N65928.AR.002364
NTC ORLANDO
5090.3a

INTERIM RECORD OF DECISION OPERABLE UNIT 3 (OU3) NTC ORLANDO FL
4/1/2000
HARDING LAWSON ASSOCIATES

INTERIM RECORD OF DECISION
OPERABLE UNIT 3

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

UNIT IDENTIFICATION CODE: N65928
CONTRACT NO.: N62467-89-D-0317/136

APRIL 2000

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NORTH CHARLESTON, SOUTH CAROLINA 29418

HLA

Harding Lawson Associates
Engineering and Environmental Services
2590 Executive Center Circle East
Tallahassee, Florida 32301 - (850) 656-1293

PRINTED ON RECYCLED PAPER

INTERIM RECORD OF DECISION

OPERABLE UNIT 3

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Unit Identification Code: N65928

Contract No.: N62467-89-D-0317/136

Prepared by:

Harding Lawson Associates
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

Barbara Nwokike, Code 1873, Engineer-in-Charge

April 2000

CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

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

DATE: April 7, 2000

NAME AND TITLE OF CERTIFYING OFFICIAL: John Kaiser
Task Order Manager

NAME AND TITLE OF CERTIFYING OFFICIAL: Rick Allen
Project Technical Lead

(DFAR 252.227-7036)

TABLE OF CONTENTS

Interim Record of Decision, Operable Unit 3
Naval Training Center
Orlando, Florida

LIST OF FIGURES

Interim Record of Decision, Operable Unit 3
Naval Training Center
Orlando, Florida

LIST OF TABLES

GLOSSARY

ABB-ES	ABB Environmental Services. Inc.
ARAR	applicable or relevant and appropriate requirement
bls	below land surface
BCP	Base Realignment and Closure Cleanup Plan
BRAC	Base Realignment and Closure (Act)
CERCLA	Comprehensive Environmental Response. Compensation. and Liability Act
CFR	Code of Federal Regulations
cm/sec	centimeters per second
COC	chemical of concern
CPC	chemical of potential concern
DET	Environmental Detachment, Charleston
ECPC	ecological chemical of potential concern
ELCR	excess lifetime cancer risk
ERA	ecological risk assessment
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
Ft/day	feet per day
Ft/ft	feet per foot
GCTL	groundwater cleanup target level
HHCPC	human health chemical of potential concern
HHRA	human health risk assessment
HI	hazard index
HLA	Harding Lawson Associates
IAS	Initial Assessment Study
IC	institutional controls
IR	Installation Restoration
IRA	interim remedial action
IROD	Interim Record of Decision
MCL	maximum contaminant level
MCPA	(4-chloro-2-methylphenoxy)acetic acid
MCPP	potassium (2-methyl-4-chlorophenoxy)propionate
NCP	National Oil and Hazardous Substances Contingency Plan
NPDES	National Pollutant Discharge Elimination System
NTC	Naval Training Center
O&M	operation and maintenance
OPS	operating properly and successfully
OPT	Orlando Partnering Team
OU	Operable Unit
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PP	Proposed Plan

GLOSSARY (Continued)

RAB	Restoration Advisory Board
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RfD	reference dose
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SA	study area
SCG	Soil Cleanup Goal
SCTL	Soil Cleanup Target Level
SOUTHNAV-FACENGCOM	Southern Division Naval Facilities Engineering Command
STP	Sewage Treatment Plant
SVOC	semivolatile organic compound
TAL	Target Analyte List
TBC	to be considered
TCL	target compound list
USEPA	U.S. Environmental Protection Agency
UV/OX	ultraviolet light and oxidation
VOC	volatile organic compound

Harding Lawson Associates

HLA

August 15, 2000

Commanding Officer
SOUTHNAVFACENGCOM
2155 Eagle Drive
North Charleston, SC 29419-9010

ATTN: Ms. Barbara Nwokike, Code 187300

Subject: **Response to Comments**
Operable Unit 3 Interim Record of Decision
NTC, Orlando
Contract: N62467-89-D-0317

Dear Barbara:

As you know, HLA issued the OU 3 Interim ROD on April 25, 2000. We have received comments from David Grabka (FDEP), and Nancy Rodriguez David Jenkins (U.S. EPA). Attached is the response to those comments.

On August 11, 2000, HLA issued an electronic redline/strikeout copy of the OU 3 Interim ROD that reflects how all comments are being addressed in the document. We will provide hard copy of the redline/strikeout document to those reviewers that request it. We have received electronic figures from TetraTech that have the most current analytical data represented (Figure 2-5, *Groundwater Exceedances, March 1998 to April 2000, Operable Unit 3, Study Area 8*, and 2-6, *Groundwater Exceedances, March 1998 to April 2000, Operable Unit 3, Study Area 9*). We will forward them to the OPT when minor revisions have been made to incorporate them into the Interim ROD.

If you have any questions or need additional information, please call me at (904) 448-1333.

Very Truly Yours,

Harding Lawson Associates

Rich Allen

Richard P. Allen
Technical Lead

Attachment

cc: Wayne Hansel, Southern Division
Nancy Rodriguez, USEPA Region IV
David Grabka, FDEP
Steve Tsangaris, CH2M Hill
Steve McCoy, Tetra Tech/NUS
John Kaiser, HLA
File

PROJECT REVIEW COMMENTS

NTC, Orlando Operable Unit 3
NTC Orlando
Final Draft Interim Record of Decision

Florida Department of Environmental Protection - David Grabka, 7/10/00

1. **Page 1-3, Third Bullet on page. The prohibition on the issuance of permits for the installation of potable water wells, irrigation wells, or dewatering wells for construction projects screened within the surficial aquifer is not an attainable institutional control at this site. Rather, while the property remains with the Navy, the Navy will disallow the installation of the above-mentioned wells on their property. After the property has been transferred, groundwater use restrictions shall be enacted in the deed(s) through a Restrictive Covenant granting a perpetual conservation easement to the Department.**

   The Navy will eliminate the third bullet on Page 1-3 and insert the final sentence of your comment into the first bullet on Page 1-3.

2. **Page 1-3, Fifth Bullet on page. A five year site review is not required to be a part of this Interim Record of Decision. When a final decision is made on the selected remedy for this site, a five year site review will be a required component of the Record of Decision. Because of this, please also remove the first bullet on page 2-10.**

   The Navy will eliminate the fifth bullet on page 1-3 and the first bullet on p. 2-10, noting that the final ROD will require reference to a five year site review.

3. **Page 1-3, Groundwater Monitoring Section, Second Bullet. Groundwater also needs to be analyzed for iron, lead, antimony and manganese as those compounds have previously been detected above primary standards, secondary standards and base specific reference concentrations.**

   The Navy will add a reference to include these TAL metals in future monitoring. The second bullet on Page 1-3 will be revised to read: "Groundwater would be analyzed for only those compounds that previously exceeded primary and secondary standards, or basewide site screening concentrations; these include TCL semivolatile organic compounds (SVOCs), pesticides, herbicides, and certain TAL metals including iron, lead, antimony, manganese and arsenic."

4. **Page 1-3, Groundwater Monitoring Section, Fourth Bullet. It should be noted that contaminants in drive point wells and downgradient wells next to Lake Baldwin would need to be compared surface water quality standards in order to evaluate whether some parameters could be discontinued.**

   The following bullet will be added on Page 1-3 in the Groundwater Monitoring section:

   "Sampling data in drive point wells and downgradient wells next to Lake Baldwin will

---

Florida Department of Environmental Protection - David Grabka, 7/10/00 (Continued)

be compared to surface water quality standards to evaluate the need for retaining certain parameters in the monitoring program.".

5. **Page 2-8, Second Paragraph, Last Sentence. The last sentence should say "are such parcels."**

The Navy will make the suggested change.

6. **Page 2-8, Third Paragraph, Second Sentence. The sentence should end after future exposure to contaminated groundwater. This IROD does nothing to reduce further contamination migration through groundwater.**

The Navy will make the suggested change.

7. **Page 2-8, Fourth Paragraph. This should be rewritten as "While further study of cleanup alternatives is undertaken, and in consideration . . ."**

The Navy will make the suggested change.

8. **Page 2-8, Fourth Paragraph, Second Bullet. Are institutional controls to restrict land use to non-residential (recreational) to be applied over the entire site or only over portions of the site where contaminants remain at concentrations that exceed the residential SCTLs?**

Because the two study areas that comprise OU 3 are both of limited extent, the intention at this time would be that institutional controls restricting land use to non-residential (recreational) use be applied to each study area individually. At some point, it may be possible to remove institutional controls on a portion of, or all of, one or both study areas. This would most likely occur during a five year review. It should be noted that the reuse scenario for the entire buffer zone around Lake Baldwin, including OU 3, is planned for nonresidential (i.e., recreational) use.

9. **Page 2-8, Fourth Paragraph, Third Bullet. This sentence should be rewritten as "Monitoring of contaminated groundwater to track restoration and ensure the continued protection of human health and the environment as site use and conditions change with time."**

The Navy will make the suggested change.

10. **Page 2-8, Fifth Paragraph, Second Sentence. Insert ROD before selected remedy.**

Florida Department of Environmental Protection - David Grabka, 7/10/00 (Continued)

The Navy will make the suggested change.

11. **Page 2-8, Sixth Paragraph, Second Sentence. Remove references to the maintenance of soil cover and unauthorized digging activities. The periodic inspections will help assure that no unauthorized residential development has occurred and that no wells have been installed within the area of groundwater restriction.**

    The Navy will make the suggested change.

12. **Page 2-9, Fourth Bullet. See comment (1).**

    The Navy will eliminate the fourth bullet on Page 2-9 and insert the final sentence of your comment into the second bullet on Page 2-9.

13. **Page 2-9, Fifth Bullet. Please insert "written" between annual and reminders.**

    The Navy will make the suggested change.

14. **Page 2-14, Top of Page. It should say that "The Navy, FDEP and EPA will evaluate the data and will make a decision as to whether or not active remediation is necessary to prevent shallow groundwater beneath SA 8 from reaching Lake Baldwin."**

    The Navy will change "The Navy…" to "The OPT…" (see Ms. Rodriguez' comment No. 7).

15. **Page 2-14, Third Paragraph. It should say Florida surface water quality standard instead of guidance concentration. In the same paragraph, it should state that "groundwater samples from intermediate wells at SA '9' each . . ."**

    The Navy will make the suggested change.

16. **The chem box data in Figures 2-5 and 2-6 for the January 2000 sampling event should be properly bolded to indicate exceedances.**

    Noted. Figures 2-5 and 2-6 have been revised.

17. **It should be explicitly stated that the human health risk summary numbers explained in the text and listed in Tables 2-3 and 2-4 are for data collected from the Remedial Investigation.**

Florida Department of Environmental Protection - David Grabka, 7/10/00 (Continued)

Since that time, Interim Removal Measures have reduced risk from surface soils to levels protective for potential future users such as recreational, tresspasser, and commercial users. When a final remedy is selected and the Final Record of Decision is prepared, the risk numbers should be recalculated based upon current data, both soil and groundwater.

The Navy will make the suggested change.

18. **Page 2-33, Table 2-7. The list of selected contaminants of concern is not complete. Antimony, manganese, iron and several pesticides have been detected during the current groundwater monitoring effort and should be included on the table.**

    The Navy will make the suggested change, although at the levels of iron and manganese detected, no additional risk is expected.

19. **Page 2-33, Second Paragraph. It is stated that while pump and treat is a proven technique for removing contamination, experience has shown that attainment of drinking water standards may be technically impractical. What experience has shown this? This needs to be further clarified.**

    The second Paragraph of Page 2-33 will be revised as follows: "Alternatives G-4 and G-5 are proven techniques (i.e., pump-and-treat) for removing the bulk of contamination, but attainment of action levels (e.g., surface water standards, drinking water standards) may be difficult given the recalcitrant nature of this contaminant."

20. **Page 2-33, Section 2.8.1.2, Second Paragraph, Bottom of page. It is stated that alternatives G-1 and G-2 may achieve action levels only after a sufficient period of time. "Sufficient" is too ambiguous a word. The estimated length of time predicted for those alternatives should be specified.**

    The second paragraph of Section 2.8.1.2 will be revised as follows:

    It is anticipated that Alternatives G-1 and G-2 may achieve action levels, but only within a time period that would likely be measured in decades. The ongoing groundwater monitoring program will provide data that will be used to estimate the period required to achieve action levels for all alternatives. These data will be factored into the final remedy. Alternatives G-3, G-4, and G-5 (*ex situ* treatment) would likely achieve action levels sooner than Alternatives G-1 and G-2 (*in situ* treatment). All five alternatives would comply with ARARs.

Florida Department of Environmental Protection - David Grabka, 7/10/00 (Continued)

21. **Page 2-38, Groundwater Monitoring, Second Bullet. First Bullet on page. See comment (3).**

    Noted. See the Navy response to comment (3).

22. **Page 2-44, Table 2-10, State Guidance Materials. Soil Cleanup Target Levels and Groundwater Cleanup Target Levels are now listed in Chapter 62-777, Florida Administrative Code.**

    Noted. The Navy will make the suggested changes.

NTC, Orlando Operable Unit 3
NTC Orlando
Final Draft Interim Record of Decision

United States Environmental Protection Agency – Region 4, Nancy Rodriguez, 7/11/00

1. Declaration of the ROD, Section 1.3 Description of the Selected Remedy. This section states that EPA has indicated that until the selected remedy is operating properly and successfully, the property will be deemed non-transferrable. This statement should be revised in order to accurately reflect EPA's position. CERCLA's property transfer provisions in section 120(h) require the United States to place in the deed the covenant that all necessary remedial action has been taken. All necessary remedial action will be deemed to have been taken if the construction and installation of an approved remedial design has been completed, and the remedy has been demonstrated to the Administrator to be operating properly and successfully. If the remedy cannot be demonstrated to be operating properly and successfully, the property can still be transferred under the covenant deferral request provisions of CERCLA § 120(h)(3)(C). The correction to the text should be, "Without resort to the Covenant Deferral Request provisions of CERCLA § 12(h)(3)(C), the property cannot be transferred until the selected remedy is operating properly and successfully (OPS)." Please make this same correction to the text in Section 2.4 Scope and Role of Interim Remedial Action Selected for OU3.

    The Navy will make the suggested change.

2. Declaration of the ROD, Section 1.3 Description of the Selected Remedy. Please revise the third sentence in the first bullet under "Institutional Controls": "The Navy or its contractor ~~can~~ will verify whether the warning signs are still in place or whether ..." In addition, if the Navy employs a contractor to conduct such inspection, the Navy should periodically (for instance, at least every five years) verify the accuracy of the information in the inspection reports. Please address the text accordingly. Please make this same correction to the text in Sections 2.4 Scope and Role of Interim Remedial Action Selected for OU3 and 2.9.1 Description of the Limited Action Remedy.

    The Navy will make the suggested change.

3. Declaration of the ROD, Section 1.3 Description of the Selected Remedy. The remedy envisions prohibition against residential use of the property until residential cleanup standards have been met. While EPA agrees with the statement that the Navy will ensure that no residential development occurs prior to transfer, it is the Navy's responsibility to ensure that all aspects of its selected remedy are effective, regardless of the transfer status. Please revise the sentence in the third bullet under "Institutional Controls," by deleting "Prior to transfer." Please describe the process by which the Navy will ensure that such restrictions, and all ICs, are followed. The only reference to monitoring of ICs is that site review every five years to verify visually that ICs are maintained. Please add to your

United States Environmental Protection Agency – Region 4, Nancy Rodriguez, 7/11/00 (Continued)

method of monitoring ICs the inspection of deed records to ensure that the restrictions are memorialized with any transfer of restricted real property. Please describe the frequency with which the Navy will conduct such IC compliance-verification. Please make this same correction to the text in Sections 2.4 Scope and Role of Interim Remedial Action Selected for OU3 and 2.9.1 Description of the Limited Action Remedy.

The Navy will make the suggested changes.

4. **Declaration of the ROD, Section 1.3 Description of the Selected Remedy. "Institutional Controls", sixth bullet. Please include the restriction against residential development in the annual reminder notices. Please make this same correction to the text in Sections 2.4 Scope and Role of Interim Remedial Action Selected for OU3 and 2.9.1 Description of the Limited Action Remedy.**

   The Navy will make the suggested changes in the fifth bullet, as FDEP wanted the sixth bullet deleted (see Mr. Grabka's comment No. 2 and the Navy response).

5. **Declaration of the ROD, Section 1.4 Declaration Statement. Please provide the rational for the statement that the selected remedy does not satisfy the statutory preference for treatment as a principal element of the remedy.**

   The Navy observes that under CERCLA, some form of active remediation is preferable (not mandated) to monitoring only, but that the final remedy will likely include one or more active remedial measures which had not been considered when the RI/FS was submitted, due to groundwater monitoring data collected after the submittal.

6. **Section 2.4, Page 2-8, 2nd Paragraph. Delete the word greatest in the following sentence 'This has allowed cleanup efforts to focus on those parcels that pose the greatest potential risk to human health and the environment....".**

   The Navy will make the suggested change.

7. **Section 2.5.4 Groundwater, Page 2-14, 1st Paragraph. Please change "The Navy is evaluating.." to "The OPT is evaluating...".**

   The Navy will make the suggested change.

8. **Section 2.9.1 Description of the Limited Action Remedy. The text states that the remedy**

United States Environmental Protection Agency – Region 4, Nancy Rodriguez, 7/11/00 (Continued)

includes institutional controls, groundwater monitoring and five-year (maximum) reviews, and bench-scale pilot testing of innovative technologies. Note that CERCLA § 121(c) indicates that whenever hazardous substances, pollutants, or contaminants are left in place, the remedial action will be reviewed no less often than every five years. The Interim ROD appears to have translated CERCLA's "no less often" language into "no more often." While it does not violate the letter of the statute, it certainly appears to run at odds with its spirit. Please revise the Interim ROD so as to not deflate the five-year-review language of the statute.

The Navy did not mean to imply that site reviews would take place ***no less than*** every five years apart, but that the interval between site reviews would be a ***maximum*** of five years apart, as stipulated by CERCLA. The text will be modified to make this clear. However, for cost estimating purposes, five year reviews were assumed.

9. **Section 2.9.1 Description of the Limited Action Remedy. Compliance with ARARs. This section states that the remedy *may* comply with ARARs in the long-term. Compliance with ARARs is a CERCLA threshold criteria, and must be met in a final remedial decision. However, since this remedy is being selected on an interim basis, and includes bench scale testing to evaluate the effectiveness of the natural attenuation portion of the remedy, this section should make clear that this factor, uncertainty about compliance with ARARs, is one of the bases for selecting this as an *Interim* Remedy.**

The Navy assumes that you were referring to Section 2.9.2, not 2.9.1. The Navy will add the following at the end of the paragraph:

"The remedial actions selected for OU 3 are intended to address the principal threats and risks for OU 3. They were chosen as the interim remedy for OU 3, and will be revised in the final ROD, as necessary, because data collection and analysis activities are ongoing, bench scale testing results have not been completed and evaluated, and because of uncertainty as to the effectiveness of the chosen remedial actions. The uncertainty about compliance with ARARs was the principal basis for selecting monitoring as a component of the interim remedy."

10. **Section 2.9.1 Description of the Limited Action Remedy. Reduction of Toxicity, Mobility, and Volume Through Treatment. Where the preference for remedies employing treatment which permanently and significantly reduces the toxicity, mobility, or volume of hazardous substances, pollutants, or contaminants as a principal element of the selected remedy is not satisfied, the ROD must explain why a remedial action involving such reductions in**

United States Environmental Protection Agency – Region 4, Nancy Rodriguez, 7/11/00 (Continued)

toxicity, mobility or volume was not selected. Please provide this explanation in this section.

The Navy assumes that you were referring to Section 2.9.2, not 2.9.1. The Navy will add the following to the first paragraph of Section 2.9.2:

"The decision to implement Alternative G-1 rather than pursue more aggressive treatment technologies was made primarily because of the belief that the IRA soil removals at both SAs have removed the continuing source(s) of contamination and that natural processes will now be able to reduce contaminant levels in the shallow aquifer."

11. **Section 2.9.1 Description of the Limited Action Remedy. Long-Term Effectiveness and Permanence. Evaluation of the long-term effectiveness of the remedy states that administrative actions would provide exposure control, but would not provide a permanent remedy for risks posed by the site during the period that contaminant concentrations decline through natural processes. It appears to be the objective of the institutional controls, including legal and administrative (governmental) controls, to provide effectiveness of the remedy both for the short- and the long-term. If there is a reason to believe that the long-term effectiveness of the institutional control remedy is limited, please state that reason in the IROD. In addition, if the remedy is not effective in the long-term, its selection should be reevaluated.**

    The Navy assumes that you were referring to Section 2.9.2, not Section 2.9.1. The remedy selected for the IROD (groundwater-use restrictions, groundwater monitoring, and site reviews) will be monitored closely during the first five years to determine its long-term effectiveness. Two of the herbicides (MCPA and MCPP) should degrade rapidly and not be detectable, certainly after the passage of five years. Other contaminants should also degrade naturally. However, arsenic is a persistent and relatively immobile contaminant, particularly in soil. Arsenic concentrations will be closely monitored in the short term to determine whether or not natural processes are reducing concentrations at a rate acceptable to regulatory agencies. The Navy has stated in the IROD that active treatment technologies may be required to reduce contaminant concentrations more rapidly, and that continuing site reviews and data evaluation will guide future decisions to implement the remedial alternatives selected for the IROD.

12. **Section 2.9.1 Description of the Limited Action Remedy. Implementability. Since there are aspects of the institutional control monitoring that have not been addressed, it is suggested**

United States Environmental Protection Agency – Region 4, Nancy Rodriguez, 7/11/00 (Continued)

that the implementability should be considered in light of EPA's comments. EPA does not suggest that the institutional controls are not implementable; merely, that the IROD has not captured all the elements essential to an effective institutional control remedy.

The Navy assumes that you were referring to Section 2.9.2 The text in the final ROD will reflect all essential elements for ICs, to include

- legal description of property,
- institutional control language in the same form as it will appear in the deed
- statement from the Navy of how the ICs will be enforceable under local state law
- a description of who will be responsible for monitoring the integrity and effectiveness of the ICs and the frequency of monitoring
- a description of the procedures that will be used to enforce against violations of an IC (who will enforce, and what legal authority to enforce)
- Assurance that the Navy will verify maintenance of ICs on a periodic basis (specifying the period)

13. Section 2.9.1 Description of the Limited Action Remedy. Cost. **The cost should address the implementation of an effective institutional control remedy, per EPA comments on ICs. For instance, since there is no description of periodic inspections of the deeds of record through time (along with the five-year reviews) to verify the carrying forward of the restrictive covenants, and hence, no cost allocated to this function, the cost does not reflect an effective IC remedy.**

The Navy assumes that you were referring to Section 2.9.2. Table 2-9, "Cost Summary for Limited Action Remedy," will be revised to reflect any comments incorporated into the final IROD, if appropriate. Also, see the Navy response to your Comment 3

14. Statutory Determinations. **This section states that the selected remedy will comply with ARARs. Please reconcile this with EPA Comment 7.**

The Navy assumes that you were referring to EPA Comment 9, not Comment 7. Please refer to the Navy response for your comment 9. The text in Section 2.10, Statutory Determinations, will be revised similarly to the response to comment 9.

15. Statutory Determinations. **Please see EPA Comment 8. This section provides the rationale for not selecting a remedy, which results in reductions in toxicity, mobility or volume. The rationale given, "because evaluation of balancing criteria determined treatment of the**

United States Environmental Protection Agency – Region 4, Nancy Rodriguez, 7/11/00 (Continued)

groundwater was not practicable" is not meaningfully descriptive. Please provide more particular information about the nature of the balancing criteria that justified this decision, for example, technical infeasibility, inadequate short-term protection of human health and the environment, or extraordinarily high costs.

The reduction in arsenic (the primary COC at both Study Areas) concentrations to MCLs was estimated to take from 22 years (SA 9) to 38 years (SA 8) at costs ranging from $9M (Alternative G-4) to $14.5M (Alternative G-5). This contrasts with a cost of $0.75M (Alternative G-1) for monitoring with ICs and site reviews for 30 years. Thus, Alternatives G-4 and G-5 will cost from 10 to 20 times more than Alternative G-1, although for a similar time period.

United States Environmental Protection Agency – Region 4, David Jenkins, 7/18/00

1. **Figure 2-5 shows that all of the January, 2000 groundwater samples were collected on the 23rd, while Figure 3 of the May 12, 2000 quarterly report shows the January, 2000 groundwater samples were collected on the 19th, 20th or 22nd, but none were collected on the 23rd of January, 2000. There are similar minor discrepancies in the dates reported on Figure 2-6 and Figure 4 of the quarterly report. The reported results appear to be the same on all figures, just the dates are different. The maps with the correct dates should be identified and used in future reports.**

   The maps will be corrected.

2. **The legend on Figure 2-5 states that "BOLD CONCENTRATION INDICATES EXCEEDANCE", but not all exceedances appear in bold type. For example, arsenic and lead in the January 23, 2000 sample at OLD-08-14 exceed the screening criteria shown in the legend, but are not presented in bold type. There seems to be similar minor discrepancies on Figure 2-6. Corrected maps should used in future reports.**

   The maps will be corrected.

3. **Contaminants of Potential Concern are listed in Table 2-2. Dieldrin is listed as a COPC at Study Area 8. Figure 2-5 shows only one detection of dieldrin at Study Area 8. This is a 1997 estimated "J" result from monitoring well OLD-08-14, which has never been confirmed by subsequent analysis.**

United States Environmental Protection Agency – Region 4, David Jenkins, 7/18/00 (Continued)

For both Study Areas 8 and 9, nearly all of the exceedances for MCPA and MCPP shown on Figures 2-5 and 2-6 are estimated or non-detect values with detection limits much greater than the screening values shown in the legends of the figures. The qualifier for many of theses analyses is an "R" for Rejected. The usefulness of showing these results, especially the rejected data, as exceedances is questionable.

Similar comments apply to the results presented on Figure 2-6 where both rejected and non-detect results are shown in bold type, signifying exceedances of an applicable standard. Exceedances of screening criteria in groundwater at Study Area 9 should not be evaluated using non-detects and rejected data as shown on Figure 2-6.

Dieldrin will be added to the list of compounds for analysis at SA 8. "R" qualified results will not be shown on Figures 2-5 and 2-6. Non-detect results will not be shown in bold type.

4. **Only one detect for MCPP is unqualified at Site 8 (Figure 2-5), and one result each for MCPP and MCPA are unqualified at Site 9 (Figure 2-6). While the land use in this area makes the presence of pesticides and herbicides unsurprising, the answers to the questions: "Are these COCs, and how much needs to be cleaned up?" are a not readily apparent.**

MCPA is reported to degraded rapidly by soil microorganisms and has low persistence, with a reported field half-life of 14 days to 1 month, depending on soil moisture and soil organic matter (EXTOXNET). The duration of MCPP (mecoprop) residual activity in soil is about two months. Because of it's high mobility, it may potentially leach into groundwater. However, in general, phenoxy herbicides such as MCPP are not sufficiently persistent to reach groundwater (EXTOXNET). If these are compounds have reached groundwater and are COCs at Study Area 8, the determination needs to be made at lower detection limits than shown on Figure 2-5.

Note that plots (attached to this memo) of the MCPA and MCPP data from Study Area 8 shows that the concentrations in the summer and fall are consistently higher than the concentrations in winter. The plots were made by assuming that non-detect results were one-half of the detection limit. Even with this assumption, all of the non-detect results are greater than the screening level. Designation of MCPA and MCPP as a contaminant of concern must be based on data obtained with lower detection limits. The plot seems to support the statements in the previous paragraph about the "short" persistance of MCPA and MCPP in groundwater, and may indicate that the results are due to seasonal application, which might be more cheaply terminated than treated in a remedial action. If

---

United States Environmental Protection Agency – Region 4, David Jenkins, 7/18/00 (Continued)

seasonal application of these compounds no longer occurs, are these compounds being leached into groundwater from a residual source in soil which might be removed?

The CLEAN III contractor has been working closely with their laboratory to bring down the detection limits for MCPA and MCPP to meaningful levels. The two compounds are being carried as COCs even though it is expected that by the time arsenic concentrations have become significantly reduced from their current levels, that MCPA and MCPP will no longer be detectable. A residual source for MCPA and MCPP in soil is an unlikely scenario, given the recent interim remedial actions (soil removals) that have occurred at both Study Areas comprising OU 3. It should be noted that application of all pesticides and herbicides to this area ceased at least two years ago, following the decommissioning of this portion of the Main Base.

5. **A plot (attached to this memo) of the arsenic data from Study Area 8 shows that arsenic concentrations in groundwater increased dramatically following the Interim Remedial Measure in April, 1999. Some concentrations remained at abnormally high concentrations in January, 2000, while others have diminished to concentrations less than observed before the Interim Remedial Measure. The results from many on-site wells show sharp increases for aluminum, manganese, lead and antimony followed by decreases in concentration to pre-Remedial Measure levels or less by January, 2000. These data may indicate that the effects of the Interim Remedial Measure have not reached equilibrium in the groundwater flow system. Additional quarterly groundwater samples should be collected until the post-Remedial Measure groundwater conditions are determined.**

   Agreed. A recommendation to continue with quarterly monitoring for the short term will be made to the OPT.

6. **As stated in my memo dated December 3, 1999, what is the basis for limiting the quarterly monitoring period for groundwater sampling events to one year? The EPA MNA guidelines recommend quarterly monitoring "... for at least one year... "(pages 44, 47, C2-7, C3-22), after which "... an appropriate sampling frequency should be established which considers seasonal variations in water table elevations, ground-water flow direction and flow velocity at the site (p. 52). Instead of following EPA guidelines, the description of Alternative G-1 on page 2-29 states that "Groundwater would be sampled quarterly for the first year, and annually thereafter ...". The text on page 1-3 seems to conflict with the text on page 2-29. Page 1-3 states that sampling will occur quarterly for the first year "... and annually thereafter, unless the data consistency between quarterly sampling episodes indicates that a different strategy is more appropriate."**

United States Environmental Protection Agency – Region 4, David Jenkins, 7/18/00 (Continued)

A major Interim Remedial Measure was implemented in April, 1999, (p. 2-12), but the report does not present graphs showing concentration trends or travel time estimates which demonstrate that the effects for the remedial measure could be expected to be observed already in the monitoring wells. It is premature to state that the quarterly monitoring period can be limited to one year because seasonal water level, and groundwater flow direction variations have not been demonstrated, and the time required for the monitoring well network to respond to the Interim Remedial Measures which have been implemented has not been determined. The sampling schedule text on page 1-3 allows for consideration of site specific conditions more than the text on page 2-29, and therefore, is more consistent with EPA guidelines.

The text of the IROD will be changed so that it is consistent with the sampling methodology described on Page 1-3.

7. **No maps showing plumes of contaminated groundwater which can be related to source areas and groundwater flow directions are provided for any of the contaminants of concern listed in Table 2-2. While the area of contamination is relatively small and the sources and natural discharge areas appear to be obvious, maps showing the extent of contamination are useful for describing the site and, in particular, for designing remedial measures. Future reports should include maps showing water level contours, groundwater flow directions, concentrations of key contaminants and contaminant plumes which clearly define the extent of contamination, demonstrate relationships between source and discharge areas and will aid in evaluating remedial measures.**

The IROD contains current groundwater elevation maps and flow directions (Appendix C), and concentrations of contaminants that exceed regulatory limits are presented on Figures 2-5 and 2-6 (see responses to your comment Nos. 1, 2 and 3 for pending revisions to the two figures). The CLEAN III contractor will be preparing the final ROD and will consider your comments when preparing their submittal.

8. **Regarding the statements that contamination may be reaching Lake Baldwin, an unusual sampling device has been developed recently which may be applicable for use at this site. The device, called a Henry sampler, is essentially a syringe with tubing which allows a sample to be collected from just below the surface water/groundwater interface. Also, observation of the water level in the tubing compared with the surface water level allows a visual determination and measurement of the groundwater head above the surface water body. The observation of groundwater head above the surface water level proves that**

United States Environmental Protection Agency – Region 4, David Jenkins, 7/18/00 (Continued)

groundwater inflow to surface water is occurring. The sampling device allows a sample to be collected before mixing with surface water occurs, if the bottom sediments are soft enough to allow penetration of the sampler.

Five "jpg" files are attached to this memo which demonstrate some of the uses of the Henry sampling device. The device is available from:

Mark Henry, MHE Products,
123 Dunlap St,
Lansing, Michigan, 48910
markhen@alumni.engin.umich.edu

EPA Region 4 does not have an SOP for this device yet, and it's use is suggested only as an field confirmation technique. If the method is found to be applicable to this site's specific conditions, it may be less expensive and more informative than alternative techniques for obtaining samples of groundwater inflow to Lake Baldwin.

The Navy appreciates the information provided. The new sampling device appears to be an improvement over more traditional sampling techniques.

1.0 DECLARATION OF THE INTERIM RECORD OF DECISION

1.1 SITE NAME AND LOCATION.

The site name is Operable Unit (OU) 3, which consists of Study Areas (SAs) 8 and 9 – former pesticide and herbicide handling areas. OU 3 is located in the southeast corner of the Main Base of the former Naval Training Center (NTC) in Orlando, Florida.

1.2 STATEMENT OF BASIS AND PURPOSE.

This Interim Record of Decision (IROD) presents the selected remedial actions for OU 3 at NTC Orlando. The response actions selected in this IROD are necessary to protect the public health, welfare, or the environment from actual or threatened releases of hazardous substances or pollutants or contaminants into the environment. The selected actions were chosen in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act of 1986, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The remedial actions were chosen based on the administrative record for the site. The information supporting the remedial action decision for OU 3 is contained in the Information Repository for this site. Both the Administrative Record and the Information Repository are located at the Orlando Public Library.

As part of base closure for NTC Orlando, environmental investigations and studies have been conducted to evaluate the soil and groundwater conditions at OU 3 from past chemical handling, storage, and disposal practices. The Navy's studies of OU 3 indicated that several pesticide-related chemicals, particularly arsenic, were found in the shallow soil and shallow groundwater at SA 8 and 9. In addition, other chemicals of concern (COCs) such as herbicide compounds were detected in soil and groundwater. The studies concluded that the groundwater contamination is most likely the result of COCs leaching from soil. As a result, several cleanup and removal actions have been implemented to address soil and groundwater contamination. Contaminated soil has been excavated and removed during two Interim Remedial Actions (IRAs) in 1997 and 1999. Furthermore, the groundwater has been sampled, analyzed, and monitored to evaluate COC concentrations before and after the IRAs.

The purpose of remedial action at OU 3 is to monitor contamination at the site via a groundwater monitoring program, institutional controls, and site reviews. The IRA for soil, completed in May 1999, removed additional contaminated soil, thereby reducing the risk to humans and wildlife to acceptable levels for the intended reuse of the land, which is non-residential (recreational). Therefore, no further cleanup is required for site soil.

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this IROD, may present a risk to public health, welfare, or the environment. The selected response action is necessary to protect public health. The U.S. Environmental Protection Agency (USEPA) and the State of Florida's Department of Environmental Protection (FDEP) concur with the remedial actions selected for OU 3.

1.3 DESCRIPTION OF THE SELECTED REMEDY.

The proposed remedial actions addressing contamination at OU 3 include (a) institutional controls (groundwater-use restrictions), (b) groundwater monitoring, and (c) site reviews. In addition, recent data from the groundwater monitoring program has indicated that more proactive remedial measures may be necessary. Accordingly, (d) bench scale pilot tests are in the planning stages to evaluate three innovative remedial technologies that may be effective in more quickly reducing groundwater contaminant levels to below State and Federal cleanup criteria. Also, (e) three drive point wells will be installed along the shoreline of Lake Baldwin and added to the groundwater monitoring program to determine contaminant levels in groundwater at the point where the migration pathway from the source area to surface water is completed.

The operable unit described in this IROD is the third of four operable units identified at the NTC. The Remedial Investigation/Feasibility Study (RI/FS) (Harding Lawson Associates [HLA], 1999a) and Proposed Plan (PP) (HLA, 1999b) for OU 3 recommended that actions (a) through (c) be implemented. The USEPA and FDEP had concurred that, following the IRA soil removal (and thus the elimination of the source of contamination) in May 1999, monitoring of groundwater to determine if natural processes will reduce contaminant concentrations to permissible levels is an acceptable remedy. However, with more recent groundwater monitoring data indicating the possibility that groundwater may be entering Lake Baldwin with contaminant concentrations exceeding surface water standards, additional precautions have been implemented ([d] and [e], above). At any point in the monitoring program, the Navy, USEPA or FDEP may determine that the rate of contaminant reduction is inadequate, or that groundwater next to Lake Baldwin is in violation of surface water standards, and thereby decide to implement more active remedial measures as described in the RI/FS report (HLA, 1999a), or as proposed pending results from bench scale studies (summarized in (d), above).

The remedial actions selected for OU 3 are intended to address the principal threats and risks for OU 3 and are chosen as the interim remedy for OU 3. The final remedy will be chosen upon completion of the quarterly monitoring program and bench scale testing. Any changes to the remedy, as proposed herein, will be documented in a final ROD or ROD amendment. Each remedial action is summarized below.

Institutional Controls

Institutional controls (ICs) will be required at this parcel from the time that the IROD is implemented until such time as the remediation goals have been met and some of the ICs can be lifted. The USEPA and FDEP have both indicated that until the selected remedy is operating properly and successfully (OPS), that the property will be deemed non-transferable. Thus, until there is an OPS determination, it will be the responsibility of the Navy to restrict access to the parcel and assure that the public is protected from possible exposure to soil and groundwater contaminants. After the OPS determination, the ICs will accompany transfer documents and property deeds.

Prior to property transfer, the Navy will retain title to the land until the OPS determination, and will restrict access to the parcel by posting signs and conducting periodic visual inspections concurrently with sampling events in the long-term monitoring program. These measures will help to assure that soil cover has been maintained, that no unauthorized digging activities have taken place, and that no wells have been installed within the area of the groundwater restriction.

The institutional controls that will be implemented are listed below:

- Post signs in the vicinity of known soil contamination that was left in place at SAs 8 and 9. The soil was left in place because the risks to the wetland from active remediation were perceived to be greater than the risk of leaving the soil in place. The Navy or its contractor can verify whether the warning signs are still in place or whether there is any evidence of digging in these areas during the groundwater monitoring program.

- Disallow the use of surficial aquifer groundwater for drinking or irrigation by posting signs and conducting periodic visual inspections to assure that no unauthorized wells have been installed. After an OPS determination has been made and the property is deemed transferable by the USEPA and FDEP, the Navy will assure that language is written into transfer documents and property deeds which specifies the ICs that will remain in effect until contaminants in groundwater have been reduced to levels below State or Federal MCLs, whichever is lower.

- Disallow future land use for residential development in areas where contaminated soil exceeds residential cleanup target levels. This would be achieved through restrictive covenants in the transfer documents and property deeds. Prior to transfer, the Navy will ensure that no residential development occurs in the restricted areas.

- Prohibit issuing permits for the installation of potable water wells, irrigation wells, or dewatering wells for construction projects screened within the surficial aquifer until contaminants in groundwater have been reduced to levels below State or Federal MCLs; this will be expedited by notification to the Florida Department of Environmental Protection, St. John's River Water Management District, and Orange County Environmental Health Services. Acknowledgement letters will be obtained from each of these agencies indicating their participation as stakeholders or in the permit denial process.

- Implement annual reminders of groundwater use restrictions to property owners, planning agencies, and permitting agencies.

- Restrictions would be removed only when a five-year site review indicates that groundwater action levels have been achieved based on the groundwater sampling results.

Groundwater Monitoring

- Sample groundwater from selected monitoring wells in the vicinity of OU 3. For each SA, 14 monitoring wells will be sampled, consisting of upgradient, downgradient, and source area wells. Initially, these wells will consist of the same wells being monitored by the CLEAN III Contractor during the first year of baseline sampling, which concluded in January 2000. As conditions change or site conditions become better understood, this list of wells may be modified. In addition, three drive point wells will be installed at SA 8 along the shoreline of Lake Baldwin to determine contaminant levels in groundwater along the migration pathway from the source area to surface water.

- Groundwater would be analyzed for only those compounds that were previously detected, which includes TCL semivolatile organic compounds (SVOCs), pesticides, herbicides, and arsenic.

- Perform sampling and analysis four times in the first year (i.e., quarterly) and annually thereafter, unless the data consistency between quarterly sampling episodes indicates that a different strategy is more appropriate.

- Every fifth year, analyze samples for target compound list and target analyte list (TCL/TAL) parameters (VOCs, SVOCs, pesticides, herbicides, and inorganics), unless the previous two rounds of sampling indicate that some parameters no longer need to be evaluated due to contaminant reduction to levels below the State's groundwater cleanup target levels (GCTLs). This, however, would hold true only for upgradient and source area wells, not for downgradient wells.

- Analytical results and data would be used to evaluate whether or not contaminant concentrations continue to decrease over time.

Site Reviews

- Site reviews would occur every 5 years until action levels are attained. Site reviews would consist of evaluating groundwater data, visual inspection for maintenance of IC, and assessing changes in site conditions and uses.

- Based on a review of groundwater data and site conditions, the Navy will recommend: (1) no further action; (2) continued monitoring; or (3) implementation of other remedial action.

- At any point in the monitoring program, the Navy, USEPA or FDEP may determine that the rate of contaminant reduction is inadequate, or that groundwater next to Lake Baldwin is in violation of surface water standards, and thereby decide to implement more active remediation; such remedial techniques are listed in the Feasibility Study (HLA, 1999a) and could include Alternatives G-4 (Groundwater Extraction, Treatment, Discharge to POTW), and G-5 (Groundwater Extraction, Treatment, Discharge to Surface Water), or one of the technologies to be pilot-tested (see below).

Bench Scale Pilot Testing of Innovative Technologies

Due to recent analytical results that indicate the possibility that groundwater with contaminant levels exceeding surface water standards may be reaching Lake Baldwin, the Orlando Partnering Team (OPT), which includes representatives from the Navy, FDEP, and USEPA, decided to evaluate three innovative remedial technologies that show promise for reducing contaminant levels in groundwater. The three treatment technologies that will be evaluated are listed below in Table 1-1.

Table 1-1
Treatment Options Being Evaluated in Bench Scale Testing

Interim Record of Decision, Operable Unit 3
Naval Training Center
Orlando, Florida

Treatment Options	Physiochemical Mechanism	Advantages	Disadvantages
Iron modified zeolite	sorption/precipitation	• Works with As(III) and As(V) • Passes TCLP	• provides no organic removal
Surfactant modified zeolite	anion exchange	• Fixed charge not pH dependent • Surfactant may absorb organic contaminants	• Competition for exchange sites with common anions • Most effective with As(V)
Activated aluminum	sorption	• Strong sorption (irreversible) • Major anions don't compete • Widely used in water treatment	• PH sensitive (5-6) • Competitive with phosphate • Works best with As(V) • Does not address organics

The results of the bench scale testing will be evaluated and factored into the final decision at OU 3. Specific timelines for achieving cleanup targets and evaluation criteria will be included in the final ROD, based on evaluation of monitoring data and bench scale testing results.

1.4 DECLARATION STATEMENT.

The selected interim remedy for OU 3 attains the mandates of CERCLA Section 121, and to the maximum extent possible, the National Contingency Plan. The interim remedial action selected for OU 3 is protective of human health and the environment, complies with Federal and State regulatory requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost effective. The selected interim remedy does not satisfy the statutory preference for treatment as a principal element of the remedy. The remedial action will be reevaluated quarterly as additional monitoring data is collected and after results from bench scale testing have been assessed. The final remedial action will likely be composed of one or a combination of alternatives discussed in the Feasibility Study (including Alternative G-1 [Limited Action, including groundwater monitoring with evaluation of natural attenuation parameters], or groundwater treatment alternatives [G-4 and G-5]). However, data from the ongoing monitoring program and future bench scale studies may revise the final remedial strategy. Whatever remedial action is eventually chosen, it will have specific cleanup targets and timelines in place, and will include ample reviews to ensure that the remedy continues to provide adequate protection of human health and the environment.

1.5 IROD DATA CERTIFICATION CHECKLIST.

The following information is included in the Decision Summary (Section 2) of this IROD. Additional information can be found in the Administrative Record file for this site.

- Chemicals of concern and their respective concentrations.
- Baseline risk represented by the chemicals of concern
- Cleanup levels established for chemicals of concern and the basis for these levels.
- How source materials constituting principal threats are addressed.
- Current and reasonably anticipated future land use assumptions and current and potential future beneficial uses of ground water used in the baseline risk assessment and ROD.
- Potential land and groundwater use that will be available at the site as a result of the Selected Remedy.
- Estimated capital, annual operation and maintenance (O&M), and total present worth costs, discount rate, and the number of years over which the remedy cost estimates are projected.
- Key factor(s) that led to selecting the remedy (i.e., describe how the Selected Remedy provides the best balance of tradeoffs with respect to the balancing and modifying criteria, highlighting criteria key to the decision)

Based on the results of quarterly groundwater monitoring and bench scale testing, the key factors influencing remedy selection may be revised, with a subsequent change in the final remedy selection. Any such changes will be addressed in the final Record of Decision for OU 3.

1.6 AUTHORIZING SIGNATURE OF THE INTERIM REMEDY.

Wayne Hansel, P.E. Base Realignment and Closure Environmental Coordinator, Department of Navy	Date

2.0 DECISION SUMMARY

2.1 SITE NAME, LOCATION, AND DESCRIPTION.

OU 3 consists of SA 8 (Golf Course Greenskeeper's Storage Area) and SA 9 (Former Pesticide Handling and Storage Area). These areas are located in the southeast corner of the NTC Main Base, between Lake Baldwin and the former golf course (Figure 2-1). The NTC Main Base is located approximately 3 miles east of Interstate 4 and north of State Road 50, within the Orlando city limits (Figure 2-2). SA 8 is located at the end of Trident Lane (Figure 2-3) and SA 9 is located adjacent to Trident Lane, south and west of SA 8 (Figure 2-4).

2.2 SITE HISTORY AND ENFORCEMENT ACTIVITIES.

Pesticides and herbicides, along with equipment used to maintain the golf course, were stored at SA 8 for 20 to 30 years. SA 9 was the primary pesticide handling facility for the Main Base in the late 1960's and early 1970's. Pesticide mixing reportedly did not occur at this location after 1972, although chemicals may have been stored there until the buildings were demolished in 1981. Currently all structures have been removed from both SA 8 and SA 9.

OU 3 has undergone several phases of investigation. Summaries of these activities are presented in Table 2-1.

2.3 HIGHLIGHTS OF COMMUNITY PARTICIPATION.

The RI/FS Report for OU 3 was finalized and placed in the Information Repository in June 1999. The Proposed Plan for OU 3 was made available to the public in July 1999. These documents, and other IR program information, are available for public review in the Information Repository, which is located at the Orlando Public Library. A public comment period to solicit comments on the Proposed Plan was advertised in the *Orlando Sentinel* from July 1 through August 1, 1999. No responses were received during the public comment period; if comments had been received, Navy responses would have been included in this document. The public comment period advertisement also stated that a public meeting would be scheduled if anyone so requested; no requests were received.

A Restoration Advisory Board (RAB) was established for NTC, Orlando in 1994 after the base was selected for closure. The progress and results of activities at OU 3 have been presented at the bi-monthly RAB meetings, as appropriate, during that time. Community acceptance of the preferred alternative has been evaluated over the past year through presentations to the facility's Restoration Advisory Board (RAB). This board is composed of a group of community citizens who participate in reviewing and evaluating environmental cleanup at the base. RAB meetings are advertised and open to the general public, as well. Minutes from the RAB meetings are included in the information repository for NTC Orlando. The RAB has been briefed on the status of OU 3 and has agreed to the approach and recommendations made herein.

2.4 SCOPE AND ROLE OF INTERIM REMEDIAL ACTION SELECTED FOR OU 3.

NTC, Orlando was named as a Base Realignment and Closure (BRAC) installation in 1994. A BRAC Cleanup Plan (BCP) was developed subsequently for all of NTC, Orlando. The goal of the BCP process is to facilitate the disposal and reuse of BRAC installations while protecting human health and the environment. The City of Orlando and the Navy are parties to the transfer, with FDEP and USEPA acting as support

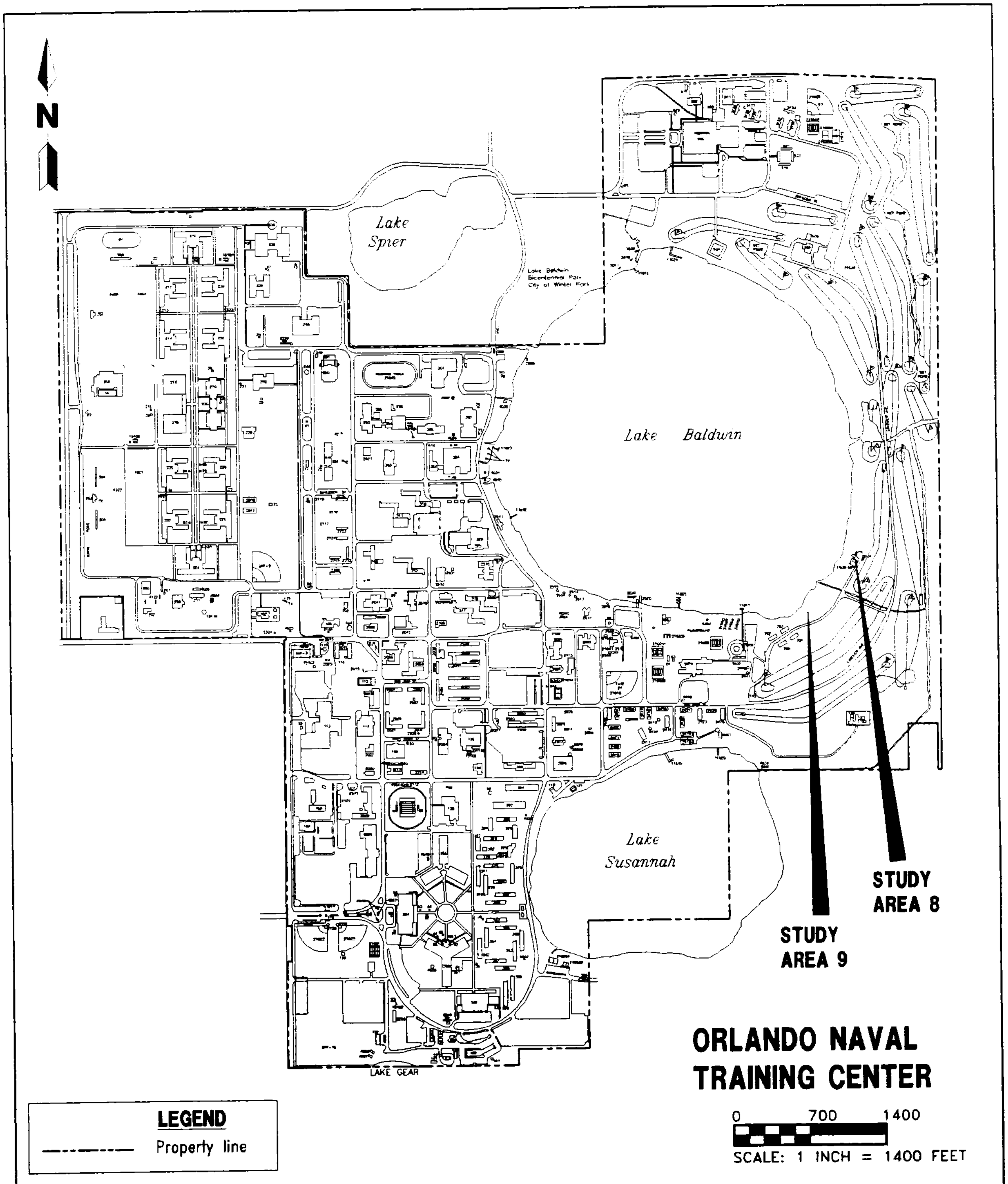


FIGURE 2-1
MAIN BASE
SITE LOCATION MAP
STUDY AREAS 8 AND 9

INTERIM RECORD OF DECISION
OPERABLE UNIT 3

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

K:\02546\02546-09\ROD\02546578.DWG, BB-BB 04/25/00 15:21:39, ACAD14

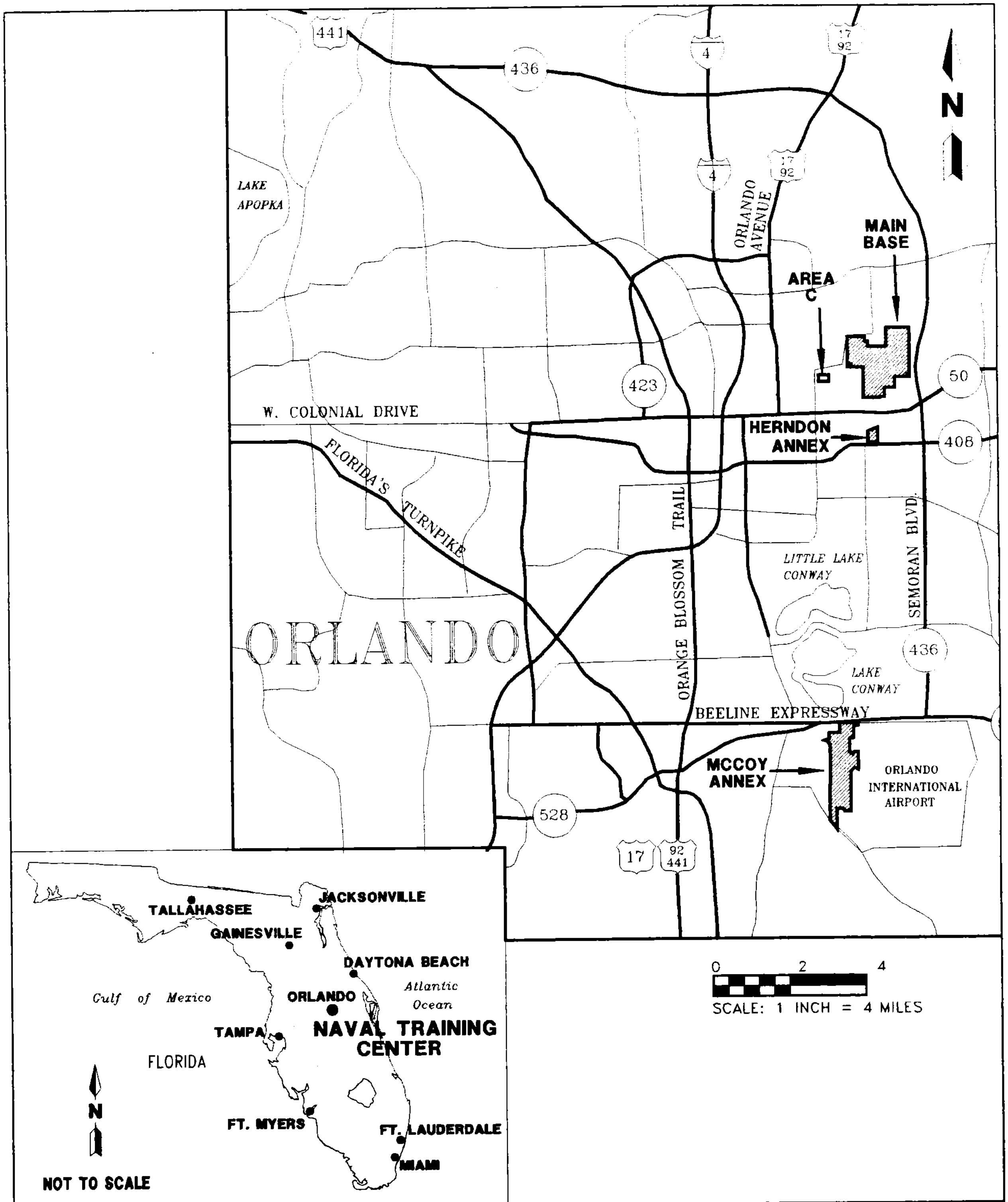


FIGURE 2-2
VICINITY MAP

INTERIM RECORD OF DECISION
OPERABLE UNIT 3

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

K:\02546\02546-09\ROD\02546579.DWG, BB-BB 04/25/00 15:23:17, ACAD14

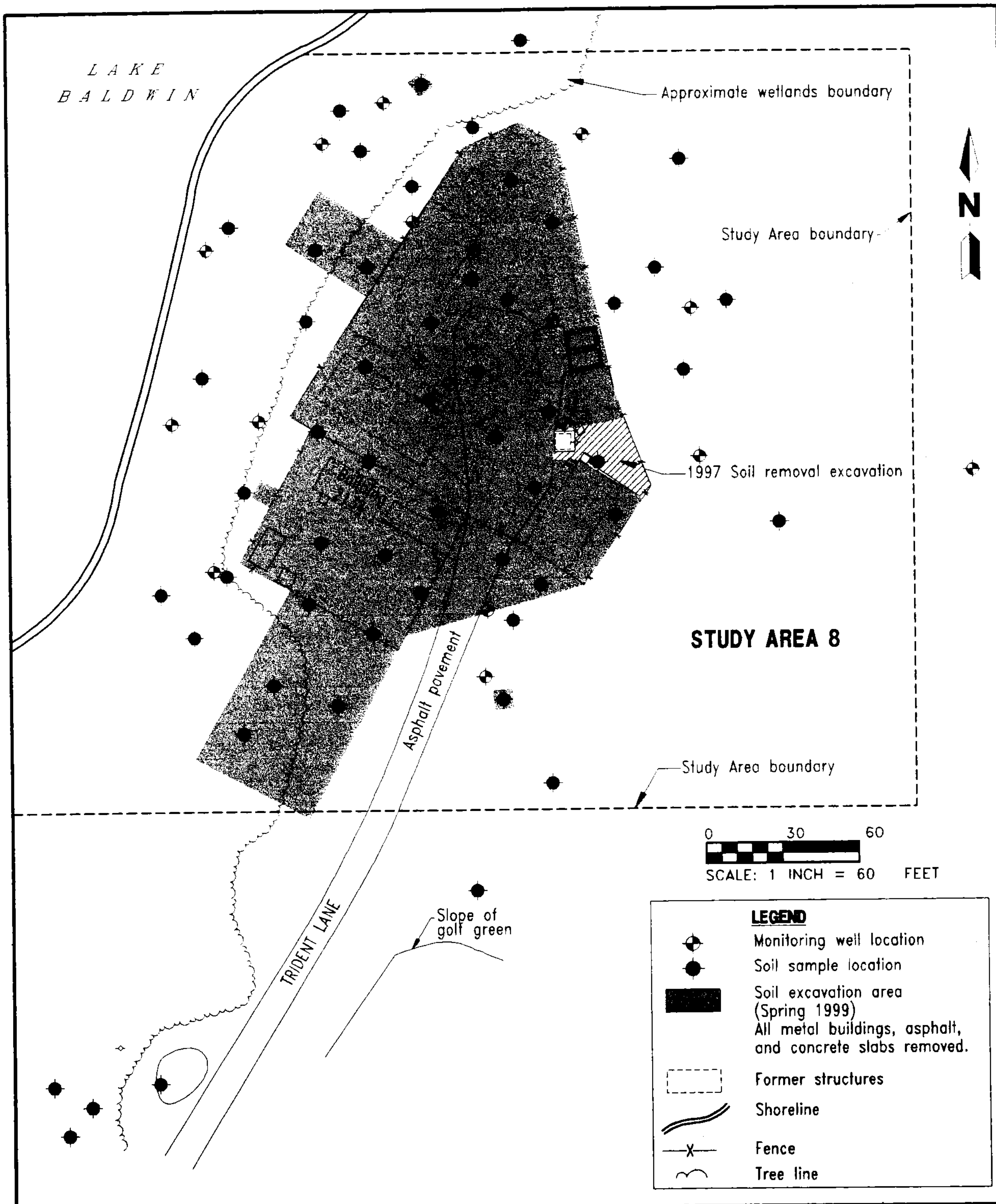


FIGURE 2-3
SITE FEATURES AND SOIL EXCAVATION AREAS STUDY AREA 8

INTERIM RECORD OF DECISION
OPERABLE UNIT 3

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

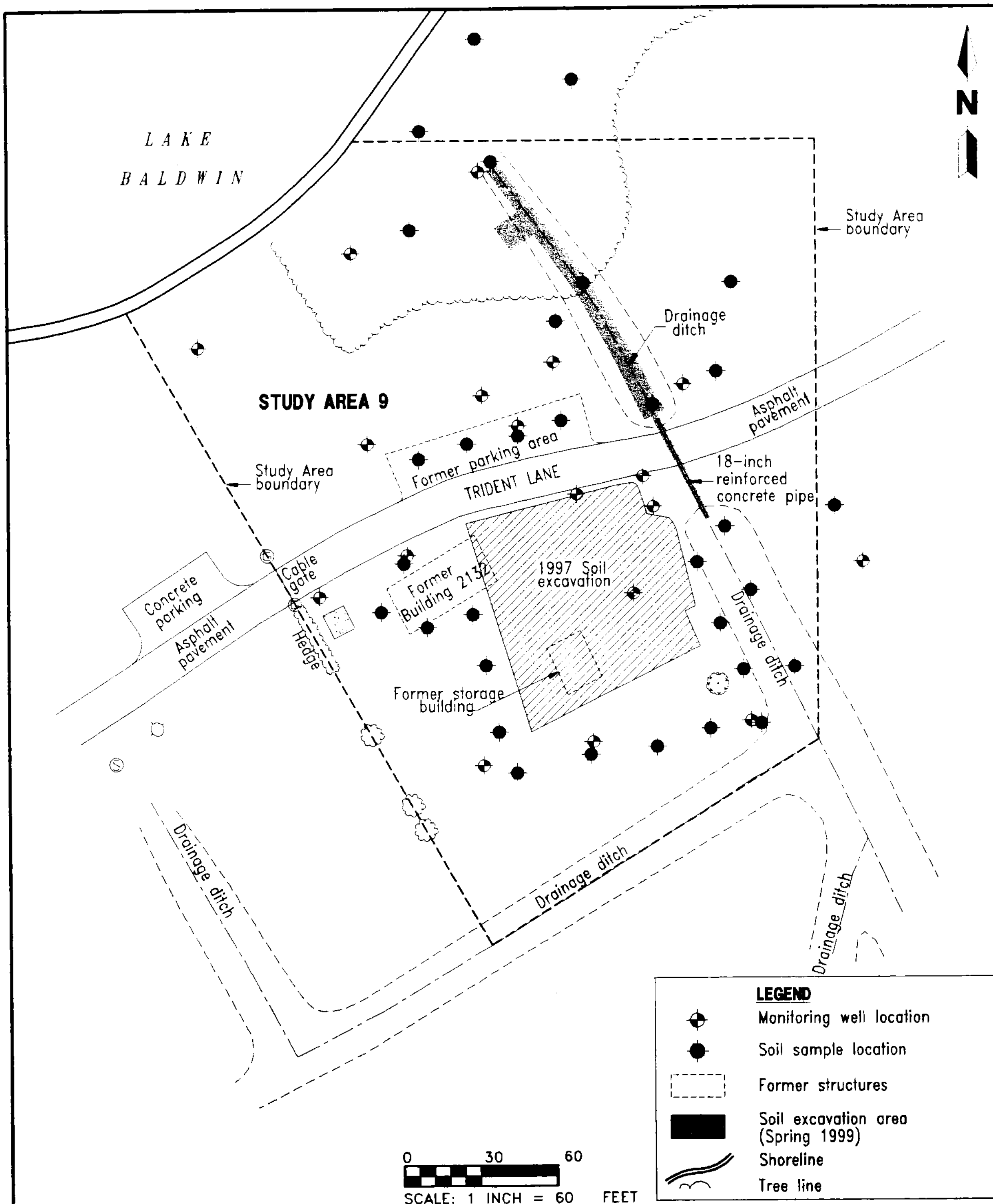


FIGURE 2-4
SITE FEATURES AND SOIL EXCAVATION AREAS STUDY AREA 9

INTERIM RECORD OF DECISION OPERABLE UNIT 3

NAVAL TRAINING CENTER ORLANDO, FLORIDA

K:\02546\02546-09\ROD\02546581.DWG VC-BB 04/25/00 15:25:48 ACAD14

Table 2-1
Operable Unit 3 Investigative History

Interim Record of Decision, Operable Unit 3
Naval Training Center
Orlando, Florida

Date	Investigation Title	Activities	Findings
1985	Initial Assessment Study (IAS) of NTC, Orlando Facilities C.C. Johnson and Associates, 1985)	• Archival search and site walkovers.	• Nine potentially contaminated sites identified, including SA 9 which indicated that pesticides and herbicides may have been spilled or disposed of in the vicinity and a gravel drywell sump may be located there.
1986	Verification Study at NTC, Orlando Facilities (Geraghty & Miller, 1986)	• Installation and sampling of three wells at SA 9	• Ethylbenzene, phenol, 2-chlorophenol, 2,4-dichlorophenol and chlordane were detected in the wells at SA 9. • Recommendation for the installation of a fourth monitoring well. • Quarterly monitoring recommended at SA 9 for one year.
1994	Environmental Baseline Survey (ABB Environmental Services [ABB-ES], 1994)	• Record search and walkover of SA 8.	• Further investigation under the site screening program recommended.
1994	Site Screening Evaluation	• Surface soil and subsurface soil samples collected at SA 8 and SA 9. • Evaluation of aerial photographs at SA 9. • Installation and sampling of one monitoring well at SA 9 and four monitoring wells at SA 8.	• Arsenic, lead, and SVOCs detected at SA 9 in concentrations greater than Federal MCLs and/or FGGCs in groundwater samples. • PAHs and pesticides detected at concentrations greater than Florida residential SCGs in soil samples at SA 9. • Arsenic concentrations greater than background screening concentrations and benzo(a)pyrene concentrations exceeding Florida's residential SCGs were detected in surface soil samples. • Arsenic concentrations exceeding the Federal MCL and FGGCs were detected in groundwater at SA 8. • Recommended that an RI/FS be conducted at SA 8 and SA 9. • Further evaluation of surface and groundwater at SA 9 needed.

See notes at end of table.

Table 2-1 (Continued)
Operable Unit 3 Investigative History

Interim Record of Decision, Operable Unit 3
Naval Training Center
Orlando, Florida

Date	Investigation Title	Activities	Findings
1997-1999	Remedial Investigation, Operable Unit 3, Naval Training Center, Orlando, Florida (HLA, 1999)	SA 8 and SA 9: • Surface soil sampling. • HHRA conducted. • ERA conducted. • Geophysical survey. • Ecological surveys • Wetland delineation survey SA 8: • Hydraulic conductivity tests performed at two wells. • Installation, development, and sampling of 10 microwells and 4 well points. • Collection of groundwater samples from 4 existing monitoring wells. • Toxicity testing for two test species from 2 well points and 1 microwell. SA 9: • Installation, development, and sampling of 11 microwells and 3 well points. • Collection of groundwater samples from 4 existing monitoring wells.	• Contamination in soil and groundwater at SA 8 and SA 9 poses unacceptable cancer and noncancer risks to human receptors. • Potential risks for ecological receptors exposed to surface soil and groundwater were identified at SA 8. • SA 8: Arsenic, PAHs (primarily benzo(a)pyrene), and MCPP exceed their screening values for soil. Arsenic, MCPA, and MCPP exceed their screening values for groundwater. • Potential risks were identified for terrestrial wildlife exposed to surface soil at SA 9. • SA 9: Arsenic, alpha-chlordane, gamma-chlordane, 4,4'-DDD, and MCPA exceeded screening values for soil. Arsenic, 2,4-dichlorophenol, alpha-, and gamma-BHC, MCPA, and MCPP exceeded screening values for groundwater. • Based on the results of the RI, an FS was conducted.
1997-1999	Feasibility Study, Operable Unit 3, Naval Training Center, Orlando, Florida (HLA, 1999)	• Evaluated potential remedial alternatives based on engineering factors, implementability, environmental and public health concerns, and costs.	• Identified 4 remedial action objectives for SA 8 and 3 remedial action objectives for SA 9. • Five remedial alternatives to address soil contamination were developed. • Five remedial alternatives to address groundwater contamination were developed.
March 1999 to January 2000	Quarterly monitoring well resampling events (4), Operable Unit 3, Navy Installation Restoration Program, Naval Training Center, Orlando, Florida (Tetra Tech NUS [TtNUS], 1999)	Resampled all monitoring wells at OU 3 (Study Areas 8 and 9) to determine baseline contaminant levels prior to Environmental Detachment Charleston's scheduled Interim Remedial Action, a soil removal, and effects of source removal on contaminant concentration fluctuations as a function of time.	Resampling results initially indicated that the two pesticide compounds, MCPA and MCPP, were no longer present at detectable concentrations, but later sampling indicated they were still present. Arsenic concentrations fluctuated over a wide range of concentrations, and were present along the shoreline of Lake Baldwin at concentrations exceeding MCLs.

Notes: NTC = Naval Training Center.
OU = operable unit.
MCL = maximum contaminant level.
VOC = volatile organic compound.
PCB = polychlorinated biphenyl.
TAL = target analyte list.
TCL = target compound list.
USEPA = U.S. Environmental Protection Agency.
TPH = total petroleum hydrocarbons.
SVOC = semivolatile organic compound.
HHRA = human health risk assessment.
ERA = ecological risk assessment.
FDEP = Florida Department of Environmental Protection.

agencies with respect to environmental restoration activities. However, the community at large, potential developers, and other site stakeholders have been informed and included in both the cleanup and transfer decision-making processes through regular meetings of the RAB and the Land Reuse Authority.

A phased approach to environmental evaluation and restoration at NTC, Orlando has allowed identification and prioritization of areas requiring remedial actions. This has allowed cleanup efforts to focus on those parcels that pose the greatest potential risk to human health or the environment, as well as those parcels for which reuse and economic redevelopment plans have already been identified. The areas south of Lake Baldwin at Main Base, which includes OU 3, is one such parcel.

This IROD addresses OU 3 and the associated contaminated groundwater of SA 8 and SA 9. The purpose of this response is to prevent current or future exposure to contaminated groundwater and to reduce further contaminant migration through the groundwater.

After careful study of cleanup alternatives, and consideration of the proposed reuse of the area including OU 3, the Orlando Partnering Team (OPT), which includes representatives from the Navy, FDEP, and USEPA, is proposing the following plan to address the potential risk from site contamination:

- No Further Action is expected to address soil contamination. The contaminated soil has been removed from the site, with the exception of some isolated soils within the wetland areas along Lake Baldwin, and the overall potential risk has been reduced to acceptable levels for the intended reuse of the property, which is non-residential (recreational).

- Institutional controls would be implemented to prevent use of contaminated groundwater and to restrict land use to non-residential (recreational).

- Long-term monitoring of contaminated groundwater with an initial 1-year review followed by 5-year reviews to track restoration and ensure the continued protection of human health and the environment as site use and conditions change with time.

The institutional controls alluded to in the second bullet above will be required at this parcel from the time that the IROD is implemented until a Final ROD is in place, remediation goals have been met and some of the ICs can be lifted. The USEPA and FDEP have both indicated that until the selected remedy is OPS, that the property will be deemed non-transferable. Thus, until there is an OPS determination, it will be the responsibility of the Navy to restrict access to the parcel and assure that the public is protected from possible exposure to soil and groundwater contaminants. After the OPS determination, the ICs will accompany transfer documents and property deeds.

Prior to property transfer, the Navy will retain title to the land until the OPS determination, and will restrict access to the parcel by posting signs and conducting periodic visual inspections concurrently with sampling events in the long-term monitoring program. These measures will help to assure that soil cover has been maintained, that no unauthorized digging activities have taken place, and that no wells have been installed within the area of the groundwater restriction.

At the time of the property transfer, the Navy will include language in the transfer documents that has been developed for other parcels at the NTC, similar to the following:

"Institutional controls at Operable Unit 3 will consist of administrative measures taken to prevent exposure of human receptors to surface soil that exceeds recreational screening criteria in certain wetland areas where remediation would have destroyed ecological habitat. Institutional controls will also be taken to prevent exposure of human receptors to contaminated groundwater in the surficial aquifer.

These institutional controls will be established at the time of property transfer. employing deed restrictions. notices, and agreements in a layering strategy to mutually reinforce the goals of the institutional controls. To provide for enforceability of the institutional controls. a Restrictive Covenant shall be applied to the property implementing those land and groundwater use restrictions. The Restrictive Covenant shall grant the FDEP a perpetual conservation easement on the property that shall run with the land and the title to the property and that will be binding on all subsequent owners of the property. The Restrictive Covenant shall also be enforceable by the Department through injunctive relief or other available remedies. The Restrictive Covenant shall only be released with FDEP concurrence.

"The unauthorized excavation of surface soil and use of groundwater within the soil and groundwater restriction boundary(s) shall be prohibited (including drinking and irrigation) through the Restrictive Covenant until released by the Navy with FDEP concurrence. The unauthorized excavation of soil and installation of new wells for any purpose other than assessing soil and groundwater quality or remediating ground-water contamination shall be prohibited through the covenant. The disturbance of existing groundwater remediation systems, including monitoring wells. will also be prohibited.

"The Navy will issue a ground-water use advisory to the St. Johns River Water Management District. the Orange County Environmental Protection Division. and the City of Orlando that no surficial wells should be permitted while the restriction is in effect. The groundwater restrictions shall remain in place until such time that groundwater cleanup goals are met and the restrictions have been removed by the Navy with FDEP concurrence."

The institutional controls that will be implemented are listed below:

- Post signs in the vicinity of known soil contamination that was left in place at SAs 8 and 9. The soil was left in place because the risks to the wetland from active remediation were perceived to be greater than the risk of leaving the soil in place. The Navy or its contractor can verify whether the warning signs are still in place or whether there is any evidence of digging in these areas during the groundwater monitoring program.

- Disallow the use of surficial aquifer groundwater for drinking or irrigation by posting signs and conducting periodic visual inspections to assure that no unauthorized wells have been installed. After an OPS determination has been made and the property is deemed transferable by the USEPA and FDEP, the Navy will assure that language is written into transfer documents and property deeds which specifies the ICs that will remain in effect until contaminants in groundwater have been reduced to levels below State or Federal MCLs, whichever is lower.

- Disallow future land use for residential development in areas where contaminated soil exceeds residential cleanup target levels. This would be achieved through restrictive covenants in the transfer documents and property deeds. Prior to transfer, the Navy will ensure that no residential development occurs in the restricted areas.

- Prohibit issuing permits for the installation of potable water wells, irrigation wells, or dewatering wells for construction projects screened within the surficial aquifer until contaminants in groundwater have been reduced to levels below State or Federal MCLs; this will be expedited by notification to the Florida Department of Environmental Protection, St. John's River Water Management District, and Orange County Environmental Health Services. Acknowledgement letters will be obtained from each of these agencies indicating their participation as stakeholders or in the permit denial process.

- Implement annual reminders of groundwater use restrictions to property owners, planning agencies, and permitting agencies.

- Restrictions would be removed only when a five-year site review indicates that groundwater action levels have been achieved based on the groundwater sampling results.

2.5 SITE CHARACTERISTICS.

The goal of the RI conducted for OU 3 was to collect data to determine the nature and extent of releases of site-derived contaminants; identify potential pathways of migration via soil or groundwater; and evaluate risks to human and ecological receptors. The goal of the FS was to identify remedial action objectives (RAOs), identify remedial technologies and alternatives that will achieve RAOs, and evaluate the selected alternatives to provide the basis for selection in the PP.

2.5.1 Physical Settings

The following is a brief summary of physical conditions at both SAs.

2.5.1.1 Study Area 8

The Greenskeeper's Storage Area is located in the southeast portion of the Main Base at NTC, Orlando, between Lake Baldwin and the recently closed golf course. A paved cul-de-sac (Trident Lane) occupied the central portion of the site. As shown on Figure 2-3, metal buildings, concrete slab, and asphalt were removed from SA 8. The remainder of the site is sparsely vegetated, with trees bordering the fence in many areas. A chain link fence currently surrounds the site effectively limiting foot traffic through the area.

A strip of dense wooded wetlands up to 60 feet wide lies between the northwestern fenced perimeter and the open water of Lake Baldwin. The distance from the end of Trident Lane to the water's edge at Lake Baldwin is approximately 135 feet. The eastern side of the fenced complex is bordered by grassy fairways of the recently closed golf course.

The ground surface is relatively flat, with a slight regional slope to the northwest, towards the bordering wetlands along Lake Baldwin. There is a slight but noticeable drop off (approximately 1.5 feet) at the edge of the wetlands, just outside the northwestern fenceline. Surface runoff has been observed to pool in this area after significant rainstorm events. Runoff following storm events has also been observed to travel northeast along Trident Lane, towards the end of the cul-de-sac, and also southwest, from the roadway towards the gate.

2.5.1.2 Study Area 9

The former Pesticide Handling and Storage Area for Main Base is located in the southeast portion of Main Base, southeast of Lake Baldwin. Building 2132 and a smaller, unnumbered storage building were formerly located south of what is now Trident Lane, and directly north of the fourth hole fairway of the former golf course. These buildings were demolished in 1981. Rinse water used to clean application equipment and empty containers was reportedly discharged inside Building 2132 to a drain connected to a gravel sump. This sump was excavated and removed as part of the IRA at SA 9 in 1997 (Environmental Detachment Charleston, S.C. [DET], 1997).

The shore of Lake Baldwin is approximately 150 feet northwest of the location of former Building 2132. Trident Lane crosses the SA from southwest to northeast. Shallow drainage swales (several feet wide and 1 foot deep) border the south and east sides of the site. The ground surface slopes gently towards the eastern swale, and there is a slight regional slope towards the northwest. The eastern drainage swale crosses under Trident Lane and continues into the wooded wetland area bordering Lake Baldwin. During heavy rainfall events, overland flow has been observed to travel northeast, along Trident Lane, from the site to the eastern drainage swale.

The site currently consists of a large, flat grassy field. The entire surface of SA 9 is grass-covered, including the area backfilled following the 1997 IRA. There are scattered, mature trees, particularly south of the former building locations. Access to the entire area is unrestricted.

2.5.2 Hydrogeology

The hydrogeology at OU 3 was evaluated through preparation of potentiometric surface maps and permeability testing of shallow monitoring wells across both SAs. These data were evaluated for the shallow zone of the surficial aquifer.

2.5.2.1 Water Table Surface Mapping

In order to determine the direction of groundwater flow in the shallow surficial aquifer at OU 3, static water-level data measurements were made at monitoring wells across the area. These data were used to map the water table. Locally, the water table surface mimics the topography of the area with the groundwater flow from the areas of highest elevation toward Lake Baldwin.

The spatial variation and seasonal fluctuation in water level due to rain is reflected in the hydraulic gradient at both sites. Data collected in 1997 indicate a groundwater hydraulic gradient of approximately 1×10^{-2} feet per foot (ft/ft) at both sites with flow generally toward Lake Baldwin. Data collected in 1998 indicate a gradient of approximately 5×10^{-3} ft/ft with little change in flow direction. The reduced gradient may be due to the greater decrease in water-level elevation over time in wells further from Lake Baldwin.

2.5.2.2 Aquifer Characterization Results

At each SA, rising-head tests were performed at selected monitoring wells. Results showed that the hydraulic conductivity value for the wells at SA 8 averaged 2.74 feet per day (ft/day). Hydraulic conductivity values were more variable at SA 9, averaging 2.09×10^{-1} ft/day in OLD-09-02 and 6.8×10^{-2} ft/day in OLD-09-04.

The groundwater-flow velocity in the surficial aquifer at SA 8 ranged from 3.9×10^{-2} to 7.8×10^{-2} ft/day. The average groundwater velocity for the surficial aquifer at SA 8 is 5.8×10^{-2} ft/day. Since the hydraulic conductivity is more variable at SA 9, groundwater-flow velocities are more variable. Calculated velocities range from a low of 9.71×10^{-4} ft/day at low hydraulic gradient conditions (5×10^{-3} ft/ft) to a high of 5.97×10^{-3} ft/day at high hydraulic gradient conditions (1×10^{-2} ft/ft). The higher calculated groundwater velocity at SA 8 is due to higher hydraulic conductivity in this area, since the hydraulic gradient is roughly the same at both SAs.

2.5.3 Surface Soil

The contaminants at OU 3 that exceed screening values are believed to be related to the handling and storage of pesticides and herbicides and, to a limited extent, to the operation and maintenance (O&M) of landscaping equipment and other local road traffic.

Although contaminants in soil (primarily arsenic) have been detected upgradient of the former work areas at SA 8 and SA 9 at concentrations above screening values, these concentrations were considerably lower than concentrations detected at and downgradient of the source areas. Their presence is likely the result of routine application of pesticide and herbicide compounds to landscaped areas and the golf course greens.

The soil contamination resulting from greenskeeper activities at SA 8 were concentrated in the fenced compound and the immediate vicinity. The highest contaminant concentrations were located within the fence or within the heavily vegetated area just west of the fence. Because of the high arsenic levels, an IRA was implemented in the most heavily contaminated portions of SA 8 in September 1997, resulting in the excavation and disposal of 36 tons of contaminated soil. Some of the less heavily contaminated soils were left in place in 1997, with the expectation that they would be evaluated and potentially remediated subsequent to submittal of the Feasibility Study. In April 1999, the DET mobilized at OU 3 and excavated nearly all remaining contaminated soil, primarily within the fenced area of the parcel (Figure 2-3). Section 2.11.1 contains additional information about the IRA soil removal, and the DET's completion report is included as Appendix B.

Soil contaminants at SA 9 were concentrated in two areas. The first area is located in the flat grassy area east of former Building 2132 in which the 1997 IRA occurred, resulting in the excavation and disposal of 946 tons of pesticide-contaminated soil in September 1997. The second area is located along the drainage swale, which has been a receptor of surface runoff from the work area for many years. It appeared that contaminated sediment had accumulated at the point where the swale entered the heavily vegetated areas, based on the finding that concentrations at that point were higher than concentrations in all other samples collected from the swale and wetlands both above and below that point. Samples results confirmed that contamination did not extend laterally beyond the swale. The soil in the swale area of SA 9 was excavated and disposed of during a second IRA in April and May 1999 (Figure 2-4).

Soil samples were collected in the wetland area to evaluate concentrations of soil likely to migrate overland and be deposited into Lake Baldwin as sediment. Although contaminants were detected in wetland soil at both SAs, concentrations generally showed a significant decrease from the concentrations located at the source areas.

Since the completion of the IRA soil removal by the Environmental Detachment Charleston in May 1999, most remaining soil at OU 3 meets soil cleanup criteria required for the intended reuse, which is non-residential (recreational). In several instances, soil exceeding recreational cleanup criteria was left in place because the exceedances were isolated, adjacent to and within a wetland, and the overall exposure to the area would be protective of recreational users. In addition, the potential harm to ecological receptors and biota from soil removal activities in the wetlands was deemed to be more harmful than the benefit that would result from soil remediation.

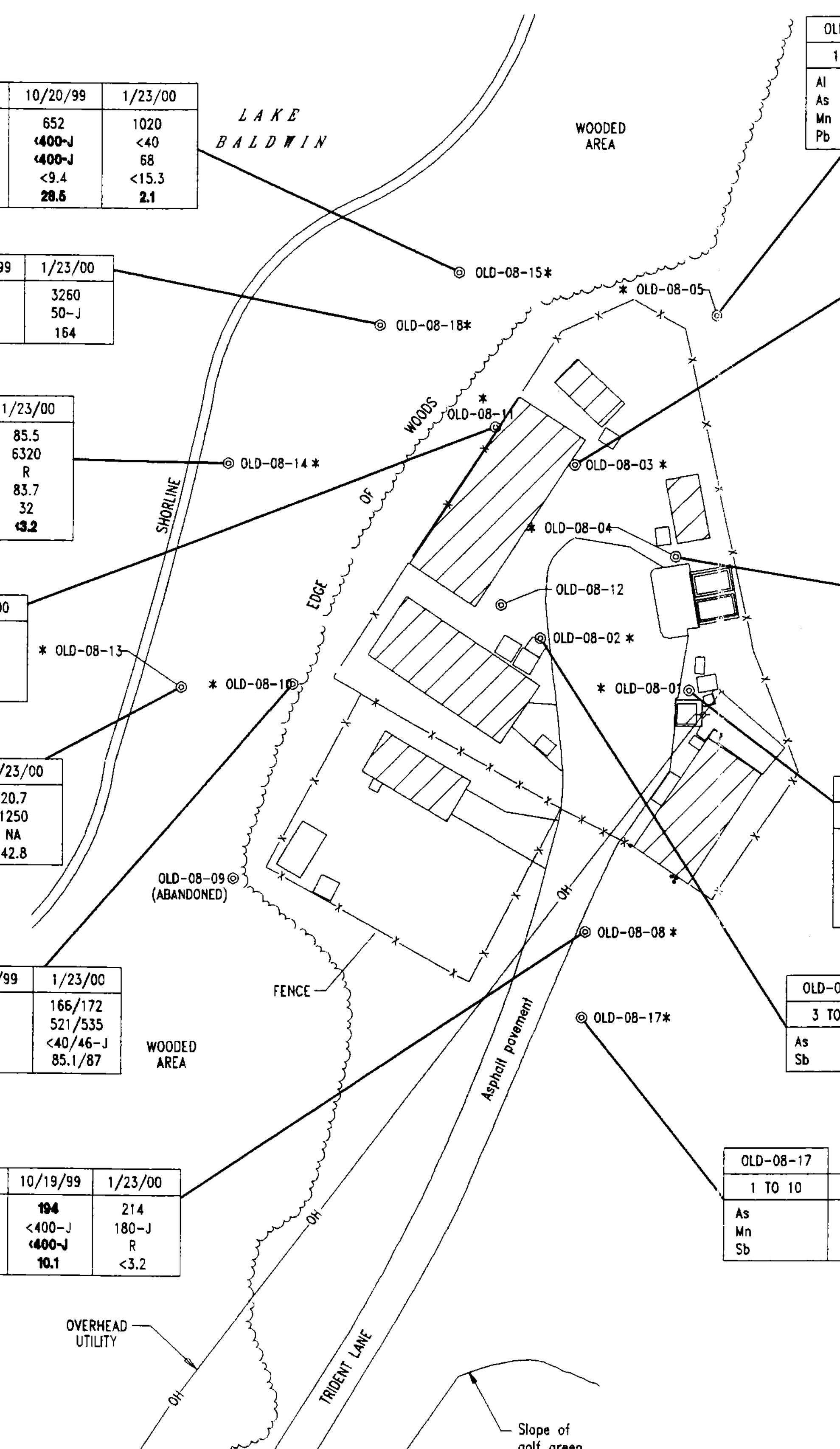
2.5.4 Groundwater

At SA 8, four monitoring wells were installed during site screening (Figure 2-3). During the first phase of the RI/FS, eight wells were installed at SA 8. During the second phase at SA 8, two additional wells and one additional well point were installed. Groundwater samples collected during both RI/FS sampling phases were analyzed for SVOCs, pesticides, polychlorinated biphenyls (PCBs), herbicides, inorganics, total organic carbon (TOC), and total suspended solids (TSS). Selected wells were also analyzed for arsenic speciation and related parameters.

At SA 9, four monitoring wells were installed during site screening (Figure 2-4). During the first phase of the RI/FS, three shallow well points and nine wells were installed at SA 9. During the second phase at SA 9, two additional wells were installed. Groundwater samples during the first RI/FS sampling round were analyzed for SVOCs, pesticides and PCBs, herbicides, inorganics, TOC, and TSS. During the second phase, samples were analyzed for herbicides, inorganics, TOC, and TSS. Selected wells were also analyzed for arsenic speciation and related parameters.

Lake Baldwin is located downgradient of both SAs 8 and 9. Well points were installed adjacent to the lake edge at both SAs to evaluate groundwater discharge to the lake. Arsenic is the primary COC in groundwater at both SAs.

At SA 8, in the October 1999 quarterly sampling, arsenic exceeded both surface water standards and GCTLs at one of the four well points adjacent to Lake Baldwin (Figure 2-5). In addition, MCPP and lead were each detected in one well point at concentrations exceeding the Florida GCTL. More recently at SA 8, in the January 2000 quarterly sampling (unvalidated), MCPP was detected in three out of four well points, and



OLD-08-15					
1 TO 7	12/5/97	3/13/99	8/1/99	10/20/99	1/23/00
Fe	498	**1960**	853/806	652	1020
MCPA	**1200-DJ**	**<50**	**<400/<400**	**<400-J**	<40
MCPP	**<60**	**<50**	**<400/280-J**	**<400-J**	68
Mn	**72.9**	**83.9**	32.6/30.1	<9.4	<15.3
Pb	2.3-J	NS	<2.8/<2.4	**28.5**	**2.1**

OLD-08-18					
2 TO 11	2/19/98	3/12/99	7/31/99	10/20/99	1/23/00
Fe	550	NS	**3550**	**3360**	3260
MCPP	NS	NS	**320-R**	**180-J**	50-J
Mn	<23.4	NS	**204**	**185**	164

OLD-08-14					
1 TO 7	12/8/97	3/15/99	7/31/99	10/20/99	1/23/00
As	7.1-J	9.5	**100**	**224**	85.5
Fe	**1730-J**	**7340-J**	**5190**	**10500**	6320
MCPP	**200-J**	**<50**	**190-J**	**<400-J**	R
Mn	**172**	**132-J**	**304**	**119**	83.7
Pb	3.1	**21.1**	**34.8**	**151**	32
Sb	<2	<3.3	**<6.8**	**11.2**	**<3.2**

OLD-08-11					
1 TO 10	10/23/97	3/12/99	7/30/99	10/19/99	1/23/00
As	**223**	**315-J**	**170**	**114**	823
Dieldrin	**0.019-J**	NA	NA	NA	NA
MCPA	**<140**	**<50**	**<400-J**	**<400-J**	140-J
MCPP	**660-J**	**<50**	**110-J**	**<400-J**	<40

OLD-08-13					
1 TO 7	12/5/97	3/15/99	7/31/99	10/21/99	1/23/00
As	**88.2**	19	24.3/22.6	30.7	20.7
Fe	447	**2470-J**	**1660/1650**	**2150**	1250
MCPA	**660-J**	**<100**	NA	NA	NA
Mn	**148**	**124-J**	**68.1/68.7**	**75.1**	42.8

OLD-08-10					
1 TO 10	10/23/97	3/12/99	7/30/99	10/21/99	1/23/00
As	**209**	**122-J**	**189**	**276**	166/172
Fe	825	**1400**	<104	120	521/535
MCPP	**900-J**	**<51**	**540-R**	**<400**	<40/46-J
Mn	**54.4**	**56.8**	<14.7	29.3	85.1/87

OLD-08-08					
1 TO 10	10/22/97	3/11/99	8/1/99	10/19/99	1/23/00
As	**122/120**	**175**	**154**	**194**	214
MCPA	<82/<72	<50	<400	<400-J	180-J
MCPP	**<110/710-J**	**<60**	**99-J**	**<400-J**	R
Sb	<2.9	<14	<3.6	**10.1**	<3.2

OLD-08-05					
1 TO 10	10/23/97	3/10/99	7/29/99	10/21/99	1/23/00
Al	<96.7/<120	126	**4310-J**	**289**/276	**<110**
As	**57.7/57.3**	**56.9**	**284**	**84/88.3**	37.9
Mn	**160/162**	**146-J**	**338**	25.2/25.5	24.8
Pb	<1.9/<1.9	<1.4	3.7	**38.7/34.1**	15

OLD-08-03					
3 TO 13	10/22/97	3/11/99	7/28/99	10/19/99	1/23/00
Al	<80.9	168	**4300-J**	721	**<115**
As	**79.9**	**260**	**234**	**610**	248
Fe	231	**1260**	750	201	479
MCPA	**640-J**	**<50**	NA	NA	NA
Mn	15.3	19.6	12.2	**65.4**	39.2
Sb	<2.9	<4.7	**<8.1**	**13.8**	**<7.6**

OLD-08-06					
1 TO 10	10/23/97	3/11/99	7/29/99	10/19/99	1/23/00
As	**53**	**88.5**	**138**	**71.8**	73.4
Fe	198	**33300**	<61.9	185	**97.3**
Mn	24.2	**110**	**69.6**	11.7	**<3.1**

OLD-08-04					
3 TO 13	10/22/97	3/11/99	7/28/99	10/19/99	1/23/00
As	**70.4**	**102/106**	**99.2**	**381**	20[illegible]

OLD-08-07					
1 TO 10	10/23/97	3/15/99	7/28/99	10/19/99	1/23/00
As	**56.4**	47.9	NS	NS	NS

OLD-08-01					
3 TO 13	10/22/97	3/13/99	7/28/99	10/19/99	1/23/00
As	**133**	**138-J/128-J**	**163**	**229**	150
Fe	**1460**	<311/<451	155	<98.3	**76.2**
MCPP	**790-J**	**<50/<50**	NA	NA	NA
Naph	**25**	NA	NA	NA	NA
Sb	7.7-J	<5.6	**<3.6**	**7.4**	<11.3

OLD-08-02					
3 TO 13	10/22/97	3/11/99	7/28/99	10/19/99	1/23/00
As	**295**	**294**	**609**	**881**	717
Sb	<2.9	<3.3	<3.4	**8**	<21.3

OLD-08-17					
1 TO 10	2/18/98	3/11/99	7/30/99	10/19/99	1/23/00
As	**98.8**	**167**	**191**	**156**	145
Mn	<10.5	10.1	<6	**59.1**	**<4.8**
Sb	<2.5	<3.3	**12.2**	4.6	**<7.9**

LEGEND

ASTERISK INDICATES WELLS SAMPLED — * OLD-08-01

MONITORING WELL — ◎

SCREEN INTERVAL TO NEAREST FOOT — SAMPLE COLLECTION DATE — DUPLICATE SAMPLE

3 TO 13	10/22/97	3/13/99	7/28/99
As	**133**	**138-J/128-J**	**163**
Fe	**1460**	<311/<451	155
MCPP	**790-J**	**<50/<50**	NA
Naph	25	NA	NA

ANALYTE — ANALYTE CONCENTRATION [1,2]

ESTIMATED CONCENTRATION	J
VALUE FROM DILUTION	D
NOT ANALYZED	NA
REJECTED	R
NOT SAMPLED	NS

1-CONCENTRATION IN MICROGRAMS PER LITER (ug/L)
2-BOLD CONCENTRATION INDICATES EXCEEDANCE

SCREENING CRITERIA

ANALYTE	GCTL [1]	BGSV [1]
Al	200	4067
As	50	5
Dieldrin	0.005	-
Fe	300	1227
MCPA	3.5	-
MCPP	7	-
Mn	50	17
Naph	20	-
Pb	15	4
Sb	6	4.1

GCTL=GROUNDWATER CLEANUP TARGET LEVEL
BGSV=BACKGROUND SCREENING VALUE

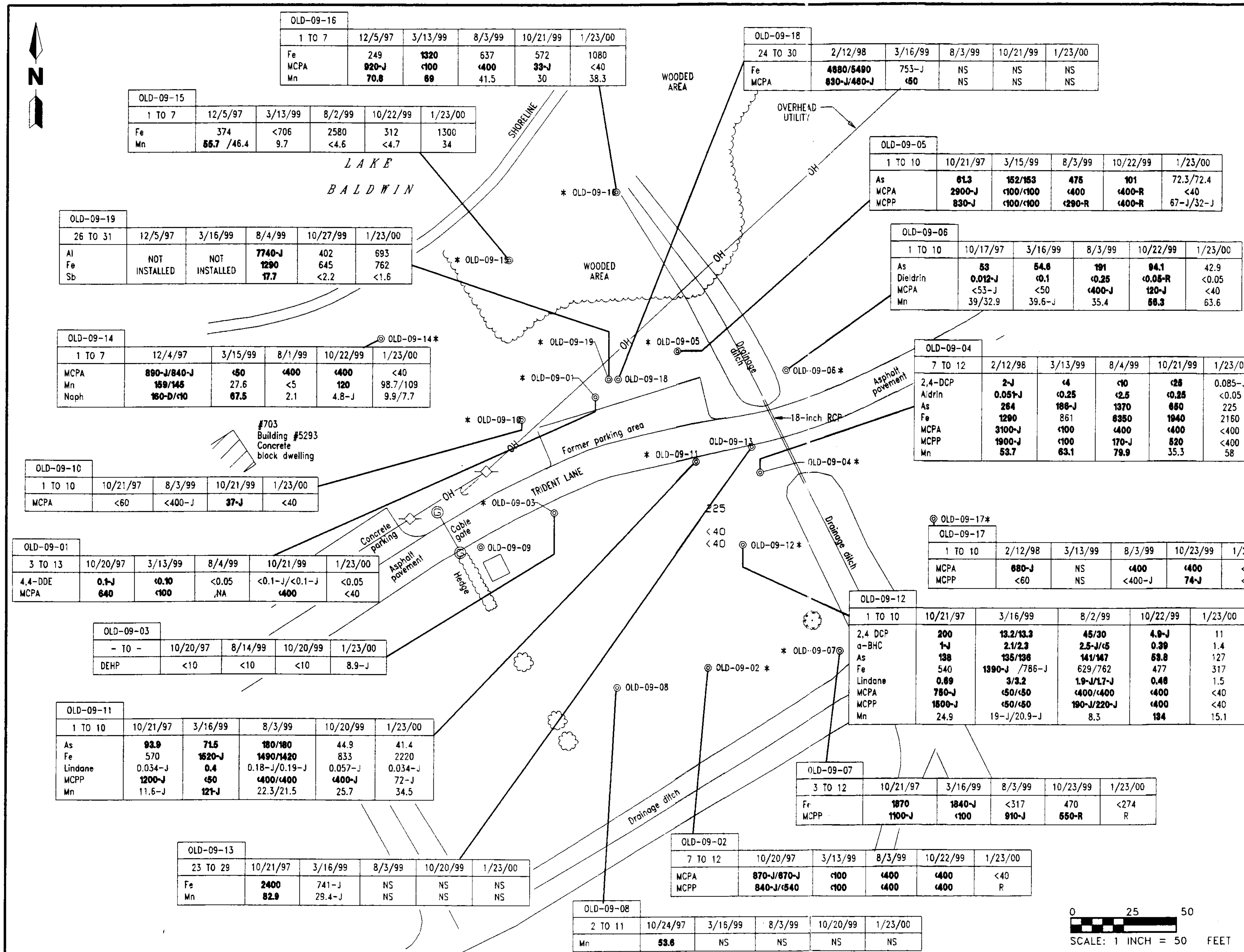
NOTES:
1. DATA ARE SHOWN FOR LOCATIONS WITH PAST OR CURRENT SCREENING CRITERIA EXCEEDANCES.
2. SAMPLING DATA FROM TETRA TECH N.U.S., INC.

FIGURE 2-5
GROUNDWATER EXCEEDANCES MARCH 1998 TO JANUARY 2000 OPERABLE UNIT 3 STUDY AREA 8

INTERIM RECORD OF DECISION OPERABLE UNIT 3

NAVAL TRAINING CENTER ORLANDO, FLORIDA

K:\02546\02546-09\ROD\02546582.DWG, SB-BB 04/25/00 15:27:26, ACAD14



OLD-09-16					
1 TO 7	12/5/97	3/13/99	8/3/99	10/21/99	1/23/00
Fe	249	**1320**	637	572	1080
MCPA	**920-J**	<100	<400	**33-J**	<40
Mn	**70.8**	**69**	41.5	30	38.3

OLD-09-15					
1 TO 7	12/5/97	3/13/99	8/2/99	10/22/99	1/23/00
Fe	374	<706	2580	312	1300
Mn	**55.7** /46.4	9.7	<4.6	<4.7	34

OLD-09-19					
26 TO 31	12/5/97	3/16/99	8/4/99	10/27/99	1/23/00
Al	NOT INSTALLED	NOT INSTALLED	**7740-J**	402	693
Fe			**1290**	645	762
Sb			**17.7**	<2.2	<1.6

OLD-09-14					
1 TO 7	12/4/97	3/15/99	8/1/99	10/22/99	1/23/00
MCPA	**890-J/840-J**	<50	<400	<400	<40
Mn	**159/145**	27.6	<5	**120**	98.7/109
Naph	**160-D/<10**	**67.5**	2.1	4.8-J	9.9/7.7

OLD-09-10				
1 TO 10	10/21/97	8/3/99	10/21/99	1/23/00
MCPA	<60	<400-J	**37-J**	<40

OLD-09-01					
3 TO 13	10/20/97	3/13/99	8/4/99	10/21/99	1/23/00
4,4-DDE	**0.1-J**	<0.10	<0.05	<0.1-J/<0.1-J	<0.05
MCPA	**640**	<100	NA	<400	<40

OLD-09-03				
- TO -	10/20/97	8/14/99	10/20/99	1/23/00
DEHP	<10	<10	<10	8.9-J

OLD-09-11					
1 TO 10	10/21/97	3/16/99	8/3/99	10/20/99	1/23/00
As	**93.9**	**71.5**	**180/180**	44.9	41.4
Fe	570	**1520-J**	**1490/1420**	833	2220
Lindane	0.034-J	**0.4**	0.18-J/0.19-J	0.057-J	0.034-J
MCPP	**1200-J**	<50	<400/<400	<400-J	72-J
Mn	11.6-J	**121-J**	22.3/21.5	25.7	34.5

OLD-09-13					
23 TO 29	10/21/97	3/16/99	8/3/99	10/20/99	1/23/00
Fe	**2400**	741-J	NS	NS	NS
Mn	**82.9**	29.4-J	NS	NS	NS

OLD-09-18					
24 TO 30	2/12/98	3/16/99	8/3/99	10/21/99	1/23/00
Fe	**4680/5490**	753-J	NS	NS	NS
MCPA	**830-J/460-J**	<50	NS	NS	NS

OLD-09-05					
1 TO 10	10/21/97	3/15/99	8/3/99	10/22/99	1/23/00
As	**61.3**	**152/153**	**475**	**101**	72.3/72.4
MCPA	**2900-J**	<100/<100	<400	<400-R	<40
MCPP	**830-J**	<100/<100	<290-R	<400-R	67-J/32-J

OLD-09-06					
1 TO 10	10/17/97	3/16/99	8/3/99	10/22/99	1/23/00
As	**53**	**54.6**	**191**	**94.1**	42.9
Dieldrin	**0.012-J**	<0.1	<0.25	<0.05-R	<0.05
MCPA	<53-J	<50	<400-J	**120-J**	<40
Mn	39/32.9	39.6-J	35.4	**56.3**	63.6

OLD-09-04					
7 TO 12	2/12/98	3/13/99	8/4/99	10/21/99	1/23/00
2,4-DCP	**2-J**	<4	<10	<25	0.085-J
Aldrin	**0.051-J**	<0.25	<2.5	<0.25	<0.05
As	**264**	**186-J**	**1370**	**650**	225
Fe	**1290**	861	**6350**	**1940**	2160
MCPA	**3100-J**	<100	<400	<400	<400
MCPP	**1900-J**	<100	**170-J**	**520**	<400
Mn	**53.7**	**63.1**	**79.9**	35.3	58

OLD-09-17					
1 TO 10	2/12/98	3/13/99	8/3/99	10/23/99	1/23/00
MCPA	**680-J**	NS	<400	<400	<40
MCPP	<60	NS	<400-J	**74-J**	<40

OLD-09-12					
1 TO 10	10/21/97	3/16/99	8/2/99	10/22/99	1/23/00
2,4 DCP	**200**	**13.2/13.3**	**45/30**	**4.9-J**	11
a-BHC	**1-J**	**2.1/2.3**	**2.5-J**/<5	**0.39**	1.4
As	**138**	**135/136**	**141/147**	**53.8**	127
Fe	540	**1390-J** /786-J	629/762	477	317
Lindane	**0.69**	**3/3.2**	**1.9-J/1.7-J**	**0.46**	1.5
MCPA	**750-J**	<50/<50	<400/<400	<400	<40
MCPP	**1500-J**	<50/<50	**190-J/220-J**	<400	<40
Mn	24.9	19-J/20.9-J	8.3	**134**	15.1

OLD-09-07					
3 TO 12	10/21/97	3/16/99	8/3/99	10/23/99	1/23/00
Fe	**1870**	**1840-J**	<317	470	<274
MCPP	**1100-J**	<100	**910-J**	**550-R**	R

OLD-09-02					
7 TO 12	10/20/97	3/13/99	8/3/99	10/22/99	1/23/00
MCPA	**870-J/670-J**	<100	<400	<400	<40
MCPP	**840-J**/<540	<100	<400	<400	R

OLD-09-08					
2 TO 11	10/24/97	3/16/99	8/3/99	10/20/99	1/23/00
Mn	**53.6**	NS	NS	NS	NS

0 25 50
SCALE: 1 INCH = 50 FEET

LEGEND

ASTERISK INDICATES WELLS SAMPLED — * OLD-09-05

MONITORING WELL — ◎

SCREEN INTERVAL TO NEAREST FOOT — SAMPLE COLLECTION DATE

1 TO 10	10/21/97	3/16/99	8/3/99
As	**93.9**	**71.5**	**180/180**
Fe	570	**1520-J**	**1490/1420**
Lindane	0.034-J	**0.4**	0.18-J/0.19-J
MCPP	**1200-J**	<50	<400/<400
Mn	11.6-J	**121-J**	22.3/21.5

ANALYTE — ANALYTE CONCENTRATION 1,2 — DUPLICATE SAMPLE

ESTIMATED CONCENTRATION	J
VALUE FROM DILUTION	D
REJECTED	R
NOT SAMPLED	NS

1-CONCENTRATION IN MICROGRAMS PER LITER (ug/L)
2-BOLD CONCENTRATION INDICATES EXCEEDANCE

SCREENING CRITERIA

ANALYTE	GCTL [1]	BGSV [1]
Al	200	4067
Aldrin	0.005	-
As	50	5
DEHP	6	-
Dieldrin	0.005	-
Fe	300	1227
MCPA	3.5	-
MCPP	7	-
Mn	50	17
Sb	6	4.1
a-BHC	0.006	-
2,4-DCP	0.5	-
Lindane	0.2	-
Naph	20	-

GCTL=GROUNDWATER CLEANUP TARGET LEVEL
BGSV=BACKGROUND SCREENING VALUE

NOTES:
1. DATA ARE SHOWN FOR LOCATIONS WITH PAST OR CURRENT SCREENING CRITERIA EXCEEDANCES.
2. SAMPLING DATA FROM TETRA TECH N.U.S., INC.

FIGURE 2-6
GROUNDWATER EXCEEDANCES MARCH 1999 TO JANUARY 2000 OPERABLE UNIT 3 STUDY AREA 9

INTERIM RECORD OF DECISION OPERABLE UNIT 3

NAVAL TRAINING CENTER ORLANDO, FLORIDA

K:\02546\02546-09\ROD\02546583.DWG, BB-BB 04/25/00 15:29:37, ACAD14

arsenic in two out of four well points at concentrations exceeding the Florida GCTL. The Navy is evaluating the data and will make a decision as to whether or not active remediation is necessary to prevent shallow groundwater beneath SA 8 from reaching Lake Baldwin.

Because of this recent data, the OPT has decided to monitor the groundwater via drive point wells installed in shallow water adjacent to the shoreline of the lake to determine whether or not ecological receptors are at risk. The OPT also decided to implement bench scale testing on three remedial technologies that show promise in reducing contaminant concentrations in groundwater. The last option available is to implement active remedial strategies outlined in the feasibility study, which include groundwater extraction and treatment prior to release either to surface water or the local publicly owned treatment works (POTW).

At SA 9, arsenic concentrations in the well points were all well below groundwater screening values and the Florida surface water guidance concentration, although in one well point, the pesticide MCPA was present at an estimated concentration exceeding the State of Florida GCTL (Figure 2-6). Groundwater samples collected from intermediate wells at SA each showed that no significant downward migration of contaminants has occurred within the shallow aquifer. Evaluation of filtered versus unfiltered groundwater sample results at both SAs indicates that most inorganic contaminants are not attributable to suspended solids

2.5.5 Migration Pathways

Direct spillage or disposal of pesticides and herbicides on the ground surface at both SAs and via a sump at SA 9 were the most likely mechanisms for introducing contaminants to the environment. Given the proximity of the sites to the golf course, and the amount of grass cover at the sites, particularly at SA 9, it is also very likely that some component of the total contaminant load detected is due to routine application of pesticide and herbicide compounds.

Once the contaminants had been introduced to the environment, several migration routes were possible. The first of these would be airborne transport of particulates generated during mixing or washing. Routine application of some of the pesticides and herbicides was by spraying, as well. Sprays would only have been generated or applied episodically, and the droplets likely traveled very short distances.

Rainfall is likely the primary agent driving contaminant migration at OU 3. There are two potential migration pathways driven by rainfall. The first is overland flow or runoff. The second is infiltration or percolation. Contaminants present within the soil may be picked up or dissolved in the rainwater and migrate with water as it travels vertically.

For groundwater, the primary migration mechanism is horizontal groundwater flow that serves to transport contaminants away from the source areas at OU 3. The groundwater flow is generally in a northwesterly direction, following surface topography towards Lake Baldwin from both SAs.

2.5.6 Fate and Transport

Based on the fate and persistence characteristics of the COCs and the most likely transport mechanisms, it is expected that off-site migration of contaminants is limited, both in distance and variety of contaminants at SAs 8 and 9. Furthermore, organic contaminants, such as the polynuclear aromatic hydrocarbons (PAHs), pesticides and herbicides, are expected to degrade over time, either in place (soil) or as they migrate (groundwater), while the inorganics tend to sorb to soil and remain near the point of introduction to the environment.

2.5.7 Current and Future Land Use

Because NTC, Orlando has been decommissioned, there are no military activities ongoing in the area including OU 3. Current land at OU 3 consists of open, maintained grass fields, bordered by palustrine wetlands along the shore of Lake Baldwin, and unlined drainage swales. A paved road, Trident Lane bisects both SAs. All buildings have been removed from both locations as part of IRAs. The only current use of land at OU 3 is by the occasional grounds maintenance worker or tresspasser. Groundwater is not currently used at OU 3.

Proposed land use zones for NTC Orlando are documented in the City of Orlando's Site Reuse Plan. The areas encompassing both SA8 and 9 will border a proposed multi-family residential development, but will themselves be designated as non-residential (recreational) use only. The shallow groundwater in the vicinity of OU 3 has never been developed for potable water use, as it is not sufficiently productive, and there is no reason to expect this will change in the future. The only possible beneficial use of shallow groundwater from this area would be for irrigation or non-potable use by the nearby residential development. Because NTC, Orlando is a BRAC facility, any future land use has been reviewed and approved by the Land Reuse Authority, including representatives from all stakeholders. Because the Navy will retain title to the property until all cleanup goals have been achieved and approved by FDEP and USEPA, and after transfer, certain restrictive covenants will remain in place, any change in reuse would require regulatory review and approval.

2.6 SUMMARY OF SITE RISKS.

A risk assessment was completed for OU 3 to predict whether or not the site would pose current or future threats to human health or the environment. Both a human health risk assessment (HHRA) and an ecological risk assessment (ERA) were performed for OU 3. The risk assessments evaluated the contaminants detected in site media during the RI and provided the basis for selecting the remedial actions.

The risk assessments were performed using data collected after the first IRA in September 1997 but before the second IRA was completed in April and May 1999. Therefore, the human health and ecological risk assessments, summarized below, do not take into account recent changes in the conditions of the sites. Refer to Section 2.12 for more information.

2.6.1 Human Health Risk Assessment

An HHRA was conducted to characterize the risks associated with potential exposures to site-related contaminants at OU 3 for human receptors. The HHRA is provided as Chapter 6.0 of the RI/FS report (HLA, 1999a), and supporting documentation is provided in Appendix E of that report.

Five components of the HHRA were completed, including (1) data evaluation, (2) selection of human health chemicals of potential concern (CPCs), (3) exposure assessment, (4) toxicity assessment, and (5) risk characterization.

2.6.1.1 SA 8 Data Evaluation

The data evaluation involved numerous activities, including sorting data by medium, evaluating analytical methods, evaluating quantitation limits, evaluating quality of data with respect to qualifiers and codes, evaluating tentatively identified compounds, comparing potentially site-related contamination with background, developing a data set for use in risk assessment, and identifying CPCs.

Fifty-five surface soil and 18 groundwater sample locations were evaluated in this HHRA. The samples were analyzed for TCL SVOCs, PCBs, pesticides, herbicides, and TAL inorganic compounds. In addition, five surface soil samples and seven groundwater samples were also analyzed for arsenic speciation to determine the ionic form of arsenic present at the site.

Selection of CPCs CPCs are defined as: chemicals for which data of sufficient quality are available for use in the risk assessment; chemicals that are potentially site related; and chemicals that have maximum detected concentrations above standards or guidelines, including risk-based screening concentrations (where available) and background screening concentrations (for inorganic analytes, where established). Table 2-2 summarizes the HHCPCs selected for surface soil and groundwater at SA 8.

Exposure Assessment Potentially site-related chemicals from the Greenskeeper's Storage Area are pesticides, herbicides, metals, and solvents used as pesticide dispersants. These CPCs are only an issue where the three exposure factors are present and complete: (1) a chemical source or release, (2) an exposure point, and (3) an exposure route. Lastly, currently complete or potentially complete future exposure routes must be identified (exposure routes in the HHRA are often hypothetical future routes such as a residential exposure.)

Although the golf course is no longer in use, site maintenance workers may perform routine lawn maintenance activities, where the highest concentrations of contaminants exist. Additionally, trespassers may access the area outside the fence. No humans currently reside at SA 8. The proposed land reuse scenario for the area including SA 8 is multi-family residential units near SA 8 and an undeveloped recreational buffer zone bordering Lake Baldwin and encompassing most of SA 8.

The receptors that are reasonable to consider in the current scenario are trespassers and site maintenance workers. Recognizing probable future land uses, the following potential receptors were identified:

- Site maintenance workers, who perform routine lawn maintenance activities, such as: mowing, weed control, and sprinkler system repairs,
- Commercial workers (assumes only indoor exposures, i.e., minimal contact with site soils),
- Excavation workers, such as construction or installation of utility lines.
- Recreational users, and
- Future area residents.

The potentially complete pathways considered include:

- Incidental ingestion, dermal contact, and inhalation of particulates of contaminants in soil; and Ingestion of groundwater as drinking water by a future area resident.

Currently, there are no drinking water wells at the site and potable water is obtained from the City's public water supply wells offbase. These supply wells are screened at depths exceeding 100 feet and derive groundwater from a deep aquifer. If SA 8 is developed for residential use, drinking water wells in the surficial aquifer could be influenced by contaminants in the groundwater. Because the groundwater is at less than four feet, potable water will most likely continue to be obtained from the City's water supply wells and not from drinking water wells at the site. Exposure of potential future adult and child residents (ingestion of drinking water) is, therefore, evaluated in the HHRA as a conservative measure.

Toxicity Assessment The toxicity assessment is a two-step process whereby the potential hazards associated with the route-specific exposure to a given chemical are (1) identified by reviewing relevant human and

Table 2-2 **Summary of Human Health Chemicals of Potential Concern (CPCs)** Interim Record of Decision, Operable Unit 3 Naval Training Center Orlando, Florida	
Environmental Medium	CPCs
Study Area 8	
Surface Soil	**volatile organics:** none
	semivolatile organics: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene
	pesticides, herbicides and PCBs: aldrin, alpha-chlordane, gamma-chlordane, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, dieldrin, heptachlor, heptachlor epoxide, MCPA, MCPP, and Aroclor-1260
	inorganics: aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, copper, iron, lead, manganese, silver, and vanadium
Groundwater	**volatile organics:** naphthalene
	semivolatile organics: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz-(a,h)anthracene, and indeno(1,2,3-cd)pyrene
	pesticides, herbicides and PCBs: dieldrin, MCPA, and MCPP
	inorganics: aluminum, arsenic, iron, and manganese
Study Area 9	
Surface Soil	**volatile organics:** none
	semivolatile organics: none
	pesticides, herbicides and PCBs: 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, alpha-chlordane, gamma-chlordane, dieldrin, MCPA , and MCPP
	inorganics: aluminum, antimony, arsenic, beryllium, copper, and silver
Groundwater	**volatile organics:** none
	semivolatile organics: 2,4-dichlorophenol, and naphthalene
	pesticides, herbicides and PCBs: alpha-BHC, delta-BHC, gamma-BHC, aldrin, gamma-chlordane, dieldrin, heptachlor epoxide, 2,4-D, MCPA, and MCPP
	inorganics: arsenic, iron, and manganese

Notes: 2,4-D = 2,4-dichlorophenoxyacetic acid.
BHC = benzene hexachloride.
DDD = 4,4-dichlorodiphenyldichloroethane.
DDE = 4,4-dichlorodiphenyldichloroethene.
DDT = 4,4-dichlorodiphenyltrichloroethane.
MCPA = (4-chloro-2-methylphenoxy)acetic acid.
MCPP = potassium (2-methyl-4-chlorophenoxy)propionate.
PCBs = polychlorinated biphenyls.

animal studies, and (2) quantified through analysis of dose-response relationships. USEPA has calculated numerous toxicity values that have undergone extensive review within the scientific community. These values (published in the Integrated Risk Information System and other journals) are used in the baseline evaluation to calculate both carcinogenic and non-carcinogenic risks associated with each CPC and rate of exposure.

Risk Characterization In the final step of the risk assessment, the results of the exposure and toxicity assessments are combined to estimate the overall risk from exposure to site contamination. For cancer-causing chemicals, risk is estimated to be a probability. For example, a particular exposure to chemicals at a site may present a 1 in 10,000 (or 1×10^{-4}) chance of developing cancer over an estimated lifetime of 70 years. For noncancer-causing chemicals, the dose of a chemical for which a receptor may be exposed is estimated and compared to the reference dose (RfD). The RfD is developed by USEPA scientists and represents an estimate of the amount of a chemical a person (including the most sensitive persons) could be exposed to over a lifetime, without developing adverse effects. The measure of the likelihood of adverse effects other than cancer occurring in humans is called the hazard index (HI). An HI greater than 1 suggests that adverse effects are possible.

Current and future scenario risk estimates are calculated for each exposure pathway and receptor at SA 8. Both carcinogenic and noncarcinogenic risks were estimated for each CPC for each complete exposure pathway for each medium. A summary of the predicted risks for various exposure scenarios is summarized in Table 2-3.

Surface Soil Current Land Use For the current land use scenario, the cancer risks associated with exposure to surface soil are 5×10^{-6} for a lifetime trespasser (combined adult and adolescent), and 1×10^{-6} for a site maintenance worker. Both receptors' cancer risk values are at or below the USEPA acceptable cancer risk range of 1 in 10,000 to 1 in 1,000,000; however, the lifetime trespasser cancer risk exceeds the Florida level of concern of 1×10^{-6}.

The noncancer risks associated with surface soil ingestion dermal contact and fugitive dust inhalation under the current land use scenario (adolescent and adult trespasser user, and site maintenance worker) are below USEPA's and FDEP's target HI of 1. The removal of additional soil at SA 8 has decreased the potential cancer and noncancer risks for current receptors below the USEPA and FDEP criteria for acceptable risk.

Surface Soil Future Land Use For potential future land use scenario, the cancer risks associated with exposure to surface soil are 5×10^{-6} for an lifetime recreational user (combined adult and adolescent), 1×10^{-6} for a site maintenance worker, 7×10^{-5} for an lifetime resident (combined adult and child), 9×10^{-6} for a commercial worker, and 3×10^{-7} for an excavation worker. All of these receptors' cancer risks are within or below the USEPA acceptable cancer risk range of 1 in 10,000 to 1 in 1,000,000; however, the lifetime recreational user, lifetime resident, and commercial worker cancer risk exceed the Florida level of concern of 1×10^{-6}.

The noncancer risks associated with surface soil ingestion, dermal contact, and fugitive dust inhalation under the future land use scenario for all potential future receptors are below USEPA's and FDEP's target HI of 1, except for child resident. The child resident HI of 2.9 exceeds the USEPA and FDEP target HI. The removal of additional soil at SA 8 has decreased the potential cancer and noncancer risks for future receptors below the USEPA and FDEP criteria for acceptable risk.

Groundwater Current Use There are no current exposures to groundwater. Therefore, risk was not evaluated for the current land use scenario.

Table 2-3
Human Health Risk Summary for Study Area 8

Interim Record of Decision, Operable Unit 3
Naval Training Center
Orlando, Florida

Land Use	Exposure Route	HI *	ELCR *
Current Land Uses			
Surface Soil:			
Adult Trespasser:	Incidental ingestion	0.03	2×10^{-6}
	Dermal contact	0.02	4×10^{-7}
	Inhalation of particulates	0.00004	5×10^{-10}
	Total Adult Trespasser:	0.05	2×10^{-6}
Adolescent Trespasser:	Incidental ingestion	0.05	2×10^{-6}
	Dermal contact	0.1	1×10^{-6}
	Inhalation of particulates	0.00004	3×10^{-10}
	Total Adolescent Trespasser:	0.2	3×10^{-6}
	Total Risk to Trespasser (Adult and Adolescent) Exposed to Surface Soil:	NC	5×10^{-6}
Site Maintenance Worker:	Incidental ingestion	0.01	9×10^{-7}
	Dermal contact	0.01	3×10^{-7}
	Inhalation of particulates	0.0001	3×10^{-9}
	Total Site Maintenance Worker:	0.02	1×10^{-6}
Commercial Worker:	Incidental ingestion	0.09	8×10^{-6}
	Dermal contact	0.05	1×10^{-6}
	Inhalation of particulates	0.001	2×10^{-8}
	Total Commercial Worker:	0.1	9×10^{-6}
Site Maintenance Worker:	Incidental ingestion	0.01	9×10^{-7}
	Dermal contact	0.01	3×10^{-7}
	Inhalation of particulates	0.0001	3×10^{-9}
	Total Site Maintenance Worker:	0.02	1×10^{-6}
Future Land Uses			
Surface Soil:			
Adult Recreational User:	Incidental ingestion	0.03	2×10^{-6}
	Dermal contact	0.02	4×10^{-7}
	Inhalation of particulates	0.00004	5×10^{-10}
	Total Adult Recreational User:	0.05	2×10^{-6}
Adolescent Recreational User:	Incidental ingestion	0.05	2×10^{-6}
	Dermal contact	0.1	1×10^{-6}
	Inhalation of particulates	0.00004	3×10^{-10}
	Total Adolescent Recreational User:	0.2	3×10^{-6}
	Total Risk to Recreational User (Adult and Adolescent) Exposed to Surface Soil:	NC	5×10^{-6}

See notes at end of table.

Table 2-3 (Continued)
Human Health Risk Summary for Study Area 8

Interim Record of Decision, Operable Unit 3
Naval Training Center
Orlando, Florida

Land Use		Exposure Route	HI *	ELCR *
	Adult Resident:	Incidental ingestion	0.2	2×10^{-5}
		Dermal contact	0.1	4×10^{-6}
		Inhalation of particulates	0.002	3×10^{-8}
		Total Adult Resident:	0.3	2×10^{-5}
	Child Resident:	Incidental ingestion	2.3	5×10^{-5}
		Dermal contact	0.6	4×10^{-6}
		Inhalation of particulates	0.006	3×10^{-8}
		Total Child Resident:	2.9	5×10^{-5}
		Total Risk to Resident (Adult and Child) Exposed to Surface Soil:	NC	7×10^{-5}
	Commercial Worker	Incidental ingestion	0.09	8×10^{-6}
		Dermal contact	0.05	1×10^{-6}
		Inhalation of particulates	0.001	2×10^{-8}
		Total Commercial Worker:	0.1	9×10^{-6}
	Site Maintenance Resident:	Incidental ingestion	0.01	9×10^{-7}
		Dermal contact	0.01	3×10^{-7}
		Inhalation of particulates	0.0001	3×10^{-9}
		Total Site Maintenance Worker:		5×10^{-6}
	Excavation Worker:	Incidental ingestion	0.2	3×10^{-7}
		Dermal contact	0.01	1×10^{-8}
		Inhalation of particulates	0.0001	1×10^{-10}
		Total Excavation Worker:	0.2	3×10^{-7}
Groundwater:				
	Adult Resident:	Ingestion of Groundwater as Drinking Water	41	2×10^{-3}
		Total Adult Resident:	41	2×10^{-3}
	Child Resident:	Ingestion of Groundwater as Drinking Water	95	1×10^{-3}
		Total Child Resident:	95	1×10^{-3}
		Total Risk to Resident (Adult and Child) Exposed to Groundwater:	NC	3×10^{-3}
		Total Risk to Resident (Adult and Child) Exposed to Groundwater and Surface Soil:	NC	3×10^{-3}

Notes: * = receptor totals may vary for spreadsheets due to rounding algorithm.
HI = hazard index.
ELCR = excess lifetime cancer risk.
NC = Not calculated because child and adult HIs are not additive.

Groundwater Future Land Use For potential future land use scenarios, the cancer risks associated with groundwater ingestion are 3×10^{-3} for a lifetime resident (combined adult and child). Cancer risks associated with groundwater inhalation were not evaluated because VOCs were not identified as COCs. The potential future residential receptor cancer risk is above both the USEPA acceptable risk range of 1×10^{-4} to 1×10^{-6} and the FDEP level of concern of 1×10^{-6} (mainly due to arsenic, and to a lesser extent, dieldrin).

The noncancer risks associated with groundwater ingestion under the future land use scenario for potential future adult (HI = 41) and child (HI = 95) residential receptors are above USEPA's and FDEP's target HI of 1.

Cumulative Cancer Risk Summary USEPA Region IV guidance requires an assessment of a cumulative receptor risk. No cumulative risks need to be calculated for current land use because there is currently only potential exposure to soil. For future land use, the potential future residential receptor, based on the land reuse scenario of a multi-family residential unit, could potentially be exposed to both surface soils and groundwater. The cumulative risk of 3×10^{-3} is above the USEPA acceptable cancer risk range and the FDEP target level of concern. This risk is primarily due to arsenic in groundwater, although recent soil removals (1999) have lowered the cumulative risk posed by exposures at the site.

2.6.1.2 SA 9 Data Evaluation

The data evaluation involved numerous activities, including sorting data by medium, evaluating analytical methods, evaluating quantitation limits, evaluating quality of data with respect to qualifiers and codes, evaluating tentatively identified compounds, comparing potentially site-related contamination with background, developing a data set for use in risk assessment, and identifying CPCs.

Thirty-two surface soil and 18 groundwater sample locations evaluated in this HHRA. The samples were analyzed for TCL, VOCs, SVOCs, PCBs, pesticides, herbicides, and TAL inorganic compounds. In addition, five surface soil samples and four groundwater samples were also analyzed for arsenic speciation.

<u>Selection of CPCs</u> CPCs are defined as: chemicals for which data of sufficient quality are available for use in the risk assessment; chemicals that are potentially site related; and chemicals that have maximum detected concentrations above standards or guidelines, including risk-based screening concentrations (where available) and background screening concentrations (for inorganic analytes where available). Table 2-2 summarizes the selected CPCs for surface soil and groundwater at SA 9.

<u>Exposure Assessment</u> Potentially site-related chemicals from the former Pesticide Handling and Storage Area are pesticides, herbicides, metals, and solvents used as pesticide dispersants. These CPCs are only an issue where the three exposure factors are present and complete: (1) a chemical source or release, (2) an exposure point, and (3) an exposure route. Lastly, currently complete or potentially complete future exposure routes must be identified. Often in the HHRA the exposure route is a hypothetical future route such as a resident.

Although the golf course is no longer in use, site maintenance workers may still be working at the site, performing activities such as mowing the grass. Additionally, trespassers may access the area. No humans currently reside at SA 9. The proposed land reuse scenario includes a residential area with a strip of land bordering the lake to be used for recreational purposes. The boundaries of the recreational buffer zone (limited development) have not been fully defined, but would likely encompass portions of SA 9.

The receptors that are reasonable to consider in the current scenario are trespassers and site maintenance workers. Recognizing probable future land uses, the following potential receptors were identified:

- Site maintenance workers, who perform routine lawn maintenance activities, such as: mowing, weed control, and sprinkler system repairs,

- Commercial workers (assumes only indoor exposures, i.e., minimal contact with site soils),
- Excavation workers performing activities such as construction or installation of utility lines,
- Recreational users, and
- Future area residents.

A recreational user of surface water was evaluated as part of the Lake Baldwin study area. The potentially complete pathways considered include:

- Incidental ingestion, dermal contact, and inhalation of particulates of contaminants in soil; and
- Ingestion of groundwater as drinking water by a future area resident.

Currently, there are no drinking water wells at the site and potable water is obtained from the City's public water supply wells offbase. If SA 9 is developed for residential use, drinking water wells in the surficial aquifer could be impacted by contaminants in the groundwater. Because the groundwater is less than four feet deep, potable water will most likely continue to be obtained from the City's water supply wells and not from drinking water wells at the site. Exposure of potential future adult and child residents (ingestion of drinking water) is, therefore, evaluated in the HHRA as a conservative measure.

Toxicity Assessment The toxicity assessment is a two-step process whereby the potential hazards associated with the route-specific exposure to a given chemical are (1) identified by reviewing relevant human and animal studies, and (2) quantified through analysis of dose-response relationships. USEPA has calculated numerous toxicity values that have undergone extensive review within the scientific community. These values (published in the Integrated Risk Information System and other journals) are used in the baseline evaluation to calculate both carcinogenic and non-carcinogenic risks associated with each CPC and rate of exposure.

Risk Characterization Current and future scenario risk estimates are calculated for each exposure pathway and receptor at SA 9. Both carcinogenic and noncarcinogenic risks were estimated for each CPC for each complete exposure pathway for each medium. The relative significance of risk estimates is evaluated in terms of a comparison with acceptable risk limits established by USEPA and the State and by comparison of site concentrations to risk-based screening concentrations and other guidance values. Table 2-4 provides a summary of predicted risks for various exposure scenarios.

Surface Soil Current Land For the current land use scenario, the cancer risks associated with exposure to surface soil (ingestion, dermal contact, and fugitive dust inhalation) are 2×10^{-6} for a lifetime trespasser (combined adult and adolescent), and 6×10^{-7} for a site maintenance worker. Both receptors' cancer risk values are at or below the USEPA acceptable cancer risk range of 1 in 10,000 to 1 in 1,000,000; however, the lifetime trespasser cancer risk exceeds the Florida level of concern of 1×10^{-6} (mainly due to beryllium and arsenic).

The noncancer risks associated with surface soil ingestion, dermal contact, and fugitive dust inhalation under the current land use scenario are below USEPA's and FDEP's target HI of 1. The removal of additional soil at SA 8 has decreased the potential cancer risks for current receptors to below the USEPA and FDEP criteria for acceptable risk.

Surface Soil Future Land Use For potential future land use scenarios, the cancer risks associated with exposure to surface soil are 2×10^{-6} for a lifetime recreational user (combined adult and adolescent), 6×10^{-7}

Table 2-4
Human Health Risk Summary for Study Area 9

Interim Record of Decision, Operable Unit 3
Naval Training Center
Orlando, Florida

Land Use		Exposure Route	HI*	ELCR*
Current Land Use				
Surface Soil:				
	Adult Trespasser:	Incidental ingestion	0.02	5×10^{-7}
		Dermal contact	0.02	5×10^{-7}
		Inhalation of particulates	0.000001	6×10^{-11}
		Total Adult Trespasser:	0.04	1×10^{-6}
	Adolescent Trespasser:	Incidental ingestion	0.04	4×10^{-7}
		Dermal contact	0.1	1×10^{-6}
		Inhalation of particulates	0.000002	4×10^{-11}
		Total Adolescent Trespasser:	0.1	1×10^{-6}
		Total Risk to Trespasser (Adult and Adolescent) Exposed to Surface Soil:	NC	2×10^{-6}
	Site Maintenance Worker:	Incidental ingestion	0.008	2×10^{-7}
		Dermal contact	0.01	4×10^{-7}
		Inhalation of particulates	0.000005	3×10^{-10}
		Total Site Maintenance Worker:	0.02	6×10^{-7}
Surface Soil:				
	Adult Recreational User:	Incidental ingestion	0.02	5×10^{-7}
		Dermal contact	0.02	5×10^{-7}
		Inhalation of particulates	0.000001	6×10^{-11}
		Total Adult Recreational User:	0.04	1×10^{-6}
	Adolescent Recreational User:	Incidental ingestion	0.04	4×10^{-7}
		Dermal contact	0.1	1×10^{-6}
		Inhalation of particulates	0.000002	4×10^{-11}
		Total Adolescent Recreational User:	0.1	1×10^{-6}
		Total Risk to Recreational User (Adult and Adolescent) Exposed to Surface Soil:	NC	2×10^{-6}
	Adult Resident:	Incidental ingestion	0.2	5×10^{-6}
		Dermal contact	0.2	5×10^{-6}
		Inhalation of particulates	0.00006	4×10^{-9}
		Total Adult Resident:	0.4	1×10^{-5}
	Child Resident:	Incidental ingestion	1.7	1×10^{-5}
		Dermal contact	0.7	5×10^{-6}
		Inhalation of particulates	0.0002	3×10^{-9}
		Total Child Resident:	2.4	2×10^{-5}
		Total Risk to Resident (Adult and Child) Exposed to Surface Soil:	NC	3×10^{-5}

See notes at end of table.

Table 2-4 (Continued)
Human Health Risk Summary for Study Area 9

Interim Record of Decision, Operable Unit 3
Naval Training Center
Orlando, Florida

Land Use		Exposure Route	HI*	ELCR*
	Occupational Worker:	Incidental ingestion	0.06	2×10^{-6}
		Dermal contact	0.05	1×10^{-6}
		Inhalation of particulates	0.00004	3×10^{-9}
		Total Occupational Worker:	0.1	3×10^{-6}
	Site Maintenance Worker:	Incidental ingestion	0.008	2×10^{-7}
		Dermal contact	0.01	4×10^{-7}
		Inhalation of particulates	0.000005	3×10^{-10}
		Total Site Maintenance Worker:	0.02	6×10^{-7}
	Excavation Worker:	Incidental ingestion	0.07	8×10^{-8}
		Dermal contact	0.01	2×10^{-8}
		Inhalation of particulates	0.000005	1×10^{-11}
		Total Excavation Worker:	0.08	1×10^{-7}
Groundwater:				
	Adult Resident:	Ingestion of Groundwater as Drinking Water	112	1×10^{-3}
		Total Adult Resident:	112	1×10^{-3}
	Child Resident:	Ingestion of Groundwater as Drinking Water	261	8×10^{-4}
		Total Child Resident:	261	8×10^{-4}
		Total Risk to Resident (Adult and Child) Exposed to Groundwater:	NC	2×10^{-3}
		Total Risk to Resident (Adult and Child) Exposed to Groundwater and Surface Soil:	NC	2×10^{-3}

Notes: HI = hazard index.
* = receptor totals may vary for spreadsheets due to rounding algorithm.
ELCR = excess lifetime cancer risk.
NC = Not calculated because child and adult HIs are not additive.

for a site maintenance worker, 3×10^{-5} for a lifetime resident (combined adult and child), 3×10^{-6} for a commercial worker, and 1×10^{-7} for an excavation worker. All of these receptors' cancer risks are within or below the USEPA acceptable cancer risk range of 1 in 10,000 to 1 in 1,000,000; however, the lifetime recreational user, lifetime resident, and commercial worker cancer risk exceed the Florida level of concern of 1×10^{-6} (mainly due to arsenic, beryllium, and alpha- and gamma- chlordane).

The noncancer risks associated with surface soil ingestion dermal contact and fugitive dust inhalation under the future land use scenario for all potential future receptors are below USEPA's and FDEP's target HI of 1, except for child resident. The child resident HI of 2.4 exceeds the USEPA and FDEP target HI of 1 (mainly due to MCPP, MCPA, and to a lesser extent, arsenic). The removal of additional soil at SA 9 has decreased the potential cancer and noncancer risks for future receptors to below the USEPA and FDEP criteria for acceptable risk.

Groundwater Current Land Use There are no current exposures to groundwater. Therefore, risk was not evaluated for the current land use scenario.

Groundwater Potential Land Use For potential future land use scenario, the cancer risks associated with groundwater ingestion are 2×10^{-3} for an lifetime resident (combined adult and child). Cancer risks associated with groundwater inhalation were not evaluated because VOCs were not identified as COCs. The potential future residential receptor cancer risk is above both the USEPA acceptable risk range of 1×10^{-4} to 1×10^{-6} and the FDEP level of concern of 1×10^{-6}.

The noncancer risks associated with groundwater ingestion under the future land use scenario for potential future adult (HI = 112) and child (HI = 261) residential receptors are above USEPA's and FDEP's target HI of 1.

Cumulative USEPA Region IV guidance requires an assessment of a cumulative receptor risk. No cumulative risks need to be calculated for current land use because there is currently only potential exposure to soil. For future land use, the potential future residential receptor could potentially be exposed to surface soils and groundwater. The cumulative risk of 2×10^{-3} is above the USEPA acceptable cancer risk range and the FDEP target level of concern. The removal of additional soil at SA 9 has decreased the potential cancer and noncancer risks for future receptors to below the USEPA and FDEP criteria for acceptable risk.

2.6.2 ERA

This ERA evaluates actual and potential adverse effects to ecological receptors associated with exposure to contamination from OU 3 surface soil and groundwater at NTC, Orlando. The ERA for OU 3 was completed in accordance with current guidance for ERAs at Superfund sites. Table 2-5 provides a summary of the CPCs selected for SA 8 and SA 9 to be evaluated for each medium.

2.6.2.1 ERA for SA 8

No lethal risks were identified for terrestrial wildlife resulting from exposure to ECPCs in surface soil; therefore, reductions in the survivability of wildlife receptor populations at SA 8 are not expected to occur. Sublethal risks associated with ingestion of arsenic and cadmium in surface soil and food items are predicted for small herbivorous mammals at SA 8. In addition, sublethal risks associated with ingestion of cadmium in soil and related food items are predicted for insectivorous birds at SA 8. These sublethal risks have been reduced or eliminated as a result of additional soil removals completed in 1999.

Reduction in terrestrial plant and soil invertebrate biomass used as forage material was evaluated. Terrestrial plants could potentially experience adverse growth and reproduction effects from exposure to detected concentrations of aluminum, arsenic, chromium, silver, vanadium, and zinc in the surface soil at SA 8. No evidence of current reduction in vegetative biomass was observed in the field at SA 8. Therefore, impacts to

Table 2-5
Summary of Ecological Chemicals of Potential Concern (ECPCs)

Interim Record of Decision, Operable Unit 3
Naval Training Center
Orlando, Florida

Environmental Medium	ECPCs
Study Area 8	
Surface soil	**volatile organics:** none **semivolatile organics:** acenaphthylene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, di-*n*-butylphthalate, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, pyrene, bis(2-ethylhexyl)phthalate **pesticides, herbicides, and PCBs:** 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, Aroclor-1260, endrin, heptachlor epoxide, alpha-chlordane, gamma-chlordane, 2,4 5-TP (silvex), 2,4,5-T, 2,4-D, 2,4-DB, dalapon, dichloroprop, dinoseb, MCPA, and MCPP **inorganics:** aluminum, antimony, arsenic, beryllium, cadmium, chromium, copper, lead, manganese, mercury, selenium, silver, vanadium, zinc
Groundwater	**volatile organics:** none **semivolatile organics:** none **pesticides, herbicides, and PCBs:** 4,4'-DDT, dieldrin, endrin, Endrin aldehyde, delta-BHC, 2,4-D, 2,4-DB, dalapon, dichlorprop, dinoseb, MCPA, and MCPP **inorganics:** arsenic, barium, cobalt, copper, iron, lead, manganese
Study Area 9	
Surface soil	**volatile organics:** none **semivolatile organics:** 2-methylnaphthalene and bis(2-ethylhexyl)phthalate **pesticides, herbicides, and PCBs:** 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, alpha-chlordane, gamma-chlordane, 2,4-D, 2,4-DB, dalapon, dichloroprop, dinoseb, MCPA, and MCPP **inorganics:** aluminum, antimony, arsenic, beryllium, copper, lead, manganese, selenium, silver, and vanadium
Groundwater	**volatile organics:** none **semivolatile organics:** 2,4-dichlorophenol, 2-methylnaphthalene, 2-methylphenol, 4-methylphenol, and naphthalene **pesticides, herbicides, and PCBs:** 4,4'-DDD , 4,4'-DDT, dieldrin, endosulfan I, endrin, endrin aldehyde, heptachlor epoxide, , alpha-chlordane, gamma-chlordane, delta-BHC, gamma-BHC, 2,4-D, 2,4-DB, dalapon, dichloroprop, dinoseb, MCPA, and MCPP **inorganics:** arsenic, barium, cobalt, copper, iron, lead, manganese, silver

Notes: DDD = dichlorodiphenyldichloroethane.
DDE = dichlorodiphenyldichloroethene.
DDT = dichlorodiphenyltrichloroethane.
BHC = hexachlorobenzene.
2,4-D = 2,4-dichlorophenoxyacetic acid.
2,4-DB = 2,4-dichlorophenoxybutyric acid.
MCPA = (4-chloro-2-methylphenoxy)acetic acid.
MCPP = potassium (2-methyl-4-chlorophenoxy)propionate.

small mammals and birds that rely on plant biomass as a forage base are unlikely. It is unlikely that invertebrate biomass and/or abundance would be reduced such that small mammal and bird populations would be affected at SA 8, particularly as contaminant concentrations have been further reduced.

Potential risks associated with exposures to ECPCs in SA 8 groundwater were evaluated for terrestrial plants in the forested wetland area and for aquatic receptors in Lake Baldwin.

Risks to aquatic receptors associated with exposure to groundwater were evaluated based on the responses of the water flea and the fathead minnow. The results of the groundwater toxicity tests show no significant reduction in survival of test species exposed to site-related groundwater as compared to the groundwater collected from the upgradient reference sample. It is possible that groundwater discharge to the surface water of Lake Baldwin adjacent to SA 8 may pose an unacceptable sublethal risk to aquatic receptors, specifically invertebrates in the water column. Risks for terrestrial and wetland plants were evaluated. The growth and yield of terrestrial and wetland plants in the forested wetland area adjacent to SA 8 may be reduced due to exposure to arsenic in groundwater, although there is currently no indication this is occurring.

2.6.2.2 ERA for SA 9

No lethal risks were identified for terrestrial wildlife resulting from exposure to ECPCs in surface soil. Sublethal risks associated with ingestion of 4,4'-DDD in surface soil and food items are possible for small herbivorous mammals and insectivorous birds at SA 9. In addition, sublethal risks are possible for carnivorous birds exposed to RME concentrations of pesticides. However, these potential risks have been further reduced or eliminated as a result of the 1999 soil removals.

Reduction in terrestrial plant and soil invertebrate biomass used as forage material was evaluated. Terrestrial plants could potentially experience adverse growth and reproduction effects from exposure to detected concentrations of aluminum in the surface soil at SA 9. Impacts to small mammals and birds that rely on plant biomass as a forage base at SA 9 are not likely.

Potential risks associated with exposures to ECPCs in SA 9 groundwater were evaluated for terrestrial plants in the forested wetland area and for aquatic receptors in Lake Baldwin. The growth and yield of terrestrial and wetland plants in the forested wetland area adjacent to SA 9 are not expected to be impacted.

It is unlikely that groundwater discharge to the surface water of Lake Baldwin adjacent to SA 9 will pose an unacceptable risk to aquatic receptors.

2.7 DESCRIPTION OF REMEDIAL ALTERNATIVES.

As described in the RI/FS (HLA, 1999a), five alternatives were considered for remediating surface soil and five alternatives were considered for groundwater. As described in the PP, an IRA was completed in May 1999 by the DET to remove the remaining contaminated soil from OU 3. A summary of the IRA is provided in Section 2.12. Because the remaining soil contaminated above action levels was removed from OU 3, no further remedial actions are required to achieve Remedial Actions Objectives (RAOs).

2.7.1 Groundwater Alternatives

This section summarizes the five remedial alternatives presented in the RI/FS for addressing COCs in groundwater at OU 3:

- Alternative G-1: Limited Action (with Evaluation of Natural Attenuation Parameters)
- Alternative G-2: Permeable Treatment Walls
- Alternative G-3: Extraction and Phytoremediation

- Alternative G-4: Extraction, Pretreatment, Discharge to Orlando STP
- Alternative G-5: Extraction, Treatment, Discharge to Surface Water

A summary of the key components for groundwater alternatives is presented in Table 2-6 and a description of the alternatives is provided in the following subsections. For all groundwater alternatives, groundwater monitoring and sampling would be conducted as part of the corrective action.

2.7.1.1 Alternative G-1: Limited Action (with Evaluation of Natural Attenuation Parameters)

Due to the relatively low risks to human health and ecological receptors at OU 3, a limited action alternative with continuing evaluation of natural attenuation (NA) parameters for groundwater is considered a viable option for site closure. Limited action includes groundwater use restrictions, groundwater monitoring, and site reviews. Natural attenuation would likely biodegrade organic COCs over time. The environmental and cost impacts of this alternative are significantly less than the environmental and cost impacts of any of the other four cleanup alternatives.

NA includes the following mechanisms: biodegradation, sorption, dispersion, dilution, and volatilization. Biodegradation is not expected to be an important NA mechanism at OU 3, although it may be marginally effective at reducing concentrations of the herbicides MCPA and MCPP through reductive dechlorination. However, all of the remaining mechanisms are expected to reduce contaminant concentrations for one or more COCs (organic and inorganic). The groundwater monitoring program will confirm the rates at which concentrations are being attenuated and assist in the selection of a final remedy.

Groundwater would be sampled quarterly for the first year, and annually thereafter from selected existing monitoring wells and drive point wells adjacent to the shoreline of Lake Baldwin. Samples would be analyzed for COCs. Groundwater monitoring shall also include measuring water quality parameters such as temperature, pH, Eh, dissolved oxygen, and specific conductance to evaluate NA conditions. A review of conditions after one year, following completion of bench-scale testing and remedy selection, then at 5 year intervals would also occur to determine if additional actions should be implemented.

2.7.1.2 Alternative G-2: *In Situ* Permeable Treatment Walls

Under this alternative, permeable reactive walls would be strategically placed to intercept COCs in groundwater. This is an innovative technology that treats groundwater "in-situ", or in place. The materials in the wall would remove targeted COCs by degrading, transforming, precipitating, or adsorbing the target solutes as groundwater flows through the wall. A "Funnel and Gate" design that involves the use of sheet pilings to funnel groundwater flow may be installed to optimize treatment. In addition, walls of varying reactive materials could be installed in series to remove targeted compounds.

This alternative would require treatability studies and design to ensure COCs are treatable. This alternative does not require extraction of groundwater for treatment but does require excavation of soil to install the treatment wall. Groundwater monitoring would be required to evaluate effectiveness. Removal or replacement of reactive wall materials would be required as part of routine O&M. This is a relatively new cleanup technology and would require preliminary testing to determine its efficiency in removing COCs at OU 3. Five-year reviews and interim groundwater use restrictions would also be required as part of this alternative.

Due to recent analytical results that indicate the possibility that groundwater with contaminant levels exceeding surface water standards may be reaching Lake Baldwin, the Orlando Partnering Team (OPT), which includes representatives from the Navy, FDEP, and USEPA, decided to evaluate three innovative remedial technologies that show promise for reducing contaminant levels in groundwater. The three treatment technologies that will be evaluated were listed previously in Table 1-1, and consist of the addition of iron modified zeolite, surfactant modified zeolite, or activated aluminum to the substrate to reduce contaminant levels. One or more of these compounds may prove to be effective in removing COCs at OU 3.

Table 2-6
Identification of Remedial Alternatives for Groundwater

Interim Record of Decision, Operable Unit 3
Naval Training Center
Orlando, Florida

Remedial Action Component	G-1 Limited Action	G-2 Permeable Treatment Walls	G-3 Phytoremediation	G-4 Groundwater Extraction, Pretreatment, and Discharge to Orlando STP	G-5 Groundwater Extraction, Treatment, and Discharge to Surface Water
Groundwater-Use Restrictions	X	X	X	X	X
Treatability Studies		X	X		
Design		X	X	X	X
Mobilization/Site Preparation		X	X	X	X
Utilities Required (water or electricity)			X	X	X
In Situ Groundwater Treatment		X			
Groundwater Extraction			X	X	X
Ex Situ Groundwater Treatment:					
Chemical Precipitation					X
Aeration					X
Filtration				X	X
Carbon Adsorption				X	X
UV/Oxidation				X	
Sampling & Analysis					
Monitoring COCs in groundwater	X	X	X	X	X
Influent Sampling			X	X	X
Treated Effluent Sampling			X	X	X
Groundwater Discharge:					
Surface water					X
Orlando STP				X	
Residuals Disposal (sludges, filters, spent carbon, plants)			X	X	X
Operation and Maintenance		X	X	X	X
Five-Year Site Reviews	X	X	X	X	X

Notes: G = groundwater.
STP = Sewage Treatment Plant.
COC = chemical of concern.
UV = ultraviolet light.

2.7.1.3 Alternative G-3: Phytoremediation

Under this alternative, groundwater would be extracted and discharged to a trough containing appropriate plant species that have an affinity to take up, accumulate, and/or degrade contaminants. Plants would be tested under both bench-scale (laboratory) and pilot-scale (field) conditions. Indigenous plant species would be tested first. Plant species that are not indigenous to the area but that effectively bioaccumulate COCs will be planted on site. These plants will be field-tested to determine their ability to accumulate and degrade COCs as well as their ability to survive under ambient conditions.

Nutrients, such as nitrogen and phosphorus, may be added to the groundwater influent to promote microbial activity. Plants that have maximized their waste bearing capacity in the roots (i.e., plant tissue) will be removed, treated (if necessary), and disposed of. Groundwater would be analyzed to determine COC concentrations and removal rates. Over a period of time and multiple plantings, RAOs may be achieved. Confirmatory groundwater samples would be collected to confirm COC removal. Long-term groundwater monitoring would be required as part of the alternative. This technology is also new and may not achieve cleanup levels.

2.7.1.4 Alternative G-4: Groundwater Extraction, Pretreatment, and Discharge to Orlando STP

This alternative provides only the pretreatment required to treat organic COCs while inorganic COCs would be treated at the Orlando STP. Groundwater would be collected by a series of extraction wells. This alternative would consist of the following components:

- acidification (lowering pH with sulfuric acid),
- UV/OX with hydrogen peroxide,
- neutralization (raising pH with potassium permanganate), and
- GAC adsorption.

UV/OX was selected as the representative pretreatment technology to remove SVOCs (pesticides and herbicides) prior to discharge and treatment in the Orlando STP. Lowering the pH can keep inorganic compounds in dissolved form and avoid fouling the UV/OX unit. Raising the pH prevents excessive deterioration of the carbon absorption media. Treatment with GAC can then remove remaining SVOCs prior to discharge to the Orlando STP. Based on existing groundwater data and knowledge of STP operations, the Orlando STP should be capable of effectively treating the effluent from the UV/OX system without impacting the sludge quality or discharge limitations of the Orlando STP under the existing NTC, Orlando permit.

Administrative activities would be required as part of this alternative, including five-year reviews, groundwater monitoring, and groundwater-use restrictions until the action levels are met. No treatability studies were included in the cost estimate for this alternative; it was anticipated that an observational approach would be used to modify the system, if required.

2.7.1.5 Alternative G-5: Groundwater Extraction, Treatment, and Discharge to Surface Water

This alternative consists of collecting groundwater, providing both organic and inorganic COC treatment, and discharging the treated effluent to surface water. Treatment levels would be based on discharge to surface water (i.e., achievement of surface water standards). Similar to Alternative G-4, groundwater would be collected by a series of extraction wells. This alternative would consist of the following components:

- chemical precipitation with ferric chloride,
- flocculation with anionic polymer,
- clarification,
- diffused aeration,
- filtration, and GAC adsorption.

Precipitation with ferric iron is recognized as the most effective and practical means of arsenic removal. Flocculation with polymer addition can precipitate the oxidized inorganic compounds by forming a dense particle mass. Clarification can provide the required detention time for settling and removal of the suspended mass. Diffused aeration would oxidize readily available organic contaminants. A filtration step would be used to remove suspended solids and prevent the GAC units from clogging. Finally, treatment with GAC would remove remaining SVOCs prior to discharge to surface water.

Treated water would meet the substantive requirements of an NPDES permit administered by the USEPA. Administrative activities would be required as part of this alternative, including five-year reviews, groundwater monitoring, and groundwater-use restrictions until the action levels are met. No treatability studies were included in the cost estimate for this alternative; it was anticipated that an observational approach would be used to modify the system, if required.

2.8 COMPARATIVE ANALYSIS OF REMEDIAL ALTERNATIVES.

In evaluating the remedial actions for OU 3, nine criteria were used. The first seven are technical criteria based on the degree of protection of the environment, cost, and engineering feasibility issues. The last two are acceptance criteria (acceptance by the USEPA/FDEP and acceptance by the community).

The nine criteria can be categorized into three groups: threshold criteria, primary balancing criteria, and modifying criteria. Remedial actions should satisfy the threshold criteria, achieve the primary balancing criteria, and consider the modifying criteria after the public comment period. The subsections that follow discuss the remedial actions proposed for OU 3 relative to the nine criteria.

2.8.1 Comparative Analysis for Groundwater Alternatives

This section summarizes the comparative analysis for the five groundwater (G) alternatives. Alternatives discussed in the RI/FS and ROD are labeled as follows:

- G-1: Limited Action (with evaluation of natural attenuation parameters);
- G-2: Permeable Treatment Walls;
- G-3: Phytoremediation;
- G-4: Extraction, Pretreatment, Discharge to Orlando STP; and
- G-5: Extraction, Treatment, Discharge to Surface Water.

2.8.1.1 Comparison of Threshold Criteria

A comparison is made between the groundwater alternatives with respect to two criteria: (1) overall protection of human health and the environment and (2) compliance with ARARs.

Overall Protection of Human Health and the Environment According to the RI/FS (Chapters 6.0 and 7.0), contaminants in groundwater at OU 3 present slight risks to human health and ecological receptors. Alternative G-1 would only protect human health through imposing groundwater use restrictions. Action levels may be achieved through natural attenuation processes (i.e., physical, chemical, and biological). The rate of transformation is anticipated to be slow without intervention. Table 2-7 presents the COCs at OU 3 and their respective Federal and State MCLs, as currently available. The rate of transformation for each COC will be evaluated via the ongoing quarterly monitoring program. In addition, the bench scale tests that are planned for iron-modified zeolite, surfactant-modified zeolite, or activated aluminum will provide input into estimates of contaminant reduction as a function of time. If at any time, results suggest that Alternative G-1 is no longer protective of human health and the environment and goals are not achievable, the Navy will propose and implement another alternative.

Table 2-7
Selected Contaminants of Concern at Operable Unit 3
Federal and State Maximum Contaminant Levels for Groundwater

Interim Record of Decision, Operable Unit 3
Naval Training Center
Orlando, Florida

COC	Federal MCL[1]	State MCL[1]
Arsenic	50	50
Beryllium	4	4
Dieldrin	–	0.005
Lead	15	15
MCPA	–	3.5
MCPP	–	7
Naphthalene	–	20

[1] in micrograms per liter.

Alternatives G-2 and G-3 are innovative technologies that are anticipated to achieve protection of human health and the environment; however, limited data on their success are available. Alternatives G-2 and G-3 are more protective of human health than Alternative G-1, but they are not as well demonstrated as Alternatives G-4 and G-5. Although mechanical intervention is included in Alternatives G-2 and G-3, their effectiveness is less predictable as they rely on natural transformation processes and conditions at the site.

Alternatives G-3, G-4, and G-5 would provide an aggressive groundwater extraction and treatment system to directly remove dissolved contaminants from the shallow aquifer. Alternatives G-4 and G-5 are proven techniques (i.e., pump-and-treat) for removing the bulk of contamination, but experience has shown that attainment of action levels (e.g., surface water standards, drinking water standards) may be technically impractical.

Compliance with ARARs All alternatives are anticipated to eventually achieve chemical-specific ARARs. Alternatives G-2 and G-3 are focused primarily on arsenic contamination and may not attain ARARs for organic compounds at the same time as ARARs for inorganic compounds are achieved. Alternative G-2 relies primarily on adsorption and precipitation, while Alternative G-3 relies primarily on a plant's ability to biodegrade or directly uptake COCs in its root system.

Alternative G-4 would be expected to meet all ARARs because it includes mechanical treatment processes to address organic COCs and relies on the STP to address inorganic COCs. Alternative G-5 would be expected to meet all ARARs because it includes mechanical treatment processes to address both organic and inorganic contaminants. ARARs for inorganic contaminants could potentially be achieved using G-2, G-3, and G-5. ARARs for organic contaminants could potentially be achieved using any of the alternatives.

2.8.1.2 Comparison of Primary Balancing Criteria

A comparison is made between groundwater alternatives with respect to five criteria: (1) long-term effectiveness and permanence; (2) reduction in toxicity, mobility, and volume; (3) short-term effectiveness; (4) implementability; and (5) cost.

Long-Term Effectiveness and Permanence It is anticipated that Alternatives G-1 and G-2 may achieve action levels only after a sufficient period of time. Alternatives G-3, G-4, and G-5 (*ex situ* treatment) would likely achieve action levels sooner than Alternatives G-1 and G-2 (*in situ* treatment). All five alternatives would comply with ARARs.

Given sufficient time for natural transformation processes to occur, the limited-action alternative (G-1) may eventually achieve action levels for organics but not at the same time as for inorganics (arsenic). The long-term effectiveness and permanence of Alternatives G-2 and G-3 are unknown; therefore, neither would be as reliable as Alternatives G-4 or G-5.

While Alternatives G-1, G-2, G-3, and G-5 are independent alternatives, Alternative G-4 is dependent upon the City of Orlando's STP. If the STP were to close in the future before action levels are met in the aquifer, additional treatment would be required for discharge directly to surface water.

Reduction of Toxicity, Mobility, and Volume Other than that accomplished through natural transformation processes, Alternative G-1 would not reduce the toxicity, mobility, or volume of contaminants. Alternatives G-1 and G-2 would not include groundwater extraction; therefore, contaminant volume would not be reduced. However, Alternative G-2 includes installing permeable reactive walls to reduce the toxicity and mobility of COCs in groundwater flowing toward Lake Baldwin.

Alternatives G-3, G-4, and G-5 provide treatment processes to extract and treat contaminated groundwater. By extracting groundwater from strategic locations, the hydraulic flow paths would be controlled, preventing contaminant migration. The selected technologies for treatment would provide reduction in toxicity, mobility, and volume of both organic and inorganic contaminants.

Short-Term Effectiveness Alternatives G-3, G-4, and G-5 would likely have the quickest impact (i.e., contaminant concentrations would be reduced sooner than if Alternatives G-1 or G-2 were implemented) on groundwater contaminants. The treatment duration for these alternatives are based on the pumping duration to effectively remove COCs from groundwater. All three of these alternatives include physical, chemical, or biological treatment processes for contaminant removal.

Alternative G-2 relies primarily on the natural flow of groundwater in the surficial aquifer to pass through the treatment wall. Hydraulic conductivity values range from approximately 0.2 ft/day at SA 9 to 2.74 ft/day at SA 8. Retardation due to adsorption would result in even slower COC movement in groundwater. As a result, many years would be required for a plume to pass through the treatment walls for Alternative G-2. Therefore, short-term effectiveness is considered negligible.

Implementability Because Alternative G-1 includes only administrative actions (e.g., groundwater-use restrictions, groundwater monitoring and sampling, and five year site reviews), it would be the easiest to implement.

Alternative G-2 and G-3 includes bench-scale and pilot-scale treatability studies to test the effectiveness of COC removal. Alternative G-2 includes the installation of permeable reactive walls in addition to the components of Alternative G-1. Alternative G-3 includes groundwater extraction, setup of greenhouses, and harvesting and removing plants that have accumulated COCs in addition to the components of Alternative G-1. Alternatives G-2 and G-3 are relatively difficult to implement because reactive walls and phytoremediation are new technologies and few vendors are available that offer the necessary knowledge and experience with the processes.

Alternatives G-4 and G-5 are straightforward. These alternatives include a similar type of remedial action (i.e., pump-and-treat); however, Alternative G-4 would be easier to construct because it only includes pretreatment of extracted groundwater (i.e., organic treatment) for acceptance in Orlando's STP, whereas Alternative G-5 includes the construction of a more comprehensive treatment system for treatment of all contaminants (e.g., organics and inorganic COCs).

Cost Table 2-8 summarizes the present worth cost estimates for each groundwater alternative based on treatment duration O&M and administrative O&M costs. Cost estimates were prepared for each SA because

Table 2-8
Summary of Comparative Analysis for Groundwater Alternatives

Interim Record of Decision, Operable Unit 3
Naval Training Center
Orlando, Florida

Alternative:	G-1 Limited Action	G-2 Permeable Treatment Walls	G-3 Phyto-remediation	G-4 Groundwater Extraction, Treatment, Discharge to STP	G-5 Groundwater Extraction, Treatment, Discharge to Surface Water
Groundwater Remediation					
Groundwater extracted?	No	No	Yes	Yes	Yes
Organics reduced?	Potential	Potential	Potential	Yes	Yes
Inorganics reduced?	Potential	Yes	Yes	At STP	Yes
Estimated time to achieve action levels (years)?[1]	30+	30+	SA 8 = 30+ SA 9 = 22	SA 8 = 30+ SA 9 = 22	SA 8 = 30+ SA 9 = 22
Plume contained?	No	Yes	Yes	Yes	Yes
Plume toxicity reduced?	No	Yes	Yes	Yes	Yes
Remedy permanent?	No	Unknown	Unknown	Yes	Yes
Uncertainty of attaining action levels?	High	High	High	Low	Low
Treatment Residuals Produced?	No	No	Yes	Yes	Yes
Operation and Maintenance					
Treatment System and Residuals Management	No	Yes	Yes	Yes	Yes
Utilities Maintenance	No	No	Yes	Yes	Yes
Groundwater Monitoring	Yes	Yes	Yes	Yes	Yes
Contaminants Released/Remaining in Environment					
Organics	Yes	Yes	No	No	No
Inorganics	Yes	Yes	No	No	No
Total Cost - Cleanup cost for **SA 8**					
Present Worth	$741,000	$1,670,000	$4,095,000	$3,582,000	$8,279,000
Total Cost - Cleanup cost for **SA 9**					
Present Worth	included in SA 8	$1,498,000	$3,525,000	$5,420,000	$6,192,000
Combined Total Cost - **SA 8 and 9**					
Present Worth	$741,000	$3,168,000	$7,620,000	$9,002,000	$14,471,000

[1] For Alternative G-4, the treatment system would operate for approximately eight years at SA 8 to remove organic contaminants. After this period, the system would be shut down but the pumps would continue to operate in order for inorganics to be treated at the STP.

Notes: SA = Study Area.
STP = sewage treatment plant.

individual treatment units would be installed at each location (Alternatives G-2, G-3, G-4, and G-5). If SA 8 and 9 are addressed at the same time, cost savings may be realized by combining direct costs (i.e., treatability studies, site preparation, equipment purchases, etc.) and indirect costs (i.e., design, engineering, permitting, etc.). Table 2-8 shows the combined gross total cost for SA 8 and 9.

In accordance with USEPA guidance, the cost for Alternative G-1, the limited-action alternative, is based on a 30-year time frame. As expected, Alternative G-1 has the lowest capital cost and the lowest cost overall. Most of the cost for this alternative is for O&M activities (i.e., groundwater sampling and monitoring and five-year reviews) for 30 years. Alternatives G-2, G-3, G-4, and G-5 have higher capital costs than Alternative G-1 and also have five-year reviews for the treatment duration. Table 2-8 shows the estimated period of time to complete each alternative.

Alternatives G-4 and G-5 include a similar type of remedial action (i.e., pump-and-treat); however, Alternative G-4 would have a lower cost because it only includes pretreatment of extracted groundwater for acceptance at Orlando's STP. As expected, Alternative G-5 has the highest estimated costs of the five alternatives because is offers the most comprehensive treatment process (groundwater extraction, inorganic COC removal, organic COC removal, and discharge).

2.9 SELECTED REMEDY.

After careful study of the conditions at OU 3, comparison of the cleanup alternatives, and consideration of the proposed reuse of the land containing OU 3, the OPT concluded that no further action is appropriate for site soil and Alternative G-1 (Limited Action with natural attenuation monitoring) was the appropriate groundwater remedy for this site.

2.9.1 Description of the Limited Action Remedy

Under this remedy, long-term groundwater sampling and monitoring will be conducted to assess whether or not COC concentrations are reducing over time via natural attenuation. Institutional controls will be implemented to prohibit potable use of groundwater in the vicinity of SAs 8 and 9.

This remedy includes the following components:

- institutional controls,
- groundwater monitoring, and
- five-year (maximum) site reviews.

Data from the recently completed first year of quarterly monitoring indicates that more proactive remedial measures may be necessary (Appendix C). As a result, bench scale pilot tests are in the planning stages to evaluate three innovative remedial technologies that may more quickly reduce groundwater contaminant levels to below State and Federal cleanup criteria. Three drive point wells will also be installed along the shoreline of Lake Baldwin and added to the groundwater monitoring program to determine contaminant levels in groundwater at the point where the potential migration pathway from the source area to surface water is completed.

The remedial actions selected for OU 3 are intended to address the principal threats and risks for OU 3 and are chosen as the interim remedy for OU 3. At any point in the monitoring program, the Navy, USEPA or FDEP may determine that the rate of contaminant reduction is inadequate, or that groundwater next to Lake Baldwin is in violation of surface water standards, and thereby decide to implement more active remedial measures. The final remedy will be chosen upon completion of the quarterly monitoring program and bench scale testing. Any changes to the remedy, as proposed herein, will be documented in a final ROD or ROD amendment. Each remedial action is summarized below.

Institutional Controls

Institutional controls will be required at this parcel from the time that the IROD is implemented until such time as the remediation goals have been met and some of the ICs can be lifted. Prior to property transfer, the Navy will retain title to the land until the OPS determination, and will restrict access to the parcel by posting signs and conducting periodic visual inspections concurrently with sampling events in the long-term monitoring program. These measures will help to assure that soil cover has been maintained, that no unauthorized digging activities have taken place, and that no wells have been installed within the area of the groundwater restriction.

The specific institutional controls that will be implemented are listed below:

- Post signs in the vicinity of known soil contamination that was left in place at SAs 8 and 9. The soil was left in place because the risks to the wetland from active remediation were perceived to be greater than the risk of leaving the soil in place. The Navy or its contractor can verify whether the warning signs are still in place or whether there is any evidence of digging in these areas during the groundwater monitoring program.

- Disallow the use of surficial aquifer groundwater for drinking or irrigation by posting signs and conducting periodic visual inspections to assure that no unauthorized wells have been installed. After an OPS determination has been made and the property is deemed transferable by the USEPA and FDEP, the Navy will assure that language is written into transfer documents and property deeds which specifies the ICs that will remain in effect until contaminants in groundwater have been reduced to levels below State or Federal MCLs, whichever is lower.

- Disallow future land use for residential development in areas where contaminated soil exceeds residential cleanup target levels. This would be achieved through restrictive covenants in the transfer documents and property deeds. Prior to transfer, the Navy will ensure that no residential development occurs in the restricted areas.

- Prohibit issuing permits for the installation of potable water wells, irrigation wells, or dewatering wells for construction projects screened within the surficial aquifer until contaminants in groundwater have been reduced to levels below State or Federal MCLs; this will be expedited by notification to the Florida Department of Environmental Protection, St. John's River Water Management District, and Orange County Environmental Health Services. Acknowledgement letters will be obtained from each of these agencies indicating their participation as stakeholders or in the permit denial process.

- Implement annual reminders of groundwater use restrictions to property owners, planning agencies, and permitting agencies.

- Restrictions would be removed only when a five-year site review indicates that groundwater action levels have been achieved based on the groundwater sampling results.

Groundwater Monitoring

- Sample groundwater from selected monitoring wells in the vicinity of OU 3. For each SA, 14 monitoring wells will be sampled, consisting of upgradient, downgradient, and source area wells. Initially, these wells will consist of the same wells being monitored by the CLEAN III Contractor during the first year of baseline sampling, which concluded in January 2000. As conditions change or site conditions become better understood, this list of wells may be modified. In addition, three drive point wells will be installed at SA 8 along the shoreline of Lake Baldwin to determine contaminant levels in groundwater along the migration pathway from the source area to surface water.

- Groundwater would be analyzed for only those compounds that were previously detected, which includes TCL SVOCs, pesticides, herbicides, and arsenic.

- Perform sampling and analysis four times in the first year (i.e., quarterly) and annually thereafter, unless the data consistency between quarterly sampling episodes indicates that a different strategy is more appropriate.

- Every fifth year, analyze samples for TCL/TAL parameters (VOCs, SVOCs, pesticides, herbicides, and inorganics), unless the previous two rounds of sampling indicate that some parameters no longer need to be evaluated due to contaminant reduction to levels below the State's GCTLs. This, however, would hold true only for upgradient and source area wells, not for downgradient wells.

- Analytical results and data would be used to evaluate whether or not contaminant concentrations continue to decrease over time. Data would be summarized and managed on an annual basis for use in the five-year reviews. Annual groundwater sampling and monitoring will continue until action levels are met or changes in land use are proposed.

Site Reviews

- Site reviews would occur at a maximum of every 5 years until action levels are attained. Site reviews would consist of evaluating groundwater data, visual inspection for maintenance of IC, and assessing changes in site conditions and uses.

- Based on a review of groundwater data and site conditions, the Navy will recommend: (1) no further action; (2) continued monitoring; or (3) implementation of other remedial action.

- At any point in the monitoring program, the Navy, USEPA or FDEP may determine that the rate of contaminant reduction is inadequate, or that groundwater next to Lake Baldwin is in violation of surface water standards, and thereby decide to implement more active remediation; as previously described in detail.

Bench Scale Pilot Testing of Innovative Technologies

Due to recent analytical results that indicate the possibility that groundwater with contaminant levels exceeding surface water standards may be reaching Lake Baldwin, the OPT, which includes representatives from the Navy, FDEP, and USEPA, decided to evaluate three innovative remedial technologies that show promise for reducing contaminant levels in groundwater. The three treatment technologies that will be evaluated include iron-modified zeolite, surfactant-modified zeolite, and activated aluminum.

The results of the bench scale testing will be evaluated and factored into the final decision at OU 3. Specific timelines for achieving cleanup targets and evaluation criteria will be included in the final ROD, based on evaluation of monitoring data and bench scale testing results.

<u>2.9.2 Technical Assessment of the Limited Action Remedy</u>

This section provides the technical assessment of the Limited Action remedy against the nine criteria.

<u>Overall Protection of Human Health and the Environment</u> There is currently no exposure to groundwater at OU 3. Exposure to contaminated groundwater would be addressed via groundwater-use restrictions. Humans

would be prevented from developing a drinking water well within the surficial aquifer at OU 3 and drinking untreated groundwater. This remedy does not provide a maximum standard of protection to humans (i.e., groundwater treatment); however, shallow groundwater is not used as a drinking water source and no adverse short-term or cross-media effects are anticipated.

Compliance with ARARs This remedy does not comply with chemical-specific ARARs (e.g., maximum contaminant levels [MCLs] or GCTLs) in the short term; however, this remedy may comply with ARARs in the long-term. Natural processes, including physical, chemical, and biological changes in the aquifer will reduce contaminant concentrations. Achievement of ARARs is one factor to be considered in evaluation of bench scale testing and the first year of quarterly results.

Long-Term Effectiveness and Permanence Naturally occurring processes, such as biological activity, may reduce organic contaminant concentrations in the aquifer over the long term. Groundwater monitoring would provide a means of evaluating the concentrations of contaminants in groundwater and predicting the degradation rate of contaminants. Administrative actions proposed in this remedy would provide a means of exposure control, but would not provide a permanent remedy for risks posed by the site during the period that contaminant concentrations decline through natural processes. Groundwater monitoring and administrative actions are considered reliable controls.

Reduction of Toxicity, Mobility, and Volume Through Treatment Although treatment is not included in this remedy, this alternative provides some reduction in contaminant toxicity of SVOCs (pesticides and herbicides) through natural degradation processes. This remedy would not provide a reduction in contaminant mobility or volume because groundwater extraction or treatment is not proposed.

Although groundwater is not a drinking water source at OU 3, human health toxicity posed by ingestion of groundwater contaminants would remain over a period of several decades until concentrations are reduced through natural processes. No treatment residuals would be produced if this alternative were implemented.

Short-Term Effectiveness Because groundwater is not currently being used as a drinking water source at OU 3, there is no change in short-term risks. However, groundwater-use restrictions would be implemented to prevent humans from drinking untreated water from the surficial aquifer.

This remedy would not comply with RAOs in the short term because the only means of contaminant reduction posed by this alternative is natural degradation. Based on the baseline RA, this remedy does not pose a threat to workers through exposure to contaminated groundwater.

Implementability This remedy does not require remedial construction for implementation. Other activities, such as groundwater monitoring, implementation of groundwater use restrictions, and five-year site reviews are easily implemented. Several vendors provide these services in the Orlando area. Monitoring equipment is easily obtained.

Cost The present worth cost of Alternative G-1 is $741,000 and is presented in Table 2-9. This estimate includes the cost of the groundwater monitoring program, groundwater-use restrictions, and five-year site reviews over a 30-year period, as suggested by USEPA guidance (USEPA, 1988c).

State and Federal Acceptance The FDEP and USEPA have concurred with the remedial actions selected for OU 3.

Community Acceptance Community acceptance of the preferred alternative has been evaluated over the past year through presentations to the facility's RAB. This board is composed of a group of community citizens who participate in reviewing and evaluating environmental cleanup at the base. The RAB has been briefed on the status of OU 3 and has agreed to the approach and recommendations made herein.

Table 2-9
Cost Summary Table for Limited Action Remedy

Interim Record of Decision, Operable Unit 3
Naval Training Center
Orlando, Florida

Cost Item		Cost - SAs 8 and 9
DIRECT COST		
Groundwater-Use Restrictions (SAs 8 and 9)		$10,000
	Total Direct Cost	$10,000
INDIRECT COST		
Health and Safety (at 3%)		NA
Administration and Permitting Fees (at 3%)		NA
Engineering and Design (at 10%)		NA
Construction Support Services (at 10%)		NA
	Total Indirect Cost	NA
	Total Capital Cost (Direct + Indirect)	$10,000
OPERATION AND MAINTENANCE (O&M) COST		
Annual Groundwater Monitoring		$36,000
five-year Groundwater Monitoring (annualized)		$6,000
five-year Site Reviews (annualized)		$6,000
	Present worth of O&M (over 30-year period)	$663,000
	Total Capital and O&M Cost	$673,000
	Contingency (at 10%)	67,000
	Total Cost of Alternative G-1: Limited Action	$741,000

Notes: % = percent.
NA = not applicable.

In addition to these RAB presentations, a 30-day public comment period on the PP was held from July 1 to August 1, 1999 to solicit input on the selected remedial actions from community citizens. No comments were received from the public during the comment period. Had they been received, they would have been addressed in the Responsiveness Summary, which is included in Appendix A to this ROD.

2.10 STATUTORY DETERMINATIONS.

The remedial action selected for implementation at OU 3 is consistent with the Navy's IR program, and satisfies the statutory requirements of CERCLA Section 121, and the NCP. The remedial action selected for OU 3 is:

- protective of human health and the environment, based on current and future land use exposure pathways, and current contaminant concentrations, as determined by risk assessment;

- complies with Federal and State regulatory requirements that are legally applicable or relevant and appropriate to the remedial action (as summarized in Table 2-10);

- utilizes permanent solutions and alternative treatments to the extent practicable, based on interim actions involving removal and off-site disposal of contaminated soil, and the proposed bench scale testing of three alternative groundwater treatment techniques;

- cost effective, based on the cost analysis summarized in Table 2-9;

- however, because evaluation of balancing criteria determined treatment of the groundwater was not practicable, this remedy does not satisfy the statutory preference for treatment as a principal element. Results of bench scale testing and the first year's quarterly monitoring data may suggest that a treatment remedy would be more appropriate.

Because this remedy will result in hazardous substances remaining onsite above health-based levels, a review will be conducted at least every 5 years after commencement of the remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment. The 5-year reviews will include evaluation of all monitoring data gathered since the preceding review and a visual inspection to evaluate changes in site conditions and effectiveness of institutional controls.

2.11 DOCUMENTATION OF SIGNIFICANT CHANGES.

As stated in the PP, site conditions have changed since the issuance of the RI/FS. An IRA conducted between April and May 1999 removed the remaining contaminated soil that posed a potential health risk. In addition, a quarterly groundwater monitoring program was initiated in March 1999 to evaluate whether COCs are still present following removal of the contaminant source and at what concentration level. A summary of the results of the monitoring program are included on Figures 2-5 and 2-6, and the Fourth Quarterly Monitoring Report by the CLEAN III Contractor (for the January 2000 sampling event) is included in Appendix C. The other quarterly monitoring reports for sampling events that occurred in March 1999, July 1999, and October 1999 have become part of the Administrative Record for this site and may be viewed in the Orlando Public Library (TetraTech NUS, 1999a & b, 2000).

2.11.1 Soil Removal Action

The soil contamination resulting from greenskeeper activities at SA 8 were concentrated in the fenced compound and the immediate vicinity. The highest contaminant concentrations were located within the fence or within the heavily vegetated area just west of the fence. Because of the high arsenic levels, an IRA was implemented in the most heavily contaminated portions of SA 8 in September 1997, resulting in the

Table 2-10
Synopsis of Applicable or Relevant and Appropriate Requirements

Interim Record of Decision, Operable Unit 3
Naval Training Center
Orlando, Florida

Name and Regulatory Citation	Description	Consideration in the Remedial Action Process for OU 3
Federal Regulatory Requirements		
Clean Water Act (CWA), General Pretreatment Regulations for Existing and New Sources of Pollution (40 CFR Part 403)	Regulations for the introduction of pollutants from nondomestic sources into POTWs, to control pollutants that pass through, cause interference, or are otherwise incompatible with treatment processes at the plant.	If extracted and treated groundwater is discharged to a POTW, the discharge must meet local limits imposed by the plant.
CWA, National Permit Discharge Elimination System (NPDES) (40 CFR Part 122 and 125)	Requires permits for discharge of any pollutant into the navigable waters of the United States. Permits specify allowable concentrations of contaminants that may be present in the effluent stream.	Remedial alternatives that involve discharging pollutants to navigable water will require a NPDES permit.
CWA, Water Quality Standards (40 CFR Part 131)	Ambient Water Quality Criteria (AWQC), which are nonenforceable, ecological- and human health-based criteria, have been developed to establish water quality standards under the CWA.	Remedial actions that involve the discharge of groundwater to a surface water body must consider the Federal AWQC in the absence of a state surface water standard.
Endangered Species Act Regulations (50 CFR Parts 81, 225, 402)	The Act requires Federal agencies to take action to avoid jeopardizing the continued existence of federally listed endangered or threatened species.	Endangered or threatened species may be present in the vicinity of OU 3. If a planned remedial action could potentially affect an endangered species, this regulation would apply.
National Environmental Policy Act (NEPA) Wetlands, Floodplains, Important Farmland, Coastal Zones, etc. (40 CFR ◻ 6.302[a])	Contains the procedures for carrying out the executive order on wetland protection (EO 11990). Requires Federal agencies to minimize the degradation, loss, or destruction of wetlands, and take steps to preserve and enhance the natural and beneficial value of wetlands.	When choosing a remedial action, any possible impact to wetlands should be considered and mitigated.
NEPA Wetlands, Floodplains Important Farmland, Coastal Zones, etc. (40 CFR Part 6)	Appendix A sets forth the policy for carrying out the Floodplains EO 11988. This appendix requires cleanup in a floodplain not be selected unless determination is made that no practicable alternative exists.	If a remedial action will be implemented in a designated floodplain, alternatives should be considered to reduce the risk of flood loss and preserve and restore floodplains.
Resource Conservation and Recovery Act (RCRA) Regulations, Identification and Listing of Hazardous Wastes (40 CFR Part 261)	Defines listed and characteristic hazardous wastes subject to RCRA. Appendix II contains the Toxicity Characteristic Leaching Procedure.	These regulations would apply when determining whether or not waste on site is hazardous either by being listed or exhibiting a hazardous characteristic as described in the regulations.
RCRA Regulations, Standards Applicable to Transporters of Hazardous Waste (40 CFR Part 263)	These regulations establish procedures to be followed when transporting manifested hazardous waste within the United States.	If a remedial alternative for OU 3 were to include the off-site transportation of hazardous waste for treatment and/or disposal, transporters must meet these requirements.
RCRA Regulations, LDRs for Contaminated Debris (40 CFR Parts 270 and 271)	Hazardous debris, under these regulations, can be managed so that treated, cleaned debris may be disposed of as nonhazardous waste. Treatment residuals containing the original contaminant remain a hazardous waste and must be disposed of as such.	If a remedial alternative for OU 3 generates hazardous debris (e.g., if pavement or concrete contaminated with hazardous waste requires removal), these regulations would apply to disposal and/or treatment of that debris.

See notes at end of table.

Table 2-10 (Continued)
Synopsis of Applicable or Relevant and Appropriate Requirements

Interim Record of Decision, Operable Unit 3
Naval Training Center
Orlando, Florida

Name and Regulatory Citation	Description	Consideration in the Remedial Action Process for OU 3
Safe Drinking Water Act (SDWA) Regulations, Maximum Contaminant Levels (MCLs) and Maximum Contaminant Level Goals (MCLGs) (40 CFR Part 141, Subparts B and F)	Establishes enforceable standards (MCLs) for potable water for specific contaminants that have been determined to adversely affect human health. MCLGs are nonenforceable health goals established by USEPA.	MCLs can be used for groundwater or surface waters that are current or potential drinking water sources. Nonzero MCLGs can be considered potential relevant and appropriate requirements for groundwater used as a current or potential drinking water source.
SDWA Regulations, Underground Injection Control Program (40 CFR Parts 144, 146, 147, and 1000)	These regulations outline minimum program and performance standards for underground injection programs.	If a remedial alternative for OU 3 includes injection into the aquifer, then these regulations would apply.
Federal Guidance Material		
USEPA Region III Risk-Based Concentration Tables	This table contains reference doses and carcinogenic potency slopes for nearly 600 chemicals. These toxicity constants have been combined with standard exposure scenarios to calculate chemical concentrations corresponding to fixed levels of risk.	The chemical-specific soil and groundwater values provided in this guidance are TBC values when evaluating these media in the risk assessment and the FS.
State Regulatory Requirements		
Florida Rules on Permits (Chapter 62-4, FAC)	Provides permitting requirements for water pollution sources and air emissions units.	The regulation would apply to off-site CERCLA activities or non-CERCLA remedial activities requiring air emissions or water discharge permits.
Florida Surface Water Quality Standards (Chapter 62-302, FAC)	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 for remedial actions that involve the discharge of groundwater to a surface water body.
Florida Groundwater Classes, Standards and Exemptions (Chapter 62-520, FAC)	Rule designates the groundwaters of the State into five classes and establishes minimum "free from" criteria. Rule also specifies that Class I & II waters must meet the primary and secondary drinking water standards listed in Chapter 62-550, FAC.	These regulations should be used when determining cleanup levels for groundwater.
Florida Underground Injection Control Regulations (Chapter 62-522, FAC)	This rule establishes a State underground injection control program consistent with the Federal requirements and appropriate to the hydrogeology of Florida. Five classes of injection wells are defined.	If a remedial alternative for OU 3 includes injection into the aquifer, then these regulations would apply.
Florida Drinking Water Standards (Chapter 62-550, FAC)	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.	The standards provided in this rule will be used when evaluating cleanup levels for groundwater at OU 3.
See notes at end of table.		

Table 2-10 (Continued)
Synopsis of Applicable or Relevant and Appropriate Requirements

Interim Record of Decision, Operable Unit 3
Naval Training Center
Orlando, Florida

Name and Regulatory Citation	Description	Consideration in the Remedial Action Process for OU 3
State Regulatory Requirements (Continued)		
Florida Wastewater Facility Permits (Chapter 62-620, FAC)	Establishes requirements for wastewater permits. Because Florida is a designated state (i.e., has the authority to implement the National Discharge Elimination System permits), one permit will suffice to meet both Federal and State discharge requirements.	If a remedial alternatives consists of the discharge of wastewater to navigable waters, the substantive requirements of this rule would need to be achieved.
Pretreatment Requirements for Existing and New Sources of Pollution (Chapter 62-625, FAC)	Rule establishes the authority of various bodies to implement pretreatment standards to control pollutants that pass through or interfere with treatment processes in domestic wastewater facilities.	The regulation would apply to remedial activities involving the discharge of remediation waters to a POTW.
Florida Water Quality Based Effluent Limitations (WQBELs) (Chapter 62-650, FAC)	Requires that all activities and discharges, except dredge and fill, must meet effluent limitations based on technology or water quality. WQBELs are determined by FDEP based on the characteristics of the receiving discharge, the receiving water, and the surface water criteria promulgated by FDEP.	The regulation would apply to remedial alternatives that discharge contaminated groundwater to surface water.
Hazardous Waste Rules (Chapter 62-730, FAC)	These rules adopt by reference appropriate sections of 40 CFR Parts 260 through 268 and established minor additions and exceptions to these regulations concerning the generation, storage, treatment, transportation, and disposal of hazardous waste.	Based on the history of operations at OU 3 and the chemicals used during operations, the wastes encountered at the OU may be classified as hazardous wastes, and these regulations would apply.
State Guidance Materials		
Soil Cleanup Target Levels (Chapter 62-785, FAC)	Provides risk-based cleanup target levels for contaminants in soil based on direct human contact. Includes levels for residential, industrial, and leaching to groundwater exposure scenarios. Target levels are based on default site characteristics, but site-specific soil target levels may be calculated.	The values in this guidance should be considered when determining cleanup levels for soil.
Groundwater Cleanup Target Levels (Chapter 62-785, FAC)	Provides risk-based cleanup target levels for contaminants in groundwater based on ingestion.	The values in this guidance should be considered when determining cleanup levels for groundwater.

Notes: OU = operable unit.
CFR = Code of Federal Regulations.
POTW = publicly owned treatment works.
EO = Executive Order.
LDR = Land Disposal Restriction.
USEPA = U.S. Environmental Protection Agency
TBC = to be considered.
FS = feasibility study.
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act.
FAC = Florida Administrative Code.
FDEP = Florida Department of Environmental Protection.

excavation and disposal of 36 tons of contaminated soil. Some of the less heavily contaminated soils were left in place in 1997, with the expectation that they would be evaluated and potentially remediated subsequent to submittal of the Feasibility Study. In April 1999, the DET mobilized at OU 3 and excavated the remaining soil, primarily within the fenced area of the parcel (Figure 2-3). Section 2.11.1 contains additional information about the IRA soil removal, and the DET's completion report is included as Appendix B.

Soil contaminants at SA 9 were concentrated in two areas. The first area is located in the flat grassy area east of former Building 2132 in which the 1997 IRA occurred, resulting in the excavation and disposal of 946 tons of pesticide-contaminated soil in September 1997. The second area is located along the drainage swale, which has been a receptor of surface runoff from the work area for many years. It appeared that contaminated sediment had accumulated at the point where the swale entered the heavily vegetated areas, based on the finding that concentrations at that point were higher than concentrations in all other samples collected from the swale and wetlands both above and below that point. Samples results confirmed that contamination did not extend laterally beyond the swale. The soil in the swale area of SA 9 was excavated and disposed of during a second IRA in April and May 1999 (Figure 2-4).

Soil samples were collected in the wetland area to evaluate concentrations of soil likely to migrate overland and be deposited into Lake Baldwin as sediment. Although contaminants were detected in wetland soil at both SAs, concentrations generally showed a significant decrease from the concentrations located at the source areas.

Since the completion of the IRA soil removal by the Environmental Detachment Charleston in May 1999, most remaining soil at OU 3 meets soil cleanup criteria required for the intended reuse, which is non-residential (recreational). In several instances, soil exceeding recreational cleanup criteria was left in place because the exceedances were isolated, adjacent to and within a wetland, and the overall exposure to the area would be protective of recreational users. In addition, the potential harm to ecological receptors and biota from soil removal activities in the wetlands was deemed to be more harmful than the benefit that would result from soil remediation.

2.11.2 Quarterly Groundwater Sampling

The OPT suspected that groundwater quality had improved since completion of RI activities because the most highly contaminated soil had been removed from the site. In order to evaluate the effects of soil removal on groundwater contamination and to provide data for evaluating the rate at which natural attenuation is affecting contaminant concentrations, quarterly sampling was conducted between March 1999 and January 2000. Results of the sample rounds are summarized on Figures 2-5 and 2-6. The most recent quarterly report (January 2000) is included as Appendix C and contains a complete summary of all data to date.

At SA 8, in the October 1999 quarterly sampling, arsenic exceeded both surface water standards and GCTLs at one of the four well points adjacent to Lake Baldwin (Figure 2-5). In addition, MCPP and lead were each detected in one well point at concentrations exceeding the Florida GCTL. More recently at SA 8, in the January 2000 quarterly sampling (unvalidated), MCPP was detected in three out of four well points, and arsenic in two out of four well points at concentrations exceeding the Florida GCTL. The Navy is evaluating the data and will make a decision as to whether or not active remediation is necessary to prevent shallow groundwater beneath SA 8 from reaching Lake Baldwin.

Because of this recent data, the OPT has decided to monitor the groundwater via drive point wells installed in shallow water adjacent to the shoreline of the lake to determine whether or not ecological receptors are at risk. The OPT also decided to implement bench scale testing on three remedial technologies that show promise in reducing contaminant concentrations in groundwater.

At SA 9, arsenic concentrations in the well points were all well below groundwater screening values and the Florida surface water guidance concentration, although in one well point, the pesticide MCPA was present at an estimated concentration exceeding the State of Florida GCTL (Figure 2-6).

REFERENCES

ABB Environmental Services, Inc. (ABB-ES). 1994. *Base Realignment and Closure Environmental Baseline Survey Report, Naval Training Center, Orlando, Florida*. Prepared for Southern Division. Naval Facilities Engineering Command (SOUTHNAVFACENGCOM). North Charleston, South Carolina. December.

ABB-ES. 1995a. *Final Background Sampling Report, Naval Training Center, Orlando, Florida*. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina.

ABB-ES. 1995b. *Draft Site Screening Report, Groups I and II, Naval Training Center, Orlando, Florida*. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina.

ABB-ES. 1996. *Base Realignment and Closure Cleanup Plan, Naval Training Center, Orlando, Florida*. Prepared for Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), North Charleston, South Carolina (February).

ABB-ES. 1997. *Remedial Investigation and Feasibility Study Workplan, Operable Unit 3, Study Areas 8 and 9, Naval Training Center, Orlando, Florida*. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina.

C.C. Johnson and Associates, Inc. 1985. *Initial Assessment Study of Naval Training Center, Orlando, Florida*. Prepared for Naval Energy and Environmental Support Activity, Port Hueneme, California (September).

Environmental Detachment Charleston, S.C. 1997. *Completion Report, Interim Remedial Action for Study Areas 8, 9, and 52, Naval Training Center, Orlando*. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina, November.

Environmental Detachment Charleston, S.C. 1999. *Completion Report, Interim Remedial Action for SA 17, 18, 23, 35, 37, 40, 42, and OU 3 & OU 4, Naval Training Center, Orlando*. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina, August.

Florida Department of Environmental Protection (FDEP). 1994. *Groundwater Guidance Concentrations*. Division of Water Facilities, Bureau of Groundwater Protection. Tallahassee, Florida (June).

FDEP. 1994. *Water Quality Standards, Minimum Criteria for Groundwater*. Chapter 17-3.402, Florida Administrative Code (FAC). Tallahassee, Florida (p. 6 January).

FDEP. 1998. *Brownfields Cleanup Criteria Rule*: Chapter 62-785, Florida Administrative Code. Tallahassee, Florida.

Florida Legislature. 1994a. Florida Drinking Water Standards; Florida Administrative Code (FAC), Chapter 62-550. Tallahassee, Florida (September).

Florida Legislature. 1994b. Water Quality Standards, Minimum Criteria for Groundwater; FAC, Chapter 62-3.402. Tallahassee, Florida (January).

Florida Legislature. 1996. Surface Water Quality Standards; FAC. Chapter 62-302. Tallahassee, Florida (1996).

Geraghty & Miller. 1986. *Verification Study, Assessment of Potential Soil and Ground-Water Contamination at Naval Training Center, Orlando, Florida.* Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina (December).

Harding Lawson Associates (HLA). 1999a. *Remedial Investigation and Feasibility Study, Operable Unit 3, Naval Training Center, Orlando, Florida.* Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina (June).

HLA. 1999b. *Proposed Plan, Operable Unit 3, Naval Training Center, Orlando, Florida.* Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina (July).

Tetra Tech NUS. 1999a. *Monitor Well Sampling at Operable Unit 3, March 8 to 17, 1999, Naval Training Center, Orlando.* Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina (June 30).

Tetra Tech NUS. 1999b. *Monitor Well Sampling at Operable Unit 3, July 28 to August 4, 1999, Naval Training Center, Orlando.* Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina (December 7).

Tetra Tech NUS. 2000. *Monitor Well Sampling at Operable Unit 3, October 19 to 22, 1999, Naval Training Center, Orlando.* Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina (Feb 1).

U.S. Environmental Protection Agency (USEPA). 1985. Ambient Water Quality Criteria for Arsenic-1984. Office of Water Regulations and Standards. Washington, D.C. EPA 440/5-84-003. PB85-227445.

USEPA. 1988. *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final.* EPA/540/G-89/004. Office of Solid Waste and Emergency Response. Washington, D.C. (October).

USEPA. 1989a. *Risk Assessment Guidance for Superfund: Human Health Evaluation Manual (Part A) Volume 1.* EPA/540/1-89/002. Office of Emergency and Remedial Response. Washington, D.C. (December).

USEPA. 1989b. *Exposure Factors Handbook.* USEPA/600/8-89/043. Office of Health and Environmental Assessment. Washington, D.C.

USEPA. 1989c. *Ecological Assessment of Hazardous Waste Sites: A Field and Laboratory Reference.* EPA 600/3-89/013. Environmental Research Laboratory. Corvallis, Oregon.

USEPA. 1989d. *Risk Assessment Guidance for Superfund: Environmental Evaluation Manual; Volume 2.* EPA/540/1-89/002. Washington, D.C. (December).

USEPA. 1990. *National Oil and Hazardous Substances Pollution Contingency Plan, Final Rule.* 40 Code of Federal Regulations Part 300. Federal Register 55(46):8718.

USEPA. 1991a. *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual, Supplemental Guidance, Standard Default Exposure Factors.* OSWER Directive 9285.6-03. Office of Emergency and Remedial Response, Toxics Integration Branch. Washington, D.C.

USEPA. 1994. *Remediation Technologies Screening Matrix and Reference Guide*. Prepared by Department of Defense. Environmental Technology Transfer Committee (October).

USEPA. 1995. *Drinking Water Regulations and Health Advisories*. Office of Water. Washington. D.C. (May).

USEPA. 1996. *Presumptive Response Strategy and Ex Situ Treatment Technologies for Contaminated Groundwater at CERCLA Sites*.

USEPA. 1997a. *Health Effects Summary Tables (HEAST), FY-1997 Annual*. EPA 540-R-97-036, PB97-921199. Office of Solid Waste and Emergency Response. Washington, D.C. (July).

USEPA. 1997b. *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments, Interim Final Draft*. Environmental Response Team. Edison, New Jersey.

USEPA. 1998a. *Risk-Based Concentration Table*. USEPA Region III. Philadelphia, Pennsylvania (October).

USEPA. 1998b. Integrated Risk Information System (IRIS). On-line database search (April).

USEPA. 1998c. Permeable Reactive Barrier Technologies for Contaminant Remediation. EPA/600/R-98/125. Office of Solid Waste and Emergency Response (September).

Vance, David B. 1995. "Arsenic: Chemical Behavior and Treatment." *The National Environmental Journal*. pp. 60-64 (May/June).

APPENDIX A

RESPONSIVENESS SUMMARY

Responsiveness Summary

The Responsiveness Summary serves three purposes. First, it provides regulatory agencies with information about the community preferences regarding the remedial alternatives presented for Operable Unit (OU) 3, Study Areas 8 and 9, at Naval Training Center (NTC), Orlando, Florida. Second, the Responsiveness Summary documents how public comments have been considered and integrated into the decision-making process. Third, it provides the Navy, U.S. Environmental Protection Agency, and Florida Department of Environmental Protection with the opportunity to respond to each comment submitted.

The Remedial Investigation/Feasibility Study and Proposed Plan for OU 3 were made available in an Information Repository maintained at the Orlando Public Library. Comments on these documents were solicited from the public during a public comment period held from July 1 through August 1, 1999. No comments were received during the comment period.

APPENDIX B

INTERIM REMOVAL ACTION COMPLETION REPORT (1999)

OPERABLE UNIT 3

1. INTRODUCTION

1.1 OPERABLE UNIT 3

Operable Unit (OU) 3 is located on the Main Base, Naval Training Center, Orlando (Figure 1). OU 3 consists of SA 8 and SA 9. SA 8 was the location of the greenskeeper's storage area, which consists of Building 2134, several smaller storage sheds, and numerous concrete pads (Figure 1). Information for SA 9 can be found in Section 6.

STUDY AREA 8

1.2 OU 3 SA 8 INTERIM REMEDIAL ACTION

SOUTHDIV tasked the DET to perform an IRA for this site. The objective of the IRA was to excavate and dispose of soil contaminated with pesticides and/or arsenic. The excavation was to continue until the sampling program indicated with reasonable confidence that the concentrations of contaminants at the site were less than residential limits specified by FDEP SCG, dated 30 April 1998 or USEPA Region III, dated 01 October 1998, whichever specifies the stricter criteria.

1.2.1 OU 3 SA 8 Interim Remedial Action Execution Summary

The execution of this IRA is discussed in the following sections:

1.2.1.1 OU3 SA 8 Sample Point 08S044

The execution of this IRA consisted of excavating an area approximately 5′ x 8′ to a depth of 2′ (Figure 2). Soil removed from the site was characterized as hazardous and was sent to a permitted Treatment, Storage, and Disposal Facility (TSDF). A Confirmation sample was collected from each sidewall testing for pesticides. The results of these samples were all less than the RGOs.

1.2.1.2 OU3 SA 8 Sample Point 08S031

The execution of this IRA consisted of excavating an area approximately 16′ x 31′ to a depth of 2′ (Figure 3). Soil removed from the site was characterized as hazardous and was sent to a permitted Treatment, Storage, and Disposal Facility (TSDF). A Confirmation sample was collected from each sidewall testing for pesticides. The results of these samples were all less than the RGOs.

1.2.1.3 OU3 SA 8 Arsenic Areas

The execution of this IRA consisted of excavating an area approximately 150′ x 290′ to a depth of 2′ (Figure 4). Soil removed from the site was characterized as non-hazardous and was sent to a Subtitle D landfill. Confirmation samples were collected from each sidewall testing for arsenic. The results of these samples were all less than the RGOs or were less than three times the RGOs.

2.0 INTERIM REMEDIAL ACTION EXCECUTION

2.1 ACTIONS PERFORMED BY THE INTERIM REMEDIAL ACTION WORK PLAN

Actions performed are listed below.

- Collection of waste characterization samples
- Installation of approximately 400′ of silt fencing for erosion control
- Removal and disposal of 50 square feet of non-friable transite shingles
- Demolition and disposal of Building 2143
- Removal and disposal of concrete, asphalt, trees/shrubs/ and fencing
- Excavation and disposal of approximately 2,886 tons of non-hazardous waste
- Excavation and disposal of approximately 63 tons of hazardous waste
- Collection of confirmatory samples along each sidewall for analysis of pesticides and/or arsenic
- Restoration of site by backfilling, grading to surrounding area, and hydroseeding

2.2 OBSERVATIONS NOTES

2.2.1 Soil Conditions

From ground surface to the bottom of the excavation the soil was dark silty sand.

2.3 PLAN MODIFICATIONS AND JUSTIFICATION

- The OPT added three 5′ x 5′ x 2′ areas, an 25′ x 40′ x 2′ area, and a 50′ x 50′ x 2′ area to the original scope of work to be conducted at the site for arsenic contamination.

3.0 INTERIM REMEDIAL ACTION OUTCOME

3.1 SITE CONDITIONS FOLLOWING COMPLETION OF WORK

Following completion of work, the DET had removed 63 tons of pesticide contaminated soil and 2,886 tons of arsenic contaminated soil. The site was backfilled, graded to surrounding area and hydroseeded. Site photographs are included in Appendix H1.

4.0 SAMPLING

4.1 CONFIRMATION SAMPLING

Upon completion of work a confirmation sample was taken on each sidewall testing for arsenic and/or pesticides (Figures 2, 3, & 4). See appendix H2 for sampling documentation.

4.2 WASTE CHARACTERIZATION SAMPLING

Waste characterization samples SA8001, 2, and 3 were taken and analyzed for TCLP metals and TCLP pesticides and sample 99SPORT0140-1 was taken and analyzed for TCLP metals.

5.0 WASTE GENERATION

5.1 Hazardous Waste

A total of 63 tons of hazardous pesticide contaminated soil was disposed of to a permitted treatment, storage and disposal facility. Waste Manifests are in appendix H3.

5.2 Non-Hazardous Waste

A total of 2,886 tons of non-hazardous arsenic contaminated soil was disposed of to a permitted treatment, storage and disposal facility. Waste Manifests are in appendix H3.

STUDY AREA 9

6.1 OPERABLE UNIT 3

Operable Unit (OU) 3 is located on the Main Base, Naval Training Center, Orlando (Figure 5). OU 3 consists of SA 8 and SA 9. SA 9 was the location of a pesticide and herbicide storage building used by the Air Force and Navy between the 1950's to 1972 (figure 1). Information for SA 8 can be found in Section 1.

6.2 OU 3 SA 9 INTERIM REMEDIAL ACTION

SOUTHDIV tasked the DET to perform an IRA for this site. The objective of the IRA was to excavate and dispose of soil contaminated with pesticides. The excavation was to continue until the sampling program indicated with reasonable confidence that the concentrations of contaminants at the site were less than residential limits specified by FDEP SCG, dated 30 April 1998 or USEPA Region III, dated 01 October 1998, whichever specifies the stricter criteria.

6.2.1 OU 3 SA 9 Interim Remedial Action Execution Summary

The execution of this IRA consisted of excavating an area approximately 128′ x 3′ to a depth of 2′ (Figure 6). Soil removed from the site was characterized as hazardous and was sent to a permitted Treatment, Storage, and Disposal Facility (TSDF). A Confirmation sample was collected from each sidewall testing for pesticides. The results of these samples were all less than the RGOs.

7.0 INTERIM REMEDIAL ACTION EXCECUTION

7.1 ACTIONS PERFORMED BY THE INTERIM REMEDIAL ACTION WORK PLAN

Actions performed are listed below

- Installation of approximately 75′ of silt fencing for erosion control
- Removal and disposal of trees and shrubs
- Excavation and disposal of an area approximately 128′ x 3′ to a depth of 2′
- Collection of confirmatory samples along each sidewall for analysis of pesticides and/or arsenic
- Restoration of site by backfilling, grading to surrounding area, and hydroseeding

7.2 OBSERVATIONS NOTES

7.2.1 Soil Conditions

From ground surface to the bottom of the excavation the soil was dark silty sand.

7.3 PLAN MODIFICATIONS AND JUSTIFICATION

- The OPT instructed the DET not to excavate sample point 09S009 for arsenic contamination.

8.0 INTERIM REMEDIAL ACTION OUTCOME

8.1 SITE CONDITIONS FOLLOWING COMPLETION OF WORK

Following completion of work, the DET had removed 32 tons of pesticide contaminated soil. The site was backfilled, graded to surrounding area and hydroseeded. Site photographs are included in Appendix H1.

9.0 SAMPLING

9.1 CONFIRMATION SAMPLING

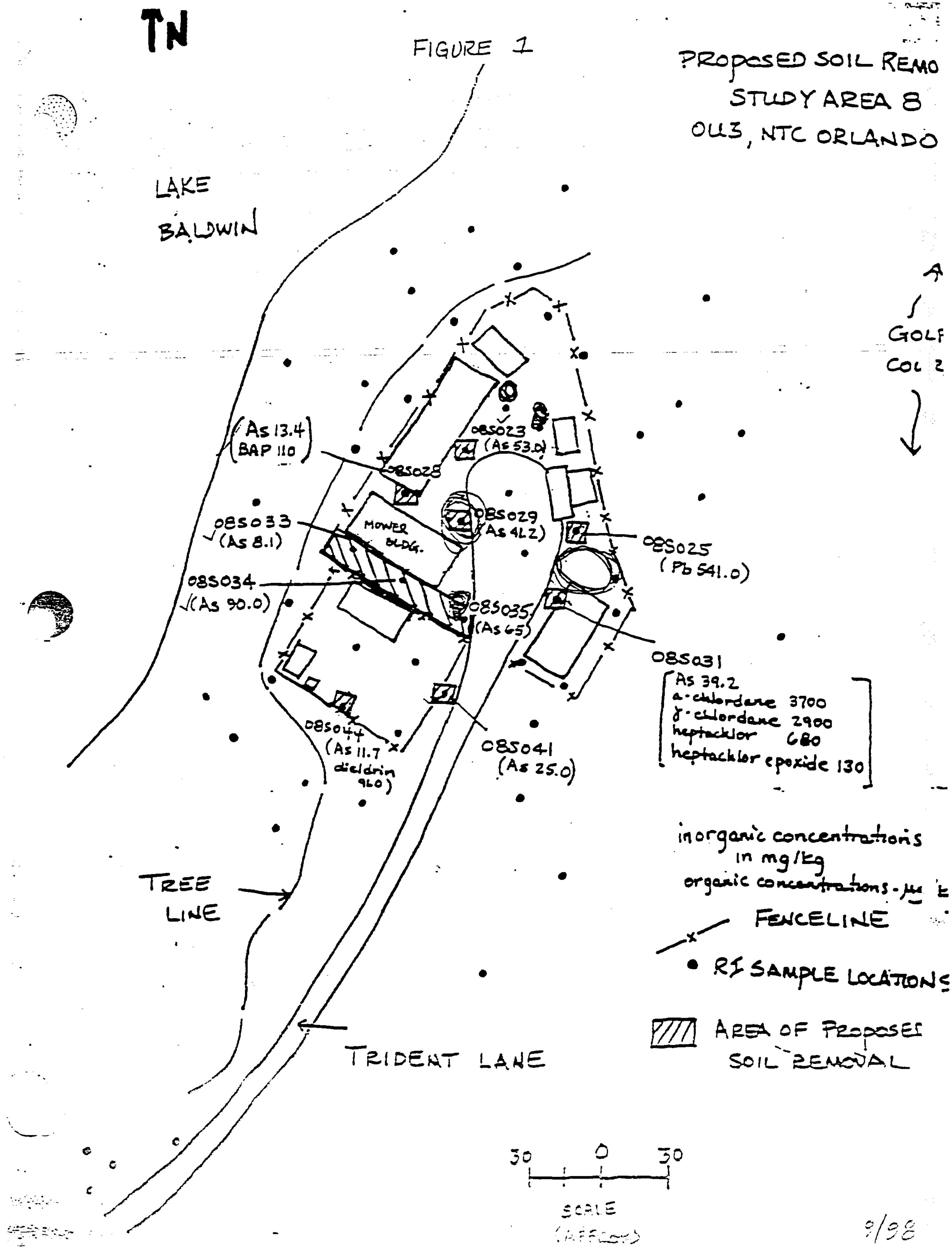
Upon completion of work a confirmation sample was taken on each sidewall testing for arsenic and/or pesticides (Figure 6). See appendix H2 for sampling documentation.

10.0 WASTE GENERATION

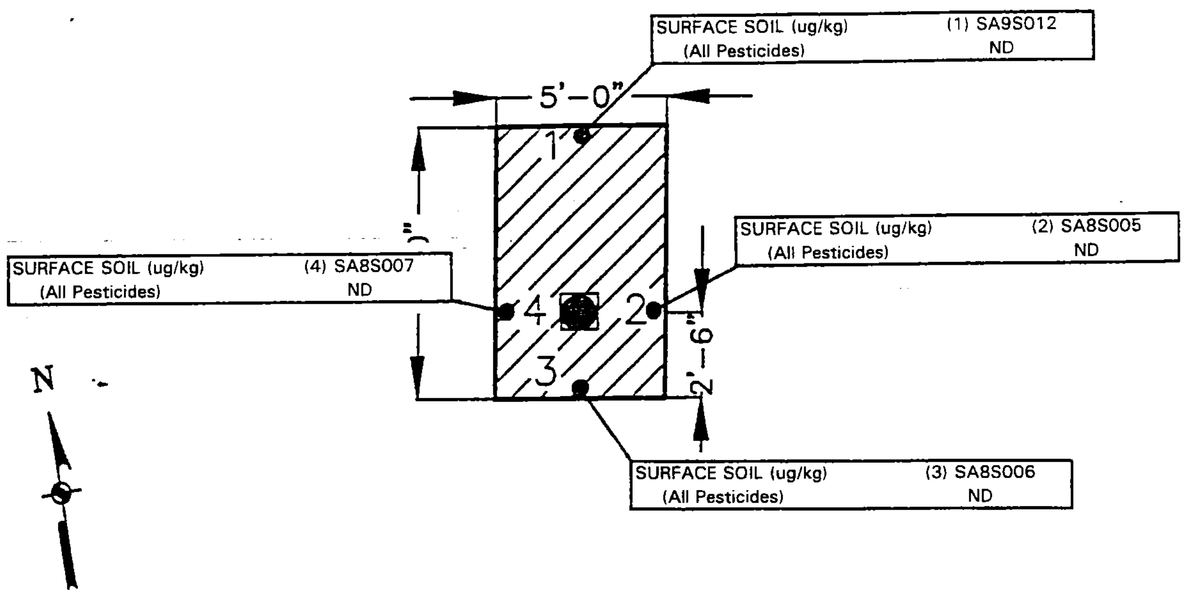
10.1 Hazardous Waste

A total of 32 tons of hazardous pesticide contaminated soil was disposed of to a permitted treatment, storage and disposal facility. Waste Manifests are in appendix H3.

FIGURE 1



TN
PROPOSED SOIL REMO
STUDY AREA 8
OU3, NTC ORLANDO
LAKE BALDWIN
GOLF COU
(As 13.4 BAP 110)
08S023 (As 53.0)
08S028
08S029 (As 41.2)
MOWER BLDG.
08S033 (As 8.1)
08S034 (As 90.0)
08S035 (As 65)
08S025 (Pb 541.0)
08S031
As 39.2
a-chlordane 3700
γ-chlordane 2900
heptachlor 680
heptachlor epoxide 130
08S044 (As 11.7 dieldrin 960)
08S041 (As 25.0)
inorganic concentrations in mg/kg
organic concentrations - μg/kg
TREE LINE
FENCELINE
RI SAMPLE LOCATIONS
AREA OF PROPOSED SOIL REMOVAL
TRIDENT LANE
30 0 30
SCALE (APPROX)
9/98



LEGEND

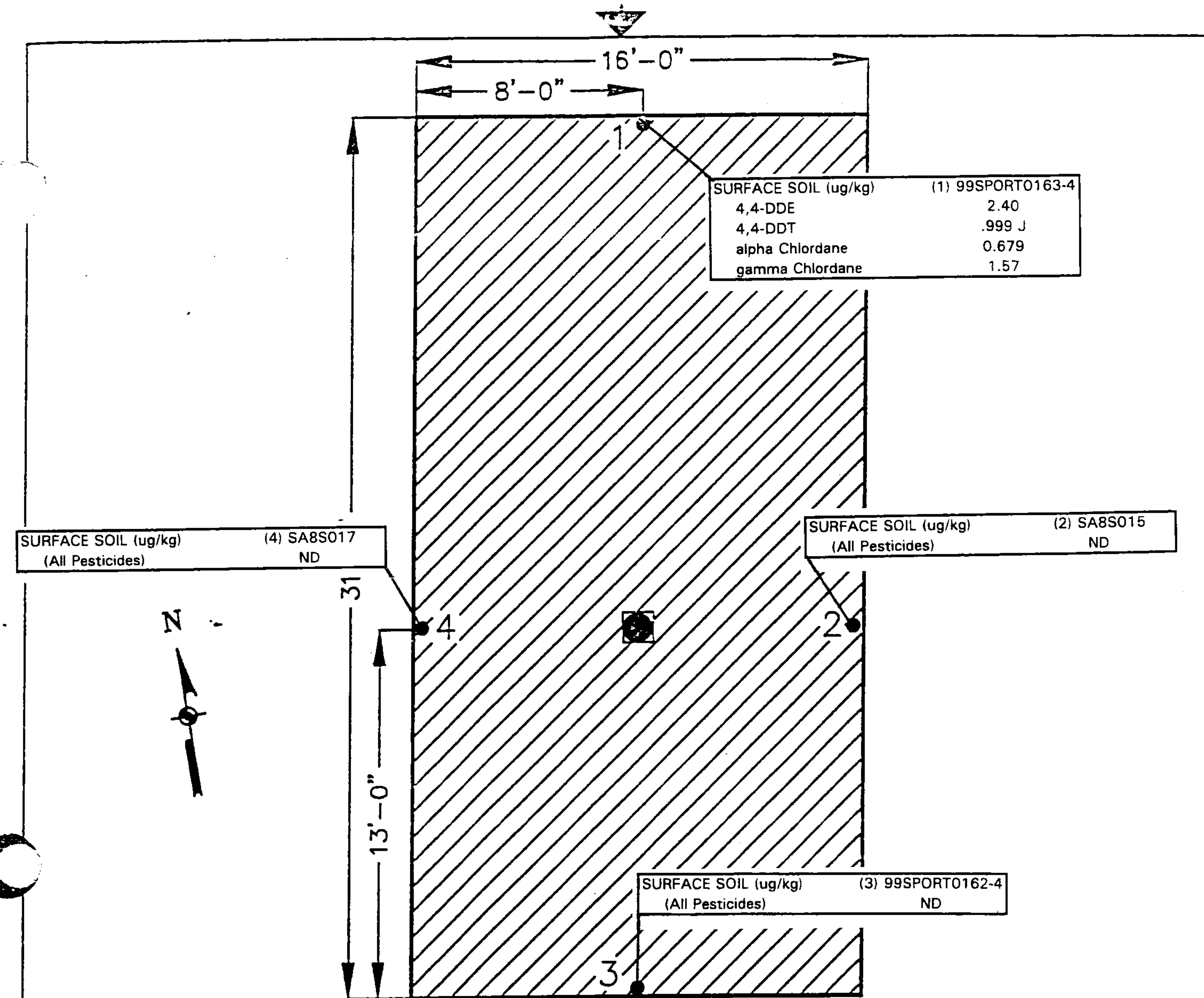
1 ●	CONFIRMATORY SAMPLE ID SA9S012
2 ●	CONFIRMATORY SAMPLE ID SA8S005
3 ●	CONFIRMATORY SAMPLE ID SA8S006
4 ●	CONFIRMATORY SAMPLE ID SAS8007
■	SAMPLE POINT 08S044
▨	EXCAVATED TO 2 FEET DEEP

ENVIRONMENTAL DETACHMENT CHARLESTON
1899 NORTH HOBSON AVENUE – BUILDING 30
NORTH CHARLESTON, SOUTH CAROLINA 29405-2106

FIGURE 2
NAVAL TRAINING CENTER ORLANDO OU3 SA 8
EXCAVATION BOUNDARIES AND
CONFIRMATORY SAMPLE LOCATIONS

DATE:	PREPARED BY:	REV
25 AUGUST 1999	A. J. MOYER	–

SCALE: NONE		SHEET: –



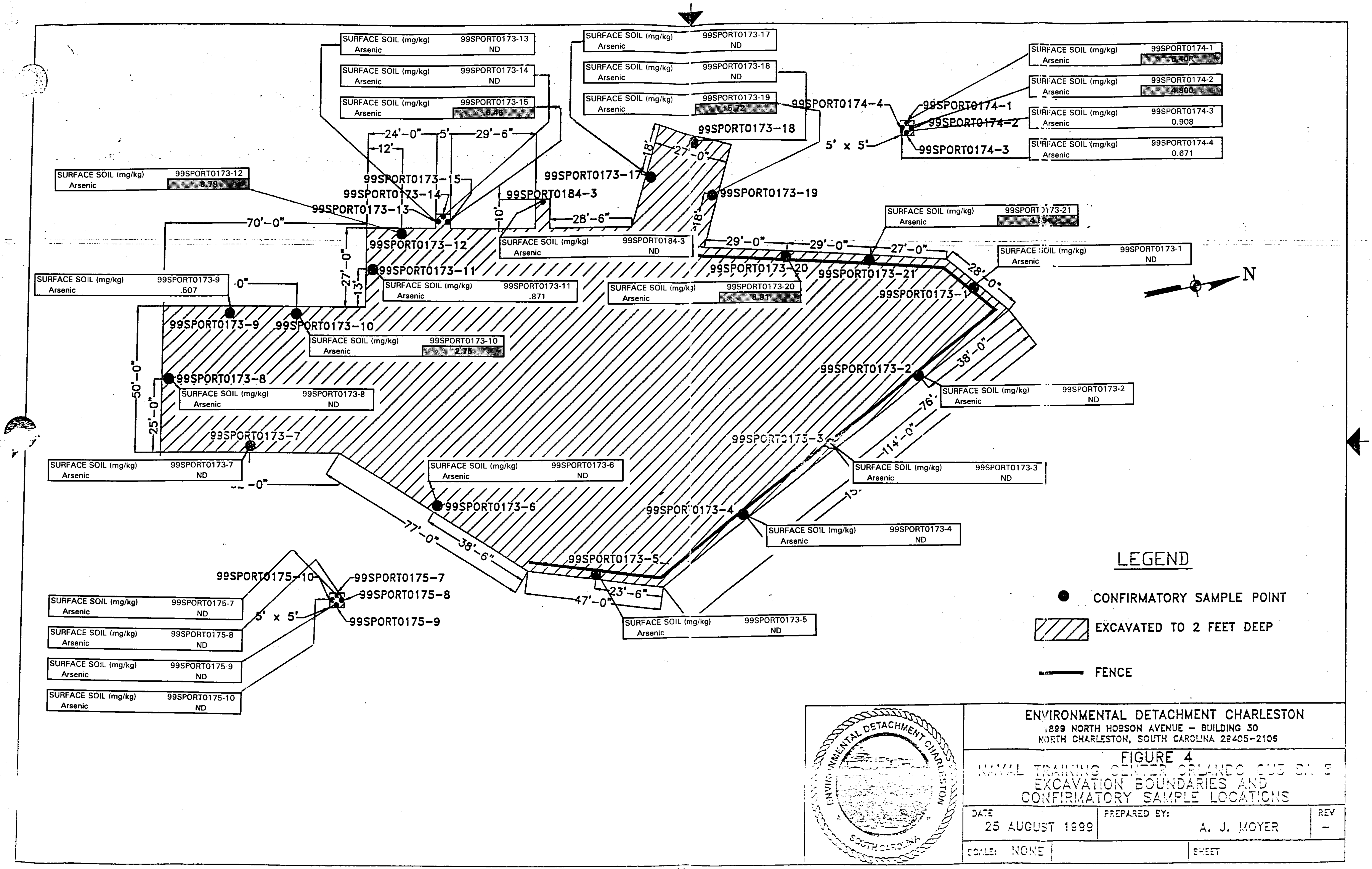
LEGEND

1 ●	CONFIRMATORY SAMPLE ID 99SPORT0163–4
2 ●	CONFIRMATORY SAMPLE ID SA8S015
3 ●	CONFIRMATORY SAMPLE ID 99SPORT0162–4
4 ●	CONFIRMATORY SAMPLE ID SAS8017
	SAMPLE POINT 08S031
	EXCAVATED TO 2 FEET DEEP

ENVIRONMENTAL DETACHMENT CHARLESTON
1899 NORTH HOBSON AVENUE – BUILDING 30
NORTH CHARLESTON, SOUTH CAROLINA 29405–2106

FIGURE 3
NAVAL TRAINING CENTER ORLANDO OU3 SA 8
EXCAVATION BOUNDARIES AND
CONFIRMATORY SAMPLE LOCATIONS

DATE:	PREPARED BY:	REV
25 AUGUST 1999	A. J. MOYER	–
SCALE: NONE	SHEET: –	



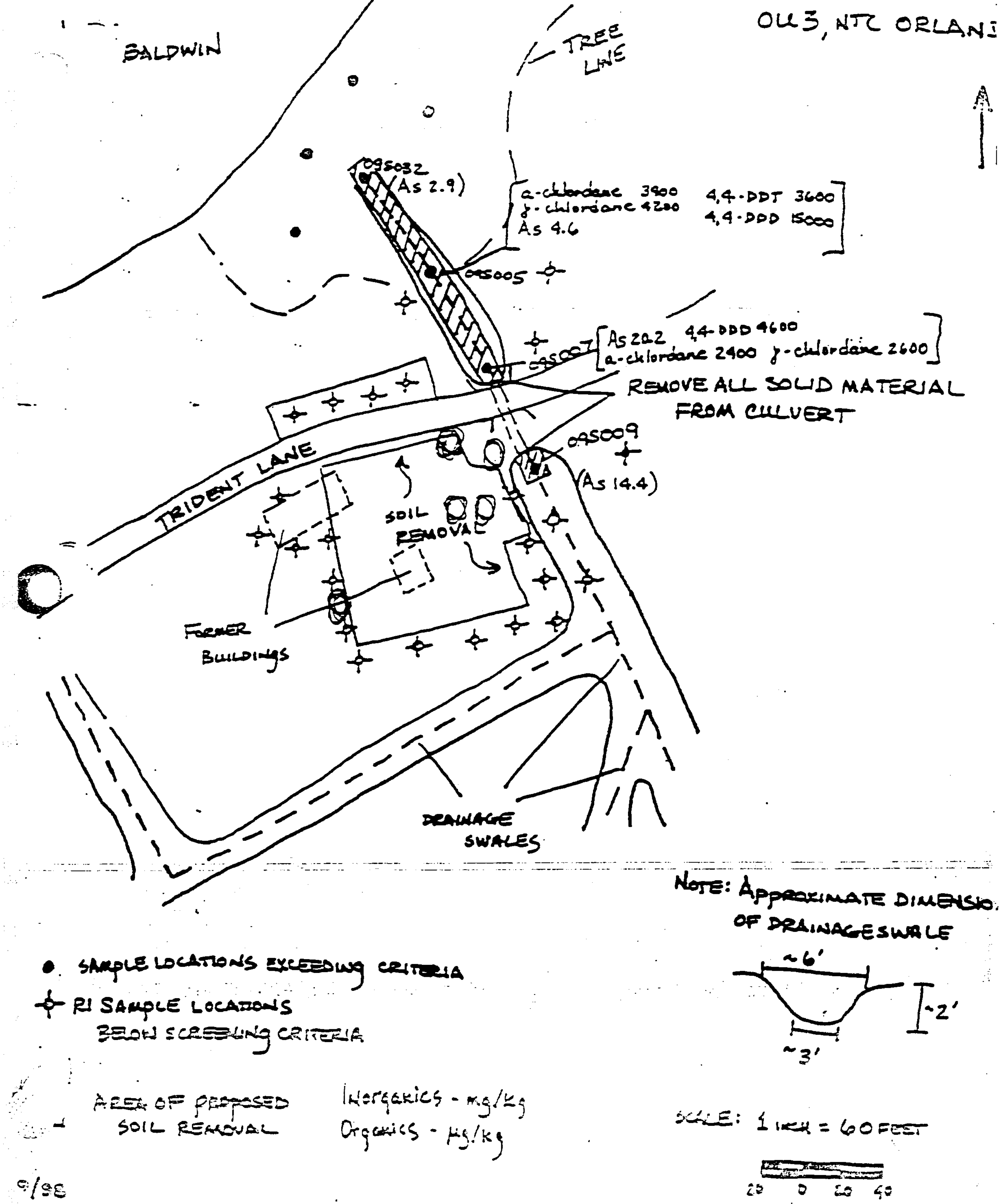
ENVIRONMENTAL DETACHMENT CHARLESTON
1899 NORTH HOBSON AVENUE – BUILDING 30
NORTH CHARLESTON, SOUTH CAROLINA 29405-2105

FIGURE 4
NAVAL TRAINING CENTER ORLANDO OU3 SA 8
EXCAVATION BOUNDARIES AND
CONFIRMATORY SAMPLE LOCATIONS

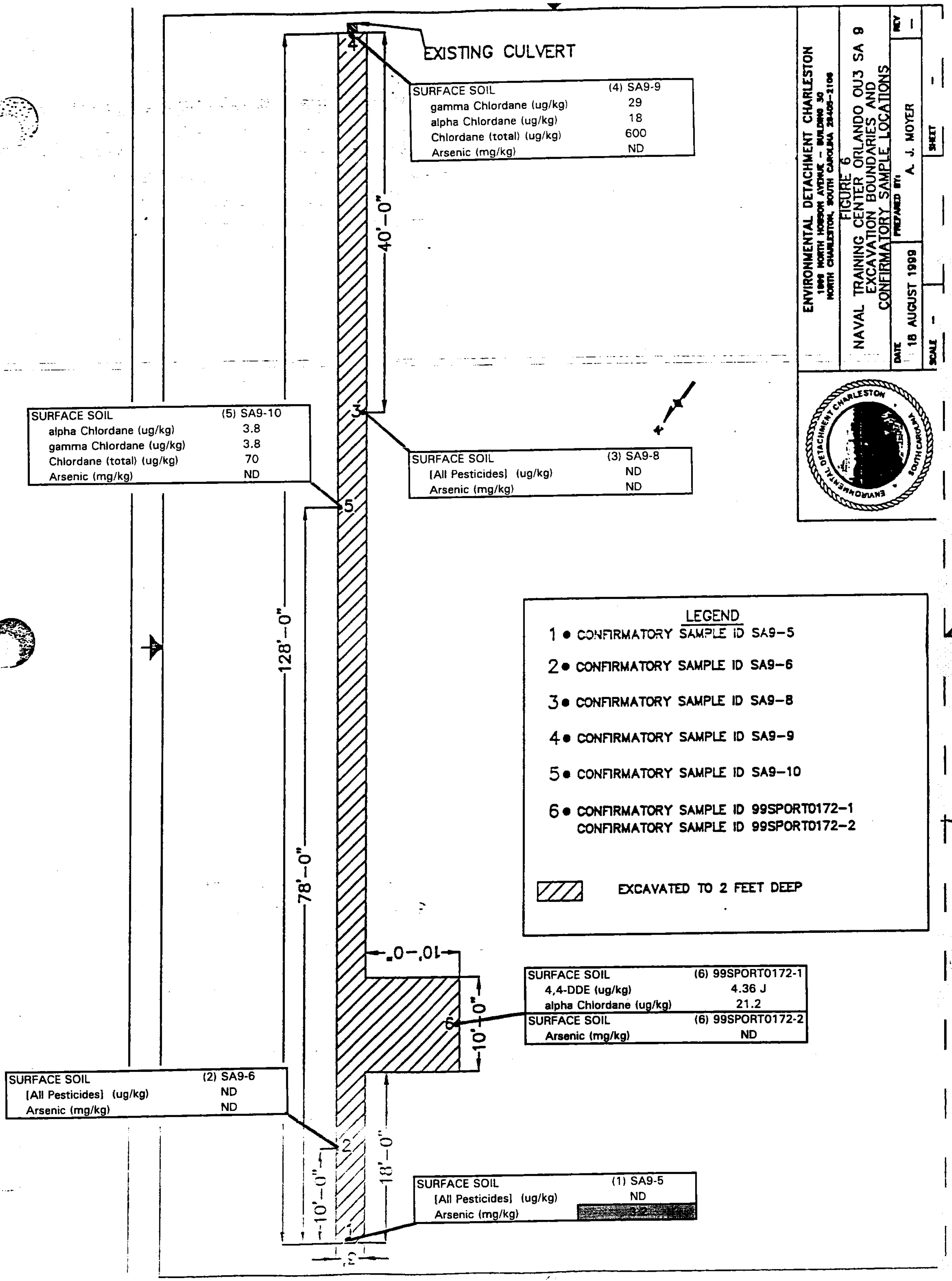
DATE	PREPARED BY:	REV
25 AUGUST 1999	A. J. MOYER	–
SCALE: NONE		SHEET

FIGURE 5

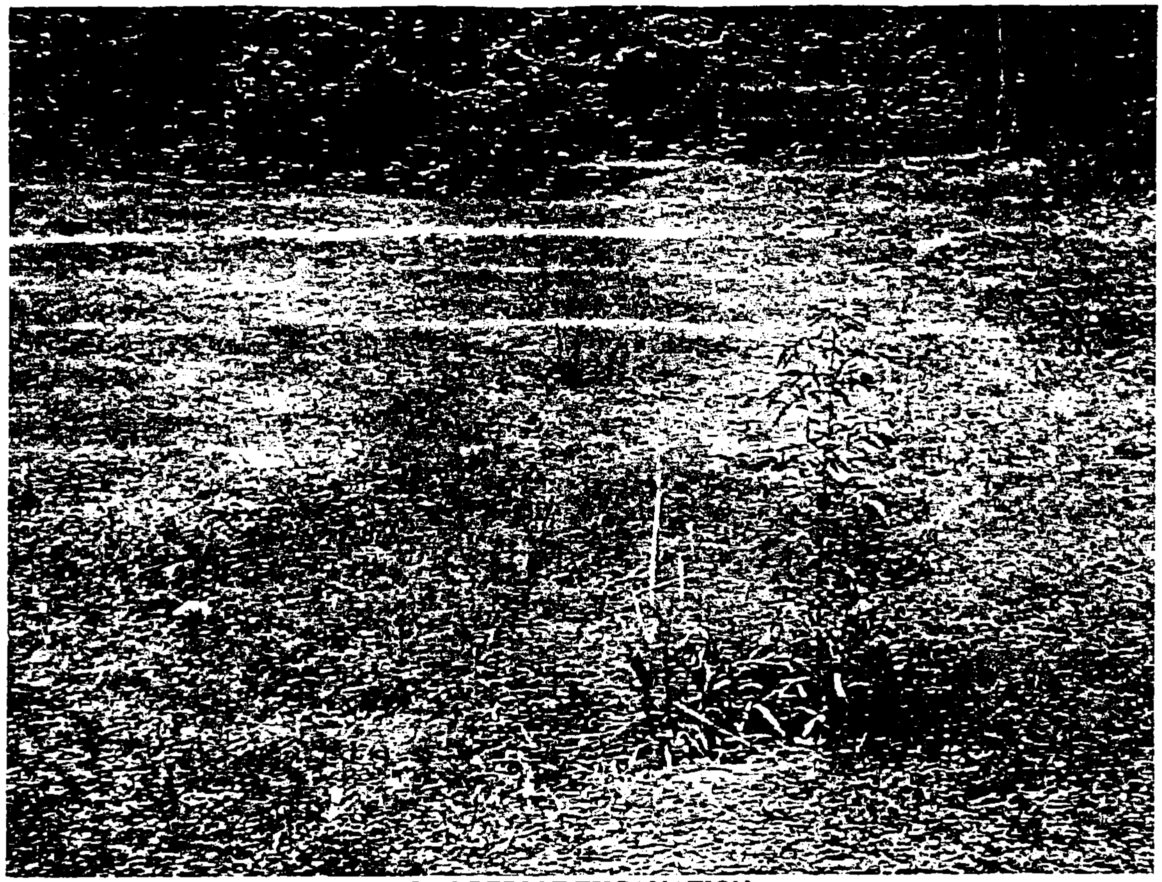
PROPOSED SOIL REM
STUDY AREA
OU3, NTC ORLANI

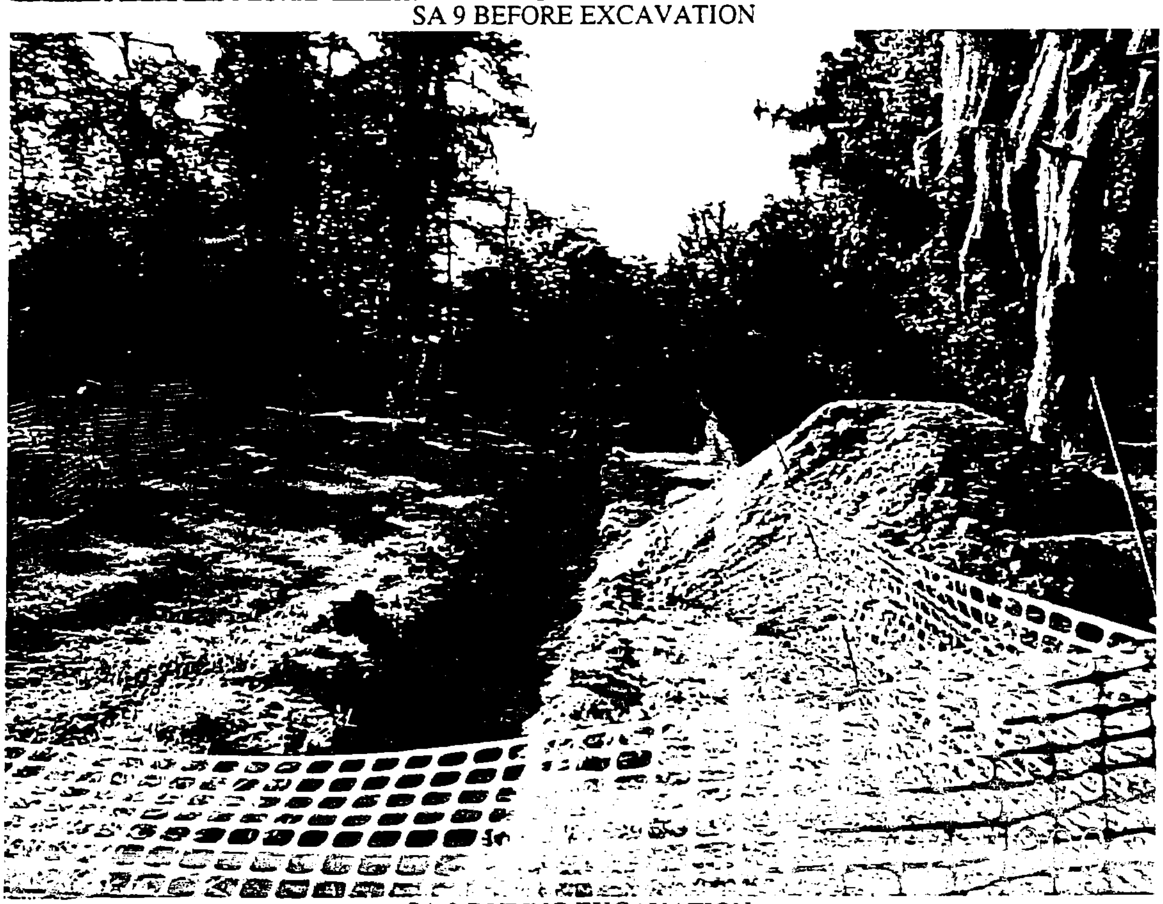


9/98



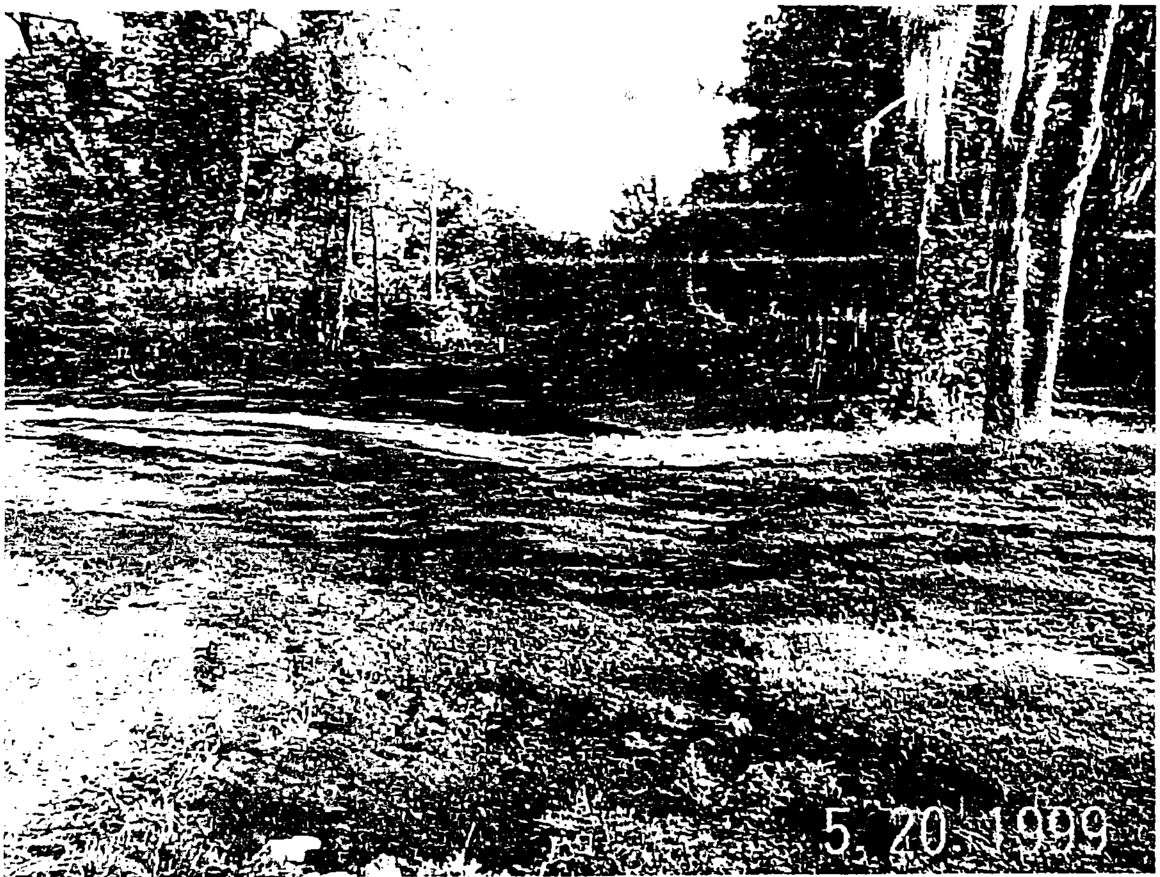
EXISTING CULVERT
SURFACE SOIL (4) SA9-9
gamma Chlordane (ug/kg) 29
alpha Chlordane (ug/kg) 18
Chlordane (total) (ug/kg) 600
Arsenic (mg/kg) ND
40'-0"
SURFACE SOIL (5) SA9-10
alpha Chlordane (ug/kg) 3.8
gamma Chlordane (ug/kg) 3.8
Chlordane (total) (ug/kg) 70
Arsenic (mg/kg) ND
SURFACE SOIL (3) SA9-8
[All Pesticides] (ug/kg) ND
Arsenic (mg/kg) ND
128'-0"
78'-0"
LEGEND
1 • CONFIRMATORY SAMPLE ID SA9-5
2 • CONFIRMATORY SAMPLE ID SA9-6
3 • CONFIRMATORY SAMPLE ID SA9-8
4 • CONFIRMATORY SAMPLE ID SA9-9
5 • CONFIRMATORY SAMPLE ID SA9-10
6 • CONFIRMATORY SAMPLE ID 99SPORT0172-1
CONFIRMATORY SAMPLE ID 99SPORT0172-2
EXCAVATED TO 2 FEET DEEP
10'-0"
SURFACE SOIL (6) 99SPORT0172-1
4,4-DDE (ug/kg) 4.36 J
alpha Chlordane (ug/kg) 21.2
SURFACE SOIL (6) 99SPORT0172-2
Arsenic (mg/kg) ND
10'-0"
SURFACE SOIL (2) SA9-6
[All Pesticides] (ug/kg) ND
Arsenic (mg/kg) ND
18'-0"
10'-0"
SURFACE SOIL (1) SA9-5
[All Pesticides] (ug/kg) ND
Arsenic (mg/kg) 3.2
2'
ENVIRONMENTAL DETACHMENT CHARLESTON
1899 NORTH HOBSON AVENUE – BUILDING 30
NORTH CHARLESTON, SOUTH CAROLINA 29405-2106
FIGURE 6
NAVAL TRAINING CENTER ORLANDO OU3 SA 9
EXCAVATION BOUNDARIES AND
CONFIRMATORY SAMPLE LOCATIONS
REV –
PREPARED BY: A. J. MOYER
DATE 18 AUGUST 1999
SCALE –
SHEET –
ENVIRONMENTAL DETACHMENT CHARLESTON SOUTH CAROLINA


SA 9 BEFORE EXCAVATION


SA 9 DURING EXCAVATION

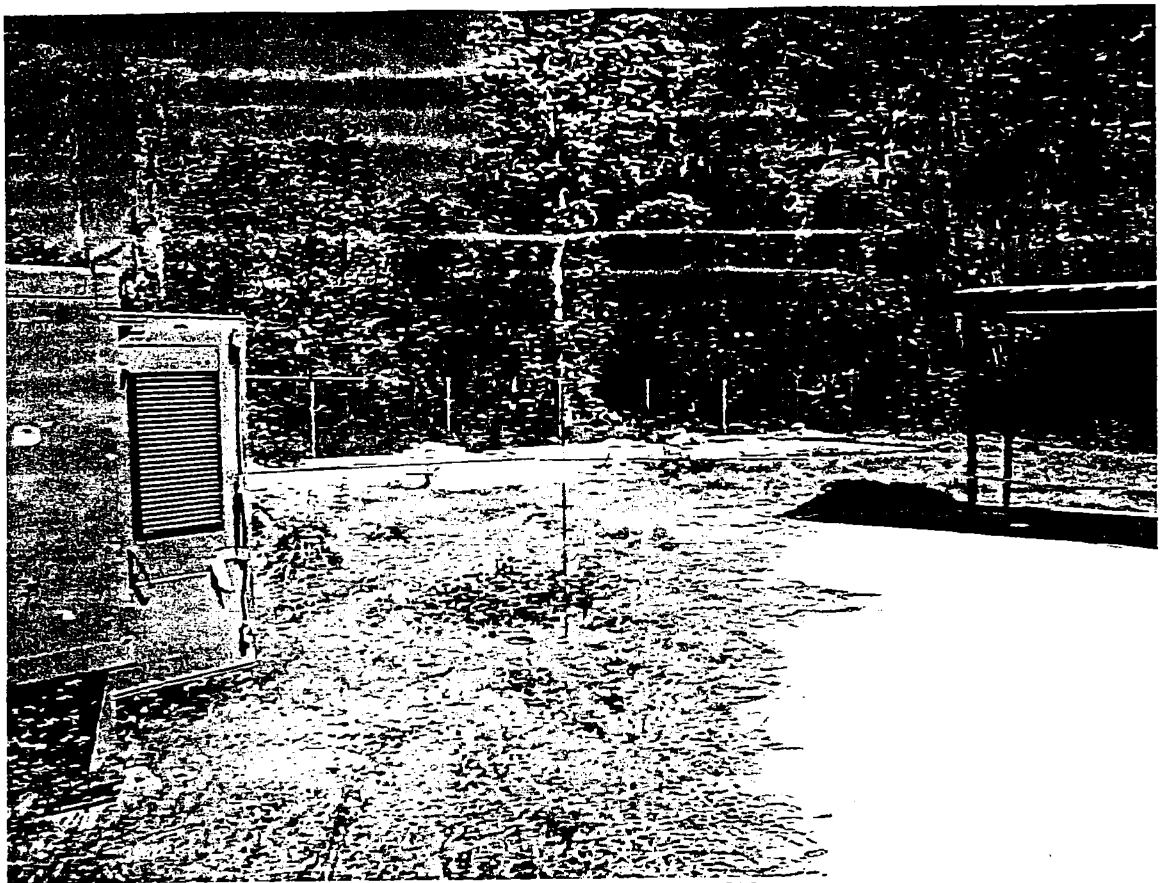
SA 9 AFTER BACKFILL

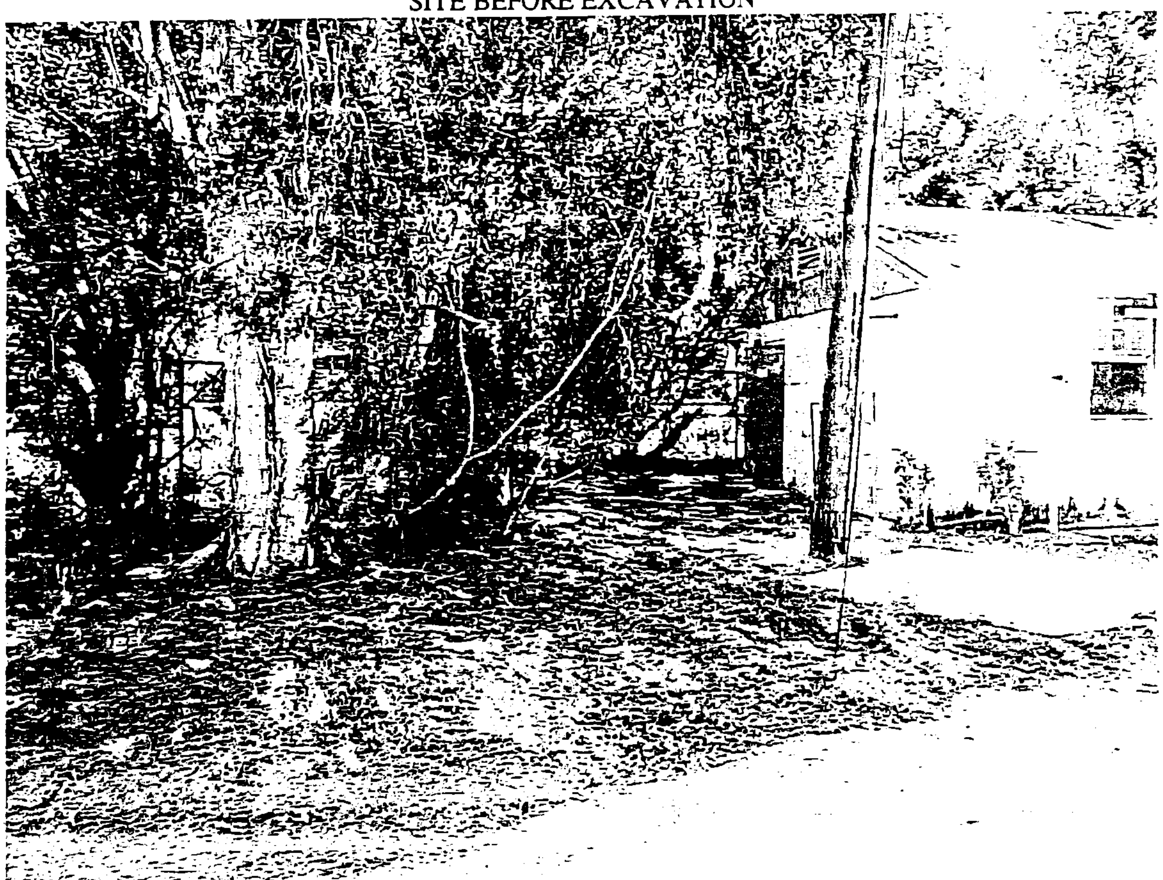
SA9 SILT FENCING

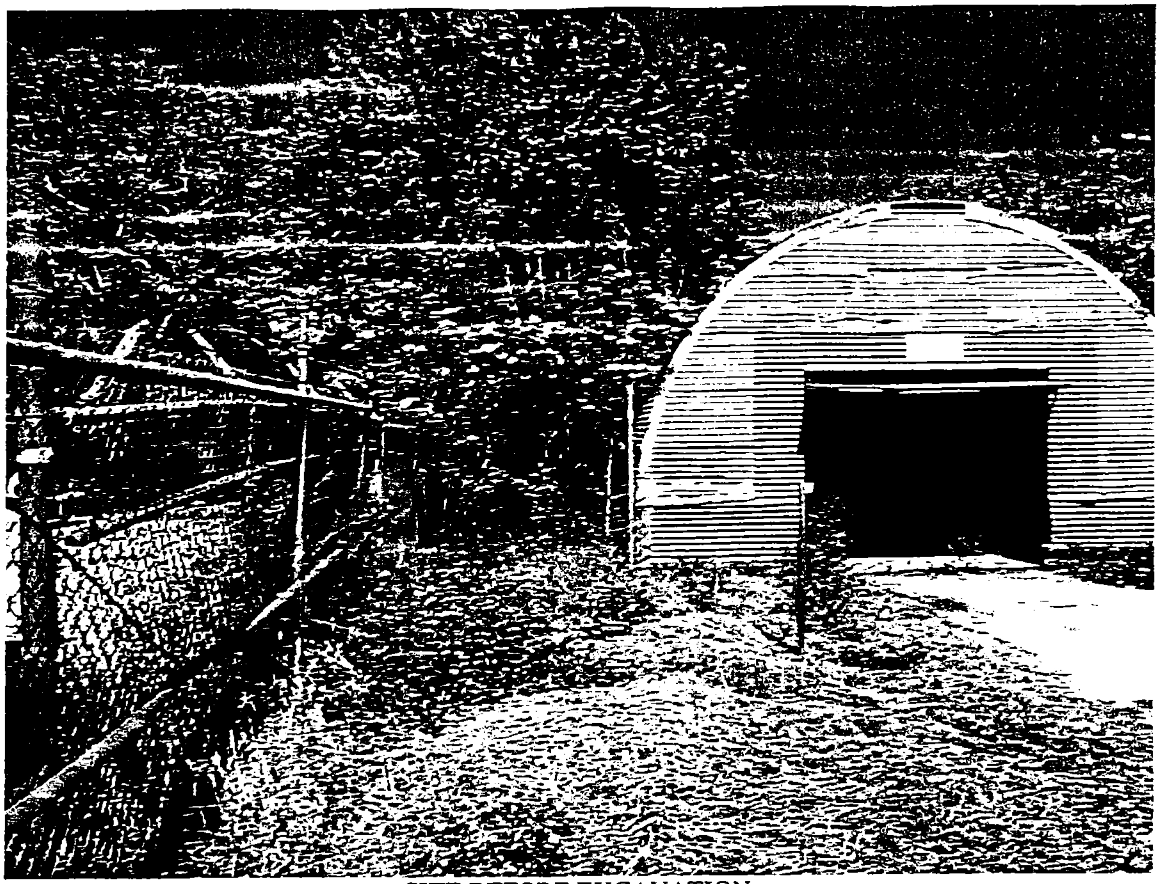


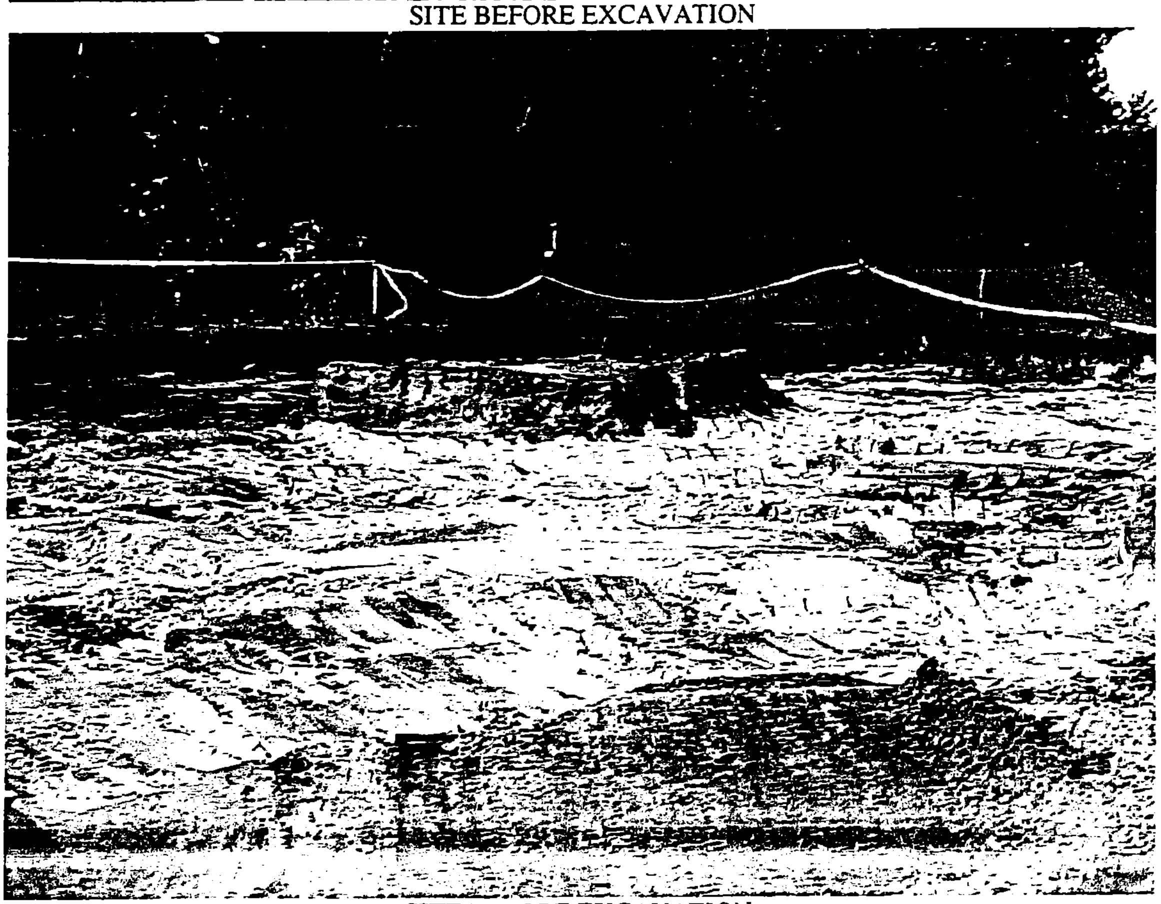
SA9 AFTER BACKFILL


SA9 ATER HYDROSEEDING

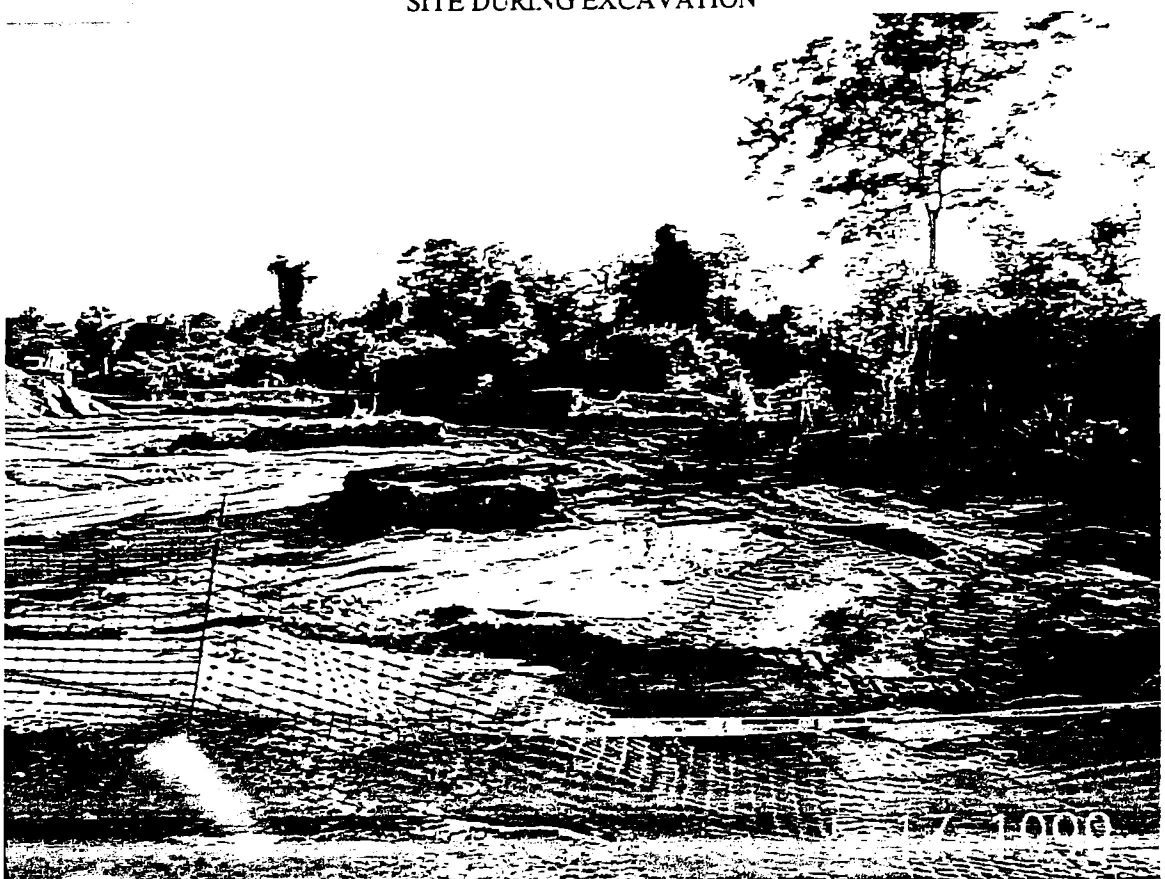

SITE BEFORE EXCAVATION


SITE BEFORE EXCAVATION

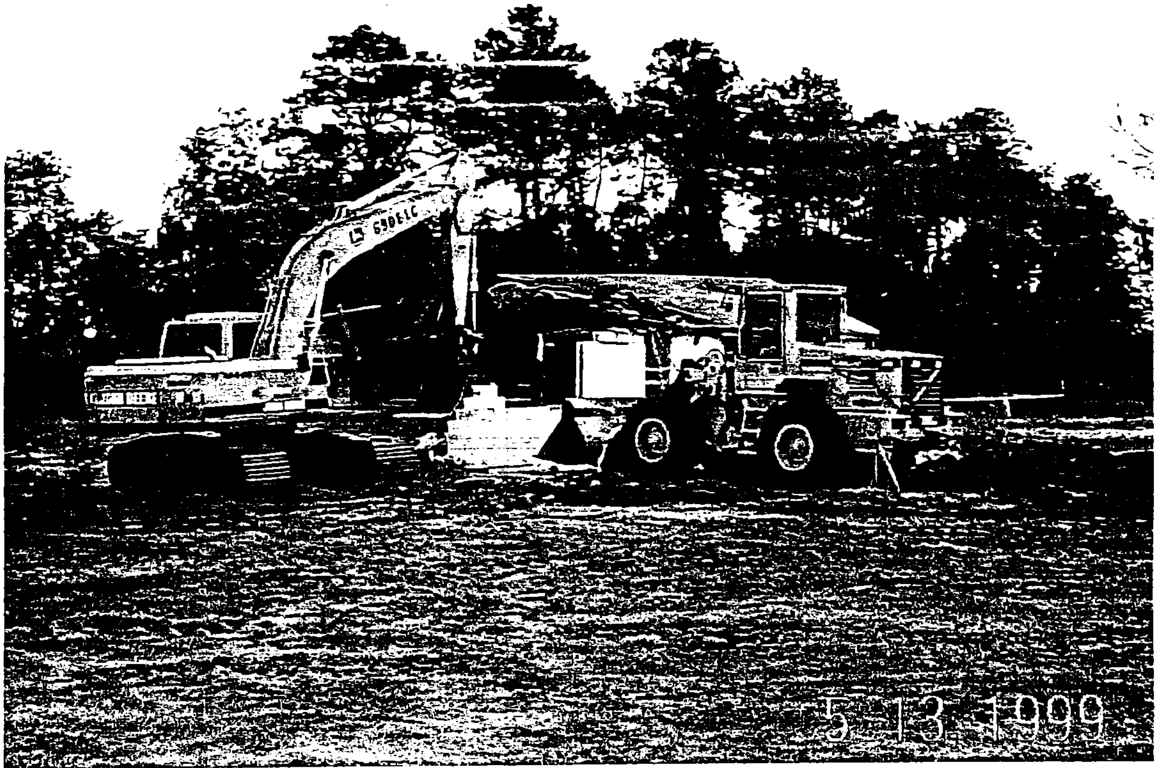

SITE BEFORE EXCAVATION


SITE BEFORE EXCAVATION

SITE DURING EXCAVATION



SITE DURING EXCAVATION



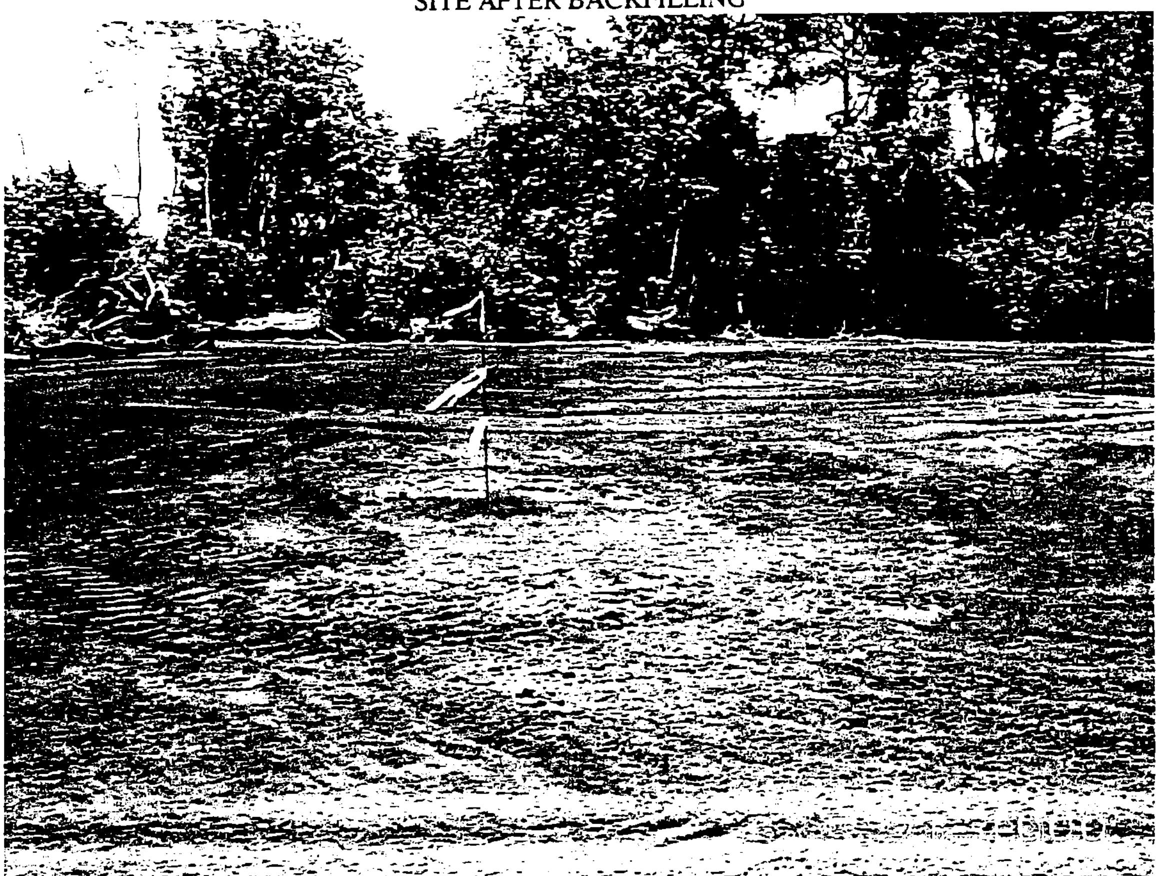
BUILDING DEMO


BUILDING DEMO

BACKFILLING SITE

BACKFILLING SITE

SITE AFTER BACKFILLING



SITE AFTER BACKFILLING

SITE AFTER HYDROSEEDED

CONFIRMATION SAMPLES

Environmental Conservation Laboratories
10207 General Drive
Orlando, Florida 32824-8529
407 / 826-5314
Fax 407 / 850-6945
www.encolabs.com

ENCO Laboratories

DHRS Certification No. E83182

Client:	Environmental Detachment Charleston	Report #:	OR6392
		Date Submitted:	27-Apr-99
		Date Reported:	5-May-99
Address:	1899 N. Hobson Ave Charleston, SC 29405-2106	Project Name:	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6392-1	SA8S012	4/27/99 11:00	8081	alpha-BHC	1.9	U		µg/Kg	1.9	1.9
OR6392-1	SA8S012	4/27/99 11:00	8081	beta-BHC	1.9	U		µg/Kg	1.9	1.9
OR6392-1	SA8S012	4/27/99 11:00	8081	gamma-BHC (Lindane)	1.9	U		µg/Kg	1.9	1.5
OR6392-1	SA8S012	4/27/99 11:00	8081	Heptachlor	1.9	U		µg/Kg	1.9	1.9
OR6392-1	SA8S012	4/27/99 11:00	8081	delta-BHC	1.9	U		µg/Kg	1.9	1.9
OR6392-1	SA8S012	4/27/99 11:00	8081	Aldrin	1.9	U		µg/Kg	1.9	0.37
OR6392-1	SA8S012	4/27/99 11:00	8081	Heptachlor Epoxide	1.9	U		µg/Kg	1.9	1.5
OR6392-1	SA8S012	4/27/99 11:00	8081	Chlordane gamma	1.9	U		µg/Kg	1.9	0.3
OR6392-1	SA8S012	4/27/99 11:00	8081	Chlordane alpha	1.9	U		µg/Kg	1.9	0.37
OR6392-1	SA8S012	4/27/99 11:00	8081	Endosulfan I	1.9	U		µg/Kg	1.9	1.9
OR6392-1	SA8S012	4/27/99 11:00	8081	4,4'-DDE	1.9	U		µg/Kg	1.9	1.9
OR6392-1	SA8S012	4/27/99 11:00	8081	Dieldrin	1.9	U		µg/Kg	1.9	1.9
OR6392-1	SA8S012	4/27/99 11:00	8081	Endrin	1.9	U		µg/Kg	1.9	1.9
OR6392-1	SA8S012	4/27/99 11:00	8081	4,4'-DDD	1.9	U		µg/Kg	1.9	1.5
OR6392-1	SA8S012	4/27/99 11:00	8081	Endosulfan II	1.9	U		µg/Kg	1.9	1.9
OR6392-1	SA8S012	4/27/99 11:00	8081	4,4'-DDT	1.9	U		µg/Kg	1.9	1.9
OR6392-1	SA8S012	4/27/99 11:00	8081	Endrin aldehyde	1.9	U		µg/Kg	1.9	1.5
OR6392-1	SA8S012	4/27/99 11:00	8081	Endosulfan sulfate	1.9	U		µg/Kg	1.9	0.75
OR6392-1	SA8S012	4/27/99 11:00	8081	Methoxychlor	11	U		µg/Kg	2	11
OR6392-1	SA8S012	4/27/99 11:00	8081	Endrin Ketone	2.6	U		µg/Kg	1.9	2.6
OR6392-1	SA8S012	4/27/99 11:00	8081	Chlordane (Total)	37	U		µg/Kg	37	1.9
OR6392-1	SA8S012	4/27/99 11:00	8081	Toxaphene	75	U		µg/Kg	75	3.7
OR6392-1	SA8S012	4/27/99 11:00	8081	Isodrin	3.7	U		µg/Kg	3.7	3.7
OR6392-1	SA8S012	4/27/99 11:00	8081	Mirex	3.7	U		µg/Kg	3.7	3.7
OR6392-1	SA8S012	4/27/99 11:00	8081	2,4,5,6-TCMX	90			%		
OR6392-1	SA8S012	4/27/99 11:00	8081	DBC	67			%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6392-1	SA8S012	4/27/99 11:00	SM2540G	Percent Solids	89			%		

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.
I = Analyte detected; value is between the Method Detection Level (MDL) and the Practical Quantitation Level (PQL).

QSARF # ______

ENVIRONMENTAL CONSERVATION LABORATORIES

4810 Executive Park Court, Suite 211
Jacksonville, Florida 32216-6069
Ph. (904) 296-3007 • Fax (904) 296-6210

10207 General Drive
Orlando, Florida 32824
Ph. (407) 826-5314 • Fax (407) 850-6945

ENCO CompQAP No.: 960038G/0

CHAIN OF CUSTODY RECORD

PROJECT REFERENCE: NTC Orlando
PROJECT NO.:
P.O. NUMBER:
PROJECT LOC. (State): FL
SAMPLER(s) NAME: Rusty Cope
PHONE: 496-2173
FAX:
CLIENT NAME: Env DET Chas
CLIENT PROJECT MANAGER: A. Moyer
CLIENT ADDRESS (CITY, STATE, ZIP): 1899 N. Hobson Ave N Chas. SC 29405

PAGE 1 OF 1

☐ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (surcharge)

Date Due: 4/30/99

STATION	DATE	TIME	GRAB	COMP	SAMPLE IDENTIFICATION	SURFACE WATER	GROUND WATER	WASTEWATER	DRINKING WATER	SOIL/SOLID/SEDIMENT	NONAQUEOUS LIQUID (oil, solvent, etc.)	AIR	SLUDGE	OTHER	Pesticides								REMARKS
1	4/27/99	1100	X		SA8S012					X					1								
2	4/27/99	1105	X		SA8S013					X					1								
3	4/27/99	1110	X		SA8S014					X					1								
4	4/27/99	1115	X		SA8S015					X					1								
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							
13																							
14																							

MATRIX TYPE — REQUIRED ANALYSIS — PRESERVATIVE — NUMBER OF CONTAINERS SUBMITTED

	DATE	TIME		DATE	TIME		DATE	TIME
SAMPLE KIT PREPARED BY: ☐JACKSONVILLE ☐ORLANDO			RELINQUISHED BY: (SIGNATURE)			RECEIVED BY: (SIGNATURE)		
RELINQUISHED BY: (SIGNATURE) Rusty Cope	4/27/99	1530	RECEIVED BY: (SIGNATURE) Jamel N. Gregory	4/27/99	1530	RELINQUISHED BY: (SIGNATURE)		
RECEIVED BY: (SIGNATURE)			RELINQUISHED BY: (SIGNATURE)			RECEIVED BY: (SIGNATURE)		

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	ENCO LOG NO.	REMARKS
T. Pickman ☐ Jacksonville ■ Orlando	4.27.99	17:00	☐ YES ☐ NO	OR603	

Client:	Environmental Detachment Charleston	Report #: OR6391	
		Date Submitted:	27-Apr-99
		Date Reported:	5-May-99
Address:	1899 N. Hobson Ave Charleston, SC 29405-2106	Project Name:	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6391-2	SA8S005	4/27/99 10:15	8081	alpha-BHC	1.8	U		µg/Kg	1.8	1.8
OR6391-2	SA8S005	4/27/99 10:15	8081	beta-BHC	1.8	U		µg/Kg	1.8	1.8
OR6391-2	SA8S005	4/27/99 10:15	8081	gamma-BHC (Lindane)	1.8	U		µg/Kg	1.8	1.4
OR6391-2	SA8S005	4/27/99 10:15	8081	Heptachlor	1.8	U		µg/Kg	1.8	1.8
OR6391-2	SA8S005	4/27/99 10:15	8081	delta-BHC	1.8	U		µg/Kg	1.8	1.8
OR6391-2	SA8S005	4/27/99 10:15	8081	Aldrin	1.8	U		µg/Kg	1.8	0.35
OR6391-2	SA8S005	4/27/99 10:15	8081	Heptachlor Epoxide	1.8	U		µg/Kg	1.8	1.4
OR6391-2	SA8S005	4/27/99 10:15	8081	Chlordane gamma	1.8	U		µg/Kg	1.8	0.3
OR6391-2	SA8S005	4/27/99 10:15	8081	Chlordane alpha	1.8	U		µg/Kg	1.8	0.35
OR6391-2	SA8S005	4/27/99 10:15	8081	Endosulfan I	1.8	U		µg/Kg	1.8	1.8
OR6391-2	SA8S005	4/27/99 10:15	8081	4,4'-DDE	1.8	U		µg/Kg	1.8	1.8
OR6391-2	SA8S005	4/27/99 10:15	8081	Dieldrin	1.8	U		µg/Kg	1.8	1.8
OR6391-2	SA8S005	4/27/99 10:15	8081	Endrin	1.8	U		µg/Kg	1.8	1.8
OR6391-2	SA8S005	4/27/99 10:15	8081	4,4'-DDD	1.8	U		µg/Kg	1.8	1.4
OR6391-2	SA8S005	4/27/99 10:15	8081	Endosulfan II	1.8	U		µg/Kg	1.8	1.8
OR6391-2	SA8S005	4/27/99 10:15	8081	4,4'-DDT	1.8	U		µg/Kg	1.8	1.8
OR6391-2	SA8S005	4/27/99 10:15	8081	Endrin aldehyde	1.8	U		µg/Kg	1.8	1.4
OR6391-2	SA8S005	4/27/99 10:15	8081	Endosulfan sulfate	1.8	U		µg/Kg	1.8	0.7
OR6391-2	SA8S005	4/27/99 10:15	8081	Methoxychlor	10	U		µg/Kg	2	10
OR6391-2	SA8S005	4/27/99 10:15	8081	Endrin Ketone	2.4	U		µg/Kg	1.8	2.4
OR6391-2	SA8S005	4/27/99 10:15	8081	Chlordane (Total)	35	U		µg/Kg	35	1.8
OR6391-2	SA8S005	4/27/99 10:15	8081	Toxaphene	70	U		µg/Kg	70	3.5
OR6391-2	SA8S005	4/27/99 10:15	8081	Isodrin	3.5	U		µg/Kg	3.5	3.5
OR6391-2	SA8S005	4/27/99 10:15	8081	Mirex	3.5	U		µg/Kg	3.5	3.5
OR6391-2	SA8S005	4/27/99 10:15	8081	2,4,5,6-TCMX	97			%		
OR6391-2	SA8S005	4/27/99 10:15	8081	DBC	97			%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6391-2	SA8S005	4/27/99 10:15	SM2540G	Percent Solids	95			%		

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.

Client:	Environmental Detachment Charleston	Report #: OR6391	
		Date Submitted:	27-Apr-99
		Date Reported:	5-May-99
Address:	1899 N. Hobson Ave Charleston, SC 29405-2106	Project Name:	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6391-3	SA8S006	4/27/99 10:18	8081	alpha-BHC	1.9	U		µg/Kg	1.9	1.9
OR6391-3	SA8S006	4/27/99 10:18	8081	beta-BHC	1.9	U		µg/Kg	1.9	1.9
OR6391-3	SA8S006	4/27/99 10:18	8081	gamma-BHC (Lindane)	1.9	U		µg/Kg	1.9	1.5
OR6391-3	SA8S006	4/27/99 10:18	8081	Heptachlor	1.9	U		µg/Kg	1.9	1.9
OR6391-3	SA8S006	4/27/99 10:18	8081	delta-BHC	1.9	U		µg/Kg	1.9	1.9
OR6391-3	SA8S006	4/27/99 10:18	8081	Aldrin	1.9	U		µg/Kg	1.9	0.37
OR6391-3	SA8S006	4/27/99 10:18	8081	Heptachlor Epoxide	1.9	U		µg/Kg	1.9	1.5
OR6391-3	SA8S006	4/27/99 10:18	8081	Chlordane gamma	1.9	U		µg/Kg	1.9	0.3
OR6391-3	SA8S006	4/27/99 10:18	8081	Chlordane alpha	1.9	U		µg/Kg	1.9	0.37
OR6391-3	SA8S006	4/27/99 10:18	8081	Endosulfan I	1.9	U		µg/Kg	1.9	1.9
OR6391-3	SA8S006	4/27/99 10:18	8081	4,4'-DDE	1.9	U		µg/Kg	1.9	1.9
OR6391-3	SA8S006	4/27/99 10:18	8081	Dieldrin	1.9	U		µg/Kg	1.9	1.9
OR6391-3	SA8S006	4/27/99 10:18	8081	Endrin	1.9	U		µg/Kg	1.9	1.9
OR6391-3	SA8S006	4/27/99 10:18	8081	4,4'-DDD	1.9	U		µg/Kg	1.9	1.5
OR6391-3	SA8S006	4/27/99 10:18	8081	Endosulfan II	1.9	U		µg/Kg	1.9	1.9
OR6391-3	SA8S006	4/27/99 10:18	8081	4,4'-DDT	1.9	U		µg/Kg	1.9	1.9
OR6391-3	SA8S006	4/27/99 10:18	8081	Endrin aldehyde	1.9	U		µg/Kg	1.9	1.5
OR6391-3	SA8S006	4/27/99 10:18	8081	Endosulfan sulfate	1.9	U		µg/Kg	1.9	0.74
OR6391-3	SA8S006	4/27/99 10:18	8081	Methoxychlor	11	U		µg/Kg	2	11
OR6391-3	SA8S006	4/27/99 10:18	8081	Endrin Ketone	2.6	U		µg/Kg	1.9	2.6
OR6391-3	SA8S006	4/27/99 10:18	8081	Chlordane (Total)	37	U		µg/Kg	37	1.9
OR6391-3	SA8S006	4/27/99 10:18	8081	Toxaphene	74	U		µg/Kg	74	3.7
OR6391-3	SA8S006	4/27/99 10:18	8081	Isodrin	3.7	U		µg/Kg	3.7	3.7
OR6391-3	SA8S006	4/27/99 10:18	8081	Mirex	3.7	U		µg/Kg	3.7	3.7
OR6391-3	SA8S006	4/27/99 10:18	8081	2,4,5,6-TCMX	100			%		
OR6391-3	SA8S006	4/27/99 10:18	8081	DBC	129			%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6391-3	SA8S006	4/27/99 10:18	SM2540G	Percent Solids	90			%		

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.

Client: Environmental Detachment Charleston

Address: 1899 N. Hobson Ave
Charleston, SC 29405-2106

Report #: OR6391
Date Submitted: 27-Apr-99
Date Reported: 5-May-99
Project Name: NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6391-4	SA8S007	4/27/99 10:22	8081	alpha-BHC	1.8	U		µg/Kg	1.8	1.8
OR6391-4	SA8S007	4/27/99 10:22	8081	beta-BHC	1.8	U		µg/Kg	1.8	1.8
OR6391-4	SA8S007	4/27/99 10:22	8081	gamma-BHC (Lindane)	1.8	U		µg/Kg	1.8	1.4
OR6391-4	SA8S007	4/27/99 10:22	8081	Heptachlor	1.8	U		µg/Kg	1.8	1.8
OR6391-4	SA8S007	4/27/99 10:22	8081	delta-BHC	1.8	U		µg/Kg	1.8	1.8
OR6391-4	SA8S007	4/27/99 10:22	8081	Aldrin	1.8	U		µg/Kg	1.8	0.35
OR6391-4	SA8S007	4/27/99 10:22	8081	Heptachlor Epoxide	1.8	U		µg/Kg	1.8	1.4
OR6391-4	SA8S007	4/27/99 10:22	8081	Chlordane gamma	1.8	U		µg/Kg	1.8	0.3
OR6391-4	SA8S007	4/27/99 10:22	8081	Chlordane alpha	1.8	U		µg/Kg	1.8	0.35
OR6391-4	SA8S007	4/27/99 10:22	8081	Endosulfan I	1.8	U		µg/Kg	1.8	1.8
OR6391-4	SA8S007	4/27/99 10:22	8081	4,4'-DDE	1.8	U		µg/Kg	1.8	1.8
OR6391-4	SA8S007	4/27/99 10:22	8081	Dieldrin	1.8	U		µg/Kg	1.8	1.8
OR6391-4	SA8S007	4/27/99 10:22	8081	Endrin	1.8	U		µg/Kg	1.8	1.8
OR6391-4	SA8S007	4/27/99 10:22	8081	4,4'-DDD	1.8	U		µg/Kg	1.8	1.4
OR6391-4	SA8S007	4/27/99 10:22	8081	Endosulfan II	1.8	U		µg/Kg	1.8	1.8
OR6391-4	SA8S007	4/27/99 10:22	8081	4,4'-DDT	1.8	U		µg/Kg	1.8	1.8
OR6391-4	SA8S007	4/27/99 10:22	8081	Endrin aldehyde	1.8	U		µg/Kg	1.8	1.4
OR6391-4	SA8S007	4/27/99 10:22	8081	Endosulfan sulfate	1.8	U		µg/Kg	1.8	0.71
OR6391-4	SA8S007	4/27/99 10:22	8081	Methoxychlor	11	U		µg/Kg	2	11
OR6391-4	SA8S007	4/27/99 10:22	8081	Endrin Ketone	2.4	U		µg/Kg	1.8	2.5
OR6391-4	SA8S007	4/27/99 10:22	8081	Chlordane (Total)	35	U		µg/Kg	35	1.8
OR6391-4	SA8S007	4/27/99 10:22	8081	Toxaphene	71	U		µg/Kg	71	3.5
OR6391-4	SA8S007	4/27/99 10:22	8081	Isodrin	3.5	U		µg/Kg	3.5	3.5
OR6391-4	SA8S007	4/27/99 10:22	8081	Mirex	3.5	U		µg/Kg	3.5	3.5
OR6391-4	SA8S007	4/27/99 10:22	8081	2,4,5,6-TCMX	106			%		
OR6391-4	SA8S007	4/27/99 10:22	8081	DBC	106			%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6391-4	SA8S007	4/27/99 10:22	SM2540G	Percent Solids	94			%		

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.

QSARF #______

ENVIRONMENTAL CONSERVATION LABORATORIES

4810 Executive Park Court, Suite 211
Jacksonville, Florida 32216-6069
Ph. (904) 296-3007 • Fax (904) 296-6210

10207 General Drive
Orlando, Florida 32824
Ph. (407) 826-5314 • Fax (407) 850-6945

ENCO CompQAP No.: 960038G/0

CHAIN OF CUSTODY RECORD

PROJECT REFERENCE: NTC Orlando | PROJECT NO.: | P.O. NUMBER:

PROJECT LOC. (State): FL. | SAMPLER(s) NAME: Rusty Cope | PHONE: 496-2173 | FAX: 862-5468

CLIENT NAME: Env DET Chas | CLIENT PROJECT MANAGER: A. Moyer

CLIENT ADDRESS (CITY, STATE, ZIP): 1899 N. Hobson Ave N. Chas. SC 29405

PAGE ___ OF ___

☐ STANDARD REPORT DELIVERY

☐ EXPEDITED REPORT DELIVERY (surcharge)

Date Due: 4-30-99

STATION	DATE	TIME	GRAB	COMP	SAMPLE IDENTIFICATION	SURFACE WATER	GROUND WATER	WASTEWATER	DRINKING WATER	SOIL/SOLID/SEDIMENT	NONAQUEOUS LIQUID (oil, solvent, etc.)	AIR	SLUDGE	OTHER	Pesticides	FLTRPH	REMARKS
1	4/27/99	1010			SA8S004					X					1		
2		1015			SA8S005					X					1		
3		1018			SA8S006					X					1		
4		1022			SA8S007					X					1		
5		1027			SA8S008					X					1		
6		1033			SA8S009					X					1		
7		1038			SA8S010					X					1		
8		1044			SA8S011					X					1		
9	4/26/99	1630			Back Fill FLTRPH					X						1	
10																	
11																	
12																	
13																	
14																	

PRESERVATIVE — NUMBER OF CONTAINERS SUBMITTED

SAMPLE KIT PREPARED BY: ☐ JACKSONVILLE ☐ ORLANDO | DATE | TIME

	DATE	TIME		DATE	TIME		DATE	TIME
RELINQUISHED BY: (SIGNATURE) Rusty Cope	4/27/99	1530	RECEIVED BY: (SIGNATURE) James W. Gregory	4/27/99	1530	RELINQUISHED BY: (SIGNATURE)		
RECEIVED BY: (SIGNATURE)			RELINQUISHED BY: (SIGNATURE)			RECEIVED BY: (SIGNATURE)		
			RELINQUISHED BY: (SIGNATURE)			RECEIVED BY: (SIGNATURE)		

RECEIVED FOR LABORATORY BY: (SIGNATURE) T. Pickerman ☐ Jacksonville ☐ Orlando | DATE: 4-27-99 | TIME: 17:00 | CUSTODY INTACT ☐ YES ☑ NO | ENCO LOG NO.: OR63 | REMARKS:

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/874:
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 08, 1999

Sample ID	: 99SPORT0163-4
Lab ID	: 9905055-11
Matrix	: Soil
Date Collected	: 05/03/99
Date Received	: 05/04/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Extractable Organics											
Pesticides - 21 items											
4,4'-DDD	U	ND	0.596	1.33	ug/kg	1.0	SJ	05/07/99	0654	148299	1
4,4'-DDE		2.40	0.556	1.33	ug/kg	1.0					
4,4'-DDT	J	0.999	0.806	1.33	ug/kg	1.0					
Aldrin	U	ND	0.263	0.670	ug/kg	1.0					
Dieldrin	U	ND	0.743	1.33	ug/kg	1.0					
Endosulfan I	U	ND	0.460	0.670	ug/kg	1.0					
Endosulfan II	U	ND	0.689	1.33	ug/kg	1.0					
Endosulfan sulfate	U	ND	0.922	0.922	ug/kg	1.0					
Endrin	U	ND	0.689	1.33	ug/kg	1.0					
Endrin aldehyde	U	ND	1.01	1.33	ug/kg	1.0					
Endrin ketone	U	ND	0.816	1.33	ug/kg	1.0					
Heptachlor	U	ND	0.440	0.670	ug/kg	1.0					
Heptachlor epoxide	U	ND	0.220	0.670	ug/kg	1.0					
Methoxychlor	U	ND	3.59	6.70	ug/kg	1.0					
Toxaphene	U	ND	11.1	33.3	ug/kg	1.0					
alpha-BHC	U	ND	0.266	0.670	ug/kg	1.0					
alpha-Chlordane		0.679	0.446	0.670	ug/kg	1.0					
beta-BHC	U	ND	0.393	0.670	ug/kg	1.0					
delta-BHC	U	ND	0.286	0.670	ug/kg	1.0					
gamma-BHC	U	ND	0.353	0.670	ug/kg	1.0					
gamma-Chlordane		1.57	0.473	0.670	ug/kg	1.0					

The following prep procedures were performed:

Pesticides CPU 05/05/99 1700 148299 :

9905055-11

Client:	Environmental Detachment Charleston	Report #:	OR6392
		Date Submitted:	27-Apr-99
		Date Reported:	5-May-99
Address:	1899 N. Hobson Ave Charleston, SC 29405-2106	Project Name:	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6392-4	SA8S015	4/27/99 11:15	8081	alpha-BHC	2.5	U		µg/Kg	2.5	2.5
OR6392-4	SA8S015	4/27/99 11:15	8081	beta-BHC	2.5	U		µg/Kg	2.5	2.5
OR6392-4	SA8S015	4/27/99 11:15	8081	gamma-BHC (Lindane)	2.5	U		µg/Kg	2.5	2
OR6392-4	SA8S015	4/27/99 11:15	8081	Heptachlor	2.5	U		µg/Kg	2.5	2.5
OR6392-4	SA8S015	4/27/99 11:15	8081	delta-BHC	2.5	U		µg/Kg	2.5	2.5
OR6392-4	SA8S015	4/27/99 11:15	8081	Aldrin	2.5	U		µg/Kg	2.5	0.48
OR6392-4	SA8S015	4/27/99 11:15	8081	Heptachlor Epoxide	2.5	U		µg/Kg	2.5	2
OR6392-4	SA8S015	4/27/99 11:15	8081	Chlordane gamma	2.5	U		µg/Kg	2.5	0.4
OR6392-4	SA8S015	4/27/99 11:15	8081	Chlordane alpha	2.5	U		µg/Kg	2.5	0.48
OR6392-4	SA8S015	4/27/99 11:15	8081	Endosulfan I	2.5	U		µg/Kg	2.5	2.5
OR6392-4	SA8S015	4/27/99 11:15	8081	4,4'-DDE	2.5	U		µg/Kg	2.5	2.5
OR6392-4	SA8S015	4/27/99 11:15	8081	Dieldrin	2.5	U		µg/Kg	2.5	2.5
OR6392-4	SA8S015	4/27/99 11:15	8081	Endrin	2.5	U		µg/Kg	2.5	2.5
OR6392-4	SA8S015	4/27/99 11:15	8081	4,4'-DDD	2.5	U		µg/Kg	2.5	2
OR6392-4	SA8S015	4/27/99 11:15	8081	Endosulfan II	2.5	U		µg/Kg	2.5	2.5
OR6392-4	SA8S015	4/27/99 11:15	8081	4,4'-DDT	2.5	U		µg/Kg	2.5	2.5
OR6392-4	SA8S015	4/27/99 11:15	8081	Endrin aldehyde	2.5	U		µg/Kg	2.5	2
OR6392-4	SA8S015	4/27/99 11:15	8081	Endosulfan sulfate	2.5	U		µg/Kg	2.5	0.98
OR6392-4	SA8S015	4/27/99 11:15	8081	Methoxychlor	15	U		µg/Kg	3	15
OR6392-4	SA8S015	4/27/99 11:15	8081	Endrin Ketone	3.4	U		µg/Kg	2.5	3.4
OR6392-4	SA8S015	4/27/99 11:15	8081	Chlordane (Total)	49	U		µg/Kg	49	2.5
OR6392-4	SA8S015	4/27/99 11:15	8081	Toxaphene	98	U		µg/Kg	98	4.8
OR6392-4	SA8S015	4/27/99 11:15	8081	Isodrin	4.8	U		µg/Kg	4.8	4.8
OR6392-4	SA8S015	4/27/99 11:15	8081	Mirex	4.8	U		µg/Kg	4.8	4.8
OR6392-4	SA8S015	4/27/99 11:15	8081	2,4,5,6-TCMX	118			%		
OR6392-4	SA8S015	4/27/99 11:15	8081	DBC	88			%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6392-4	SA8S015	4/27/99 11:15	SM2540G	Percent Solids	68			%		

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.

ENCO

ENVIRONMENTAL CONSERVATION LABORATORIES

4810 Executive Park Court, Suite 211
Jacksonville, Florida 32216-6069
Ph. (904) 296-3007 • Fax (904) 296-6210

10207 General Drive
Orlando, Florida 32824
Ph. (407) 826-5314 • Fax (407) 850-6945

ENCO CompQAP No.: 960038G/0

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT REFERENCE: NTC Orlando
PROJECT NO.:
P.O. NUMBER:
PROJECT LOC. (State): FL
SAMPLER(s) NAME: Rusty Cope
PHONE: 496-2173
FAX:
CLIENT NAME: Env DET Chas
CLIENT PROJECT MANAGER: A. Moyer
CLIENT ADDRESS (CITY, STATE, ZIP): 1899 N. Hobson Ave N Chas. SC 29405

☐ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (surcharge)
Date Due: 4/30/99

MATRIX TYPE: SURFACE WATER, GROUND WATER, WASTEWATER, DRINKING WATER, SOIL/SOLID/SEDIMENT, NONAQUEOUS LIQUID (oil, solvent, etc.), AIR, SLUDGE, OTHER

REQUIRED ANALYSIS: Pesticides
PRESERVATIVE
NUMBER OF CONTAINERS SUBMITTED

STATION	DATE	TIME	GRAB	COMP	SAMPLE IDENTIFICATION	SURFACE WATER	GROUND WATER	WASTEWATER	DRINKING WATER	SOIL/SOLID/SEDIMENT	NONAQUEOUS LIQUID	AIR	SLUDGE	OTHER	Pesticides								REMARKS
1	4/27/99	1100	X		SA8S012					X					1								
2	4/27/99	1105	X		SA8S013					X					1								
3	4/27/99	1110	X		SA8S014					X					1								
4	4/27/99	1115	X		SA8S015					X					1								
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							
13																							
14																							

SAMPLE KIT PREPARED BY: ☐JACKSONVILLE ☐ORLANDO — DATE: — TIME:

	DATE	TIME		DATE	TIME		DATE	TIME
RELINQUISHED BY: (SIGNATURE) Rusty Cope	4/27/99	1530	RECEIVED BY: (SIGNATURE) James W. Gregory	4/27/99	1530	RELINQUISHED BY: (SIGNATURE)		
RECEIVED BY: (SIGNATURE)			RELINQUISHED BY: (SIGNATURE)			RECEIVED BY: (SIGNATURE)		

(First row of signature block: RELINQUISHED BY: (SIGNATURE) — DATE — TIME — RECEIVED BY: (SIGNATURE) — DATE — TIME)

RECEIVED FOR LABORATORY BY: (SIGNATURE) T. Pickman ☐ Jacksonville ■ Orlando
DATE: 4.27.99 TIME: 17:00
CUSTODY INTACT: ☐ YES ☐ NO
ENCO LOG NO.: OR603
REMARKS:

GENERAL ENGINEERING LABORATORIES
Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/8742
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 08, 1999

Sample ID	: 99SPORT0162-4
Lab ID	: 9905055-04
Matrix	: Soil
Date Collected	: 05/03/99
Date Received	: 05/04/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Extractable Organics											
Pesticides - 21 items											
4,4'-DDD	U	ND	5.96	13.3	ug/kg	10.	SJ	05/07/99	0249	148299	1
4,4'-DDE	U	ND	5.56	13.3	ug/kg	10.					
4,4'-DDT	U	ND	8.06	13.3	ug/kg	10.					
Aldrin	U	ND	2.63	6.66	ug/kg	10.					
Dieldrin	U	ND	7.43	13.3	ug/kg	10.					
Endosulfan I	U	ND	4.60	6.66	ug/kg	10.					
Endosulfan II	U	ND	6.89	13.3	ug/kg	10.					
Endosulfan sulfate	U	ND	9.22	9.22	ug/kg	10.					
Endrin	U	ND	6.89	13.3	ug/kg	10.					
Endrin aldehyde	U	ND	10.1	13.3	ug/kg	10.					
Endrin ketone	U	ND	8.16	13.3	ug/kg	10.					
Heptachlor	U	ND	4.40	6.66	ug/kg	10.					
Heptachlor epoxide	U	ND	2.20	6.66	ug/kg	10.					
Methoxychlor	U	ND	35.9	66.6	ug/kg	10.					
Toxaphene	U	ND	111	333	ug/kg	10.					
alpha-BHC	U	ND	2.66	6.66	ug/kg	10.					
alpha-Chlordane	U	ND	4.46	6.66	ug/kg	10.					
beta-BHC	U	ND	3.93	6.66	ug/kg	10.					
delta-BHC	U	ND	2.86	6.66	ug/kg	10.					
gamma-BHC	U	ND	3.53	6.66	ug/kg	10.					
gamma-Chlordane	U	ND	4.73	6.66	ug/kg	10.					

The following prep procedures were performed:

Pesticides CPU 05/05/99 1700 148299 1

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407
(843) 556-8171 • Fax (843) 766-1178

9905055-04

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/874..
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 08, 1999

Sample ID : 99SPORT0162-4

Surrogate Recovery	Test	Percent%	Acceptable Limits
4CMX	PEST-8081A	89.5	(36.5 - 131.)
Decachlorobiphenyl	PEST-8081A	105.	(50.7 - 135.)

M = Method	Method-Description
M 1	EPA 8081A
M 2	EPA 3550

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed
in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager, Elise Hanson at 843-556-8171.

E Hanson

Reviewed By

General Engineering Lab[illegible]ries, Inc.
2040 Savage Road
Charleston, South Caroli[illegible] [illegible]07
P.O. Box 30712
Charleston, South Carolina 29417
(803) 556-8171

CHAIN OF CUSTODY RECORD

Page 1 of 1 — 3 DAY TURNAROUND

Client Name/Facility Name: NTC ORlando

Collected by/Company: Env DET Chas

SAMPLE ANALYSIS REQUIRED (x) - use remarks area to specify specific compounds or methods

Use F or P in the boxes to indicate whether sample was filtered and/or preserved

SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS - specify	Pesticide 8081	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	Remarks
99Sport 0162-1	4/27/99	1355		X		X	1								X								Split SA-9-9 SA9SI9
99Sport 0162-2	5/1/99	1200	X				1								X								Equip Ringate Blank SA37S01
99Sport 0162-3	5/1/99	1210		X		X	1								X								Split SA37SI02
99Sport 0162-4	5/3/99	1630		X		X	1								X								SA85021
99Sport 0162-5	5/3/99	1637		X		X	1								X								SA85022
99Sport 0162-6	5/3/99	1643		X		X	1								X								SA85023
99Sport 0162-7	5/3/99	1650		X		X	1								X								SA85024

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:
R W Cope	5/3/99	1805	W. R. Hiers, Jr	W. R. Hiers, Jr.	5/4/99	1336	—

Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:
—	—	—	Ryan R. B[illegible]	5/4/99	1336	

White = [illegible]le collector Yellow = file Pink = with report

Client:	Environmental Detachment Charleston	Report #:	OR6393
		Date Submitted:	27-Apr-99
		Date Reported:	5-May-99
Address:	1899 N. Hobson Ave Charleston, SC 29405-2106	Project Name:	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6393-2	SA8S017	4/27/99 11:35	8081	alpha-BHC	1.7	U		µg/Kg	1.7	1.7
OR6393-2	SA8S017	4/27/99 11:35	8081	beta-BHC	1.7	U		µg/Kg	1.7	1.7
OR6393-2	SA8S017	4/27/99 11:35	8081	gamma-BHC (Lindane)	1.7	U		µg/Kg	1.7	1.4
OR6393-2	SA8S017	4/27/99 11:35	8081	Heptachlor	1.7	U		µg/Kg	1.7	1.7
OR6393-2	SA8S017	4/27/99 11:35	8081	delta-BHC	1.7	U		µg/Kg	1.7	1.7
OR6393-2	SA8S017	4/27/99 11:35	8081	Aldrin	1.7	U		µg/Kg	1.7	0.34
OR6393-2	SA8S017	4/27/99 11:35	8081	Heptachlor Epoxide	1.7	U		µg/Kg	1.7	1.4
OR6393-2	SA8S017	4/27/99 11:35	8081	Chlordane gamma	1.7	U		µg/Kg	1.7	0.3
OR6393-2	SA8S017	4/27/99 11:35	8081	Chlordane alpha	1.7	U		µg/Kg	1.7	0.34
OR6393-2	SA8S017	4/27/99 11:35	8081	Endosulfan I	1.7	U		µg/Kg	1.7	1.7
OR6393-2	SA8S017	4/27/99 11:35	8081	4,4'-DDE	1.7	U		µg/Kg	1.7	1.7
OR6393-2	SA8S017	4/27/99 11:35	8081	Dieldrin	1.7	U		µg/Kg	1.7	1.7
OR6393-2	SA8S017	4/27/99 11:35	8081	Endrin	1.7	U		µg/Kg	1.7	1.7
OR6393-2	SA8S017	4/27/99 11:35	8081	4,4'-DDD	1.7	U		µg/Kg	1.7	1.4
OR6393-2	SA8S017	4/27/99 11:35	8081	Endosulfan II	1.7	U		µg/Kg	1.7	1.7
OR6393-2	SA8S017	4/27/99 11:35	8081	4,4'-DDT	1.7	U		µg/Kg	1.7	1.7
OR6393-2	SA8S017	4/27/99 11:35	8081	Endrin aldehyde	1.7	U		µg/Kg	1.7	1.4
OR6393-2	SA8S017	4/27/99 11:35	8081	Endosulfan sulfate	1.7	U		µg/Kg	1.7	0.68
OR6393-2	SA8S017	4/27/99 11:35	8081	Methoxychlor	10	U		µg/Kg	2	10
OR6393-2	SA8S017	4/27/99 11:35	8081	Endrin Ketone	2.3	U		µg/Kg	1.7	2.4
OR6393-2	SA8S017	4/27/99 11:35	8081	Chlordane (Total)	34	U		µg/Kg	34	1.7
OR6393-2	SA8S017	4/27/99 11:35	8081	Toxaphene	68	U		µg/Kg	68	3.4
OR6393-2	SA8S017	4/27/99 11:35	8081	Isodrin	3.4	U		µg/Kg	3.4	3.4
OR6393-2	SA8S017	4/27/99 11:35	8081	Mirex	3.4	U		µg/Kg	3.4	3.4
OR6393-2	SA8S017	4/27/99 11:35	8081	2,4,5,6-TCMX	102			%		
OR6393-2	SA8S017	4/27/99 11:35	8081	DBC	82			%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6393-2	SA8S017	4/27/99 11:35	SM2540G	Percent Solids	98			%		

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.

QSARF # ______

ENCO

ENVIRONMENTAL CONSERVATION LABORATORIES

4810 Executive Park Court, Suite 211
Jacksonville, Florida 32216-6069
Ph. (904) 296-3007 • Fax (904) 296-6210

10207 General Drive
Orlando, Florida 32824
Ph. (407) 826-5314 • Fax (407) 850-6945

ENCO CompQAP No.: 960038G/0

CHAIN OF CUSTODY RECORD

PROJECT REFERENCE	PROJECT NO.	P.O. NUMBER
NTC Orlando		

PROJECT LOC. (State)	SAMPLER(s) NAME	PHONE	FAX
FL	Rusty Cope	496-2173	

CLIENT NAME: Env Det Chas

CLIENT PROJECT MANAGER: A. Moyer

CLIENT ADDRESS (CITY, STATE, ZIP): 1899 N. Hobson Ave N. Chas SC 29405

PAGE ___ OF ___

☐ STANDARD REPORT DELIVERY

☐ EXPEDITED REPORT DELIVERY (surcharge)

Date Due: ______

MATRIX TYPE: SURFACE WATER, GROUND WATER, WASTEWATER, DRINKING WATER, SOIL/SOLID/SEDIMENT, NONAQUEOUS LIQUID (oil, solvent, etc.), AIR, SLUDGE, OTHER

REQUIRED ANALYSIS: Pesticides

PRESERVATIVE

NUMBER OF CONTAINERS SUBMITTED

STATION	DATE	TIME	GRAB	COMP	SAMPLE IDENTIFICATION	SURFACE WATER	GROUND WATER	WASTEWATER	DRINKING WATER	SOIL/SOLID/SEDIMENT	NONAQUEOUS LIQUID	AIR	SLUDGE	OTHER	Pesticides								REMARKS
1	4/27/99	1130	X		SA8S016					X					1								
2	4/27/99	1135	X		SA8S017					X					1								
3	4/27/99	1140	X		SA8S018					X					1								
4					~~SA8S019 RWC~~																		
5	~~4/27/99~~	~~1500~~																					
6																							
7																							
8																							
9																							
10																							
11																							
12																							
13																							
14																							

SAMPLE KIT PREPARED BY: ☐JACKSONVILLE ☐ORLANDO	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
RELINQUISHED BY: (SIGNATURE) Rusty Cope	4/27/99	15:30	RECEIVED BY: (SIGNATURE) James Gregory	4/27/99	15:30	RELINQUISHED BY: (SIGNATURE)		
RECEIVED BY: (SIGNATURE)			RELINQUISHED BY: (SIGNATURE)			RECEIVED BY: (SIGNATURE)		

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	ENCO LOG NO.	REMARKS
Teresa Chan ☐ Jacksonville ☒ Orlando	4-27-99	17:00	☐ YES ☐ NO	ORG[illegible]3	

Page 1 of 1

CHAIN OF COSTODY RECORD

— 3 DAY TURNAROUND —

[illegible]eral [illegible]ering [illegible]
2040 Savage Road
Charleston, South Carol[illegible] [illegible]07
P.O. Box 30712
Charleston, South Carolina 29417
(803) 556-8171

Client Name/Facility Name: ENV D NTC Orlando

Collected by/Company: ENV DOT CHASN

SAMPLE ANALYSIS REQUIRED (x) - use remarks area to specify specific compounds or methods

Use F or P in the boxes to indicate whether sample was filtered and/or preserved

SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS - specify	Pesticide 8081	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	Remarks
99Sport0163-1	5/3/99	1700		X		X	1								X								SA8S025
99Sport0163-2	5/3/99	1708		X		X	1								X								SA8S0 26
99Sport0163-3	5/3/99	1715		X		X	1								X								SA8S0 27
99Sport0163-4	5/3/99	1723		X		X	1								X								SA8S0 28

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:
K W Cope	5/3/99	1805	W. R. Hiers, Jr.	W. R. Hiers, Jr.	5/4/99	1336	—
Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:	
	—	—	Kyle R. Burt	5/4/99	1336		

White [illegible]le collector Yellow = file Pink = with report

VEERING
, INC.

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/874:
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Description: SUPSHIP-Portsmouth Detachment

)7 Report Date: May 08, 1999

Sample ID : 99SPORT0163-4

very	Test	Percent %	Acceptable Limits
	PEST-8081A	105000*	(36.5 - 131.)
nyl	PEST-8081A	90.0	(50.7 - 135.)

Method-Description

EPA 8081A
EPA 3550

is report are defined as follows:
ie analyte was not detected at a concentration greater than the detection limit.
of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
analyte was not detected at a concentration greater than the detection limit.
ality control analyte recovery is outside of specified acceptance criteria.

been prepared and reviewed
Jeneral Engineering Laboratories
rocedures. Please direct
r Project Manager, Elise Hanson at 843-556-8171.

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87-
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 13, 1999

Sample ID	: 99SPORT0173-2
Lab ID	: 9905273-02
Matrix	: Soil
Date Collected	: 05/09/99
Date Received	: 05/10/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Arsenic	U	ND	425	467	ug/kg	2.0	MBL	05/11/99	1556	148766	

The following prep procedures were performed:

TRACE	AJM	05/10/99	1800	148766	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed
in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager, Elise Hanson at 843-556-8171.

E Hanson

viewed By

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/874.
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client:	Supervisor of Ship Building & Conversion SUPSHIP-Portsmouth Detachment-Env. 1899 North Hobson Ave. North Charleston, South Carolina 29405-2106
Contact:	Mr. Bill Hiers
Project Description:	SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 13, 1999

Sample ID	: 99SPORT0173-3
Lab ID	: 9905273-03
Matrix	: Soil
Date Collected	: 05/09/99
Date Received	: 05/10/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
rsenic	U	ND	441	485	ug/kg	2.0	MBL	05/11/99	1602	148766	1

The following prep procedures were performed:

TRACE	AJM	05/10/99	1800	148766	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

E. Hanson

viewed By

9905273-03

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/874..
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 13, 1999

Sample ID	: 99SPORT0173-3
Lab ID	: 9905273-03
Matrix	: Soil
Date Collected	: 05/09/99
Date Received	: 05/10/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Arsenic	U	ND	441	485	ug/kg	2.0	MBL	05/11/99	1602	148766	1
The following prep procedures were performed:											
TRACE							AJM	05/10/99	1800	148766	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

E. Hanson

Reviewed By

GENERAL ENGINEERING LABORATORIES
Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87-
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 13, 1999

Sample ID	: 99SPORT0173-5
Lab ID	: 9905273-05
Matrix	: Soil
Date Collected	: 05/09/99
Date Received	: 05/10/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Arsenic	U	ND	450	495	ug/kg	2.0	MBL	05/11/99	1614	148766	.

The following prep procedures were performed:

TRACE	AJM	05/10/99	1800	148766	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed
in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager, Elise Hanson at 843-556-8171.

E Hanson
iewed By

9905273-05

GENERAL ENGINEERING LABORATORIES
Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/874
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 13, 1999

Sample ID	: 99SPORT0173-4
Lab ID	: 9905273-04
Matrix	: Soil
Date Collected	: 05/09/99
Date Received	: 05/10/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Arsenic	U	ND	425	467	ug/kg	2.0	MBL	05/11/99	1608	148766	

The following prep procedures were performed:

TRACE	AJM	05/10/99	1800	148766	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

EHanson

viewed By

9905273-04

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 13, 1999

Sample ID	: 99SPORT0173-6
Lab ID	: 9905273-06
Matrix	: Soil
Date Collected	: 05/09/99
Date Received	: 05/10/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Arsenic	U	ND	441	485	ug/kg	2.0	MBL	05/11/99	1620	148766	

The following prep procedures were performed:

TRACE	AJM	05/10/99	1800	148766	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

E Hanson

Reviewed By

GENERAL ENGINEERING LABORATORIES, INC.

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: May 13, 1999

Sample ID	: 99SPORT0173-7
Lab ID	: 9905273-07
Matrix	: Soil
Date Collected	: 05/09/99
Date Received	: 05/10/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Arsenic	U	ND	441	485	ug/kg	2.0	MBL	05/11/99	1626	148766	

The following prep procedures were performed:

TRACE	AJM	05/10/99	1800	148766	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

Notes:

The qualifiers in this report are defined as follows:

ND indicates that the analyte was not detected at a concentration greater than the detection limit.

J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

U indicates that the analyte was not detected at a concentration greater than the detection limit.

* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

E Hanson

viewed By

GENERAL ENGINEERING LABORATORIES, INC.

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/874
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client:	Supervisor of Ship Building & Conversion SUPSHIP-Portsmouth Detachment-Env. 1899 North Hobson Ave. North Charleston, South Carolina 29405-2106
Contact:	Mr. Bill Hiers
Project Description:	SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 13, 1999

Sample ID	: 99SPORT0173-8
Lab ID	: 9905273-08
Matrix	: Soil
Date Collected	: 05/09/99
Date Received	: 05/10/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Arsenic	U	ND	430	472	ug/kg	2.0	MBL	05/11/99	1633	148766	1

The following prep procedures were performed:

TRACE	AJM	05/10/99	1800	148766	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

E Hanson
Reviewed By

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	ES7472/87.
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: May 13, 1999

Sample ID	: 99SPORT0173-9
Lab ID	: 9905273-09
Matrix	: Soil
Date Collected	: 05/09/99
Date Received	: 05/10/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Arsenic		507	450	495	ug/kg	2.0	MBL	05/11/99	1654	148766	.

The following prep procedures were performed:

TRACE	AJM	05/10/99	1800	148766	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

Notes:

The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

EHanson

iewed By

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/874
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston. South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 13. 1999

Sample ID	: 99SPORT0173-10
Lab ID	: 9905273-10
Matrix	: Soil
Date Collected	: 05/09/99
Date Received	: 05/10/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Arsenic		2750	414	455	ug/kg	2.0	MBL	05/11/99	1700	148766	.

The following prep procedures were performed:

TRACE	AJM	05/10/99	1800	148766	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed
in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager. Elise Hanson at 843-556-8171.

E Hanson

viewed By

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/S
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: May 13, 1999

Sample ID	: 99SPORT0173-11
Lab ID	: 9905273-11
Matrix	: Soil
Date Collected	: 05/09/99
Date Received	: 05/10/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Arsenic		871	425	467	ug/kg	2.0	MBL	05/11/99	1706	148766	

The following prep procedures were performed:

TRACE	AJM	05/10/99	1800	148766	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

Notes:

The qualifiers in this report are defined as follows:

ND indicates that the analyte was not detected at a concentration greater than the detection limit.

J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

U indicates that the analyte was not detected at a concentration greater than the detection limit.

* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

E Hanson

viewed By

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407
(843) 556-8171 • Fax (843) 766-1178

9905273-11

GENERAL ENGINEERING LABORATORIES, INC.

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87-
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client:	Supervisor of Ship Building & Conversion SUPSHIP-Portsmouth Detachment-Env. 1899 North Hobson Ave. North Charleston, South Carolina 29405-2106
Contact:	Mr. Bill Hiers
Project Description:	SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: May 13, 1999

Sample ID	: 99SPORT0173-12
Lab ID	: 9905273-12
Matrix	: Soil
Date Collected	: 05/09/99
Date Received	: 05/10/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Arsenic		8790	2090	2300	ug/kg	10.	MBL	05/11/99	1712	148766	.

The following prep procedures were performed:

TRACE	AJM	05/10/99	1800	148766	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

EHanson

'iewed By

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407
(843) 556-8171 • Fax (843) 766-1178

9905273-12

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/8[illegible]
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: May 13, 1999

Sample ID	: 99SPORT0173-13
Lab ID	: 9905273-13
Matrix	: Soil
Date Collected	: 05/09/99
Date Received	: 05/10/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Arsenic	U	ND	2090	2300	ug/kg	10	MBL	05/11/99	1718	148766	

The following prep procedures were performed:

TRACE	AJM	05/10/99	1800	148766	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed
in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager, Elise Hanson at 843-556-8171.

E Hanson

viewed By

9905273-13

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87-
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: May 13. 1999

Sample ID	: 99SPORT0173-14
Lab ID	: 9905273-14
Matrix	: Soil
Date Collected	: 05/09/99
Date Received	: 05/10/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
rsenic	U	ND	2170	2380	ug/kg	10.	MBL	05/11/99	1724	148766	

The following prep procedures were performed:

TRACE	AJM	05/10/99	1800	148766	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed
in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager, Elise Hanson at 843-556-8171.

E Hanson

iewed By

9905273-14

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	ES7472/87-
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client:	Supervisor of Ship Building & Conversion SUPSHIP-Portsmouth Detachment-Env. 1899 North Hobson Ave. North Charleston, South Carolina 29405-2106
Contact:	Mr. Bill Hiers
Project Description:	SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 13, 1999

Sample ID	: 99SPORT0173-15
Lab ID	: 9905273-15
Matrix	: Soil
Date Collected	: 05/09/99
Date Received	: 05/10/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Arsenic		6460	2170	2380	ug/kg	10.	MBL	05/11/99	1731	148766	1

The following prep procedures were performed:

TRACE	AJM	05/10/99	1800	148766	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

E Hanson

[R]eviewed By

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407
(843) 556-8171 • Fax (843) 766-1178

Printed on recycled paper

9905273-15

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: May 13, 1999

Sample ID	: 99SPORT0173-18
Lab ID	: 9905273-18
Matrix	: Soil
Date Collected	: 05/09/99
Date Received	: 05/10/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Arsenic	U	ND	2280	2500	ug/kg	10.	MBL	05/11/99	1749	148766	

The following prep procedures were performed:

TRACE	AJM	05/10/99	1800	148766	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed
in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager, Elise Hanson at 843-556-8171.

E Hanson

iewed By

9905273-18

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87..
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client:	Supervisor of Ship Building & Conversion SUPSHIP-Portsmouth Detachment-Env. 1899 North Hobson Ave. North Charleston, South Carolina 29405-2106
Contact:	Mr. Bill Hiers
Project Description:	SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 13, 1999

Sample ID	: 99SPORT0173-17
Lab ID	: 9905273-17
Matrix	: Soil
Date Collected	: 05/09/99
Date Received	: 05/10/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Arsenic	U	ND	2110	2320	ug/kg	10.	MBL	05/11/99	1743	148766	

The following prep procedures were performed:

TRACE	AJM	05/10/99	1800	148766	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

E Hanson

viewed By

9905273-17

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/874[illegible]
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: May 13, 1999

Sample ID	: 99SPORT0173-19
Lab ID	: 9905273-19
Matrix	: Soil
Date Collected	: 05/09/99
Date Received	: 05/10/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
rsenic		5720	2090	2300	ug/kg	10.	MBL	05/11/99	1811	148766	1

The following prep procedures were performed:

TRACE	AJM	05/10/99	1800	148766	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager. Elise Hanson at 843-556-8171.

E Hanson

iewed By

9905273-19

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87-
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: May 13, 1999

Sample ID	: 99SPORT0173-20
Lab ID	: 9905273-20
Matrix	: Soil
Date Collected	: 05/09/99
Date Received	: 05/10/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Arsenic		8910	2210	2430	ug/kg	10.	MBL	05/11/99	1817	148766	

The following prep procedures were performed:

TRACE	AJM	05/10/99	1800	148766	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

Notes:

The qualifiers in this report are defined as follows:

ND indicates that the analyte was not detected at a concentration greater than the detection limit.

J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).

U indicates that the analyte was not detected at a concentration greater than the detection limit.

* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

E Hanson

'iewed By

9905273-20

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/874..
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client:	Supervisor of Ship Building & Conversion SUPSHIP-Portsmouth Detachment-Env. 1899 North Hobson Ave. North Charleston, South Carolina 29405-2106
Contact:	Mr. Bill Hiers
Project Description:	SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 13, 1999

Sample ID	: 99SPORT0173-21
Lab ID	: 9905273-21
Matrix	: Soil
Date Collected	: 05/09/99
Date Received	: 05/10/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Arsenic		4890	430	472	ug/kg	2.0	MBL	05/11/99	1334	148767	1

The following prep procedures were performed:

TRACE	AJM	05/10/99	1800	148767	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

EHanson

Reviewed By

Page 1 of 2

CHAIN OF CUSTODY RECORD

9905273?

General Engineering Laboratories
2040 Savage Road
Charleston, South Carolina 29407
P.O. Box 30712
Charleston, South Carolina 29417
(803) 556-8171

Client Name/Facility Name: NTC ORlando

Collected by/Company: ENV DET Chas

SAMPLE ANALYSIS REQUIRED (x) - use remarks area to specify specific compounds or methods

Use F or P in the boxes to indicate whether sample was filtered and/or preserved

40139

	SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	Arsenic	Remarks
1-	99Sport0173-1	5/9/99	0800		X		X	1																X	SPLIT-TO ENCO SA8SO21
2.	99Sport0173-2	5/9/99	0805		X		X	1																X	SA8SO22
3.	99Sport0173-3	5/9/99	0809		X		X	1																X	SA8SO23
4-	99Sport0173-4	5/9/99	0814		X		X	1																X	SA8SO24
5-	99Sport0173-5	5/9/99	0819		X		X	1																X	SA8SO25
6-	99Sport0173-6	5/9/99	0825		X		X	1																X	SA8SO26
7.	99Sport0173-7	5/9/99	0829		X		X	1																X	SA8SO27
8.	99Sport0173-8	5/9/99	0835		X		X	1																X	SA8SO28
9.	99Sport0173-9	5/9/99	0840		X		X	1																X	SA8SO29
10	99Sport0173-10	5/9/99	0845		X		X	1																X	SA8SO30
11	99Sport0173-11	5/9/99	0849		X		X	1																X	SA8SO31
12	99Sport0173-12	5/9/99	0855		X		X	1																X	SA8SO32
13	99Sport0173-13	5/9/99	0859		X		X	1																X	SA8SO33

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:
R W Pope	5/9/99	1600					

Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:
			P. Nowell	5-10-99	10:00	

White = sample collector Yellow = file Pink = with report

NTCUC0014 /

Page 2 of 2

CHAIN OF CUSTODY RECORD

K9905273S

General Engineering La[illegible]ies, Inc.
2040 Savage Road
Charleston, South Carolin[illegible]407
P.O. Box 30712
Charleston, South Carolina 29417
(803) 556-8171

Client Name/Facility Name: NTC Orlando

Collected by/Company: Env. Det Chas.

SAMPLE ANALYSIS REQUIRED (x) - use remarks area to specify specific compounds or methods

Use F or P in the boxes to indicate whether sample was filtered and/or preserved

40139

	SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS - specify RCRA 8	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	Arsenic	Remarks	
14	99Spit0173-14	5/9/99	0906		X		X	1																X	SA8SO34	.1
15	99Spit0173-15	5/9/99	0912		X		X	1																X	SA8SO35	.1
16	99Spit0173-16	5/9/99	0918		X		X	1																X	SA8SO36	.1
17	99Spit0173-17	5/9/99	0925		X		X	1																X	SA8SO37	.1
18	99Spit0173-18	5/9/99	0930		X		X	1																X	SA8SO38	.1
19	99Spit0173-19	5/9/99	0936		X		X	1																X	SA8SO39	.1
20	99Spit0173-20	5/9/99	0942		X		X	1																X	SA8SO40	.1
21	99Spit0173-21	5/9/99	0950		X		X	1																X	SA8SO41	.1
22	99Spit0173-26	5/9/99	0800		X		X	1																X	Duplicate 99Spit0173-1	.1
23	99Spit0173-27	5/9/99	1300		X		X	3						1											SA-17 VOC 8021/5035	.3
24	99Spit0173-28	5/9/99	1310		X		X	1							1										SA-17 RCRA-8 Metals	.2

S

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:
KW Cope	5/9/99	1600	[illegible]				

Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:
			P. Neher	[illegible]99	10:00	

White = sam[illegible]llector Yellow = file Pink = with report

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87-
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: May 19, 1999

Sample ID	: 99SPORT0184-3
Lab ID	: 9905531-03
Matrix	: Soil
Date Collected	: 05/14/99
Date Received	: 05/17/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Arsenic	U	ND	2170	2380	ug/kg	10.	MBL	05/18/99	0939	149233	1

The following prep procedures were performed:

TRACE	FGD	05/17/99	1900	149233	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

Reviewed By

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407
(843) 556-8171 • Fax (843) 766-1178

9905531-03

NPWC00197

General Engineering L[illegible]ories, Inc.
2040 Savage Road
Charleston, South Caro[illegible] 29407
P.O. Box 30712
Charleston, South Carolina 29417
(803) 556-8171

CHAIN OF CUSTODY RECORD

9905531.

Client Name/Facility Name: McCoy Orlando NTC

Collected by/Company: Env Det Chas

SAMPLE ANALYSIS REQUIRED (x) - use remarks area to specify specific compounds or methods

Use F or P in the boxes to indicate whether sample was filtered and/or preserved

	SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	PAH	Arsenic	Remarks 40301	
01	99Sport0184-1	5/14/99	1120		X		X	1																X		SA17SO31+32 SA17SO34 @ 60'	.1
52	99Sport0184-2	5/14/99	1520		X		X	1																	X	99Sport0175-1+2 SA35SA65 @ 20'	.2
53	99Sport0184-3	5/14/99	1620		X		X	1																	X	99Sport0173-16 SA8SO55 @ 10'	.2

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:
KW Cole	5/14/99	1745					

Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:
			P. Nower	5/17/99	08:30	

White = sa[illegible] collector Yellow = file Pink = with report

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 13, 1999

Sample ID	: 99SPORT0174-1
Lab ID	: 9905275-01
Matrix	: Soil
Date Collected	: 05/09/99
Date Received	: 05/10/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Arsenic		6400	441	485	ug/kg	2.0	MBL	05/11/99	1353	148767	

The following prep procedures were performed:

TRACE	AJM	05/10/99	1800	148767	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

EHanson

.viewed By

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407
(843) 556-8171 • Fax (843) 766-1178

9905275-01

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/.
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197

Report Date: May 13, 1999

Sample ID	: 99SPORT0174-2
Lab ID	: 9905275-02
Matrix	: Soil
Date Collected	: 05/09/99
Date Received	: 05/10/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Arsenic		4800	438	481	ug/kg	2.0	MBL	05/11/99	1359	148767	

The following prep procedures were performed:

TRACE	AJM	05/10/99	1800	148767	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed
in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager, Elise Hanson at 843-556-8171.

EHanson

Reviewed By

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407
(843) 556-8171 • Fax (843) 766-1178

Printed on recycled paper.

9905275-02

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87.
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client:	Supervisor of Ship Building & Conversion SUPSHIP-Portsmouth Detachment-Env. 1899 North Hobson Ave. North Charleston, South Carolina 29405-2106
Contact:	Mr. Bill Hiers
Project Description:	SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 13, 1999

Sample ID	: 99SPORT0174-3
Lab ID	: 9905275-03
Matrix	: Soil
Date Collected	: 05/09/99
Date Received	: 05/10/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Arsenic		908	433	476	ug/kg	2.0	MBL	05/11/99	1405	148767	1

The following prep procedures were performed:

TRACE	AJM	05/10/99	1800	148767	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

E Hanson

Reviewed By

9905275-03

GENERAL ENGINEERING LABORATORIES, INC.

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/874
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 13, 1999

Sample ID	: 99SPORT0174-4
Lab ID	: 9905275-04
Matrix	: Soil
Date Collected	: 05/09/99
Date Received	: 05/10/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Arsenic		671	430	472	ug/kg	2.0	MBL	05/11/99	1411	148767	

The following prep procedures were performed:

TRACE	AJM	05/10/99	1800	148767	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

EHanson
Reviewed By

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407
(843) 556-8171 • Fax (843) 766-1178

9905275-04

wwwww

General Engineering Laboratories, Inc.
2040 Savage Road
Charleston, South Carolina 29407
P.O. Box 30712
Charleston, South Carolina 29417
(803) 556-8171

CHAIN OF CUSTODY RECORD

Page 1 of 1

9905275

Client Name/Facility Name: NTC ORlando

Collected by/Company: Env Det Chas

SAMPLE ANALYSIS REQUIRED (x) - use remarks area to specify specific compounds or methods

Use F or P in the boxes to indicate whether sample was filtered and/or preserved

40140

	SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	Arsenic	Remarks
1-	99Spot0174-1	5/9/99	1010		X		X	1																X	SA85042
2-	99Spot0174-2	5/9/99	1014		X		X	1																X	SA85043
3-	99Spot0174-3	5/9/99	1018		X		X	1																X	SA85044
4-	99Spot0174-4	5/9/99	1023		X		X	1																X	SA85045
																									Seperate Grid in
																									Back Approx 10'x10'

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:
KW Cole	5/9/99	1600					

Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:
			P. [illegible]	5-10-99	10:00	

White = [illegible]e collector Yellow = file Pink = with report

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/8743
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 14, 1999

Sample ID	: 99SPORT0175-7
Lab ID	: 9905315-07
Matrix	: Soil
Date Collected	: 05/10/99
Date Received	: 05/11/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Arsenic	U	ND	425	467	ug/kg	2.0	MBL	05/12/99	1115	148886	1

The following prep procedures were performed:

TRACE	FGD	05/11/99	2000	148886	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed
in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager, Elise Hanson at 843-556-8171.

EHanson

Reviewed By

9905315-07

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87-
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 14, 1999

Sample ID	: 99SPORT0175-8
Lab ID	: 9905315-08
Matrix	: Soil
Date Collected	: 05/10/99
Date Received	: 05/11/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Arsenic	U	ND	430	472	ug/kg	2.0	MBL	05/12/99	1121	148886	

The following prep procedures were performed:

TRACE	FGD	05/11/99	2000	148886	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

EHanson

Reviewed By

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407
(843) 556-8171 • Fax (843) 766-1178

9905315-08

Client:	Environmental Detachment Charleston	Report #.	OR6394
Address:		Date Submitted:	27-Apr-99
	1899 N. Hobson Ave	Date Reported:	5-May-99
	Charleston, SC 29405-2106	Project Name	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULT	QUAL	DIL	UNITS	RDL	MDL
OR6394-8	SA9-8	4/27/99 13:50	8081	alpha-BHC	2	U		µg/Kg	1.9	1.9
OR6394-8	SA9-8	4/27/99 13:50	8081	beta-BHC	2	U		µg/Kg	1.9	1.9
OR6394-8	SA9-8	4/27/99 13:50	8081	gamma-BHC (Lindane)	1.9	U		µg/Kg	1.9	1.5
OR6394-8	SA9-8	4/27/99 13:50	8081	Heptachlor	2	U		µg/Kg	1.9	1.9
OR6394-8	SA9-8	4/27/99 13:50	8081	delta-BHC	2	U		µg/Kg	1.9	1.9
OR6394-8	SA9-8	4/27/99 13:50	8081	Aldrin	1.9	U		µg/Kg	1.9	0.38
OR6394-8	SA9-8	4/27/99 13:50	8081	Heptachlor Epoxide	1.9	U		µg/Kg	1.9	1.5
OR6394-8	SA9-8	4/27/99 13:50	8081	Chlordane gamma	2	U		µg/Kg	2	0.3
OR6394-8	SA9-8	4/27/99 13:50	8081	Chlordane alpha	1.9	U		µg/Kg	1.9	0.38
OR6394-8	SA9-8	4/27/99 13:50	8081	Endosulfan I	2	U		µg/Kg	1.9	1.9
OR6394-8	SA9-8	4/27/99 13:50	8081	4,4'-DDE	2	U		µg/Kg	1.9	1.9
OR6394-8	SA9-8	4/27/99 13:50	8081	Dieldrin	2	U		µg/Kg	1.9	1.9
OR6394-8	SA9-8	4/27/99 13:50	8081	Endrin	2	U		µg/Kg	1.9	1.9
OR6394-8	SA9-8	4/27/99 13:50	8081	4,4'-DDD	1.9	U		µg/Kg	1.9	1.6
OR6394-8	SA9-8	4/27/99 13:50	8081	Endosulfan II	2	U		µg/Kg	1.9	1.9
OR6394-8	SA9-8	4/27/99 13:50	8081	4,4'-DDT	2	U		µg/Kg	1.9	1.9
OR6394-8	SA9-8	4/27/99 13:50	8081	Endrin aldehyde	1.9	U		µg/Kg	1.9	1.6
OR6394-8	SA9-8	4/27/99 13:50	8081	Endosulfan sulfate	1.9	U		µg/Kg	1.9	0.76
OR6394-8	SA9-8	4/27/99 13:50	8081	Methoxychlor	12	U		µg/Kg	2	12
OR6394-8	SA9-8	4/27/99 13:50	8081	Endrin Ketone	2.7	U		µg/Kg	1.9	2.7
OR6394-8	SA9-8	4/27/99 13:50	8081	Chlordane (Total)	39	U		µg/Kg	39	1.9
OR6394-8	SA9-8	4/27/99 13:50	8081	Toxaphene	78	U		µg/Kg	78	3.8
OR6394-8	SA9-8	4/27/99 13:50	8081	Isodrin	3.8	U		µg/Kg	3.8	3.8
OR6394-8	SA9-8	4/27/99 13:50	8081	Mirex	3.8	U		µg/Kg	3.8	3.8
OR6394-8	SA9-8	4/27/99 13:50	8081	2,4,5,6-TCMX	116			%		
OR6394-8	SA9-8	4/27/99 13:50	8081	DBC	93			%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULT	QUAL	DIL	UNITS	RDL	MDL
OR6394-8	SA9-8	4/27/99 13:50	7060	Arsenic	0.9	U	2	mg/Kg	0.9	0.1

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULT	QUAL	DIL	UNITS	RDL	MDL
OR6394-8	SA9-8	4/27/99 13:50	SM2540G	Percent Solids	86			%		

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 14, 1999

Sample ID	: 99SPORT0175-9
Lab ID	: 9905315-09
Matrix	: Soil
Date Collected	: 05/10/99
Date Received	: 05/11/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Arsenic	U	ND	438	481	ug/kg	2.0	MBL	05/12/99	1139	148886	

The following prep procedures were performed:

TRACE	FGD	05/11/99	2000	148886	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

EHanson

Reviewed By

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/874
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 14, 1999

Sample ID	: 99SPORT0175-10
Lab ID	: 9905315-10
Matrix	: Soil
Date Collected	: 05/10/99
Date Received	: 05/11/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
rsenic	U	ND	455	500	ug/kg	2.0	MBL	05/12/99	1145	148886	!

The following prep procedures were performed:

TRACE	FGD	05/11/99	2000	148886	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed
in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager, Elise Hanson at 843-556-8171.

E Hanson

:viewed By

MTWCO117 19 0157

CHAIN OF CUSTODY RECORD

ral E... ring I... orie
2040 Savage Road
Charleston, South Carol. 407
P.O. Box 30712
Charleston, South Carolina 29417
(803) 556-8171

Page 1 of 1

Client Name/Facility Name: NTC ORlando

Collected by/Company: ENV DET CHASN

SAMPLE ANALYSIS REQUIRED (x) - use remarks area to specify specific compounds or methods

Use F or P in the boxes to indicate whether sample was filtered and/or preserved

40172

	SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	Arsenic	Remarks
01	99Sport0175-1	5/10/99	1720		X		X	1																X	SA35SA54
02	99Sport0175-2	5/10/99	1725		X		X	1																X	SA35SA55
03	99Sport0175-3	5/10/99	1730		X		X	1																X	SA35S~~B~~H56
04	99Sport0175-4	5/10/99	1735		X		X	1																X	SA35S~~B~~H57
05	99Sport0175-5	5/10/99	1740		X		X	1																X	SA35SI58
06	99Sport0175-6	5/10/99	1745		X		X	1																X	SA35SI59
07	99Sport0175-7	5/10/99	1755		X		X	1																X	SA8SO46
08	99Sport0175-8	5/10/99	1800		X		X	1																X	SA8SO47
09	99Sport0175-9	5/10/99	1805		X		X	1																X	SA8SO48
10	99Sport0175-10	5/10/99	1810		X		X	1																X	SA8SO49
																									2½' from Stake

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:
RW Cope	5/10/99	1900					

Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:
			[signature]	5-11-99	0700	

White = ... collector Yellow = file Pink = with report

Client:	Environmental Detachment Charleston	Report #	OR6394
Address:	1899 N. Hobson Ave Charleston, SC 29405-2106	Date Submitted	27-Apr-99
		Date Reported	5-May-99
		Project Name	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULT	QUAL	DIL	UNITS	RDL	MDL
OR6394-5	SA9-5	4/27/99 13:35	8081	alpha-BHC	2.3	U		µg/Kg	1.9	1.9
OR6394-5	SA9-5	4/27/99 13:35	8081	beta-BHC	2.3	U		µg/Kg	1.9	1.9
OR6394-5	SA9-5	4/27/99 13:35	8081	gamma-BHC (Lindane)	2.2	U		µg/Kg	1.9	1.5
OR6394-5	SA9-5	4/27/99 13:35	8081	Heptachlor	2.3	U		µg/Kg	1.9	1.9
OR6394-5	SA9-5	4/27/99 13:35	8081	delta-BHC	2.3	U		µg/Kg	1.9	1.9
OR6394-5	SA9-5	4/27/99 13:35	8081	Aldrin	2.2	U		µg/Kg	1.9	0.38
OR6394-5	SA9-5	4/27/99 13:35	8081	Heptachlor Epoxide	2.2	U		µg/Kg	1.9	1.5
OR6394-5	SA9-5	4/27/99 13:35	8081	Chlordane gamma	2.3	U		µg/Kg	2.3	0.4
OR6394-5	SA9-5	4/27/99 13:35	8081	Chlordane alpha	2.2	U		µg/Kg	2.2	0.44
OR6394-5	SA9-5	4/27/99 13:35	8081	Endosulfan I	2.3	U		µg/Kg	2.2	2.2
OR6394-5	SA9-5	4/27/99 13:35	8081	4,4'-DDE	2.3	U		µg/Kg	2.2	2.2
OR6394-5	SA9-5	4/27/99 13:35	8081	Dieldrin	2.3	U		µg/Kg	2.2	2.2
OR6394-5	SA9-5	4/27/99 13:35	8081	Endrin	2.3	U		µg/Kg	2.2	2.2
OR6394-5	SA9-5	4/27/99 13:35	8081	4,4'-DDD	2.2	U		µg/Kg	2.2	1.8
OR6394-5	SA9-5	4/27/99 13:35	8081	Endosulfan II	2.3	U		µg/Kg	2.2	2.2
OR6394-5	SA9-5	4/27/99 13:35	8081	4,4'-DDT	2.3	U		µg/Kg	2.2	2.2
OR6394-5	SA9-5	4/27/99 13:35	8081	Endrin aldehyde	2.2	U		µg/Kg	2.2	1.8
OR6394-5	SA9-5	4/27/99 13:35	8081	Endosulfan sulfate	2.2	U		µg/Kg	2.2	0.89
OR6394-5	SA9-5	4/27/99 13:35	8081	Methoxychlor	13	U		µg/Kg	3	13
OR6394-5	SA9-5	4/27/99 13:35	8081	Endrin Ketone	3.1	U		µg/Kg	2.2	3.1
OR6394-5	SA9-5	4/27/99 13:35	8081	Chlordane (Total)	44	U		µg/Kg	44	2.2
OR6394-5	SA9-5	4/27/99 13:35	8081	Toxaphene	89	U		µg/Kg	89	4.4
OR6394-5	SA9-5	4/27/99 13:35	8081	Isodrin	4.4	U		µg/Kg	4.4	4.4
OR6394-5	SA9-5	4/27/99 13:35	8081	Mirex	4.4	U		µg/Kg	4.4	4.4
OR6394-5	SA9-5	4/27/99 13:35	8081	2,4,5,6-TCMX	160			%		
OR6394-5	SA9-5	4/27/99 13:35	8081	DBC	107			%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULT	QUAL	DIL	UNITS	RDL	MDL
OR6394-5	SA9-5	4/27/99 13:35	7060	Arsenic	3.2		2	mg/Kg	1.1	0.1

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULT	QUAL	DIL	UNITS	RDL	MDL
OR6394-5	SA9-5	4/27/99 13:35	SM2540G	Percent Solids	75			%		

NOTE: Analyte values are reported on a dry weight basis.

U = Compound was analyzed for but not detected to the level shown.

Client:	Environmental Detachment Charleston	Report #:	OR6394
Address:		Date Submitted:	27-Apr-99
	1899 N. Hobson Ave	Date Reported:	5-May-99
	Charleston, SC 29405-2106	Project Name:	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULT	QUAL	DIL	UNITS	RDL	MDL
OR6394-6	SA9-6	4/27/99 13:40	8081	alpha-BHC	2	U		µg/Kg	1.9	1.9
OR6394-6	SA9-6	4/27/99 13:40	8081	beta-BHC	2	U		µg/Kg	1.9	1.9
OR6394-6	SA9-6	4/27/99 13:40	8081	gamma-BHC (Lindane)	1.9	U		µg/Kg	1.9	1.5
OR6394-6	SA9-6	4/27/99 13:40	8081	Heptachlor	2	U		µg/Kg	1.9	1.9
OR6394-6	SA9-6	4/27/99 13:40	8081	delta-BHC	2	U		µg/Kg	1.9	1.9
OR6394-6	SA9-6	4/27/99 13:40	8081	Aldrin	1.9	U		µg/Kg	1.9	0.38
OR6394-6	SA9-6	4/27/99 13:40	8081	Heptachlor Epoxide	1.9	U		µg/Kg	1.9	1.5
OR6394-6	SA9-6	4/27/99 13:40	8081	Chlordane gamma	2	U		µg/Kg	2	0.3
OR6394-6	SA9-6	4/27/99 13:40	8081	Chlordane alpha	1.9	U		µg/Kg	1.9	0.38
OR6394-6	SA9-6	4/27/99 13:40	8081	Endosulfan I	2	U		µg/Kg	1.9	1.9
OR6394-6	SA9-6	4/27/99 13:40	8081	4,4'-DDE	2	U		µg/Kg	1.9	1.9
OR6394-6	SA9-6	4/27/99 13:40	8081	Dieldrin	2	U		µg/Kg	1.9	1.9
OR6394-6	SA9-6	4/27/99 13:40	8081	Endrin	2	U		µg/Kg	1.9	1.9
OR6394-6	SA9-6	4/27/99 13:40	8081	4,4'-DDD	1.9	U		µg/Kg	1.9	1.6
OR6394-6	SA9-6	4/27/99 13:40	8081	Endosulfan II	2	U		µg/Kg	1.9	1.9
OR6394-6	SA9-6	4/27/99 13:40	8081	4,4'-DDT	2	U		µg/Kg	1.9	1.9
OR6394-6	SA9-6	4/27/99 13:40	8081	Endrin aldehyde	1.9	U		µg/Kg	1.9	1.6
OR6394-6	SA9-6	4/27/99 13:40	8081	Endosulfan sulfate	1.9	U		µg/Kg	1.9	0.78
OR6394-6	SA9-6	4/27/99 13:40	8081	Methoxychlor	12	U		µg/Kg	2	12
OR6394-6	SA9-6	4/27/99 13:40	8081	Endrin Ketone	2.7	U		µg/Kg	1.9	2.7
OR6394-6	SA9-6	4/27/99 13:40	8081	Chlordane (Total)	39	U		µg/Kg	39	1.9
OR6394-6	SA9-6	4/27/99 13:40	8081	Toxaphene	78	U		µg/Kg	78	3.8
OR6394-6	SA9-6	4/27/99 13:40	8081	Isodrin	3.8	U		µg/Kg	3.8	3.8
OR6394-6	SA9-6	4/27/99 13:40	8081	Mirex	3.8	U		µg/Kg	3.8	3.8
OR6394-6	SA9-6	4/27/99 13:40	8081	2,4,5,6-TCMX	116			%		
OR6394-6	SA9-6	4/27/99 13:40	8081	DBC	93			%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULT	QUAL	DIL	UNITS	RDL	MDL
OR6394-6	SA9-6	4/27/99 13:40	7060	Arsenic	2		2	mg/Kg	0.9	0.1

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULT	QUAL	DIL	UNITS	RDL	MDL
OR6394-6	SA9-6	4/27/99 13:40	SM2540G	Percent Solids	86			%		

NOTE: Analyte values are reported on a dry weight basis

U = Compound was analyzed for but not detected to the level shown

Client: Environmental Detachment Charleston
Address: 1899 N. Hobson Ave
Charleston, SC 29405-2106

Report #: OR6394
Date Submitted: 27-Apr-99
Date Reported: 5-May-99
Project Name: NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULT	QUAL	DIL	UNITS	RDL	MDL
OR6394-9	SA9-9	4/27/99 13:55	8081	alpha-BHC	1.8	U		µg/Kg	1.9	1.9
OR6394-9	SA9-9	4/27/99 13:55	8081	beta-BHC	1.8	U		µg/Kg	1.9	1.9
OR6394-9	SA9-9	4/27/99 13:55	8081	gamma-BHC (Lindane)	1.8	U		µg/Kg	1.9	1.5
OR6394-9	SA9-9	4/27/99 13:55	8081	Heptachlor	1.8	U		µg/Kg	1.9	1.9
OR6394-9	SA9-9	4/27/99 13:55	8081	delta-BHC	1.8	U		µg/Kg	1.9	1.9
OR6394-9	SA9-9	4/27/99 13:55	8081	Aldrin	1.8	U		µg/Kg	1.9	0.38
OR6394-9	SA9-9	4/27/99 13:55	8081	Heptachlor Epoxide	1.8	U		µg/Kg	1.9	1.5
OR6394-9	SA9-9	4/27/99 13:55	8081	Chlordane gamma	29			µg/Kg	1.8	0.3
OR6394-9	SA9-9	4/27/99 13:55	8081	Chlordane alpha	18			µg/Kg	1.8	0.36
OR6394-9	SA9-9	4/27/99 13:55	8081	Endosulfan I	1.8	U		µg/Kg	1.8	1.8
OR6394-9	SA9-9	4/27/99 13:55	8081	4,4'-DDE	1.8	U		µg/Kg	1.8	1.8
OR6394-9	SA9-9	4/27/99 13:55	8081	Dieldrin	1.8	U		µg/Kg	1.8	1.8
OR6394-9	SA9-9	4/27/99 13:55	8081	Endrin	1.8	U		µg/Kg	1.8	1.8
OR6394-9	SA9-9	4/27/99 13:55	8081	4,4'-DDD	1.8	U		µg/Kg	1.8	1.4
OR6394-9	SA9-9	4/27/99 13:55	8081	Endosulfan II	1.8	U		µg/Kg	1.8	1.8
OR6394-9	SA9-9	4/27/99 13:55	8081	4,4'-DDT	1.8	U		µg/Kg	1.8	1.8
OR6394-9	SA9-9	4/27/99 13:55	8081	Endrin aldehyde	1.8	U		µg/Kg	1.8	1.4
OR6394-9	SA9-9	4/27/99 13:55	8081	Endosulfan sulfate	1.8	U		µg/Kg	1.8	0.73
OR6394-9	SA9-9	4/27/99 13:55	8081	Methoxychlor	11	U		µg/Kg	2	11
OR6394-9	SA9-9	4/27/99 13:55	8081	Endrin Ketone	2.5	U		µg/Kg	1.8	2.5
OR6394-9	SA9-9	4/27/99 13:55	8081	Chlordane (Total)	600			µg/Kg	36	1.8
OR6394-9	SA9-9	4/27/99 13:55	8081	Toxaphene	72	U		µg/Kg	72	3.6
OR6394-9	SA9-9	4/27/99 13:55	8081	Isodrin	3.6	U		µg/Kg	3.6	3.6
OR6394-9	SA9-9	4/27/99 13:55	8081	Mirex	3.6	U		µg/Kg	3.6	3.6
OR6394-9	SA9-9	4/27/99 13:55	8081	2,4,5,6-TCMX	130			%		
OR6394-9	SA9-9	4/27/99 13:55	8081	DBC	109			%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULT	QUAL	DIL	UNITS	RDL	MDL
OR6394-9	SA9-9	4/27/99 13:55	7060	Arsenic	0.9	U	2	mg/Kg	0.9	0.1

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULT	QUAL	DIL	UNITS	RDL	MDL
OR6394-9	SA9-9	4/27/99 13:55	SM2540G	Percent Solids	92			%		

NOTE: Analyte values are reported on a dry weight basis

U = Compound was analyzed for but not detected to the level shown

Client: Environmental Detachment Charleston
Address: 1899 N. Hobson Ave
Charleston, SC 29405-2106

Report #: OR6394
Date Submitted: 27-Apr-99
Date Reported: 5-May-99
Project Name: NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULT	QUAL	DIL	UNITS	RDL	MDL
OR6394-10	SA9-10	4/27/99 14:00	8081	alpha-BHC	2	U		µg/Kg	1.9	1.9
OR6394-10	SA9-10	4/27/99 14:00	8081	beta-BHC	2	U		µg/Kg	1.9	1.9
OR6394-10	SA9-10	4/27/99 14:00	8081	gamma-BHC (Lindane)	1.9	U		µg/Kg	1.9	1.5
OR6394-10	SA9-10	4/27/99 14:00	8081	Heptachlor	2	U		µg/Kg	1.9	1.9
OR6394-10	SA9-10	4/27/99 14:00	8081	delta-BHC	2	U		µg/Kg	1.9	1.9
OR6394-10	SA9-10	4/27/99 14:00	8081	Aldrin	1.9	U		µg/Kg	1.9	0.38
OR6394-10	SA9-10	4/27/99 14:00	8081	Heptachlor Epoxide	1.9	U		µg/Kg	1.9	1.5
OR6394-10	SA9-10	4/27/99 14:00	8081	Chlordane gamma	3.8			µg/Kg	2	0.3
OR6394-10	SA9-10	4/27/99 14:00	8081	Chlordane alpha	3.8			µg/Kg	1.9	0.38
OR6394-10	SA9-10	4/27/99 14:00	8081	Endosulfan I	2	U		µg/Kg	1.9	1.9
OR6394-10	SA9-10	4/27/99 14:00	8081	4,4'-DDE	2	U		µg/Kg	1.9	1.9
OR6394-10	SA9-10	4/27/99 14:00	8081	Dieldrin	2	U		µg/Kg	1.9	1.9
OR6394-10	SA9-10	4/27/99 14:00	8081	Endrin	2	U		µg/Kg	1.9	1.9
OR6394-10	SA9-10	4/27/99 14:00	8081	4,4'-DDD	1.9	U		µg/Kg	1.9	1.5
OR6394-10	SA9-10	4/27/99 14:00	8081	Endosulfan II	2	U		µg/Kg	1.9	1.9
OR6394-10	SA9-10	4/27/99 14:00	8081	4,4'-DDT	2	U		µg/Kg	1.9	1.9
OR6394-10	SA9-10	4/27/99 14:00	8081	Endrin aldehyde	1.9	U		µg/Kg	1.9	1.5
OR6394-10	SA9-10	4/27/99 14:00	8081	Endosulfan sulfate	1.9	U		µg/Kg	1.9	0.77
OR6394-10	SA9-10	4/27/99 14:00	8081	Methoxychlor	11	U		µg/Kg	2	11
OR6394-10	SA9-10	4/27/99 14:00	8081	Endrin Ketone	2.6	U		µg/Kg	1.9	2.7
OR6394-10	SA9-10	4/27/99 14:00	8081	Chlordane (Total)	70			µg/Kg	38	1.9
OR6394-10	SA9-10	4/27/99 14:00	8081	Toxaphene	77	U		µg/Kg	77	3.8
OR6394-10	SA9-10	4/27/99 14:00	8081	Isodrin	3.8	U		µg/Kg	3.8	3.8
OR6394-10	SA9-10	4/27/99 14:00	8081	Mirex	3.8	U		µg/Kg	3.8	3.8
OR6394-10	SA9-10	4/27/99 14:00	8081	2,4,5,6-TCMX	115			%		
OR6394-10	SA9-10	4/27/99 14:00	8081	DBC	92			%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULT	QUAL	DIL	UNITS	RDL	MDL
OR6394-10	SA9-10	4/27/99 14:00	7060	Arsenic	0.9	U	2	mg/Kg	0.9	0.1

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULT	QUAL	DIL	UNITS	RDL	MDL
OR6394-10	SA9-10	4/27/99 14:00	SM2540G	Percent Solids	87			%		

NOTE: Analyte values are reported on a dry weight basis

U = Compound was analyzed for but not detected to the level shown

QSARF #

ENVIRONMENTAL CONSERVATION LABORATORIES

4810 Executive Park Court, Suite 211
Jacksonville, Florida 32216-6069
Ph. (904) 296-3007 • Fax (904) 296-6210

10207 General Drive
Orlando, Florida 32824
Ph. (407) 826-5314 • Fax (407) 850-6945

ENCO CompQAP No.: 960038G/0

CHAIN OF CUSTODY RECORD

PROJECT REFERENCE: NTC ORlando	PROJECT NO.	P.O. NUMBER	PAGE / OF
PROJECT LOC. (State): FL	SAMPLER(s) NAME: Kurtz Cope	PHONE 496-2173 FAX	
CLIENT NAME: Env Det Chas	CLIENT PROJECT MANAGER: A Moyer		
CLIENT ADDRESS (CITY, STATE, ZIP): 1899 N Hobson Ave N Chas SC 29405			

☐ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (surcharge)
Date Due:

MATRIX TYPE / REQUIRED ANALYSIS / NUMBER OF CONTAINERS SUBMITTED

STATION	DATE	TIME	GRAB	COMP	SAMPLE IDENTIFICATION	SURFACE WATER	GROUND WATER	WASTEWATER	DRINKING WATER	SOIL/SOLID/SEDIMENT	NONAQUEOUS LIQUID (oil, solvent, etc.)	AIR	SLUDGE	OTHER	Arsenic	Pesticides	REMARKS
1	4/27/99	1			~~SA9S00~~					X					1	X	
2		1315	X		SA9-1					X					1	X	
3		1320	X		SA9-2					X					1	X	
4		1325	X		SA9-3					X					1	X	
5		1330	X		SA9-4					X					1	X	
6		1335	X		SA9-5					X					1	X	
7		1340	X		SA9-6					X					1	X	
8		1344	X		SA9-7					X					1	X	
9		1350	X		SA9-8					X					1	X	
10		1355	X		SA9-9					X					1	X	
11		1400	X		SA9-10					X					1	X	
12		1350	X		SA9C8					X					1	X	Dup.
13																	
14																	

SAMPLE KIT PREPARED BY: ☐JACKSONVILLE ☐ORLANDO	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
RELINQUISHED BY: (SIGNATURE) K W Cope	DATE 4/27/99	TIME 1530	RECEIVED BY: (SIGNATURE) James W. Gregory	DATE 4/27/99	TIME 1530	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
RECEIVED BY (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME
RECEIVED FOR LABORATORY BY: (SIGNATURE) T. Pick ☐ Jacksonville ☐ Orlando	DATE 42799	TIME 17.00	CUSTODY INTACT ☐ YES ☐ NO	ENCO LOG NO. OR63	REMARKS			

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87-
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client:	Supervisor of Ship Building & Conversion SUPSHIP-Portsmouth Detachment-Env. 1899 North Hobson Ave. North Charleston, South Carolina 29405-2106
Contact:	Mr. Bill Hiers
Project Description:	SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 14, 1999

Sample ID	: 99SPORT0172-1
Lab ID	: 9905240-01
Matrix	: Soil
Date Collected	: 05/06/99
Date Received	: 05/07/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Extractable Organics											
Pesticides - 21 items											
4,4'-DDD	U	ND	2.94	6.56	ug/kg	5.0	SJ	05/12/99	0339	148661	1
4,4'-DDE	J	4.36	2.74	6.56	ug/kg	5.0					
4,4'-DDT	U	ND	3.97	6.56	ug/kg	5.0					
Aldrin	U	ND	1.30	3.28	ug/kg	5.0					
Dieldrin	U	ND	3.66	6.56	ug/kg	5.0					
Endosulfan I	U	ND	2.26	3.28	ug/kg	5.0					
Endosulfan II	U	ND	3.39	6.56	ug/kg	5.0					
Endosulfan sulfate	U	ND	4.54	4.54	ug/kg	5.0					
Endrin	U	ND	3.39	6.56	ug/kg	5.0					
Endrin aldehyde	U	ND	4.95	6.56	ug/kg	5.0					
Endrin ketone	U	ND	4.02	6.56	ug/kg	5.0					
Heptachlor	U	ND	2.16	3.28	ug/kg	5.0					
Heptachlor epoxide	U	ND	1.08	3.28	ug/kg	5.0					
Methoxychlor	U	ND	17.7	32.8	ug/kg	5.0					
Toxaphene	U	ND	54.5	164	ug/kg	5.0					
alpha-BHC	U	ND	1.31	3.28	ug/kg	5.0					
alpha-Chlordane		21.2	2.20	3.28	ug/kg	5.0					
beta-BHC	U	ND	1.94	3.28	ug/kg	5.0					
delta-BHC	U	ND	1.41	3.28	ug/kg	5.0					
gamma-BHC	U	ND	1.74	3.28	ug/kg	5.0					
gamma-Chlordane		27.1	2.33	3.28	ug/kg	5.0					

The following prep procedures were performed:

Pesticides RDH 05/10/99 1200 148661 2

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407

(843) 556-8171 • Fax (843) 766-1178

9905240-01

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/87
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client:	Supervisor of Ship Building & Conversion SUPSHIP-Portsmouth Detachment-Env. 1899 North Hobson Ave. North Charleston, South Carolina 29405-2106
Contact:	Mr. Bill Hiers
Project Description:	SUPSHIP-Portsmouth Detachment

cc: NPWC00197   Report Date: May 14, 1999

Sample ID : 99SPORT0172-1

Surrogate Recovery	Test	Percent %	Acceptable Limits
4CMX	PEST-8081A	72.5	(36.5 - 131.)
Decachlorobiphenyl	PEST-8081A	78.2	(50.7 - 135.)

M = Method	Method-Description
M 1	EPA 8081A
M 2	EPA 3550

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

Reviewed By

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/874
NC	233	
NJ	79002	79002
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 11, 1999

Sample ID	: 99SPORT0172-2
Lab ID	: 9905240-02
Matrix	: Soil
Date Collected	: 05/06/99
Date Received	: 05/07/99
Priority	: Rush
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Arsenic	U	ND	425	467	ug/kg	2.0	MBL	05/10/99	1407	148650	1

The following prep procedures were performed:

TRACE	FGD	05/10/99	1000	148650	2

M = Method	Method-Description
M 1	EPA 6010B
M 2	EPA 3050

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

E Hanson

Reviewed By

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407
(843) 556-8171 • Fax (843) 766-1178

9905240-02

'/PWC0019'/

CHAIN OF COUSTODY RECORD

Page 1 of 2

9905240/.

General Engineering Lab[illegible]ories, Inc.
2040 Savage Road
Charleston, South Carol[illegible] [illegible]07
P.O. Box 30712
Charleston, South Carolina 29417
(803) 556-8171

Client Name/Facility Name: NTC ORlandO

Collected by/Company: ENV DET ChAS

SAMPLE ANALYSIS REQUIRED (x) - use remarks area to specify specific compounds or methods

Use F or P in the boxes to indicate whether sample was filtered and/or preserved

	SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS - specify	Pesticide 8081	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	Arsenic	PAH 8270	Remarks: 3 DAY Turnaround 40090	
-01	99Sport0172-1	5/6/99	1350		X		X	1								X										SA9-11	.1
-02	99Sport0172-2	5/6/99	1352		X		X	1																X		SA9-12	.2
-03	99Sport0172-3	5/6/99	1615		X		X	1																	X	SA40SO50	.3
-04	99Sport0172-4	5/6/99	1620		X		X	1																	X	SA40SO51	.3
-05	99Sport0172-5	5/6/99	1625		X		X	1																	X	SA40SO52	.3
-06	99Sport0172-6	5/6/99	1632		X		X	1																	X	SA40SO53	.3
.07	99Sport0172-7	5/6/99	1640		X		X	1																	X	SA40SO54	.3
.08	99Sport0172-8	5/6/99	1645		X		X	1																	X	SA40SO55	.3
.09	99Sport0172-9	5/6/99	1652		X		X	1																	X	SA40SO56	.3
.10	99Sport0172-10	5/6/99	1617		X		X	1																X		SA40SO57	.2
.11	99Sport0172-11	5/6/99	1622		X		X	1																X		SA40SO58	.2
.12	99Sport0172-12	5/6/99	1627		X		X	1																X		SA40SO59	.2
-13	99Sport0172-13	5/6/99	1634		X		X	1																X		SA40SO60	.2

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:
KW Cope	5/6/99	1845					

Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:
			P. Mauer	5-7-99	10:30	

White [illegible]ple collector Yellow = file Pink = with report

[illegible]

Page 2 of 2

CHAIN OF CUSTODY RECORD

99052401

[illegible] 2040 Savage Road
Charleston, South Carol[illegible] 407
P.O. Box 30712
Charleston, South Carolina 29417
(803) 556-8171

Client Name/Facility Name: NTC ORlando

Collected by/Company: Env DET Chas

SAMPLE ANALYSIS REQUIRED (x) - use remarks area to specify specific compounds or method

Use F or P in the boxes to indicate whether sample was filtered and/or preserved

3 DAY Turnaround 40090

	SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	Arsenic ICP	Remarks	
-14	99Sport0172-14	5/6/99	1643		X		X	1																X	SA40S061	.2
-15	99Sport0172-15	5/6/99	1648		X		X	1																X	SA40S0621	.2
-16	99Sport0172-16	5/6/99	1655		X		X	1																X	SA40S063	.2

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:
K W Cope	5/6/99	1845					

Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:
			P. [illegible]	5-7-99	10:30	

White = [illegible]le collector   Yellow = file   Pink = with report

WASTE CHARACTERIZATION

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/8745
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: April 02, 1999

Sample ID	: 99 SPORT0140-1
Lab ID	: 9903921-01
Matrix	: TCLP
Date Collected	: 03/18/99
Date Received	: 03/25/99
Priority	: Routine
Collector	: Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Metals Analysis											
Mercury	U	ND	0.000350	0.0200	mg/l	1.0	RMJ	03/31/99	1321	145698	1
Silver	J	14.8	7.30	50.0	ug/l	10.	MBL	03/31/99	1141	145709	2
Arsenic		207	45.1	50.0	ug/l	10.					
Barium		139	5.10	50.0	ug/l	10.					
Cadmium	J	18.7	4.40	50.0	ug/l	10.					
Chromium	J	14.5	5.60	50.0	ug/l	10.					
Lead		217	15.9	50.0	ug/l	10.					
Selenium	U	ND	27.1	50.0	ug/l	10.					

The following prep procedures were performed:

Mercury	RMJ	03/30/99	1820	145698	3
TCLP Prep for Metals	JJ	03/29/99	1720	145549	4

M = Method	Method-Description
M 1	EPA 7470
M 2	EPA 6010A
M 3	EPA 7470A
M 4	EPA 1311

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/874?
NC	233	
SC	10120	10582
TN	02934	02934

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: April 02, 1999

Sample ID : 99 SPORT0140-1

M = Method **Method-Description**

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed
in accordance with General Engineering Laboratories
standard operating procedures. Please direct
any questions to your Project Manager, Elise Hanson at 843-556-8171.

EHanson
Reviewed By

QC Summary Report

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Lab. Sample ID: 9903921-01 Report Date: April 02, 1999

Sample/Parameter	Type	Batch	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Analyst	Date	Time
Metals Analysis													
QC598196	BLANK	145698											
Mercury						0.000253	mg/l				RMJ	03/31/99	1314
QC598197	BLANK	145698											
Mercury						-0.000104	mg/l				RMJ	03/31/99	1316
QC598199	LCS	145698											
Mercury			0.02			0.0208	mg/l		104	(81.5 - 124.)	RMJ	03/31/99	1318
QC598237	BLANK	145709											
Arsenic						1.61	ug/l				MBL	03/31/99	1118
Barium						0.129	ug/l						
Cadmium						-0.0610	ug/l						
Chromium						0.221	ug/l						
Lead						0.358	ug/l						
Selenium						0.179	ug/l						
Silver						0.974	ug/l						
QC598238	BLANK	145709											
Arsenic						4.90	ug/l				MBL	03/31/99	1124
Barium						0.959	ug/l						
Cadmium						-0.299	ug/l						
Chromium						0.647	ug/l						
Lead						1.38	ug/l						
Selenium						3.61	ug/l						
Silver						1.40	ug/l						
QC598239	LCS	145709											
Arsenic			5000			4910	ug/l		98.2	(89.5 - 112.)	MBL	03/31/99	1129
Barium			10000			9780	ug/l		97.8	(90.7 - 111.)			
Cadmium			1000			1010	ug/l		101	(90.7 - 115.)			
Chromium			5000			4990	ug/l		99.9	(90.0 - 112.)			
Lead			5000			5020	ug/l		100	(89.3 - 114.)			
Selenium			1000			921	ug/l		92.1	(87.2 - 109.)			
Silver			500			505	ug/l		101	(90.9 - 116.)			

Notes:
The qualifiers in this report are defined as follows:
J indicates presence of analyte < RL (Report Limit)
U indicates presence of analyte < DL (Detect Limit)

√a indicates that spike recovery limits do not apply when
sample concentration exceeds spike conc by a factor of 4 or more

GENERAL ENGINEERING LABORATORIES
PO Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407
(803) 556-8171 • Fax (803) 766-1178

General Engineering Lab...ies, Inc.
2040 Savage Road
Charleston, South Caroli... 407
P.O. Box 30712
Charleston, South Carolina 29417
(803) 556-8171

CHAIN OF CUSTODY RECORD

Page 1 of 1

Client Name/Facility Name: SPORTENVDETCHASN

Collected by/Company: SPORTENVDETCHASN

SAMPLE ANALYSIS REQUIRED (x) - use remarks area to specify specific compounds or methods

Use F or P in the boxes to indicate whether sample was filtered and/or preserved

SAMPLE ID	DATE	TIME	WELL	SOIL	COMP	GRAB	# OF CONTAINERS	pH, conductivity	TOC/DOC	TOX	Chloride, Fluoride, Sulfide	Nitrite/Nitrate	VOC - Specify Method required	TCLP-RCRA METALS - specify	Pesticide	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type		Remarks
99SPORTφ14φ-1	3/18/99	1315		X	X		1							X										SA-8 ORLANDO 085025

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:
Alan J. Mozo	3/25/99	0955	W. R. Hiers, Jr.	W. R. Hiers, Jr.	3/25/99	1535	Stephanie Beckler
Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:	

White = ...ple collector Yellow = file Pink = with report

ENCO LABORATORIES
REPORT # : OR6327
DATE REPORTED: April 30, 1999
PROJECT NAME : NTC-Orlando

RESULTS OF ANALYSIS

EPA METHOD 1311/8080 - TCLP PESTICIDES	SA-35015	SA-80001	Units
Chlordane (Total)	NR	1.0 U	µg/L
Endrin	NR	0.050 U	µg/L
Heptachlor	NR	0.050 U	µg/L
Heptachlor Epoxide	NR	0.050 U	µg/L
gamma-BHC (Lindane)	NR	0.050 U	µg/L
Methoxychlor	NR	1.0 U	µg/L
Toxaphene	NR	2.0 U	µg/L
Surrogate:		**% RECOV**	**LIMITS**
2,4,5,6-TCMX		80	30-150
[illegible]		80	34-138
Date Extracted		04/28/99	
Date Analyzed		04/29/99	

= Analysis not requested for this sample.
Compound was analyzed for but not detected to the level shown.

RESULTS OF ANALYSIS

TCLP METALS	METHOD	SA-35015	SA-80001	Units
TCLP Arsenic	1311/7060	0.050 U	**0.060**	mg/L
Date Analyzed		04/23/99	04/23/99	
TCLP Barium	1311/7080	2.0 U	2.0 U	mg/L
Date Analyzed		04/23/99	04/23/99	
TCLP Cadmium	1311/7130	0.10 U	0.10 U	mg/L
Date Analyzed		04/23/99	04/23/99	
TCLP Chromium	1311/7190	0.50 U	0.50 U	mg/L
Date Analyzed		04/23/99	04/23/99	
TCLP Lead	1311/7420	0.50 U	**0.50**	mg/L
Date Analyzed		04/23/99	04/23/99	
TCLP Mercury	1311/7470	0.0050 U	0.0050 U	mg/L
Date Analyzed		04/26/99	04/26/99	
TCLP Selenium	1311/7740	0.050 U	0.050 U	mg/L
Date Analyzed		04/25/99	04/25/99	
TCLP Silver	1311/7760	0.20 U	0.20 U	mg/L
Date Analyzed		04/23/99	04/23/99	

Compound was analyzed for but not detected to the level shown.

ENCO LABORATORIES
REPORT # : OR6327
DATE REPORTED: April 30, 1999
PROJECT NAME : NTC-Orlando

RESULTS OF ANALYSIS

EPA METHOD 1311/8080 - TCLP PESTICIDES	SA-80002	SA-80003	Units
Chlordane (Total)	1.0 U	1.0 U	µg/L
Endrin	0.050 U	0.050 U	µg/L
Heptachlor	0.050 U	0.050 U	µg/L
Heptachlor Epoxide	0.050 U	0.050 U	µg/L
gamma-BHC (Lindane)	0.050 U	0.050 U	µg/L
Methoxychlor	1.0 U	1.0 U	µg/L
Toxaphene	2.0 U	2.0 U	µg/L
Surrogate:	**% RECOV**	**% RECOV**	**LIMITS**
2,4,5,6-TCMX	80	100	30-150
[illegible]	60	80	34-138
Date Extracted	04/28/99	04/28/99	
Date Analyzed	04/29/99	04/29/99	

Compound was analyzed for but not detected to the level shown.

ENCO LABORATORIES
REPORT # : OR6327A
DATE REPORTED: April 30, 1999
PROJECT NAME : NTC-Orlando

RESULTS OF ANALYSIS

TCLP METALS	METHOD	SA-80002	SA-80003	Units
TCLP Arsenic	1311/7060	**0.14**	0.050 U	mg/L
Date Analyzed		04/23/99	04/23/99	
TCLP Barium	1311/7080	2.0 U	2.0 U	mg/L
Date Analyzed		04/23/99	04/23/99	
TCLP Cadmium	1311/7130	0.10 U	0.10 U	mg/L
Date Analyzed		04/23/99	04/23/99	
TCLP Chromium	1311/7190	0.50 U	0.50 U	mg/L
Date Analyzed		04/23/99	04/23/99	
TCLP Lead	1311/7420	0.50 U	0.50 U	mg/L
Date Analyzed		04/23/99	04/23/99	
TCLP Mercury	1311/7470	0.0050 U	0.0050 U	mg/L
Date Analyzed		04/26/99	04/26/99	
TCLP Selenium	1311/7740	0.050 U	0.050 U	mg/L
Date Analyzed		04/25/99	04/25/99	
TCLP Silver	1311/7760	0.20 U	0.20 U	mg/L
Date Analyzed		04/23/99	04/23/99	

Compound was analyzed for but not detected to the level shown.

OSARF #

ENVIRONMENTAL CONSERVATION LABORATORIES

4810 Executive Park Court, Suite 211
Jacksonville, Florida 32216-6069
Ph. (904) 296-3007 • Fax (904) 296-6210

10207 General Drive
Orlando, Florida 32824
Ph. (407) 826-5314 • Fax (407) 850-6945

ENCO CompQAP No.: 960038G/0

CHAIN OF CUSTODY RECORD

PROJECT REFERENCE: NTC ORlando
PROJECT NO.:
P.O. NUMBER:
PROJECT LOC. (State): FL
SAMPLER(s) NAME: R. Cope
PHONE: 496-2173
FAX: 869-5468
CLIENT NAME: ENV DET CHASN
CLIENT PROJECT MANAGER: [illegible]
CLIENT ADDRESS (CITY, STATE, ZIP): 1899 N. Hobson Ave N. Charleston, S.C 29405

PAGE ___ OF ___

☐ STANDARD REPORT DELIVERY
☐ EXPEDITED REPORT DELIVERY (surcharge)
Date Due

MATRIX TYPE: SURFACE WATER, GROUND WATER, WASTEWATER, DRINKING WATER, SOIL/SOLID/SEDIMENT, NONAQUEOUS LIQUID (oil, solvent, etc.), AIR, SLUDGE, OTHER

REQUIRED ANALYSIS: TCLP Metals, TCLP Pesticides

NUMBER OF CONTAINERS SUBMITTED

STATION	DATE	TIME	GRAB	COMP	SAMPLE IDENTIFICATION	SOIL/SOLID/SEDIMENT	TCLP Metals	TCLP Pesticides		REMARKS
1	4/20/99	1450	X		SA-35009	✓	X1			
2	4/20/99	1505	X		SA 35013	✓	X1			
3	4/20/99	1540	X		SA-35015	✓	X1			
4	4/20/99	1640		X	SA-80001	✓	1	X	TCLP Pesticides Requested	5 Locations Area A
5	4/20/99	1700		X	SA-80002	✓	1	X	on 4-28-99.	5 Locations Area B
6	4/20/99	1720		X	SA-80003	✓	1	X		5 Locations Area C
7	4/21/99	1010	X		SA-42002	✓	1			
8	4/21/99	1022	X		SA-42001	✓	1			
9	4/21/99	1120	X		SA-23005	✓	1			McCoy Annex
10	4/21/99	1145		X	SA-18008	✓		1		" 5 locations
11	4/21/99	1201		X	SA-17035	✓		1		" 5 locations
12										
13										
14										

SAMPLE KIT PREPARED BY: ☐JACKSONVILLE ☐ORLANDO

	DATE	TIME		DATE	TIME		DATE	TIME
SAMPLE KIT PREPARED BY: ☐JACKSONVILLE ☐ORLANDO	4/21/99	1240	RELINQUISHED BY: (SIGNATURE) K W Cope			RECEIVED BY: (SIGNATURE)		
RELINQUISHED BY: (SIGNATURE)	4/21/99	1240	RECEIVED BY: (SIGNATURE) [signature]			RELINQUISHED BY: (SIGNATURE)		
RECEIVED BY (SIGNATURE)			RELINQUISHED BY: (SIGNATURE)			RECEIVED BY: (SIGNATURE)		

RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	ENCO LOG NO.	REMARKS
Kevin [illegible] ☐ Jacksonville ☑ Orlando	4/21/99	12:40PM	☐ YES ☑ NO	OR63[illegible]	

APPENDIX C

GROUNDWATER SAMPLING RESULTS REPORT
January 2000 SAMPLING EVENT

TETRA TECH NUS, INC.
800 Oak Ridge Turnpike, A-600 ■ Oak Ridge, Tennessee 37830
(423) 483-9900 ■ FAX (423) 483-2014 ■ www.tetratech.com

00-A012

February 1, 2000

Commanding Officer
SOUTHNAVFACENGCOM
ATTN: Ms. Barbara Nwokike, Code 1873
P.O. Box 190010
2155 Eagle Drive
North Charleston, SC 29419-9010

Subject: Operable Unit 3 Quarterly Groundwater Sampling, October 1999
McCoy Annex, NTC, Orlando

Dear Ms. Nwokike:

Enclosed are the results from the quarterly groundwater sampling conducted at OU 3 in October, 1999. The results for this and previous sampling events, are summarized in the attached tables and figures. Copies of the field log sheets are included in Attachment A.

The next sampling at OU 3 was completed on January 25, 2000, and the results will be issued in April 2000. If you have any questions please contact me at (423) 220-4730.

Sincerely,

Steven B. McCoy

Steven B. McCoy, P.E.
Task Order Manager

SBM:ckf

Enclosure

c: Mr. Rick Allen, Harding Lawson Associates
Mr. David Grabka, FDEP
Mr. Wayne Hansel, SOUTHNAVFACENGCOM
Ms. Nancy Rodriguez, USEPA Region IV
Mr. Steve Sangaris, CH2M Hill
Mr. Michael Campbell, Tetra Tech NUS
Mr. Mark Perry, Tetra Tech NUS (unbound)
Ms. Debbie Wroblewski, Tetra Tech NUS (cover letter only)
File/db

GROUNDWATER SAMPLING AT OPERABLE UNIT 3

Trip Dates: October 19-22, 1999

Site Name: Operable Unit 3: Study Areas 8 and 9
Main Base, Naval Training Center, Orlando, Florida

TO Manager: Steve McCoy

Field Team: Jason McCann, Field Operations Leader
Kevin Margetts
Gary Sparks
Jerry Krieger

Prepared by: David Stair

1.0 PURPOSE

Quarterly groundwater sampling was conducted at Operable Unit (OU) 3 (Study Areas 8 and 9) in October 1999. The fieldwork was performed in accordance with the *Work Plan for Groundwater Sampling* (Tetra Tech NUS, 1999a), and the *Project Operations Plan* (POP) (ABB-ES, 1997).

2.0 ACTIVITIES

Tetra Tech NUS mobilized to the field on Oct. 18, 1999, to perform quarterly monitoring at Study Areas (SA) 2, 3, and 52, and OU 3. Work at OU 3 began on Oct. 19, 1999, with a site reconnaissance, a water level survey, and groundwater sampling.

Water Level Survey - Groundwater levels were measured at SA 8 on October 19 and at SA 9 on October 20. Groundwater elevations for this field event and previous events are summarized in Table 1 for SA 8 and in Table 2 for SA 9.

Sampling - Groundwater sampling was conducted on October 19-22, 1999. Fourteen wells (four 2-in wells and ten ½-in microwells) at SA 8 and 15 wells (five 2-in wells and ten ½-in microwells) at SA 9 were sampled. All wells were purged and sampled using the low-flow method described in the POP. Purging of wells consisted of removing groundwater with a peristaltic pump at a rate of approximately 100 ml/min until field parameters, which include temperature, pH, conductivity, turbidity, dissolved oxygen, and oxidation-reduction potential, had stabilized. Water levels in the 2-in wells were monitored every 3 to 5 minutes to ensure that drawdown was less than 0.3 ft. In the 0.5-inch microwells, the small diameter of the well casing prevented simultaneous measurement of the depth to water during purging.

Of the 14 total groundwater samples from SA 8, six (OLD-08-08, -10, -11, -14, -15, -18) were analyzed for herbicides using SW 846 Method 8151A and Total Analyte List (TAL) metals using SW 846 Method 6010A; the remaining eight were analyzed for TAL metals only. Of the 15 total groundwater samples from SA 9, nine were analyzed for TAL metals, pesticides using Method 8181, and herbicides using Method 8151A; five (OLD-09-03, -04, -12, -14, -15) were analyzed for those parameters and semi-volatile organic compounds (SVOCs) using Method 8270; and one sample (OLD-09-19) was analyzed for SVOCs, herbicides, and TAL metals. All samples were placed in ice-cooled coolers and shipped via overnight delivery to Quanterra Environmental Services in North Canton, OH for analysis.

3.0 PROBLEMS ENCOUNTERED

Turbidity exceeded 10 NTU in two wells, OLD-08-15 (99.6 NTU) and OLD-09-02 (22.1 NTU), but was stable within ±5%. The final turbidity in OLD-09-02 had also been elevated (55 NTU) in the last round of sampling (July/August 1999), but turbidity in OLD-08-15 had been 4.2 NTU. For six wells at SA 8 and ten wells at SA 9, the turbidity did not stabilize within the limits specified in the work plan but was less than 10 NTU at the time of sampling. Groundwater purging and sampling log sheets are included in Attachment A.

4.0 RESULTS

Water Level Survey – The groundwater elevation data are presented in Tables 1 and 2. Water level elevation maps are presented in Figures 1 (SA 8) and 2 (SA 9). Groundwater at SA 8 flows to the west toward Lake Baldwin. Groundwater at SA 9 shows divergent flow with groundwater north of Trident Lane flowing to the northeast toward Lake Baldwin and groundwater in the eastern portion of the site flowing to the southeast. These flow directions are consistent with those reported earlier by Tetra Tech (1999b) and HLA (1999).

Data Validation - All sample analyses were subjected to data validation in accordance with the guidance document *Navy Installation Restoration Chemical Data Quality Assurance Manual* (NFESC, 1998). Qualification of the data was performed using the USEPA Contract Laboratory Program guidelines for inorganic and organic data review (USEPA, 1994a, and 1994b). The data validation evaluated data completeness, holding time compliance, calibration compliance, laboratory blank contamination, surrogate spike recovery, matrix spike recovery, blank spike recovery, internal standard response, sample quantitation, and detection limits. Qualifiers resulting from the validation process are shown with the analyte concentrations in Tables 3, 4, and 5.

Analytical Results – The positive detections for this round of sampling are summarized in Table 3, the historical groundwater detections are presented in Table 4, and a complete listing of the validated analytical data for the October 1999 sampling event is included as Table 5. Shaded cells indicate concentrations equal to or above Florida Groundwater Cleanup Target Levels (GCTLs) (FDEP, 1999) or established background concentrations (ABB-ES, 1995). The distributions of contaminants detected above the GCTLs are shown on Figures 3 and 4.

At SA 8, arsenic concentrations exceeded the screening level (GCTL) in 11 of the 14 wells sampled. The maximum arsenic concentration of 610 μg/L was found in the sample from well OLD-08-03. Concentrations of arsenic measured in October increased from the levels measured in July/August in seven wells and decreased in six wells. Arsenic levels in OLD-08-13 near the shoreline of Lake Baldwin have been below the screening criterion for three consecutive sampling events in 1999 after the initial exceedance in 1997. Antimony was detected above the screening level for the first time in five wells (OLD-08-01, -02, -03, -08, and -14) and decreased below the criterion in one well (OLD-08-17). Lead was detected above its GCTL for the first time in two wells (OLD-08-05 and –15) and remained above the GCTL in a third well (OLD-08-14). The herbicide MCPP, detected in one well (OLD-08-18), was the only organic analyte detected above screening criteria. The exceedances at SA 8 are summarized below.

Exceedances at SA 8 – July/August and October, 1999

Analyte	Screening Criteria (μg/L)	July/August 1999		October, 1999	
		No. of Wells*	Concentration Range (μg/L)	No. of Wells*	Concentration Range (μg/L)
Primary Exceedances:					
Antimony	6	1	12.2	5	6 –13.8
Arsenic	50	11	99.2 – 609	11	54 – 610
Lead	15	1	34.8	3	28.5 – 151
MCPP	7	4	99 J – 280 J	1	180 J
Secondary Exceedances:					
Aluminum	4067	2	4300 J – 4310 J	0	-
Iron	1227	3	1650 – 5190	3	2150 – 10500
Manganese	50	5	68.1 – 338	5	55.4 - 185

* A total of 14 monitoring wells were sampled.

At SA 9, arsenic was found above the screening criterion in 4 of the 15 wells sampled. The maximum arsenic concentration of 650 μg/L was found in shallow groundwater at monitoring well OLD-09-04. During the previous sampling event in July/August 1999, the maximum of 1370 μg/L was also found in this well. Concentrations of arsenic detected in October decreased in eight wells from concentrations measured in July/August 1999. Of the organic contaminants detected in October, MCPA and MCPP were detected above GCTLs most frequently. The exceedances at SA 9 are summarized below.

Exceedances at SA 9 – July/August and October, 1999

Analyte	Screening Criteria (µg/L)	July/August, 1999		October, 1999	
		No. of Wells*	Concentration Range (µg/L)	No. of Wells *	Concentration Range (µg/L)
Primary Exceedances:					
Antimony	6	1	17.7	0	-
Arsenic	50	5	141 - 1370	4	53.8 - 650
a-BHC	0.006	1	2.5 J	1	0.39
2,4-dichlorophenol	0.5	1	45/30	1	4.9 J
Lindane	0.2	1	1.9 J /1.7 J	1	0.46
MCPA	3.5	0	-	3	33 J – 120 J
MCPP	7	3	170 J – 910 J	2	74J - 520
Secondary Exceedances:					
Aluminum	4067	1	7740 J	0	-
Iron	1227	3	1290 – 6350	1	1940
Manganese	50	1	79.9	3	56.3 - 134

* A total of 15 monitoring wells were sampled.

<u>**MCPA/MCPP Reporting and Method Detection Limits**</u> – The MCPA and MCPP reporting limits for this and the previous sample event (July/August 1999) were typically 400 µg/L. The reporting limits were established by the calibration standards used by Quanterra who analyzed the samples. According to Quanterra the method detection limits (MDL) for MCPA and MCPP are 30 and 33 µg/L, respectively. Thus, concentrations approaching 30 µg/L for MCPA or and 33 µg/L MCPP should have been detected and reported as "J" or estimated values. For example, the concentration of MCPP in sample NTC08G1812 is reported as 180 J.

Quanterra has taken steps to lower their MCPA and MCPP reporting limits to 40 µg/L but this will not be achieved until the January 2000 sampling round. The MDLs for MCPA and MCPP should also decrease, but will remain higher than the GCTLs of 3.5 µg/L for MCPA and 7 µg/L for MCPP. Efforts to locate a laboratory that can achieve MDLs equal to the GCTLs were unsuccessful.

5.0 REFERENCES

ABB-ES (ABB Environmental Services, Inc.), 1995. *Background Sampling Report, Naval Training Center, Orlando, Florida*. Unit Identification Code N65928, Navy CLEAN District 1, Contract No. N62467-89-D-0317, August.

ABB-ES (ABB Environmental Services, Inc.), 1997. *Project Operations Plan for Site Investigations and Remedial Investigations*. Naval Training Center, Orlando, Florida, Unit Identification Code N65928, Navy CLEAN District 1, Contract No. N62467-89-D-0317, August.

FDEP (Florida Department of Environmental Protection), 1999. *Development of Soil Cleanup Target Levels (SCTLs) for Chapter 62-777, F.A.C.* CEH/TR-99-01, May 26, 1999.

HLA (Harding Lawson Associates), 1999. *Remedial Investigation and Feasibility Study, Operable Unit 3. Naval Training Center, Orlando, Florida*, Unit Identification Code N65928, Navy CLEAN District 1, Contract No. N62467-89-D-0317/136, June.

NFESC (Naval Facilities Engineering Service Center), 1998. *Navy Installation Restoration Chemical Data Quality Assurance Manual (Interim Guidance Document)*, June.

Tetra Tech NUS, Inc., 1999a. *Work Plan for Groundwater Sampling*. Document No. R4707995, September.

Tetra Tech NUS, Inc., 1999b. *Groundwater Sampling at Operable Unit 3*. Document R4710991. December 6, 1999.

USEPA, 1994a. *USEPA Contract Laboratory Program: Nation Functional Guidelines for Inorganic Data Review.* EPA/540/R-94/013, Office of Solid Waste and Emergency Response, Washington, D.C., February

USEPA, 1994b. *USEPA Contract Laboratory Program: Nation Functional Guidelines for Organic Data Review.* EPA/540/R-94/012, Office of Solid Waste and Emergency Response, Washington, D.C., February.

FIGURES

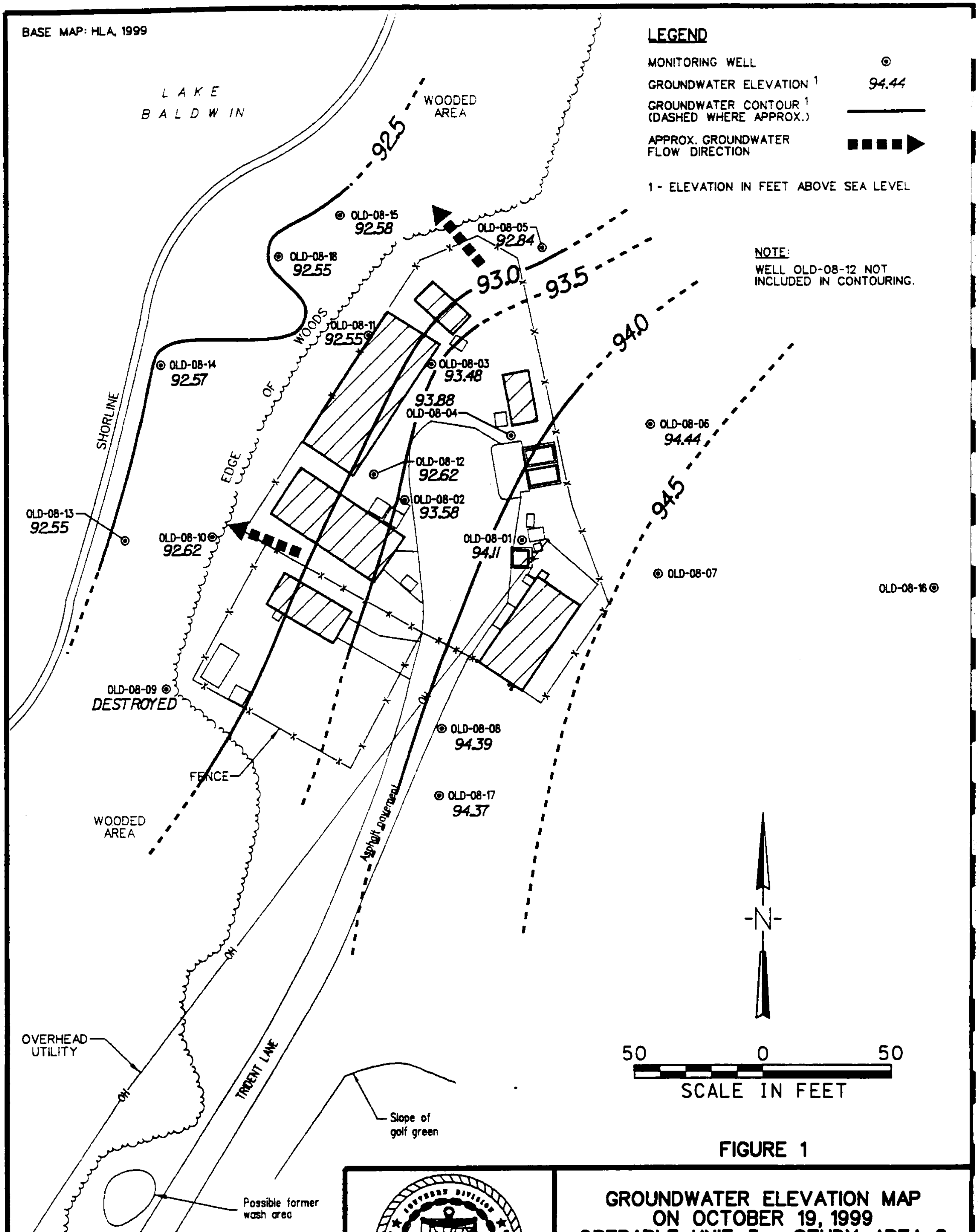


FIGURE 1

GROUNDWATER ELEVATION MAP ON OCTOBER 19, 1999 OPERABLE UNIT 3 - STUDY AREA 8 GROUNDWATER MONITORING REPORT

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

n8-5x11v.dgn

CAD FILE NO./DATE: 7457M030.dgn/1-31-00

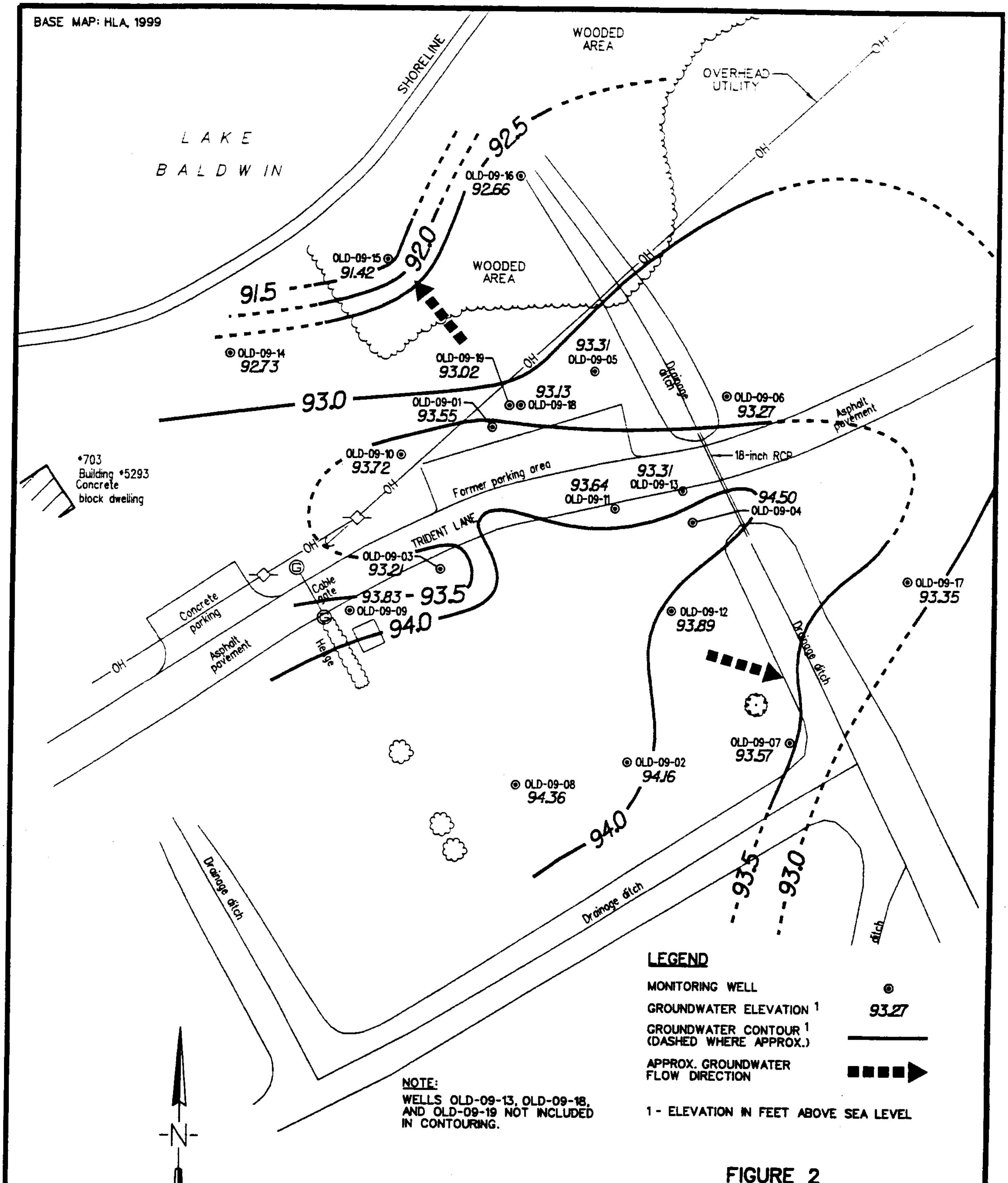


FIGURE 2

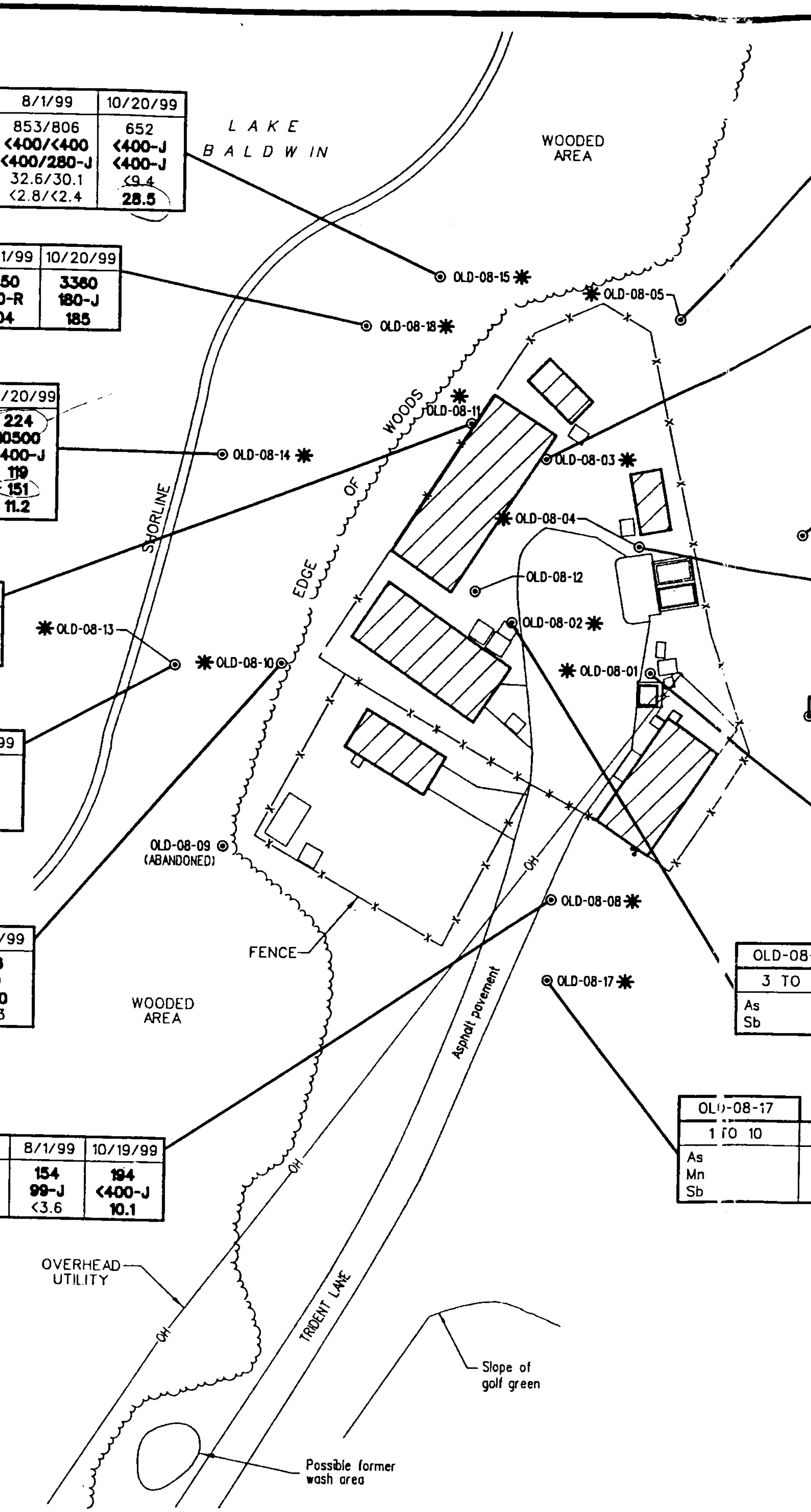
GROUNDWATER ELEVATION MAP ON OCTOBER 20, 1999
OPERABLE UNIT 3 - STUDY AREA 9
GROUNDWATER MONITORING REPORT

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

CAD FILE NO./DATE: 7457M031.dgn/2-1-00

n8-5x11v.dgn

BASE MAP: HLA, 1999



OLD-08-15

1 TO 7	12/5/97	3/13/99	8/1/99	10/20/99
Fe	498	**1960**	853/806	652
MCPA	**1200-DJ**	<50	<400/<400	<400-J
MCPP	<60	<50	<400/280-J	<400-J
Mn	**72.9**	**83.9**	32.6/30.1	<9.4
Pb	2.3-J	NS	<2.8/<2.4	**28.5**

OLD-08-18

2 TO 11	2/19/98	3/12/99	7/31/99	10/20/99
Fe	550	NS	**3550**	**3360**
MCPP	NS	NS	**320-R**	**180-J**
Mn	<23.4	NS	**204**	**185**

OLD-08-14

1 TO 7	12/8/97	3/15/99	7/31/99	10/20/99
As	7.1-J	9.5	**100**	**224**
Fe	**1730-J**	**7340-J**	**5190**	**10500**
MCPP	**200-J**	<50	**190-J**	<400-J
Mn	**172**	**132-J**	**304**	**119**
Pb	3.1	**21.1**	**34.8**	**151**
Sb	<2	<3.3	<6.8	**11.2**

OLD-08-11

1 TO 10	10/23/97	3/12/99	7/30/99	10/19/99
As	**223**	**315-J**	**170**	**114**
Dieldrin	**0.019-J**	NA	NA	NA
MCPP	**660-J**	<50	**110-J**	<400-J

OLD-08-13

1 TO 7	12/5/97	3/15/99	7/31/99	10/21/99
As	**88.2**	19	24.3/22.6	30.7
Fe	447	**2470-J**	**1660/1650**	**2150**
MCPA	**660-J**	<100	NA	NA
Mn	**148**	**124-J**	**68.1/68.7**	**75.1**

OLD-08-10

1 TO 10	10/23/97	3/12/99	7/30/99	10/21/99
As	**209**	**122-J**	**189**	**276**
Fe	825	**1400**	<104	120
MCPP	**900-J**	<51	**540-R**	<400
Mn	**54.4**	**56.8**	<14.7	29.3

OLD-08-08

1 TO 10	10/22/97	3/11/99	8/1/99	10/19/99
As	**122/120**	**175**	**154**	**194**
MCPP	**<110/710-J**	<50	**99-J**	<400-J
Sb	<2.9	<14	<3.6	**10.1**

OLD-08-05

1 TO 10	10/23/97	3/10/99	7/29/99	10/21/99
Al	<96.7/<120	126	**4310-J**	289/276
As	**57.7/57.3**	**56.9**	**284**	**54/55.3**
Mn	**160/162**	**146-J**	**338**	25.2/25.5
Pb	<1.9/<1.9	<1.4	3.7	**35.7/34.1**

OLD-08-03

3 TO 13	10/22/97	3/11/99	7/28/99	10/19/99
Al	<80.9	168	**4300-J**	721
As	**79.9**	**260**	**234**	**610**
Fe	231	**1260**	750	201
MCPA	**640-J**	<50	NA	NA
Mn	15.3	19.6	12.2	**55.4**
Sb	<2.9	<4.7	**<8.1**	**13.8**

OLD-08-06

1 TO 10	10/23/97	3/11/99	7/29/99	10/19/99
As	**53**	**88.5**	**138**	**71.8**
Fe	198	**33300**	<61.9	185
Mn	24.2	**110**	**69.6**	11.7

OLD-08-04

3 TO 13	10/22/97	3/11/99	7/28/99	10/19/99
As	**70.4**	**102/106**	**99.2**	**381**

OLD-08-07

1 TO 10	10/23/97	3/15/99	7/28/99	10/19/99
As	**56.4**	47.9	NS	NS

OLD-08-01

3 TO 13	10/22/97	3/13/99	7/28/99	10/19/99
As	**133**	**138-J/128-J**	**163**	**229**
Fe	**1460**	<311/<451	155	<98.3
MCPP	**790-J**	**<50/<50**	NA	NA
Naph	**25**	NA	NA	NA
Sb	7.7-J	<5.6	<3.6	**7.4**

OLD-08-02

3 TO 13	10/22/97	3/11/99	7/28/99	10/19/99
As	**295**	**294**	**609**	**581**
Sb	<2.9	<3.3	<3.4	**6**

OLD-08-17

1 TO 10	2/18/98	3/11/99	7/30/99	10/19/99
As	**98.8**	**167**	**191**	**156**
Mn	<10.5	10.1	<6	**59.1**
Sb	<2.5	<3.3	**12.2**	4.6

LEGEND

ASTERISK INDICATES WELLS SAMPLED ✱OLD-08-01

MONITORING WELL ◎

SCREEN INTERVAL TO NEAREST FOOT — SAMPLE COLLECTION DATE — DUPLICATE SAMPLE

3 TO 13	10/22/97	3/13/99	7/28/99
As	**133**	**138-J/128-J**	**163**
Fe	**1460**	<311/<451	155
MCPP	**790-J**	**<50/<50**	NA
Naph	25	NA	NA

ANALYTE — ANALYTE 1,2 CONCENTRATION

ESTIMATED CONCENTRATION	J
VALUE FROM DILUTION	D
NOT ANALYZED	NA
REJECTED	R
NOT SAMPLED	NS

1-CONCENTRATION IN MICROGRAMS PER LITER (µg/L)
2-BOLD CONCENTRATION INDICATES EXCEEDANCE

SCREENING CRITERIA

ANALYTE	GCTL[1]	BGSV[1]
Al	200	4067
As	50	5
Dieldrin	0.005	-
Fe	300	1227
MCPA	3.5	-
MCPP	7	-
Mn	50	17
Naph	20	-
Pb	15	4
Sb	6	4.1

72

GCTL-GROUNDWATER CLEANUP TARGET LEVEL
BGSV-BACKGROUND SCREENING VALUE

NOTE:
DATA ARE SHOWN FOR LOCATIONS WITH PAST OR CURRENT SCREENING CRITERIA EXCEEDANCES.

FIGURE 3

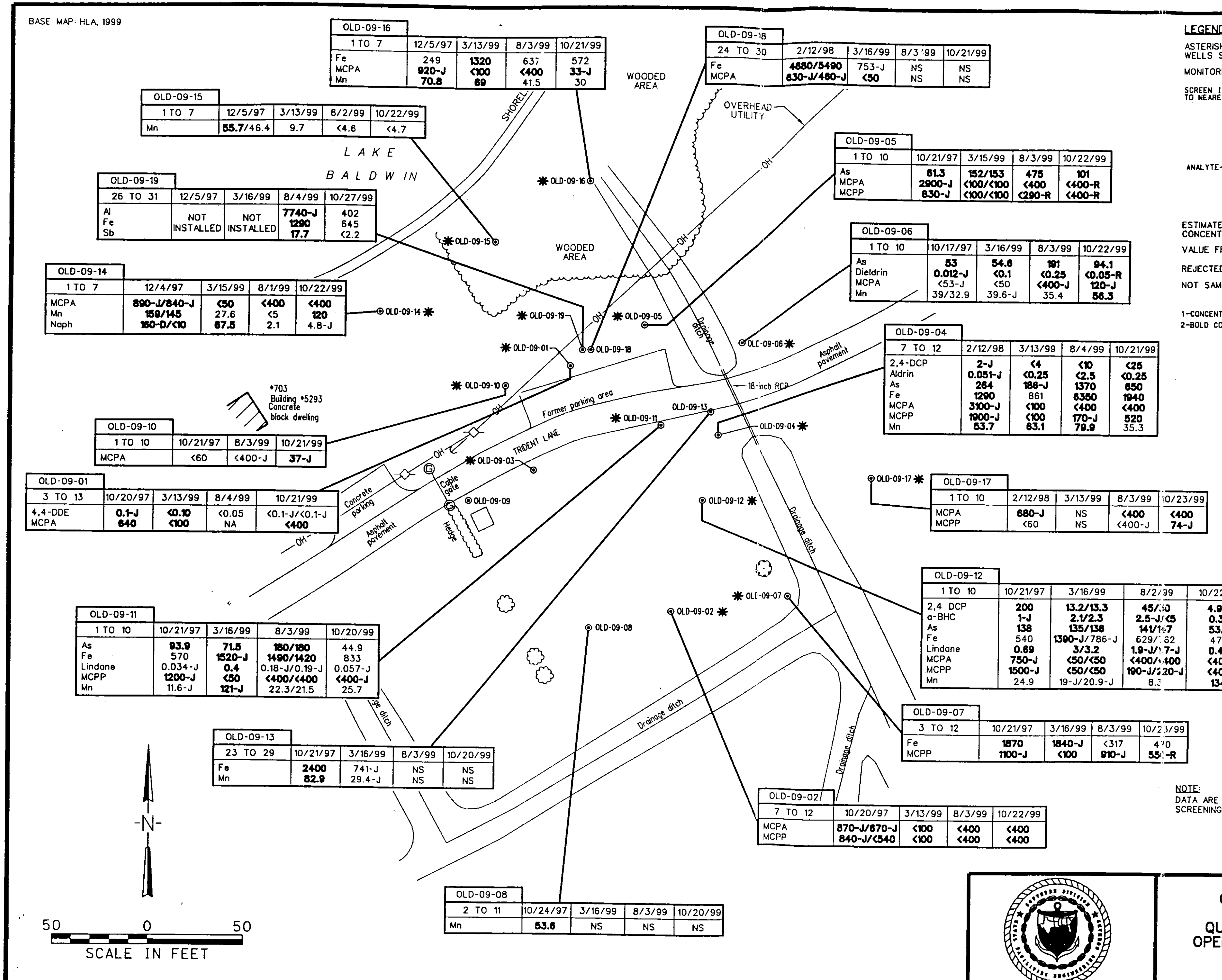
GROUNDWATER EXCEEDANCES
OCTOBER, 1999
QUARTERLY MONITORING REPORT
OPERABLE UNIT 3 - STUDY AREA 8

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

CAD FILE NO./DATE: 7457M028.dgn/1-31-00

n11x17b.dgn

BASE MAP: HLA, 1999



OLD-09-16

1 TO 7	12/5/97	3/13/99	8/3/99	10/21/99
Fe	249	**1320**	637	572
MCPA	**920-J**	**<100**	**<400**	**33-J**
Mn	**70.8**	**69**	41.5	30

OLD-09-15

1 TO 7	12/5/97	3/13/99	8/2/99	10/22/99
Mn	**55.7**/46.4	9.7	<4.6	<4.7

OLD-09-19

26 TO 31	12/5/97	3/16/99	8/4/99	10/27/99
Al	NOT INSTALLED	NOT INSTALLED	**7740-J**	402
Fe			**1290**	645
Sb			**17.7**	<2.2

OLD-09-14

1 TO 7	12/4/97	3/15/99	8/1/99	10/22/99
MCPA	**890-J/840-J**	**<50**	**<400**	**<400**
Mn	**159/145**	27.6	<5	**120**
Naph	**160-D/<10**	**67.5**	2.1	4.8-J

OLD-09-10

1 TO 10	10/21/97	8/3/99	10/21/99
MCPA	<60	<400-J	**37-J**

OLD-09-01

3 TO 13	10/20/97	3/13/99	8/4/99	10/21/99
4,4-DDE	**0.1-J**	**<0.10**	<0.05	<0.1-J/<0.1-J
MCPA	**640**	**<100**	NA	**<400**

OLD-09-11

1 TO 10	10/21/97	3/16/99	8/3/99	10/20/99
As	**93.9**	**71.5**	**180/180**	44.9
Fe	570	**1520-J**	**1490/1420**	833
Lindane	0.034-J	**0.4**	0.18-J/0.19-J	0.057-J
MCPP	**1200-J**	**<50**	**<400/<400**	**<400-J**
Mn	11.6-J	**121-J**	22.3/21.5	25.7

OLD-09-13

23 TO 29	10/21/97	3/16/99	8/3/99	10/20/99
Fe	**2400**	741-J	NS	NS
Mn	**82.9**	29.4-J	NS	NS

OLD-09-08

2 TO 11	10/24/97	3/16/99	8/3/99	10/20/99
Mn	**53.6**	NS	NS	NS

OLD-09-18

24 TO 30	2/12/98	3/16/99	8/3/99	10/21/99
Fe	**4680/5490**	753-J	NS	NS
MCPA	**630-J/460-J**	**<50**	NS	NS

OLD-09-05

1 TO 10	10/21/97	3/15/99	8/3/99	10/22/99
As	**61.3**	**152/153**	**475**	**101**
MCPA	**2900-J**	**<100/<100**	**<400**	**<400-R**
MCPP	**830-J**	**<100/<100**	**<290-R**	**<400-R**

OLD-09-06

1 TO 10	10/17/97	3/16/99	8/3/99	10/22/99
As	**53**	**54.6**	**191**	**94.1**
Dieldrin	**0.012-J**	**<0.1**	**<0.25**	**<0.05-R**
MCPA	<53-J	<50	**<400-J**	**120-J**
Mn	39/32.9	39.6-J	35.4	**56.3**

OLD-09-04

7 TO 12	2/12/98	3/13/99	8/4/99	10/21/99
2,4-DCP	**2-J**	**<4**	**<10**	**<25**
Aldrin	**0.051-J**	**<0.25**	**<2.5**	**<0.25**
As	**264**	**186-J**	**1370**	**650**
Fe	**1290**	861	**6350**	**1940**
MCPA	**3100-J**	**<100**	**<400**	**<400**
MCPP	**1900-J**	**<100**	**170-J**	**520**
Mn	**53.7**	**63.1**	**79.9**	35.3

OLD-09-17

1 TO 10	2/12/98	3/13/99	8/3/99	10/23/99
MCPA	**680-J**	NS	**<400**	**<400**
MCPP	<60	NS	<400-J	**74-J**

OLD-09-12

1 TO 10	10/21/97	3/16/99	8/2/99	10/22/99
2,4 DCP	**200**	**13.2/13.3**	**45/[illegible]**	**4.9-J**
a-BHC	**1-J**	**2.1/2.3**	**2.5-J/<5**	**0.39**
As	**138**	**135/138**	**141/1[illegible]7**	**53.8**
Fe	540	**1390-J**/786-J	629/[illegible]62	477
Lindane	**0.69**	**3/3.2**	**1.9-J/[illegible]7-J**	**0.48**
MCPA	**750-J**	**<50/<50**	**<400/[illegible]400**	**<400**
MCPP	**1500-J**	**<50/<50**	**190-J/[illegible]20-J**	**<400**
Mn	24.9	19-J/20.9-J	8.[illegible]	**134**

OLD-09-07

3 TO 12	10/21/97	3/16/99	8/3/99	10/2[illegible]/99
Fe	**1870**	**1840-J**	<317	4[illegible]0
MCPP	**1100-J**	**<100**	**910-J**	**55[illegible]-R**

OLD-09-02

7 TO 12	10/20/97	3/13/99	8/3/99	10/22/99
MCPA	**870-J/670-J**	**<100**	**<400**	**<400**
MCPP	**840-J/<540**	**<100**	**<400**	**<400**

LEGEND

ASTERISK INDICATES WELLS SAMPLED — ✱OLD-09-05

MONITORING WELL — ⊙

SCREEN INTERVAL TO NEAREST FOOT / SAMPLE COLLECTION DATE / ANALYTE / ANALYTE CONCENTRATION[1,2] / DUPLICATE SAMPLE

1 TO 10	10/21/97	3/16/99	8/3/99
As	**93.9**	**71.5**	**180/180**
Fe	570	**1520-J**	**1490/1420**
Lindane	0.034-J	**0.4**	0.18-J/0.19-J
MCPP	**1200-J**	**<50**	**<400/<400**
Mn	11.6-J	**121-J**	22.3/21.5

ESTIMATED CONCENTRATION — J

VALUE FROM DILUTION — D

REJECTED — R

NOT SAMPLED — NS

1-CONCENTRATION IN MICROGRAMS PER LITER (µg/L)

2-BOLD CONCENTRATION INDICATES EXCEEDANCE

SCREENING CRITERIA

ANALYTE	GCTL[1]	BGSV[1]
Al	200	4067
Aldrin	0.005	-
As	50	5
Dieldrin	0.005	-
Fe	300	1227
MCPA	3.5	-
MCPP	7	-
Mn	50	17
Sb	6	4.1
a-BHC	0.006	-
2,4-DCP	0.5	-
Lindane	0.2	-
Naph	20	-

GCTL-GROUNDWATER CLEANUP TARGET LEVEL

BGSV-BACKGROUND SCREENING VALUE

NOTE:
DATA ARE SHOWN FOR LOCATIONS WITH PAST OR CURRENT SCREENING CRITERIA EXCEEDANCES.

FIGURE 4

GROUNDWATER EXCEEDANCES
OCTOBER, 1999
QUARTERLY MONITORING REPORT
OPERABLE UNIT 3 - STUDY AREA 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

CAD FILE NO./DATE: 7457M029.dgn/2-1-00

n11x17b.dgn

TABLES

TABLE 1

WATER-LEVEL ELEVATIONS SUMMARY
OPERABLE UNIT 3 - STUDY AREA 8

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well	Well Type	Screen Interval (BGS)	TOC Elevation (AMSL)	11/97		4/27/98		5/13/98		3/14/99		7/20/99		10/19/99	
				Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)
OLD-08-01	2" well	3-13	94.96	1.74	93.22	2.36	92.60	2.65	92.31	3.70	91.26	2.23	92.73	0.85	94.11
OLD-08-02	2" well	3-13	94.77	1.85	92.92	2.47	92.30	2.74	92.03	3.65	91.12	2.30	92.47	1.19	93.58
OLD-08-03	2" well	3-13	94.31	1.61	92.70	2.34	91.97	2.65	91.66	3.21	91.10	1.89	92.42	0.83	93.48
OLD-08-04	2" well	3-13	94.62	1.58	93.04	2.19	92.43	2.45	92.17	3.45	91.17	1.99	92.63	0.74	93.88
OLD-08-05	½" µ well	1-10	93.64	0.80	92.84	1.29	92.35	1.55	92.09	2.35	91.29	1.02	92.62	0.80	92.84
OLD-08-06	½" µ well	1-10	95.06	1.56	93.50	2.15	92.91	2.46	92.60	3.75	91.31	1.99	93.07	0.62	94.44
OLD-08-07	½" µ well	1-10	95.40	1.73	93.67	2.36	93.04	2.67	92.73	3.81	91.59	2.31	93.09	NM	NM
OLD-08-08	½" µ well	1-10	95.22	1.73	93.49	2.33	92.89	2.64	92.58	3.67	91.55	2.29	92.93	0.83	94.39
OLD-08-09	½" µ well	1-10	93.53	1.75	91.78	2.13	91.40	2.37	91.16	destroyed		destroyed		destroyed	
OLD-08-10	½" µ well	1-10	93.07	1.28	91.79	1.61	91.46	1.84	91.23	2.31	90.76	1.58	91.49	0.45	92.62
OLD-08-11	½" µ well	1-10	93.00	0.99	92.01	1.55	91.45	1.80	91.20	2.57	90.43	1.28	91.72	0.45	92.55
OLD-08-12	½" µ well	23-29	94.50	not installed		NM	NM	NM	NM	4.27	90.23	3.32	91.18	1.88	92.62
OLD-08-13	½" µ well	1.13-7.13	95.98	not installed		5.16	90.82	4.84	91.14	5.34	90.64	4.66	91.32	3.43	92.55
OLD-08-14	½" µ well	1.12-7.12	97.12	not installed		5.86	91.26	6.03	91.09	6.44	90.68	5.59	91.53	4.55	92.57
OLD-08-15	½" µ well	1.22-7.22	96.41	not installed		5.19	91.22	5.44	90.97	5.89	90.52	5.33	91.08	3.83	92.58
OLD-08-16	½" µ well	1-10	96.34	not installed		3.05	93.29	3.42	92.92	NM	NM	3.14	93.20	NM	NM
OLD-08-17	½" µ well	09-9.9	94.92	not installed		2.10	92.82	2.40	92.52	3.43	91.49	2.10	92.82	0.55	94.37
OLD-08-18	½" µ well	1.5-10.5	95.32	not installed		5.18	90.14	4.33	90.99	5.10	90.22	4.13	91.19	2.77	92.55

Notes:

All measurements are in units of feet.

AMSL - Above mean sea level
BGS - Below ground surface
BTOC - Below top of casing
NM - Not measured
TOC - Top of casing

TABLE 2

WATER-LEVEL ELEVATIONS SUMMARY
OPERABLE UNIT 3 - STUDY AREA 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well	Well Type	Screen Interval (BGS)	TOC Elevation (AMSL)	11/97		4/27/98		5/8/98		3/16/99		7/19/99		10/20/99	
				Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)
OLD-09-01	2" well	3-13	94.66	2.26	92.40	2.95	91.71	3.18	91.48	3.82	90.84	2.65	92.01	1.11	93.55
OLD-09-02	2" well	7-12	97.72	4.69	93.03	5.39	92.33	5.68	92.04	6.71	91.01	5.43	92.29	3.56	94.16
OLD-09-03	2" well	7-12	97.81	5.62	92.19	6.12	91.69	6.35	91.46	7.08	90.73	6.13	91.68	4.60	93.21
OLD-09-04	2" well	7-12	97.18	4.89	92.29	5.38	91.80	5.63	91.55	6.48	90.70	5.23	91.95	2.68	94.50
OLD-09-05	½" µ well	1-10	94.16	1.84	92.32	2.52	91.64	2.72	91.44	3.36	90.80	2.33	91.83	0.85	93.31
OLD-09-06	½" µ well	1-10	93.87	1.53	92.34	2.05	91.82	2.31	91.56	2.74	91.13	1.63	92.24	0.60	93.27
OLD-09-07	½" µ well	3-12	95.69	2.63	93.06	4.26	91.43	4.46	91.23	5.15	90.54	4.29	91.40	2.12	93.57
OLD-09-08	½" µ well	2-11	95.59	2.31	93.28	3.05	92.54	3.31	92.28	4.27	91.32	3.00	92.59	1.23	94.36
OLD-09-09	½" µ well	1-10	95.17	2.17	93.00	2.80	92.37	3.05	92.12	3.81	91.36	2.62	92.55	1.34	93.83
OLD-09-10	½" µ well	1-10	94.63	1.96	92.67	2.70	91.93	2.88	91.75	3.59	91.04	2.38	92.25	0.91	93.72
OLD-09-11	½" µ well	1-10	95.05	2.28	92.77	2.90	92.15	3.12	91.93	3.77	91.28	2.65	92.40	1.41	93.64
OLD-09-12	½" µ well	1-10	95.21	2.70	92.51	2.80	92.41	3.17	92.04	4.02	91.19	2.92	92.29	1.32	93.89
OLD-09-13	½" µ well	23-29	94.91	2.98	91.93	22.70	72.21	2.58	92.33	22.64	72.27	3.45	91.46	1.60	93.31
OLD-09-14	½" µ well	1.39-7.39	97.11	not installed		5.60	91.51	5.78	91.33	6.29	90.82	5.73	91.38	4.38	92.73
OLD-09-15	½" µ well	1.18-7.18	96.62	not installed		5.23	91.39	5.34	91.28	5.86	90.76	5.33	91.29	5.20	91.42
OLD-09-16	½" µ well	1.11-7.11	96.61	not installed		5.19	91.42	5.35	91.26	5.86	90.75	5.29	91.32	3.95	92.66
OLD-09-17	½" µ well	0.93-9.93	95.00	not installed		3.59	91.41	3.79	91.21	4.46	90.54	3.64	91.36	1.65	93.35
OLD-09-18	½" µ well	23.6-29.6	94.74	not installed		23.45	71.29	3.44	91.30	23.38	71.36	3.30	91.44	1.61	93.13
OLD-09-19	2" well	25.5-30.5	94.59	not installed										1.57	93.02

Notes:

All measurements are in units of feet.

AMSL - Above mean sea level

BGS - Below ground surface

BTOC - Below top of casing

NM - Not measured

TOC - Top of casing

TABLE 3

POSITIVE DETECTIONS IN GROUNDWATER - OCTOBER 1999
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	Screening Criteria[a]		OLD-08-01	OLD-08-02	OLD-08-03	OLD-08-04	OLD-08-05		OLD-08-06	OLD-08-08
Sample ID	Florida GCTL[b]	NTC BGSV[c]	NTC08G0112	NTC08G0212	NTC08G0312	NTC08G0412	NTC08G0512	NTC08G0512-D	NTC08G0612	NTC08G0812
Lab ID			A9J210106004	A9J210106003	A9J210106007	A9J210106005	A9J220158007	A9J220158008	A9J210106008	A9J210106002
Sample Date			10/19/99	10/19/99	10/19/99	10/19/99	10/21/99	10/21/99	10/19/99	10/19/99
Semivolatiles (µg/L)			NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	0.5									
Naphthalene	20									
Pesticides (µg/L)			NA	NA	NA	NA	NA	NA	NA	NA
alpha-BHC	0.006									
alpha-Chlordane[d]	2									
gamma-BHC (Lindane)	0.2									
gamma-Chlordane[d]	2									
Herbicides (µg/L)			NA	NA	NA	NA	NA	NA	NA	
Dicamba	210									
MCPA	3.5									
MCPP	7									
Pentachlorophenol	1									NA
Inorganics (µg/L)										
Aluminum	200	4067	156	515	721	261	289	276	94.6	
Antimony	6	4.1	7.1	16	18.8	3.6				10
Arsenic	50	5	22	581	610	381	[illegible]	[illegible]	[illegible]	194
Barium	2000	31.4	11.9	36	51.6	8.4	7.7	8.1	7.4	37.3
Cadmium	5	5.6		0.23		0.44	0.42	0.39		
Calcium	*	36830	56300	81600	89600	59000	17800	18200	30800	116000
Chromium	100	7.8	3.6	2.4	4.5	4.1	10.1	10.7	4.9	
Cobalt	4-20	*			1.3					
Copper	1000	5.4	5.2	6.7	2.9	11.1	30.8	29.2	4.6	
Iron	300	1227		332	201		590	583	185	
Lead	15	4		3.2			35.7	[illegible]		
Magnesium	*	4560	4510	5550	8120	6740	1510	1550	2030	4600
Manganese	50	17	21.8	27.2	654	39.2	25.2	25.5	11.7	
Nickel	100	*			27.4					
Potassium	*	5400	12600	11000	20900	19500	3100	3240	3270	11100
Silver	100	*					1.7	1.8		
Sodium	160000	18222	3560	8220	5970	4370	1220	1290	1200	4830
Vanadium	49	20.6	2.3	1	1.2	3.1	4.3	4.2	3.7	0.62
Zinc	5000	4		131	561	310				

TABLE 3

POSITIVE DETECTIONS IN GROUNDWATER - OCTOBER 1999
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

PAGE 2 of 5

Well Designation	Screening Criteria[a]		OLD-08-10	OLD-08-11	OLD-08-13	OLD-08-14	OLD-08-15	OLD-08-17	OLD-08-18
Sample ID	Florida	NTC	NTC08G1012	NTC08G1112	NTC08G1312	NTC08G1412	NTC08G1512	NTC08G1712	NTC08G1812
Lab ID	GCTL[b]	BGSV[c]	A9J220158006	A9J210106006	A9J220158005	A9J210231004	A9J210231006	A9J210106001	A9J210231005
Sample Date			10/21/99	10/19/99	10/21/99	10/20/99	10/20/99	10/19/99	10/20/99
Semivolatiles (µg/L)			NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	0.5								
Naphthalene	20								
Pesticides (µg/L)			NA	NA	NA	NA	NA	NA	NA
alpha-BHC	0.006								
alpha-Chlordane[d]	2								
gamma-BHC (Lindane)	0.2								
gamma-Chlordane[d]	2								
Herbicides (µg/L)					NA			NA	
Dicamba	210			1.3 J					
MCPA	3.5								
MCPP	7								[illegible]
Pentachlorophenol	1			NA		NA	NA		NA
Inorganics (µg/L)									
Aluminum	200	4067		404	447	2230	4010		835
Antimony	6	4.1				[illegible]	4.9	4.6	
Arsenic	50	5	270	14	30.7	224	14.7	156	
Barium	2000	31.4	9.7	3.8	16.6	20.7	7.3	29.8	35.6
Cadmium	5	5.6				0.96			
Calcium	*	36830	53500	34100	14000	30500	7510	99300	5240
Chromium	100	7.8		3.6		6.7	2.1	2.3	3
Cobalt	4-20	*			0.96	2.2			
Copper	1000	5.4				56.5	6.7	2.4	2.8
Iron	300	1227	120		2150	10600	652	257	2360
Lead	15	4				16	[illegible]	13.4	1.6
Magnesium	*	4560	4740	2740	3140	6670	3250	3820	1880
Manganese	50	17	29.3		75	119		159	185
Nickel	100	*				85			
Potassium	*	5400	2680	6990	669	4070	3860	6640	801
Silver	100	*				2.4			
Sodium	160000	18222	2750	5570	7200	31200	40900	2730	8770
Vanadium	49	20.6			0.72	7	3	4.1	4.6
Zinc	5000	4				341			

TABLE 3

POSITIVE DETECTIONS IN GROUNDWATER - OCTOBER 1999
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	Screening Criteria[a]		OLD-09-01		OLD-09-02	OLD-09-03		OLD-09-04	OLD-09-05	OLD-09-06
Sample ID	Florida	NTC	NTC09G0112	NTC09G0112-D	NTC09G0212	NTC09G0312	NTC09G0312-D	NTC09G0412	NTC09G0512	NTC09G0612
Lab ID	GCTL[b]	BGSV[c]	A9J220158002	A9J220158003	A9J230148006	A9J210231001	A9J210231002	A9J220158004	A9J230148001	A9J230148003
Sample Date			10/21/99	10/21/99	10/22/99	10/20/99	10/20/99	10/21/99	10/22/99	10/22/99
Semivolatiles (µg/L)			NA	NA	NA				NA	NA
2,4-Dichlorophenol	0.5									
Naphthalene	20									
Pesticides (µg/L)										
alpha-BHC	0.006									
alpha-Chlordane[d]	2									
gamma-BHC (Lindane)	0.2									
gamma-Chlordane[d]	2		0.034 J							
Herbicides (µg/L)										
Dicamba	210							0.4 J		
MCPA	3.5									120 J
MCPP	7							520		
Pentachlorophenol	1					NA	NA	0.06 J		
Inorganics (µg/L)										
Aluminum	200	4067			1510	455	472	253		
Antimony	6	4.1								
Arsenic	50	5	30	30.8				660	101	94.1
Barium	2000	31.4	55.4	55	2.7	2.2	2.9	9.5	28.1	27.2
Cadmium	5	5.6								
Calcium	*	36830	94400	93700	5540	11000	11300	30800	105000	72300
Chromium	100	7.8			2.7					
Cobalt	4-20	*					0.82			
Copper	1000	5.4						3.2		
Iron	300	1227	285	283	121	131	139	1840	157	797
Lead	15	4			1.8					
Magnesium	*	4560	6550	6530	1230	2300	2370	1980	6580	2620
Manganese	50	17	18.1	19.4				35.3	33.6	58.3
Nickel	100	*								
Potassium	*	5400	5200	5140	3580	3650	3770	5550	4610	8440
Silver	100	*								
Sodium	160000	18222	1520	1520	4200	2360	2530	678	2710	4140
Vanadium	49	20.6	0.58		1.5		0.7		0.59	0.92
Zinc	5000	4								

TABLE 3

POSITIVE DETECTIONS IN GROUNDWATER - OCTOBER 1999
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	Screening Criteria[a]		OLD-09-07	OLD-09-10	OLD-09-11	OLD-09-12	OLD-09-14	OLD-09-15	OLD-09-16	OLD-09-17	OLD-09-19
Sample ID	Florida GCTL[b]	NTC BGSV[c]	NTC09G0712	NTC09G1012	NTC09G1112	NTC09G1212	NTC09G1412	NTC09G1512	NTC09G1612	NTC09G1712	NTC09G1912
Lab ID			A9J260203001	A9J220158001	A9J210231003	A9J230148005	A9J230148004	A9J230148002	A9J220158009	A9J260203002	A9J300126002
Sample Date			10/23/99	10/21/99	10/20/99	10/22/99	10/22/99	10/22/99	10/21/99	10/23/99	10/27/99
Semivolatiles (µg/L)			NA	NA	NA				NA	NA	
2,4-Dichlorophenol	0.5					4.9 J					
Naphthalene	20						4.8 J	8 J			
Pesticides (µg/L)											NA
alpha-BHC	0.006					0.39					
alpha-Chlordane[d]	2				0.062 J						
gamma-BHC (Lindane)	0.2				0.057 J	0.46					
gamma-Chlordane[d]	2										
Herbicides (µg/L)											
Dicamba	210										
MCPA	3.5			37 J					53 J		
MCPP	7									57 J	
Pentachlorophenol	1				NA						
Inorganics (µg/L)											
Aluminum	200	4067	547			103	509	421	309		402
Antimony	6	4.1									
Arsenic	50	5	2.3		44.9	53.6				5.4	
Barium	2000	31.4	6.4	24.8	10.5	22.4	25.2	5.3	12.6	19.4	18.1 J
Cadmium	5	5.6									
Calcium	*	36830	8760	81800	70800	81100	37600		4500	74000	29300
Chromium	100	7.8					4.6				1.4
Cobalt	4-20	*				0.83					
Copper	1000	5.4	4.1			1.7				1.8	
Iron	300	1227	470	630	833	477	786	312	572		645
Lead	15	4	1.4		1.9						
Magnesium	*	4560	790	4640	3190	3990	4000	602	990	821	3210
Manganese	50	17		18.4	25.7	134	[illegible]		30		37.9
Nickel	100	*									1.7
Potassium	*	5400	895	3420	10200	5980	2340		693	554	1600
Silver	100	*									
Sodium	160000	18222	1450	3380	6440	1370	16600	5650	8620		7080
Vanadium	49	20.6	1.7	0.83	0.99	1.8	3.1	0.53	3.2	4.8	5.1
Zinc	5000	4	33 J	83.1							

TABLE 3

POSITIVE DETECTIONS IN GROUNDWATER – OCTOBER 1999
OPERABLE UNIT 3 – STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Notes:

* indicates that the screening value is not available.
"J" qualifier indicates an estimated value.
NA Not analyzed.
Values in shaded cells are equal to or exceed the screening criteria.
Empty cells indicate non-detects.

[a] For an organic analyte, the screening criterion is the GCTL; for an inorganic analyte with an established GCTL and BGSV, the screening criterion is the greater of the GCTL or the BGSV.

[b] Groundwater Cleanup Target Level (Development of Soil Cleanup Target Levels (SCTLs) for Chapter 62-777, F.A.C., May 26, 1999).

[c] Background Screening Value (Background Sampling Report for NTC, Orlando, Florida; ABB Environmental Services, August 1995).

[d] Screening Criteria Substitution – Chlordane for alpha-Chlordane and gamma-Chlordane, and Endosulfan for Endosulfan II.

TABLE 4

HISTORICAL DETECTIONS IN GROUNDWATER
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	Screening Criteria[a]		OLD-08-01				
Sample ID			08G00102	NTC08G00110	NTC08G00110-D	NTC08G00111	NTC08G0112
Lab ID	Florida	NTC	873054	F3846-7	F3846-11	A9G29018006	A9J210106004
Sample Date	GCTL[b]	BGSV[c]	10/22/97	3/13/99	3/13/99	7/28/99	10/19/99
Semivolatiles/PAHs (µg/L)				NA	NA	NA	NA
1-Methylnaphthalene	20		NA				
2,4,6-Trichlorophenol	3.2						
2,4-Dichlorophenol	0.5						
2,4-Dimethylphenol	140						
2-Methylnaphthalene	20						
2-Methylphenol	35						
4-Methylphenol	4						
Naphthalene	20		25				
Phenol	10						
Pesticides/PCBs (µg/L)				NA	NA	NA	NA
4,4'-DDD	0.1						
4,4'-DDE	0.1						
4,4'-DDT	0.1		0.0056 J				
Aldrin	0.005						
alpha-BHC	0.2						
alpha-Chlordane[d]	2						
delta-BHC	2.1						
Dieldrin	0.005						
Endosulfan	42						
Endosulfan II[d]	42						
Endosulfan Sulfate	*						
Endrin	2		0.01 J				
Endrin Aldehyde	*						
gamma-BHC (Lindane)	0.2						
gamma-Chlordane[d]	2						
Toxaphene	3						
Herbicides (µg/L)						NA	NA
2,4,5-TP (Silvex)	50						
2,4-D	70		0.095 J				
2,4-DB	56		0.046 J				
Dalapon	200						
Dicamba	210						
Dichloroprop	35						
Dinoseb	7						
MCPA	3.5						
MCPP	7		700 J				
Pentachlorophenol	1						
Inorganics (µg/L)							
Aluminum	200	4067		199	235	192 J	156
Antimony	6	4.1	3.7 J				[illegible]
Arsenic	50	5	133	136 J	[illegible]	[illegible]	229
Barium	2000	31.4	19 J				11.9
Cadmium	5	5.6					
Calcium	*	36830	101000	35500	34500	55000 J	56300
Chromium	100	7.8	2.6 J	13.7	10.7		3.6
Cobalt	420	*					
Copper	1000	5.4					5.2
Iron	300	1227	14800			155	
Lead	15	4					
Magnesium	*	4560		2810	2920	3980	4510
Manganese	50	17	12.6 J		5.8	4.8	21.8
Mercury	2	0.12					
Nickel	100	*	1.7 J	6.2	6.9		
Potassium	*	5400	16000	6200	5780	6390	12600
Selenium	50	9.7					
Silver	100	*					
Sodium	160000	18222		3500	3620	6050	3560
Vanadium	49	20.6	0.86 J	13.6	11.8		2.3
Zinc	5000	4				129	
General Chemistry (mg/L)				NA	NA	NA	NA
Total Organic Carbon			27.4				
Total Suspended Solids			5				

TABLE 4

HISTORICAL DETECTIONS IN GROUNDWATER
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	Screening Criteria[a]		OLD-08-02			
Sample ID			08G00202	NTC08G00210	NTC08G00211	NTC08G0212
Lab ID	Florida	NTC	873055	F3841-4	A9G2901198009	A9J210106003
Sample Date	GCTL[b]	BGSV[c]	10/22/97	3/11/99	7/28/99	10/19/99
Semivolatiles/PAHs (µg/L)				NA	NA	NA
1-Methylnaphthalene	20		NA			
2,4,6-Trichlorophenol	3.2					
2,4-Dichlorophenol	0.5					
2,4-Dimethylphenol	140					
2-Methylnaphthalene	20					
2-Methylphenol	35					
4-Methylphenol	4					
Naphthalene	20					
Phenol	10					
Pesticides/PCBs (µg/L)				NA	NA	NA
4,4'-DDD	0.1					
4,4'-DDE	0.1					
4,4'-DDT	0.1					
Aldrin	0.005					
alpha-BHC	0.2					
alpha-Chlordane[d]	2					
delta-BHC	2.1					
Dieldrin	0.005					
Endosulfan	42					
Endosulfan II[e]	42					
Endosulfan Sulfate	*		0.012 J			
Endrin	2					
Endrin Aldehyde	*					
gamma-BHC (Lindane)	0.2					
gamma-Chlordane[d]	2					
Toxaphene	3					
Herbicides (µg/L)					NA	NA
2,4 5-TP (Silvex)	50					
2,4-D	70		0.0051 J			
2,4-DB	56		0.09 J			
Dalapon	200					
Dicamba	210					
Dichloroprop	35					
Dinoseb	7					
MCPA	3.5					
MCPP	7					
Pentachlorophenol	1					
Inorganics (µg/L)						
Aluminum	200	4067		207	918 J	515
Antimony	6	4.1				[illegible]
Arsenic	50	5	295	294	609	[illegible]
Barium	2000	31.4	25.1 J	21.5 J	24.5	36
Cadmium	5	5.6				0.23
Calcium	*	36830	104000	62100	74200 J	81600
Chromium	100	7.8	1.4 J			2.4
Cobalt	420	*				
Copper	1000	5.4		2.1		6.7
Iron	300	1227		250	148	332
Lead	15	4				3.2
Magnesium	*	4560		3710	4360	5550
Manganese	50	17	6.7 J	13.1	13.3	27.2
Mercury	2	0.12				
Nickel	100	*	1.4 J	1.4		
Potassium	*	5400	10800	6710	10100	11000
Selenium	50	9.7				
Silver	100	*				
Sodium	160000	18222		6470	5850	8220
Vanadium	49	20.6		0.50		1
Zinc	5000	4		47.1 J		131
General Chemistry (mg/L)				NA	NA	NA
Total Organic Carbon			28.8			
Total Suspended Solids						

TABLE 4

HISTORICAL DETECTIONS IN GROUNDWATER
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	Screening Criteria[a]		OLD-08-03			
Sample ID			08G00302	NTC08G00310	NTC08G00311	NTC08G0312
Lab ID	Florida	NTC	873056	F3841-6	A9G290198008	A9J210106007
Sample Date	GCTL[b]	BGSV[c]	10/22/97	3/11/99	7/28/99	10/19/99
Semivolatiles/PAHs (µg/L)				NA	NA	NA
1-Methylnaphthalene	20		NA			
2,4,6-Trichlorophenol	3.2					
2,4-Dichlorophenol	0.5					
2,4-Dimethylphenol	140					
2-Methylnaphthalene	20					
2-Methylphenol	35					
4-Methylphenol	4					
Naphthalene	20					
Phenol	10					
Pesticides/PCBs (µg/L)				NA	NA	NA
4,4'-DDD	0.1					
4,4'-DDE	0.1					
4,4'-DDT	0.1					
Aldrin	0.005					
alpha-BHC	0.2					
alpha-Chlordane[d]	2					
delta-BHC	2.1					
Dieldrin	0.005					
Endosulfan	42					
Endosulfan II[e]	42					
Endosulfan Sulfate	*					
Endrin	2					
Endrin Aldehyde	*					
gamma-BHC (Lindane)	0.2					
gamma-Chlordane[d]	2					
Toxaphene	3					
Herbicides (µg/L)					NA	NA
2,4 5-TP (Silvex)	50					
2,4-D	70					
2,4-DB	56		0.6 J			
Dalapon	200					
Dicamba	210					
Dichloroprop	35					
Dinoseb	7					
MCPA	3.5		640 J			
MCPP	7					
Pentachlorophenol	1					
Inorganics (µg/L)						
Aluminum	200	4067		168	[illegible]	721
Antimony	6	4.1				[illegible]
Arsenic	50	5	79.9	[illegible]	234	[illegible]
Barium	2000	31.4	14.7 J	20.9 J	38.3	51.6
Cadmium	5	5.6				
Calcium	*	36830	37500	28600	67600 J	89600
Chromium	100	7.8	1.7 J		5.2	4.5
Cobalt	420	*				1.3
Copper	1000	5.4	1.5 J	3.3	15.7	2.9
Iron	300	1227	231	[illegible]	750	201
Lead	15	4			2.8	
Magnesium	*	4560		2440	3450	8120
Manganese	50	17	15.3	19.6	12.2	[illegible]
Mercury	2	0.12				
Nickel	100	*	1.6 J	10.0	15	27.4
Potassium	*	5400	9130	6400	9610	20900
Selenium	50	9.7				
Silver	100	*				
Sodium	160000	18222		4290	5790	5970
Vanadium	49	20.6		0.77		1.2
Zinc	5000	4		180 J	254	561
General Chemistry (mg/L)				NA	NA	NA
Total Organic Carbon			30.6			
Total Suspended Solids						

TABLE 4

HISTORICAL DETECTIONS IN GROUNDWATER
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	Screening Criteria[a]		OLD-08-04				
Sample ID			08G00402	NTC08G00410	NTC08G00410-D	NTC08G00411	NTC08G0412
Lab ID	Florida	NTC	873064	F3841-5	F3841-7	A9G290198007	A9J210106005
Sample Date	GCTL[b]	BGSV[c]	10/22/97	3/11/99	3/11/99	7/28/99	10/19/99
Semivolatiles/PAHs (µg/L)				NA	NA	NA	NA
1-Methylnaphthalene	20		NA				
2,4,6-Trichlorophenol	3.2						
2,4-Dichlorophenol	0.5						
2,4-Dimethylphenol	140						
2-Methylnaphthalene	20						
2-Methylphenol	35						
4-Methylphenol	4						
Naphthalene	20						
Phenol	10						
Pesticides/PCBs (µg/L)				NA	NA	NA	NA
4,4'-DDD	0.1						
4,4'-DDE	0.1						
4,4'-DDT	0.1						
Aldrin	0.005						
alpha-BHC	0.2						
alpha-Chlordane[d]	2						
delta-BHC	2.1						
Dieldrin	0.005						
Endosulfan	42						
Endosulfan II[e]	42						
Endosulfan Sulfate	*						
Endrin	2						
Endrin Aldehyde	*						
gamma-BHC (Lindane)	0.2						
gamma-Chlordane[d]	2						
Toxaphene	3						
Herbicides (µg/L)						NA	NA
2,4 5-TP (Silvex)	50						
2,4-D	70		0.023 J				
2,4-DB	56		0.18 J				
Dalapon	200						
Dicamba	210						
Dichloroprop	35						
Dinoseb	7						
MCPA	3.5						
MCPP	7						
Pentachlorophenol	1						
Inorganics (µg/L)							
Aluminum	200	4067		240	304	918 J	261
Antimony	6	4.1					3.6
Arsenic	50	5	70.4	102	106	99.2	381
Barium	2000	31.4					8.4
Cadmium	5	5.6					0.44
Calcium	*	36830	28900	21700	22900	26600 J	59000
Chromium	100	7.8	1.5 J				4.1
Cobalt	420	*					
Copper	1000	5.4	1.3 J	5.0	37.6	8.5	11.1
Iron	300	1227			222		
Lead	15	4					
Magnesium	*	4560		2230	2420	2220	6740
Manganese	50	17	16.4	19.8	18.1	10.3	39.2
Mercury	2	0.12					
Nickel	100	*	3 J	6.8	7.5	9.5	
Potassium	*	5400	9940	6430	6750	5380	19500
Selenium	50	9.7					
Silver	100	*					
Sodium	160000	18222		4580	5070	6630	4370
Vanadium	49	20.6		2.1	2.4		3.1
Zinc	5000	4		295 J	337 J	627	310
General Chemistry (mg/L)				NA	NA	NA	NA
Total Organic Carbon			27				
Total Suspended Solids							

TABLE 4

HISTORICAL DETECTIONS IN GROUNDWATER
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	Screening Criteria[a]		OLD-08-05					
Sample ID			08G00501	08G00501D	NTC08G00510	NTC08G00511	NTC08G0512	NTC08G0512-D
Lab ID	Florida	NTC	873270	873272	F3832-1	A9G300236003	A9J220158007	A9J220158008
Sample Date	GCTL[b]	BGSV[c]	10/23/97	10/23/97	3/10/99	7/29/99	10/21/99	10/21/99
Semivolatiles/PAHs (µg/L)					NA	NA	NA	NA
1-Methylnaphthalene	20		NA	NA				
2,4,6-Trichlorophenol	3.2							
2,4-Dichlorophenol	0.5							
2,4-Dimethylphenol	140							
2-Methylnaphthalene	20							
2-Methylphenol	35							
4-Methylphenol	4							
Naphthalene	20							
Phenol	10							
Pesticides/PCBs (µg/L)					NA	NA	NA	NA
4,4'-DDD	0.1							
4,4'-DDE	0.1							
4,4'-DDT	0.1							
Aldrin	0.005							
alpha-BHC	0.2							
alpha-Chlordane[d]	2							
delta-BHC	2.1							
Dieldrin	0.005							
Endosulfan	42							
Endosulfan II[e]	42							
Endosulfan Sulfate	*							
Endrin	2							
Endrin Aldehyde	*							
gamma-BHC (Lindane)	0.2							
gamma-Chlordane[d]	2							
Toxaphene	3							
Herbicides (µg/L)						NA	NA	NA
2,4 5-TP (Silvex)	50							
2,4-D	70							
2,4-DB	56		1.4 J					
Dalapon	200							
Dicamba	210							
Dichloroprop	35							
Dinoseb	7		0.098 J					
MCPA	3.5							
MCPP	7							
Pentachlorophenol	1							
Inorganics (µg/L)								
Aluminum	200	4067			126	4310 J	289	276
Antimony	6	4.1						
Arsenic	50	5	57.7	57.3	58.9	284	54	[illegible]
Barium	2000	31.4	11.8 J	11.3 J	17.8	77.8	7.7	8.1
Cadmium	5	5.6					0.42	0.39
Calcium	*	36830	33200	33100	19800	101000 J	17800	18200
Chromium	100	7.8	1.8 J	2.3 J	10.5	6.8	10.1	10.7
Cobalt	420	*						
Copper	1000	5.4	1.2 J	0.96 J	2.3	9.3	30.8	29.2
Iron	300	1227					590	583
Lead	15	4				3.7	[illegible]	[illegible]
Magnesium	*	4560			2640	8500	1510	1550
Manganese	50	17	[illegible]	[illegible]	[illegible]	[illegible]	25.2	25.5
Mercury	2	0.12						
Nickel	100	*			1.4			
Potassium	*	5400	11200	11200	5910 J	12900	3100	3240
Selenium	50	9.7						
Silver	100	*					1.7	1.8
Sodium	160000	18222			3850	8540	1220	1290
Vanadium	49	20.6			0.43		4.3	4.2
Zinc	5000	4			40.9 J	74.1		
General Chemistry (mg/L)				NA	NA	NA	NA	NA
Total Organic Carbon			31.2					
Total Suspended Solids								

TABLE 4

**HISTORICAL DETECTIONS IN GROUNDWATER
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9**

**NAVAL TRAINING CENTER
ORLANDO, FLORIDA**

Well Designation	Screening Criteria[a]		OLD-08-06				OLD-08-07	
Sample ID			08G00601	NTC08G00610	NTC08G00611	NTC08G0612	08G00701	NTC08G00710
Lab ID	Florida	NTC	873268	F3841-1	A9G300236004	A9J210106008	873267	F3849-1
Sample Date	GCTL[b]	BGSV[c]	10/23/97	3/11/99	7/29/99	10/19/99	10/23/97	3/15/99
Semivolatiles/PAHs (µg/L)				NA	NA	NA		NA
1-Methylnaphthalene	20		NA				NA	
2,4,6-Trichlorophenol	3.2							
2,4-Dichlorophenol	0.5							
2,4-Dimethylphenol	140							
2-Methylnaphthalene	20							
2-Methylphenol	35							
4-Methylphenol	4							
Naphthalene	20							
Phenol	10							
Pesticides/PCBs (µg/L)				NA	NA	NA		NA
4,4'-DDD	0.1							
4,4'-DDE	0.1							
4,4'-DDT	0.1							
Aldrin	0.005							
alpha-BHC	0.2							
alpha-Chlordane[d]	2							
delta-BHC	2.1							
Dieldrin	0.005							
Endosulfan	42							
Endosulfan II[e]	42							
Endosulfan Sulfate	*							
Endrin	2							
Endrin Aldehyde	*							
gamma-BHC (Lindane)	0.2							
gamma-Chlordane[d]	2							
Toxaphene	3							
Herbicides (µg/L)					NA	NA		
2,4,5-TP (Silvex)	50							
2,4-D	70		0.22 J					
2,4-DB	56		0.57 J					
Dalapon	200							
Dicamba	210							
Dichloroprop	35							
Dinoseb	7		0.28 J					
MCPA	3.5							
MCPP	7							
Pentachlorophenol	1							
Inorganics (µg/L)								
Aluminum	200	4067		150	744 J	94.6		
Antimony	6	4.1						
Arsenic	50	5	53	88.5	138	71.8	88.4	47.9
Barium	2000	31.4	12.3 J	27.8 J	38.3	7.4	8 J	
Cadmium	5	5.6						
Calcium	*	36830	28100	21000	67800 J	30800	45300	26800 J
Chromium	100	7.8	3.4 J	22.0		4.9	1.1 J	
Cobalt	420	*						
Copper	1000	5.4	6.7 J	13.3	13.3	4.6	3.3 J	8.6
Iron	300	1227	198	33300		185	529	
Lead	15	4	6.6	13.2	9.8			
Magnesium	*	4560		2610	5720	2030		2750 J
Manganese	50	17	24.2	410	89.6	11.7	11 J	
Mercury	2	0.12						
Nickel	100	*		16.8				
Potassium	*	5400	11700	5450	13200	3270	11000	3140 J
Selenium	50	9.7						
Silver	100	*						
Sodium	160000	18222		4690	3630	1200		3930
Vanadium	49	20.6	2 J	0.53		3.7	1.8 J	
Zinc	5000	4		38.2 J	177			
General Chemistry (mg/L)				NA	NA	NA		NA
Total Organic Carbon			33.7				22.9	
Total Suspended Solids								

TABLE 4

HISTORICAL DETECTIONS IN GROUNDWATER
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	Screening Criteria[a]		OLD-08-08				
Sample ID			08G00801	08G00801D	NTC08G00810	NTC08G00811	NTC08G0812
Lab ID	Florida	NTC	873069	873074	F3841-3	A9H030166007	A9J210106002
Sample Date	GCTL[b]	BGSV[c]	10/22/97	10/22/97	3/11/99	8/1/99	10/19/99
Semivolatiles/PAHs (µg/L)					NA	NA	NA
1-Methylnaphthalene	20		NA	NA			
2,4,6-Trichlorophenol	3.2						
2,4-Dichlorophenol	0.5						
2,4-Dimethylphenol	140						
2-Methylnaphthalene	20						
2-Methylphenol	35						
4-Methylphenol	4						
Naphthalene	20						
Phenol	10						
Pesticides/PCBs (µg/L)					NA	NA	NA
4,4'-DDD	0.1						
4,4'-DDE	0.1						
4,4'-DDT	0.1						
Aldrin	0.005						
alpha-BHC	0.2						
alpha-Chlordane[d]	2						
delta-BHC	2.1						
Dieldrin	0.005						
Endosulfan	42						
Endosulfan II[d]	42						
Endosulfan Sulfate	*						
Endrin	2						
Endrin Aldehyde	*						
gamma-BHC (Lindane)	0.2						
gamma-Chlordane[d]	2						
Toxaphene	3						
Herbicides (µg/L)							
2,4 5-TP (Silvex)	50						
2,4-D	70		0.12 J	0.11 J			
2,4-DB	56		0.16 J	0.11 J			
Dalapon	200						
Dicamba	210						
Dichloroprop	35		0.69 J	0.66 J			
Dinoseb	7						
MCPA	3.5						
MCPP	7			710 J		99 J	
Pentachlorophenol	1					NA	NA
Inorganics (µg/L)							
Aluminum	200	4067					
Antimony	6	4.1					10 J
Arsenic	50	5	122	120	175	154	194
Barium	2000	31.4	26.6 J	26.1 J	10.4 J	18.9	37.3
Cadmium	5	5.6					
Calcium	*	36830	131000	134000	58800	71400	116000
Chromium	100	7.8					
Cobalt	420	*					
Copper	1000	5.4	1.5 J	1.4 J	7.1		
Iron	300	1227				370	
Lead	15	4					
Magnesium	*	4560			2620	2550	4600
Manganese	50	17	6.3 J	6.4 J	3.4		
Mercury	2	0.12					
Nickel	100	*			2.5		
Potassium	*	5400	8670	8900	8780	7600	11100
Selenium	50	9.7					
Silver	100	*					
Sodium	160000	18222			5310	3840	4830
Vanadium	49	20.6			0.96		0.62
Zinc	5000	4			42.1 J		
General Chemistry (mg/L)				NA	NA	NA	NA
Total Organic Carbon			20.7				
Total Suspended Solids							

TABLE 4

**HISTORICAL DETECTIONS IN GROUNDWATER
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9**

**NAVAL TRAINING CENTER
ORLANDO, FLORIDA**

Well Designation	Screening Criteria[a]		OLD-08-09		OLD-08-10			
Sample ID			08F00901	08G00901	08G01001	NTC08G01010	NTC08G01011	NTC08G1012
Lab ID	Florida	NTC	873053	873070	873269	F3846-3	A9H020124009	A9J220158006
Sample Date	GCTL[b]	BGSV[c]	10/22/97	10/22/97	10/23/97	3/12/99	7/30/99	10/21/99
Semivolatiles/PAHs (µg/L)			NA			NA	NA	NA
1-Methylnaphthalene	20			NA	NA			
2,4,6-Trichlorophenol	3.2							
2,4-Dichlorophenol	0.5							
2,4-Dimethylphenol	140							
2-Methylnaphthalene	20							
2-Methylphenol	35							
4-Methylphenol	4							
Naphthalene	20							
Phenol	10							
Pesticides/PCBs (µg/L)			NA			NA	NA	NA
4,4'-DDD	0.1							
4,4'-DDE	0.1							
4,4'-DDT	0.1							
Aldrin	0.005							
alpha-BHC	0.2							
alpha-Chlordane[d]	2							
delta-BHC	2.1							
Dieldrin	0.005							
Endosulfan	42							
Endosulfan II[d]	42							
Endosulfan Sulfate	*							
Endrin	2							
Endrin Aldehyde	*							
gamma-BHC (Lindane)	0.2							
gamma-Chlordane[d]	2							
Toxaphene	3							
Herbicides (µg/L)			NA					
2,4 5-TP (Silvex)	50							
2,4-D	70			0.076 J				
2,4-DB	56			0.061 J				
Dalapon	200						2J	
Dicamba	210							
Dichloroprop	35							
Dinoseb	7							
MCPA	3.5							
MCPP	7				900 J			
Pentachlorophenol	1							
Inorganics (µg/L)								NA
Aluminum	200	4067	252	372	614	409		
Antimony	6	4.1						
Arsenic	50	5	98.4	117	209	122 J	189	276
Barium	2000	31.4	4.9 J		15 J		8.8	9.7
Cadmium	5	5.6						
Calcium	*	36830	43300	45600	7230	17100	42800	53500
Chromium	100	7.8	1.3 J				16.5	
Cobalt	420	*						
Copper	1000	5.4		1.2 J	6.5 J		1.7	
Iron	300	1227	410	455	825	1400		120
Lead	15	4						
Magnesium	*	4560				1970	3870	4740
Manganese	50	17	18.9	18.5	[illegible]	[illegible]		29.3
Mercury	2	0.12						
Nickel	100	*	1.7 J					
Potassium	*	5400	4720 J	4980 J		822	3620	2680
Selenium	50	9.7						
Silver	100	*						
Sodium	160000	18222				5910	9180	2750
Vanadium	49	20.6	2.3 J	2.3 J	2.8 J		3.1	
Zinc	5000	4					13.6	
General Chemistry (mg/L)			NA			NA	NA	NA
Total Organic Carbon				31.5	21.1			
Total Suspended Solids								

TABLE 4

HISTORICAL DETECTIONS IN GROUNDWATER
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	Screening Criteria[a]		OLD-08-11				OLD-08-12	
Sample ID			08G01101	NTC08G01110	NTC08G01111	NTC08G1112	08F01201	08G01201
Lab ID	Florida	NTC	873271	F3846-2	A9H020124010	A9J210106006	873265	873266
Sample Date	GCTL[b]	BGSV[c]	10/23/97	3/12/99	7/30/99	10/19/99	10/23/97	10/23/97
Semivolatiles/PAHs (µg/L)				NA	NA	NA	NA	
1-Methylnaphthalene	20		NA					NA
2,4,6-Trichlorophenol	3.2							
2,4-Dichlorophenol	0.5							
2,4-Dimethylphenol	140							
2-Methylnaphthalene	20							
2-Methylphenol	35							
4-Methylphenol	4							
Naphthalene	20							
Phenol	10							
Pesticides/PCBs (µg/L)				NA	NA	NA	NA	
4,4'-DDD	0.1							
4,4'-DDE	0.1							
4,4'-DDT	0.1							
Aldrin	0.005							
alpha-BHC	0.2							
alpha-Chlordane[d]	2							
delta-BHC	2.1							
Dieldrin	0.005		0.019 J					
Endosulfan	42							
Endosulfan II[d]	42							
Endosulfan Sulfate	*							
Endrin	2							
Endrin Aldehyde	*							
gamma-BHC (Lindane)	0.2							
gamma-Chlordane[d]	2							
Toxaphene	3							
Herbicides (µg/L)							NA	
2,4 5-TP (Silvex)	50							
2,4-D	70		0.048 J					0.082 J
2,4-DB	56							
Dalapon	200					1.3 J		
Dicamba	210							
Dichloroprop	35							
Dinoseb	7							
MCPA	3.5							
MCPP	7		860 J		110 J			
Pentachlorophenol	1					NA		
Inorganics (µg/L)								
Aluminum	200	4067		171		404	412	1450
Antimony	6	4.1						
Arsenic	50	5	223	315 J	170	[illegible]		
Barium	2000	31.4		63.4 J		3.8	18.2 J	38.5 J
Cadmium	5	5.6						
Calcium	*	36830	89800	60000	64700	34100		
Chromium	100	7.8				3.6		0.83 J
Cobalt	420	*						
Copper	1000	5.4	0.9 J				0.95 J	1.5 J
Iron	300	1227					[illegible]	[illegible]
Lead	15	4						
Magnesium	*	4560		4740	4300	2740		
Manganese	50	17	5.3 J	6.4			[illegible]	[illegible]
Mercury	2	0.12						
Nickel	100	*						
Potassium	*	5400	11600	5130	10600	6990		
Selenium	50	9.7						
Silver	100	*						
Sodium	160000	18222		7330	9370	5570		
Vanadium	49	20.6					2.6 J	4.2 J
Zinc	5000	4						
General Chemistry (mg/L)				NA	NA	NA	NA	
Total Organic Carbon			20.9					8.47
Total Suspended Solids								8

TABLE 4

HISTORICAL DETECTIONS IN GROUNDWATER
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	Screening Criteria[a]		OLD-08-13					
Sample ID			08F01301	08G01301	NTC08G01310	NTC08G01311	NTC08G01311-D	NTC08G1312
Lab ID	Florida	NTC	876944	876943	F3849-3	A9H030166001	A9H030166002	A9J220158005
Sample Date	GCTL[b]	BGSV[c]	12/5/97	12/5/97	3/15/99	7/31/99	7/31/99	10/21/99
Semivolatiles/PAHs (µg/L)			NA		NA	NA	NA	NA
1-Methylnaphthalene	20			NA				
2,4,6-Trichlorophenol	3.2							
2,4-Dichlorophenol	0.5							
2,4-Dimethylphenol	140							
2-Methylnaphthalene	20							
2-Methylphenol	35							
4-Methylphenol	4							
Naphthalene	20							
Phenol	10							
Pesticides/PCBs (µg/L)			NA		NA	NA	NA	NA
4,4'-DDD	0.1							
4,4'-DDE	0.1							
4,4'-DDT	0.1							
Aldrin	0.005							
alpha-BHC	0.2							
alpha-Chlordane[d]	2							
delta-BHC	2.1			0.0051 J				
Dieldrin	0.005							
Endosulfan	42							
Endosulfan II[d]	42							
Endosulfan Sulfate	*							
Endrin	2							
Endrin Aldehyde	*							
gamma-BHC (Lindane)	0.2							
gamma-Chlordane[d]	2							
Toxaphene	3							
Herbicides (µg/L)			NA			NA	NA	NA
2,4 5-TP (Silvex)	50							
2,4-D	70			0.16 J				
2,4-DB	56			0.31 J				
Dalapon	200							
Dicamba	210							
Dichloroprop	35			0.4 J				
Dinoseb	7							
MCPA	3.5			680 J				
MCPP	7							
Pentachlorophenol	1							
Inorganics (µg/L)								
Aluminum	200	4067	529	1870	527	823	729	447
Antimony	6	4.1						
Arsenic	50	5	71.1	68.2	19.0	24.3	22.6	30.7
Barium	2000	31.4	25.6 J	42.1 J	76.4 J	17.9	17.7	16.6
Cadmium	5	5.6						
Calcium	*	36830	11400	12900	9170 J	12100	11500	14000
Chromium	100	7.8						
Cobalt	420	*	1.5 J	1.9 J		0.98		0.96
Copper	1000	5.4	4.5 J	5.5 J	23.1	1.9	1.4	
Iron	300	1227	293	447	2470 J	[illegible]	[illegible]	[illegible]
Lead	15	4		3.2	6.5			
Magnesium	*	4560			1770 J	2320	2230	3140
Manganese	50	17	94.1	146	[illegible]	[illegible]	[illegible]	[illegible]
Mercury	2	0.12						
Nickel	100	*	7.3 J	9.6 J				
Potassium	*	5400			848 J	277	284	669
Selenium	50	9.7						
Silver	100	*						
Sodium	160000	18222			8490	7980	7720	7200
Vanadium	49	20.6	1.2 J	2 J		1.4	0.92	0.72
Zinc	5000	4						
General Chemistry (mg/L)			NA		NA	NA	NA	NA
Total Organic Carbon				22.1				
Total Suspended Solids				22				

TABLE 4

HISTORICAL DETECTIONS IN GROUNDWATER
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	Screening Criteria[a]		OLD-08-14			
Sample ID			08G01401	NTC08G01410	NTC08G01411	NTC08G1412
Lab ID	Florida	NTC	878090	F3849-2	A9H030166003	A9J210231004
Sample Date	GCTL[b]	BGSV[c]	12/8/97	3/15/99	7/31/99	10/20/99
Semivolatiles/PAHs (µg/L)				NA	NA	NA
1-Methylnaphthalene	20		NA			
2,4,6-Trichlorophenol	3.2					
2,4-Dichlorophenol	0.5					
2,4-Dimethylphenol	140					
2-Methylnaphthalene	20					
2-Methylphenol	35					
4-Methylphenol	4					
Naphthalene	20					
Phenol	10					
Pesticides/PCBs (µg/L)				NA	NA	NA
4,4'-DDD	0.1					
4,4'-DDE	0.1					
4,4'-DDT	0.1					
Aldrin	0.005					
alpha-BHC	0.2					
alpha-Chlordane[d]	2					
delta-BHC	2.1					
Dieldrin	0.005					
Endosulfan	42					
Endosulfan II[e]	42					
Endosulfan Sulfate	*					
Endrin	2					
Endrin Aldehyde	*		0.0066 J			
gamma-BHC (Lindane)	0.2					
gamma-Chlordane[d]	2					
Toxaphene	3					
Herbicides (µg/L)						
2,4 5-TP (Silvex)	50					
2,4-D	70					
2,4-DB	56					
Dalapon	200		1.4 J		7.5 J	
Dicamba	210					
Dichloroprop	35		0.14 J			
Dinoseb	7					
MCPA	3.5					
MCPP	7		200 J		190 J	
Pentachlorophenol	1				NA	NA
Inorganics (µg/L)						
Aluminum	200	4067	1380 J	1800	1340	2230
Antimony	6	4.1				[illegible]
Arsenic	50	5	7.1 J	9.5	100	[illegible]
Barium	2000	31.4	39.2 J	99.5 J	53.3	20.7
Cadmium	5	5.6				0.96
Calcium	*	36830	34200	12200 J	65600	30500
Chromium	100	7.8				6.7
Cobalt	420	*	2.3 J		2.2	2.2
Copper	1000	5.4	9.5 J	17.5	4.3	56.5
Iron	300	1227	1780 J	7340	[illegible]	[illegible]
Lead	15	4	3.1	[illegible]	[illegible]	[illegible]
Magnesium	*	4560		3190 J	20000	6670
Manganese	50	17	[illegible]	[illegible]	[illegible]	[illegible]
Mercury	2	0.12				
Nickel	100	*	5.8 J			85
Potassium	*	5400		1240 J	1050	4070
Selenium	50	9.7				
Silver	100	*				2.4
Sodium	160000	18222		15600	41200	31200
Vanadium	49	20.6	2.5 J		4.7	7
Zinc	5000	4			439	341
General Chemistry (mg/L)				NA	NA	NA
Total Organic Carbon			46.8			
Total Suspended Solids			20			

TABLE 4

HISTORICAL DETECTIONS IN GROUNDWATER
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	Screening Criteria[a]		OLD-08-15					OLD-08-16
Sample ID			08G01501	NTC08G01510	NTC08G01511	NTC08G01511-D	NTC08G1512	08G01601
Lab ID	Florida	NTC	876942	F3846-1	A9H030166005	A9H030166006	A9J210231006	882951
Sample Date	GCTL[b]	BGSV[c]	12/5/97	3/13/99	8/1/99	8/1/99	10/20/99	2/18/98
Semivolatiles/PAHs (µg/L)				NA	NA	NA	NA	NA
1-Methylnaphthalene	20		NA					
2,4,6-Trichlorophenol	3.2							
2,4-Dichlorophenol	0.5							
2,4-Dimethylphenol	140							
2-Methylnaphthalene	20							
2-Methylphenol	35							
4-Methylphenol	4							
Naphthalene	20							
Phenol	10							
Pesticides/PCBs (µg/L)				NA	NA	NA	NA	NA
4,4'-DDD	0.1							
4,4'-DDE	0.1							
4,4'-DDT	0.1							
Aldrin	0.005							
alpha-BHC	0.2							
alpha-Chlordane[d]	2							
delta-BHC	2.1		0.0077 J					
Dieldrin	0.005							
Endosulfan	42							
Endosulfan II[d]	42							
Endosulfan Sulfate	*							
Endrin	2							
Endrin Aldehyde	*							
gamma-BHC (Lindane)	0.2							
gamma-Chlordane[d]	2							
Toxaphene	3							
Herbicides (µg/L)								NA
2,4 5-TP (Silvex)	50							
2,4-D	70		0.16 J					
2,4-DB	56		0.29 J					
Dalapon	200				36 J			
Dicamba	210							
Dichloroprop	35							
Dinoseb	7							
MCPA	3.5		1200 DJ					
MCPP	7					280 J		
Pentachlorophenol	1				NA	NA	NA	
Inorganics (µg/L)								
Aluminum	200	4067	1420	811	2430	2360	4010	454
Antimony	6	4.1					4.9	
Arsenic	50	5			3.6	2.5	14.7	3.9 J
Barium	2000	31.4	21.6 J		15.4	13.9	7.3	27.7 J
Cadmium	5	5.6						
Calcium	*	36830	18100	5440	8880	8590	7510	
Chromium	100	7.8					2.1	
Cobalt	420	*	1.2 J					1.9 J
Copper	1000	5.4	8.3 J		2.6	1.5	6.7	
Iron	300	1227	498	1980	853	806	652	580
Lead	15	4	2.3 J				[illegible]	
Magnesium	*	4560		2810	4040	4000	3250	
Manganese	50	17	72.9	683	32.6	30.1		[illegible]
Mercury	2	0.12						
Nickel	100	*	5.9 J					11.4 J
Potassium	*	5400		806	2010	1890	3860	
Selenium	50	9.7						
Silver	100	*						
Sodium	160000	18222	28900	13200	30600	28500	40900	
Vanadium	49	20.6	3 J		2.5	2.9	3	3.5 J
Zinc	5000	4			11.7			
General Chemistry (mg/L)				NA	NA	NA	NA	
Total Organic Carbon			27.2					25.2
Total Suspended Solids			13					

TABLE 4

HISTORICAL DETECTIONS IN GROUNDWATER
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	Screening Criteria[a]		OLD-08-17				OLD-08-18		
Sample ID			08G01701	NTC08G01710	NTC08G01711	NTC08G1712	08G01801	NTC08G01811	NTC08G1812
Lab ID	Florida	NTC	882943	F3841-2	A9H020124011	A9J210106001	882980	A9H030166004	A9J210231005
Sample Date	GCTL[b]	BGSV[c]	2/18/98	3/11/99	7/30/99	10/19/99	2/19/98	7/31/99	10/20/99
Semivolatiles/PAHs (µg/L)			NA	NA	NA	NA	NA	NA	NA
1-Methylnaphthalene	20								
2,4,6-Trichlorophenol	3.2								
2,4-Dichlorophenol	0.5								
2,4-Dimethylphenol	140								
2-Methylnaphthalene	20								
2-Methylphenol	35								
4-Methylphenol	4								
Naphthalene	20								
Phenol	10								
Pesticides/PCBs (µg/L)			NA	NA	NA	NA	NA	NA	NA
4,4'-DDD	0.1								
4,4'-DDE	0.1								
4,4'-DDT	0.1								
Aldrin	0.005								
alpha-BHC	0.2								
alpha-Chlordane[d]	2								
delta-BHC	2.1								
Dieldrin	0.005								
Endosulfan	42								
Endosulfan II[d]	42								
Endosulfan Sulfate	*								
Endrin	2								
Endrin Aldehyde	*								
gamma-BHC (Lindane)	0.2								
gamma-Chlordane[d]	2								
Toxaphene	3								
Herbicides (µg/L)			NA		NA	NA	NA	NA	
2,4 5-TP (Silvex)	50								
2,4-D	70								
2,4-DB	56								
Dalapon	200								
Dicamba	210								
Dichloroprop	35								
Dinoseb	7								180 J
MCPA	3.5								
MCPP	7								
Pentachlorophenol	1								NA
Inorganics (µg/L)									
Aluminum	200	4067	88.3 J	88.1			87.3 J	1780	835
Antimony	6	4.1			12.2	4.6	2.9 J		
Arsenic	50	5	88.8	167	191	156			
Barium	2000	31.4	20 J		18.7	29.8	12.1 J	42.8	35.6
Cadmium	5	5.6							
Calcium	*	36830		38300	53500	99300		5910	5240
Chromium	100	7.8				2.3			3
Cobalt	420	*						0.95	
Copper	1000	5.4		5.5	3	2.4		2.5	2.8
Iron	300	1227				257	550	[illegible]	[illegible]
Lead	15	4				13.4			1.6
Magnesium	*	4580		2220	2180	3820		1730	1880
Manganese	50	17		10.1		[illegible]		[illegible]	[illegible]
Mercury	2	0.12							
Nickel	100	*	4.4 J	8.0			3 J		
Potassium	*	5400	10900	7580	12100	6640		741	801
Selenium	50	9.7							
Silver	100	*							
Sodium	160000	18222		6340	4770	2730		9730	8770
Vanadium	49	20.6	4.4 J		10.3	4.1	2.4 J	6.2	4.6
Zinc	5000	4		30.2 J					
General Chemistry (mg/L)				NA	NA	NA		NA	NA
Total Organic Carbon			19.9				23.5		
Total Suspended Solids									

TABLE 4

HISTORICAL DETECTIONS IN GROUNDWATER
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	Screening Criteria[a]		OLD-09-01				
Sample ID			09G00102	NTC09G00110	NTC09G00111	NTC09G0112	NTC09G0112-D
Lab ID	Florida	NTC	872936	F3846-8	A9H050202002	A9J220158002	A9J220158003
Sample Date	GCTL[b]	BGSV[c]	10/20/97	3/13/99	8/4/99	10/21/99	10/21/99
Semivolatiles/PAHs (µg/L)					NA	NA	NA
1-Methylnaphthalene	20		NA	NA			
2,4,6-Trichlorophenol	3.2						
2,4-Dichlorophenol	0.5						
2,4-Dimethylphenol	140						
2-Methylnaphthalene	20						
2-Methylphenol	35						
4-Methylphenol	4						
Naphthalene	20						
Phenol	10						
Pesticides/PCBs (µg/L)				(e)	(e)		
4,4'-DDD	0.1						
4,4'-DDE	0.1		0.1 J				
4,4'-DDT	0.1						
Aldrin	0.005						
alpha-BHC	0.2						
alpha-Chlordane[d]	2						
delta-BHC	2.1						
Dieldrin	0.005						
Endosulfan	42						
Endosulfan II[d]	42						
Endosulfan Sulfate	*						
Endrin	2						
Endrin Aldehyde	*						
gamma-BHC (Lindane)	0.2						
gamma-Chlordane[d]	2				0.067 J	0.034 J	
Toxaphene	3				2.1 J		
Herbicides (µg/L)							
2,4 5-TP (Silvex)	50						
2,4-D	70		0.0018 J				
2,4-DB	56		0.42 J				
Dalapon	200						
Dicamba	210						
Dichloroprop	35						
Dinoseb	7						
MCPA	3.5		640				
MCPP	7						
Pentachlorophenol	1				NA		
Inorganics (µg/L)							
Aluminum	200	4067	318	102			
Antimony	6	4.1					
Arsenic	50	5	13.2	31.8 J	34.9	30	30.8
Barium	2000	31.4	24.5 J		53.5	55.4	55
Cadmium	5	5.6					
Calcium	*	36830	24600	119000	79900	94400	93700
Chromium	100	7.8	0.81 J	15.3			
Cobalt	420	*					
Copper	1000	5.4			0.85		
Iron	300	1227	391		289	285	283
Lead	15	4					
Magnesium	*	4560		10200	6640	6550	6530
Manganese	50	17	6.7 J	16.1		18.1	19.4
Mercury	2	0.12					
Nickel	100	*	2.5 J	7.9			
Potassium	*	5400		12200	8180 J	5200	5140
Selenium	50	9.7					
Silver	100	*					
Sodium	160000	18222		2000	2350	1520	1520
Vanadium	49	20.6				0.58	
Zinc	5000	4					
General Chemistry (mg/L)				NA	NA	NA	NA
Total Organic Carbon			37.2				
Total Suspended Solids							

TABLE 4

HISTORICAL DETECTIONS IN GROUNDWATER
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	Screening Criteria[a]		OLD-09-02				
Sample ID			09G00202	09G00202D	NTC09G00210	NTC09G00211	NTC09G0212
Lab ID	Florida	NTC	872937	872939	F3846-9	A9H040126009	A9J230148006
Sample Date	GCTL[b]	BGSV[c]	10/20/97	10/20/97	3/13/99	8/3/99	10/22/99
Semivolatiles/PAHs (µg/L)						NA	NA
1-Methylnaphthalene	20		NA	NA	NA		
2,4,6-Trichlorophenol	3.2						
2,4-Dichlorophenol	0.5						
2,4-Dimethylphenol	140			2 J			
2-Methylnaphthalene	20						
2-Methylphenol	35			1 J			
4-Methylphenol	4			3 J			
Naphthalene	20						
Phenol	10			2 J			
Pesticides/PCBs (µg/L)					(e)	(e)	
4,4'-DDD	0.1						
4,4'-DDE	0.1						
4,4'-DDT	0.1						
Aldrin	0.005						
alpha-BHC	0.2						
alpha-Chlordane[d]	2						
delta-BHC	2.1						
Dieldrin	0.005						
Endosulfan	42						
Endosulfan II[d]	42					0.047 J	
Endosulfan Sulfate	*						
Endrin	2						
Endrin Aldehyde	*						
gamma-BHC (Lindane)	0.2						
gamma-Chlordane[d]	2						
Toxaphene	3						
Herbicides (µg/L)							
2,4 5-TP (Silvex)	50						
2,4-D	70						
2,4-DB	56		0.44 J	0.33 J			
Dalapon	200						
Dicamba	210						
Dichloroprop	35			3.1 J			
Dinoseb	7						
MCPA	3.5		670 J	670 J			
MCPP	7		840 J				
Pentachlorophenol	1					NA	
Inorganics (µg/L)							
Aluminum	200	4067	731	781	1810	2140 J	1510
Antimony	6	4.1					
Arsenic	50	5					
Barium	2000	31.4	1.8 J	2.4 J			2.7
Cadmium	5	5.6					
Calcium	*	36830	5830	6350	7500	10100	5540
Chromium	100	7.8	1.3 J	1.1 J			2.7
Cobalt	420	*					
Copper	1000	5.4				3.8	
Iron	300	1227					121
Lead	15	4					1.8
Magnesium	*	4560			1630	2240	1230
Manganese	50	17					
Mercury	2	0.12					
Nickel	100	*				1.6	
Potassium	*	5400			2970	2500 J	3580
Selenium	50	9.7			3.5		
Silver	100	*	1.1 J				
Sodium	160000	18222			2500	5690	4200
Vanadium	49	20 6	0.73 J	0.73 J			1.5
Zinc	5000	4				43.6	
General Chemistry (mg/L)				NA	NA	NA	NA
Total Organic Carbon			34.5				
Total Suspended Solids							

TABLE 4

HISTORICAL DETECTIONS IN GROUNDWATER
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	Screening Criteria[a]		OLD-09-03			
Sample ID			09G00302	NTC09G00311	NTC09G0312	NTC09G0312-D
Lab ID	Florida	NTC	872938	A9H050202001	A9J210231001	A9J210231002
Sample Date	GCTL[b]	BGSV[c]	10/20/97	8/4/99	10/20/99	10/20/99
Semivolatiles/PAHs (µg/L)						
1-Methylnaphthalene	20		NA		NA	NA
2,4,6-Trichlorophenol	3.2					
2,4-Dichlorophenol	0.5					
2,4-Dimethylphenol	140					
2-Methylnaphthalene	20					
2-Methylphenol	35					
4-Methylphenol	4					
Naphthalene	20		1 J			
Phenol	10					
Pesticides/PCBs (µg/L)				(e)		
4,4'-DDD	0.1					
4,4'-DDE	0.1					
4,4'-DDT	0.1		0.0039 J			
Aldrin	0.005					
alpha-BHC	0.2					
alpha-Chlordane[d]	2					
delta-BHC	2.1					
Dieldrin	0.005					
Endosulfan	42					
Endosulfan II[d]	42					
Endosulfan Sulfate	*					
Endrin	2					
Endrin Aldehyde	*					
gamma-BHC (Lindane)	0.2					
gamma-Chlordane[d]	2					
Toxaphene	3					
Herbicides (µg/L)						
2,4 5-TP (Silvex)	50					
2,4-D	70		0.0035 J			
2,4-DB	56		0.17 J			
Dalapon	200					
Dicamba	210					
Dichloroprop	35					
Dinoseb	7					
MCPA	3.5					
MCPP	7					
Pentachlorophenol	1				NA	NA
Inorganics (µg/L)						
Aluminum	200	4067	471	452 J	455	472
Antimony	6	4.1				
Arsenic	50	5				
Barium	2000	31.4	4 J		2.2	2.9
Cadmium	5	5.6				
Calcium	*	36830	10600	11200	11000	11300
Chromium	100	7.8	0.88 J			
Cobalt	420	*				0.82
Copper	1000	5.4		0.96		
Iron	300	1227			131	139
Lead	15	4				
Magnesium	*	4560		2230	2300	2370
Manganese	50	17				
Mercury	2	0.12				
Nickel	100	*				
Potassium	*	5400		3420 J	3650	3770
Selenium	50	9.7				
Silver	100	*				
Sodium	160000	18222		2710	2360	2530
Vanadium	49	20.6				0.7
Zinc	5000	4				
General Chemistry (mg/L)				NA	NA	NA
Total Organic Carbon			47.5			
Total Suspended Solids						

TABLE 4

HISTORICAL DETECTIONS IN GROUNDWATER
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	Screening Criteria[a]		OLD-09-04				
Sample ID			09F00402	09G00402	NTC09G00410	NTC09G00411	NTC09G0412
Lab ID	Florida	NTC	872971	872975	F3846-10	A9H050202003	A9J220158004
Sample Date	GCTL[b]	BGSV[c]	10/21/97	2/12/98	3/13/99	8/4/99	10/21/99
Semivolatiles/PAHs (µg/L)			NA				
1-Methylnaphthalene	20			NA	NA	3.9 J	NA
2,4,6-Trichlorophenol	3.2						
2,4-Dichlorophenol	0.5			2 J			
2,4-Dimethylphenol	140						
2-Methylnaphthalene	20			14 J		2 J	
2-Methylphenol	35						
4-Methylphenol	4						
Naphthalene	20			6 J	3.3 J	0.96 J	
Phenol	10						
Pesticides/PCBs (µg/L)			NA		(e)	(e)	
4,4'-DDD	0.1			0.088 J			
4,4'-DDE	0.1						
4,4'-DDT	0.1						
Aldrin	0.005			0.051 J			
alpha-BHC	0.2						
alpha-Chlordane[d]	2				0.34 J		
delta-BHC	2.1						
Dieldrin	0.005						
Endosulfan	42			0.094 J			
Endosulfan II[d]	42						
Endosulfan Sulfate	*						
Endrin	2						
Endrin Aldehyde	*						
gamma-BHC (Lindane)	0.2			0.011 J			
gamma-Chlordane[d]	2			0.67	0.43 J		
Toxaphene	3						
Herbicides (µg/L)			NA				
2,4 5-TP (Silvex)	50						
2,4-D	70			0.099 J			
2,4-DB	56			1.8 J			
Dalapon	200					9.9 J	
Dicamba	210						0.4 J
Dichloroprop	35						
Dinoseb	7			0.098 J			
MCPA	3.5			3100 J			
MCPP	7			1900 J		170 J	620
Pentachlorophenol	1						0.06 J
Inorganics (µg/L)							
Aluminum	200	4067	373	448	176		253
Antimony	6	4.1	3.5 J				
Arsenic	50	5	232	264	186	1370	850
Barium	2000	31.4	8.6 J	8.6 J		17.8	9.5
Cadmium	5	5.6					
Calcium	*	36830	48000	43800	41600	52100	30800
Chromium	100	7.8	1.7 J	1.6 J			
Cobalt	420	*	0.75 J				
Copper	1000	5.4	42.7	56		4.2	3.2
Iron	300	1227	1380	1290	861	6350	1940
Lead	15	4	4.2	6.1			
Magnesium	*	4560			2020	3000	1980
Manganese	50	17	62.7	63.7	[illegible]	[illegible]	35.3
Mercury	2	0.12	0.12 J	0.11 J			
Nickel	100	*	2 J	2.2 J			
Potassium	*	5400			6680	7490 J	5550
Selenium	50	9.7					
Silver	100	*					
Sodium	160000	18222			1700	1440	678
Vanadium	49	20.6	1.5 J	0.99 J			
Zinc	5000	4					
General Chemistry (mg/L)			NA		NA	NA	NA
Total Organic Carbon				54.6			
Total Suspended Solids							

TABLE 4

HISTORICAL DETECTIONS IN GROUNDWATER
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	Screening Criteria[a]		OLD-09-05				
Sample ID			09G00501	NTC09G00510	NTC09G00510-D	NTC09G00511	NTC09G0512
Lab ID	Florida	NTC	872976	F3849-6	F3849-7	A9H040126007	A9J230148001
Sample Date	GCTL[b]	BGSV[c]	10/21/97	3/15/99	3/15/99	8/3/99	10/22/99
Semivolatiles/PAHs (µg/L)						NA	NA
1-Methylnaphthalene	20		NA	NA	NA		
2,4,6-Trichlorophenol	3.2						
2,4-Dichlorophenol	0.5						
2,4-Dimethylphenol	140						
2-Methylnaphthalene	20						
2-Methylphenol	35						
4-Methylphenol	4						
Naphthalene	20						
Phenol	10						
Pesticides/PCBs (µg/L)				(e)	(e)	(e)	
4,4'-DDD	0.1		0.029 J				
4,4'-DDE	0.1		0.0081 J				
4,4'-DDT	0.1						
Aldrin	0.005						
alpha-BHC	0.2						
alpha-Chlordane[d]	2		0.11 J				
delta-BHC	2.1		0.021 J				
Dieldrin	0.005						
Endosulfan	42						
Endosulfan II[d]	42						
Endosulfan Sulfate	*						
Endrin	2		0.022 J				
Endrin Aldehyde	*						
gamma-BHC (Lindane)	0.2		0.0076 J				
gamma-Chlordane[d]	2		0.17				
Toxaphene	3						
Herbicides (µg/L)							
2,4 5-TP (Silvex)	50						
2,4-D	70		0.11 J				
2,4-DB	56		0.83 J				
Dalapon	200						
Dicamba	210						
Dichloroprop	35						
Dinoseb	7						
MCPA	3.5		2900 J				
MCPP	7		830 J				
Pentachlorophenol	1					NA	
Inorganics (µg/L)							
Aluminum	200	4067	224				
Antimony	6	4.1				3.1	
Arsenic	50	5	613	152	153	475	101
Barium	2000	31.4	7.6 J			8.8	28.1
Cadmium	5	5.6					
Calcium	*	36830	53400	62500 J	64300 J	94500	105000
Chromium	100	7.8	1.4 J				
Cobalt	420	*					
Copper	1000	5.4					
Iron	300	1227	188	962 J	966 J		157
Lead	15	4		1.6	2.1		
Magnesium	*	4560		5080 J	5210 J	5870	6580
Manganese	50	17	11.3 J	27.4 J	27.8 J	12	33.6
Mercury	2	0.12					
Nickel	100	*					
Potassium	*	5400		12100 J	12000 J	8570 J	4610
Selenium	50	9.7					
Silver	100	*					
Sodium	160000	18222		3630	3910	3620	2710
Vanadium	49	20.6	3.4 J				0.59
Zinc	5000	4				55.2	
General Chemistry (mg/L)				NA	NA	NA	NA
Total Organic Carbon			33.1				
Total Suspended Solids							

TABLE 4

HISTORICAL DETECTIONS IN GROUNDWATER
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	Screening Criteria[a]		OLD-09-06				
Sample ID			09F00601	09G00601	NTC09G00610	NTC09G00611	NTC09G0612
Lab ID	Florida	NTC	872655	872659	F3854-1	A9H040126003	A9J230148003
Sample Date	GCTL[b]	BGSV[c]	10/17/97	10/17/97	3/16/99	8/3/99	10/22/99
Semivolatiles/PAHs (µg/L)			NA			NA	NA
1-Methylnaphthalene	20			NA	NA		
2,4,6-Trichlorophenol	3.2						
2,4-Dichlorophenol	0.5						
2,4-Dimethylphenol	140						
2-Methylnaphthalene	20						
2-Methylphenol	35						
4-Methylphenol	4						
Naphthalene	20						
Phenol	10						
Pesticides/PCBs (µg/L)			NA		(e)	(e)	
4,4'-DDD	0.1						
4,4'-DDE	0.1						
4,4'-DDT	0.1			0.0067 J			
Aldrin	0.005						
alpha-BHC	0.2						
alpha-Chlordane[d]	2						
delta-BHC	2.1						
Dieldrin	0.005			0.012 J			
Endosulfan	42						
Endosulfan II[d]	42			0.0093 J			
Endosulfan Sulfate	*						
Endrin	2			0.019 J			
Endrin Aldehyde	*						
gamma-BHC (Lindane)	0.2						
gamma-Chlordane[d]	2			0.03 J			
Toxaphene	3						
Herbicides (µg/L)			NA				
2,4 5-TP (Silvex)	50						
2,4-D	70			0.9 J			
2,4-DB	56						
Dalapon	200						
Dicamba	210						
Dichloroprop	35						120 J
Dinoseb	7						
MCPA	3.5						
MCPP	7						
Pentachlorophenol	1					NA	
Inorganics (µg/L)							
Aluminum	200	4067		538	797		
Antimony	6	4.1	5.1 J				
Arsenic	50	5	51.5	53	54.6	[illegible]	[illegible]
Barium	2000	31.4	13.7 J	9.5 J		11	27.2
Cadmium	5	5.6					
Calcium	*	36830	53400	55000	21000 J	62600	72300
Chromium	100	7.8	0.85 J	1 J			
Cobalt	420	*	1.5 J				
Copper	1000	5.4	6.3 J				
Iron	300	1227	740	638	1120 J	465	797
Lead	15	4					
Magnesium	*	4560			2360 J	3090	2620
Manganese	50	17	39	32.9	39.6 J	35.4	[illegible]
Mercury	2	0.12					
Nickel	100	*	2.7 J				
Potassium	*	5400			2820	3010 J	8440
Selenium	50	9.7					
Silver	100	*	0.95 J				
Sodium	160000	18222			2740	2340	4140
Vanadium	49	20.6	1.7 J	0.86 J			0.92
Zinc	5000	4					
General Chemistry (mg/L)			NA		NA	NA	NA
Total Organic Carbon				24.3			
Total Suspended Solids				20			

TABLE 4

HISTORICAL DETECTIONS IN GROUNDWATER
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	Screening Criteria[a]		OLD-09-07					OLD-09-08	OLD-09-09
Sample ID			09F00701	09G00701	NTC09G00710	NTC09G00711	NTC09G0712	09G00801	09G00901
Lab ID	Florida	NTC	872972	872977	F3854-4	A9H040126001	A9J260203001	873307	873310
Sample Date	GCTL[b]	BGSV[c]	10/21/97	10/21/97	3/16/99	8/3/99	10/23/99	10/24/97	10/24/97
Semivolatiles/PAHs (µg/L)			NA			NA	NA		
1-Methylnaphthalene	20			NA	NA			NA	NA
2,4,6-Trichlorophenol	3.2								
2,4-Dichlorophenol	0.5								
2,4-Dimethylphenol	140								
2-Methylnaphthalene	20								
2-Methylphenol	35								
4-Methylphenol	4								
Naphthalene	20								
Phenol	10								
Pesticides/PCBs (µg/L)			NA		(e)	(e)			
4,4'-DDD	0.1								
4,4'-DDE	0.1								
4,4'-DDT	0.1								
Aldrin	0.005								
alpha-BHC	0.2								
alpha-Chlordane[d]	2								
delta-BHC	2.1								
Dieldrin	0.005								
Endosulfan	42								
Endosulfan II[d]	42								
Endosulfan Sulfate	*								
Endrin	2								
Endrin Aldehyde	*								
gamma-BHC (Lindane)	0.2								
gamma-Chlordane[d]	2								
Toxaphene	3								
Herbicides (µg/L)			NA						
2,4 5-TP (Silvex)	50								
2,4-D	70			0.0047 J				0.21 J	0.24 J
2,4-DB	56			0.18 J					
Dalapon	200								
Dicamba	210					0.87 J			
Dichloroprop	35							0.59 J	0.37 J
Dinoseb	7								0.099 J
MCPA	3.5								
MCPP	7			1100 J		910 J			
Pentachlorophenol	1					NA			
Inorganics (µg/L)									
Aluminum	200	4067	1600	2040	1500	1180 J	547	290	243
Antimony	6	4.1							3.5 J
Arsenic	50	5				5.3	2.3		
Barium	2000	31.4	11.5 J	13.8 J			6.4	12.5 J	
Cadmium	5	5.6							
Calcium	*	36830			10200 J	10200	8760	17900	31100
Chromium	100	7.8	2.6 J	3.7 J		8.6			
Cobalt	420	*		1.1 J					1 J
Copper	1000	5.4				5.1	4.1	0.76 J	2.6 J
Iron	300	1227	1640 J	1670	1840 J		470	1000	200
Lead	15	4					1.4		
Magnesium	*	4560			1760 J	1110	790		
Manganese	50	17	38.4	48.9	19.7 J			[illegible]	3 J
Mercury	2	0.12							
Nickel	100	*	4.9 J	5.4 J		5.8			
Potassium	*	5400			2360	588 J	895		
Selenium	50	9.7							
Silver	100	*							
Sodium	160000	18222			3950	6340	1450		
Vanadium	49	20.6	0.8 J	1.3 J			1.7	0.91 J	1.8 J
Zinc	5000	4				70.4	33 J		
General Chemistry (mg/L)			NA		NA	NA	NA		
Total Organic Carbon				41.1				47.8	62.3
Total Suspended Solids									

TABLE 4

HISTORICAL DETECTIONS IN GROUNDWATER
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	Screening Criteria[a]		OLD-09-10			
Sample ID			09G01001	NTC09G01010	NTC09G01011	NTC09G1012
Lab ID	Florida	NTC	872978	F3849-5	A9H040126008	A9J220158001
Sample Date	GCTL[b]	BGSV[c]	10/21/97	3/15/99	8/3/99	10/21/99
Semivolatiles/PAHs (µg/L)					NA	NA
1-Methylnaphthalene	20		NA	NA		
2,4,6-Trichlorophenol	3.2					
2,4-Dichlorophenol	0.5					
2,4-Dimethylphenol	140					
2-Methylnaphthalene	20					
2-Methylphenol	35					
4-Methylphenol	4					
Naphthalene	20					
Phenol	10					
Pesticides/PCBs (µg/L)				(e)	(e)	
4,4'-DDD	0.1					
4,4'-DDE	0.1					
4,4'-DDT	0.1					
Aldrin	0.005					
alpha-BHC	0.2					
alpha-Chlordane[d]	2					
delta-BHC	2.1					
Dieldrin	0.005					
Endosulfan	42					
Endosulfan II[d]	42					
Endosulfan Sulfate	*					
Endrin	2					
Endrin Aldehyde	*					
gamma-BHC (Lindane)	0.2					
gamma-Chlordane[d]	2					
Toxaphene	3					
Herbicides (µg/L)						
2,4 5-TP (Silvex)	50					
2,4-D	70					
2,4-DB	56		0.14 J			
Dalapon	200					
Dicamba	210					
Dichloroprop	35					
Dinoseb	7					
MCPA	3.5					37 J
MCPP	7					
Pentachlorophenol	1				NA	
Inorganics (µg/L)						
Aluminum	200	4067	212	502		
Antimony	6	4.1				
Arsenic	50	5				
Barium	2000	31.4	5.4 J			24.8
Cadmium	5	5.6				
Calcium	*	36830	33700	23900 J	44700	81800
Chromium	100	7.8	0.91 J			
Cobalt	420	*				
Copper	1000	5.4				
Iron	300	1227	1030	959 J	570	630
Lead	15	4				
Magnesium	*	4560		2690 J	2960	4640
Manganese	50	17	16.7	18.5 J	17.4	18.4
Mercury	2	0.12				
Nickel	100	*				
Potassium	*	5400		3000 J	2100 J	3420
Selenium	50	9.7				
Silver	100	*				
Sodium	160000	18222		2880	4020	3380
Vanadium	49	20.6				0.83
Zinc	5000	4			43.8	83.1
General Chemistry (mg/L)				NA	NA	NA
Total Organic Carbon			28			
Total Suspended Solids						

TABLE 4

HISTORICAL DETECTIONS IN GROUNDWATER
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	Screening Criteria[a]		OLD-09-11				
Sample ID			09G01101	NTC09G01110	NTC09G01111	NTC09G01111-D	NTC09G1112
Lab ID	Florida	NTC	872979	F3854-5	A9H040126004	A9H040126005	A9J210231003
Sample Date	GCTL[b]	BGSV[c]	10/21/97	3/16/99	8/3/99	8/3/99	10/20/99
Semivolatiles/PAHs (µg/L)					NA	NA	NA
1-Methylnaphthalene	20		NA	NA			
2,4,6-Trichlorophenol	3.2						
2,4-Dichlorophenol	0.5						
2,4-Dimethylphenol	140						
2-Methylnaphthalene	20						
2-Methylphenol	35						
4-Methylphenol	4						
Naphthalene	20						
Phenol	10						
Pesticides/PCBs (µg/L)				(e)	(e)	(e)	
4,4'-DDD	0.1						
4,4'-DDE	0.1		0.0051 J				
4,4'-DDT	0.1		0.0092 J				
Aldrin	0.005						
alpha-BHC	0.2		0.0042 J				
alpha-Chlordane[d]	2					0.3 J	0.062 J
delta-BHC	2.1						
Dieldrin	0.005						
Endosulfan	42						
Endosulfan II[d]	42						
Endosulfan Sulfate	*						
Endrin	2						
Endrin Aldehyde	*		0.078 J				
gamma-BHC (Lindane)	0.2		0.034 J	0.40	0.18 J	0.19 J	0.057 J
gamma-Chlordane[d]	2					0.21 J	
Toxaphene	3						
Herbicides (µg/L)							
2,4 5-TP (Silvex)	50						
2,4-D	70		1.4 J				
2,4-DB	56		1 J				
Dalapon	200						
Dicamba	210						
Dichloroprop	35						
Dinoseb	7						
MCPA	3.5						
MCPP	7		1200 J				
Pentachlorophenol	1				NA	NA	NA
Inorganics (µg/L)							
Aluminum	200	4067	539				
Antimony	6	4.1			2.7	4	
Arsenic	50	5	93.9	71.5	180	180	44.9
Barium	2000	31.4	6.8 J		18.1	18	10.5
Cadmium	5	5.6					
Calcium	*	36830	36900	32100 J	55000	54700	70800
Chromium	100	7.8	1 J	43.6	11.4		
Cobalt	420	*					
Copper	1000	5.4					
Iron	300	1227	570	1520 J	1490	1620	833
Lead	15	4					1.9
Magnesium	*	4560		2100 J	2740	2720	3190
Manganese	50	17	11.6 J	[illegible]	22.3	21.5	25.7
Mercury	2	0.12					
Nickel	100	*		24.2	9.2		
Potassium	*	5400		6230	9220 J	9320 J	10200
Selenium	50	9.7					
Silver	100	*					
Sodium	160000	18222		2940	1240	1320	6440
Vanadium	49	20.6					0.99
Zinc	5000	4					
General Chemistry (mg/L)				NA	NA	NA	NA
Total Organic Carbon			36				
Total Suspended Solids			28				

TABLE 4

HISTORICAL DETECTIONS IN GROUNDWATER
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	Screening Criteria[a]		OLD-09-12					
Sample ID			09G01201	NTC09G01210	NTC09G01210-D	NTC09G01211	NTC09G01211-D	NTC09G1212
Lab ID	Florida	NTC	872980	F3854-6	F3854-7	A9H030173002	A9H030173004	A9J230148005
Sample Date	GCTL[b]	BGSV[c]	10/21/97	3/16/99	3/16/99	8/2/99	8/2/99	10/22/99
Semivolatiles/PAHs (µg/L)								
1-Methylnaphthalene	20		NA	NA	NA			NA
2,4,6-Trichlorophenol	3.2		2 J					
2,4-Dichlorophenol	0.5		200	13.2	13.3	45	30	4.9 J
2,4-Dimethylphenol	140							
2-Methylnaphthalene	20							
2-Methylphenol	35							
4-Methylphenol	4							
Naphthalene	20		8 J	4.3 J	3.7 J	2.4	2.4	
Phenol	10							
Pesticides/PCBs (µg/L)				(e)	(e)	(e)	(e)	
4,4'-DDD	0.1							
4,4'-DDE	0.1							
4,4'-DDT	0.1							
Aldrin	0.005							
alpha-BHC	0.2		1 J	24	23	25 J		0.39
alpha-Chlordane[d]	2		0.028 J					
delta-BHC	2.1		0.3					
Dieldrin	0.005							
Endosulfan	42		0.046 J					
Endosulfan II[d]	42							
Endosulfan Sulfate	*							
Endrin	2							
Endrin Aldehyde	*							
gamma-BHC (Lindane)	0.2		0.89	3.0	3.2	1.9 J	1.7 J	0.46
gamma-Chlordane[d]	2		0.013 J					
Toxaphene	3							
Herbicides (µg/L)				NA				
2,4 5-TP (Silvex)	50					1.6 J	1.5 J	
2,4-D	70		110 J			33 J	31 J	
2,4-DB	56							
Dalapon	200						21 J	
Dicamba	210							
Dichloroprop	35							
Dinoseb	7							
MCPA	3.5		750 J					
MCPP	7		1500 J			190 J	220 J	
Pentachlorophenol	1							
Inorganics (µg/L)								
Aluminum	200	4067	1030	1830	1340	1040 J	1710 J	103
Antimony	6	4.1						
Arsenic	50	5	138	135	138	141	147	53.8
Barium	2000	31.4	10.3 J			9.1	13.1	22.4
Cadmium	5	5.6						
Calcium	*	36830	11700	15700 J	15700 J	15900	16500	81100
Chromium	100	7.8	3.3 J					
Cobalt	420	*						0.83
Copper	1000	5.4	6.1 J				3.5	1.7
Iron	300	1227	540	1890 J	786 J	629	762	477
Lead	15	4	1.9 J					
Magnesium	*	4560		2340 J	2340 J	2220	2280	3990
Manganese	50	17	24.9	19.0 J	20.9 J	8.3	10.2	[illegible]
Mercury	2	0.12						
Nickel	100	*	3.4 J					
Potassium	*	5400		11100	11400	13200 J	13200 J	5980
Selenium	50	9.7						
Silver	100	*						
Sodium	160000	18222		2560	2510	2320	5850	1370
Vanadium	49	20.6	0.79 J					1.8
Zinc	5000	4				75.5	92	
General Chemistry (mg/L)				NA	NA	NA	NA	NA
Total Organic Carbon			38.5					
Total Suspended Solids								

TABLE 4

HISTORICAL DETECTIONS IN GROUNDWATER
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	Screening Criteria[a]		OLD-09-13		OLD-09-14				
Sample ID			09G01301	NTC09G01310	09G01401	09G01401D	NTC09G01410	NTC09G01411	NTC09G1412
Lab ID	Florida	NTC	872981	F3854-3	876803	876821	F3849-4	A9H030173001	A9J230148004
Sample Date	GCTL[b]	BGSV[c]	10/21/97	3/16/99	12/4/97	12/4/97	3/15/99	8/1/99	10/22/99
Semivolatiles/PAHs (µg/L)									
1-Methylnaphthalene	20		NA	NA			NA		NA
2,4,6-Trichlorophenol	3.2								
2,4-Dichlorophenol	0.5								
2,4-Dimethylphenol	140								
2-Methylnaphthalene	20								
2-Methylphenol	35								
4-Methylphenol	4								
Naphthalene	20		2 J		180 D		67.5 J	2.1	4.8 J
Phenol	10								
Pesticides/PCBs (µg/L)				(e)			(e)	(e)	
4,4'-DDD	0.1								
4,4'-DDE	0.1								
4,4'-DDT	0.1								
Aldrin	0.005								
alpha-BHC	0.2								
alpha-Chlordane[d]	2								
delta-BHC	2.1								
Dieldrin	0.005								
Endosulfan	42								
Endosulfan II[d]	42								
Endosulfan Sulfate	*								
Endrin	2								
Endrin Aldehyde	*								
gamma-BHC (Lindane)	0.2								
gamma-Chlordane[d]	2								
Toxaphene	3								
Herbicides (µg/L)									
2,4 5-TP (Silvex)	50								
2,4-D	70		0.0012 J		0.26 J				
2,4-DB	56		0.38 J		0.21 J				
Dalapon	200								
Dicamba	210								
Dichloroprop	35								
Dinoseb	7								
MCPA	3.5				890 J	840 J			
MCPP	7								
Pentachlorophenol	1								
Inorganics (µg/L)									
Aluminum	200	4067	353	536	315	294	448		509
Antimony	6	4.1							
Arsenic	50	5							
Barium	2000	31.4	19.7 J		47.2 J	38 J		18.1	25.2
Cadmium	5	5.6							
Calcium	*	36830			105000	80800	12900 J	45800	37600
Chromium	100	7.8	1.3 J						4.6
Cobalt	420	*	0.88 J		1.7 J	2.1 J			
Copper	1000	5.4			4.5 J	5.6 J			
Iron	300	1227	2400	741 J	430	451			786
Lead	15	4					1.6		
Magnesium	*	4560		882 J	9780	7410	1230 J	4620	4000
Manganese	50	17	62.9	29.4 J	[illegible]	[illegible]	27.6 J		[illegible]
Mercury	2	0.12							
Nickel	100	*	3.5 J		9.9 J	9.4 J		5	
Potassium	*	5400						574 J	2340
Selenium	50	9.7							
Silver	100	*							
Sodium	160000	18222		7400			5050	32200	16600
Vanadium	49	20.6	1.3 J		1.6 J	1.6 J			3.1
Zinc	5000	4							
General Chemistry (mg/L)				NA		NA	NA	NA	NA
Total Organic Carbon			10.1		21.2				
Total Suspended Solids					7				

TABLE 4

HISTORICAL DETECTIONS IN GROUNDWATER
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	Screening Criteria[a]		OLD-09-15				
Sample ID			09F01501	09G01501	NTC09G01510	NTC09G01511	NTC09G1512
Lab ID	Florida	NTC	876945	876940	F3846-5	A9H030173003	A9J230148002
Sample Date	GCTL[b]	BGSV[c]	12/5/97	12/5/97	3/13/99	8/2/99	10/22/99
Semivolatiles/PAHs (µg/L)			NA				
1-Methylnaphthalene	20				NA		NA
2,4,6-Trichlorophenol	3.2						
2,4-Dichlorophenol	0.5						
2,4-Dimethylphenol	140						
2-Methylnaphthalene	20						
2-Methylphenol	35						
4-Methylphenol	4						
Naphthalene	20			5 J	11.2	6.7 J	8 J
Phenol	10						
Pesticides/PCBs (µg/L)			NA		(e)	(e)	
4,4'-DDD	0.1						
4,4'-DDE	0.1						
4,4'-DDT	0.1						
Aldrin	0.005						
alpha-BHC	0.2						
alpha-Chlordane[d]	2						
delta-BHC	2.1						
Dieldrin	0.005						
Endosulfan	42						
Endosulfan II[d]	42			0.0075 J			
Endosulfan Sulfate	*						
Endrin	2						
Endrin Aldehyde	*						
gamma-BHC (Lindane)	0.2						
gamma-Chlordane[d]	2						
Toxaphene	3						
Herbicides (µg/L)			NA				
2,4 5-TP (Silvex)	50						
2,4-D	70			0.068 J			
2,4-DB	56			0.18 J			
Dalapon	200						
Dicamba	210						
Dichloroprop	35			0.42 J			
Dinoseb	7						
MCPA	3.5						
MCPP	7						
Pentachlorophenol	1						
Inorganics (µg/L)							
Aluminum	200	4067	872	3260	470		421
Antimony	6	4.1					
Arsenic	50	5					
Barium	2000	31.4	13.3 J	18.3 J			5.3
Cadmium	5	5.6					
Calcium	*	36830	8060	9800			
Chromium	100	7.8					
Cobalt	420	*	0.63 J	0.8 J			
Copper	1000	5.4	4.4 J	7.2 J			
Iron	300	1227	284	374			312
Lead	15	4		2.8 J			
Magnesium	*	4560			807		602
Manganese	50	17	46.4	[illegible]	9.7		
Mercury	2	0.12					
Nickel	100	*	5.6 J	7.5 J			
Potassium	*	5400					
Selenium	50	9.7					
Silver	100	*					
Sodium	160000	18222	7890		6970	5320	5650
Vanadium	49	20.6	0.93 J	1.9 J			0.53
Zinc	5000	4					
General Chemistry (mg/L)			NA		NA	NA	NA
Total Organic Carbon				25.3			
Total Suspended Solids				58			

TABLE 4

HISTORICAL DETECTIONS IN GROUNDWATER
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	Screening Criteria[a]		OLD-09-16				
Sample ID			09F01601	09G01601	NTC09G01610	NTC09G01611	NTC09G1612
Lab ID	Florida	NTC	876946	876941	F3846-6	A9H040126006	A9J220158009
Sample Date	GCTL[b]	BGSV[c]	12/5/97	12/5/97	3/13/99	8/3/99	10/21/99
Semivolatiles/PAHs (µg/L)			NA			NA	NA
1-Methylnaphthalene	20			NA	NA		
2,4,6-Trichlorophenol	3.2						
2,4-Dichlorophenol	0.5						
2,4-Dimethylphenol	140						
2-Methylnaphthalene	20						
2-Methylphenol	35						
4-Methylphenol	4						
Naphthalene	20						
Phenol	10						
Pesticides/PCBs (µg/L)			NA		(e)	(e)	
4,4'-DDD	0.1						
4,4'-DDE	0.1						
4,4'-DDT	0.1						
Aldrin	0.005						
alpha-BHC	0.2						
alpha-Chlordane[d]	2						
delta-BHC	2.1						
Dieldrin	0.005						
Endosulfan	42						
Endosulfan II[d]	42						
Endosulfan Sulfate	*						
Endrin	2						
Endrin Aldehyde	*						
gamma-BHC (Lindane)	0.2						
gamma-Chlordane[d]	2						
Toxaphene	3						
Herbicides (µg/L)			NA				
2,4 5-TP (Silvex)	50						
2,4-D	70						
2,4-DB	56			0.31 J			
Dalapon	200						
Dicamba	210						
Dichloroprop	35			0.36 J			
Dinoseb	7			0.12 J			
MCPA	3.5			920 J			33 J
MCPP	7			0.36 J			
Pentachlorophenol	1					NA	
Inorganics (µg/L)							
Aluminum	200	4067	405	1840	443	1670 J	309
Antimony	6	4.1					
Arsenic	50	5	2.4 J	2.2 J			
Barium	2000	31.4	10.5 J	17.8 J		22.3	12.6
Cadmium	5	5.6					
Calcium	*	36830	13100	15000	5740	8250	4500
Chromium	100	7.8					
Cobalt	420	*	0.75 J	0.55 J			
Copper	1000	5.4	4 J	5.1 J		2.6	
Iron	300	1227		249	51320	637	572
Lead	15	4					
Magnesium	*	4560			750	1220	990
Manganese	50	17	44.5	570.8	1600	41.5	30
Mercury	2	0.12					
Nickel	100	*	3 J	5.1 J		2.8	
Potassium	*	5400			584	586 J	693
Selenium	50	9.7					
Silver	100	*					
Sodium	160000	18222			9040	12000	8620
Vanadium	49	20.6	3.1 J	5.1 J			3.2
Zinc	5000	4				41.5	
General Chemistry (mg/L)			NA		NA	NA	NA
Total Organic Carbon				22			
Total Suspended Solids				4			

TABLE 4

**HISTORICAL DETECTIONS IN GROUNDWATER
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9**

**NAVAL TRAINING CENTER
ORLANDO, FLORIDA**

Well Designation	Screening Criteria[a]		OLD-09-17			OLD-09-18		
Sample ID			09G01701	NTC09G01711	NTC09G1712	09G01801	09G01801D	NTC09G01810
Lab ID	Florida	NTC	882644	A9H040126002	A9J260203002	882638	882641	F3854-2
Sample Date	GCTL[b]	BGSV[c]	2/12/98	8/3/99	10/23/99	2/12/98	2/12/98	3/16/99
Semivolatiles/PAHs (µg/L)			NA	NA	NA	NA	NA	
1-Methylnaphthalene	20							NA
2,4,6-Trichlorophenol	3.2							
2,4-Dichlorophenol	0.5							
2,4-Dimethylphenol	140							
2-Methylnaphthalene	20							
2-Methylphenol	35							
4-Methylphenol	4							
Naphthalene	20							
Phenol	10							
Pesticides/PCBs (µg/L)			NA	(e)		NA	NA	(e)
4,4'-DDD	0.1							
4,4'-DDE	0.1							
4,4'-DDT	0.1							
Aldrin	0.005							
alpha-BHC	0.2							
alpha-Chlordane[d]	2							
delta-BHC	2.1							
Dieldrin	0.005							
Endosulfan	42							
Endosulfan II[d]	42							
Endosulfan Sulfate	*							
Endrin	2							
Endrin Aldehyde	*							
gamma-BHC (Lindane)	0.2							
gamma-Chlordane[d]	2							
Toxaphene	3							
Herbicides (µg/L)								
2,4 5-TP (Silvex)	50							
2,4-D	70		0.32 J					
2,4-DB	56		0.55 J					
Dalapon	200		0.69 J			0.3 J		
Dicamba	210							
Dichloroprop	35		0.29 J			0.24 J	0.12 J	
Dinoseb	7							
MCPA	3.5		680 J			630 J	460 J	
MCPP	7				74 J			
Pentachlorophenol	1							
Inorganics (µg/L)								
Aluminum	200	4067	349			567	667	2180
Antimony	6	4.1						
Arsenic	50	5	4.3 J	8.3	5.4			
Barium	2000	31.4			19.4	20.8 J	23.4 J	
Cadmium	5	5.6						
Calcium	*	36830		42500	74000			
Chromium	100	7.8				1.5 J	1.9 J	
Cobalt	420	*						
Copper	1000	5.4		1.3	1.8			
Iron	300	1227	53.6 J			[illegible]	[illegible]	753 J
Lead	15	4						
Magnesium	*	4560			821			997 J
Manganese	50	17						
Mercury	2	0.12						
Nickel	100	*	1.4 J	1.7				
Potassium	*	5400		2950 J	554			
Selenium	50	9.7						
Silver	100	*						
Sodium	160000	18222		1300				7670
Vanadium	49	20.6	4.3 J	8.9	4.8	1.6 J	1.6 J	
Zinc	5000	4						
General Chemistry (mg/L)			NA	NA	NA			NA
Total Organic Carbon						7.05	5.94	
Total Suspended Solids								

TABLE 4

HISTORICAL DETECTIONS IN GROUNDWATER
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	Screening Criteria[a]		OLD-09-19	
Sample ID			NTC09G01911	NTC09G1912
Lab ID	Florida	NTC	A9H050202004	A9J300126002
Sample Date	GCTL[b]	BGSV[c]	8/4/99	10/27/99
Semivolatiles/PAHs (µg/L)				
1-Methylnaphthalene	20			NA
2,4,6-Trichlorophenol	3.2			
2,4-Dichlorophenol	0.5			
2,4-Dimethylphenol	140			
2-Methylnaphthalene	20			
2-Methylphenol	35			
4-Methylphenol	4			
Naphthalene	20			
Phenol	10			
Pesticides/PCBs (µg/L)			(e)	NA
4,4'-DDD	0.1			
4,4'-DDE	0.1			
4,4'-DDT	0.1			
Aldrin	0.005			
alpha-BHC	0.2			
alpha-Chlordane[d]	2			
delta-BHC	2.1			
Dieldrin	0.005			
Endosulfan	42			
Endosulfan II[d]	42			
Endosulfan Sulfate	*			
Endrin	2			
Endrin Aldehyde	*			
gamma-BHC (Lindane)	0.2			
gamma-Chlordane[d]	2			
Toxaphene	3			
Herbicides (µg/L)				
2,4 5-TP (Silvex)	50			
2,4-D	70			
2,4-DB	56			
Dalapon	200			
Dicamba	210			
Dichloroprop	35			
Dinoseb	7			
MCPA	3.5			
MCPP	7			
Pentachlorophenol	1			
Inorganics (µg/L)				
Aluminum	200	4067	7740	402
Antimony	6	4.1	17.7	
Arsenic	50	5		
Barium	2000	31.4	51.5	18.1 J
Cadmium	5	5.6		
Calcium	*	36830	51600	29300
Chromium	100	7.8	3.4	1.4
Cobalt	420	*		
Copper	1000	5.4	6.6	
Iron	300	1227	1290	645
Lead	15	4		
Magnesium	*	4560	1660	3210
Manganese	50	17		37.9
Mercury	2	0.12		
Nickel	100	*		1.7
Potassium	*	5400		1600
Selenium	50	9.7		
Silver	100	*		
Sodium	160000	18222	8260	7080
Vanadium	49	20.6		5.1
Zinc	5000	4		
General Chemistry (mg/L)			NA	NA
Total Organic Carbon				
Total Suspended Solids				

TABLE 4

HISTORICAL DETECTIONS IN GROUNDWATER
OPERABLE UNIT 3 – STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Notes:

* Indicates that the screening value is not available.
"D" qualifier indicates the reported value is from a dilution.
"J" qualifier indicates an estimated value.
Empty cells indicate non-detects.
NA Not analyzed.
Only chemicals detected in at least one sample are shown.
Values in shaded cells are equal to or exceed the screening criteria.

(a) For an organic analyte, the screening criterion is the GCTL; for an inorganic analyte with an established GCTL and BGSV, the screening criterion is the greater of the GCTL or the BGSV.
(b) Groundwater Cleanup Target Level (Development of Soil Cleanup Target Levels (SCTLs) for Chapter 62-777, F.A.C., May 26, 1999).
(c) Background Screening Value (Background Sampling Report for NTC, Orlando, Florida; ABB Environmental Services, August 1995) for inorganics only.
(d) Screening Criteria Substitution – Chlordane for alpha-Chlordane and gamma-Chlordane, and Endosulfan for Endosulfan II.
(e) PCBs not analyzed for.

TABLE 5

VALIDATED GROUNDWATER ANALYTICAL RESULTS - OCTOBER 1999
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION		Screening Criteria (a)		OLD-08-01	OLD-08-02	OLD-08-03	OLD-08-04	OLD-08-05	
SAMPLE ID		Florida	NTC	NTC08G0112	NTC08G0212	NTC08G0312	NTC08G0412	NTC08G0512	NTC08G0512-D
LAB ID	CAS Number	GCTL (b)	BGSV (c)	A9J210106004	A9J210106003	A9J210106007	A9J210106005	A9J220158007	A9J220158008
SAMPLE DATE				10/19/99	10/19/99	10/19/99	10/19/99	10/21/99	10/21/99
Semivolatiles (µg/L)									
1,2,4-Trichlorobenzene	120-82-1	70		NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	95-50-1	600		NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	541-73-1	10		NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	106-46-7	75		NA	NA	NA	NA	NA	NA
2,2'-Oxybis (1-Chloropropane)	108-60-1	10		NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	4		NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	88-06-2	3.2		NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	120-83-2	0.5		NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	140		NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	51-28-5	14		NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	121-14-2	0.1		NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	606-20-2	0.1		NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	91-58-7	560		NA	NA	NA	NA	NA	NA
2-Chlorophenol	95-57-8	35		NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	20		NA	NA	NA	NA	NA	NA
2-Methylphenol	95-48-7	35		NA	NA	NA	NA	NA	NA
2-Nitroaniline	88-74-4	50		NA	NA	NA	NA	NA	NA
2-Nitrophenol	88-75-5	*		NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	91-94-1	12		NA	NA	NA	NA	NA	NA
3-Nitroaniline	99-09-2	50		NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-Methylphenol	534-52-1	*		NA	NA	NA	NA	NA	NA
4-Bromophenyl Phenyl Ether	101-55-3	406		NA	NA	NA	NA	NA	NA
4-Chloro-3-Methylphenol	59-50-7	63		NA	NA	NA	NA	NA	NA
4-Chloroaniline	106-47-8	28		NA	NA	NA	NA	NA	NA
4-Chlorophenyl Phenyl Ether	7005-72-3	*		NA	NA	NA	NA	NA	NA
4-Methylphenol	106-44-5	4		NA	NA	NA	NA	NA	NA
4-Nitroaniline	100-01-6	21		NA	NA	NA	NA	NA	NA
4-Nitrophenol	100-02-7	56		NA	NA	NA	NA	NA	NA
Bis(2-Chloroethoxy)Methane	111-91-1	*		NA	NA	NA	NA	NA	NA
Bis(2-Chloroethyl)Ether	111-44-4	4		NA	NA	NA	NA	NA	NA
Bis(2-Chloroisopropyl)Ether	108-60-1	10		NA	NA	NA	NA	NA	NA
Bis(2-Ethylhexyl)Phthalate	117-81-7	6		NA	NA	NA	NA	NA	NA
Butylbenzyl Phthalate	85-68-7	140		NA	NA	NA	NA	NA	NA
Carbazole	86-74-8	4		NA	NA	NA	NA	NA	NA
Di-N-Butyl Phthalate	84-74-2	700		NA	NA	NA	NA	NA	NA
Di-N-Octyl Phthalate	117-84-0	140		NA	NA	NA	NA	NA	NA
Dibenzofuran	132-64-9	28		NA	NA	NA	NA	NA	NA
Diethyl Phthalate	84-66-2	5600		NA	NA	NA	NA	NA	NA
Dimethyl Phthalate	131-11-3	70000		NA	NA	NA	NA	NA	NA
Hexachlorobenzene	118-74-1	1		NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	87-68-3	0.5		NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	77-47-4	50		NA	NA	NA	NA	NA	NA
Hexachloroethane	67-72-1	2.5		NA	NA	NA	NA	NA	NA
Isophorone	78-59-1	37		NA	NA	NA	NA	NA	NA
N-Nitroso-Di-N-Propylamine	621-64-7	4		NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	86-30-6	7.1		NA	NA	NA	NA	NA	NA
Nitrobenzene	98-95-3	4		NA	NA	NA	NA	NA	NA
Pentachlorophenol	87-86-5	1		NA	NA	NA	NA	NA	NA
Phenol	108-95-2	10		NA	NA	NA	NA	NA	NA
PAHs (µg/L)									
1-Methylnaphthalene	90-12-0	20		NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	20		NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	20		NA	NA	NA	NA	NA	NA
Acenaphthylene	208-96-8	210		NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	2100		NA	NA	NA	NA	NA	NA
Benzo(a)Anthracene	56-55-3	0.2		NA	NA	NA	NA	NA	NA
Benzo(a)Pyrene	50-32-8	0.2		NA	NA	NA	NA	NA	NA
Benzo(b)Fluoranthene	205-99-2	0.2		NA	NA	NA	NA	NA	NA
Benzo(g,h,i)Perylene	191-24-2	210		NA	NA	NA	NA	NA	NA
Benzo(k)Fluoranthene	207-08-9	0.5		NA	NA	NA	NA	NA	NA
Chrysene	218-01-9	4.8		NA	NA	NA	NA	NA	NA
Dibenzo(a,h)Anthracene	53-70-3	0.2		NA	NA	NA	NA	NA	NA
Fluoranthene	206-44-0	280		NA	NA	NA	NA	NA	NA
Fluorene	86-73-7	280		NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)Pyrene	193-39-5	0.2		NA	NA	NA	NA	NA	NA
Naphthalene	91-20-3	20		NA	NA	NA	NA	NA	NA
Phenanthrene	85-01-8	210		NA	NA	NA	NA	NA	NA
Pyrene	129-00-0	210		NA	NA	NA	NA	NA	NA

TABLE 5

VALIDATED GROUNDWATER ANALYTICAL RESULTS - OCTOBER 1999
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION		Screening Criteria [a]		OLD-08-01	OLD-08-02	OLD-08-03	OLD-08-04	OLD-08-05	
SAMPLE ID		Florida	NTC	NTC08G0112	NTC08G0212	NTC08G0312	NTC08G0412	NTC08G0512	NTC08G0512-D
LAB ID	CAS Number	GCTL[b]	BGSV[c]	A9J210106004	A9J210106003	A9J210106007	A9J210106005	A9J220158007	A9J220158008
SAMPLE DATE				10/19/99	10/19/99	10/19/99	10/19/99	10/21/99	10/21/99
Pesticides (µg/L)									
4,4'-DDD	72-54-8	0.1		NA	NA	NA	NA	NA	NA
4,4'-DDE	72-55-9	0.1		NA	NA	NA	NA	NA	NA
4,4'-DDT	50-29-3	0.1		NA	NA	NA	NA	NA	NA
Aldrin	309-00-2	0.005		NA	NA	NA	NA	NA	NA
alpha-BHC	319-84-6	0.2		NA	NA	NA	NA	NA	NA
alpha-Chlordane[d]	5103-71-9	2		NA	NA	NA	NA	NA	NA
Beta-BHC	319-85-7	0.02		NA	NA	NA	NA	NA	NA
Delta-BHC	319-86-8	2.1		NA	NA	NA	NA	NA	NA
Dieldrin	60-57-1	0.005		NA	NA	NA	NA	NA	NA
Endosulfan	115-29-7	42		NA	NA	NA	NA	NA	NA
Endosulfan II[d]	33213-65-9	42		NA	NA	NA	NA	NA	NA
Endosulfan Sulfate	1031-07-8	*		NA	NA	NA	NA	NA	NA
Endrin	72-20-8	2		NA	NA	NA	NA	NA	NA
Endrin Aldehyde	7421-93-4	*		NA	NA	NA	NA	NA	NA
Endrin Ketone	53494-70-5	*		NA	NA	NA	NA	NA	NA
gamma-BHC (Lindane)	58-89-9	0.2		NA	NA	NA	NA	NA	NA
gamma-Chlordane[d]	12789-03-6	2		NA	NA	NA	NA	NA	NA
Heptachlor	76-44-8	0.4		NA	NA	NA	NA	NA	NA
Heptachlor Epoxide	1024-57-3	0.2		NA	NA	NA	NA	NA	NA
Methoxychlor	72-43-5	40		NA	NA	NA	NA	NA	NA
Toxaphene	8001-35-2	3		NA	NA	NA	NA	NA	NA
Herbicides (µg/L)									
2,4,5-TP (Silvex)	93-72-1	50		NA	NA	NA	NA	NA	NA
2,4,5-T	93-76-5	70		NA	NA	NA	NA	NA	NA
2,4-D	94-75-7	70		NA	NA	NA	NA	NA	NA
2,4-DB	94-82-6	56		NA	NA	NA	NA	NA	NA
Dalapon	75-99-0	200		NA	NA	NA	NA	NA	NA
Dicamba	1918-00-9	210		NA	NA	NA	NA	NA	NA
Dichloroprop	120-36-5	35		NA	NA	NA	NA	NA	NA
Dinoseb	88-85-7	7		NA	NA	NA	NA	NA	NA
MCPA	94-74-6	3.5		NA	NA	NA	NA	NA	NA
MCPP	7085-19-0	7		NA	NA	NA	NA	NA	NA
Pentachlorophenol	87-86-5	1		NA	NA	NA	NA	NA	NA
Inorganics (µg/L)									
Aluminum	7429-90-5	200	4067	156	515	721	261	289	276
Antimony	7440-36-0	6	4.1	7.4	8	13.8	3.6	2.6 U	2.6 U
Arsenic	7440-38-2	50	5	229	581	810	381	54	55.3
Barium	7440-39-3	2000	31.4	11.9	36	51.6	8.4	7.7	8.1
Beryllium	7440-41-7	4	*	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Cadmium	7440-43-9	5	5.6	0.2 U	0.23	0.2 U	0.44	0.42	0.39
Calcium	7440-70-2	*	36830	56300	81600	89600	59000	17800	18200
Chromium	7440-47-3	100	7.8	3.6	2.4	4.5	4.1	10.1	10.7
Cobalt	7440-48-4	420	*	0.7 U	0.7 U	1.3	0.7 U	0.7 U	0.7 U
Copper	7440-50-8	1000	5.4	5.2	6.7	2.9	11.1	30.8	29.2
Iron	7439-89-6	300	1227	98.3 U	332	201	27.5 U	590	583
Lead	7439-92-1	15	4	1.5 U	3.2	1.5 U	1.5 U	35.7	[illegible]
Magnesium	7439-95-4	*	4560	4510	5550	8120	6740	1510	1550
Manganese	7439965	50	17	21.8	27.2	55.4	39.2	25.2	25.5
Mercury	7439-97-6	2	0.12	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	7440-02-0	100	*	2.2 U	2.1 U	27.4	6.8 U	5.2 U	4.2 U
Potassium	7440-09-7	*	5400	12600	11000	20900	19500	3100	3240
Selenium	7782-49-2	50	9.7	5.6 U	4.7 U	4.7 U	4.7 U	4.7 U	4.7 U
Silver	7440-22-4	100	*	1.6 U	1.6 U	1.6 U	1.6 U	1.7	1.8
Sodium	7440-23-5	160000	18222	3560	8220	5970	4370	1220	1290
Thallium	7440-28-0	2	3.8	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
Vanadium	7440-62-2	49	20.6	2.3	1	1.2	3.1	4.3	4.2
Zinc	7440-66-6	5000	4	49.2 U	131	581	310	66.1 U	67.8 U

TABLE 5

VALIDATED GROUNDWATER ANALYTICAL RESULTS - OCTOBER 1999
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION		Screening Criteria [a]		OLD-08-06	OLD-08-08	OLD-08-10	OLD-08-11	OLD-08-13	OLD-08-14	OLD-08-15
SAMPLE ID		Florida	NTC	NTC08G0612	NTC08G0812	NTC08G1012	NTC08G1112	NTC08G1312	NTC08G1412	NTC08G1512
LAB ID	CAS Number	GCTL [b]	BGSV [c]	A9J210106008	A9J210106002	A9J220158006	A9J210106006	A9J220158005	A9J210231004	A9J210231006
SAMPLE DATE				10/19/99	10/19/99	10/21/99	10/19/99	10/21/99	10/20/99	10/20/99
Semivolatiles (µg/L)										
1,2,4-Trichlorobenzene	120-82-1	70		NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	95-50-1	600		NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	541-73-1	10		NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	106-46-7	75		NA	NA	NA	NA	NA	NA	NA
2,2'-Oxybis (1-Chloropropane)	108-60-1	10		NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	4		NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	88-06-2	3.2		NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	120-83-2	0.5		NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	140		NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	51-28-5	14		NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	121-14-2	0.1		NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	606-20-2	0.1		NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	91-58-7	560		NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	95-57-8	35		NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	20		NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	95-48-7	35		NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	88-74-4	50		NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	88-75-5	*		NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	91-94-1	12		NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	99-09-2	50		NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-Methylphenol	534-52-1	*		NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl Phenyl Ether	101-55-3	406		NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-Methylphenol	59-50-7	63		NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	106-47-8	28		NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl Phenyl Ether	7005-72-3	*		NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	106-44-5	4		NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	100-01-6	21		NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	100-02-7	56		NA	NA	NA	NA	NA	NA	NA
Bis(2-Chloroethoxy)Methane	111-91-1	*		NA	NA	NA	NA	NA	NA	NA
Bis(2-Chloroethyl)Ether	111-44-4	4		NA	NA	NA	NA	NA	NA	NA
Bis(2-Chloroisopropyl)Ether	108-60-1	10		NA	NA	NA	NA	NA	NA	NA
Bis(2-Ethylhexyl)Phthalate	117-81-7	6		NA	NA	NA	NA	NA	NA	NA
Butylbenzyl Phthalate	85-68-7	140		NA	NA	NA	NA	NA	NA	NA
Carbazole	86-74-8	4		NA	NA	NA	NA	NA	NA	NA
Di-N-Butyl Phthalate	84-74-2	700		NA	NA	NA	NA	NA	NA	NA
Di-N-Octyl Phthalate	117-84-0	140		NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	132-64-9	28		NA	NA	NA	NA	NA	NA	NA
Diethyl Phthalate	84-66-2	5600		NA	NA	NA	NA	NA	NA	NA
Dimethyl Phthalate	131-11-3	70000		NA	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	118-74-1	1		NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	87-68-3	0.5		NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	77-47-4	50		NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	67-72-1	2.5		NA	NA	NA	NA	NA	NA	NA
Isophorone	78-59-1	37		NA	NA	NA	NA	NA	NA	NA
N-Nitroso-Di-N-Propylamine	621-64-7	4		NA	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	86-30-6	7.1		NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	98-95-3	4		NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	87-86-5	1		NA	NA	NA	NA	NA	NA	NA
Phenol	108-95-2	10		NA	NA	NA	NA	NA	NA	NA
PAHs (µg/L)										
1-Methylnaphthalene	90-12-0	20		NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	20		NA	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	20		NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	208-96-8	210		NA	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	2100		NA	NA	NA	NA	NA	NA	NA
Benzo(a)Anthracene	56-55-3	0.2		NA	NA	NA	NA	NA	NA	NA
Benzo(a)Pyrene	50-32-8	0.2		NA	NA	NA	NA	NA	NA	NA
Benzo(b)Fluoranthene	205-99-2	0.2		NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)Perylene	191-24-2	210		NA	NA	NA	NA	NA	NA	NA
Benzo(k)Fluoranthene	207-08-9	0.5		NA	NA	NA	NA	NA	NA	NA
Chrysene	218-01-9	4.8		NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)Anthracene	53-70-3	0.2		NA	NA	NA	NA	NA	NA	NA
Fluoranthene	206-44-0	280		NA	NA	NA	NA	NA	NA	NA
Fluorene	86-73-7	280		NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)Pyrene	193-39-5	0.2		NA	NA	NA	NA	NA	NA	NA
Naphthalene	91-20-3	20		NA	NA	NA	NA	NA	NA	NA
Phenanthrene	85-01-8	210		NA	NA	NA	NA	NA	NA	NA
Pyrene	129-00-0	210		NA	NA	NA	NA	NA	NA	NA

TABLE 5

VALIDATED GROUNDWATER ANALYTICAL RESULTS - OCTOBER 1999
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION		Screening Criteria [a]		OLD-08-06	OLD-08-08	OLD-08-10	OLD-08-11	OLD-08-13	OLD-08-14	OLD-08-15
SAMPLE ID		Florida	NTC	NTC08G0612	NTC08G0812	NTC08G1012	NTC08G1112	NTC08G1312	NTC08G1412	NTC08G1512
LAB ID	CAS Number	GCTL[b]	BGSV[c]	A9J210106008	A9J210106002	A9J220158006	A9J210106006	A9J220158005	A9J210231004	A9J210231006
SAMPLE DATE				10/19/99	10/19/99	10/21/99	10/19/99	10/21/99	10/20/99	10/20/99
Pesticides (µg/L)										
4,4'-DDD	72-54-8	0.1		NA	NA	NA	NA	NA	NA	NA
4,4'-DDE	72-55-9	0.1		NA	NA	NA	NA	NA	NA	NA
4,4'-DDT	50-29-3	0.1		NA	NA	NA	NA	NA	NA	NA
Aldrin	309-00-2	0.005		NA	NA	NA	NA	NA	NA	NA
alpha-BHC	319-84-6	0.2		NA	NA	NA	NA	NA	NA	NA
alpha-Chlordane[d]	5103-71-9	2		NA	NA	NA	NA	NA	NA	NA
Beta-BHC	319-85-7	0.02		NA	NA	NA	NA	NA	NA	NA
Delta-BHC	319-86-8	2.1		NA	NA	NA	NA	NA	NA	NA
Dieldrin	60-57-1	0.005		NA	NA	NA	NA	NA	NA	NA
Endosulfan	115-29-7	42		NA	NA	NA	NA	NA	NA	NA
Endosulfan II[e]	33213-65-9	42		NA	NA	NA	NA	NA	NA	NA
Endosulfan Sulfate	1031-07-8	*		NA	NA	NA	NA	NA	NA	NA
Endrin	72-20-8	2		NA	NA	NA	NA	NA	NA	NA
Endrin Aldehyde	7421-93-4	*		NA	NA	NA	NA	NA	NA	NA
Endrin Ketone	53494-70-5	*		NA	NA	NA	NA	NA	NA	NA
gamma-BHC (Lindane)	58-89-9	0.2		NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane[d]	12789-03-6	2		NA	NA	NA	NA	NA	NA	NA
Heptachlor	76-44-8	0.4		NA	NA	NA	NA	NA	NA	NA
Heptachlor Epoxide	1024-57-3	0.2		NA	NA	NA	NA	NA	NA	NA
Methoxychlor	72-43-5	40		NA	NA	NA	NA	NA	NA	NA
Toxaphene	8001-35-2	3		NA	NA	NA	NA	NA	NA	NA
Herbicides (µg/L)										
2,4,5-TP (Silvex)	93-72-1	50		NA	1 U	1 U	1 U	NA	1 U	1 U
2,4,5-T	93-76-5	70		NA	1 U	1 U	1 U	NA	1 UJ	1 UJ
2,4-D	94-75-7	70		NA	4 U	4 U	4 U	NA	4 U	4 U
2,4-DB	94-82-6	56		NA	4 U	4 U	4 U	NA	4 U	4 U
Dalapon	75-99-0	200		NA	23 U	29 U	49 U	NA	32 U	2 UJ
Dicamba	1918-00-9	210		NA	2 U	2 U	1.3 J	NA	2 U	2 U
Dichloroprop	120-36-5	35		NA	4 U	4 U	4 U	NA	4 U	4 U
Dinoseb	88-85-7	7		NA	0.6 U	0.6 U	0.6 U	NA	0.6 U	0.6 U
MCPA	94-74-6	3.5		NA	400 UJ	400 U	400 UJ	NA	400 UJ	400 UJ
MCPP	7085-19-0	7		NA	400 UJ	400 U	400 UJ	NA	400 UJ	400 UJ
Pentachlorophenol	87-86-5	1		NA	NA	0.1 U	NA	NA	NA	NA
Inorganics (µg/L)										
Aluminum	7429-90-5	200	4067	94.6	73.6 U	73.6 U	404	447	2230	4010
Antimony	7440-36-0	6	4.1	2.6 U	10.1	2.6 U	2.6 U	2.6 U	11.2	4.9
Arsenic	7440-38-2	50	5	71.8	194	276	114	30.7	224	14.7
Barium	7440-39-3	2000	31.4	7.4	37.3	9.7	3.8	16.6	20.7	7.3
Beryllium	7440-41-7	4	*	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Cadmium	7440-43-9	5	5.6	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.96	0.2 U
Calcium	7440-70-2	*	36830	30800	116000	53500	34100	14000	30500	7510
Chromium	7440-47-3	100	7.8	4.9	1.6 U	1.6 U	3.6	1.6 U	6.7	2.1
Cobalt	7440-48-4	420	*	0.7 U	0.7 U	0.7 U	0.7 U	0.96	2.2	0.7 U
Copper	7440-50-8	1000	5.4	4.6	1.1 U	1.1 U	1.1 U	1.1 U	56.5	6.7
Iron	7439-89-6	300	1227	185	109 U	120	83.8 U	2160	10600	652
Lead	7439-92-1	15	4	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	[illegible]	[illegible]
Magnesium	7439-95-4	*	4560	2030	4600	4740	2740	3140	6670	3250
Manganese	7439965	50	17	11.7	8.8 U	29.3	4 U	[illegible]	[illegible]	9.4 U
Mercury	7439-97-6	2	0.12	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	7440-02-0	100	*	3.2 U	3 U	1.4 U	1.8 U	2.2 U	85	3.4 U
Potassium	7440-09-7	*	5400	3270	11100	2680	6990	669	4070	3860
Selenium	7782-49-2	50	9.7	4.7 U	4.7 U	4.7 U	4.7 U	4.7 U	5.4 U	4.7 U
Silver	7440-22-4	100	*	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	2.4	1.6 U
Sodium	7440-23-5	160000	18222	1200	4830	2750	5570	7200	31200	40900
Thallium	7440-28-0	2	3.8	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
Vanadium	7440-62-2	49	20.6	3.7	0.62	0.5 U	0.5 U	0.72	7	3
Zinc	7440-66-6	5000	4	43.4 U	12.6 U	7 U	15.1 U	9.6 U	341	47.3 U

TABLE 5

VALIDATED GROUNDWATER ANALYTICAL RESULTS - OCTOBER 1999
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION		Screening Criteria [a]		OLD-08-17	OLD-08-18	OLD-09-01	OLD-09-01	OLD-09-02	OLD-09-03	OLD-09-03
SAMPLE ID		Florida	NTC	NTC08G1712	NTC08G1812	NTC09G0112	NTC09G0112-D	NTC09G0212	NTC09G0312	NTC09G0312-D
LAB ID	CAS Number	GCTL [b]	BGSV [c]	A9J210106001	A9J210231005	A9J220158002	A9J220158003	A9J230148006	A9J210231001	A9J210231002
SAMPLE DATE				10/19/99	10/20/99	10/21/99	10/21/99	10/22/99	10/20/99	10/20/99
Semivolatiles (µg/L)										
1,2,4-Trichlorobenzene	120-82-1	70		NA	NA	NA	NA	NA	10 U	10 U
1,2-Dichlorobenzene	95-50-1	600		NA	NA	NA	NA	NA	10 U	10 U
1,3-Dichlorobenzene	541-73-1	10		NA	NA	NA	NA	NA	10 U	10 U
1,4-Dichlorobenzene	106-46-7	75		NA	NA	NA	NA	NA	10 U	10 U
2,2'-Oxybis (1-Chloropropane)	108-60-1	10		NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	4		NA	NA	NA	NA	NA	10 U	10 U
2,4,6-Trichlorophenol	88-06-2	3.2		NA	NA	NA	NA	NA	10 U	10 U
2,4-Dichlorophenol	120-83-2	0.5		NA	NA	NA	NA	NA	10 U	10 U
2,4-Dimethylphenol	105-67-9	140		NA	NA	NA	NA	NA	10 U	10 U
2,4-Dinitrophenol	51-28-5	14		NA	NA	NA	NA	NA	25 U	25 U
2,4-Dinitrotoluene	121-14-2	0.1		NA	NA	NA	NA	NA	10 U	10 U
2,6-Dinitrotoluene	606-20-2	0.1		NA	NA	NA	NA	NA	10 U	10 U
2-Chloronaphthalene	91-58-7	560		NA	NA	NA	NA	NA	10 U	10 U
2-Chlorophenol	95-57-8	35		NA	NA	NA	NA	NA	10 U	10 U
2-Methylnaphthalene	91-57-6	20		NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	95-48-7	35		NA	NA	NA	NA	NA	10 U	10 U
2-Nitroaniline	88-74-4	50		NA	NA	NA	NA	NA	25 U	25 U
2-Nitrophenol	88-75-5	*		NA	NA	NA	NA	NA	10 U	10 U
3,3'-Dichlorobenzidine	91-94-1	12		NA	NA	NA	NA	NA	10 U	10 U
3-Nitroaniline	99-09-2	50		NA	NA	NA	NA	NA	25 U	25 U
4,6-Dinitro-2-Methylphenol	534-52-1	*		NA	NA	NA	NA	NA	25 U	25 U
4-Bromophenyl Phenyl Ether	101-55-3	406		NA	NA	NA	NA	NA	10 U	10 U
4-Chloro-3-Methylphenol	59-50-7	63		NA	NA	NA	NA	NA	10 U	10 U
4-Chloroaniline	106-47-8	28		NA	NA	NA	NA	NA	10 U	10 U
4-Chlorophenyl Phenyl Ether	7005-72-3	*		NA	NA	NA	NA	NA	10 U	10 U
4-Methylphenol	106-44-5	4		NA	NA	NA	NA	NA	10 U	10 U
4-Nitroaniline	100-01-6	21		NA	NA	NA	NA	NA	25 U	25 U
4-Nitrophenol	100-02-7	56		NA	NA	NA	NA	NA	25 U	25 U
Bis(2-Chloroethoxy)Methane	111-91-1	*		NA	NA	NA	NA	NA	10 U	10 U
Bis(2-Chloroethyl)Ether	111-44-4	4		NA	NA	NA	NA	NA	10 U	10 U
Bis(2-Chloroisopropyl)Ether	108-60-1	10		NA	NA	NA	NA	NA	10 U	10 U
Bis(2-Ethylhexyl)Phthalate	117-81-7	6		NA	NA	NA	NA	NA	11 U	10 U
Butylbenzyl Phthalate	85-68-7	140		NA	NA	NA	NA	NA	10 U	10 U
Carbazole	86-74-8	4		NA	NA	NA	NA	NA	10 U	10 U
Di-N-Butyl Phthalate	84-74-2	700		NA	NA	NA	NA	NA	10 U	10 U
Di-N-Octyl Phthalate	117-84-0	140		NA	NA	NA	NA	NA	10 U	10 U
Dibenzofuran	132-64-9	28		NA	NA	NA	NA	NA	10 U	10 U
Diethyl Phthalate	84-66-2	5600		NA	NA	NA	NA	NA	10 U	10 U
Dimethyl Phthalate	131-11-3	70000		NA	NA	NA	NA	NA	10 U	10 U
Hexachlorobenzene	118-74-1	1		NA	NA	NA	NA	NA	10 U	10 U
Hexachlorobutadiene	87-68-3	0.5		NA	NA	NA	NA	NA	10 U	10 U
Hexachlorocyclopentadiene	77-47-4	50		NA	NA	NA	NA	NA	10 UJ	10 UJ
Hexachloroethane	67-72-1	2.5		NA	NA	NA	NA	NA	10 U	10 U
Isophorone	78-59-1	37		NA	NA	NA	NA	NA	10 U	10 U
N-Nitroso-Di-N-Propylamine	621-64-7	4		NA	NA	NA	NA	NA	10 U	10 U
N-Nitrosodiphenylamine	86-30-6	7.1		NA	NA	NA	NA	NA	10 U	10 U
Nitrobenzene	98-95-3	4		NA	NA	NA	NA	NA	10 U	10 U
Pentachlorophenol	87-86-5	1		NA	NA	NA	NA	NA	25 U	25 U
Phenol	108-95-2	10		NA	NA	NA	NA	NA	10 U	10 U
PAHs (µg/L)										
1-Methylnaphthalene	90-12-0	20		NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	20		NA	NA	NA	NA	NA	10 U	10 U
Acenaphthene	83-32-9	20		NA	NA	NA	NA	NA	10 U	10 U
Acenaphthylene	208-96-8	210		NA	NA	NA	NA	NA	10 U	10 U
Anthracene	120-12-7	2100		NA	NA	NA	NA	NA	10 U	10 U
Benzo(a)Anthracene	56-55-3	0.2		NA	NA	NA	NA	NA	10 U	[illegible]
Benzo(a)Pyrene	50-32-8	0.2		NA	NA	NA	NA	NA	10 U	[illegible]
Benzo(b)Fluoranthene	205-99-2	0.2		NA	NA	NA	NA	NA	10 U	10 U
Benzo(g,h,i)Perylene	191-24-2	210		NA	NA	NA	NA	NA	10 U	10 U
Benzo(k)Fluoranthene	207-08-9	0.5		NA	NA	NA	NA	NA	10 U	10 U
Chrysene	218-01-9	4.8		NA	NA	NA	NA	NA	10 U	10 U
Dibenzo(a,h)Anthracene	53-70-3	0.2		NA	NA	NA	NA	NA	10 U	10 U
Fluoranthene	206-44-0	280		NA	NA	NA	NA	NA	10 U	10 U
Fluorene	86-73-7	280		NA	NA	NA	NA	NA	10 U	10 U
Indeno(1,2,3-cd)Pyrene	193-39-5	0.2		NA	NA	NA	NA	NA	10 U	10 U
Naphthalene	91-20-3	20		NA	NA	NA	NA	NA	10 U	10 U
Phenanthrene	85-01-8	210		NA	NA	NA	NA	NA	10 U	10 U
Pyrene	129-00-0	210		NA	NA	NA	NA	NA	10 U	10 U

TABLE 5

VALIDATED GROUNDWATER ANALYTICAL RESULTS - OCTOBER 1999
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION		Screening Criteria [a]		OLD-08-17	OLD-08-18	OLD-09-01	OLD-09-01	OLD-09-02	OLD-09-03	OLD-09-03
SAMPLE ID		Florida	NTC	NTC08G1712	NTC08G1812	NTC09G0112	NTC09G0112-D	NTC09G0212	NTC09G0312	NTC09G0312-D
LAB ID	CAS Number	GCTL [b]	BGSV [c]	A9J210106001	A9J210231005	A9J220158002	A9J220158003	A9J230148006	A9J210231001	A9J210231002
SAMPLE DATE				10/19/99	10/20/99	10/21/99	10/21/99	10/22/99	10/20/99	10/20/99
Pesticides (µg/L)										
4,4'-DDD	72-54-8	0.1		NA	NA	0.1 UJ	0.1 UJ	0.25 U	0.05 UJ	0.05 UJ
4,4'-DDE	72-55-9	0.1		NA	NA	0.1 UJ	0.1 UJ	0.25 U	0.05 UJ	0.05 UJ
4,4'-DDT	50-29-3	0.1		NA	NA	0.1 UJ	0.1 UJ	0.25 U	0.05 UJ	0.05 UJ
Aldrin	309-00-2	0.005		NA	NA	0.1 UJ	0.1 UJ	0.25 U	0.05 UJ	0.05 UJ
alpha-BHC	319-84-6	0.2		NA	NA	0.1 UJ	0.1 UJ	0.25 U	0.05 UJ	0.05 UJ
alpha-Chlordane [d]	5103-71-9	2		NA	NA	0.1 UJ	0.1 UJ	0.25 U	0.05 UJ	0.05 UJ
Beta-BHC	319-85-7	0.02		NA	NA	0.1 UJ	0.1 UJ	0.11 R	0.05 UJ	0.05 UJ
Delta-BHC	319-86-8	2.1		NA	NA	0.1 UJ	0.1 UJ	0.25 U	0.05 UJ	0.05 UJ
Dieldrin	60-57-1	0.005		NA	NA	0.1 UJ	0.1 UJ	0.25 U	0.05 UJ	0.05 UJ
Endosulfan	115-29-7	42		NA	NA	0.1 UJ	0.1 UJ	0.25 U	0.05 UJ	0.05 UJ
Endosulfan II [d]	33213-65-9	42		NA	NA	0.1 UJ	0.1 UJ	0.25 U	0.05 UJ	0.05 UJ
Endosulfan Sulfate	1031-07-8	*		NA	NA	0.1 UJ	0.1 UJ	0.25 U	0.05 UJ	0.05 UJ
Endrin	72-20-8	2		NA	NA	0.1 UJ	0.1 UJ	0.25 U	0.05 UJ	0.05 UJ
Endrin Aldehyde	7421-93-4	*		NA	NA	0.1 UJ	0.1 UJ	0.25 U	0.05 UJ	0.05 UJ
Endrin Ketone	53494-70-5	*		NA	NA	0.1 UJ	0.1 UJ	0.25 U	0.05 UJ	0.05 UJ
gamma-BHC (Lindane)	58-89-9	0.2		NA	NA	0.1 UJ	0.1 UJ	0.25 U	0.05 UJ	0.05 UJ
gamma-Chlordane [d]	12789-03-6	2		NA	NA	0.034 J	0.1 UJ	0.25 U	0.05 UJ	0.05 UJ
Heptachlor	76-44-8	0.4		NA	NA	0.1 UJ	0.1 UJ	0.25 U	0.05 UJ	0.05 UJ
Heptachlor Epoxide	1024-57-3	0.2		NA	NA	0.08 R	0.1 UJ	0.25 U	0.05 UJ	0.05 UJ
Methoxychlor	72-43-5	40		NA	NA	0.2 UJ	0.2 UJ	0.5 UJ	0.1 UJ	0.1 UJ
Toxaphene	8001-35-2	3		NA	NA	4 UJ	4 UJ	10 U	2 UJ	2 UJ
Herbicides (µg/L)										
2,4,5-TP (Silvex)	93-72-1	50		NA	1 U	1 U	1 U	1 U	1 U	1 U
2,4,5-T	93-76-5	70		NA	1 UJ	1 U	1 U	1 U	1 UJ	1 UJ
2,4-D	94-75-7	70		NA	4 U	4 U	4 U	4 U	4 U	4 U
2,4-DB	94-82-6	56		NA	4 U	4 U	4 U	4 U	4 U	4 U
Dalapon	75-99-0	200		NA	2 UJ	2.3 U	16 U	2 U	2 UJ	5 U
Dicamba	1918-00-9	210		NA	2 U	2 U	2 U	2 U	2 U	2 U
Dichloroprop	120-36-5	35		NA	4 U	4 U	4 U	4 U	4 U	4 U
Dinoseb	88-85-7	7		NA	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
MCPA	94-74-6	3.5		NA	400 UJ	400 U	400 U	400 U	400 UJ	400 UJ
MCPP	7085-19-0	7		NA	180 J	400 U	400 U	400 U	400 UJ	400 UJ
Pentachlorophenol	87-86-5	1		NA	NA	0.1 U	0.1 U	0.1 U	NA	NA
Inorganics (µg/L)										
Aluminum	7429-90-5	200	4067	73.6 U	835	73.6 U	73.6 U	1510	455	472
Antimony	7440-36-0	6	4.1	4.6	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U
Arsenic	7440-38-2	50	5	156	2.7 U	30	30.8	2.7 U	2.7 U	2.7 U
Barium	7440-39-3	2000	31.4	29.8	35.6	55.4	55	2.7	2.2	2.9
Beryllium	7440-41-7	4	*	0.3 U	0.3 U	0.3 U	0.3 U	0.46 U	0.3 U	0.3 U
Cadmium	7440-43-9	5	5.6	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Calcium	7440-70-2	*	36830	99300	5240	94400	93700	5540	11000	11300
Chromium	7440-47-3	100	7.8	2.3	3	1.6 U	1.6 U	2.7	1.6 U	1.6 U
Cobalt	7440-48-4	420	*	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.82
Copper	7440-50-8	1000	5.4	2.4	2.8	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Iron	7439-89-6	300	1227	257	3360	285	283	121	131	139
Lead	7439-92-1	15	4	13.4	1.6	1.5 U	1.5 U	1.8	1.5 U	1.5 U
Magnesium	7439-95-4	*	4560	3820	1880	6550	6530	1230	2300	2370
Manganese	7439965	50	17	59.1	165	18.1	19.4	1.8 U	1.4 U	1.9 U
Mercury	7439-97-6	2	0.12	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	7440-02-0	100	*	3.7 U	3.2 U	3.2 U	2.8 U	1.3 U	1.3 U	1.5 U
Potassium	7440-09-7	*	5400	6640	801	5200	5140	3580	3650	3770
Selenium	7782-49-2	50	9.7	4.7 U	4.7 U	4.7 U	4.7 U	4.7 U	4.7 U	4.7 U
Silver	7440-22-4	100	*	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Sodium	7440-23-5	160000	18222	2730	8770	1520	1520	4200	2360	2530
Thallium	7440-28-0	2	3.8	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
Vanadium	7440-62-2	49	20.6	4.1	4.6	0.58	0.5 U	1.5	0.5 U	0.7
Zinc	7440-66-6	5000	4	13.1 U	19.3 U	17 U	10.1 U	20.2 U	10.6 U	12.9 U

TABLE 5

VALIDATED GROUNDWATER ANALYTICAL RESULTS - OCTOBER 1999
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION		Screening Criteria [a]		OLD-09-04	OLD-09-05	OLD-09-06	OLD-09-07	OLD-09-10	OLD-09-11	OLD-09-12
SAMPLE ID		Florida	NTC	NTC09G0412	NTC09G0512	NTC09G0612	NTC09G0712	NTC09G1012	NTC09G1112	NTC09G1212
LAB ID	CAS Number	GCTL [b]	BGSV [c]	A9J220158004	A9J230148001	A9J230148003	A9J260203001	A9J220158001	A9J210231003	A9J230148005
SAMPLE DATE				10/21/99	10/22/99	10/22/99	10/23/99	10/21/99	10/20/99	10/22/99
Semivolatiles (µg/L)										
1,2,4-Trichlorobenzene	120-82-1	70		25 U	NA	NA	NA	NA	NA	10 U
1,2-Dichlorobenzene	95-50-1	600		25 U	NA	NA	NA	NA	NA	10 U
1,3-Dichlorobenzene	541-73-1	10		25 U	NA	NA	NA	NA	NA	10 U
1,4-Dichlorobenzene	106-46-7	75		25 U	NA	NA	NA	NA	NA	10 U
2,2'-Oxybis (1-Chloropropane)	108-60-1	10		NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	4		25 U	NA	NA	NA	NA	NA	10 U
2,4,6-Trichlorophenol	88-06-2	3.2		25 U	NA	NA	NA	NA	NA	10 U
2,4-Dichlorophenol	120-83-2	0.5		25 U	NA	NA	NA	NA	NA	4.9 J
2,4-Dimethylphenol	105-67-9	140		25 U	NA	NA	NA	NA	NA	10 U
2,4-Dinitrophenol	51-28-5	14		62 U	NA	NA	NA	NA	NA	25 U
2,4-Dinitrotoluene	121-14-2	0.1		25 U	NA	NA	NA	NA	NA	10 U
2,6-Dinitrotoluene	606-20-2	0.1		25 U	NA	NA	NA	NA	NA	10 U
2-Chloronaphthalene	91-58-7	560		25 U	NA	NA	NA	NA	NA	10 U
2-Chlorophenol	95-57-8	35		25 U	NA	NA	NA	NA	NA	10 U
2-Methylnaphthalene	91-57-6	20		NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	95-48-7	35		25 U	NA	NA	NA	NA	NA	10 U
2-Nitroaniline	88-74-4	50		62 U	NA	NA	NA	NA	NA	25 U
2-Nitrophenol	88-75-5	*		25 U	NA	NA	NA	NA	NA	10 U
3,3'-Dichlorobenzidine	91-94-1	12		25 U	NA	NA	NA	NA	NA	10 U
3-Nitroaniline	99-09-2	50		62 U	NA	NA	NA	NA	NA	25 U
4,6-Dinitro-2-Methylphenol	534-52-1	*		62 U	NA	NA	NA	NA	NA	25 U
4-Bromophenyl Phenyl Ether	101-55-3	406		25 U	NA	NA	NA	NA	NA	10 U
4-Chloro-3-Methylphenol	59-50-7	63		25 U	NA	NA	NA	NA	NA	10 U
4-Chloroaniline	106-47-8	28		25 UR	NA	NA	NA	NA	NA	10 U
4-Chlorophenyl Phenyl Ether	7005-72-3	*		25 U	NA	NA	NA	NA	NA	10 U
4-Methylphenol	106-44-5	4		25 U	NA	NA	NA	NA	NA	10 U
4-Nitroaniline	100-01-6	21		62 U	NA	NA	NA	NA	NA	25 U
4-Nitrophenol	100-02-7	56		62 U	NA	NA	NA	NA	NA	25 U
Bis(2-Chloroethoxy)Methane	111-91-1	*		25 U	NA	NA	NA	NA	NA	10 U
Bis(2-Chloroethyl)Ether	111-44-4	4		25 U	NA	NA	NA	NA	NA	10 U
Bis(2-Chloroisopropyl)Ether	108-60-1	10		25 U	NA	NA	NA	NA	NA	10 U
Bis(2-Ethylhexyl)Phthalate	117-81-7	6		25 U	NA	NA	NA	NA	NA	10 U
Butylbenzyl Phthalate	85-68-7	140		25 U	NA	NA	NA	NA	NA	10 U
Carbazole	86-74-8	4		25 U	NA	NA	NA	NA	NA	10 U
Di-N-Butyl Phthalate	84-74-2	700		25 U	NA	NA	NA	NA	NA	10 U
Di-N-Octyl Phthalate	117-84-0	140		25 U	NA	NA	NA	NA	NA	10 U
Dibenzofuran	132-64-9	28		25 U	NA	NA	NA	NA	NA	10 U
Diethyl Phthalate	84-66-2	5600		25 U	NA	NA	NA	NA	NA	10 U
Dimethyl Phthalate	131-11-3	70000		25 U	NA	NA	NA	NA	NA	10 U
Hexachlorobenzene	118-74-1	1		25 U	NA	NA	NA	NA	NA	10 U
Hexachlorobutadiene	87-68-3	0.5		25 U	NA	NA	NA	NA	NA	10 U
Hexachlorocyclopentadiene	77-47-4	50		25 U	NA	NA	NA	NA	NA	10 U
Hexachloroethane	67-72-1	2.5		25 U	NA	NA	NA	NA	NA	10 U
Isophorone	78-59-1	37		25 U	NA	NA	NA	NA	NA	10 U
N-Nitroso-Di-N-Propylamine	621-64-7	4		25 U	NA	NA	NA	NA	NA	10 U
N-Nitrosodiphenylamine	86-30-6	7.1		25 U	NA	NA	NA	NA	NA	10 U
Nitrobenzene	98-95-3	4		25 U	NA	NA	NA	NA	NA	10 U
Pentachlorophenol	87-86-5	1		62 U	NA	NA	NA	NA	NA	25 U
Phenol	108-95-2	10		25 U	NA	NA	NA	NA	NA	10 U
PAHs (µg/L)										
1-Methylnaphthalene	90-12-0	20		NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	20		25 U	NA	NA	NA	NA	NA	10 U
Acenaphthene	83-32-9	20		25 U	NA	NA	NA	NA	NA	10 U
Acenaphthylene	208-96-8	210		25 U	NA	NA	NA	NA	NA	10 U
Anthracene	120-12-7	2100		25 U	NA	NA	NA	NA	NA	10 U
Benzo(a)Anthracene	56-55-3	0.2		25 U	NA	NA	NA	NA	NA	[illegible]
Benzo(a)Pyrene	50-32-8	0.2		25 U	NA	NA	NA	NA	NA	[illegible]
Benzo(b)Fluoranthene	205-99-2	0.2		25 U	NA	NA	NA	NA	NA	10 U
Benzo(g,h,i)Perylene	191-24-2	210		25 U	NA	NA	NA	NA	NA	10 U
Benzo(k)Fluoranthene	207-08-9	0.5		25 U	NA	NA	NA	NA	NA	10 U
Chrysene	218-01-9	4.8		25 U	NA	NA	NA	NA	NA	10 U
Dibenzo(a,h)Anthracene	53-70-3	0.2		25 U	NA	NA	NA	NA	NA	10 U
Fluoranthene	206-44-0	280		25 U	NA	NA	NA	NA	NA	10 U
Fluorene	86-73-7	280		25 U	NA	NA	NA	NA	NA	10 U
Indeno(1,2,3-cd)Pyrene	193-39-5	0.2		25 U	NA	NA	NA	NA	NA	10 U
Naphthalene	91-20-3	20		25 U	NA	NA	NA	NA	NA	10 U
Phenanthrene	85-01-8	210		25 U	NA	NA	NA	NA	NA	10 U
Pyrene	129-00-0	210		25 U	NA	NA	NA	NA	NA	10 U

TABLE 5

VALIDATED GROUNDWATER ANALYTICAL RESULTS - OCTOBER 1999
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION		Screening Criteria [a]		OLD-09-04	OLD-09-05	OLD-09-06	OLD-09-07	OLD-09-10	OLD-09-11	OLD-09-12
SAMPLE ID		Florida	NTC	NTC09G0412	NTC09G0512	NTC09G0612	NTC09G0712	NTC09G1012	NTC09G1112	NTC09G1212
LAB ID	CAS Number	GCTL [b]	BGSV [c]	A9J220158004	A9J230148001	A9J230148003	A9J260203001	A9J220158001	A9J210231003	A9J230148005
SAMPLE DATE				10/21/99	10/22/99	10/22/99	10/23/99	10/21/99	10/20/99	10/22/99
Pesticides (µg/L)										
4,4'-DDD	72-54-8	0.1		0.25 UJ	0.05 UR	0.033 R	0.05 U	0.05 U	0.05 UJ	0.25 U
4,4'-DDE	72-55-9	0.1		0.25 UJ	0.05 UR	0.05 UR	0.05 U	0.05 U	0.05 U	0.25 U
4,4'-DDT	50-29-3	0.1		0.25 U	0.05 UR	0.05 UR	0.05 U	0.05 UJ	0.05 U	0.25 U
Aldrin	309-00-2	0.005		0.25 U	0.05 UR	0.05 UR	0.05 U	0.05 U	0.05 U	0.25 U
alpha-BHC	319-84-6	0.2		0.25 U	0.05 UR	0.015 R	0.05 U	0.05 U	0.05 U	0.39
alpha-Chlordane [d]	5103-71-9	2		0.089 R	0.05 UR	0.05 UR	0.05 U	0.05 U	0.062 J	0.25 U
Beta-BHC	319-85-7	0.02		0.25 U	0.05 UR	0.05 UR	0.05 U	0.05 U	0.05 U	0.12 R
Delta-BHC	319-86-8	2.1		0.25 U	0.05 UR	0.05 UR	0.05 U	0.05 U	0.05 U	0.13 R
Dieldrin	60-57-1	0.005		0.25 U	0.05 UR	0.05 UR	0.05 U	0.05 U	0.05 U	0.25 U
Endosulfan	115-29-7	42		0.25 U	0.05 UR	0.05 UR	0.05 U	0.05 U	0.05 U	0.25 U
Endosulfan II [d]	33213-65-9	42		0.25 U	0.05 UR	0.05 UR	0.05 U	0.05 U	0.05 U	0.25 U
Endosulfan Sulfate	1031-07-8	*		0.25 U	0.05 UR	0.05 UR	0.05 U	0.05 U	0.05 U	0.25 U
Endrin	72-20-8	2		0.25 U	0.05 UR	0.05 UR	0.05 UJ	0.05 UJ	0.05 UJ	0.25 U
Endrin Aldehyde	7421-93-4	*		0.25 U	0.05 UR	0.05 UR	0.05 U	0.05 U	0.093 R	0.25 U
Endrin Ketone	53494-70-5	*		0.25 U	0.05 UR	0.05 UR	0.05 U	0.05 U	0.05 U	0.25 U
gamma-BHC (Lindane)	58-89-9	0.2		0.25 U	0.05 UR	0.013 R	0.05 U	0.05 UJ	0.057 J	0.46
gamma-Chlordane [d]	12789-03-6	2		0.25 R	0.05 UR	0.05 UR	0.05 U	0.05 U	0.054 R	0.25 U
Heptachlor	76-44-8	0.4		0.25 U	0.05 UR	0.05 UR	0.05 U	0.05 UJ	0.05 U	0.25 U
Heptachlor Epoxide	1024-57-3	0.2		0.25 U	0.05 UR	0.05 UR	0.05 U	0.05 UJ	0.05 U	0.25 U
Methoxychlor	72-43-5	40		0.5 UJ	0.093 R	0.1 UR	0.1 UJ	0.1 UJ	0.1 UJ	0.5 UJ
Toxaphene	8001-35-2	3		10 U	2 UR	2 UR	2 U	2 U	2 U	10 U
Herbicides (µg/L)										
2,4,5-TP (Silvex)	93-72-1	50		1 U	1 UR	1 U	1 U	1 U	1 U	1 U
2,4,5-T	93-76-5	70		1 U	1 UR	1 U	1 U	1 U	1 UJ	1 U
2,4-D	94-75-7	70		4 U	4 UR	4 U	4 U	4 U	4 U	4 U
2,4-DB	94-82-6	56		4 U	4 UR	4 U	4 U	4 U	4 U	4 U
Dalapon	75-99-0	200		2 U	9.1 U	10 U	2.4 U	3.1 U	11 U	5.9 U
Dicamba	1918-00-9	210		0.4 J	2 UR	2 U	2 U	2 U	2 U	2 U
Dichloroprop	120-36-5	35		4 U	4 UR	4 U	4 U	4 U	4 U	4 U
Dinoseb	88-85-7	7		0.6 U	0.6 UR	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
MCPA	94-74-6	3.5		400 U	400 UR	120 J	400 U	37 J	400 UJ	400 U
MCPP	7085-19-0	7		520	400 UR	400 U	550 R	400 U	400 UJ	400 U
Pentachlorophenol	87-86-5	1		0.06 J	0.1 UR	0.1 U	0.1 U	0.1 U	NA	0.1 U
Inorganics (µg/L)										
Aluminum	7429-90-5	200	4067	253	73.6 U	73.6 U	547	73.6 U	73.6 U	103
Antimony	7440-36-0	6	4.1	2.6 U	2.6 U	2.6 U	2.1 U	2.6 U	2.6 U	2.6 U
Arsenic	7440-38-2	50	5	650	101	94.1	2.3	2.7 U	44.9	53.8
Barium	7440-39-3	2000	31.4	9.5	28.1	27.2	6.4	24.8	10.5	22.4
Beryllium	7440-41-7	4	*	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Cadmium	7440-43-9	5	5.6	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Calcium	7440-70-2	*	36830	30800	105000	72300	8760	81800	70800	81100
Chromium	7440-47-3	100	7.8	1.6 U	1.6 U	1.6 U	4.1 U	1.6 U	1.6 U	1.6 U
Cobalt	7440-48-4	420	*	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.83
Copper	7440-50-8	1000	5.4	3.2	1.1 U	1.1 U	4.1	1.1 U	1.1 U	1.7
Iron	7439-89-6	300	1227	1940	157	797	470	630	833	477
Lead	7439-92-1	15	4	1.5 U	1.5 U	1.5 U	1.4	1.5 U	1.9	1.5 U
Magnesium	7439-95-4	*	4560	1980	6580	2620	790	4640	3190	3990
Manganese	7439965	50	17	35.3	33.6	583	2.6 U	18.4	25.7	[illegible]
Mercury	7439-97-6	2	0.12	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	7440-02-0	100	*	1.5 U	1.3 U	1.7 U	1.8 U	2.1 U	1.3 U	3.3 U
Potassium	7440-09-7	*	5400	5550	4610	8440	895	3420	10200	5980
Selenium	7782-49-2	50	9.7	4.7 U	4.7 U	4.7 U	2.4 U	4.7 U	5.1 U	5.6 U
Silver	7440-22-4	100	*	1.6 U	1.6 U	1.6 U	0.9 U	1.6 U	1.6 U	1.6 U
Sodium	7440-23-5	160000	18222	678	2710	4140	1450	3380	6440	1370
Thallium	7440-28-0	2	3.8	1 UJ	1 UJ	1 UJ	1 U	1 UJ	1 UJ	1 UJ
Vanadium	7440-62-2	49	20.6	0.5 U	0.59	0.92	1.7	0.83	0.99	1.8
Zinc	7440-66-6	5000	4	15.8 U	9.6 U	13.2 U	33 J	83.1	28.6 U	18.5 U

TABLE 5

VALIDATED GROUNDWATER ANALYTICAL RESULTS - OCTOBER 1999
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION		Screening Criteria (a)		OLD-09-14	OLD-09-15	OLD-09-16	OLD-09-17	OLD-09-19
SAMPLE ID		Florida	NTC	NTC09G1412	NTC09G1512	NTC09G1612	NTC09G1712	NTC09G1912
LAB ID	CAS Number	GCTL (b)	BGSV (c)	A9J230148004	A9J230148002	A9J220158009	A9J260203002	A9J300126002
SAMPLE DATE				10/22/99	10/22/99	10/21/99	10/23/99	10/27/99
Semivolatiles (µg/L)								
1,2,4-Trichlorobenzene	120-82-1	70		10 U	10 U	NA	NA	10 U
1,2-Dichlorobenzene	95-50-1	600		10 U	10 U	NA	NA	10 U
1,3-Dichlorobenzene	541-73-1	10		10 U	10 U	NA	NA	10 U
1,4-Dichlorobenzene	106-46-7	75		10 U	10 U	NA	NA	10 U
2,2'-Oxybis (1-Chloropropane)	108-60-1	10		NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	4		10 U	10 U	NA	NA	10 U
2,4,6-Trichlorophenol	88-06-2	3.2		10 U	10 U	NA	NA	10 U
2,4-Dichlorophenol	120-83-2	0.5		10 U	10 U	NA	NA	10 U
2,4-Dimethylphenol	105-67-9	140		10 U	10 U	NA	NA	10 U
2,4-Dinitrophenol	51-28-5	14		25 U	25 U	NA	NA	25 U
2,4-Dinitrotoluene	121-14-2	0.1		10 U	10 U	NA	NA	10 U
2,6-Dinitrotoluene	606-20-2	0.1		10 U	10 U	NA	NA	10 U
2-Chloronaphthalene	91-58-7	560		10 U	10 U	NA	NA	10 U
2-Chlorophenol	95-57-8	35		10 U	10 U	NA	NA	10 U
2-Methylnaphthalene	91-57-6	20		NA	NA	NA	NA	10 U
2-Methylphenol	95-48-7	35		10 U	10 U	NA	NA	10 U
2-Nitroaniline	88-74-4	50		25 U	25 U	NA	NA	25 U
2-Nitrophenol	88-75-5	*		10 U	10 U	NA	NA	10 U
3,3'-Dichlorobenzidine	91-94-1	12		10 U	10 U	NA	NA	10 UR
3-Nitroaniline	99-09-2	50		25 U	25 U	NA	NA	25 U
4,6-Dinitro-2-Methylphenol	534-52-1	*		25 U	25 U	NA	NA	25 U
4-Bromophenyl Phenyl Ether	101-55-3	406		10 U	10 U	NA	NA	10 U
4-Chloro-3-Methylphenol	59-50-7	63		10 U	10 U	NA	NA	10 U
4-Chloroaniline	106-47-8	28		10 U	10 U	NA	NA	10 UR
4-Chlorophenyl Phenyl Ether	7005-72-3	*		10 U	10 U	NA	NA	10 U
4-Methylphenol	106-44-5	4		10 U	10 U	NA	NA	10 U
4-Nitroaniline	100-01-6	21		25 U	25 U	NA	NA	25 UJ
4-Nitrophenol	100-02-7	56		25 U	25 U	NA	NA	25 U
Bis(2-Chloroethoxy)Methane	111-91-1	*		10 U	10 U	NA	NA	10 U
Bis(2-Chloroethyl)Ether	111-44-4	4		10 U	10 U	NA	NA	10 U
Bis(2-Chloroisopropyl)Ether	108-60-1	10		10 U	10 U	NA	NA	10 U
Bis(2-Ethylhexyl)Phthalate	117-81-7	6		10 U	10 U	NA	NA	10 U
Butylbenzyl Phthalate	85-68-7	140		10 U	10 U	NA	NA	10 U
Carbazole	86-74-8	4		10 U	10 U	NA	NA	10 U
Di-N-Butyl Phthalate	84-74-2	700		10 U	10 U	NA	NA	10 U
Di-N-Octyl Phthalate	117-84-0	140		10 U	10 U	NA	NA	10 U
Dibenzofuran	132-64-9	28		10 U	10 U	NA	NA	10 U
Diethyl Phthalate	84-66-2	5600		10 U	10 U	NA	NA	10 U
Dimethyl Phthalate	131-11-3	70000		10 U	10 U	NA	NA	10 U
Hexachlorobenzene	118-74-1	1		10 U	10 U	NA	NA	10 U
Hexachlorobutadiene	87-68-3	0.5		10 U	10 U	NA	NA	10 U
Hexachlorocyclopentadiene	77-47-4	50		10 U	10 U	NA	NA	10 U
Hexachloroethane	67-72-1	2.5		10 U	10 U	NA	NA	10 U
Isophorone	78-59-1	37		10 U	10 U	NA	NA	10 U
N-Nitroso-Di-N-Propylamine	621-64-7	4		10 U	10 U	NA	NA	10 U
N-Nitrosodiphenylamine	86-30-6	7.1		10 U	10 U	NA	NA	10 U
Nitrobenzene	98-95-3	4		10 U	10 U	NA	NA	10 U
Pentachlorophenol	87-86-5	1		25 U	25 U	NA	NA	25 U
Phenol	108-95-2	10		10 U	10 U	NA	NA	10 U
PAHs (µg/L)								
1-Methylnaphthalene	90-12-0	20		NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	20		10 U	10 U	NA	NA	10 U
Acenaphthene	83-32-9	20		10 U	10 U	NA	NA	10 U
Acenaphthylene	208-96-8	210		10 U	10 U	NA	NA	10 U
Anthracene	120-12-7	2100		10 U	10 U	NA	NA	10 U
Benzo(a)Anthracene	56-55-3	0.2		10 U	10 U	NA	NA	10 U
Benzo(a)Pyrene	50-32-8	0.2		10 U	10 U	NA	NA	10 U
Benzo(b)Fluoranthene	205-99-2	0.2		10 U	10 U	NA	NA	10 U
Benzo(g,h,i)Perylene	191-24-2	210		10 U	10 U	NA	NA	10 U
Benzo(k)Fluoranthene	207-08-9	0.5		10 U	10 U	NA	NA	10 U
Chrysene	218-01-9	4.8		10 U	10 U	NA	NA	10 U
Dibenzo(a,h)Anthracene	53-70-3	0.2		10 U	10 U	NA	NA	10 U
Fluoranthene	206-44-0	280		10 U	10 U	NA	NA	10 U
Fluorene	86-73-7	280		10 U	10 U	NA	NA	10 U
Indeno(1,2,3-cd)Pyrene	193-39-5	0.2		10 U	10 U	NA	NA	10 U
Naphthalene	91-20-3	20		4.8 J	8 J	NA	NA	10 U
Phenanthrene	85-01-8	210		10 U	10 U	NA	NA	10 U
Pyrene	129-00-0	210		10 U	10 U	NA	NA	10 U

TABLE 5

VALIDATED GROUNDWATER ANALYTICAL RESULTS - OCTOBER 1999
OPERABLE UNIT 3 - STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

WELL DESIGNATION		Screening Criteria (a)		OLD-09-14	OLD-09-15	OLD-09-16	OLD-09-17	OLD-09-19
SAMPLE ID		Florida	NTC	NTC09G1412	NTC09G1512	NTC09G1612	NTC09G1712	NTC09G1912
LAB ID	CAS Number	GCTL (b)	BGSV (c)	A9J230148004	A9J230148002	A9J220158009	A9J260203002	A9J300126002
SAMPLE DATE				10/22/99	10/22/99	10/21/99	10/23/99	10/27/99
Pesticides (µg/L)								
4,4'-DDD	72-54-8	0.1		0.25 U	0.06 R	0.25 U	0.05 U	NA
4,4'-DDE	72-55-9	0.1		0.25 U	0.05 UR	0.25 U	0.05 U	NA
4,4'-DDT	50-29-3	0.1		0.25 U	0.05 UR	0.25 U	0.05 U	NA
Aldrin	309-00-2	0.005		0.25 U	0.05 UR	0.25 U	0.05 U	NA
alpha-BHC	319-84-6	0.2		0.25 U	0.05 UR	0.25 U	0.05 U	NA
alpha-Chlordane (d)	5103-71-9	2		0.25 U	0.05 UR	0.25 U	0.05 U	NA
Beta-BHC	319-85-7	0.02		0.25 U	0.05 UR	0.092 R	0.05 U	NA
Delta-BHC	319-86-8	2.1		0.25 U	0.05 UR	0.25 U	0.05 U	NA
Dieldrin	60-57-1	0.005		0.25 U	0.05 UR	0.25 U	0.05 U	NA
Endosulfan	115-29-7	42		0.25 U	0.05 UR	0.25 U	0.05 U	NA
Endosulfan II (d)	33213-65-9	42		0.25 U	0.05 UR	0.25 U	0.05 U	NA
Endosulfan Sulfate	1031-07-8	*		0.25 U	0.05 UR	0.25 U	0.05 U	NA
Endrin	72-20-8	2		0.25 U	0.05 UR	0.25 U	0.05 UJ	NA
Endrin Aldehyde	7421-93-4	*		0.25 U	0.05 UR	0.25 U	0.05 U	NA
Endrin Ketone	53494-70-5	*		0.25 U	0.05 UR	0.25 U	0.05 U	NA
gamma-BHC (Lindane)	58-89-9	0.2		0.25 U	0.05 UR	0.25 U	0.05 U	NA
gamma-Chlordane (d)	12789-03-6	2		0.25 U	0.05 UR	0.25 U	0.05 U	NA
Heptachlor	76-44-8	0.4		0.25 U	0.05 UR	0.25 U	0.05 U	NA
Heptachlor Epoxide	1024-57-3	0.2		0.25 U	0.05 UR	0.25 U	0.05 U	NA
Methoxychlor	72-43-5	40		0.5 UJ	0.1 UR	0.5 UJ	0.1 UJ	NA
Toxaphene	8001-35-2	3		10 U	2 UR	10 U	2 U	NA
Herbicides (µg/L)								
2,4,5-TP (Silvex)	93-72-1	50		1 U	1 U	1 U	1 U	1 U
2,4,5-T	93-76-5	70		1 U	1 U	1 U	1 U	1 UJ
2,4-D	94-75-7	70		4 U	4 U	4 U	4 U	4 UJ
2,4-DB	94-82-6	56		4 U	4 U	4 U	4 U	4 U
Dalapon	75-99-0	200		2 U	12 U	2 U	3.7 U	2 U
Dicamba	1918-00-9	210		2 U	2 U	2 U	2 U	2 U
Dichloroprop	120-36-5	35		4 U	4 U	4 U	4 U	4 U
Dinoseb	88-85-7	7		0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
MCPA	94-74-6	3.5		400 U	400 U	33 J	400 U	400 U
MCPP	7085-19-0	7		400 U	400 U	98 R	74 J	400 U
Pentachlorophenol	87-86-5	1		0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Inorganics (µg/L)								
Aluminum	7429-90-5	200	4067	509	421	309	80.2 U	402
Antimony	7440-36-0	6	4.1	2.6 U	2.6 U	2.6 U	2.1 U	2.2 U
Arsenic	7440-38-2	50	5	2.7 U	2.7 U	2.7 U	5.4	2.3 U
Barium	7440-39-3	2000	31.4	25.2	5.3	12.6	19.4	18.1 J
Beryllium	7440-41-7	4	*	0.32 U	0.3 U	0.3 U	0.3 U	0.1 U
Cadmium	7440-43-9	5	5.6	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Calcium	7440-70-2	*	36830	37600	363 U	4500	74000	29300
Chromium	7440-47-3	100	7.8	4.6	1.6 U	1.6 U	0.7 U	1.4
Cobalt	7440-48-4	420	*	0.7 U	0.7 U	0.7 U	0.7 U	0.6 U
Copper	7440-50-8	1000	5.4	1.1 U	1.1 U	1.1 U	1.8	2.1 U
Iron	7439-89-6	300	1227	786	312	572	17.6 U	645
Lead	7439-92-1	15	4	1.5 U	1.5 U	1.5 U	1.2 U	1.1 U
Magnesium	7439-95-4	*	4560	4000	602	990	821	3210
Manganese	7439965	50	17	120	4.7 U	30	2.8 U	37.9
Mercury	7439-97-6	2	0.12	0.1 U	0.1 U	0.1 U	0.1 U	0.11 U
Nickel	7440-02-0	100	*	3.9 U	3.2 U	1.5 U	1.3 U	1.7
Potassium	7440-09-7	*	5400	2340	64.7 U	693	554	1600
Selenium	7782-49-2	50	9.7	4.7 U	4.7 U	4.7 U	2.4 U	3.5 U
Silver	7440-22-4	100	*	1.6 U	1.6 U	1.6 U	0.9 U	0.6 U
Sodium	7440-23-5	160000	18222	16600	5650	8620	956 U	7080
Thallium	7440-28-0	2	3.8	1 UJ	1 UJ	1 UJ	1 U	0.93 UJ
Vanadium	7440-62-2	49	20.6	3.1	0.53	3.2	4.8	5.1
Zinc	7440-66-6	5000	4	25.1 U	10.9 U	15.8 U	14.5 U	8 U

TABLE 5

VALIDATED GROUNDWATER ANALYTICAL RESULTS – OCTOBER 1999
OPERABLE UNIT 3 – STUDY AREAS 8 AND 9

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Notes:

* indicates that the criteria or screening value not available.
"J" qualifier indicates an estimated value.
"U" qualifier indicates a non-detect.
"R" qualifier indicates rejected value.
NA Not analyzed.
Values in shaded cells are equal to or exceed the screening criteria.
Empty cells indicate analyte not analyzed for.

(a) For an organic analyte, the screening criterion is the GCTL; for an inorganic analyte with an established GCTL and BGSV, the screening criterion is the greater of the GCTL or the BGSV.

(b) Groundwater Cleanup Target Level (Development of Soil Cleanup Target Levels (SCTLs) for Chapter 62-777, F.A.C., May 26, 1999)

(c) Background Screening Value (Background Sampling Report for NTC, Orlando, Florida; ABB Environmental Services, August 1995) for inorganics only.

(d) Screening Criteria Substitution – Chlordane for alpha-Chlordane and gamma-Chlordane, and Endosulfan for Endosulfan II.

ATTACHMENT A

GROUNDWATER SAMPLE LOG SHEETS

GROUNDWATER PURGING AND SAMPLING LOG

Date 101999

Project Site Name: NTC Orlando
Project No.: CTO 0024

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

Sample ID No.: NTL086 0112
Sample Location: S.4.8
Sampled By: KSM GLS
C.O.C. No.:

PURGING DATA

Casing Size (in.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
1	0.041	1435	6.41	335.0	27.35	4.27	0.97	24.3	.86	100
2	0.163	1440	6.28	333.0	27.64	3.15	0.52	27.0	.86	100
3	0.367	1445	6.25	334.0	28.00	3.99	0.54	26.6	.86	100
4	0.653	1450	6.26	333.0	27.75	3.20	0.56	25.6	.86	100
5	1.020									
6	1.469									
8	2.611									
10	4.080									

Well Casing Diameter: 2"
Total Well Depth (TD): 12.45
Static Water Level (WL): .85
One Casing Volume(gal/L):

[3.78gals/L]

Start Purge (hrs): 1435
End Purge (hrs): 1450
Total Purge Time (min): 15 min
Total Vol. Purged (gal/L): 1.5L.

SAMPLE PARAMETERS

Date / Time	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 101499 Time: 1455	Clear	6.27	333.0	27.70	3.1	0.56	25.9	.76	100

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
TAL inorganics	HNO3	1L. Plastic	101999
~~Gross Alpha/Gross Beta/Total Uranium/Radium226~~	~~HNO3 (pH<2)~~	~~1-L gal plastic container~~	

ADDITIONAL INFORMATION

OVA Reading (ppm): 0 ppm

Method:
[ ] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[ ] Teflon
[ ] Teflon-lined Polyethylene

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):

GROUNDWATER PURGING AND SAMPLING LOG

Date 10/19/99

Project Site Name: NTC Orlando
Project No.: CTO 0024

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

Sample ID No.: NTC0860212
Sample Location: 02D0802
Sampled By: JM/SK
C.O.C. No.: ~~53445~~ 53422

PURGING DATA

Casing Size (in.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
1	0.041	1430	6.58	474	28.36	2.88	4.03	-90.5	1.19	100
2	0.163	1435	6.51	469	28.09	2.69	3.66	-115.5	1.19	100
3	0.367	1440	6.49	468	28.01	2.64	3.56	-125.9	1.15	100
4	0.653	1445	6.49	467	28.51	1.79	3.67	-138.3	1.15	100
5	1.020	1450	6.48	467	28.09	3.26	3.53	-148.7	1.15	100
6	1.469	1455	6.47	465	28.13	2.03	3.57	-159.3	1.15	100
8	2.611	1500	6.48	465	28.71	1.70	4.13	-166.0	1.15	100
10	4.080	1505	6.47	465	28.41	1.94	4.11	-169.0	1.15	100
		1510	6.47	465	28.22	2.34	4.09	-170.0	1.15	100

Well Casing Diameter: 2"
Total Well Depth (TD): 12.38
Static Water Level (WL): 1.19
One Casing Volume(~~gal~~/L): 6.9

[3.78gals/L]

Start Purge (hrs): 1430
End Purge (hrs): 1510
Total Purge Time (min): 40
Total Vol. Purged (~~gal~~/L): 9

SAMPLE PARAMETERS

		Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date	10/19/99									
Time	1510	Clear	6.47	465	28.22	2.34	4.09	-170.0	1.15	100

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
~~Gross Alpha/Gross Beta/Total Uranium/Radium 226~~	~~HNO3 (pH < 2)~~	~~1 - 1 gal plastic cubitainer~~	
TAL Inorganics	HNO3	1 1L plastic	✓

ADDITIONAL INFORMATION

OVA Reading (ppm): 0.0 PPM

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s): [signature]

GROUNDWATER PURGING AND SAMPLING LOG

Date 101999

Page 1 of 1

Project Site Name: NTC Orlando
Project No.: CTO 0024

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

Sample ID No.: NTC08G0312
Sample Location:
Sampled By:
C.O.C. No.:

PURGING DATA

Casing Size (in.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
1	0.041	1550	5.90	528.0	27.54	8.04	1.33	77.9	.89	100
2	0.163	1555	5.93	532.0	27.43	5.72	1.26	76.9	89	100
3	0.367	1600	5.93	539.0	27.39	3.18	1.09	77.9	.89	100
4	0.653	1605	5.93	546.0	27.38	2.46	1.04	79.3	89	100
5	1.020	1610	5.92	550.0	27.49	2.12	.82	79.5	.89	100
6	1.469	1615	5.92	550.0	27.56	2.17	.80	80.6	.89	100
8	2.611	1620	5.92	550.0	27.54	2.32	.80	80.5	.89	100
10	4.080									

Well Casing Diameter: 2" PVC
Total Well Depth (TD): 13.40
Static Water Level (WL): .83
One Casing Volume(gal/L): 2.1(g)

[3.78gals/L]

Start Purge (hrs): 1550
End Purge (hrs): 1620
Total Purge Time (min): 30 min
Total Vol. Purged (gal/L): 3.0 Lt.

SAMPLE PARAMETERS

Date: 101999 / Time: 1625	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
	clear	5.92	550	27.53	2.31	.80	80.6	.89	100

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
TAL INORGANICS	HNO3	1 - 1Lt Plastic	101999
Gross Alpha/Gross Beta/Total Uranium/Radium 226	HNO3 (pH < 2)	1 - 1 gal plastic cubitainer	

ADDITIONAL INFORMATION

OVA Reading (ppm):

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s): [signature]

GROUNDWATER PURGING AND SAMPLING LOG

Date 101999

Project Site Name: NTC Orlando
Project No.: CTO 0024

Sample ID No.: NTC08G0412
Sample Location: Site 8
Sampled By: KSm / JcLS
C.O.C. No.:

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

PURGING DATA

Casing Size (in.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
1	0.041	1505	5.83	448.0	27.54	2.61	1.14	63.0	.81	100
2	0.163	1510	5.80	450.0	27.64	2.66	0.75	70.0	.81	100
3	0.367	1515	5.80	446.0	27.68	2.75	0.65	73.5	.81	100
4	0.653	1520	5.80	442.0	27.67	2.63	0.62	77.8	.81	100
5	1.020	1525	5.80	438.0	27.69	2.79	0.52	81.4	.81	100
6	1.469	1530	5.79	431.0	27.69	2.89	0.54	83.0	.81	100
8	2.611	1533	5.79	429.0	27.86	2.86	0.51	83.1	.81	100
10	4.080		✓	✓	✓	✓	✓	✓		

Well Casing Diameter: 2" PVC
Total Well Depth (TD): 13.02
Static Water Level (WL): .74
One Casing Volume(gal/L): 2.0 g

[3.78gals/L]

Start Purge (hrs): 1505
End Purge (hrs): 1533
Total Purge Time (min): 28 min
Total Vol. Purged (gal/L): 2.8 lt

SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 101999 / Time: 1535	clear	5.80	429.0	27.88	2.80	0.52	83.0	.81	100

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
TAL INORGANIC			101999
~~Gross Alpha/Gross Beta/Ra-226/Ra-228~~	HNO2 (pH<2)	~~1/2 gal plastic container~~	

ADDITIONAL INFORMATION

OVA Reading (ppm): 0 ppm

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

Circle if Applicable:

MS/MSD

Duplicate ID No.: ~~Kevin J. Margotta~~

Signature(s): Kevin J. Margotta

Date 102199

GROUNDWATER PURGING AND SAMPLING LOG

Project Site Name: NTC Orlando

Project No.: CTO 0024

Sample ID No.: NTC08G0512

Sample Location:

Sampled By:

C.O.C. No.:

[ ] Domestic Well Data

[X] Monitoring Well Data

[ ] Other Well Type:

* Duplicate collected on this well

* MS/MSD collected

PURGING DATA

Casing Size (in.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	* DTW ft BTOC	Flow Rate ml/min
1	0.041	1300	5.68	76.00	25.64	6.8	3.56	74.2	~~0.80~~	100
2	0.163	1305	5.41	93.00	25.12	7.3	1.49	73.7	~~0.80~~	100
3	0.367	1310	5.41	95.00	25.05	4.0	1.29	63.7	~~0.80~~	100
4	0.653	1315	5.43	96.00	25.15	2.2	1.11	57.4	~~0.80~~	100
5	1.020	1320	5.43	97.00	25.25	2.2	1.07	55.6	~~0.80~~	100
6	1.469	1325	5.43	98.00	25.19	2.0	0.96	52.9	~~0.80~~	100
8	2.611	1330	5.42	98.00	25.08	2.0	0.88	50.2	~~0.80~~	100
10	4.080	1335	5.42	99.00	25.04	1.8	0.86	48.2	~~0.80~~	100
		1340	5.41	99.00	25.00	2.1	0.79	44.6	~~0.80~~	100
		1345	5.41	99.00	24.88	2.1	0.82	43.9	~~0.80~~	100
		1348	5.41	99.00	24.94	2.0	0.79	43.0	~~0.80~~	100
		1351	5.41	99.00	24.81	1.6	0.73	42.5	~~0.80~~	100
Well Casing Diameter: 0.5		1354	5.41	99.00	24.75	1.5	0.71	42.0	~~0.80~~	100
Total Well Depth (TD): 9.53		1357	5.41	99.00	24.73	1.5	0.70	42.0	~~0.80~~	100
* Static Water Level (WL): 0.80		1400	5.41	99.00	24.72	1.3	0.70	41.5	0.80	100
One Casing Volume(gal/L):		0.37								
[3.78gals/L]										
Start Purge (hrs): 1300										
End Purge (hrs):										
Total Purge Time (min): 60										
Total Vol. Purged (gal/L): 6.06										

* Initial water level measurements (Static Water Level) were incorrectly recorded in subsequent readings (DTW). The incorrect readings have been crossed-out. MJC-12/29/99

SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 102199 / Time: 1400	Clear	5.41	99.00	24.71	1.3	0.71	41.8	0.80	100

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
TAL Inorganic	HNO_3	4 - 1Lt Plastic (1 Dup + 2 MS/MSD = 4	102199

ADDITIONAL INFORMATION

OVA Reading (ppm): 0 ppm

Method:
- [X] Peristaltic Pump
- [ ] Centrifugal Pump
- [ ] Bladder Pump
- [ ] Tube Evacuation
- [ ] Vacuum Jug Assembly
- [ ] Bailer

Tubing Type:
- [ ] Polyethylene
- [X] Teflon
- [ ] Teflon-lined Polyethylene

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
	NTC08G3000 / NTC08G0512 MS / NTC08G0512 MSD	[signature]

Date 10/19/99

GROUNDWATER PURGING AND SAMPLING LOG

Project Site Name:	NTC Orlando	Sample ID No.:	NTC08G0612
Project No.:	CTO 0024	Sample Location:	OLD0806
		Sampled By:	SM/SK
		C.O.C. No.:	83422

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

PURGING DATA

Casing Size (in.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW* ft BTOC	Flow Rate ml/min
1	0.041	1615	6.32	192	29.02	11.7	0.97	-71.7	~~.62~~	100
2	0.163	1620	6.15	175	28.29	2.11	1.24	-72.9	~~.62~~	100
3	0.367	1625	6.15	174	28.33	1.81	1.24	-74.5	~~.62~~	100
4	0.653	1630	6.14	173	28.26	1.77	1.24	-74.5	~~.62~~	100
5	1.020		±0.1 ✓	±8.7 ✓	±1.4 ✓	x	✓	±3.6 ✓	<0.3 ✓	
6	1.469									
8	2.611									
10	4.080									

Well Casing Diameter: .85*
Total Well Depth (TD): 4.0
Static Water Level (WL): .62*
One Casing Volume(gal/L): ~~.13~~ 0.085 gals
[3.78gals/L]

Start Purge (hrs): 1615
End Purge (hrs): 1630
Total Purge Time (min): 15
Total Vol. Purged (gal/L): .4

* Initial water level measurements (Static Water Level) were incorrectly recorded in subsequent readings (DTW). The incorrect readings have been crossed-out. MJC-12/29/99

SAMPLE PARAMETERS

Date / Time	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 10/19/99 Time: 1630	Clear	6.14	173	28.26	1.77	1.24	-74.5	0.62	100

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
~~Gross Alpha/Gross Beta/Total Uranium/Radium 226~~	~~HNO3 (pH < 2)~~	~~1 - 1 gal plastic container~~	
TAL Inorganics	HNO3	1 L plastic	✓

ADDITIONAL INFORMATION

OVA Reading (ppm): 0.0 PPM

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
		[signature]

GROUNDWATER PURGING AND SAMPLING LOG

Date 101999

Project Site Name: NTC Orlando
Project No.: CTO 0024

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

Sample ID No.: ~~[illegible]~~ NTC08G-C81
Sample Location: Site 8
Sampled By: KJM / GLS
C.O.C. No.:

PURGING DATA

Casing Size (in.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW* ft BTOC	Flow Rate ml/min
1	0.041	1325	6.35	584.0	28.11	6.47	.69	-37.0	~~9.45~~	100
2	0.163	1330	6.38	590.0	28.15	3.26	.52	-52.4	~~9.45~~	100
3	0.367	1335	6.36	592.0	28.27	2.84	.49	-58.2	~~9.45~~	100
4	0.653	1340	6.37	596.0	27.99	2.60	.51	-62.2	~~9.45~~	100
5	1.020	1345	6.37	592.0	27.78	2.19	.51	-64.3	~~9.45~~	100
6	1.469	1350	6.37	592.0	28.07	1.79	.38	-65.9	~~9.45~~	100
8	2.611	1355	6.36	593.0	27.81	1.68	.43	-68.0	~~9.45~~	100
10	4.080	1358	6.38	592.0	27.50	1.60	.38	-69.2	~~9.45~~	100
		1402	6.38	592.0	27.64	1.85	.53	-69.5	~~9.45~~	100
			✓	✓	✓	✓	x	✓	✓	✓

Well Casing Diameter: 0.5
Total Well Depth (TD): 9.45
* Static Water Level (WL): .83
One Casing Volume (gal/L): .45 0.33 L
[3.78gals/L]

Start Purge (hrs): 1319
End Purge (hrs): 1402
Total Purge Time (min): 43 min
Total Vol. Purged (gal/L): 4.3 Lit

* Initial water level measurements (Static Water Level) were incorrectly recorded in subsequent readings (DTW). The incorrect readings have been crossed-out. MJC-12/29/99

NO DO

SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 101999									
Time: 1405	Clear	6.37	592.0	27.61	1.70	.43	-68.3	9.45	100

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
TAL Organics	~~H_2SO_4~~ HNO3	1 Lt. Plastic	101999
~~Gross Alpha/Gross Beta/Total Uranium/Radium 226~~	~~HNO3 (pH<2)~~	~~1 - 1 gal plastic cubitainer~~	✓
Herbicides 8151	None	2 - 1Lt. Ambers	

ADDITIONAL INFORMATION

OVA Reading (ppm): 0 ppm

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

Circle If Applicable:

MS/MSD | Duplicate ID No.:

Signature(s): [signature]

GROUNDWATER PURGING AND SAMPLING LOG

Date 102199

Project Site Name: NTC Orlando
Project No.: CTO 0024

Sample ID No.: NTC08G1012
Sample Location: Site 8
Sampled By: KJm / GLS
C.O.C. No.:

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

PURGING DATA

Casing Size (in.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	* DTW ft BTOC	Flow Rate ml/min
1	0.041	1050	6.25	282.0	24.65	5.3	1.86	-16.0	~~0.45~~	100
2	0.163	1055	6.25	283.0	24.65	3.6	1.75	-15.5	~~0.45~~	100
3	0.367	1100	6.28	287.0	24.64	2.0	1.51	-13.9	~~0.45~~	100
4	0.653	1105	6.31	289.0	24.70	1.0	1.26	-12.5	~~0.45~~	100
5	1.020	1110	6.32	289.0	24.65	0.8	1.14	-11.4	~~0.45~~	100
6	1.469	1115	6.33	289.0	24.66	0.75	1.09	-11.0	~~0.45~~	100
8	2.611	1118	6.33	288.0	24.68	0.70	1.07	-10.8	~~0.45~~	100
10	4.080	1121	6.33	289.0	24.67	0.65	1.06	-10.9	~~0.45~~	100
		1124	6.33	289.0	24.68	0.50	1.05	-10.9	~~0.45~~	100
			✓	✓	✓	x	✓	✓	✓	-

No turbd

Well Casing Diameter: 0.5
Total Well Depth (TD): 9.43
* Static Water Level (WL): 0.45
One Casing Volume(gal/L): 0.35 L
[3.78gals/L]

Start Purge (hrs): 1050
End Purge (hrs): 1125
Total Purge Time (min): 35 min
Total Vol. Purged (gal/L): 3.5 Lt.

* Initial water level measurements (Static Water Level) were incorrectly recorded in subsequent readings (DTW). The incorrect readings have been crossed-out. MJC-12/29/99

SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 102199 Time:	clear	6.33	289.0	24.69	0.50	1.06	-10.8	0.45	100

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
~~Gross Alpha/Gross Beta/Total Uranium/Radium 226~~	~~HNO3 (pH<2)~~	~~1 Liter plastic container~~	
TAL INORGANIC	HNO3	1-1Lt Plastic	102199
Herbicides	NONE	2-1Lt. Ambers	↓

ADDITIONAL INFORMATION

OVA Reading (ppm): 0 ppm

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s): [signature]

Date 10/19/99

GROUNDWATER PURGING AND SAMPLING LOG

Project Site Name: NTC Orlando
Project No.: CTO 0024

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

Sample ID No.: NTC086~~M~~12
Sample Location: OLD081~~2~~
Sampled By: JM/JK
C.O.C. No.: ~~53415~~ 53422

PURGING DATA

Casing Size (in.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	* DTW ft BTOC	Flow Rate ml/min
1	0.041	1530	6.35	227	27.50	15.2	1.94	-181.8	~~.45~~	100
2	0.163	1535	6.25	213	27.67	7.49	1.68	-218.4	~~.45~~	100
3	0.367	1540	6.25	212	27.75	4.59	1.76	-226.2	~~.45~~	100
4	0.653	1550	6.24	~~[illegible]~~	27.96	2.98	1.80	-230.3	~~.45~~	100
5	1.020		✓	212 ✓	✓					
6	1.469									
8	2.611									
10	4.080									

Well Casing Diameter: .05
Total Well Depth (TD): 9.65
* Static Water Level (WL): .45
One Casing Volume(~~gal~~/L): ~~1.452~~ 0.4 L

[3.78gals/L]

Start Purge (hrs): 1530
End Purge (hrs): 1550
Total Purge Time (min): 20
Total Vol. Purged (~~gal~~/L): ~~4~~ 2 L

*Initial water level measurements (Static Water Level) were incorrectly recorded in subsequent readings (DTW). The incorrect readings have been crossed-out. MJC-12/29/99

NO
+9.6
+10

SAMPLE PARAMETERS

Date: 10/19/99 Time: 1550	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
	clear	6.24	212	27.96	2.98	1.80	-230.3	.45	100

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
~~Gross Alpha/Gross Beta/Total Uranium/Radium 226~~	~~HNO3 (pH < 2)~~	~~1 - 1 gal plastic cubitainer~~	
Herbicides (8151)	N/A	2 1 L Glass	✓
TAL (Inorganics)	HNO_3	1 1 L Plastic	✓

ADDITIONAL INFORMATION

OVA Reading (ppm): 0.0 PPM

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s): J Kelley

GROUNDWATER PURGING AND SAMPLING LOG

Date 102199

Project Site Name: NTC Orlando
Project No.: CTO 0024

Sample ID No.: NTC08G1312
Sample Location: Site 8
Sampled By: VJN / GLS
C.O.C. No.:

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

* stop purge @ Beginning. DO probe membrane needs replacing.

PURGING DATA

Casing Size (in.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW * ft BTOC	Flow Rate ml/min
1	0.041	0900	5.88	191.0	23.29		18.31	Stop purge		
2	0.163	0950	5.49	167.0	22.40	47.9	5.70	43.7	~~[illegible]~~	100
3	0.367	0955	5.34	166.0	23.21	21.2	2.95	13.5	~~[illegible]~~	100
4	0.653	1000	5.25	144.00	23.27	12.0	1.70	-0.5	~~[illegible]~~	100
5	1.020	1005	5.23	144.0	23.40	10.7	1.68	-0.7	~~[illegible]~~	100
6	1.469	1010	5.22	143.0	23.41	8.7	1.66	-1.1	~~[illegible]~~	100
8	2.611	1015	5.20	143.0	23.48	7.1	1.58	-1.6	~~[illegible]~~	100
10	4.080	1018	5.20	142.0	23.60	6.8	1.55	-2.6	~~[illegible]~~	100
		1022	5.20	140.0	23.70	6.1	1.54	-3.2	~~[illegible]~~	100
		1025	5.20	139.0	23.67	5.2	1.52	-3.8	~~[illegible]~~	100
		1028	5.19	139.0	23.69	5.2	1.51	-3.3	~~[illegible]~~	200
		1031	5.19	138.0	23.74	4.9	1.50	-3.4	~~[illegible]~~	100
Well Casing Diameter:	0.5	1034	5.19	138.0	23.72	4.7	1.50	-3.5	~~[illegible]~~	100
Total Well Depth (TD):	10.95									
* Static Water Level (WL):	3.43									
One Casing Volume(gal/L):		0.29 L								
[3.78gals/L]										
Start Purge (hrs):	~~0900~~ 950									
End Purge (hrs):	1035									
Total Purge Time (min):	45 min									
Total Vol. Purged (gal/L):	4.5 L									

* Initial water level measurements (Static Water Level) were incorrectly recorded in subsequent readings (DTW). The incorrect readings have been crossed-out. MJC-12/29/99

SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date 102199 / Time 1035	Clear	5.19	138.0	23.70	4.7	1.50	-3.4	3.81	100

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
TAL INORGANICS	HNO3	1-1Lt Plastic	102199
Gross Alpha/Gross Beta/Total Uranium/Radium 226	HNO3 (pH < 2)	1 - 1 gal plastic cubitainer	

ADDITIONAL INFORMATION

OVA Reading (ppm): 0 ppm

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s): [signature]

GROUNDWATER PURGING AND SAMPLING LOG

Date 102099

Page 1 of 1

Project Site Name: NTC Orlando
Project No.: CTO 0024

Sample ID No.: NTC08G1412
Sample Location: Site 8
Sampled By: KSM / BHS
C.O.C. No.:

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

PURGING DATA

Casing Size (in.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	* DTW ft BTOC	Flow Rate ml/min
1	0.041	1618	4.66	317.0	25.61	7.11	1.40	101.5	~~4.50~~	100
2	0.163	1620	4.62	314.0	25.74	7.08	1.44	99.5	~~4.50~~	100
3	0.367	1625	4.63	314.0	25.58	5.49	1.45	95.6	~~4.50~~	100
4	0.653	1630	4.65	311.0	25.20	5.11	1.48	92.2	~~4.50~~	100
5	1.020		✓	✓	✓	✓				
6	1.469									
8	2.611									
10	4.080									

Well Casing Diameter: 0.5
Total Well Depth (TD): 10.95
* Static Water Level (WL): 4.55
One Casing Volume(gal/L): 0.2L
[3.78gals/L]
Start Purge (hrs): 1615
End Purge (hrs): 1630
Total Purge Time (min): 15 min
Total Vol. Purged (gal/L): 1.5 L

* Initial water level measurements (Static Water Level) were incorrectly recorded in subsequent readings (DTW). The incorrect readings have been crossed-out. MJC-12/29/99

60 purge 4.10

SAMPLE PARAMETERS

Date / Time	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 102099 Time: 1630	Amber	4.67	310.0	25.27	4.9	1.48	92.0	4.50	100

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
TAL Inorganics	HNO3	1-1Lt. Plastic	1020
~~Gross Alpha/Gross Beta/Total Uranium/Radium 226~~	~~HNO3 (pH < 2)~~	~~1 - 1 gal plastic cubitainer~~	
Herbicides	None	2-1Lt Amber	✓

ADDITIONAL INFORMATION

OVA Reading (ppm): 0 ppm

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):

GROUNDWATER PURGING AND SAMPLING LOG

Date 102099

Project Site Name: NTC Orlando
Project No.: CTO 0024

Sample ID No.: NTC08G1512
Sample Location: Site 8
Sampled By: KSM / GLS
C.O.C. No.:

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

Note Collected sample w/High Turbidity Readings @S per Mike Cambell

PURGING DATA

Casing Size (in.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
1	0.041	0945	4.76	283.0	25.38	59.6	1.20	83.5		100
2	0.163	0950	4.57	285.0	25.59	65.6	0.86	87.1		100
3	0.367	0955	4.52	283.0	25.44	67.9	0.87	87.6		100
4	0.653	~~1000~~ 1005	4.49	276.0	25.54	78.9	0.78	87.4		100
5	1.020	1015	4.46	272.0	25.52	86.6	0.58	87.7		100
6	1.469	1025	4.43	269.0	25.55	92.7	0.51	87.2		100
8	2.611	1035	4.40	266.0	25.57	94.2	0.45	86.8		100
10	4.080	1040	4.42	265.0	25.42	96.4	0.36	85.3		100
		1045	4.43	264.0	25.35	98.1	0.36	85.0		100

Well Casing Diameter: 0.5
Total Well Depth (TD): 10.87
Static Water Level (WL): 3.83
One Casing Volume(gal/L): 0.26

[3.78gals/L]

Start Purge (hrs): 0940
End Purge (hrs): 1045
Total Purge Time (min): 65 min
Total Vol. Purged (gal/L): 6.5 L

4/.
60 min

SAMPLE PARAMETERS

Date: 102099	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Time: 1045	Lt. Amber	4.42	264.0	25.37	99.6	0.37	85.1		100

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
TAL INORGANICS	HNO3	1 - 1Lt Plastic	102099
~~Gross Alpha/Gross Beta/Total Uranium/Radium-226~~	~~HNO3 (pH<2)~~	~~1-gal plastic container~~	
Herbicides	NONE	2 - 1Lt. Ambers	

ADDITIONAL INFORMATION

OVA Reading (ppm): 0 ppm

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

Circle If Applicable:

MS/MSD | Duplicate ID No.:

Signature(s):

Date 10/19/99

GROUNDWATER PURGING AND SAMPLING LOG

Project Site Name: NTC Orlando
Project No.: CTO 0024

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

Sample ID No.: NTC08G17B
Sample Location: 01008 17
Sampled By: JM/JK
C.O.C. No.: ~~53415~~ 53422

PURGING DATA

Casing Size (in.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW* ft BTOC	Flow Rate ml/min
1	0.041	1325	6.62	410	27.47	3.40	2.81	188.5	~~0.55~~	100
2	0.163	1330	6.66	477	27.05	1.53	2.73	60.1	~~0.55~~	100
3	0.367	1333	6.68	481	27.26	0.94	2.66	16.9	~~0.55~~	100
4	0.653	1337	6.69	479	27.59	1.07	2.80	-39.1	~~0.55~~	100
5	1.020	1342	6.69	476	27.44	0.78	2.78	-61.4	~~0.55~~	100
6	1.469	1347	6.69	476	27.71	1.03	2.68	-64.0	~~0.55~~	100
8	2.611	1352	6.69	478	28.09	0.56	2.92	-81.6	~~0.55~~	100
10	4.080	1357	6.69	477	27.42	0.53	2.64	-101.8	~~0.55~~	100
11		1402	6.69	477	27.37	0.66	2.65	-105.4	~~0.55~~	100
12		1407	6.69	[illegible]	27.79	0.70	2.61	-108.5	~~0.55~~	100
13			✓	✓	✓	X	✓			
14										

Well Casing Diameter: 0.5
Total Well Depth (TD): 9.25
* Static Water Level (WL): 0.55
One Casing Volume(gal/L): ~~1.35~~ 0.34 L

[3.78gals/L]

Start Purge (hrs): 1325
End Purge (hrs): 1407
Total Purge Time (min): 42
Total Vol. Purged (gal/L): ~~1~~ 4.2 L

* Initial water level measurements (Static Water Level) were incorrectly recorded in subsequent readings (DTW). The incorrect readings have been crossed-out. MJC-12/29/99

N
tank

SAMPLE PARAMETERS

Date: 10/19/99 Time: 1407	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
	clear	6.69	477	27.99	0.70	2.61	-108.5	0.55	100

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
~~Gross Alpha/Gross Beta/Total Uranium/Radium 226~~	~~HNO3 (pH < 2)~~	~~1 - 1 gal plastic container~~	
Metals (TAL Inorganic)	HNO_3	1 - Liter	yes

ADDITIONAL INFORMATION

OVA Reading (ppm): 0.0 ppm

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
		[signature]

Date 102099

GROUNDWATER PURGING AND SAMPLING LOG

Project Site Name: NTC Orlando
Project No.: CTO 0024

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

Sample ID No.: NTC08G-1812
Sample Location: Site 8
Sampled By: KJM / GLS
C.O.C. No.:

PURGING DATA

Casing Size (in.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW* ft BTOC	Flow Rate ml/min
1	0.041	1110	5.14	114.0	25.51	439.0	1.98	8.5	~~2.77~~	100
2	0.163	1115	5.18	94.00	25.25	396.0	1.34	5.0	~~2.77~~	100
3	0.367	1125	5.12	91.00	25.38	53.9	0.93	-2.0	~~2.77~~	100
4	0.653	1130	5.15	91.00	25.50	24.8	0.80	-4.5	~~2.77~~	100
5	1.020	1135	5.16	90.00	26.06	15.1	0.93	-2.9	~~2.77~~	100
6	1.469	1140	5.14	90.00	26.04	12.6	0.69	-4.0	~~2.77~~	100
8	2.611	1145	5.15	90.00	26.13	11.2	0.72	-6.8	~~2.77~~	100
10	4.080	1148	5.14	87.00	26.06	10.3	0.61	-6.8	~~2.77~~	100
		1152	5.14	89.00	25.97	9.2	0.63	-7.6	~~2.77~~	100
		1155	5.12	89.00	25.77	9.0	0.61	-4.4	~~2.77~~	100
		1158	5.11	89.00	25.96	8.7	0.50	-7.0	~~2.77~~	100
		1201	5.13	88.00	26.17	8.0	0.60	-7.8	~~2.77~~	100
Well Casing Diameter: 0.5		1204	5.12	88.00	26.22	7.8	0.51	-7.7	~~2.77~~	100

Total Well Depth (TD): 13.93
* Static Water Level (WL): 2.77
One Casing Volume(gal/L): 0.4 L
[3.785 gals/L]

Start Purge (hrs): 1105
End Purge (hrs): 1204
Total Purge Time (min): 59 min
Total Vol. Purged (gal/L): 5.9 L

* Initial water level measurements (Static Water Level) were incorrectly recorded in subsequent readings (DTW). The incorrect readings have been crossed-out. MJC-12/29/99

SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 102099 / Time: 1205	Clear	5.12	88.00	26.24	7.0	0.55	-7.6	2.77	100

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
TAL Inorganics	HNO3	1 - 1 Lt Plastic	102099
Gross Alpha/Gross Beta/Total Uranium/Radium 226	HNO3 (pH < 2)	1 - 1 gal plastic cubitainer	
Herbicides	None	2 - 1 Lt Amber	"

ADDITIONAL INFORMATION

OVA Reading (ppm): 0 ppm

Method:
[ ] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[ ] Teflon
[ ] Teflon-lined Polyethylene

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):

Date 10/21/99

GROUNDWATER PURGING AND SAMPLING LOG

Project Site Name: NTC Orlando
Project No.: CTO 0024

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

Sample ID No.: NTC0960112
Sample Location: OLD0901
Sampled By: JK/JM
C.O.C. No.: 53417

PURGING DATA

Casing Size (in.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
1	0.041	1035	6.55	448	25.71	2.52	5.51	-51.9	1.11	100
2	0.163	1040	6.45	462	25.41	2.62	5.15	-88.2	1.11	100
3	0.367	1045	6.44	460	25.25	2.08	5.67	-96.8	1.11	100
4	0.653	1050	6.44	458	25.38	1.59	5.54	-91.8	1.11	100
5	1.020	1055	6.44	455	25.61	2.31	5.46	-95.7	1.11	100
6	1.469	1105	6.43	452	25.51	2.01	5.77	-107.2	1.11	100
8	2.611	1110	6.43	451	25.48	2.74	5.75	-108.7	1.11	100
10	4.080	1115	6.43	447	25.49	1.21	5.31	-97.4	1.11	100
		1120	6.43	446	25.52	1.22	5.28	-98.4	1.11	100
		1125	6.42	446	25.50	1.33	5.57	-108.5	1.11	100
		1130	6.42	445	25.33	1.84	5.53	-119.2	1.11	100
		1135	6.42	443	25.32	1.31	5.31	-118.6	1.11	100
Well Casing Diameter: 2"		1140	6.42	442	25.32	1.40	5.17	-124.9	1.11	100
Total Well Depth (TD): 13.5		1145	6.42	441	25.37	1.53	5.21	-123.7	1.11	100
Static Water Level (WL): 1.11		1150	6.42	441	25.40	1.86	5.25	-123.4	1.11	100
One Casing Volume(~~gal~~/L): 7.64			✓	✓	✓	x	✓	✓		
[3.78gals/L]										
Start Purge (hrs): 1035										
End Purge (hrs): 1150										
Total Purge Time (min): 75										
Total Vol. Purged (~~gal~~/L): 1.5										

NO tur

SAMPLE PARAMETERS

Date / Time	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 10/21/99 Time: 1150	Clear	6.42	441	25.40	1.86	5.25	-123.4	1.11	100

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
~~Gross Alpha/Gross Beta/Total Uranium/Radium 226~~	~~HNO3 (pH < 2)~~	~~1 - 1 gal plastic container~~	
Pesticides 8181	N/A	2 1 L Glass	✓
Herbicides 8151	N/A	4 1 L Glass	✓
TAL Inorganics	HNO3	2 1 L Plastic	✓

ADDITIONAL INFORMATION

OVA Reading (ppm): 0.00 PPM

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

Circle if Applicable:

MS/MSD: —

Duplicate ID No.: NTC09D5000

Signature(s): J Kiley

GROUNDWATER PURGING AND SAMPLING LOG

Date 10-22-99

Project Site Name:	NTC Orlando	Sample ID No.:	NTC091-0212
Project No.:	CTO 0024	Sample Location:	NTC-Orlando
		Sampled By:	Gary Sparks
		C.O.C. No.:	

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

PURGING DATA

Casing Size (in.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
1	0.041	15:30	4.83	6600	26.62	17.7	2.32	100.9	3.56	100
2	0.163	15:35	4.60	65.00	26.58	17.2	2.92	126.3		100
3	0.367	15:40	4.51	6500	26.59	17.2	.78	116.7		100
4	0.653	15:45	4.59	62.00	26.56	18.7	.97	111.5		100
5	1.020	15:50	4.58	63.00	26.63	20.0	.56	96.5		100
6	1.469	15:53	4.62	61.00	26.86	20.8	.51	89.0		100
8	2.611	15:56	4.64	62.00	26.77	21.2	.53	83.3		100
10	4.080	15:59	4.62	62.00	26.65	21.2	.51	82.9		100
		16:02	4.64	62.00	26.68	22.1	.51	81.1		100

Well Casing Diameter: 2.163 2"
Total Well Depth (TD): 12
Static Water Level (WL): 3.56
One Casing Volume(gal/L):

[3.78gals/L]

Start Purge (hrs): 15:30
End Purge (hrs): 16:02
Total Purge Time (min): 32
Total Vol. Purged (gal/L): 3.2

SAMPLE PARAMETERS

Date: 10-22-99 / Time: 16:02	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
	clear	4.64	62.00	26.68	22.1	.51	81.1	3.56	100

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Gross Alpha/Gross Beta/Total Uranium/Radium 226	HNO3 (pH < 2)	1 - 1 gal plastic cubitainer	
Herbicides		2 glass Liters	✓
pesticides		2 glass Liters	✓
TAL inorganics	Nitric	1 plastic Liter	✓

ADDITIONAL INFORMATION

OVA Reading (ppm):

Method:
[✓] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[✓] Teflon
[ ] Teflon-lined Polyethylene

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s): Gary Sparks

Date 10/20/99

GROUNDWATER PURGING AND SAMPLING LOG

Project Site Name: NTC Orlando
Project No.: CTO 0024

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

Sample ID No.: NTC09G0312
Sample Location: 04D0903
Sampled By: JK/JM
C.O.C. No.: 53421

PURGING DATA

Casing Size (in.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
1	0.041	1045	5.63	131	28.18	2.52	2.48	6.3	4.6	100
2	0.163	1050	5.45	98	28.72	2.23	1.81	-39.3	4.6	100
3	0.367	1055	5.45	97	28.89	2.10	1.57	-42.3	4.6	100
4	0.653	1100	5.46	97	29.95	1.98	1.60	-50.9	4.6	100
5	1.020	1105	5.45	97	29.64	1.96	1.48	-58.7	4.6	100
6	1.469	1110	5.45	97	28.94	1.97	1.45	-68.2	4.6	100
8	2.611	1115	5.44	97	28.85	2.17	1.40	-72.6	4.6	100
10	4.080	1120	5.44	97	28.61	2.23	1.37	-74.5	4.6	100
		1125	5.43	97	28.17	2.01	1.39	-77.5	4.6	100
			✓	✓	✓	✓	X	✓	✓	

Well Casing Diameter: 2"
Total Well Depth (TD): 12.0
Static Water Level (WL): 4.60
One Casing Volume(~~gal~~/L): 4.6

[3.78gals/L]

Start Purge (hrs): 1045
End Purge (hrs): 1125
Total Purge Time (min): 40
Total Vol. Purged (~~gal~~/L): .9

no DO

SAMPLE PARAMETERS

Date	Time	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
10/20/99	1125	Clear	5.43	97	28.17	2.01	1.39	-77.5	4.6	100

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
~~Gross Alpha/Gross Beta/Total Uranium/Radium 226~~	HNO3 (pH ≤ 2)	~~1 - 1 gal plastic cubitainer~~	
SVOCs (Method 8270)	N/A	2 1L Amber Glass	✓
Pesticides (Method 8181)	N/A	2 1L Amber "	✓
Herbicides (Method 8151)	N/A	2 1L Amber "	✓
TAL Inorganics	HNO3	2 1 Liter Plastic	✓

ADDITIONAL INFORMATION

OVA Reading (ppm): 0.0 PPM

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	NTC09D4000	G Kilgore

Date 10/21/99

GROUNDWATER PURGING AND SAMPLING LOG

Page 1 of 1

Project Site Name: NTC Orlando
Project No.: CTO 0024

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

Sample ID No.: NTC0960412
Sample Location: OLD0904
Sampled By: JK/JM
C.O.C. No.: 33417

PURGING DATA

Casing Size (in.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
1	0.041	1425	6.57	155	25.21	10.05	4.06	-89.9	2.68	100
2	0.163	1430	6.10	220	25.37	13.1	5.09	-95.8	2.68	100
3	0.367	1435	6.10	220	25.37	13.2	5.10	-111.2	2.68	100
4	0.653	1440	6.01	195	25.08	9.90	3.95	-115.0	2.68	100
5	1.020	1445	6.04	191	24.52	11.6	6.83	-99.1	2.68	100
6	1.469	1450	6.08	188	24.79	12.8	8.12	-89.4	2.68	100
8	2.611	1455	6.01	188	25.11	9.38	4.30	-103.4	26.8	100
10	4.080	1500	5.98	187	25.18	9.02	3.22	-124.7	26.8	100
		1505	5.97	185	25.05	8.92	3.02	-128.6	26.8	100
		1510	5.97	183	24.78	9.61	2.85	-127.9	26.8	100
		1515	5.97	183	24.66	10.72	2.70	-145.5	26.8	100
		1520	5.97	181	24.50	11.5	2.47	-151.8	2.68	100
Well Casing Diameter: 2"		1525	5.97	179	24.54	12.0	2.57	-162.3	2.68	100
Total Well Depth (TD): 12.0		1530	5.78	179	24.56	9.72	2.49	-164.0	2.68	100
Static Water Level (WL): 2.68										
One Casing Volume(gal/L): 5.75										
[3.78gals/L]										
Start Purge (hrs): 1425										
End Purge (hrs): 1530										
Total Purge Time (min): 65										
Total Vol. Purged (gal/L): 1.4										

SAMPLE PARAMETERS

Date / Time	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 10/21/99 Time: 1530	clear	5.98	179	24.56	9.72	2.49	-164.0	2.68	100

SAMPLE COLLECTION INFORMATION

Analysis		Preservative	Container Requirements	Collected
~~Gross Alpha/Gross Beta/Total Uranium/Radium 226~~		HNO3 (pH < 2)	1 - 1 gal plastic cubitainer	
SVOCs	8270	N/A	2 1 L Glass	✓
Pesticides	8181	N/A	2 1 L Glass	✓
Herbicides	8151	N/A	2 1 L Glass	✓
TAL Inorganics		HNO3	1 1 L Plastic	✓

ADDITIONAL INFORMATION

OVA Reading (ppm): 0.0

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

Circle if Applicable:

MS/MSD —

Duplicate ID No.: —

Signature(s): J Kolleger

GROUNDWATER PURGING AND SAMPLING LOG

Date 10/22/99

Project Site Name: NTC Orlando
Project No.: CTO 0024

Sample ID No.: NTC096C0512
Sample Location: OLD0405
Sampled By: JK/JM
C.O.C. No.: 53420

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

PURGING DATA

Casing Size (in.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	* DTW ft BTOC	Flow Rate ml/min
1	0.041	1005	6.62	520	24.77	2.98	5.32	-70.0	~~0.85~~	
2	0.163	1010	6.58	515	24.53	1.54	4.77	-64.6	~~0.85~~	100
3	0.367	1015	6.58	516	24.65	1.31	4.66	-137.4	~~0.85~~	100
4	0.653	1020	6.58	520	24.82	1.76	4.58	-145.0	~~0.85~~	100
5	1.020	1025	6.58	520	24.92	1.72	4.58	-145.8	~~0.85~~	100
6	1.469	1030	6.58	519	25.03	1.33	4.60	-146.9	~~0.85~~	100
8	2.611									
10	4.080									

Well Casing Diameter: 0.5
Total Well Depth (TD): 10
* Static Water Level (WL): 0.85
One Casing Volume(~~gal~~/L): ~~.73~~ 1.42 L
[3.78gals/L]

Start Purge (hrs): 1005
End Purge (hrs): 1030
Total Purge Time (min): 25
Total Vol. Purged (~~gal~~/L): 6

* Initial water level measurements (Static Water Level) were incorrectly recorded in subsequent readings (DTW). The incorrect readings have been crossed-out. MJC-12/29/99

4.0
+405
> 10.6

SAMPLE PARAMETERS

Date: 10/22/99 Time: 1030	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
	clear	6.58	519	25.03	1.33	4.60	-146.9	0.85	100

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
~~Gross Alpha/Gross Beta/Total Uranium/Radium 226~~	~~HNO3 (pH < 2)~~	1 - 1 gal plastic cubitainer	
Pesticides 8181	N/A	2 1 L Glass	✓
Herbicides 8151	N/A	2 1 L Glass	✓
TAL inorganics	HNO3	1 1 L Plastic	✓

ADDITIONAL INFORMATION

OVA Reading (ppm): 0.0 PPM

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
—	—	J Krieger

GROUNDWATER PURGING AND SAMPLING LOG

Date 10/22/99

Project Site Name: NTC Orlando
Project No.: CTO 0024

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

Sample ID No.: NTC09606l2
Sample Location: OLD0906
Sampled By: SK/JM
C.O.C. No.: 53420

PURGING DATA

Casing Size (in.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW* ft BTOC	Flow Rate ml/min
1	0.041	1105	6.60	342	26.04	19.8	3.83	-122.7	~~0.60~~	100
2	0.163	1110	6.41	381	25.78	14.9	3.38	-135.9	~~0.60~~	100
3	0.367	1115	6.39	388	25.97	7.93	2.69	-154.8	~~0.60~~	100
4	0.653	1120	6.38	386	24.86	3.85	2.73	-162.2	~~0.60~~	100
5	1.020	1125	6.38	385	25.05	3.18	2.80	-163.5	~~0.60~~	100
6	1.469	1130	6.38	385	25.04	3.15	2.78	-164.8	~~0.60~~	100
8	2.611	6.								
10	4.080									

Well Casing Diameter: 0.5
Total Well Depth (TD): 10
* Static Water Level (WL): 0.60
One Casing Volume(~~gal~~/L): 1.45

[3.78gals/L]

Start Purge (hrs): 1105
End Purge (hrs): 1130
Total Purge Time (min): 25
Total Vol. Purged (~~gal~~/L): .6L

*Initial water level measurements (Static Water Level) were incorrectly recorded in subsequent readings (DTW). The incorrect readings have been crossed-out. MJC-12/29/99

SAMPLE PARAMETERS

Date 10/22 / Time 1130	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
~~Gross Alpha/Gross Beta/Total Uranium/Radium 226~~	~~HNO3 (pH ≤ 2)~~	~~1 - 1 gal plastic cubitainer~~	
Pesticides	N/A	2 1L Glass	✓
Herbicides	N/A	2 1L Glass	✓
TAL Inorganics	HNO3	1 1L Plastic	✓

ADDITIONAL INFORMATION

OVA Reading (ppm): 0.0 PPM

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

Circle if Applicable:

MS/MSD —
Duplicate ID No.: —

Signature(s): J Kllegan

GROUNDWATER PURGING AND SAMPLING LOG

Date 10-23-99

Page 1 of 1

Project Site Name: NTC Orlando
Project No.: CTO 0024

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

Sample ID No.: NTC09G0712
Sample Location: OLD0907 Orlando
Sampled By: Gary Sparks
C.O.C. No.:

PURGING DATA

Casing Size (in.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
1	0.041	13:45	4.95	57.00	26.33	6.70	2.54	179.9	NA	100
2	0.163	13:50	4.86	57.00	26.28	5.50	1.62	171.7		100
3	0.367	13:53	4.82	58.00	26.28	4.07	1.29	171.5		100
4	0.653	13:56	4.81	58.00	26.36	4.05	1.12	167.2		100
5	1.020	13:59	4.80	58.00	26.46	3.30	1.01	159.6		100
6	1.469	14:05	4.81	59.00	26.71	2.89	.98	155.5		100
8	2.611	14:08	4.81	59.00	26.76	3.46	.93	151.7		100
10	4.080	14:11	4.81	58.00	26.65	2.82	.90	150.6		100
		14:14	4.81	58.00	26.67	2.70	.87	149.5		100

Well Casing Diameter: 0.5
Total Well Depth (TD): 12.0
Static Water Level (WL): 2.12
One Casing Volume(gal/L):

[3.78 L/gal]

Start Purge (hrs): 13.45
End Purge (hrs): 14.14
Total Purge Time (min): 30
Total Vol. Purged (gal/L): 3.0

no turb > 10%

SAMPLE PARAMETERS

Date: 10-23-99	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Time: 14:14	Clear	4.81	58.00	26.67	2.70	.87	149.5	~~2.10~~ NA GS	100

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Herbicides		2 Glass Liters	✓
Pesticides		" "	✓
TAL Inorganics	Nitrite	1 Plastic Liter	✓

ADDITIONAL INFORMATION

OVA Reading (ppm): 0.00 ppm

Method:
[✓] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[✓] Teflon
[ ] Teflon-lined Polyethylene

Circle If Applicable:
MS/MSD
Duplicate ID No.:

Signature(s): Gary Sparks

Date 10/21/99

GROUNDWATER PURGING AND SAMPLING LOG

Page 1 of 1

Project Site Name: NTC Orlando
Project No.: CTO 0024

Sample ID No.: NTC0961012
Sample Location: OLD0910
Sampled By: JK/JM
C.O.C. No.: 53417

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

PURGING DATA

Casing Size (in.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW* ft BTOC	Flow Rate ml/min
1	0.041	0910	6.21	390	24.12	16.4	0.86	59.6	~~0.91~~	100
2	0.163	0915	6.33	395	24.28	8.28	3.72	-2.4	~~0.91~~	100
3	0.367	0920	6.35	394	24.20	3.11	4.49	-64.2	~~0.91~~	100
4	0.653	0925	6.35	395	24.25	1.43	4.40	-80.3	~~0.91~~	100
5	1.020	0930	6.35	395	24.28	1.23	4.39	-82.2	~~0.91~~	100
6	1.469	0935	6.35	395	24.24	1.27	4.42	-86.3	~~0.91~~	100
8	2.611									
10	4.080									

Well Casing Diameter: 0.5
Total Well Depth (TD): 10
* Static Water Level (WL): 0.41
One Casing Volume(~~gal~~/L): 1.41

[3.78gals/L]

Start Purge (hrs): 0910
End Purge (hrs): 0935
Total Purge Time (min): 25
Total Vol. Purged (~~gal~~/L): .6

*Initial water level measurements (Static Water Level) were incorrectly recorded in subsequent readings (DTW). The incorrect readings have been crossed-out. MJC-12/29/99

n: 0
+46: 0

SAMPLE PARAMETERS

Date: 10/21/99 Time: 0935	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
	clear	6.35	395	24.24	1.27	4.42	-86.3	0.91	100

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
~~Gross Alpha/Gross Beta/Total Uranium/Radium 226~~	~~HNO3 (pH < 2)~~	~~1 - 1 gal plastic cubitainer~~	
Pesticides 8181	N/A	2 1 L Glass	✓
Herbicides 8151	N/A	2 1 L Glass	✓
TAL Inorganics	HNO3	1 1 L Plastic	✓

ADDITIONAL INFORMATION

OVA Reading (ppm): 0.0 PPM

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [illegible]

Date 10/20/99

GROUNDWATER PURGING AND SAMPLING LOG

Page 1 of 1

Project Site Name: NTC Orlando
Project No.: CTO 0024

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

Sample ID No.: NTC09G1112
Sample Location: OLD0911
Sampled By: JK/JM
C.O.C. No.: 53421

PURGING DATA *

Casing Size (in.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
1	0.041	1620	6.44	395	28.41	7.60	2.07	-80.5	~~1.41~~	100
2	0.163	1625	6.46	400	28.20	2.29	2.62	-105.7	~~1.41~~	100
3	0.367	1630	6.48	401	28.48	1.97	2.79	-116.9	~~1.41~~	100
4	0.653	1635	6.50	401	28.57	1.39	2.92	-121.3	~~1.41~~	100
5	1.020	1640	6.50	401	28.60	1.39	2.85	-124.4	~~1.41~~	100
6	1.469	1645	6.51	400	28.78	1.36	2.83	-126.8	~~1.41~~	100
8	2.611									
10	4.080									

Well Casing Diameter: 0.5
Total Well Depth (TD): 10.0
* Static Water Level (WL): 1.41
One Casing Volume(gal/L): 1.3

[3.78gals/L]

Start Purge (hrs): 1620
End Purge (hrs): 1645
Total Purge Time (min): 25
Total Vol. Purged (gal/L): .6

*Initial water level measurements (Static Water Level) were incorrectly recorded in subsequent readings (DTW). The incorrect readings have been crossed-out. MJC-12/29/99

SAMPLE PARAMETERS

Date / Time	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 10/20/99 Time: 1645	Clear	6.51	400	28.78	1.36	2.83	-126.8	1.41	100

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
~~Gross Alpha/Gross Beta/Total Uranium/Radium-226~~	~~HNO3 (pH < 2)~~	~~1 - 1 gal plastic container~~	
Pesticides	N/A	2 1 L Glass	2
Herbicides	N/A	2 1 L Glass	2
TAL Inorganics	HNO3	1 1 L Plastic	1

ADDITIONAL INFORMATION

OVA Reading (ppm): 0.0 PPM

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

Circle if Applicable:

MS/MSD | Duplicate ID No.:

Signature(s): [signature]

GROUNDWATER PURGING AND SAMPLING LOG

Date 10/22/99

Project Site Name: NTC Orlando
Project No.: CTO 0024

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

Sample ID No.: NTC096I212
Sample Location: OLD0912
Sampled By: JK/JM
C.O.C. No.: 53420

PURGING DATA

Casing Size (in.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW* ft BTOC	Flow Rate ml/min
1	0.041	1405	5.70	213	27.56	21.3	5.17	-17.6	~~1.32~~	100
2	0.163	1410	6.41	375	27.54	8.77	6.07	-46.2	~~1.32~~	100
3	0.367	1415	6.43	379	27.54	8.40	5.94	-46.9	~~1.32~~	100
4	0.653	1420	6.49	394	27.40	5.77	6.33	-50.5	~~1.32~~	100
5	1.020	1425	6.52	398	27.47	4.98	6.25	-52.3	~~1.32~~	100
6	1.469	1430	6.55	404	27.53	4.02	6.39	-55.1	~~1.32~~	100
8	2.611									
10	4.080									

Well Casing Diameter: 0.5
Total Well Depth (TD): 10
* Static Water Level (WL): 1.32
One Casing Volume(gal/L): 1.35

[3.78gals/L]

Start Purge (hrs): 1405
End Purge (hrs): 1430
Total Purge Time (min): 25
Total Vol. Purged (gal/L): .6

*Initial water level measurements (Static Water Level) were incorrectly recorded in subsequent readings (DTW). The incorrect readings have been crossed-out. MJC-12/29/99

ho o, turb?

SAMPLE PARAMETERS

Date: 10/22/99 Time: 1430	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
	clear	6.55	404	27.53	4.02	6.39	-55.1	1.32	100

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
~~Gross Alpha/Gross Beta/Total Uranium/Radium 226~~	~~HNO3 (pH < 2)~~	~~1 - 1 gal plastic cubitainer~~	
SVOCs 8270		6 1 L Glass	✓
Pesticides 8081		6 1 L Glass	✓
Herbicides 8151		6 1 L Glass	✓
TAL Inorganics		3 1 L Plastic	✓

ADDITIONAL INFORMATION

OVA Reading (ppm): 0.0 PPM

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

Circle if Applicable:
MS/MSD
Duplicate ID No.:

Signature(s): [signature]

GROUNDWATER PURGING AND SAMPLING LOG

Date 10-22-99

Project Site Name: NTC Orlando
Project No.: CTO 0024

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

Sample ID No.: NTC C9 F 1412
Sample Location: NTC - Orlando?
Sampled By: [illegible]
C.O.C. No.:

PURGING DATA

Casing Size (in.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW* ft BTOC	Flow Rate ml/min
1	0.041	14:05	6.00	293.00	23.86	3.28	1.89	-22.5	~~4.38~~	
2	0.163	14:08	5.97	292.00	23.86	2.76	1.14	-37.1		100
3	0.367	14:11	5.99	290.00	23.85	3.26	0.99?	-46.1		100
4	0.653	14:15	5.99	283.00	23.81	3.02	.79	-56.0		100
5	1.020	14:20	6.00	286.00	23.79	3.03	.77	-62.8		100
6	1.469	14:25	6.01	284.00	23.82	3.12	.68	-68.2		100
8	2.611	14:30	6.01	276.00	23.56?	3.32	.60	-71.8		100
10	4.080	14:33	6.02	276.00	23.89	3.16	.57	-74.2		100
		14:36	6.02	271.00	23.41	3.08	.57	-73.5		100

Well Casing Diameter: 0.5
Total Well Depth (TD): 7.40
* Static Water Level (WL): 4.38
One Casing Volume(gal/L):

[3.78gals/L]

Start Purge (hrs): 13:45
End Purge (hrs): 14:36
Total Purge Time (min): 40 min
Total Vol. Purged (gal/L): 5.0

*Initial water level measurements (Static Water Level) were incorrectly recorded in subsequent readings (DTW). The incorrect readings have been crossed-out. MJC-12/29/99

SAMPLE PARAMETERS

Date / Time	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 10-22-99 Time: 14:36	Clear	6.02	276.00	23.41	3.08	.57	-73.5	4.38	100

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Gross Alpha/Gross Beta/Total Uranium/Radium 226	HNO3 (pH < 2)	1 - 1 gal plastic cubitainer	
Herbicides		2 glass L	✓
SVOCs		2 glass L	✓
Pesticides		2 glass L	✓
TAL inorganics	Nitric	1 plastic L	✓

ADDITIONAL INFORMATION

OVA Reading (ppm):

Method:
[✓] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[✓] Teflon
[ ] Teflon-lined Polyethylene

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s): [signature]

GROUNDWATER PURGING AND SAMPLING LOG

Date 11.22.99

Project Site Name: NTC Orlando
Project No.: CTO 0024

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

Sample ID No.: NTC096 15/2
Sample Location: NTC Orlando
Sampled By: Gary Spaulding
C.O.C. No.:

PURGING DATA

Casing Size (in.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW * ft BTOC	Flow Rate ml/min
1	0.041	10:00	5.19	61.00	23.05	11.6	4.65	112.6	~~5.20~~	100
2	0.163	10:05	4.48	53.00	22.64	3.21	1.11	92.3		100
3	0.367	10:10	4.46	53.00	22.64	1.12	1.25	82.2		100
4	0.653	10:15	4.32	53.00	22.77	.45	.99	74.7		100
5	1.020	10:20	4.29	52.00	22.62	.14	.81	71.6		100
6	1.469	10:23	4.27	52.00	22.91	.21	.77	69.3		100
8	2.611	10:26	4.27	52.00	22.97	.41	0.70	68.2		100
10	4.080									

Well Casing Diameter: 0.5 .05
Total Well Depth (TD): 7.19
* Static Water Level (WL): 5.20
One Casing Volume(gal/L):
[3.78gals/L]

Start Purge (hrs): 10:00
End Purge (hrs): 10:26
Total Purge Time (min): 26
Total Vol. Purged (gal/L): 2.6

* Initial water level measurements (Static Water Level) were incorrectly recorded in subsequent readings (DTW). The incorrect readings have been crossed-out. MJC-12/29/99

no turb > 10

SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 11-22-99									
Time: 10:26	Clear	4.27	52.00	22.97	.41	.70	68.2	5.20	100

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
Gross Alpha/Gross Beta/Total Uranium/Radium 226	HNO3 (pH < 2)	1 - 1 gal plastic cubitainer	
pesticides		2 glass liters	✓
Herbicides		2 glass liters	✓
SVOC's		2 glass liters	✓
TAL	Nitric	1 plastic liter	✓

ADDITIONAL INFORMATION

OVA Reading (ppm): 0.0 ppm

Method:
[✓] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] ~~Polyethylene~~
[✓] Teflon
[ ] Teflon-lined Polyethylene

Circle If Applicable:

MS/MSD | Duplicate ID No.:

Signature(s): Gary Spaulding

Date 10-21-99

GROUNDWATER PURGING AND SAMPLING LOG

Project Site Name: NTC Orlando
Project No.: CTO 0024

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

Sample ID No.: NTC09G-16-12
Sample Location: SA 09
Sampled By: Gary Sparks
C.O.C. No.:

PURGING DATA

Casing Size (in.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
1	0.041	15:10	4.84	85.0	23.19	9.6	1.85	40.1	NA	100
2	0.163	1516	4.76	84.0	23.19	5.4	1.40	40.3		100
3	0.367	1520	4.76	84.0	23.26	2.8	1.06	39.4		100
4	0.653	1523	4.74	74.0	23.27	2.0	0.99	38.6		100
5	1.020	1526	4.76	84.0	23.18	1.5	0.97	37.9		100
6	1.469	1529	4.76	84.0	23.14	1.2	0.97	37.4	↓	100
8	2.611									
10	4.080									

Well Casing Diameter: 0.5
Total Well Depth (TD):
Static Water Level (WL):
One Casing Volume(gal/L):

[3.78gals/L]

Start Purge (hrs): 15.10
End Purge (hrs): 1530
Total Purge Time (min): 20 min
Total Vol. Purged (gal/L): 2.0 Lt.

no turb?k

SAMPLE PARAMETERS

Date / Time	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 102199 Time: 1530	clear	4.76	84.0	23.12	1.0	0.97	38		100

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
~~[illegible]~~	~~HNO3 (pH<2)~~	~~1 L plastic container~~	
TAL Inorganics	HNO3	1-1Lt Plastic	102199
Pesticides	None	1-1Lt Amber	↓
Herbicides	None	2-1LT Ambers	↓

ADDITIONAL INFORMATION

OVA Reading (ppm): 0

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s): [signature]

GROUNDWATER PURGING AND SAMPLING LOG

Date 10/23/99

Project Site Name: NTC Orlando
Project No.: CTO 0024

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

Sample ID No.: NTC0961712
Sample Location: OLD0917
Sampled By: JK
C.O.C. No.:

PURGING DATA

Casing Size (in.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	*DTW ft BTOC	Flow Rate ml/min
1	0.041	1350	6.78	333	25.99	2.46	5.10	83.2	~~1.65~~	100
2	0.163	1355	6.64	337	26.16	1.66	4.94	87.0	~~1.65~~	100
3	0.367	1400	6.68	336	26.29	1.16	4.95	90.3	~~1.65~~	100
4	0.653	1405	6.67	335	26.43	1.12	5.02	91.4	~~1.65~~	100
5	1.020	1410	6.67	334	26.38	1.21	5.03	91.9	~~1.65~~	100
6	1.469	1415	6.67	334	26.42	0.96	5.03	92.3	~~1.65~~	100
8	2.611									
10	4.080									

Well Casing Diameter: 0.5
Total Well Depth (TD): 10.1
* Static Water Level (WL): 1.65
One Casing Volume(~~gal~~/L): 1.31L

[3.78gals/L]

Start Purge (hrs): 1350
End Purge (hrs): 1415
Total Purge Time (min): 25
Total Vol. Purged (~~gal~~/L): .6 L

*Initial water level measurements (Static Water Level) were incorrectly recorded in subsequent readings (DTW). The incorrect readings have been crossed-out. MJC-12/29/99

No

SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date: 10/23/99 Time: 1415	clear	6.67	334	26.42	0.96	5.03	92.3	1.65	100

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
~~Gross Alpha/Gross Beta/Total Uranium/Radium 226~~	~~HNO3 (pH < 2)~~	~~1 - 1 gal plastic cubitainer~~	
Pesticides 8181	N/A	2 1 L Glass	✓
Herbicides 8151	N/A	2 1 L Glass	✓
TAL Inorganics	HNO3	1 1 L Plastic	✓

ADDITIONAL INFORMATION

OVA Reading (ppm): 0.00PPM

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[X] Teflon
[ ] Teflon-lined Polyethylene

Circle if Applicable:

MS/MSD	Duplicate ID No.:
—	—

Signature(s): [signature]

Date 11-27-99

GROUNDWATER PURGING AND SAMPLING LOG

Project Site Name: NTC Orlando
Project No.: CTO 0024

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

Sample ID No.: NTC[illegible]1912
Sample Location: OLD0419
Sampled By: [illegible]
C.O.C. No.:

PURGING DATA

Casing Size (in.)	Gals/Ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
1	0.041	10:40	6.76	4530	25.65	30	2.32	-44.8	1.95	100
2	0.163	10:45	6.65	400	25.96	32	1.59	-61.9	1.95	100
3	0.367	10:50	6.52	338.00	26.05	13	1.33	-50.9	1.95	100
4	0.653	10:55	6.45	305.00	26.15	11	1.16	-46.5	1.95	100
5	1.020	11:00	6.40	29[illegible].00	25.98	3.9	1.05	-48.5	1.95	100
6	1.469	11:03	6.36	276.00	26.06	2.7	1.01	-49.1	1.95	100
8	2.611	11:06	6.34	270.00	26.07	2.5	.95	-50.4	1.95	100
10	4.080	11:09	6.32	263.00	26.06	2.4	.89	-52.5	1.95	100
		11:12	6.28	248.00	26.07	2.2	.85	-54.0	1.95	100
		11:15	6.27	244.00	26.09	2.3	.83	-54.8	1.95	100
		11:18	6.26	235.00	26.06	2.1	.81	-55.6	1.95	100

Well Casing Diameter: 2.0
Total Well Depth (TD): 30.5
Static Water Level (WL): 1.95
One Casing Volume(gal/L):

[3.78gals/L]

Start Purge (hrs): 10:40
End Purge (hrs): 11:18
Total Purge Time (min): 38
Total Vol. Purged (gal/L): 3.8

SAMPLE PARAMETERS

Date: 11-27-99 / Time: 11:18	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
	Clear	6.26	235.0	26.06	2.1	0.81	-55.6	1.95	100

SAMPLE COLLECTION INFORMATION

Analysis	Preservative	Container Requirements	Collected
~~Gross Alpha/Gross Beta/Total Uranium/Radium 226~~	HNO3 (pH < 2)	1 - 1 gal plastic cubitainer	
SVOCs 8270			✓
Herbicides 8151			—
TAL Inorganics			—
			—

ADDITIONAL INFORMATION

OVA Reading (ppm): 0.0ppm

Method:
[✓] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[ ] Vacuum Jug Assembly
[ ] Bailer

Tubing Type:
[ ] Polyethylene
[✓] Teflon
[ ] Teflon-lined Polyethylene

Circle if Applicable:

MS/MSD	Duplicate ID No.:	Signature(s):
		[illegible signature]