY NAME AND CONTACT:	ACCUTEST LINDA WILLIAMS
ADDRESS	4405 VINELAND Rd #C-15
CITY, STATE	ORLANDO, FL 32811

STANDARD TAT ☒
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

					CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	G	G	G	P	P	P	
					PRESERVATIVE USED	HCL	HCL	NONE	N	HNO3	NaOH	N	
DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS / TYPE OF ANALYSIS	VOCs (8260B)	METHANE/ETHANE/ETHENE RSK 147/175	ALCOHOLS (8015B)	SVOCs (8270C) PAHs (8310)	METALS Cd/Cr (6010B)	SULFIDE 376-1	ANIONS (300.0) SO4, Cl, NO2, NO3	COMMENTS
7/12	1200	H10-GW-MW19-06	GW	G		3	3	3	4	1	1	1	COOL TO 4°C
7/12	0000	H10-GW-DUP1-06				3	3	3	4	1	1	1	
7/12	0825	H10-GW-MW15-06				3							SEE ATTACHED
7/12	1000	H10-GW-MW14-06				3							QAPP TABLE
7/12	1330	H10-GW-MW23-06				3							FOR ANALYTICAL
7/12	1000	H10-GW-MSMSD1-06				3							REQUIREMENTS
7/12	-	H10-GW-TB02-06											

1. RELINQUISHED BY Alan D Pate	DATE 7/12/01	TIME 1730	1. RECEIVED BY [signature]	DATE 7/13/01	TIME 1000
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/99 FORM NO. TtNUS-001

TETRA TECH NUS, INC.

CHAIN OF COUSTODY

NUMBER H10-

PAGE ____ OF ____

PROJECT NO: 3995 | SITE NAME: NAS JAX HANGAR 1000

SAMPLERS (SIGNATURE): Alan Pate

PROJECT MANAGER AND PHONE NUMBER: Mark Peterson 904-281-0400

FIELD OPERATIONS LEADER AND PHONE NUMBER: Alan Pate 904-281-0400

CARRIER/WAYBILL NUMBER: FEDEX

LABORATORY NAME AND CONTACT: Accutest L. Williams

ADDRESS: 4405 Vineland Rd #[illegible]

CITY, STATE: Orlando, FL 32811

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	G	G	G	P	P	P
PRESERVATIVE USED	HCl	HCl	none	none	HNO3	NaOH	none

YEAR 2001 DATE	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	VOCs (8260B)	Methane-Ethane-Ethene RSK-175	Alcohols (8015B)	SVOCs (8270C) & PAHs (8310)	Metals: Cd, Cr (6010B)	Sulfide 376.1	Anions: (300.0) Cl, NO2, NO3, SO4	COMMENTS
/12	1000	H10-GW-MW14-06	GW	G	13		3	3	4	1	1	1	Cool to 4°C
/12	1000	H10-GW-MSMSD1-[illegible]	GW	G	13		3	3	4	1	1	1	
													See attached QAPP table for analytical requirements

1. RELINQUISHED BY: Alan Pate	DATE: 7/12/01	TIME: 1730	1. RECEIVED BY: [illegible]	DATE: 7/13/01	TIME: 1000
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS: N3995.JF005011S

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

FORM NO. TtNUS-001

TETRA TECH NUS, INC.

CHAIN OF CUSTODY | NUMBER | PAGE ____ OF ____

PROJECT NO:	SITE NAME:	PROJECT MANAGER AND PHONE NUMBER	LABORATORY NAME AND CONTACT:
N3995	NAS JAX HANGAR 1000	MARK PETERSON 904-281-0400	ACCUTEST LINDA WILLIAMSON
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER AND PHONE NUMBER	ADDRESS
Alan Pate		ALAN PATE 904-281-0400	4405 VINELAND Rd #C-15
		CARRIER/WAYBILL NUMBER	CITY, STATE
		FED-EX	ORLANDO, FL 32811

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

						TYPE OF ANALYSIS							
					CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	G	G	G	P	P	P	
					PRESERVATIVE USED	HCl	HCl	N	N	HNO3	NaOH	N	
DATE YEAR 2001	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	VOCs 8260B	METHANE/ETHANE/ETHENE RSK 147/175	ALCOHOLS 8015B	SVOCs (8270C) PAHs (8310)	METALS Ca/Cr 6010B	SULFIDE 376.1	ANIONS (300.0) SO4, Cl, NO2, NO3	COMMENTS
7/12	0825	H10-GW-MW15-06	GW	G	13	3	3	4	1	1	1		COOL TO 4°C
7/12	1330	H10-GW-MW23-06	GW	G	13	3	3	4	1	1	1		
													SEE ATTACHED QAPP TABLE FOR ANALYTICAL REQUIREMENTS

	DATE	TIME		DATE	TIME
1. RELINQUISHED BY Alan Pate	7/12/01	1230	1. RECEIVED BY [signature]	7/13/01	1000
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

F10296

HOLDING TIME

08/14/01

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UG/L	H10-GW-DUP1-06	F10296-2	NORMAL	F10296	ALC	07/12/01	/ /	07/25/01	0	0	13
UG/L	H10-GW-MW14-06	F10296-4	NORMAL	F10296	ALC	07/12/01	/ /	07/25/01	0	0	13
UG/L	H10-GW-MW15-06	F10296-3	NORMAL	F10296	ALC	07/12/01	/ /	07/25/01	0	0	13
UG/L	H10-GW-MW19-06	F10296-1	NORMAL	F10296	ALC	07/12/01	/ /	07/25/01	0	0	13
UG/L	H10-GW-MW23-06	F10296-5	NORMAL	F10296	ALC	07/12/01	/ /	07/25/01	0	0	13
MG/L	H10-GW-DUP1-06	F10296-2	NORMAL	F10296	CL	07/12/01	07/16/01	07/16/01	4	0	4
MG/L	H10-GW-MW14-06	F10296-4	NORMAL	F10296	CL	07/12/01	07/16/01	07/16/01	4	0	4
MG/L	H10-GW-MW15-06	F10296-3	NORMAL	F10296	CL	07/12/01	07/16/01	07/16/01	4	0	4
MG/L	H10-GW-MW19-06	F10296-1	NORMAL	F10296	CL	07/12/01	07/16/01	07/16/01	4	0	4
MG/L	H10-GW-MW23-06	F10296-5	NORMAL	F10296	CL	07/12/01	07/16/01	07/16/01	4	0	4
UG/L	H10-GW-DUP1-06	F10296-2	NORMAL	F10296	ETHA	07/12/01	/ /	07/17/01	0	0	5
UG/L	H10-GW-MW14-06	F10296-4	NORMAL	F10296	ETHA	07/12/01	/ /	07/17/01	0	0	5
UG/L	H10-GW-MW15-06	F10296-3	NORMAL	F10296	ETHA	07/12/01	/ /	07/17/01	0	0	5
UG/L	H10-GW-MW19-06	F10296-1	NORMAL	F10296	ETHA	07/12/01	/ /	07/17/01	0	0	5
UG/L	H10-GW-MW23-06	F10296-5	NORMAL	F10296	ETHA	07/12/01	/ /	07/17/01	0	0	5
UG/L	H10-GW-DUP1-06	F10296-2	NORMAL	F10296	ETHE	07/12/01	/ /	07/17/01	0	0	5
UG/L	H10-GW-MW14-06	F10296-4	NORMAL	F10296	ETHE	07/12/01	/ /	07/17/01	0	0	5
UG/L	H10-GW-MW15-06	F10296-3	NORMAL	F10296	ETHE	07/12/01	/ /	07/17/01	0	0	5
UG/L	H10-GW-MW19-06	F10296-1	NORMAL	F10296	ETHE	07/12/01	/ /	07/17/01	0	0	5
UG/L	H10-GW-MW23-06	F10296-5	NORMAL	F10296	ETHE	07/12/01	/ /	07/17/01	0	0	5
UG/L	H10-GW-DUP1-06	F10296-2	NORMAL	F10296	M	07/12/01	07/16/01	07/17/01	4	1	5
UG/L	H10-GW-MW14-06	F10296-4	NORMAL	F10296	M	07/12/01	07/16/01	07/18/01	4	2	6
UG/L	H10-GW-MW15-06	F10296-3	NORMAL	F10296	M	07/12/01	07/16/01	07/17/01	4	1	5
UG/L	H10-GW-MW19-06	F10296-1	NORMAL	F10296	M	07/12/01	07/16/01	07/17/01	4	1	5

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UG/L	H10-GW-MW23-06	F10296-5	NORMAL	F10296	M	07/12/01	07/16/01	07/18/01	4	2	6
UG/L	H10-GW-DUP1-06	F10296-2	NORMAL	F10296	METH	07/12/01	/ /	07/17/01	0	0	5
UG/L	H10-GW-MW14-06	F10296-4	NORMAL	F10296	METH	07/12/01	/ /	07/17/01	0	0	5
UG/L	H10-GW-MW15-06	F10296-3	NORMAL	F10296	METH	07/12/01	/ /	07/17/01	0	0	5
UG/L	H10-GW-MW19-06	F10296-1	NORMAL	F10296	METH	07/12/01	/ /	07/17/01	0	0	5
UG/L	H10-GW-MW23-06	F10296-5	NORMAL	F10296	METH	07/12/01	/ /	07/17/01	0	0	5
MG/L	H10-GW-DUP1-06	F10296-2	NORMAL	F10296	NTA	07/12/01	07/13/01	07/13/01	1	0	1
MG/L	H10-GW-MW14-06	F10296-4	NORMAL	F10296	NTA	07/12/01	07/13/01	07/13/01	1	0	1
MG/L	H10-GW-MW15-06	F10296-3	NORMAL	F10296	NTA	07/12/01	07/13/01	07/13/01	1	0	1
MG/L	H10-GW-MW19-06	F10296-1	NORMAL	F10296	NTA	07/12/01	07/13/01	07/13/01	1	0	1
MG/L	H10-GW-MW23-06	F10296-5	NORMAL	F10296	NTA	07/12/01	07/13/01	07/13/01	1	0	1
MG/L	H10-GW-DUP1-06	F10296-2	NORMAL	F10296	NTI	07/12/01	07/13/01	07/13/01	1	0	1
MG/L	H10-GW-MW14-06	F10296-4	NORMAL	F10296	NTI	07/12/01	07/13/01	07/13/01	1	0	1
MG/L	H10-GW-MW15-06	F10296-3	NORMAL	F10296	NTI	07/12/01	07/13/01	07/13/01	1	0	1
MG/L	H10-GW-MW19-06	F10296-1	NORMAL	F10296	NTI	07/12/01	07/13/01	07/13/01	1	0	1
MG/L	H10-GW-MW23-06	F10296-5	NORMAL	F10296	NTI	07/12/01	07/13/01	07/13/01	1	0	1
UG/L	H10-GW-DUP1-06	F10296-2	NORMAL	F10296	OS	07/12/01	07/16/01	07/24/01	4	8	12
UG/L	H10-GW-MW14-06	F10296-4	NORMAL	F10296	OS	07/12/01	07/16/01	07/24/01	4	8	12
UG/L	H10-GW-MW15-06	F10296-3	NORMAL	F10296	OS	07/12/01	07/16/01	07/24/01	4	8	12
UG/L	H10-GW-MW19-06	F10296-1	NORMAL	F10296	OS	07/12/01	07/16/01	07/24/01	4	8	12
UG/L	H10-GW-MW23-06	F10296-5	NORMAL	F10296	OS	07/12/01	07/16/01	07/24/01	4	8	12
UG/L	H10-GW-DUP1-06	F10296-2	NORMAL	F10296	OV	07/12/01	/ /	07/19/01	0	0	7
UG/L	H10-GW-MW14-06	F10296-4	NORMAL	F10296	OV	07/12/01	/ /	07/18/01	0	0	6
UG/L	H10-GW-MW15-06	F10296-3	NORMAL	F10296	OV	07/12/01	/ /	07/18/01	0	0	6
UG/L	H10-GW-MW19-06	F10296-1	NORMAL	F10296	OV	07/12/01	/ /	07/20/01	0	0	8
UG/L	H10-GW-MW23-06	F10296-5	NORMAL	F10296	OV	07/12/01	/ /	07/18/01	0	0	6
UG/L	H10-GW-TB02-06	F10296-6	NORMAL	F10296	OV	07/12/01	/ /	07/23/01	0	0	11

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UG/L	H10-GW-DUP1-06	F10296-2	NORMAL	F10296	PAH	07/12/01	07/16/01	07/17/01	4	1	5
UG/L	H10-GW-MW14-06	F10296-4	NORMAL	F10296	PAH	07/12/01	07/16/01	07/17/01	4	1	5
UG/L	H10-GW-MW15-06	F10296-3	NORMAL	F10296	PAH	07/12/01	07/16/01	07/17/01	4	1	5
UG/L	H10-GW-MW19-06	F10296-1	NORMAL	F10296	PAH	07/12/01	07/16/01	07/17/01	4	1	5
UG/L	H10-GW-MW23-06	F10296-5	NORMAL	F10296	PAH	07/12/01	07/16/01	07/17/01	4	1	5
UG/L	H10-GW-DUP1-06	F10296-2	NORMAL	F10296	SIM	07/12/01	07/16/01	07/23/01	4	7	11
UG/L	H10-GW-MW14-06	F10296-4	NORMAL	F10296	SIM	07/12/01	07/16/01	07/23/01	4	7	11
UG/L	H10-GW-MW15-06	F10296-3	NORMAL	F10296	SIM	07/12/01	07/16/01	07/23/01	4	7	11
UG/L	H10-GW-MW19-06	F10296-1	NORMAL	F10296	SIM	07/12/01	07/16/01	07/23/01	4	7	11
UG/L	H10-GW-MW23-06	F10296-5	NORMAL	F10296	SIM	07/12/01	07/16/01	07/23/01	4	7	11
MG/L	H10-GW-DUP1-06	F10296-2	NORMAL	F10296	SO4	07/12/01	07/13/01	07/13/01	1	0	1
MG/L	H10-GW-MW14-06	F10296-4	NORMAL	F10296	SO4	07/12/01	07/13/01	07/13/01	1	0	1
MG/L	H10-GW-MW15-06	F10296-3	NORMAL	F10296	SO4	07/12/01	07/13/01	07/13/01	1	0	1
MG/L	H10-GW-MW19-06	F10296-1	NORMAL	F10296	SO4	07/12/01	07/13/01	07/13/01	1	0	1
MG/L	H10-GW-MW23-06	F10296-5	NORMAL	F10296	SO4	07/12/01	07/13/01	07/13/01	1	0	1
MG/L	H10-GW-DUP1-06	F10296-2	NORMAL	F10296	SUL	07/12/01	/ /	07/19/01	0	0	7
MG/L	H10-GW-MW14-06	F10296-4	NORMAL	F10296	SUL	07/12/01	/ /	07/19/01	0	0	7
MG/L	H10-GW-MW15-06	F10296-3	NORMAL	F10296	SUL	07/12/01	/ /	07/19/01	0	0	7
MG/L	H10-GW-MW19-06	F10296-1	NORMAL	F10296	SUL	07/12/01	/ /	07/19/01	0	0	7
MG/L	H10-GW-MW23-06	F10296-5	NORMAL	F10296	SUL	07/12/01	/ /	07/19/01	0	0	7

FIELD DUPLICATE SAMPLES

July 2001

Hangar 1000, NAS Jacksonville

Jacksonville, FL

Fraction	Analyte	H10-MW19-06	H10-DUP1-06	RPD
Volatiles	Cyclohexanone	ND	30 J	NC
	1,1-Dichloroethane	104	108	4%
	1,1-Dichloroethene	169	165	2%
	1,2-Dichloroethene (total)	53.9	58.7	9%
	Freon 113	366	366	0%
	Trichlorethene	211	227	7%
	Tetrachloroethene	4.6 J	5 J	8%
Gases	Methane	112	125	11%
Misc.	Chloride	22.5	27	18%
	Sulfate	18.2	18.2	0%

NS = not sampled

ND = not detected

NC = not calculated

J = estimated

RPD = Relative Percent Difference

Acceptable RPD: 0-30% aqueous

Method Blank Summary

Job Number: F10296
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VC222-MB	C0004669.D	1	07/18/01	JG	n/a	n/a	VC222

The QC reported here applies to the following samples:

Method: SW846 8260B

F10296-3, F10296-4, F10296-5

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	99%	80-120%
17060-07-0	1,2-Dichloroethane-D4	106%	80-120%
2037-26-5	Toluene-D8	99%	80-120%
460-00-4	4-Bromofluorobenzene	88%	80-120%

Method : C:\MSDCHEM\2\METHODS\8260AFF1.M (RTE Integrator)
Title : EPA 624 & SW8 5030B/8260B
Last Update : Thu Jul 19 14:26:48 2001
Response via : Initial Calibration

Calibration Files
1 =C0004625.D 2 =C0004626.D 3 =C0004627.D
4 =C0004628.D 5 =C0004629.D 6 =C0004630.D

		Compound	1	2	3	4	5	6	Avg	%RSD
1)	I	Fluorobenzene				ISTD				
2)		Dichlorodifluorom		0.215	0.209	0.205	0.204	0.190	0.205	4.46
3)	P	Chloromethane	0.360	0.421	0.425	0.411	0.393	0.368	0.396	6.96
4)	C	Vinyl Chloride	0.262	0.380	0.356	0.356	0.343	0.319	0.336	12.32
5)		Bromomethane	0.163	0.193	0.184	0.174	0.159	0.136	0.168	12.09
6)		Chloroethane	0.163	0.205	0.192	0.193	0.180	0.163	0.183	9.33
7)		Trichlorofluorome		0.224	0.249	0.235	0.244	0.240	0.239	3.99
8)		Acrolein	0.007	0.008	0.013	0.013	0.013	0.014	0.011	25.96
9)	C	1,1-Dichloroethen	0.400	0.499	0.497	0.513	0.498	0.472	0.480	8.59
0)		Freon 113	0.212	0.266	0.257	0.264	0.259	0.248	0.251	8.10
1)		Acetone		0.063	0.065	0.062	0.058	0.058	0.061	5.47
2)		Iodomethane	0.300	0.384	0.360	0.381	0.378	0.371	0.362	8.78
3)		Methyl Acetate	0.206	0.171	0.180	0.174	0.160	0.159	0.175	9.87
4)		Carbon Disulfide	0.852	1.030	0.990	1.001	0.966	0.908	0.958	6.88
5)		Methylene Chlorid		0.562	0.488	0.486	0.463	0.446	0.489	9.07
6)		Tert-Butyl Alcoho	0.021	0.017	0.021	0.020	0.020	0.021	0.020	7.04
7)		trans-1,2-Dichlor	0.415	0.501	0.493	0.485	0.482	0.467	0.474	6.50
8)		Acrylonitrile	0.076	0.072	0.084	0.081	0.076	0.077	0.078	5.30
9)		Methyl Tert Butyl	0.598	0.616	0.655	0.649	0.639	0.641	0.633	3.44
0)	P	1,1-Dichloroethan	0.492	0.560	0.561	0.545	0.532	0.510	0.533	5.22
1)		Vinyl acetate	0.493	0.546	0.642	0.653	0.614	0.600	0.591	10.32
2)		Di-isopropyl ethe	1.037	1.174	1.181	1.155	1.114	1.062	1.120	5.39
3)		ETBE	0.795	0.853	0.898	0.891	0.877	0.878	0.865	4.39
4)		2,2-Dichloropropa	0.157	0.203	0.202	0.199	0.196	0.189	0.191	9.01
5)		cis-1,2-Dichloroe	0.225	0.260	0.253	0.252	0.251	0.246	0.248	4.81
6)		2-Butanone	0.113	0.100	0.109	0.103	0.097	0.099	0.104	6.16
7)		Bromochloromethan	0.077	0.112	0.109	0.110	0.109	0.111	0.105	12.95
8)	C	Chloroform	0.398	0.450	0.440	0.433	0.436	0.427	0.431	4.11
9)		Tetrahydrofuran		0.069	0.071	0.070	0.065	0.067	0.069	3.29
0)		1,1,1-Trichloroet	0.231	0.310	0.300	0.298	0.303	0.301	0.291	10.17
1)		Cyclohexane	0.425	0.560	0.563	0.560	0.565	0.545	0.536	10.29
2)	S	Dibromofluorometh	0.222	0.218	0.221	0.219	0.220	0.221	0.220	0.67
3)		1,1-Dichloroprope	0.277	0.366	0.365	0.359	0.362	0.352	0.347	9.94
4)		Carbon Tetrachlor	0.195	0.260	0.257	0.261	0.265	0.267	0.251	11.05
5)	S	1,2-Dichloroethan	0.288	0.266	0.277	0.267	0.261	0.263	0.270	3.80
6)		Benzene	1.076	1.205	1.156	1.137	1.105	1.044	1.120	5.19
7)		TAME	0.649	0.688	0.724	0.724	0.705	0.695	0.698	3.98
8)		1,2-Dichloroethan	0.441	0.370	0.363	0.354	0.339	0.334	0.367	10.56
9)		Trichloroethene	0.237	0.272	0.271	0.263	0.265	0.261	0.261	4.88
0)		Methylcyclohexane	0.347	0.428	0.443	0.428	0.440	0.423	0.418	8.54
1)	C	1,2-Dichloropropa	0.279	0.339	0.331	0.327	0.319	0.307	0.317	6.83
2)		Dibromomethane	0.131	0.149	0.152	0.146	0.143	0.143	0.144	4.90
3)		1,4-Dioxane		0.002	0.002	0.002	0.002	0.002	0.002	8.55
4)		Bromodichlorometh	0.291	0.319	0.325	0.325	0.328	0.327	0.319	4.52
5)		2-Nitropropane	0.053	0.048	0.058	0.058	0.054	0.055	0.055	6.84
6)		2-Chloroethyl vin	0.144	0.154	0.166	0.165	0.153	0.147	0.155	5.83
7)		4-Methyl-2-pentan	0.233	0.218	0.241	0.235	0.219	0.222	0.228	4.20
		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.434	0.436	0[illegible]	7.44

49)	I	Chlorobenzene-d5	----------------	----------------	----------------	ISTD	----------------	----------------	----------------	
50)	S	Toluene-d8	1.371	1.382	1.364	1.397	1.346	1.340	1.360	1.14
51)	C	Toluene	1.435	1.685	1.643	1.628	1.611	1.549	1.592	5.57
52)		trans-1,3-Dichlor	0.460	0.500	0.524	0.521	0.519	0.518	0.507	4.83
53)		1,1,2-Trichloroet	0.262	0.261	0.267	0.264	0.254	0.252	0.260	2.24
54)		Tetrachloroethene	0.285	0.353	0.346	0.341	0.340	0.333	0.333	7.40
55)		2-hexanone	0.224	0.209	0.231	0.225	0.209	0.211	0.218	4.60
56)		1,3-Dichloropropa	0.542	0.564	0.574	0.561	0.541	0.531	0.552	3.00
57)		Dibromochlorometh	0.242	0.263	0.273	0.279	0.280	0.285	0.270	5.91
58)		1,2-Dibromoethane	0.252	0.262	0.282	0.277	0.270	0.275	0.270	4.08
59)		1-Chlorohexane	0.427	0.524	0.533	0.545	0.547	0.535	0.519	8.75
60)	P	Chlorobenzene	0.845	1.010	0.990	0.975	0.973	0.952	0.958	6.09
61)		1,1,1,2-Tetrachlo	0.223	0.297	0.291	0.297	0.287	0.275	0.278	10.12
62)	C	Ethylbenzene	1.454	1.842	1.824	1.798	1.750	1.652	1.720	8.55
63)		m,p-Xylene	1.116	1.431	1.411	1.391	1.342	1.261	1.325	9.01
64)		o-Xylene	1.190	1.489	1.488	1.480	1.403	1.313	1.394	8.70
65)		Styrene	0.788	1.046	1.124	1.144	1.090	1.020	1.035	12.54
66)	P	Bromoform	0.146	0.151	0.187	0.192	0.190	0.198	0.177	12.85
67)	I	1,4-Dichlorobenzene-d	----------------	----------------	----------------	ISTD	----------------	----------------	----------------	
68)		Isopropylbenzene	2.493	3.271	3.228	3.223	3.305	3.236	3.126	9.96
69)	S	4-Bromofluorobenz	1.100	1.102	1.079	1.079	1.105	1.109	1.096	1.21
70)		Bromobenzene	0.658	0.809	0.799	0.778	0.774	0.731	0.758	7.40
71)		Cyclohexanone		0.017	0.019	0.018	0.018	0.018	0.018	3.58
72)	P	1,1,2,2-Tetrachlo	0.627	0.606	0.636	0.635	0.634	0.633	0.628	1.85
73)		trans-1,4-Dichlor	0.215	0.217	0.249	0.244	0.237	0.241	0.234	6.15 ✓
74)		1,2,3-Trichloropr	0.172	0.164	0.179	0.168	0.165	0.170	0.169	3.27
75)		n-Propylbenzene	3.321	4.362	4.267	4.169	4.140	3.917	4.029	9.37
76)		2-Chlorotoluene	2.284	2.946	2.886	2.844	2.750	2.590	2.717	9.04
77)		4-Chlorotoluene	2.205	2.729	2.645	2.634	2.663	2.607	2.581	7.31
78)		1,3,5-Trimethylbe	2.054	2.677	2.731	2.702	2.638	2.477	2.547	10.10
79)		sec-Butylbenzene	2.593	3.425	3.494	3.475	3.502	3.383	3.312	10.72
80)		1,3-Dichlorobenze	1.147	1.508	1.454	1.440	1.465	1.421	1.406	9.24
81)		4-Isopropyltoluen	1.814	2.402	2.481	2.458	2.501	2.426	2.347	11.22
82)		1,4-Dichlorobenze	1.310	1.552	1.496	1.477	1.484	1.441	1.460	5.61
83)		tert-Butylbenzene	1.483	1.918	1.914	1.903	1.898	1.816	1.822	9.34
84)		n-Butylbenzene	2.260	2.825	2.916	2.873	2.919	2.820	2.769	9.14
85)		1,2-Dichlorobenze	1.113	1.385	1.380	1.374	1.372	1.333	1.326	8.00
86)		1,2,4-Trimethylbe	2.100	2.807	2.829	2.827	2.834	2.733	2.688	10.82
87)		1,2-Dibromo-3-Chl	0.123	0.105	0.107	0.112	0.108	0.110	0.111	5.61
88)		1,2,4-Trichlorobe	0.728	0.915	0.897	0.956	0.949	0.946	0.899	9.66
89)		Hexachlorobutadie	0.331	0.395	0.362	0.377	0.380	0.386	0.372	6.13
90)		Naphthalene	1.513	1.564	1.652	1.737	1.689	1.745	1.650	5.71
91)		1,2,3-Trichlorobe	0.990	0.788	0.775	0.805	0.797	0.808	0.827	9.77

(#) = Out of Range

8260APP1.M Thu Jul 19 14:27:28 2001 RPT1

GC/MS QA-QC Check Report

Tune File : C:\MSDCHEM\2\DATA\071801\C0004666.D
Tune Time : 18 Jul 2001 10:47 am

Daily Calibration File : C:\MSDCHEM\2\DATA\071801\C0004667.D

File	Sample	Surrogate Recovery %				941024	673256	400874
						Internal Standard Responses		
No Quant Results for C:\MSDCHEM\2\DATA\071801\C0004666.D								
C0004667.D	CC220-40	100	104	98	86	941024	673256	400874
C0004668.D	BS	101	104	99	86	944283	666885	395196
C0004669.D	MB	99	106	99	89	936182	652788	364041
C0004670.D	F10309-4,2	99	103	99	87	904133	627173	358455
C0004671.D	F10291-6,5	100	106	99	87	874416	611862	348241
C0004672.D	F10291-2,5	99	106	100	86	853346	590648	337989
C0004673.D	F10291-3,5	100	106	99	85	829195	578713	333682
C0004674.D	F10291-4,5	99	104	99	87	863650	597023	331600
C0004675.D	F10291-5,5	100	105	98	84	825033	574391	332679
C0004676.D	F10291-4MS	100	104	100	83	850073	598456	365161
C0004677.D	F10291-4MS	99	104	99	83	863999	605272	369713
C0004678.D	F10296-2,5	100	104	99	86	873947	608884	348111
C0004679.D	F10296-3,5	100	105	98	86	847472	590239	338218
C0004680.D	F10296-4,5	100	106	99	85	826248	580555	335834
C0004681.D	F10296-5,5	100	105	99	85	824505	573114	330601
C0004682.D	F10291-1,2	99	105	99	87	853709	591273	328781
C0004683.D	F10296-1,2	98	105	100	86	829549	570144	322184
C0004684.D	F10291-5,2	99	106	98	84	813636	572673	330236
C0004685.D	MB	99	104	99	85	814461	568013	324161
C0004686.Dt	MB	98	104	100	85	817497	565393	319782
C0004687.Dt	F10294-20,	100	106	97	83	779671	550872	320116
C0004688.Dt	F10303-3,1	99	104	98	84	819324	572154	330976

t - fails 12hr time check   * - fails criteria

Created: Thu Jul 19 08:38:08 2001 MSVOA5

Method Blank Summary

Job Number: F10296
Account: ALSE Accutest Labs Southeast
Project: TETRFLJX: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GC2823-MB	GH5757.D	1	07/25/01	NM	n/a	n/a	GGH1458

The QC reported here applies to the following samples: **Method: DAI**

F10296-1, F10296-2, F10296-3, F10296-4, F10296-5

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	5000	ug/l	
71-36-3	n-Butyl Alcohol	ND	5000	ug/l	
67-56-1	Methanol	ND	5000	ug/l	

Calibration Status Report gcl3

Method : C:\HPCHEM\1\METHODS\ALC72501.M (Chemstation Integrator)
Title :
Last Update : Wed Jul 25 10:21:38 2001
Response via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	810.00	0.00	C:\HPCHEM\1\DATA\GH5750.D
2	2	405.00	0.00	C:\HPCHEM\1\DATA\GH5751.D
3	3	81.00	0.00	C:\HPCHEM\1\DATA\GH5752.D
4	4	40.50	0.00	C:\HPCHEM\1\DATA\GH5753.D
5	5	8.10	0.00	C:\HPCHEM\1\DATA\GH5754.D
6	6	4.05	0.00	C:\HPCHEM\1\DATA\GH5755.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Jul 25 12:11 2001	Jul 25 12:09 19101	25 Jul 2001 9:39 am
2	2	Jul 25 12:12 2001	Jul 25 12:12 19101	25 Jul 2001 9:57 am
3	3	Jul 25 12:13 2001	Jul 25 12:13 19101	25 Jul 2001 10:11 am
4	4	Jul 25 12:14 2001	Jul 25 12:14 19101	25 Jul 2001 10:24 am
5	5	Jul 25 12:16 2001	Jul 25 12:15 19101	25 Jul 2001 10:37 am
6	6	Jul 25 12:18 2001	Jul 25 12:18 19101	25 Jul 2001 10:51 am

zn 7/25/01

07/30/01

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\1\DATA\GH5771.D
Acq On : 25 Jul 2001 2:21 pm
Sample : mix BA 100 ppm
Misc :
IntFile : events.e

Vial: 96
Operator: nancym
Inst : gc13
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\ALC72501.M (Chemstation Integrator)
Title :
Last Update : Wed Jul 25 10:21:38 2001
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF		%Dev	Area%	Dev(min)
1	methanol	13.224	12.816	E3	3.1	100	0.00
2	IBA	27.508	27.881	E3	-1.4	102	0.00
3	1-Butanol	27.253	27.351	E3	-0.4	101	0.00

2 7/25/01

753

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Response Factor Report [illegible]

Method : C:\HPCHEM\2\METHODS\DGMEE.M (Chemstation Integrator)
Title : Dissolved Gases in Water
Last Update : Tue Jul 03 10:52:34 2001
Response via : Initial Calibration

Calibration Files
1 =XY000550.D 2 =XY000551.D 3 =XY000552.D
4 =XY000553.D 5 =XY000554.D 6 =XY000555.D 7 =XY000556.D

	Compound	1	2	3	4	5	6	7	Avg	%RSD
1)	Methane	1.418	1.142	1.146	1.182	1.113	1.055	1.162	1.174 E4	9.80
2)	Ethylene	1.974	2.060	2.178	2.266	2.160	2.042	2.221	2.129 E4	4.97
3)	Ethane	2.645	2.285	2.212	2.281	2.153	2.058	2.244	2.269 E4	8.12

Average % RSD = 7.6

(#) = Out of Range

DGMEE.M Thu Jul 12 14:50:35 2001 PIDHALL2

Evaluate Continuing Calibration Report

Data File : C:\HPCHEM\2\DATA\071701\XY000599.D
Acq On : 17 Jul 2001 9:27 am
Sample : CC29-1000ppmv
Misc : gc1381,gxy31,,,,,
IntFile : EVENTS.E

Vial: 100
Operator: RachidA
Inst : VOA5
Multiplr: 1.00

Method : C:\HPCHEM\2\METHODS\DGMEE.M (Chemstation Integrator)
Title : Dissolved Gases in Water
Last Update : Thu Jul 12 13:33:34 2001
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	Methane	1000.000	907.548	9.2	101	0.01
2	Ethylene	1000.000	919.519	8.0	101	0.02
3	Ethane	1000.000	913.665	8.6	101	0.02

Average % D = 8.6

(#) = Out of Range
XY000572.D DGMEE.M

SPCC's out = 0 CCC's out = 0
Wed Jul 18 09:28:50 2001 PIDHALL2

Method Blank Summary

Job Number: F10296
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP3507-MB	W005988.D	1	07/24/01	ME	07/16/01	OP3507	SW326

The QC reported here applies to the following samples: **Method: SW846 8270C**

F10296-1, F10296-2, F10296-3, F10296-4, F10296-5

CAS No.	Compound	Result	RL	Units	Q
	3&4-Methylphenol	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	57%	20-125%
4165-62-2	Phenol-d5	34%	10-125%
118-79-6	2,4,6-Tribromophenol	93%	35-140%
4165-60-0	Nitrobenzene-d5	89%	46-125%
321-60-8	2-Fluorobiphenyl	77%	46-125%
1718-51-0	Terphenyl-d14	83%	49-126%

GC/MS QA-QC Check Report

Tune File : C:\HPCHEM\1\DATA\071601\W005886.D
Tune Time : 16 Jul 2001 8:43 am

~~Daily Calibration File : C:\HPCHEM\1\DATA\071601\W005887.D~~ 7/17/01

							Internal Standard Responses		
							245291	843102	427735
							540306	245353	130019
File	Sample	Surrogate Recovery %							
W005894.D	op3464-mb	93	94	93	90		196057	659989	337768
		89	82				474626	287150	175365
W005895.D	f10253-1,2	89	90	84	104		257019	838192	382960
		99	88				431286	191101	179383
W005896.D	f10260-1,1	52	63	64	80		161630	529575	273459
		67	68				342562	186092	173247
W005897.D	f10260-2,2	64	67	74	83		260645	811232	375960
		74	66				405349	216004	224589
W005898.D	f10253-3	72	71	78	84		264239	819317	380321
		82	64				423060	220839	227780
W005899.D	op3479-bs	87	88	94	97		323166	1105692	537454
		88	97				573021	212376	225685
W005900.D	op3479-mb	76	75	79	83		295702	955215	450840
		71	99				485385	185478	197426
W005901.D	f10276-2	78	77	83	87		324910	1033759	482057
		73	93				515373	193275	202536
W005902.D	op3479-ms	68	71	75	85		341145	1162403	550103
		79	89				575716	199555	209896
W005903.D	op3479-msd	79	78	86	88		317130	1068404	521533
		82	94				566836	205673	206120
W005904.D	f10281-1	74	77	82	92		308046	980279	435052
		79	76				440764	187905	206466
W005905.D	f10281-2	78	81	84	87		333547	1110334	522884
		84	84				516542	190567	207854
W005906.D	f10281-3	69	71	74	84		307117	984994	443069
		78	76				462230	210847	220514
W005907.D	f10281-4	75	74	77	82		237783	771161	368825
		82	76				418569	202122	207666
W005908.D	solvent bl	89	87	93	97		297290	956929	434312
		87	86				434901	184918	207101

+ - fails 12hr time check   * - fails criteria

GC/MS QA-QC Check Report

Tune File : C:\HPCHEM\1\DATA\072401\W005983.D
Tune Time : 24 Jul 2001 10:11 am

Daily Calibration File : C:\HPCHEM\1\DATA\072401\W005984.D 7/25/01

						203536	683720	330838
						418879	208382	130495
File	Sample	Surrogate Recovery %				Internal Standard Responses		
W005985.D	op3528-m	96	97	95	97	189880	636121	318330
		93	85			436139	263261	160410
W005986.D	f10315-1	81	83	76	85	195038	679685	340378
		84	80			463989	259768	153474
W005987.D	op3507-b	60	41	83	79	168851	593937	289211
		94	87			368031	189796	119174
W005988.D	op3507-m	57	35	89	77	178509	596224	298421
		93	83			393844	235725	154525
W005989.D	f10291-1	45	28	66	67	185393	612711	298862
		85	77			394334	227484	144156
W005990.D	f10291-2	45	29	65	67	204165	676324	333037
		85	81			445191	246413	157128
W005991.D	f10291-3	49	31	77	81	203627	684134	345369
		93	90			475210	248722	144205
W005992.D	f10291-4	53	34	78	76	223581	752500	382144
		86	80			513278	288004	164034
W005993.D	f10291-5	47	29	74	74	204248	675642	336063
		89	82			446533	258850	151456
W005994.D	f10296-1	52	33	78	77	220781	728768	360949
		85	79			480886	264927	149128
W005995.D	f10296-2	46	29	67	68	221181	748784	368727
		78	76			494676	265583	151172
W005996.D	f10296-3	48	30	72	73	208945	702942	350598
		83	80			473454	263448	149979
W005997.D	f10296-4	47	30	71	71	225577	754683	377924
		82	78			494168	263527	155954
W005998.D	op3507-m	74	56	88	92	200160	684195	331619
		98	88			413424	213636	123111
W005999.D	op3507-m	73	55	83	84	209516	725251	350294
		89	81			440358	218206	125066
W006000.D	f10296-5	48	34	83	81	227759	768804	391183
		72	82			531364	296561	166059

[illegible]	[illegible]	[illegible] 85	[illegible] 75		[illegible]	[illegible] 374632	[illegible] 192512	299881 119287
006002.D	op3536-m	58 89	35 87	84	84	184999 415910	620576 234432	310459 140262
006003.D	f10365-1	43 85	26 86	67	68	194162 432361	652765 234264	325395 138827
006004.D	f10365-2	48 84	30 80	72	72	207402 481707	700311 269482	350046 158319
006005.D	op3536-m	73 93	56 89	84	86	224693 534585	798415 264596	406238 153621
006006.D	op3536-m	74 96	56 89	87	88	206022 437963	721099 212609	354597 127443
006007.D	f10365-3	47 88	30 86	71	73	205166 441389	696286 232860	339246 137744
006008.D	tf10365-4	40 77	25 76	60	61	200590 459869	682175 254677	340769 147449
006009.D	tf10365-5	46 84	30 84	71	74	192788 422167	636577 213628	316126 130100
006010.D	tf10357-1	44 99	39 93	83	94	192699 401842	649295 217819	303402 133538

t - fails 12hr time check * - fails criteria

Created: Wed Jul 25 11:07:19 2001 MSBNA01

Method Blank Summary

Job Number: F10296
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP3505-MB	EE004328.D	1	07/17/01	MRE	07/16/01	OP3505	GEE198

The QC reported here applies to the following samples:

Method: EPA 8310

F10296-1, F10296-2, F10296-3, F10296-4, F10296-5

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	79%	33-141%
92-94-4	p-Terphenyl	85%	31-122%

Quantitation Report (QT Reviewed)

```
Signal #1 : E:\HPCHEM\1\DATA\0717PAH\EE004325.D\DAD1B.CH Vial: 1
Signal #2 : E:\HPCHEM\1\DATA\0717PAH\EE004325.D\DAD1A.CH
Acq On    : 17-Jul-2001, 11:19:19                        Operator: MIKEE
Sample    : ACN                                          Inst    : G1315A
Misc      : op3505,gee198,1000,,,1,,water                Multiplr: 1.00
IntFile Signal #1: EVENTS.E    IntFile Signal #2: events2.e
Quant Time: Jul 17 11:45 2001  Quant Results File: 8310_32.RES

Quant Method : C:\HPCHEM\2\METHODS\8310_32.M (Chemstation Integrator)
Title        : PAH's BY EPA  8310
Last Update  : Fri Jul 13 08:10:26 2001
Response via : Initial Calibration
DataAcq Meth : 8310_32.M

Volume Inj.         : 10ul
Signal #1 Phase : Envirosep PP       Signal #2 Phase: Envirosep PP
Signal #1 Info  : DAD 270nm          Signal #2 Info : DAD 254nm
```

Compound	RT#1	RT#2	Resp#1	Resp#2	ppm	ppm
System Monitoring Compounds						
8) S O-Terphenyl	0.00	0.00	0	0	N.D.	N.D.
Spiked Amount 20.000	Range	33 - 141	Recovery	=	0.00%#	0.00%#
12) S P-Terphenyl	0.00	0.00	0	0	N.D.	N.D.
Spiked Amount 20.000	Range	31 - 122	Recovery	=	0.00%#	0.00%#
Target Compounds						
1) Naphthalene	0.00	0.00	0	0	N.D.	N.D.
2) Acenaphthylene	0.00	0.00	0	0	N.D.	N.D.
3) 1-Methyl Naphtha	0.00	0.00	0	0	N.D.	N.D.
4) 2-Methyl Naphtha	0.00	0.00	0	0	N.D.	N.D.
5) Acenaphthene	0.00	0.00	0	0	N.D.	N.D.
6) Fluorene	0.00	0.00	0	0	N.D.	N.D.
7) Phenanthrene	0.00	0.00	0	0	N.D.	N.D.
9) Anthracene	0.00	0.00	0	0	N.D.	N.D.
10) Fluoranthene	0.00	0.00	0	0	N.D.	N.D.
~~11) Pyrene~~	~~0.00~~	~~0.00~~	~~0~~	~~0~~	~~N.D.~~	~~N.D.~~
13) Benzo(a)Anthrace	0.00	0.00	0	0	N.D.	N.D.
14) Chrysene	0.00	0.00	0	0	N.D.	N.D.
15) Benzo(b)Fluorant	0.00	0.00	0	0	N.D.	N.D.
16) Benzo(k)Fluorant	0.00	0.00	0	0	N.D.	N.D.
17) Benzo(a) Pyrene	0.00	0.00	0	0	N.D.	N.D.
18) Dibenzo(a,h)anth	0.00	0.00	0	0	N.D.	N.D.
19) Benzo(g,h,i) Per	0.00	0.00	0	0	N.D.	N.D.
20) Indeno(1,2,3-cd)	0.00	0.00	0	0	N.D.	N.D.

MKG 7/18/01

Tetra Tech NUS INTERNAL CORRESPONDENCE

TO:	**Mr. Mark Peterson**	**DATE:**	**February 7, 2001**
FROM:	**Elena Rodriguez**	**COPIES:**	**DV FILE**

SUBJECT: **DATA VALIDATION - ORGANICS**
CTO 111, NASJAX
SDG F8416

SAMPLES: 8/Aqueous/

H10-FB-01
H10-GW-DUP1-01
H10-GW-MW23-01
H10-GW-MW24-01
H10-GW-MW25-01
H10-GW-MW26-01
H10-GW-MW27-01

OVERVIEW

The sample set for CTO 111, NASJAX, SDG F8416 consists of 5 aqueous environmental samples and three aqueous field quality control samples (one field blank, one trip blank, and one field duplicate: H10-DUP1-01 and H10-MW23-01). All groundwater samples were analyzed for select volatile organic compounds, semi-volatile organic compounds, polynuclear aromatic hydrocarbons, alcohols, and dissolved gasses. The field blank was analyzed for semi-volatile organic compounds and polynuclear aromatic hydrocarbons.

The samples were collected by TetraTech NUS on December 14, 2000 and analyzed by Accutest Laboratories. All analyses were conducted in accordance with Naval Facilities Engineering Service Center (NFESC) Quality Assurance/Quality Control (QA/QC) criteria using the following analytical and reporting protocols: SW-846 Methods 8260B, 8270C, 8310, 8015 and RSK SOP 147/175. The data contained in this SDG were validated with regard to the following parameters:

- * Data completeness
- * Holding times
- * Initial/continuing calibrations
- * Laboratory method and field quality control blank results
- * Field duplicate results
- * Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Problems affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A.

Volatile Organics

Data reported for this fraction were found to be acceptable.

Semi-Volatile Organics

Data reported for this fraction were found to be acceptable.

Polynuclear Aromatic Hydrocarbons

Data reported for this fraction were found to be acceptable.

Dissolved Gases (Methane-Ethane-Ethene)

Data reported for this fraction were found to be acceptable.

Additional Comments

Positive results below the reporting limit (RL) were qualified as estimated, J, due to uncertainty near the detection limit.

The trip blank was listed on the chain-of-custody form but was not received by the laboratory. The laboratory notified the Task Order Manager upon receipt of the coolers.

EXECUTIVE SUMMARY

Laboratory Performance Issues: None.

Other Factors Affecting Data Quality: The trip blank was not received by the laboratory.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (10/99), and the Navy IRCDQM (9/99) NFESC guidelines. The text of this report has been formulated to address only those problem areas affecting data quality.

"I attest that the data referenced herein were validated according to the agreed upon validation criteria as specified in the NFESC guidelines and the Quality Assurance Project Plan (QAPP)."

Elena Rodriguez
Tetra Tech NUS

Elena Rodriguez

Elena Rodriguez for Joe Samchuck
Tetra Tech NUS

Joseph A. Samchuck
Data Validation Quality Assurance Officer

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED ANALYTICAL RESULTS

CTO111-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8416

SAMPLE NUMBER:	H10-GW-DUP1-01			H10-GW-MW23-01			H10-GW-MW24-01			H10-GW-MW25-01		
SAMPLE DATE:	12/14/00			12/14/00			12/14/00			12/14/00		
LABORATORY ID:	F8416-6			F8416-7			F8416-4			F8416-3		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:	H10-GW-MW23-01											
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	2	U		2	U		2	U		2	U	
1,1,2-TRICHLOROETHANE	2	U		2	U		2	U		2	U	
1,1-DICHLOROETHANE	2	U		2	U		2	U		2	U	
1,1-DICHLOROETHENE	2	U		2	U		2	U		2	U	
1,2-DICHLOROETHANE	2	U		2	U		2	U		2	U	
1,2-DICHLOROETHENE (TOTAL)	4	U		4	U		4	U		4	U	
2-NITROPROPANE	10	U		10	U		10	U		10	U	
ACETONE	50	U		50	U		50	U		50	U	
BENZENE	1	U		1	U		1	U		1	U	
CARBON DISULFIDE	10	U		10	U		10	U		10	U	
CARBON TETRACHLORIDE	2	U		2	U		2	U		2	U	
CHLOROBENZENE	2	U		2	U		2	U		2	U	
CYCLOHEXANONE	10	U		10	U		10	U		10	U	
ETHYLBENZENE	2	U		2	U		2	U		2	U	
FREON-113	2	U		2	U		2	U		2	U	
METHYLENE CHLORIDE	5	U		5	U		5	U		5	U	
TETRACHLOROETHENE	2	U		2	U		2	U		2	U	
TOLUENE	2	U		2	U		2	U		2	U	
TRICHLOROETHENE	2	U		2	U		2	U		2	U	
VINYL CHLORIDE	1	U		1	U		1	U		1	U	
XYLENES, TOTAL	6	U		6	U		6	U		6	U	

CTO111-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8416

SAMPLE NUMBER:	H10-GW-MW26-01			H10-GW-MW27-01								
SAMPLE DATE:	12/14/00			12/14/00			/ /			/ /		
LABORATORY ID:	F8416-1			F8416-2								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	0.0 %			0.0 %			100.0 %			100.0 %		
UNITS:	UG/L			UG/L								
FIELD DUPLICATE OF:												
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
VOLATILES												
1,1,1-TRICHLOROETHANE	2	U		2	U							
1,1,2-TRICHLOROETHANE	2	U		2	U							
1,1-DICHLOROETHANE	2	U		2	U							
1,1-DICHLOROETHENE	2	U		2	U							
1,2-DICHLOROETHANE	2	U		2	U							
1,2-DICHLOROETHENE (TOTAL)	4	U		4	U							
2-NITROPROPANE	10	U		10	U							
ACETONE	50	U		50	U							
BENZENE	1	U		1								
CARBON DISULFIDE	10	U		10	U							
CARBON TETRACHLORIDE	2	U		2	U							
CHLOROBENZENE	2	U		2	U							
CYCLOHEXANONE	10	U		10	U							
ETHYLBENZENE	0.96	J	P	1.5	J	P						
FREON-113	2	U		2	U							
METHYLENE CHLORIDE	5	U		5	U							
TETRACHLOROETHENE	2	U		2	U							
TOLUENE	1.6	J	P	9.5								
TRICHLOROETHENE	2	U		2	U							
VINYL CHLORIDE	1	U		1	U							
XYLENES, TOTAL	1.3	J	P	8								

CTO111-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8416

SAMPLE NUMBER:	H10-GW-DUP1-01			H10-GW-MW23-01			H10-GW-MW24-01			H10-GW-MW25-01		
SAMPLE DATE:	12/14/00			12/14/00			12/14/00			12/14/00		
LABORATORY ID:	F8416-6			F8416-7			F8416-4			F8416-3		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:	H10-GW-MW23-01											
	RESULT	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
DISSOLVED GASES												
ETHANE	0.227			0.341			0.742			0.413		
ETHENE	0.123			0.194			0.583			0.219		
ISOBUTYL ALCOHOL	500	U		500	U		500	U		500	U	
METHANE	1.39			1.6			2.35			26.2		
METHANOL	500	U		500	U		500	U		500	U	
N-BUTYL ALCOHOL	500	U		500	U		500	U		500	U	

CTO111-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8416

SAMPLE NUMBER:	H10-GW-MW26-01			H10-GW-MW27-01								
SAMPLE DATE:	12/14/00			12/14/00			/ /			/ /		
LABORATORY ID:	F8416-1			F8416-2								
QC_TYPE:	NORMAL			NORMAL								
% SOLIDS:	0.0 %			0.0 %			100.0 %			100.0 %		
UNITS:	UG/L			UG/L								
FIELD DUPLICATE OF:												
	RESULT	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
DISSOLVED GASES												
ETHANE	0.049			0.014	U							
ETHENE	0.031			0.035								
ISOBUTYL ALCOHOL	500	U		500	U							
METHANE	555			91.1								
METHANOL	500	U		500	U							
N-BUTYL ALCOHOL	500	U		500	U							

CTO111-NAS JACKSONVILLE

WATER DATA
Accutest, NJ
SDG: F8416

SAMPLE NUMBER:	H10-FB-01			H10-GW-DUP1-01			H10-GW-MW23-01			H10-GW-MW24-01		
SAMPLE DATE:	12/14/00			12/14/00			12/14/00			12/14/00		
LABORATORY ID:	F8416-5			F8416-6			F8416-7			F8416-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:				H10-GW-MW23-01								
	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE	RESULT	QUAL	CODE
SEMIVOLATILES												
2,4-DINITROTOLUENE	0.2	U		0.2	U		0.2	U		0.22	U	
2-CHLOROPHENOL	5	U		5	U		5	U		5.5	U	
2-METHYLPHENOL	5	U		5	U		5	U		5.5	U	
3&4-METHYLPHENOL	4	U		4	U		4	U		4.4	U	
4-NITROPHENOL	25	U		25	U		25	U		28	U	
CARBAZOLE	4	U		4	U		4	U		4.4	U	
N-NITROSO-DI-N-PROPYLAMINE	4	U		4	U		4	U		4.4	U	
PENTACHLOROPHENOL	1	U		1	U		1	U		1.1	U	
PHENOL	5	U		5	U		5	U		5.5	U	
PYRIDINE	5	U		5	U		5	U		5.5	U	

CTO111-NAS JACKSONVILLE

WATER DATA

Accutest, NJ

SDG: F8416

SAMPLE NUMBER:	H10-GW-MW25-01			H10-GW-MW26-01			H10-GW-MW27-01				
SAMPLE DATE:	12/14/00			12/14/00			12/14/00			/ /	
LABORATORY ID:	F8416-3			F8416-1			F8416-2				
QC_TYPE:	NORMAL			NORMAL			NORMAL				
% SOLIDS:	0.0 %			0.0 %			0.0 %			100.0 %	
UNITS:	UG/L			UG/L			UG/L				
FIELD DUPLICATE OF:											
	RESULT	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
SEMIVOLATILES												
2,4-DINITROTOLUENE	0.2	U		0.2	U		0.2	U				
2-CHLOROPHENOL	5	U		5	U		5	U				
2-METHYLPHENOL	5	U		5	U		5	U				
3&4-METHYLPHENOL	4	U		4	U		4	U				
4-NITROPHENOL	25	U		25	U		25	U				
CARBAZOLE	4	U		4	U		4	U				
N-NITROSO-DI-N-PROPYLAMINE	4	U		4	U		4	U				
PENTACHLOROPHENOL	1	U		1	U		1	U				
PHENOL	5	U		5	U		5	U				
PYRIDINE	5	U		5	U		5	U				

CTO111-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8416

SAMPLE NUMBER:	H10-FB-01			H10-GW-DUP1-01			H10-GW-MW23-01			H10-GW-MW24-01		
SAMPLE DATE:	12/14/00			12/14/00			12/14/00			12/14/00		
LABORATORY ID:	F8416-5			F8416-6			F8416-7			F8416-4		
QC_TYPE:	NORMAL			NORMAL			NORMAL			NORMAL		
% SOLIDS:	0.0 %			0.0 %			0.0 %			0.0 %		
UNITS:	UG/L			UG/L			UG/L			UG/L		
FIELD DUPLICATE OF:				H10-GW-MW23-01								
	RESULT	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	2	U		2	U		2	U		2.2	U	
2-METHYLNAPHTHALENE	2	U		2	U		2	U		2.2	U	
ACENAPHTHENE	4	U		4	U		4	U		4.4	U	
ACENAPHTHYLENE	4	U		4	U		4	U		4.4	U	
ANTHRACENE	2	U		2	U		2	U		2.2	U	
BENZO(A)ANTHRACENE	0.2	U		0.2	U		0.2	U		0.22	U	
BENZO(A)PYRENE	0.2	U		0.2	U		0.2	U		0.22	U	
BENZO(B)FLUORANTHENE	0.2	U		0.2	U		0.2	U		0.22	U	
BENZO(G,H,I)PERYLENE	0.2	U		0.2	U		0.2	U		0.22	U	
BENZO(K)FLUORANTHENE	0.2	U		0.2	U		0.2	U		0.22	U	
CHRYSENE	2	U		2	U		2	U		2.2	U	
DIBENZO(A,H)ANTHRACENE	0.2	U		0.2	U		0.2	U		0.22	U	
FLUORANTHENE	2	U		2	U		2	U		2.2	U	
FLUORENE	2	U		2	U		2	U		2.2	U	
INDENO(1,2,3-CD)PYRENE	0.2	U		0.2	U		0.2	U		0.22	U	
NAPHTHALENE	2	U		2	U		2	U		2.2	U	
PHENANTHRENE	2	U		2	U		2	U		2.2	U	
PYRENE	2	U		2	U		2	U		2.2	U	

CTO111-NAS JACKSONVILLE
WATER DATA
Accutest, NJ
SDG: F8416

SAMPLE NUMBER:	H10-GW-MW25-01			H10-GW-MW26-01			H10-GW-MW27-01					
SAMPLE DATE:	12/14/00			12/14/00			12/14/00			/ /		
LABORATORY ID:	F8416-3			F8416-1			F8416-2					
QC_TYPE:	NORMAL			NORMAL			NORMAL					
% SOLIDS:	0.0 %			0.0 %			0.0 %			100.0 %		
UNITS:	UG/L			UG/L			UG/L					
FIELD DUPLICATE OF:												
	RESULT	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**	**RESULT**	**QUAL**	**CODE**
POLYNUCLEAR AROMATIC HYDROCARBONS												
1-METHYLNAPHTHALENE	2	U		2	U		2	U				
2-METHYLNAPHTHALENE	2	U		2	U		2	U				
ACENAPHTHENE	4	U		4	U		4	U				
ACENAPHTHYLENE	4	U		4	U		4	U				
ANTHRACENE	2	U		2	U		2	U				
BENZO(A)ANTHRACENE	0.2	U		0.2	U		0.2	U				
BENZO(A)PYRENE	0.2	U		0.2	U		0.2	U				
BENZO(B)FLUORANTHENE	0.2	U		0.2	U		0.2	U				
BENZO(G,H,I)PERYLENE	0.2	U		0.2	U		0.2	U				
BENZO(K)FLUORANTHENE	0.2	U		0.2	U		0.2	U				
CHRYSENE	2	U		2	U		2	U				
DIBENZO(A,H)ANTHRACENE	0.2	U		0.2	U		0.2	U				
FLUORANTHENE	2	U		2	U		2	U				
FLUORENE	2	U		2	U		2	U				
INDENO(1,2,3-CD)PYRENE	0.2	U		0.2	U		0.2	U				
NAPHTHALENE	2	U		2	U		2	U				
PHENANTHRENE	2	U		2	U		2	U				
PYRENE	2	U		2	U		2	U				

Qualifier Codes:

A	=	Lab Blank Contamination
B	=	Field Blank contamination
C	=	Calibration (i.e. %RSDs, %Ds, ICVs, CCVs, RPDs, RRFs, etc.) Noncompliance
D	=	MS/MSD Noncompliance
E	=	LCS/LCSD Noncompliance
F	=	Lab Duplicate Imprecision
G	=	Field Duplicate Imprecision
H	=	Holding Time Exceedance
I	=	ICP Serial Dilution Noncompliance
J	=	GFAA PDS – GFAA MSAs r<0.995
K	=	ICP Interference – Include ICSAB %Rs
L	=	Instrument Calibration Range Exceedance
M	=	Sample Preservation
N	=	Internal Standard Noncompliance
O	=	Poor Instrument Performance (I.E. base-time drifting)
P	=	Uncertainty near detection limit (<2 x IDL for Inorganics and < CRQL for Organics)
Q	=	Other problems (can encompass a number of issues)
R	=	Surrogates Recovery Noncompliance
S	=	Pesticide/PCB Resolution
T	=	% Breakdown Noncompliance for DDT and Endrin
U	=	Pest/PCB D% between columns for positive results
V	=	Non-Linear calibrations, tuning r< 0.995 (correlation coefficient)
W	=	EMPC result
X	=	Signal to noise response drop
Y	=	% Solid content is less than 30%

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

ACCUTEST

Report of Analysis

Client Sample ID:	H10-GW-MW23-01		
Lab Sample ID:	F8416-7	**Date Sampled:**	12/14/00
Matrix:	AQ - Ground Water	**Date Received:**	12/15/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	B003134.D	1	12/27/00	JG	n/a	n/a	VB110
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	**Cyclohexanone**	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	**Freon 113**	ND	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	**2-Nitropropane**	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		80-120%
17060-07-0	1,2-Dichloroethane-D4	93%		69-128%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	98%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	H10-GW-MW24-01		
Lab Sample ID:	F8416-4	**Date Sampled:**	12/14/00
Matrix:	AQ - Ground Water	**Date Received:**	12/15/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0001957.D	1	12/26/00	JG	n/a	n/a	VC89
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	**Cyclohexanone**	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	**Freon 113**	ND	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	**2-Nitropropane**	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		80-120%
17060-07-0	1,2-Dichloroethane-D4	104%		69-128%
2037-26-5	Toluene-D8	94%		80-120%
460-00-4	4-Bromofluorobenzene	96%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

ACCUTEST.

Report of Analysis

Client Sample ID:	H10-GW-MW25-01		
Lab Sample ID:	F8416-3	**Date Sampled:**	12/14/00
Matrix:	AQ - Ground Water	**Date Received:**	12/15/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0001956.D	1	12/26/00	JG	n/a	n/a	VC89
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	**Cyclohexanone**	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	**Freon 113**	ND	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	**2-Nitropropane**	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		80-120%
17060-07-0	1,2-Dichloroethane-D4	103%		69-128%
2037-26-5	Toluene-D8	94%		80-120%
460-00-4	4-Bromofluorobenzene	96%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	H10-GW-MW26-01		
Lab Sample ID:	F8416-1	**Date Sampled:**	12/14/00
Matrix:	AQ - Ground Water	**Date Received:**	12/15/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0001954.D	1	12/26/00	JG	n/a	n/a	VC89
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	**Cyclohexanone**	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	0.96	2.0	ug/l	J
76-13-1	**Freon 113**	ND	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	**2-Nitropropane**	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	1.6	2.0	ug/l	J
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	1.3	6.0	ug/l	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		80-120%
17060-07-0	1,2-Dichloroethane-D4	104%		69-128%
2037-26-5	Toluene-D8	92%		80-120%
460-00-4	4-Bromofluorobenzene	96%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	H10-GW-MW27-01		
Lab Sample ID:	F8416-2	**Date Sampled:**	12/14/00
Matrix:	AQ - Ground Water	**Date Received:**	12/15/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0001955.D	1	12/26/00	JG	n/a	n/a	VC89
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	1.0	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	**Cyclohexanone**	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	1.5	2.0	ug/l	J
76-13-1	**Freon 113**	ND	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	**2-Nitropropane**	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	9.5	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	8.0	6.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		80-120%
17060-07-0	1,2-Dichloroethane-D4	102%		69-128%
2037-26-5	Toluene-D8	94%		80-120%
460-00-4	4-Bromofluorobenzene	96%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	H10-GW-DUP1-01		
Lab Sample ID:	F8416-6	**Date Sampled:**	12/14/00
Matrix:	AQ - Ground Water	**Date Received:**	12/15/00
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0001958.D	1	12/26/00	JG	n/a	n/a	VC89
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	**Cyclohexanone**	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	**Freon 113**	ND	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	**2-Nitropropane**	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		80-120%
17060-07-0	1,2-Dichloroethane-D4	104%		69-128%
2037-26-5	Toluene-D8	93%		80-120%
460-00-4	4-Bromofluorobenzene	95%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	H10-GW-MW23-01		
Lab Sample ID:	F8416-7	**Date Sampled:**	12/14/00
Matrix:	AQ - Ground Water	**Date Received:**	12/15/00
Method:	SW846 8015	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II16220.D	1	12/20/00	ANJ	n/a	n/a	N:GII823
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	1.60	0.10	ug/l	
74-84-0	Ethane	0.34	0.014	ug/l	
74-85-1	Ethene	0.19	0.014	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	H10-GW-MW24-01		
Lab Sample ID:	F8416-4	**Date Sampled:**	12/14/00
Matrix:	AQ - Ground Water	**Date Received:**	12/15/00
Method:	SW846 8015	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II16217.D	1	12/20/00	ANJ	n/a	n/a	N:GII823
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	2.35	0.10	ug/l	
74-84-0	Ethane	0.74	0.014	ug/l	
74-85-1	Ethene	0.58	0.014	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	H10-GW-MW25-01		
Lab Sample ID:	F8416-3	**Date Sampled:**	12/14/00
Matrix:	AQ - Ground Water	**Date Received:**	12/15/00
Method:	SW846 8015	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II16216.D	1	12/20/00	ANJ	n/a	n/a	N:GII823
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	26.2	0.10	ug/l	
74-84-0	Ethane	0.41	0.014	ug/l	
74-85-1	Ethene	0.22	0.014	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	H10-GW-MW26-01		
Lab Sample ID:	F8416-1	**Date Sampled:**	12/14/00
Matrix:	AQ - Ground Water	**Date Received:**	12/15/00
Method:	SW846 8015	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II16214.D	1	12/20/00	ANJ	n/a	n/a	N:GII823
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	555	0.10	ug/l	
74-84-0	Ethane	0.049	0.014	ug/l	
74-85-1	Ethene	0.031	0.014	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	H10-GW-MW27-01		
Lab Sample ID:	F8416-2	**Date Sampled:**	12/14/00
Matrix:	AQ - Ground Water	**Date Received:**	12/15/00
Method:	SW846 8015	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II16215.D	1	12/20/00	ANJ	n/a	n/a	N:GII823
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	91.1	0.10	ug/l	
74-84-0	Ethane	ND	0.014	ug/l	
74-85-1	Ethene	0.035	0.014	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	H10-GW-DUP1-01		
Lab Sample ID:	F8416-6	**Date Sampled:**	12/14/00
Matrix:	AQ - Ground Water	**Date Received:**	12/15/00
Method:	SW846 8015	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	II16219.D	1	12/20/00	ANJ	n/a	n/a	N:GII823
Run #2							

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	1.39	0.10	ug/l	
74-84-0	Ethane	0.23	0.014	ug/l	
74-85-1	Ethene	0.12	0.014	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	H10-GW-MW23-01		
Lab Sample ID:	F8416-7	**Date Sampled:**	12/14/00
Matrix:	AQ - Ground Water	**Date Received:**	12/15/00
Method:	DAI	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH24551.D	1	12/21/00	ANJ	n/a	n/a	N:GGH688
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	112%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	H10-GW-MW24-01		
Lab Sample ID:	F8416-4	**Date Sampled:**	12/14/00
Matrix:	AQ - Ground Water	**Date Received:**	12/15/00
Method:	DAI	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH24549.D	1	12/21/00	ANJ	n/a	n/a	N:GGH688
Run #2 [a]	GH24580.D	1	12/22/00	ANJ	n/a	n/a	N:GGH688

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND [b]	500	ug/l	
71-36-3	n-Butyl Alcohol	ND [b]	500	ug/l	
67-56-1	Methanol	ND [b]	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	63% [c]	94%	75-125%

(a) Sample originally analyzed within the holding time.
(b) Result is from Run# 2
(c) Outside of in house control limits,

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	H10-GW-MW25-01		
Lab Sample ID:	F8416-3	**Date Sampled:**	12/14/00
Matrix:	AQ - Ground Water	**Date Received:**	12/15/00
Method:	DAI	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH24548.D	1	12/21/00	ANJ	n/a	n/a	N:GGH688
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	80%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	H10-GW-MW26-01		
Lab Sample ID:	F8416-1	**Date Sampled:**	12/14/00
Matrix:	AQ - Ground Water	**Date Received:**	12/15/00
Method:	DAI	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH24546.D	1	12/21/00	ANJ	n/a	n/a	N:GGH688
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	107%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID: H10-GW-MW27-01
Lab Sample ID: F8416-2
Matrix: AQ - Ground Water
Method: DAI
Project: NAS Jax-Hanger 1000

Date Sampled: 12/14/00
Date Received: 12/15/00
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH24547.D	1	12/21/00	ANJ	n/a	n/a	N:GGH688
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	76%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	H10-GW-DUP1-01		
Lab Sample ID:	F8416-6	**Date Sampled:**	12/14/00
Matrix:	AQ - Ground Water	**Date Received:**	12/15/00
Method:	DAI	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH24550.D	1	12/21/00	ANJ	n/a	n/a	N:GGH688
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	83%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	H10-GW-MW23-01		
Lab Sample ID:	F8416-7	**Date Sampled:**	12/14/00
Matrix:	AQ - Ground Water	**Date Received:**	12/15/00
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L005897.D	1	12/22/00	ME	12/21/00	OP2468	SL357
Run #2	L005909.D	1	12/26/00	ME	12/21/00	OP2474	SL358

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND [a]	5.0	ug/l	
95-48-7	2-Methylphenol	ND [a]	5.0	ug/l	
	3&4-Methylphenol	ND [a]	4.0	ug/l	
100-02-7	4-Nitrophenol	ND [a]	25	ug/l	
87-86-5	Pentachlorophenol	ND	1.0	ug/l	
108-95-2	Phenol	ND [a]	5.0	ug/l	
86-74-8	Carbazole	ND [a]	4.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.20	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND [a]	4.0	ug/l	
110-86-1	Pyridine	ND [a]	5.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol		50%	21-100%
4165-62-2	Phenol-d5		34%	10-94%
118-79-6	2,4,6-Tribromophenol		85%	10-123%
4165-60-0	Nitrobenzene-d5		83%	35-114%
321-60-8	2-Fluorobiphenyl		81%	43-116%
1718-51-0	Terphenyl-d14		90%	33-141%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

ACCUTEST

Report of Analysis

Client Sample ID:	H10-GW-MW24-01		
Lab Sample ID:	F8416-4	**Date Sampled:**	12/14/00
Matrix:	AQ - Ground Water	**Date Received:**	12/15/00
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L005892.D	1	12/22/00	ME	12/18/00	OP2468	SL357
Run #2	W003509.D	1	12/26/00	ME	12/18/00	OP2451	SW206

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND [a]	5.5	ug/l	
95-48-7	2-Methylphenol	ND [a]	5.5	ug/l	
	3&4-Methylphenol	ND [a]	4.4	ug/l	
100-02-7	4-Nitrophenol	ND [a]	28	ug/l	
87-86-5	Pentachlorophenol	ND	1.1	ug/l	
108-95-2	Phenol	ND [a]	5.5	ug/l	
86-74-8	Carbazole	ND [a]	4.4	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.22	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND [a]	4.4	ug/l	
110-86-1	Pyridine	ND [a]	5.5	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol		45%	21-100%
4165-62-2	Phenol-d5		29%	10-94%
118-79-6	2,4,6-Tribromophenol		80%	10-123%
4165-60-0	Nitrobenzene-d5		72%	35-114%
321-60-8	2-Fluorobiphenyl		72%	43-116%
1718-51-0	Terphenyl-d14		87%	33-141%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

ACCUTEST

Report of Analysis

Client Sample ID:	H10-GW-MW25-01		
Lab Sample ID:	F8416-3	**Date Sampled:**	12/14/00
Matrix:	AQ - Ground Water	**Date Received:**	12/15/00
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L005891.D	1	12/22/00	ME	12/18/00	OP2468	SL357
Run #2	W003508.D	1	12/26/00	ME	12/18/00	OP2451	SW206

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND [a]	5.0	ug/l	
95-48-7	2-Methylphenol	ND [a]	5.0	ug/l	
	3&4-Methylphenol	ND [a]	4.0	ug/l	
100-02-7	4-Nitrophenol	ND [a]	25	ug/l	
87-86-5	Pentachlorophenol	ND	1.0	ug/l	
108-95-2	Phenol	ND [a]	5.0	ug/l	
86-74-8	Carbazole	ND [a]	4.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.20	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND [a]	4.0	ug/l	
110-86-1	Pyridine	ND [a]	5.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol		44%	21-100%
4165-62-2	Phenol-d5		28%	10-94%
118-79-6	2,4,6-Tribromophenol		74%	10-123%
4165-60-0	Nitrobenzene-d5		72%	35-114%
321-60-8	2-Fluorobiphenyl		68%	43-116%
1718-51-0	Terphenyl-d14		83%	33-141%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	H10-GW-MW26-01		
Lab Sample ID:	F8416-1	**Date Sampled:**	12/14/00
Matrix:	AQ - Ground Water	**Date Received:**	12/15/00
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L005889.D	1	12/22/00	ME	12/18/00	OP2468	SL357
Run #2	W003506.D	1	12/26/00	ME	12/18/00	OP2451	SW206

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND [a]	5.0	ug/l	
95-48-7	2-Methylphenol	ND [a]	5.0	ug/l	
	3&4-Methylphenol	ND [a]	4.0	ug/l	
100-02-7	4-Nitrophenol	ND [a]	25	ug/l	
87-86-5	Pentachlorophenol	ND	1.0	ug/l	
108-95-2	Phenol	ND [a]	5.0	ug/l	
86-74-8	Carbazole	ND [a]	4.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.20	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND [a]	4.0	ug/l	
110-86-1	Pyridine	ND [a]	5.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol		43%	21-100%
4165-62-2	Phenol-d5		28%	10-94%
118-79-6	2,4,6-Tribromophenol		69%	10-123%
4165-60-0	Nitrobenzene-d5		72%	35-114%
321-60-8	2-Fluorobiphenyl		70%	43-116%
1718-51-0	Terphenyl-d14		82%	33-141%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	H10-GW-MW27-01		
Lab Sample ID:	F8416-2	**Date Sampled:**	12/14/00
Matrix:	AQ - Ground Water	**Date Received:**	12/15/00
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L005890.D	1	12/22/00	ME	12/18/00	OP2468	SL357
Run #2	W003507.D	1	12/26/00	ME	12/18/00	OP2451	SW206

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND [a]	5.0	ug/l	
95-48-7	2-Methylphenol	ND [a]	5.0	ug/l	
	3&4-Methylphenol	ND [a]	4.0	ug/l	
100-02-7	4-Nitrophenol	ND [a]	25	ug/l	
87-86-5	Pentachlorophenol	ND	1.0	ug/l	
108-95-2	Phenol	ND [a]	5.0	ug/l	
86-74-8	Carbazole	ND [a]	4.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.20	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND [a]	4.0	ug/l	
110-86-1	Pyridine	ND [a]	5.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol		39%	21-100%
4165-62-2	Phenol-d5		25%	10-94%
118-79-6	2,4,6-Tribromophenol		76%	10-123%
4165-60-0	Nitrobenzene-d5		66%	35-114%
321-60-8	2-Fluorobiphenyl		63%	43-116%
1718-51-0	Terphenyl-d14		84%	33-141%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	H10-GW-DUP1-01		
Lab Sample ID:	F8416-6	**Date Sampled:**	12/14/00
Matrix:	AQ - Ground Water	**Date Received:**	12/15/00
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L005894.D	1	12/22/00	ME	12/18/00	OP2468	SL357
Run #2	W003511.D	1	12/26/00	ME	12/18/00	OP2451	SW206

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND [a]	5.0	ug/l	
95-48-7	2-Methylphenol	ND [a]	5.0	ug/l	
	3&4-Methylphenol	ND [a]	4.0	ug/l	
100-02-7	4-Nitrophenol	ND [a]	25	ug/l	
87-86-5	Pentachlorophenol	ND	1.0	ug/l	
108-95-2	Phenol	ND [a]	5.0	ug/l	
86-74-8	Carbazole	ND [a]	4.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.20	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND [a]	4.0	ug/l	
110-86-1	Pyridine	ND [a]	5.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol		44%	21-100%
4165-62-2	Phenol-d5		29%	10-94%
118-79-6	2,4,6-Tribromophenol		73%	10-123%
4165-60-0	Nitrobenzene-d5		70%	35-114%
321-60-8	2-Fluorobiphenyl		66%	43-116%
1718-51-0	Terphenyl-d14		87%	33-141%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	H10-FB-01		
Lab Sample ID:	F8416-5	**Date Sampled:**	12/14/00
Matrix:	AQ - Field Blank Water	**Date Received:**	12/15/00
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L005893.D	1	12/22/00	ME	12/18/00	OP2468	SL357
Run #2	W003510.D	1	12/26/00	ME	12/18/00	OP2451	SW206

ABN TCL List

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND [a]	5.0	ug/l	
95-48-7	2-Methylphenol	ND [a]	5.0	ug/l	
	3&4-Methylphenol	ND [a]	4.0	ug/l	
100-02-7	4-Nitrophenol	ND [a]	25	ug/l	
87-86-5	Pentachlorophenol	ND	1.0	ug/l	
108-95-2	Phenol	ND [a]	5.0	ug/l	
86-74-8	Carbazole	ND [a]	4.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.20	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND [a]	4.0	ug/l	
110-86-1	Pyridine	ND [a]	5.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol		44%	21-100%
4165-62-2	Phenol-d5		29%	10-94%
118-79-6	2,4,6-Tribromophenol		72%	10-123%
4165-60-0	Nitrobenzene-d5		74%	35-114%
321-60-8	2-Fluorobiphenyl		68%	43-116%
1718-51-0	Terphenyl-d14		85%	33-141%

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	H10-GW-MW23-01		
Lab Sample ID:	F8416-7	**Date Sampled:**	12/14/00
Matrix:	AQ - Ground Water	**Date Received:**	12/15/00
Method:	EPA 8310 SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE001147.D	1	12/26/00	MRE	12/21/00	OP2469	GEE57
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	97%		29-133%
92-94-4	p-Terphenyl	97%		33-133%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	H10-GW-MW24-01		
Lab Sample ID:	F8416-4	**Date Sampled:**	12/14/00
Matrix:	AQ - Ground Water	**Date Received:**	12/15/00
Method:	EPA 8310 SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE001168.D	1	12/27/00	MRE	12/21/00	OP2469	GEE58
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.4	ug/l	
208-96-8	Acenaphthylene	ND	4.4	ug/l	
120-12-7	Anthracene	ND	2.2	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.22	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.22	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.22	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.22	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.22	ug/l	
218-01-9	Chrysene	ND	2.2	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.22	ug/l	
206-44-0	Fluoranthene	ND	2.2	ug/l	
86-73-7	Fluorene	ND	2.2	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.22	ug/l	
91-20-3	Naphthalene	ND	2.2	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.2	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.2	ug/l	
85-01-8	Phenanthrene	ND	2.2	ug/l	
129-00-0	Pyrene	ND	2.2	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	65%		29-133%
92-94-4	p-Terphenyl	65%		33-133%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	H10-GW-MW25-01		
Lab Sample ID:	F8416-3	**Date Sampled:**	12/14/00
Matrix:	AQ - Ground Water	**Date Received:**	12/15/00
Method:	EPA 8310 SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE001143.D	1	12/26/00	MRE	12/21/00	OP2469	GEE57
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	78%		29-133%
92-94-4	p-Terphenyl	84%		33-133%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	H10-GW-MW26-01		
Lab Sample ID:	F8416-1	**Date Sampled:**	12/14/00
Matrix:	AQ - Ground Water	**Date Received:**	12/15/00
Method:	EPA 8310 SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE001141.D	1	12/26/00	MRE	12/21/00	OP2469	GEE57
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	86%		29-133%
92-94-4	p-Terphenyl	86%		33-133%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	H10-GW-MW27-01		
Lab Sample ID:	F8416-2	**Date Sampled:**	12/14/00
Matrix:	AQ - Ground Water	**Date Received:**	12/15/00
Method:	EPA 8310 SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE001142.D	1	12/26/00	MRE	12/21/00	OP2469	GEE57
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	93%		29-133%
92-94-4	p-Terphenyl	92%		33-133%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	H10-GW-DUP1-01		
Lab Sample ID:	F8416-6	**Date Sampled:**	12/14/00
Matrix:	AQ - Ground Water	**Date Received:**	12/15/00
Method:	EPA 8310 SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE001146.D	1	12/26/00	MRE	12/21/00	OP2469	GEE57
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	92%		29-133%
92-94-4	p-Terphenyl	90%		33-133%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	H10-FB-01		
Lab Sample ID:	F8416-5	**Date Sampled:**	12/14/00
Matrix:	AQ - Field Blank Water	**Date Received:**	12/15/00
Method:	EPA 8310 SW846 3510C	**Percent Solids:**	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EE001145.D	1	12/26/00	MRE	12/21/00	OP2469	GEE57
Run #2							

Polynuclear Aromatic Hydrocarbons

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	85%		29-133%
92-94-4	p-Terphenyl	60%		33-133%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

APPENDIX C

SUPPORT DOCUMENTATION

F8416

HOLDING TIME

01/18/01

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UG/L	H10-GW-DUP1-01	F8416-6	NORMAL	F8416	ALC	12/14/00	/ /	12/21/00	0	0	7
UG/L	H10-GW-MW23-01	F8416-7	NORMAL	F8416	ALC	12/14/00	/ /	12/21/00	0	0	7
UG/L	H10-GW-MW24-01	F8416-4	NORMAL	F8416	ALC	12/14/00	/ /	12/22/00	0	0	8
UG/L	H10-GW-MW25-01	F8416-3	NORMAL	F8416	ALC	12/14/00	/ /	12/21/00	0	0	7
UG/L	H10-GW-MW26-01	F8416-1	NORMAL	F8416	ALC	12/14/00	/ /	12/21/00	0	0	7
UG/L	H10-GW-MW27-01	F8416-2	NORMAL	F8416	ALC	12/14/00	/ /	12/21/00	0	0	7
MG/L	H10-GW-DUP1-01	F8416-6	NORMAL	F8416	CL	12/14/00	01/03/01	01/03/01	20	0	20
MG/L	H10-GW-MW23-01	F8416-7	NORMAL	F8416	CL	12/14/00	01/03/01	01/03/01	20	0	20
MG/L	H10-GW-MW24-01	F8416-4	NORMAL	F8416	CL	12/14/00	01/03/01	01/03/01	20	0	20
MG/L	H10-GW-MW25-01	F8416-3	NORMAL	F8416	CL	12/14/00	01/03/01	01/03/01	20	0	20
MG/L	H10-GW-MW26-01	F8416-1	NORMAL	F8416	CL	12/14/00	01/03/01	01/03/01	20	0	20
MG/L	H10-GW-MW27-01	F8416-2	NORMAL	F8416	CL	12/14/00	01/03/01	01/03/01	20	0	20
UG/L	H10-GW-DUP1-01	F8416-6	NORMAL	F8416	ETHA	12/14/00	/ /	12/20/00	0	0	6
UG/L	H10-GW-MW23-01	F8416-7	NORMAL	F8416	ETHA	12/14/00	/ /	12/20/00	0	0	6
UG/L	H10-GW-MW24-01	F8416-4	NORMAL	F8416	ETHA	12/14/00	/ /	12/20/00	0	0	6
UG/L	H10-GW-MW25-01	F8416-3	NORMAL	F8416	ETHA	12/14/00	/ /	12/20/00	0	0	6
UG/L	H10-GW-MW26-01	F8416-1	NORMAL	F8416	ETHA	12/14/00	/ /	12/20/00	0	0	6
UG/L	H10-GW-MW27-01	F8416-2	NORMAL	F8416	ETHA	12/14/00	/ /	12/20/00	0	0	6
UG/L	H10-GW-DUP1-01	F8416-6	NORMAL	F8416	ETHE	12/14/00	/ /	12/20/00	0	0	6
UG/L	H10-GW-MW23-01	F8416-7	NORMAL	F8416	ETHE	12/14/00	/ /	12/20/00	0	0	6
UG/L	H10-GW-MW24-01	F8416-4	NORMAL	F8416	ETHE	12/14/00	/ /	12/20/00	0	0	6
UG/L	H10-GW-MW25-01	F8416-3	NORMAL	F8416	ETHE	12/14/00	/ /	12/20/00	0	0	6
UG/L	H10-GW-MW26-01	F8416-1	NORMAL	F8416	ETHE	12/14/00	/ /	12/20/00	0	0	6
UG/L	H10-GW-MW27-01	F8416-2	NORMAL	F8416	ETHE	12/14/00	/ /	12/20/00	0	0	6

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/L	H10-GW-DUP1-01	F8416-6	NORMAL	F8416	HSUL	12/14/00	/ /	12/19/00	0	0	5
MG/L	H10-GW-MW23-01	F8416-7	NORMAL	F8416	HSUL	12/14/00	/ /	12/19/00	0	0	5
MG/L	H10-GW-MW24-01	F8416-4	NORMAL	F8416	HSUL	12/14/00	/ /	12/19/00	0	0	5
MG/L	H10-GW-MW25-01	F8416-3	NORMAL	F8416	HSUL	12/14/00	/ /	12/19/00	0	0	5
MG/L	H10-GW-MW26-01	F8416-1	NORMAL	F8416	HSUL	12/14/00	/ /	12/19/00	0	0	5
MG/L	H10-GW-MW27-01	F8416-2	NORMAL	F8416	HSUL	12/14/00	/ /	12/19/00	0	0	5
UG/L	H10-GW-DUP1-01	F8416-6	NORMAL	F8416	M	12/14/00	12/19/00	12/27/00	5	8	13
UG/L	H10-GW-MW23-01	F8416-7	NORMAL	F8416	M	12/14/00	12/19/00	12/27/00	5	8	13
UG/L	H10-GW-MW24-01	F8416-4	NORMAL	F8416	M	12/14/00	12/19/00	12/27/00	5	8	13
UG/L	H10-GW-MW25-01	F8416-3	NORMAL	F8416	M	12/14/00	12/19/00	12/27/00	5	8	13
UG/L	H10-GW-MW26-01	F8416-1	NORMAL	F8416	M	12/14/00	12/19/00	12/27/00	5	8	13
UG/L	H10-GW-MW27-01	F8416-2	NORMAL	F8416	M	12/14/00	12/19/00	12/27/00	5	8	13
UG/L	H10-GW-DUP1-01	F8416-6	NORMAL	F8416	METH	12/14/00	/ /	12/20/00	0	0	6
UG/L	H10-GW-MW23-01	F8416-7	NORMAL	F8416	METH	12/14/00	/ /	12/20/00	0	0	6
UG/L	H10-GW-MW24-01	F8416-4	NORMAL	F8416	METH	12/14/00	/ /	12/20/00	0	0	6
UG/L	H10-GW-MW25-01	F8416-3	NORMAL	F8416	METH	12/14/00	/ /	12/20/00	0	0	6
UG/L	H10-GW-MW26-01	F8416-1	NORMAL	F8416	METH	12/14/00	/ /	12/20/00	0	0	6
UG/L	H10-GW-MW27-01	F8416-2	NORMAL	F8416	METH	12/14/00	/ /	12/20/00	0	0	6
MG/L	H10-GW-DUP1-01	F8416-6	NORMAL	F8416	NTA	12/14/00	12/16/00	12/17/00	2	1	3
MG/L	H10-GW-MW23-01	F8416-7	NORMAL	F8416	NTA	12/14/00	12/16/00	12/17/00	2	1	3
MG/L	H10-GW-MW24-01	F8416-4	NORMAL	F8416	NTA	12/14/00	12/16/00	12/17/00	2	1	3
MG/L	H10-GW-MW25-01	F8416-3	NORMAL	F8416	NTA	12/14/00	12/16/00	12/17/00	2	1	3
MG/L	H10-GW-MW26-01	F8416-1	NORMAL	F8416	NTA	12/14/00	12/16/00	12/17/00	2	1	3
MG/L	H10-GW-MW27-01	F8416-2	NORMAL	F8416	NTA	12/14/00	12/16/00	12/17/00	2	1	3
MG/L	H10-GW-DUP1-01	F8416-6	NORMAL	F8416	NTI	12/14/00	12/16/00	12/17/00	2	1	3
MG/L	H10-GW-MW23-01	F8416-7	NORMAL	F8416	NTI	12/14/00	12/16/00	12/17/00	2	1	3
MG/L	H10-GW-MW24-01	F8416-4	NORMAL	F8416	NTI	12/14/00	12/16/00	12/17/00	2	1	3

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
MG/L	H10-GW-MW25-01	F8416-3	NORMAL	F8416	NTI	12/14/00	12/16/00	12/17/00	2	1	3
MG/L	H10-GW-MW26-01	F8416-1	NORMAL	F8416	NTI	12/14/00	12/16/00	12/17/00	2	1	3
MG/L	H10-GW-MW27-01	F8416-2	NORMAL	F8416	NTI	12/14/00	12/16/00	12/17/00	2	1	3
MG/L	H10-GW-DUP1-01	F8416-6	NORMAL	F8416	NTIA	12/14/00	/ /	12/17/00	0	0	3
MG/L	H10-GW-MW23-01	F8416-7	NORMAL	F8416	NTIA	12/14/00	/ /	12/17/00	0	0	3
MG/L	H10-GW-MW24-01	F8416-4	NORMAL	F8416	NTIA	12/14/00	/ /	12/17/00	0	0	3
MG/L	H10-GW-MW25-01	F8416-3	NORMAL	F8416	NTIA	12/14/00	/ /	12/17/00	0	0	3
MG/L	H10-GW-MW26-01	F8416-1	NORMAL	F8416	NTIA	12/14/00	/ /	12/17/00	0	0	3
MG/L	H10-GW-MW27-01	F8416-2	NORMAL	F8416	NTIA	12/14/00	/ /	12/17/00	0	0	3
UG/L	H10-FB-01	F8416-5	NORMAL	F8416	OS	12/14/00	12/18/00	12/26/00	4	8	12
UG/L	H10-GW-DUP1-01	F8416-6	NORMAL	F8416	OS	12/14/00	12/18/00	12/26/00	4	8	12
UG/L	H10-GW-MW23-01	F8416-7	NORMAL	F8416	OS	12/14/00	12/21/00	12/26/00	7	5	12
UG/L	H10-GW-MW24-01	F8416-4	NORMAL	F8416	OS	12/14/00	12/18/00	12/26/00	4	8	12
UG/L	H10-GW-MW25-01	F8416-3	NORMAL	F8416	OS	12/14/00	12/18/00	12/26/00	4	8	12
UG/L	H10-GW-MW26-01	F8416-1	NORMAL	F8416	OS	12/14/00	12/18/00	12/22/00	4	4	8
UG/L	H10-GW-MW27-01	F8416-2	NORMAL	F8416	OS	12/14/00	12/18/00	12/26/00	4	8	12
UG/L	H10-GW-DUP1-01	F8416-6	NORMAL	F8416	OV	12/14/00	/ /	12/26/00	0	0	12
UG/L	H10-GW-MW23-01	F8416-7	NORMAL	F8416	OV	12/14/00	/ /	12/27/00	0	0	13
UG/L	H10-GW-MW24-01	F8416-4	NORMAL	F8416	OV	12/14/00	/ /	12/26/00	0	0	12
UG/L	H10-GW-MW25-01	F8416-3	NORMAL	F8416	OV	12/14/00	/ /	12/26/00	0	0	12
UG/L	H10-GW-MW26-01	F8416-1	NORMAL	F8416	OV	12/14/00	/ /	12/26/00	0	0	12
UG/L	H10-GW-MW27-01	F8416-2	NORMAL	F8416	OV	12/14/00	/ /	12/26/00	0	0	12
UG/L	H10-FB-01	F8416-5	NORMAL	F8416	PAH	12/14/00	12/21/00	12/26/00	7	5	12
UG/L	H10-GW-DUP1-01	F8416-6	NORMAL	F8416	PAH	12/14/00	12/21/00	12/26/00	7	5	12
UG/L	H10-GW-MW23-01	F8416-7	NORMAL	F8416	PAH	12/14/00	12/21/00	12/26/00	7	5	12
UG/L	H10-GW-MW24-01	F8416-4	NORMAL	F8416	PAH	12/14/00	12/21/00	12/27/00	7	6	13
UG/L	H10-GW-MW25-01	F8416-3	NORMAL	F8416	PAH	12/14/00	12/21/00	12/26/00	7	5	12

Units	Nsample	Lab Id	Qc Type	Sdg	Sort	Samp Date	Extr Date	Anal Date	SAMP_DATE TO EXTR_DATE	EXTR_DATE TO ANAL_DATE	SAMP_DATE TO ANAL_DATE
UG/L	H10-GW-MW26-01	F8416-1	NORMAL	F8416	PAH	12/14/00	12/21/00	12/26/00	7	5	12
UG/L	H10-GW-MW27-01	F8416-2	NORMAL	F8416	PAH	12/14/00	12/21/00	12/26/00	7	5	12

FIELD DUPLICATES

Fraction	Analyte	H10-DUP1-01	H10-MW23-01	RPD
Gases	Methane	1.39	1.6	14%
	Ethane	0.227	0.341	40%
	Ethene	0.123	0.194	45%
Metals	Chromium	4.3 B	4.3 B	0%
Misc.	Chloride	16.5	17	3%
	Sulfate	205	207	1%

RPD = Relative Percent Difference

Acceptable range: 0-30% aqueous

0-50% solid

Accutest Laboratories Southeast
Case Narrative

Job (SDG) No.: F8416

Samples: 1-8

Analysis Performed: 8260, 8270, 8015 (gas), 8015 (alcohol), 8310, metals, chem

1) Sample Receipt Conformance / Non-Conformance Summary

Custody Seals on Coolers?	Yes (✓)	No ( )
Custody Seals in Tact?	Yes (✓)	No ( )
Chain of Custody Sealed in Plastic?	Yes (✓)	No ( )
Chain of Custody Filled out Properly?	Yes (✓)	No ( )
Enough ice and Packing material?	Yes (✓)	No ( )
All Bottles Sealed?	Yes (✓)	No ( )
Any Bottles Broken?	Yes ( )	No (✓)
Labels in good condition?	Yes (✓)	No ( )
Labels agree with chain of custody?	Yes ( )	No (✓)
Correct Containers Used?	Yes (✓)	No ( )
Preserved Properly?	Yes (✓)	No ( )
Sufficient Sample?	Yes ( )	No (✓)

Comments:

Accutest Labs, SE

emo To File

o:

rom: HEATHER WANDREY

C:

ate: 1-4-01

e: F8416

THERE WAS SOME CONFUSION IN REGARDS TO THESE SAMPLES, LOGIN DIDNOT ~~COOI~~ CORRESPOND W/ BOOK IN SAMPLE MANG. + LABELS ON BOTTLES. ALL SAMPLES WERE PULLED FROM SHELVES + DOUBLE CHECKED THERE WAS NO T. B. FOUND, DID NOT RECEIVE ALL OTHER SAMPLES WERE CORRECTED + RUN ~~[illegible]~~ ACCORDING TO COC, PROBLEMS WERE POINTED OUT + DISCUSSED W/ SAMPLE MANAGMENT.

HWandrey 1-4-01

1

TETRA TECH NUS, INC.

CHAIN OF CUSTODY | NUMBER H10-121400 | PAGE 1 OF 3

PROJECT NO: N0399	SITE NAME: HANGAR 1000
SAMPLERS (SIGNATURE)	Alan L Pate; Elena L Rodriguez
STANDARD TAT ☒ RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day	
PROJECT MANAGER AND PHONE NUMBER	MARK PETERSON 904-281-0400
FIELD OPERATIONS LEADER AND PHONE NUMBER	ALAN PATE 904-281-0400
CARRIER/WAYBILL NUMBER	FEDEX
LABORATORY NAME AND CONTACT:	ACCUTEST
ADDRESS	4405 VINELAND RD #C-15
CITY, STATE	ORLANDO, FL 32811

DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	** VOC's 8260B	** Methane/ethane/ethene RSK147/175	** ALCOHOLS 8015B	SVOCs 8270C	PAHs 8310	Metals: Cd Cr 6010B	Sulfide	Anions: Cl, SO4, NO2, NO3	COMMENTS
CONTAINER TYPE PLASTIC (P) or GLASS (G)						G	G	G	G	G	P	P	P	
PRESERVATIVE USED						HCl	–	–	–	–	HNO3	NaOH	–	
12/14	1055	H10-GW-MW25-01	GW	G	16	3	3	3	2	2	1	1	1	Cool to 4°C
12/14	1215	H10-GW-MW24-01	GW	G	11*	2	2	2	1	1	1	1	1	
12/14	1255	H10-FB-01	AQ	G	4				2	2				See QAPP for analytical requirements

** All vials in seperate cooler.

* Note: Very limited sample for H10-GW-MW24-01

1. RELINQUISHED BY Elena L Rodriguez	DATE 12/14/00	TIME 1700	1. RECEIVED BY	DATE	TIME
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/99 FORM NO. TINUS-001

TETRA TECH NUS, INC.

CHAIN OF CUSTODY

NUMBER H10-

PROJECT NO: N0399

SITE NAME: HANGAR 1000

PROJECT MANAGER AND PHONE NUMBER: MARK PETERSON 904-281-0400

LABORATORY NAME AND CONTACT: ACCUTEST

SAMPLERS (SIGNATURE): Alan L Pate, Elena G Rodriguez

FIELD OPERATIONS LEADER AND PHONE NUMBER: ALAN PATE 904-281-0400

ADDRESS: 4405 VINELAND Rd #C-15

CARRIER/WAYBILL NUMBER:

CITY, STATE: ORLANDO, FL 32811

STANDARD TAT ☒
RUSH TAT ☐ ☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

						CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	G	G	G	G	P	P	P	
						PRESERVATIVE USED	HCl	-	-	-	-	HNO3	NaOH	-	
DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS	** VOC's 8260B	Methane/Ethane/Ethene RSK147/175 **	Alcohols 8015B **	SVOCs 8270C	PAHs 8310	Metals: Cd, Cr 6010B	Sulfide	Anions: SO4, Cl, NO2, NO3	COMMENTS
(6) 12/14	0000	H10-GW-DUP1-01	GW	G	16		3	3	3	2	2	1	1	1	Cool 4°C
(7) 12/14	0855	H10-GW-MW23-01	GW	G	16		3	3	3	2	2	1	1	1	
(8) 12/14	0000	TRIP BLANK	AQ	G	2		2								See QAPP for analytical requirements

** Contains vials from all samples - see COC's from other 2 coolers

1. RELINQUISHED BY: Elena G Rodriguez	DATE 12/14/00	TIME 1700	1. RECEIVED BY	DATE	TIME
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

3/99
FORM NO. TtNUS-001

TETRA TECH NUS, INC. CHAIN OF CUSTODY | NUMBER H10-121400 | PAGE 3 OF 3

PROJECT NO: N0399	SITE NAME: ~~HANGAR~~ HANGAR 1000	PROJECT MANAGER AND PHONE NUMBER: MARK PETERSON 904-281-0400	LABORATORY NAME AND CONTACT: ACCUTEST
SAMPLERS (SIGNATURE): Alan L Pate, Elena L Rodriguez		FIELD OPERATIONS LEADER AND PHONE NUMBER: ALAN PATE 904-281-0400	ADDRESS: 4405 VINELAND RD # C-15
		CARRIER/WAYBILL NUMBER: FEDEX	CITY, STATE: ORLANDO, FL 32811

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

						CONTAINER TYPE PLASTIC (P) or GLASS (G)	G	G	G	G	G	P	P	P	
						PRESERVATIVE USED	HCl	—	—	—	—	HNO3	NaOH	—	
	DATE YEAR 2000	TIME	SAMPLE ID	MATRIX	GRAB (G) COMP (C)	No. OF CONTAINERS	TYPE OF ANALYSIS: ** VOC's 8260B	** Methane/Ethane/Ethene RSK147/175	** Alcohols 8015B	SVOCs 8270C	PAHs 8310	Metals: Cd, Cr 6010B	Sulfide	Anions: SO4, Cl, NO2, NO3	COMMENTS
1)	12/14	1445	H10-GW-MW26-01	GW	G	16	3	3	3	2	2	1	1	1	Cool to 4°C
2)	12/14	1100	H10-GW-MW27-01	GW	G	16	3	3	3	2	2	1	1	1	See QAPP for analytical requirements

** All vials in separate cooler.

1. RELINQUISHED BY: Elena Rodriguez	DATE 12/14/00	TIME 1700	1. RECEIVED BY: Jeff Brown	DATE 12/15/00	TIME 1530
2. RELINQUISHED BY	DATE	TIME	2. RECEIVED BY	DATE	TIME
3. RELINQUISHED BY	DATE	TIME	3. RECEIVED BY	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY) H.2

3/99
FORM NO. TINUS-001

Method Blank Summary

Job Number: F8416
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VB110-MB	B003131.D	1	12/27/00	JG	n/a	n/a	VB110

The QC reported here applies to the following samples: **Method:** SW846 8260B

F8416-7

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	103%	80-120%
17060-07-0	1,2-Dichloroethane-D4	97%	69-128%
2037-26-5	Toluene-D8	96%	80-120%
460-00-4	4-Bromofluorobenzene	96%	80-120%

Method Blank Summary

Job Number: F8416
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VC89-MB	C0001938.D	1	12/26/00	JG	n/a	n/a	VC89

The QC reported here applies to the following samples: **Method:** SW846 8260B

F8416-1, F8416-2, F8416-3, F8416-4, F8416-6

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	2.0	ug/l	
75-15-0	Carbon disulfide	ND	10	ug/l	
56-23-5	Carbon tetrachloride	ND	2.0	ug/l	
108-94-1	Cyclohexanone	ND	10	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
79-46-9	2-Nitropropane	ND	10	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	6.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	105%	80-120%
17060-07-0	1,2-Dichloroethane-D4	102%	69-128%
2037-26-5	Toluene-D8	94%	80-120%
460-00-4	4-Bromofluorobenzene	92%	80-120%

Method Blank Summary

Job Number: F8416
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2451-MB	W003504.D	1	12/26/00	ME	12/18/00	OP2451	SW206

The QC reported here applies to the following samples: **Method:** SW846 8270C

F8416-1, F8416-2, F8416-3, F8416-4, F8416-5, F8416-6

CAS No.	Compound	Result	RL	Units	Q
95-57-8	2-Chlorophenol	ND	5.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	ug/l	
	3&4-Methylphenol	ND	5.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
86-74-8	Carbazole	ND	5.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	ug/l	
110-86-1	Pyridine	ND	5.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	45%	21-100%
4165-62-2	Phenol-d5	28%	10-94%
118-79-6	2,4,6-Tribromophenol	69%	10-123%
4165-60-0	Nitrobenzene-d5	74%	35-114%
321-60-8	2-Fluorobiphenyl	71%	43-116%
1718-51-0	Terphenyl-d14	91%	33-141%

Method Blank Summary

Job Number: F8416
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2468-MB	L005888.D	1	12/22/00	ME	12/18/00	OP2468	SL357

The QC reported here applies to the following samples: **Method:** SW846 8270C

F8416-1, F8416-2, F8416-3, F8416-4, F8416-5, F8416-6

CAS No.	Compound	Result	RL	Units	Q
87-86-5	Pentachlorophenol	ND	1.0	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.20	ug/l	

Method Blank Summary

Job Number: F8416
Account: ALSE Accutest Laboratories Southeast, Inc.
Project: TETRFLJX: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GII823-MB1	II16200.D	1	12/20/00	WG	n/a	n/a	GII823

The QC reported here applies to the following samples: **Method:** SW846 8015

F8416-1, F8416-2, F8416-3, F8416-4, F8416-6, F8416-7

CAS No.	Compound	Result	RL	Units	Q
74-82-8	Methane	ND	0.10	ug/l	
74-84-0	Ethane	ND	0.014	ug/l	
74-85-1	Ethene	ND	0.014	ug/l	

Report of Analysis

Client Sample ID:	H10-GW-MW26-01		
Lab Sample ID:	F8416-1	**Date Sampled:**	12/14/00
Matrix:	AQ - Ground Water	**Date Received:**	12/15/00
Method:	DAI	**Percent Solids:**	n/a
Project:	TETRFLJX: NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH24546.D	1	12/21/00	XPL	n/a	n/a	GGH688
Run #2							

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	107%		75-125%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Method Blank Summary

Job Number: F8416
Account: ALSE Accutest Laboratories Southeast, Inc.
Project: TETRFLJX: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGH688-MB2	GH24544.D	1	12/21/00	XPL	n/a	n/a	GGH688

The QC reported here applies to the following samples: **Method:** DAI

F8416-1, F8416-2, F8416-3, F8416-4, F8416-6, F8416-7

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries		Limits
111-27-3	Hexanol	95%	75-125%

Method Blank Summary

Job Number: F8416
Account: ALSE Accutest Laboratories Southeast, Inc.
Project: TETRFLJX: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGH688-MB4	GH24578.D	1	12/22/00	XPL	n/a	n/a	GGH688

The QC reported here applies to the following samples: **Method:** DAI

F8416-4

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries		Limits
111-27-3	Hexanol	89%	75-125%

Method Blank Summary

Job Number: F8416
Account: ALSE Accutest Laboratories Southeast, Inc.
Project: TETRFLJX: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGH688-MB1	GH24526.D	1	12/20/00	XPL	n/a	n/a	GGH688

The QC reported here applies to the following samples: **Method:** DAI

GGH688-BS

CAS No.	Compound	Result	RL	Units	Q
78-83-1	Isobutyl Alcohol	ND	500	ug/l	
71-36-3	n-Butyl Alcohol	ND	500	ug/l	
67-56-1	Methanol	ND	500	ug/l	

CAS No.	Surrogate Recoveries		Limits
111-27-3	Hexanol	89%	75-125%

Method Blank Summary

Job Number: F8416
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2469-MB	EE001140.D	1	12/26/00	MRE	12/21/00	OP2469	GEE57

The QC reported here applies to the following samples: **Method:** EPA 8310

F8416-1, F8416-2, F8416-3, F8416-4, F8416-5, F8416-6, F8416-7

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	91%	29-133%
92-94-4	p-Terphenyl	95%	33-133%

Method Blank Summary

Job Number: F8416
Account: TETRFLJX Tetra-Tech,NUS
Project: NAS Jax-Hanger 1000

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP2469-MB	EE001167.D	1	12/27/00	MRE	12/21/00	OP2469	GEE58

The QC reported here applies to the following samples: **Method:** EPA 8310

F8416-1, F8416-2, F8416-3, F8416-4, F8416-5, F8416-6, F8416-7

CAS No.	Compound	Result	RL	Units	Q
83-32-9	Acenaphthene	ND	4.0	ug/l	
208-96-8	Acenaphthylene	ND	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	ug/l	
218-01-9	Chrysene	ND	2.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	2.0	ug/l	
86-73-7	Fluorene	ND	2.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	2.0	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	ug/l	
85-01-8	Phenanthrene	ND	2.0	ug/l	
129-00-0	Pyrene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	93%	29-133%
92-94-4	p-Terphenyl	97%	33-133%

Accutest Laboratories

Report of Analysis

Client Sample ID:	H10-SEW-1		
Lab Sample ID:	F10104-1	Date Sampled:	06/21/01
Matrix:	AQ - Ground Water	Date Received:	06/22/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H012547.D	1	07/03/01	NAF	n/a	n/a	VH359
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		80-120%
17060-07-0	1,2-Dichloroethane-D4	101%		80-120%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	100%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

ATO 111

Accutest Laboratories

Report of Analysis

Client Sample ID:	H10-SEW-2		
Lab Sample ID:	F10104-2	Date Sampled:	06/21/01
Matrix:	AQ - Ground Water	Date Received:	06/22/01
Method:	SW846 8260B	Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H012548.D	1	07/03/01	NAF	n/a	n/a	VH359
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		80-120%
17060-07-0	1,2-Dichloroethane-D4	102%		80-120%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	103%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	H10-SEW-3			
Lab Sample ID:	F10104-3		Date Sampled:	06/21/01
Matrix:	AQ - Ground Water		Date Received:	06/22/01
Method:	SW846 8260B		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H012549.D	1	07/03/01	NAF	n/a	n/a	VH359
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		80-120%
17060-07-0	1,2-Dichloroethane-D4	105%		80-120%
2037-26-5	Toluene-D8	96%		80-120%
460-00-4	4-Bromofluorobenzene	100%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	H10-TOC-1		
Lab Sample ID:	F10104-4	Date Sampled:	06/21/01
Matrix:	SO - Soil	Date Received:	06/22/01
		Percent Solids:	79.9
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Solids, Percent	79.9		%	1	07/03/01	ANJ	ASTM 4643-00
Total Organic Carbon	< 1200	1200	mg/kg	1	07/03/01	ANJ	CORP ENG 81 M

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	H10-TOC-2		
Lab Sample ID:	F10104-5	Date Sampled:	06/21/01
Matrix:	SO - Soil	Date Received:	06/22/01
		Percent Solids:	82.6
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Solids, Percent	82.6		%	1	07/03/01	ANJ	ASTM 4643-00
Total Organic Carbon	< 1200	1200	mg/kg	1	07/03/01	ANJ	CORP ENG 81 M

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	H10-TOC-3		
Lab Sample ID:	F10104-6	Date Sampled:	06/21/01
Matrix:	SO - Soil	Date Received:	06/22/01
		Percent Solids:	84.5
Project:	NAS Jax-Hanger 1000		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Solids, Percent	84.5		%	1	07/03/01	ANJ	ASTM 4643-00
Total Organic Carbon [a]	3280	1200	mg/kg	1	07/05/01	ANJ	CORP ENG 81 M

(a) Multiple injections indicate possible sample non-homogeneity.

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	TRIP BLANK-1			
Lab Sample ID:	F10104-7		Date Sampled:	06/21/01
Matrix:	AQ - Trip Blank Water		Date Received:	06/22/01
Method:	SW846 8260B		Percent Solids:	n/a
Project:	NAS Jax-Hanger 1000			

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H012550.D	1	07/03/01	NAF	n/a	n/a	VH359
Run #2							

VOA TCL List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	50	ug/l	
71-43-2	Benzene	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/l	
540-59-0	1,2-Dichloroethene (total)	ND	4.0	ug/l	
100-41-4	Ethylbenzene	ND	2.0	ug/l	
76-13-1	Freon 113	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/l	
127-18-4	Tetrachloroethylene	ND	2.0	ug/l	
108-88-3	Toluene	ND	2.0	ug/l	
79-01-6	Trichloroethylene	ND	2.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	92%		80-120%
17060-07-0	1,2-Dichloroethane-D4	96%		80-120%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	101%		80-120%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

APPENDIX F

FIELD ANALYTICAL LOG SHEETS

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000

Project No.: N3995

Sampled By: AP/LM

Field Analyst: SAME

Field Form Checked as per QA/QC Checklist (initials): ALP

Sample ID No.: H10-GW-MW01-05

Sample Location: MW01

Duplicate: ☐

Blank: ☐

SAMPLING DATA:

Date: 1/17/01	Color	ORP (Eh)	S.C.	Temp.	Turbidity	DO	Sal.	pH
Time: 1400	(Visual)	(+/- mv)	(mS/cm)	(°C)	(NTU)	(Meter, mg/l)	(%)	(SU)
Method:	CLEAR	148	40.1	23.3	-10	19.9	—	6.25

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 1-12 mg/L) Analysis Time: 1355

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
____	x 0.01	= mg/L
____	x 0.02	= mg/L

CHEMetrics: >12 mg/L OVER READABLE LIMIT

Notes:

Alkalinity: TITRETS K 9820

Analysis Time: 1358

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: 100-1000 mg/L) Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	____ & ____	x 0.1	= mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	____ & ____	x 0.4	= mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	____ & ____	x 1.0	= mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	____ & ____	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	____ & ____	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	____ & ____	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: 100 mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:____ Digits Required: 1st.:____ 2nd.:____ 3rd.:____

Carbon Dioxide: TITRETS K 1910

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: 10-100 mg/L) Analysis Time: 1400

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
____	x 0.1	= mg/L
____	x 0.2	= mg/L
____	x 1.0	= mg/L
____	x 2.0	= mg/L

CHEMetrics: 70 mg/L

Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR [illegible]	Sample ID No.: [illegible]
Project No.: N3995	Sample Location: MW10[illegible]
Sampled By: AP/CM	Duplicate: ☐
Field Analyst: SAME	Blank: ☐
Field Form Checked as per QA/QC Checklist (initials):	

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide (S^{2-}):

Equipment: DR-700 DR-890 HS-C Color Chart HS-WR Color Wheel Analysis Time: 1405

Program/Module: 610nm 93 Other: ______

Concentration: 0.0 mg/L Filtered: ☐

Notes:

Sulfate (SO_4^{2-}):

Equipment: DR-700 DR-8__ Other: ______ Analysis Time: ______

Program/Module: 91

Concentration: ______ mg/L Filtered: ☐

Standard Solution: ☐ Results: ______

Standard Additions: ☐ Digits Required: 0.1ml: ______ 0.2ml: ______ 0.3ml: ______

Notes:

Nitrite (NO_2^--N):

Analysis Time: ______

Equipment: DR-700 DR-8__ Other: ______ Filtered: ☐

Program/Module: 60

Concentration: ______ mg/L Reagent Blank Correction: ☐

Standard Solution: ☐ Results: ☐

Notes:

Nitrate (NO_3^--N):

Analysis Time: ______

Equipment: DR-700 DR-8__ Other: ______ Filtered: ☐

Program/Module: 55

Concentration: ______ mg/L

Nitrite Interference Treatment: ☐

Standard Solution: ☐ Results: ______ Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml: ______ 0.2ml: ______ 0.3ml: ______

Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000

Project No.: N3995

Sampled By: AP/LM

Field Analyst: Same

Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW01-07

Sample Location: MW01

Duplicate: ☐

Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8 __ HACH MN-5 Other: ________ Analysis Time: ________

Program/Module: 525nm 41

Concentration: ________ mg/L

Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: ________ Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml: ________ 0.2ml: ________ 0.3ml: ________

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8 90 IR-18C Color Wheel Other: ________ Analysis Time: 1408

Program/Module: 500nm 33

Concentration: 0.2 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: ________ Analysis Time: 1403

Concentration: 0.0 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Mulitplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☐

Title block is initialized by person who performed the QA/QC Ckecklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR ICC
Project No.: N3995
Sampled By: AP/cm
Field Analyst: Same
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: HC-GW-MW02-C5
Sample Location: MW02
Duplicate: ☐
Blank: ☐

SAMPLING DATA:

Date: 1/17/01	Color	ORP (Eh)	S.C.	Temp.	Turbidity	DO	Sal.	pH
Time: 1545	(Visual)	(+/- mv)	(mS/cm)	(°C)	(NTU)	(Meter, mg/l)	(%)	(SU)
Method:	CLEAR	81	11.7	27.4	<10	5.1	–	5.78

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 0-1 mg/L) Analysis Time: 1550

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier		Concentration
______	x 0.01	=	mg/L
______	x 0.02	=	mg/L

CHEMetrics: 1.0 mg/L

Notes:

Alkalinity:

TITRETS K9810

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: 10-100 mg/L) Analysis Time: 1553 Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier		Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	____ & ____	x 0.1	=	mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	____ & ____	x 0.4	=	mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	____ & ____	x 1.0	=	mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	____ & ____	x 2.0	=	mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	____ & ____	x 5.0	=	mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	____ & ____	x 10.0	=	mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: 25 mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:______ Digits Required: 1st.:______ 2nd.:______ 3rd.:______

Carbon Dioxide:

TITRETS KA10

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: 10-100 mg/L) Analysis Time: 1555

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count			Concentration
______	x 0.1	=	mg/L
______	x 0.2	=	mg/L
______	x 1.0	=	mg/L
______	x 2.0	=	mg/L

CHEMetrics: 40 mg/L

Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000 | Sample ID No.: HU-GW-MW02-02
Project No.: N3995 | Sample Location: MW02
Sampled By: AP/LM | Duplicate: ☐
Field Analyst: SAME | Blank: ☐
Field Form Checked as per QA/QC Checklist (initials): ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide (S^{2-}):

Equipment: DR-700 DR-890 HS-C Color Chart HS-WR Color Wheel Analysis Time: 1603

Program/Module: 610nm 93 Other: ______

Concentration: 0.04 mg/L Filtered: ☐

Notes:

Sulfate (SO_4^{2-}):

Equipment: DR-700 DR-8__ Other: ______ Analysis Time: ______

Program/Module: 91

Concentration: ______ mg/L Filtered: ☐

Standard Solution: ☐ Results: ______

Standard Additions: ☐ Digits Required: 0.1ml:______ 0.2ml:______ 0.3ml:______

Notes:

Nitrite (NO_2^--N):

Analysis Time: ______

Equipment: DR-700 DR-8__ Other: ______ Filtered: ☐

Program/Module: 60

Concentration: ______ mg/L Reagent Blank Correction: ☐

Standard Solution: ☐ Results: ☐

Notes:

Nitrate (NO_3^--N):

Analysis Time: ______

Equipment: DR-700 DR-8__ Other: ______ Filtered: ☐

Program/Module: 55

Concentration: ______ mg/L

Nitrite Interference Treatment: ☐

Standard Solution: ☐ Results: ______ Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml:______ 0.2ml:______ 0.3ml:______

Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: Hanger 1000

Project No.: N3945

Sampled By: AP/LM

Field Analyst: SAME

Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW02-05

Sample Location: MW02

Duplicate: ☐

Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8 __ HACH MN-5 Other: ______ Analysis Time: ______

Program/Module: 525nm 41

Concentration: ______ mg/L

Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: ______ Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml: ______ 0.2ml: ______ 0.3ml: ______

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8 90 IR-18C Color Wheel Other: ______ Analysis Time: 1609

Program/Module: 500nm 33

Concentration: 1.87 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: ______ Analysis Time: 1605

Concentration: 0.0 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Mulitplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☐

Title block is initialized by person who performed the QA/QC Ckecklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000

Project No.: N3995

Sampled By: AP/LM

Field Analyst: SAME

Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H1C-GW-MW03-05

Sample Location: MW03

Duplicate: ☐

Blank: ☐

SAMPLING DATA:

	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
Date: 1/16/01 Time: 1200 Method:	CLEAR	97	14.8	24.9	~10	0.0	—	5.49

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 0-1 mg/L) Analysis Time: 1125

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier		Concentration
______	x 0.01	=	mg/L
______	x 0.02	=	mg/L

CHEMetrics: 0.7 mg/L

Notes:

Alkalinity:

TITRETS K-9810

Analysis Time: 1128

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: 10-100 mg/L) Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier		Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	____ & ____	x 0.1	=	mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	____ & ____	x 0.4	=	mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	____ & ____	x 1.0	=	mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	____ & ____	x 2.0	=	mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	____ & ____	x 5.0	=	mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	____ & ____	x 10.0	=	mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: 10 mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:______ Digits Required: 1st.:______ 2nd.:______ 3rd.:______

Carbon Dioxide:

TITRETS K1910

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: 10-100 mg/L) Analysis Time: 1130

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count			Concentration
______	x 0.1	=	mg/L
______	x 0.2	=	mg/L
______	x 1.0	=	mg/L
______	x 2.0	=	mg/L

CHEMetrics: 90 mg/L

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET
NATURAL ATTENUATION PARAMETERS

Project Site Name: HANGAR 1000

Project No.: N3995

Sample ID No.: HIC-GW-MW03-05

Sample Location: Site No MW03

Sampled By: AP/LM

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	
Date:								
Time:								
Method: Peristaltic pump								

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide:

Equipment: HACH DR-700 Colorimeter HACH DR-800 Colorimeter HACH HS-C Test Kit

Wave / Program: 610nm / 61.12.1

TtNUS Serial No.: ____________

DR 890

Concentration: 0.0 mg/L

-1140

Ferrous Iron:

Equipment: HACH DR-700 Colorimeter HACH DR-800 Colorimeter HACH IR-18C Test Kit

Wave / Program: 500nm / 50.05.1

TtNUS Serial No.: ____________

Concentration: ____________ mg/L

Manganese:

Equipment: HACH DR-700 Colorimeter HACH DR-800 Colorimeter

Wave / Program: 525nm / 52.13.1

TtNUS Serial No.: ____________

Concentration: ____________ mg/L

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000

Project No.: N3995

Sampled By: AP/LM

Field Analyst: SAME

Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: 1100-GW-MW03-05

Sample Location: MW03

Duplicate: ☐

Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8 __ HACH MN-5 Other: ________ Analysis Time: ________

Program/Module: 525nm 41

Concentration: ________ mg/L

Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: ________ Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml: ________ 0.2ml: ________ 0.3ml: ________

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-890 IR-18C Color Wheel Other: ________ Analysis Time: 1145

Program/Module: 500nm 33

Concentration: >3.30 mg/L

Filtered: ☐

Notes: LIMIT

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: ________ Analysis Time: 1138

Concentration: 0.0 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Mulitplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☐

Title block is initialized by person who performed the QA/QC Ckecklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000

Project No.: N3995

Sampled By: AP/LM

Field Analyst: SAME

Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW105-05

Sample Location: MW05

Duplicate: ☐

Blank: ☐

SAMPLING DATA:

	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
Date: 1/19/01								
Time: 1215								
Method:	Clear	45	15.9	23.6	2	0.2	—	5.64

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 0-1 mg/L) Analysis Time: 1212

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
______	x 0.01	= mg/L
______	x 0.02	= mg/L

CHEMetrics: 1.0 mg/L

Notes:

Alkalinity: K 9810

Analysis Time: ______

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: 10-100 mg/L) Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	____ & ____	x 0.1	= mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	____ & ____	x 0.4	= mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	____ & ____	x 1.0	= mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	____ & ____	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	____ & ____	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	____ & ____	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: 28 mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:______ Digits Required: 1st.:______ 2nd.:______ 3rd.:______

Carbon Dioxide: K 1910

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: 10-100 mg/L) Analysis Time: 1218

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
______	x 0.1	= mg/L
______	x 0.2	= mg/L
______	x 1.0	= mg/L
______	x 2.0	= mg/L

CHEMetrics: 35 mg/L

Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000
Project No.: N3995
Sampled By: AP/LM
Field Analyst: SAME
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW105-05
Sample Location: MW105
Duplicate: ☐
Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide (S^{2-}):

Equipment: DR-700 DR-8 90 HS-C Color Chart HS-WR Color Wheel Analysis Time: 1220
Program/Module: 610nm 93 Other:

Concentration: 0.0 mg/L Filtered: ☐
Notes:

Sulfate (SO_4^{2-}):

Equipment: DR-700 DR-8 __ Other: Analysis Time:
Program/Module: 91
Concentration: mg/L Filtered: ☐

Standard Solution: ☐ Results:
Standard Additions: ☐ Digits Required: 0.1ml: 0.2ml: 0.3ml:
Notes:

Nitrite (NO_2^--N):

Analysis Time:
Filtered: ☐
Equipment: DR-700 DR-8 __ Other:
Program/Module: 60
Concentration: mg/L
Reagent Blank Correction: ☐
Standard Solution: ☐ Results: ☐

Notes:

Nitrate (NO_3^--N):

Analysis Time:
Filtered: ☐
Equipment: DR-700 DR-8 __ Other:
Program/Module: 55
Concentration: mg/L

Nitrite Interference Treatment: ☐
Reagent Blank Correction: ☐
Standard Solution: ☐ Results:
Standard Additions: ☐ Digits Required: 0.1ml: 0.2ml: 0.3ml:
Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1CC
Project No.: N3995
Sampled By: AP/TM
Field Analyst: SAME
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW05-05
Sample Location: MW05
Duplicate: ☐
Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8__ HACH MN-5 Other: ______ Analysis Time: ______
Program/Module: 525nm 41
Concentration: ______ mg/L
Filtered: ☐
Digestion: ☐
Reagent Blank Correction: ☐
Standard Solution: ☐ Results: ______
Standard Additions: ☐ Digits Required: 0.1ml:______ 0.2ml:______ 0.3ml:______
Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-890 IR-18C Color Wheel Other: ______ Analysis Time: 1224
Program/Module: 500nm 33
Concentration: 1.57 mg/L
Filtered: ☐
Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: ______ Analysis Time: 1216
Concentration: 0.1 mg/L Exceeded 5.0 mg/L range on color chart ☐
Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑
Correct measurement units are cited in the SAMPLING DATA block: ☑
Mulitplication is correct for each *Multiplier* table: ☑
Final calulated concentration is within the appropriate *Range Used* block: ☑
Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☑
QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑
Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☐
Title block is initialized by person who performed the QA/QC Ckecklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000
Project No.: N3995
Sampled By: AP/LW
Field Analyst: SAME
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW06-05
Sample Location: MW06
Duplicate: ☐
Blank: ☐

SAMPLING DATA:

	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
Date: 1/19/01								
Time: 1015								
Method:	CLEAR	61	24.4	22.5	~10	1.2	—	

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 1-12 mg/L) Analysis Time: 1009

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
______	x 0.01	= mg/L
______	x 0.02	= mg/L

CHEMetrics: 1.5 mg/L

Notes:

Alkalinity:

K 9810

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: 10-100 mg/L) Analysis Time: 1010

Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	____ & ____	x 0.1	= mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	____ & ____	x 0.4	= mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	____ & ____	x 1.0	= mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	____ & ____	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	____ & ____	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	____ & ____	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: 35 mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:______ Digits Required: 1st.:______ 2nd.:______ 3rd.:______

Carbon Dioxide:

K 1910

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: 10-100 mg/L) Analysis Time: 1013

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
______	x 0.1	= mg/L
______	x 0.2	= mg/L
______	x 1.0	= mg/L
______	x 2.0	= mg/L

CHEMetrics: 25 mg/L

Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000

Project No.: N3995

Sampled By: AP/LM

Field Analyst: SAME

Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW06-05

Sample Location: MW06

Duplicate: ☐

Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide (S^{2-}):

Equipment: DR-700 DR-8 90 HS-C Color Chart HS-WR Color Wheel Analysis Time: 1020

Program/Module: 610nm 93 Other:

Concentration: 0.0 mg/L Filtered: ☐

Notes:

Sulfate (SO_4^{2-}):

Equipment: DR-700 DR-8 __ Other: Analysis Time:

Program/Module: 91

Concentration: mg/L Filtered: ☐

Standard Solution: ☐ Results:

Standard Additions: ☐ Digits Required: 0.1ml: 0.2ml: 0.3ml:

Notes:

Nitrite (NO_2^--N):

Analysis Time:

Equipment: DR-700 DR-8 __ Other: Filtered: ☐

Program/Module: 60

Concentration: mg/L Reagent Blank Correction: ☐

Standard Solution: ☐ Results: ☐

Notes:

Nitrate (NO_3^--N):

Analysis Time:

Equipment: DR-700 DR-8 __ Other: Filtered: ☐

Program/Module: 55

Concentration: mg/L

Nitrite Interference Treatment: ☐

Standard Solution: ☐ Results: Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml: 0.2ml: 0.3ml:

Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 100C
Project No.: N3495
Sampled By: AP/LM
Field Analyst: Same
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW06-05
Sample Location: MW06
Duplicate: ☐
Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8 HACH MN-5 Other: ______ Analysis Time: ______
Program/Module: 525nm 41
Concentration: ______ mg/L
Filtered: ☐
Digestion: ☐
Standard Solution: ☐ Results: ______
Reagent Blank Correction: ☐
Standard Additions: ☐ Digits Required: 0.1ml: ______ 0.2ml: ______ 0.3ml: ______
Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-890 IR-18C Color Wheel Other: ______ Analysis Time: 1025
Program/Module: 500nm 33
Concentration: 0.55 mg/L
Filtered: ☐
Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: ______ Analysis Time: 1021
Concentration: 0.0 mg/L Exceeded 5.0 mg/L range on color chart ☐
Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑
Correct measurement units are cited in the SAMPLING DATA block: ☑
Mulitplication is correct for each *Multiplier* table: ☑
Final calulated concentration is within the appropriate *Range Used* block: ☑
Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☑
QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑
Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☐
Title block is initialized by person who performed the QA/QC Ckecklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000
Project No.: N3995
Sampled By: AP/LM
Field Analyst: SAME
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW07-05
Sample Location: MW07
Duplicate: ☐
Blank: ☐

SAMPLING DATA:

Date: 1/19/01 Time: 0835 Method:	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
	CLEAR	72	276	24.5	~10	0.2	←	5.92

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 1-12 mg/L) Analysis Time: 0831

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
______	x 0.01	= mg/L
______	x 0.02	= mg/L

CHEMetrics: 1.0 mg/L

Notes:

Alkalinity:

TITRETS K9810

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: 10-100 mg/L) Analysis Time: 0833

Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	______ & ______	x 0.1	= mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	______ & ______	x 0.4	= mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	______ & ______	x 1.0	= mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	______ & ______	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	______ & ______	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	______ & ______	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: 38 mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:______ Digits Required: 1st.:______ 2nd.:______ 3rd.:______

Carbon Dioxide:

K1910

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: 10-100 mg/L) Analysis Time: 0835

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
______	x 0.1	= mg/L
______	x 0.2	= mg/L
______	x 1.0	= mg/L
______	x 2.0	= mg/L

CHEMetrics: 30 mg/L

Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000
Project No.: N3995
Sampled By: AP/LM
Field Analyst: SAME
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW07-05
Sample Location: MW07
Duplicate: ☐
Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide (S^{2-}):

Equipment: DR-700 DR-890 HS-C Color Chart HS-WR Color Wheel Analysis Time: 0843
Program/Module: 610nm 93 Other: ______
Concentration: 0.0 mg/L Filtered: ☐
Notes:

Sulfate (SO_4^{2-}):

Equipment: DR-700 DR-8__ Other: ______ Analysis Time: ______
Program/Module: 91
Concentration: ______ mg/L Filtered: ☐
Standard Solution: ☐ Results: ______
Standard Additions: ☐ Digits Required: 0.1ml:______ 0.2ml:______ 0.3ml:______
Notes:

Nitrite (NO_2^--N):

Analysis Time: ______
Equipment: DR-700 DR-8__ Other: ______ Filtered: ☐
Program/Module: 60
Concentration: ______ mg/L Reagent Blank Correction: ☐
Standard Solution: ☐ Results: ☐
Notes:

Nitrate (NO_3^--N):

Analysis Time: ______
Equipment: DR-700 DR-8__ Other: ______ Filtered: ☐
Program/Module: 55
Concentration: ______ mg/L
Nitrite Interference Treatment: ☐
Standard Solution: ☐ Results: ______ Reagent Blank Correction: ☐
Standard Additions: ☐ Digits Required: 0.1ml:______ 0.2ml:______ 0.3ml:______
Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000
Project No.: N3995
Sampled By: AP/LM
Field Analyst: SAME
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW07-05
Sample Location: MW07
Duplicate: ☐
Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8 __ HACH MN-5 Other: ________ Analysis Time: ________

Program/Module: 525nm 41

Concentration: ________ mg/L

Filtered: ☐
Digestion: ☐
Reagent Blank Correction: ☐

Standard Solution: ☐ Results: ________

Standard Additions: ☐ Digits Required: 0.1ml:______ 0.2ml:______ 0.3ml:______

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-890 IR-18C Color Wheel Other: ________ Analysis Time: 0848

Program/Module: 500nm 33

Concentration: 0.17 mg/L Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: ________ Analysis Time: 0840

Concentration: 0.0 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Mulitplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☐

Title block is initialized by person who performed the QA/QC Ckecklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000 | Sample ID No.: H10-GW-MW08-05
Project No.: N3995 | Sample Location: MW08
Sampled By: AP/LM | Duplicate: ☐
Field Analyst: JAME | Blank: ☐
Field Form Checked as per QA/QC Checklist (initials):

SAMPLING DATA:

Date: 1/17/01 Time: 1200 Method:	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
	CLEAR	167	79.2	19.9	6	19.9	—	

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT   CHEMetrics (Range: 1-12 mg/L)   Analysis Time: 1200

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
______	x 0.01 =	mg/L
______	x 0.02 =	mg/L

CHEMetrics: >12 mg/L ABOVE 12

Notes:

Alkalinity:

TITRETS K 9820

Equipment: HACH Digital Titrator AL-DT   CHEMetrics (Range: 100-1000 mg/L)   Analysis Time: 1204   Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	____ & ____	x 0.1 =	mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	____ & ____	x 0.4 =	mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	____ & ____	x 1.0 =	mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	____ & ____	x 2.0 =	mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	____ & ____	x 5.0 =	mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	____ & ____	x 10.0 =	mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: 170 mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:______ Digits Required: 1st.:______ 2nd.:______ 3rd.:______

Carbon Dioxide:

TITRETS K 1910

Equipment: HACH Digital Titrator CA-DT   CHEMetrics (Range: 10-100 mg/L)   Analysis Time: 1206

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
______	x 0.1 =	mg/L
______	x 0.2 =	mg/L
______	x 1.0 =	mg/L
______	x 2.0 =	mg/L

CHEMetrics: 60 mg/L

Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000
Project No.: N3995
Sampled By: AP/cm
Field Analyst: Same
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW08-05
Sample Location: MW08
Duplicate: ☐
Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide (S^{2-}):

Equipment: DR-700 DR-890 HS-C Color Chart HS-WR Color Wheel Analysis Time: 1214

Program/Module: 610nm 93 Other: ______

Concentration: 0.0 mg/L Filtered: ☐

Notes:

Sulfate (SO_4^{2-}):

Equipment: DR-700 DR-8__ Other: ______ Analysis Time: ______

Program/Module: 91

Concentration: ______ mg/L Filtered: ☐

Standard Solution: ☐ Results: ______

Standard Additions: ☐ Digits Required: 0.1ml:______ 0.2ml:______ 0.3ml:______

Notes:

Nitrite (NO_2^--N):

Analysis Time: ______

Equipment: DR-700 DR-8__ Other: ______ Filtered: ☐

Program/Module: 60

Concentration: ______ mg/L Reagent Blank Correction: ☐

Standard Solution: ☐ Results: ☐

Notes:

Nitrate (NO_3^--N):

Analysis Time: ______

Equipment: DR-700 DR-8__ Other: ______ Filtered: ☐

Program/Module: 55

Concentration: ______ mg/L

Nitrite Interference Treatment: ☐

Standard Solution: ☐ Results: ______ Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml:______ 0.2ml:______ 0.3ml:______

Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000	Sample ID No.: H10-GW-MW08-05
Project No.: N3995	Sample Location: MW08
Sampled By: AP/LM	Duplicate: ☐
Field Analyst: SAME	Blank: ☐
Field Form Checked as per QA/QC Checklist (initials):	

SAMPLE COLLECTION/ANALYSIS INFORMATION:

~~Manganese (Mn^{2+}):~~

Equipment: DR-700 DR-8 __ HACH MN-5 Other: ______ Analysis Time: ______

Program/Module: 525nm 41

Concentration: ______ mg/L Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: ______ Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml: ______ 0.2ml: ______ 0.3ml: ______

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-890 IR-18C Color Wheel Other: ______ Analysis Time: 1219

Program/Module: 500nm 33

Concentration: 0.0 mg/L Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: ______ Analysis Time: 1213

Concentration: 0.0 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

- All data fields have been completed as necessary: ☑
- Correct measurement units are cited in the SAMPLING DATA block: ☑
- Mulitplication is correct for each *Multiplier* table: ☑
- Final calulated concentration is within the appropriate *Range Used* block: ☑
- Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☑
- QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑
- Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☐
- Title block is initialized by person who performed the QA/QC Ckecklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000
Project No.: N3995
Sampled By: AP/LM
Field Analyst: SAME
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW09-05
Sample Location: MW09
Duplicate: ☐
Blank: ☐

SAMPLING DATA:

Date: 1/18/01 / Time: 1430 / Method:	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
	CLEAR	-85	57.3	24.0	~10	0.8	—	7.39

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 1-12 mg/L) Analysis Time: 1430

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
______	x 0.01 =	mg/L
______	x 0.02 =	mg/L

CHEMetrics: 2.0 mg/L

Notes:

Alkalinity: K9820 Analysis Time: 1433

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: 100-1400 mg/L) Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	____ & ____	x 0.1 =	mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	____ & ____	x 0.4 =	mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	____ & ____	x 1.0 =	mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	____ & ____	x 2.0 =	mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	____ & ____	x 5.0 =	mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	____ & ____	x 10.0 =	mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: 250 mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:______ Digits Required: 1st.:______ 2nd.:______ 3rd.:______

Carbon Dioxide: K1910

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: 10-100 mg/L) Analysis Time: 1436

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
______	x 0.1 =	mg/L
______	x 0.2 =	mg/L
______	x 1.0 =	mg/L
______	x 2.0 =	mg/L

CHEMetrics: 11 mg/L

Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000
Project No.: N3995
Sampled By: AP/LM
Field Analyst: SAME
Field Form Checked as per QA/QC Checklist (initials): ☐

Sample ID No.: HG-GW-MW09-05
Sample Location: MW09
Duplicate: ☐
Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide (S^{2-}):

Equipment: DR-700 DR-890 HS-C Color Chart HS-WR Color Wheel Analysis Time: 1443
Program/Module: 610nm 93 Other: ______

Concentration: 0.02 mg/L Filtered: ☐

Notes:

Sulfate (SO_4^{2-}):

Equipment: DR-700 DR-8__ Other: ______ Analysis Time: ______
Program/Module: 91
Concentration: ______ mg/L Filtered: ☐

Standard Solution: ☐ Results: ______
Standard Additions: ☐ Digits Required: 0.1ml: ______ 0.2ml: ______ 0.3ml: ______

Notes:

Nitrite (NO_2^--N):

Analysis Time: ______
Filtered: ☐
Equipment: DR-700 DR-8__ Other: ______
Program/Module: 60
Concentration: ______ mg/L Reagent Blank Correction: ☐
Standard Solution: ☐ Results: ☐

Notes:

Nitrate (NO_3^--N):

Analysis Time: ______
Filtered: ☐
Equipment: DR-700 DR-8__ Other: ______
Program/Module: 55
Concentration: ______ mg/L

Nitrite Interference Treatment: ☐
Reagent Blank Correction: ☐

Standard Solution: ☐ Results: ______
Standard Additions: ☐ Digits Required: 0.1ml: ______ 0.2ml: ______ 0.3ml: ______

Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 100C

Project No.: N3995

Sampled By: AP/LM

Field Analyst: SAME

Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW09-05

Sample Location: MW09

Duplicate: ☐

Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8 __ HACH MN-5 Other: ______ Analysis Time: ______

Program/Module: 525nm 41

Concentration: ______ mg/L

Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: ______ Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml:______ 0.2ml:______ 0.3ml:______

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8 90 IR-18C Color Wheel Other: ______ Analysis Time: 1448

Program/Module: 500nm 33

Concentration: 0.06 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: ______ Analysis Time: 1444

Concentration: 0.0 mg/L Exceeded 5.0 mg/L range on color chart ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Mulitplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☐

Title block is initialized by person who performed the QA/QC Ckecklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000
Project No.: N3995
Sampled By: AP/LM
Field Analyst: SAME
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW10-05
Sample Location: MW10
Duplicate: ☐
Blank: ☐

SAMPLING DATA:

Date: 1/17/01	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
Time: 1005								
Method:	CLEAR	98.	19.1	22.6	7	1.6	—	5.88

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 1-12 mg/L) Analysis Time: 1000

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier		Concentration
______	x 0.01	=	mg/L
______	x 0.02	=	mg/L

CHEMetrics: 1.0 mg/L

Notes:

Alkalinity:

TITRETS K9810

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: 10-100 mg/L) Analysis Time: 1002 Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier		Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	____ & ____	x 0.1	=	mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	____ & ____	x 0.4	=	mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	____ & ____	x 1.0	=	mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	____ & ____	x 2.0	=	mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	____ & ____	x 5.0	=	mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	____ & ____	x 10.0	=	mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: 40 mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:______ Digits Required: 1st.:______ 2nd.:______ 3rd.:______

Carbon Dioxide:

TITRETS K1910

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: 10-100 mg/L) Analysis Time: 1004

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count			Concentration
______	x 0.1	=	mg/L
______	x 0.2	=	mg/L
______	x 1.0	=	mg/L
______	x 2.0	=	mg/L

CHEMetrics: 45 mg/L

Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000

Project No.: N3995

Sampled By: AP/LM

Field Analyst: SAME

Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW10-05

Sample Location: MW10

Duplicate: ☐

Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide (S^{2-}):

Equipment: DR-700 DR-890 HS-C Color Chart HS-WR Color Wheel Analysis Time: 1012

Program/Module: 610nm ~~93~~ Other:

Concentration: 0.03 mg/L Filtered: ☐

Notes:

Sulfate (SO_4^{2-}):

Equipment: DR-700 DR-8__ Other: Analysis Time:

Program/Module: 91

Concentration: mg/L Filtered: ☐

Standard Solution: ☐ Results:

Standard Additions: ☐ Digits Required: 0.1ml: 0.2ml: 0.3ml:

Notes:

Nitrite (NO_2^--N):

Analysis Time:

Equipment: DR-700 DR-8__ Other: Filtered: ☐

Program/Module: 60

Concentration: mg/L Reagent Blank Correction: ☐

Standard Solution: ☐ Results: ☐

Notes:

Nitrate (NO_3^--N):

Analysis Time:

Equipment: DR-700 DR-8__ Other: Filtered: ☐

Program/Module: 55

Concentration: mg/L

Nitrite Interference Treatment: ☐

Standard Solution: ☐ Results: Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml: 0.2ml: 0.3ml:

Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000
Project No.: N3995
Sampled By: AP/LM
Field Analyst: SAME
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW10-05
Sample Location: MW11C
Duplicate: ☐
Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8__ HACH MN-5 Other: ______ Analysis Time: ______
Program/Module: 525nm 41
Concentration: ______ mg/L
Filtered: ☐
Digestion: ☐
Standard Solution: ☐ Results: ______ Reagent Blank Correction: ☐
Standard Additions: ☐ Digits Required: 0.1ml:______ 0.2ml:______ 0.3ml:______
Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-890 IR-18C Color Wheel Other: ______ Analysis Time: 1017
Program/Module: 500nm 33
Concentration: 0.74 mg/L
Filtered: ☐
Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: ______ Analysis Time: 1012
Concentration: 0.0 mg/L Exceeded 5.0 mg/L range on color chart: ☐
Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑
Correct measurement units are cited in the SAMPLING DATA block: ☑
Mulitplication is correct for each *Multiplier* table: ☑
Final calulated concentration is within the appropriate *Range Used* block: ☑
Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☑
QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑
Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☐
Title block is initialized by person who performed the QA/QC Ckecklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000

Project No.: N3995

Sampled By: AP/LM

Field Analyst: SAME

Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW11-05

Sample Location: MW 11

Duplicate: ☐

Blank: ☐

SAMPLING DATA:

	Color	ORP (Eh)	S.C.	Temp.	Turbidity	DO	Sal.	pH
Date: 1/17/01	(Visual)	(+/- mv)	(mS/m)	(°C)	(NTU)	(Meter, mg/l)	(%)	(SU)
Time: 0820								
Method:	CLEAR	-103	50.2	23.8	21	0.1	—	7.26

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 1-12 mg/L) Analysis Time: 0815

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier		Concentration
	x 0.01	=	mg/L
	x 0.02	=	mg/L

CHEMetrics: 1.0 mg/L

Notes:

Alkalinity:

TITRETS K 9820

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: 100-1000 mg/L) Analysis Time: 0818

Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier		Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	&	x 0.1	=	mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	&	x 0.4	=	mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	&	x 1.0	=	mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	&	x 2.0	=	mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	&	x 5.0	=	mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	&	x 10.0	=	mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: 185 mg/L

Notes:

Standard Additions: ☐ Titrant Molarity: Digits Required: 1st.: 2nd.: 3rd.:

Carbon Dioxide:

TITRETS K 1910

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: 10-100 mg/L) Analysis Time: 0820

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count			Concentration
	x 0.1	=	mg/L
	x 0.2	=	mg/L
	x 1.0	=	mg/L
	x 2.0	=	mg/L

CHEMetrics: 14 mg/L

Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000
Project No.: N3995
Sampled By: AP/LM
Field Analyst: SAME
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW11-05
Sample Location: MW11
Duplicate: ☐
Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide (S^{2-}):

Equipment: DR-700 DR-8 92 HS-C Color Chart HS-WR Color Wheel Analysis Time: 0830
Program/Module: 610nm 93 Other: ______
Concentration: 0.03 mg/L Filtered: ☐
Notes:

Sulfate (SO_4^{2-}):

Equipment: DR-700 DR-8 __ Other: ______ Analysis Time: ______
Program/Module: 91
Concentration: ______ mg/L Filtered: ☐
Standard Solution: ☐ Results: ______
Standard Additions: ☐ Digits Required: 0.1ml: ______ 0.2ml: ______ 0.3ml: ______
Notes:

Nitrite (NO_2^--N):

Analysis Time: ______
Equipment: DR-700 DR-8 __ Other: ______ Filtered: ☐
Program/Module: 60
Concentration: ______ mg/L Reagent Blank Correction: ☐
Standard Solution: ☐ Results: ☐
Notes:

Nitrate (NO_3^--N):

Analysis Time: ______
Equipment: DR-700 DR-8 __ Other: ______ Filtered: ☐
Program/Module: 55
Concentration: ______ mg/L
Nitrite Interference Treatment: ☐
Standard Solution: ☐ Results: ______ Reagent Blank Correction: ☐
Standard Additions: ☐ Digits Required: 0.1ml: ______ 0.2ml: ______ 0.3ml: ______
Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000

Project No.: N13995

Sampled By: AP/LM

Field Analyst: SAME

Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW11-05

Sample Location: MW11

Duplicate: ☐

Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8 __ HACH MN-5 Other: ________ Analysis Time: ________

Program/Module: 525nm 41

Concentration: ________ mg/L

Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: ________ Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml: ________ 0.2ml: ________ 0.3ml: ________

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-890 IR-18C Color Wheel Other: ________ Analysis Time: 0835

Program/Module: 500nm 33

Concentration: 0.23 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: ________ Analysis Time: 0832

Concentration: 0.0 mg/L Exceeded 5.0 mg/L range on color chart ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Mulitplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☐

Title block is initialized by person who performed the QA/QC Ckecklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000
Project No.: N3995
Sampled By: AP/CM
Field Analyst: SAME
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW12-05
Sample Location: MW12
Duplicate: ☐
Blank: ☐

SAMPLING DATA:

Date: 1/18/01 Time: 1215 Method:	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
	Lt Brown	-46	22.2	24.4	~1	0.0	—	5.59

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT   CHEMetrics (Range: 0-1 mg/L)   Analysis Time: 1212

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
______	x 0.01	= mg/L
______	x 0.02	= mg/L

CHEMetrics: 0.8 mg/L

Notes:

Alkalinity:

K 9810

Equipment: HACH Digital Titrator AL-DT   CHEMetrics (Range: 10-100 mg/L)   Analysis Time: ______   Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	____ & ____	x 0.1	= mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	____ & ____	x 0.4	= mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	____ & ____	x 1.0	= mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	____ & ____	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	____ & ____	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	____ & ____	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: 17 mg/L

Notes:

Standard Additions: ☐   Titrant Molarity: ______   Digits Required: 1st.: ______ 2nd.: ______ 3rd.: ______

Carbon Dioxide:

K 1910

Equipment: HACH Digital Titrator CA-DT   CHEMetrics (Range: 10-100 mg/L)   Analysis Time: ______

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
______	x 0.1	= mg/L
______	x 0.2	= mg/L
______	x 1.0	= mg/L
______	x 2.0	= mg/L

CHEMetrics: 40 mg/L

Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000
Project No.: N3995
Sampled By: AP/LM
Field Analyst: SAME
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW12-05
Sample Location: MW12
Duplicate: ☐
Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide (S^{2-}):

Equipment: DR-700 DR-890 HS-C Color Chart HS-WR Color Wheel Analysis Time: 1225
Program/Module: 610nm 93 Other: ______
Concentration: 0.04 mg/L Filtered: ☐
Notes:

Sulfate (SO_4^{2-}):

Equipment: DR-700 DR-8__ Other: ______ Analysis Time: ______
Program/Module: 91
Concentration: ______ mg/L Filtered: ☐
Standard Solution: ☐ Results: ______
Standard Additions: ☐ Digits Required: 0.1ml:______ 0.2ml:______ 0.3ml:______
Notes:

Nitrite (NO_2^--N):

Analysis Time: ______
Equipment: DR-700 DR-8__ Other: ______ Filtered: ☐
Program/Module: 60
Concentration: ______ mg/L Reagent Blank Correction: ☐
Standard Solution: ☐ Results: ☐
Notes:

Nitrate (NO_3^--N):

Analysis Time: ______
Equipment: DR-700 DR-8__ Other: ______ Filtered: ☐
Program/Module: 55
Concentration: ______ mg/L
Nitrite Interference Treatment: ☐
Standard Solution: ☐ Results: ______ Reagent Blank Correction: ☐
Standard Additions: ☐ Digits Required: 0.1ml:______ 0.2ml:______ 0.3ml:______
Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000
Project No.: N3995
Sampled By: AP/LM
Field Analyst: SAME
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW12-05
Sample Location: MW12
Duplicate: ☐
Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8__ HACH MN-5 Other: ________ Analysis Time: ________

Program/Module: 525nm 41

Concentration: ________ mg/L

Filtered: ☐
Digestion: ☐
Reagent Blank Correction: ☐

Standard Solution: ☐ Results: ________

Standard Additions: ☐ Digits Required: 0.1ml:______ 0.2ml:______ 0.3ml:______

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-890 IR-18C Color Wheel Other: ________ Analysis Time: 1230

Program/Module: 500nm 33

Concentration: 2.57 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: ________ Analysis Time: 1226

Concentration: 0.7 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑
Correct measurement units are cited in the SAMPLING DATA block: ☑
Mulitplication is correct for each *Multiplier* table: ☑
Final calulated concentration is within the appropriate *Range Used* block: ☑
Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☑
QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑
Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☐
Title block is initialized by person who performed the QA/QC Ckecklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000

Project No.: N3995

Sampled By: AP/LM

Field Analyst: SAME

Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW13-05

Sample Location: MW 13

Duplicate: ☐

Blank: ☐

SAMPLING DATA:

Date: 1/16/01	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
Time: 1310								
Method:	CLEAR	115	.262	25.3	-10	0.0		5.80

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 0-100 mg/L) Analysis Time: 1300

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier		Concentration
______	x 0.01	=	mg/L
______	x 0.02	=	mg/L

CHEMetrics: 1.0 mg/L

Notes:

Alkalinity:

TITRETS K9810

Analysis Time:

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: 10-100 mg/L) Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier		Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	______ & ______	x 0.1	=	mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	______ & ______	x 0.4	=	mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	______ & ______	x 1.0	=	mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	______ & ______	x 2.0	=	mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	______ & ______	x 5.0	=	mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	______ & ______	x 10.0	=	mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: 60 mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:______ Digits Required: 1st.:______ 2nd.:______ 3rd.:______

Carbon Dioxide:

TITRETS K1910

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: 10-100 mg/L) Analysis Time:

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count			Concentration
______	x 0.1	=	mg/L
______	x 0.2	=	mg/L
______	x 1.0	=	mg/L
______	x 2.0	=	mg/L

CHEMetrics: 85 mg/L

Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000

Project No.: N3995

Sampled By: AP/LM

Field Analyst: SAME

Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW13-05

Sample Location: MW 13

Duplicate: ☐

Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide (S^{2-}):

Equipment: DR-700 DR-890 HS-C Color Chart HS-WR Color Wheel Analysis Time: 1320

Program/Module: 610nm 93 Other: ______

Concentration: 0.0 mg/L Filtered: ☐

Notes:

Sulfate (SO_4^{2-}):

Equipment: DR-700 DR-8__ Other: ______ Analysis Time: ______

Program/Module: 91

Concentration: ______ mg/L Filtered: ☐

Standard Solution: ☐ Results: ______

Standard Additions: ☐ Digits Required: 0.1ml:______ 0.2ml:______ 0.3ml:______

Notes:

Nitrite (NO_2^--N):

Analysis Time: ______

Equipment: DR-700 DR-8__ Other: ______ Filtered: ☐

Program/Module: 60

Concentration: ______ mg/L Reagent Blank Correction: ☐

Standard Solution: ☐ Results: ☐

Notes:

Nitrate (NO_3^--N):

Analysis Time: ______

Equipment: DR-700 DR-8__ Other: ______ Filtered: ☐

Program/Module: 55

Concentration: ______ mg/L

Nitrite Interference Treatment: ☐

Standard Solution: ☐ Results: ______ Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml:______ 0.2ml:______ 0.3ml:______

Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 100C
Project No.: N3995
Sampled By: AP/LM
Field Analyst: SAME
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: HR-GW-MW13-05
Sample Location: MW13
Duplicate: ☐
Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8__ HACH MN-5 Other: ______ Analysis Time: ______
Program/Module: 525nm 41
Concentration: ______ mg/L
Filtered: ☐
Digestion: ☐
Standard Solution: ☐ Results: ______ Reagent Blank Correction: ☐
Standard Additions: ☐ Digits Required: 0.1ml:______ 0.2ml:______ 0.3ml:______
Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-890 IR-18C Color Wheel Other: ______ Analysis Time: 1327
Program/Module: 500nm 33
Concentration: 0.36 mg/L
Filtered: ☐
Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: ______ Analysis Time: 1318
Concentration: 0.0 mg/L Exceeded 5.0 mg/L range on color chart: ☐
Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑
Correct measurement units are cited in the SAMPLING DATA block: ☑
Mulitplication is correct for each *Multiplier* table: ☑
Final calulated concentration is within the appropriate *Range Used* block: ☑
Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☑
QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑
Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☐
Title block is initialized by person who performed the QA/QC Ckecklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000
Project No.: N3995
Sampled By: AP/LM
Field Analyst: SAME
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW14-05
Sample Location: H10-MW14
Duplicate: ☐
Blank: ☐

SAMPLING DATA:

Date: 1/17/01
Time: 0805
Method:

Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
CLEAR	-116	16.7	23.8	-10	0.1	—	5.63

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 0-1 mg/L) Analysis Time: 0800

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
______	x 0.01	= mg/L
______	x 0.02	= mg/L

CHEMetrics: 0.7 mg/L

Notes:

Alkalinity:

TITRETS K9810

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: 10-100 mg/L) Analysis Time: 0802

Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	____ & ____	x 0.1	= mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	____ & ____	x 0.4	= mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	____ & ____	x 1.0	= mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	____ & ____	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	____ & ____	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	____ & ____	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: 20 mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:______ Digits Required: 1st.:______ 2nd.:______ 3rd.:______

Carbon Dioxide:

TITRETS K910

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: 10-100 mg/L) Analysis Time: ______

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
______	x 0.1	= mg/L
______	x 0.2	= mg/L
______	x 1.0	= mg/L
______	x 2.0	= mg/L

CHEMetrics: 40 mg/L

Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 100C
Project No.: N3995
Sampled By: AP/LM
Field Analyst: SAME
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: HD-GW-MW14-05
Sample Location: MW14
Duplicate: ☐
Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide (S^{2-}):

Equipment: DR-700 | DR-890 | HS-C Color Chart | HS-WR Color Wheel | Analysis Time: 0812
Program/Module: 610nm | 93 | Other: ______

Concentration: 0.60 mg/L
Filtered: ☐
Notes:

Sulfate (SO_4^{2-}):

Equipment: DR-700 | DR-8__ | Other: ______ | Analysis Time: ______
Program/Module: 91
Concentration: ______ mg/L
Filtered: ☐

Standard Solution: ☐ Results: ______
Standard Additions: ☐ Digits Required: 0.1ml:______ 0.2ml:______ 0.3ml:______
Notes:

Nitrite (NO_2^--N):

Analysis Time: ______
Filtered: ☐
Equipment: DR-700 | DR-8__ | Other: ______
Program/Module: 60
Concentration: ______ mg/L
Reagent Blank Correction: ☐
Standard Solution: ☐ Results: ☐
Notes:

Nitrate (NO_3^--N):

Analysis Time: ______
Filtered: ☐
Equipment: DR-700 | DR-8__ | Other: ______
Program/Module: 55
Concentration: ______ mg/L
Nitrite Interference Treatment: ☐
Reagent Blank Correction: ☐
Standard Solution: ☐ Results: ______
Standard Additions: ☐ Digits Required: 0.1ml:______ 0.2ml:______ 0.3ml:______
Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000

Project No.: N3995

Sampled By: AP/LM

Field Analyst: SAME

Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW14-05

Sample Location: MW14

Duplicate: ☐

Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: ~~DR-700~~ DR-8__ HACH MN-5 Other: ________ Analysis Time: ________

Program/Module: 525nm 41

Concentration: ________ mg/L

Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: ________ Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml:________ 0.2ml:________ 0.3ml:________

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-890 IR-18C Color Wheel Other: ________ Analysis Time: 0815

Program/Module: 500nm 33

Concentration: >3.30 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: ________ Analysis Time: 0810

Concentration: 2.0 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Mulitplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☐

Title block is initialized by person who performed the QA/QC Ckecklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000
Project No.: N3995
Sampled By: AP/LM
Field Analyst: SAME
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H1C-GW-MW15-05
Sample Location: MW15
Duplicate: ☐
Blank: ☐

SAMPLING DATA:

Date: 1/18/01
Time: 1055
Method:

Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
CLEAR	-70	15.8	22.6	1	0.5	—	5.30

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 0-1 mg/L) Analysis Time: 1052

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
______	x 0.01	= mg/L
______	x 0.02	= mg/L

CHEMetrics: 0.8 mg/L

Notes:

Alkalinity:

K9810, 15 + 20

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: ______ mg/L) Analysis Time: 1057

Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	______ & ______	x 0.1	= mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	______ & ______	x 0.4	= mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	______ & ______	x 1.0	= mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	______ & ______	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	______ & ______	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	______ & ______	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: ______ mg/L *NO READING*

Notes:

Standard Additions: ☐ Titrant Molarity: ______ Digits Required: 1st.: ______ 2nd.: ______ 3rd.: ______

Carbon Dioxide:

K1910

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: 10-100 mg/L) Analysis Time: 1058

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
______	x 0.1	= mg/L
______	x 0.2	= mg/L
______	x 1.0	= mg/L
______	x 2.0	= mg/L

CHEMetrics: 40 mg/L

Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000

Project No.: N3995

Sampled By: AP/LM

Field Analyst: SAME

Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW15-05

Sample Location: MW15

Duplicate: ☐

Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide (S^{2-}):

Equipment: DR-700 DR-890 HS-C Color Chart HS-WR Color Wheel Analysis Time: 1107

Program/Module: 610nm 93 Other:

Concentration: 0.51 mg/L Filtered: ☐

Notes:

Sulfate (SO_4^{2-}):

Equipment: DR-700 DR-8__ Other: Analysis Time:

Program/Module: 91

Concentration: mg/L Filtered: ☐

Standard Solution: ☐ Results:

Standard Additions: ☐ Digits Required: 0.1ml: 0.2ml: 0.3ml:

Notes:

Nitrite (NO_2^--N):

Analysis Time:

Filtered: ☐

Equipment: DR-700 DR-8__ Other:

Program/Module: 60

Concentration: mg/L

Reagent Blank Correction: ☐

Standard Solution: ☐ Results: ☐

Notes:

Nitrate (NO_3^--N):

Analysis Time:

Filtered: ☐

Equipment: DR-700 DR-8__ Other:

Program/Module: 55

Concentration: mg/L

Nitrite Interference Treatment: ☐

Reagent Blank Correction: ☐

Standard Solution: ☐ Results:

Standard Additions: ☐ Digits Required: 0.1ml: 0.2ml: 0.3ml:

Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000
Project No.: N3995
Sampled By: AP/LM
Field Analyst: SAME
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW15-05
Sample Location: MW15
Duplicate: ☐
Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8__ HACH MN-5 Other: ______ Analysis Time: ______

Program/Module: 525nm 41

Concentration: ______ mg/L

Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: ______ Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml:______ 0.2ml:______ 0.3ml:______

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-890 IR-18C Color Wheel Other: ______ Analysis Time: 1112

Program/Module: 500nm 33

Concentration: 2.16 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: ______ Analysis Time: 1104

Concentration: 5.0 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Mulitplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☐

Title block is initialized by person who performed the QA/QC Ckecklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000
Project No.: N3995
Sampled By: AP/CM
Field Analyst: Same
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW16-05
Sample Location: MW16
Duplicate: ☐
Blank: ☐

SAMPLING DATA:

Date: 1/16/01 Time: 0925 Method:	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
	CLEAR	100	10.7	22.9	-10	0.0	-	5.04

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 0-1 mg/L) Analysis Time: 0924

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
______	x 0.01	= mg/L
______	x 0.02	= mg/L

CHEMetrics: 1.0 mg/L

Notes:

Alkalinity:

NO READING

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: _____ mg/L) Analysis Time: 0930

Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	____ & ____	x 0.1	= mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	____ & ____	x 0.4	= mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	____ & ____	x 1.0	= mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	____ & ____	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	____ & ____	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	____ & ____	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: _______ mg/L

Notes: No READING K-9810-9815+9820

Standard Additions: ☐ Titrant Molarity: _______ Digits Required: 1st.: _______ 2nd.: _______ 3rd.: _______

Carbon Dioxide:

TITRETS K-9110

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: 10-100 mg/L) Analysis Time: 0932

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
______	x 0.1	= mg/L
______	x 0.2	= mg/L
______	x 1.0	= mg/L
______	x 2.0	= mg/L

CHEMetrics: 4K mg/L

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET
NATURAL ATTENUATION PARAMETERS

Project Site Name: HANGAR 1000
Project No.: N3995

Sample ID No.: H1C-GW-MW16-05
Sample Location: ~~Site No.~~ MW16
Sampled By: AP/CM

SAMPLING DATA:

Date:	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	
Time:								
Method: Peristaltic pump								

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide:

Equipment: HACH DR-700 Colorimeter HACH DR-800 Colorimeter HACH HS-C Test Kit

Wave / Program: 610nm / 61.12.1

TtNUS Serial No.: DR 890

Concentration: 0.0 mg/L

0942

Ferrous Iron:

Equipment: HACH DR-700 Colorimeter HACH DR-800 Colorimeter HACH IR-18C Test Kit

Wave / Program: 500nm / 50.05.1

TtNUS Serial No.: ______

Concentration: ______ mg/L

Manganese:

Equipment: HACH DR-700 Colorimeter HACH DR-800 Colorimeter

Wave / Program: 525nm / 52.13.1

TtNUS Serial No.: ______

Concentration: ______ mg/L

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000	Sample ID No.: H10-GW-MW16-05
Project No.: N3995	Sample Location: MW16
Sampled By: AP/LM	Duplicate: ☐
Field Analyst: SAME	Blank: ☐
Field Form Checked as per QA/QC Checklist (initials):	

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8 __ HACH MN-5 Other: ______ Analysis Time: ______

Program/Module: 525nm 41

Concentration: ______ mg/L Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: ______ Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml: ______ 0.2ml: ______ 0.3ml: ______

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-890 IR-18C Color Wheel Other: ______ Analysis Time: 0948

Program/Module: 500nm 33

Concentration: 3.16 mg/L Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: ______ Analysis Time: 0940

Concentration: 0.0 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Mulitplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☐

Title block is initialized by person who performed the QA/QC Ckecklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000
Project No.: N3995
Sampled By: AP/LM
Field Analyst: SAME
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW17-05
Sample Location: MW17
Duplicate: ☐
Blank: ☐

SAMPLING DATA:

Date: 1/16/01 Time: 0815 Method:	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
	CLEAR	-43	19.9	24.5	<10	0.0	—	6.12

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 0-1 mg/L) Analysis Time: 0815

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
______	x 0.01	= mg/L
______	x 0.02	= mg/L

CHEMetrics: 0.5 mg/L

Notes:

Alkalinity:

TITRETS K-9810

Analysis Time: 0819

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: 10-100 mg/L) Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	____ & ____	x 0.1	= mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	____ & ____	x 0.4	= mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	____ & ____	x 1.0	= mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	____ & ____	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	____ & ____	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	____ & ____	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: 70 mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:______ Digits Required: 1st.:______ 2nd.:______ 3rd.:______

Carbon Dioxide:

TITRETS K-1910

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: ______mg/L) Analysis Time: 0822

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
______	x 0.1	= mg/L
______	x 0.2	= mg/L
______	x 1.0	= mg/L
______	x 2.0	= mg/L

CHEMetrics: 30 mg/L

Tetra Tech NUS, Inc.

GROUNDWATER SAMPLE LOG SHEET
NATURAL ATTENUATION PARAMETERS

Project Site Name: HANGAR 1000
Project No.: N3995

Sample ID No.: H10-GW-MW17-05
Sample Location: Site No. MW17
Sampled By: AP/LM

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	Sal.	
Date:								
Time:	(Visual)	(SU)	(mS/cm)	(^{0}C)	(NTU)	(Meter, mg/l)	(%)	
Method: Peristaltic pump								

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide:

Equipment: HACH DR-700 Colorimeter HACH DR-800 Colorimeter HACH HS-C Test Kit

Wave / Program: 610nm / 61.12.1

TtNUS Serial No.: ____________ DR 890

Concentration: 0.12 mg/L

0844

Ferrous Iron:

Equipment: HACH DR-700 Colorimeter HACH DR-800 Colorimeter HACH IR-18C Test Kit

Wave / Program: 500nm / 50.05.1

TtNUS Serial No.: ____________

Concentration: ____________ mg/L

Manganese:

Equipment: HACH DR-700 Colorimeter HACH DR-800 Colorimeter

Wave / Program: 525nm / 52.13.1

TtNUS Serial No.: ____________

Concentration: ____________ mg/L

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000
Project No.: N3995
Sampled By: AP/LM
Field Analyst: Same
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW17-05
Sample Location: MW 17
Duplicate: ☐
Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: ~~DR-700~~ DR-8__ HACH MN-5 Other: ______ Analysis Time: ______

Program/Module: 525nm 41

Concentration: ______ mg/L

Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: ______ Reagent Blank Correction ☐

Standard Additions: ☐ Digits Required: 0.1ml:______ 0.2ml:______ 0.3ml:______

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-890 IR-18C Color Wheel Other: ______ Analysis Time: 0833

Program/Module: 500nm 33

Concentration: 3.27 mg/L Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: ______ Analysis Time: 0832

Concentration: 0.3 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Mulitplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Nitrite interference treatment used for Nitrate test if Nitrite was detected: ☐

Title block is initialized by person who performed the QA/QC Ckecklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000

Project No.: N3995

Sampled By: AP/LM

Field Analyst: SAME

Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW18-05

Sample Location: MW18

Duplicate: ☐

Blank: ☐

SAMPLING DATA:

Date: 1/18/01 Time: 0930 Method:	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
	CLEAR	98	277	22.0	3	0.2	—	5.90

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 0-1 mg/L) Analysis Time:

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
	x 0.01	= mg/L
	x 0.02	= mg/L

CHEMetrics: 0.8 mg/L

Notes:

Alkalinity: TITRETS K9810

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: 10-100 mg/L) Analysis Time:

Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	&	x 0.1	= mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	&	x 0.4	= mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	&	x 1.0	= mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	&	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	&	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	&	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: 50 mg/L

Notes:

Standard Additions: ☐ Titrant Molarity: Digits Required: 1st.: 2nd.: 3rd.:

Carbon Dioxide: TITRETS K1910

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: 10-100 mg/L) Analysis Time:

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
	x 0.1	= mg/L
	x 0.2	= mg/L
	x 1.0	= mg/L
	x 2.0	= mg/L

CHEMetrics: 35 mg/L

Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000
Project No.: N3995
Sampled By: AP/CM
Field Analyst: SAME
Field Form Checked as per QA/QC Checklist (initials): ☐

Sample ID No.: H10-GW-MW18-05
Sample Location: MW18
Duplicate: ☐
Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide (S^{2-}):

Equipment: DR-700 DR-890 HS-C Color Chart HS-WR Color Wheel Analysis Time: 0940
Program/Module: 610nm 93 Other: ______
Concentration: 0.0 mg/L Filtered: ☐
Notes:

Sulfate (SO_4^{2-}):

Equipment: DR-700 DR-8__ Other: ______ Analysis Time: ______
Program/Module: 91
Concentration: ______ mg/L Filtered: ☐
Standard Solution: ☐ Results: ______
Standard Additions: ☐ Digits Required: 0.1ml: ______ 0.2ml: ______ 0.3ml: ______
Notes:

Nitrite (NO_2^--N):

Analysis Time: ______
Equipment: DR-700 DR-8__ Other: ______ Filtered: ☐
Program/Module: 60
Concentration: ______ mg/L Reagent Blank Correction: ☐
Standard Solution: ☐ Results: ☐
Notes:

Nitrate (NO_3^--N):

Analysis Time: ______
Equipment: DR-700 DR-8__ Other: ______ Filtered: ☐
Program/Module: 55
Concentration: ______ mg/L
Nitrite Interference Treatment: ☐
Standard Solution: ☐ Results: ______ Reagent Blank Correction: ☐
Standard Additions: ☐ Digits Required: 0.1ml: ______ 0.2ml: ______ 0.3ml: ______
Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 100C
Project No.: 113995
Sampled By: AP/LM
Field Analyst: SAME
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW18-05
Sample Location: MW18
Duplicate: ☐
Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8 __ HACH MN-5 Other: ______ Analysis Time: ______
Program/Module: 525nm 41
Concentration: ______ mg/L
Filtered: ☐
Digestion: ☐
Standard Solution: ☐ Results: ______ Reagent Blank Correction: ☐
Standard Additions: ☐ Digits Required: 0.1ml: ______ 0.2ml: ______ 0.3ml: ______
Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8 90 IR-18C Color Wheel Other: ______ Analysis Time: 0947
Program/Module: 500nm 33
Concentration: 0.12 mg/L Filtered: ☐
Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: ______ Analysis Time: 0936
Concentration: 0.0 mg/L Exceeded 5.0 mg/L range on color chart: ☐
Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑
Correct measurement units are cited in the SAMPLING DATA block: ☑
Mulitplication is correct for each *Multiplier* table: ☑
Final calulated concentration is within the appropriate *Range Used* block: ☑
Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☑
QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑
Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☐
Title block is initialized by person who performed the QA/QC Ckecklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000
Project No.: N3995
Sampled By: AP / LM
Field Analyst: SAME
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW19-05
Sample Location: MW19
Duplicate: ☐
Blank: ☐

SAMPLING DATA:

Date: 1/19/01 Time: 1300 Method:	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
	CLEAR	20	14.7	22.5	~10	0.0	--	5.18

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 0-1 mg/L) Analysis Time: 1320

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
______	x 0.01	= mg/L
______	x 0.02	= mg/L

CHEMetrics: 1.0 mg/L

Notes:

Alkalinity:

ALL RANGES

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: ______ mg/L) Analysis Time: 1322 Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	______ & ______	x 0.1	= mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	______ & ______	x 0.4	= mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	______ & ______	x 1.0	= mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	______ & ______	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	______ & ______	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	______ & ______	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: ______ mg/L *NO READING*

Notes:

Standard Additions: ☐ Titrant Molarity: ______ Digits Required: 1st.: ______ 2nd.: ______ 3rd.: ______

Carbon Dioxide:

K 1910

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: 10-100 mg/L) Analysis Time: 1325

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
______	x 0.1	= mg/L
______	x 0.2	= mg/L
______	x 1.0	= mg/L
______	x 2.0	= mg/L

CHEMetrics: 40 mg/L

Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000
Project No.: N3995
Sampled By: AP/LM
Field Analyst: SAME
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW19-05
Sample Location: MW19
Duplicate: ☐
Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide (S^{2-}):

Equipment: DR-700 DR-8 90 HS-C Color Chart HS-WR Color Wheel Analysis Time: 1330
Program/Module: 610nm 93 Other: ______
Concentration: 0.31 mg/L Filtered: ☐
Notes:

Sulfate (SO_4^{2-}):

Equipment: DR-700 DR-8 __ Other: ______ Analysis Time: ______
Program/Module: 91
Concentration: ______ mg/L Filtered: ☐
Standard Solution: ☐ Results: ______
Standard Additions: ☐ Digits Required: 0.1ml:______ 0.2ml:______ 0.3ml:______
Notes:

Nitrite (NO_2^--N):

Analysis Time: ______
Equipment: DR-700 DR-8 __ Other: ______ Filtered: ☐
Program/Module: 60
Concentration: ______ mg/L Reagent Blank Correction: ☐
Standard Solution: ☐ Results: ☐
Notes:

Nitrate (NO_3^--N):

Analysis Time: ______
Equipment: DR-700 DR-8 __ Other: ______ Filtered: ☐
Program/Module: 55
Concentration: ______ mg/L
Nitrite Interference Treatment: ☐
Standard Solution: ☐ Results: ______ Reagent Blank Correction: ☐
Standard Additions: ☐ Digits Required: 0.1ml:______ 0.2ml:______ 0.3ml:______
Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000

Project No.: N3995

Sampled By: AP/LM

Field Analyst: SAME

Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW19-05

Sample Location: MW19

Duplicate: ☐

Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8__ HACH MN-5 Other: ______ Analysis Time: ______

Program/Module: 525nm 41

Concentration: ______ mg/L

Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: ______ Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml:______ 0.2ml:______ 0.3ml:______

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-890 IR-18C Color Wheel Other: ______ Analysis Time: 1335

Program/Module: 500nm 33

Concentration: >3.30 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: ______ Analysis Time: 1327

Concentration: 2.0 mg/L Exceeded 5.0 mg/L range on color chart ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Mulitplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☐

Title block is initialized by person who performed the QA/QC Ckecklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000

Project No.: N3995

Sampled By: AP/CM

Field Analyst: SAME

Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW22-05

Sample Location: MW22

Duplicate: ☐

Blank: ☐

SAMPLING DATA:

Date: 1/16/01 Time: 1420 Method:	Color (Visual)	ORP (Eh) (+/- mv)	S.C. (mS/cm)	Temp. (^oC)	Turbidity (NTU)	DO (Meter, mg/l)	Sal. (%)	pH (SU)
	clear	-182	27.2	25.1	- 10	0.0	—	5.95

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: HACH Digital Titrator OX-DT CHEMetrics (Range: 0-1 mg/L) Analysis Time: 1415

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	1-5 mg/L	200 ml	0.200 N	0.01
☐	2-10 mg/L	100 ml	0.200 N	0.02

Titration Count	Multiplier	Concentration
______	x 0.01	= mg/L
______	x 0.02	= mg/L

CHEMetrics: 0.4 mg/L

Notes:

Alkalinity:

TITRETS K9810

Equipment: HACH Digital Titrator AL-DT CHEMetrics (Range: 10-100 mg/L) Analysis Time: 1418

Filtered: ☐

Range Used:	Range	Sample Vol.	Cartridge	Multiplier	Titration Count	Multiplier	Concentration
☐	10-40 mg/L	100 ml	0.1600 N	0.1	____ & ____	x 0.1	= mg/L
☐	40-160 mg/L	25 ml	0.1600 N	0.4	____ & ____	x 0.4	= mg/L
☐	100-400 mg/L	100 ml	1.600 N	1.0	____ & ____	x 1.0	= mg/L
☐	200-800 mg/L	50 ml	1.600 N	2.0	____ & ____	x 2.0	= mg/L
☐	500-2000 mg/L	20 ml	1.600 N	5.0	____ & ____	x 5.0	= mg/L
☐	1000-4000 mg/L	10 ml	1.600 N	10.0	____ & ____	x 10.0	= mg/L

Parameter:	Hydroxide	Carbonate	Bicarbonate
Relationship:			

CHEMetrics: 40 mg/L

Notes:

Standard Additions: ☐ Titrant Molarity:______ Digits Required: 1st.:______ 2nd.:______ 3rd.:______

Carbon Dioxide:

TITRETS K1910

Equipment: HACH Digital Titrator CA-DT CHEMetrics (Range: 10-100 mg/L) Analysis Time: 1420

Range Used:	Range	Sample Vol.	Cartridge	Multiplier
☐	10-50 mg/L	200 ml	0.3636 N	0.1
☐	20-100 mg/L	100 ml	0.3636 N	0.2
☐	100-400 mg/L	200 ml	3.636 N	1.0
☐	200-1000 mg/L	100 ml	3.636 N	2.0

Titration Count		Concentration
______	x 0.1	= mg/L
______	x 0.2	= mg/L
______	x 1.0	= mg/L
______	x 2.0	= mg/L

CHEMetrics: 60 mg/L

Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000

Project No.: N3995

Sampled By: AP/cm

Field Analyst: SAME

Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW22-05

Sample Location: MW22

Duplicate: ☐

Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Sulfide (S^{2-}):

Equipment: DR-700 DR-890 HS-C Color Chart HS-WR Color Wheel Analysis Time: 1430

Program/Module: 610nm 93 Other:

Concentration: >0.80 mg/L Filtered: ☐

Notes: LIMIT

Sulfate (SO_4^{2-}):

Equipment: DR-700 DR-8__ Other: Analysis Time:

Program/Module: 91

Concentration: mg/L Filtered: ☐

Standard Solution: ☐ Results:

Standard Additions: ☐ Digits Required: 0.1ml: 0.2ml: 0.3ml:

Notes:

Nitrite (NO_2^--N):

Analysis Time:

Equipment: DR-700 DR-8__ Other: Filtered: ☐

Program/Module: 60

Concentration: mg/L Reagent Blank Correction: ☐

Standard Solution: ☐ Results: ☐

Notes:

Nitrate (NO_3^--N):

Analysis Time:

Equipment: DR-700 DR-8__ Other: Filtered: ☐

Program/Module: 55

Concentration: mg/L

Nitrite Interference Treatment: ☐

Standard Solution: ☐ Results: Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml: 0.2ml: 0.3ml:

Notes:

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: HANGAR 1000
Project No.: N3995
Sampled By: AP/LM
Field Analyst: SAME
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW22-05
Sample Location: MW 22
Duplicate: ☐
Blank: ☐

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Manganese (Mn^{2+}):

Equipment: DR-700 DR-8__ HACH MN-5 Other: ______ Analysis Time: ______

Program/Module: 525nm 41

Concentration: ______ mg/L

Filtered: ☐

Digestion: ☐

Standard Solution: ☐ Results: ______ Reagent Blank Correction: ☐

Standard Additions: ☐ Digits Required: 0.1ml:______ 0.2ml:______ 0.3ml:______

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-890 IR-18C Color Wheel Other: ______ Analysis Time: 1435

Program/Module: 500nm 33

Concentration: >3.30 mg/L Filtered: ☐

Notes: LIMIT

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: ______ Analysis Time: 1427

Concentration: 2.0 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Mulitplication is correct for each *Multiplier* table: ☑

Final calulated concentration is within the appropriate *Range Used* block: ☑

Alkalinity *Relationship* is determined appropriatly as per manufacturer instructions: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Nitrite Interference treatment used for Nitrate test if Nitrite was detected: ☐

Title block is initialized by person who performed the QA/QC Ckecklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: *NASJAX Hangar 1000*
Project No.: *N3995, CTO 167*
Sampled By: *A.Pate/L.Middleton*
Field Analyst: *A.Pate/L.Middleton*
Field Form Checked as per QA/QC Checklist (initials): ☐

Sample ID No.: H10-GW-MW -06
Sample Location: H10-MW
Duplicate: ☐
Blank: ☐

SAMPLING DATA:

Date: [illegible] -7/ /01 Time: [illegible] Method: Peristaltic pump	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment:

CHEMetrics Range ☐ 0 - 1.0 mg/L (K-7501) ☑ 1 - 12 mg/L (K-7512)

Analysis Time: 1012

CHEMetrics: >12 mg/L

Notes:

Alkalinity:

Analysis Time: [illegible]

Range Used:	CHEMetrics Range	
☐	10-100 mg/L	(K-9810)
☑	50-500 mg/L	(K-9815)
☐	100-1000 mg/L	(K-9820)

CHEMetrics: [illegible] mg/L

Notes:

Carbon Dioxide:

Analysis Time: 1023

Range Used:	CHEMetrics Range	
☑	10-100 mg/L	(K-1910)
☐	100-1000 mg/L	(K-1920)
☐	250-2500 mg/L	(K-1925)

CHEMetrics: 15 mg/L

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8__ IR-18C Color Wheel Other: ______ Analysis Time: [illegible]

Program/Module: 500nm 33

Concentration: 0.03 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: ______

Analysis Time: ______

Concentration: 0.0 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☐

Correct measurement units are cited in the SAMPLING DATA block: ☐

Multiplication is correct for each *Multiplier* table: ☐

Final calculated concentration is within the appropriate *Range Used* block: ☐

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☐

Title block is initialized by person who performed the QA/QC Checklist: ☐

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name:	*NASJAX Hangar 1000*
Project No.:	*N3995, CTO 167*
Sampled By:	*A.Pate/L.Middleton*
Field Analyst:	*A.Pate/L.Middleton*
Field Form Checked as per QA/QC Checklist (initials):	

Sample ID No.: H10-GW-MW -06

Sample Location: H10-MW

Duplicate: ☐

Blank: ☐

SAMPLING DATA:

Date: 7/ /01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP
Time: [illegible]	(Visual)	(SU)	(mS/cm)	(^{o}C)	(NTU)	(Meter, mg/l)	mV
Method: Peristaltic pump	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: CHEMetrics Range ☐ 0 - 1.0 mg/L (K-7501) ☐ 1 - 12 mg/L (K-7512)

Analysis Time: [illegible]

CHEMetrics: [illegible] mg/L

Notes:

Alkalinity:

Analysis Time: [illegible]

Range Used:	CHEMetrics Range	
☑	10-100 mg/L	(K-9810)
☐	50-500 mg/L	(K-9815)
☐	100-1000 mg/L	(K-9820)

CHEMetrics: [illegible] mg/L

Notes:

Carbon Dioxide:

Analysis Time: 0834

Range Used:	CHEMetrics Range	
☑	10-100 mg/L	(K-1910)
☐	100-1000 mg/L	(K-1920)
☐	250-2500 mg/L	(K-1925)

CHEMetrics: [illegible] mg/L

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8[illegible] IR-18C Color Wheel Other: Analysis Time:

Program/Module: 500nm 33

Concentration: 3.14 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: Analysis Time: [illegible]

Concentration: [illegible] mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Multiplication is correct for each *Multiplier* table: ☑

Final calculated concentration is within the appropriate *Range Used* block: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Title block is initialized by person who performed the QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name:	*NASJAX Hangar 1000*	Sample ID No.:	H10-GW-MW -06
Project No.:	*N3995, CTO 167*	Sample Location:	H10-MW
Sampled By:	*A.Pate/L.Middleton*	Duplicate:	☐
Field Analyst:	*A.Pate/L.Middleton*	Blank:	☐
Field Form Checked as per QA/QC Checklist (initials):			

SAMPLING DATA:

	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Date: 7/ 31 /01							
Time: 0845							
Method: Peristaltic pump	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: CHEMetrics Range ☑ 0 - 1.0 mg/L (K-7501) ☐ 1 - 12 mg/L (K-7512) Analysis Time: 0850

CHEMetrics: 1.0 mg/L

Notes:

Alkalinity: Analysis Time: 0844

Range Used:	CHEMetrics Range	
☑	10-100 mg/L	(K-9810)
☐	50-500 mg/L	(K-9815)
☐	100-1000 mg/L	(K-9820)

CHEMetrics: 20 mg/L

Notes:

Carbon Dioxide: Analysis Time: 0846

Range Used:	CHEMetrics Range	
☑	10-100 mg/L	(K-1910)
☐	100-1000 mg/L	(K-1920)
☐	250-2500 mg/L	(K-1925)

CHEMetrics: 95 mg/L

Notes:

Ferrous Iron (Fe^{2+}): >5 [illegible]

Equipment: DR-700 DR-8 IR-18C Color Wheel Other: Analysis Time: 0855

Program/Module: 500nm 33

Concentration: 5.48 mg/L Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: Analysis Time: 0840

Concentration: 0.0 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Multiplication is correct for each *Multiplier* table: ☑

Final calculated concentration is within the appropriate *Range Used* block: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☐

Title block is initialized by person who performed the QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name:	*NASJAX Hangar 1000*
Project No.:	*N3995, CTO 167*
Sampled By:	*A.Pate/L.Middleton*
Field Analyst:	*A.Pate/L.Middleton*
Field Form Checked as per QA/QC Checklist (initials):	

Sample ID No.: H10-GW-MW -06

Sample Location: H10-MW

Duplicate: ☐

Blank: ☐

SAMPLING DATA:

Date: 7/ 31 /01	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV	
Time:								
Method: Peristaltic pump	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: CHEMetrics Range ☑ 0 - 1.0 mg/L (K-7501) ☐ 1 - 12 mg/L (K-7512)

Analysis Time: [illegible]

CHEMetrics: 1.0 mg/L

Notes:

Alkalinity:

Analysis Time: [illegible]

Range Used:	CHEMetrics Range	
☑	10-100 mg/L	(K-9810)
☐	50-500 mg/L	(K-9815)
☐	100-1000 mg/L	(K-9820)

CHEMetrics: 35 mg/L

Notes:

Carbon Dioxide:

Analysis Time: 1050

Range Used:	CHEMetrics Range	
☑	10-100 mg/L	(K-1910)
☐	100-1000 mg/L	(K-1920)
☐	250-2500 mg/L	(K-1925)

CHEMetrics: 26 mg/L

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-850 IR-18C Color Wheel Other:

Analysis Time: 1059

Program/Module: 500nm 33

Concentration: 1.41 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other:

Analysis Time: 1046

Concentration: 0.0 mg/L

Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Multiplication is correct for each *Multiplier* table: ☑

Final calculated concentration is within the appropriate *Range Used* block: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Title block is initialized by person who performed the QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name:	*NASJAX Hangar 1000*	Sample ID No.:	H10-GW-MW -06
Project No.:	*N3995, CTO 167*	Sample Location:	H10-MW
Sampled By:	*A.Pate/L.Middleton*	Duplicate:	☐
Field Analyst:	*A.Pate/L.Middleton*	Blank:	☐
Field Form Checked as per QA/QC Checklist (initials):			

SAMPLING DATA:

Date: 7/31/01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	
Time: 1305	(Visual)	(SU)	(mS/cm)	(°C)	(NTU)	(Meter, mg/l)	mV	
Method: Peristaltic pump	Clear	5.72	0.351	[illegible]	[illegible]	0.58	5	

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: CHEMetrics Range ☑ 0 - 1.0 mg/L (K-7501) ☐ 1 - 12 mg/L (K-7512) Analysis Time: 1306

CHEMetrics: 1.2 mg/L

Notes:

Alkalinity: Analysis Time: 1320

Range Used:	CHEMetrics Range	
☑	10-100 mg/L	(K-9810)
☐	50-500 mg/L	(K-9815)
☐	100-1000 mg/L	(K-9820)

CHEMetrics: 50 mg/L

Notes:

Carbon Dioxide: Analysis Time: 1312

Range Used:	CHEMetrics Range	
☑	10-100 mg/L	(K-1910)
☐	100-1000 mg/L	(K-1920)
☐	250-2500 mg/L	(K-1925)

CHEMetrics: 45 mg/L

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-890 IR-18C Color Wheel Other: Analysis Time: 1317

Program/Module: 500nm 33

Concentration: 0.62 mg/L Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: Analysis Time: 1314

Concentration: 0.0 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Multiplication is correct for each *Multiplier* table: ☑

Final calculated concentration is within the appropriate *Range Used* block: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Title block is initialized by person who performed the QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name:	*NASJAX Hangar 1000*	Sample ID No.:	H10-GW-MW 07 -06
Project No.:	*N3995, CTO 167*	Sample Location:	H10-MW 07
Sampled By:	*A.Pate/L.Middleton*	Duplicate:	☐
Field Analyst:	*A.Pate/L.Middleton*	Blank:	☐
Field Form Checked as per QA/QC Checklist (initials):			

SAMPLING DATA:

Date: 7/ /01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP
Time: 1515	(Visual)	(SU)	(mS/cm)	(°C)	(NTU)	(Meter, mg/l)	mV
Method: Peristaltic pump							

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: CHEMetrics Range ☑ 0 - 1.0 mg/L (K-7501) ☐ 1 - 12 mg/L (K-7512) Analysis Time: 1450

CHEMetrics: 1.0 mg/L

Notes:

Alkalinity: Analysis Time: 1500

Range Used:	CHEMetrics Range	
☑	10-100 mg/L	(K-9810)
☐	50-500 mg/L	(K-9815)
☐	100-1000 mg/L	(K-9820)

CHEMetrics: 70 mg/L

Notes:

Carbon Dioxide: Analysis Time: 1457

Range Used:	CHEMetrics Range	
☐	10-100 mg/L	(K-1910)
☐	100-1000 mg/L	(K-1920)
☐	250-2500 mg/L	(K-1925)

CHEMetrics: 50 mg/L

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-890 IR-18C Color Wheel Other: Analysis Time: 1500

Program/Module: 500nm 33

Concentration: 0.23 mg/L Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: Analysis Time:

Concentration: 0.0 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☐

Correct measurement units are cited in the SAMPLING DATA block: ☐

Multiplication is correct for each *Multiplier* table: ☐

Final calculated concentration is within the appropriate *Range Used* block: ☐

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☐

Title block is initialized by person who performed the QA/QC Checklist: ☐

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name:	*NASJAX Hangar 1000*	Sample ID No.:	H10-GW-MW -06
Project No.:	*N3995, CTO 167*	Sample Location:	H10-MW
Sampled By:	*A.Pate/M.O'Neill*	Duplicate:	☐
Field Analyst:	*A.Pate/M.O'Neill*	Blank:	☐
Field Form Checked as per QA/QC Checklist (initials):			

SAMPLING DATA:

		Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Date:	7/11/01							
Time:	1210							
Method:	Peristaltic pump	Clear	6.15	0.896	26.1	0	18	298

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: CHEMetrics Range ☒ 0 - 1.0 mg/L (K-7501) ☒ 1 - 12 mg/L (K-7512) Analysis Time: 1135

CHEMetrics: >12 mg/L

Notes:

Alkalinity:

Analysis Time: 1145

Range Used:	CHEMetrics Range	
☒	10-100 mg/L	(K-9810)
☐	50-500 mg/L	(K-9815)
☐	100-1000 mg/L	(K-9820)

CHEMetrics: 100 mg/L

Notes:

Carbon Dioxide:

Analysis Time: 1137

Range Used:	CHEMetrics Range	
☐	10-100 mg/L	(K-1910)
☒	100-1000 mg/L	(K-1920)
☐	250-2500 mg/L	(K-1925)

CHEMetrics: 80 mg/L

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-810 IR-18C Color Wheel Other: Analysis Time: 11:55

Program/Module: 500nm 33

Concentration: 0.0 mg/L Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: Analysis Time: 112

Concentration: 0.0 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Multiplication is correct for each *Multiplier* table: ☑

Final calculated concentration is within the appropriate *Range Used* block: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Title block is initialized by person who performed the QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name:	*NASJAX Hangar 1000*	Sample ID No.:	H10-GW-MW 08D -06
Project No.:	*N3995, CTO 167*	Sample Location:	H10-MW 08D
Sampled By:	*A.Pate/M.O'Neill*	Duplicate:	☐
Field Analyst:	*A.Pate/M.O'Neill*	Blank:	☐
Field Form Checked as per QA/QC Checklist (initials):			

SAMPLING DATA:

Date: 7/ 11 /01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	
Time: 1008	(Visual)	(SU)	(mS/cm)	(°C)	(NTU)	(Meter, mg/l)	mV	
Method: Peristaltic pump	Cloudy	7.00	0.459	25.6	266	1.07	-175	

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: CHEMetrics Range ☑ 0 - 1.0 mg/L (K-7501) ☐ 1 - 12 mg/L (K-7512) Analysis Time: 1030

CHEMetrics: 0.6 mg/L

Notes:

Alkalinity: Analysis Time:

Range Used:	CHEMetrics Range	
☐	10-100 mg/L	(K-9810)
☑	50-500 mg/L	(K-9815)
☐	100-1000 mg/L	(K-9820)

CHEMetrics: 175 mg/L

Notes:

Carbon Dioxide: Analysis Time: 1036

Range Used:	CHEMetrics Range	
☑	10-100 mg/L	(K-1910)
☐	100-1000 mg/L	(K-1920)
☐	250-2500 mg/L	(K-1925)

CHEMetrics: 16 mg/L

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-890 IR-18C Color Wheel Other: Analysis Time: 1050

Program/Module: 500nm 33

Concentration: 0.57 mg/L Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: Analysis Time: 1052

Concentration: 0.0 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Multiplication is correct for each *Multiplier* table: ☑

Final calculated concentration is within the appropriate *Range Used* block: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Title block is initialized by person who performed the QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name:	*NASJAX Hangar 1000*	Sample ID No.:	H10-GW-MW 09 -06
Project No.:	*N3995, CTO 167*	Sample Location:	H10-MW 09
Sampled By:	*A.Pate/L.Middleton*	Duplicate:	☐
Field Analyst:	*A.Pate/L.Middleton*	Blank:	☐
Field Form Checked as per QA/QC Checklist (initials):			

SAMPLING DATA:

Date: 8/2/01 ~~7/ /01~~	Color	pH	S.C.	Temp.	Turbidity	DO	ORP
Time: 0855	(Visual)	(SU)	(mS/cm)	(°C)	(NTU)	(Meter, mg/l)	mV
Method: Peristaltic pump	Clear	7.25	0.537	21.5	3.7	0.50	-157

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: CHEMetrics Range ☑ 0 - 1.0 mg/L (K-7501) ☐ 1 - 12 mg/L (K-7512) Analysis Time: 0818

CHEMetrics: 1.0 mg/L

Notes:

Alkalinity: Analysis Time: 0823

Range Used:	CHEMetrics Range	
☐	10-100 mg/L	(K-9810)
☑	50-500 mg/L	(K-9815)
☐	100-1000 mg/L	(K-9820)

CHEMetrics: 200 mg/L

Notes:

Carbon Dioxide: Analysis Time: 0820

Range Used:	CHEMetrics Range	
☑	10-100 mg/L	(K-1910)
☐	100-1000 mg/L	(K-1920)
☐	250-2500 mg/L	(K-1925)

CHEMetrics: 11 mg/L

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-820 IR-18C Color Wheel Other: Analysis Time: 0833

Program/Module: 500nm 33

Concentration: 1.72 mg/L Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: Analysis Time: 0826

Concentration: 0.0 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Multiplication is correct for each *Multiplier* table: ☑

Final calculated concentration is within the appropriate *Range Used* block: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Title block is initialized by person who performed the QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name:	*NASJAX Hangar 1000*	Sample ID No.:	H10-GW-MW 10 -06
Project No.:	*N3995, CTO 167*	Sample Location:	H10-MW 10
Sampled By:	*A.Pate/M.O'Neill*	Duplicate:	☐
Field Analyst:	*A.Pate/M.O'Neill*	Blank:	☐
Field Form Checked as per QA/QC Checklist (initials):			

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	
Date: 7/ 11 /01	(Visual)	(SU)	(mS/cm)	(^{0}C)	(NTU)	(Meter, mg/l)	mV	
Time: 1215								
Method: Peristaltic pump	Clear	5.64	0.200	26.9	0	1.57	93	

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: CHEMetrics Range ☐ 0 - 1.0 mg/L (K-7501) ☑ 1 - 12 mg/L (K-7512)

Analysis Time: 1225

CHEMetrics: 1.5 mg/L

Notes:

Alkalinity:

Analysis Time: 1244

Range Used:	CHEMetrics Range	
☐	10-100 mg/L	(K-9810)
☐	50-500 mg/L	(K-9815)
☐	100-1000 mg/L	(K-9820)

CHEMetrics: 35 mg/L

Notes:

Carbon Dioxide:

Analysis Time: 1240

Range Used:	CHEMetrics Range	
☑	10-100 mg/L	(K-1910)
☐	100-1000 mg/L	(K-1920)
☐	250-2500 mg/L	(K-1925)

CHEMetrics: 70 mg/L

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-890 IR-18C Color Wheel Other: Analysis Time: 1246

Program/Module: 500nm 33

Concentration: 0.62 mg/L Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: Analysis Time: 1239

Concentration: 0.0 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Multiplication is correct for each *Multiplier* table: ☑

Final calculated concentration is within the appropriate *Range Used* block: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Title block is initialized by person who performed the QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name:	*NASJAX Hangar 1000*	Sample ID No.:	H10-GW-MW 11 -06
Project No.:	*N3995, CTO 167*	Sample Location:	H10-MW 11
Sampled By:	*A.Pate/L.Middleton*	Duplicate:	☐
Field Analyst:	*A.Pate/L.Middleton*	Blank:	☐
Field Form Checked as per QA/QC Checklist (initials):			

SAMPLING DATA:

Date: 8/11/07	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV	
Time: 1230								
Method: Peristaltic pump								

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: CHEMetrics Range ☑ 0 - 1.0 mg/L (K-7501) ☐ 1 - 12 mg/L (K-7512) Analysis Time: 1215

CHEMetrics: 0.8 mg/L

Notes:

Alkalinity: Analysis Time: 1249

Range Used:	CHEMetrics Range	
☐	10-100 mg/L	(K-9810)
☑	50-500 mg/L	(K-9815)
☐	100-1000 mg/L	(K-9820)

CHEMetrics: 225 mg/L

Notes:

Carbon Dioxide: Analysis Time: 1218

Range Used:	CHEMetrics Range	
☑	10-100 mg/L	(K-1910)
☐	100-1000 mg/L	(K-1920)
☐	250-2500 mg/L	(K-1925)

CHEMetrics: 13 mg/L

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-890 IR-18C Color Wheel Other: Analysis Time: 1227

Program/Module: 500nm 33

Concentration: 2.69 mg/L Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: Analysis Time: 1247

Concentration: 0.0 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Multiplication is correct for each *Multiplier* table: ☑

Final calculated concentration is within the appropriate *Range Used* block: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Title block is initialized by person who performed the QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name:	*NASJAX Hangar 1000*	Sample ID No.:	H10-GW-MW -06
Project No.:	*N3995, CTO 167*	Sample Location:	H10-MW
Sampled By:	*A.Pate/L.Middleton*	Duplicate:	☐
Field Analyst:	*A.Pate/L.Middleton*	Blank:	☐
Field Form Checked as per QA/QC Checklist (initials):			

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	
Date: 4/ /01								
Time: 1330	(Visual)	(SU)	(mS/cm)	(°C)	(NTU)	(Meter, mg/l)	mV	
Method: Peristaltic pump	Clear	5.44	0.216	21.6	2.6	0.45	3	

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: CHEMetrics Range ☒ 0 - 1.0 mg/L (K-7501) ☐ 1 - 12 mg/L (K-7512) Analysis Time: 1325

CHEMetrics: 1.0 mg/L

Notes:

Alkalinity:

Analysis Time: 1336

Range Used:	CHEMetrics Range	
☑	10-100 mg/L	(K-9810)
☐	50-500 mg/L	(K-9815)
☐	100-1000 mg/L	(K-9820)

CHEMetrics: 25 mg/L

Notes:

Carbon Dioxide:

Analysis Time: 1337

Range Used:	CHEMetrics Range	
☑	10-100 mg/L	(K-1910)
☐	100-1000 mg/L	(K-1920)
☐	250-2500 mg/L	(K-1925)

CHEMetrics: 40 mg/L

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-810 IR-18C Color Wheel Other: Analysis Time: 1345

Program/Module: 500nm 33

Concentration: 2.74 mg/L Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: Analysis Time: 1330

Concentration: 0.1 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☐

Correct measurement units are cited in the SAMPLING DATA block: ☐

Multiplication is correct for each *Multiplier* table: ☐

Final calculated concentration is within the appropriate *Range Used* block: ☐

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☐

Title block is initialized by person who performed the QA/QC Checklist: ☐

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name:	*NASJAX Hangar 1000*	Sample ID No.:	H10-GW-MW 13 -06
Project No.:	*N3995, CTO 167*	Sample Location:	H10-MW 13
Sampled By:	*A.Pate/L.Middleton*	Duplicate:	☐
Field Analyst:	*A.Pate/L.Middleton*	Blank:	☐
Field Form Checked as per QA/QC Checklist (initials):			

SAMPLING DATA:

Date: 8/2/01 ~~7/~~ /01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP
Time: 0955	(Visual)	(SU)	(mS/cm)	(°C)	(NTU)	(Meter, mg/l)	mV
Method: Peristaltic pump	Clear	5.93	0.306	26.0	2.2	1.20	105

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: CHEMetrics Range ☑ 0 - 1.0 mg/L (K-7501) ☐ 1 - 12 mg/L (K-7512) Analysis Time: 0947

CHEMetrics: 1.0 mg/L

Notes:

Alkalinity: Analysis Time: 0950

Range Used:	CHEMetrics Range	
☒	10-100 mg/L	(K-9810)
☐	50-500 mg/L	(K-9815)
☐	100-1000 mg/L	(K-9820)

CHEMetrics: 40 mg/L

Notes:

Carbon Dioxide: Analysis Time: 0953

Range Used:	CHEMetrics Range	
☒	10-100 mg/L	(K-1910)
☐	100-1000 mg/L	(K-1920)
☐	250-2500 mg/L	(K-1925)

CHEMetrics: 50 mg/L

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-890 IR-18C Color Wheel Other: Analysis Time: 0950

Program/Module: 500nm 33

Concentration: 0.15 mg/L Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: Analysis Time: 0952

Concentration: 0.0 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☐

Correct measurement units are cited in the SAMPLING DATA block: ☐

Multiplication is correct for each *Multiplier* table: ☐

Final calculated concentration is within the appropriate *Range Used* block: ☐

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☐

Title block is initialized by person who performed the QA/QC Checklist: ☐

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name:	NASJAX Hangar 1000	Sample ID No.:	H10-GW-MW 14 -06
Project No.:	N3995, CTO 167	Sample Location:	H10-MW 14
Sampled By:	A.Pate/M.O'Neill	Duplicate:	☐
Field Analyst:	A.Pate/M.O'Neill	Blank:	☐

Field Form Checked as per QA/QC Checklist (initials): ☐

SAMPLING DATA:

Date: 7/ 12 /01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP
Time: 1000	(Visual)	(SU)	(mS/cm)	(°C)	(NTU)	(Meter, mg/l)	mV
Method: Peristaltic pump	Clear	4.97	0.166	27.3	0	1.27	-130

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: CHEMetrics Range ☑ 0 - 1.0 mg/L (K-7501) ☐ 1 - 12 mg/L (K-7512)

Analysis Time: 1020

CHEMetrics: 0.4 mg/L

Notes:

Alkalinity: Analysis Time: 1030

Range Used:	CHEMetrics Range	
☑	10-100 mg/L	(K-9810)
☐	50-500 mg/L	(K-9815)
☐	100-1000 mg/L	(K-9820)

CHEMetrics: 28 mg/L

Notes:

Carbon Dioxide: Analysis Time: 1023

Range Used:	CHEMetrics Range	
☑	10-100 mg/L	(K-1910)
☐	100-1000 mg/L	(K-1920)
☐	250-2500 mg/L	(K-1925)

CHEMetrics: 85 mg/L

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 ~~DR-890~~ AP IR-18C Color Wheel Other: Analysis Time: 1040

Program/Module: 500nm 33

Concentration: 3.80 mg/L Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: Analysis Time: 1037

Concentration: 1.0 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Multiplication is correct for each *Multiplier* table: ☑

Final calculated concentration is within the appropriate *Range Used* block: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Title block is initialized by person who performed the QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: NASJAX Hangar 1000 | Sample ID No.: H10-GW-MW 15 -06

Project No.: N3995, CTO 167 | Sample Location: H10-MW 15

Sampled By: A.Pate/M.O'Neill | Duplicate: ☐

Field Analyst: A.Pate/M.O'Neill | Blank: ☐

Field Form Checked as per QA/QC Checklist (initials):

SAMPLING DATA:

Date: 7/12/01	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (^0C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Time: 0825							
Method: Peristaltic pump	Clear	4.78	0.159	25.6	0	1.00	-120

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: CHEMetrics Range ☐ 0 - 1.0 mg/L (K-7501) ☐ 1 - 12 mg/L (K-7512)

Analysis Time: 0827

CHEMetrics: 0.8 mg/L

Notes:

Alkalinity: Analysis Time: 0835

Range Used:	CHEMetrics Range	
☒	10-100 mg/L	(K-9810)
☒	50-500 mg/L	(K-9815)
☒	100-1000 mg/L	(K-9820)

NO READING RAN ALL 3 TESTS @ 10 mg/L

CHEMetrics: ~~0835~~ AP mg/L

Notes:

Carbon Dioxide: Analysis Time: 0832

Range Used:	CHEMetrics Range	
☑	10-100 mg/L	(K-1910)
☐	100-1000 mg/L	(K-1920)
☐	250-2500 mg/L	(K-1925)

CHEMetrics: 95 mg/L

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-890 IR-18C Color Wheel Other: Analysis Time: 0848

Program/Module: 500nm 33

Concentration: 2.68 mg/L Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: Analysis Time: 0839

Concentration: 0.5 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Multiplication is correct for each *Multiplier* table: ☑

Final calculated concentration is within the appropriate *Range Used* block: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Title block is initialized by person who performed the QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name:	*NASJAX Hangar 1000*	Sample ID No.:	H10-GW-MW 16 -06
Project No.:	*N3995, CTO 167*	Sample Location:	H10-MW 16
Sampled By:	*A.Pate/L.Middleton*	Duplicate:	☐
Field Analyst:	*A.Pate/L.Middleton*	Blank:	☐
Field Form Checked as per QA/QC Checklist (initials):			

SAMPLING DATA:

Date: 8/2/01	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Time: 1200							
Method: Peristaltic pump	Clear	5.93	0.194	23.3	0	0.87	-21

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: CHEMetrics Range ☑ 0 - 1.0 mg/L (K-7501) ☐ 1 - 12 mg/L (K-7512) Analysis Time: 1147

CHEMetrics: 1.0 mg/L

Notes:

Alkalinity: Analysis Time: 1153

Range Used:	CHEMetrics Range	
☑	10-100 mg/L	(K-9810)
☐	50-500 mg/L	(K-9815)
☐	100-1000 mg/L	(K-9820)

CHEMetrics: 70 mg/L

Notes:

Carbon Dioxide: Analysis Time: 1155

Range Used:	CHEMetrics Range	
☐	10-100 mg/L	(K-1910)
☐	100-1000 mg/L	(K-1920)
☐	250-2500 mg/L	(K-1925)

CHEMetrics: 50 mg/L

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8 __ IR-18C Color Wheel Other: ________ Analysis Time: ________

Program/Module: 500nm 33

Concentration: ________ mg/L Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: ________ Analysis Time: ________

Concentration: ________ mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☐

Correct measurement units are cited in the SAMPLING DATA block: ☐

Multiplication is correct for each *Multiplier* table: ☐

Final calculated concentration is within the appropriate *Range Used* block: ☐

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☐

Title block is initialized by person who performed the QA/QC Checklist: ☐

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: *NASJAX Hangar 1000*
Project No.: *N3995, CTO 167*
Sampled By: *A.Pate/M.O'Neill*
Field Analyst: *A.Pate/M.O'Neill*
Field Form Checked as per QA/QC Checklist (initials):

Sample ID No.: H10-GW-MW 17 -06
Sample Location: H10-MW 17
Duplicate: ☐
Blank: ☐

SAMPLING DATA:

	Color	pH	S.C.	Temp.	Turbidity	DO	ORP
Date: 7/ 11 /01	(Visual)	(SU)	(mS/cm)	(°C)	(NTU)	(Meter, mg/l)	mV
Time: 1445							
Method: Peristaltic pump	Clear	4.52	0.110	25.0	<0.1	2.41	147

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: CHEMetrics Range ☐ 0 - 1.0 mg/L (K-7501) ☐ 1 - 12 mg/L (K-7512)
Analysis Time: 1500

CHEMetrics: 0.6 mg/L

Notes:

Alkalinity: Analysis Time: 1505

Range Used:	CHEMetrics Range	
☒	10-100 mg/L	(K-9810)
☒	50-500 mg/L	(K-9815)
☒	100-1000 mg/L	(K-9820)

PERFORMED ALL THREE TEST

CHEMetrics: <10 mg/L

Notes:

Carbon Dioxide: Analysis Time: 1502

Range Used:	CHEMetrics Range	
☑	10-100 mg/L	(K-1910)
☐	100-1000 mg/L	(K-1920)
☐	250-2500 mg/L	(K-1925)

CHEMetrics: 50 mg/L

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8 90 IR-18C Color Wheel Other:
Analysis Time: 1512

Program/Module: 500nm 33

Concentration: 1.06 mg/L

Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other:
Analysis Time: 1508

Concentration: 0.0 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑
Correct measurement units are cited in the SAMPLING DATA block: ☑
Multiplication is correct for each *Multiplier* table: ☑
Final calculated concentration is within the appropriate *Range Used* block: ☑
QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑
Title block is initialized by person who performed the QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name:	*NASJAX Hangar 1000*	Sample ID No.:	H10-GW-MW 18 -06
Project No.:	*N3995, CTO 167*	Sample Location:	H10-MW 18
Sampled By:	*A.Pate/L.Middleton*	Duplicate:	☐
Field Analyst:	*A.Pate/L.Middleton*	Blank:	☐
Field Form Checked as per QA/QC Checklist (initials):			

SAMPLING DATA:

Date: 8/2/01 ~~-71~~ ~~/01~~	Color	pH	S.C.	Temp.	Turbidity	DO	ORP
Time: 1100	(Visual)	(SU)	(mS/cm)	(°C)	(NTU)	(Meter, mg/l)	mV
Method: Peristaltic pump	Clear	5.79	0.255	25.1	0	0.76	73

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: CHEMetrics Range ☐ 0 - 1.0 mg/L (K-7501) ☐ 1 - 12 mg/L (K-7512) Analysis Time: 1042

CHEMetrics: 1.0 mg/L

Notes:

Alkalinity: Analysis Time: 1045

Range Used:	CHEMetrics Range	
☑	10-100 mg/L	(K-9810)
☐	50-500 mg/L	(K-9815)
☐	100-1000 mg/L	(K-9820)

CHEMetrics: 40 mg/L

Notes:

Carbon Dioxide: Analysis Time: 1049

Range Used:	CHEMetrics Range	
☑	10-100 mg/L	(K-1910)
☐	100-1000 mg/L	(K-1920)
☐	250-2500 mg/L	(K-1925)

CHEMetrics: 35 mg/L

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-890 IR-18C Color Wheel Other: Analysis Time: 1055

Program/Module: 500nm 33

Concentration: 0.0 mg/L Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: Analysis Time: 1059

Concentration: 0.0 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Multiplication is correct for each *Multiplier* table: ☑

Final calculated concentration is within the appropriate *Range Used* block: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Title block is initialized by person who performed the QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name: *NASJAX Hangar 1000* — Sample ID No.: H10-GW-MW 19 -06

Project No.: *N3995, CTO 167* — Sample Location: H10-MW 19

Sampled By: *A.Pate/M.O'Neill* — Duplicate: ☐

Field Analyst: *A.Pate/M.O'Neill* — Blank: ☐

Field Form Checked as per QA/QC Checklist (initials): ☐

SAMPLING DATA:

		Color	pH	S.C.	Temp.	Turbidity	DO	ORP
Date:	7/12/01							
Time:	1200	(Visual)	(SU)	(mS/cm)	(°C)	(NTU)	(Meter, mg/l)	mV
Method:	Peristaltic pump	Clear	4.57	0.134	28.4	0	0.93	-85

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: CHEMetrics Range ☐ 0 - 1.0 mg/L (K-7501) ☐ 1 - 12 mg/L (K-7512) — Analysis Time: 1217

CHEMetrics: 0.4 mg/L DUP - 0.4

Notes:

Alkalinity: Analysis Time: ______

Range Used:	CHEMetrics Range	
☐	10-100 mg/L	(K-9810)
☐	50-500 mg/L	(K-9815)
☐	100-1000 mg/L	(K-9820)

NO READING <10mg/L

CHEMetrics: ______ mg/L DUP - NO READING

Notes:

Carbon Dioxide: Analysis Time: 1222

Range Used:	CHEMetrics Range	
☑	10-100 mg/L	(K-1910)
☐	100-1000 mg/L	(K-1920)
☐	250-2500 mg/L	(K-1925)

CHEMetrics: 50 mg/L DUP - 45mg/L

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8__ IR-18C Color Wheel Other: ______ Analysis Time: 1233

Program/Module: 500nm 33

Concentration: 4.0 mg/L — Filtered: ☐

Notes: DUP - 3.8mg/L

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: ______ Analysis Time: 1235

Concentration: 0.3 mg/L — Exceeded 5.0 mg/L range on color chart: ☐

Notes: DUP - 0.3 mg/L

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Multiplication is correct for each *Multiplier* table: ☑

Final calculated concentration is within the appropriate *Range Used* block: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Title block is initialized by person who performed the QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name:	*NASJAX Hangar 1000*	Sample ID No.:	H10-GW-MW 22 -06
Project No.:	*N3995, CTO 167*	Sample Location:	H10-MW 22
Sampled By:	*A.Pate/M.O'Neill*	Duplicate:	☐
Field Analyst:	*A.Pate/M.O'Neill*	Blank:	☐
Field Form Checked as per QA/QC Checklist (initials):			

SAMPLING DATA:

Date: 7/ 11 /01	Color (Visual)	pH (SU)	S.C. (mS/cm)	Temp. (°C)	Turbidity (NTU)	DO (Meter, mg/l)	ORP mV
Time: 1345							
Method: Peristaltic pump	Clear	5.60	0.264	25.8	3.9	1.82	-65

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: CHEMetrics Range ☐ 0 - 1.0 mg/L (K-7501) ☐ 1 - 12 mg/L (K-7512)

Analysis Time: 1400

CHEMetrics: 0.2 mg/L

Notes:

Alkalinity:

Analysis Time: 1409

Range Used:	CHEMetrics Range	
☑	10-100 mg/L	(K-9810)
☐	50-500 mg/L	(K-9815)
☐	100-1000 mg/L	(K-9820)

CHEMetrics: 65 mg/L

Notes:

Carbon Dioxide:

Analysis Time: 1405

Range Used:	CHEMetrics Range	
☑	10-100 mg/L	(K-1910)
☐	100-1000 mg/L	(K-1920)
☐	250-2500 mg/L	(K-1925)

CHEMetrics: 40 mg/L

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-890 IR-18C Color Wheel Other: Analysis Time: 1412

Program/Module: 500nm 33

Concentration: 1.76 mg/L Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: Analysis Time: 1407

Concentration: 0.7 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Multiplication is correct for each *Multiplier* table: ☑

Final calculated concentration is within the appropriate *Range Used* block: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Title block is initialized by person who performed the QA/QC Checklist: ☑

Tetra Tech NUS, Inc.

FIELD ANALYTICAL LOG SHEET
GEOCHEMICAL PARAMETERS

Project Site Name:	*NASJAX Hangar 1000*	Sample ID No.:	H10-GW-MW23 -06
Project No.:	*N3995, CTO 167*	Sample Location:	H10-MW23
Sampled By:	*A.Pate/M.O'Neill*	Duplicate:	☐
Field Analyst:	*A.Pate/M.O'Neill*	Blank:	☐
Field Form Checked as per QA/QC Checklist (initials):			

SAMPLING DATA:

Date: 7/ 12 /01	Color	pH	S.C.	Temp.	Turbidity	DO	ORP	
Time: 1330	(Visual)	(SU)	(mS/cm)	(°C)	(NTU)	(Meter, mg/l)	mV	
Method: Peristaltic pump	Clear	4.81	0.325	25.2	0.5	0.85	-30	

SAMPLE COLLECTION/ANALYSIS INFORMATION:

Dissolved Oxygen:

Equipment: CHEMetrics Range ☑ 0 - 1.0 mg/L (K-7501) ☐ 1 - 12 mg/L (K-7512) Analysis Time: 1338

CHEMetrics: 1.0 mg/L

Notes:

Alkalinity:

Analysis Time: 1347

Range Used:	CHEMetrics Range	
☐	10-100 mg/L	(K-9810)
☐	50-500 mg/L	(K-9815)
☐	100-1000 mg/L	(K-9820)

CHEMetrics: 12 mg/L

Notes:

Carbon Dioxide:

Analysis Time: 1342

Range Used:	CHEMetrics Range	
☐	10-100 mg/L	(K-1910)
☐	100-1000 mg/L	(K-1920)
☐	250-2500 mg/L	(K-1925)

CHEMetrics: 38 mg/L

Notes:

Ferrous Iron (Fe^{2+}):

Equipment: DR-700 DR-8 __ IR-18C Color Wheel Other: Analysis Time: 1400

Program/Module: 500nm 33

Concentration: 4.8 mg/L Filtered: ☐

Notes:

Hydrogen Sulfide (H_2S):

Equipment: HS-C Other: Analysis Time: 1353

Concentration: 0.0 mg/L Exceeded 5.0 mg/L range on color chart: ☐

Notes:

QA/QC Checklist:

All data fields have been completed as necessary: ☑

Correct measurement units are cited in the SAMPLING DATA block: ☑

Multiplication is correct for each *Multiplier* table: ☑

Final calculated concentration is within the appropriate *Range Used* block: ☑

QA/QC sample (e.g., Std. Additions, etc.) frequency is appropriate as per the project planning documents: ☑

Title block is initialized by person who performed the QA/QC Checklist: ☑

APPENDIX G

USGS CONTAMINANT FATE AND TRANSPORT INFORMATION

USGS
science for a changing world

Fate and Transport Modeling of Selected Chlorinated Organic Compunds at Hangar 1000, U.S. Naval Air Station, Jacksonville, Florida

U.S. Geological Survey
Water Resources Investigations Report 03-4089

Prepared as part of the
U.S. Navy, Southern Division,
Naval Facilities Engineering Command

Fate and Transport Modeling of Selected Chlorinated Organic Compounds at Hangar 1000, U.S. Naval Air Station, Jacksonville, Florida

By J. Hal Davis

U.S. Geological Survey

Water-Resources Investigations Report 03-4089

Prepared in cooperation with the

U.S. NAVY, SOUTHERN DIVISION,

NAVAL FACILITIES ENGINEERING COMMAND

Tallahassee, Florida

2003

U.S. DEPARTMENT OF THE INTERIOR
GALE A. NORTON, Secretary

U.S. GEOLOGICAL SURVEY
Charles G. Groat, Director

For additional information write to:

U.S. Geological Survey
2010 Levy Avenue
Tallahassee, FL 32310

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CONVERSION FACTORS, DATUMS, AND ABBREVIATIONS

Multiply	By	To obtain
inch (in.)	25.4	millimeter (mm)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
inch per year (in/yr)	25.4	millimeter per year (mm/yr)
square foot (ft^2)	0.09290	square meter (m^2)
square mile (mi^2)	2.59	square kilometer (km^2)
foot per day (ft/d)	0.3048	meter per day (m/d)
foot squared per day (ft^2/d)	0.0929	meter squared per day (m^2/d)
cubic foot per day (ft^3/d)	0.028317	cubic meter per day (m^3/d)
cubic foot per second (ft^3/s)	0.02832	cubic meter per second (m^3/s)
foot per year (ft/yr)	0.3048	meter per year (m/yr)

ACRONYMS AND ABBREVIATIONS

DCE	Dichloroethene
g/cm3	grams per cubic centimeter
µg/L	micrograms per liter
MODFLOW	Modular Three-Dimensional Finite-Difference Ground-Water Flow Model
OU1	Operable Unit 1
RT3D	Reactive Transport in Three Dimensions
TCE	Trichloroethene
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
VC	Vinyl Chloride

Vertical coordinate information is referenced to the National Geodetic Vertical Datum of 1929 (NGVD29); horizontal coordinate information is referenced to the North American Datum of 1927 (NAD27).

Fate and Transport Modeling of Selected Chlorinated Organic Compounds at Hangar 1000, U.S. Naval Air Station, Jacksonville, Florida

By J. Hal Davis

ABSTRACT

The Jacksonville Naval Air Station occupies 3,800 acres adjacent to the St. Johns River in Jacksonville, Florida. Two underground storage tanks at Hangar 1000 contained solvents from the late 1960s until they were removed in 1994. Ground-water samples at one of the tank sites had levels of trichloroethene (TCE) and total dichloroethene (DCE) of 8,710 micrograms per liter (μg/L) and 4,280 μg/L, respectively. Vinyl chloride (VC) at the site is the result of the biodegradation of DCE. Ground water beneath Hangar 1000 flows toward a storm sewer. TCE and DCE plumes travel with the ground water and presumably have reached the storm sewer, which discharges to the St. Johns River.

Simulation of solute transport indicates that the traveltime from the storage tank site to the storm sewer is 16, 14, and 12 years for TCE, DCE, and VC respectively. TCE has the longest traveltime because it has the highest retardation factor at 2.5, DCE takes less time with a retardation factor of 2.0, and VC has the quickest traveltime because it has the lowest retardation factor of 1.7. Based on modeling results, the release of contaminants in the aquifer occurred more than 16 years ago.

Model-derived dispersivity values at Hangar 1000 were: longitudinal 1.5 feet (ft), transverse 0.27 ft, and vertical 0.27 ft. The model-derived first order decay rates for biodegradation of TCE, DCE, and VC were 0.0002 per day (d^{-1}), 0.0002 d^{-1}, and 0.06 d^{-1}, respectively. These rates are equivalent to half-lives of 13.7 years for TCE and DCE and 17 days for VC.

Source area reductions in contaminant concentrations of 50 and 100 percent were modeled to simulate remediation. As expected, reducing the source concentration by 50 percent resulted in eventual TCE, DCE, and VC concentrations that were half of the original concentrations. About 16 years were needed for new steady-state TCE concentrations to develop, about 14 years for DCE, and about 12 years for VC. Reducing the source area concentrations by 100 percent in the model eventually resulted in zero concentrations of TCE, DCE, and VC. The modeled period of time for the contaminants to be removed from the aquifer once the source was removed was about 17 years for TCE, 15 years for DCE, and 13 years for VC.

INTRODUCTION

The U.S. Naval Air Station, (referred to as the Station) occupies 3,800 acres adjacent to the St. Johns River in Jacksonville, Fla. *(*fig. 1*)*. The mission of the Station is to provide aerial anti-submarine warfare support, aviator training, and aircraft maintenance. Support facilities at the Station include an airfield, a maintenance depot, a Naval hospital, a Naval supply center, and recreational and residential facilities. Military activities have been conducted at the Station since 1909; the Station presently employs about 15,000 people.

The Station was placed on the U.S. Environmental Protection Agency's (USEPA) National Priorities List in December 1989, and is participating in the U.S. Department of Defense Installation Restoration Program, which serves to identify and remediate environmental contamination in compliance with the Comprehensive Environmental Response, Compensation, and Liability Act and the Superfund Amendments and Reauthorization Act of 1980 and 1985, respectively. On October 23, 1990, the Station entered into a Federal Facility Agreement with the USEPA and the Florida Department of Environmental Protection, which designated Operable Units 1, 2, and 3 at the Station (U.S. Navy, 1994a). Operable Units (fig. 1) were designated in areas where several sources of similar contamination existed in close proximity, thus allowing the contaminated areas to be addressed in one coordinated effort. Operable Unit 1 (OU1) was the Station landfill; this site has been discussed in previous studies (Davis and others, 1996). Operable Unit 2 (OU2) was the wastewater treatment plant, which has been remediated. Operable Unit 3 (OU3) was the Naval Aviation Depot; this site has been discussed in previous studies (Davis, 1998; 2000). Since entering into the Federal Facility Agreement, several additional operable units have been designated, including Operable Unit 6 (OU6), also known as Hangar 1000, which is the subject of this report.

Aircraft are serviced and repaired at Hangar 1000. To contain the solvents used at the hangar, two underground storage tanks were operated from the late 1960s until their use was discontinued in 1994. One tank was a 750-gallon concrete tank used as a solvent and water separator. The other was a 2,000-gallon steel tank, which received solvent overflow from the first tank as well as waste oils and solvents discharged from other operations at the facility. Both tanks, associated piping systems, and visually contaminated soils were excavated and removed in March 1994. After removal, contamination levels in the wells near the removal site fluctuated, indicating that tank removal may have spread the contamination (U.S. Navy, in press.) Floor drains and their associated pipes were abandoned intact at the time of the tank removals.

The Navy has documented the occurrence and distribution of contamination at Hangar 1000 through a contractor, Tetra Tech NUS, Inc. (Tetra Tech). Currently, Tetra Tech is determining whether the contamination poses a risk to human health or the environment. To better understand the fate and transport and consequences of future remedial actions on contamination at Hanger 1000, the U.S. Geological Survey (USGS) conducted a study to simulate the movement of contaminated ground water from the old storage tank site to ground-water discharge areas.

Purpose and Scope

A computer model capable of simulating the ground-water flow and the fate and transport of trichloroethene (TCE), dichloroethene (DCE), and vinyl chloride (VC) in the ground water at Hangar 1000 was needed by the Navy to aid in remedial decisions. The purpose of this report is to document the development of this model, which simulates ground-water flow and solute transport, and present the results of the model predictions. The computer modeling effort consisted of: (1) updating an existing large-scale ground-water model to simulate ground-water flow in the vicinity of Hangar 1000, (2) establishing boundary conditions for a site-specific model with the large-scale model, and (3) predicting the movement of contaminants at Hangar 1000 through solute transport simulation using the site-specific model.

Previous Modeling at the Jacksonville Naval Air Station

The USGS previously developed and calibrated a one-layer regional ground-water flow model that simulated steady-state flow in the surficial aquifer that underlies the site (Davis and others, 1996). This model used the USGS Modular Three-Dimensional Finite-Difference Ground-Water Flow Model (MODFLOW) software as described in McDonald and Harbaugh (1988). The regional model had 240 rows and 290 columns with a uniform cell size of 100 by

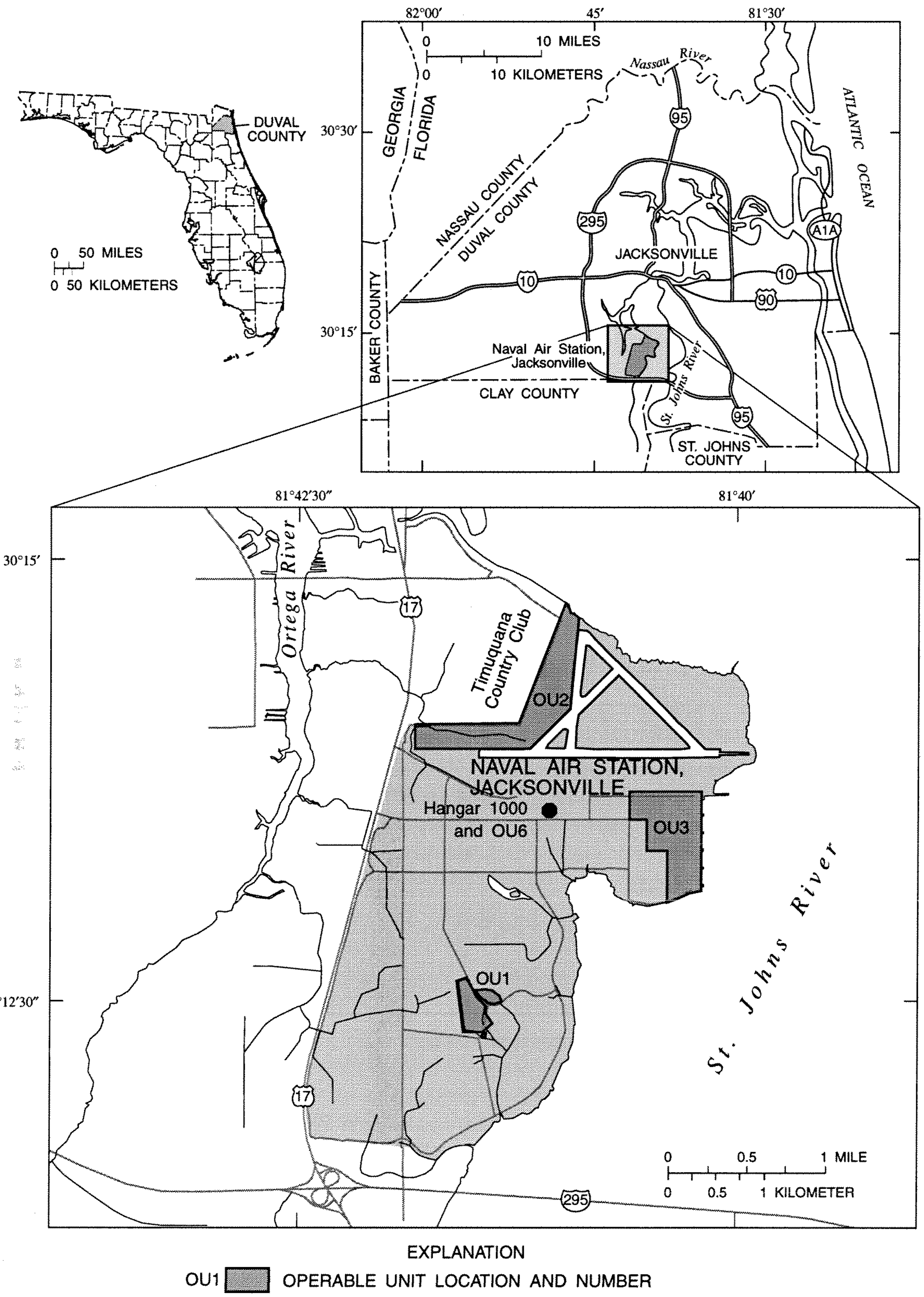


Figure 1. Location of the Jacksonville Naval Air Station.

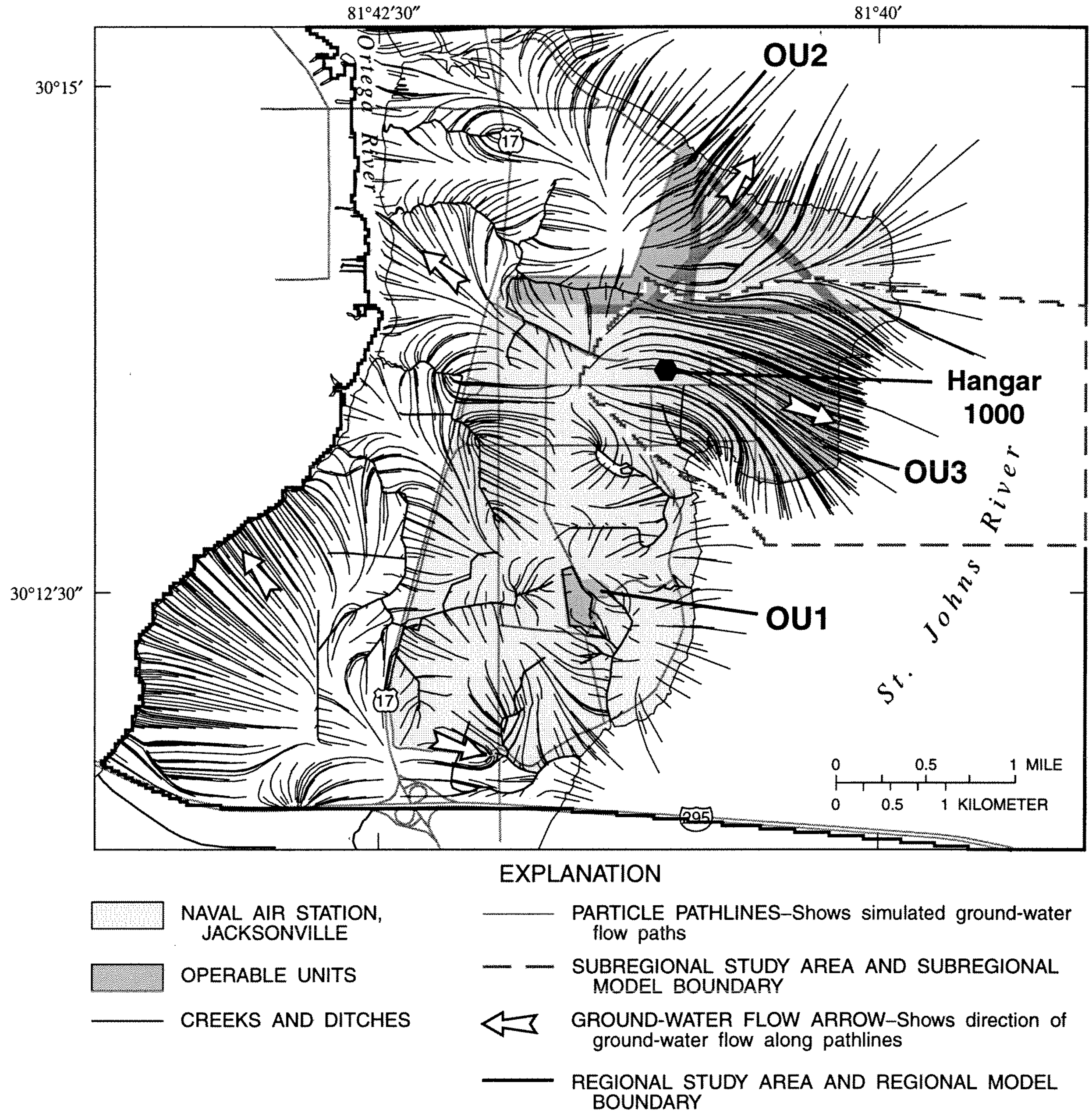


Figure 2. Subregional and regional model areas with particle pathlines.

100 feet (ft), and simulated steady-state flow at the entire Station and some surrounding areas (fig. 2). The model was used to determine the direction and velocity of ground-water flow throughout the Station as well as to evaluate the effect of proposed remediation scenarios on ground-water flow at OU1. Later, this model was used to establish boundary conditions for a smaller subregional model centered at OU3.

The subregional ground-water flow model (Davis, 1998) was developed to investigate steady-state ground-water flow at OU3. Boundaries for the regional and subregional model are shown in figure 2. The subregional model had 2 layers with 78 rows and 148 columns and a uniform cell size of 100 by 100 ft. This model was used to establish the boundary conditions and aquifer properties for a site-specific solute-transport model at OU3 (Davis, 2000), and to predict the movement of TCE, DCE, and VC from OU3 to the ultimate discharge points in the St. Johns River. The solute transport modeling was conducted using the Modular Three-Dimensional Multi-Species Transport Model (Zheng and Wang, 1998) computer software.

Acknowledgments

The author expresses appreciation to Dana Gaskins, Cliff Casey, and Anthony Robinson of U.S. Navy, Southern Division, Naval Facilities Engineering Command for providing information and funding; Tim Curtin and Jane Beason of the Station for helping provide access to Station facilities; and Greg Roof and Mark Peterson of Tetra Tech for providing technical assistance and data.

Methods

For this study, a ground-water flow model previously developed to simulate ground-water flow at OU3 was updated and used to simulate ground-water flow at Hangar 1000. This model was documented by Davis (2000). The updated model was then used to set the boundary conditions for a site-specific solute transport model. All of the models referenced were based on previous work conducted by the USGS. All of the water-quality sampling data was collected by Tetra Tech, and thus, the discussion of contamination distribution, history, and movement is based on Tetra Tech data. For a more complete discussion of the methods and results determined by Tetra Tech, see U.S. Navy (in press).

HYDROLOGIC SETTING

The climate for Jacksonville is humid subtropical, with an average annual rainfall and temperature for 1967-96 of 60.63 inches and 78 °F, respectively. Most of the annual rainfall occurs in late spring and early summer (Fairchild, 1972). Rainfall distribution is highly variable because most comes from scattered convective thunderstorms during the summer. Winters are mild and dry with occasional frost from November through February (Fairchild, 1972).

Land-surface topography consists of gently rolling hills with elevations ranging from about 30 ft above sea level on hilltops to 1 ft above sea level at the shorelines of the St. Johns and Ortega Rivers (fig. 1). The Naval Air Station is located in the Dinsmore Plain of the Northern Coastal Strip of the Sea Island District

<table>
<tr><th rowspan="2">SYSTEM</th><th rowspan="2">SERIES</th><th rowspan="2">FORMATION</th><th rowspan="2">HYDROGEOLOGIC UNIT</th><th colspan="3">MODEL LAYERS</th></tr>
<tr><th>REGIONAL MODEL</th><th>PREVIOUS SUBREGIONAL MODEL DOCUMENTED BY DAVIS (1998)</th><th>HANGER 1000 SUBREGIONAL MODEL, OU3 SUBREGIONAL MODEL, AND HANGER 1000 SITE-SPECIFIC SOLUTE TRANSPORT MODEL</th></tr>
<tr><td rowspan="2">QUATERNARY</td><td>HOLOCENE</td><td rowspan="3">Undifferentiated terrace and shallow marine deposits</td><td rowspan="3">Surficial aquifer</td><td rowspan="3">Layer 1</td><td>Layer 1 (Upper layer)
See Note "A"</td><td>Layer 1 (Upper layer)
Layer 2 (Clay layer)</td></tr>
<tr><td>PLEISTOCENE</td><td rowspan="2">Layer 2 (Intermediate layer)</td><td>Layer 3 (Intermediate layer)</td></tr>
<tr><td rowspan="2">TERTIARY</td><td>PLIOCENE</td><td>Layer 4 (Intermediate layer)</td></tr>
<tr><td>MIOCENE</td><td>Hawthorn Group</td><td>Confining unit</td><td>No-flow boundary</td><td>No-flow boundary</td><td>No-flow boundary</td></tr>
</table>

Note A: The clay between layers 1 and 2 was simulated by a low vertical conductance.

EXPLANATION

SURFICIAL AQUIFER

Figure 3. Geologic units, hydrologic units, and equivalent layers used in the computer model.

in the Atlantic Coastal Plain Section (Brooks, 1981). The Dinsmore Plain is characterized by low-relief, clastic terrace deposits of Pleistocene to Holocene age (Brooks, 1981).

The surficial aquifer is exposed at land surface and forms the uppermost permeable unit at the Station. The aquifer is composed of sedimentary deposits of Pliocene to Holocene age (fig. 3), and consists of 30 to 100 ft of tan to yellow, medium to fine unconsolidated silty sands interbedded with lenses of clay, silty clay, and sandy clay (U.S. Navy, 1994a). The Pleistocene-age sedimentary deposits in Florida were deposited in a series of terraces formed during marine transgressions and regressions associated with glacial and interglacial periods (Miller, 1986).

The surficial aquifer is composed of three distinct layers in the vicinity of Hangar 1000 and 0U3 (fig. 4). The upper layer is unconfined and extends from land surface to depths of about 15 to 35 ft below land surface (Navy, 1998). Beneath the upper layer (in most areas) is a low-permeability clay layer (figs. 4 and 5). This clay layer, where present, separates the upper layer of the surficial aquifer from the intermediate layer. In areas where this clay layer is 5 to 30 ft thick (fig. 5), it is almost exclusively clay; where the layer is greater than 30 ft thick, it grades into a silt and clay mixture at depth. The extent of the clay is well known at OU3 because of the extensive wells and direct push drilling that was conducted in association with contaminant delineation. The westward extent of the clay toward Hangar 1000 is less well known; however, a relatively thick clay (5 to 20 ft) is present at Hangar 1000. For this reason, it is speculated that the clay at Hangar 1000 and OU3 are connected. In any event, the relatively thick, dense clay at Hangar 1000 separates the surficial aquifer into two separate flow zones at the site.

The confined intermediate layer (fig. 4) extends below the clay downward to the top of the Hawthorn Group. The base of the surficial aquifer is formed by the top of the Miocene-age Hawthorn Group (figs. 4 and 6), which is mainly composed of low-permeability clays (Scott, 1988).

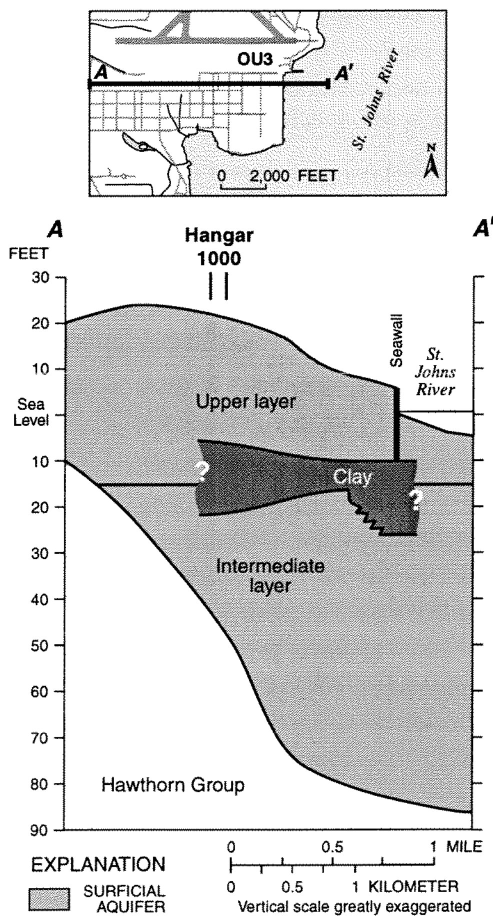
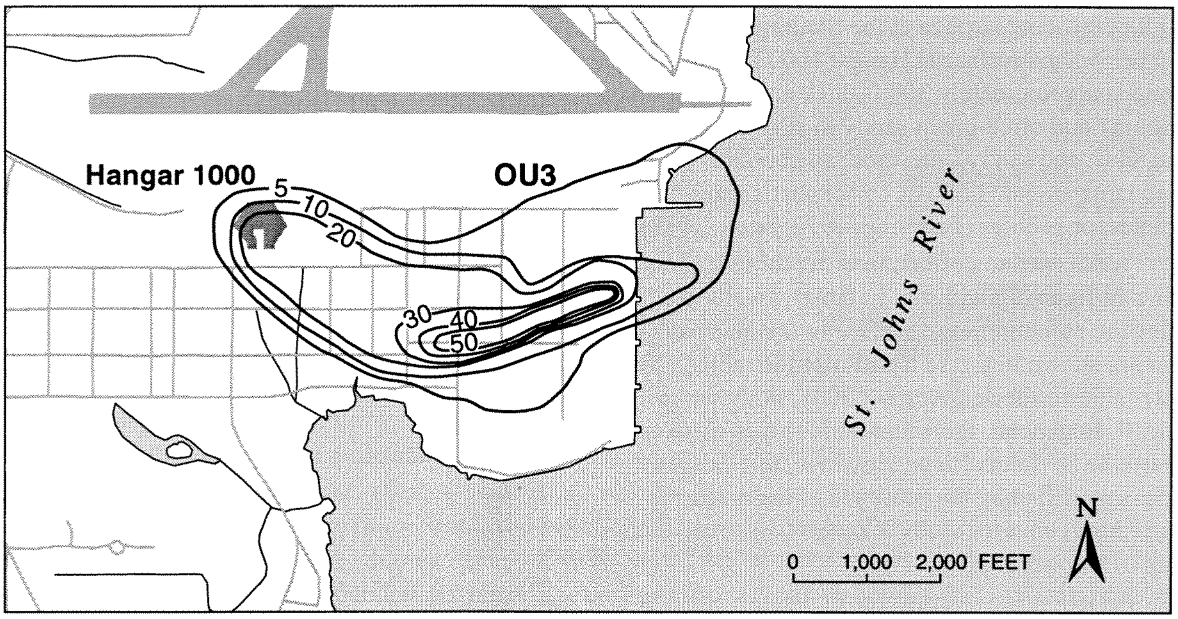


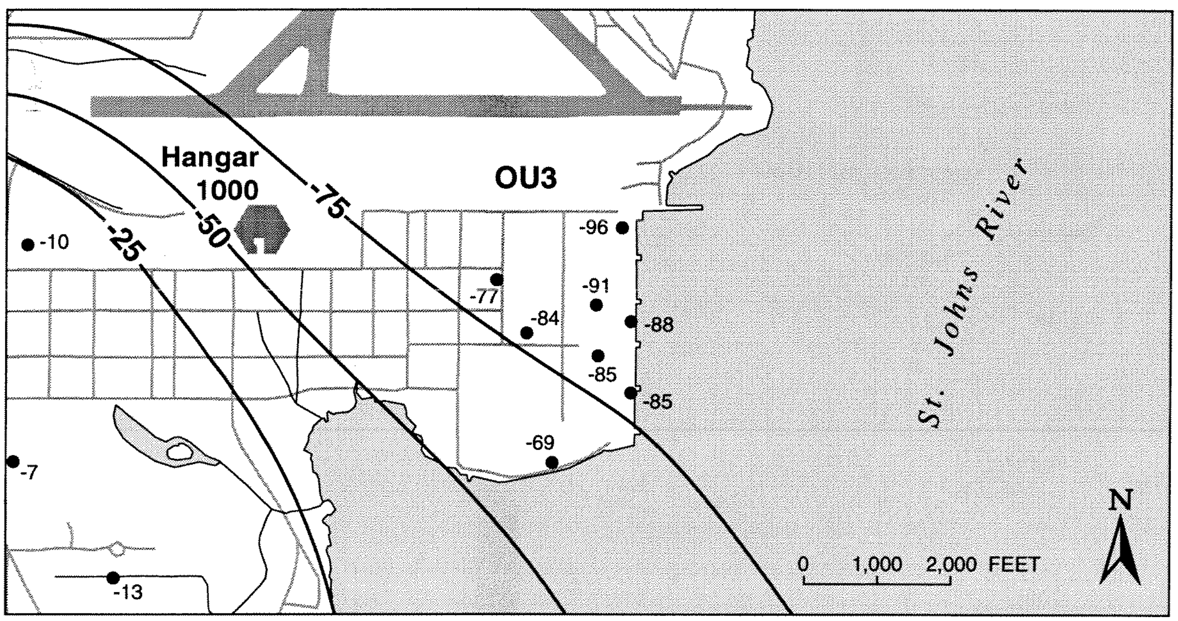
Figure 4. Generalized hydrogeologic section through the subregional study area.



EXPLANATION

—5— LINE OF EQUAL THICKNESS OF CLAY LAYER–In feet above NGVD of 1929. Contour interval 5 and 10 feet

Figure 5. Extent and thickness of the clay layer that separates the upper and intermediate layers of the surficial aquifer.



EXPLANATION

—-25— STRUCTURE CONTOUR–Shows altitude of the top of the Hawthorn Group. Contour interval is 25 feet. Datum is NGVD of 1929

● -13 WELL–Number is the altitude of the top of the Hawthorn Group in feet below NGVD of 1929

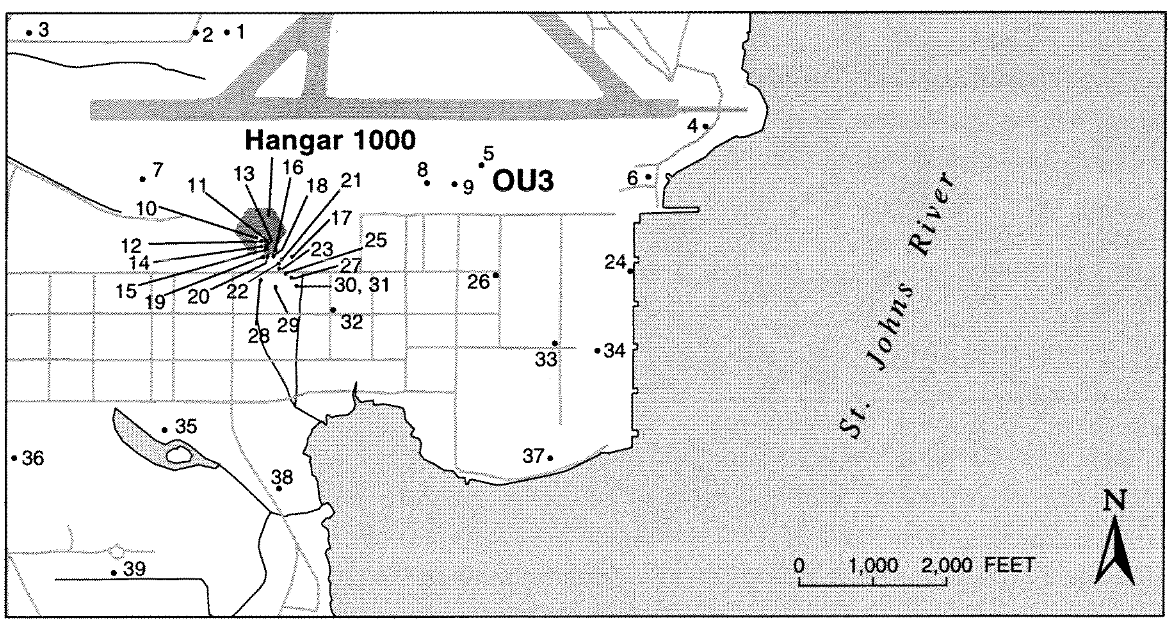
Figure 6. Top of the Hawthorn Group.

The top of the Hawthorn Group ranges from 35 to 100 ft below land surface at the Station and is about 60 ft below land surface at Hangar 1000. The Hawthorn Group is approximately 300 ft thick and composed of dark gray and olive-green sandy to silty clay, clayey sand, clay, and sandy limestone, all containing moderate to large amounts of black phosphatic sand, granules, or pebbles (Fairchild, 1972; Scott, 1988).

Wells used to define the water-table surface are shown in figure 7 and listed in table 1; wells used to define the potentiometric surface in the intermediate layer are shown in figure 8 and listed in table 2. The water-table surface on April 4, 2001, is shown in figure 9. In general, the water table slopes eastward toward the St. Johns River. However, this eastward slope is modified by the presence of leaky storm drains throughout the study area and two small ditches south of Hanger 1000.

An extensive stormwater-drainage system is present at the Station (fig. 10). The maintenance staff and consultants performed photographic surveys at OU3 documenting that ground-water seeps into the drains through joints and cracks in the drainage pipes (U.S. Navy, written commun., 1999.) Visual inspection of the drains by Navy personnel indicated that the leakage is generally confined to high motor-traffic areas. Drain depths vary, but generally range from 5 to 10 ft below land surface. All drains are in the upper layer of the aquifer.

The locations of sewer sections that drain ground water from the surficial aquifer are shown in figure 11, and the water-table surface in the vicinity of Hangar 1000 on April 4, 2001, is shown in figure 12. The water table in the vicinity of Hangar 1000 slopes southeastward toward storm drains. The ground-water contours wrap around sewer section 4 (fig. 12), indicating that ground water from the surficial aquifer is discharging to the storm drain from both sides. South of Hanger 1000, the water table slopes toward the small ditch southeast of Hangar 1000, indicating that water is discharging from the aquifer to the ditch from both sides. These ditches were concrete-lined in the 1940s by German prisoners of war; however, the linings presently contain numerous cracks and openings.



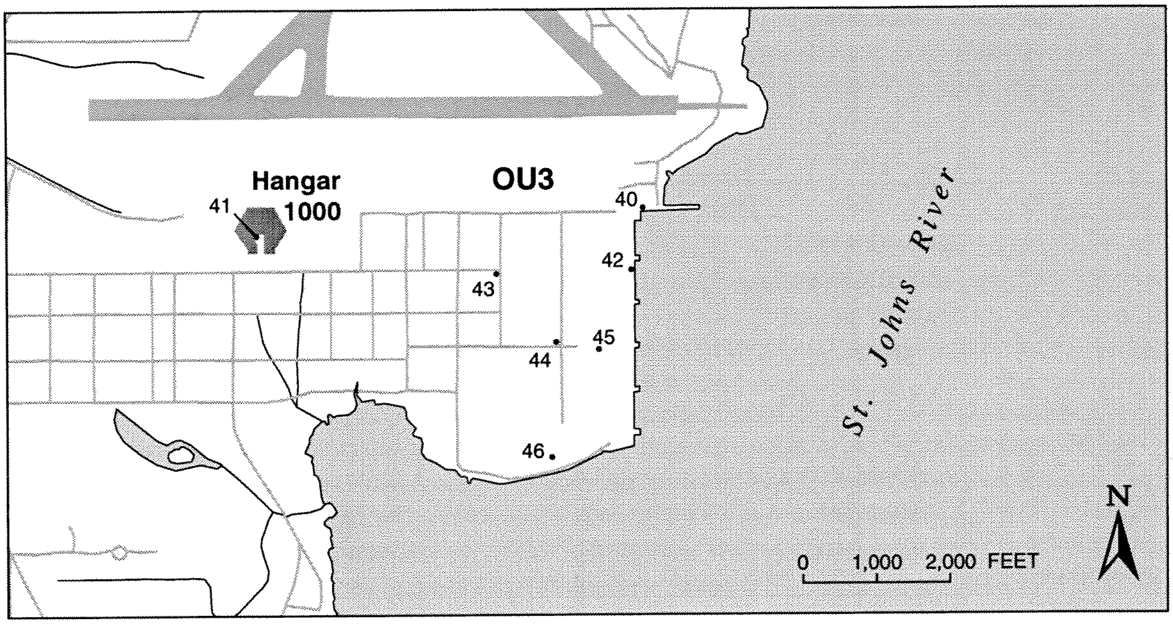
EXPLANATION

• 39 UPPER LAYER WELL WITH NUMBER–Number corresponds to map number in table 1

Figure 7. Wells completed in the upper layer of the surficial aquifer within the subregional study area.

Table 1. Monitoring wells completed in the upper layer of the surficial aquifer

Map number (see figure 7)	Well name	Altitude of top of casing, in feet	Well depth, in feet	Altitude of head on April 4, 2001, in feet
1	MW-16	20.68	12.00	15.50
2	PZ-1	19.15	14.00	15.16
3	PZ-6	19.13	15.90	10.57
4	JAX-TF-MW27	6.20	9.00	4.53
5	JAX-HA-MW03	10.04	12.00	6.79
6	JAX-TF-MW14	8.65	11.00	4.46
7	MW41-R	21.29	18.40	16.28
8	JAX-HA-MW05	11.11	12.00	7.96
9	JAX-HA-MW06	10.23	12.00	7.14
10	H10-MW10	16.37	14.00	9.72
11	H10-MW07	16.93	14.00	9.48
12	H10-MW08	16.46	14.00	9.54
13	H10-MW06	16.96	14.00	9.36
14	H10-MW02	16.19	14.00	9.47
15	H10-MW05	16.93	14.00	9.28
16	H10-MW15	15.67	15.00	9.00
17	H10-MW20	12.28	11.00	10.48
18	H10-MW14	16.35	15.00	8.93
19	H10-MW03	16.40	14.00	9.30
20	H10-MW13	16.56	15.00	9.17
21	H10-MW18	14.48	21.00	8.88
22	H10-MW22	14.17	11.70	8.27
23	H10-MW17	14.13	21.00	7.82
24	PZOO4	5.64	14.00	1.95
25	H10-MW19	14.24	12.00	6.74
26	PZO26	10.86	13.50	4.96
27	H10-MW23	12.62	15.00	5.73
28	H10-MW25	16.38	11.00	9.00
29	H10-MW24	17.01	14.50	8.38
30	H10-MW26	9.50	25.00	5.90
31	H10-MW27	9.70	14.00	6.47
32	MW-122	13.67	13.50	10.04
33	PZO17	10.77	14.00	3.76
34	PZO12	9.22	15.00	2.09
35	MW-47	20.99	14.50	14.42
36	MW-45	27.45	16.00	20.07
37	MW-49	22.11	25.50	1.81
38	MW-121	11.47	13.50	7.09
39	MW-52	27.76	16.00	18.18



EXPLANATION

• 46 INTERMEDIATE LAYER WELL WITH NUMBER–Number corresponds to map number in table 2

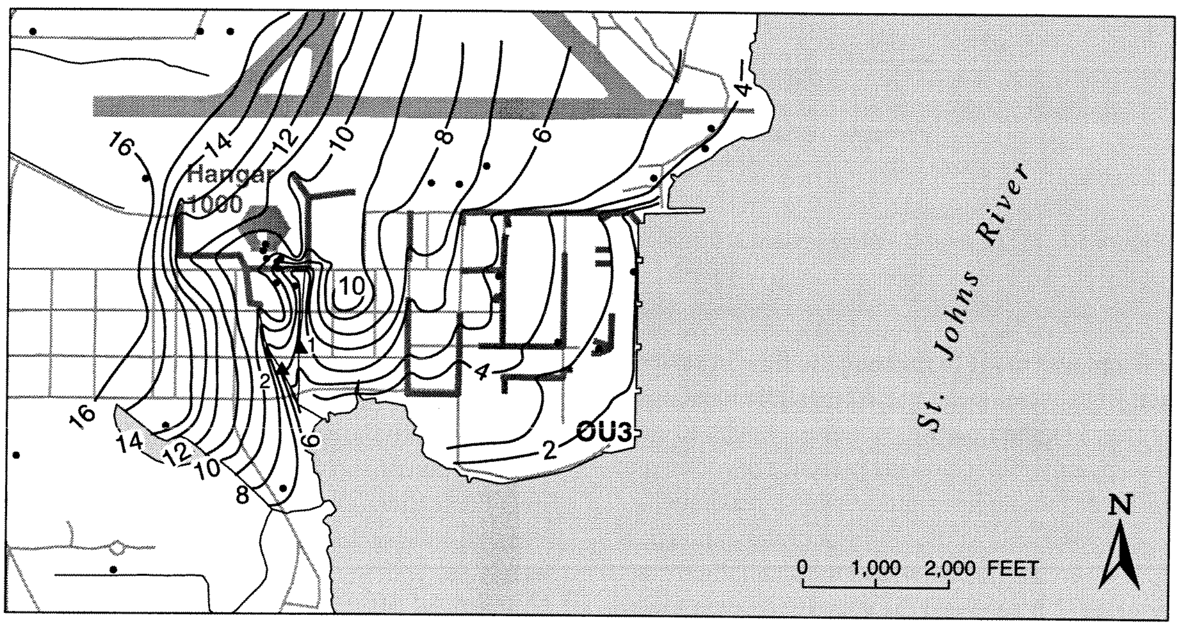
Figure 8. Wells completed in the intermediate layer of the surficial aquifer within the subregional study area.

Table 2. Monitoring wells completed in the intermediate layer of the surficial aquifer

Map number (see figure 8)	Well name	Altitude of top of casing, in feet	Well depth, in feet	Altitude of head on April 4, 2001, in feet
40	JAX-TF-MW48D	8.36	36.50	2.23
41	H10-MW11	16.35	39.00	9.87
42	PZOO3	5.71	63.70	3.65
43	PZO25	10.69	85.50	5.85
44	PZO16	10.80	54.00	2.64
45	PZO11	9.27	93.00	2.01
46	MW-50	21.96	92.00	1.96

Storm sewer section 2 has several steel grates that allow observation of the sewer. In some parts of the sewer, sand boils can be seen at joints where ground water is leaking in. The drains were observed during dry periods; however, not all of the water flowing in the drains could be attributed to ground-water leakage, because parts of sewer section 2 are connected to overflow-underflow weirs that are connected to wash racks that drain to section 2. Other drains were difficult to observe except at a few occasional manholes. Sections 1 and 5 were almost completely unobservable; however, some observations of the sewer could be made at section 4 through the manholes. Observations through a manhole at the junction of sections 2, 4, and 5 indicated that water in the drain flowed southward but did not enter section 4 because a small berm blocked the flow. Further eastward, a small flow was observed through other manholes along section 4, presumably from ground-water inflow to the drain system. However, no direct evidence such as sand boils were observed. Fairly deep standing water (approximately 1-2 ft) at the junction of sections 1 and 4 with the small ditch (fig. 11) made it impossible to observe the flow discharging from of section 4.

Surface-water flow in the ditches was measured at the same time the water levels were measured in the wells (April 4, 2001), and the locations of these flow measurements are shown in figure 9. The measured flows were 0.23 cubic feet per second (ft^3/s) at location 1 and 0.11 ft^3/s at location 2. Since the flows in the ditches contain water other than ground water, they should be considered an upper limit for ground-water leakage to the storm sewers and ditches. The measured flow at location 2 was lower than at location 1, probably because location 2 had less influence from outside sources of water.



EXPLANATION

—2— WATER-TABLE CONTOUR–Shows level to which water would have stood in tightly cased wells tapping the upper layer of the surficial aquifer. Contour interval 1 foot. Datum is NGVD of 1929

STORMWATER DRAINS THAT MAY BE DRAINING GROUND WATER–From the upper layer of the surficial aquifer

• MONITORING WELL LOCATION

1▲ SURFACE-WATER MEASUREMENT LOCATION

Figure 9. Water-table surface for the upper layer of the surficial aquifer on April 4, 2001.

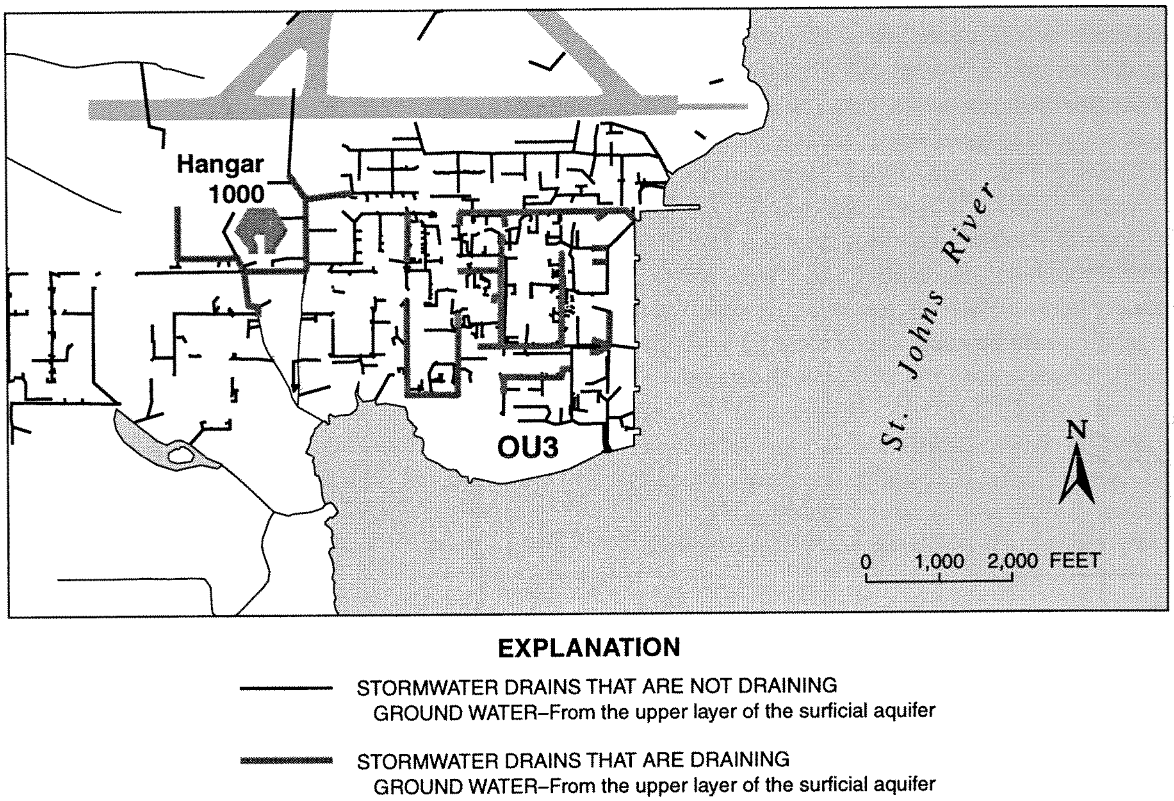


Figure 10. Stormwater-drainage system at the Jacksonville Naval Air Station.

An attempt was made to measure the flow in sewer section 4 at several locations. At manhole locations 1 and 2 (fig. 11), the flow was not deep enough to submerge a pygmy meter, and the presence of rocks and debris made measurement impossible even though flow was observed. At the sewer outfall location 3 (fig. 11, where sections 1, 4, and the small ditch meet) water was 1-2 ft deep and the velocity was too low to measure.

The potentiometric surface of the intermediate layer shows that ground-water flow is generally eastward toward the St. Johns River (fig. 13). The eastward movement of ground water is partially redirected southward by clay deposits underlying OU3. The horizontal and vertical distribution of this clay deposit is based on extensive drilling at OU3 by Navy consultants (U.S. Navy, 1998); additional discussion of the clay and its effect on ground-water flow was documented in ground-water modeling studies by Davis (1998; 2000).

The surficial aquifer is not used for water supply at the Station or surrounding areas, so ground-water level fluctuations are due to natural variations in recharge, evapotranspiration, and discharge to creeks and rivers. Water-level fluctuations in the surficial aquifer from 1993 to 2001 are shown in figure 14. As shown in the figure, water levels fluctuate seasonally but show no long-term trend. No systematic collection of water-level data has occurred since 1997. Only well MW-45 has had a recent water-level measurement and that was taken on April 4, 2001. This measurement was at the low end of the previously observed range but was taken during an extended period of low rainfall. Since water levels at the Station show no long-term trends, the system could be analyzed assuming steady-state conditions.

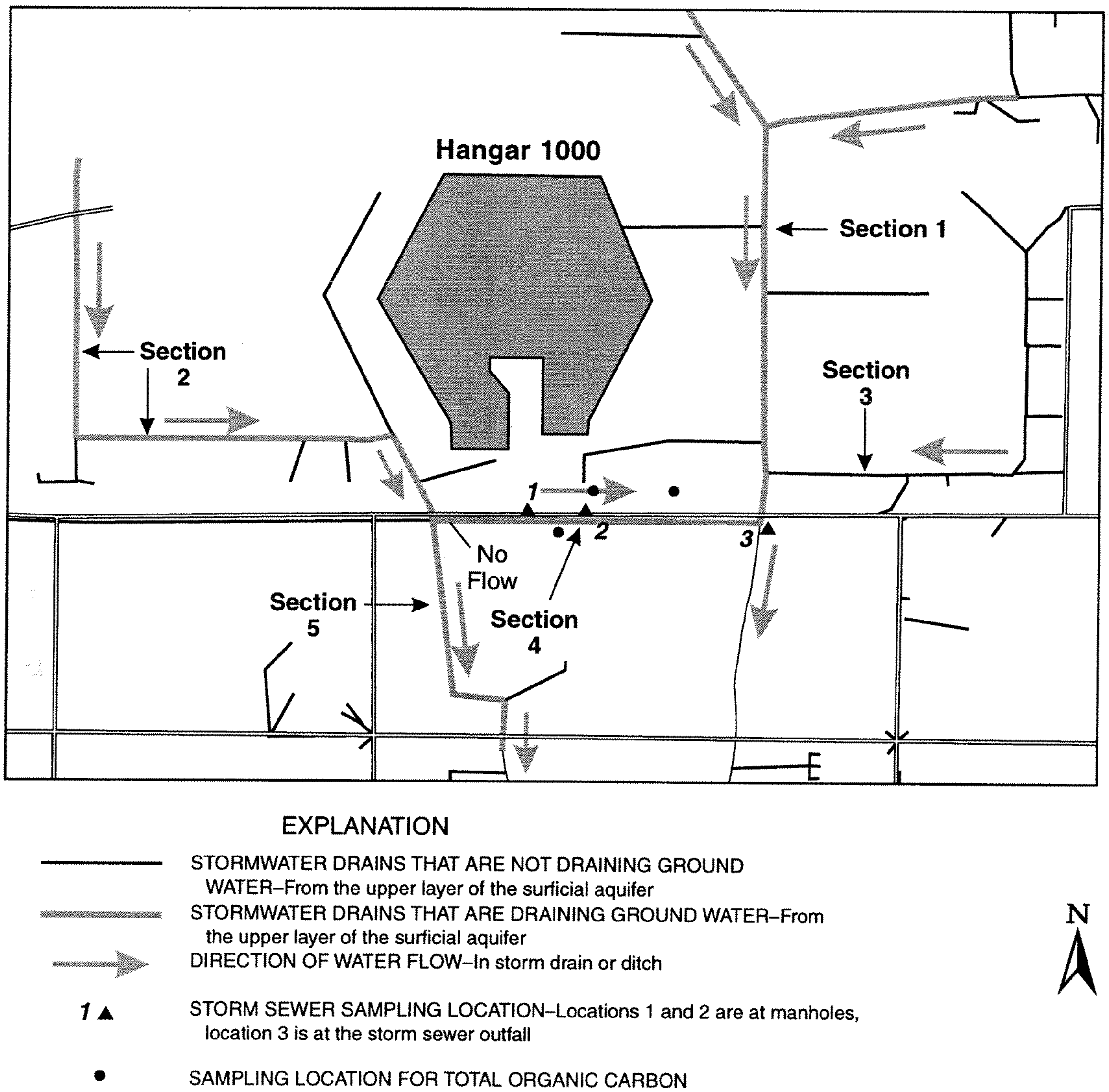
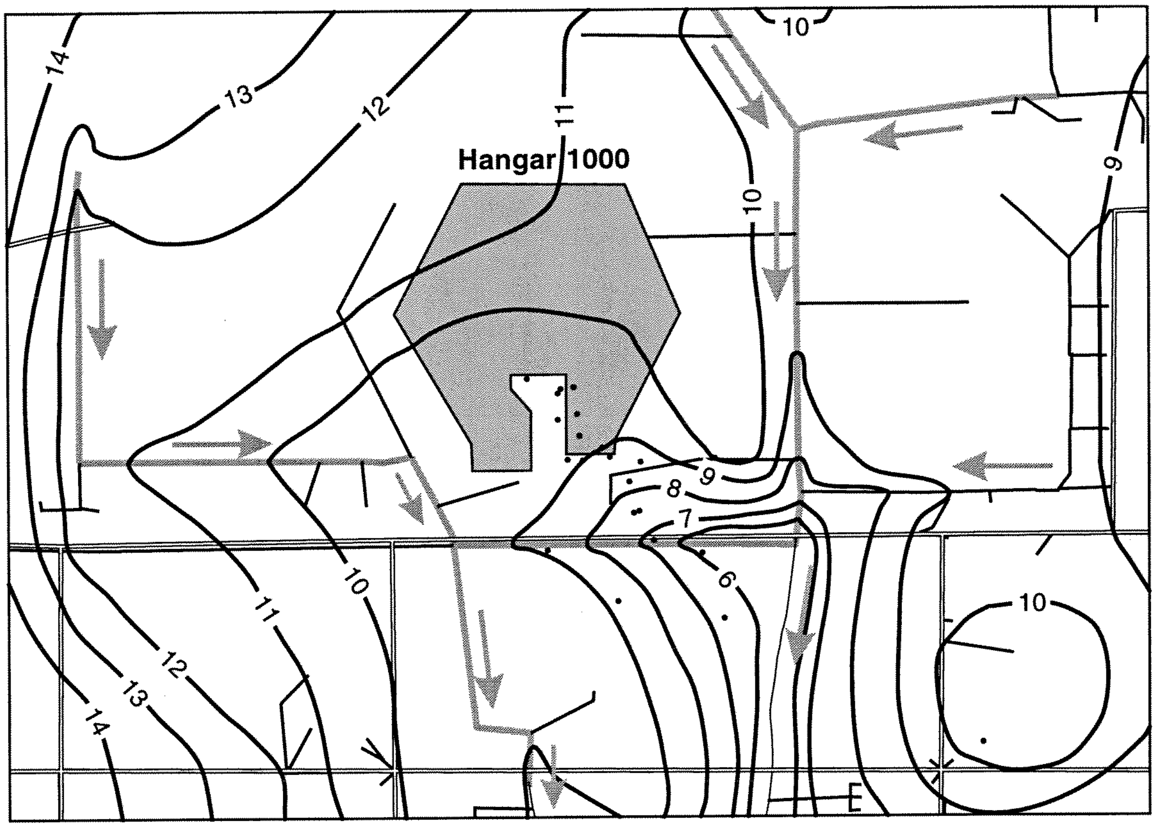


Figure 11. Location of sewer sections in the vicinity of Hangar 1000.



EXPLANATION

——10—— WATER-TABLE SURFACE CONTOUR–Showing the surface of the water table in feet above NGVD of 1929. Contour interval is 1 foot

STORMWATER DRAINS THAT ARE NOT DRAINING GROUND WATER–From the upper layer of the surficial aquifer

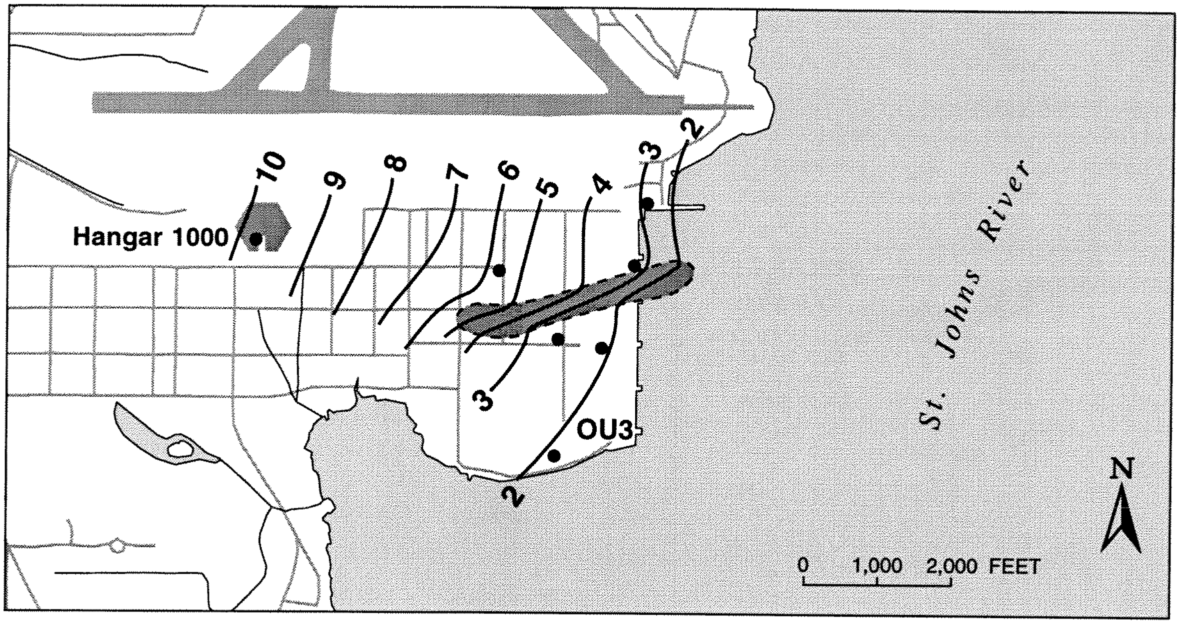
STORMWATER DRAINS THAT ARE DRAINING GROUND WATER–From the upper layer of the surficial aquifer

DIRECTION OF WATER FLOW–In storm drain or ditch

• MONITORING WELL LOCATION

N

Figure 12. Water-table surface for the upper layer of the surficial aquifer on April 4, 2001, in the vicinity of Hangar 1000.



EXPLANATION

CLAY DEPOSITS

—2— POTENTIOMETRIC CONTOUR–Shows level to which water would have stood in tightly cased wells tapping the intermediate layer of the surficial aquifer. Contour interval 1 foot. Datum is NGVD of 1929

● MONITORING WELL LOCATION

Figure 13. Potentiometric surface for the intermediate layer of the surficial aquifer on April 4, 2001.

OCCURRENCE AND FACTORS AFFECTING THE MOVEMENT OF TRICHLOROETHENE, DICHLORO-ETHENE, AND VINYL CHLORIDE

The ground-water contaminants of concern at Hangar 1000 are TCE, DCE, and VC. The present distribution of these chemicals in the ground water, and the factors affecting their future movement are discussed in this section. The current extent of the contaminant plumes is based on data collected by Tetra Tech and is more fully discussed in Navy documentation on Hanger 1000 (U.S. Navy, written commun., 2002). The location of monitoring wells used to define the plumes is shown in figure 15.

TCE, DCE, and VC are known to degrade in natural environments due to reductive dehalogenation (Zheng and Bennett, 1995). TCE degrades to DCE which degrades to VC, which can further degrade to ethene. Degradation occurs when a chlorine molecule is removed and replaced by a hydrogen molecule. The rate of degradation can be extremely variable even over small distances and depends on the particular compound and the micro-environments within the aquifer. Conditions at Hangar 1000 are generally favorable for anaerobic processes due to several reduction pathways including iron reduction, sulfate reduction, and methanogenesis (U.S. Navy, in press).

The distribution of TCE in the ground water at Hangar 1000 is shown in figure 16. All of the contamination associated with the previously removed storage tanks is located in the upper layer of the surficial aquifer. The highest concentration of TCE, 8,710 μg/L, was measured in a well installed in the location where the TCE storage tanks had been removed suggesting that free product is present because of the high levels. The TCE is migrating from the source area toward storm sewer section 4. As discussed earlier, ground water is leaking into the storm sewer in this area, so it is likely that the sewer is the discharge point for the contaminated ground water; TCE was not detected in monitoring wells south of the storm sewer.

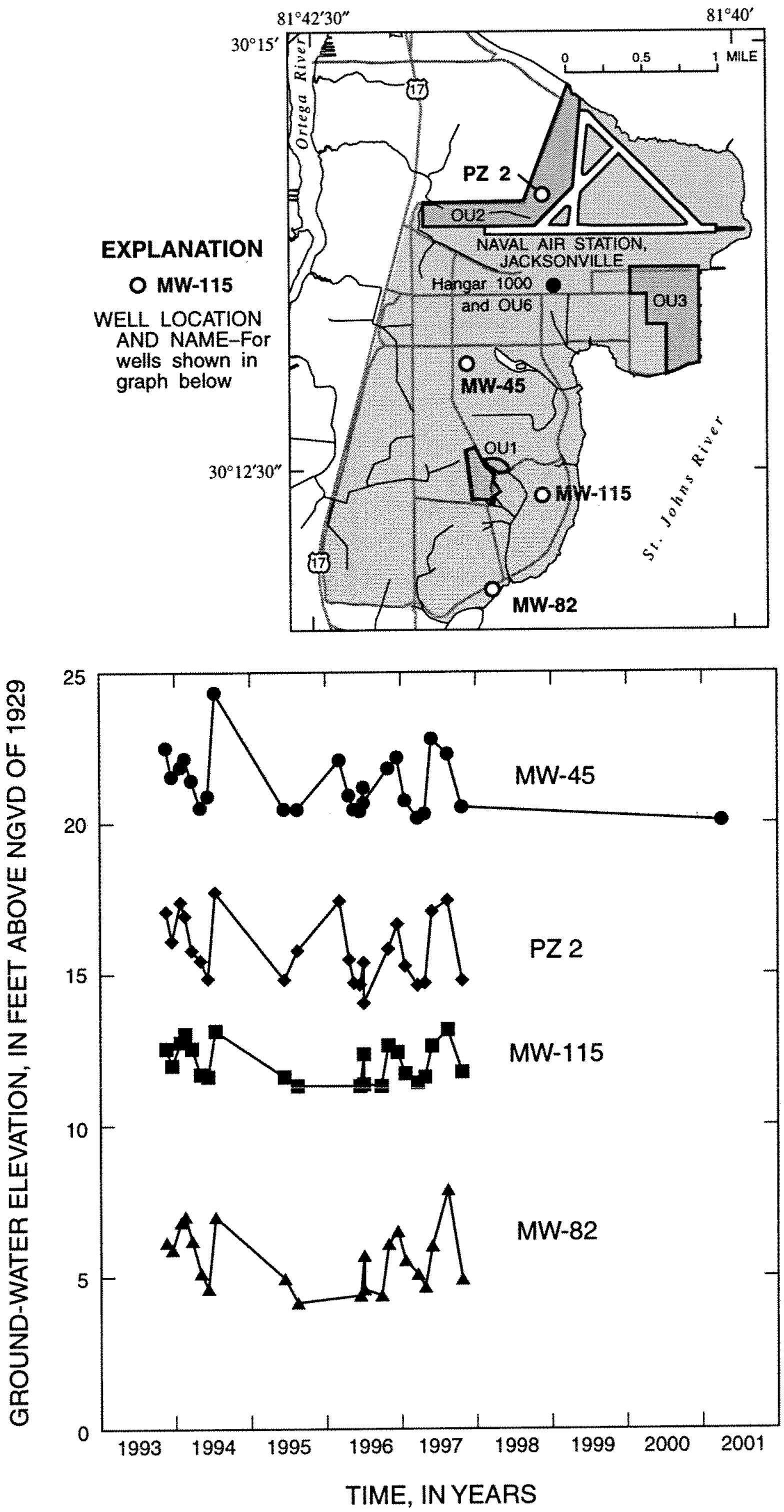


Figure 14. Water-level fluctuations in the surficial aquifer from 1993 to 2001.

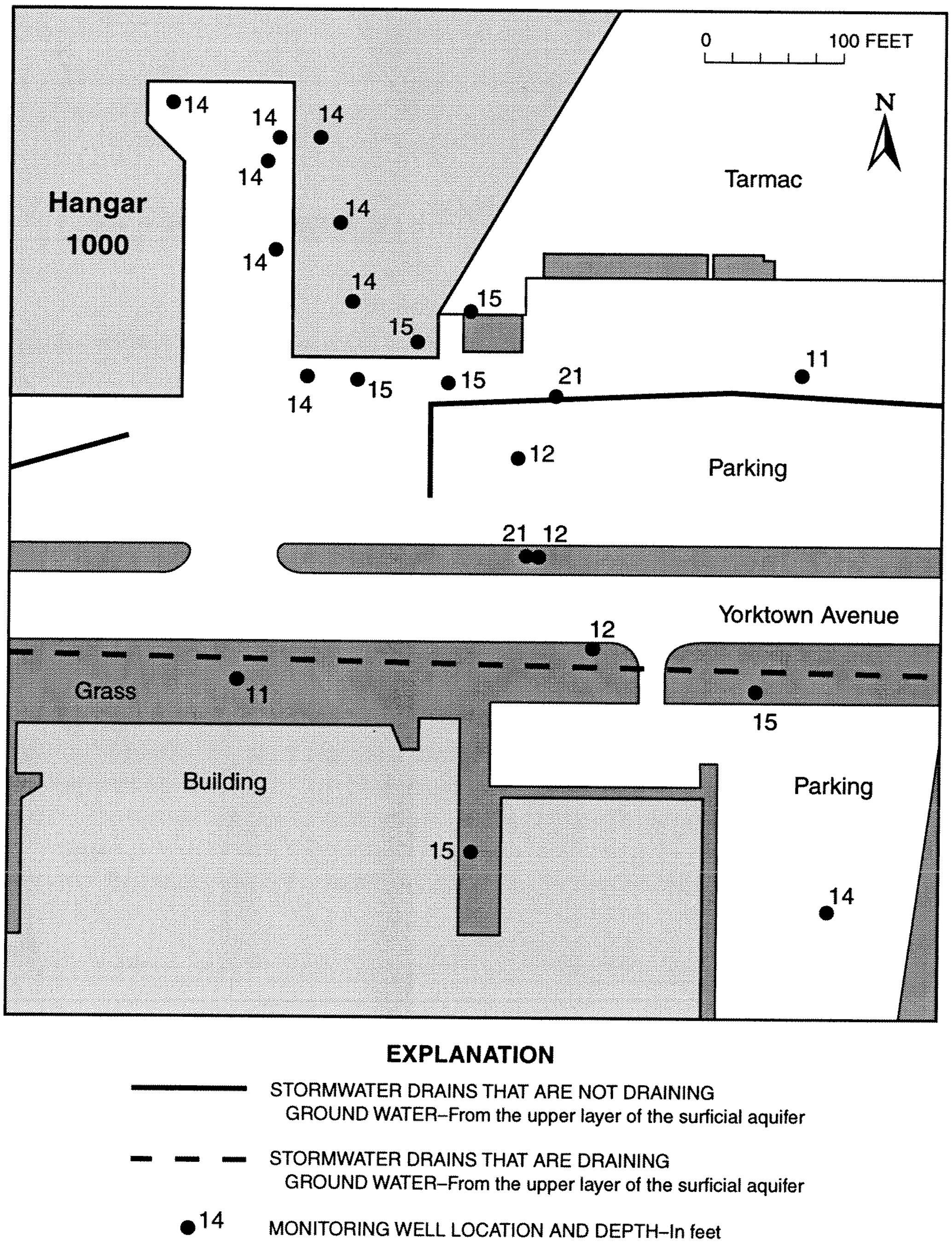
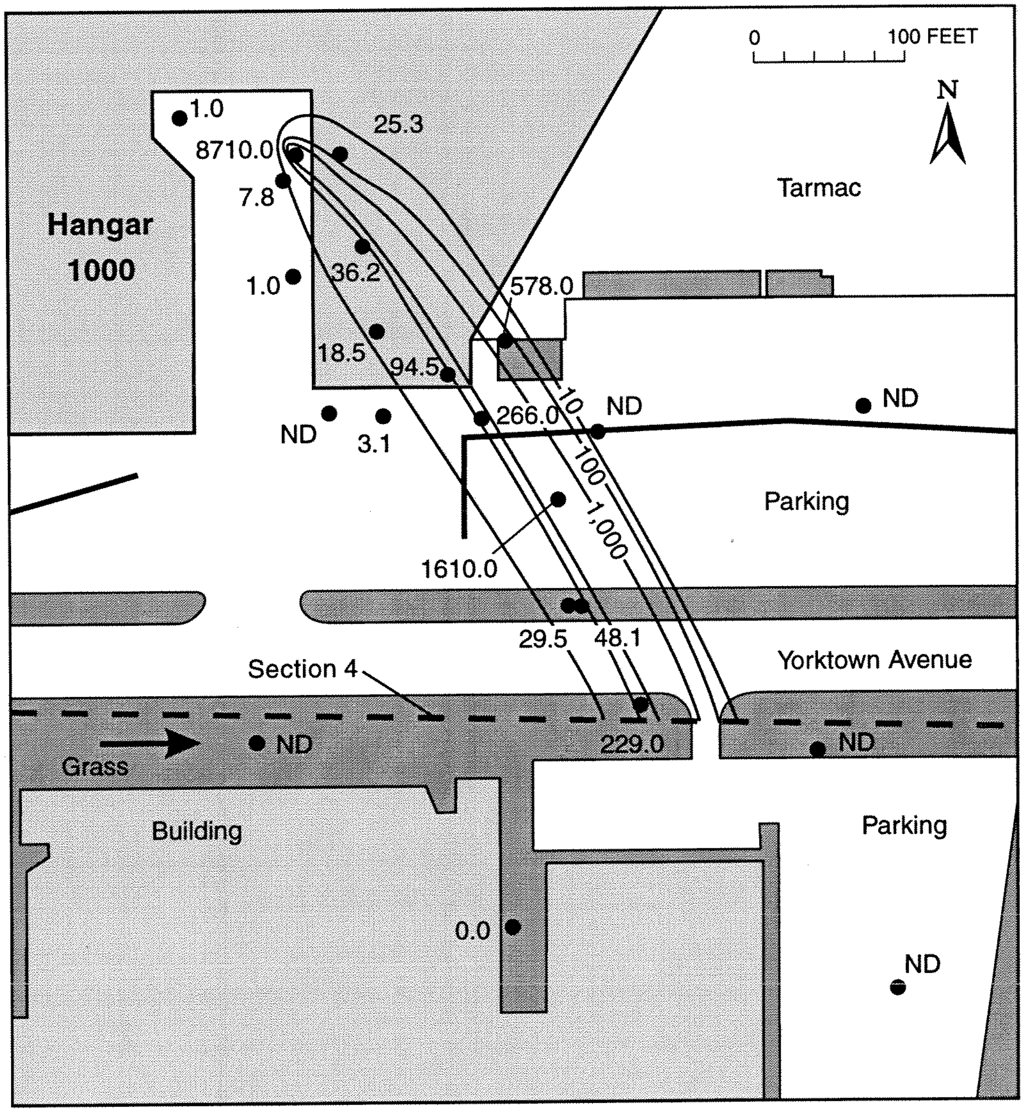


Figure 15. Location of wells where ground-water quality samples were collected.



EXPLANATION

——10——	LINE OF EQUAL CONCENTRATION OF TRICHLOROETHENE (TCE)–In micrograms per liter. Contour interval is variable
————	STORMWATER DRAINS THAT ARE NOT DRAINING GROUND WATER–From the upper layer of the surficial aquifer
— — —	STORMWATER DRAINS THAT ARE DRAINING GROUND WATER–From the upper layer of the surficial aquifer
● 1.0	MONITORING WELL LOCATION AND TCE CONCENTRATION–In micrograms per liter. "ND" indicates no detection
——▶	DIRECTION OF WATER FLOW–In storm drain or ditch

Figure 16. Distribution of trichloroethene (TCE) contamination in the ground water of the surficial aquifer at Hangar 1000 on January 17, 2001.

Tetra Tech sampled the water flowing in the storm sewer at the three locations shown in figure 11. No TCE was detected in any of these samples. This would be expected in locations 1 and 2 because they are upstream of the area where contaminated water would be expected to discharge to the storm sewer, but not in location 3. If the sewer is receiving the contaminated ground water, then the lack of detection at location 3 could be the result of several factors. First, videos taken in the storm sewers at OU3 showed that water entering the sewers at joints and cracks commonly runs down the pipes as film flow, thus allowing a substantial amount of volatilization. Second, the flow in the sewer pipe is small and essentially sheet flow, thus allowing more volatilization. Third, dilution in the standing water at the sewer outfall is occurring due to flow that can be observed coming from the sewer to the north.

If the contaminated ground water is passing beneath the sewer, then it would probably discharge directly to the small ditch to the southeast. However, no contaminants have been detected in the monitoring wells south of sewer section 4.

The distribution of DCE in the ground water is shown in figure 17. The source of DCE contamination is probably the result of reductive dehalogenation of TCE and leakage from the tanks. Concentrations of DCE at Hangar 1000 are roughly the same as that of TCE. The distribution of VC in ground water is shown in figure 18. Concentrations of VC are low, indicating either that the dehalogenation of DCE to VC is occurring relatively slowly or more likely that the destruction of VC is occurring relatively rapidly.

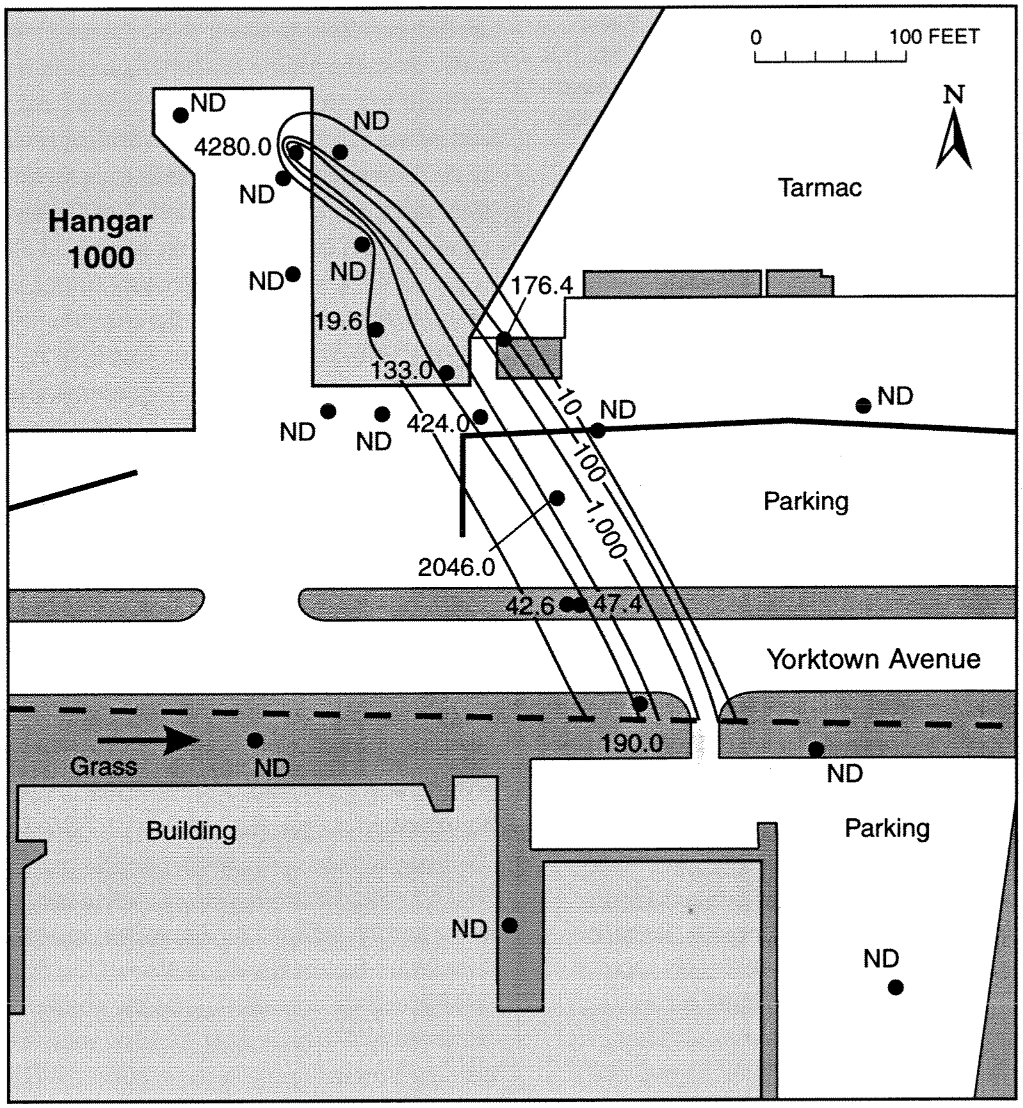
Contaminants dissolved in ground water will move by advection in the direction of flow. However, other natural processes can modify the movement of contaminants, causing the concentrations to change or causing contaminants to move at different rates than the ground water. Major processes affecting contaminant movement are advection, hydrodynamic dispersion, biodegradation, and retardation due to sorption to the sediments.

The most important factor affecting contaminant movement is advection, which is the transport of dissolved constituents with the velocity and direction of ground-water flow. Most of the surficial ground water (containing the contaminants) at Hangar 1000 probably discharges to the storm drains, which then discharges to a small creek that flows to the St. Johns River.

Hydrodynamic dispersion occurs due to the mechanical mixing of moving ground water and molecular diffusion of the dissolved chemical. Dispersion will cause a contaminant plume to spread, resulting in lower solute concentrations away from the plume center. Dispersion is usually difficult to accurately quantify in the field. Gelhar and others (1992) performed a critical review of field-scale dispersion studies to define reasonable dispersivity values. Using data that Gelhar and others (1992) described as the most reliable, a high value for longitudinal dispersivity (in the direction of the flow axis) was 5.6 ft for sites similar to Hangar 1000 and a low value was 0.98 ft. A high value for transverse dispersivity (perpendicular to the flow axis) was 0.30 ft and a low value was 0.033 ft. When simulating solute movement, low values of dispersivity will result in the highest predicted concentrations.

The rate of movement of a dissolved chemical depends on the ground-water flow velocity and the retardation factor of the particular chemical. The retardation factor is the ratio of the velocity of ground water to the velocity of the chemical. For example, a retardation factor of 1.5 means that ground water moves 1.5 times faster than the dissolved chemical. Retardation of TCE, DCE, and VC occurs because these chemicals are nonpolar, which causes them to partition to the organic matter in the aquifer sediments. Therefore, retardation and retardation factors are a function of the fraction of organic carbon content (f_{oc}) of the aquifer. Partitioning is a reversible process; molecules that have partitioned to the organic matter will move back into the ground water as relative concentrations change.

The organic carbon content in the upper layer of the surficial aquifer at Hangar 1000 was measured at three locations (fig. 11). The measured values were of 1,200 $\text{milligrams}_{\text{organic carbon}}$ per $\text{kilograms}_{\text{soil}}$ (mg_{oc}/kg_{soil}), 1,200 mg_{oc}/kg_{soil} and 3,280 mg_{oc}/kg_{soil}. The average of these is 1,893 mg_{oc}/kg_{soil} or an average f_{oc} of 1.893×10^{-3} mg_{oc}/kg_{soil} (the f_{oc} is calculated by dividing the organic carbon content by 1,000,000). The distribution coefficient (K_d) relates the mass of contaminant dissolved in the ground water to the mass sorbed to the sediments.



EXPLANATION

——10—— LINE OF EQUAL CONCENTRATION OF Dichloroethene (DCE)–In micrograms per liter. Contour interval is variable

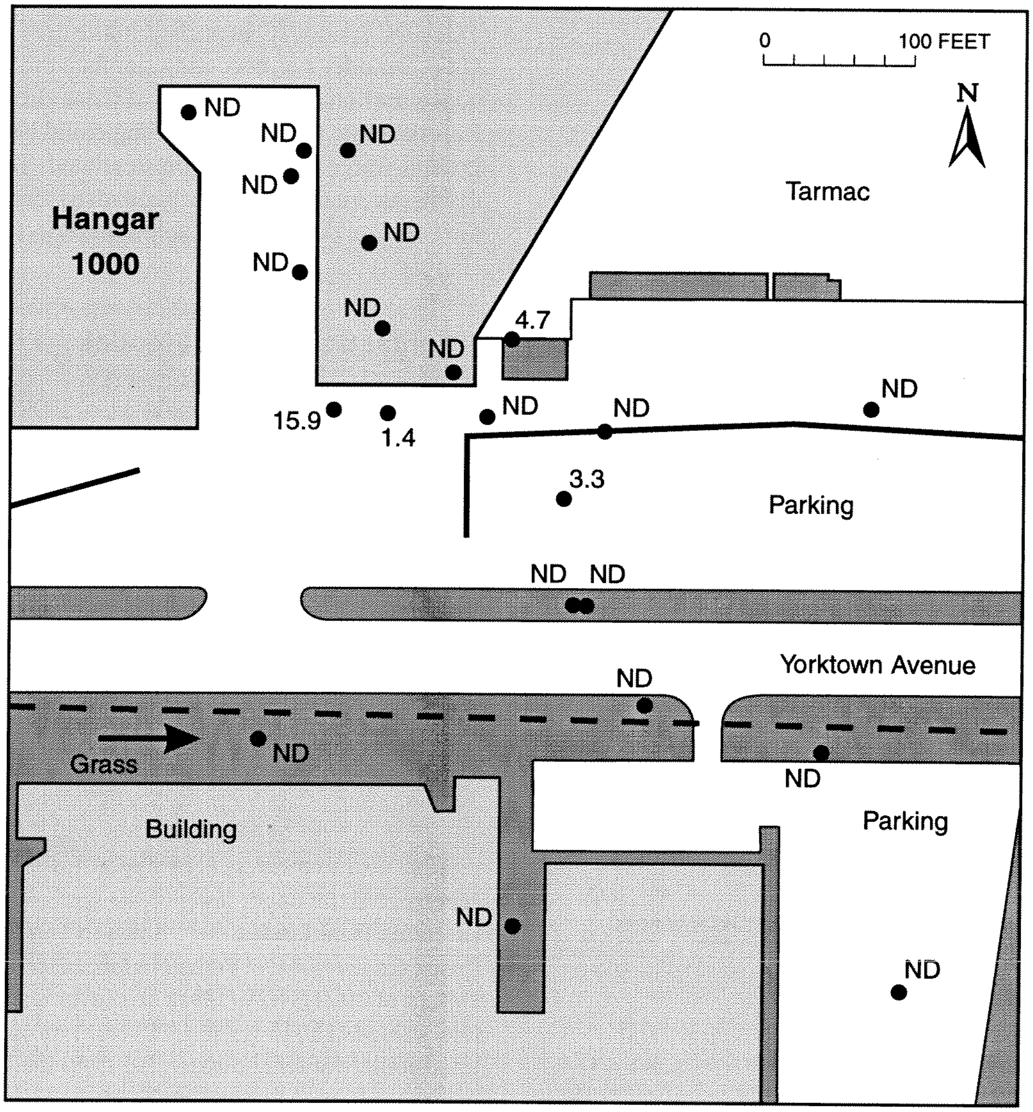
STORMWATER DRAINS THAT ARE NOT DRAINING GROUND WATER–From the upper layer of the surficial aquifer

STORMWATER DRAINS THAT ARE DRAINING GROUND WATER–From the upper layer of the surficial aquifer

● 1.0 MONITORING WELL LOCATION AND DCE CONCENTRATION–In micrograms per liter. "ND" indicates no detection

DIRECTION OF WATER FLOW–In storm drain or ditch

Figure 17. Distribution of dichloroethene (DCE) contamination in the ground water of the surficial aquifer at Hangar 1000 on January 17, 2001.



EXPLANATION

STORMWATER DRAINS THAT ARE NOT DRAINING GROUND WATER–From the upper layer of the surficial aquifer

STORMWATER DRAINS THAT ARE DRAINING GROUND WATER–From the upper layer of the surficial aquifer

1.4● MONITORING WELL LOCATION AND VINYL CHLORIDE (VC) CONCENTRATION–In micrograms per liter. "ND" indicates no detection

DIRECTION OF WATER FLOW–In storm drain or ditch

Figure 18. Distribution of vinyl chloride (VC) contamination in the ground water of the surficial aquifer at Hangar 1000 on January 17, 2001.

Partitioning coefficients were calculated using the following equation with resulting values given in table 3:

$$K_d = K_{oc} f_{oc} ,$$

where

K_d = distribution coefficient, milliliters water per grams$_{soil}$ (mL_{water}/g_{soil}),

K_{oc}= partition coefficient, mL_{water}/g_{oc}, and

f_{oc} = fraction organic carbon, in grams$_{organic\ carbon}$ per grams$_{soil}$ (g_{oc}/g_{soil}).

The retardation factor for the upper layer was calculated using the following equation, with the results given in table 3. Reasonable values for bulk density of 1.6 grams per cubic centimeter (g/cm^3) and total porosity of 25 percent (Hillel, 1980) were assumed for the aquifer sediments.

$$R = 1 + \frac{(\rho)(K_d)}{\phi} ,$$

where

R = retardation factor, no units,

ρ = bulk density of aquifer material, in g/cm^3,

K_d = distribution coefficient, mL_{water}/g_{soil}, and

ϕ = aquifer porosity, milliliters$_{water}$ per cubic centimeter$_{soil}$ ($mL_{water}/cm^3{}_{soil}$).

Table 3. Distribution of partitioning coefficients and retardation factors for trichloroethene (TCE), dichloroethene (DCE), and vinyl chloride (VC) for the upper layer of the surficial aquifer

[f_{oc}, fraction organic carbon; mL_{water}, milliliters water; g_{soil}, grams soil; K_{oc}, partition coefficient; g_{oc}, grams organic carbon; K_d, distribution coefficient]

	TCE	DCE	VC
Average f_{oc} (mL_{water}/g_{soil})	1.893×10^{-3}	1.893×10^{-3}	1.893×10^{-3}
K_{oc} (mL_{water}/g_{oc})	126[a]	86[a]	57[a]
K_d (mL_{water}/g_{soil})	0.2386	0.1628	0.1079
Retardation factor (no units)	2.5	2.0	1.7

[a] Mercer and others, 1990.

GROUND-WATER FLOW SIMULATION AT THE STATION

Several ground-water flow models have been developed, each designed to satisfy a particular need of the Station. Because of the contaminant plumes of TCE, DCE, and VC identified in the area of Hangar 1000, a model was needed to simulate the contaminant concentration and movement of these chemicals. Before solute transport modeling could be performed, ground-water flow had to be simulated. This section discusses the simulation of ground-water flow and the next section discusses the solute transport modeling at Hangar 1000.

Original Subregional Model

The original subregional OU3 model (Davis, 1998) was calibrated to the head data collected on October 29 and 30, 1996, and steady-state ground-water flow conditions were assumed. The calibration strategy was to match simulated heads in the upper and intermediate layers to within 1 ft of the measured values. After calibration, all of the model simulated heads matched the measured heads within the calibration criterion of 1 ft, and 48 of 67 simulated heads (72 percent) were within 0.5 ft of the corresponding measured values.

The original model contained 78 rows and 148 columns of active model cells; all cells were 100 ft on each side. Vertically, the surficial aquifer was divided into two layers. The upper model layer represented the upper layer of the surficial aquifer and extended from land surface down to 15 ft below sea level (sea level refers to the National Geodetic Vertical Datum of 1929 (NGVD29)); this layer was modeled as unconfined. The lower model layer represented the intermediate layer and extended from the bottom of the upper layer down to the top of the Hawthorn Group; this layer was modeled as confined. The clay layer separating the upper and intermediate layers was simulated through the vertical leakance term. A seawall at OU3 was simulated using the Horizontal-Flow Barrier Package documented by Hseih and Freckleton (1993).

The northern, western, and southern boundaries of the model were simulated as no flow and were positioned along ground-water divides delineated using both water-table maps and particle tracking with the regional model (fig. 2). The eastern model boundary also is no-flow and is positioned near the center of the

St. Johns River. This boundary was positioned away from the shoreline so that the model could simulate the upward seepage of ground water through the bottom of the river. The base of the surficial aquifer was simulated as a no-flow boundary because it is underlain by the low-permeability sediments of the Hawthorn Group. There is little, if any, vertical flow between the surficial aquifer and the Hawthorn Group.

The MODFLOW River Package was used to simulate, in the upper layer of the model, the presence of the St. Johns River and two small ditches. The riverbed conductance for the St. Johns River was calculated using a riverbed thickness of 1 ft over the entire area of each cell and a riverbed hydraulic conductivity of 8 feet per day (ft/d). The altitude of the bottom of the river was taken from USGS topographic maps and a stage of 1 ft above sea level (NVGD29). Conductance for two small ditches was calculated using a thickness of 1 ft, a width of 10 ft, and a hydraulic conductivity of 4 ft/d. The altitude of the stage and bottom of the two ditches were estimated from the topographic maps and field observations.

The MODFLOW Drain Package was used to simulate the presence of the stormwater drains in the upper model layer. The altitude, relative to the NGVD29, of the bottom of the drains was determined where manholes allowed access. Altitudes between manholes were extrapolated from the measured values.

The distribution of recharge ranged from 13.0 inches per year (in/yr) in irrigated areas to 0.4 in/yr in relatively impervious areas. The horizontal hydraulic conductivity for the upper layer ranged from 0.5 to 7.5 ft/d, while the horizontal hydraulic conductivity in the intermediate layer ranged from 20 ft/d in a sandy area to 0.2 ft/d within the low-permeability silt and clay deposits.

Recalibration of the Subregional Model

The recalibrated model used the same grid location and discretization of 78 rows and 148 columns of active model cells (measuring 100 ft on each side, fig. 19) as the original subregional

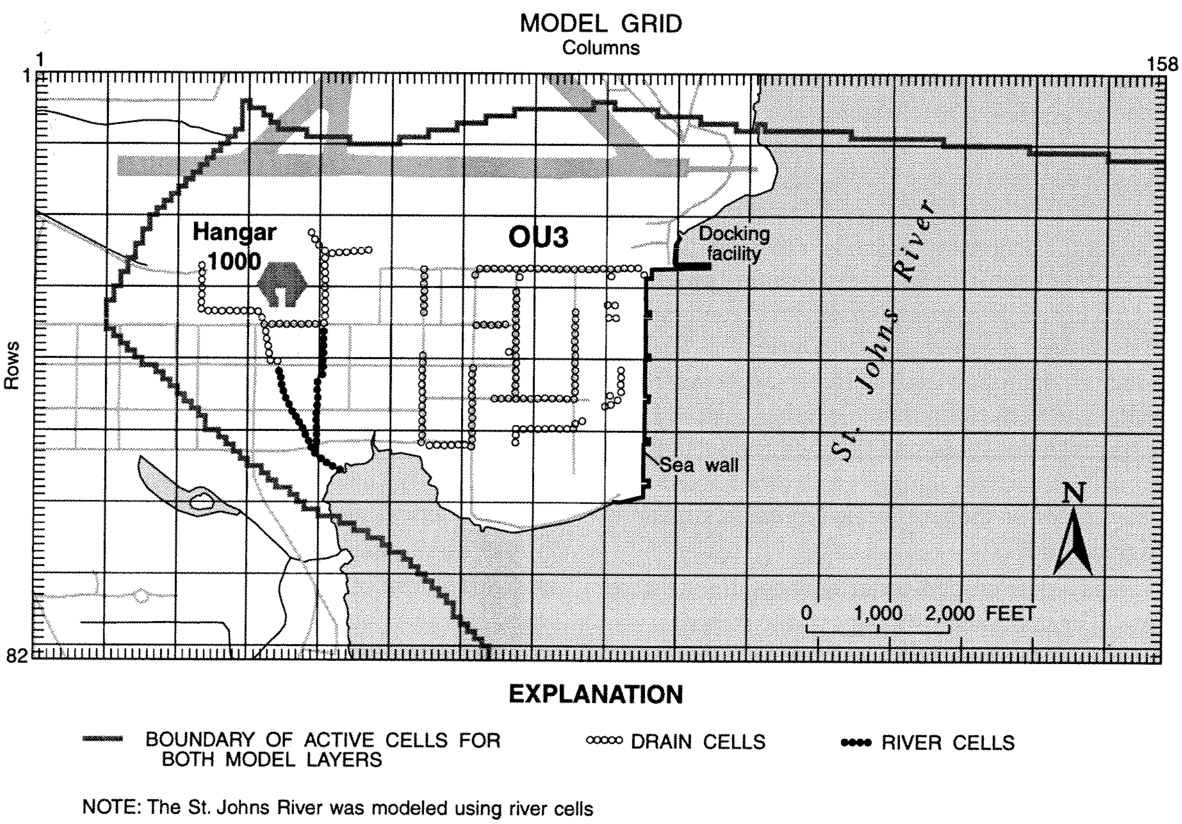


Figure 19. Location and orientation of the subregional model finite-difference grid.

model. The lateral boundaries and extent of the recalibrated model are the same as the original model. The surficial aquifer was divided into four layers (instead of the two layers in the original model) to more accurately simulate the complex hydrology (fig. 20). Layer 1 of the original model was split into layers 1 and 2; layers 3 and 4 are the result of splitting layer 2 of the original model. Model layer 1 represents the upper layer of the surficial aquifer and extends from land surface down to about 15 ft below land surface; this layer was modeled as unconfined. Layer 2 represents most of the clay layer shown in figure 5 (the deeper parts of the clay are simulated in layers 3 and 4). Model layers 3 and 4 represent the intermediate layer of the surficial aquifer and were modeled as confined. The top of the Hawthorn Group forms the base of the surficial aquifer. A seawall, located at OU3, was simulated using the Horizontal-Flow Barrier Package documented by Hseih and Freckleton (1993). The initial aquifer parameters, before recalibration, were all taken directly from the original model. The hydraulic conductivity of the clay layer (which was not explicitly modeled in the original model) was estimated using the vertical conductance and thickness.

The model was calibrated to the head data collected on April 4, 2001. Water levels were collected across the entire northern part of the Station and contoured to verify that the ground-water divides (which established the model boundaries) were the same as for the original model. The relatively thin aquifer and numerous small creeks draining ground water tend to stabilize ground-water levels and the locations of ground-water divides. During recalibration, the following parameters were varied: horizontal and vertical hydraulic conductivities of all layers, the recharge rates, and riverbed conductances. The parameter changes during recalibration were generally minor, so the recalibrated model is similar to the original model.

Steady-state ground-water flow conditions were assumed. The calibration strategy was to match simulated heads in the upper and intermediate layers to within 1.5 ft of the measured values. When calibration was completed, 45 of the 46 model-simulated heads matched the measured heads to within the 1.5-ft calibration criterion, 41of 46 simulated heads (89 percent) were within 1.0 ft, and 27 of 46 simulated heads (59 percent) were within 0.5 ft of the corresponding measured values. Figure 21 shows a comparison of the measured and simulated heads. If the model-simulated heads had matched the measured values exactly, then all the points would lie on the 45 degree line (line of equality).

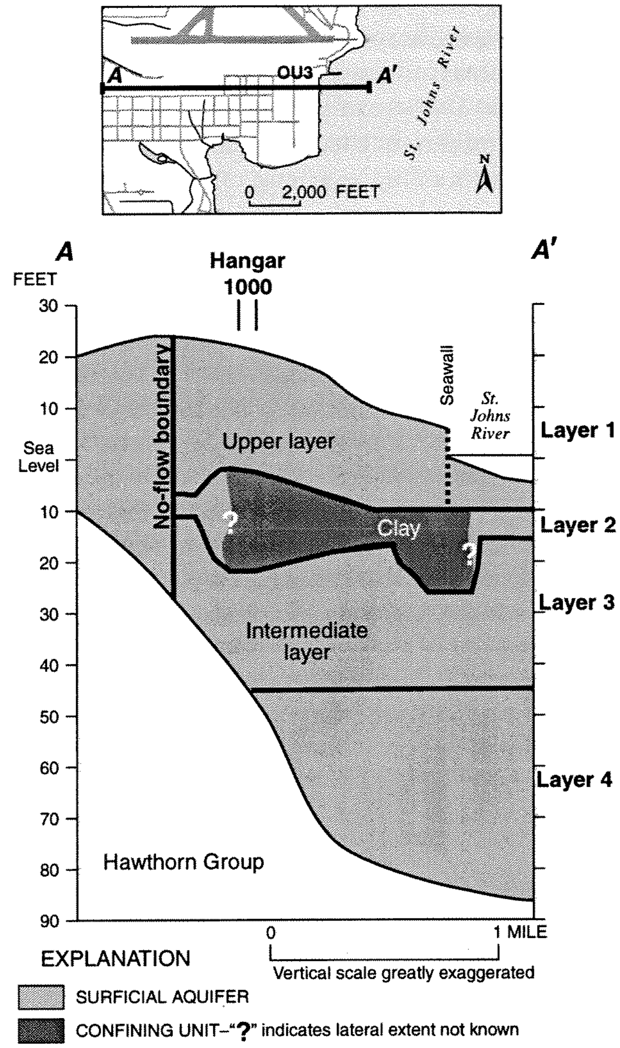


Figure 20. Generalized hydrologic section for the recalibrated subregional model.

The simulated recharge rate for the recalibrated model is shown in figure 22. Recharge ranged from a low of 0.1 in/yr largely in paved areas to 13 in/yr in irrigated areas. Most of the small, irregularly shaped, high recharge areas represent grassy areas within otherwise paved surfaces: the locations of these high recharge areas were determined from aerial photographs. The most significant changes in recharge occured in the grassy areas with higher recharge southeast of Hangar 1000.

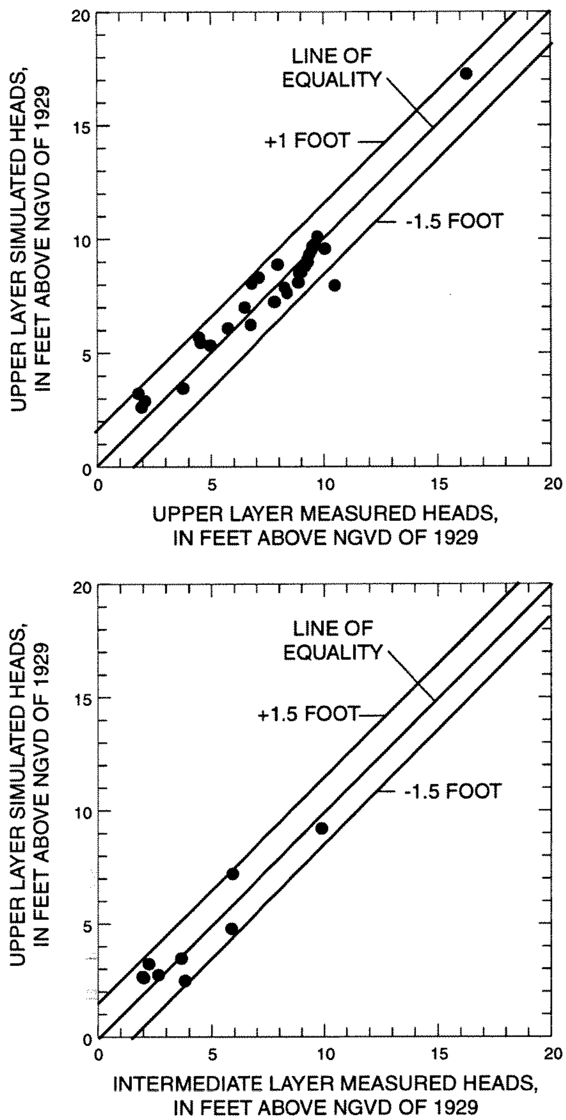


Figure 21. Comparison of measured and simulated heads for the recalibrated subregional model.

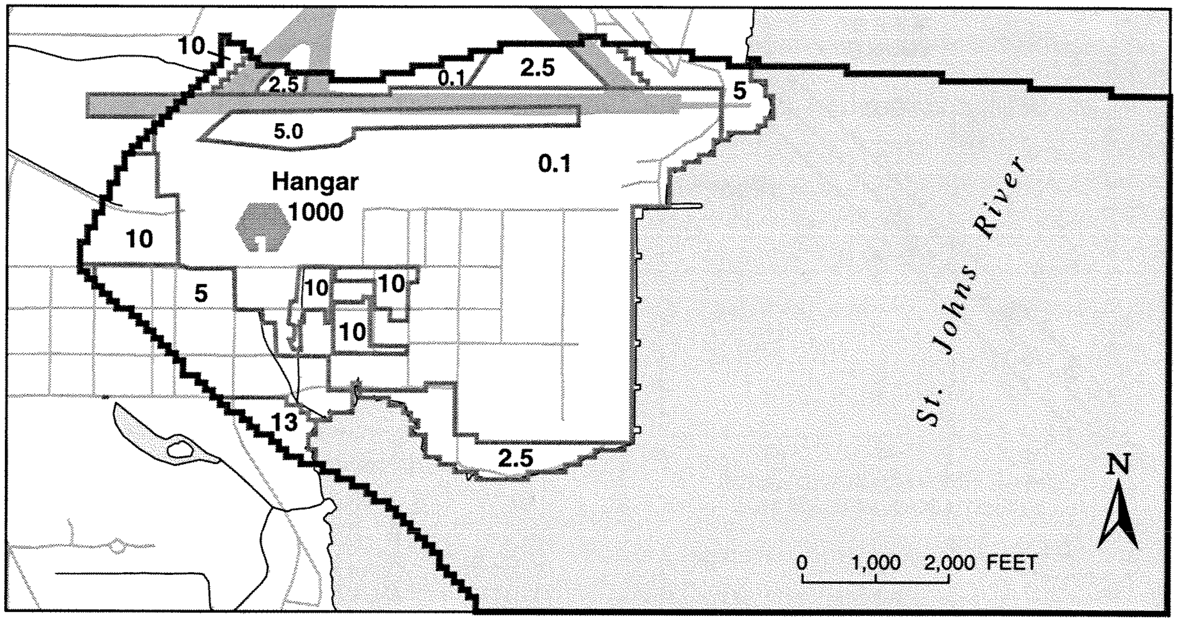
The model-simulated horizontal hydraulic conductivity distribution for the upper layer is shown in figure 23. In the central part of the model area, the hydraulic conductivity is 0.5 ft/d, which is very nearly the value of 0.6 ft/d determined from a multiple-well aquifer test (Davis, 1996a,b) conducted at a contaminated site (the test was located approximately at the center of the 0.5-ft/day conductivity area.) The 0.5-ft/d conductivity area has been reduced in size from the original subregional model. The hydraulic conductivity in the southern part of the model area is 1.0 ft/d and was determined during the calibration of the original subregional model. In the remainder of the model area, the simulated hydraulic conductivity was 7.5 ft/d. Aquifer testing of two wells in the upper layer of the surficial aquifer at Hangar 1000 (wells numbered 10 and 19 on figure 7) gave hydraulic conductivities of 4 ft/d and 8 ft/d, respectively (Davis, 2001). The hydraulic conductivity of the surficial aquifer in the original subregional model was 7.5 ft/d; this value was used in the recalibrated model because it gave the best calibration and because it fell between the measured values. The 7.5-ft/d conductivity area has increased in size from the original model. The vertical hydraulic conductivity for this, and all the other layers, is one order of magnitude lower than the horizontal hydraulic conductivity.

The model-simulated horizontal hydraulic conductivity distribution for layer 2 is shown in figure 24. The hydraulic conductivity ranged from a low of $5.0x10^{-6}$ ft/d in the thicker part of the clay layer to a high of $4.3x10^{-1}$ ft/d in the area around the old fuel barge dock, where dredging has removed or disturbed the clay. The simulated thickness of layer 2 is shown in figure 25. As seen in the figure, the clay layer is thickest near the center of the model and thins toward the edges.

The model-simulated horizontal hydraulic conductivity distribution for layer 3 is shown in figure 26. The simulated hydraulic conductivity over most of the model area was 7.5 ft/d. The higher 20-ft/d conductivity area at OU3 was based on a multi-well aquifer test (Davis, 1996a,b). The hydraulic conductivity of 0.4 ft/d represents low-permeability silt and clay deposits, and was taken from earlier modeling studies (Davis, 1998). The thickness of layer 3 ranges from 15-20 ft at Hangar 1000 (fig. 27). Near the center of the model, layer 3 thins to about 5 ft, which is due to the thickening of the overlying clay represented by layer 2.

The model-simulated horizontal hydraulic conductivity distribution for layer 4 is shown in figure 28. The distribution is the same as for layer 3 and for the same reasons, except that layer 4 does not extend as far westward as layer 3. The simulated thickness of layer 4 is shown in figure 29. The increase in thickness from west to east is a result of the thinning of the top of the Hawthorn Group which forms the base of layer 4.

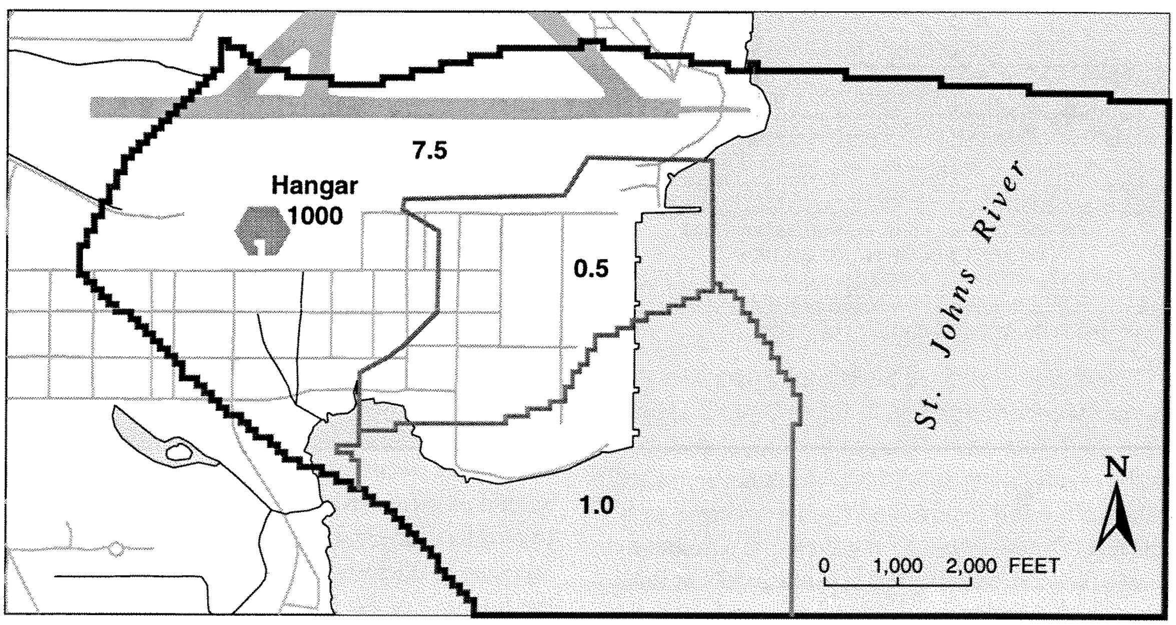
The riverbed conductance for the St. Johns River was 8 square feet per day (ft^2/d), except in the area of the docking facility where the conductance was 60 ft^2/d to reflect the disturbance and removal of riverbed sediments during dredging. The conductance of the small ditches was of 4 ft^2/d.



EXPLANATION

- SUBREGIONAL STUDY AREA AND SUBREGIONAL MODEL BOUNDARY
- BOUNDARY OF RECHARGE ZONES IN MODEL
- **2.5** RECHARGE RATES–Model simulated, values in inches per year

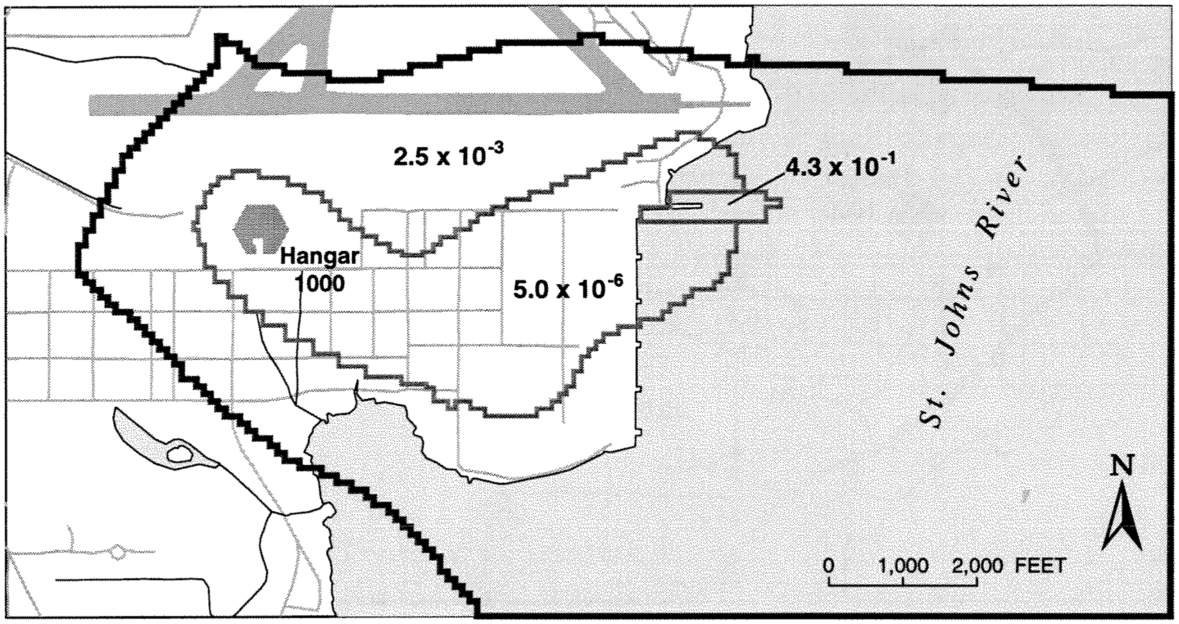
Figure 22. Simulated recharge rates for the recalibrated subregional model.



EXPLANATION

- SUBREGIONAL STUDY AREA AND SUBREGIONAL MODEL BOUNDARY
- BOUNDARY OF MODEL-SIMULATED HORIZONTAL HYDRAULIC CONDUCTIVITY–In the upper layer
- **1.0** MODEL-SIMULATED HORIZONTAL HYDRAULIC CONDUCTIVITY–In the upper layer, in feet per day

Figure 23. Simulated horizontal hydraulic conductivity of the upper layer of the recalibrated subregional model.



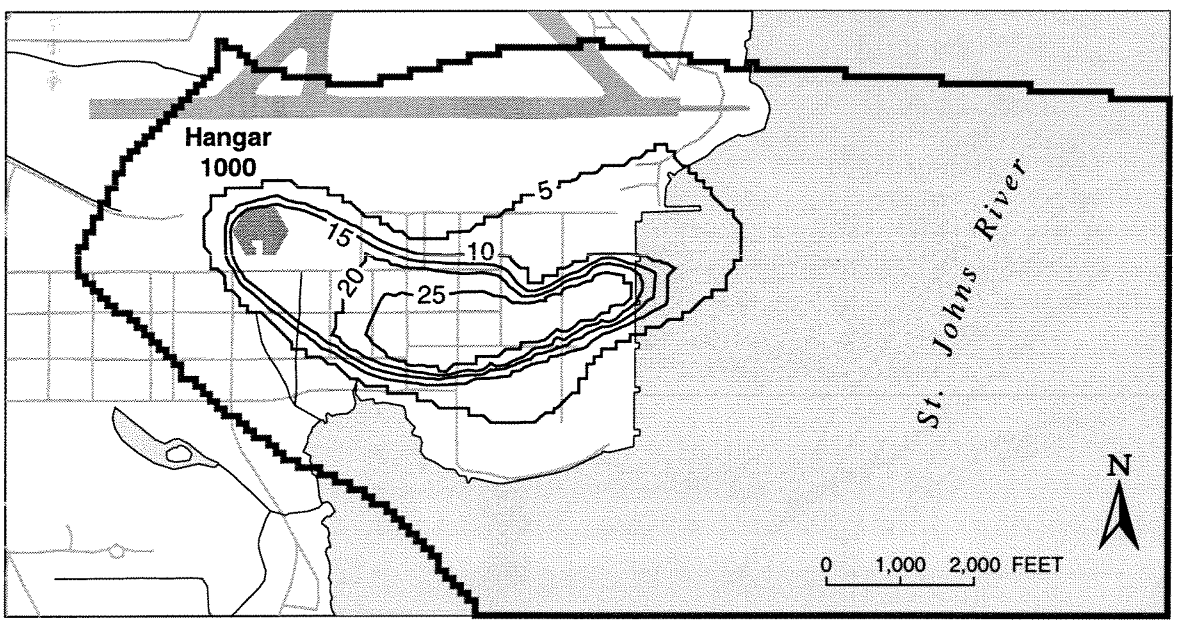
EXPLANATION

SUBREGIONAL STUDY AREA AND SUBREGIONAL MODEL BOUNDARY

BOUNDARY OF MODEL-SIMULATED HORIZONTAL HYDRAULIC CONDUCTIVITY–Of layer 2

2.5×10^{-3} MODEL-SIMULATED HORIZONTAL HYDRAULIC CONDUCTIVITY–Of layer 2, in feet per day

Figure 24. Simulated horizontal hydraulic conductivity of layer 2 of the recalibrated subregional model.

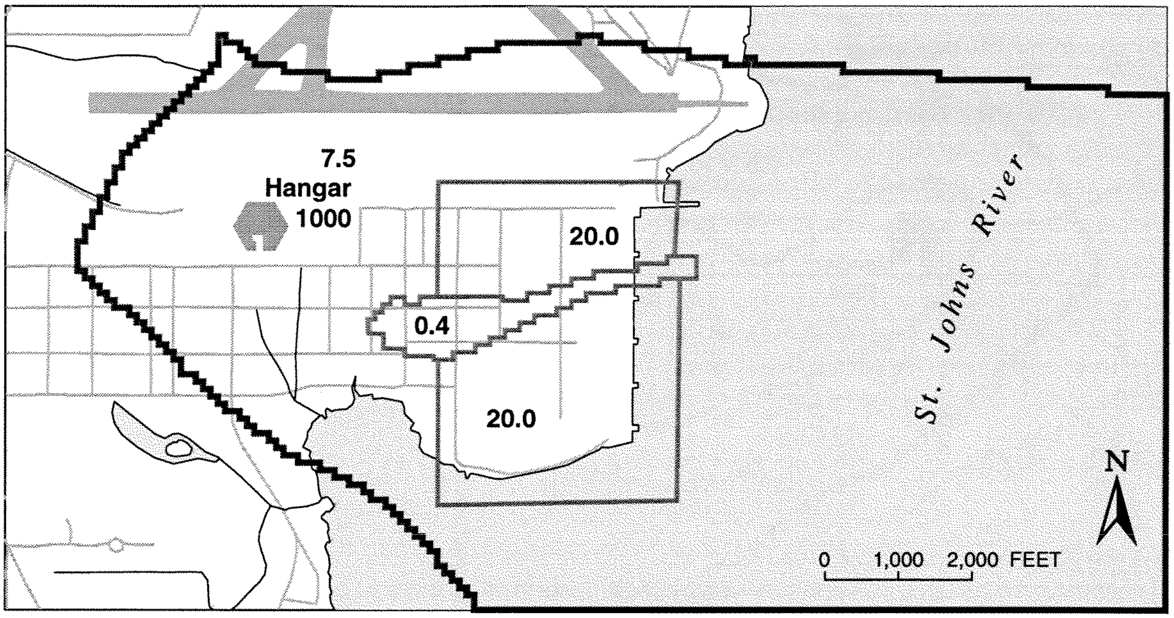


EXPLANATION

SUBREGIONAL STUDY AREA AND SUBREGIONAL MODEL BOUNDARY

—20— LINE OF EQUAL SIMULATED THICKNESS OF LAYER 2–Of the subregional model, in feet.

Figure 25. Simulated thickness of layer 2 of the recalibrated subregional model.



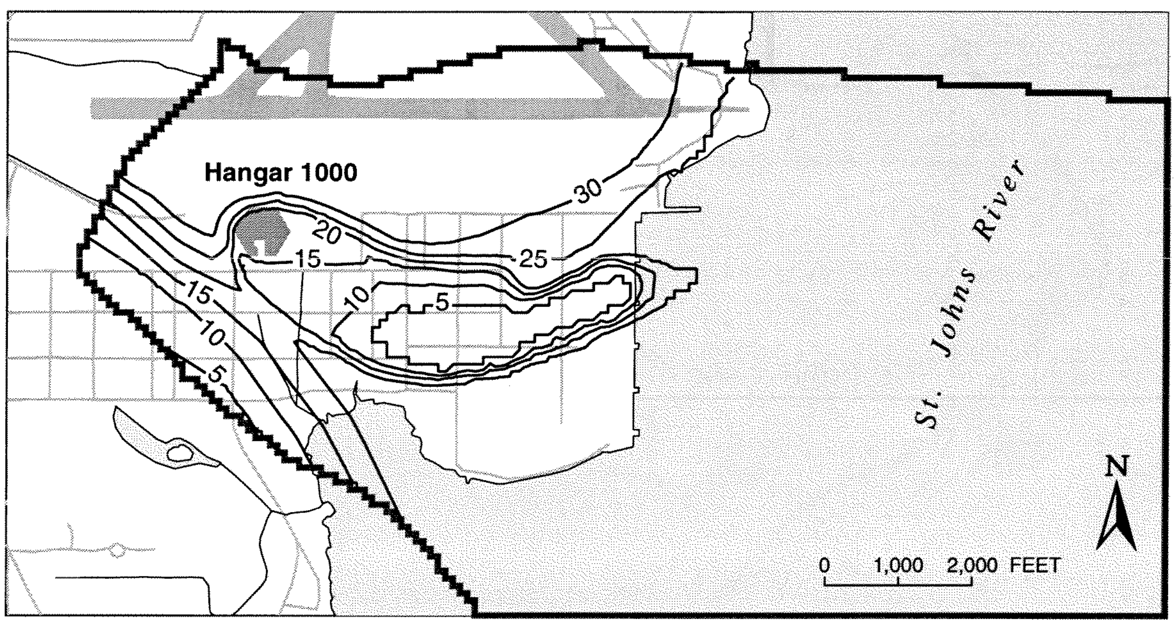
EXPLANATION

SUBREGIONAL STUDY AREA AND SUBREGIONAL MODEL BOUNDARY

BOUNDARY OF MODEL-SIMULATED HORIZONTAL HYDRAULIC CONDUCTIVITY–Of layer 3

20.0 MODEL-SIMULATED HORIZONTAL HYDRAULIC CONDUCTIVITY–Of layer 3, in feet per day

Figure 26. Simulated horizontal hydraulic conductivity of layer 3 of the recalibrated subregional model.

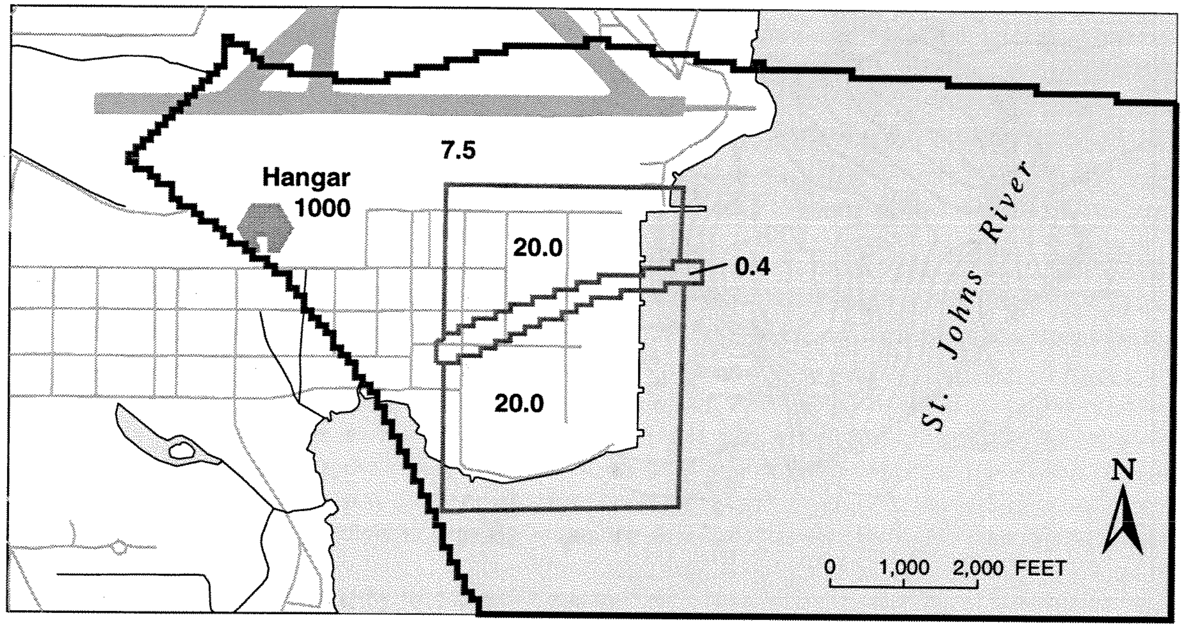


EXPLANATION

SUBREGIONAL STUDY AREA AND SUBREGIONAL MODEL BOUNDARY

—5— LINE OF EQUAL SIMULATED THICKNESS OF LAYER 3–Of the subregional model, in feet.

Figure 27. Simulated thickness of layer 3 of the recalibrated subregional model.



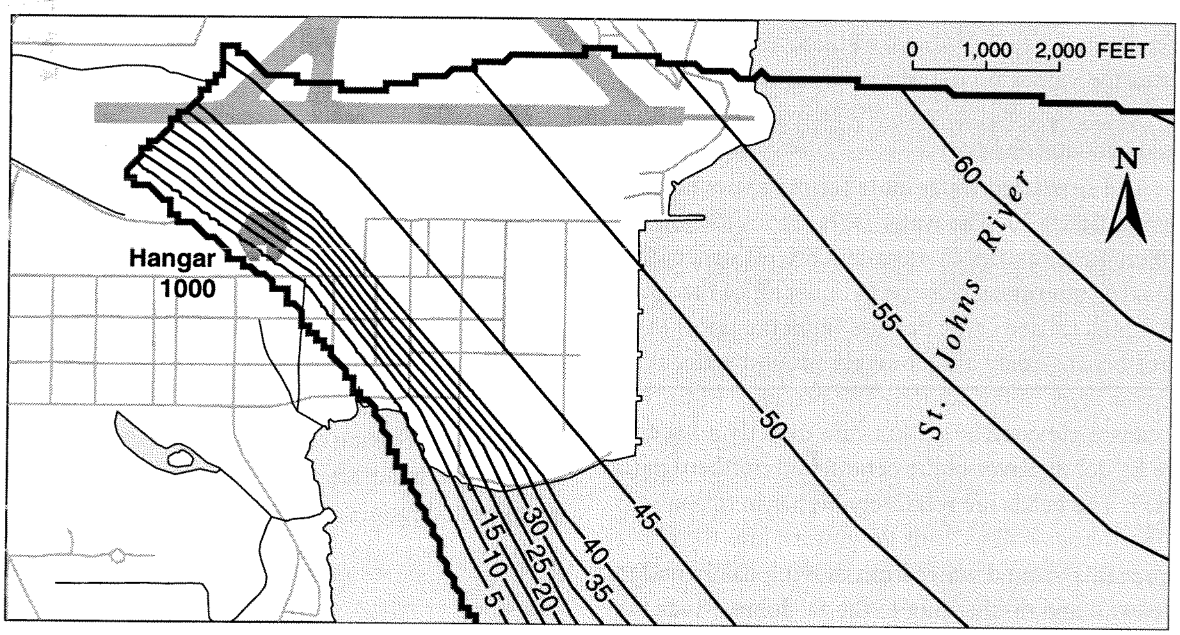
EXPLANATION

SUBREGIONAL STUDY AREA AND SUBREGIONAL MODEL BOUNDARY

BOUNDARY OF MODEL-SIMULATED HORIZONTAL HYDRAULIC CONDUCTIVITY–Of layer 4

20.0 MODEL-SIMULATED HORIZONTAL HYDRAULIC CONDUCTIVITY–Of layer 4, in feet per day

Figure 28. Simulated horizontal hydraulic conductivity of layer 4 of the recalibrated subregional model.

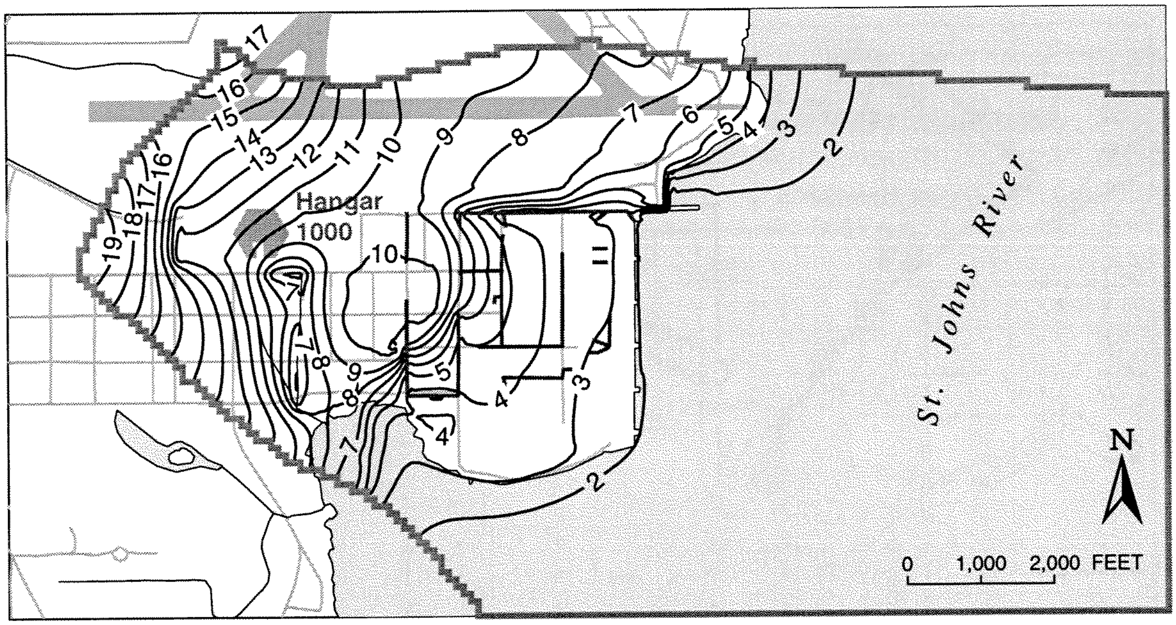


EXPLANATION

SUBREGIONAL STUDY AREA AND SUBREGIONAL MODEL BOUNDARY

—5— LINE OF EQUAL SIMULATED THICKNESS OF LAYER 4–Of the subregional model, in feet.

Figure 29. Simulated thickness of layer 4 of the recalibrated subregional model.



EXPLANATION

SUBREGIONAL STUDY AREA AND SUBREGIONAL MODEL BOUNDARY

—5— SIMULATED WATER-TABLE CONTOUR–Shows model-simulated head in the upper layer. Contour interval 1 foot. Datum is NGVD of 1929

SIMULATED LEAKING STORMWATER DRAINS

Figure 30. Simulated water-table surface of the upper layer of the recalibrated subregional model.

The calibrated conductances of the stormwater drains ranged from 0.1 to 2 ft^2/d. All of these values are the same as the values used in the original subregional model except the stormwater drains, which had a lower conductance.

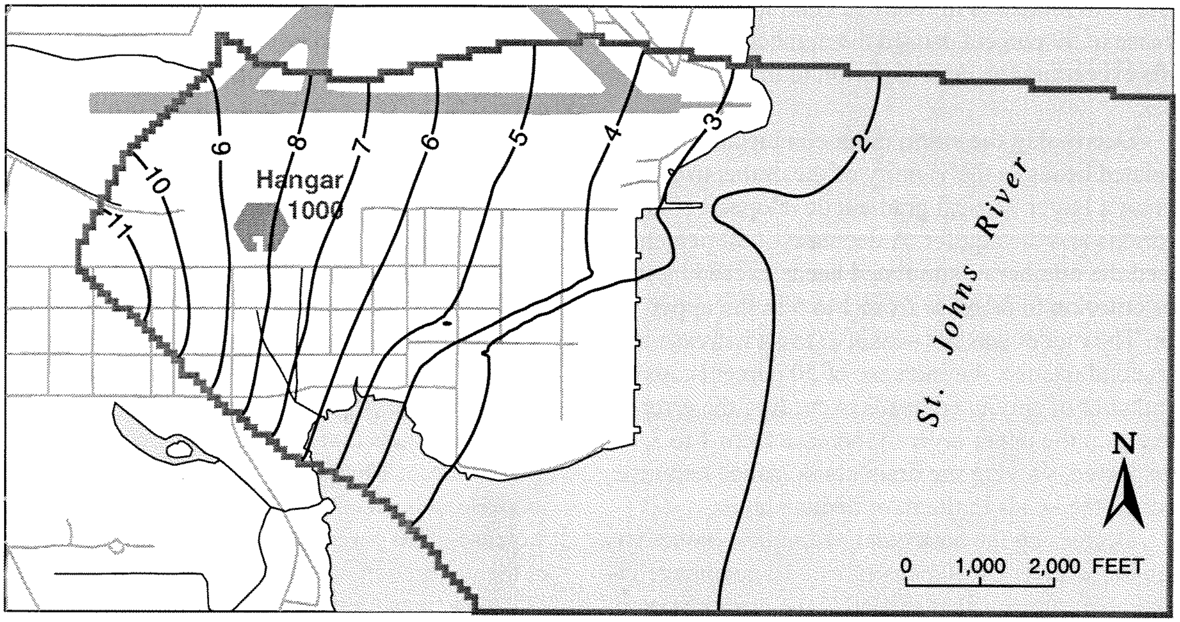
The simulated water table for the upper layer is shown in figure 30. The water table slopes toward the St. Johns River except in areas that are influenced by the leaking stormwater drains. Almost all of the simulated drains caused some depression in the water-table surface because they are removing ground water from the upper layer of the aquifer. The presence of the seawall causes elevated heads to occur directly adjacent to the St. Johns River in the central and northern parts of OU3. The heads are relatively higher in this area because the seawall extends downward into the clay and prevents ground water from moving easily under the seawall and discharging to the St. Johns River.

The simulated potentiometric surface for the intermediate layer slopes toward the St. Johns River (fig. 31). The presence of the low-permeability deposits is reflected in the bending of the contours in the central part of OU3; the result is a steeper slope of the potentiometric surface in the northern half of OU3 than in the southern half.

Ideally, there would also be a match of simulated flows to field measurements. Two streamflow measurements were taken within the study area (fig. 9); however, as discussed earlier, these creeks receive both ground-water seepage and flow from other sources, and thus could only be used as an upper limit for comparison with model-simulated values which were substaintially below the measured values. The regional, Station-wide ground-water model was calibrated to measured stream flows (due to numerous creeks at the Station) and the same recharge rates determined in adjacent watersheds were applied to the recalibrated modeled watershed to ensure reasonable recharge rates.

Ground-Water Budget

The model-simulated inflows and outflows for the subregional model area are shown in table 4. The total rate of recharge to the subregional model was



EXPLANATION

SUBREGIONAL STUDY AREA AND SUBREGIONAL MODEL BOUNDARY

—5— SIMULATED POTENTIOMETRIC CONTOUR–Shows model-simulated head in the upper layer. Contour interval 1 foot. Datum is NGVD of 1929

Figure 31. Simulated potentiometric surface of the intermediate layer of the recalibrated subregional model.

0.189 ft^3/s. Discharge rates were 0.071 ft^3/s to the St. Johns River, 0.055 ft^3/s to the ditches, and 0.063 ft^3/s to the stormwater drains.

Table 4. Simulated ground-water inflows and outflows for the recalibrated subregional model

[ft^3/s, cubic feet per second]

Ground-water source or sink	Flow rate into the model (ft^3/s)	Flow rate out of the model (ft^3/s)
Recharge	0.189	0
St. Johns River	0	0.071
Ditches	0	0.055
Stormwater drains	0	0.063
Total	0.189	0.189

Sensitivity Analysis

Sensitivity tests were conducted to determine the effect of changes in model input parameters on the model calibration. Tests were conducted by increasing (or decreasing) each parameter by 50 percent while other parameters were unchanged. Parameter changes resulted in the simulation of a new distribution of heads, and the effect of the parameter change was judged by determining the number of simulated heads that no longer remained within 1.5 ft of the measured values (table 5). Input parameters tested were recharge, riverbed conductance, storm drain conductance, horizontal hydraulic conductivity of the upper layer, horizontal hydraulic conductivity of the clay layer, horizontal hydraulic conductivity of the intermediate layer, and vertical hydraulic conductivity.

The model was sensitive to recharge rate changes because recharge was the only source of water to the model. Decreasing the recharge rate by 50 percent caused the simulated heads to drop and the number of simulated heads exceeding the error criterion to increase from 1 to 6 (out of 46). Increasing the recharge rate by 50 percent caused the model heads to rise and the number of heads exceeding the error criterion to increase from 1 to 10.

Decreasing the riverbed conductance caused the simulated heads to rise, because a larger gradient was necessary to move water from the aquifer to the river. A decrease of 50 percent caused the total number of simulated heads exceeding the error criterion to increase from 1 to 5. In contrast, the model was not sensitive to increases in riverbed conductance. An increase of 50 percent caused the number of simulated heads exceeding the error criterion to increase from 1 to 3.

Decreasing the storm drain conductance caused simulated heads in the vicinity of the drains to rise, because a larger vertical gradient developed between the drains and the aquifer. A decrease of 50 percent caused the number of simulated heads exceeding the error criterion to increase from 1 to 5 in the upper layer. The model was not sensitive to an increase in drain conductance. An increase of 50 percent caused the number of simulated heads exceeding the error criterion in the upper layer to increase from 1 to 3. As expected, varying the drain conductance had little effect on the heads in the intermediate layer.

Decreasing the horizontal hydraulic conductivity in the upper layer by 50 percent caused no change in the number of heads that exceeded the error criterion. This is probably because most of the wells are near storm drains, which reduce the fluctuations of the water levels in the aquifer in their vicinity. An increase of 50 percent also caused no change in the quality of the calibration for the same reason.

Increasing or decreasing the horizontal hydraulic conductivity in the clay layer by 50 percent also caused no change in the number of heads that exceeded the error criterion. This is probably because the clay layer had a low conductivity (especially in the thicker areas) and varying this low conductivity did not substantially change the volume of water moving through it.

Decreasing the horizontal hydraulic conductivity in the intermediate layer (layers 3 and 4 combined) caused the simulated heads in the intermediate layer to rise, causing a corresponding rise in the upper layer. A decrease of 50 percent caused the total number of simulated heads that exceeded the error criterion to increase from 1 to 6. The model was not sensitive to an increase in horizontal hydraulic conductivity. An increase of 50 percent caused no change in the quality of the calibration.

Decreasing the vertical hydraulic conductivity by 50 percent caused simulated heads in layer 1 to rise and the total number of simulated heads that exceeded the error criterion to increase from 1 to 9. An increase of 50 percent caused no change in the quality of the calibration.

Table 5. Summary of sensitivity analyses for the recalibrated subregional model
[*, indicates parameter is multiplied by the number to the right.]

Parameter changed	Number of simulated heads in the upper layer that exceeded the calibration criterion of 1.5 foot	Number of simulated heads in the intermediate layer that exceeded the calibration criterion of 1.5 foot	Total
Calibrated Model	1	0	1
Recharge * 0.5	4	2	6
Recharge * 1.5	8	2	10
Riverbed conductance * 0.5	4	1	5
Riverbed conductance * 1.5	1	2	3
Drain conductance * 0.5	5	0	5
Drain conductance * 1.5	3	0	3
Horizontal hydraulic conductivity of upper layer * 0.5	1	0	1
Horizontal hydraulic conductivity of upper layer * 1.5	1	0	1
Horizontal hydraulic conductivity of clay layer * 1.5	1	0	1
Horizontal hydraulic conductivity of clay layer * 1.5	1	0	1
Horizontal hydraulic conductivity of intermediate layer * 0.5	6	0	6
Horizontal hydraulic conductivity of intermediate layer * 1.5	1	0	1
Vertical hydraulic conductivity of all layers * 0.5	8	1	9
Vertical hydraulic conductivity of all layers * 1.5	1	0	1

Ground-Water Flow Model Limitations

The subregional model simulated ground-water flow by assuming steady-state conditions. The surficial aquifer is assumed to be under steady-state conditions because water levels in wells showed no long-term trend (but did show seasonal variation). The water table is generally close to the land surface, and there is little capacity for a substantial rise in water levels. If higher than average rainfall occurred, greater runoff would probably result without inducing a substantially higher water table. However, an extended drought could reduce water levels to below those that were used to calibrate the model, which would result in simulated ground-water flow velocities that are slower than actual velocities.

Since there were no discharge measurements for direct calibration of the model, model-derived recharge rates from the Station-wide model (which did have discharge measurements) were used because they were considered to be the best estimates. If these rates were too low, then this would result in ground-water flow velocities that were too low. Conversely, if these recharge rates were too high, then the velocities would be too high.

FATE AND TRANSPORT SIMULATIONS OF TRICHLOROETHENE, DICHLORO-ETHENE, AND VINYL CHLORIDE MOVEMENT AT HANGAR 1000

This section describes site-specific ground-water flow and fate and transport modeling conducted at Hangar 1000. The previously discussed subregional flow model was used to establish layering and boundary conditions for the site-specific ground-water flow model. Fate and transport modeling was conducted using the site-specific ground-water flow model and the computer code, Reactive Transport in Three Dimensions (RT3D), developed by Clement (1997). This code was used because it can simulate the degradation of TCE to DCE to VC. This model is herein referred to as the Hangar 1000 model.

Model Construction

The Hangar 1000 model contains 161 rows and 149 columns of model cells. All cells are 5 ft long on each side. The location and orientation of the finite-difference grid for the Hanger 1000 model is shown in figure 32. The model simulates the same four layers as the subregional model (fig. 20.) The perimeter of the Hangar 1000 model consists of constant head cells; the assigned head at these cells was taken from the calibrated subregional model described in the previous section. All other modeling and aquifer parameters were the same as those used for the subregional model, except for the cell size.

Flow Path Analysis

The direction and rate of ground-water movement in the upper layer of the aquifer was computed by using the USGS program MODPATH (Pollock, 1989), and the results of this analysis are shown in figure 33. Particle tracking was simulated in layer 1 because this is where contaminants are present. The very low-permeability clay layer (layer 2 of the model) essentially prevents contaminate ground water from moving downward into the intermediate layer (layers 3 and 4 of the model) in the study area. Thus, contamination is transported only in layer 1 of the model. The ground-water flow velocity averaged about 75 feet per year (ft/yr) and took about 6 years for particles to move the 450 ft to the storm drain, assuming a porosity of 25 percent. Other porosities would give exactly the same direction of ground-water flow, but the rate of movement would be inversely proportional to the porosity. Reducing the simulated porosity by one half would double the simulated velocity. Likewise, doubling the simulated porosity would decrease the simulated velocity by one half.

Fate and Transport Modeling Overview

The objective of the fate and transport modeling calibration was to match, as closely as possible, the known distribution of TCE, DCE, and VC. Because of the high levels of contamination at the tank removal site, free product is suspected to be present. To simulate this free product source, two cells (creating a 5 by 10 ft area) were designated as constant chemical concentration cells; the concentration in these two cells was varied during calibration. When a simulation began, RT3D assigned particles to constant concentration model cells; each particle represented a cell volume-weighted mass of contamination. The movement of particles was tracked during each step in the simulation.

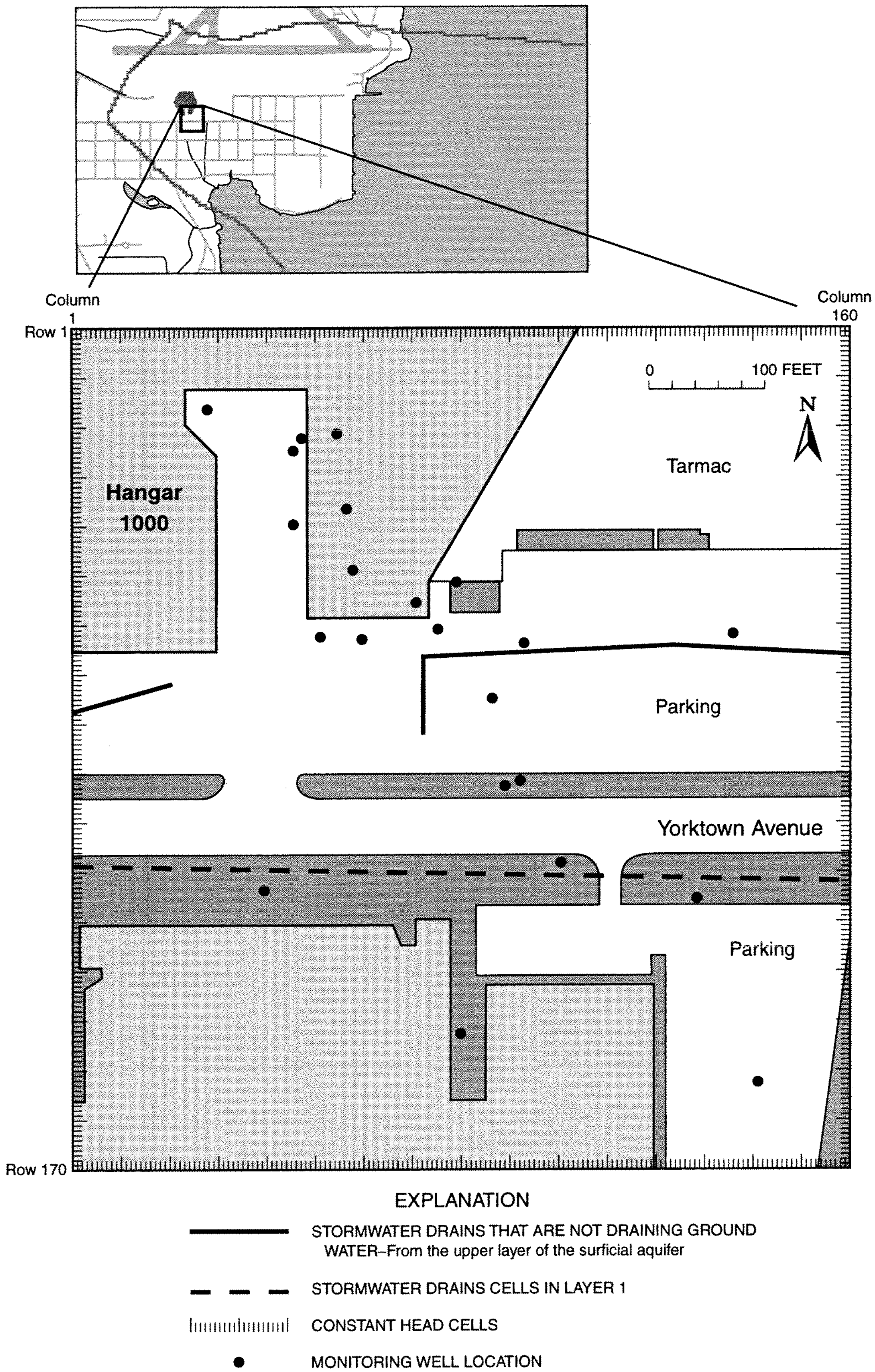
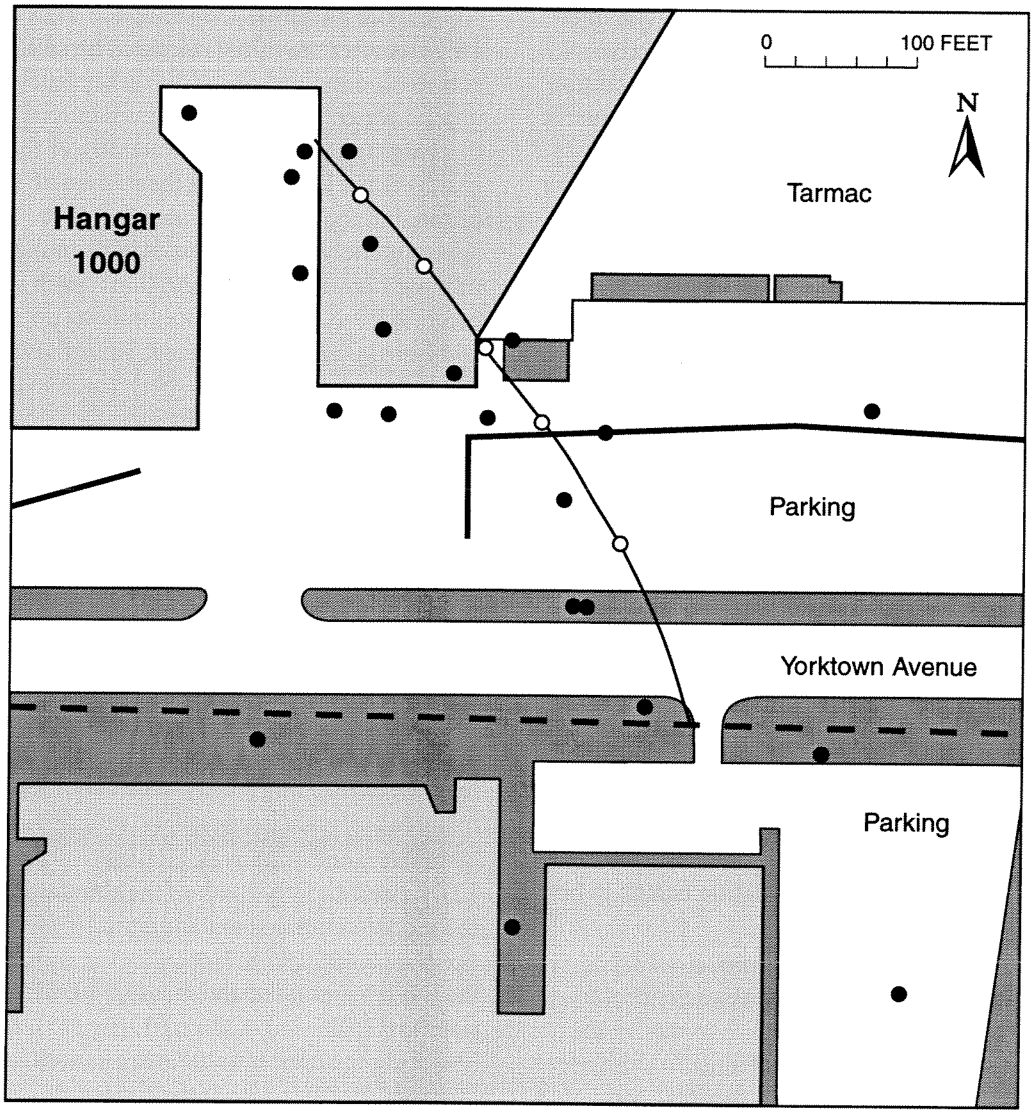


Figure 32. Location and orientation of the Hangar 1000 model.



EXPLANATION

STORMWATER DRAINS THAT ARE NOT DRAINING GROUND WATER–From the upper layer of the surficial aquifer

STORMWATER DRAINS THAT ARE DRAINING GROUND WATER–From the upper layer of the surficial aquifer

PARTICLE PATHLINE–Shows simulated ground-water flow path in the upper layer. Distance between dots represents a traveltime of 1 year

MONITORING WELL LOCATION

Figure 33. Particle pathlines representing ground-water flow directions in the upper layer of the surficial aquifer at Hangar 1000.

The sum of the masses of all the particles in a cell equaled the total mass of contamination for that cell. Advection of ground water is the most important factor governing the transport of these chemical compounds. The direction of ground-water flow was determined from the intercell flow velocities, which were part of the output from MODFLOW. The intercell flow velocities were divided by the effective porosity to get the ground-water velocity. In addition to advection, the effects of retardation, hydrodynamic dispersion, and chemical decay were added to the simulation. The effects of retardation due to sorption caused the contaminant to move slower than the ground water, and these effects were specified by the retardation factor. The effect of hydrodynamic dispersion, as specified by the dispersivity, caused the plume to spread. Chemical decay, as specified by a half-life, dictated how rapidly the compounds degraded naturally in the aquifer. TCE degrades into DCE; DCE degrades into VC; and VC can degrades into ethene (or VC could be biodegraded to other non-hazardous compounds). For a more complete discussion of contaminant transport, see Zheng and Bennett (1995).

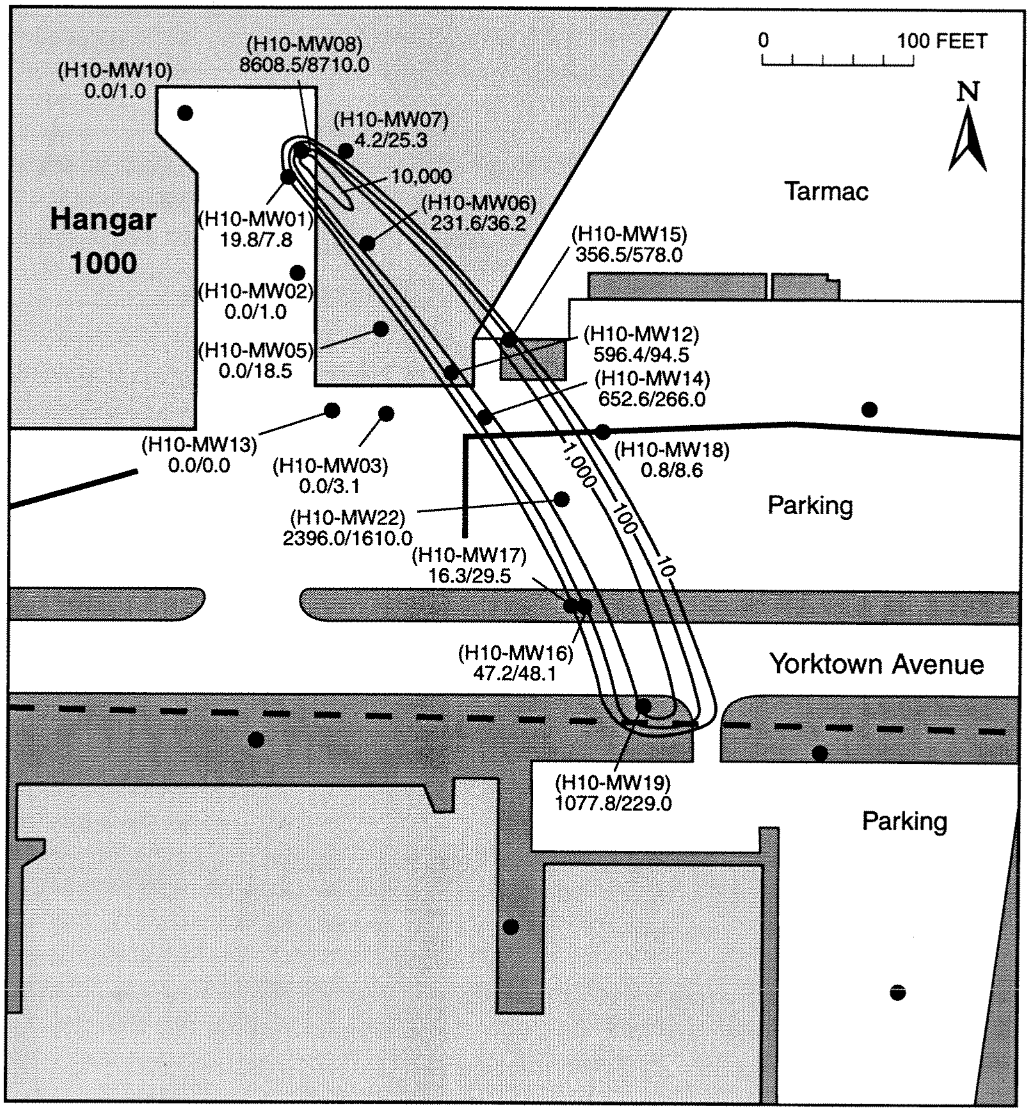
The calibration strategy was to vary the effective porosity, dispersivity, retardation, chemical decay rate, and chemical concentrations in two constant chemical concentration cells (that represented the source area) until modeled concentrations matched measured values as closely as possible. For this simulation, it was assumed that the flow field is constant in time, degradation and sorption are constant along a flow path, and that degradation occurs in both the dissolved and sorbed phase.

After the fate and transport model was calibrated, it was used to simulate future concentrations. The Navy has begun pilot tests to reduce the concentrations at the tank removal site. To simulate this result the concentration in the constant concentration cells was reduced by 50 percent and the model was run to predict the effect. This scenerio was then repeated assuming a 100 percent reduction at the source.

Calibration to Current Distributions of Trichloroethene, Dichloroethene, and Vinyl Chloride

As discussed earlier, the simulated source of contamination is the two constant chemical concentration cells (creating a source area of 5 by 10 ft) located where the leaking chemical storage tank and associated piping existed before removal. The calibrated values for the two constant chemical concentration cells were 11,000 and 20,000 μg/L for TCE; 5,400 and 10,000 μg/L for DCE; and 0 and 0 μg/L for VC. Figure 34 shows the simulated TCE distribution 16 years after the initial release. The spilled product acts as an ongoing source by slowly leaching into the ground water. TCE then continues moving toward, and discharging into, the stormwater sewer to the southeast. It is not known when the release of TCE actually began, but the tanks were installed in the late 1960s, approximately 35 years ago. After simulating 16 years into the future, TCE concetrations reach steady-state conditions; that is, the concentrations do not change if additional years are simulated. Since these steady-state concentrations result in the best match to the measured data, it is speculated that the initial leak occurred more than 16 years ago. If the contamination source area changed sunstantially during tank removal in 1994, then some concentration changes may still be migrating through the system. DCE concentrations reached steady-state conditions in 14 years (fig. 35) and VC concentrations reached steady-state concentrations in 12 years (fig 36). The VC concentrations reached steady-state conditions first because the retardation factor for VC is the lowest of the three chemicals, thus allowing VC to be transported faster; DCE was intermediate in reaching steady-state conditions because its retardation factor is intermediate to TCE and VC.

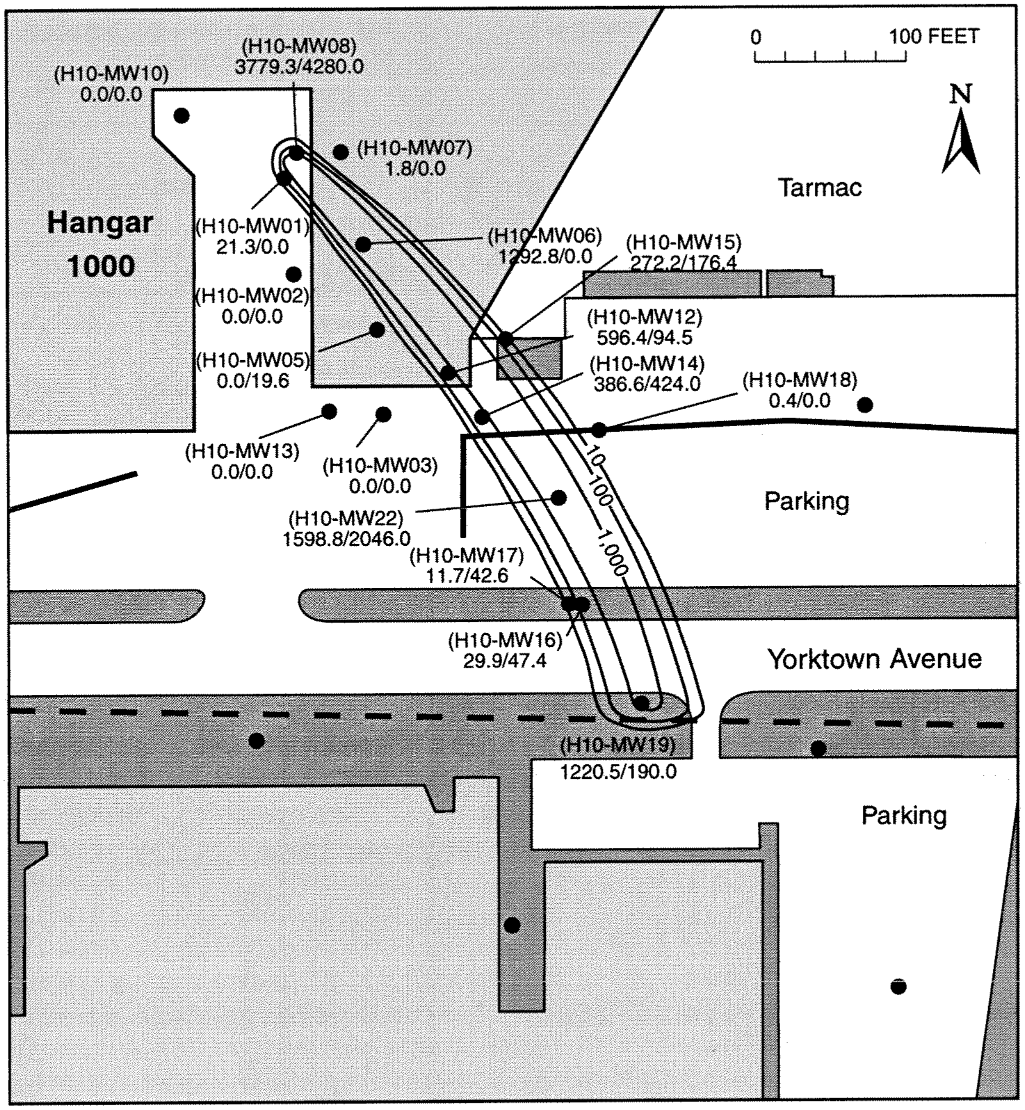
At monitoring well H10-MW08 (map number 12) located directly south of the simulated source area, the model-simulated and measured TCE concentrations are 8,609 and 8,710 μg/L (fig. 34), respectively; the model-simulated and measured DCE concentrations are 3,779 and 4,280 μg/L (fig. 35), respectively. Matching the concentrations at this well was used as the basis for determining the concentration level in the two constant chemical concentration cells. The concentration for VC was set at 0 μg/L in the source area because VC is a degradation product of DCE. Matching the measured concentration values in the other wells was accomplished by varying the dispersivity and first order decay rates of TCE, DCE, and VC. The dispersivity values that gave the best match were: longitudinal 1.5 ft, transverse 0.27 ft, and vertical 0.27 ft. These dispersivity values fall within the expected range (0.98 to 5.6 ft for longitudinal and 0.033 to 0.3 ft for transverse dispersivity) described by Gelhar and others (1992).



EXPLANATION

———	STORMWATER DRAINS THAT ARE NOT DRAINING GROUND WATER–From the upper layer of the surficial aquifer
— — —	STORMWATER DRAINS THAT ARE DRAINING GROUND WATER–From the upper layer of the surficial aquifer
—10—	LINE OF EQUAL SIMULATED TCE CONCENTRATION–In micrograms per liter. Interval is variable
●	MONITORING WELL LOCATION
(H10-MW16)	(WELL NAME)
47.2/48.1	SIMULATED/OBSERVED CONCENTRATION–In micrograms per liter

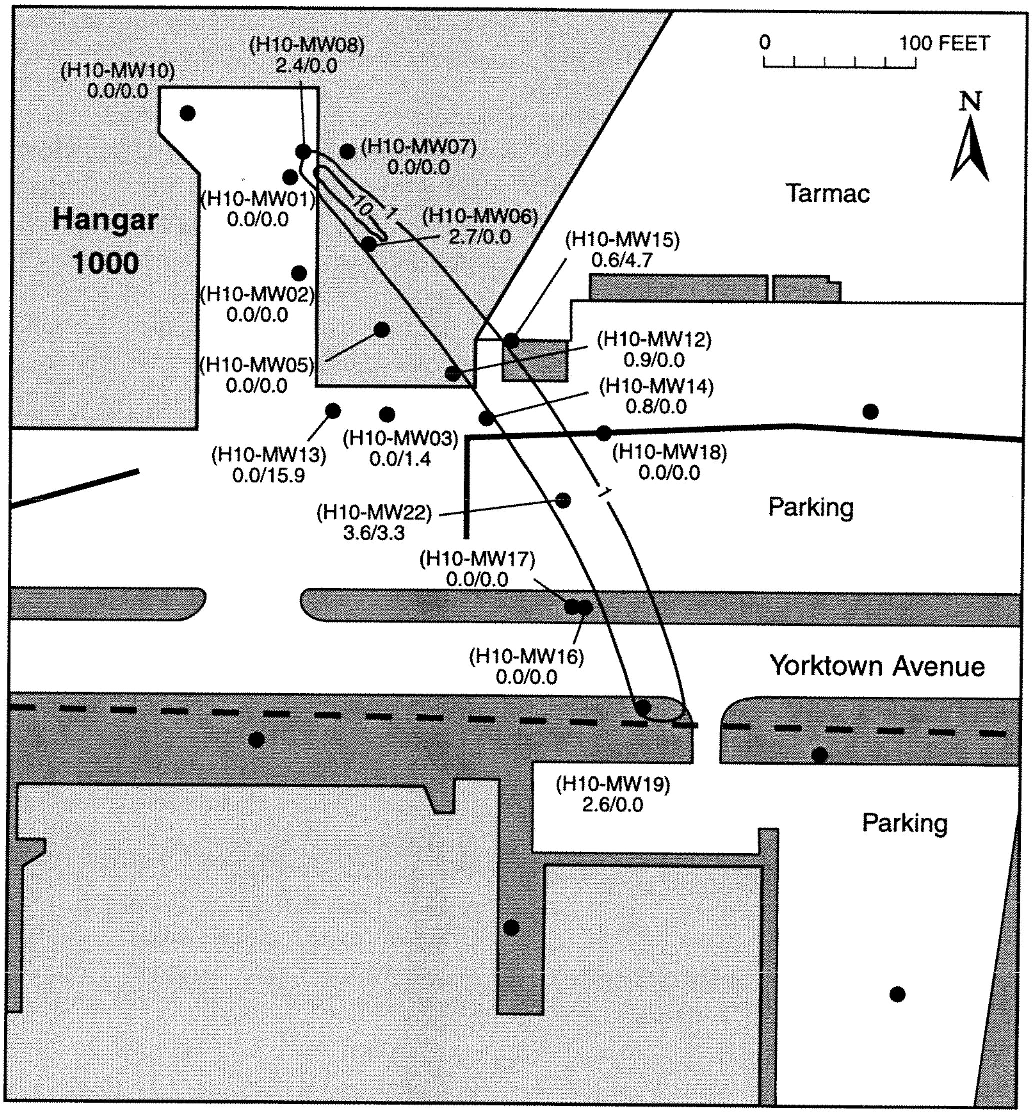
Figure 34. Simulated trichloroethene (TCE) concentrations in layer 1 after 16 years.



EXPLANATION

(solid line)	STORMWATER DRAINS THAT ARE NOT DRAINING GROUND WATER–From the upper layer of the surficial aquifer
(dashed line)	STORMWATER DRAINS THAT ARE DRAINING GROUND WATER–From the upper layer of the surficial aquifer
—10—	LINE OF EQUAL SIMULATED DCE CONCENTRATION–In micrograms per liter. Interval is variable
●	MONITORING WELL LOCATION
(H10-MW19)	(WELL NAME)
1220.5/190.0	SIMULATED/OBSERVED CONCENTRATION–In micrograms per liter

Figure 35. Simulated dichloroethene (DCE) concentrations in layer 1 after 14 years.



EXPLANATION

———	STORMWATER DRAINS THAT ARE NOT DRAINING GROUND WATER–From the upper layer of the surficial aquifer
— — —	STORMWATER DRAINS THAT ARE DRAINING GROUND WATER–From the upper layer of the surficial aquifer
—10—	LINE OF EQUAL SIMULATED VC CONCENTRATION–In micrograms per liter. Interval is variable
●	MONITORING WELL LOCATION
(H10-MW19)	(WELL NAME)
2.6/0.0	SIMULATED/OBSERVED CONCENTRATION–In micrograms per liter

Figure 36. Simulated vinyl chloride (VC) concentrations in layer 1 after 12 years.

Because the discharge point was close to the source (about 450 ft), the model was relatively insensitive to dispersivity. Dispersivity has the greatest effect on contaminant concentrations when the contamination has a long distance to travel and thus has a long period to affect the plume.

The first order decay rate for TCE that resulted in the best match was 0.0002 d^{-1}. At a similar site at OU3 (the contamination was near the water table and the site was paved), 10 years of measuring TCE concentrations gave first order decay rates of 0.0007 to 0.0002 d^{-1} (U.S. Navy, 1998). The expected range of values for TCE is 0.0002 to 0.08 d^{-1} (U.S. Environmental Protection Agency, 1998). At this site, the simulated degradation rate of TCE that gave the best match was at the slow end of the expected range. The calibrated first order decay rate was a 0.0002 for DCE and 0.06 d^{-1} for VC. The expected range of values for VC is 0.0006 to 0.08 d^{-1} (U.S. Environmental Protection Agency, 1998). A relatively high decay rate (but still within the expected range) for VC was required to match the low concentration values observed at the site. At Cecil Field, located about 10 miles west of the Jacksonville Naval Air Station, a low TCE decay rate and a high VC decay rate also were observed and attributed to the mildly oxidizing conditions (Frank Chapelle, U.S. Geological Survey written commun., 2002).

Figure 37 shows the simulated TCE distribution 8 years after the initial release of contamination. As shown in figure 37, the TCE plume has moved only about one-half of the distance to the storm sewer.

Predicted Movement of Trichloroethene, Dichloroethene, and Vinyl Chloride Assuming Source Reduction of 50 Percent

The effect of the reduction in the concentration of contamination at the source was simulated. For these simulations, the source was reduced by 50 percent. Figure 38 shows the simulated distribution of TCE 8 years after the source reduction. The 3,000-µg/L concentration contour near the center of the plume represents the last of the higher concentrations of TCE contamination that left the source and have traveled about one-half of the distance to the storm sewer. For all of the contaminants, the new steady-state concentrations were one-half of the original concentrations.

Figures 39 and 40 show the simulated distribution of DCE and VC, respectively, 8 years after the source reduction. The 2,000-µg/L concentration contour (fig. 39) near the center of the plume represents the last of the higher concentrations of DCE contamination that left the source and have traveled about one-half of the distance to the storm sewer.

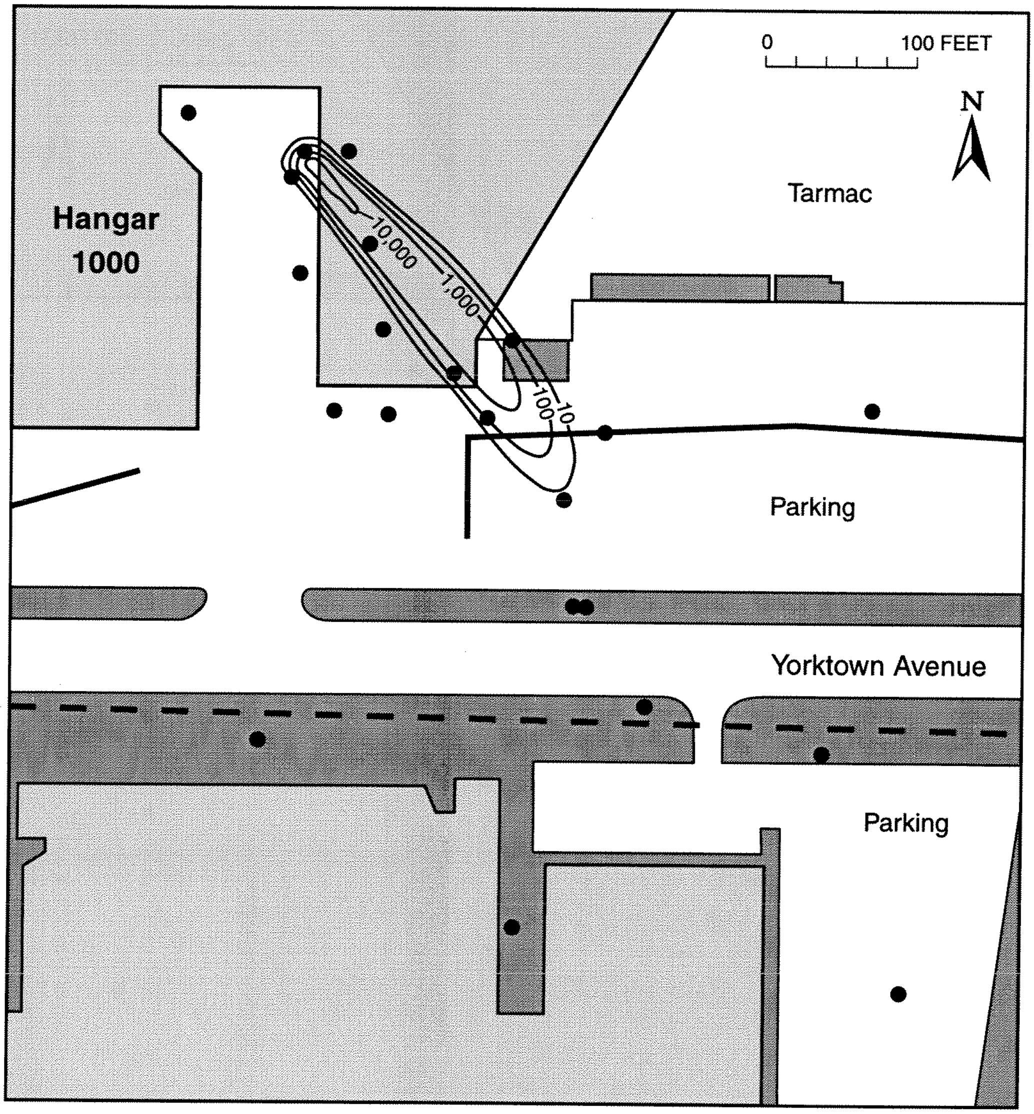
Predicted Movement of Trichloroethene, Dichloroethene, and Vinyl Chloride Assuming Source Reduction of 100 Percent

In these simulations, the reduction in the concentration of contamination at the source was 100 percent. Figures 41- 43 show the simulated distributions of TCE, DCE, and VC, respectively, 8 years after the source was eliminated. As shown in these figures, TCE, DCE, and VC are absent from ground water in the area where the tanks were located, and the remainder of the contaminant plumes have moved toward the storm sewer.

Figure 44 shows the simulated distribution of TCE 16 years after source elimination. The TCE-contaminated ground water has been flushed almost completely from the aquifer. Since TCE was not completely removed from the aquifer after 16 years, it apparently takes slightly longer for the contaminant to be flushed from the aquifer than it did for the initial concentrations to reach the storm sewer after the initial release. The simulated period of time for the contaminants to be removed from the aquifer once the source was removed was about 17 years for TCE, 15 years for DCE, and 13 years for VC.

Measurement Error and Effect of Parameter Variation on Fate and Transport Modeling Results

The simulation of future contaminant concentration values and the times of arrival at the storm sewer are subject to three major sources of error. First, the simulated ground-water flow velocities may not accurately reflect the actual flow velocities; second, the measured concentrations may not fully characterize the contaminant concentrations in the aquifer; and third, the model input parameters may not accurately characterize the transport mechanisms.



EXPLANATION

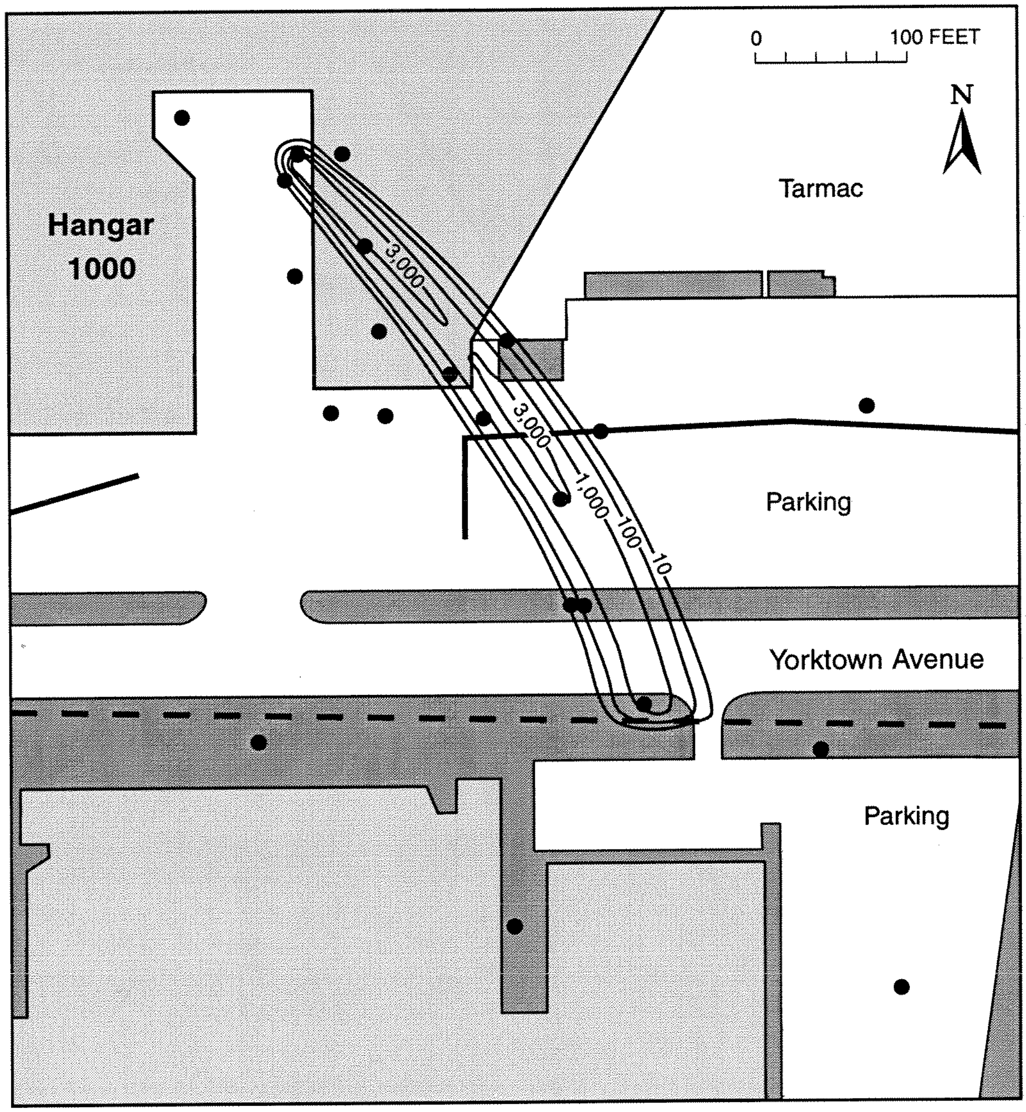
STORMWATER DRAINS THAT ARE NOT DRAINING GROUND WATER–From the upper layer of the surficial aquifer

STORMWATER DRAINS THAT ARE DRAINING GROUND WATER–From the upper layer of the surficial aquifer

—10— LINE OF EQUAL SIMULATED TCE CONCENTRATION–In micrograms per liter. Interval is variable

● MONITORING WELL LOCATION

Figure 37. Simulated trichloroethene (TCE) concentrations in layer 1 after 8 years.



EXPLANATION

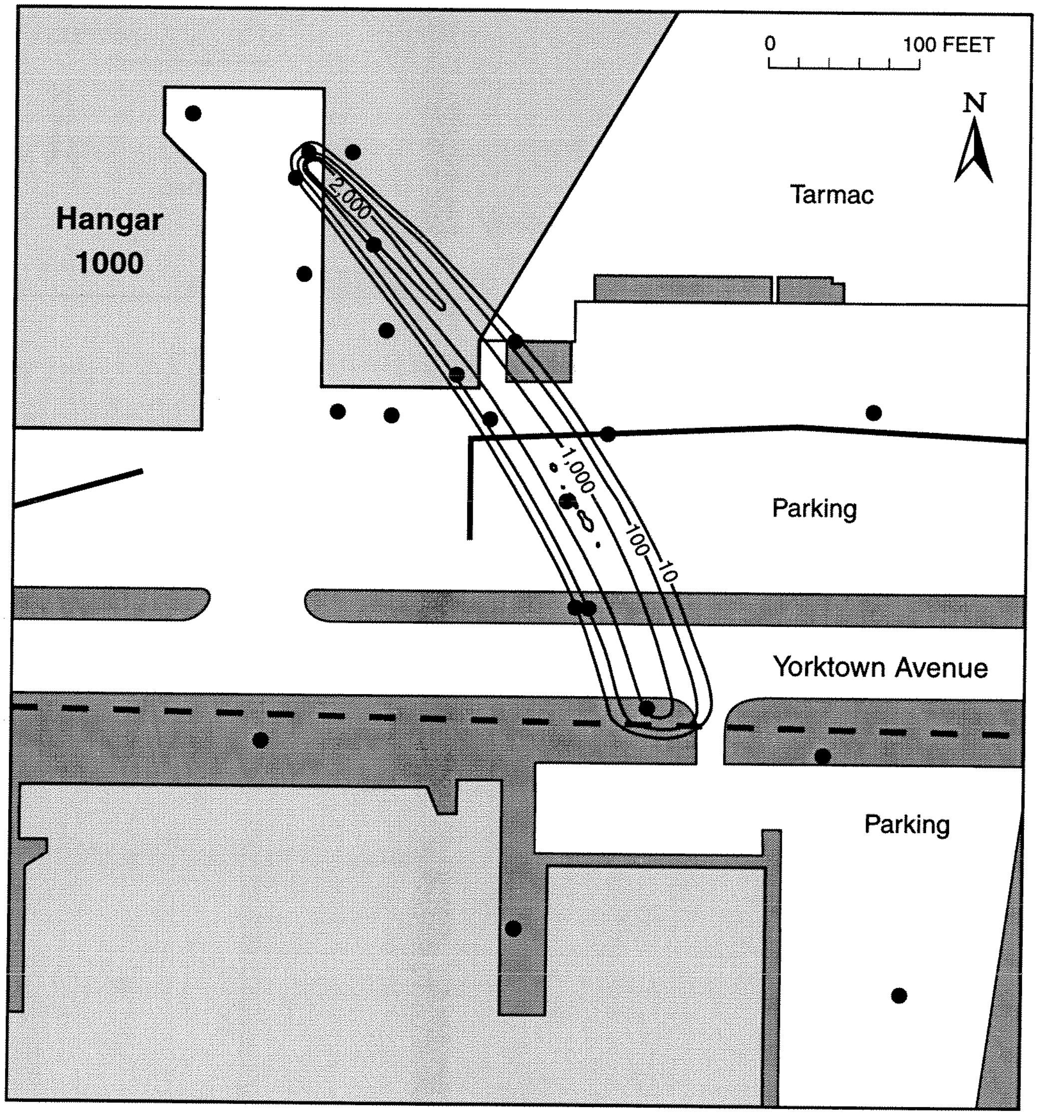
STORMWATER DRAINS THAT ARE NOT DRAINING GROUND WATER–From the upper layer of the surficial aquifer

STORMWATER DRAINS THAT ARE DRAINING GROUND WATER–From the upper layer of the surficial aquifer

—10— LINE OF EQUAL SIMULATED TCE CONCENTRATION–In micrograms per liter. Interval is variable

● MONITORING WELL LOCATION

Figure 38. Simulated trichloroethene (TCE) concentrations in layer 1 after 8 years assuming 50 percent source reduction.



EXPLANATION

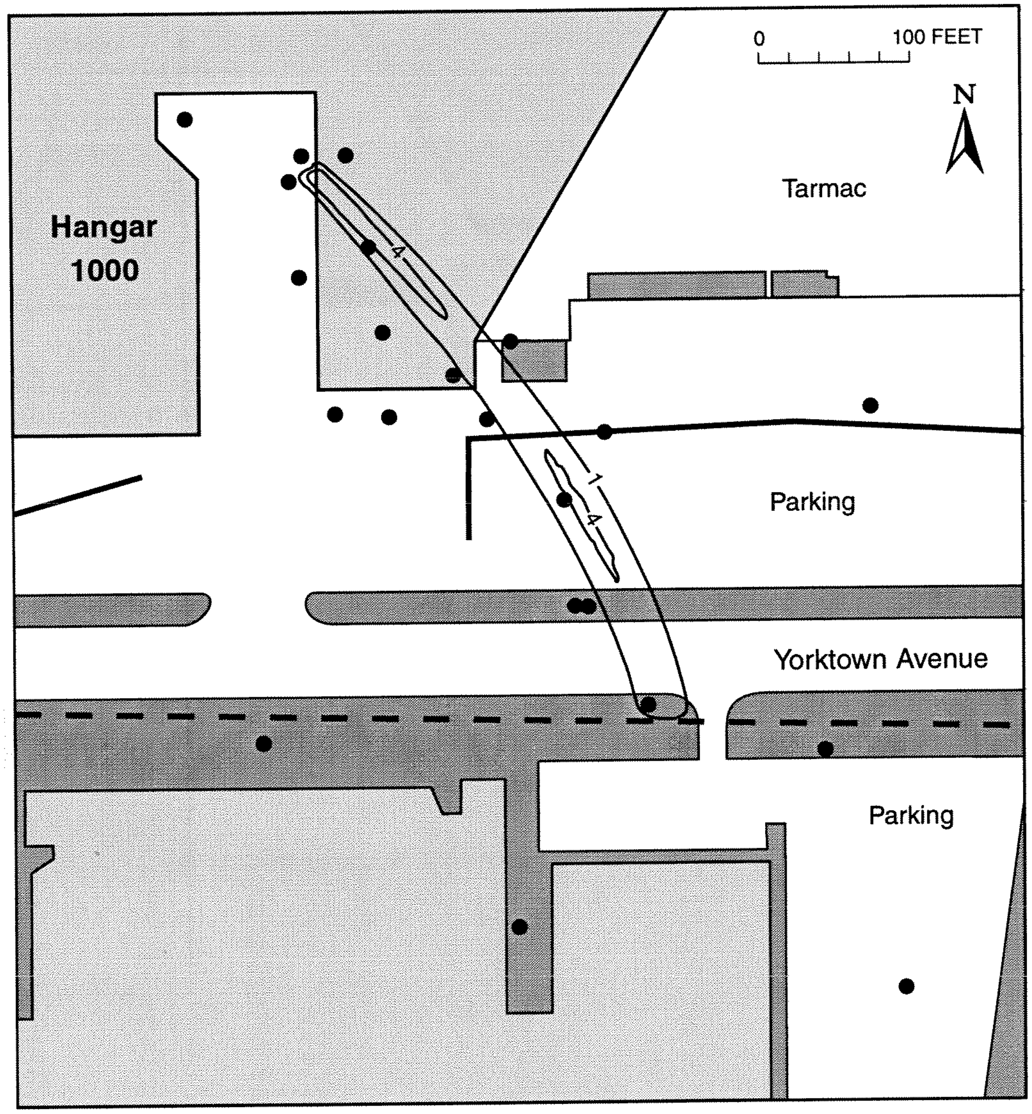
STORMWATER DRAINS THAT ARE NOT DRAINING GROUND WATER–From the upper layer of the surficial aquifer

STORMWATER DRAINS THAT ARE DRAINING GROUND WATER–From the upper layer of the surficial aquifer

—10— LINE OF EQUAL SIMULATED DCE CONCENTRATION–In micrograms per liter. Interval is variable

● MONITORING WELL LOCATION

Figure 39. Simulated dichloroethene (DCE) concentrations in layer 1 after 8 years assuming 50 percent source reduction.



EXPLANATION

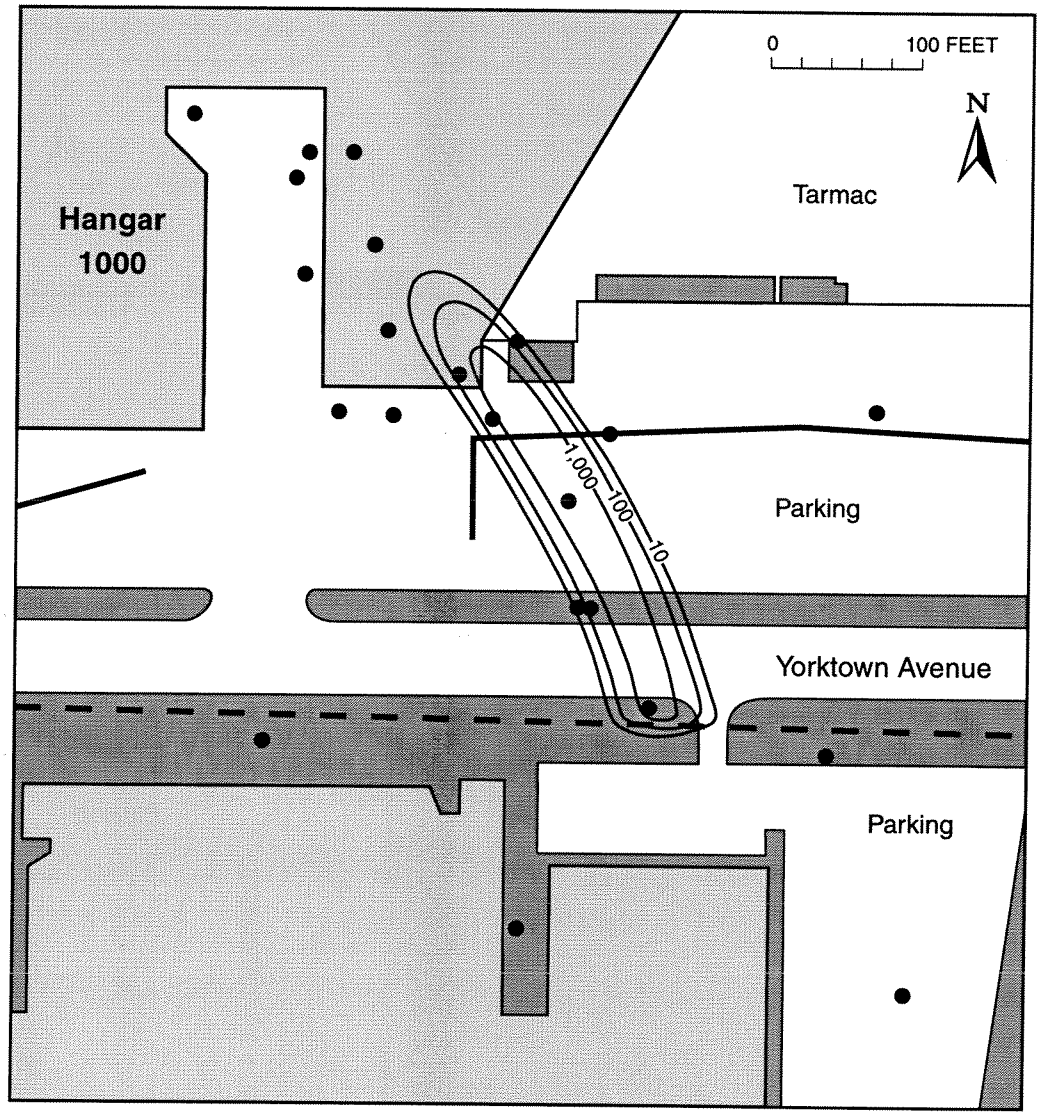
STORMWATER DRAINS THAT ARE NOT DRAINING GROUND WATER–From the upper layer of the surficial aquifer

STORMWATER DRAINS THAT ARE DRAINING GROUND WATER–From the upper layer of the surficial aquifer

—1— LINE OF EQUAL SIMULATED VC CONCENTRATION–In micrograms per liter

● MONITORING WELL LOCATION

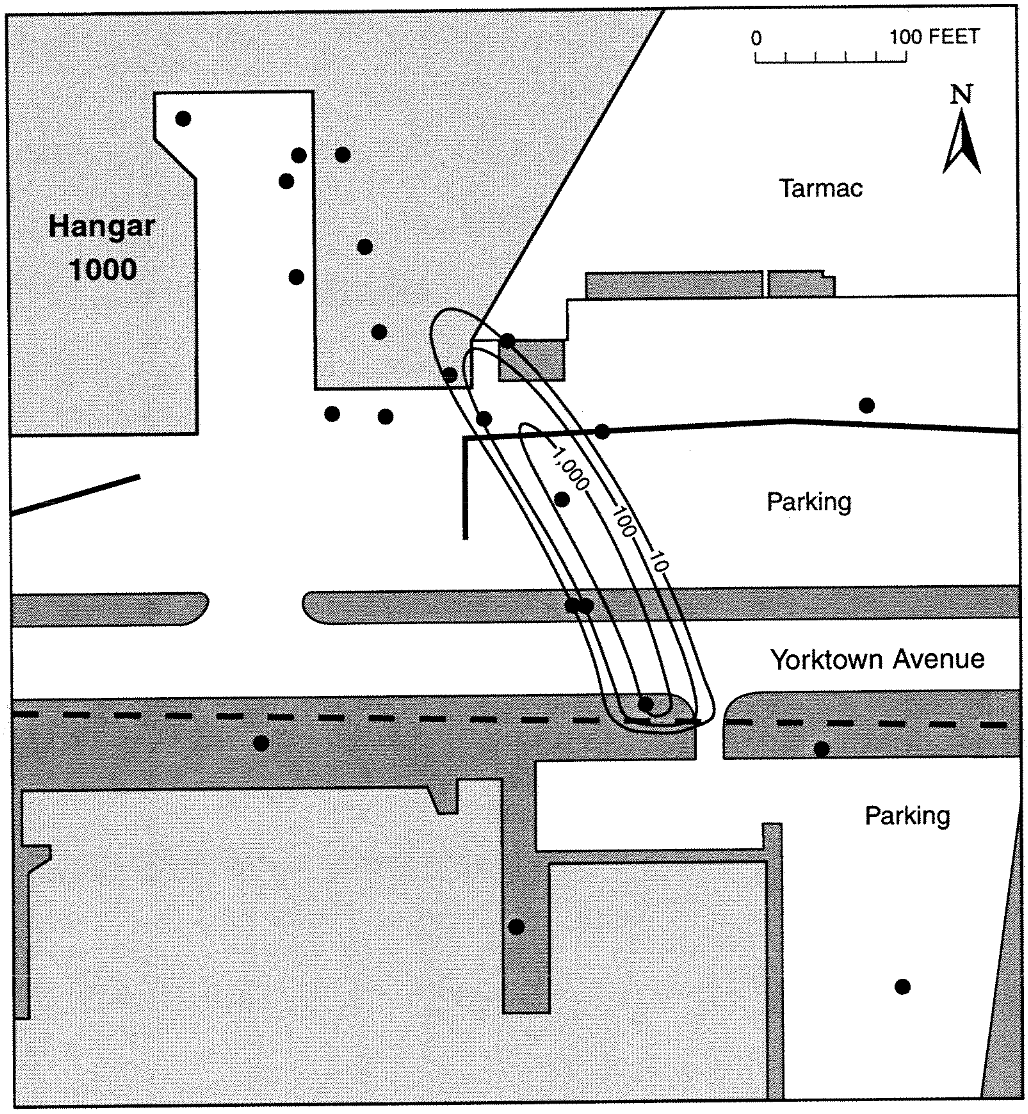
Figure 40. Simulated vinyl chloride (VC) concentrations in layer 1 after 8 years assuming 50 percent source reduction.



EXPLANATION

- STORMWATER DRAINS THAT ARE NOT DRAINING GROUND WATER–From the upper layer of the surficial aquifer
- STORMWATER DRAINS THAT ARE DRAINING GROUND WATER–From the upper layer of the surficial aquifer
- —10— LINE OF EQUAL SIMULATED TCE CONCENTRATION–In micrograms per liter. Interval is variable
- ● MONITORING WELL LOCATION

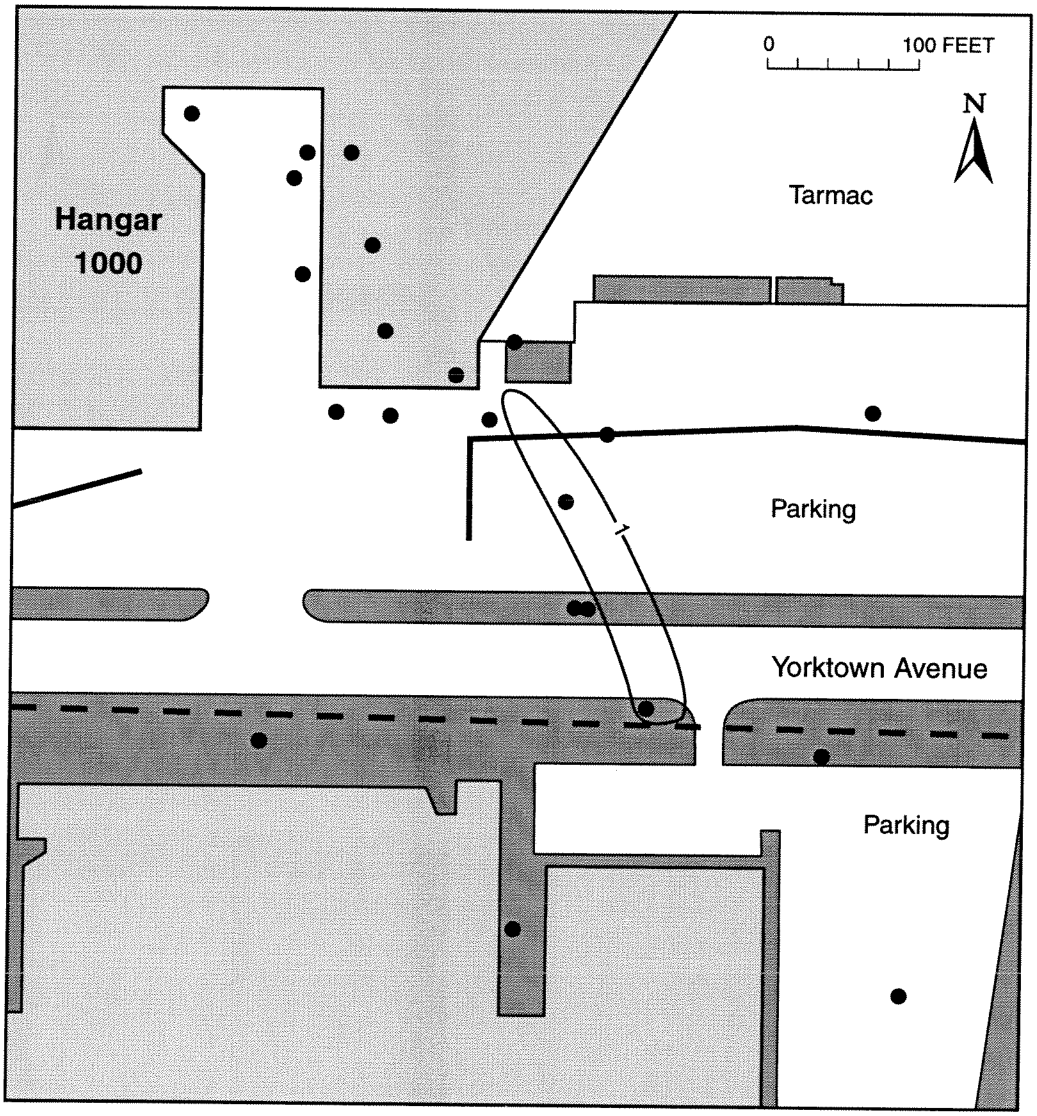
Figure 41. Simulated trichloroethene (TCE) concentrations in layer 1 after 8 years assuming 100 percent source reduction.



EXPLANATION

(solid line)	STORMWATER DRAINS THAT ARE NOT DRAINING GROUND WATER–From the upper layer of the surficial aquifer
(dashed line)	STORMWATER DRAINS THAT ARE DRAINING GROUND WATER–From the upper layer of the surficial aquifer
—10—	LINE OF EQUAL SIMULATED DCE CONCENTRATION–In micrograms per liter. Interval is variable
●	MONITORING WELL LOCATION

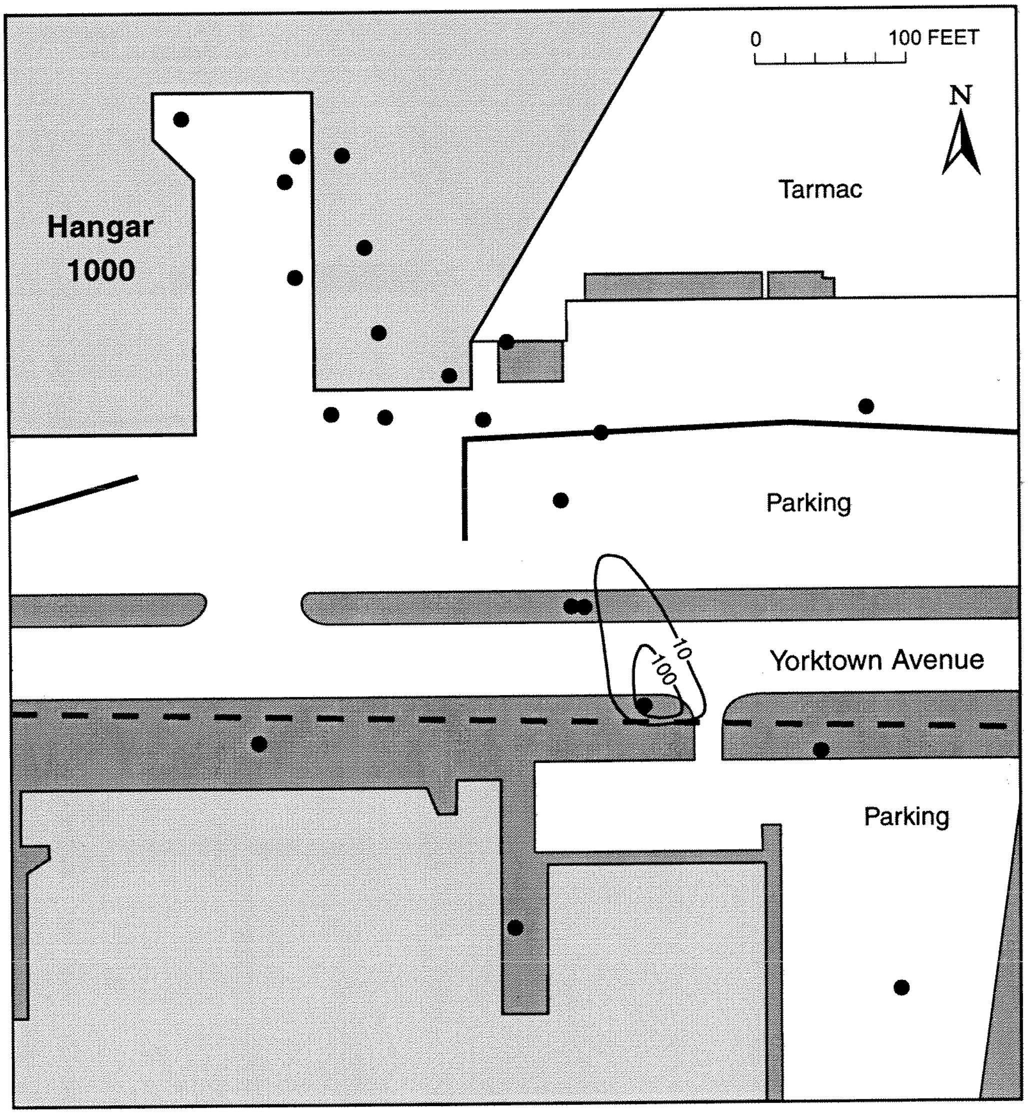
Figure 42. Simulated dichloroethene (DCE) concentrations in layer 1 after 8 years assuming 100 percent source reduction.



EXPLANATION

———	STORMWATER DRAINS THAT ARE NOT DRAINING GROUND WATER–From the upper layer of the surficial aquifer
— — —	STORMWATER DRAINS THAT ARE DRAINING GROUND WATER–From the upper layer of the surficial aquifer
— 1 —	LINE OF EQUAL SIMULATED VC CONCENTRATION–In micrograms per liter
●	MONITORING WELL LOCATION

Figure 43. Simulated vinyl chloride (VC) concentrations in layer 1 after 8 years assuming 100 percent source reduction.



EXPLANATION

STORMWATER DRAINS THAT ARE NOT DRAINING GROUND WATER–From the upper layer of the surficial aquifer

STORMWATER DRAINS THAT ARE DRAINING GROUND WATER–From the upper layer of the surficial aquifer

—10— LINE OF EQUAL SIMULATED TCE CONCENTRATION–In micrograms per liter. Interval is variable

● MONITORING WELL LOCATION

Figure 44. Simulated trichloroethene (TCE) concentrations in layer 1 after 16 years assuming 100 percent source reduction.

If the actual ground-water velocities are greater than the simulated velocities, then the contaminants will move to the storm sewer faster than predicted; if the simulated velocities are slower, then the contaminants will remain in the aquifer longer and arrive at the sewer later than predicted. Ground-water velocity probably is the most important factor when predicting the traveltime from the source area to the storm sewer.

Simulated contaminant concentrations discharging to the sewer are related directly to initial concentrations at the source. The simulation will underpredict concentrations discharging to the sewer if measured concentrations in the source area are substantially higher than concentrations sampled from the wells. However, the plumes, which were generally well-defined laterally and vertically, were characterized using data from several wells, thus making it unlikely that higher concentrations existed.

Model parameters such as retardation, hydrodynamic dispersion, porosity, and chemical degradation have a strong influence on the simulated movement and concentration of contaminants. Variations in each of the these parameters can affect the model-simulated fate and transport of contaminants. As discussed previously, the organic carbon content was measured at three locations in the upper layer of the surficial aquifer. The organic carbon content was averaged to determine retardation factors used in model simulations. With only three samples, the actual range of values in the aquifer may not be well characterized and could vary from the values used. The effect of retardation on contaminant movement is straightforward. If the retardation factor is doubled, then the rate of travel of the contaminant is halved. Conversely, if the retardation factor is halved, then the rate of travel is doubled. For example, simulated concentrations of TCE at a traveltime of 8 years are shown in figure 37. If the retardation factor for this simulation were doubled, then the TCE would have traveled only one quarter of the distance to the storm sewer. Conversely, if the retardation factor were halved, then the plume would have reached the storm sewer.

Similar to the retardation factor, the effective porosity affects the movement of contaminants, but in a linear fashion. If the porosity is doubled, then the traveltime of the contaminants also is doubled. If the porosity is halved, then the traveltime is halved. For example, in figure 37, if the porosity for this simulation had been halved, then the contaminant plume would have reached the sewer. Conversely, if the porosity had been doubled, then the contaminant plume would have traveled only one quarter of the way to the sewer. Effective porosity is difficult to quantify in the field. The value used in this model was 25 percent, and could reasonably be expected to vary from about 12.5 percent up to about 30 percent.

The simulated first order rates of chemical degradation were 0.0002, 0.0002, and 0.06 d^{-1} for TCE, DCE, and VC, respectively. Because a similar rate of degradation for TCE was documented at a similar site nearby (U.S. Navy, 1998), using this rate has some justification. The rates for DCE and VC, however, are simply model-calibration parameters (although they fall within expected values) that resulted in the best calibration for the model. If the actual rates of degradation are substanially different (or if they vary over time), then the simulated concentration values also could vary substantially. In addition, the initial concentrations and simulated concentrations in the aquifer are correlated, thus making a unique prediction more difficult. For example, if the initial concentration were too high and the first order decay rate too low, then a match to the measured values might still be possible.

SUMMARY

The Jacksonville Naval Air Station occupies 3,800 acres adjacent to the St. Johns River in Jacksonville, Florida. Hangar 1000, in the north-central part of the Station is an area where aircraft are serviced and repaired. Two underground storage tanks containing solvents were operated from the late 1960s until they were closed in 1994. One tank was a 750-gallon concrete tank used as a solvent and water separator. The other was a 2,000-gallon steel tank that received solvent overflow from the first tank, and waste oils and solvents discharged from other operations at the facility. Both tanks, associated piping systems, and visually identified contaminated soils were excavated and removed in March 1994. However, tests indicated that solvents had previously leaked from the tanks into the ground-water system.

Ground-water samples at one of the tank sites had levels of trichloroethene (TCE) and dichloroethene (DCE) of 8,710 and 4,280 μg/L, respectively. Some of the DCE at the site is from the biodegradation of TCE, and all of the vinyl chloride (VC) at the site is derived from the biodegradation of DCE. Ground water at Hangar 1000 flows toward a storm sewer that drains ground water from the aquifer. Analyses indicate that TCE, DCE, and VC plumes are traveling with the ground water and have reached the storm sewer. The sewer discharges to a small creek, which discharges to the St. Johns River.

A subregional model was calibrated to simulate the ground-water flow in the region around Hangar 1000 using the Modular Three-Dimensional Finite-Difference Ground-Water Flow Model (MODFLOW). This model was then used to establish the boundary conditions for a site-specific ground-water flow model and a fate and transport model using the computer code, Reactive Transport in Three Dimensions (RT3D).

Model results indicate that the ground-water flow velocity averaged about 75 ft/yr and it took about 6 years for the ground water to travel from the tank removal site to the storm sewer. Modeling results also indicate that the traveltime from the tank removal site to the storm sewer is 16, 14, and 12 years for TCE, DCE, and VC respectively. TCE has the longest traveltime because it has the highest retardation factor of 2.5; DCE takes less time with a retardation factor of 2.0; and VC has the the fastest traveltime because it has the lowest retardation factor of 1.7. Modeling results indicate that the release of contamination in the aquifer occurred more than 16 years ago, and currently all three contaminants are at steady-state conditions; thus, plume locations and concentrations are not changing substantially at this time.

Model-derived dispersivity values for Hangar 1000 were: longitudinal 1.5 ft, transverse 0.27 ft, and vertical 0.27 ft. Because the discharge point was close to the source (about 450 ft), the model was relatively insensitive to dispersivity. This is because dispersivity has the greatest effect on contaminant concentrations over long distances. The model-derived first order decay rate for TCE at Hangar 1000 was 0.0002 d^{-1}. In a previous study at a similar nearby site, first order decay rates of 0.0007 to 0.0002 d^{-1} were determined. The calibrated first order decay rate was 0.0002 d^{-1} for DCE and 0.06 d^{-1} for VC. The expected range of values for VC is 0.002 to 0.08 d^{-1}.

The Navy has begun pilot tests to reduce the TCE and DCE concentrations at the tank removal site. Source reductions of 50 percent and 100 percent were simulated. As expected, reducing the contaminant source by 50 percent resulted in TCE, DCE, and VC concentrations that were half of their original concentrations. It took about 16 years for new steady-state TCE concentrations to develop, about 14 years for DCE, and about 12 years for VC. Reducing the source area concentrations by 100 percent in the model eventually resulted in the total elimination of TCE, DCE, and VC in the aquifer. The simulated period of time for the contamination to be removed from the aquifer once the source was removed was about 17 years for TCE, 15 years for DCE, and 13 years for VC.

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APPENDIX H

SUPPORTING INFORMATION FOR HUMAN HEALTH RISK ASSESSMENT

VLOOKUP TABLES

Soil Properties Lookup Table

SCS Soil Type	K_s (cm/h)	α (1/cm)	N (unitless)	M (unitless)	θ_s (cm^3/cm^3)	θ_r (cm^3/cm^3)	Mean Grain Diameter (cm)
C	0.61	0.01496	1.253	0.2019	0.459	0.098	0.0092
CL	0.34	0.01581	1.416	0.2938	0.442	0.079	0.016
L	0.50	0.01112	1.472	0.3207	0.399	0.061	0.020
LS	4.38	0.03475	1.746	0.4273	0.390	0.049	0.040
S	26.78	0.03524	3.177	0.6852	0.375	0.053	0.044
SC	0.47	0.03342	1.208	0.1722	0.385	0.117	0.025
SCL	0.55	0.02109	1.330	0.2481	0.384	0.063	0.029
SI	1.82	0.00658	1.679	0.4044	0.489	0.050	0.0046
SIC	0.40	0.01622	1.321	0.2430	0.481	0.111	0.0039
SICL	0.46	0.00839	1.521	0.3425	0.482	0.090	0.0056
SIL	0.76	0.00506	1.663	0.3987	0.439	0.065	0.011
SL	1.60	0.02667	1.449	0.3099	0.387	0.039	0.030

Chemical Properties Lookup Table

CAS No.	Chemical	Organic carbon partition coefficient, K_{oc} (cm^3/g)	Diffusivity in air, D_a (cm^2/s)	Diffusivity in water, D_w (cm^2/s)	Pure component water solubility, S (mg/L)	Henry's law constant H' (unitless)	Henry's law constant at reference temperature, H (atm-m^3/mol)	Henry's law constant reference temperature, T_R (°C)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Unit risk factor, URF ($\mu g/m^3$)$^{-1}$	Reference conc., RfC (mg/m^3)	URF extrapolated (X)	RfC extrapolated (X)
50293	DDT	2.63E+06	1.37E-02	4.95E-06	2.50E-02	3.32E-04	8.10E-06	25	533.15	720.75	22,000	9.7E-05	0.0E+00		
50328	Benzo(a)pyrene	1.02E+06	4.30E-02	9.00E-06	1.62E-03	4.63E-05	1.13E-06	25	715.90	969.27	19,000	2.1E-03	0.0E+00	X	
51285	2,4-Dinitrophenol	1.02E-02	2.73E-02	9.06E-06	2.79E+03	1.82E-05	4.44E-07	25	605.28	827.85	25,000	0.0E+00	7.0E-03		X
53703	Dibenz(a,h)anthracene	3.80E+06	2.02E-02	5.18E-06	2.49E-03	6.03E-07	1.47E-08	25	743.24	990.41	29,995	2.1E-03	0.0E+00	X	
56235	Carbon tetrachloride	1.74E+02	7.80E-02	8.80E-06	7.93E+02	1.25E+00	3.05E-02	25	349.90	556.60	7,127	1.5E-05	0.0E+00		
56553	Benz(a)anthracene	3.98E+05	5.10E-02	9.00E-06	9.40E-03	1.37E-04	3.34E-06	25	708.15	1004.79	16,000	2.1E-04	0.0E+00	X	
57749	Chlordane	1.20E+05	1.18E-02	4.37E-06	5.60E-02	1.99E-03	4.85E-05	25	624.24	885.73	14,000	1.0E-04	7.0E-04		
58899	gamma-HCH (Lindane)	1.07E+03	1.42E-02	7.34E-06	6.80E+00	5.74E-04	1.40E-05	25	596.55	839.36	15,000	3.7E-04	0.0E+00	X	
60571	Dieldrin	2.14E+04	1.25E-02	4.74E-06	1.95E-01	6.19E-04	1.51E-05	25	613.32	842.25	17,000	4.6E-03	0.0E+00		
65850	Benzoic Acid	5.76E-01	5.36E-02	7.97E-06	3.50E+03	6.31E-05	1.54E-06	25	720.00	751.00	12,094	0.0E+00	1.4E+01		X
67641	Acetone	5.75E-01	1.24E-01	1.14E-05	1.00E+06	1.59E-03	3.88E-05	25	329.20	508.10	6,955	0.0E+00	3.5E-01		X
67663	Chloroform	3.98E+01	1.04E-01	1.00E-05	7.92E+03	1.50E-01	3.66E-03	25	334.32	536.40	6,988	2.3E-05	0.0E+00		
67721	Hexachloroethane	1.78E+03	2.50E-03	6.80E-06	5.00E+01	1.59E-01	3.88E-03	25	458.00	695.00	9,510	4.0E-06	0.0E+00		
71363	Butanol	6.92E+00	8.00E-02	9.30E-06	7.40E+04	3.61E-04	8.80E-06	25	390.88	563.05	10,346	0.0E+00	3.5E-01		X
71432	Benzene	5.89E+01	8.80E-02	9.80E-06	1.75E+03	2.28E-01	5.56E-03	25	353.24	562.16	7,342	7.8E-06	0.0E+00		
71556	1,1,1-Trichloroethane	1.10E+02	7.80E-02	8.80E-06	1.33E+03	7.05E-01	1.72E-02	25	347.24	545.00	7,136	0.0E+00	1.0E+00		
72208	Endrin	1.23E+04	1.25E-02	4.74E-06	2.50E-01	3.08E-04	7.51E-06	25	718.15	986.20	15,000	0.0E+00	1.1E-03		X
72435	Methoxychlor	9.77E+04	1.56E-02	4.46E-06	4.50E-02	6.48E-04	1.58E-05	25	651.02	848.49	16,000	0.0E+00	1.8E-02		X
72548	DDD	1.00E+06	1.69E-02	4.76E-06	9.00E-02	1.64E-04	4.00E-06	25	639.80	863.77	17,000	6.9E-05	0.0E+00	X	
72559	DDE	4.47E+06	1.44E-02	5.87E-06	1.20E-01	8.61E-04	2.10E-05	25	636.44	860.38	15,000	9.7E-05	0.0E+00	X	
74839	Methyl bromide	1.05E+01	7.28E-02	1.21E-05	1.52E+04	2.56E-01	6.24E-03	25	276.71	467.00	5,714	0.0E+00	5.0E-03		
75014	Vinyl chloride (chloroethene)	1.86E+01	1.06E-01	1.23E-05	2.76E+03	1.11E+00	2.71E-02	25	259.25	432.00	5,250	4.4E-06	1.0E-01		
75092	Methylene chloride	1.17E+01	1.01E-01	1.17E-05	1.30E+04	8.98E-02	2.19E-03	25	313.00	510.00	6,706	4.7E-07	3.0E+00		
75150	Carbon disulfide	4.57E+01	1.04E-01	1.00E-05	1.19E+03	1.24E+00	3.02E-02	25	319.00	552.00	6,391	0.0E+00	7.0E-01		
75252	Bromoform	8.71E+01	1.49E-02	1.03E-05	3.10E+03	2.19E-02	5.34E-04	25	422.35	696.00	9,479	1.1E-06	0.0E+00		
75274	Bromodichloromethane	5.50E+01	2.98E-02	1.06E-05	6.74E+03	6.56E-02	1.60E-03	25	363.15	585.85	7,800	1.8E-05	0.0E+00	X	
75343	1,1-Dichloroethane	3.16E+01	7.42E-02	1.05E-05	5.06E+03	2.30E-01	5.61E-03	25	330.55	523.00	6,895	0.0E+00	5.0E-01		
75354	1,1-Dichloroethylene	5.89E+01	9.00E-02	1.04E-05	2.25E+03	1.07E+00	2.61E-02	25	304.75	576.05	6,247	5.0E-05	0.0E+00		
76448	Heptachlor	1.41E+06	1.12E-02	5.69E-06	1.80E-01	4.47E-02	1.09E-03	25	603.69	846.31	13,000	1.3E-03	0.0E+00		
77474	Hexachlorocyclopentadiene	2.00E+05	1.61E-02	7.21E-06	1.80E+00	1.11E+00	2.71E-02	25	512.15	746.00	10,931	0.0E+00	7.0E-05		
78591	Isophorone	4.68E+01	6.23E-02	6.76E-06	1.20E+04	2.72E-04	6.63E-06	25	488.35	715.00	10,271	2.7E-07	0.0E+00	X	
78875	1,2-Dichloropropane	4.37E+01	7.82E-02	8.73E-06	2.80E+03	1.15E-01	2.80E-03	25	369.52	572.00	7,590	0.0E+00	4.0E-03		
79005	1,1,2-Trichloroethane	5.01E+01	7.80E-02	8.80E-06	4.42E+03	3.74E-02	9.12E-04	25	386.15	602.00	8,322	1.6E-05	0.0E+00		
79016	Trichloroethylene	1.66E+02	7.90E-02	9.10E-06	1.10E+03	4.22E-01	1.03E-02	25	360.36	544.20	7,505	1.7E-06	0.0E+00		
79345	1,1,2,2-Tetrachloroethane	9.33E+01	7.10E-02	7.90E-06	2.97E+03	1.41E-02	3.44E-04	25	419.60	661.15	8,996	5.8E-05	0.0E+00		
83329	Acenaphthene	7.08E+03	4.21E-02	7.69E-06	4.24E+00	6.36E-03	1.55E-04	25	550.54	803.15	12,155	0.0E+00	2.1E-01		X
84662	Diethylphthalate	2.88E+02	2.56E-02	6.35E-06	1.08E+03	1.85E-05	4.51E-07	25	567.15	757.00	13,733	0.0E+00	2.8E+00		X
84742	Di-n-butyl phthalate	3.39E+04	4.38E-02	7.86E-06	1.12E+01	3.85E-08	9.39E-10	25	613.15	798.67	14,751	0.0E+00	3.5E-01		X
85687	Butyl benzyl phthalate	5.75E+04	1.74E-02	4.83E-06	2.69E+00	5.17E-05	1.26E-06	25	660.60	839.68	14,000	0.0E+00	7.0E-01		X
86306	N-Nitrosodiphenylamine	1.29E+03	3.12E-02	6.35E-06	3.51E+01	2.05E-04	5.00E-06	25	632.28	890.45	7,300	1.4E-06	0.0E+00	X	
86737	Fluorene	1.38E+04	3.63E-02	7.88E-06	1.98E+00	2.61E-03	6.37E-05	25	570.44	870.00	12,666	0.0E+00	1.4E-01		X
86748	Carbazole	3.39E+03	3.90E-02	7.03E-06	7.48E+00	6.26E-07	1.53E-08	25	627.87	899.00	13,977	5.7E-06	0.0E+00	X	
87683	Hexachloro-1,3-butadiene	5.37E+04	5.61E-02	6.16E-06	3.23E+00	3.34E-01	8.15E-03	25	486.15	738.00	10,206	2.2E-05	0.0E+00		
87865	Pentachlorophenol	5.92E+02	5.60E-02	6.10E-06	1.95E+03	1.00E-06	2.44E-08	25	582.15	813.20	16,109	3.4E-05	0.0E+00	X	

88062	2,4,6-Trichlorophenol	3.81E+02	3.18E-02	6.25E-06	8.00E+02	3.19E-04	7.78E-06	25	519.15	749.03	12,000	3.1E-06	0.0E+00		
91203	Naphthalene	2.00E+03	5.90E-02	7.50E-06	3.10E+01	1.98E-02	4.83E-04	25	491.14	748.40	10,373	0.0E+00	3.0E-03		
91941	3,3-Dichlorobenzidine	7.24E+02	1.94E-02	6.74E-06	3.11E+00	1.64E-07	4.00E-09	25	560.26	754.03	20,000	1.3E-04	0.0E+00	X	
95476	o-Xylene	3.63E+02	8.70E-02	1.00E-05	1.78E+02	2.13E-01	5.20E-03	25	417.60	630.30	8,661	0.0E+00	7.0E+00		X
95487	2-Methylphenol (o-cresol)	9.12E+01	7.40E-02	8.30E-06	2.60E+04	4.92E-05	1.20E-06	25	464.19	697.60	10,800	0.0E+00	1.8E-01		X
95501	1,2-Dichlorobenzene	6.17E+02	6.90E-02	7.90E-06	1.56E+02	7.79E-02	1.90E-03	25	453.57	705.00	9,700	0.0E+00	2.0E-01		
95578	2-Chlorophenol	3.88E+02	5.01E-02	9.46E-06	2.20E+04	1.60E-02	3.90E-04	25	447.53	675.00	9,572	0.0E+00	1.8E-02		X
95954	2,4,5-Trichlorophenol	1.60E+03	2.91E-02	7.03E-06	1.20E+03	1.78E-04	4.34E-06	25	526.15	759.13	11,000	0.0E+00	3.5E-01		X
98953	Nitrobenzene	6.46E+01	7.60E-02	8.60E-06	2.09E+03	9.84E-04	2.40E-05	25	483.95	719.00	10,566	0.0E+00	2.0E-03		
100414	Ethylbenzene	3.63E+02	7.50E-02	7.80E-06	1.69E+02	3.23E-01	7.88E-03	25	409.34	617.20	8,501	0.0E+00	1.0E+00		
100425	Styrene	7.76E+02	7.10E-02	8.00E-06	3.10E+02	1.13E-01	2.76E-03	25	418.31	636.00	8,737	0.0E+00	1.0E+00		
105679	2,4-Dimethylphenol	2.09E+02	5.84E-02	8.69E-06	7.87E+03	8.20E-05	2.00E-06	25	484.13	707.60	11,329	0.0E+00	7.0E-02		X
106423	p-Xylene	3.89E+02	7.69E-02	8.44E-06	1.85E+02	3.14E-01	7.66E-03	26	411.52	616.20	8,525	0.0E+00	7.0E+00		X
106467	1,4-Dichlorobenzene	6.17E+02	6.90E-02	7.90E-06	7.38E+01	9.96E-02	2.43E-03	25	447.21	684.75	9,271	0.0E+00	8.0E-01		
106478	p-Chloroaniline	6.61E+01	4.83E-02	1.01E-05	5.30E+03	1.36E-05	3.32E-07	25	503.65	754.00	11,689	0.0E+00	1.4E-02		X
107062	1,2-Dichloroethane	1.74E+01	1.04E-01	9.90E-06	8.52E+03	4.01E-02	9.78E-04	25	356.65	561.00	7,643	2.6E-05	0.0E+00		
108054	Vinyl acetate	5.25E+00	8.50E-02	9.20E-06	2.00E+04	2.10E-02	5.12E-04	25	345.65	519.13	7,800	0.0E+00	2.0E-01		
108383	m-Xylene	4.07E+02	7.00E-02	7.80E-06	1.61E+02	3.01E-01	7.34E-03	25	412.27	617.05	8,523	0.0E+00	7.0E+00		X
108883	Toluene	1.82E+02	8.70E-02	8.60E-06	5.26E+02	2.72E-01	6.63E-03	25	383.78	591.79	7,930	0.0E+00	4.0E-01		
108907	Chlorobenzene	2.19E+02	7.30E-02	8.70E-06	4.72E+02	1.52E-01	3.71E-03	25	404.87	632.40	8,410	0.0E+00	2.0E-02		
108952	Phenol	2.88E+01	8.20E-02	9.10E-06	8.28E+04	1.63E-05	3.98E-07	25	455.02	694.20	10,920	0.0E+00	2.1E+00		X
111444	Bis(2-chloroethyl)ether	1.55E+01	6.92E-02	7.53E-06	1.72E+04	7.38E-04	1.80E-05	25	451.15	659.79	10,803	3.3E-04	0.0E+00		
115297	Endosulfan	2.14E+03	1.15E-02	4.55E-06	5.10E-01	4.59E-04	1.12E-05	25	674.43	942.94	14,000	0.0E+00	2.1E-02		X
117817	Bis(2-ethylhexyl)phthalate	1.51E+07	3.51E-02	3.66E-06	3.40E-01	4.18E-06	1.02E-07	25	657.15	806.00	15,999	4.0E-06	0.0E+00	X	
117840	Di-n-octyl phthalate	8.32E+07	1.51E-02	3.58E-06	2.00E-02	2.74E-03	6.68E-05	25	704.09	862.22	14,000	0.0E+00	7.0E-02		X
118741	Hexachlorobenzene	5.50E+04	5.42E-02	5.91E-06	6.20E+00	5.41E-02	1.32E-03	25	582.55	825.00	14,447	4.6E-04	0.0E+00		
120127	Anthracene	2.95E+04	3.24E-02	7.74E-06	4.34E-02	2.67E-03	6.51E-05	25	615.18	873.00	13,121	0.0E+00	1.1E+00		X
120821	1,2,4-Trichlorobenzene	1.78E+03	3.00E-02	8.23E-06	3.00E+02	5.82E-02	1.42E-03	25	486.15	725.00	10,471	0.0E+00	2.0E-01		
120832	2,4-Dichlorophenol	1.47E+02	3.46E-02	8.77E-06	4.50E+03	1.30E-04	3.17E-06	25	482.15	708.17	15,000	0.0E+00	1.1E-02		X
121142	2,4-Dinitrotoluene	9.55E+01	2.03E-01	7.06E-06	2.70E+02	3.80E-06	9.27E-08	25	590.00	814.00	13,467	1.9E-04	0.0E+00	X	
124481	Chlorodibromomethane	6.31E+01	1.96E-02	1.05E-05	2.60E+03	3.21E-02	7.83E-04	25	416.14	678.20	5,900	2.4E-05	0.0E+00	X	
127184	Tetrachloroethylene	1.55E+02	7.20E-02	8.20E-06	2.00E+02	7.54E-01	1.84E-02	25	394.40	620.20	8,288	5.8E-07	0.0E+00		
129000	Pyrene	1.05E+05	2.72E-02	7.24E-06	1.35E-01	4.51E-04	1.10E-05	25	667.95	936.00	14,370	0.0E+00	1.1E-01		X
156592	cis-1,2-Dichloroethylene	3.55E+01	7.36E-02	1.13E-05	3.50E+03	1.67E-01	4.07E-03	25	333.65	544.00	7,192	0.0E+00	3.5E-02		X
156605	trans-1,2-Dichloroethylene	5.25E+01	7.07E-02	1.19E-05	6.30E+03	3.85E-01	9.39E-03	25	320.85	516.50	6,717	0.0E+00	7.0E-02		X
193395	Indeno(1,2,3-cd)pyrene	3.47E+06	1.90E-02	5.66E-06	2.20E-05	6.56E-05	1.60E-06	25	809.15	1078.24	19,000	2.1E-04	0.0E+00	X	
205992	Benzo(b)fluoranthene	1.23E+06	2.26E-02	5.56E-06	1.50E-03	4.55E-03	1.11E-04	25	715.90	969.27	17,000	2.1E-04	0.0E+00	X	
206440	Fluoranthene	1.07E+05	3.02E-02	6.35E-06	2.06E-01	6.60E-04	1.61E-05	25	655.95	905.00	13,815	0.0E+00	1.4E-01		X
207089	Benzo(k)fluoranthene	1.23E+06	2.26E-02	5.56E-06	8.00E-04	3.40E-05	8.29E-07	25	753.15	1019.70	18,000	2.1E-05	0.0E+00	X	
218019	Chrysene	3.98E+05	2.48E-02	6.21E-06	1.60E-03	3.88E-03	9.46E-05	25	714.15	979.00	16,455	2.1E-06	0.0E+00	X	
309002	Aldrin	2.45E+06	1.32E-02	4.86E-06	1.80E-01	6.97E-03	1.70E-04	25	603.01	839.37	15,000	4.9E-03	0.0E+00		
319846	alpha-HCH (alpha-BHC)	1.23E+03	1.42E-02	7.34E-06	2.00E+00	4.35E-04	1.06E-05	25	596.55	839.36	15,000	1.8E-03	0.0E+00		
319857	beta-HCH (beta-BHC)	1.26E+03	1.42E-02	7.34E-06	2.40E-01	3.05E-05	7.44E-07	25	596.55	839.36	19,000	5.3E-04	0.0E+00		
542756	1,3-Dichloropropene	4.57E+01	6.26E-02	1.00E-05	2.80E+03	7.26E-01	1.77E-02	25	381.15	587.38	7,900	4.0E-06	2.0E-02		
606202	2,6-Dinitrotoluene	6.92E+01	3.27E-02	7.26E-06	1.82E+02	3.06E-05	7.46E-07	25	558.00	770.00	12,938	1.9E-04	0.0E+00	X	
621647	N-Nitrosodi-n-propylamine	2.40E+01	5.45E-02	8.17E-06	9.89E+03	9.23E-05	2.25E-06	25	509.60	746.87	6,100	2.0E-03	0.0E+00	X	
1024573	Heptachlor epoxide	8.32E+04	1.32E-02	4.23E-06	2.00E-01	3.90E-04	9.51E-06	25	613.96	848.76	16,000	2.6E-03	0.0E+00		
7439976	Mercury (elemental)	5.20E+01	3.07E-02	6.30E-06	5.62E-02	4.67E-01	1.14E-02	25	629.88	1750.00	14,127	0.0E+00	3.0E-04		
8001352	Toxaphene	2.57E+05	1.16E-02	4.34E-06	7.40E-01	2.46E-04	6.00E-06	25	657.15	873.31	15,000	3.2E-04	0.0E+00		

Soil Properties Lookup Table

SCS Soil Type	K_s (cm/h)	α (1/cm)	N (unitless)	M (unitless)	θ_s (cm³/cm³)	θ_r (cm³/cm³)	Mean Grain Diameter (cm)
C	0.61	0.01496	1.253	0.2019	0.459	0.098	0.0092
CL	0.34	0.01581	1.416	0.2938	0.442	0.079	0.016
L	0.50	0.01112	1.472	0.3207	0.399	0.061	0.020
LS	4.38	0.03475	1.746	0.4273	0.390	0.049	0.040
S	26.78	0.03524	3.177	0.6852	0.375	0.053	0.044
SC	0.47	0.03342	1.208	0.1722	0.385	0.117	0.025
SCL	0.55	0.02109	1.330	0.2481	0.384	0.063	0.029
SI	1.82	0.00658	1.679	0.4044	0.489	0.050	0.0046
SIC	0.40	0.01622	1.321	0.2430	0.481	0.111	0.0039
SICL	0.46	0.00839	1.521	0.3425	0.482	0.090	0.0056
SIL	0.76	0.00506	1.663	0.3987	0.439	0.065	0.011
SL	1.60	0.02667	1.449	0.3099	0.387	0.039	0.030

Chemical Properties Lookup Table

CAS No.	Chemical	Organic carbon partition coefficient, K_{oc} (cm³/g)	Diffusivity in air, D_a (cm²/s)	Diffusivity in water, D_w (cm²/s)	Pure component water solubility, S (mg/L)	Henry's law constant H' (unitless)	Henry's law constant at reference temperature, H (atm-m³/mol)	Henry's law constant reference temperature, T_R (°C)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Unit risk factor, URF (μg/m³)⁻¹	Reference conc., RfC (mg/m³)	URF extrapolated (X)	RfC extrapolated (X)
50293	DDT	2.63E+06	1.37E-02	4.95E-06	2.50E-02	3.32E-04	8.10E-06	25	533.15	720.75	22,000	9.7E-05	0.0E+00		
50328	Benzo(a)pyrene	1.02E+06	4.30E-02	9.00E-06	1.62E-03	4.63E-05	1.13E-06	25	715.90	969.27	19,000	2.1E-03	0.0E+00	X	
51285	2,4-Dinitrophenol	1.02E-02	2.73E-02	9.06E-06	2.79E+03	1.82E-05	4.44E-07	25	605.28	827.85	25,000	0.0E+00	7.0E-03		X
53703	Dibenz(a,h)anthracene	3.80E+06	2.02E-02	5.18E-06	2.49E-03	6.03E-07	1.47E-08	25	743.24	990.41	29,995	2.1E-03	0.0E+00	X	
56235	Carbon tetrachloride	1.74E+02	7.80E-02	8.80E-06	7.93E+02	1.25E+00	3.05E-02	25	349.90	556.60	7,127	1.5E-05	0.0E+00		
56553	Benz(a)anthracene	3.98E+05	5.10E-02	9.00E-06	9.40E-03	1.37E-04	3.34E-06	25	708.15	1004.79	16,000	2.1E-04	0.0E+00	X	
57749	Chlordane	1.20E+05	1.18E-02	4.37E-06	5.60E-02	1.99E-03	4.85E-05	25	624.24	885.73	14,000	1.0E-04	7.0E-04		
58899	gamma-HCH (Lindane)	1.07E+03	1.42E-02	7.34E-06	6.80E+00	5.74E-04	1.40E-05	25	596.55	839.36	15,000	3.7E-04	0.0E+00	X	
60571	Dieldrin	2.14E+04	1.25E-02	4.74E-06	1.95E-01	6.19E-04	1.51E-05	25	613.32	842.25	17,000	4.6E-03	0.0E+00		
65850	Benzoic Acid	5.76E-01	5.36E-02	7.97E-06	3.50E+03	6.31E-05	1.54E-06	25	720.00	751.00	12,094	0.0E+00	1.4E+01		X
67641	Acetone	5.75E-01	1.24E-01	1.14E-05	1.00E+06	1.59E-03	3.88E-05	25	329.20	508.10	6,955	0.0E+00	3.5E-01		X
67663	Chloroform	3.98E+01	1.04E-01	1.00E-05	7.92E+03	1.50E-01	3.66E-03	25	334.32	536.40	6,988	2.3E-05	0.0E+00		
67721	Hexachloroethane	1.78E+03	2.50E-03	6.80E-06	5.00E+01	1.59E-01	3.88E-03	25	458.00	695.00	9,510	4.0E-06	0.0E+00		
71363	Butanol	6.92E+00	8.00E-02	9.30E-06	7.40E+04	3.61E-04	8.80E-06	25	390.88	563.05	10,346	0.0E+00	3.5E-01		X
71432	Benzene	5.89E+01	8.80E-02	9.80E-06	1.75E+03	2.28E-01	5.56E-03	25	353.24	562.16	7,342	7.8E-06	0.0E+00		
71556	1,1,1-Trichloroethane	1.10E+02	7.80E-02	8.80E-06	1.33E+03	7.05E-01	1.72E-02	25	347.24	545.00	7,136	0.0E+00	1.0E+00		
72208	Endrin	1.23E+04	1.25E-02	4.74E-06	2.50E-01	3.08E-04	7.51E-06	25	718.15	986.20	15,000	0.0E+00	1.1E-03		X
72435	Methoxychlor	9.77E+04	1.56E-02	4.46E-06	4.50E-02	6.48E-04	1.58E-05	25	651.02	848.49	16,000	0.0E+00	1.8E-02		X
72548	DDD	1.00E+06	1.69E-02	4.76E-06	9.00E-02	1.64E-04	4.00E-06	25	639.90	863.77	17,000	6.9E-05	0.0E+00	X	
72559	DDE	4.47E+06	1.44E-02	5.87E-06	1.20E-01	8.61E-04	2.10E-05	25	636.44	860.38	15,000	9.7E-05	0.0E+00	X	
74839	Methyl bromide	1.05E+01	7.28E-02	1.21E-05	1.52E+04	2.56E-01	6.24E-03	25	276.71	467.00	5,714	0.0E+00	5.0E-03		
75014	Vinyl chloride (chloroethene)	1.86E+01	1.06E-01	1.23E-05	2.76E+03	1.11E+00	2.71E-02	25	259.25	432.00	5,250	4.4E-06	1.0E-01		
75092	Methylene chloride	1.17E+01	1.01E-01	1.17E-05	1.30E+04	8.98E-02	2.19E-03	25	313.00	510.00	6,706	4.7E-07	3.0E+00		
75150	Carbon disulfide	4.57E+01	1.04E-01	1.00E-05	1.19E+03	1.24E+00	3.02E-02	25	319.00	552.00	6,391	0.0E+00	7.0E-01		
75252	Bromoform	8.71E+01	1.49E-02	1.03E-05	3.10E+03	2.19E-02	5.34E-04	25	422.35	696.00	9,479	1.1E-06	0.0E+00		
75274	Bromodichloromethane	5.50E+01	2.98E-02	1.06E-05	6.74E+03	6.56E-02	1.60E-03	25	363.15	585.85	7,800	1.8E-05	0.0E+00	X	
75343	1,1-Dichloroethane	3.16E+01	7.42E-02	1.05E-05	5.06E+03	2.30E-01	5.61E-03	25	330.55	523.00	6,895	0.0E+00	5.0E-01		
75354	1,1-Dichloroethylene	5.89E+01	9.00E-02	1.04E-05	2.25E+03	1.07E+00	2.61E-02	25	304.75	576.05	6,247	5.0E-05	0.0E+00		
76448	Heptachlor	1.41E+06	1.12E-02	5.69E-06	1.80E-01	4.47E-02	1.09E-03	25	603.69	846.31	13,000	1.3E-03	0.0E+00		
77474	Hexachlorocyclopentadiene	2.00E+05	1.61E-02	7.21E-06	1.80E+00	1.11E+00	2.71E-02	25	512.15	746.00	10,931	0.0E+00	7.0E-05		
78591	Isophorone	4.68E+01	6.23E-02	6.76E-06	1.20E+04	2.72E-04	6.63E-06	25	488.35	715.00	10,271	2.7E-07	0.0E+00	X	
78875	1,2-Dichloropropane	4.37E+01	7.82E-02	8.73E-06	2.80E+03	1.15E-01	2.80E-03	25	369.52	572.00	7,590	0.0E+00	4.0E-03		
79005	1,1,2-Trichloroethane	5.01E+01	7.80E-02	8.80E-06	4.42E+03	3.74E-02	9.12E-04	25	386.15	602.00	8,322	1.6E-05	0.0E+00		
79016	Trichloroethylene	1.66E+02	7.90E-02	9.10E-06	1.10E+03	4.22E-01	1.03E-02	25	360.36	544.20	7,505	1.7E-06	0.0E+00		
79345	1,1,2,2-Tetrachloroethane	9.33E+01	7.10E-02	7.90E-06	2.97E+03	1.41E-02	3.44E-04	25	419.60	661.15	8,996	5.8E-05	0.0E+00		
83329	Acenaphthene	7.08E+03	4.21E-02	7.69E-06	4.24E+00	6.36E-03	1.55E-04	25	550.54	803.15	12,155	0.0E+00	2.1E-01		X
84662	Diethylphthalate	2.88E+02	2.56E-02	6.35E-06	1.08E+03	1.85E-05	4.51E-07	25	567.15	757.00	13,733	0.0E+00	2.8E+00		X
84742	Di-n-butyl phthalate	3.39E+04	4.38E-02	7.86E-06	1.12E+01	3.85E-08	9.39E-10	25	613.15	798.67	14,751	0.0E+00	3.5E-01		X
85687	Butyl benzyl phthalate	5.75E+04	1.74E-02	4.83E-06	2.69E+00	5.17E-05	1.26E-06	25	660.60	839.68	14,000	0.0E+00	7.0E-01		X
86306	N-Nitrosodiphenylamine	1.29E+03	3.12E-02	6.35E-06	3.51E+01	2.05E-04	5.00E-06	25	632.28	890.45	7,300	1.4E-06	0.0E+00	X	
86737	Fluorene	1.38E+04	3.63E-02	7.88E-06	1.98E+00	2.61E-03	6.37E-05	25	570.44	870.00	12,666	0.0E+00	1.4E-01		X
86748	Carbazole	3.39E+03	3.90E-02	7.03E-06	7.48E+00	6.26E-07	1.53E-08	25	627.87	899.00	13,977	5.7E-06	0.0E+00	X	
87683	Hexachloro-1,3-butadiene	5.37E+04	5.61E-02	6.16E-06	3.23E+00	3.34E-01	8.15E-03	25	486.15	738.00	10,206	2.2E-05	0.0E+00		
87865	Pentachlorophenol	5.92E+02	5.60E-02	6.10E-06	1.95E+03	1.00E-06	2.44E-08	25	582.15	813.20	16,109	3.4E-05	0.0E+00	X	

88062	2,4,6-Trichlorophenol	3.81E+02	3.18E-02	6.25E-06	8.00E+02	3.19E-04	7.78E-06	25	519.15	749.03	12,000	3.1E-06	0.0E+00		
91203	Naphthalene	2.00E+03	5.90E-02	7.50E-06	3.10E+01	1.98E-02	4.83E-04	25	491.14	748.40	10,373	0.0E+00	3.0E-03		
91941	3,3-Dichlorobenzidine	7.24E+02	1.94E-02	6.74E-06	3.11E+00	1.64E-07	4.00E-09	25	560.26	754.03	20,000	1.3E-04	0.0E+00	X	
95476	o-Xylene	3.63E+02	8.70E-02	1.00E-05	1.78E+02	2.13E-01	5.20E-03	25	417.60	630.30	8,661	0.0E+00	7.0E+00		X
95487	2-Methylphenol (o-cresol)	9.12E+01	7.40E-02	8.30E-06	2.60E+04	4.92E-05	1.20E-06	25	464.19	697.60	10,800	0.0E+00	1.8E-01		X
95501	1,2-Dichlorobenzene	6.17E+02	6.90E-02	7.90E-06	1.56E+02	7.79E-02	1.90E-03	25	453.57	705.00	9,700	0.0E+00	2.0E-01		
95578	2-Chlorophenol	3.88E+02	5.01E-02	9.46E-06	2.20E+04	1.60E-02	3.90E-04	25	447.53	675.00	9,572	0.0E+00	1.8E-02		X
95954	2,4,5-Trichlorophenol	1.60E+03	2.91E-02	7.03E-06	1.20E+03	1.78E-04	4.34E-06	25	526.15	759.13	11,000	0.0E+00	3.5E-01		X
98953	Nitrobenzene	6.46E+01	7.60E-02	8.60E-06	2.09E+03	9.84E-04	2.40E-05	25	483.95	719.00	10,566	0.0E+00	2.0E-03		
100414	Ethylbenzene	3.63E+02	7.50E-02	7.80E-06	1.69E+02	3.23E-01	7.88E-03	25	409.34	617.20	8,501	0.0E+00	1.0E+00		
100425	Styrene	7.76E+02	7.10E-02	8.00E-06	3.10E+02	1.13E-01	2.76E-03	25	418.31	636.00	8,737	0.0E+00	1.0E+00		
105679	2,4-Dimethylphenol	2.09E+02	5.84E-02	8.69E-06	7.87E+03	8.20E-05	2.00E-06	25	484.13	707.60	11,329	0.0E+00	7.0E-02		X
106423	p-Xylene	3.89E+02	7.69E-02	8.44E-06	1.85E+02	3.14E-01	7.66E-03	26	411.52	616.20	8,525	0.0E+00	7.0E+00		X
106467	1,4-Dichlorobenzene	6.17E+02	6.90E-02	7.90E-06	7.38E+01	9.96E-02	2.43E-03	25	447.21	684.75	9,271	0.0E+00	8.0E-01		
106478	p-Chloroaniline	6.61E+01	4.83E-02	1.01E-05	5.30E+03	1.36E-05	3.32E-07	25	503.65	754.00	11,689	0.0E+00	1.4E-02		X
107062	1,2-Dichloroethane	1.74E+01	1.04E-01	9.90E-06	8.52E+03	4.01E-02	9.78E-04	25	356.65	561.00	7,643	2.6E-05	0.0E+00		
108054	Vinyl acetate	5.25E+00	8.50E-02	9.20E-06	2.00E+04	2.10E-02	5.12E-04	25	345.65	519.13	7,800	0.0E+00	2.0E-01		
108383	m-Xylene	4.07E+02	7.00E-02	7.80E-06	1.61E+02	3.01E-01	7.34E-03	25	412.27	617.05	8,523	0.0E+00	7.0E+00		X
108883	Toluene	1.82E+02	8.70E-02	8.60E-06	5.26E+02	2.72E-01	6.63E-03	25	383.78	591.79	7,930	0.0E+00	4.0E-01		
108907	Chlorobenzene	2.19E+02	7.30E-02	8.70E-06	4.72E+02	1.52E-01	3.71E-03	25	404.87	632.40	8,410	0.0E+00	2.0E-02		
108952	Phenol	2.88E+01	8.20E-02	9.10E-06	8.28E+04	1.63E-05	3.98E-07	25	455.02	694.20	10,920	0.0E+00	2.1E+00		
111444	Bis(2-chloroethyl)ether	1.55E+01	6.92E-02	7.53E-06	1.72E+04	7.38E-04	1.80E-05	25	451.15	659.79	10,803	3.3E-04	0.0E+00		X
115297	Endosulfan	2.14E+03	1.15E-02	4.55E-06	5.10E-01	4.59E-04	1.12E-05	25	674.43	942.94	14,000	0.0E+00	2.1E-02		X
117817	Bis(2-ethylhexyl)phthalate	1.51E+07	3.51E-02	3.66E-06	3.40E-01	4.18E-06	1.02E-07	25	657.15	806.00	15,999	4.0E-06	0.0E+00	X	
117840	Di-n-octyl phthalate	8.32E+07	1.51E-02	3.58E-06	2.00E-02	2.74E-03	6.68E-05	25	704.09	862.22	14,000	0.0E+00	7.0E-02		X
118741	Hexachlorobenzene	5.50E+04	5.42E-02	5.91E-06	6.20E+00	5.41E-02	1.32E-03	25	582.55	825.00	14,447	4.6E-04	0.0E+00		
120127	Anthracene	2.95E+04	3.24E-02	7.74E-06	4.34E-02	2.67E-03	6.51E-05	25	615.18	873.00	13,121	0.0E+00	1.1E+00		X
120821	1,2,4-Trichlorobenzene	1.78E+03	3.00E-02	8.23E-06	3.00E+02	5.82E-02	1.42E-03	25	486.15	725.00	10,471	0.0E+00	2.0E-01		
120832	2,4-Dichlorophenol	1.47E+02	3.46E-02	8.77E-06	4.50E+03	1.30E-04	3.17E-06	25	482.15	708.17	15,000	0.0E+00	1.1E-02		X
121142	2,4-Dinitrotoluene	9.55E+01	2.03E-01	7.06E-06	2.70E+02	3.80E-06	9.27E-08	25	590.00	814.00	13,467	1.9E-04	0.0E+00	X	
124481	Chlorodibromomethane	6.31E+01	1.96E-02	1.05E-05	2.60E+03	3.21E-02	7.83E-04	25	416.14	678.20	5,900	2.4E-05	0.0E+00	X	
127184	Tetrachloroethylene	1.55E+02	7.20E-02	8.20E-06	2.00E+02	7.54E-01	1.84E-02	25	394.40	620.20	8,288	5.8E-07	0.0E+00		
129000	Pyrene	1.05E+05	2.72E-02	7.24E-06	1.35E-01	4.51E-04	1.10E-05	25	667.95	936.00	14,370	0.0E+00	1.1E-01		X
156592	cis-1,2-Dichloroethylene	3.55E+01	7.36E-02	1.13E-05	3.50E+03	1.67E-01	4.07E-03	25	333.65	544.00	7,192	0.0E+00	3.5E-02		X
156605	trans-1,2-Dichloroethylene	5.25E+01	7.07E-02	1.19E-05	6.30E+03	3.85E-01	9.39E-03	25	320.85	516.50	6,717	0.0E+00	7.0E-02		X
193395	Indeno(1,2,3-cd)pyrene	3.47E+06	1.90E-02	5.66E-06	2.20E-05	6.56E-05	1.60E-06	25	809.15	1078.24	19,000	2.1E-04	0.0E+00	X	
205992	Benzo(b)fluoranthene	1.23E+06	2.26E-02	5.56E-06	1.50E-03	4.55E-03	1.11E-04	25	715.90	969.27	17,000	2.1E-04	0.0E+00	X	
206440	Fluoranthene	1.07E+05	3.02E-02	6.35E-06	2.06E-01	6.60E-04	1.61E-05	25	655.95	905.00	13,815	0.0E+00	1.4E-01		X
207089	Benzo(k)fluoranthene	1.23E+06	2.26E-02	5.56E-06	8.00E-04	3.40E-05	8.29E-07	25	753.15	1019.70	18,000	2.1E-05	0.0E+00	X	
218019	Chrysene	3.98E+05	2.48E-02	6.21E-06	1.60E-03	3.88E-03	9.46E-05	25	714.15	979.00	16,455	2.1E-06	0.0E+00	X	
309002	Aldrin	2.45E+06	1.32E-02	4.86E-06	1.80E-01	6.97E-03	1.70E-04	25	603.01	839.37	15,000	4.9E-03	0.0E+00		
319846	alpha-HCH (alpha-BHC)	1.23E+03	1.42E-02	7.34E-06	2.00E+00	4.35E-04	1.06E-05	25	596.55	839.36	15,000	1.8E-03	0.0E+00		
319857	beta-HCH (beta-BHC)	1.26E+03	1.42E-02	7.34E-06	2.40E-01	3.05E-05	7.44E-07	25	596.55	839.36	19,000	5.3E-04	0.0E+00		
542756	1,3-Dichloropropene	4.57E+01	6.26E-02	1.00E-05	2.80E+03	7.26E-01	1.77E-02	25	381.15	587.38	7,900	4.0E-06	2.0E-02		
606202	2,6-Dinitrotoluene	6.92E+01	3.27E-02	7.26E-06	1.82E+02	3.06E-05	7.46E-07	25	558.00	770.00	12,938	1.9E-04	0.0E+00	X	
621647	N-Nitrosodi-n-propylamine	2.40E+01	5.45E-02	8.17E-06	9.89E+03	9.23E-05	2.25E-06	25	509.60	746.87	6,100	2.0E-03	0.0E+00	X	
1024573	Heptachlor epoxide	8.32E+04	1.32E-02	4.23E-06	2.00E-01	3.90E-04	9.51E-06	25	613.96	848.76	16,000	2.6E-03	0.0E+00		
7439976	Mercury (elemental)	5.20E+01	3.07E-02	6.30E-06	5.62E-02	4.67E-01	1.14E-02	25	629.88	1750.00	14,127	0.0E+00	3.0E-04		
8001352	Toxaphene	2.57E+05	1.16E-02	4.34E-06	7.40E-01	2.46E-04	6.00E-06	25	657.15	873.31	15,000	3.2E-04	0.0E+00		

Soil Properties Lookup Table

SCS Soil Type	K_s (cm/h)	α (1/cm)	N (unitless)	M (unitless)	θ_s (cm³/cm³)	θ_r (cm³/cm³)	Mean Grain Diameter (cm)
C	0.61	0.01496	1.253	0.2019	0.459	0.098	0.0092
CL	0.34	0.01581	1.416	0.2938	0.442	0.079	0.016
L	0.50	0.01112	1.472	0.3207	0.399	0.061	0.020
LS	4.38	0.03475	1.746	0.4273	0.390	0.049	0.040
S	26.78	0.03524	3.177	0.6852	0.375	0.053	0.044
SC	0.47	0.03342	1.208	0.1722	0.385	0.117	0.025
SCL	0.55	0.02109	1.330	0.2481	0.384	0.063	0.029
SI	1.82	0.00658	1.679	0.4044	0.489	0.050	0.0046
SIC	0.40	0.01622	1.321	0.2430	0.481	0.111	0.0039
SICL	0.46	0.00839	1.521	0.3425	0.482	0.090	0.0056
SIL	0.76	0.00506	1.663	0.3987	0.439	0.065	0.011
SL	1.60	0.02667	1.449	0.3099	0.387	0.039	0.030

Chemical Properties Lookup Table

CAS No.	Chemical	Organic carbon partition coefficient, K_{oc} (cm³/g)	Diffusivity in air, D_a (cm²/s)	Diffusivity in water, D_w (cm²/s)	Pure component water solubility, S (mg/L)	Henry's law constant H' (unitless)	Henry's law constant at reference temperature, H (atm-m³/mol)	Henry's law constant reference temperature, T_R (°C)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Unit risk factor, URF (μg/m³)⁻¹	Reference conc., RfC (mg/m³)	URF extrapolated (X)	RfC extrapolated (X)
50293	DDT	2.63E+06	1.37E-02	4.95E-06	2.50E-02	3.32E-04	8.10E-06	25	533.15	720.75	22,000	9.7E-05	0.0E+00		
50328	Benzo(a)pyrene	1.02E+06	4.30E-02	9.00E-06	1.62E-03	4.63E-05	1.13E-06	25	715.90	969.27	19,000	2.1E-03	0.0E+00	X	
51285	2,4-Dinitrophenol	1.02E-02	2.73E-02	9.06E-06	2.79E+03	1.82E-05	4.44E-07	25	605.28	827.85	25,000	0.0E+00	7.0E-03		X
53703	Dibenz(a,h)anthracene	3.80E+06	2.02E-02	5.18E-06	2.49E-03	6.03E-07	1.47E-08	25	743.24	990.41	29,995	2.1E-03	0.0E+00	X	
56235	Carbon tetrachloride	1.74E+02	7.80E-02	8.80E-06	7.93E+02	1.25E+00	3.05E-02	25	349.90	556.60	7,127	1.5E-05	0.0E+00		
56553	Benz(a)anthracene	3.98E+05	5.10E-02	9.00E-06	9.40E-03	1.37E-04	3.34E-06	25	708.15	1004.79	16,000	2.1E-04	0.0E+00	X	
57749	Chlordane	1.20E+05	1.18E-02	4.37E-06	5.60E-02	1.99E-03	4.85E-05	25	624.24	885.73	14,000	1.0E-04	7.0E-04		
58899	gamma-HCH (Lindane)	1.07E+03	1.42E-02	7.34E-06	6.80E+00	5.74E-04	1.40E-05	25	596.55	839.36	15,000	3.7E-04	0.0E+00	X	
60571	Dieldrin	2.14E+04	1.25E-02	4.74E-06	1.95E-01	6.19E-04	1.51E-05	25	613.32	842.25	17,000	4.6E-03	0.0E+00		
65850	Benzoic Acid	5.76E-01	5.36E-02	7.97E-06	3.50E+03	6.31E-05	1.54E-06	25	720.00	751.00	12,094	0.0E+00	1.4E+01		X
67641	Acetone	5.75E-01	1.24E-01	1.14E-05	1.00E+06	1.59E-03	3.88E-05	25	329.20	508.10	6,955	0.0E+00	3.5E-01		X
67663	Chloroform	3.98E+01	1.04E-01	1.00E-05	7.92E+03	1.50E-01	3.66E-03	25	334.32	536.40	6,988	2.3E-05	0.0E+00		
67721	Hexachloroethane	1.78E+03	2.50E-03	6.80E-06	5.00E+01	1.59E-01	3.88E-03	25	458.00	695.00	9,510	4.0E-06	0.0E+00		
71363	Butanol	6.92E+00	8.00E-02	9.30E-06	7.40E+04	3.61E-04	8.80E-06	25	390.88	563.05	10,346	0.0E+00	3.5E-01		X
71432	Benzene	5.89E+01	8.80E-02	9.80E-06	1.75E+03	2.28E-01	5.56E-03	25	353.24	562.16	7,342	7.8E-06	0.0E+00		
71556	1,1,1-Trichloroethane	1.10E+02	7.80E-02	8.80E-06	1.33E+03	7.05E-01	1.72E-02	25	347.24	545.00	7,136	0.0E+00	1.0E+00		
72208	Endrin	1.23E+04	1.25E-02	4.74E-06	2.50E-01	3.08E-04	7.51E-06	25	718.15	986.20	15,000	0.0E+00	1.1E-03		X
72435	Methoxychlor	9.77E+04	1.56E-02	4.46E-06	4.50E-02	6.48E-04	1.58E-05	25	651.02	848.49	16,000	0.0E+00	1.8E-02		X
72548	DDD	1.00E+06	1.69E-02	4.76E-06	9.00E-02	1.64E-04	4.00E-06	25	639.90	863.77	17,000	6.9E-05	0.0E+00	X	
72559	DDE	4.47E+06	1.44E-02	5.87E-06	1.20E-01	8.61E-04	2.10E-05	25	636.44	860.38	15,000	9.7E-05	0.0E+00	X	
74839	Methyl bromide	1.05E+01	7.28E-02	1.21E-05	1.52E+04	2.56E-01	6.24E-03	25	276.71	467.00	5,714	0.0E+00	5.0E-03		
75014	Vinyl chloride (chloroethene)	1.86E+01	1.06E-01	1.23E-05	2.76E+03	1.11E+00	2.71E-02	25	259.25	432.00	5,250	4.4E-06	1.0E-01		
75092	Methylene chloride	1.17E+01	1.01E-01	1.17E-05	1.30E+04	8.98E-02	2.19E-03	25	313.00	510.00	6,706	4.7E-07	3.0E+00		
75150	Carbon disulfide	4.57E+01	1.04E-01	1.00E-05	1.19E+03	1.24E+00	3.02E-02	25	319.00	552.00	6,391	0.0E+00	7.0E-01		
75252	Bromoform	8.71E+01	1.49E-02	1.03E-05	3.10E+03	2.19E-02	5.34E-04	25	422.35	696.00	9,479	1.1E-06	0.0E+00		
75274	Bromodichloromethane	5.50E+01	2.98E-02	1.06E-05	6.74E+03	6.56E-02	1.60E-03	25	363.15	585.85	7,800	1.8E-05	0.0E+00	X	
75343	1,1-Dichloroethane	3.16E+01	7.42E-02	1.05E-05	5.06E+03	2.30E-01	5.61E-03	25	330.55	523.00	6,895	0.0E+00	5.0E-01		
75354	1,1-Dichloroethylene	5.89E+01	9.00E-02	1.04E-05	2.25E+03	1.07E+00	2.61E-02	25	304.75	576.05	6,247	5.0E-05	0.0E+00		
76448	Heptachlor	1.41E+06	1.12E-02	5.69E-06	1.80E-01	4.47E-02	1.09E-03	25	603.69	846.31	13,000	1.3E-03	0.0E+00		
77474	Hexachlorocyclopentadiene	2.00E+05	1.61E-02	7.21E-06	1.80E+00	1.11E+00	2.71E-02	25	512.15	746.00	10,931	0.0E+00	7.0E-05		
78591	Isophorone	4.68E+01	6.23E-02	6.76E-06	1.20E+04	2.72E-04	6.63E-06	25	488.35	715.00	10,271	2.7E-07	0.0E+00	X	
78875	1,2-Dichloropropane	4.37E+01	7.82E-02	8.73E-06	2.80E+03	1.15E-01	2.80E-03	25	369.52	572.00	7,590	0.0E+00	4.0E-03		
79005	1,1,2-Trichloroethane	5.01E+01	7.80E-02	8.80E-06	4.42E+03	3.74E-02	9.12E-04	25	386.15	602.00	8,322	1.6E-05	0.0E+00		
79016	Trichloroethylene	1.66E+02	7.90E-02	9.10E-06	1.10E+03	4.22E-01	1.03E-02	25	360.36	544.20	7,505	1.7E-06	0.0E+00		
79345	1,1,2,2-Tetrachloroethane	9.33E+01	7.10E-02	7.90E-06	2.97E+03	1.41E-02	3.44E-04	25	419.60	661.15	8,996	5.8E-05	0.0E+00		
83329	Acenaphthene	7.08E+03	4.21E-02	7.69E-06	4.24E+00	6.36E-03	1.55E-04	25	550.54	803.15	12,155	0.0E+00	2.1E-01		X
84662	Diethylphthalate	2.88E+02	2.56E-02	6.35E-06	1.08E+03	1.85E-05	4.51E-07	25	567.15	757.00	13,733	0.0E+00	2.8E+00		X
84742	Di-n-butyl phthalate	3.39E+04	4.38E-02	7.86E-06	1.12E+01	3.85E-08	9.39E-10	25	613.15	798.67	14,751	0.0E+00	3.5E-01		X
85687	Butyl benzyl phthalate	5.75E+04	1.74E-02	4.83E-06	2.69E+00	5.17E-05	1.26E-06	25	660.60	839.68	14,000	0.0E+00	7.0E-01		X
86306	N-Nitrosodiphenylamine	1.29E+03	3.12E-02	6.35E-06	3.51E+01	2.05E-04	5.00E-06	25	632.28	890.45	7,300	1.4E-06	0.0E+00	X	
86737	Fluorene	1.38E+04	3.63E-02	7.88E-06	1.98E+00	2.61E-03	6.37E-05	25	570.44	870.00	12,666	0.0E+00	1.4E-01		X
86748	Carbazole	3.39E+03	3.90E-02	7.03E-06	7.48E+00	6.26E-07	1.53E-08	25	627.87	899.00	13,977	5.7E-06	0.0E+00	X	
87683	Hexachloro-1,3-butadiene	5.37E+04	5.61E-02	6.16E-06	3.23E+00	3.34E-01	8.15E-03	25	486.15	738.00	10,206	2.2E-05	0.0E+00		
87865	Pentachlorophenol	5.92E+02	5.60E-02	6.10E-06	1.95E+03	1.00E-06	2.44E-08	25	582.15	813.20	16,109	3.4E-05	0.0E+00	X	

88062	2,4,6-Trichlorophenol	3.81E+02	3.18E-02	6.25E-06	8.00E+02	3.19E-04	7.78E-06	25	519.15	749.03	12,000	3.1E-06	0.0E+00		
91203	Naphthalene	2.00E+03	5.90E-02	7.50E-06	3.10E+01	1.98E-02	4.83E-04	25	491.14	748.40	10,373	0.0E+00	3.0E-03		
91941	3,3-Dichlorobenzidine	7.24E+02	1.94E-02	6.74E-06	3.11E+00	1.64E-07	4.00E-09	25	560.26	754.03	20,000	1.3E-04	0.0E+00	X	
95476	o-Xylene	3.63E+02	8.70E-02	1.00E-05	1.78E+02	2.13E-01	5.20E-03	25	417.60	630.30	8,661	0.0E+00	7.0E+00		X
95487	2-Methylphenol (o-cresol)	9.12E+01	7.40E-02	8.30E-06	2.60E+04	4.92E-05	1.20E-06	25	464.19	697.60	10,800	0.0E+00	1.8E-01		X
95501	1,2-Dichlorobenzene	6.17E+02	6.90E-02	7.90E-06	1.56E+02	7.79E-02	1.90E-03	25	453.57	705.00	9,700	0.0E+00	2.0E-01		
95578	2-Chlorophenol	3.88E+02	5.01E-02	9.46E-06	2.20E+04	1.60E-02	3.90E-04	25	447.53	675.00	9,572	0.0E+00	1.8E-02		X
95954	2,4,5-Trichlorophenol	1.60E+03	2.91E-02	7.03E-06	1.20E+03	1.78E-04	4.34E-06	25	526.15	759.13	11,000	0.0E+00	3.5E-01		X
98953	Nitrobenzene	6.46E+01	7.60E-02	8.60E-06	2.09E+03	9.84E-04	2.40E-05	25	483.95	719.00	10,566	0.0E+00	2.0E-03		
100414	Ethylbenzene	3.63E+02	7.50E-02	7.80E-06	1.69E+02	3.23E-01	7.88E-03	25	409.34	617.20	8,501	0.0E+00	1.0E+00		
100425	Styrene	7.76E+02	7.10E-02	8.00E-06	3.10E+02	1.13E-01	2.76E-03	25	418.31	636.00	8,737	0.0E+00	1.0E+00		
105679	2,4-Dimethylphenol	2.09E+02	5.84E-02	8.69E-06	7.87E+03	8.20E-05	2.00E-06	25	484.13	707.60	11,329	0.0E+00	7.0E-02		X
106423	p-Xylene	3.89E+02	7.69E-02	8.44E-06	1.85E+02	3.14E-01	7.66E-03	26	411.52	616.20	8,525	0.0E+00	7.0E+00		X
106467	1,4-Dichlorobenzene	6.17E+02	6.90E-02	7.90E-06	7.38E+01	9.96E-02	2.43E-03	25	447.21	684.75	9,271	0.0E+00	8.0E-01		
106478	p-Chloroaniline	6.61E+01	4.83E-02	1.01E-05	5.30E+03	1.36E-05	3.32E-07	25	503.65	754.00	11,689	0.0E+00	1.4E-02		X
107062	1,2-Dichloroethane	1.74E+01	1.04E-01	9.90E-06	8.52E+03	4.01E-02	9.78E-04	25	356.65	561.00	7,643	2.6E-05	0.0E+00		
108054	Vinyl acetate	5.25E+00	8.50E-02	9.20E-06	2.00E+04	2.10E-02	5.12E-04	25	345.65	519.13	7,800	0.0E+00	2.0E-01		
108383	m-Xylene	4.07E+02	7.00E-02	7.80E-06	1.61E+02	3.01E-01	7.34E-03	25	412.27	617.05	8,523	0.0E+00	7.0E+00		X
108883	Toluene	1.82E+02	8.70E-02	8.60E-06	5.26E+02	2.72E-01	6.63E-03	25	383.78	591.79	7,930	0.0E+00	4.0E-01		
108907	Chlorobenzene	2.19E+02	7.30E-02	8.70E-06	4.72E+02	1.52E-01	3.71E-03	25	404.87	632.40	8,410	0.0E+00	2.0E-02		
108952	Phenol	2.88E+01	8.20E-02	9.10E-06	8.28E+04	1.63E-05	3.98E-07	25	455.02	694.20	10,920	0.0E+00	2.1E+00		X
111444	Bis(2-chloroethyl)ether	1.55E+01	6.92E-02	7.53E-06	1.72E+04	7.38E-04	1.80E-05	25	451.15	659.79	10,803	3.3E-04	0.0E+00		
115297	Endosulfan	2.14E+03	1.15E-02	4.55E-06	5.10E-01	4.59E-04	1.12E-05	25	674.43	942.94	14,000	0.0E+00	2.1E-02		X
117817	Bis(2-ethylhexyl)phthalate	1.51E+07	3.51E-02	3.66E-06	3.40E-01	4.18E-06	1.02E-07	25	657.15	806.00	15,999	4.0E-06	0.0E+00	X	
117840	Di-n-octyl phthalate	8.32E+07	1.51E-02	3.58E-06	2.00E-02	2.74E-03	6.68E-05	25	704.09	862.22	14,000	0.0E+00	7.0E-02		X
118741	Hexachlorobenzene	5.50E+04	5.42E-02	5.91E-06	6.20E+00	5.41E-02	1.32E-03	25	582.55	825.00	14,447	4.6E-04	0.0E+00		
120127	Anthracene	2.95E+04	3.24E-02	7.74E-06	4.34E-02	2.67E-03	6.51E-05	25	615.18	873.00	13,121	0.0E+00	1.1E+00		X
120821	1,2,4-Trichlorobenzene	1.78E+03	3.00E-02	8.23E-06	3.00E+02	5.82E-02	1.42E-03	25	486.15	725.00	10,471	0.0E+00	2.0E-01		
120832	2,4-Dichlorophenol	1.47E+02	3.46E-02	8.77E-06	4.50E+03	1.30E-04	3.17E-06	25	482.15	708.17	15,000	0.0E+00	1.1E-02		X
121142	2,4-Dinitrotoluene	9.55E+01	2.03E-01	7.06E-06	2.70E+02	3.80E-06	9.27E-08	25	590.00	814.00	13,467	1.9E-04	0.0E+00	X	
124481	Chlorodibromomethane	6.31E+01	1.96E-02	1.05E-05	2.60E+03	3.21E-02	7.83E-04	25	416.14	678.20	5,900	2.4E-05	0.0E+00	X	
127184	Tetrachloroethylene	1.55E+02	7.20E-02	8.20E-06	2.00E+02	7.54E-01	1.84E-02	25	394.40	620.20	8,288	5.8E-07	0.0E+00		
129000	Pyrene	1.05E+05	2.72E-02	7.24E-06	1.35E-01	4.51E-04	1.10E-05	25	667.95	936.00	14,370	0.0E+00	1.1E-01		X
156592	cis-1,2-Dichloroethylene	3.55E+01	7.36E-02	1.13E-05	3.50E+03	1.67E-01	4.07E-03	25	333.65	544.00	7,192	0.0E+00	3.5E-02		X
156605	trans-1,2-Dichloroethylene	5.25E+01	7.07E-02	1.19E-05	6.30E+03	3.85E-01	9.39E-03	25	320.85	516.50	6,717	0.0E+00	7.0E-02		X
193395	Indeno(1,2,3-cd)pyrene	3.47E+06	1.90E-02	5.66E-06	2.20E-05	6.56E-05	1.60E-06	25	809.15	1078.24	19,000	2.1E-04	0.0E+00	X	
205992	Benzo(b)fluoranthene	1.23E+06	2.26E-02	5.56E-06	1.50E-03	4.55E-03	1.11E-04	25	715.90	969.27	17,000	2.1E-04	0.0E+00	X	
206440	Fluoranthene	1.07E+05	3.02E-02	6.35E-06	2.06E-01	6.60E-04	1.61E-05	25	655.95	905.00	13,815	0.0E+00	1.4E-01		X
207089	Benzo(k)fluoranthene	1.23E+06	2.26E-02	5.56E-06	8.00E-04	3.40E-05	8.29E-07	25	753.15	1019.70	18,000	2.1E-05	0.0E+00	X	
218019	Chrysene	3.98E+05	2.48E-02	6.21E-06	1.60E-03	3.88E-03	9.46E-05	25	714.15	979.00	16,455	2.1E-06	0.0E+00	X	
309002	Aldrin	2.45E+06	1.32E-02	4.86E-06	1.80E-01	6.97E-03	1.70E-04	25	603.01	839.37	15,000	4.9E-03	0.0E+00		
319846	alpha-HCH (alpha-BHC)	1.23E+03	1.42E-02	7.34E-06	2.00E+00	4.35E-04	1.06E-05	25	596.55	839.36	15,000	1.8E-03	0.0E+00		
319857	beta-HCH (beta-BHC)	1.26E+03	1.42E-02	7.34E-06	2.40E-01	3.05E-05	7.44E-07	25	596.55	839.36	19,000	5.3E-04	0.0E+00		
542756	1,3-Dichloropropene	4.57E+01	6.26E-02	1.00E-05	2.80E+03	7.26E-01	1.77E-02	25	381.15	587.38	7,900	4.0E-06	2.0E-02		
606202	2,6-Dinitrotoluene	6.92E+01	3.27E-02	7.26E-06	1.82E+02	3.06E-05	7.46E-07	25	558.00	770.00	12,938	1.9E-04	0.0E+00	X	
621647	N-Nitrosodi-n-propylamine	2.40E+01	5.45E-02	8.17E-06	9.89E+03	9.23E-05	2.25E-06	25	509.60	746.87	6,100	2.0E-03	0.0E+00	X	
1024573	Heptachlor epoxide	8.32E+04	1.32E-02	4.23E-06	2.00E-01	3.90E-04	9.51E-06	25	613.96	848.76	16,000	2.6E-03	0.0E+00		
7439976	Mercury (elemental)	5.20E+01	3.07E-02	6.30E-06	5.62E-02	4.67E-01	1.14E-02	25	629.88	1750.00	14,127	0.0E+00	3.0E-04		
8001352	Toxaphene	2.57E+05	1.16E-02	4.34E-06	7.40E-01	2.46E-04	6.00E-06	25	657.15	873.31	15,000	3.2E-04	0.0E+00		

Soil Properties Lookup Table

SCS Soil Type	K_s (cm/h)	α (1/cm)	N (unitless)	M (unitless)	θ_s (cm³/cm³)	θ_r (cm³/cm³)	Mean Grain Diameter (cm)
C	0.61	0.01496	1.253	0.2019	0.459	0.098	0.0092
CL	0.34	0.01581	1.416	0.2938	0.442	0.079	0.016
L	0.50	0.01112	1.472	0.3207	0.399	0.061	0.020
LS	4.38	0.03475	1.746	0.4273	0.390	0.049	0.040
S	26.78	0.03524	3.177	0.6852	0.375	0.053	0.044
SC	0.47	0.03342	1.208	0.1722	0.385	0.117	0.025
SCL	0.55	0.02109	1.330	0.2481	0.384	0.063	0.029
SI	1.82	0.00658	1.679	0.4044	0.489	0.050	0.0046
SIC	0.40	0.01622	1.321	0.2430	0.481	0.111	0.0039
SICL	0.46	0.00839	1.521	0.3425	0.482	0.090	0.0056
SIL	0.76	0.00506	1.663	0.3987	0.439	0.065	0.011
SL	1.60	0.02667	1.449	0.3099	0.387	0.039	0.030

Chemical Properties Lookup Table

CAS No.	Chemical	Organic carbon partition coefficient, K_{oc} (cm³/g)	Diffusivity in air, D_a (cm²/s)	Diffusivity in water, D_w (cm²/s)	Pure component water solubility, S (mg/L)	Henry's law constant H' (unitless)	Henry's law constant at reference temperature, H (atm-m³/mol)	Henry's law constant reference temperature, T_R (°C)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Unit risk factor, URF (μg/m³)⁻¹	Reference conc., RfC (mg/m³)	URF extrapolated (X)	RfC extrapolated (X)
50293	DDT	2.63E+06	1.37E-02	4.95E-06	2.50E-02	3.32E-04	8.10E-06	25	533.15	720.75	22,000	9.7E-05	0.0E+00		
50328	Benzo(a)pyrene	1.02E+06	4.30E-02	9.00E-06	1.62E-03	4.63E-05	1.13E-06	25	715.90	969.27	19,000	2.1E-03	0.0E+00	X	
51285	2,4-Dinitrophenol	1.02E-02	2.73E-02	9.06E-06	2.79E+03	1.82E-05	4.44E-07	25	605.28	827.85	25,000	0.0E+00	7.0E-03		X
53703	Dibenz(a,h)anthracene	3.80E+06	2.02E-02	5.18E-06	2.49E-03	6.03E-07	1.47E-08	25	743.24	990.41	29,995	2.1E-03	0.0E+00	X	
56235	Carbon tetrachloride	1.74E+02	7.80E-02	8.80E-06	7.93E+02	1.25E+00	3.05E-02	25	349.90	556.60	7,127	1.5E-05	0.0E+00		
56553	Benz(a)anthracene	3.98E+05	5.10E-02	9.00E-06	9.40E-03	1.37E-04	3.34E-06	25	708.15	1004.79	16,000	2.1E-04	0.0E+00	X	
57749	Chlordane	1.20E+05	1.18E-02	4.37E-06	5.60E-02	1.99E-03	4.85E-05	25	624.24	885.73	14,000	1.0E-04	7.0E-04		
58899	gamma-HCH (Lindane)	1.07E+03	1.42E-02	7.34E-06	6.80E+00	5.74E-04	1.40E-05	25	596.55	839.36	15,000	3.7E-04	0.0E+00	X	
60571	Dieldrin	2.14E+04	1.25E-02	4.74E-06	1.95E-01	6.19E-04	1.51E-05	25	613.32	842.25	17,000	4.6E-03	0.0E+00		
65850	Benzoic Acid	5.76E-01	5.36E-02	7.97E-06	3.50E+03	6.31E-05	1.54E-06	25	720.00	751.00	12,094	0.0E+00	1.4E+01		X
67641	Acetone	5.75E-01	1.24E-01	1.14E-05	1.00E+06	1.59E-03	3.88E-05	25	329.20	508.10	6,955	0.0E+00	3.5E-01		X
67663	Chloroform	3.98E+01	1.04E-01	1.00E-05	7.92E+03	1.50E-01	3.66E-03	25	334.32	536.40	6,988	2.3E-05	0.0E+00		
67721	Hexachloroethane	1.78E+03	2.50E-03	6.80E-06	5.00E+01	1.59E-01	3.88E-03	25	458.00	695.00	9,510	4.0E-06	0.0E+00		
71363	Butanol	6.92E+00	8.00E-02	9.30E-06	7.40E+04	3.61E-04	8.80E-06	25	390.88	563.05	10,346	0.0E+00	3.5E-01		X
71432	Benzene	5.89E+01	8.80E-02	9.80E-06	1.75E+03	2.28E-01	5.56E-03	25	353.24	562.16	7,342	7.8E-06	0.0E+00		
71556	1,1,1-Trichloroethane	1.10E+02	7.80E-02	8.80E-06	1.33E+03	7.05E-01	1.72E-02	25	347.24	545.00	7,136	0.0E+00	1.0E+00		
72208	Endrin	1.23E+04	1.25E-02	4.74E-06	2.50E-01	3.08E-04	7.51E-06	25	718.15	986.20	15,000	0.0E+00	1.1E-03		X
72435	Methoxychlor	9.77E+04	1.56E-02	4.46E-06	4.50E-02	6.48E-04	1.58E-05	25	651.02	848.49	16,000	0.0E+00	1.8E-02		X
72548	DDD	1.00E+06	1.69E-02	4.76E-06	9.00E-02	1.64E-04	4.00E-06	25	639.80	863.77	17,000	6.9E-05	0.0E+00	X	
72559	DDE	4.47E+06	1.44E-02	5.87E-06	1.20E-01	8.61E-04	2.10E-05	25	636.44	860.38	15,000	9.7E-05	0.0E+00	X	
74839	Methyl bromide	1.05E+01	7.28E-02	1.21E-05	1.52E+04	2.56E-01	6.24E-03	25	276.71	467.00	5,714	0.0E+00	5.0E-03		
75014	Vinyl chloride (chloroethene)	1.86E+01	1.06E-01	1.23E-05	2.76E+03	1.11E+00	2.71E-02	25	259.25	432.00	5,250	4.4E-06	1.0E-01		
75092	Methylene chloride	1.17E+01	1.01E-01	1.17E-05	1.30E+04	8.98E-02	2.19E-03	25	313.00	510.00	6,706	4.7E-07	3.0E+00		
75150	Carbon disulfide	4.57E+01	1.04E-01	1.00E-05	1.19E+03	1.24E+00	3.02E-02	25	319.00	552.00	6,391	0.0E+00	7.0E-01		
75252	Bromoform	8.71E+01	1.49E-02	1.03E-05	3.10E+03	2.19E-02	5.34E-04	25	422.35	696.00	9,479	1.1E-06	0.0E+00		
75274	Bromodichloromethane	5.50E+01	2.98E-02	1.06E-05	6.74E+03	6.56E-02	1.60E-03	25	363.15	585.85	7,800	1.8E-05	0.0E+00	X	
75343	1,1-Dichloroethane	3.16E+01	7.42E-02	1.05E-05	5.06E+03	2.30E-01	5.61E-03	25	330.55	523.00	6,895	0.0E+00	5.0E-01		
75354	1,1-Dichloroethylene	5.89E+01	9.00E-02	1.04E-05	2.25E+03	1.07E+00	2.61E-02	25	304.75	576.05	6,247	5.0E-05	0.0E+00		
76448	Heptachlor	1.41E+06	1.12E-02	5.69E-06	1.80E-01	4.47E-02	1.09E-03	25	603.69	846.31	13,000	1.3E-03	0.0E+00		
77474	Hexachlorocyclopentadiene	2.00E+05	1.61E-02	7.21E-06	1.80E+00	1.11E+00	2.71E-02	25	512.15	746.00	10,931	0.0E+00	7.0E-05		
78591	Isophorone	4.68E+01	6.23E-02	6.76E-06	1.20E+04	2.72E-04	6.63E-06	25	488.35	715.00	10,271	2.7E-07	0.0E+00	X	
78875	1,2-Dichloropropane	4.37E+01	7.82E-02	8.73E-06	2.80E+03	1.15E-01	2.80E-03	25	369.52	572.00	7,590	0.0E+00	4.0E-03		
79005	1,1,2-Trichloroethane	5.01E+01	7.80E-02	8.80E-06	4.42E+03	3.74E-02	9.12E-04	25	386.15	602.00	8,322	1.6E-05	0.0E+00		
79016	Trichloroethylene	1.66E+02	7.90E-02	9.10E-06	1.10E+03	4.22E-01	1.03E-02	25	360.36	544.20	7,505	1.7E-06	0.0E+00		
79345	1,1,2,2-Tetrachloroethane	9.33E+01	7.10E-02	7.90E-06	2.97E+03	1.41E-02	3.44E-04	25	419.60	661.15	8,996	5.8E-05	0.0E+00		
83329	Acenaphthene	7.08E+03	4.21E-02	7.69E-06	4.24E+00	6.36E-03	1.55E-04	25	550.54	803.15	12,155	0.0E+00	2.1E-01		X
84662	Diethylphthalate	2.88E+02	2.56E-02	6.35E-06	1.08E+03	1.85E-05	4.51E-07	25	567.15	757.00	13,733	0.0E+00	2.8E+00		X
84742	Di-n-butyl phthalate	3.39E+04	4.38E-02	7.86E-06	1.12E+01	3.85E-08	9.39E-10	25	613.15	798.67	14,751	0.0E+00	3.5E-01		X
85687	Butyl benzyl phthalate	5.75E+04	1.74E-02	4.83E-06	2.69E+00	5.17E-05	1.26E-06	25	660.60	839.68	14,000	0.0E+00	7.0E-01		X
86306	N-Nitrosodiphenylamine	1.29E+03	3.12E-02	6.35E-06	3.51E+01	2.05E-04	5.00E-06	25	632.28	890.45	7,300	1.4E-06	0.0E+00	X	
86737	Fluorene	1.38E+04	3.63E-02	7.88E-06	1.98E+00	2.61E-03	6.37E-05	25	570.44	870.00	12,666	0.0E+00	1.4E-01		X
86748	Carbazole	3.39E+03	3.90E-02	7.03E-06	7.48E+00	6.26E-07	1.53E-08	25	627.87	899.00	13,977	5.7E-06	0.0E+00	X	
87683	Hexachloro-1,3-butadiene	5.37E+04	5.61E-02	6.16E-06	3.23E+00	3.34E-01	8.15E-03	25	486.15	738.00	10,206	2.2E-05	0.0E+00		
87865	Pentachlorophenol	5.92E+02	5.60E-02	6.10E-06	1.95E+03	1.00E-06	2.44E-08	25	582.15	813.20	16,109	3.4E-05	0.0E+00	X	

88062	2,4,6-Trichlorophenol	3.81E+02	3.18E-02	6.25E-06	8.00E+02	3.19E-04	7.78E-06	25	519.15	749.03	12,000	3.1E-06	0.0E+00		
91203	Naphthalene	2.00E+03	5.90E-02	7.50E-06	3.10E+01	1.98E-02	4.83E-04	25	491.14	748.40	10,373	0.0E+00	3.0E-03		
91941	3,3-Dichlorobenzidine	7.24E+02	1.94E-02	6.74E-06	3.11E+00	1.64E-07	4.00E-09	25	560.26	754.03	20,000	1.3E-04	0.0E+00	X	
95476	o-Xylene	3.63E+02	8.70E-02	1.00E-05	1.78E+02	2.13E-01	5.20E-03	25	417.60	630.30	8,661	0.0E+00	7.0E+00		X
95487	2-Methylphenol (o-cresol)	9.12E+01	7.40E-02	8.30E-06	2.60E+04	4.92E-05	1.20E-06	25	464.19	697.60	10,800	0.0E+00	1.8E-01		X
95501	1,2-Dichlorobenzene	6.17E+02	6.90E-02	7.90E-06	1.56E+02	7.79E-02	1.90E-03	25	453.57	705.00	9,700	0.0E+00	2.0E-01		
95578	2-Chlorophenol	3.88E+02	5.01E-02	9.46E-06	2.20E+04	1.60E-02	3.90E-04	25	447.53	675.00	9,572	0.0E+00	1.8E-02		X
95954	2,4,5-Trichlorophenol	1.60E+03	2.91E-02	7.03E-06	1.20E+03	1.78E-04	4.34E-06	25	526.15	759.13	11,000	0.0E+00	3.5E-01		X
98953	Nitrobenzene	6.46E+01	7.60E-02	8.60E-06	2.09E+03	9.84E-04	2.40E-05	25	483.95	719.00	10,566	0.0E+00	2.0E-03		
100414	Ethylbenzene	3.63E+02	7.50E-02	7.80E-06	1.69E+02	3.23E-01	7.88E-03	25	409.34	617.20	8,501	0.0E+00	1.0E+00		
100425	Styrene	7.76E+02	7.10E-02	8.00E-06	3.10E+02	1.13E-01	2.76E-03	25	418.31	636.00	8,737	0.0E+00	1.0E+00		
105679	2,4-Dimethylphenol	2.09E+02	5.84E-02	8.69E-06	7.87E+03	8.20E-05	2.00E-06	25	484.13	707.60	11,329	0.0E+00	7.0E-02		X
106423	p-Xylene	3.89E+02	7.69E-02	8.44E-06	1.85E+02	3.14E-01	7.66E-03	26	411.52	616.20	8,525	0.0E+00	7.0E+00		X
106467	1,4-Dichlorobenzene	6.17E+02	6.90E-02	7.90E-06	7.38E+01	9.96E-02	2.43E-03	25	447.21	684.75	9,271	0.0E+00	8.0E-01		
106478	p-Chloroaniline	6.61E+01	4.83E-02	1.01E-05	5.30E+03	1.36E-05	3.32E-07	25	503.65	754.00	11,689	0.0E+00	1.4E-02		X
107062	1,2-Dichloroethane	1.74E+01	1.04E-01	9.90E-06	8.52E+03	4.01E-02	9.78E-04	25	356.65	561.00	7,643	2.6E-05	0.0E+00		
108054	Vinyl acetate	5.25E+00	8.50E-02	9.20E-06	2.00E+04	2.10E-02	5.12E-04	25	345.65	519.13	7,800	0.0E+00	2.0E-01		
108383	m-Xylene	4.07E+02	7.00E-02	7.80E-06	1.61E+02	3.01E-01	7.34E-03	25	412.27	617.05	8,523	0.0E+00	7.0E+00		X
108883	Toluene	1.82E+02	8.70E-02	8.60E-06	5.26E+02	2.72E-01	6.63E-03	25	383.78	591.79	7,930	0.0E+00	4.0E-01		
108907	Chlorobenzene	2.19E+02	7.30E-02	8.70E-06	4.72E+02	1.52E-01	3.71E-03	25	404.87	632.40	8,410	0.0E+00	2.0E-02		
108952	Phenol	2.88E+01	8.20E-02	9.10E-06	8.28E+04	1.63E-05	3.98E-07	25	455.02	694.20	10,920	0.0E+00	2.1E+00		X
111444	Bis(2-chloroethyl)ether	1.55E+01	6.92E-02	7.53E-06	1.72E+04	7.38E-04	1.80E-05	25	451.15	659.79	10,803	3.3E-04	0.0E+00		
115297	Endosulfan	2.14E+03	1.15E-02	4.55E-06	5.10E-01	4.59E-04	1.12E-05	25	674.43	942.94	14,000	0.0E+00	2.1E-02		X
117817	Bis(2-ethylhexyl)phthalate	1.51E+07	3.51E-02	3.66E-06	3.40E-01	4.18E-06	1.02E-07	25	657.15	806.00	15,999	4.0E-06	0.0E+00	X	
117840	Di-n-octyl phthalate	8.32E+07	1.51E-02	3.58E-06	2.00E-02	2.74E-03	6.68E-05	25	704.09	862.22	14,000	0.0E+00	7.0E-02		X
118741	Hexachlorobenzene	5.50E+04	5.42E-02	5.91E-06	6.20E+00	5.41E-02	1.32E-03	25	582.55	825.00	14,447	4.6E-04	0.0E+00		
120127	Anthracene	2.95E+04	3.24E-02	7.74E-06	4.34E-02	2.67E-03	6.51E-05	25	615.18	873.00	13,121	0.0E+00	1.1E+00		X
120821	1,2,4-Trichlorobenzene	1.78E+03	3.00E-02	8.23E-06	3.00E+02	5.82E-02	1.42E-03	25	486.15	725.00	10,471	0.0E+00	2.0E-01		
120832	2,4-Dichlorophenol	1.47E+02	3.46E-02	8.77E-06	4.50E+03	1.30E-04	3.17E-06	25	482.15	708.17	15,000	0.0E+00	1.1E-02		X
121142	2,4-Dinitrotoluene	9.55E+01	2.03E-01	7.06E-06	2.70E+02	3.80E-06	9.27E-08	25	590.00	814.00	13,467	1.9E-04	0.0E+00	X	
124481	Chlorodibromomethane	6.31E+01	1.96E-02	1.05E-05	2.60E+03	3.21E-02	7.83E-04	25	416.14	678.20	5,900	2.4E-05	0.0E+00	X	
127184	Tetrachloroethylene	1.55E+02	7.20E-02	8.20E-06	2.00E+02	7.54E-01	1.84E-02	25	394.40	620.20	8,288	5.8E-07	0.0E+00		
129000	Pyrene	1.05E+05	2.72E-02	7.24E-06	1.35E-01	4.51E-04	1.10E-05	25	667.95	936.00	14,370	0.0E+00	1.1E-01		X
156592	cis-1,2-Dichloroethylene	3.55E+01	7.36E-02	1.13E-05	3.50E+03	1.67E-01	4.07E-03	25	333.65	544.00	7,192	0.0E+00	3.5E-02		X
156605	trans-1,2-Dichloroethylene	5.25E+01	7.07E-02	1.19E-05	6.30E+03	3.85E-01	9.39E-03	25	320.85	516.50	6,717	0.0E+00	7.0E-02		X
193395	Indeno(1,2,3-cd)pyrene	3.47E+06	1.90E-02	5.66E-06	2.20E-05	6.56E-05	1.60E-06	25	809.15	1078.24	19,000	2.1E-04	0.0E+00	X	
205992	Benzo(b)fluoranthene	1.23E+06	2.26E-02	5.56E-06	1.50E-03	4.55E-03	1.11E-04	25	715.90	969.27	17,000	2.1E-04	0.0E+00	X	
206440	Fluoranthene	1.07E+05	3.02E-02	6.35E-06	2.06E-01	6.60E-04	1.61E-05	25	655.95	905.00	13,815	0.0E+00	1.4E-01		X
207089	Benzo(k)fluoranthene	1.23E+06	2.26E-02	5.56E-06	8.00E-04	3.40E-05	8.29E-07	25	753.15	1019.70	18,000	2.1E-05	0.0E+00	X	
218019	Chrysene	3.98E+05	2.48E-02	6.21E-06	1.60E-03	3.88E-03	9.46E-05	25	714.15	979.00	16,455	2.1E-06	0.0E+00	X	
309002	Aldrin	2.45E+06	1.32E-02	4.86E-06	1.80E-01	6.97E-03	1.70E-04	25	603.01	839.37	15,000	4.9E-03	0.0E+00		
319846	alpha-HCH (alpha-BHC)	1.23E+03	1.42E-02	7.34E-06	2.00E+00	4.35E-04	1.06E-05	25	596.55	839.36	15,000	1.8E-03	0.0E+00		
319857	beta-HCH (beta-BHC)	1.26E+03	1.42E-02	7.34E-06	2.40E-01	3.05E-05	7.44E-07	25	596.55	839.36	19,000	5.3E-04	0.0E+00		
542756	1,3-Dichloropropene	4.57E+01	6.26E-02	1.00E-05	2.80E+03	7.26E-01	1.77E-02	25	381.15	587.38	7,900	4.0E-06	2.0E-02		
606202	2,6-Dinitrotoluene	6.92E+01	3.27E-02	7.26E-06	1.82E+02	3.06E-05	7.46E-07	25	558.00	770.00	12,938	1.9E-04	0.0E+00	X	
621647	N-Nitrosodi-n-propylamine	2.40E+01	5.45E-02	8.17E-06	9.89E+03	9.23E-05	2.25E-06	25	509.60	746.87	6,100	2.0E-03	0.0E+00	X	
1024573	Heptachlor epoxide	8.32E+04	1.32E-02	4.23E-06	2.00E-01	3.90E-04	9.51E-06	25	613.96	848.76	16,000	2.6E-03	0.0E+00		
7439976	Mercury (elemental)	5.20E+01	3.07E-02	6.30E-06	5.62E-02	4.67E-01	1.14E-02	25	629.88	1750.00	14,127	0.0E+00	3.0E-04		
8001352	Toxaphene	2.57E+05	1.16E-02	4.34E-06	7.40E-01	2.46E-04	6.00E-06	25	657.15	873.31	15,000	3.2E-04	0.0E+00		

Soil Properties Lookup Table

SCS Soil Type	K_s (cm/h)	α (1/cm)	N (unitless)	M (unitless)	θ_s (cm³/cm³)	θ_r (cm³/cm³)	Mean Grain Diameter (cm)
C	0.61	0.01496	1.253	0.2019	0.459	0.098	0.0092
CL	0.34	0.01581	1.416	0.2938	0.442	0.079	0.016
L	0.50	0.01112	1.472	0.3207	0.399	0.061	0.020
LS	4.38	0.03475	1.746	0.4273	0.390	0.049	0.040
S	26.78	0.03524	3.177	0.6852	0.375	0.053	0.044
SC	0.47	0.03342	1.208	0.1722	0.385	0.117	0.025
SCL	0.55	0.02109	1.330	0.2481	0.384	0.063	0.029
SI	1.82	0.00658	1.679	0.4044	0.489	0.050	0.0046
SIC	0.40	0.01622	1.321	0.2430	0.481	0.111	0.0039
SICL	0.46	0.00839	1.521	0.3425	0.482	0.090	0.0056
SIL	0.76	0.00506	1.663	0.3987	0.439	0.065	0.011
SL	1.60	0.02667	1.449	0.3099	0.387	0.039	0.030

Chemical Properties Lookup Table

CAS No.	Chemical	Organic carbon partition coefficient, K_{oc} (cm³/g)	Diffusivity in air, D_a (cm²/s)	Diffusivity in water, D_w (cm²/s)	Pure component water solubility, S (mg/L)	Henry's law constant H' (unitless)	Henry's law constant at reference temperature, H (atm-m³/mol)	Henry's law constant reference temperature, T_R (°C)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Unit risk factor, URF (µg/m³)⁻¹	Reference conc., RfC (mg/m³)	URF extrapolated (X)	RfC extrapolated (X)
50293	DDT	2.63E+06	1.37E-02	4.95E-06	2.50E-02	3.32E-04	8.10E-06	25	533.15	720.75	22,000	9.7E-05	0.0E+00		
50328	Benzo(a)pyrene	1.02E+06	4.30E-02	9.00E-06	1.62E-03	4.63E-05	1.13E-06	25	715.90	969.27	19,000	2.1E-03	0.0E+00	X	
51285	2,4-Dinitrophenol	1.02E-02	2.73E-02	9.06E-06	2.79E+03	1.82E-05	4.44E-07	25	605.28	827.85	25,000	0.0E+00	7.0E-03		X
53703	Dibenz(a,h)anthracene	3.80E+06	2.02E-02	5.18E-06	2.49E-03	6.03E-07	1.47E-08	25	743.24	990.41	29,995	2.1E-03	0.0E+00	X	
56235	Carbon tetrachloride	1.74E+02	7.80E-02	8.80E-06	7.93E+02	1.25E+00	3.05E-02	25	349.90	556.60	7,127	1.5E-05	0.0E+00		
56553	Benz(a)anthracene	3.98E+05	5.10E-02	9.00E-06	9.40E-03	1.37E-04	3.34E-06	25	708.15	1004.79	16,000	2.1E-04	0.0E+00	X	
57749	Chlordane	1.20E+05	1.18E-02	4.37E-06	5.60E-02	1.99E-03	4.85E-05	25	624.24	885.73	14,000	1.0E-04	7.0E-04		
58899	gamma-HCH (Lindane)	1.07E+03	1.42E-02	7.34E-06	6.80E+00	5.74E-04	1.40E-05	25	596.55	839.36	15,000	3.7E-04	0.0E+00	X	
60571	Dieldrin	2.14E+04	1.25E-02	4.74E-06	1.95E-01	6.19E-04	1.51E-05	25	613.32	842.25	17,000	4.6E-03	0.0E+00		
65850	Benzoic Acid	5.76E-01	5.36E-02	7.97E-06	3.50E+03	6.31E-05	1.54E-06	25	720.00	751.00	12,094	0.0E+00	1.4E+01		X
67641	Acetone	5.75E-01	1.24E-01	1.14E-05	1.00E+06	1.59E-03	3.88E-05	25	329.20	508.10	6,955	0.0E+00	3.5E-01		X
67663	Chloroform	3.98E+01	1.04E-01	1.00E-05	7.92E+03	1.50E-01	3.66E-03	25	334.32	536.40	6,988	2.3E-05	0.0E+00		
67721	Hexachloroethane	1.78E+03	2.50E-03	6.80E-06	5.00E+01	1.59E-01	3.88E-03	25	458.00	695.00	9,510	4.0E-06	0.0E+00		
71363	Butanol	6.92E+00	8.00E-02	9.30E-06	7.40E+04	3.61E-04	8.80E-06	25	390.88	563.05	10,346	0.0E+00	3.5E-01		X
71432	Benzene	5.89E+01	8.80E-02	9.80E-06	1.75E+03	2.28E-01	5.56E-03	25	353.24	562.16	7,342	7.8E-06	0.0E+00		
71556	1,1,1-Trichloroethane	1.10E+02	7.80E-02	8.80E-06	1.33E+03	7.05E-01	1.72E-02	25	347.24	545.00	7,136	0.0E+00	1.0E+00		
72208	Endrin	1.23E+04	1.25E-02	4.74E-06	2.50E-01	3.08E-04	7.51E-06	25	718.15	986.20	15,000	0.0E+00	1.1E-03		X
72435	Methoxychlor	9.77E+04	1.56E-02	4.46E-06	4.50E-02	6.48E-04	1.58E-05	25	651.02	848.49	16,000	0.0E+00	1.8E-02		X
72548	DDD	1.00E+06	1.69E-02	4.76E-06	9.00E-02	1.64E-04	4.00E-06	25	639.90	863.77	17,000	6.9E-05	0.0E+00	X	
72559	DDE	4.47E+06	1.44E-02	5.87E-06	1.20E-01	8.61E-04	2.10E-05	25	636.44	860.38	15,000	9.7E-05	0.0E+00	X	
74839	Methyl bromide	1.05E+01	7.28E-02	1.21E-05	1.52E+04	2.56E-01	6.24E-03	25	276.71	467.00	5,714	0.0E+00	5.0E-03		
75014	Vinyl chloride (chloroethene)	1.86E+01	1.06E-01	1.23E-05	2.76E+03	1.11E+00	2.71E-02	25	259.25	432.00	5,250	4.4E-06	1.0E-01		
75092	Methylene chloride	1.17E+01	1.01E-01	1.17E-05	1.30E+04	8.98E-02	2.19E-03	25	313.00	510.00	6,706	4.7E-07	3.0E+00		
75150	Carbon disulfide	4.57E+01	1.04E-01	1.00E-05	1.19E+03	1.24E+00	3.02E-02	25	319.00	552.00	6,391	0.0E+00	7.0E-01		
75252	Bromoform	8.71E+01	1.49E-02	1.03E-05	3.10E+03	2.19E-02	5.34E-04	25	422.35	696.00	9,479	1.1E-06	0.0E+00		
75274	Bromodichloromethane	5.50E+01	2.98E-02	1.06E-05	6.74E+03	6.56E-02	1.60E-03	25	363.15	585.85	7,800	1.8E-05	0.0E+00	X	
75343	1,1-Dichloroethane	3.16E+01	7.42E-02	1.05E-05	5.06E+03	2.30E-01	5.61E-03	25	330.55	523.00	6,895	0.0E+00	5.0E-01		
75354	1,1-Dichloroethylene	5.89E+01	9.00E-02	1.04E-05	2.25E+03	1.07E+00	2.61E-02	25	304.75	576.05	6,247	5.0E-05	0.0E+00		
76448	Heptachlor	1.41E+06	1.12E-02	5.69E-06	1.80E-01	4.47E-02	1.09E-03	25	603.69	846.31	13,000	1.3E-03	0.0E+00		
77474	Hexachlorocyclopentadiene	2.00E+05	1.61E-02	7.21E-06	1.80E+00	1.11E+00	2.71E-02	25	512.15	746.00	10,931	0.0E+00	7.0E-05		
78591	Isophorone	4.68E+01	6.23E-02	6.76E-06	1.20E+04	2.72E-04	6.63E-06	25	488.35	715.00	10,271	2.7E-07	0.0E+00	X	
78875	1,2-Dichloropropane	4.37E+01	7.82E-02	8.73E-06	2.80E+03	1.15E-01	2.80E-03	25	369.52	572.00	7,590	0.0E+00	4.0E-03		
79005	1,1,2-Trichloroethane	5.01E+01	7.80E-02	8.80E-06	4.42E+03	3.74E-02	9.12E-04	25	386.15	602.00	8,322	1.6E-05	0.0E+00		
79016	Trichloroethylene	1.66E+02	7.90E-02	9.10E-06	1.10E+03	4.22E-01	1.03E-02	25	360.36	544.20	7,505	1.7E-06	0.0E+00		
79345	1,1,2,2-Tetrachloroethane	9.33E+01	7.10E-02	7.90E-06	2.97E+03	1.41E-02	3.44E-04	25	419.60	661.15	8,996	5.8E-05	0.0E+00		
83329	Acenaphthene	7.08E+03	4.21E-02	7.69E-06	4.24E+00	6.36E-03	1.55E-04	25	550.54	803.15	12,155	0.0E+00	2.1E-01		X
84662	Diethylphthalate	2.88E+02	2.56E-02	6.35E-06	1.08E+03	1.85E-05	4.51E-07	25	567.15	757.00	13,733	0.0E+00	2.8E+00		X
84742	Di-n-butyl phthalate	3.39E+04	4.38E-02	7.86E-06	1.12E+01	3.85E-08	9.39E-10	25	613.15	798.67	14,751	0.0E+00	3.5E-01		X
85687	Butyl benzyl phthalate	5.75E+04	1.74E-02	4.83E-06	2.69E+00	5.17E-05	1.26E-06	25	660.60	839.68	14,000	0.0E+00	7.0E-01		X
86306	N-Nitrosodiphenylamine	1.29E+03	3.12E-02	6.35E-06	3.51E+01	2.05E-04	5.00E-06	25	632.28	890.45	7,300	1.4E-06	0.0E+00	X	
86737	Fluorene	1.38E+04	3.63E-02	7.88E-06	1.98E+00	2.61E-03	6.37E-05	25	570.44	870.00	12,666	0.0E+00	1.4E-01		X
86748	Carbazole	3.39E+03	3.90E-02	7.03E-06	7.48E+00	6.26E-07	1.53E-08	25	627.67	899.00	13,977	5.7E-06	0.0E+00	X	
87683	Hexachloro-1,3-butadiene	5.37E+04	5.61E-02	6.16E-06	3.23E+00	3.34E-01	8.15E-03	25	486.15	738.00	10,206	2.2E-05	0.0E+00		
87865	Pentachlorophenol	5.92E+02	5.60E-02	6.10E-06	1.95E+03	1.00E-06	2.44E-08	25	582.15	813.20	16,109	3.4E-05	0.0E+00	X	

88062	2,4,6-Trichlorophenol	3.81E+02	3.16E-02	6.25E-06	8.00E+02	3.19E-04	7.78E-06	25	519.15	749.03	12,000	3.1E-06	0.0E+00		
91203	Naphthalene	2.00E+03	5.90E-02	7.50E-06	3.10E+01	1.98E-02	4.83E-04	25	491.14	748.40	10,373	0.0E+00	3.0E-03		
91941	3,3-Dichlorobenzidine	7.24E+02	1.94E-02	6.74E-06	3.11E+00	1.64E-07	4.00E-09	25	560.26	754.03	20,000	1.3E-04	0.0E+00	X	
95476	o-Xylene	3.63E+02	8.70E-02	1.00E-05	1.78E+02	2.13E-01	5.20E-03	25	417.60	630.30	8,661	0.0E+00	7.0E+00		X
95487	2-Methylphenol (o-cresol)	9.12E+01	7.40E-02	8.30E-06	2.60E+04	4.92E-05	1.20E-06	25	464.19	697.60	10,800	0.0E+00	1.8E-01		X
95501	1,2-Dichlorobenzene	6.17E+02	6.90E-02	7.90E-06	1.56E+02	7.79E-02	1.90E-03	25	453.57	705.00	9,700	0.0E+00	2.0E-01		
95578	2-Chlorophenol	3.88E+02	5.01E-02	9.46E-06	2.20E+04	1.60E-02	3.90E-04	25	447.53	675.00	9,572	0.0E+00	1.8E-02		X
95954	2,4,5-Trichlorophenol	1.60E+03	2.91E-02	7.03E-06	1.20E+03	1.78E-04	4.34E-06	25	526.15	759.13	11,000	0.0E+00	3.5E-01		X
98953	Nitrobenzene	6.46E+01	7.60E-02	8.60E-06	2.09E+03	9.84E-04	2.40E-05	25	483.95	719.00	10,566	0.0E+00	2.0E-03		
100414	Ethylbenzene	3.63E+02	7.50E-02	7.80E-06	1.69E+02	3.23E-01	7.88E-03	25	409.34	617.20	8,501	0.0E+00	1.0E+00		
100425	Styrene	7.76E+02	7.10E-02	8.00E-06	3.10E+02	1.13E-01	2.76E-03	25	418.31	636.00	8,737	0.0E+00	1.0E+00		
105679	2,4-Dimethylphenol	2.09E+02	5.84E-02	8.69E-06	7.87E+03	8.20E-05	2.00E-06	25	484.13	707.60	11,329	0.0E+00	7.0E-02		X
106423	p-Xylene	3.89E+02	7.69E-02	8.44E-06	1.85E+02	3.14E-01	7.66E-03	26	411.52	616.20	8,525	0.0E+00	7.0E+00		X
106467	1,4-Dichlorobenzene	6.17E+02	6.90E-02	7.90E-06	7.38E+01	9.96E-02	2.43E-03	25	447.21	684.75	9,271	0.0E+00	8.0E-01		
106478	p-Chloroaniline	6.61E+01	4.83E-02	1.01E-05	5.30E+03	1.36E-05	3.32E-07	25	503.65	754.00	11,689	0.0E+00	1.4E-02		X
107062	1,2-Dichloroethane	1.74E+01	1.04E-01	9.90E-06	8.52E+03	4.01E-02	9.78E-04	25	356.65	561.00	7,643	2.6E-05	0.0E+00		
108054	Vinyl acetate	5.25E+00	8.50E-02	9.20E-06	2.00E+04	2.10E-02	5.12E-04	25	345.65	519.13	7,800	0.0E+00	2.0E-01		
108383	m-Xylene	4.07E+02	7.00E-02	7.80E-06	1.61E+02	3.01E-01	7.34E-03	25	412.27	617.05	8,523	0.0E+00	7.0E+00		X
108883	Toluene	1.82E+02	8.70E-02	8.60E-06	5.26E+02	2.72E-01	6.63E-03	25	383.78	591.79	7,930	0.0E+00	4.0E-01		
108907	Chlorobenzene	2.19E+02	7.30E-02	8.70E-06	4.72E+02	1.52E-01	3.71E-03	25	404.87	632.40	8,410	0.0E+00	2.0E-02		
108952	Phenol	2.88E+01	8.20E-02	9.10E-06	8.28E+04	1.63E-05	3.98E-07	25	455.02	694.20	10,920	0.0E+00	2.1E+00		X
111444	Bis(2-chloroethyl)ether	1.55E+01	6.92E-02	7.53E-06	1.72E+04	7.38E-04	1.80E-05	25	451.15	659.79	10,803	3.3E-04	0.0E+00		
115297	Endosulfan	2.14E+03	1.15E-02	4.55E-06	5.10E-01	4.59E-04	1.12E-05	25	674.43	942.94	14,000	0.0E+00	2.1E-02		X
117817	Bis(2-ethylhexyl)phthalate	1.51E+07	3.51E-02	3.66E-06	3.40E-01	4.18E-06	1.02E-07	25	657.15	806.00	15,999	4.0E-06	0.0E+00	X	
117840	Di-n-octyl phthalate	8.32E+07	1.51E-02	3.58E-06	2.00E-02	2.74E-03	6.68E-05	25	704.09	862.22	14,000	0.0E+00	7.0E-02		X
118741	Hexachlorobenzene	5.50E+04	5.42E-02	5.91E-06	6.20E+00	5.41E-02	1.32E-03	25	582.55	825.00	14,447	4.6E-04	0.0E+00		
120127	Anthracene	2.95E+04	3.24E-02	7.74E-06	4.34E-02	2.67E-03	6.51E-05	25	615.18	873.00	13,121	0.0E+00	1.1E+00		X
120821	1,2,4-Trichlorobenzene	1.78E+03	3.00E-02	8.23E-06	3.00E+02	5.82E-02	1.42E-03	25	486.15	725.00	10,471	0.0E+00	2.0E-01		
120832	2,4-Dichlorophenol	1.47E+02	3.46E-02	8.77E-06	4.50E+03	1.30E-04	3.17E-06	25	482.15	708.17	15,000	0.0E+00	1.1E-02		X
121142	2,4-Dinitrotoluene	9.55E+01	2.03E-01	7.06E-06	2.70E+02	3.80E-06	9.27E-08	25	590.00	814.00	13,467	1.9E-04	0.0E+00	X	
124481	Chlorodibromomethane	6.31E+01	1.96E-02	1.05E-05	2.60E+03	3.21E-02	7.83E-04	25	416.14	678.20	5,900	2.4E-05	0.0E+00	X	
127184	Tetrachloroethylene	1.55E+02	7.20E-02	8.20E-06	2.00E+02	7.54E-01	1.84E-02	25	394.40	620.20	8,288	5.8E-07	0.0E+00		
129000	Pyrene	1.05E+05	2.72E-02	7.24E-06	1.35E-01	4.51E-04	1.10E-05	25	667.95	936.00	14,370	0.0E+00	1.1E-01		X
156592	cis-1,2-Dichloroethylene	3.55E+01	7.36E-02	1.13E-05	3.50E+03	1.67E-01	4.07E-03	25	333.65	544.00	7,192	0.0E+00	3.5E-02		X
156605	trans-1,2-Dichloroethylene	5.25E+01	7.07E-02	1.19E-05	6.30E+03	3.85E-01	9.39E-03	25	320.85	516.50	6,717	0.0E+00	7.0E-02		X
193395	Indeno(1,2,3-cd)pyrene	3.47E+06	1.90E-02	5.66E-06	2.20E-05	6.56E-05	1.60E-06	25	809.15	1078.24	19,000	2.1E-04	0.0E+00	X	
205992	Benzo(b)fluoranthene	1.23E+06	2.26E-02	5.56E-06	1.50E-03	4.55E-03	1.11E-04	25	715.90	969.27	17,000	2.1E-04	0.0E+00	X	
206440	Fluoranthene	1.07E+05	3.02E-02	6.35E-06	2.06E-01	6.60E-04	1.61E-05	25	655.95	905.00	13,815	0.0E+00	1.4E-01		X
207089	Benzo(k)fluoranthene	1.23E+06	2.26E-02	5.56E-06	8.00E-04	3.40E-05	8.29E-07	25	753.15	1019.70	18,000	2.1E-05	0.0E+00	X	
218019	Chrysene	3.98E+05	2.48E-02	6.21E-06	1.60E-03	3.88E-03	9.46E-05	25	714.15	979.00	16,455	2.1E-06	0.0E+00	X	
309002	Aldrin	2.45E+06	1.32E-02	4.86E-06	1.80E-01	6.97E-03	1.70E-04	25	603.01	839.37	15,000	4.9E-03	0.0E+00		
319846	alpha-HCH (alpha-BHC)	1.23E+03	1.42E-02	7.34E-06	2.00E+00	4.35E-04	1.06E-05	25	596.55	839.36	15,000	1.8E-03	0.0E+00		
319857	beta-HCH (beta-BHC)	1.26E+03	1.42E-02	7.34E-06	2.40E-01	3.05E-05	7.44E-07	25	596.55	839.36	19,000	5.3E-04	0.0E+00		
542756	1,3-Dichloropropene	4.57E+01	6.26E-02	1.00E-05	2.80E+03	7.26E-01	1.77E-02	25	381.15	587.38	7,900	4.0E-06	2.0E-02		
606202	2,6-Dinitrotoluene	6.92E+01	3.27E-02	7.26E-06	1.82E+02	3.06E-05	7.46E-07	25	558.00	770.00	12,938	1.9E-04	0.0E+00	X	
621647	N-Nitrosodi-n-propylamine	2.40E+01	5.45E-02	8.17E-06	9.89E+03	9.23E-05	2.25E-06	25	509.60	746.87	6,100	2.0E-03	0.0E+00	X	
1024573	Heptachlor epoxide	8.32E+04	1.32E-02	4.23E-06	2.00E-01	3.90E-04	9.51E-06	25	613.96	848.76	16,000	2.6E-03	0.0E+00		
7439976	Mercury (elemental)	5.20E+01	3.07E-02	6.30E-06	5.62E-02	4.67E-01	1.14E-02	25	629.88	1750.00	14,127	0.0E+00	3.0E-04		
8001352	Toxaphene	2.57E+05	1.16E-02	4.34E-06	7.40E-01	2.46E-04	6.00E-06	25	657.15	873.31	15,000	3.2E-04	0.0E+00		

Soil Properties Lookup Table

SCS Soil Type	K_s (cm/h)	α (1/cm)	N (unitless)	M (unitless)	θ_s (cm³/cm³)	θ_r (cm³/cm³)	Mean Grain Diameter (cm)
C	0.61	0.01496	1.253	0.2019	0.459	0.098	0.0092
CL	0.34	0.01581	1.416	0.2938	0.442	0.079	0.016
L	0.50	0.01112	1.472	0.3207	0.399	0.061	0.020
LS	4.38	0.03475	1.746	0.4273	0.390	0.049	0.040
S	26.78	0.03524	3.177	0.6852	0.375	0.053	0.044
SC	0.47	0.03342	1.208	0.1722	0.385	0.117	0.025
SCL	0.55	0.02109	1.330	0.2481	0.384	0.063	0.029
SI	1.82	0.00658	1.679	0.4044	0.489	0.050	0.0046
SIC	0.40	0.01622	1.321	0.2430	0.481	0.111	0.0039
SICL	0.46	0.00839	1.521	0.3425	0.482	0.090	0.0056
SIL	0.76	0.00506	1.663	0.3987	0.439	0.065	0.011
SL	1.60	0.02667	1.449	0.3099	0.387	0.039	0.030

Chemical Properties Lookup Table

CAS No.	Chemical	Organic carbon partition coefficient, K_{oc} (cm³/g)	Diffusivity in air, D_a (cm²/s)	Diffusivity in water, D_w (cm²/s)	Pure component water solubility, S (mg/L)	Henry's law constant H' (unitless)	Henry's law constant at reference temperature, H (atm-m³/mol)	Henry's law constant reference temperature, T_R (°C)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Unit risk factor, URF (μg/m³)⁻¹	Reference conc., RfC (mg/m³)	URF extrapolated (X)	RfC extrapolated (X)
50293	DDT	2.63E+06	1.37E-02	4.95E-06	2.50E-02	3.32E-04	8.10E-06	25	533.15	720.75	22,000	9.7E-05	0.0E+00		
50328	Benzo(a)pyrene	1.02E+06	4.30E-02	9.00E-06	1.62E-03	4.63E-05	1.13E-06	25	715.90	969.27	19,000	2.1E-03	0.0E+00	X	
51285	2,4-Dinitrophenol	1.02E-02	2.73E-02	9.06E-06	2.79E+03	1.82E-05	4.44E-07	25	605.28	827.85	25,000	0.0E+00	7.0E-03		X
53703	Dibenz(a,h)anthracene	3.80E+06	2.02E-02	5.18E-06	2.49E-03	6.03E-07	1.47E-08	25	743.24	990.41	29,995	2.1E-03	0.0E+00	X	
56235	Carbon tetrachloride	1.74E+02	7.80E-02	8.80E-06	7.93E+02	1.25E+00	3.05E-02	25	349.90	556.60	7,127	1.5E-05	0.0E+00		
56553	Benz(a)anthracene	3.98E+05	5.10E-02	9.00E-06	9.40E-03	1.37E-04	3.34E-06	25	708.15	1004.79	16,000	2.1E-04	0.0E+00	X	
57749	Chlordane	1.20E+05	1.18E-02	4.37E-06	5.60E-02	1.99E-03	4.85E-05	25	624.24	885.73	14,000	1.0E-04	7.0E-04		
58899	gamma-HCH (Lindane)	1.07E+03	1.42E-02	7.34E-06	6.80E+00	5.74E-04	1.40E-05	25	596.55	839.36	15,000	3.7E-04	0.0E+00	X	
60571	Dieldrin	2.14E+04	1.25E-02	4.74E-06	1.95E-01	6.19E-04	1.51E-05	25	613.32	842.25	17,000	4.6E-03	0.0E+00		
65850	Benzoic Acid	5.76E-01	5.36E-02	7.97E-06	3.50E+03	6.31E-05	1.54E-06	25	720.00	751.00	12,094	0.0E+00	1.4E+01		X
67641	Acetone	5.75E-01	1.24E-01	1.14E-05	1.00E+06	1.59E-03	3.88E-05	25	329.20	508.10	6,955	0.0E+00	3.5E-01		X
67663	Chloroform	3.98E+01	1.04E-01	1.00E-05	7.92E+03	1.50E-01	3.66E-03	25	334.32	536.40	6,988	2.3E-05	0.0E+00		
67721	Hexachloroethane	1.78E+03	2.50E-03	6.80E-06	5.00E+01	1.59E-01	3.88E-03	25	458.00	695.00	9,510	4.0E-06	0.0E+00		
71363	Butanol	6.92E+00	8.00E-02	9.30E-06	7.40E+04	3.61E-04	8.80E-06	25	390.88	563.05	10,346	0.0E+00	3.5E-01		X
71432	Benzene	5.89E+01	8.80E-02	9.80E-06	1.75E+03	2.28E-01	5.56E-03	25	353.24	562.16	7,342	7.8E-06	0.0E+00		
71556	1,1,1-Trichloroethane	1.10E+02	7.80E-02	8.80E-06	1.33E+03	7.05E-01	1.72E-02	25	347.24	545.00	7,136	0.0E+00	1.0E+00		
72208	Endrin	1.23E+04	1.25E-02	4.74E-06	2.50E-01	3.08E-04	7.51E-06	25	718.15	986.20	15,000	0.0E+00	1.1E-03		X
72435	Methoxychlor	9.77E+04	1.56E-02	4.46E-06	4.50E-02	6.48E-04	1.58E-05	25	651.02	848.49	16,000	0.0E+00	1.8E-02		X
72548	DDD	1.00E+06	1.69E-02	4.76E-06	9.00E-02	1.64E-04	4.00E-06	25	639.90	863.77	17,000	6.9E-05	0.0E+00	X	
72559	DDE	4.47E+06	1.44E-02	5.87E-06	1.20E-01	8.61E-04	2.10E-05	25	636.44	860.38	15,000	9.7E-05	0.0E+00	X	
74839	Methyl bromide	1.05E+01	7.28E-02	1.21E-05	1.52E+04	2.56E-01	6.24E-03	25	276.71	467.00	5,714	0.0E+00	5.0E-03		
75014	Vinyl chloride (chloroethene)	1.86E+01	1.06E-01	1.23E-05	2.76E+03	1.11E+00	2.71E-02	25	259.25	432.00	5,250	4.4E-06	1.0E-01		
75092	Methylene chloride	1.17E+01	1.01E-01	1.17E-05	1.30E+04	8.98E-02	2.19E-03	25	313.00	510.00	6,706	4.7E-07	3.0E+00		
75150	Carbon disulfide	4.57E+01	1.04E-01	1.00E-05	1.19E+03	1.24E+00	3.02E-02	25	319.00	552.00	6,391	0.0E+00	7.0E-01		
75252	Bromoform	8.71E+01	1.49E-02	1.03E-05	3.10E+03	2.19E-02	5.34E-04	25	422.35	696.00	9,479	1.1E-06	0.0E+00		
75274	Bromodichloromethane	5.50E+01	2.98E-02	1.06E-05	6.74E+03	6.56E-02	1.60E-03	25	363.15	585.85	7,800	1.8E-05	0.0E+00	X	
75343	1,1-Dichloroethane	3.16E+01	7.42E-02	1.05E-05	5.06E+03	2.30E-01	5.61E-03	25	330.55	523.00	6,895	0.0E+00	5.0E-01		
75354	1,1-Dichloroethylene	5.89E+01	9.00E-02	1.04E-05	2.25E+03	1.07E+00	2.61E-02	25	304.75	576.05	6,247	5.0E-05	0.0E+00		
76448	Heptachlor	1.41E+06	1.12E-02	5.69E-06	1.80E-01	4.47E-02	1.09E-03	25	603.69	846.31	13,000	1.3E-03	0.0E+00		
77474	Hexachlorocyclopentadiene	2.00E+05	1.61E-02	7.21E-06	1.80E+00	1.11E+00	2.71E-02	25	512.15	746.00	10,931	0.0E+00	7.0E-05		
78591	Isophorone	4.68E+01	6.23E-02	6.76E-06	1.20E+04	2.72E-04	6.63E-06	25	488.35	715.00	10,271	2.7E-07	0.0E+00	X	
78875	1,2-Dichloropropane	4.37E+01	7.82E-02	8.73E-06	2.80E+03	1.15E-01	2.80E-03	25	369.52	572.00	7,590	0.0E+00	4.0E-03		
79005	1,1,2-Trichloroethane	5.01E+01	7.80E-02	8.80E-06	4.42E+03	3.74E-02	9.12E-04	25	386.15	602.00	8,322	1.6E-05	0.0E+00		
79016	Trichloroethylene	1.66E+02	7.90E-02	9.10E-06	1.10E+03	4.22E-01	1.03E-02	25	360.36	544.20	7,505	1.7E-06	0.0E+00		
79345	1,1,2,2-Tetrachloroethane	9.33E+01	7.10E-02	7.90E-06	2.97E+03	1.41E-02	3.44E-04	25	419.60	661.15	8,996	5.8E-05	0.0E+00		
83329	Acenaphthene	7.08E+03	4.21E-02	7.69E-06	4.24E+00	6.36E-03	1.55E-04	25	550.54	803.15	12,155	0.0E+00	2.1E-01		X
84662	Diethylphthalate	2.88E+02	2.56E-02	6.35E-06	1.08E+03	1.85E-05	4.51E-07	25	567.15	757.00	13,733	0.0E+00	2.8E+00		X
84742	Di-n-butyl phthalate	3.39E+04	4.38E-02	7.86E-06	1.12E+01	3.85E-08	9.39E-10	25	613.15	798.67	14,751	0.0E+00	3.5E-01		X
85687	Butyl benzyl phthalate	5.75E+04	1.74E-02	4.83E-06	2.69E+00	5.17E-05	1.26E-06	25	660.60	839.68	14,000	0.0E+00	7.0E-01		X
86306	N-Nitrosodiphenylamine	1.29E+03	3.12E-02	6.35E-06	3.51E+01	2.05E-04	5.00E-06	25	632.28	890.45	7,300	1.4E-06	0.0E+00	X	
86737	Fluorene	1.38E+04	3.63E-02	7.88E-06	1.98E+00	2.61E-03	6.37E-05	25	570.44	870.00	12,666	0.0E+00	1.4E-01		X
86748	Carbazole	3.39E+03	3.90E-02	7.03E-06	7.48E+00	6.26E-07	1.53E-08	25	627.87	899.00	13,977	5.7E-06	0.0E+00	X	
87683	Hexachloro-1,3-butadiene	5.37E+04	5.61E-02	6.16E-06	3.23E+00	3.34E-01	8.15E-03	25	486.15	738.00	10,206	2.2E-05	0.0E+00		
87865	Pentachlorophenol	5.92E+02	5.60E-02	6.10E-06	1.95E+03	1.00E-06	2.44E-08	25	582.15	813.20	16,109	3.4E-05	0.0E+00	X	

88062	2,4,6-Trichlorophenol	3.81E+02	3.18E-02	6.25E-06	8.00E+02	3.19E-04	7.78E-06	25	519.15	749.03	12,000	3.1E-06	0.0E+00		
91203	Naphthalene	2.00E+03	5.90E-02	7.50E-06	3.10E+01	1.98E-02	4.83E-04	25	491.14	748.40	10,373	0.0E+00	3.0E-03		
91941	3,3-Dichlorobenzidine	7.24E+02	1.94E-02	6.74E-06	3.11E+00	1.64E-07	4.00E-09	25	560.26	754.03	20,000	1.3E-04	0.0E+00	X	
95476	o-Xylene	3.63E+02	8.70E-02	1.00E-05	1.78E+02	2.13E-01	5.20E-03	25	417.60	630.30	8,661	0.0E+00	7.0E+00		X
95487	2-Methylphenol (o-cresol)	9.12E+01	7.40E-02	8.30E-06	2.60E+04	4.92E-05	1.20E-06	25	464.19	697.60	10,800	0.0E+00	1.8E-01		X
95501	1,2-Dichlorobenzene	6.17E+02	6.90E-02	7.90E-06	1.56E+02	7.79E-02	1.90E-03	25	453.57	705.00	9,700	0.0E+00	2.0E-01		
95578	2-Chlorophenol	3.88E+02	5.01E-02	9.46E-06	2.20E+04	1.60E-02	3.90E-04	25	447.53	675.00	9,572	0.0E+00	1.8E-02		X
95954	2,4,5-Trichlorophenol	1.60E+03	2.91E-02	7.03E-06	1.20E+03	1.78E-04	4.34E-06	25	526.15	759.13	11,000	0.0E+00	3.5E-01		X
98953	Nitrobenzene	6.46E+01	7.60E-02	8.60E-06	2.09E+03	9.84E-04	2.40E-05	25	483.95	719.00	10,566	0.0E+00	2.0E-03		
100414	Ethylbenzene	3.63E+02	7.50E-02	7.80E-06	1.69E+02	3.23E-01	7.88E-03	25	409.34	617.20	8,501	0.0E+00	1.0E+00		
100425	Styrene	7.76E+02	7.10E-02	8.00E-06	3.10E+02	1.13E-01	2.76E-03	25	418.31	636.00	8,737	0.0E+00	1.0E+00		
105679	2,4-Dimethylphenol	2.09E+02	5.84E-02	8.69E-06	7.87E+03	8.20E-05	2.00E-06	25	484.13	707.60	11,329	0.0E+00	7.0E-02		X
106423	p-Xylene	3.89E+02	7.69E-02	8.44E-06	1.85E+02	3.14E-01	7.66E-03	26	411.52	616.20	8,525	0.0E+00	7.0E+00		X
106467	1,4-Dichlorobenzene	6.17E+02	6.90E-02	7.90E-06	7.38E+01	9.96E-02	2.43E-03	25	447.21	684.75	9,271	0.0E+00	8.0E-01		
106478	p-Chloroaniline	6.61E+01	4.83E-02	1.01E-05	5.30E+03	1.36E-05	3.32E-07	25	503.65	754.00	11,689	0.0E+00	1.4E-02		X
107062	1,2-Dichloroethane	1.74E+01	1.04E-01	9.90E-06	8.52E+03	4.01E-02	9.78E-04	25	356.65	561.00	7,643	2.6E-05	0.0E+00		
108054	Vinyl acetate	5.25E+00	8.50E-02	9.20E-06	2.00E+04	2.10E-02	5.12E-04	25	345.65	519.13	7,800	0.0E+00	2.0E-01		
108383	m-Xylene	4.07E+02	7.00E-02	7.80E-06	1.61E+02	3.01E-01	7.34E-03	25	412.27	617.05	8,523	0.0E+00	7.0E+00		X
108883	Toluene	1.82E+02	8.70E-02	8.60E-06	5.26E+02	2.72E-01	6.63E-03	25	383.78	591.79	7,930	0.0E+00	4.0E-01		
108907	Chlorobenzene	2.19E+02	7.30E-02	8.70E-06	4.72E+02	1.52E-01	3.71E-03	25	404.87	632.40	8,410	0.0E+00	2.0E-02		
108952	Phenol	2.88E+01	8.20E-02	9.10E-06	8.28E+04	1.63E-05	3.98E-07	25	455.02	694.20	10,920	0.0E+00	2.1E+00		X
111444	Bis(2-chloroethyl)ether	1.55E+01	6.92E-02	7.53E-06	1.72E+04	7.38E-04	1.80E-05	25	451.15	659.79	10,803	3.3E-04	0.0E+00		
115297	Endosulfan	2.14E+03	1.15E-02	4.55E-06	5.10E-01	4.59E-04	1.12E-05	25	674.43	942.94	14,000	0.0E+00	2.1E-02		X
117817	Bis(2-ethylhexyl)phthalate	1.51E+07	3.51E-02	3.66E-06	3.40E-01	4.18E-06	1.02E-07	25	657.15	806.00	15,999	4.0E-06	0.0E+00	X	
117840	Di-n-octyl phthalate	8.32E+07	1.51E-02	3.58E-06	2.00E-02	2.74E-03	6.68E-05	25	704.09	862.22	14,000	0.0E+00	7.0E-02		X
118741	Hexachlorobenzene	5.50E+04	5.42E-02	5.91E-06	6.20E+00	5.41E-02	1.32E-03	25	582.55	825.00	14,447	4.6E-04	0.0E+00		
120127	Anthracene	2.95E+04	3.24E-02	7.74E-06	4.34E-02	2.67E-03	6.51E-05	25	615.18	873.00	13,121	0.0E+00	1.1E+00		X
120821	1,2,4-Trichlorobenzene	1.78E+03	3.00E-02	8.23E-06	3.00E+02	5.82E-02	1.42E-03	25	486.15	725.00	10,471	0.0E+00	2.0E-01		
120832	2,4-Dichlorophenol	1.47E+02	3.46E-02	8.77E-06	4.50E+03	1.30E-04	3.17E-06	25	482.15	708.17	15,000	0.0E+00	1.1E-02		X
121142	2,4-Dinitrotoluene	9.55E+01	2.03E-01	7.06E-06	2.70E+02	3.80E-06	9.27E-08	25	590.00	814.00	13,467	1.9E-04	0.0E+00	X	
124481	Chlorodibromomethane	6.31E+01	1.96E-02	1.05E-05	2.60E+03	3.21E-02	7.83E-04	25	416.14	678.20	5,900	2.4E-05	0.0E+00	X	
127184	Tetrachloroethylene	1.55E+02	7.20E-02	8.20E-06	2.00E+02	7.54E-01	1.84E-02	25	394.40	620.20	8,288	5.8E-07	0.0E+00		
129000	Pyrene	1.05E+05	2.72E-02	7.24E-06	1.35E-01	4.51E-04	1.10E-05	25	667.95	936.00	14,370	0.0E+00	1.1E-01		X
156592	cis-1,2-Dichloroethylene	3.55E+01	7.36E-02	1.13E-05	3.50E+03	1.67E-01	4.07E-03	25	333.65	544.00	7,192	0.0E+00	3.5E-02		X
156605	trans-1,2-Dichloroethylene	5.25E+01	7.07E-02	1.19E-05	6.30E+03	3.85E-01	9.39E-03	25	320.85	516.50	6,717	0.0E+00	7.0E-02		X
193395	Indeno(1,2,3-cd)pyrene	3.47E+06	1.90E-02	5.66E-06	2.20E-05	6.56E-05	1.60E-06	25	809.15	1078.24	19,000	2.1E-04	0.0E+00	X	
205992	Benzo(b)fluoranthene	1.23E+06	2.26E-02	5.56E-06	1.50E-03	4.55E-03	1.11E-04	25	715.90	969.27	17,000	2.1E-04	0.0E+00	X	
206440	Fluoranthene	1.07E+05	3.02E-02	6.35E-06	2.06E-01	6.60E-04	1.61E-05	25	655.95	905.00	13,815	0.0E+00	1.4E-01		X
207089	Benzo(k)fluoranthene	1.23E+06	2.26E-02	5.56E-06	8.00E-04	3.40E-05	8.29E-07	25	753.15	1019.70	18,000	2.1E-05	0.0E+00	X	
218019	Chrysene	3.98E+05	2.48E-02	6.21E-06	1.60E-03	3.88E-03	9.46E-05	25	714.15	979.00	16,455	2.1E-06	0.0E+00	X	
309002	Aldrin	2.45E+06	1.32E-02	4.86E-06	1.80E-01	6.97E-03	1.70E-04	25	603.01	839.37	15,000	4.9E-03	0.0E+00		
319846	alpha-HCH (alpha-BHC)	1.23E+03	1.42E-02	7.34E-06	2.00E+00	4.35E-04	1.06E-05	25	596.55	839.36	15,000	1.8E-03	0.0E+00		
319857	beta-HCH (beta-BHC)	1.26E+03	1.42E-02	7.34E-06	2.40E-01	3.05E-05	7.44E-07	25	596.55	839.36	19,000	5.3E-04	0.0E+00		
542756	1,3-Dichloropropene	4.57E+01	6.26E-02	1.00E-05	2.80E+03	7.26E-01	1.77E-02	25	381.15	587.38	7,900	4.0E-06	2.0E-02		
606202	2,6-Dinitrotoluene	6.92E+01	3.27E-02	7.26E-06	1.82E+02	3.06E-05	7.46E-07	25	558.00	770.00	12,938	1.9E-04	0.0E+00	X	
621647	N-Nitrosodi-n-propylamine	2.40E+01	5.45E-02	8.17E-06	9.89E+03	9.23E-05	2.25E-06	25	509.60	746.87	6,100	2.0E-03	0.0E+00	X	
1024573	Heptachlor epoxide	8.32E+04	1.32E-02	4.23E-06	2.00E-01	3.90E-04	9.51E-06	25	613.96	848.76	16,000	2.6E-03	0.0E+00		
7439976	Mercury (elemental)	5.20E+01	3.07E-02	6.30E-06	5.62E-02	4.67E-01	1.14E-02	25	629.88	1750.00	14,127	0.0E+00	3.0E-04		
8001352	Toxaphene	2.57E+05	1.16E-02	4.34E-06	7.40E-01	2.46E-04	6.00E-06	25	657.15	873.31	15,000	3.2E-04	0.0E+00		

Soil Properties Lookup Table

SCS Soil Type	K_s (cm/h)	α (1/cm)	N (unitless)	M (unitless)	θ_s (cm³/cm³)	θ_r (cm³/cm³)	Mean Grain Diameter (cm)
C	0.61	0.01496	1.253	0.2019	0.459	0.098	0.0092
CL	0.34	0.01581	1.416	0.2938	0.442	0.079	0.016
L	0.50	0.01112	1.472	0.3207	0.399	0.061	0.020
LS	4.38	0.03475	1.746	0.4273	0.390	0.049	0.040
S	26.78	0.03524	3.177	0.6852	0.375	0.053	0.044
SC	0.47	0.03342	1.208	0.1722	0.385	0.117	0.025
SCL	0.55	0.02109	1.330	0.2481	0.384	0.063	0.029
SI	1.82	0.00658	1.679	0.4044	0.489	0.050	0.0046
SIC	0.40	0.01622	1.321	0.2430	0.481	0.111	0.0039
SICL	0.46	0.00839	1.521	0.3425	0.482	0.090	0.0056
SIL	0.76	0.00506	1.663	0.3987	0.439	0.065	0.011
SL	1.60	0.02667	1.449	0.3099	0.387	0.039	0.030

Chemical Properties Lookup Table

CAS No.	Chemical	Organic carbon partition coefficient, K_{oc} (cm³/g)	Diffusivity in air, D_a (cm²/s)	Diffusivity in water, D_w (cm²/s)	Pure component water solubility, S (mg/L)	Henry's law constant H' (unitless)	Henry's law constant at reference temperature, H (atm-m³/mol)	Henry's law constant reference temperature, T_R (°C)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Unit risk factor, URF (µg/m³)⁻¹	Reference conc., RfC (mg/m³)	URF extrapolated (X)	RfC extrapolated (X)
50293	DDT	2.63E+06	1.37E-02	4.95E-06	2.50E-02	3.32E-04	8.10E-06	25	533.15	720.75	22,000	9.7E-05	0.0E+00		
50328	Benzo(a)pyrene	1.02E+06	4.30E-02	9.00E-06	1.62E-03	4.63E-05	1.13E-06	25	715.90	969.27	19,000	2.1E-03	0.0E+00	X	
51285	2,4-Dinitrophenol	1.02E-02	2.73E-02	9.06E-06	2.79E+03	1.82E-05	4.44E-07	25	605.28	827.85	25,000	0.0E+00	7.0E-03		X
53703	Dibenz(a,h)anthracene	3.80E+06	2.02E-02	5.18E-06	2.49E-03	6.03E-07	1.47E-08	25	743.24	990.41	29,995	2.1E-03	0.0E+00	X	
56235	Carbon tetrachloride	1.74E+02	7.80E-02	8.80E-06	7.93E+02	1.25E+00	3.05E-02	25	349.90	556.60	7,127	1.5E-05	0.0E+00		
56553	Benz(a)anthracene	3.98E+05	5.10E-02	9.00E-06	9.40E-03	1.37E-04	3.34E-06	25	708.15	1004.79	16,000	2.1E-04	0.0E+00	X	
57749	Chlordane	1.20E+05	1.18E-02	4.37E-06	5.60E-02	1.99E-03	4.85E-05	25	624.24	885.73	14,000	1.0E-04	7.0E-04		
58899	gamma-HCH (Lindane)	1.07E+03	1.42E-02	7.34E-06	6.80E+00	5.74E-04	1.40E-05	25	596.55	839.36	15,000	3.7E-04	0.0E+00	X	
60571	Dieldrin	2.14E+04	1.25E-02	4.74E-06	1.95E-01	6.19E-04	1.51E-05	25	613.32	842.25	17,000	4.6E-03	0.0E+00		
65850	Benzoic Acid	5.76E-01	5.36E-02	7.97E-06	3.50E+03	6.31E-05	1.54E-06	25	720.00	751.00	12,094	0.0E+00	1.4E+01		X
67641	Acetone	5.75E-01	1.24E-01	1.14E-05	1.00E+06	1.59E-03	3.88E-05	25	329.20	508.10	6,955	0.0E+00	3.5E-01		X
67663	Chloroform	3.98E+01	1.04E-01	1.00E-05	7.92E+03	1.50E-01	3.66E-03	25	334.32	536.40	6,988	2.3E-05	0.0E+00		
67721	Hexachloroethane	1.78E+03	2.50E-03	6.80E-06	5.00E+01	1.59E-01	3.88E-03	25	458.00	695.00	9,510	4.0E-06	0.0E+00		
71363	Butanol	6.92E+00	8.00E-02	9.30E-06	7.40E+04	3.61E-04	8.80E-06	25	390.88	563.05	10,346	0.0E+00	3.5E-01		X
71432	Benzene	5.89E+01	8.80E-02	9.80E-06	1.75E+03	2.28E-01	5.56E-03	25	353.24	562.16	7,342	7.8E-06	0.0E+00		
71556	1,1,1-Trichloroethane	1.10E+02	7.80E-02	8.80E-06	1.33E+03	7.05E-01	1.72E-02	25	347.24	545.00	7,136	0.0E+00	1.0E+00		
72208	Endrin	1.23E+04	1.25E-02	4.74E-06	2.50E-01	3.08E-04	7.51E-06	25	718.15	986.20	15,000	0.0E+00	1.1E-03		X
72435	Methoxychlor	9.77E+04	1.56E-02	4.46E-06	4.50E-02	6.48E-04	1.58E-05	25	651.02	848.49	16,000	0.0E+00	1.8E-02		X
72548	DDD	1.00E+06	1.69E-02	4.76E-06	9.00E-02	1.64E-04	4.00E-06	25	639.90	863.77	17,000	6.9E-05	0.0E+00	X	
72559	DDE	4.47E+06	1.44E-02	5.87E-06	1.20E-01	8.61E-04	2.10E-05	25	636.44	860.38	15,000	9.7E-05	0.0E+00	X	
74839	Methyl bromide	1.05E+01	7.28E-02	1.21E-05	1.52E+04	2.56E-01	6.24E-03	25	276.71	467.00	5,714	0.0E+00	5.0E-03		
75014	Vinyl chloride (chloroethene)	1.86E+01	1.06E-01	1.23E-05	2.76E+03	1.11E+00	2.71E-02	25	259.25	432.00	5,250	4.4E-06	1.0E-01		
75092	Methylene chloride	1.17E+01	1.01E-01	1.17E-05	1.30E+04	8.98E-02	2.19E-03	25	313.00	510.00	6,706	4.7E-07	3.0E+00		
75150	Carbon disulfide	4.57E+01	1.04E-01	1.00E-05	1.19E+03	1.24E+00	3.02E-02	25	319.00	552.00	6,391	0.0E+00	7.0E-01		
75252	Bromoform	8.71E+01	1.49E-02	1.03E-05	3.10E+03	2.19E-02	5.34E-04	25	422.35	696.00	9,479	1.1E-06	0.0E+00		
75274	Bromodichloromethane	5.50E+01	2.98E-02	1.06E-05	6.74E+03	6.56E-02	1.60E-03	25	363.15	585.85	7,800	1.8E-05	0.0E+00	X	
75343	1,1-Dichloroethane	3.16E+01	7.42E-02	1.05E-05	5.06E+03	2.30E-01	5.61E-03	25	330.55	523.00	6,895	0.0E+00	5.0E-01		
75354	1,1-Dichloroethylene	5.89E+01	9.00E-02	1.04E-05	2.25E+03	1.07E+00	2.61E-02	25	304.75	576.05	6,247	5.0E-05	0.0E+00		
76448	Heptachlor	1.41E+06	1.12E-02	5.69E-06	1.80E-01	4.47E-02	1.09E-03	25	603.69	846.31	13,000	1.3E-03	0.0E+00		
77474	Hexachlorocyclopentadiene	2.00E+05	1.61E-02	7.21E-06	1.80E+00	1.11E+00	2.71E-02	25	512.15	746.00	10,931	0.0E+00	7.0E-05		
78591	Isophorone	4.68E+01	6.23E-02	6.76E-06	1.20E+04	2.72E-04	6.63E-06	25	488.35	715.00	10,271	2.7E-07	0.0E+00	X	
78875	1,2-Dichloropropane	4.37E+01	7.82E-02	8.73E-06	2.80E+03	1.15E-01	2.80E-03	25	369.52	572.00	7,590	0.0E+00	4.0E-03		
79005	1,1,2-Trichloroethane	5.01E+01	7.80E-02	8.80E-06	4.42E+03	3.74E-02	9.12E-04	25	386.15	602.00	8,322	1.6E-05	0.0E+00		
79016	Trichloroethylene	1.66E+02	7.90E-02	9.10E-06	1.10E+03	4.22E-01	1.03E-02	25	360.36	544.20	7,505	1.7E-06	0.0E+00		
79345	1,1,2,2-Tetrachloroethane	9.33E+01	7.10E-02	7.90E-06	2.97E+03	1.41E-02	3.44E-04	25	419.60	661.15	8,996	5.8E-05	0.0E+00		
83329	Acenaphthene	7.08E+03	4.21E-02	7.69E-06	4.24E+00	6.36E-03	1.55E-04	25	550.54	803.15	12,155	0.0E+00	2.1E-01		X
84662	Diethylphthalate	2.88E+02	2.56E-02	6.35E-06	1.08E+03	1.85E-05	4.51E-07	25	567.15	757.00	13,733	0.0E+00	2.8E+00		X
84742	Di-n-butyl phthalate	3.39E+04	4.38E-02	7.86E-06	1.12E+01	3.85E-08	9.39E-10	25	613.15	798.67	14,751	0.0E+00	3.5E-01		X
85687	Butyl benzyl phthalate	5.75E+04	1.74E-02	4.83E-06	2.69E+00	5.17E-05	1.26E-06	25	660.60	839.68	14,000	0.0E+00	7.0E-01		X
86306	N-Nitrosodiphenylamine	1.29E+03	3.12E-02	6.35E-06	3.51E+01	2.05E-04	5.00E-06	25	632.28	890.45	7,300	1.4E-06	0.0E+00	X	
86737	Fluorene	1.38E+04	3.63E-02	7.88E-06	1.98E+00	2.61E-03	6.37E-05	25	570.44	870.00	12,666	0.0E+00	1.4E-01		X
86748	Carbazole	3.39E+03	3.90E-02	7.03E-06	7.48E+00	6.26E-07	1.53E-08	25	627.87	899.00	13,977	5.7E-06	0.0E+00	X	
87683	Hexachloro-1,3-butadiene	5.37E+04	5.61E-02	6.16E-06	3.23E+00	3.34E-01	8.15E-03	25	486.15	738.00	10,206	2.2E-05	0.0E+00		
87865	Pentachlorophenol	5.92E+02	5.60E-02	6.10E-06	1.95E+03	1.00E-06	2.44E-08	25	582.15	813.20	16,109	3.4E-05	0.0E+00	X	

88062	2,4,6-Trichlorophenol	3.81E+02	3.18E-02	6.25E-06	8.00E+02	3.19E-04	7.78E-06	25	519.15	749.03	12,000	3.1E-06	0.0E+00		
91203	Naphthalene	2.00E+03	5.90E-02	7.50E-06	3.10E+01	1.98E-02	4.83E-04	25	491.14	748.40	10,373	0.0E+00	3.0E-03		
91941	3,3-Dichlorobenzidine	7.24E+02	1.94E-02	6.74E-06	3.11E+00	1.64E-07	4.00E-09	25	560.26	754.03	20,000	1.3E-04	0.0E+00	X	
95476	o-Xylene	3.63E+02	8.70E-02	1.00E-05	1.78E+02	2.13E-01	5.20E-03	25	417.60	630.30	8,661	0.0E+00	7.0E+00		X
95487	2-Methylphenol (o-cresol)	9.12E+01	7.40E-02	8.30E-06	2.60E+04	4.92E-05	1.20E-06	25	464.19	697.60	10,800	0.0E+00	1.8E-01		X
95501	1,2-Dichlorobenzene	6.17E+02	6.90E-02	7.90E-06	1.56E+02	7.79E-02	1.90E-03	25	453.57	705.00	9,700	0.0E+00	2.0E-01		
95578	2-Chlorophenol	3.88E+02	5.01E-02	9.46E-06	2.20E+04	1.60E-02	3.90E-04	25	447.53	675.00	9,572	0.0E+00	1.8E-02		X
95954	2,4,5-Trichlorophenol	1.60E+03	2.91E-02	7.03E-06	1.20E+03	1.78E-04	4.34E-06	25	526.15	759.13	11,000	0.0E+00	3.5E-01		X
98953	Nitrobenzene	6.46E+01	7.60E-02	8.60E-06	2.09E+03	9.84E-04	2.40E-05	25	483.95	719.00	10,566	0.0E+00	2.0E-03		
100414	Ethylbenzene	3.63E+02	7.50E-02	7.80E-06	1.69E+02	3.23E-01	7.88E-03	25	409.34	617.20	8,501	0.0E+00	1.0E+00		
100425	Styrene	7.76E+02	7.10E-02	8.00E-06	3.10E+02	1.13E-01	2.76E-03	25	418.31	636.00	8,737	0.0E+00	1.0E+00		
105679	2,4-Dimethylphenol	2.09E+02	5.84E-02	8.69E-06	7.87E+03	8.20E-05	2.00E-06	25	484.13	707.60	11,329	0.0E+00	7.0E-02		X
106423	p-Xylene	3.89E+02	7.69E-02	8.44E-06	1.85E+02	3.14E-01	7.66E-03	26	411.52	616.20	8,525	0.0E+00	7.0E+00		X
106467	1,4-Dichlorobenzene	6.17E+02	6.90E-02	7.90E-06	7.38E+01	9.96E-02	2.43E-03	25	447.21	684.75	9,271	0.0E+00	8.0E-01		
106478	p-Chloroaniline	6.61E+01	4.83E-02	1.01E-05	5.30E+03	1.36E-05	3.32E-07	25	503.65	754.00	11,689	0.0E+00	1.4E-02		X
107062	1,2-Dichloroethane	1.74E+01	1.04E-01	9.90E-06	8.52E+03	4.01E-02	9.78E-04	25	356.65	561.00	7,643	2.6E-05	0.0E+00		
108054	Vinyl acetate	5.25E+00	8.50E-02	9.20E-06	2.00E+04	2.10E-02	5.12E-04	25	345.65	519.13	7,800	0.0E+00	2.0E-01		
108383	m-Xylene	4.07E+02	7.00E-02	7.80E-06	1.61E+02	3.01E-01	7.34E-03	25	412.27	617.05	8,523	0.0E+00	7.0E+00		X
108883	Toluene	1.82E+02	8.70E-02	8.60E-06	5.26E+02	2.72E-01	6.63E-03	25	383.78	591.79	7,930	0.0E+00	4.0E-01		
108907	Chlorobenzene	2.19E+02	7.30E-02	8.70E-06	4.72E+02	1.52E-01	3.71E-03	25	404.87	632.40	8,410	0.0E+00	2.0E-02		
108952	Phenol	2.88E+01	8.20E-02	9.10E-06	8.28E+04	1.63E-05	3.98E-07	25	455.02	694.20	10,920	0.0E+00	2.1E+00		X
111444	Bis(2-chloroethyl)ether	1.55E+01	6.92E-02	7.53E-06	1.72E+04	7.38E-04	1.80E-05	25	451.15	659.79	10,803	3.3E-04	0.0E+00		
115297	Endosulfan	2.14E+03	1.15E-02	4.55E-06	5.10E-01	4.59E-04	1.12E-05	25	674.43	942.94	14,000	0.0E+00	2.1E-02		X
117817	Bis(2-ethylhexyl)phthalate	1.51E+07	3.51E-02	3.66E-06	3.40E-01	4.18E-06	1.02E-07	25	657.15	806.00	15,999	4.0E-06	0.0E+00	X	
117840	Di-n-octyl phthalate	8.32E+07	1.51E-02	3.58E-06	2.00E-02	2.74E-03	6.68E-05	25	704.09	862.22	14,000	0.0E+00	7.0E-02		X
118741	Hexachlorobenzene	5.50E+04	5.42E-02	5.91E-06	6.20E+00	5.41E-02	1.32E-03	25	582.55	825.00	14,447	4.6E-04	0.0E+00		
120127	Anthracene	2.95E+04	3.24E-02	7.74E-06	4.34E-02	2.67E-03	6.51E-05	25	615.18	873.00	13,121	0.0E+00	1.1E+00		X
120821	1,2,4-Trichlorobenzene	1.78E+03	3.00E-02	8.23E-06	3.00E+02	5.82E-02	1.42E-03	25	486.15	725.00	10,471	0.0E+00	2.0E-01		
120832	2,4-Dichlorophenol	1.47E+02	3.46E-02	8.77E-06	4.50E+03	1.30E-04	3.17E-06	25	482.15	708.17	15,000	0.0E+00	1.1E-02		X
121142	2,4-Dinitrotoluene	9.55E+01	2.03E-01	7.06E-06	2.70E+02	3.80E-06	9.27E-08	25	590.00	814.00	13,467	1.9E-04	0.0E+00	X	
124481	Chlorodibromomethane	6.31E+01	1.96E-02	1.05E-05	2.60E+03	3.21E-02	7.83E-04	25	416.14	678.20	5,900	2.4E-05	0.0E+00	X	
127184	Tetrachloroethylene	1.55E+02	7.20E-02	8.20E-06	2.00E+02	7.54E-01	1.84E-02	25	394.40	620.20	8,288	5.8E-07	0.0E+00		
129000	Pyrene	1.05E+05	2.72E-02	7.24E-06	1.35E-01	4.51E-04	1.10E-05	25	667.95	936.00	14,370	0.0E+00	1.1E-01		X
156592	cis-1,2-Dichloroethylene	3.55E+01	7.36E-02	1.13E-05	3.50E+03	1.67E-01	4.07E-03	25	333.65	544.00	7,192	0.0E+00	3.5E-02		X
156605	trans-1,2-Dichloroethylene	5.25E+01	7.07E-02	1.19E-05	6.30E+03	3.85E-01	9.39E-03	25	320.85	516.50	6,717	0.0E+00	7.0E-02		X
193395	Indeno(1,2,3-cd)pyrene	3.47E+06	1.90E-02	5.66E-06	2.20E-05	6.56E-05	1.60E-06	25	809.15	1078.24	19,000	2.1E-04	0.0E+00	X	
205992	Benzo(b)fluoranthene	1.23E+06	2.26E-02	5.56E-06	1.50E-03	4.55E-03	1.11E-04	25	715.90	969.27	17,000	2.1E-04	0.0E+00	X	
206440	Fluoranthene	1.07E+05	3.02E-02	6.35E-06	2.06E-01	6.60E-04	1.61E-05	25	655.95	905.00	13,815	0.0E+00	1.4E-01		X
207089	Benzo(k)fluoranthene	1.23E+06	2.26E-02	5.56E-06	8.00E-04	3.40E-05	8.29E-07	25	753.15	1019.70	18,000	2.1E-05	0.0E+00	X	
218019	Chrysene	3.98E+05	2.48E-02	6.21E-06	1.60E-03	3.88E-03	9.46E-05	25	714.15	979.00	16,455	2.1E-06	0.0E+00	X	
309002	Aldrin	2.45E+06	1.32E-02	4.86E-06	1.80E-01	6.97E-03	1.70E-04	25	603.01	839.37	15,000	4.9E-03	0.0E+00		
319846	alpha-HCH (alpha-BHC)	1.23E+03	1.42E-02	7.34E-06	2.00E+00	4.35E-04	1.06E-05	25	596.55	839.36	15,000	1.8E-03	0.0E+00		
319857	beta-HCH (beta-BHC)	1.26E+03	1.42E-02	7.34E-06	2.40E-01	3.05E-05	7.44E-07	25	596.55	839.36	19,000	5.3E-04	0.0E+00		
542756	1,3-Dichloropropene	4.57E+01	6.26E-02	1.00E-05	2.80E+03	7.26E-01	1.77E-02	25	381.15	587.38	7,900	4.0E-06	2.0E-02		
606202	2,6-Dinitrotoluene	6.92E+01	3.27E-02	7.26E-06	1.82E+02	3.06E-05	7.46E-07	25	558.00	770.00	12,938	1.9E-04	0.0E+00	X	
621647	N-Nitrosodi-n-propylamine	2.40E+01	5.45E-02	8.17E-06	9.89E+03	9.23E-05	2.25E-06	25	509.60	746.87	6,100	2.0E-03	0.0E+00	X	
1024573	Heptachlor epoxide	8.32E+04	1.32E-02	4.23E-06	2.00E-01	3.90E-04	9.51E-06	25	613.96	848.76	16,000	2.6E-03	0.0E+00		
7439976	Mercury (elemental)	5.20E+01	3.07E-02	6.30E-06	5.62E-02	4.67E-01	1.14E-02	25	629.88	1750.00	14,127	0.0E+00	3.0E-04		
8001352	Toxaphene	2.57E+05	1.16E-02	4.34E-06	7.40E-01	2.46E-04	6.00E-06	25	657.15	873.31	15,000	3.2E-04	0.0E+00		

Soil Properties Lookup Table

SCS Soil Type	K_s (cm/h)	α (1/cm)	N (unitless)	M (unitless)	θ_s (cm³/cm³)	θ_r (cm³/cm³)	Mean Grain Diameter (cm)
C	0.61	0.01496	1.253	0.2019	0.459	0.098	0.0092
CL	0.34	0.01581	1.416	0.2938	0.442	0.079	0.016
L	0.50	0.01112	1.472	0.3207	0.399	0.061	0.020
LS	4.38	0.03475	1.746	0.4273	0.390	0.049	0.040
S	26.78	0.03524	3.177	0.6852	0.375	0.053	0.044
SC	0.47	0.03342	1.208	0.1722	0.385	0.117	0.025
SCL	0.55	0.02109	1.330	0.2481	0.384	0.063	0.029
SI	1.82	0.00658	1.679	0.4044	0.489	0.050	0.0046
SIC	0.40	0.01622	1.321	0.2430	0.481	0.111	0.0039
SICL	0.46	0.00839	1.521	0.3425	0.482	0.090	0.0056
SIL	0.76	0.00506	1.663	0.3987	0.439	0.065	0.011
SL	1.60	0.02667	1.449	0.3099	0.387	0.039	0.030

Chemical Properties Lookup Table

CAS No.	Chemical	Organic carbon partition coefficient, K_{oc} (cm³/g)	Diffusivity in air, D_a (cm²/s)	Diffusivity in water, D_w (cm²/s)	Pure component water solubility, S (mg/L)	Henry's law constant H' (unitless)	Henry's law constant at reference temperature, H (atm-m³/mol)	Henry's law constant reference temperature, T_R (°C)	Normal boiling point, T_B (°K)	Critical temperature, T_C (°K)	Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol)	Unit risk factor, URF (μg/m³)⁻¹	Reference conc., RfC (mg/m³)	URF extrapolated (X)	RfC extrapolated (X)
50293	DDT	2.63E+06	1.37E-02	4.95E-06	2.50E-02	3.32E-04	8.10E-06	25	533.15	720.75	22,000	9.7E-05	0.0E+00		
50328	Benzo(a)pyrene	1.02E+06	4.30E-02	9.00E-06	1.62E-03	4.63E-05	1.13E-06	25	715.90	969.27	19,000	2.1E-03	0.0E+00	X	
51285	2,4-Dinitrophenol	1.02E-02	2.73E-02	9.06E-06	2.79E+03	1.82E-05	4.44E-07	25	605.28	827.85	25,000	0.0E+00	7.0E-03		X
53703	Dibenz(a,h)anthracene	3.80E+06	2.02E-02	5.18E-06	2.49E-03	6.03E-07	1.47E-08	25	743.24	990.41	29,995	2.1E-03	0.0E+00	X	
56235	Carbon tetrachloride	1.74E+02	7.80E-02	8.80E-06	7.93E+02	1.25E+00	3.05E-02	25	349.90	556.60	7,127	1.5E-05	0.0E+00		
56553	Benz(a)anthracene	3.98E+05	5.10E-02	9.00E-06	9.40E-03	1.37E-04	3.34E-06	25	708.15	1004.79	16,000	2.1E-04	0.0E+00	X	
57749	Chlordane	1.20E+05	1.18E-02	4.37E-06	5.60E-02	1.99E-03	4.85E-05	25	624.24	885.73	14,000	1.0E-04	7.0E-04		
58899	gamma-HCH (Lindane)	1.07E+03	1.42E-02	7.34E-06	6.80E+00	5.74E-04	1.40E-05	25	596.55	839.36	15,000	3.7E-04	0.0E+00	X	
60571	Dieldrin	2.14E+04	1.25E-02	4.74E-06	1.95E-01	6.19E-04	1.51E-05	25	613.32	842.25	17,000	4.6E-03	0.0E+00		
65850	Benzoic Acid	5.76E-01	5.36E-02	7.97E-06	3.50E+03	6.31E-05	1.54E-06	25	720.00	751.00	12,094	0.0E+00	1.4E+01		X
67641	Acetone	5.75E-01	1.24E-01	1.14E-05	1.00E+06	1.59E-03	3.88E-05	25	329.20	508.10	6,955	0.0E+00	3.5E-01		X
67663	Chloroform	3.98E+01	1.04E-01	1.00E-05	7.92E+03	1.50E-01	3.66E-03	25	334.32	536.40	6,988	2.3E-05	0.0E+00		
67721	Hexachloroethane	1.78E+03	2.50E-03	6.80E-06	5.00E+01	1.59E-01	3.88E-03	25	458.00	695.00	9,510	4.0E-06	0.0E+00		
71363	Butanol	6.92E+00	8.00E-02	9.30E-06	7.40E+04	3.61E-04	8.80E-06	25	390.88	563.05	10,346	0.0E+00	3.5E-01		X
71432	Benzene	5.89E+01	8.80E-02	9.80E-06	1.75E+03	2.28E-01	5.56E-03	25	353.24	562.16	7,342	7.8E-06	0.0E+00		
71556	1,1,1-Trichloroethane	1.10E+02	7.80E-02	8.80E-06	1.33E+03	7.05E-01	1.72E-02	25	347.24	545.00	7,136	0.0E+00	1.0E+00		
72208	Endrin	1.23E+04	1.25E-02	4.74E-06	2.50E-01	3.08E-04	7.51E-06	25	718.15	986.20	15,000	0.0E+00	1.1E-03		X
72435	Methoxychlor	9.77E+04	1.56E-02	4.46E-06	4.50E-02	6.48E-04	1.58E-05	25	651.02	848.49	16,000	0.0E+00	1.8E-02		X
72548	DDD	1.00E+06	1.69E-02	4.76E-06	9.00E-02	1.64E-04	4.00E-06	25	639.90	863.77	17,000	6.9E-05	0.0E+00	X	
72559	DDE	4.47E+06	1.44E-02	5.87E-06	1.20E-01	8.61E-04	2.10E-05	25	636.44	860.38	15,000	9.7E-05	0.0E+00	X	
74839	Methyl bromide	1.05E+01	7.28E-02	1.21E-05	1.52E+04	2.56E-01	6.24E-03	25	276.71	467.00	5,714	0.0E+00	5.0E-03		
75014	Vinyl chloride (chloroethene)	1.86E+01	1.06E-01	1.23E-05	2.76E+03	1.11E+00	2.71E-02	25	259.25	432.00	5,250	4.4E-06	1.0E-01		
75092	Methylene chloride	1.17E+01	1.01E-01	1.17E-05	1.30E+04	8.98E-02	2.19E-03	25	313.00	510.00	6,706	4.7E-07	3.0E+00		
75150	Carbon disulfide	4.57E+01	1.04E-01	1.00E-05	1.19E+03	1.24E+00	3.02E-02	25	319.00	552.00	6,391	0.0E+00	7.0E-01		
75252	Bromoform	8.71E+01	1.49E-02	1.03E-05	3.10E+03	2.19E-02	5.34E-04	25	422.35	696.00	9,479	1.1E-06	0.0E+00		
75274	Bromodichloromethane	5.50E+01	2.98E-02	1.06E-05	6.74E+03	6.56E-02	1.60E-03	25	363.15	585.85	7,800	1.8E-05	0.0E+00	X	
75343	1,1-Dichloroethane	3.16E+01	7.42E-02	1.05E-05	5.06E+03	2.30E-01	5.61E-03	25	330.55	523.00	6,895	0.0E+00	5.0E-01		
75354	1,1-Dichloroethylene	5.89E+01	9.00E-02	1.04E-05	2.25E+03	1.07E+00	2.61E-02	25	304.75	576.05	6,247	5.0E-05	0.0E+00		
76448	Heptachlor	1.41E+06	1.12E-02	5.69E-06	1.80E-01	4.47E-02	1.09E-03	25	603.69	846.31	13,000	1.3E-03	0.0E+00		
77474	Hexachlorocyclopentadiene	2.00E+05	1.61E-02	7.21E-06	1.80E+00	1.11E+00	2.71E-02	25	512.15	746.00	10,931	0.0E+00	7.0E-05		
78591	Isophorone	4.68E+01	6.23E-02	6.76E-06	1.20E+04	2.72E-04	6.63E-06	25	488.35	715.00	10,271	2.7E-07	0.0E+00	X	
78875	1,2-Dichloropropane	4.37E+01	7.82E-02	8.73E-06	2.80E+03	1.15E-01	2.80E-03	25	369.52	572.00	7,590	0.0E+00	4.0E-03		
79005	1,1,2-Trichloroethane	5.01E+01	7.80E-02	8.80E-06	4.42E+03	3.74E-02	9.12E-04	25	386.15	602.00	8,322	1.6E-05	0.0E+00		
79016	Trichloroethylene	1.66E+02	7.90E-02	9.10E-06	1.10E+03	4.22E-01	1.03E-02	25	360.36	544.20	7,505	1.7E-06	0.0E+00		
79345	1,1,2,2-Tetrachloroethane	9.33E+01	7.10E-02	7.90E-06	2.97E+03	1.41E-02	3.44E-04	25	419.60	661.15	8,996	5.8E-05	0.0E+00		
83329	Acenaphthene	7.08E+03	4.21E-02	7.69E-06	4.24E+00	6.36E-03	1.55E-04	25	550.54	803.15	12,155	0.0E+00	2.1E-01		X
84662	Diethylphthalate	2.88E+02	2.56E-02	6.35E-06	1.08E+03	1.85E-05	4.51E-07	25	567.15	757.00	13,733	0.0E+00	2.8E+00		X
84742	Di-n-butyl phthalate	3.39E+04	4.38E-02	7.86E-06	1.12E+01	3.85E-08	9.39E-10	25	613.15	798.67	14,751	0.0E+00	3.5E-01		X
85687	Butyl benzyl phthalate	5.75E+04	1.74E-02	4.83E-06	2.69E+00	5.17E-05	1.26E-06	25	660.60	839.68	14,000	0.0E+00	7.0E-01		X
86306	N-Nitrosodiphenylamine	1.29E+03	3.12E-02	6.35E-06	3.51E+01	2.05E-04	5.00E-06	25	632.28	890.45	7,300	1.4E-06	0.0E+00	X	
86737	Fluorene	1.38E+04	3.63E-02	7.88E-06	1.98E+00	2.61E-03	6.37E-05	25	570.44	870.00	12,666	0.0E+00	1.4E-01		X
86748	Carbazole	3.39E+03	3.90E-02	7.03E-06	7.48E+00	6.26E-07	1.53E-08	25	627.87	899.00	13,977	5.7E-06	0.0E+00	X	
87683	Hexachloro-1,3-butadiene	5.37E+04	5.61E-02	6.16E-06	3.23E+00	3.34E-01	8.15E-03	25	486.15	738.00	10,206	2.2E-05	0.0E+00		
87865	Pentachlorophenol	5.92E+02	5.60E-02	6.10E-06	1.95E+03	1.00E-06	2.44E-08	25	582.15	813.20	16,109	3.4E-05	0.0E+00	X	

88062	2,4,6-Trichlorophenol	3.81E+02	3.18E-02	6.25E-06	8.00E+02	3.19E-04	7.78E-06	25	519.15	749.03	12,000	3.1E-06	0.0E+00		
91203	Naphthalene	2.00E+03	5.90E-02	7.50E-06	3.10E+01	1.98E-02	4.83E-04	25	491.14	748.40	10,373	0.0E+00	3.0E-03		
91941	3,3-Dichlorobenzidine	7.24E+02	1.94E-02	6.74E-06	3.11E+00	1.64E-07	4.00E-09	25	560.26	754.03	20,000	1.3E-04	0.0E+00	X	
95476	o-Xylene	3.63E+02	8.70E-02	1.00E-05	1.78E+02	2.13E-01	5.20E-03	25	417.60	630.30	8,661	0.0E+00	7.0E+00		X
95487	2-Methylphenol (o-cresol)	9.12E+01	7.40E-02	8.30E-06	2.60E+04	4.92E-05	1.20E-06	25	464.19	697.60	10,800	0.0E+00	1.8E-01		X
95501	1,2-Dichlorobenzene	6.17E+02	6.90E-02	7.90E-06	1.56E+02	7.79E-02	1.90E-03	25	453.57	705.00	9,700	0.0E+00	2.0E-01		
95578	2-Chlorophenol	3.88E+02	5.01E-02	9.46E-06	2.20E+04	1.60E-02	3.90E-04	25	447.53	675.00	9,572	0.0E+00	1.8E-02		X
95954	2,4,5-Trichlorophenol	1.60E+03	2.91E-02	7.03E-06	1.20E+03	1.78E-04	4.34E-06	25	526.15	759.13	11,000	0.0E+00	3.5E-01		X
98953	Nitrobenzene	6.46E+01	7.60E-02	8.60E-06	2.09E+03	9.84E-04	2.40E-05	25	483.95	719.00	10,566	0.0E+00	2.0E-03		
100414	Ethylbenzene	3.63E+02	7.50E-02	7.80E-06	1.69E+02	3.23E-01	7.88E-03	25	409.34	617.20	8,501	0.0E+00	1.0E+00		
100425	Styrene	7.76E+02	7.10E-02	8.00E-06	3.10E+02	1.13E-01	2.76E-03	25	418.31	638.00	8,737	0.0E+00	1.0E+00		
105679	2,4-Dimethylphenol	2.09E+02	5.84E-02	8.69E-06	7.87E+03	8.20E-05	2.00E-06	25	484.13	707.60	11,329	0.0E+00	7.0E-02		X
106423	p-Xylene	3.89E+02	7.69E-02	8.44E-06	1.85E+02	3.14E-01	7.66E-03	26	411.52	616.20	8,525	0.0E+00	7.0E+00		X
106467	1,4-Dichlorobenzene	6.17E+02	6.90E-02	7.90E-06	7.38E+01	9.96E-02	2.43E-03	25	447.21	684.75	9,271	0.0E+00	8.0E-01		
106478	p-Chloroaniline	6.61E+01	4.83E-02	1.01E-05	5.30E+03	1.36E-05	3.32E-07	25	503.65	754.00	11,689	0.0E+00	1.4E-02		X
107062	1,2-Dichloroethane	1.74E+01	1.04E-01	9.90E-06	8.52E+03	4.01E-02	9.78E-04	25	356.65	561.00	7,643	2.6E-05	0.0E+00		
108054	Vinyl acetate	5.25E+00	8.50E-02	9.20E-06	2.00E+04	2.10E-02	5.12E-04	25	345.65	519.13	7,800	0.0E+00	2.0E-01		
108383	m-Xylene	4.07E+02	7.00E-02	7.80E-06	1.61E+02	3.01E-01	7.34E-03	25	412.27	617.05	8,523	0.0E+00	7.0E+00		X
108883	Toluene	1.82E+02	8.70E-02	8.60E-06	5.26E+02	2.72E-01	6.63E-03	25	383.78	591.79	7,930	0.0E+00	4.0E-01		
108907	Chlorobenzene	2.19E+02	7.30E-02	8.70E-06	4.72E+02	1.52E-01	3.71E-03	25	404.87	632.40	8,410	0.0E+00	2.0E-02		
108952	Phenol	2.88E+01	8.20E-02	9.10E-06	8.28E+04	1.63E-05	3.98E-07	25	455.02	694.20	10,920	0.0E+00	2.1E+00		X
111444	Bis(2-chloroethyl)ether	1.55E+01	6.92E-02	7.53E-06	1.72E+04	7.38E-04	1.80E-05	25	451.15	659.79	10,803	3.3E-04	0.0E+00		
115297	Endosulfan	2.14E+03	1.15E-02	4.55E-06	5.10E-01	4.59E-04	1.12E-05	25	674.43	942.94	14,000	0.0E+00	2.1E-02		X
117817	Bis(2-ethylhexyl)phthalate	1.51E+07	3.51E-02	3.66E-06	3.40E-01	4.18E-06	1.02E-07	25	657.15	806.00	15,999	4.0E-06	0.0E+00	X	
117840	Di-n-octyl phthalate	8.32E+07	1.51E-02	3.58E-06	2.00E-02	2.74E-03	6.68E-05	25	704.09	862.22	14,000	0.0E+00	7.0E-02		X
118741	Hexachlorobenzene	5.50E+04	5.42E-02	5.91E-06	6.20E+00	5.41E-02	1.32E-03	25	582.55	825.00	14,447	4.6E-04	0.0E+00		
120127	Anthracene	2.95E+04	3.24E-02	7.74E-06	4.34E-02	2.67E-03	6.51E-05	25	615.18	873.00	13,121	0.0E+00	1.1E+00		X
120821	1,2,4-Trichlorobenzene	1.78E+03	3.00E-02	8.23E-06	3.00E+02	5.82E-02	1.42E-03	25	486.15	725.00	10,471	0.0E+00	2.0E-01		
120832	2,4-Dichlorophenol	1.47E+02	3.46E-02	8.77E-06	4.50E+03	1.30E-04	3.17E-06	25	482.15	708.17	15,000	0.0E+00	1.1E-02		X
121142	2,4-Dinitrotoluene	9.55E+01	2.03E-01	7.06E-06	2.70E+02	3.80E-06	9.27E-08	25	590.00	814.00	13,467	1.9E-04	0.0E+00	X	
124481	Chlorodibromomethane	6.31E+01	1.96E-02	1.05E-05	2.60E+03	3.21E-02	7.83E-04	25	416.14	678.20	5,900	2.4E-05	0.0E+00	X	
127184	Tetrachloroethylene	1.55E+02	7.20E-02	8.20E-06	2.00E+02	7.54E-01	1.84E-02	25	394.40	620.20	8,288	5.8E-07	0.0E+00		
129000	Pyrene	1.05E+05	2.72E-02	7.24E-06	1.35E-01	4.51E-04	1.10E-05	25	667.95	936.00	14,370	0.0E+00	1.1E-01		X
156592	cis-1,2-Dichloroethylene	3.55E+01	7.36E-02	1.13E-05	3.50E+03	1.67E-01	4.07E-03	25	333.65	544.00	7,192	0.0E+00	3.5E-02		X
156605	trans-1,2-Dichloroethylene	5.25E+01	7.07E-02	1.19E-05	6.30E+03	3.85E-01	9.39E-03	25	320.85	516.50	6,717	0.0E+00	7.0E-02		X
193395	Indeno(1,2,3-cd)pyrene	3.47E+06	1.90E-02	5.66E-06	2.20E-05	6.56E-05	1.60E-06	25	809.15	1078.24	19,000	2.1E-04	0.0E+00	X	
205992	Benzo(b)fluoranthene	1.23E+06	2.26E-02	5.56E-06	1.50E-03	4.55E-03	1.11E-04	25	715.90	969.27	17,000	2.1E-04	0.0E+00	X	
206440	Fluoranthene	1.07E+05	3.02E-02	6.35E-06	2.06E-01	6.60E-04	1.61E-05	25	655.95	905.00	13,815	0.0E+00	1.4E-01		X
207089	Benzo(k)fluoranthene	1.23E+06	2.26E-02	5.56E-06	8.00E-04	3.40E-05	8.29E-07	25	753.15	1019.70	18,000	2.1E-05	0.0E+00	X	
218019	Chrysene	3.98E+05	2.48E-02	6.21E-06	1.60E-03	3.88E-03	9.46E-05	25	714.15	979.00	16,455	2.1E-06	0.0E+00	X	
309002	Aldrin	2.45E+06	1.32E-02	4.86E-06	1.80E-01	6.97E-03	1.70E-04	25	603.01	839.37	15,000	4.9E-03	0.0E+00		
319846	alpha-HCH (alpha-BHC)	1.23E+03	1.42E-02	7.34E-06	2.00E+00	4.35E-04	1.06E-05	25	596.55	839.36	15,000	1.8E-03	0.0E+00		
319857	beta-HCH (beta-BHC)	1.26E+03	1.42E-02	7.34E-06	2.40E-01	3.05E-05	7.44E-07	25	596.55	839.36	19,000	5.3E-04	0.0E+00		
542756	1,3-Dichloropropene	4.57E+01	6.26E-02	1.00E-05	2.80E+03	7.26E-01	1.77E-02	25	381.15	587.38	7,900	4.0E-06	2.0E-02		
606202	2,6-Dinitrotoluene	6.92E+01	3.27E-02	7.26E-06	1.82E+02	3.06E-05	7.46E-07	25	558.00	770.00	12,938	1.9E-04	0.0E+00	X	
621647	N-Nitrosodi-n-propylamine	2.40E+01	5.45E-02	8.17E-06	9.89E+03	9.23E-05	2.25E-06	25	509.60	746.87	6,100	2.0E-03	0.0E+00	X	
1024573	Heptachlor epoxide	8.32E+04	1.32E-02	4.23E-06	2.00E-01	3.90E-04	9.51E-06	25	613.96	848.76	16,000	2.6E-03	0.0E+00		
7439976	Mercury (elemental)	5.20E+01	3.07E-02	6.30E-06	5.62E-02	4.67E-01	1.14E-02	25	629.88	1750.00	14,127	0.0E+00	3.0E-04		
8001352	Toxaphene	2.57E+05	1.16E-02	4.34E-06	7.40E-01	2.46E-04	6.00E-06	25	657.15	873.31	15,000	3.2E-04	0.0E+00		

APPENDIX I

COMPUTATIONS OF DNAPL SOURCE AREAS CONTAMINANT MASS

MASS SUMMARY

Hanger 1000
Naval Air Station Jacksonville
Jacksonville, Florida

MASS ASSUMPTION SCENARIOS	H Area (> 5 ppm VOCs in Soil)		M Area (> 1 and < 5 ppm VOCs in Soil)		L Area (< 1 ppm VOCs in Soil)	
	Upper Zone (7' to 16')	Lower Zone (16' to 25')	Upper Zone (7' to 16')	Lower Zone (16' to 25')	Upper Zone (7' to 16')	Lower Zone (16' to 25')
Impacted Soil (Saturated Soil)						
Maximum (lbs)	34.21	30.46	2.27	0.93	2.01	0.87
Most Likely (lbs)	24.36	21.65	1.44	0.57	0.51	0.19
Minimum (lbs)	21.49	16.22	1.27	0.47	0.07	0.10
Adsorbed Phase (Groundwater)						
Maximum (lbs)	50.24					
Minimum (lbs)	8.60					
Variation - Geomean (lbs)	1.94					
Dissolved Phase (Groundwater)						
Maximum (lbs)	4.06					
Minimum (lbs)	4.02					
Variation - Geomean (lbs)	0.59					
Totals						
Maximum	**125.02 lbs**		**or**	**56.71 kg**		
Most Likely	**61.34 lbs**		**or**	**27.82 kg**		
Minimum	**42.15 lbs**		**or**	**19.12 kg**		

12:49 PM 8/14/2003

MIMIMUM SCENARIO - Estimated Mass of Contaminants in Saturated Soil (7' to 25')
Zone of Highest Concentrations (>5 ppm for any individual VOC)

Hanger 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Mass of Contaminants in Soil:

	7 to 16 feet					16 to 25 feet											
Sample Location with Sample Depth in feet bls:	H1000-31	H1000-06	# Total Samples (incl NDs)	Total VOCs	Avg (ug/kg)	H1000-02	H1000-03	H1000-31	H1000-34	H1000-38	H1000-05	H1000-06	H1000-35	H1000-03	# Total Samples (incl NDs)	Total VOCs	Avg (ug/kg)
Analyte	8'	11'				19'	19'	20'	20'	20'	21'	21'	22'	24'			
1,1,1-Trichloroethane	337,000	25,300	2	362,300	181,150	1,480	831 U	34,700	2850	4,510 U	898 U	3,610	1,620	875 U	9	44,260	4,918
1,1,2,2-Tetrachloroethane	14,800 U	3,100 U	2	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	9	0	0
1,1,2-Trichloroethane	14,800 U	3,100 U	2	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	9	0	0
1,1-Dichloroethane	14,800 U	3,100 U	2	0	0	221	551	7,730 U	6070	5,640	565	820 U	296	1,070	9	14,413	1,601
1,1-Dichloroethene	5600	3,100 U	2	5,600	2,800	597	831 U	7,730 U	9,750 U	2800	898 U	1,100	706	875 U	9	5,203	578
1,2,4-Trichlorobenzene	14,800 U	3,100 U	2	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	9	0	0
1,2-Dibromo-3-chloropropane	14,800 U	3,100	2	3,100	1,550	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820	328 U	875 U	9	820	91
1,2-Dibromoethane	14,800 U	3,100 U	2	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	9	0	0
1,2-Dichlorobenzene	14,800 U	3,100 U	2	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	9	0	0
1,2-Dichloroethane	14,800 U	3,100 U	2	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	9	0	0
1,2-Dichloropropane	22,900	3,100 U	2	22,900	11,450	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	9	0	0
1,3-Dichlorobenzene	14,800 U	3,100 U	2	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	9	0	0
1,4-Dichlorobenzene	14,800 U	3,100 U	2	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	9	0	0
2-Butanone	29,600 U	6,200 U	2	0	0	13.4 U	1,660 U	15,500 U	19,500 U	9,010 U	1,800 U	1,640 U	657 U	1,750 U	9	0	0
2-Hexanone	29,600 U	6,200 U	2	0	0	13.4 U	1,660 U	15,500 U	19,500 U	9,010 U	1,800 U	1,640 U	657 U	1,750 U	9	0	0
4-Methyl-2-pentanone	29,600 U	6,200	2	6,200	3,100	13.4 U	1,660 U	15,500 U	19,500 U	9,010 U	1,800 U	1,640	657 U	1,750 U	9	1,640	182
Acetone	29,600 U	6,200 U	2	0	0	128	1,660 U	15,500 U	19,500 U	9,010 U	1,800 U	1,640 U	657 U	1,750 U	9	128	14
Benzene	14,800 U	3,100 U	2	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	365	328 U	875 U	9	365	41
Bromodichloromethane	14,800 U	3,100 U	2	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	9	0	0
Bromoform	14,800 U	3,100 U	2	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	9	0	0
Bromomethane	14,800 U	3,100	2	3,100	1,550	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898	820	328 U	875 U	9	1,718	191
Carbon disulfide	14,800 U	3,100 U	2	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	9	0	0
Carbon tetrachloride	49,200	3,100 U	2	49,200	24,600	6.69 U	831 U	4930	9,750 U	4,510 U	898 U	820 U	242	875 U	9	5,172	575
Chlorobenzene	14,800 U	3,100 U	2	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	9	0	0
Chloroethane	14,800 U	3,100	2	3,100	1,550	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898	820	328 U	875 U	9	1,718	191
Chloroform	14,800 U	3,100 U	2	0	0	1.89	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	9	2	0
Chloromethane	14,800 U	3,100 U	2	0	0	6.69	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	9	7	1
Cyclohexane	14,800 U	3,100 U	2	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	9	0	0
Dibromochloromethane	14,800 U	3,100 U	2	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	9	0	0
Dichlorodifluoromethane	14,800 U	3,100 U	2	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	9	0	0
cis-1,3-Dichloropropene	14,800 U	3,100 U	2	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	9	0	0
trans-1,3-Dichloropropene	14,800 U	3,100 U	2	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	9	0	0
Ethylbenzene	14,800 U	3,100 U	2	0	0	5.58	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	9	6	1
Isopropylbenzene (Cumene)	14,800 U	3,100 U	2	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	9	0	0
Methyl Acetate	14,800,000 U	3,100,000 U	2	0	0	6690 U	831,000 U	7,730,000 U	9,750,000 U	4,510,000 U	898,000 U	820,000 U	328,000 U	875,000 U	9	0	0
Methylcyclohexane	14,800,000 U	3,100,000 U	2	0	0	6690 U	831,000 U	7,730,000 U	9,750,000 U	4,510,000 U	898,000 U	820,000 U	328,000 U	875,000 U	9	0	0
Methylene chloride	14,800 U	3,100 U	2	0	0	6.69 U	831 U	7,730 U	4,380	4,510 U	898 U	820 U	328 U	875 U	9	4,380	487
Styrene	14,800 U	3,100 U	2	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	9	0	0
Tetrachloroethene	12,200	4,360	2	16,560	8,280	158	831 U	139,000	9,750 U	4,510 U	246	799	85	875 U	9	140,288	15,588
Toluene	14,800 U	3,100 U	2	0	0	66.7	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	9	67	7
Trichloroethene	133,000	60,100	2	193,100	96,550	8,450	11,300	139,000	224,000	74,500	15,700	15,900	10,900	1,220	9	500,970	55,663
Trichlorofluoromethane	14,800 U	3,100 U	2	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898	820	328 U	875 U	9	1,718	191
Trichlorotrifluoroethane	29,700	2790	2	32,490	16,245	6.69 U	831 U	7,930	9,750 U	4,510 U	305	1,940	328 U	875 U	9	10,175	1,131
Vinyl chloride	5,910 U	1,240 U	2	0	0	2.67 U	333 U	3,090 U	3,900 U	1,800 U	359 U	354	131 U	350 U	9	354	39
Xylene (total)	14,800 U	3,100 U	2	0	0	28.5	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	9	29	3
cis-1,2-Dichloroethene	14,800 U	3,100 U	2	0	0	2,270	3,270	1510	6560	55,300	1,750	5,220	3,430	14,600	9	93,910	10,434
tert-Butyl methyl ether (MTBE)	14,800 U	3,100 U	2	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	9	0	0
trans-1,2-Dichloroethene	14,800 U	3,100 U	2	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	9	0	0
TOTAL VOCs	**589,600**	**108,050**	**2**	**697,650**	**348,825**	**13,413**	**15,121**	**327,070**	**243,860**	**138,240**	**21,260**	**34,208**	**17,279**	**16,890**	**14**	**2,571,468**	**183,676**

Notes:
Blue Shading - J-value reported (estimated) and assumed as value in calcuation.
Grey Shading - Positive value reported.

1. All concentrations reported in micrograms per kilogram (ug/kg).
2. U denotes analyte not detected above reported detection limit.
3. J denotes analyte concentration is estimated.
4. Bold and shaded denotes detected concentration.

This scenario includes an average VOC concentration per COC as calcuated across the entire area using all samples in average. J-values are included in the summation.

	7 to 16 feet		16 to 25 feet	
Total VOCs =	**348,825.00**	ug/kg	**91,926.82**	ug/kg
Conversion =	348.83	mg/kg	91.93	mg/kg
Impacted Area (from drawing) =	66	ft²	189	ft²
Impacted Zone Thickness =	9	ft	9	ft
Total Volume of Soil in Impacted Zone =	**594**	cf	**1,701**	cf
Conversion Factor =	27	CF per CY	27	CF per CY
Conversion Factor =	1.4	tons per 1 yd3 (sand)	1.4	tons per 1 yd3 (sand)
Conversion Factor =	907.2	kg per ton	907.2	kg per ton
Mass of Soil Zone =	30.80	Tons	88.20	Tons
Mass of Soil Zone =	27,941.76	Kg	80,015.04	Kg
Mass of Contamination =	9.75	Kg	7.36	Kg
Mass of Contamination =	**21.49**	**lbs**	**16.22**	**lbs**

TOTAL MASS OF VOC CONTAMINATION IN HIGHEST IMPACTED AREA = 37.70 lbs

AVERAGE SCENARIO - Estimated Mass of Contaminants in Saturated Soil (7' to 25')
Zone of Highest Concentrations (>5 ppm for any individual VOC)

Hanger 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Mass of Contaminants in Soil:

Sample Location with Sample Depth in feet bls:	7 to 16 feet					16 to 25 feet											
	H1000-31	H1000-06	>ND Samples	Total VOCs	Avg (ug/kg)	H1000-02	H1000-03	H1000-31	H1000-34	H1000-38	H1000-05	H1000-06	H1000-35	H1000-03	>ND Samples	Total VOCs	Avg (ug/kg)
Analyte	**8'**	**11'**				**19'**	**19'**	**20'**	**20'**	**20'**	**21'**	**21'**	**22'**	**24'**			
1,1,1-Trichloroethane	**337,000**	**25,300**	2	362,300	181,150	**1,480**	831 U	**34,700**	**2850**	4,510 U	898 U	**3,610**	**1,620**	875 U	5	44,260	8,852
1,1,2,2-Tetrachloroethane	14,800 U	3,100 U	0	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	0	0	0
1,1,2-Trichloroethane	14,800 U	3,100 U	0	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	0	0	0
1,1-Dichloroethane	14,800 U	3,100 U	0	0	0	**221**	**551**	7,730 U	**6070**	**5,640**	**565**	820 U	**296**	**1,070**	7	14,413	2,059
1,1-Dichloroethene	**5600**	3,100 U	1	5,600	5,600	**597**	831 U	7,730 U	9,750 U	**2800**	898 U	**1,100**	**706**	875 U	4	5,203	1,301
1,2,4-Trichlorobenzene	14,800 U	3,100 U	0	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	0	0	0
1,2-Dibromo-3-chloropropane	14,800 U	**3,100**	1	3,100	3,100	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	**820**	328 U	875 U	1	820	820
1,2-Dibromoethane	14,800 U	3,100 U	0	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	0	0	0
1,2-Dichlorobenzene	14,800 U	3,100 U	0	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	0	0	0
1,2-Dichloroethane	14,800 U	3,100 U	0	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	0	0	0
1,2-Dichloropropane	**22,900**	3,100 U	1	22,900	22,900	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	0	0	0
1,3-Dichlorobenzene	14,800 U	3,100 U	0	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	0	0	0
1,4-Dichlorobenzene	14,800 U	3,100 U	0	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	0	0	0
2-Butanone	29,600 U	6,200 U	0	0	0	13.4 U	1,660 U	15,500 U	19,500 U	9,010 U	1,800 U	1,640 U	657 U	1,750 U	0	0	0
2-Hexanone	29,600 U	6,200 U	0	0	0	13.4 U	1,660 U	15,500 U	19,500 U	9,010 U	1,800 U	1,640 U	657 U	1,750 U	0	0	0
4-Methyl-2-pentanone	29,600 U	**6,200**	1	6,200	6,200	13.4 U	1,660 U	15,500 U	19,500 U	9,010 U	1,800 U	**1,640**	657 U	1,750 U	1	1,640	1,640
Acetone	29,600 U	6,200 U	0	0	0	**128**	1,660 U	15,500 U	19,500 U	9,010 U	1,800 U	1,640 U	657 U	1,750 U	1	128	128
Benzene	14,800 U	3,100 U	0	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	**365**	328 U	875 U	1	365	365
Bromodichloromethane	14,800 U	3,100 U	0	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	0	0	0
Bromoform	14,800 U	3,100 U	0	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	0	0	0
Bromomethane	14,800 U	**3,100**	1	3,100	3,100	6.69 U	831 U	7,730 U	9,750 U	4,510 U	**898**	**820**	328 U	875 U	2	1,718	859
Carbon disulfide	14,800 U	3,100 U	0	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	0	0	0
Carbon tetrachloride	**49,200**	3,100 U	1	49,200	49,200	6.69 U	831 U	**4930**	9,750 U	4,510 U	898 U	820 U	**242**	875 U	2	5,172	2,586
Chlorobenzene	14,800 U	3,100 U	0	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	0	0	0
Chloroethane	14,800 U	**3,100**	1	3,100	3,100	6.69 U	831 U	7,730 U	9,750 U	4,510 U	**898**	**820**	328 U	875 U	2	1,718	859
Chloroform	14,800 U	3,100 U	0	0	0	**1.89**	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	1	2	2
Chloromethane	14,800 U	3,100 U	0	0	0	**6.69**	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	1	7	7
Cyclohexane	14,800 U	3,100 U	0	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	0	0	0
Dibromochloromethane	14,800 U	3,100 U	0	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	0	0	0
Dichlorodifluoromethane	14,800 U	3,100 U	0	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	0	0	0
cis-1,3-Dichloropropene	14,800 U	3,100 U	0	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	0	0	0
trans-1,3-Dichloropropene	14,800 U	3,100 U	0	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	0	0	0
Ethylbenzene	14,800 U	3,100 U	0	0	0	**5.58**	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	1	6	6
Isopropylbenzene (Cumene)	14,800 U	3,100 U	0	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	0	0	0
Methyl Acetate	14,800,000 U	3,100,000 U	0	0	0	6690 U	831,000 U	7,730,000 U	9,750,000 U	4,510,000 U	898,000 U	820,000 U	328,000 U	875,000 U	0	0	0
Methylcyclohexane	14,800,000 U	3,100,000 U	0	0	0	6690 U	831,000 U	7,730,000 U	9,750,000 U	4,510,000 U	898,000 U	820,000 U	328,000 U	875,000 U	0	0	0
Methylene chloride	14,800 U	3,100 U	0	0	0	6.69 U	831 U	7,730 U	**4,380**	4,510 U	898 U	820 U	328 U	875 U	1	4,380	4,380
Styrene	14,800 U	3,100 U	0	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	0	0	0
Tetrachloroethene	**12,200**	**4,360**	2	16,560	8,280	**158**	831 U	**139,000**	9,750 U	4,510 U	**246**	**799**	**85**	875 U	5	140,288	28,058
Toluene	14,800 U	3,100 U	0	0	0	**66.7**	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	1	67	67
Trichloroethene	**133,000**	**60,100**	2	193,100	96,550	**8,450**	**11,300**	**139,000**	**224,000**	**74,500**	**15,700**	**15,900**	**10,900**	**1,220**	9	500,970	55,663
Trichlorofluoromethane	14,800 U	3,100 U	0	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	**898**	**820**	328 U	875 U	2	1,718	859
Trichlorotrifluoroethane	**29,700**	**2790**	2	32,490	16,245	6.69 U	831 U	**7,930**	9,750 U	4,510 U	**305**	**1,940**	328 U	875 U	3	10,175	3,392
Vinyl chloride	5,910 U	1,240 U	0	0	0	2.67 U	333 U	3,090 U	3,900 U	1,800 U	359 U	**354**	131 U	350 U	1	354	354
Xylene (total)	14,800 U	3,100 U	0	0	0	**28.5**	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	1	29	29
cis-1,2-Dichloroethene	14,800 U	3,100 U	0	0	0	**2,270**	**3,270**	**1510**	**6560**	**55,300**	**1,750**	**5,220**	**3,430**	**14,600**	9	93,910	10,434
tert-Butyl methyl ether (MTBE)	14,800 U	3,100 U	0	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	0	0	0
trans-1,2-Dichloroethene	14,800 U	3,100 U	0	0	0	6.69 U	831 U	7,730 U	9,750 U	4,510 U	898 U	820 U	328 U	875 U	0	0	0
TOTAL VOCs	**589,600**	**108,050**	**2**	**697,650**	**348,825**	**13,413**	**15,121**	**327,070**	**243,860**	**138,240**	**21,260**	**34,208**	**17,279**	**16,890**	**14**	**2,571,468**	**183,676**

Notes:
Blue Shading - J-value reported (estimated) and assumed as value in calcuation.
Grey Shading - Positive value reported.

1. All concentrations reported in micrograms per kilogram (ug/kg).
2. U denotes analyte not detected above reported detection limit.
3. J denotes analyte concentration is estimated.
4. Bold and shaded denotes detected concentration.

This scenario includes an average VOC concentration per COC
as calcuated across the entire area using only positive detections in average number of samples.
J-values are included in the summation.

7 to 16 feet		
Total VOCs =	**395,425.00**	ug/kg
Conversion =	395.43	mg/kg
Impacted Area (from drawing) =	66	ft²
Impacted Zone Thickness =	9	ft
Total Volume of Soil in Impacted Zone =	**594**	cf
Conversion Factor =	27	CF per CY
Conversion Factor =	1.4	tons per 1 yd3 (sand)
Conversion Factor =	907.2	kg per ton
Mass of Soil Zone =	30.80	Tons
Mass of Soil Zone =	27,941.76	Kg
Mass of Contamination =	11.05	Kg
Mass of Contamination =	**24.36**	**lbs**

16 to 25 feet		
Total VOCs =	**122,718.15**	ug/kg
Conversion =	122.72	mg/kg
Impacted Area (from drawing) =	189	ft²
Impacted Zone Thickness =	9	ft
Total Volume of Soil in Impacted Zone =	**1,701**	cf
Conversion Factor =	27	CF per CY
Conversion Factor =	1.4	tons per 1 yd3 (sand)
Conversion Factor =	907.2	kg per ton
Mass of Soil Zone =	88.20	Tons
Mass of Soil Zone =	80,015.04	Kg
Mass of Contamination =	9.82	Kg
Mass of Contamination =	**21.65**	**lbs**

TOTAL MASS OF VOC CONTAMINATION IN HIGHEST IMPACTED AREA = 46.01 lbs

MAXIMUM SCENARIO - Estimated Mass of Contaminants in Saturated Soil (7' to 25')
Zone of Highest Concentrations (>5 ppm for any individual VOC)

Hanger 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Mass of Contaminants in Soil:

Sample Location with Sample Depth in feet bls:	7 to 16 feet					16 to 25 feet											
	H1000-31	H1000-06	>ND Samples	Total VOCs	Avg (ug/kg)	H1000-02	H1000-03	H1000-31	H1000-34	H1000-38	H1000-05	H1000-06	H1000-35	H1000-03	>ND Samples	Total VOCs	Avg (ug/kg)
Analyte	8'	11'				19'	19'	20'	20'	20'	21'	21'	22'	24'			
1,1,1-Trichloroethane	337,000	25,300	2	362,300	181,150	1,480	416	34,700	2850 J	2,255	449	3,610	1,620	438	8	44,967	5,621
1,1,2,2-Tetrachloroethane	7,400	1,550	2	8,950	4,475	3.35	416	3,865	4,875	2,255	449	410	164	438	9	12,874	1,430
1,1,2-Trichloroethane	7,400	1,550	2	8,950	4,475	3.35	416	3,865	4,875	2,255	449	410	164	438	9	12,874	1,430
1,1-Dichloroethane	7,400	1,550	2	8,950	4,475	221	551 J	3,865	6070 J	5,640	565 J	410	296 J	1,070	5	11,206	2,241
1,1-Dichloroethene	5600 J	1,550	1	1,550	1,550	597	416	3,865	4,875	2800 J	449	1,100	706	438	8	12,445	1,556
1,2,4-Trichlorobenzene	7,400	1,550	2	8,950	4,475	3.35	416	3,865	4,875	2,255	449	410	164	438	9	12,874	1,430
1,2-Dibromo-3-chloropropane	7,400	3100 J	1	7,400	7,400	3.35	416	3,865	4,875	2,255	449	820 J	164	438	8	12,464	1,558
1,2-Dibromoethane	7,400	1,550	2	8,950	4,475	3.35	416	3,865	4,875	2,255	449	410	164	438	9	12,874	1,430
1,2-Dichlorobenzene	7,400	1,550	2	8,950	4,475	3.35	416	3,865	4,875	2,255	449	410	164	438	9	12,874	1,430
1,2-Dichloroethane	7,400	1,550	2	8,950	4,475	3.35	416	3,865	4,875	2,255	449	410	164	438	9	12,874	1,430
1,2-Dichloropropane	22,900	1,550	2	24,450	12,225	3.35	416	3,865	4,875	2,255	449	410	164	438	9	12,874	1,430
1,3-Dichlorobenzene	7,400	1,550	2	8,950	4,475	3.35	416	3,865	4,875	2,255	449	410	164	438	9	12,874	1,430
1,4-Dichlorobenzene	7,400	1,550	2	8,950	4,475	3.35	416	3,865	4,875	2,255	449	410	164	438	9	12,874	1,430
2-Butanone	14,800	3,100	2	17,900	8,950	6.70	830	7,750	9,750	4,505	900	820	329	1,750 U	8	24,890	3,111
2-Hexanone	14,800	3,100	2	17,900	8,950	6.70	830	7,750	9,750	4,505	900	820	329	1,750 U	8	24,890	3,111
4-Methyl-2-pentanone	14,800	6,200 J	1	14,800	14,800	6.70	830	7,750	9,750	4,505	900	1,640 J	329	1,750 U	7	24,070	3,439
Acetone	14,800	3,100	2	17,900	8,950	128 J	830	7,750	9,750	4,505	900	820	329	1,750 U	7	24,884	3,555
Benzene	7,400	1,550	2	8,950	4,475	3.35	416	3,865	4,875	2,255	449	365 J	164	438	8	12,464	1,558
Bromodichloromethane	7,400	1,550	2	8,950	4,475	3.35	416	3,865	4,875	2,255	449	410	164	438	9	12,874	1,430
Bromoform	7,400	1,550	2	8,950	4,475	3.35	416	3,865	4,875	2,255	449	410	164	438	9	12,874	1,430
Bromomethane	7,400	3,100 J	1	7,400	7,400	3.35	416	3,865	4,875	2,255	898 J	820 J	164	438	7	12,015	1,716
Carbon disulfide	7,400	1,550	2	8,950	4,475	3.35	416	3,865	4,875	2,255	449	410	164	438	9	12,874	1,430
Carbon tetrachloride	49,200	1,550	2	50,750	25,375	3.35	416	4,930 J	4,875	2,255	449	410	242 J	438	7	8,845	1,264
Chlorobenzene	7,400	1,550	2	8,950	4,475	3.35	416	3,865	4,875	2,255	449	410	164	438	9	12,874	1,430
Chloroethane	7,400	3,100 J	1	7,400	7,400	3.35	416	3,865	4,875	2,255	898 J	820 J	164	438	7	12,015	1,716
Chloroform	7,400	1,550	2	8,950	4,475	1.89 J	416	3,865	4,875	2,255	449	410	164	438	8	12,871	1,609
Chloromethane	7,400	1,550	2	8,950	4,475	6.69 J	416	3,865	4,875	2,255	449	410	164	438	8	12,871	1,609
Cyclohexane	7,400	1,550	2	8,950	4,475	3.35	416	3,865	4,875	2,255	449	410	164	438	9	12,874	1,430
Dibromochloromethane	7,400	1,550	2	8,950	4,475	3.35	416	3,865	4,875	2,255	449	410	164	438	9	12,874	1,430
Dichlorodifluoromethane	7,400	1,550	2	8,950	4,475	3.35	416	3,865	4,875	2,255	449	410	164	438	9	12,874	1,430
cis-1,3-Dichloropropene	7,400	1,550	2	8,950	4,475	3.35	416	3,865	4,875	2,255	449	410	164	438	9	12,874	1,430
trans-1,3-Dichloropropene	7,400	1,550	2	8,950	4,475	3.35	416	3,865	4,875	2,255	449	410	164	438	9	12,874	1,430
Ethylbenzene	7,400	1,550	2	8,950	4,475	5.58 J	416	3,865	4,875	2,255	449	410	164	438	8	12,871	1,609
Isopropylbenzene (Cumene)	7,400	1,550	2	8,950	4,475	3.35	416	3,865	4,875	2,255	449	410	164	438	9	12,874	1,430
Methyl Acetate	0	0	2	0	0	0.00	0	0	0	0	0	0	0	0	9	0	0
Methylcyclohexane	0	0	2	0	0	0.00	0	0	0	0	0	0	0	0	9	0	0
Methylene chloride	7,400	1,550	2	8,950	4,475	3.35	416	3,865	4380 J	2,255	449	410	164	438	8	7,999	1,000
Styrene	7,400	1,550	2	8,950	4,475	3.35	416	3,865	4,875	2,255	449	410	164	438	9	12,874	1,430
Tetrachloroethene	12200 J	4,360	1	4,360	4,360	158	416	139,000	4,875	2,255	246 J	799 J	85 J	438	6	147,141	24,524
Toluene	7,400	1,550	2	8,950	4,475	66.7	416	3,865	4,875	2,255	449	410	164	438	9	12,938	1,438
Trichloroethene	133,000	60,100	2	193,100	96,550	8,450	11,300	139,000	224,000	74,500	15700 J	15,900	10,900	1,220	8	485,270	60,659
Trichlorofluoromethane	7,400	1,550	2	8,950	4,475	3.35	416	3,865	4,875	2,255	898 J	820 J	164	438	7	12,015	1,716
Trichlorotrifluoroethane	29,700	2790 J	1	29,700	29,700	3.35	416	7,930	4,875	2,255	305 J	1,940	164	438	8	18,020	2,253
Vinyl chloride	2,955	620	2	3,575	1,788	1.34	416	1,545	1,950	900	180	354	66	175	9	5,586	621
Xylene (total)	7,400	1,550	2	8,950	4,475	28.5	416	3,865	4,875	2,255	449	410	164	438	9	12,900	1,433
cis-1,2-Dichloroethene	7,400	1,550	2	8,950	4,475	2,270	3,270	1510 J	6560 J	55,300	1,750	5,220	3,430	14,600	7	85,840	12,263
tert-Butyl methyl ether (MTBE)	7,400	1,550	2	8,950	4,475	3.35	416	3,865	4,875	2,255	449	410	164	438	9	12,874	1,430
trans-1,2-Dichloroethene	7,400	1,550	2	8,950	4,475	3.35	416	3,865	4,875	2,255	449	410	164	438	9	12,874	1,430
TOTAL VOCs	**885,555**	**152,380**	**1.854166667**	**1,037,935**	**555,273**	**13,393**	**34,095**	**488,450**	**440,450**	**237,795**	**20,347**	**42,884**	**23,612**	**33,690**	**14**	**3,965,859**	**283,276**

Notes:
Blue Shading - J-value reported (estimated) and assumed as value in calcuation
Grey Shading - Positive value reported.
Yellow Shading - Non Detect values included as 1/2 of detection limit.

1. All concentrations reported in micrograms per kilogram (ug/kg).
2. U denotes analyte not detected above reported detection limit.
3. J denotes analyte concentration is estimated.
4. Bold and shaded denotes detected concentration.

This scenario includes an average VOC concentration per COC
as calcuated across the entire area using positive detections and 1/2 of detection limits for non-detec
J-values are not included in the summation.

7 to 16 feet		
Total VOCs =	**555,272.50**	ug/kg
Conversion =	555.27	mg/kg
Impacted Area (from drawing) =	66	ft^2
Impacted Zone Thickness =	9	ft
Total Volume of Soil in Impacted Zone =	**594**	cf
Conversion Factor =	27	CF per CY
Conversion Factor =	1.4	tons per 1 yd3 (sand)
Conversion Factor =	907.2	kg per ton
Mass of Soil Zone =	30.80	Tons
Mass of Soil Zone =	27,941.76	Kg
Mass of Contamination =	15.52	Kg
Mass of Contamination =	**34.21**	**lbs**

16 to 25 feet		
Total VOCs =	**172,649.04**	ug/kg
Conversion =	172.65	mg/kg
Impacted Area (from drawing) =	189	ft^2
Impacted Zone Thickness =	9	ft
Total Volume of Soil in Impacted Zone =	**1,701**	cf
Conversion Factor =	27	CF per CY
Conversion Factor =	1.4	tons per 1 yd3 (sand)
Conversion Factor =	907.2	kg per ton
Mass of Soil Zone =	88.20	Tons
Mass of Soil Zone =	80,015.04	Kg
Mass of Contamination =	13.81	Kg
Mass of Contamination =	**30.46**	**lbs**

TOTAL MASS OF VOC CONTAMINATION IN HIGHEST IMPACTED AREA = 64.66 lbs

MINIMUM SCENARIO - Estimated Mass of Contaminants in Saturated Soil (7' to 25')
Zone of Medium Concentrations (>1 ppm and <5 ppm for any individual VOC)

Hanger 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Mass of Contaminants in Soil:

	7 to 16 feet						16 to 25 feet					
Sample Location with Sample Depth in feet bls:	**H1000-33**	**H1000-35**	**H1000-39**	**# Total Samples (incl NDs)**	**Total VOCs**	**Avg (ug/kg)**	**H1000-32**	**H1000-33**	**H1000-37**	**# Total Samples (incl NDs)**	**Total VOCs**	**Avg (ug/kg)**
Analyte	**8'**	**9'**	**16'**				**20'**	**20'**	**20'**			
1,1,1-Trichloroethane	**1,160**	**3,230**	**640**	3	5,030	1,676.67	**265**	119 U	**134**	9	12,139	1,348.74
1,1,2,2-Tetrachloroethane	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
1,1,2-Trichloroethane	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
1,1-Dichloroethane	**304**	**146**	**164**	3	614	204.67	218 U	**94.9**	233 U	9	1,531	170.06
1,1-Dichloroethene	**146**	**367**	**587**	3	1,100	366.67	218 U	**106**	**48.1**	9	2,724	302.64
1,2,4-Trichlorobenzene	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
1,2-Dibromo-3-chloropropane	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
1,2-Dibromoethane	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
1,2-Dichlorobenzene	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
1,2-Dichloroethane	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
1,2-Dichloropropane	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
1,3-Dichlorobenzene	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
1,4-Dichlorobenzene	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
2-Butanone	**68.2**	**185**	**59.3**	3	313	104.17	436 U	238 U	465 U	9	732	81.35
2-Hexanone	278 U	807 U	352 U	3	0	0.00	436 U	238 U	465 U	9	3	0.33
4-Methyl-2-pentanone	278 U	807 U	352 U	3	0	0.00	436 U	238 U	465 U	9	3	0.33
Acetone	278 U	807 U	352 U	3	0	0.00	436 U	238 U	465 U	9	3	0.33
Benzene	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
Bromodichloromethane	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
Bromoform	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
Bromomethane	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
Carbon disulfide	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
Carbon tetrachloride	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
Chlorobenzene	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
Chloroethane	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
Chloroform	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
Chloromethane	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
Cyclohexane	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
Dibromochloromethane	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
Dichlorodifluoromethane	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
cis-1,3-Dichloropropene	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
trans-1,3-Dichloropropene	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
Ethylbenzene	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
Isopropylbenzene (Cumene)	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
Methyl Acetate	139,000 U	404,000 U	176,000 U	3	0	0.00	218,000 U	119,000 U	233,000 U	9	3	0.33
Methylcyclohexane	139,000 U	404,000 U	176,000 U	3	0	0.00	218,000 U	119,000 U	233,000 U	9	3	0.33
Methylene chloride	139 U	404 U	176 U	3	0	0.00	**119**	119 U	233 U	9	122	13.56
Styrene	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
Tetrachloroethene	**107**	404 U	176 U	3	107	35.67	218 U	**56.8**	233 U	9	309	34.39
Toluene	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
Trichloroethene	139 U	**2,690**	**1,850**	3	4,540	1,513.33	**1,170**	119 U	**2,160**	9	13,926	1,547.37
Trichlorofluoromethane	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
Trichlorotrifluoroethane	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
Vinyl chloride	55.7 U	161 U	70.5 U	3	0	0.00	87.3 U	47.6 U	93.1 U	9	3	0.33
Xylene (total)	**46**	404 U	176 U	3	46	15.33	218 U	119 U	233 U	9	110	12.26
cis-1,2-Dichloroethene	**1,960**	**858**	**4,990**	3	7,808	2,602.67	218 U	**779**	**234**	9	19,235	2,137.19
tert-Butyl methyl ether (MTBE)	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
trans-1,2-Dichloroethene	139 U	404 U	176 U	3	0	0.00	218 U	119 U	233 U	9	3	0.33
TOTAL VOCs	**3,791**	**7,476**	**8,290**	3	**19,558**	**6,519.17**	**1,554**	**1,037**	**2,576**	9	**50,804**	**5,644.89**

Notes:
Blue Shading - J-value reported (estimated) and assumed as value in calcuation.
Grey Shading - Positive value reported.

1. All concentrations reported in micrograms per kilogram (ug/kg).
2. U denotes analyte not detected above reported detection limit.
3. J denotes analyte concentration is estimated.
4. Bold and shaded denotes detected concentration.

This scenario includes an average VOC concentration per COC as calcuated across the entire area using all samples in average. J-values are included in the summation.

	7 to 16 feet	16 to 25 feet	
Total VOCs =	**6,519.17**	**5,660.55**	ug/kg
Conversion =	6.52	5.66	mg/kg
Impacted Area (from drawing) =	**209**	**89**	ft^2
Impacted Zone Thickness =	**9**	**9**	ft
Total Volume of Soil in Impacted Zone =	**1,881**	**801**	cf
Conversion Factor =	**27**	**27**	CF per CY
Conversion Factor =	**1.4**	**1.4**	tons per 1 yd3 (sand)
Conversion Factor =	**907.2**	**907.2**	kg per ton
Mass of Soil Zone =	97.53	41.53	Tons
Mass of Soil Zone =	88,482.24	37,679.04	Kg
Mass of Contamination =	0.58	0.21	Kg
Mass of Contamination =	**1.27**	**0.47**	**lbs**

TOTAL MASS OF VOC CONTAMINATION IN MEDIUM IMPACTED AREA = 1.74 lbs

AVERAGE SCENARIO - Estimated Mass of Contaminants in Saturated Soil (7' to 25')
Zone of Medium Concentrations (>1 ppm and <5 ppm for any individual VOC)

Hanger 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Mass of Contaminants in Soil:

Sample Location with Sample Depth in feet bls:	7 to 16 feet						16 to 25 feet					
	H1000-33	H1000-35	H1000-39	>ND Samples	Total VOCs	Avg (ug/kg)	H1000-32	H1000-33	H1000-37	>ND Samples	Total VOCs	Avg (ug/kg)
Analyte	8'	9'	16'				20'	20'	20'			
1,1,1-Trichloroethane	**1,160**	**3,230**	**640**	3	5,030	1,676.67	**265**	119 U	**134**	8	12,139	1,517.33
1,1,2,2-Tetrachloroethane	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
1,1,2-Trichloroethane	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
1,1-Dichloroethane	**304**	**146**	**164**	3	614	204.67	218 U	**94.9**	233 U	7	1,531	218.65
1,1-Dichloroethene	**146**	**367**	**587**	3	1,100	366.67	218 U	**106**	**48.1**	8	2,724	340.47
1,2,4-Trichlorobenzene	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
1,2-Dibromo-3-chloropropane	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
1,2-Dibromoethane	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
1,2-Dichlorobenzene	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
1,2-Dichloroethane	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
1,2-Dichloropropane	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
1,3-Dichlorobenzene	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
1,4-Dichlorobenzene	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
2-Butanone	**68.2**	**185**	**59.3**	3	313	104.17	436 U	238 U	465 U	6	732	122.03
2-Hexanone	278 U	807 U	352 U	0	0	0.00	436 U	238 U	465 U	3	0	0.00
4-Methyl-2-pentanone	278 U	807 U	352 U	0	0	0.00	436 U	238 U	465 U	3	0	0.00
Acetone	278 U	807 U	352 U	0	0	0.00	436 U	238 U	465 U	3	0	0.00
Benzene	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
Bromodichloromethane	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
Bromoform	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
Bromomethane	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
Carbon disulfide	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
Carbon tetrachloride	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
Chlorobenzene	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
Chloroethane	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
Chloroform	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
Chloromethane	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
Cyclohexane	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
Dibromochloromethane	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
Dichlorodifluoromethane	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
cis-1,3-Dichloropropene	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
trans-1,3-Dichloropropene	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
Ethylbenzene	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
Isopropylbenzene (Cumene)	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
Methyl Acetate	139,000 U	404,000 U	176,000 U	0	0	0.00	218,000 U	119,000 U	233,000 U	3	0	0.00
Methylcyclohexane	139,000 U	404,000 U	176,000 U	0	0	0.00	218,000 U	119,000 U	233,000 U	3	0	0.00
Methylene chloride	139 U	404 U	176 U	0	0	0.00	**119**	119 U	233 U	4	119	29.75
Styrene	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
Tetrachloroethene	**107**	404 U	176 U	1	107	107.00	218 U	**56.8**	233 U	5	379	75.76
Toluene	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
Trichloroethene	139 U	**2,690**	**1,850**	2	4,540	2,270.00	**1,170**	119 U	**2,160**	7	14,682	2,097.43
Trichlorofluoromethane	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
Trichlorotrifluoroethane	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
Vinyl chloride	55.7 U	161 U	70.5 U	0	0	0.00	87.3 U	47.6 U	93.1 U	3	0	0.00
Xylene (total)	**46**	404 U	176 U	1	46	46.00	218 U	119 U	233 U	4	139	34.75
cis-1,2-Dichloroethene	**1,960**	**858**	**4,990**	3	7,808	2,602.67	218 U	**779**	**234**	8	19,235	2,404.33
tert-Butyl methyl ether (MTBE)	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
trans-1,2-Dichloroethene	139 U	404 U	176 U	0	0	0.00	218 U	119 U	233 U	3	0	0.00
TOTAL VOCs	**3,791**	**7,476**	**8,290**	**3**	**19,558**	**6,519.17**	**1,554**	**1,037**	**2,576**	**9**	**50,804**	**5,644.89**

Notes:
Blue Shading - J-value reported (estimated) and assumed as value in calcuation.
Grey Shading - Positive value reported.

1. All concentrations reported in micrograms per kilogram (ug/kg).
2. U denotes analyte not detected above reported detection limit.
3. J denotes analyte concentration is estimated.
4. Bold and shaded denotes detected concentration.

This scenario includes an average VOC concentration per COC
as calcuated across the entire area using only positive detections in average number of samples.
J-values are included in the summation.

	7 to 16 feet	16 to 25 feet	
Total VOCs =	**7,377.83**	**6,840.51**	ug/kg
Conversion =	7.38	6.84	mg/kg
Impacted Area (from drawing) =	209	89	ft^2
Impacted Zone Thickness =	9	9	ft
Total Volume of Soil in Impacted Zone =	**1,881**	**801**	cf
Conversion Factor =	27	27	CF per CY
Conversion Factor =	1.4	1.4	tons per 1 yd3 (sand)
Conversion Factor =	907.2	907.2	kg per ton
Mass of Soil Zone =	97.53	41.53	Tons
Mass of Soil Zone =	88,482.24	37,679.04	Kg
Mass of Contamination =	0.65	0.26	Kg
Mass of Contamination =	**1.44**	**0.57**	**lbs**

TOTAL MASS OF VOC CONTAMINATION IN MEDIUM IMPACTED AREA = 2.01 lbs

MAXIMUM SCENARIO - Estimated Mass of Contaminants in Saturated Soil (7' to 25')
Zone of Medium Concentrations (>1 ppm and <5 ppm for any individual VOC)

Hanger 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Mass of Contaminants in Soil:

	7 to 16 feet						16 to 25 feet					
Sample Location with Sample Depth in feet bls:	H1000-33	H1000-35	H1000-39	>ND Samples	Total VOCs	Avg (ug/kg)	H1000-32	H1000-33	H1000-37	>ND Samples	Total VOCs	Avg (ug/kg)
Analyte	8'	9'	16'				20'	20'	20'			
1,1,1-Trichloroethane	**1,160**	**3,230**	**640**	3	5,030	1,676.67	**265**	60	**134 J**	8	12,064	1,508.02
1,1,2,2-Tetrachloroethane	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
1,1,2-Trichloroethane	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
1,1-Dichloroethane	**304**	**146 J**	**164 J**	1	304	304.00	109	**94.9 J**	117	6	1,139	189.75
1,1-Dichloroethene	**146**	**367 J**	**587**	2	733	366.50	109	**106 J**	**48.1 J**	6	1,944	323.92
1,2,4-Trichlorobenzene	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
1,2-Dibromo-3-chloropropane	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
1,2-Dibromoethane	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
1,2-Dichlorobenzene	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
1,2-Dichloroethane	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
1,2-Dichloropropane	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
1,3-Dichlorobenzene	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
1,4-Dichlorobenzene	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
2-Butanone	**68.2 J**	**185 J**	**59.3 J**	0	0	0.00	218	119	233	6	570	94.92
2-Hexanone	139	404	176	3	719	239.50	218	119	233	9	2,249	249.89
4-Methyl-2-pentanone	139	404	176	3	719	239.50	218	119	233	9	2,249	249.89
Acetone	139	404	176	3	719	239.50	218	119	233	9	2,249	249.89
Benzene	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
Bromodichloromethane	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
Bromoform	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
Bromomethane	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
Carbon disulfide	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
Carbon tetrachloride	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
Chlorobenzene	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
Chloroethane	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
Chloroform	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
Chloromethane	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
Cyclohexane	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
Dibromochloromethane	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
Dichlorodifluoromethane	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
cis-1,3-Dichloropropene	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
trans-1,3-Dichloropropene	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
Ethylbenzene	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
Isopropylbenzene (Cumene)	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
Methyl Acetate	0	0	0	3	0	0.00	0	0	0	9	3	0.33
Methylcyclohexane	0	0	0	3	0	0.00	0	0	0	9	3	0.33
Methylene chloride	70	202	88	3	360	119.83	**119 J**	60	117	8	1,018	127.23
Styrene	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
Tetrachloroethene	**107 J**	202	88	2	290	145.00	109	**56.8 J**	117	7	953	136.07
Toluene	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
Trichloroethene	70	**2,690**	**1,850**	3	4,610	1,536.50	**1,170**	60	**2,160**	9	14,148	1,572.00
Trichlorofluoromethane	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
Trichlorotrifluoroethane	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
Vinyl chloride	28	81	35	3	144	47.87	44	24	47	9	452	50.23
Xylene (total)	**46 J**	202	88	2	290	145.00	109	60	117	8	1,012	126.50
cis-1,2-Dichloroethene	**1,960**	**858**	**4,990**	3	7,808	2,602.67	109	**779**	**234**	9	19,344	2,149.30
tert-Butyl methyl ether (MTBE)	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
trans-1,2-Dichloroethene	70	202	88	3	360	119.83	109	60	117	9	1,127	125.20
TOTAL VOCs	**6,447**	**15,341**	**11,798**	**3**	**33,587**	**11,195.53**	**6,493**	**3,480**	**7,681**	**9**	**96,026**	**10,669.53**

Notes:
Blue Shading - J-value reported (estimated) and assumed as value in calcuation
Grey Shading - Positive value reported.
Yellow Shading - Non Detect values included as 1/2 of detection limit.

1. All concentrations reported in micrograms per kilogram (ug/kg).
2. U denotes analyte not detected above reported detection limit.
3. J denotes analyte concentration is estimated.
4. Bold and shaded denotes detected concentration.

This scenario includes an average VOC concentration per COC
as calcuated across the entire area using positive detections and 1/2 of detection limits for non-detects.
J-values are not included in the summation.

	7 to 16 feet	16 to 25 feet	Units
Total VOCs =	**11,617.03**	**11,159.99**	ug/kg
Conversion =	11.62	11.16	mg/kg
Impacted Area (from drawing) =	209	89	ft^2
Impacted Zone Thickness =	9	9	ft
Total Volume of Soil in Impacted Zone =	**1,881**	**801**	cf
Conversion Factor =	27	27	CF per CY
Conversion Factor =	1.4	1.4	tons per 1 yd3 (sand)
Conversion Factor =	907.2	907.2	kg per ton
Mass of Soil Zone =	97.53	41.53	Tons
Mass of Soil Zone =	88,482.24	37,679.04	Kg
Mass of Contamination =	1.03	0.42	Kg
Mass of Contamination =	**2.27**	**0.93**	**lbs**

TOTAL MASS OF VOC CONTAMINATION IN MEDIUM IMPACTED AREA = 3.19 lbs

MINIMUM SCENARIO - Estimated Mass of Contaminants in Saturated Soil (7' to 25')
Zone of Lowest Concentrations (<1 ppm for any individual VOC)

Hanger 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Mass of Contaminants in Soil:

Sample Location with Sample Depth in feet bls:	7 to 16 feet													
	H1000-39	H1000-27	H1000-29	H1000-34	H1000-36	H1000-37	H1000-38	H1000-26	H1000-32	H1000-28	H1000-35	# Total Samples (incl NDs)	Total VOCs	Avg (ug/kg)
Analyte	6'	8'	8'	8'	8'	8'	8'	10'	10'	14'	14'			
1,1,1-Trichloroethane	152 U	134 U	117 U	156 U	**3.93**	6.06 U	119 U	5.64 U	**134**	6.21 U	135 U	11	138	12.54
1,1,2,2-Tetrachloroethane	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	**6.21**	135 U	11	6	0.56
1,1,2-Trichloroethane	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
1,1-Dichloroethane	152 U	134 U	**69.4**	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	69	6.31
1,1-Dichloroethene	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
1,2,4-Trichlorobenzene	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
1,2-Dibromo-3-chloropropane	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
1,2-Dibromoethane	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
1,2-Dichlorobenzene	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
1,2-Dichloroethane	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
1,2-Dichloropropane	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
1,3-Dichlorobenzene	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
1,4-Dichlorobenzene	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
2-Butanone	**60.4**	268 U	234 U	3,313 U	12.1 U	12.1 U	238 U	**11.3**	291 U	**5.49**	269 U	11	77	7.02
2-Hexanone	304 U	268 U	234 U	3,313 U	12.1 U	12.1 U	238 U	11.3 U	291 U	**12.4**	135 U	11	12	1.13
4-Methyl-2-pentanone	304 U	268 U	234 U	3,313 U	12.1 U	12.1 U	238 U	**5.02**	291 U	12.4 U	135 U	11	5	0.46
Acetone	304 U	268 U	234 U	3,313 U	12.1 U	12.1 U	238 U	35.8 U	291 U	**12.3**	135 U	11	12	1.12
Benzene	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
Bromodichloromethane	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
Bromoform	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
Bromomethane	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
Carbon disulfide	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
Carbon tetrachloride	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
Chlorobenzene	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
Chloroethane	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
Chloroform	152 U	134 U	117 U	156 U	**2.68**	**1.71**	119 U	5.64 U	145 U	**1.67**	135 U	11	6	0.55
Chloromethane	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
Cyclohexane	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
Dibromochloromethane	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
Dichlorodifluoromethane	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
cis-1,3-Dichloropropene	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
trans-1,3-Dichloropropene	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
Ethylbenzene	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
Isopropylbenzene (Cumene)	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
Methyl Acetate	152,000 U	134,000 U	117,000 U	156,000 U	6,060 U	6,060 U	119,000 U	5,640 U	145,000 U	6,210 U	135,000 U	11	0	0.00
Methylcyclohexane	152,000 U	134,000 U	117,000 U	156,000 U	6,060 U	6,060 U	119,000 U	5,640 U	145,000 U	6,210 U	135,000 U	11	0	0.00
Methylene chloride	152 U	**101**	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	**78.1**	**3.28**	135 U	11	182	16.58
Styrene	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
Tetrachloroethene	152 U	134 U	117 U	156 U	**1.55**	6.06 U	119 U	**2.47**	145 U	6.21 U	135 U	11	4	0.37
Toluene	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
Trichloroethene	152 U	134 U	117 U	156 U	**12**	6.06 U	119 U	**4.68**	**123**	6.21 U	135 U	11	140	12.71
Trichlorofluoromethane	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
Trichlorotrifluoroethane	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
Vinyl chloride	60.8 U	53.6 U	46.9 U	62.6 U	2.43 U	2.43 U	47.7 U	2.26 U	58.1 U	2.48 U	53.8 U	11	0	0.00
Xylene (total)	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
cis-1,2-Dichloroethene	152 U	134 U	**396**	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	396	36.00
tert-Butyl methyl ether (MTBE)	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
trans-1,2-Dichloroethene	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	11	0	0.00
TOTAL VOCs	**60**	**101**	**465**	**0**	**20**	**2**	**0**	**23**	**335**	**41**	**0**	11	1,049	95.34

Sample Location with Sample Depth in feet bls:	16 to 25 feet							
	H1000-27	H1000-36	H1000-04	H1000-02	H1000-04	# Total Samples (incl NDs)	Total VOCs	Avg (ug/kg)
Analyte	18'	20'	21'	25'	25'			
1,1,1-Trichloroethane	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
1,1,2,2-Tetrachloroethane	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
1,1,2-Trichloroethane	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
1,1-Dichloroethane	6.17 U	164 U	34.5 U	**8.04**	9.08 U	5	8	1.61
1,1-Dichloroethene	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
1,2,4-Trichlorobenzene	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
1,2-Dibromo-3-chloropropane	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
1,2-Dibromoethane	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
1,2-Dichlorobenzene	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
1,2-Dichloroethane	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
1,2-Dichloropropane	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
1,3-Dichlorobenzene	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
1,4-Dichlorobenzene	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
2-Butanone	12.3 U	328 U	69 U	**6.77**	**17.7**	5	24	4.89
2-Hexanone	12.3 U	328 U	69 U	15.4 U	18.2 U	5	0	0.00
4-Methyl-2-pentanone	12.3 U	328 U	69 U	15.4 U	18.2 U	5	0	0.00
Acetone	**16.2**	328 U	69 U	**40.1**	**152**	5	208	41.66
Benzene	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
Bromodichloromethane	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
Bromoform	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
Bromomethane	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
Carbon disulfide	6.17 U	164 U	34.5 U	**2.41**	**19.6**	5	22	4.40
Carbon tetrachloride	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
Chlorobenzene	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
Chloroethane	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
Chloroform	**1.83**	164 U	34.5 U	7.69 U	**2.4**	5	4	0.85
Chloromethane	6.17 U	164 U	34.5 U	**7.69**	9.08 U	5	8	1.54
Cyclohexane	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
Dibromochloromethane	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
Dichlorodifluoromethane	6.17 U	164 U	34.5 U	**7.69**	9.08 U	5	8	1.54
cis-1,3-Dichloropropene	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
trans-1,3-Dichloropropene	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
Ethylbenzene	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
Isopropylbenzene (Cumene)	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
Methyl Acetate	6,170 U	164,000 U	34,500 U	7690 U	9,080 U	5	0	0.00
Methylcyclohexane	6,170 U	164,000 U	34,500 U	7690 U	9,080 U	5	0	0.00
Methylene chloride	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
Styrene	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
Tetrachloroethene	6.17 U	164 U	34.5 U	7.69 U	**4.38**	5	4	0.88
Toluene	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
Trichloroethene	6.17 U	**226**	**115**	**76**	9.08 U	5	417	83.40
Trichlorofluoromethane	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
Trichlorotrifluoroethane	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
Vinyl chloride	2.47 U	65.6 U	34.5 U	3.08 U	3.63 U	5	0	0.00
Xylene (total)	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
cis-1,2-Dichloroethene	6.17 U	164 U	34.5 U	**7.8**	9.08 U	5	8	1.56
tert-Butyl methyl ether (MTBE)	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
trans-1,2-Dichloroethene	6.17 U	164 U	34.5 U	7.69 U	9.08 U	5	0	0.00
TOTAL VOCs	**18**	**226**	**115**	**157**	**196**	5	712	142.32

Notes:
Blue Shading - J-value reported (estimated) and assumed as value in calcuation.
Grey Shading - Positive value reported.

1. All concentrations reported in micrograms per kilogram (ug/kg).
2. U denotes analyte not detected above reported detection limit.
3. J denotes analyte concentration is estimated.
4. Bold and shaded denotes detected concentration.

This scenario includes an average VOC concentration per COC as calcuated across the entire area using all samples in average. J-values are included in the summation.

7 to 16 feet			16 to 25 feet		
Total VOCs =	**95.34**		Total VOCs =	**142.32**	ug/kg
Conversion =	0.10		Conversion =	0.14	mg/kg
Impacted Area (from drawing) =	775		Impacted Area (from drawing) =	775	ft²
Impacted Zone Thickness =	9		Impacted Zone Thickness =	9	ft
Total Volume of Soil in Impacted Zone =	**6,975**		Total Volume of Soil in Impacted Zone =	**6,975**	cf
Conversion Factor =	27		Conversion Factor =	27	CF per CY
Conversion Factor =	1.4		Conversion Factor =	1.4	tons per 1 yd3 (sand)
Conversion Factor =	907.2		Conversion Factor =	907.2	kg per ton

7 to 16 feet			16 to 25 feet		
Mass of Soil Zone =	361.67		Mass of Soil Zone =	361.67	Tons
Mass of Soil Zone =	328,104.00		Mass of Soil Zone =	328,104.00	Kg
Mass of Contamination =	0.03		Mass of Contamination =	0.05	Kg
Mass of Contamination =	**0.07**		Mass of Contamination =	**0.10**	lbs

TOTAL MASS OF VOC CONTAMINATION IN LOWST IMPACTED AREA = 0.17 lbs

AVERAGE SCENARIO - Estimated Mass of Contaminants in Saturated Soil (7' to 25')
Zone of Lowest Concentrations (<1 ppm for any individual VOC)

Hanger 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Mass of Contaminants in Soil:

Sample Location with Sample Depth in feet bls:	7 to 16 feet													
	H1000-39	H1000-27	H1000-29	H1000-34	H1000-36	H1000-37	H1000-38	H1000-26	H1000-32	H1000-28	H1000-35	>ND Samples	Total VOCs	Avg (ug/kg)
Analyte	6'	8'	8'	8'	8'	8'	8'	10'	10'	14'	14'			
1,1,1-Trichloroethane	152 U	134 U	117 U	156 U	**3.93**	6.06 U	119 U	5.64 U	**134**	6.21 U	135 U	2	138	68.97
1,1,2,2-Tetrachloroethane	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	**6.21**	135 U	1	6	6.21
1,1,2-Trichloroethane	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
1,1-Dichloroethane	152 U	134 U	**69.4**	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	1	69	69.40
1,1-Dichloroethene	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
1,2,4-Trichlorobenzene	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
1,2-Dibromo-3-chloropropane	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
1,2-Dibromoethane	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
1,2-Dichlorobenzene	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
1,2-Dichloroethane	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
1,2-Dichloropropane	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
1,3-Dichlorobenzene	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
1,4-Dichlorobenzene	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
2-Butanone	**60.4**	268 U	234 U	3,313 U	12.1 U	12.1 U	238 U	**11.3**	291 U	**5.49**	269 U	3	77	25.73
2-Hexanone	304 U	268 U	234 U	3,313 U	12.1 U	12.1 U	238 U	11.3 U	291 U	**12.4**	135 U	1	12	12.40
4-Methyl-2-pentanone	304 U	268 U	234 U	3,313 U	12.1 U	12.1 U	238 U	**5.02**	291 U	12.4 U	135 U	1	5	5.02
Acetone	304 U	268 U	234 U	3,313 U	12.1 U	12.1 U	238 U	35.8 U	291 U	**12.3**	135 U	1	12	12.30
Benzene	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
Bromodichloromethane	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
Bromoform	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
Bromomethane	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
Carbon disulfide	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
Carbon tetrachloride	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
Chlorobenzene	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
Chloroethane	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
Chloroform	152 U	134 U	117 U	156 U	**2.68**	**1.71**	119 U	5.64 U	145 U	**1.67**	135 U	3	6	2.02
Chloromethane	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
Cyclohexane	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
Dibromochloromethane	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
Dichlorodifluoromethane	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
cis-1,3-Dichloropropene	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
trans-1,3-Dichloropropene	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
Ethylbenzene	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
Isopropylbenzene (Cumene)	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
Methyl Acetate	152,000 U	134,000 U	117,000 U	156,000 U	6,060 U	6,060 U	119,000 U	5,640 U	145,000 U	6,210 U	135,000 U	0	0	0.00
Methylcyclohexane	152,000 U	134,000 U	117,000 U	156,000 U	6,060 U	6,060 U	119,000 U	5,640 U	145,000 U	6,210 U	135,000 U	0	0	0.00
Methylene chloride	152 U	**101**	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	**78.1**	**3.28**	135 U	3	182	60.79
Styrene	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
Tetrachloroethene	152 U	134 U	117 U	156 U	**1.55**	6.06 U	119 U	**2.47**	145 U	6.21 U	135 U	2	4	2.01
Toluene	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
Trichloroethene	152 U	134 U	117 U	156 U	**12**	6.06 U	119 U	**4.68**	**123**	6.21 U	135 U	3	140	46.59
Trichlorofluoromethane	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
Trichlorotrifluoroethane	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
Vinyl chloride	60.8 U	53.6 U	46.9 U	62.6 U	2.43 U	2.43 U	47.7 U	2.26 U	58.1 U	2.48 U	53.8 U	0	0	0.00
Xylene (total)	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
cis-1,2-Dichloroethene	152 U	134 U	**396**	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	1	396	396.00
tert-Butyl methyl ether (MTBE)	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
trans-1,2-Dichloroethene	152 U	134 U	117 U	156 U	6.06 U	6.06 U	119 U	5.64 U	145 U	6.21 U	135 U	0	0	0.00
TOTAL VOCs	**60**	**101**	**465**	**0**	**20**	**2**	**0**	**23**	**335**	**41**	**0**	11	1,049	95.34

Sample Location with Sample Depth in feet bls:	16 to 25 feet							
	H1000-27	H1000-36	H1000-04	H1000-02	H1000-04	>ND Samples	Total VOCs	Avg (ug/kg)
Analyte	18'	20'	21'	25'	25'			
1,1,1-Trichloroethane	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
1,1,2,2-Tetrachloroethane	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
1,1,2-Trichloroethane	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
1,1-Dichloroethane	6.17 U	164 U	34.5 U	**8.04**	9.08 U	1	8	8.04
1,1-Dichloroethene	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
1,2,4-Trichlorobenzene	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
1,2-Dibromo-3-chloropropane	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
1,2-Dibromoethane	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
1,2-Dichlorobenzene	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
1,2-Dichloroethane	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
1,2-Dichloropropane	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
1,3-Dichlorobenzene	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
1,4-Dichlorobenzene	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
2-Butanone	12.3 U	328 U	69 U	**6.77**	**17.7**	2	24	12.24
2-Hexanone	12.3 U	328 U	69 U	15.4 U	18.2 U	0	0	0.00
4-Methyl-2-pentanone	12.3 U	328 U	69 U	15.4 U	18.2 U	0	0	0.00
Acetone	**16.2**	328 U	69 U	**40.1**	**152**	3	208	69.43
Benzene	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
Bromodichloromethane	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
Bromoform	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
Bromomethane	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
Carbon disulfide	6.17 U	164 U	34.5 U	**2.41**	**19.6**	2	22	11.01
Carbon tetrachloride	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
Chlorobenzene	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
Chloroethane	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
Chloroform	**1.83**	164 U	34.5 U	7.69 U	**2.4**	2	4	2.12
Chloromethane	6.17 U	164 U	34.5 U	**7.69**	9.08 U	1	8	7.69
Cyclohexane	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
Dibromochloromethane	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
Dichlorodifluoromethane	6.17 U	164 U	34.5 U	**7.69**	9.08 U	1	8	7.69
cis-1,3-Dichloropropene	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
trans-1,3-Dichloropropene	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
Ethylbenzene	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
Isopropylbenzene (Cumene)	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
Methyl Acetate	6,170 U	164,000 U	34,500 U	7690 U	9,080 U	0	0	0.00
Methylcyclohexane	6,170 U	164,000 U	34,500 U	7690 U	9,080 U	0	0	0.00
Methylene chloride	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
Styrene	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
Tetrachloroethene	6.17 U	164 U	34.5 U	7.69 U	**4.38**	1	4	4.38
Toluene	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
Trichloroethene	6.17 U	**226**	**115**	**76**	9.08 U	3	417	139.00
Trichlorofluoromethane	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
Trichlorotrifluoroethane	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
Vinyl chloride	2.47 U	65.6 U	34.5 U	3.08 U	3.63 U	0	0	0.00
Xylene (total)	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
cis-1,2-Dichloroethene	6.17 U	164 U	34.5 U	**7.8**	9.08 U	1	8	7.80
tert-Butyl methyl ether (MTBE)	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
trans-1,2-Dichloroethene	6.17 U	164 U	34.5 U	7.69 U	9.08 U	0	0	0.00
TOTAL VOCs	**18**	**226**	**115**	**157**	**196**	5	712	142.32

Notes:

1. All concentrations reported in micrograms per kilogram (ug/kg) unless otherwise noted.
2. U denotes analyte not detected above reported detection limit.
3. J denotes analyte concentration is estimated.
4. Bold and shaded denotes detected concentration.

7 to 16 feet:

Total VOCs =	707.44	
Conversion =	0.71	
Impacted Area (from drawing) =	775	
Impacted Zone Thickness =	9	
Total Volume of Soil in Impacted Zone =	6,975	
Conversion Factor =	27	
Conversion Factor =	1.4	
Conversion Factor =	907.2	
Mass of Soil Zone =	361.67	
Mass of Soil Zone =	328,104.00	
Mass of Contamination =	0.23	
Mass of Contamination =	0.51	

16 to 25 feet:

Total VOCs =	269.39	ug/kg
Conversion =	0.27	mg/kg
Impacted Area (from drawing) =	775	ft²
Impacted Zone Thickness =	9	ft
Total Volume of Soil in Impacted Zone =	6,975	cf
Conversion Factor =	27	CF per CY
Conversion Factor =	1.4	tons per 1 yd3 (sand)
Conversion Factor =	907.2	kg per ton
Mass of Soil Zone =	361.67	Tons
Mass of Soil Zone =	328,104.00	Kg
Mass of Contamination =	0.09	Kg
Mass of Contamination =	0.19	lbs

TOTAL MASS OF VOC CONTAMINATION IN LOWEST IMPACTED AREA = 0.71 lbs

MAXIMUM SCENARIO - Estimated Mass of Contaminants in Saturated Soil (7' to 25')
Zone of Lowest Concentrations (<1 ppm for any individual VOC)

Hanger 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Mass of Contaminants in Soil:

Sample Location with Sample Depth in feet bls:	7 to 16 feet													
	H1000-39	H1000-27	H1000-29	H1000-34	H1000-36	H1000-37	H1000-38	H1000-26	H1000-32	H1000-28	H1000-35	>ND Samples	Total VOCs	Avg (ug/kg)
Analyte	6'	8'	8'	8'	8'	8'	8'	10'	10'	14'	14'			
1,1,1-Trichloroethane	76	67	58.5	78	**3.93**	3	60	2.82	**134**	3.105	68	11	553	50.31
1,1,2,2-Tetrachloroethane	76	67	58.5	78	3	3	60	2.82	73	**6.21**	68	11	494	44.92
1,1,2-Trichloroethane	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
1,1-Dichloroethane	76	67	**69.4**	78	3	3	60	2.82	73	3.105	68	11	502	45.63
1,1-Dichloroethene	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
1,2,4-Trichlorobenzene	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
1,2-Dibromo-3-chloropropane	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
1,2-Dibromoethane	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
1,2-Dichlorobenzene	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
1,2-Dichloroethane	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
1,2-Dichloropropane	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
1,3-Dichlorobenzene	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
1,4-Dichlorobenzene	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
2-Butanone	**60.4**	134	117	1,657	6	6	119	**11.3**	146	**5.49**	135	11	2,396	217.80
2-Hexanone	152	134	117	1,657	6	6	119	5.65	146	**12.4**	68	11	2,422	220.15
4-Methyl-2-pentanone	152	134	117	1,657	6	6	119	**5.02**	146	6.2	68	11	2,415	219.53
Acetone	152	134	117	1,657	6	6	119	17.9	146	**12.3**	68	11	2,434	221.25
Benzene	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
Bromodichloromethane	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
Bromoform	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
Bromomethane	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
Carbon disulfide	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
Carbon tetrachloride	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
Chlorobenzene	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
Chloroethane	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
Chloroform	76	67	58.5	78	**2.68**	**1.71**	60	2.82	73	**1.67**	68	11	488	44.35
Chloromethane	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
Cyclohexane	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
Dibromochloromethane	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
Dichlorodifluoromethane	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
cis-1,3-Dichloropropene	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
trans-1,3-Dichloropropene	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
Ethylbenzene	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
Isopropylbenzene (Cumene)	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
Methyl Acetate	0	0	0	0	0	0	0	0	0	0	0	11	0	0.00
Methylcyclohexane	0	0	0	0	0	0	0	0	0	0	0	11	0	0.00
Methylene chloride	76	**101**	58.5	78	3	3	60	2.82	**78.1**	**3.28**	68	11	531	48.25
Styrene	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
Tetrachloroethene	76	67	58.5	78	**1.55**	3	60	**2.47**	73	3.105	68	11	489	44.47
Toluene	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
Trichloroethene	76	67	58.5	78	**12**	3	60	**4.68**	**123**	3.105	68	11	552	50.22
Trichlorofluoromethane	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
Trichlorotrifluoroethane	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
Vinyl chloride	30.4	26.8	23.45	31	1	1	24	1.13	29	1.24	27	11	197	17.87
Xylene (total)	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
cis-1,2-Dichloroethene	76	67	**396**	78	3	3	60	2.82	73	3.105	68	11	828	75.32
tert-Butyl methyl ether (MTBE)	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
trans-1,2-Dichloroethene	76	67	58.5	78	3	3	60	2.82	73	3.105	68	11	491	44.64
TOTAL VOCs	**3,663**	**3,344**	**3,238**	**9,855**	**158**	**148**	**2,939**	**158**	**3,701**	**167**	**3,131**	11	30,503	2,773.02

Sample Location with Sample Depth in feet bls:	16 to 25 feet							
	H1000-27	H1000-36	H1000-04	H1000-02	H1000-04	>ND Samples	Total VOCs	Avg (ug/kg)
Analyte	18'	20'	21'	25'	25'			
1,1,1-Trichloroethane	3.085	82	17.25	3.845	4.54	5	111	22.14
1,1,2,2-Tetrachloroethane	3.085	82	17.25	3.845	4.54	5	111	22.14
1,1,2-Trichloroethane	3.085	82	17.25	3.845	4.54	5	111	22.14
1,1-Dichloroethane	3.085	82	17.25	**8.04**	4.54	5	115	22.98
1,1-Dichloroethene	3.085	82	17.25	3.845	4.54	5	111	22.14
1,2,4-Trichlorobenzene	3.085	82	17.25	3.845	4.54	5	111	22.14
1,2-Dibromo-3-chloropropane	3.085	82	17.25	3.845	4.54	5	111	22.14
1,2-Dibromoethane	3.085	82	17.25	3.845	4.54	5	111	22.14
1,2-Dichlorobenzene	3.085	82	17.25	3.845	4.54	5	111	22.14
1,2-Dichloroethane	3.085	82	17.25	3.845	4.54	5	111	22.14
1,2-Dichloropropane	3.085	82	17.25	3.845	4.54	5	111	22.14
1,3-Dichlorobenzene	3.085	82	17.25	3.845	4.54	5	111	22.14
1,4-Dichlorobenzene	3.085	82	17.25	3.845	4.54	5	111	22.14
2-Butanone	6.15	164	34.50	**6.77**	**17.7**	5	229	45.82
2-Hexanone	6.15	164	34.5	7.7	9.1	5	221	44.29
4-Methyl-2-pentanone	6.15	164	34.5	7.7	9.1	5	221	44.29
Acetone	**16.2**	164	34.50	**40.1**	**152**	5	407	81.36
Benzene	3.085	82	17.25	3.845	4.54	5	111	22.14
Bromodichloromethane	3.085	82	17.25	3.845	4.54	5	111	22.14
Bromoform	3.085	82	17.25	3.845	4.54	5	111	22.14
Bromomethane	3.085	82	17.25	3.845	4.54	5	111	22.14
Carbon disulfide	3.085	82	17.25	**2.41**	**19.6**	5	124	24.87
Carbon tetrachloride	3.085	82	17.25	3.845	4.54	5	111	22.14
Chlorobenzene	3.085	82	17.25	3.845	4.54	5	111	22.14
Chloroethane	3.085	82	17.25	3.845	4.54	5	111	22.14
Chloroform	**1.83**	82	17.25	3.845	**2.4**	5	107	21.47
Chloromethane	3.085	82	17.25	**7.69**	4.54	5	115	22.91
Cyclohexane	3.085	82	17.25	3.845	4.54	5	111	22.14
Dibromochloromethane	3.085	82	17.25	3.845	4.54	5	111	22.14
Dichlorodifluoromethane	3.085	82	17.25	**7.69**	4.54	5	115	22.91
cis-1,3-Dichloropropene	3.085	82	17.25	3.845	4.54	5	111	22.14
trans-1,3-Dichloropropene	3.085	82	17.25	3.845	4.54	5	111	22.14
Ethylbenzene	3.085	82	17.25	3.845	4.54	5	111	22.14
Isopropylbenzene (Cumene)	3.085	82	17.25	3.845	4.54	5	111	22.14
Methyl Acetate	0	0	0	0	0	5	0	0.00
Methylcyclohexane	0	0	0	0	0	5	0	0.00
Methylene chloride	3.085	82	17.25	3.845	4.54	5	111	22.14
Styrene	3.085	82	17.25	3.845	4.54	5	111	22.14
Tetrachloroethene	3.085	82	17.25	3.845	**4.38**	5	111	22.11
Toluene	3.085	82	17.25	3.845	4.54	5	111	22.14
Trichloroethene	3.085	**226**	**115**	**76**	4.54	5	425	84.93
Trichlorofluoromethane	3.085	82	17.25	3.845	4.54	5	111	22.14
Trichlorotrifluoroethane	3.085	82	17.25	3.845	4.54	5	111	22.14
Vinyl chloride	1.235	33	17.25	1.54	1.82	5	55	10.93
Xylene (total)	3.085	82	17.25	3.845	4.54	5	111	22.14
cis-1,2-Dichloroethene	3.085	82	17.25	**7.8**	4.54	5	115	22.94
tert-Butyl methyl ether (MTBE)	3.085	82	17.25	3.845	4.54	5	111	22.14
trans-1,2-Dichloroethene	3.085	82	17.25	3.845	4.54	5	111	22.14
TOTAL VOCs	**161**	**4,195**	**960**	**308**	**389**	5	6,013	1,202.56

Notes:
Blue Shading - J-value reported (estimated) and assumed as value in calcuation
Grey Shading - Positive value reported.
Yellow Shading - Non Detect values included as 1/2 of detection limit.

1. All concentrations reported in micrograms per kilogram (ug/kg).
2. U denotes analyte not detected above reported detection limit.
3. J denotes analyte concentration is estimated.
4. Bold and shaded denotes detected concentration.

This scenario includes an average VOC concentration per COC
as calcuated across the entire area using positive detections and 1/2 of detection limits for non-detects.
J-values are not included in the summation.

7 to 16 feet:

Total VOCs =	**2,773.02**	
Conversion =	2.77	
Impacted Area (from drawing) =	775	
Impacted Zone Thickness =	9	
Total Volume of Soil in Impacted Zone =	**6,975**	
Conversion Factor =	27	
Conversion Factor =	1.4	
Conversion Factor =	907.2	
Mass of Soil Zone =	361.67	
Mass of Soil Zone =	328,104.00	
Mass of Contamination =	0.91	
Mass of Contamination =	**2.01**	

16 to 25 feet:

Total VOCs =	**1,202.56**	ug/kg
Conversion =	1.20	mg/kg
Impacted Area (from drawing) =	775	ft²
Impacted Zone Thickness =	9	ft
Total Volume of Soil in Impacted Zone =	**6,975**	cf
Conversion Factor =	27	CF per CY
Conversion Factor =	1.4	tons per 1 yd3 (sand)
Conversion Factor =	907.2	kg per ton
Mass of Soil Zone =	361.67	Tons
Mass of Soil Zone =	328,104.00	Kg
Mass of Contamination =	0.39	Kg
Mass of Contamination =	**0.87**	**lbs**

TOTAL MASS OF VOC CONTAMINATION IN LOWEST IMPACTED AREA = 2.88 lbs

Estimated Mass of Dissolved and Adsorbed Contaminants in Saturated Zone (7' to 25')
Maximum (Worst Case) Scenario

Hanger 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Mass of Aqueous Phase (Dissolved/Soluble) Contaminants:

Well/Boring No.	Total VOCs (ug/L)	1,1,1 TCA (ug/L)	1,1 DCA (ug/L)	1,1 DCE (ug/L)	1,2 DCA (ug/L)	Benzene (ug/L)	Ethylbenzene (ug/L)	PCE (ug/L)	Toluene (ug/L)	TCE (ug/L)	TCFA (ug/L)	Vinyl Chloride (ug/L)	Xylenes (ug/L)	cis-1,2 DCE (ug/L)	Total VOCs (Calculated) (ug/L)	Data Reference
MW-1	NP	20.7	1.5	1.4	0	0	0	0	0	7.8	0	0	0	3.2	34.6	RI - 1/2001
MW-8 (5'-15')	NP	7070	644	1260	300	100	500	173	116	5520	274	100	500	1350	17907	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
MW-1	77	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	77	Mike Halil Presentation Data - Graph Data for MW-1 (9/20/2001)
MW-8	21312	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	21312	Mike Halil Presentation Data - Graph Data for MW-8 (9/20/2001)
MW-8D	0	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	0	Mike Halil Presentation Data - Graph Data for MW-8D (9/20/2001)
IP-1D	82340	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	82340	Mike Halil Presentation Data - Graph Data for IP-1D (9/20/2001)
IP-3D	10720	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	10720	Mike Halil Presentation Data - Graph Data for IP-3D (9/20/2001)
IP-4D	6514	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	6514	Mike Halil Presentation Data - Graph Data for IP-4D (9/20/2001)
IP-5D	5040	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	5040	Mike Halil Presentation Data - Graph Data for IP-5D (9/20/2001)
IP-6D	45782	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	45782	Mike Halil Presentation Data - Graph Data for IP-6D (9/20/2001)
H1000-06 (9'-11')	NP	8.36	1.19	5	3	1	5	3	1.02	15.6	92.3	1	5	5	146.47	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
H1000-26 (10'-12')	NP	8550	979	2270	300	100	500	178	164	8460	200	100	500	1520	23821	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
H1000-01 (17'-19')	NP	100	358	606	60	20	100	60	100	1440	514	20	100	503	3981	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
H1000-06 (17'-19')	NP	132	25.3	50.6	30	10	50	23.9	50	834	36.4	10	50	24.8	1327	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
H1000-02 (18'-20')	NP	1180	1140	1260	300	100	500	300	500	7240	500	100	500	13100	26720	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
H1000-03 (18'-20')	NP	147	63.7	147	30	10	50	30	50	1150	180	10	50	923	2840.7	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
H1000-26 (18'-20')	NP	100	140	100	60	20	100	60	100	2940	270	20	100	201	4211	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
H1000-05 (19'-21')	NP	625	1640	1090	375	125	625	375	625	11000	260	125	625	16100	33590	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
H1000-04 (20'-22')	NP	29.5	1.83	11.5	3	1	5	3	5	116	20.4	1	5	18.7	220.93	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
H1000-05 (22'-24')	NP	100	206	118	60	20	100	60	100	2170	100	20	100	903	4057	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
H1000-06 (22'-24')	NP	169	12.7	10	6	2	10	6.67	5.56	243	2.32	2	10	13.3	492.55	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
H1000-03 (23'-25')	NP	1250	2950	2140	750	250	1250	750	1250	1980	1250	250	1250	40900	56220	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
H1000-02 (24'-26')	NP	29.7	19.9	8.48	3	1	5	3	1.2	58.7	5	1	5	53.7	194.68	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
H1000-04 (24'-26')	NP	5	7.62	3.68	3	1	5	3	5	45.4	5	1	5	6.24	95.94	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
H1000-25 (20'-22')	NP	500	625	522	300	100	500	300	500	10300	500	100	500	2780	17527	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
Sum of Results	**171785.0**	**20016.3**	**8815.7**	**9603.7**	**2583.0**	**861.0**	**4305.0**	**2328.6**	**3572.8**	**53520.5**	**4209.4**	**861.0**	**4305.0**	**78404.9**	**365171.9**	
Number of Samples (total)	8	17	17	17	17	17	17	17	17	17	17	17	17	17	25	
Number of Samples (positive>0)	7	17	17	17	16	16	16	16	16	17	16	16	16	17	24	

	Total VOCs	1,1,1 TCA	1,1 DCA	1,1 DCE	1,2 DCA	Benzene	Ethylbenzene	PCE	Toluene	TCE	TCFA	Vinyl Chloride	Xylenes	cis-1,2 DCE	Total VOCs (Calculated)
Average Dissolved Concentration - Total Average (ug/L) =	**21473.1**	**1177.4**	**518.6**	**564.9**	**151.9**	**50.6**	**253.2**	**137.0**	**210.2**	**3148.3**	**247.6**	**50.6**	**253.2**	**4612.1**	**14606.9**
Average Dissolved Concentration - Positive >0 Average (ug/L) =	**24540.7**	**1177.4**	**518.6**	**564.9**	**161.4**	**53.8**	**269.1**	**145.5**	**223.3**	**3148.3**	**263.1**	**53.8**	**269.1**	**4612.1**	**15215.5**

NP - Not Provided in Data Tables
Red highlighted data indicates Not Detected (ND) above reported detection limit - value assumed is reported detection limit for maximum mass calculation purposes.

Estimated Groundwater Volume:

Estimated groundwater plume volume: (impacted area) x (impacted thickness) x (porosity) x (7.48 gal/ft^3)
Where:

Impacted Area = 1050 ft^2
Impacted Thickness = 18 ft (Assume 7' bgs to 25' bgs)
Porosity = 0.3 unitless (%)
Conversion Factor = 7.48 gallons per cubic foot

Estimated groundwater plume volume = **42,412** gallons

Estimated Mass of Soluble Contaminants:

Estimated Mass of Soluble Contaminants: M(dissolved)(lbs) = C(dissolved)(ug/L) x V(gw)(gal) x 3.7854(l/gal)x(2.205E-9(lb/ug))
Where:

M(dissolved) = mass of dissolved contaminants (lbs)
C(dissolved) = average dissolved contaminant concentration (ug/L)
V(gw) = volume of impacted groundwater (gal)

Conversion factors: 3.7854 L/gal
2.21E-09 lb/ug

Estimated Mass of Soluble Contaminants:

	Total VOCs	1,1,1 TCA	1,1 DCA	1,1 DCE	1,2 DCA	Benzene	Ethylbenzene	PCE	Toluene	TCE	TCFA	Vinyl Chloride	Xylenes	cis-1,2 DCE
Average Dissolved Mass (lbs) =	**7.6**	**0.4**	**0.2**	**0.2**	**0.1**	**0.0**	**0.1**	**0.0**	**0.1**	**1.1**	**0.1**	**0.0**	**0.1**	**1.6**
Average Dissolved Mass (lbs) =	**8.7**	**0.4**	**0.2**	**0.2**	**0.1**	**0.0**	**0.1**	**0.1**	**0.1**	**1.1**	**0.1**	**0.0**	**0.1**	**1.6**

Estimated Total Mass of Soluble Contaminants Concentration (Based on Sum of Average):

4.03	**lbs**	(Using sum of all samples to calculate average concentration)
4.06	**lbs**	(Using sum of all samples > 0 to calculate average concentration)

Mass of Adsorbed Contaminants Calculations:

Concentration of contaminants adsorbed to soil: C(soil) = C(dissolved) x Kd

Where:

C(soil) = contaminant concentration in soil (mg/kg)
C(dissolved) = average dissolved contaminant concentration (mg/l)
Kd = solid/liquid distribution coefficient (l/kg)

For organics: Kd = Koc x Foc

Where:

Koc = organic carbon/water partition coefficient (l/kg)
1. Sawyer/McCarty/Parkin, Chemistry for Env. Eng. 1994
2. HRC Design Software
Foc = fractional organic carbon content (0.5% by weight for typical sand) (from EPA 440/5-89-002)

	Total VOCs	1,1,1 TCA	1,1 DCA	1,1 DCE	1,2 DCA	Benzene	Ethylbenzene	PCE	Toluene	TCE	TCFA	Vinyl Chloride	Xylenes	cis-1,2 DCE
Koc (l/kg):	231	183	183	19	44	84.9	1378.3	263	308.6	122.8	100	2.5	240	77.5
Foc (kg/kg):	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Kd (l/kg) =	1.16	0.92	0.92	0.10	0.22	0.42	6.89	1.32	1.54	0.61	0.50	0.01	1.20	0.39

C(dissolved) (mg/l):	21.4731	1.1774	0.5186	0.5649	0.1519	0.0506	0.2532	0.1370	0.2102	3.1483	0.2476	0.0506	0.2532	4.6121
Kd (l/kg):	1.16	0.92	0.92	0.10	0.22	0.42	6.89	1.32	1.54	0.61	0.50	0.01	1.20	0.39
C(soil) (mg/kg) =	24.8312	1.0773	0.4745	0.0537	0.0334	0.0215	1.7452	0.1801	0.3243	1.9330	0.1238	0.0006	0.3039	1.7872
C(dissolved) (mg/l):	24.5407	1.1774	0.5186	0.5649	0.1614	0.0538	0.2691	0.1455	0.2233	3.1483	0.2631	0.0538	0.2691	4.6121
Kd (l/kg):	1.16	0.92	0.92	0.10	0.22	0.42	6.89	1.32	1.54	0.61	0.50	0.01	1.20	0.39
C(soil) (mg/kg) =	28.3785	1.0773	0.4745	0.0537	0.0355	0.0228	1.8542	0.1914	0.3445	1.9330	0.1315	0.0007	0.3229	1.7872

Estimated Impacted Soil Mass:

M(soil) = impacted area x impacted thickness x (1-porosity) x 1 $yd^3/27ft^3$ x 1.4 tons/yd3 x 907.2 kg/ton

Where:

FROM ABOVE INPUT:

Impacted Area =	**1050**	ft^2
Impacted Thickness =	**18**	ft
Mass minus Porosity =	**0.7**	unitless (%)
Conversion Factor =	**7.48**	gallons per cubic foot

Conversion factors:

27	CF per CY
1.4	tons per 1 yd3 (sand)
907.2	kg per ton

Estimated impacted soil mass = **622,339** **kg**

2.21E-06 mg to lb conversion

Estimated Mass of Contaminants Adsorbed to Soil:

M(adsorbed)(lbs) = C(soil)(mg/kg) x M(soil)(kg) x 2.205E-6 (lb/mg)

	Total VOCs	1,1,1 TCA	1,1 DCA	1,1 DCE	1,2 DCA	Benzene	Ethylbenzene	PCE	Toluene	TCE	TCFA	Vinyl Chloride	Xylenes	cis-1,2 DCE
C(soil) (mg/kg)	24.8312	1.0773	0.4745	0.0537	0.0334	0.0215	1.7452	0.1801	0.3243	1.9330	0.1238	0.0006	0.3039	1.7872
M(adsorbed) (lbs)	34.075	1.478	0.651	0.074	0.046	0.030	2.395	0.247	0.445	2.653	0.170	0.001	0.417	2.452
C(soil) (mg/kg)	28.3785	1.0773	0.4745	0.0537	0.0355	0.0228	1.8542	0.1914	0.3445	1.9330	0.1315	0.0007	0.3229	1.7872
M(adsorbed) (lbs)	38.943	1.478	0.651	0.074	0.049	0.031	2.545	0.263	0.473	2.653	0.181	0.001	0.443	2.452

Estimated Total Mass of Adsorbed COCs = **45.13** **lbs**
Estimated Total Mass of Adsorbed COCs = **50.24** **lbs**

Total Estimated Mass of Hydrocarbons in Saturated Zones (lbs) = Adsorbed Mass + Dissolved Mass =

49.16	lbs
54.29	lbs

Estimated Mass of Dissolved and Adsorbed Contaminants in Saturated Zone (7' to 25')
Minimum (Best Case) Scenario

Hanger 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Mass of Aqueous Phase (Dissolved/Soluble) Contaminants:

Well/Boring No.	1,1,1 TCA (ug/L)	1,1 DCA (ug/L)	1,1 DCE (ug/L)	1,2 DCA (ug/L)	Benzene (ug/L)	Ethylbenzene (ug/L)	PCE (ug/L)	Toluene (ug/L)	TCE (ug/L)	TCFA (ug/L)	Vinyl Chloride (ug/L)	Xylenes (ug/L)	cis-1,2 DCE (ug/L)	Total VOCs (Calculated) (ug/L)	Data Reference
MW-1	20.7	1.5	1.4	0	0	0	0	0	7.8	0	0	0	3.2	34.6	RI - 1/2001
MW-8 (5'-15')	7070	644	1260	0	0	0	173	116	5520	274	0	0	1350	16407	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
H1000-06 (9'-11')	8.36	1.19	0	0	0	0	0	1.02	15.6	92.3	0	0	0	118.47	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
H1000-26 (10'-12')	8550	979	2270	0	0	0	178	164	8460	200	0	0	1520	22321	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
H1000-01 (17'-19')	0	358	606	0	0	0	0	0	1440	514	0	0	503	3421	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
H1000-06 (17'-19')	132	25.3	50.6	0	0	0	23.9	0	834	36.4	0	0	24.8	1127	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
H1000-02 (18'-20')	1180	1140	1260	0	0	0	0	0	7240	0	0	0	13100	23920	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
H1000-03 (18'-20')	147	63.7	147	30	0	0	0	0	1150	180	0	0	923	2640.7	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
H1000-26 (18'-20')	0	140	0	0	0	0	0	0	2940	270	0	0	201	3551	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
H1000-05 (19'-21')	0	1640	1090	0	0	0	0	0	11000	260	0	0	16100	30090	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
H1000-04 (20'-22')	29.5	1.83	11.5	0	0	0	0	0	116	20.4	0	0	18.7	197.93	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
H1000-05 (22'-24')	0	206	118	0	0	0	0	0	2170	0	0	0	903	3397	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
H1000-06 (22'-24')	169	12.7	0	0	0	0	6.67	5.56	243	2.32	0	0	13.3	452.55	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
H1000-03 (23'-25')	0	2950	2140	0	0	0	0	0	1980	0	0	0	40900	47970	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
H1000-02 (24'-26')	29.7	19.9	8.48	0	0	0	0	1.2	58.7	0	0	0	53.7	171.68	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
H1000-04 (24'-26')	0	7.62	3.68	0	0	0	0	0	45.4	0	0	0	6.24	62.94	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
H1000-25 (20'-22')	0	625	522	0	0	0	0	0	10300	0	0	0	2780	14227	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Report
Sum of Results	**17336.3**	**8815.7**	**9488.7**	**30.0**	**0.0**	**0.0**	**381.6**	**287.8**	**53520.5**	**1849.4**	**0.0**	**0.0**	**78399.9**	**170109.9**	
Number of Samples (total)	17	17	17	17	17	17	17	17	17	17	17	17	17		
Number of Samples (positive>0)	10	17	14	1	0	0	4	5	17	10	0	0	16		

	1,1,1 TCA	1,1 DCA	1,1 DCE	1,2 DCA	Benzene	Ethylbenzene	PCE	Toluene	TCE	TCFA	Vinyl Chloride	Xylenes	cis-1,2 DCE
Average Dissolved Concentration - Total Average (ug/L) =	**1019.8**	**518.6**	**558.2**	**1.8**	**0.0**	**0.0**	**22.4**	**16.9**	**3148.3**	**108.8**	**0.0**	**0.0**	**4611.8**
Average Dissolved Concentration - Positive >0 Average (ug/L) =	**1733.6**	**518.6**	**677.8**	**30.0**	**0.0**	**0.0**	**95.4**	**57.6**	**3148.3**	**184.9**	**0.0**	**0.0**	**4900.0**

NP - Not Provided in Data Tables
Red highlighted data indicates Not Detected (ND) above reported detection limit - value assumed is zero for minimum mass calculation purposes.

Estimated Groundwater Volume:

Estimated groundwater plume volume: (impacted area) x (impacted thickness) x (porosity) x (7.48 gal/ft^3)
Where:

Impacted Area = 1050 ft^2
Impacted Thickness = 18 ft (Assume 7' bgs to 25' bgs)
Porosity = 0.3 unitless (%)
Conversion Factor = 7.48 gallons per cubic foot

Estimated groundwater plume volume = **42,412** gallons

Estimated Mass of Soluble Contaminants:

Estimated Mass of Soluble Contaminants: M(dissolved)(lbs) = C(dissolved)(ug/L) x V(gw)(gal) x 3.7854(l/gal)x(2.205E-9(lb/ug))
Where:

M(dissolved) = mass of dissolved contaminants (lbs)
C(dissolved) = average dissolved contaminant concentration (ug/L)
V(gw) = volume of impacted groundwater (gal)

Conversion factors: 3.7854 L/gal
2.21E-09 lb/ug

Estimated Mass of Soluble Contaminants:

	1,1,1 TCA	1,1 DCA	1,1 DCE	1,2 DCA	Benzene	Ethylbenzene	PCE	Toluene	TCE	TCFA	Vinyl Chloride	Xylenes	cis-1,2 DCE
Average Dissolved Mass (lbs) =	**0.4**	**0.2**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.1**	**0.0**	**0.0**	**0.0**	**1.6**

	1,1,1 TCA	1,1 DCA	1,1 DCE	1,2 DCA	Benzene	Ethylbenzene	PCE	Toluene	TCE	TCFA	Vinyl Chloride	Xylenes	cis-1,2 DCE
Average Dissolved Mass (lbs) =	**0.6**	**0.2**	**0.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.1**	**0.1**	**0.0**	**0.0**	**1.7**

Estimated Total Mass of Soluble Contaminants Concentration (Based on Sum of Average):

3.54	**lbs**	(Using sum of all samples to calculate average concentration)
4.02	**lbs**	(Using sum of all samples > 0 to calculate average concentration)

Mass of Adsorbed Contaminants Calculations:

Concentration of contaminants adsorbed to soil: C(soil) = C(dissolved) x Kd

Where:

C(soil) = contaminant concentration in soil (mg/kg)
C(dissolved) = average dissolved contaminant concentration (mg/l)
Kd = solid/liquid distribution coefficient (l/kg)

For organics: Kd = Koc x Foc

Where:

Koc = organic carbon/water partition coefficient (l/kg)
1. Sawyer/McCarty/Parkin, Chemistry for Env. Eng. 1994
2. HRC Design Software
Foc = fractional organic carbon content (0.5% by weight for typical sand) (from EPA 440/5-89-002)

	1,1,1 TCA	1,1 DCA	1,1 DCE	1,2 DCA	Benzene	Ethylbenzene	PCE	Toluene	TCE	TCFA	Vinyl Chloride	Xylenes	cis-1,2 DCE
Koc (l/kg):	183	183	19	44	84.9	1378.3	263	308.6	122.8	100	2.5	240	77.5
Foc (kg/kg):	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Kd (l/kg) =	0.92	0.92	0.10	0.22	0.42	6.89	1.32	1.54	0.61	0.50	0.01	1.20	0.39

	1,1,1 TCA	1,1 DCA	1,1 DCE	1,2 DCA	Benzene	Ethylbenzene	PCE	Toluene	TCE	TCFA	Vinyl Chloride	Xylenes	cis-1,2 DCE
C(dissolved) (mg/l):	1.0198	0.5186	0.5582	0.0018	0.0000	0.0000	0.0224	0.0169	3.1483	0.1088	0.0000	0.0000	4.6118
Kd (l/kg):	0.92	0.92	0.10	0.22	0.42	6.89	1.32	1.54	0.61	0.50	0.01	1.20	0.39
C(soil) (mg/kg) =	0.9331	0.4745	0.0530	0.0004	0.0000	0.0000	0.0295	0.0261	1.9330	0.0544	0.0000	0.0000	1.7871
C(dissolved) (mg/l):	1.7336	0.5186	0.6778	0.0300	0.0000	0.0000	0.0954	0.0576	3.1483	0.1849	0.0000	0.0000	4.9000
Kd (l/kg):	0.92	0.92	0.10	0.22	0.42	6.89	1.32	1.54	0.61	0.50	0.01	1.20	0.39
C(soil) (mg/kg) =	1.5863	0.4745	0.0644	0.0066	0.0000	0.0000	0.1254	0.0888	1.9330	0.0925	0.0000	0.0000	1.8987

Estimated Impacted Soil Mass:

M(soil) = impacted area x impacted thickness x (1-porosity) x 1 $yd^3/27ft^3$ x 1.4 tons/yd3 x 907.2 kg/ton

Where:

FROM ABOVE INPUT:

Impacted Area =	**1050**	ft^2
Impacted Thickness =	**18**	ft
Mass minus Porosity =	**0.7**	unitless (%)
Conversion Factor =	**7.48**	gallons per cubic foot

Conversion factors:

27	CF per CY
1.4	tons per 1 yd3 (sand)
907.2	kg per ton

Estimated impacted soil mass = **622,339** **kg**

2.21E-06 mg to lb conversion

Estimated Mass of Contaminants Adsorbed to Soil:

M(adsorbed)(lbs) = C(soil)(mg/kg) x M(soil)(kg) x 2.205E-6 (lb/mg)

	1,1,1 TCA	1,1 DCA	1,1 DCE	1,2 DCA	Benzene	Ethylbenzene	PCE	Toluene	TCE	TCFA	Vinyl Chloride	Xylenes	cis-1,2 DCE
C(soil) (mg/kg)	0.9331	0.4745	0.0530	0.0004	0.0000	0.0000	0.0295	0.0261	1.9330	0.0544	0.0000	0.0000	1.7871
M(adsorbed) (lbs)	1.280	0.651	0.073	0.001	0.000	0.000	0.041	0.036	2.653	0.075	0.000	0.000	2.452
C(soil) (mg/kg)	1.5863	0.4745	0.0644	0.0066	0.0000	0.0000	0.1254	0.0888	1.9330	0.0925	0.0000	0.0000	1.8987
M(adsorbed) (lbs)	2.177	0.651	0.088	0.009	0.000	0.000	0.172	0.122	2.653	0.127	0.000	0.000	2.606

Estimated Total Mass of Adsorbed COCs = **7.26** **lbs**
Estimated Total Mass of Adsorbed COCs = **8.60** **lbs**

Total Estimated Mass of Hydrocarbons in Saturated Zones (lbs) = Adsorbed Mass + Dissolved Mass =

10.80	**lbs**
12.62	**lbs**

Estimated Mass of Dissolved and Adsorbed Contaminants in Saturated Zone (7' to 25')
Maximum (Worst Case) Scenario - Using Geometric Mean (not Arithmetic)

Hanger 1000
Naval Air Station Jacksonville
Jacksonville, Florida

Mass of Aqueous Phase (Dissolved/Soluble) Contaminants:

Well/Boring No.	1,1,1 TCA (ug/L)	1,1 DCA (ug/L)	1,1 DCE (ug/L)	1,2 DCA (ug/L)	Benzene (ug/L)	Ethylbenzene (ug/L)	PCE (ug/L)	Toluene (ug/L)	TCE (ug/L)	TCFA (ug/L)	Vinyl Chloride (ug/L)	Xylenes (ug/L)	cis-1,2 DCE (ug/L)	Total VOCs (Calculated) (ug/L)	Data Reference
MW-1	20.7	1.5	1.4	1	1	1	1	1	7.8	1	1	1	3.2	42.6	RI - 1/2001
MW-8 (5'-15')	7070	644	1260	300	100	500	173	116	5520	274	100	500	1350	17907	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Repo
H1000-06 (9'-11')	8.36	1.19	5	3	1	5	3	1.02	15.6	92.3	1	5	5	146.47	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Repo
H1000-26 (10'-12')	8550	979	2270	300	100	500	178	164	8460	200	100	500	1520	23821	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Repo
H1000-01 (17'-19')	100	358	606	60	20	100	60	100	1440	514	20	100	503	3981	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Repo
H1000-06 (17'-19')	132	25.3	50.6	30	10	50	23.9	50	834	36.4	10	50	24.8	1327	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Repo
H1000-02 (18'-20')	1180	1140	1260	300	100	500	300	500	7240	500	100	500	13100	26720	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Repo
H1000-03 (18'-20')	147	63.7	147	30	10	50	30	50	1150	180	10	50	923	2840.7	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Repo
H1000-26 (18'-20')	100	140	100	60	20	100	60	100	2940	270	20	100	201	4211	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Repo
H1000-05 (19'-21')	625	1640	1090	375	125	625	375	625	11000	260	125	625	16100	33590	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Repo
H1000-04 (20'-22')	29.5	1.83	11.5	3	1	5	3	5	116	20.4	1	5	18.7	220.93	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Repo
H1000-05 (22'-24')	100	206	118	60	20	100	60	100	2170	100	20	100	903	4057	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Repo
H1000-06 (22'-24')	169	12.7	10	6	2	10	6.67	5.56	243	2.32	2	10	13.3	492.55	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Repo
H1000-03 (23'-25')	1250	2950	2140	750	250	1250	750	1250	1980	1250	250	1250	40900	56220	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Repo
H1000-02 (24'-26')	29.7	19.9	8.48	3	1	5	3	1.2	58.7	5	1	5	53.7	194.68	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Repo
H1000-04 (24'-26')	5	7.62	3.68	3	1	5	3	5	45.4	5	1	5	6.24	95.94	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Repo
H1000-25 (20'-22')	500	625	522	300	100	500	300	500	10300	500	100	500	2780	17527	Summary from Table 1 and Table 2 - May 10, 2002 Site Characterization Repo
Sum of Results	**20016.3**	**8815.7**	**9603.7**	**2584.0**	**862.0**	**4306.0**	**2329.6**	**3573.8**	**53520.5**	**4210.4**	**862.0**	**4306.0**	**78404.9**	**193394.9**	
Number of Samples (total)	17	17	17	17	17	17	17	17	17	17	17	17	17		
Number of Samples (positive>0)	17	17	17	17	17	17	17	17	17	17	17	17	17		

	1,1,1 TCA	1,1 DCA	1,1 DCE	1,2 DCA	Benzene	Ethylbenzene	PCE	Toluene	TCE	TCFA	Vinyl Chloride	Xylenes	cis-1,2 DCE
Average Dissolved Concentration - Total Geomean (ug/L) =	**168.2**	**80.0**	**96.9**	**35.4**	**12.6**	**57.3**	**33.0**	**39.8**	**740.9**	**72.7**	**12.6**	**57.3**	**262.9**

NP - Not Provided in Data Tables
Red highlighted data indicates Not Detected (ND) above reported detection limit - value assumed is reported detection limit for maximum mass calculation purposes.

Estimated Groundwater Volume:

Estimated groundwater plume volume: (impacted area) x (impacted thickness) x (porosity) x (7.48 gal/ft^3)
Where:

Impacted Area = 1050 ft^2
Impacted Thickness = 18 ft (Assume 7' bgs to 25' bgs)
Porosity = 0.3 unitless (%)
Conversion Factor = 7.48 gallons per cubic foot

Estimated groundwater plume volume = **42,412** gallons

Estimated Mass of Soluble Contaminants:

Estimated Mass of Soluble Contaminants: M(dissolved)(lbs) = C(dissolved)(ug/L) x V(gw)(gal) x 3.7854(l/gal)x(2.205E-9(lb/ug))
Where:

M(dissolved) = mass of dissolved contaminants (lbs)
C(dissolved) = average dissolved contaminant concentration (ug/L)
V(gw) = volume of impacted groundwater (gal)

Conversion factors: 3.7854 L/gal
2.21E-09 lb/ug

Estimated Mass of Soluble Contaminants:

	1,1,1 TCA	1,1 DCA	1,1 DCE	1,2 DCA	Benzene	Ethylbenzene	PCE	Toluene	TCE	TCFA	Vinyl Chloride	Xylenes	cis-1,2 DCE
Average Dissolved Mass (lbs) =	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.3**	**0.0**	**0.0**	**0.0**	**0.1**

Estimated Total Mass of Soluble Contaminants Concentration (Based on Sum of Average):

0.59 **lbs** (Using sum of all samples to calculate average concentration)

Mass of Adsorbed Contaminants Calculations:

Concentration of contaminants adsorbed to soil: C(soil) = C(dissolved) x Kd

Where:

C(soil) = contaminant concentration in soil (mg/kg)
C(dissolved) = average dissolved contaminant concentration (mg/l)
Kd = solid/liquid distribution coefficient (l/kg)

For organics: Kd = Koc x Foc

Where:

Koc = organic carbon/water partition coefficient (l/kg)
1. Sawyer/McCarty/Parkin, Chemistry for Env. Eng. 1994
2. HRC Design Software
Foc = fractional organic carbon content (0.5% by weight for typical sand) (from EPA 440/5-89-002)

	1,1,1 TCA	1,1 DCA	1,1 DCE	1,2 DCA	Benzene	Ethylbenzene	PCE	Toluene	TCE	TCFA	Vinyl Chloride	Xylenes	cis-1,2 DCE
Koc (l/kg):	183	183	19	44	84.9	1378.3	263	308.6	122.8	100	2.5	240	77.5
Foc (kg/kg):	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Kd (l/kg) =	0.92	0.92	0.10	0.22	0.42	6.89	1.32	1.54	0.61	0.50	0.01	1.20	0.39

C(dissolved) (mg/l):	0.1682	0.0800	0.0969	0.0354	0.0126	0.0573	0.0330	0.0398	0.7409	0.0727	0.0126	0.0573	0.2629
Kd (l/kg):	0.92	0.92	0.10	0.22	0.42	6.89	1.32	1.54	0.61	0.50	0.01	1.20	0.39
C(soil) (mg/kg) =	0.1539	0.0732	0.0092	0.0078	0.0053	0.3946	0.0434	0.0614	0.4549	0.0363	0.0002	0.0687	0.1019

Estimated Impacted Soil Mass:

M(soil) = impacted area x impacted thickness x (1-porosity) x 1 $yd^3/27ft^3$ x 1.4 tons/yd3 x 907.2 kg/ton

Where:

FROM ABOVE INPUT:

Impacted Area = **1050** ft^2
Impacted Thickness = **18** ft
Mass minus Porosity = **0.7** unitless (%)
Conversion Factor = **7.48** gallons per cubic foot

Conversion factors:

27 CF per CY
1.4 tons per 1 yd3 (sand)
907.2 kg per ton

Estimated impacted soil mass = 622,339 kg

2.21E-06 mg to lb conversion

Estimated Mass of Contaminants Adsorbed to Soil:

M(adsorbed)(lbs) = C(soil)(mg/kg) x M(soil)(kg) x 2.205E-6 (lb/mg)

	1,1,1 TCA	1,1 DCA	1,1 DCE	1,2 DCA	Benzene	Ethylbenzene	PCE	Toluene	TCE	TCFA	Vinyl Chloride	Xylenes	cis-1,2 DCE
C(soil) (mg/kg)	0.1539	0.0732	0.0092	0.0078	0.0053	0.3946	0.0434	0.0614	0.4549	0.0363	0.0002	0.0687	0.1019
M(adsorbed) (lbs)	0.211	0.101	0.013	0.011	0.007	0.541	0.060	0.084	0.624	0.050	0.000	0.094	0.140

Estimated Total Mass of Adsorbed COCs = 1.94 lbs

Total Estimated Mass of Hydrocarbons in Saturated Zones (lbs) = Adsorbed Mass + Dissolved Mass =

2.53 **lbs**

APPENDIX J

DETAILED COST ESTIMATES

J.1 ALTERNATIVE 2
J.2 ALTERNATIVE 3

J.1

ALTERNATIVE 2

NAVAL AIR STATION JACKSONVILLE
JACKSONVILLE, FLORIDA
HANGAR 1000
ALTERNATIVE 2: NATURAL ATTENUATION, INSTITUTIONAL CONTROLS, AND MONITORING

			Unit Cost				Extended Cost				
Item	Quantity	Unit	Subcontract	Material	Labor	Equipment	Subcontract	Material	Labor	Equipment	Subtotal
1 PROJECT PLANNING											
1.1 Prepare Remedial Action Plan	100	hr			$35.00		$0	$0	$3,500	$0	$3,500
2 INSTITUTIONAL CONTROLS											
2.1 Prepare Deed Restrictions & LUCIPs	100	hr			$35.00		$0	$0	$3,500	$0	$3,500
Subtotal							$0	$0	$7,000	$0	$7,000
Local Area Adjustments							100.0%	118.6%	87.3%	87.3%	
							$0	$0	$6,111	$0	$6,111
Overhead on Labor Cost @	30%								$1,833		$1,833
G & A on Labor Cost @	10%								$611		$611
G & A on Material Cost @	10%							$0			$0
G & A on Subcontract Cost @	10%						$0				$0
Total Direct Cost							$0	$0	$8,555	$0	$8,555
Indirects on Total Direct Cost @	0%										$0
Profit on Total Direct Cost @	10%										$856
Subtotal											$9,411
Health & Safety Monitoring @	0%										$0
Total Field Cost											$9,411
Contingency on Total Field Costs @	0%										$0
Engineering on Total Field Cost @	0%										$0
TOTAL COST											**$9,411**

NAVAL AIR STATION JACKSONVILLE
JACKSONVILLE, FLORIDA
HANGAR 1000
ALTERNATIVE 2: NATURAL ATTENUATION, INSTITUTIONAL CONTROLS, AND MONITORING
Annual Cost

Item	Item Cost Years 1 - 5 [(1)]	Item Cost Year 6 - 30 [(2)]	Item Cost Every 5 Years	Notes
Performance Sampling	$5,800	$2,900		Labor, field supplies for sampling 7 wells.
Performance Analysis/Water	$9,200	$2,720		Analyze samples from 7 wells plus 1 QA sample for TCL VOCs and TCL SVOCs. Also analyze same 7 samples for natural attenuation parameters for first 5 years. Semi-annually for years 1 - 5 and annually for years 6 - 30.
Migration Sampling	$4,360	$2,180		Labor, field supplies for sampling 2 wells plus one storm sewer location.
Migration Analysis/Water	$2,720	$1,360		Analyze 3 water samples plus 1 QA sample for TCL VOCs and TCL SVOCs. Semi-annually for years 1 - 5 and annually for years 6 - 30.
Report	$2,000	$1,000		Document sampling events and results.
Site Inspection	$1,000	$1,000		One day annual inspection to verify continued implementation of institutional controls.
Site Review			$7,000	
TOTALS	$25,080	$11,160	$7,000	

(1) Sampling would occur semi-annually for the years 1 - 5.
(2) Sampling would occur annually for years 6 - 30.

NAVAL AIR STATION JACKSONVILLE
JACKSONVILLE, FLORIDA
HANGAR 1000
ALTERNATIVE 2: NATURAL ATTENUATION, INSTITUTIONAL CONTROLS, AND MONITORIN(
Present Worth Analysis

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 7%	Present Worth
0	$9,411		$9,411	1.000	$9,411
1		$25,080	$25,080	0.935	$23,450
2		$25,080	$25,080	0.873	$21,895
3		$25,080	$25,080	0.816	$20,465
4		$25,080	$25,080	0.763	$19,136
5		$32,080	$32,080	0.713	$22,873
6		$11,160	$11,160	0.666	$7,433
7		$11,160	$11,160	0.623	$6,953
8		$11,160	$11,160	0.582	$6,495
9		$11,160	$11,160	0.544	$6,071
10		$18,160	$18,160	0.508	$9,225
11		$11,160	$11,160	0.475	$5,301
12		$11,160	$11,160	0.444	$4,955
13		$11,160	$11,160	0.415	$4,631
14		$11,160	$11,160	0.388	$4,330
15		$18,160	$18,160	0.362	$6,574
16		$11,160	$11,160	0.339	$3,783
17		$11,160	$11,160	0.317	$3,538
18		$11,160	$11,160	0.296	$3,303
19		$11,160	$11,160	0.277	$3,091
20		$18,160	$18,160	0.258	$4,685
21		$11,160	$11,160	0.242	$2,701
22		$11,160	$11,160	0.226	$2,522
23		$11,160	$11,160	0.211	$2,355
24		$11,160	$11,160	0.197	$2,199
25		$18,160	$18,160	0.184	$3,341
26		$11,160	$11,160	0.172	$1,920
27		$11,160	$11,160	0.161	$1,797
28		$11,160	$11,160	0.150	$1,674
29		$11,160	$11,160	0.141	$1,574
30		$18,160	$18,160	0.131	$2,379
				TOTAL PRESENT WORTH	$220,059

J.2

ALTERNATIVE 3

NAVAL AIR STATION JACKSONVILLE
JACKSONVILLE, FLORIDA
HANGAR 1000
ALTERNATIVE 3: SOURCE REMOVAL WITH BNP, NATURAL ATTENUATION, INSTITUTIONAL CONTROLS AND MONITORING
CAPITAL COST

			Unit Cost				Extended Cost				
Item	Quantity	Unit	Subcontract	Material	Labor	Equipment	Subcontract	Material	Labor	Equipment	Subtotal
1 PROJECT PLANNING / MANAGEMENT											
1.1 Project Management	365	hr			$30.00		$0	$0	$10,950	$0	$10,950
1.2 Work Plans	305	hr			$30.00		$0	$0	$9,150	$0	$9,150
2 MOBILIZATION/DEMOBILIZATION											
2.1 Mobilize/Demobilize Drill Rig	1	ls	$2,500.00				$2,500	$0	$0	$0	$2,500
3 DECONTAMINATION											
3.1 Decontamination of Drill Rig, etc.	1	ls	$2,000.00				$2,000	$0	$0	$0	$2,000
4 MONITORING WELLS											
4.1 Monitoring Well, 2" dia, 10 @ 25'	250	lf	$30.00				$7,500	$0	$0	$0	$7,500
4.2 Well Development	20	hour	$35.00				$700	$0	$0	$0	$700
4.3 Collect/Containerize IDW	50	drum	$50.00				$2,500	$0	$0	$0	$2,500
4.4 Transport/Dispose IDW Off Site	50	drum	$150.00				$7,500	$0	$0	$0	$7,500
4.5 Survey Well Location	1	ls	$1,000.00				$1,000	$0	$0	$0	$1,000
4.6 Field Investigation	700	hr			$30.00		$0	$0	$21,000	$0	$21,000
5 BENCH SCALE TREATABILITY STUDY											
5.1 Bench-scale treatability study	1	ls	$35,000.00				$35,000	$0	$0	$0	$35,000
6 DIRECT BNP INJECTION TREATMENT											
6.1 DPT injection points, 10 points to 25' bgs	10	ea	$400.00				$4,000	$0	$0	$0	$4,000
6.2 BNP emulsion	800	lb		$45.36			$0	$36,288	$0	$0	$36,288
6.3 Field Activities	1	ls	$21,000.00				$21,000	$0	$0	$0	$21,000
7 BNP RECIRCULATION TREATMENT											
7.1 2-inch injection wells, three at 25' deep	75	lf	$30.00				$2,250	$0	$0	$0	$2,250
7.2 Well Development	6	hour	$35.00				$210	$0	$0	$0	$210
7.3 2-inch extraction wells, three at 25' deep	75	lf	$30.00				$2,250	$0	$0	$0	$2,250
7.4 Well Development	6	hour	$35.00				$210	$0	$0	$0	$210
7.5 10 gpm horizontal centrifugal recirculation pump	1	ea		$1,000.00				$1,000	$0	$0	
7.6 BNP Injection Pump	1	ea				$500.00	$0	$0	$0	$500	$500
7.7 Holding tank	1	mo		$540.00			$0	$540	$0	$0	$540
7.8 Mixing tank	1	mo		$540.00			$0	$540	$0	$0	$540
7.9 Field Activities	1	ls	$21,000.00				$21,000	$0	$0	$0	$21,000
8 SOURCE REMOVAL MONITORING											
8.1 Field Activities	1	ls	$21,000.00				$21,000	$0	$0	$0	$21,000
8.2 Ist Quarter Year 0	1	ls	$13,140.00		$5,800.00		$13,140	$0	$5,800	$0	$18,940
8.3 2nd Quarter Year 0	1	ls	$13,140.00		$5,800.00		$13,140	$0	$5,800	$0	$18,940
8.4 3rd Quarter Year 0	1	ls	$13,140.00		$5,800.00		$13,140	$0	$5,800	$0	$18,940
8.5 4th Quarter Year 0	1	ls	$13,140.00		$5,800.00		$13,140	$0	$5,800	$0	$18,940
8.6 Chemist Review	16	hr			$30.00		$0	$0	$480	$0	$480
8.7 Data Management	220	hr			$30.00		$0	$0	$6,600	$0	$6,600
9 INSTITUTIONAL CONTROLS											
9.1 Prepare Deed Restrictions & LUCIPs	100	hr			$30.00		$0	$0	$3,000	$0	$3,000
Subtotal							$183,180	$38,368	$74,380	$500	$296,428
Overhead on Labor Cost @	30%								$22,314		$22,314
G & A on Labor Cost @	10%								$7,438		$7,438
G & A on Material Cost @	10%							$3,837			$3,837
G & A on Subcontract Cost @	10%						$18,318				$18,318
Total Direct Cost							$201,498	$42,205	$104,132	$500	$348,335
Indirects on Total Direct Cost @	10%										$34,833
Profit on Total Direct Cost @	10%										$34,833
TOTAL COST											**$418,002**

NAVAL AIR STATION JACKSONVILLE
JACKSONVILLE, FLORIDA
HANGAR 1000
ALTERNATIVE 3: SOURCE REMOVAL WITH BNP, NATURAL ATTENUATION, INSTITUTIONAL CONTROLS AND MONITORING
Annual Cost

Item	Item Cost Years 1 - 5 (1)	Item Cost Year 6 - 20 (2)	Item Cost Every 5 Years	Notes
Performance Sampling	$5,800	$2,900		Labor, field supplies for sampling 7 wells
Performance Analysis/Water	$9,200	$2,720		Analyze samples from 7 wells plus 1 QA sample for TCL VOCs and TCL SVOCs. Also analyze same 7 samples for natural attenuation parameters for first 5 years. Semi-annually for years 1 - 5 and annually for years 6 - 20.
Migration Sampling	$4,360	$2,180		Labor, field supplies for sampling 2 wells plus one storm sewer location.
Migration Analysis/Water	$2,720	$1,360		Analyze 3 water samples plus 1 QA sample for TCL VOCs and TCL SVOCs. Semi-annually for years 1 - 5 and annually for years 6 - 20.
Report	$2,000	$1,000		Document sampling events and results
Site Inspection	$1,000	$1,000		One day annual inspection to verify continued implementation of institutional controls
Site Review			$7,000	
TOTALS	$25,080	$11,160	$7,000	

(1) Sampling would occur semi-annually for the years 1 - 5
(2) Sampling would occur annually for years 6 - 20

NAVAL AIR STATION JACKSONVILLE
JACKSONVILLE, FLORIDA
HANGAR 1000
ALTERNATIVE 3: SOURCE REMOVAL WITH BNP, NATURAL ATTENUATION, INSTITUTIONAL CONTROLS AND MONITORING
Present Worth Analysis

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 7%	Present Worth
0	$418,002		$418,002	1.000	$418,002
1		$25,080	$25,080	0.935	$23,450
2		$25,080	$25,080	0.873	$21,895
3		$25,080	$25,080	0.816	$20,465
4		$25,080	$25,080	0.763	$19,136
5		$32,080	$32,080	0.713	$22,873
6		$11,160	$11,160	0.666	$7,433
7		$11,160	$11,160	0.623	$6,953
8		$11,160	$11,160	0.582	$6,495
9		$11,160	$11,160	0.544	$6,071
10		$18,160	$18,160	0.508	$9,225
11		$11,160	$11,160	0.475	$5,301
12		$11,160	$11,160	0.444	$4,955
13		$11,160	$11,160	0.415	$4,631
14		$11,160	$11,160	0.388	$4,330
15		$18,160	$18,160	0.362	$6,574
16		$11,160	$11,160	0.339	$3,783
17		$11,160	$11,160	0.317	$3,538
18		$11,160	$11,160	0.296	$3,303
19		$11,160	$11,160	0.277	$3,091
20		$18,160	$18,160	0.258	$4,685
				TOTAL PRESENT WORTH	$606,190