N65928.AR.000982
NTC ORLANDO
5090.3a

FINAL BASE REALIGNMENT AND CLOSURE ENVIRONMENTAL SITE SCREENING REPORTS STUDY AREA 37 NTC ORLANDO FL

1/1/2000

HARDING LAWSON ASSOCIATES

01.03.37.0001

00067

BASE REALIGNMENT AND CLOSURE ENVIRONMENTAL SITE SCREENING REPORT STUDY AREA 37

NAVAL TRAINING CENTER ORLANDO, FLORIDA

UNIT IDENTIFICATION CODE: N65928
CONTRACT NO.: N62467-89-D-0317/107

JANUARY 2000

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

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

BASE REALIGNMENT AND CLOSURE
ENVIRONMENTAL SITE SCREENING REPORT

STUDY AREA 37

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Unit Identification Code: N65928

Contract No.: N62467-89-D-0317/107

Prepared by:

Harding Lawson Associates, Inc.
2590 Executive Center Circle, East
Tallahassee, Florida 32301

Prepared for:

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

Barbara Nwokike, Code 1873, Engineer-in-Charge

January 2000

CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

The Contractor, Harding Lawson Associates, Inc., hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0317/107 are complete and accurate and comply with all requirements of this contract.

DATE: January 13, 2000

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

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

(DFAR 252.227-7036)

TABLE OF CONTENTS

BRAC Environmental Site Screening Report
Study Area 37
Naval Training Center
Orlando, Florida

LIST OF FIGURES

BRAC Environmental Site Screening Report
Study Area 37
Naval Training Center
Orlando, Florida

GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
bls	below land surface
CLP	Contract Laboratory Program
DET	Environmental Detachment Charleston
DQO	data quality objective
FDEP	Florida Department of Environmental Protection
GCTL	groundwater cleanup target level
HLA	Harding Lawson Associates
IA	immunoassay analysis
IRA	interim remedial action
MCL	maximum contaminant level
msl	mean sea level
mg/kg	milligrams per kilogram
μg/kg	micrograms per kilogram
μg/ℓ	micrograms per liter
NTC	Naval Training Center
NTU	nephelometric turbidity unit
OPT	Orlando Partnering Team
PCB	polychlorinated biphenyls
RBC	risk-based concentration
SA	Study Area
SCTL	soil cleanup target level
TAL	target analyte list
TCL	Target Compound List
TOC	top of casing
TPH	total petroleum hydrocarbons
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound

1.0 STUDY AREA (SA) 37, BUILDING 2414

This report contains information gathered during site screening activities conducted at Study Area 37. Site screening investigations were completed between June 24 and November 4, 1997. Proposed field activities were presented in the Site screening Plan (ABB Environmental Services, Inc. [ABB-ES], 1995). Additional soil screening was conducted between March 10 and March 15, 1998, in response to data collected during the initial screening activities. The site screening investigation resulted in the recommendation and implementation of a limited soil removal at the site. The Interim remedial Action (IRA) was conducted during April and May, 1999. A supplemental groundwater investigation was conducted between July 9 and September 9, 1999, following the remedial action.

1.1 SA 37, BACKGROUND AND CONDITIONS. Study Area 37 is part of the Main Base at the Naval Training Center (NTC), Orlando (Figure 1). Building 2414 is located on the eastern part of the Main Base, north of Langley Street (Figure 2). The building was a storage facility associated with the Bachelor Officers Quarters. Most recently, the building was used to store golf carts used by housekeeping personnel and spare towels. An interior door into a storage room inside the building is marked "Grounds Tools", which may indicate that landscape maintenance activities occurred at the building, and related chemicals may have been stored, mixed and used in the area. A gravel-floored wooden shed attached to the north side of the building was used to store paint and related chemicals in flammable materials storage lockers. The shed and flammable materials storage lockers had been removed at the time of the site screening investigation, and there was no obvious evidence of releases of material stored in the shed. Additional details can be found in the Site Screening Plan (ABB-ES, 1995).

1.2 SA 37, INITIAL SITE SCREENING INVESTIGATION SUMMARY. The site screening investigation was intended to evaluate the potential for release of contaminants to environmental media due to past site practices. Historical site activities and current site conditions were used to determine sampling locations.

1.2.1 Field investigation The main area of environmental interest at SA 37 was the former location of the flammable materials storage locker on the north side of the building (Figure 2). A surface soil sample and a subsurface soil sample were collected from a soil boring at this location, and a monitoring well was installed and sampled in this area of the site. A second monitoring well was installed and sampled to the south of Building 2414, but no soil samples were collected at that location.

1.2.1.1 **Surface Soil Sampling** One surface soil sample (37S00101) was collected adjacent to the front of the former hazardous materials storage shed (Figure 2). The surface soil sample was submitted to an approved laboratory for full suite Contract Laboratory Program (CLP) target analyte list (TAL) and target compound list (TCL) laboratory analysis plus pesticides and polychlorinated biphenyls (PCBs), along with total petroleum hydrocarbons (TPH), in accordance with US Environmental Protection Agency (USEPA) Level IV data quality objectives (DQOs).

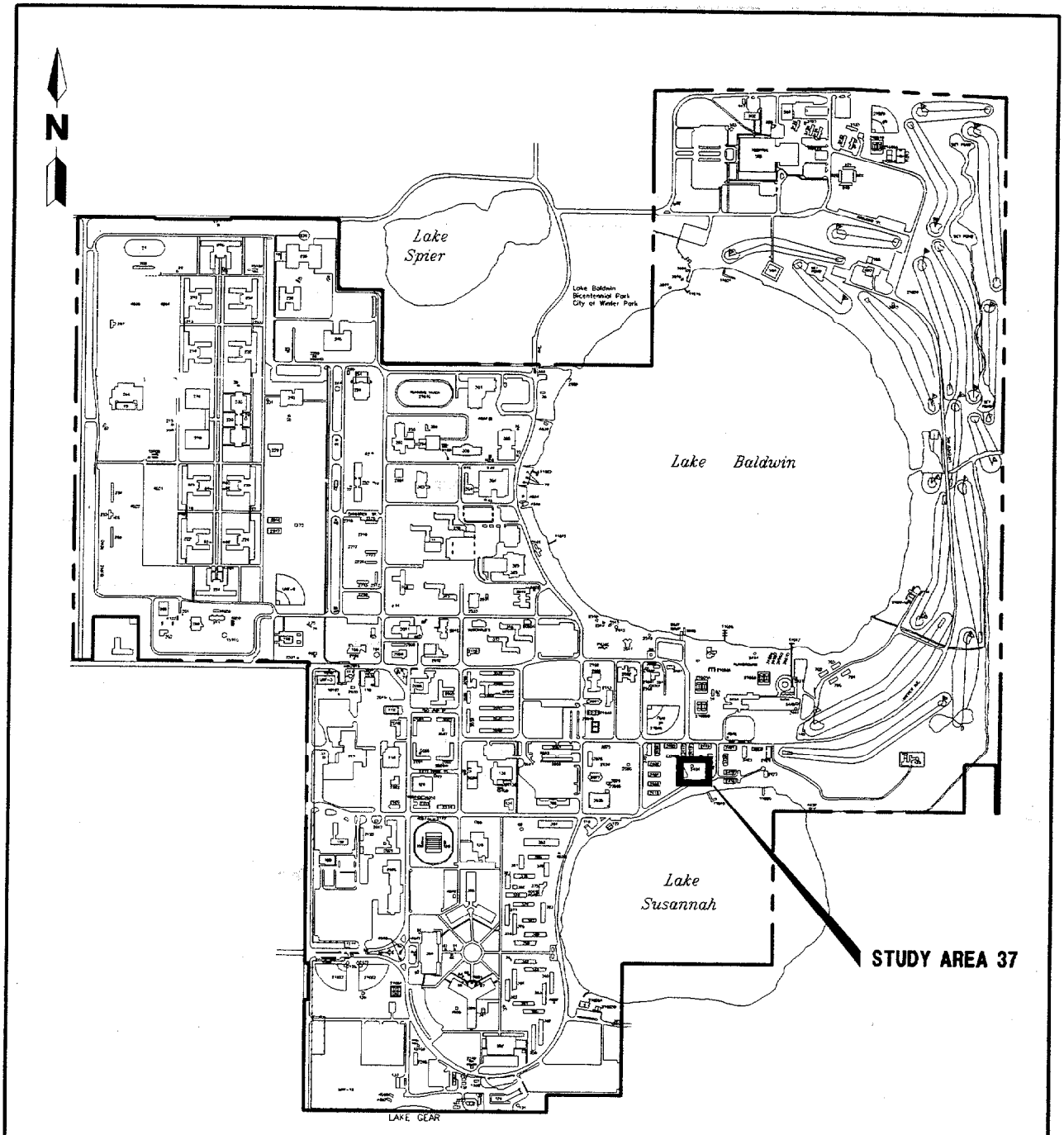


FIGURE 1
LOCATION OF STUDY AREA 37

K:\02530\02530-09\SSR\02530534.DWG, KHM-BB 01/15/98 09:26:52, AutoCAD R14

BASE REALIGNMENT AND CLOSURE
ENVIRONMENTAL SITE
SCREENING REPORT
STUDY AREA 37
NAVAL TRAINING CENTER
ORLANDO, FLORIDA

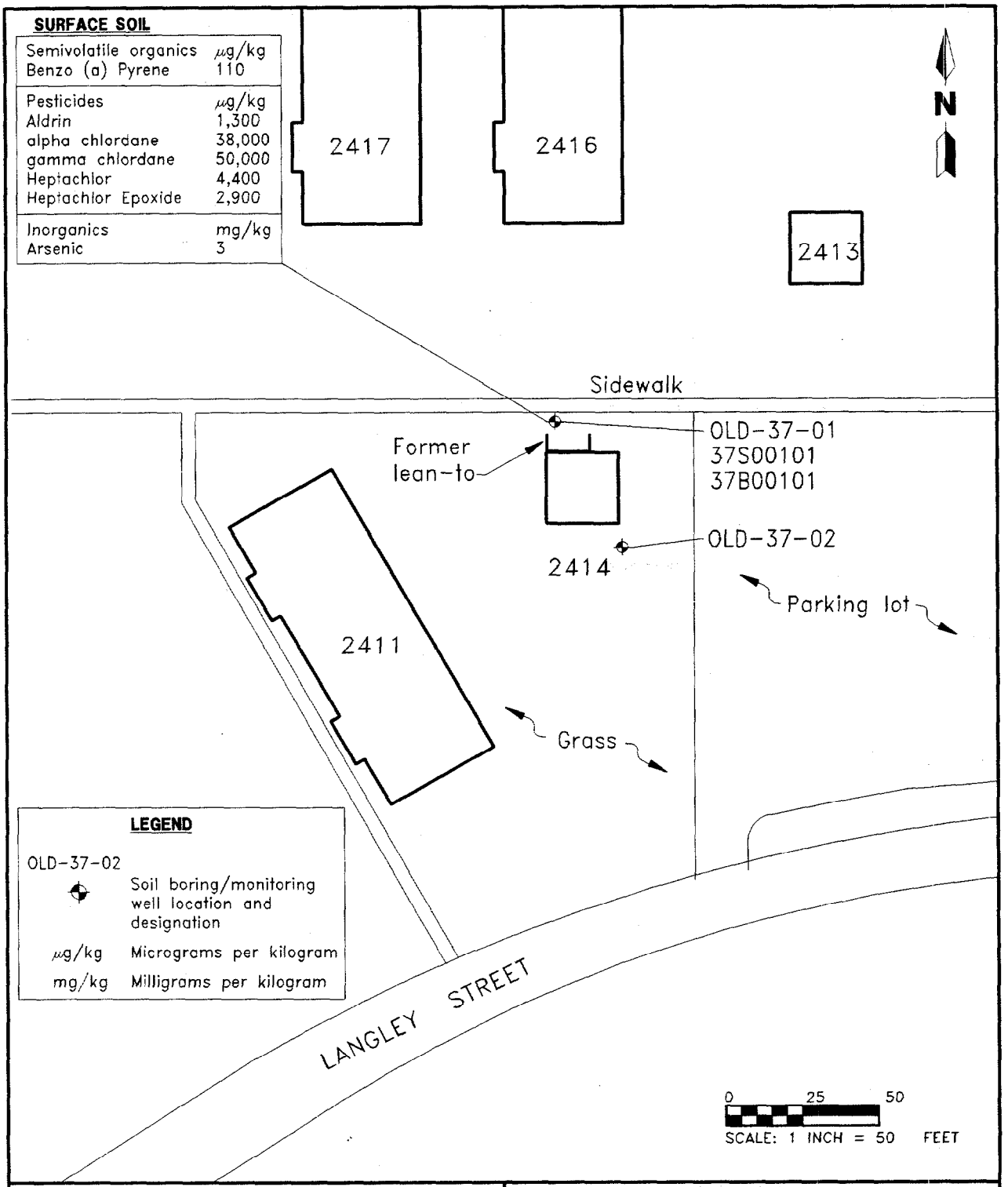


FIGURE 2
INITIAL SITE SCREENING INVESTIGATION

K:\02530\02530-15\SSR\02530895.DWG, BE-VC 11/09/99 10:40:31, ACAD14

BASE REALIGNMENT AND CLOSURE
ENVIRONMENTAL SITE SCREENING REPORT
STUDY AREA 37
NAVAL TRAINING CENTER
ORLANDO, FLORIDA

1.2.1.2 **Subsurface Soil Sampling** One soil boring was advanced adjacent to the former location of the storage shed (Figure 2). A subsurface soil sample (37B00101) was collected from 4.5 to 5.5 feet below land surface (bls), the interval immediately above the groundwater table at the time of sampling. The subsurface soil sample was submitted to an approved laboratory for full suite CLP TAL and TCL laboratory analysis plus pesticides and PCBs, along with TPH analysis, in accordance with USEPA Level IV DQOs.

1.2.1.3 **Groundwater Monitoring Well Installation and Sampling** Two monitoring wells, OLD-37-01 and OLD-37-02, were installed during the field investigation (Figure 2). OLD-37-01 was installed adjacent to the former location of the storage shed on the northern end of Building 2414. The second well, OLD-37-02, was installed on the south side of Building 2414, in the direction of Lake Susannah, and presumed to be downgradient. The soil borings for the well installations were advanced to approximately 13 feet bls. The screened interval for each monitoring well bracketed the water table, which was encountered at 6 to 8 feet bls during the investigation. A groundwater sample was collected from each well using low flow sampling techniques (ABB-ES, 1997). Groundwater samples (37G00101 and 37G00201) were submitted to an approved laboratory for full suite CLP TAL and TCL laboratory analysis plus pesticides and PCBs, along with TPH and suspended solids analysis, in accordance with USEPA Level IV DQOs. Filtered samples (37H00101 and 37H00201, 0.45 micron in-line filter) were also collected and submitted for TAL metals analysis. Duplicate samples (37G00101D and 37H00101D) were also collected at well OLD-37-01. The monitoring well installation diagrams and field sample data are included in Appendix A.

1.2.2 Initial Site Screening Results The analytical results of the surface and subsurface soil samples were evaluated by comparing the concentration of the various compounds detected to screening criteria, including basewide soil background screening levels, Florida Department of Environmental Protection's (FDEP) Soil Cleanup Target Levels (SCTLs), and USEPA Region III Risk-Based Concentrations (RBCs).

Groundwater analytical data are compared to background screening values (metals only), FDEP Groundwater Cleanup Target Levels (GCTLs), Federal maximum contaminant levels (MCLs), and USEPA Region III RBCs for tap water.

Analytical results from the media sampled at Study Area 37 are presented as Positive Detections Tables in Appendix B. Exceedances of background or regulatory guidance concentrations (shaded on the positive hits tables) are displayed in chem-boxes near their respective explorations on Figure 2. A complete set of analytical results is presented in Appendix C.

1.2.2.1 **Surface Soil Analytical Results** Analysis of the surface soil sample collected at Study Area 37 detected semivolatile organics, inorganics, and pesticides (Appendix B-1).

Sample 37S00101 had a benzo(a)pyrene concentration of 110 micrograms per kilogram (μg/kg), exceeding both the Florida residential SCTL of 100 μg/kg and the USEPA Region III residential RBC for residential soil of 88 μg/kg.

Arsenic was detected at a concentration of 3.0 milligrams per kilogram (mg/kg), which is above the site specific background screening concentration of 1.0 mg/kg and the residential SCTL of 0.8 mg/kg.

Several pesticides were detected in the surface soil sample at concentrations exceeding screening criteria. Aldrin was detected at 1,300 µg/kg, exceeding the both the residential SCTL of 70 µg/kg and the industrial RBC of 340 µg/kg. The concentrations of both alpha-chlordane (40,000 µg/kg) and gamma-chlordane (52,000 µg/kg) exceeded the residential SCTL of 3,100 µg/kg and the industrial RBC of 16,000 µg/kg. Heptachlor was detected at 4,400 µg/kg, exceeding the residential SCTL of 200 µg/kg and the industrial RBC of 1,300 µg/kg. Heptachlor epoxide was detected at 2,900 µg/kg, which also exceeded the residential SCTL of 100 µg/kg and the industrial RBC of 630 µg/kg.

1.2.2.2 **Subsurface Soil Analytical Results** Analysis of the subsurface soil collected at Study Area 37 detected semivolatile organics, pesticides, and inorganics (Appendix B-1). The analytes detected were at concentrations below their respective residential screening criteria.

1.2.2.3 **Groundwater Analytical Results** Analysis of the groundwater collected at Study Area 37 detected pesticides and inorganics (Appendix B-2). Thallium was detected in sample 37G00101 (well OLD-37-01) at a concentration of 4.8 µg/ℓ, which exceeds the State primary standard (2 µg/ℓ) and the Federal MCL (2.6 µg/ℓ). The background screening concentration for thallium is 3.8 µg/ℓ. The duplicate sample (37G00101D) and the filtered samples (37H00101 and 37H00101D) from well OLD-37-01 did not detect thallium. The turbidity of the unfiltered sample was 12 nephelometric turbidity units (NTUs), and the filtered groundwater turbidity was 9 NTU. The elevated thallium concentration in groundwater sample 37G00101 is likely due to suspended sediment in the sample.

HLA has concluded that thallium detection in sample 37G00201 may be due to sample turbidity, since the filtered sample did not detect thallium, and that no further delineation or remediation to address thallium in groundwater is warranted.

Water level and elevation survey data indicate that the groundwater elevation in OLD-37-02 is higher than groundwater elevation in OLD-37-01, which is unexpected (groundwater flow is likely toward Lake Susannah to the south), and may indicate that anomalous water table conditions may be present locally.

1.3 ADDITIONAL SOIL SCREENING INVESTIGATION SUMMARY. Data from the initial site screening investigation indicated that several pesticide compounds were present in surface soil at the northwest corner of Building 2414 at concentrations greater than screening values. In order to evaluate the presence of pesticides detected during the initial site screening investigation, additional surface and subsurface soil samples were collected from the site. The soil samples collected for the additional site screening investigation were analyzed onsite for total chlordane with field immunoassay analysis (IA) kits. Confirmatory samples were sent to an off-site laboratory for TCL pesticide analysis to verify the results of the onsite analysis.

1.3.1 Field Program The surface and subsurface soil samples were collected for field IA testing from a sampling grid around the location of surface soil sample 37S00101 and around the perimeter of the building. The sampling grid was laid out with (nominal) 10-foot spacing between sampling nodes (Figure 3).

1.3.1.1 **Surface Soil Sampling** A total of 21 surface soil samples were analyzed onsite with the field IA kits (Figure 3). In the first round of IA sampling, one

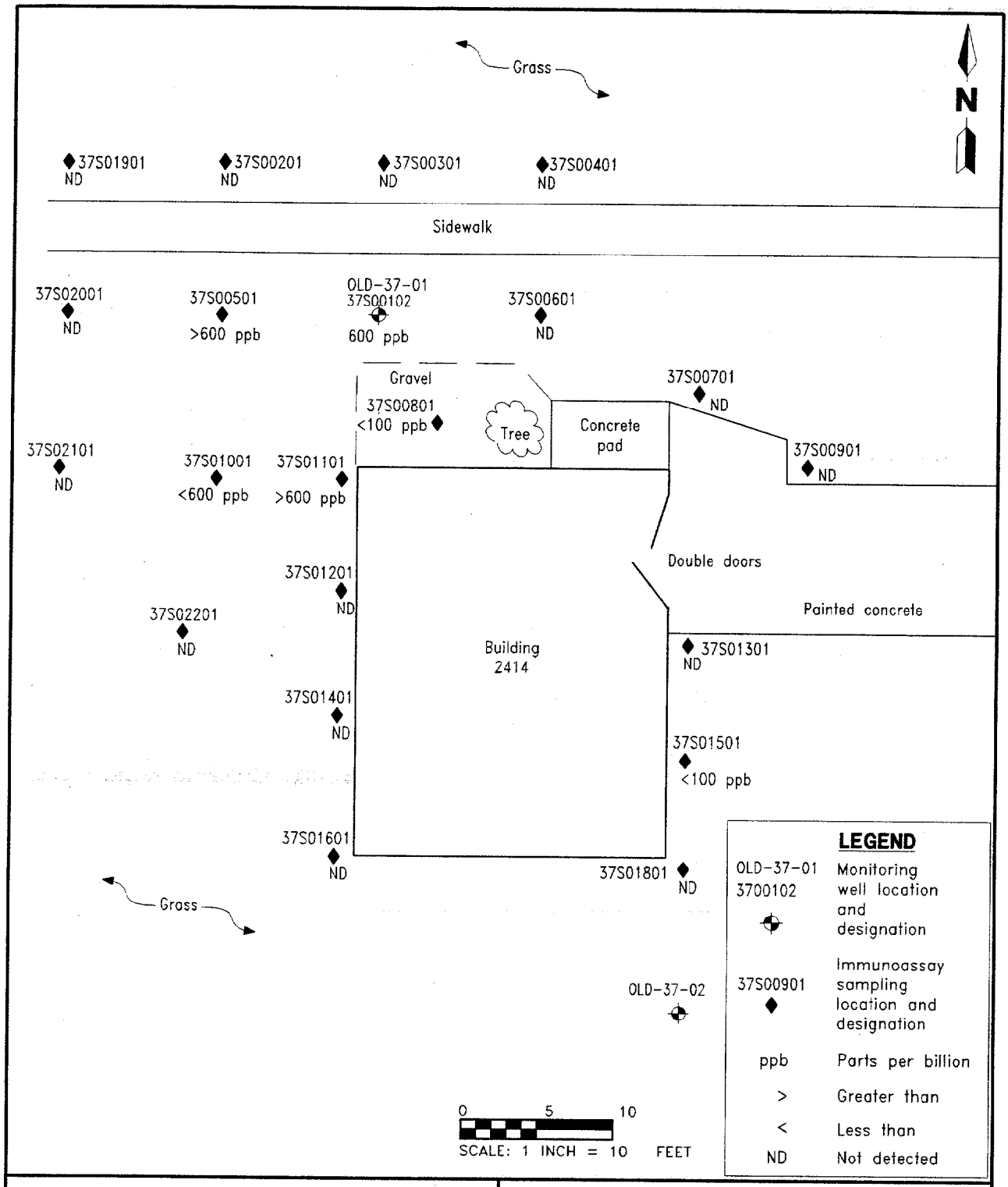


FIGURE 3
IMMUNOASSAY ANALYSIS SURFACE SOIL SAMPLING LOCATIONS AND CHLORDANE CONCENTRATIONS

K:\02530\02530-15\SSR\02530897.DWG, PDP-VC 11/11/99 08:20:06, ACAD14

BASE REALIGNMENT AND CLOSURE ENVIRONMENTAL SITE SCREENING REPORT STUDY AREA 37 NAVAL TRAINING CENTER ORLANDO, FLORIDA

surface soil sample, 37S00102, was collected at the original location sampled during the initial site screening investigation (37S00101). Surface soil samples 37S00201 through 37S00801, and samples 37S01001 and 37S01101 were collected from the grid at approximately 10 foot spacing from the original sampling location. The sampling grid spacing was adjusted to allow to accommodate Building 2414 and other site features. Samples 37S00701 and 37S00901 were collected adjacent to the concrete paved area at the northeast corner of Building 2414. Samples 37S01201 through 37S01601 were collected from the west and east sides of Building 2414.

The second round of surface soil samples included 37S01801, which was collected at the southeast corner of Building 2414. Samples 37S01901 through 37S02201 extended the sampling grid approximately 10 feet to the west and south of surface soil samples collected in the first IA sampling round.

1.3.1.2 **Subsurface Soil Sampling** Soil borings (37B001 through 37B004) were advanced at the four surface soil sample locations with the highest chlordane concentrations determined by field IA (37S00102, 37S01101, 37S01001, and 37S00501, Figure 4). Three subsurface soil samples were collected from each boring at 2 to 4, 4 to 6, and 6 to 8 feet bls.

1.3.1.3 **Confirmatory Soil Sample Analysis** Three surface soil and three subsurface soil confirmatory samples were sent to an off-site laboratory for CLP pesticide analysis. Surface soil samples were selected that had photometer responses equal to chlordane concentrations of greater than (>) 600 ppb, between 20 ppb and 100 ppb, and 0 ppb. Subsurface soil samples were selected that had photometer responses equal to chlordane concentrations of greater than 600 ppb, less than (<) 100 ppb, and 0 ppb.

1.3.2 Additional Soil Screening Results The IA test kits used for this investigation detect chlordane and structurally similar compounds (i.e., chlorinated pesticides in the USEPA Method 8080 list, except for 4,4'-DDT, 4,4'-DDT, and 4,4'-DDE). The IA test kits are semi-quantitative, in that they provide only a total concentration of the target compounds and do not quantify concentrations of individual compounds. The results of the field IA are presented in Appendix B-3.

1.3.2.1 **Surface Soil Sample Results** Positive IA responses were detected in 6 of the 21 surface soil samples tested during the additional soil screening investigation (Figure 3). Five of these six samples were collected near the northwest corner of Building 2414. Samples 37S00102, 37S00501, and 37S01101 had IA responses of 600 ppb or greater. Sample 37S01001 had an IA response between 100 and 600 ppb and sample 37S00801 had an IA response between 20 and 100 ppb. One other sample, collected adjacent to the east side of Building 2414, had a positive IA detection. Sample 37S01501 had an IA response between 20 and 100 ppb.

1.3.2.2 **Subsurface Soil Sample Results** Positive IA responses were detected in three of the 12 subsurface soil samples collected during the additional soil screening investigation (locations 37B001 through 37B004, Figure 4). Sample 37B00201 had an IA response greater than 600 ppb. Field analysis notes indicate that there was a low analyte volume in this sample following sample extraction. Samples 37B00103 and 37B00402 had IA responses of 100 ppb or less.

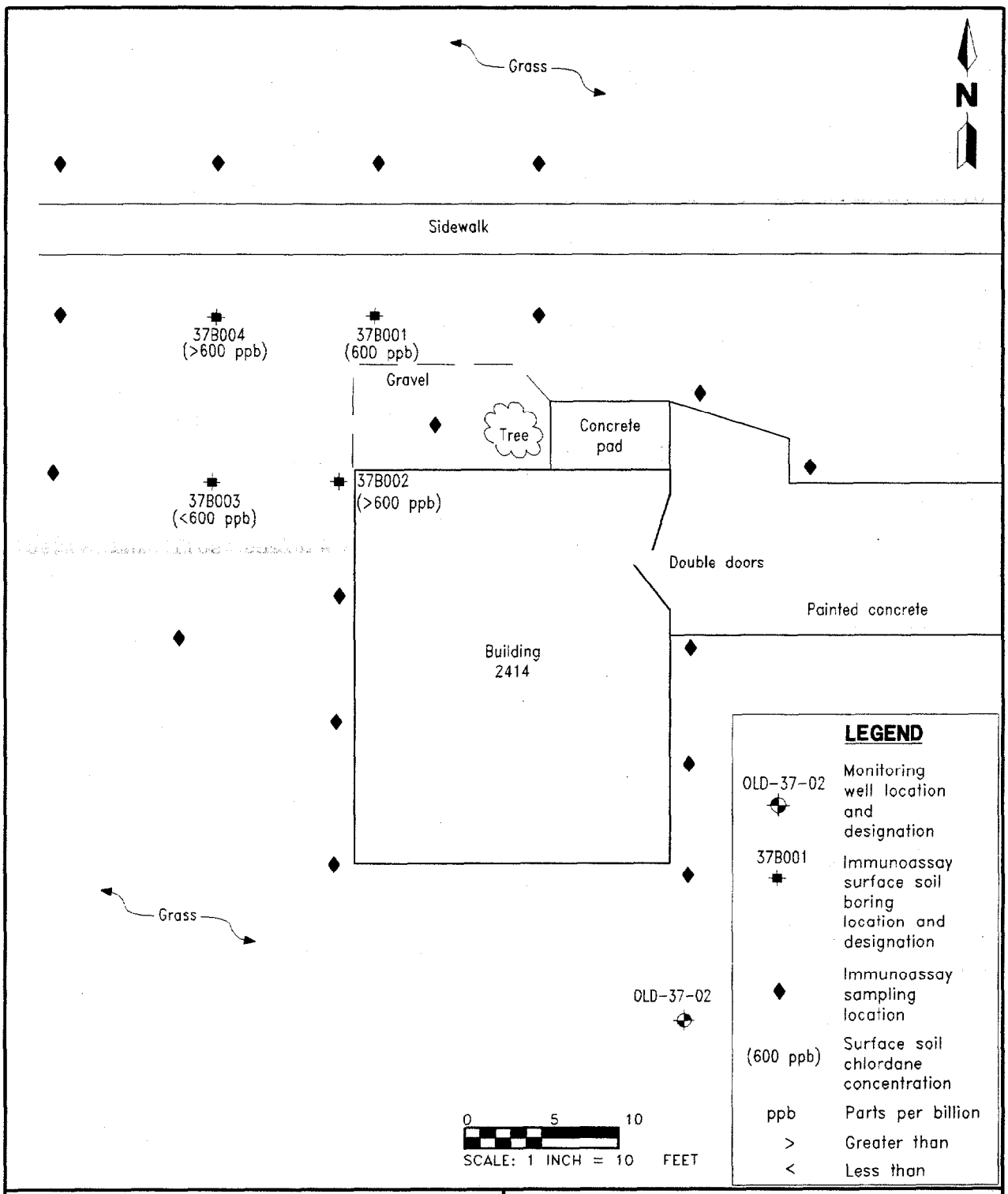


FIGURE 4
IMMUNOASSAY ANALYSIS SOIL BORING LOCATIONS

K:\02530\02530-15\SSR\02530898.DWG, PDP-VC 11/11/99 09:06:48, ACAD14

BASE REALIGNMENT AND CLOSURE
ENVIRONMENTAL SITE SCREENING REPORT
STUDY AREA 37
NAVAL TRAINING CENTER
ORLANDO, FLORIDA

1.3.2.3 **Confirmatory Soil Sample Results** A comparison of onsite and off-site analytical results is included in Appendix B-3. Non-chlordane pesticides that were also detected in the surface soil confirmatory samples are included in Appendix B-4.

Comparison of the field IA and off-site analytical results for the surface soil samples indicates that chlordane concentrations at or above 600 ppb measured by IA testing correlate with concentrations of one or more pesticides at concentrations above residential screening values. At sample location 37S00102, where the field IA result was 600 ppb, the pesticides aldrin, chlordane, heptachlor, and heptachlor epoxide were above screening values in a sample collected during the initial site screening investigation. Sample location 37S00501 had a field IA response above 600 ppb and a total chlordane concentration of 1,880 µg/kg. The heptachlor epoxide concentration in 37S00501 also exceeded screening values. Sample 37S01501, which had a field IA response between 20 and 100 ppb, had a combined chlordane concentration of 157 µg/kg in the off-site analytical results. Sample 37S00601, which had a field IA response of 0 ppb, had a combined chlordane concentration of 3.8 µg/kg in the off-site analytical results.

The field IA results for the subsurface soil samples 37B00103 and 37B00301 produced comparable chlordane values to the off-site analytical results. The off-site analytical concentration for sample 37B00201, which had an IA response of greater than 600 ppb, was less than 1 µg/kg for chlordane. This result is probably due to low analyte volume in the field IA test producing a false high photometer response.

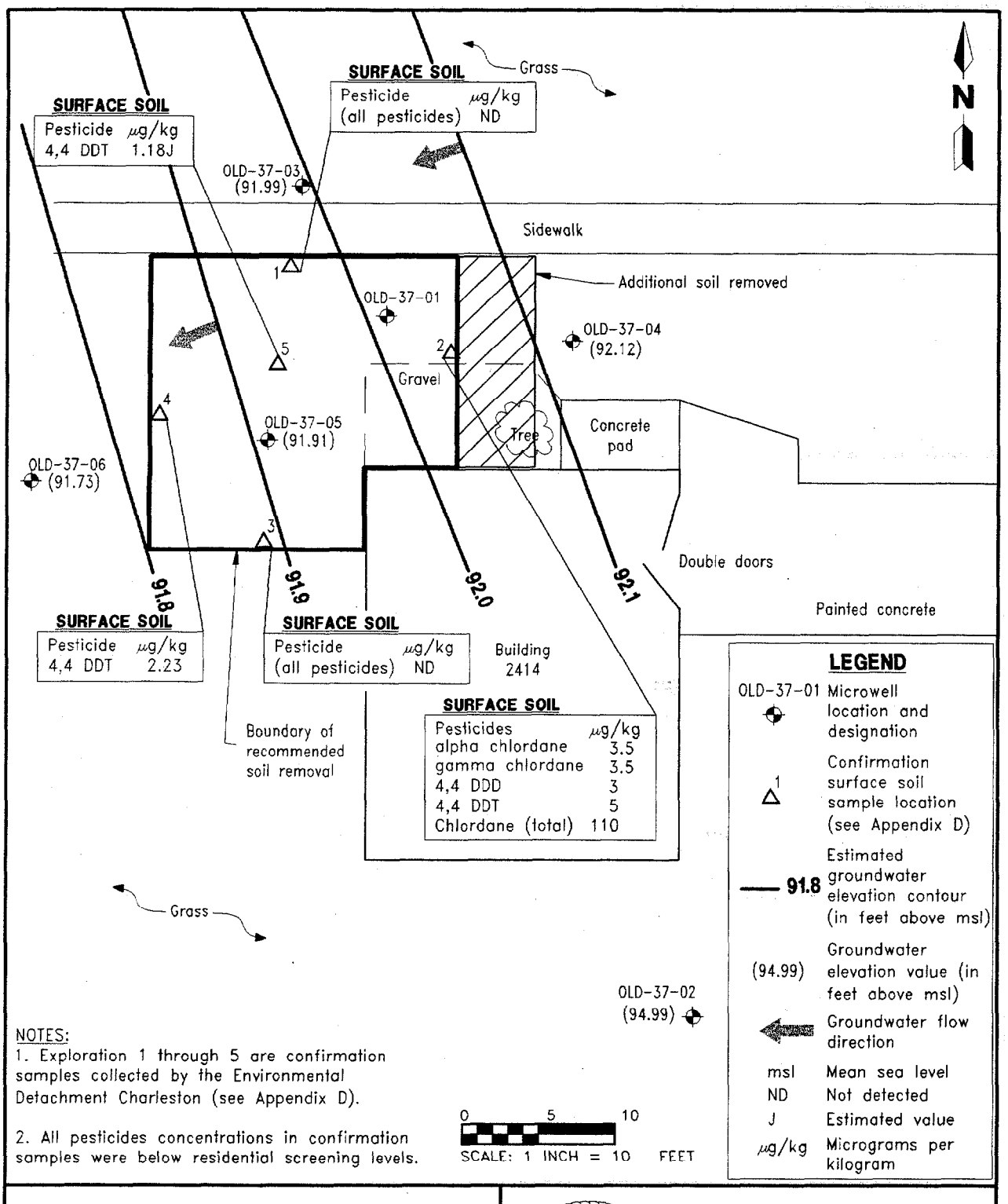
Comparison of the field IA and off-site analytical results for the soil samples collected at SA 37 indicates that chlordane concentrations measured by IA testing generally correlate favorably with the chlordane concentrations determined by the off-site laboratory analysis.

1.4 REMEDIAL ACTIVITIES. Based on the results of the site screening investigations, an area at SA 37 was identified where pesticide concentrations in surface soils exceeded residential and industrial screening criteria (Figure 5). The Orlando Partnering team (OPT) determined that surface soil removal would be an appropriate interim remedial action (IRA) to address the pesticide exceedances.

1.4.1 IRA Specifications After evaluating the site screening data, a workplan was prepared which described the planned IRA implementation (Harding Lawson Associates [HLA], 1999). The objective of the IRA was to excavate and properly dispose of surface soils where pesticide concentrations were greater than FDEP residential SCTLs (Figure 5)

A sampling methodology was specified in the IRA workplan to confirm when sufficient soil had been removed from a location to achieve the IRA objective.

1.4.2 IRA Execution Environmental Detachment, Charleston (DET) was contracted to perform the IRA as specified in the work plan (HLA, 1999). Approximately 44 tons of soil were removed from the site. The excavated material was characterized as hazardous and disposed of in a permitted facility. The Completion Report prepared by the DET is included as Appendix D.



NOTES:

1. Exploration 1 through 5 are confirmation samples collected by the Environmental Detachment Charleston (see Appendix D).

2. All pesticides concentrations in confirmation samples were below residential screening levels.

FIGURE 5
MICROWELL LOCATIONS AND GROUNDWATER ELEVATION CONTOURS

K:\02530\02530-15\SSR\02530899.DWG, VC-VC 01/11/00 14:53:03, ACAD14

BASE REALIGNMENT AND CLOSURE ENVIRONMENTAL SITE SCREENING REPORT STUDY AREA 37 NAVAL TRAINING CENTER ORLANDO, FLORIDA

Based on analytical data collected during the IRA, the excavation area was extended approximately 5 feet further east than specified in the IRA workplan (HLA, 1999).

Confirmatory sample data collected by the DET from the edges of the excavations indicate that State of Florida SCTLs were achieved in excavation areas. The OPT directed the DET to not excavate beneath the building.

1.5 GROUNDWATER CHARACTERIZATION INVESTIGATION SUMMARY. An additional groundwater characterization investigation was conducted at SA 37 to more fully evaluate aquifer properties and potential groundwater contamination (Appendix E). Four microwells were installed and sampled, along with OLD-37-02, after the IRA was completed (Figure 5). Top of casing elevations and static water levels were measured following the microwell installation

1.5.1 Groundwater Monitoring Microwells were installed at SA 37 after the IRA to evaluate potential mobilization of pesticide compounds from soil disturbed by the excavation. Also, the microwells were installed following the IRA to avoid destroying wells that might have been needed for additional groundwater monitoring, should that have been required.

1.5.1.1 **Microwell Installation and Sampling** Four microwells, OLD-37-03 through OLD-37-06, were installed following the IRA soil removal (Figure 5). OLD-37-05 was installed at the approximate center of the IRA excavation area. The other microwells, OLD-37-03, OLD-37-04, and OLD-37-06, were installed around the perimeter of the soil removal area, on the north, east, and west sides of the excavation. A hardpan layer of varying thickness was encountered at each of the boring locations. Attempts were made to install a fifth microwell adjacent the south side of the excavation, but were unsuccessful due to the hardpan. The soil borings for the microwell installations were advanced to approximately 15 feet bls. The screened interval for each microwell was approximately 9 to 15 feet bls, with the water table at approximately 9 feet bls at the time of installation. A groundwater sample was collected from each microwell using low flow sampling techniques. Groundwater samples were submitted to an approved laboratory for arsenic and CLP TCL pesticides and PCBs analysis in accordance with USEPA Level IV DQOs. The microwell installation diagrams and field sample data are included in Appendix A.

1.5.1.2 **Groundwater Analytical Results** Analysis of the groundwater collected following the IRA at Study Area 37 detected one pesticide, delta-BHC, and arsenic (Appendices B-5 and C-4). The analytes detected were at concentrations below their respective groundwater screening criteria.

1.5.2 Aquifer Characterization Previous water level data collected during the initial site screening investigation indicated that groundwater elevation in OLD-37-02 was higher than groundwater elevation in OLD-37-01, which may indicate anomalous water table conditions. Since only two monitoring wells were installed at the time, only limited interpretation of groundwater flow direction was possible. Additional data were collected following the IRA and microwell installation to further evaluate site conditions and allow for estimation of the local groundwater flow direction.

1.5.2.1 **Field Program** A level survey was conducted to establish top of casing (TOC) elevations for the newly-installed microwells at SA 37. The reference point for the survey was the TOC of OLD-37-02, which had been surveyed by a registered surveyor following the initial site screening investigation. A round of static water level measurements was taken at the time of the elevation survey and the depth to water measurements were converted to water table elevations. Data from the elevation and water level surveys are included in Appendix F.

1.5.2.2 **Aquifer Characterization Results** The static water levels measured during the groundwater characterization at SA 37 were similar to the anomalous values observed previously at the site. Depth to water in OLD-37-02 was 4.78 feet below TOC, whereas depth to water in the microwells north of Building 2414 ranged from 8.71 to 9.43 feet below TOC. The TOC elevation for OLD-37-02 is 99.77 feet referenced to mean sea level (msl). The microwell TOC elevations ranged from 100.83 to 101.33 feet msl. Based on these data, the groundwater table elevation at OLD-37-02 was 94.99 feet msl. This value is up to 3 feet higher than the groundwater elevations measured in the microwells at that time, which ranged from 91.73 to 92.12 feet msl.

Under normal water table conditions, groundwater elevations are expected to mimic surface topography and the groundwater table at SA 37 would dip to the south or southeast towards Lake Susannah. Under these conditions, water level elevations in OLD-37-02 would be less than in the microwells. The data collected at SA 37 would suggest that different conditions are occurring at the site. The shallower depth to water and the higher groundwater elevation in OLD-37-02 may result from groundwater perching above the hardpan layer observed in the subsurface at the site. Alternatively, a water supply line may be leaking in the vicinity of OLD-37-02, elevating the water table surface. In either case, water level elevations at OLD-37-02 are not consistent with those elsewhere at the site and do not represent site conditions in the vicinity of the IRA.

The water level data collected from the microwells installed around the perimeter of the IRA excavation indicate that groundwater flow north of Building 2414 is to the west-southwest (Appendix E). In this area, the water table gradient is approximately 0.01 feet/feet. Based on this data, microwell OLD-37-06 is located downgradient from the IRA excavation area.

1.6 STUDY AREA 37, CONCLUSIONS AND RECOMMENDATIONS. Based on available information and site screening data, HLA concludes that historical site activities have resulted in releases to the media sampled at Study Area 37. Surface soil detections above screening criteria include pesticides, semivolatile organics, and inorganics. Analytes detected in the subsurface soil were below residential screening criteria. Only thallium was detected in groundwater at a concentration that exceeded screening criteria (4.8 $\mu g/\ell$ versus a background screening concentration for thallium of 3.8 $\mu g/\ell$ and a GCTL of 2 $\mu g/\ell$). However, neither the field duplicate sample nor the filtered sample detected thallium.

Data collected during the site screening investigation at SA 37 indicated that surface soil at the northwest corner of Building 2414 had pesticide concentrations above the FDEP SCTLs for residential soil. An IRA was conducted to remediate the surface soils in the vicinity of this sample location. The results presented in the Completion Report prepared by the DET indicate that the SCTLs for pesticides were met. Based on available information, the remedial activities

completed at SA 37 are protective of human health and the environment for exposure to surface soil at the site.

Other analytes exceeding surface soil screening criteria in sample 37S00101, benzo(a)pyrene and arsenic, were located in the area excavated during the IRA. This area was backfilled with clean soil during the IRA.

Groundwater analytical results for microwells installed and sampled following the IRA had pesticides and arsenic detections, but all were at concentrations below groundwater screening criteria (Appendices B-5 and C-4).

HLA recommends that SA 37 be made eligible for transfer, and that the site be reclassified from 7/Gray to 4/Dark Green.

The undersigned members of the Orlando Partnering Team concur with the findings and recommendations of the preceding investigation at Study Area 37.

Study Area 37

Nancy Rodriguez — 1-19-00
U.S. Environmental Protection Agency, Region IV — Date

David J. Keith — 1/19/00
Florida Department of Environmental Protection — Date

Wayne J Hansel — 1-19-00
U.S. Department of the Navy — Date

REFERENCES

ABB Environmental Services, Inc. (ABB-ES). 1995. *Site Screening Plan, Groups I through IV Study Areas and Miscellaneous Additional Sites, Naval Training Center (NTC), Orlando, Florida.* Prepared for Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), North Charleston, South Carolina.

ABB-ES. 1997. *Project Operations Plan for Site Investigations and Remedial Investigations, NTC, Orlando, Florida.* Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina.

Harding Lawson Associates. 1999. *Base Realignment and Closure Work Plan for Interim Remedial Action, Study Area 37, NTC, Orlando, Florida.* Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina, January.

APPENDIX A

MONITORING WELL INSTALLATION DIAGRAMS, AND GROUNDWATER SAMPLE FIELD DATA

Appendix A-1	Monitoring Well Installation Diagrams
Appendix A-2	Groundwater Sample Field Data

APPENDIX A-1

MONITORING WELL INSTALLATION DIAGRAMS

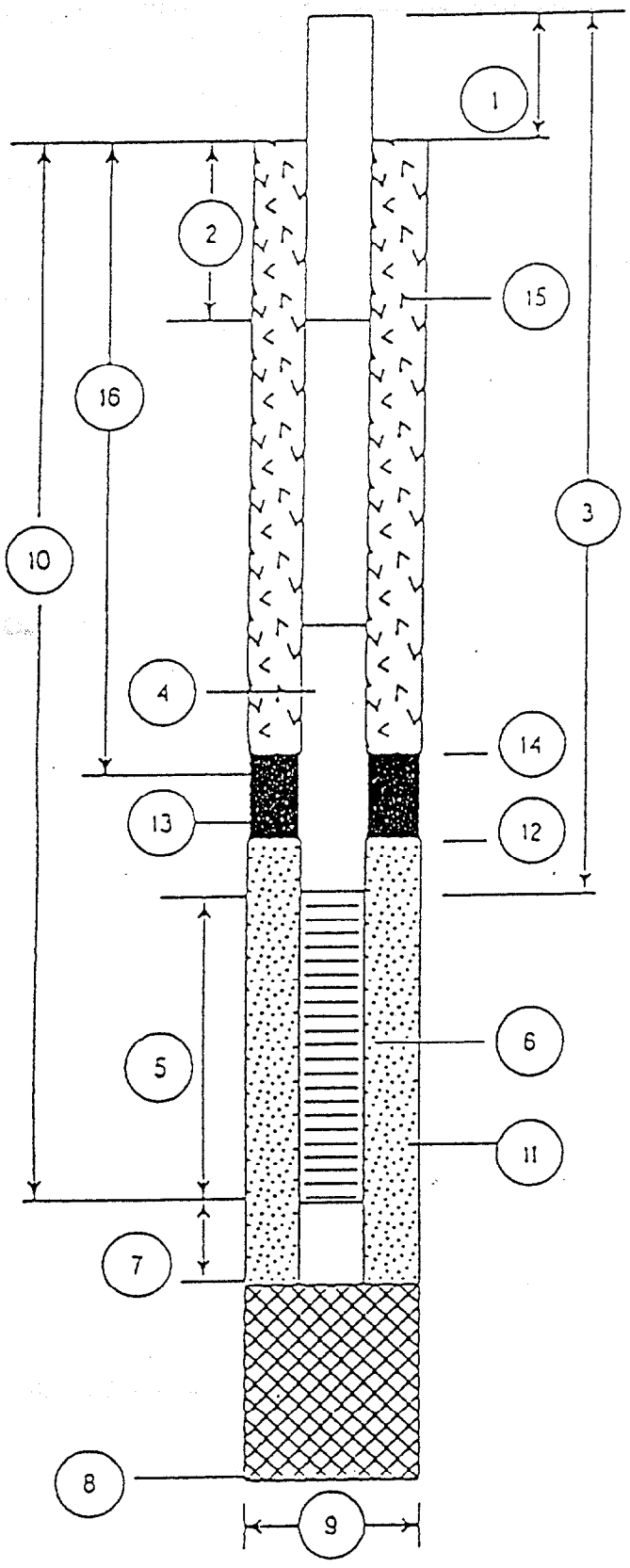
DEPARTMENT OF THE NAVY

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, SC.

WELL CONSTRUCTION DETAIL

WELL NUMBER: OLD-37-01

DATE OF INSTALLATION: 10-6/97



1. Height of Casing above ground: FM
2. Depth to first Coupling: 3'
   Coupling Interval Depths: NA
3. Total Length of Riser Pipe: 3'
4. Type of Riser Pipe: 2" Sched. 40 PVC
5. Length of Screen: 10'
6. Type of Screen: 2" sched. 40 PVC 0.010" slot
7. Length of Sump: 6"
8. Total Depth of Boring: 13'
9. Diameter of Boring: 10"
10. Depth to Bottom of Screen: 13'
11. Type of Screen Filter: Silica Sand
    Quantity Used: 600 lb Size: 20/30
12. Depth to Top of Filter: 2'
13. Type of Seal: 60/45 sand
    Quantity Used: 50lb
14. Depth to Top of Seal: 1'
15. Type of Grout: Neat cement
    Grout Mixture:
    Method of Placement: Pour
16. Tot. Depth of 6 in. Steel Casing: N/A

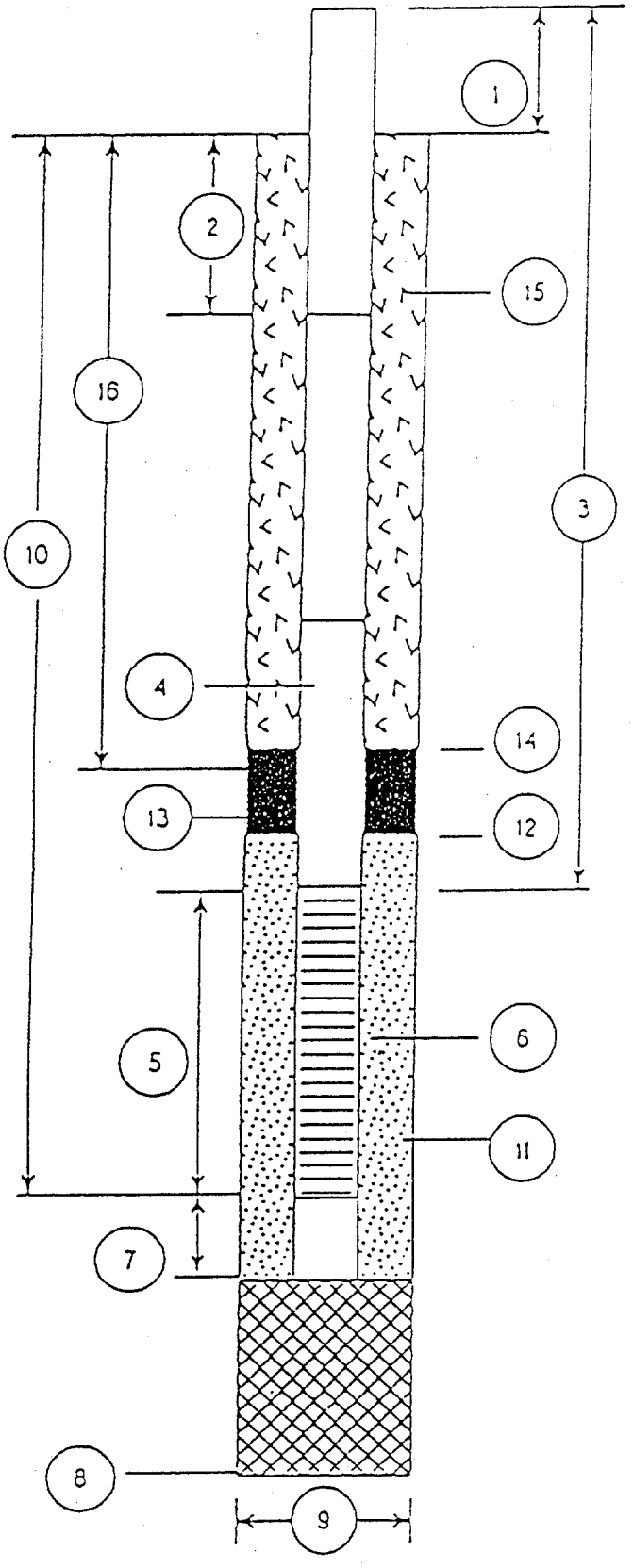
DEPARTMENT OF THE NAVY

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, SC.

WELL CONSTRUCTION DETAIL

WELL NUMBER: OLD-37-02

DATE OF INSTALLATION: 10-6/97



1. Height of Casing above ground: FM
2. Depth to first Coupling: 3'
   Coupling Interval Depths: NA
3. Total Length of Riser Pipe: 3'
4. Type of Riser Pipe: 2" Sched. 40 PVC
5. Length of Screen: 10'
6. Type of Screen: 2" Sched. 40 PVC 0.010 Slot
7. Length of Sump: 6"
8. Total Depth of Boring: 13'
9. Diameter of Boring: 10"
10. Depth to Bottom of Screen: 13'
11. Type of Screen Filter: Silica Sand
    Quantity Used: 600lb Size: 20/30
12. Depth to Top of Filter: 2'
13. Type of Seal: 60/45 Sand
    Quantity Used: 50 lb
14. Depth to Top of Seal: 1'
15. Type of Grout: Neat cement
    Grout Mixture:
    Method of Placement: Pour
16. Tot. Depth of 6 in. Steel Casing: NA

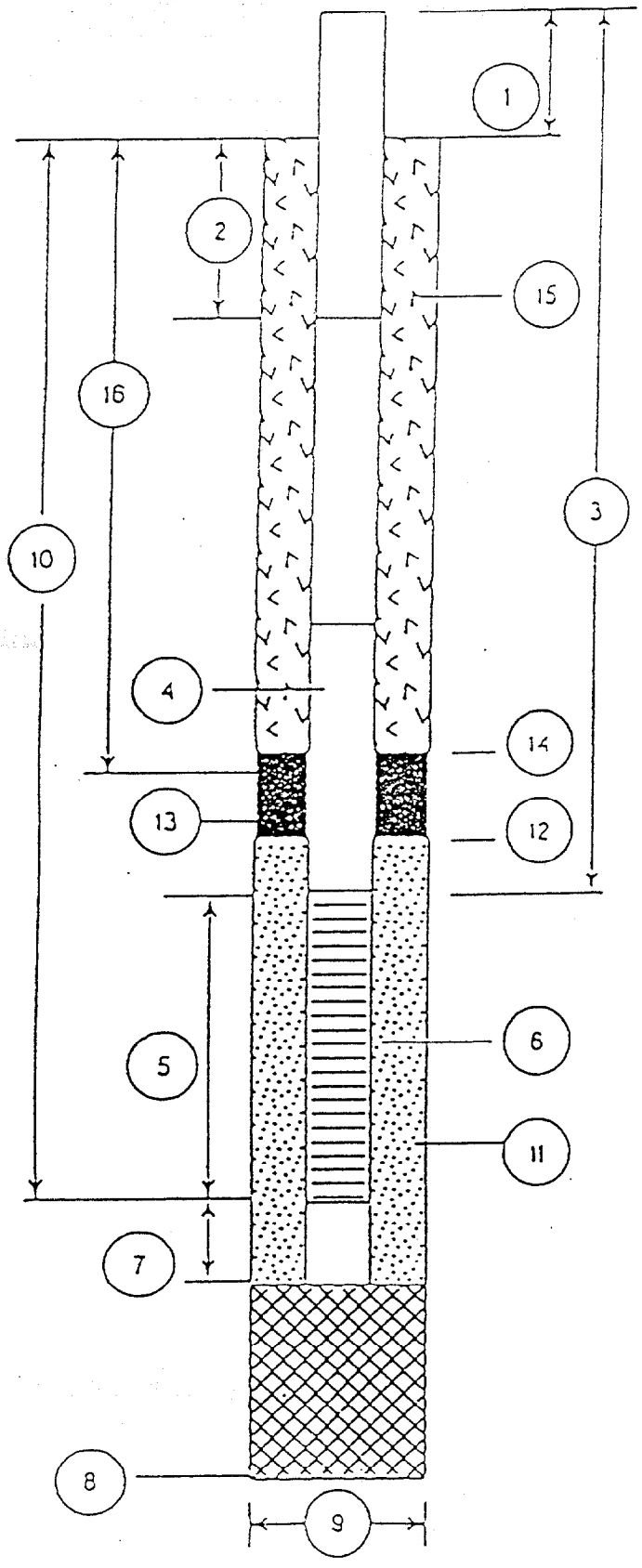
DEPARTMENT OF THE NAVY

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, SC.

WELL CONSTRUCTION DETAIL

WELL NUMBER: OLD-37-03

DATE OF INSTALLATION: 7-7/99



1. Height of Casing above ground: FM
2. Depth to first Coupling: ~~NA~~ 9'
   Coupling Interval Depths: NA
3. Total Length of Riser Pipe: ~~6~~ 9
4. Type of Riser Pipe: 1/2" Sched 40 PVC
5. Length of Screen: 6'
6. Type of Screen: 20/40 Prepacked 0.20 Slot
7. Length of Sump: NA
8. Total Depth of Boring: 15'
9. Diameter of Boring: 2"
10. Depth to Bottom of Screen: 15'
11. Type of Screen Filter: 20/40 Sand
    Quantity Used: Pre-Packed Size: 20/40
12. Depth to Top of Filter: 6'
13. Type of Seal: bentonite pellets
    Quantity Used: ~
14. Depth to Top of Seal: 4'
15. Type of Grout: Portland cement
    Grout Mixture:
    Method of Placement: Pour
16. Tot. Depth of 6 in. Steel Casing: NA

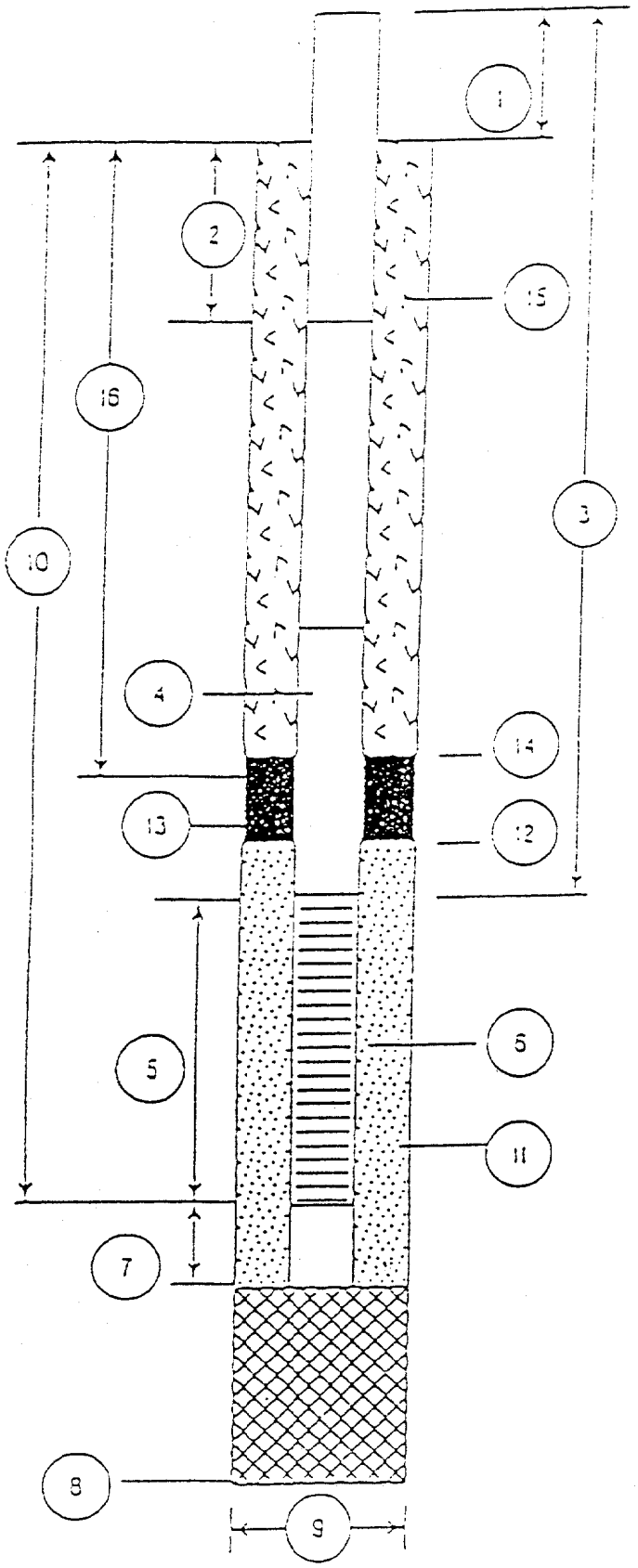
DEPARTMENT OF THE NAVY

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, SC.

WELL CONSTRUCTION DETAIL

WELL NUMBER: OLD-37-04

DATE OF INSTALLATION: 7-86



1. Height of Casing above ground: Fm
2. Depth to first Coupling: 8'
   Coupling Interval Depths: NA
3. Total Length of Riser Pipe: 8'
4. Type of Riser Pipe: 1/2" sched 40PVC
5. Length of Screen: 6'
6. Type of Screen: 0.020 slot prepacked
7. Length of Sump: NA
8. Total Depth of Boring: 14.5'
9. Diameter of Boring: 2"
10. Depth to Bottom of Screen: 14'
11. Type of Screen Filter: Sand
    Quantity Used: Prepacked Size: 20/40
12. Depth to Top of Filter: 4'
13. Type of Seal: Fine Sand
    Quantity Used: —
14. Depth to Top of Seal: 2'
15. Type of Grout: Portland cement
    Grout Mixture: —
    Method of Placement: poured
16. Tot. Depth of 6 in. Steel Casing: Fm

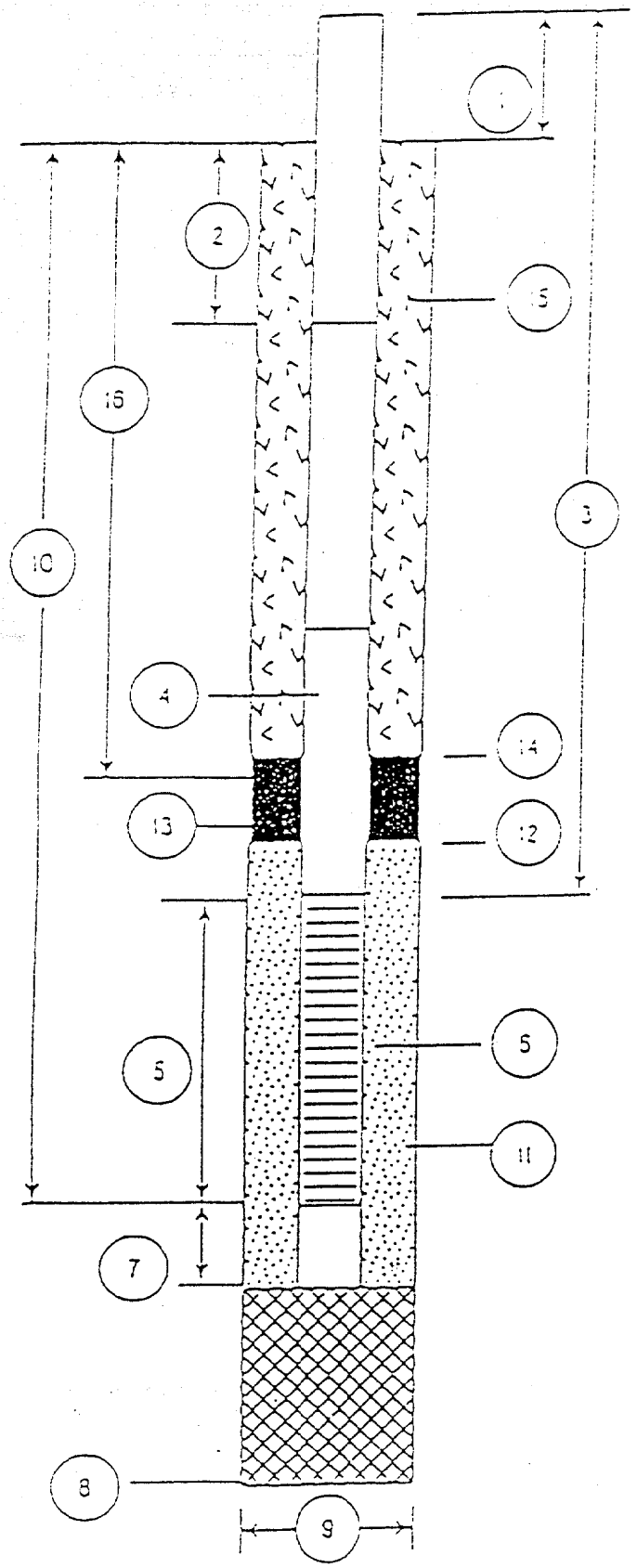
DEPARTMENT OF THE NAVY

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, SC.

WELL CONSTRUCTION DETAIL

WELL NUMBER: OLD37.06

DATE OF INSTALLATION: 7-8-99



1. Height of Casing above ground: Flm
2. Depth to first Coupling: 9'
   Coupling Interval Depths: NA
3. Total Length of Riser Pipe: 9'
4. Type of Riser Pipe: 1/2" Sched 40 PVC
5. Length of Screen: 6'
6. Type of Screen: 0.020 Slot Prepacked
7. Length of Sump: NA
8. Total Depth of Boring: 15'
9. Diameter of Boring: 2"
10. Depth to Bottom of Screen: 15'
11. Type of Screen Filter: Sand
    Quantity Used: Prepacked Size: 20/40
12. Depth to Top of Filter: 4'
13. Type of Seal: fine sand
    Quantity Used: —
14. Depth to Top of Seal: 2'
15. Type of Grout: Portland cement
    Grout Mixture:
    Method of Placement: Pour
16. Tot. Depth of 6 in. Steel Casing: NA

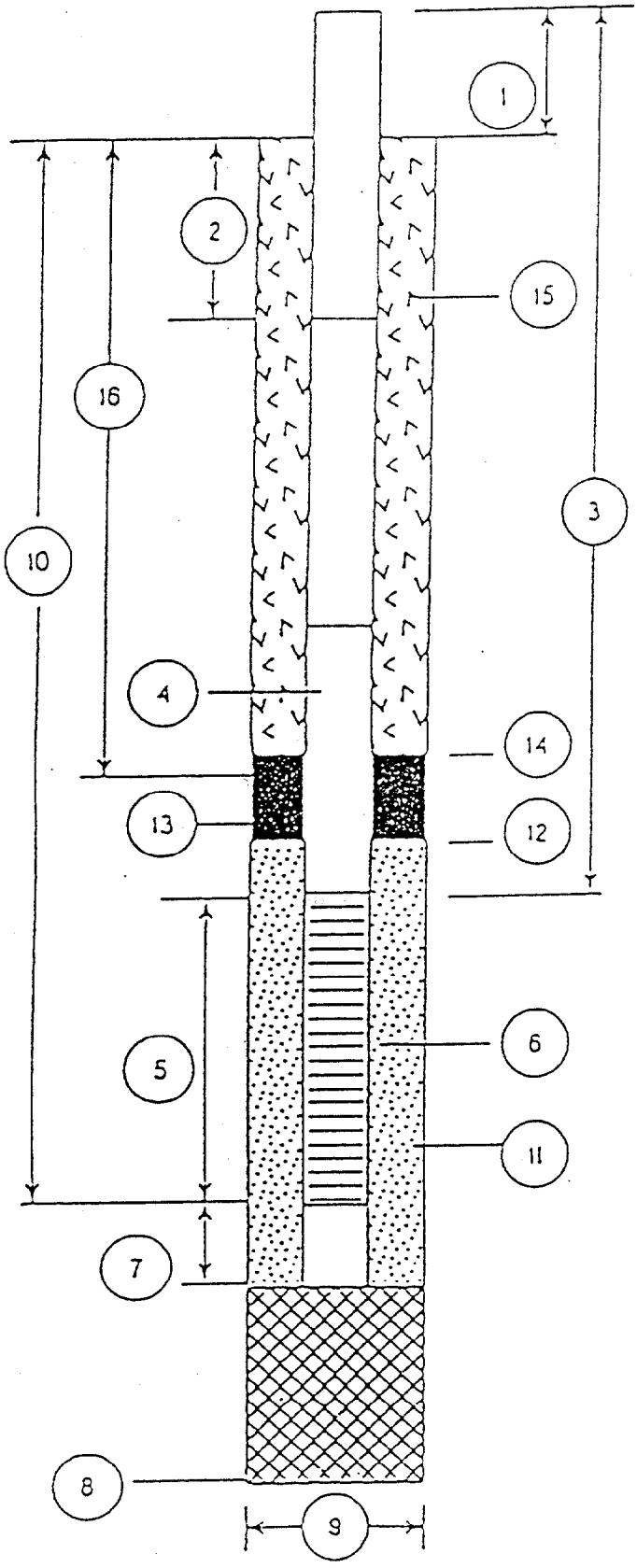
DEPARTMENT OF THE NAVY

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, SC.

WELL CONSTRUCTION DETAIL

WELL NUMBER: OLD-37-07

DATE OF INSTALLATION: 7-8/9



1. Height of Casing above ground: FM
2. Depth to first Coupling: 9'
   Coupling Interval Depths: NA
3. Total Length of Riser Pipe: 9'
4. Type of Riser Pipe: 1½" Sched. 40 PVC
5. Length of Screen: 6'
6. Type of Screen: 0.020 Slot / Pre-packed
7. Length of Sump: NA
8. Total Depth of Boring: 15.5'
9. Diameter of Boring: 2"
10. Depth to Bottom of Screen: 15'
11. Type of Screen Filter: Sand
    Quantity Used: Pre-Packed Size: 20/40
12. Depth to Top of Filter: 6.5'
13. Type of Seal: 30/65 Sand
    Quantity Used: ____
14. Depth to Top of Seal: 3.5'
15. Type of Grout: Portland Cement
    Grout Mixture:
    Method of Placement: Pour
16. Tot. Depth of 6 in. Steel Casing: NA

APPENDIX A-2

GROUNDWATER SAMPLE FIELD DATA

GROUNDWATER SAMPLE FIELD DATA

Project: NTC ORLANDO
Project Number: 02530.05
Sample Location ID: OLD-37-01
Time: Start: 1145 End: 1436

Point of Interest: SA 37
Date: 11-4/97
Signature of Sampler: William D. Olsen

Water Level/Well Data

Well Depth 13.09 Ft. — X Measured / ___ Historical
X Top of Well / ___ Top of Protective Casing ___ ___
Well Riser Stick-up FM Ft. (from ground)
Protective NA Ft. Casing/Well Difference
Protective NA Ft. Casing

Depth to Water 8.06 Ft.
Well Material: X PVC / ___ SS ___
Well Locked?: X Yes / ___ No
Well Dia. X 2 inch / ___ 4 inch / ___ 6 inch ___ ___
Water Level Equip. Used: X Elect. Cond. Probe / ___ Float Activated / ___ Press. Transducer ___ ___

Height of Water Column 5.03 Ft. X
X .16 Gal/Ft. (2 in.) / ___ .65 Gal/Ft. (4 in.) / ___ 1.5 Gal/Ft. (6 in.) / ___ ___ Gal/Ft. (___ in.)
= [0.8 Gal/Vol / 5 Total Gal Purged]

Well Integrity: Yes / No
Prot. Casing Secure: X / ___
Concrete Collar Intact: X / ___
Other ___ : X / ___

Equipment Documentation

Purging/Sampling Equipment Used:

(✓ If Used For) Purging	Sampling		Equipment ID
X	X	Peristaltic Pump	
—	—	Submersible Pump	
—	—	Bailer	
—	—	PVC/Silicon Tubing	
X	X	Teflon/Silicon Tubing	
—	—	Airlift	
—	—	Hand Pump	
—	X	In-line Filter	
—	—	Press/Vac Filter	
—	—		
—	—		

Decontamination Fluids Used:

(✓ All That Apply at Location)
___ Methanol (100%)
___ 25% Methanol/75% ASTM Type II water
X Deionized Water
___ Liquinox Solution
___ Hexane
___ HNO_3/D.I. Water Solution
___ Potable Water
___ None
___ ___
___ ___

Field Analysis Data

Ambient Air VOC 0 ppm Well Mouth 0 ppm Field Data Collected X In-line / ___ In Container

Sample Observations: ___ Turbid / ___ Colored / X Clear / ___ Odor / ___ Cloudy

Purge Data	@ INIT Gal.	@ 1 Gal.	@ 2½ Gal.	@ 4 Gal.	@ 5 Gal.
Temperature, Deg. C	25.0	25.0	25.0	25.0	24.5
pH, units	4.56	4.75	4.82	4.87	4.89
Specific Conductivity (umhos/cm @ 25 Deg. C)	152	151	153	155	155
~~Turbidity~~ NTU	17.53	10.90	10.93	12.20	12.12
~~Oxidation Reduction, +/- mv~~					
~~Dissolved Oxygen, ppm~~					

Sample Collection Requirements

(✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA	___	HCL	___	___	___/___/___/___
SVOA	___	4°C	___	___	___/___/___/___
Pest/PCB	___	4°C	___	___	___/___/___/___
Inorganics	___	HNO_3	___	___	___/___/___/___
Explosives	___	4°C	___	___	___/___/___/___
TPH	___	H_2SO_4	___	___	___/___/___/___
TOC	___	H_2SO_4	___	___	___/___/___/___
Nitrate	___	H_2SO_4	___	___	___/___/___/___

Notes:
37H0010 / 37H0010D = Filtered Metals 0.45u
Filtered Turbidity = 9.12 NTU
37G0010 = Full Suite + TPH + TSS
37G0010D = Full Suite + TSS
Final Turbidity = 11.76 NTU

GROUNDWATER SAMPLE FIELD DATA

Project: NTC ORLANDO
Project Number: 02530.05
Sample Location ID: OLD-37-02
Time: Start: 0915 End: 1135
Point of Interest: SA37
Date: 11.4/97
Signature of Sampler: William D. Olea

Water Level/Well Data

Well Depth 13.09 Ft. — X Measured / ___ Historical
X Top of Well / ___ Top of Protective Casing
Well Riser Stick-up (from ground) FM Ft.
Protective Casing/Well Difference NA Ft.
Protective Casing NA Ft.

Depth to Water 11.05 Ft.
Well Material: X PVC / ___ SS
Well Locked?: X Yes / ___ No
Well Dia. X 2 inch / ___ 4 inch / ___ 6 inch
Water Level Equip. Used: X Elect. Cond. Probe / ___ Float Activated / ___ Press. Transducer

Height of Water Column 9.03 Ft. X
X .16 Gal/Ft. (2 in.) / ___ .65 Gal/Ft. (4 in.) / ___ 1.5 Gal/Ft. (6 in.) / ___ Gal/Ft. (___ in.)
= [1.45 Gal/Vol / 5 Total Gal Purged]

Well Integrity:	Yes	No
Prot. Casing Secure	X	
Concrete Collar Intact	X	
Other	X	

Equipment Documentation

Purging/Sampling Equipment Used :

(✓ If Used For) Purging	Sampling		Equipment ID
X	X	Peristaltic Pump	
—	—	Submersible Pump	
—	—	Bailer	
—	—	PVC/Silicon Tubing	
X	X	Teflon/Silicon Tubing	
—	—	Airlift	
—	—	Hand Pump	
—	X	In-line Filter	
—	—	Press/Vac Filter	
—	—		

Decontamination Fluids Used :

(✓ All That Apply at Location)
___ Methanol (100%)
___ 25% Methanol/75% ASTM Type II water
X Deionized Water
___ Liquinox Solution
___ Hexane
___ HNO_3/D.I. Water Solution
___ Potable Water
___ None
___ ___
___ ___

Field Analysis Data

Ambient Air VOC 0 ppm Well Mouth 0 ppm Field Data Collected X In-line / ___ In Container

Sample Observations: ___ Turbid / X Clear / ___ Cloudy / ___ Colored / ___ Odor

Purge Data	@ INIT Gal.	@ ___ Gal.	@ ___ Gal.	@ 4 Gal.	@ 5 Gal.
Temperature, Deg. C	25.0	25.0	25.0	25.0	25.0
pH, units	4.61	4.60	4.59	4.57	4.47
Specific Conductivity (umhos/cm @ 25 Deg. C)	120	90	95	90	98
~~Turbidity, NTU~~	31.4	27.2	27.0	25.4	25.4
~~Oxidation - Reduction, +/- mv~~					
~~Dissolved Oxygen, ppm~~					

Sample Collection Requirements

(✓ If Required at this Location)

Analytical Parameter	✓ If Field Filtered	Preservation Method	Volume Required	✓ If Sample Collected	Sample Bottle IDs
VOA	___	HCL	___	___	___/___/___/___
SVOA	___	4oC	___	___	___/___/___/___
Pest/PCB	___	4oC	___	___	___/___/___/___
Inorganics	___	HNO_3	___	___	___/___/___/___
Explosives	___	4°C	___	___	___/___/___/___
TPH	___	H_2SO_4	___	___	___/___/___/___
TOC	___	H_2SO_4	___	___	___/___/___/___
Nitrate	___	H_2SO_4	___	___	___/___/___/___

Notes: 37H00201 = Filtered metals, 0.45µ 8.34NTU
37G00201 = Full Suite + TPH + TSS
final turbidity = 20.8 NTU

DEP Form # 62-770.900(3)
Form Title: Petroleum or Petroleum Products Water Sampling Log
Effective Date: September 23, 1997

Petroleum or Petroleum Products
Water Sampling Log

FDEP FACILITY NO.: —	WELL NO.: OLD-37-02	SAMPLE ID: 37600202	DATE: 8/15/99
SITE NAME: NTC ORLANDO	SITE LOCATION: SA 37		

PURGE DATA

WELL DIAMETER (in): 2"	TOTAL WELL DEPTH (ft): 12.88	DEPTH TO WATER (ft): 3.89	WELL CAPACITY (gal/ft): 0.16

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH − DEPTH TO WATER) x WELL CAPACITY =

= (12.88 − 3.89) x 0.16 = 1.4

PURGE METHOD: Low Flow/Peristaltic	PURGING INITIATED AT: 1435	PURGING ENDED AT: 1455
	PURGE RATE (gpm): 0.2	TOTAL VOLUME PURGED (gal): 4.5

WELL VOLS. PURGED	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (°C)	COND. (µmhos)	COLOR	ODOR	APPEARANCE	OTHER
0	INIT	4.96	27.3	99	45.0NTU	NONE		
0.7	1	—	27.4	98	30.4			
1.4	2	5.07	27.2	98	65.3			
2.4	3.5	5.09	27.1	100	50.0			
3 1/4	4.5	5.17	27.4	99	48.1			

SAMPLING DATA

SAMPLED BY / AFFILIATION: Bill Olson / HLA	SAMPLER(S) SIGNATURE(S): Bill Olson	
SAMPLING METHOD(S): Peristaltic Pump	SAMPLING INITIATED AT: 1455	SAMPLING ENDED AT: 1500

FIELD DECONTAMINATION: Y (N) | FIELD-FILTERED: Y (N) | DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATIONS			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH	
2	AG	1L	4°C	—	—	TCL Pest/PCB
1	HDP	500ml	HNO_3	—	2.0	Arsenic

REMARKS:

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; HDP = HIGH DENSITY POLYETHYLENE; O = OTHER (SPECIFY)

WELL CAPACITY: 1.25" = 0.06 gal/ft; 2" = 0.16 gal/ft; 4" = 0.65 gal/ft; 6" = 1.47 gal/ft; 8" = 2.61 gal/ft; 12" = 5.88 gal/ft

NOTE: this does not constitute all the information required by Chapter 62-160, F.A.C.

DEP Form # 62-770.900(3)
Form Title: Petroleum or Petroleum Products Water Sampling Log
Effective Date: September 25, 1997

Petroleum or Petroleum Products
Water Sampling Log

FDEP FACILITY NO.: —	WELL NO.: OW-37-03	SAMPLE ID: 37600301	DATE: 8/5/99
SITE NAME: SA 37	SITE LOCATION: NTC ORLANDO		

PURGE DATA

WELL DIAMETER (in): 1/2	TOTAL WELL DEPTH (ft): 14.72	DEPTH TO WATER (ft): 9.08	WELL CAPACITY (gal/ft): 0.01

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH − DEPTH TO WATER) x WELL CAPACITY =

= (14.72 − 9.08) x 0.01 = 0.05

PURGE METHOD: Low Flow	PURGING INITIATED AT: 1010	PURGING ENDED AT: 1057
	PURGE RATE (gpm): 0.12	TOTAL VOLUME PURGED (gal): 6

WELL VOLS. PURGED	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (°C)	COND. (µmhos)	COLOR	ODOR	APPEARANCE	OTHER
0	INIT	—	26.7	115	7200			
40	2	5.10	26.1	110	69.4			
60	3	4.83	26.7	111	153.1			
80	4	4.30	26.2	110	137.9			
100	5	4.08	26.2	111	74.0			
110	5 1/2	4.03	26.1	109	60.4			
120	6	4.02	26.2	110	73.5			

SAMPLING DATA

SAMPLED BY / AFFILIATION: Bill Olson / HLA	SAMPLER(S) SIGNATURE(S): William Olson	
SAMPLING METHOD(S): Peristaltic	SAMPLING INITIATED AT: 1057	SAMPLING ENDED AT: 1102

FIELD DECONTAMINATION: Y (N) FIELD-FILTERED: Y (N) DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATIONS			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH	
2	AG	1 L	4°C	—	—	TCL PEST/PCB
1	HDP	500ml	HNO_3	—	2.0	Arsenic

REMARKS:

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; HDP = HIGH DENSITY POLYETHYLENE; O = OTHER (SPECIFY)

WELL CAPACITY: 1.25" = 0.06 gal/ft; 2" = 0.16 gal/ft; 4" = 0.65 gal/ft; 6" = 1.47 gal/ft; 8" = 2.61 gal/ft; 12" = 5.88 gal/ft

NOTE: this does not constitute all the information required by Chapter 62-160, F.A.C.

FLORIDA

DEP Form # 62-770.900(3)
Form Title: Petroleum or Petroleum Products Water Sampling Log
Effective Date: September 23, 1997

Petroleum or Petroleum Products
Water Sampling Log

FDEP FACILITY NO.: —	WELL NO.: ~~OLD-37-04~~	SAMPLE ID: 37600401	DATE: 8/5/99
SITE NAME: SA37	SITE LOCATION: NTC ORLANDO		

PURGE DATA

WELL DIAMETER (in): 1/2"	TOTAL WELL DEPTH (ft): 14.23	DEPTH TO WATER (ft): 8.14	WELL CAPACITY (gal/ft): 0.01

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH − DEPTH TO WATER) x WELL CAPACITY =

= (14.23 − 8.14) x 0.01 = 0.06

PURGE METHOD: low Flow	PURGING INITIATED AT: 1120	PURGING ENDED AT: 1159
	PURGE RATE (gpm): 0.12	TOTAL VOLUME PURGED (gal): 5

WELL VOLS. PURGED	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (°C)	COND. (µmhos)	COLOR	ODOR	APPEARANCE	OTHER
INIT	0	4.88	26.7	172	>200			
33	2	5.08	26.6	180	>206			
49	3	5.30	26.3	181	144.7			
66	4	5.36	26.3	182	150.2			
82	5	5.38	26.2	182	140.3			

SAMPLING DATA

SAMPLED BY / AFFILIATION: Bill Olson / HLA	SAMPLER(S) SIGNATURE(S): Wm D Olson	
SAMPLING METHOD(S): Peristaltic	SAMPLING INITIATED AT: 1159	SAMPLING ENDED AT: 1205

FIELD DECONTAMINATION: Y (N) | FIELD-FILTERED: Y (N) | DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATIONS			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH	
2	AG	1L	4°C	—	—	TCL Pest/PCB
1	HDP	500ml	HNO_3	—	2	Arsenic

REMARKS:

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; HDP = HIGH DENSITY POLYETHYLENE; O = OTHER (SPECIFY)

WELL CAPACITY: 1.25" = 0.06 gal/ft; 2" = 0.16 gal/ft; 4" = 0.65 gal/ft; 6" = 1.47 gal/ft; 8" = 2.61 gal/ft; 12" = 5.88 gal/ft

: this does not constitute all the information required by Chapter 62-160, F.A.C.

FLORIDA

DEP Form # 62-770.900(3)
Form Title: Petroleum or Petroleum Products Water Sampling Log
Effective Date: September 23, 1997

Petroleum or Petroleum Products
Water Sampling Log

FDEP FACILITY NO.: ———	WELL NO.: ~~OD-3705~~	SAMPLE ID: 376005D1	DATE: 8/5/99
SITE NAME: SA 37	SITE LOCATION: NTC ORLANDO		

PURGE DATA

WELL DIAMETER (in): 1/2	TOTAL WELL DEPTH (ft): 14.99	DEPTH TO WATER (ft): 8.83	WELL CAPACITY (gal/ft): 0.01

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH − DEPTH TO WATER) x WELL CAPACITY =

= (14.99 − 8.83) x 0.01 = 0.06

PURGE METHOD: Low Flow	PURGING INITIATED AT: 1214	PURGING ENDED AT: 1315
	PURGE RATE (gpm): 0.15	TOTAL VOLUME PURGED (gal): 9

WELL VOLS. PURGED	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (°C)	COND. (µmhos)	COLOR	ODOR	APPEARANCE	OTHER
33.3	2	5.41	26.0	100	>200			
50.0	3	5.35	26.8	98	>200			
66.7	4	5.45	26.5	92	>200			
83.3	5	5.37	26.7	90	95.4			
100.0	6	5.38	26.4	90	85.5			
133.3	8	5.43	26.2	88	67-9			
150.0	9	5.34	26.6	85	63.0			

SAMPLING DATA

SAMPLED BY / AFFILIATION: Bill Olson / HLA	SAMPLER(S) SIGNATURE(S): [signature]
SAMPLING METHOD(S): Peristaltic	SAMPLING INITIATED AT: 1315 / SAMPLING ENDED AT: 1335

FIELD DECONTAMINATION: Y (N) | FIELD-FILTERED: Y (N) | DUPLICATE: (Y) N

SAMPLE CONTAINER SPECIFICATIONS			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH	
4	AG	1Q	4°C	———	—	Tot PEST / PCB
2	HDP	500ml	HNO_3	———	2	Arsenic

REMARKS:

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; HDP = HIGH DENSITY POLYETHYLENE; O = OTHER (SPECIFY)

WELL CAPACITY: 1.25" = 0.06 gal/ft; 2" = 0.16 gal/ft; 4" = 0.65 gal/ft; 6" = 1.47 gal/ft; 8" = 2.61 gal/ft; 12" = 5.88 gal/ft

NOTE: this does not constitute all the information required by Chapter 62-160, F.A.C.

DEP Form # 62-770.900(3)
Form Title: Petroleum or Petroleum Products Water Sampling Log
Effective Date: September 23, 1997

Petroleum or Petroleum Products
Water Sampling Log

FDEP FACILITY NO.:	WELL NO.: MW37-06	SAMPLE ID: 376MW601	DATE: 8/15/99
SITE NAME: SA 37	SITE LOCATION: NTC ORLANDO		

PURGE DATA

WELL DIAMETER (in): 1/2"	TOTAL WELL DEPTH (ft): 15.18	DEPTH TO WATER (ft): 9.52	WELL CAPACITY (gal/ft): 0.01

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH − DEPTH TO WATER) x WELL CAPACITY =

= (15.18 − 9.52) x 0.01 = 0.05

PURGE METHOD: LOW FLOW	PURGING INITIATED AT: 1336	PURGING ENDED AT: 1416
	PURGE RATE (gpm): 0.15	TOTAL VOLUME PURGED (gal): 6

WELL VOLS. PURGED	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (°C)	COND. (µmhos)	COLOR	ODOR	APPEARANCE	OTHER
INIT	0	5.17	27.2	82	7200			
40	2	5.15	26.3	80	7200			
60	3	5.22	26.2	80	97-8			
80	4	5.08	26.8	80	108.1			
100	5	5.09	26.9	78	114.5			
120	6	5.09	26.4	78	86.0			

SAMPLING DATA

SAMPLED BY / AFFILIATION: Bill Olson / MLA	SAMPLER(S) SIGNATURE(S): [illegible] D. Olson
SAMPLING METHOD(S): Peristaltic	SAMPLING INITIATED AT: 1416 / SAMPLING ENDED AT: 1420

FIELD DECONTAMINATION: Y (N) | FIELD-FILTERED: Y (N) | DUPLICATE: Y (N)

SAMPLE CONTAINER SPECIFICATIONS			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH	
2	AG	1L	4°C	—	—	TCL Pest / PCB
1	HDP	500mL	HNO_3	—	2	Arsenic

REMARKS:

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; HDP = HIGH DENSITY POLYETHYLENE; O = OTHER (SPECIFY)

WELL CAPACITY: 1.25" = 0.06 gal/ft; 2" = 0.16 gal/ft; 4" = 0.65 gal/ft; 6" = 1.47 gal/ft; 8" = 2.61 gal/ft; 12" = 5.88 gal/ft

NOTE: this does not constitute all the information required by Chapter 62-160, F.A.C.

APPENDIX B

SUMMARY OF POSITIVE DETECTIONS TABLES

TABLE B-1

SUMMARY OF POSITIVE DETECTIONS IN SURFACE AND SUBSURFACE SOIL
INITIAL SITE SCREENING INVESTIGATION

Appendix B

Table B-1. Summary of Positive Detections in Surface and Subsurface Soil Analytical Results
Study Area 37 Initial Site Screening

Naval Training Center, Orlando
Orlando, FL

Identifier	Background [1] Screening		SCTL [2] Residential		RBC [3] for Residential Soil		RBC [3] for Industrial Soil		37S00101		37B00101	
Sampling Date									8-Jul-97		8-Jul-97	
Depth bls (ft)									0-1		4.5-5.5	
Semivolatile Organics, ug/kg												
2-Methylnaphthalene			80,000						200	J		
Acenaphthylene			1,100,000		2,300,000	n	61,000,000	n	73	J		
Benzo(a)anthracene			1,400		880	c	7,800	c	79	J		
Benzo(a)pyrene			100		88	c	780	c	110	J		
Benzo(b)fluoranthene			1,400		880	c	7,800	c	160	J		
Benzo(k)fluoranthene			15,000		8,800	c	78,000	c	130	J		
bis(2-Ethylhexyl)phthalate			76,000		46,000	c	410,000	c	84	J	86	J
Chrysene			140,000		88,000	c	780,000	c	160	J		
Dibenzofuran			280,000						56	J		
Diethylphthalate			54,000,000		63,000,000	n	1,000,000,000	c	41	J		
Fluoranthene			2,900,000		3,100,000	n	82,000,000	n	160	J		
Naphthalene			40,000						140	J		
Phenanthrene			2,000,000		2,300,000	n	61,000,000	n	180	J		
Pesticides/PCBs, ug/kg												
4,4'-DDD			4,600		2,700	c	24,000	c	2500		15	J
Aldrin			70		38	c	340	c	1,300		9.3	
alpha-Chlordane			3,100		1,800	c	16,000	c	40,000	R	240	R
delta-BHC			22,000						830	J		
gamma-Chlordane			3,100		1,800	c	16,000	c	52,000	R	320	R
Heptachlor			200		140	c	1,300	c	4,400		32	
Heptachlor epoxide			100		70	c	630	c	2,900			
Inorganics, mg/kg												
Aluminum	2,088		72,000		78,000	n	1,000,000	n	1,010		1,200	
Arsenic	1.0		0.8		0.43	c	3.8	c	3			
Barium	8.7		110		5,500	n	140,000	n	29.4	J	26.9	J
Cadmium	0.98		75		39	n	1,000	n	0.9	J		
Calcium	25,295		ND		1,000,000		1,000,000		4,800		393	J
Chromium			210		230	n	6,100	n	4.3		2.9	
Cobalt			4,700		4,700	n	120,000	n	1.7	J		
Copper			110		3,100	n	82,000	n	7.6		1.4	J
Iron	712		23,000		23,000	n	610,000	n	4,990		763	
Lead	14.5		400		400		400		60.6		14.2	
Magnesium	328		ND		460,468		460,468		180	J	20.5	J
Manganese	8.1		1,600		1,800	n	47,000	n	32.6		2.4	J
Mercury	0.07		3		23	n	610	n	0.29	J		
Nickel	4.4		110		1,600	n	41,000	n	2.7	J		
Potassium	210		ND		1,000,000		1,000,000		187	J	116	J
Selenium	1.1		390		390	n	10,000	n	0.73	J		
Sodium	ND		ND		100,000		1,000,000		64.8	J	53.3	J
Vanadium	3.1		15		550	n	14,000	n	2.8	J	0.89	J
Zinc	17.2		23,000		23,000	n	610,000	n	72.5		17.3	

Appendix B

Table B-1. Summary of Positive Detections in Surface and Subsurface Soil Analytical Results
Study Area 37 Initial Site Screening

Naval Training Center, Orlando
Orlando, FL

NOTES:

[1] The background screening value is twice the average of detected concentrations for inorganic analytes.

[2] SCTL = Florida Department of Environmental Protection, Soil Cleanup Target Levels, Chapter 62-777 FAC, May 26, 1999.
Values indicated are for direct exposure scenario. Value for mercury is for inorganic mercury. Chromium values are for Chromium (IV).

[3] RBC = Risk-Based Concentration Table, USEPA Region III, May 1996, R.L. Smith. RBC for chromium is based on chromium VI. RBC for lead is not available, value is Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites (OSWER directive 9355-4-12). For essential nutrients (calcium, magnesium) screening values were derived based on recommended daily allowances (RDAs).
RBC for benzo(g,h,i)perylene and phenanthrene are not available, value is based on pyrene.

n = noncarcinogenic pathway
c = carcinogenic pathway
ND = Not determined.
bls = below land surface
PCB = polychlorinated biphenyl.
OSWER = Office of Solid Waste and Emergency Response.
USEPA = U.S. Environmental Protection Agency.

mg/kg = milligrams per kilogram.
ug/kg = micrograms per kilogram.

DDD = Dichlorodiphenyldichloroethane

J = Reported concentration is an estimated quantity.
P - greater than 25% difference in concentrations between columns (for pesticide/PCB analyses only)

All inorganics results expressed in milligrams per kilogram (mg/kg) soil dry weight; organics in micrograms per kilogram (ug/kg) soil dry weight.
Bold/shaded values indicate exceedance of regulatory guidance and background.
Blank space indicates analyte/compound was not detected at the reporting limit.

TABLE B-2

SUMMARY OF POSITIVE DETECTIONS IN GROUNDWATER
INITIAL SITE SCREENING INVESTIGATION

Appendix B

Table B-2. Summary of Positive Detections in Groundwater Analytical Results
Study Area 37 Initial Site Screening

Naval Training Center Orlando
Orlando, FL

Identifier	Background Screening [1]		FDEP GCTL		Primary FEDMCL		RBC [2] for Tap Water		37G00101		37G00101D		37G00201		37H00101		37H00101D		37H00201	
Sampling Date									4-Nov-97		4-Nov-97		4-Nov-97		4-Nov-97		4-Nov-97		4-Nov-97	
Pesticides/PCBs, ug/L																				
alpha-Chlordane			2	p	2		0.052	c	0.004	J										
delta-BHC			2	st					0.004	J	0.004	J								
Heptachlor			0.4	p	0.4		0.0023	c			0.10	J								
Inorganics, ug/L																				
Aluminum	4,067		200	s	ND		37,000	n	1060		1070		1260		955		908		1010	
Antimony	4		6	p											3.5	J			3.4	J
Barium	31.4		2,000	p					15.9	J	16.9	J	13.9	J	15.7	J	15.1	J	12.3	J
Iron	1,227		300	s	ND		11,000	n					305						307	
Lead	4		15	p					1.9	J	1.6	J	1.6	J			1.3	J		
Selenium	9.7		50	p	ND		180	n					4.8	J					4.6	J
Thallium	3.8		2	p	2		2.6	n	4.8	J										
Vanadium	20.6		49	st	ND		260	n	8.6	J	8	J	3.4	J	7.4	J	8.5	J	2.7	J

Appendix B
Table B-2. Summary of Positive Detections in Groundwater Analytical Results
Study Area 37 Initial Site Screening

Naval Training Center Orlando
Orlando, FL

NOTES:

Groundwater background screening value is twice the average of detected concentrations for inorganic analytes.

FDEPGCTL = Florida Department of Environmental Protection, Groundwater Cleanup Target Levels, Chapter 62-777 FAC, May 26, 1999.

FEDMCL= Federal Maximum Contaminant Levels, Primary Drinking Water Regulations and Health Advisories, February 1996.

RBC = Risk-Based Concentration Table, USEPA Region III, March 1997, R.L. Smith.

For essential nutrients (calcium, magnesium, potassium, and sodium) screening values were derived based on recommended daily allowances.

s = secondary groundwater standard.

st = systemic toxicant.

mc = based on minimum criteria

p = primary standard.

o = organoleptic.

n = *noncarcinogenic effects.*

c = carcinogen (GCTLs) or carcinogenic effects (RBCs).

ND = Not determined.

USEPA = U.S. Environmental Protection Agency.

H = Filtered sample (0.45 micron in-line filter).

J = Reported concentration is an estimated quantity.

ug/l = micrograms per liter.

mg/l = miligrams per liter.

Bold/shaded numbers indicate exceedance of groundwater guidance and background.

Blank space indicates analyte/compound was not detected at the reporting limit.

TABLE B-3

SUMMARY OF IMMUNOASSAY ANALYSIS RESULTS
ADDITIONAL SITE SCREENING INVESTIGATION

Appendix B

Table B-3. Summary of Surface and Subsurface Soil Immunoassay Analytical Results
Study Area 37 Additional Site Screening

Naval Training Center Orlando
Orlando, FL

SAMPLE ID	Depth (ft bls)	PHOTOMETER RESPONSE	CHLORDANE (ppb)	CONFIRMATORY SAMPLE (ug/kg)	SAMPLE ID	Depth (ft bls)	PHOTOMETER RESPONSE	CHLORDANE (ppb)	CONFIRMATORY SAMPLE (ug/kg)
NC (0)	--	0.96	0		NC (0)	--	0.97	0	
C1 (20)	--	0.81	20		C1 (100)	--	0.67	100	
C2 (100)	--	0.62	100		C2 (600)	--	0.39	600	
C3 (600)	--	0.29	600		37S01801	0-1	1.12	U	
37S00102	0-1	0.29	600	88,000[1]	37S01901	0-1	1.14	U	
37S00201	0-1	1.22	U		37S02001	0-1	1.31	U	
37S00301	0-1	1.29	U		37S02101	0-1	1.49	U	
37S00401	0-1	1.61	U		37S02201	0-1	1.57	U	
37S00501	0-1	0.10	>600	1,880	37B00102	2-4	1.09	U	
37S00601	0-1	1.58	U	3.8	37B00103	4-6	0.88	<100	36
37S00701	0-1	1.29	U		37B00104	6-8	1.73	U	
37S00801	0-1	0.79	20< <100		37B00201	2-4	0.20	>600[2]	0.45J
37S00901	0-1	1.13	U		37B00202	4-6	1.99	U	
37S01001	0-1	0.50	100< <600		37B00203	6-8	1.72	U	
37S01101	0-1	0.04	>600		37B00301	2-4	1.85	U	U
37S01201	0-1	1.29	U		37B00302	4-6	1.86	U	
37S01301	0-1	1.12	U		37B00303	6-8	1.94	U	
37S01401	0-1	1.54	U		37B00401	2-4	1.69	U	
37S01501	0-1	0.77	20< <100	209	37B00402	4-6	0.65	100	
37S01601	0-1	1.90	U		37B00403	6-8	2.03	U	

NOTES:

[1] Initial screening investigation value

[2] False positive due to low analyte volume

U = Below detection limit J = Reported concentration is an estimated quantity. ft bls = feet below land surface

Samples NC, C1, C2, and C3 are calibrators run with chlordane standards. The concentration of each standard is in parentheses following the sample ID.

Reported values for total chlordane concentration are based on calibrator sample photometer responses for the associated Immunoassay Analysis runs.

Confirmatory sample chlordane concentrations are the sum of alpha and gamma chlordane reported in offsite analysis results.

TABLE B-4

SUMMARY OF POSITIVE DETECTIONS IN CONFIRMATORY SOIL SAMPLES
ADDITIONAL SITE SCREENING INVESTIGATION

Appendix B

Table B-4. Summary of Positive Pesticide Detections in Confirmatory Soil Sample Analytical Results
Study Area 37 Additional Site Screening

Naval Training Center Orlando
Orlando, FL

Identifier	SCTL [1] for Residential Soil		RBC [2] for Residential Soil		RBC [2] for Industrial Soil		37S00101		37S00501		37S00601		37S01501		37B00101		37B00103		37B00201	
Sampling Date							8-Jul-97		10-Mar-98		10-Mar-98		10-Mar-98		8-Jul-97		13-Mar-98		13-Mar-98	
Depth bls (ft)							0-1		0-1		0-1		0-1		4.5-5.5					
Pesticides/PCBs, ug/kg																				
4,4'-DDD	4,600		2,700	c	24,000	c	2,500								15	J				
4,4'-DDE	3,300		1,900	c	17,000	c			20	JX	1.4	J	12				1	J		
4,4'-DDT	3,300		1,900	c	17,000	c			62		1.7	J	23				1.5	J		
Aldrin	70		38	c	340	c	**1,300**								9.3					
alpha-Chlordane	3,100		1,800	c	16,000	c	**40,000**	R	**950**	D	2.1		77	E	240	R	17		0.25	J
delta-BHC	22,000		ND		ND		830	J												
Dieldrin	70		40	c	360	c			19	JX			2	JP						
Endrin	21,000		23,000	n	610,000	n			38	DJX										
Endrin ketone	ND		ND		ND								1.3	JP						
gamma-Chlordane	3,100		1,800	c	16,000	c	**52,000**	R	**930**	D	1.7	J	80	EP	320	R	19	P	0.2	J
Heptachlor	200		140	c	1,300	c	**4,400**		5.1	J			4.1		32		1.4	JP		
Heptachlor epoxide	100		70	c	630	c	**2,900**		**110**	DJ	0.2	JP	5.2	P			2.6			

NOTES:

1 SCTL = Florida Department of Environmental Protection, Soil Cleanup Target Levels, Chapter 62-777 FAC, May 26, 1999.

2 RBC = Risk-Based Concentration Table, USEPA Region III, May 1996, R.L. Smith.

n = noncarcinogenic pathway
mg/kg = milligrams per kilogram.
bls = below land surface

c = carcinogenic pathway
ug/kg = micrograms per kilogram.
PCB = polychlorinated biphenyl.

USEPA = U.S. Environmental Protection Agency.

DDD = Dichlorodiphenyldichloroethane
DDE = Dichlorodiphenyldichloroethene
DDT = Dichlorodiphenyltrichloroethane

D = Indicates value was determined during a diluted reanalysis.

J = Reported concentration is an estimated quantity.

P - greater than 25% difference in concentrations between columns (for pesticide/PCB analyses only)

X = Very biased data; applies to all analytes in Pesticides/PCB and VOA samples when surrogate recoveries for that sample are less than 10%.

ND = Not determined.

Organics results expressed in micrograms per kilogram (ug/kg) soil dry weight.

Bold/shaded values indicate exceedance of regulatory guidance and background.

Blank space indicates analyte/compound was not detected at the reporting limit.

TABLE B-5

SUMMARY OF POSITIVE DETECTIONS IN GROUNDWATER
GROUNDWATER CHARACTERIZATION INVESTIGATION

Appendix B

Table B-5. Summary of Positive Detections in Groundwater Analytical Results
Study Area 37 Groundwater Characterization

Naval Training Center Orlando
Orlando, FL

Identifier	Background Screening [1]		FDEP GCTL		Primary FEDMCL		RBC [2] for Tap Water		37G00202		37G00301		37G00401		37G00501		37G00501D		37G00601	
Sampling Date									5-Aug-99		5-Aug-99		5-Aug-99		5-Aug-99		5-Aug-99		5-Aug-99	
Pesticides/PCBs, ug/L																				
delta-BHC			2.1	st					0.0036	JP	0.015	JP			0.0032	JP	0.0046	JP	0.0075	JP
Inorganics, ug/L																				
Arsenic	5		50	p	50		0.045	c	4.3	B			4.3	B						

NOTES:

Groundwater background screening value is twice the average of detected concentrations for inorganic analytes.
FDEPGCTL = Florida Department of Environmental Protection, Groundwater Cleanup Target Levels, Chapter 62-777 FAC, May 26, 1999.
FEDMCL= Federal Maximum Contaminant Levels, Primary Drinking Water Regulations and Health Advisories, February 1996.
RBC = Risk-Based Concentration Table, USEPA Region III, March 1997, R.L. Smith.
For essential nutrients (calcium, magnesium, potassium, and sodium) screening values were derived based on recommended daily allowances.
s = secondary groundwater standard.
st = systemic toxicant.
mc = based on minimum criteria
p = primary standard.
o = organoleptic.
n = noncarcinogenic effects.
c = carcinogen (GCTLs) or carcinogenic effects (RBCs).
ND = Not determined.
USEPA = U.S. Environmental Protection Agency.
H = Filtered sample (0.45 micron in-line filter).
J = Reported concentration is an estimated quantity.
P - greater than 25% difference in concentrations between columns (for pesticide/PCB analyses only)
mg/l = miligrams per liter.
Bold/shaded numbers indicate exceedance of groundwater guidance and background.

APPENDIX C

SUMMARY OF ANALYTICAL RESULTS

Table C-1	Summary of Surface and Subsurface Soil Analytical Results, Initial Site Screening Investigation
Table C-2	Summary of Groundwater Analytical Results, Initial Site Screening Investigation
Table C-3	Summary of Surface and Subsurface Analytical Results, Additional Site Screening Investigation
Table C-4	Summary of Groundwater Analytical Results, Groundwater Characterization Investigation

TABLE C-1

SUMMARY OF SURFACE AND SUBSURFACE SOIL ANALYTICAL RESULTS, INITIAL SITE SCREENING INVESTIGATION

Appendix C
Table C-1. Summary of Soil Analytical Results
Study Area 37 Initial Site Screening

Naval Training Center Orlando
Orlando, FL

Sample ID	37S00101		37B00101	
Lab ID	C7G100151021		C7G100151022	
Sampling Date	8-Jul-97		8-Jul-97	
Volatile organics, ug/kg				
1,2-Dichloroethene (total)	11	U	12	U
4-Methylphenol	370	U	410	U
1,1,1-Trichloroethane	11	U	12	U
1,1,2,2-Tetrachloroethane	11	U	12	U
1,1,2-Trichloroethane	11	U	12	U
1,1-Dichloroethane	11	U	12	U
1,1-Dichloroethene	11	U	12	U
1,2-Dichloroethane	11	U	12	U
1,2-Dichloropropane	11	U	12	U
2-Butanone	11	UJ	12	UJ
2-Hexanone	11	UJ	12	UJ
4-Methyl-2-pentanone	11	U	12	U
Acetone	11	UJ	12	UJ
Benzene	11	U	12	U
Bromodichloromethane	11	U	12	U
Bromoform	11	U	12	U
Bromomethane	11	UJ	12	U
Carbon disulfide	11	UJ	12	UJ
Carbon tetrachloride	11	U	12	U
Chlorobenzene	11	U	12	U
Chloroethane	11	U	12	U
Chloroform	11	U	12	U
Chloromethane	11	UJ	12	UJ
cis-1,3-Dichloropropene	11	U	12	U
Dibromochloromethane	11	U	12	U
Ethylbenzene	11	U	12	U
Methylene chloride	11	U	12	U
Styrene	11	U	12	U
Tetrachloroethene	11	U	12	U
Toluene	11	U	12	U
trans-1,3-Dichloropropene	11	U	12	U
Trichloroethene	11	U	12	U
Vinyl chloride	11	UJ	12	U
Xylene (total)	11	U	12	U
Semivolatile organics, ug/kg				
1,2,4-Trichlorobenzene	370	U	410	U
1,2-Dichlorobenzene	370	U	410	U
1,3-Dichlorobenzene	370	U	410	U
1,4-Dichlorobenzene	370	U	410	U
2,2'-oxybis(1-Chloropropane)	370	U	410	U
2,4,5-Trichlorophenol	910	U	990	U
2,4,6-Trichlorophenol	370	U	410	U
2,4-Dichlorophenol	370	U	410	U
2,4-Dimethylphenol	370	U	410	U
2,4-Dinitrophenol	910	U	990	U

Appendix C
Table C-1. Summary of Soil Analytical Results
Study Area 37 Initial Site Screening

Naval Training Center Orlando
Orlando, FL

Sample ID	37S00101		37B00101	
Lab ID	C7G100151021		C7G100151022	
Sampling Date	8-Jul-97		8-Jul-97	
2,4-Dinitrotoluene	370	U	410	U
2,6-Dinitrotoluene	370	U	410	U
2-Chloronaphthalene	370	U	410	U
2-Chlorophenol	370	U	410	U
2-Methylnaphthalene	200	J	410	U
2-Methylphenol	370	U	410	U
2-Nitroaniline	910	U	990	U
2-Nitrophenol	370	U	410	U
3,3'-Dichlorobenzidine	370	U	410	U
3-Nitroaniline	910	U	990	U
4,6-Dinitro-2-methylphenol	910	U	990	U
4-Bromophenyl-phenylether	370	U	410	U
4-Chloro-3-methylphenol	370	U	410	U
4-Chloroaniline	370	U	410	U
4-Chlorophenyl-phenylether	370	U	410	U
4-Nitroaniline	910	U	990	U
4-Nitrophenol	910	U	990	U
Acenaphthene	370	U	410	U
Acenaphthylene	73	J	410	U
Anthracene	370	U	410	U
Benzo(a)anthracene	79	J	410	U
Benzo(a)pyrene	110	J	410	U
Benzo(b)fluoranthene	160	J	410	U
Benzo(g,h,i)perylene	370	U	410	U
Benzo(k)fluoranthene	130	J	410	U
bis(2-Chloroethoxy)methane	370	U	410	U
bis(2-Chloroethyl)ether	370	U	410	U
bis(2-Ethylhexyl)phthalate	84	J	86	J
Butylbenzylphthalate	370	U	410	U
Carbazole	370	U	410	U
Chrysene	160	J	410	U
Di-n-butylphthalate	370	U	410	U
Di-n-octylphthalate	370	U	410	U
Dibenz(a,h)anthracene	370	U	410	U
Dibenzofuran	56	J	410	U
Diethylphthalate	41	J	410	U
Dimethylphthalate	370	U	410	U
Fluoranthene	160	J	410	U
Fluorene	370	U	410	U
Hexachlorobenzene	370	U	410	U
Hexachlorobutadiene	370	U	410	U
Hexachlorocyclopentadiene	370	U	410	U
Hexachloroethane	370	U	410	U
Indeno(1,2,3-cd)pyrene	370	U	410	U
Isophorone	370	U	410	U
N-Nitroso-di-n-propylamine	370	U	410	U

Appendix C
Table C-1. Summary of Soil Analytical Results
Study Area 37 Initial Site Screening

Naval Training Center Orlando
Orlando, FL

Sample ID	37S00101		37B00101	
Lab ID	C7G100151021		C7G100151022	
Sampling Date	8-Jul-97		8-Jul-97	
N-Nitrosodiphenylamine (1)	370	U	410	U
Naphthalene	140	J	410	U
Nitrobenzene	370	U	410	U
Pentachlorophenol	910	U	990	U
Phenanthrene	180	J	410	U
Phenol	370	U	410	U
Pyrene	370	U	410	U
Pesticides/PCBs, ug/kg				
4,4'-DDD	2500		15	J
4,4'-DDE	1500	U	16	U
4,4'-DDT	1500	U	16	U
Aldrin	1300		9.3	
alpha-BHC	770	UJ	8.4	UJ
alpha-Chlordane	40000	R	240	R
Aroclor-1016	15000	U	160	U
Aroclor-1221	30000	U	330	U
Aroclor-1232	15000	U	160	U
Aroclor-1242	15000	U	160	U
Aroclor-1248	15000	U	160	U
Aroclor-1254	15000	U	160	U
Aroclor-1260	15000	U	160	U
beta-BHC	770	U	8.4	U
delta-BHC	830	J	8.4	UJ
Dieldrin	1500	U	16	U
Endosulfan I	770	U	8.4	U
Endosulfan II	1500	U	16	U
Endosulfan sulfate	1500	U	16	U
Endrin	1500	U	16	U
Endrin aldehyde	1500	U	16	U
Endrin ketone	1500	U	16	U
gamma-BHC (Lindane)	770	U	8.4	U
gamma-Chlordane	52000	R	320	R
Heptachlor	4400		32	
Heptachlor epoxide	2900		8.4	U
Methoxychlor	7700	U	84	U
Toxaphene	77000	U	840	U

Appendix C
Table C-1. Summary of Soil Analytical Results
Study Area 37 Initial Site Screening

Naval Training Center Orlando
Orlando, FL

Sample ID	37S00101		37B00101	
Lab ID	C7G100151021		C7G100151022	
Sampling Date	8-Jul-97		8-Jul-97	
Inorganics, mg/kg				
Aluminum	1010		1200	
Antimony	3.2	U	3.4	U
Arsenic	3		0.57	U
Barium	29.4	J	26.9	J
Beryllium	0.07	U	0.07	U
Cadmium	0.9	J	0.63	U
Calcium	4800		393	J
Chromium	4.3		2.9	
Cobalt	1.7	J	0.77	U
Copper	7.6		1.4	J
Iron	4990		763	
Lead	60.6		14.2	
Magnesium	180	J	20.5	J
Manganese	32.6		2.4	J
Mercury	0.29	J	0.12	UJ
Nickel	2.7	J	2.1	U
Potassium	187	J	116	J
Selenium	0.73	J	0.74	U
Silver	0.54	U	0.59	U
Sodium	64.8	J	53.3	J
Thallium	0.61	U	0.67	U
Vanadium	2.8	J	0.89	J
Zinc	72.5		17.3	
TRPH	110	U	120	U

TABLE C-2

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
INITIAL SITE SCREENING INVESTIGATION

Appendix C
Table C-2. Summary of Groundwater Analytical Results
Study Area 37 Initial Site Screening

Naval Training Center Orlando
Orlando, FL

Sample ID	37G00101		37H00101	37G00101D		37H00101D	37G00201		37H00201
LabID	S776284*2		S776284*4	S776284*8		S776284*5	S776284*1		S776284*3
Sampling Date	4-Nov-97		4-Nov-97	4-Nov-97		4-Nov-97	4-Nov-97		4-Nov-97
Volatile organics, ug/L									
1,1,1-Trichloroethane	1	U	NA	1	U	NA	1	U	NA
1,1,2,2-Tetrachloroethane	1	U	NA	1	U	NA	1	U	NA
1,1,2-Trichloroethane	1	U	NA	1	U	NA	1	U	NA
1,1-Dichloroethane	1	U	NA	1	U	NA	1	U	NA
1,1-Dichloroethene	1	U	NA	1	U	NA	1	U	NA
1,2-Dibromo-3-chloropropane	1	UJ	NA	1	UJ	NA	1	UJ	NA
1,2-Dibromoethane (EDB)	1	U	NA	1	U	NA	1	U	NA
1,2-Dichloroethane	1	U	NA	1	U	NA	1	U	NA
1,2-Dichloropropane	1	U	NA	1	U	NA	1	U	NA
2-Butanone	5	U	NA	5	U	NA	5	U	NA
2-Hexanone	5	U	NA	5	U	NA	5	U	NA
4-Methyl-2-pentanone	5	U	NA	5	U	NA	5	U	NA
Acetone	5	UR	NA	5	UR	NA	5	UR	NA
Benzene	1	U	NA	1	U	NA	1	U	NA
Bromochloromethane	1	U	NA	1	U	NA	1	U	NA
Bromodichloromethane	1	U	NA	1	U	NA	1	U	NA
Bromoform	1	U	NA	1	U	NA	1	U	NA
Bromomethane	1	U	NA	1	U	NA	1	U	NA
Carbon disulfide	1	U	NA	1	U	NA	1	U	NA
Carbon tetrachloride	1	U	NA	1	U	NA	1	U	NA
Chlorobenzene	1	U	NA	1	U	NA	1	U	NA
Chloroethane	1	U	NA	1	U	NA	1	U	NA
Chloroform	1	U	NA	1	U	NA	1	U	NA
Chloromethane	1	U	NA	1	U	NA	1	U	NA
cis-1,2-Dichloroethene	1	U	NA	1	U	NA	1	U	NA
cis-1,3-Dichloropropene	1	U	NA	1	U	NA	1	U	NA
Dibromochloromethane	1	U	NA	1	U	NA	1	U	NA
Ethylbenzene	1	U	NA	1	U	NA	1	U	NA
Methylene chloride	2	U	NA	2	U	NA	2	U	NA
Styrene	1	U	NA	1	U	NA	1	U	NA
Tetrachloroethene	1	U	NA	1	U	NA	1	U	NA
Toluene	1	U	NA	1	U	NA	1	U	NA
trans-1,2-Dichloroethylene	1	U	NA	1	U	NA	1	U	NA
trans-1,3-Dichloropropene	1	U	NA	1	U	NA	1	U	NA
Trichloroethene	1	U	NA	1	U	NA	1	U	NA
Vinyl chloride	1	U	NA	1	U	NA	1	U	NA
Xylene (total)	1	U	NA	1	U	NA	1	U	NA
Semivolatile organics, ug/L									
1,2,4-Trichlorobenzene	1	UJ	NA	1	UJ	NA	1	UJ	NA
1,2-Dichlorobenzene	1	U	NA	1	U	NA	1	U	NA
1,3-Dichlorobenzene	1	U	NA	1	U	NA	1	U	NA
1,4-Dichlorobenzene	1	U	NA	1	U	NA	1	U	NA
2,2'-oxybis(1-Chloropropane)	10	U	NA	10	U	NA	10	U	NA
2,4,5-Trichlorophenol	25	U	NA	25	U	NA	25	U	NA
2,4,6-Trichlorophenol	10	U	NA	10	U	NA	10	U	NA

Appendix C
Table C-2. Summary of Groundwater Analytical Results
Study Area 37 Initial Site Screening

Naval Training Center Orlando
Orlando, FL

Sample ID	37G00101		37H00101	37G00101D		37H00101D	37G00201		37H00201
LabID	S776284*2		S776284*4	S776284*8		S776284*5	S776284*1		S776284*3
2,4-Dichlorophenol	10	U	NA	10	U	NA	10	U	NA
2,4-Dimethylphenol	10	U	NA	10	U	NA	10	U	NA
2,4-Dinitrophenol	25	U	NA	25	U	NA	25	U	NA
2,4-Dinitrotoluene	10	U	NA	10	U	NA	10	U	NA
2,6-Dinitrotoluene	10	U	NA	10	U	NA	10	U	NA
2-Chloronaphthalene	10	U	NA	10	U	NA	10	U	NA
2-Chlorophenol	10	U	NA	10	U	NA	10	U	NA
2-Methylnaphthalene	10	U	NA	10	U	NA	10	U	NA
2-Methylphenol	10	U	NA	10	U	NA	10	U	NA
2-Nitroaniline	25	U	NA	25	U	NA	25	U	NA
2-Nitrophenol	10	U	NA	10	U	NA	10	U	NA
3,3'-Dichlorobenzidine	10	U	NA	10	U	NA	10	U	NA
3-Methylphenol/4-Methylphenol	10	U	NA	10	U	NA	10	U	NA
3-Nitroaniline	25	U	NA	25	U	NA	25	U	NA
4,6-Dinitro-2-methylphenol	25	U	NA	25	U	NA	25	U	NA
4-Bromophenyl-phenylether	10	U	NA	10	U	NA	10	U	NA
4-Chloro-3-methylphenol	10	U	NA	10	U	NA	10	U	NA
4-Chloroaniline	10	U	NA	10	U	NA	10	U	NA
4-Chlorophenyl-phenylether	10	U	NA	10	U	NA	10	U	NA
4-Nitroaniline	25	U	NA	25	U	NA	25	U	NA
4-Nitrophenol	25	U	NA	25	U	NA	25	U	NA
Acenaphthene	10	U	NA	10	U	NA	10	U	NA
Acenaphthylene	10	U	NA	10	U	NA	10	U	NA
Anthracene	10	U	NA	10	U	NA	10	U	NA
Benzo(a)anthracene	10	U	NA	10	U	NA	10	U	NA
Benzo(a)pyrene	10	U	NA	10	U	NA	10	U	NA
Benzo(b)fluoranthene	10	U	NA	10	U	NA	10	U	NA
Benzo(g,h,i)perylene	10	U	NA	10	U	NA	10	U	NA
Benzo(k)fluoranthene	10	U	NA	10	U	NA	10	U	NA
bis(2-Chloroethoxy)methane	10	U	NA	10	U	NA	10	U	NA
bis(2-Chloroethyl)ether	10	U	NA	10	U	NA	10	U	NA
bis(2-Ethylhexyl)phthalate	10	U	NA	10	U	NA	10	U	NA
Butylbenzylphthalate	10	U	NA	10	U	NA	10	U	NA
Carbazole	10	U	NA	10	U	NA	10	U	NA
Chrysene	10	U	NA	10	U	NA	10	U	NA
Di-n-butylphthalate	10	U	NA	10	U	NA	10	U	NA
Di-n-octylphthalate	10	U	NA	10	U	NA	10	U	NA
Dibenz(a,h)anthracene	10	U	NA	10	U	NA	10	U	NA
Dibenzofuran	10	U	NA	10	U	NA	10	U	NA
Diethylphthalate	10	U	NA	10	U	NA	10	U	NA
Dimethylphthalate	10	U	NA	10	U	NA	10	U	NA
Fluoranthene	10	U	NA	10	U	NA	10	U	NA
Fluorene	10	U	NA	10	U	NA	10	U	NA
Hexachlorobenzene	10	U	NA	10	U	NA	10	U	NA
Hexachlorobutadiene	10	U	NA	10	U	NA	10	U	NA
Hexachlorocyclopentadiene	10	U	NA	10	U	NA	10	U	NA
Hexachloroethane	10	U	NA	10	U	NA	10	U	NA

Appendix C
Table C-2. Summary of Groundwater Analytical Results
Study Area 37 Initial Site Screening

Naval Training Center Orlando
Orlando, FL

Sample ID	37G00101		37H00101	37G00101D		37H00101D	37G00201		37H00201
LabID	S776284*2		S776284*4	S776284*8		S776284*5	S776284*1		S776284*3
Indeno(1,2,3-cd)pyrene	10	U	NA	10	U	NA	10	U	NA
Isophorone	10	U	NA	10	U	NA	10	U	NA
N-Nitroso-di-n-propylamine	10	U	NA	10	U	NA	10	U	NA
N-Nitrosodiphenylamine	10	U	NA	10	U	NA	10	U	NA
Naphthalene	10	U	NA	10	U	NA	10	U	NA
Nitrobenzene	10	U	NA	10	U	NA	10	U	NA
Pentachlorophenol	25	U	NA	25	U	NA	25	U	NA
Phenanthrene	10	U	NA	10	U	NA	10	U	NA
Phenol	10	U	NA	10	U	NA	10	U	NA
Pyrene	10	U	NA	10	U	NA	10	U	NA
Pesticides/PCBs, ug/L									
4,4'-DDD	0.1	U	NA	0.1	UJ	NA	0.1	UJ	NA
4,4'-DDE	0.1	U	NA	0.1	UJ	NA	0.1	UJ	NA
4,4'-DDT	0.1	U	NA	0.1	UJ	NA	0.1	UJ	NA
Aldrin	0.05	U	NA	0.05	UJ	NA	0.05	UJ	NA
alpha-BHC	0.05	U	NA	0.05	UJ	NA	0.05	UJ	NA
alpha-Chlordane	0.0042	J	NA	0.05	UJ	NA	0.05	UJ	NA
Aroclor-1016	1	U	NA	1	UJ	NA	1	UJ	NA
Aroclor-1221	2	U	NA	2	UJ	NA	2	UJ	NA
Aroclor-1232	1	U	NA	1	UJ	NA	1	UJ	NA
Aroclor-1242	1	U	NA	1	UJ	NA	1	UJ	NA
Aroclor-1248	1	U	NA	1	UJ	NA	1	UJ	NA
Aroclor-1254	1	U	NA	1	UJ	NA	1	UJ	NA
Aroclor-1260	1	U	NA	1	UJ	NA	1	UJ	NA
beta-BHC	0.05	U	NA	0.05	UJ	NA	0.05	UJ	NA
delta-BHC	0.004	J	NA	0.0036	J	NA	0.05	UJ	NA
Dieldrin	0.1	UJ	NA	0.1	UJ	NA	0.1	UJ	NA
Endosulfan I	0.05	U	NA	0.05	UJ	NA	0.05	UJ	NA
Endosulfan II	0.1	U	NA	0.1	UJ	NA	0.1	UJ	NA
Endosulfan sulfate	0.1	U	NA	0.1	UJ	NA	0.1	UJ	NA
Endrin	0.1	UR	NA	0.1	UR	NA	0.1	UR	NA
Endrin aldehyde	0.1	U	NA	0.1	UJ	NA	0.1	UJ	NA
Endrin ketone	0.1	U	NA	0.1	UJ	NA	0.1	UJ	NA
gamma-BHC (Lindane)	0.05	U	NA	0.05	UJ	NA	0.05	UJ	NA
gamma-Chlordane	0.05	U	NA	0.05	UJ	NA	0.05	UJ	NA
Heptachlor	0.17	UJ	NA	0.099	J	NA	0.05	UJ	NA
Heptachlor epoxide	0.05	U	NA	0.05	UJ	NA	0.05	UJ	NA
Methoxychlor	0.5	UJ	NA	0.5	UJ	NA	0.5	UJ	NA
Toxaphene	5	U	NA	5	UJ	NA	5	UJ	NA

Appendix C
Table C-2. Summary of Groundwater Analytical Results
Study Area 37 Initial Site Screening

Naval Training Center Orlando
Orlando, FL

Sample ID	37G00101		37H00101		37G00101D		37H00101D		37G00201		37H00201	
LabID	S776284*2		S776284*4		S776284*8		S776284*5		S776284*1		S776284*3	
Inorganics, ug/L												
Aluminum	1060		955		1070		908		1260		1010	
Antimony	3.3	U	3.5	J	3.3	U	3.3	UJ	3.3	U	3.4	J
Arsenic	9.7	U	10	U	9.5	U	11.1	U	6	U	5.4	U
Barium	15.9	J	15.7	J	16.9	J	15.1	J	13.9	J	12.3	J
Beryllium	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Cadmium	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U
Calcium	9300	U	9300	U	9390	U	9320	U	5250	U	5600	U
Chromium	2	U	2	U	2	U	2	U	2	U	2	U
Cobalt	1	U	1	U	1	U	1	U	1	U	1	U
Copper	3.5	U	3.8	U	3.3	U	4.1	U	2.3	U	3.9	U
Iron	35.3	U	35.3	U	35.3	U	35.3	U	305		307	
Lead	1.9	J	1.2	UJ	1.6	J	1.3	J	1.6	J	1.2	U
Magnesium	889	U	883	U	888	U	891	U	1340	U	1380	U
Manganese	5.6	U	5.7	U	5.6	U	5.8	U	4.2	U	5.4	U
Mercury	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Nickel	2.7	U	2.4	U	2.3	U	2.4	U	3.1	U	3.3	U
Potassium	6010	U	6070	U	6020	U	6070	U	1990	U	2080	U
Selenium	2.6	U	2.6	U	2.6	U	2.6	U	4.8	J	4.6	J
Silver	3	U	3	U	3	U	3	U	3	U	3	U
Sodium	12500	U	12800	U	12500	U	12700	U	4940	U	5100	U
Thallium	4.8	J	4.7	U	4.7	UJ	4.7	U	4.7	U	4.7	U
Vanadium	8.6	J	7.4	J	8	J	8.5	J	3.4	J	2.7	J
Zinc	201	U	202	U	201	U	203	U	6.5	U	9.8	U
General Chemistry, mg/L												
Suspended Solids	5	U	NA		5	U			5	U	NA	
TRPH	1	U	NA		NA				1	U	NA	

TABLE C-3

SUMMARY OF SURFACE AND SUBSURFACE ANALYTICAL RESULTS
ADDITIONAL SITE SCREENING INVESTIGATION

Appendix C
Table C-3. Summary of Soil Analytical Results
Confirmation Sampling, Pesticides/PCBs
Study Area 37 Additional Site Screening

Naval Training Center, Orlando
Orlando, FL

Sample ID	37B00103		37B00201		37B00301		37S00501		37S00601		37S01501	
Lab ID	S881458*4		S881458*6		S881458*5		S881458*1		S881458*2		S881458*3	
Sampling Date	3/13/98		3/13/98		3/13/98		3/10/98		3/10/98		3/10/98	
Pesticides/PCBs, ug/kg												
4,4'-DDD	3.7	U	3.8	U	3.7	U	28	U	3.6	U	3.6	U
4,4'-DDE	1	J	3.8	U	3.7	U	20	JX	1.4	J	12	
4,4'-DDT	1.5	J	3.8	U	3.7	U	62		1.7	J	23	
Aldrin	1.9	U	2	U	1.9	U	15	U	1.8	U	1.8	U
alpha-BHC	1.9	U	2	U	1.9	U	150	U	1.8	U	1.8	U
alpha-Chlordane	17		0.25	J	1.9	U	950	D	2.1		77	EP
Aroclor-1016	37	U	38	U	37	U	280	U	36	U	36	U
Aroclor-1221	74	U	78	U	75	U	580	U	73	U	73	U
Aroclor-1232	37	U	38	U	37	U	280	U	36	U	36	U
Aroclor-1242	37	U	38	U	37	U	280	U	36	U	36	U
Aroclor-1248	37	U	38	U	37	U	280	U	36	U	36	U
Aroclor-1254	37	U	38	U	37	U	280	U	36	U	36	U
Aroclor-1260	37	U	38	U	37	U	280	U	36	U	36	U
beta-BHC	1.9	U	2	U	1.9	U	150	U	1.8	U	1.8	U
delta-BHC	1.9	U	2	U	1.9	U	150	U	1.8	U	1.8	U
Dieldrin	3.7	U	3.8	U	3.7	U	19	JX	3.6	U	2	JP
Endosulfan I	1.9	U	2	U	1.9	U	15	U	1.8	U	1.8	U
Endosulfan II	3.7	U	3.8	U	3.7	U	280	U	3.6	U	3.6	U
Endosulfan sulfate	3.7	U	3.8	U	3.7	U	280	U	3.6	U	3.6	U
Endrin	3.7	U	3.8	U	3.7	U	38	DJX	3.6	U	3.6	U
Endrin aldehyde	3.7	U	3.8	U	3.7	U	280	U	3.6	U	3.6	U
Endrin ketone	3.7	U	3.8	U	3.7	U	280	U	3.6	U	1.3	JP
gamma-BHC	1.9	U	2	U	1.9	U	150	U	1.8	U	1.8	U
gamma-Chlordane	19	P	0.2	J	1.9	U	930	D	1.7	J	80	EP
Heptachlor	1.4	JP	2	U	1.9	U	150	U	1.8	U	4.1	
Heptachlor epoxide	2.6		2	U	1.9	U	110	DJ	0.2	JP	5.2	P
Methoxychlor	19	U	20	U	19	U	1500	U	18	U	18	U
Toxaphene	190	U	200	U	190	U	15000	U	180	U	180	U

TABLE C-4

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
GROUNDWATER CHARACTERIZATION INVESTIGATION

Appendix C

Table C-4. Summary of Groundwater Analytical Results

Study Area 37 Additional Site Screening

Naval Training Center Orlando

Orlando, FL

Sample ID	37G00202		37G00301		37G00401		37G00501		37G00501D		37G00601	
LabID	15239-5		15239-1		15239-2		15239-3		15239-6		15239-4	
Sampling Date	5-Aug-99		5-Aug-99		5-Aug-99		5-Aug-99		5-Aug-99		5-Aug-99	
Pesticides/PCBs, ug/L												
4,4'-DDD	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
4,4'-DDE	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
4,4'-DDT	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Aldrin	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
alpha-BHC	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
alpha-Chlordane	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
Aroclor-1016	1	U	1	U	1	U	1	U	1	U	1	U
Aroclor-1221	2	U	2	U	2	U	2	U	2	U	2	U
Aroclor-1232	1	U	1	U	1	U	1	U	1	U	1	U
Aroclor-1242	1	U	1	U	1	U	1	U	1	U	1	U
Aroclor-1248	1	U	1	U	1	U	1	U	1	U	1	U
Aroclor-1254	1	U	1	U	1	U	1	U	1	U	1	U
Aroclor-1260	1	U	1	U	1	U	1	U	1	U	1	U
beta-BHC	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
delta-BHC	0.0036	JP	0.015	JP	0.05	U	0.0032	JP	0.0046	JP	0.0075	JP
Dieldrin	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Endosulfan I	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
Endosulfan II	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Endosulfan sulfate	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Endrin	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Endrin aldehyde	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Endrin ketone	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
gamma-BHC (Lindane)	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
gamma-Chlordane	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
Heptachlor	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
Heptachlor epoxide	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
Methoxychlor	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Toxaphene	5	U	5	U	5	U	5	U	5	U	5	U
Inorganics, ug/L												
Arsenic	4.3	B	3.1	U	4.3	B	3.1	U	3.1	U	3.1	U

Notes for Summary of Analytical Results Tables
Study Area 37

Naval Training Center Orlando
Orlando Florida

NA = Identified parameter not analyzed.
Sample ID = Sample Identifier
Lab ID = Laboratory identifier

Units:

mg/kg	milligram per kilogram
ug/kg	microgram per kilogram
mg/L	milligram per liter
ug/L	microgram per liter

The following standard analytical data qualifiers have the following definitions:

D	Reported concentration is from a dilution or reanalysis of the sample.
J	The analyte/compound was positively identified and the associated numerical value is an estimated concentration of the analyte/compound in the sample.
P	Greater than 25% difference in concentrations between columns (for pesticide/PCB analyses only)
R	The sample results are rejected during data validation because of serious deficiencies in meeting quality control criteria.
X	Very biased data; applies to all analytes in Pesticides/PCB and VOA samples when surrogate recoveries for that sample are less than 10%.
U	The analyte/compound was analyzed for but was not detected above the reported sample quantitation limit. The number preceding the U qualifier is the reported sample quantitation limit.
UJ	The analyte/compound was not detected above the reported sample quantitation limit. The reported quantitation limit, however, is approximate and may or may not represent the actual limit of quantitation necessary to accurately measure the analyte/compound in the sample.

APPENDIX D

COMPLETION REPORT, INTERIM REMEDIAL ACTION ENVIRONMENTAL DETACHMENT CHARLESTON STUDY AREA 37

STUDY AREA 37

STUDY AREA 37

1. INTRODUCTION

1.1 STUDY AREA 37

SA 37 is located on the Main Base, Naval Training Center, Orlando (Figure 1). Building 2414 is a storage facility associated with the Bachelor Officers' Quarters. Several pesticides were detected in the surface soil sample north of Building 2414 (figure 2).

1.2 SA 37 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.

1.2.1 SA 37 Interim Remedial Action Execution Summary

The execution of this IRA consisted of excavating an area approximately 20′ x 25′ 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 and excavation bottom, testing for pesticides. The results of these samples were all less than the RGOs.

2.0 INTERIM REMEDIAL ACTION EXCECUTION

2.1 ACTIONS PERFORMED BY THE INTERIM REMEDIAL ACTION WORK PLAN

Actions performed are listed below

- Excavation and disposal of an area approximately 20′ x 25′ to a depth of 2′
- Collection of confirmatory samples from each sidewall and excavation bottom for analysis of pesticides
- Restoration of site by backfilling, grading to surrounding area, and seeding

2.2 OBSERVATIONS NOTES

2.2.1 Soil Conditions

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

3.0 INTERIM REMEDIAL ACTION OUTCOME

3.1 SITE CONDITIONS FOLLOWING COMPLETION OF WORK

Following completion of work, the DET had removed 44 tons of pesticide contaminated soil. The site was backfilled, graded to surrounding area and seeded. Site photographs are included in Appendix E1.

4.0 SAMPLING

4.1 CONFIRMATION SAMPLING

Upon completion of work a confirmation sample was taken on each sidewall and excavation bottom, testing for pesticides (Figure 4). See appendix E2 for sampling documentation.

5.0 WASTE GENERATION

5.1 Hazardous Waste

A total of 44 tons of hazardous pesticide contaminated soil was disposed of to a permitted treatment, storage and disposal facility. Waste Manifests are in appendix E3.

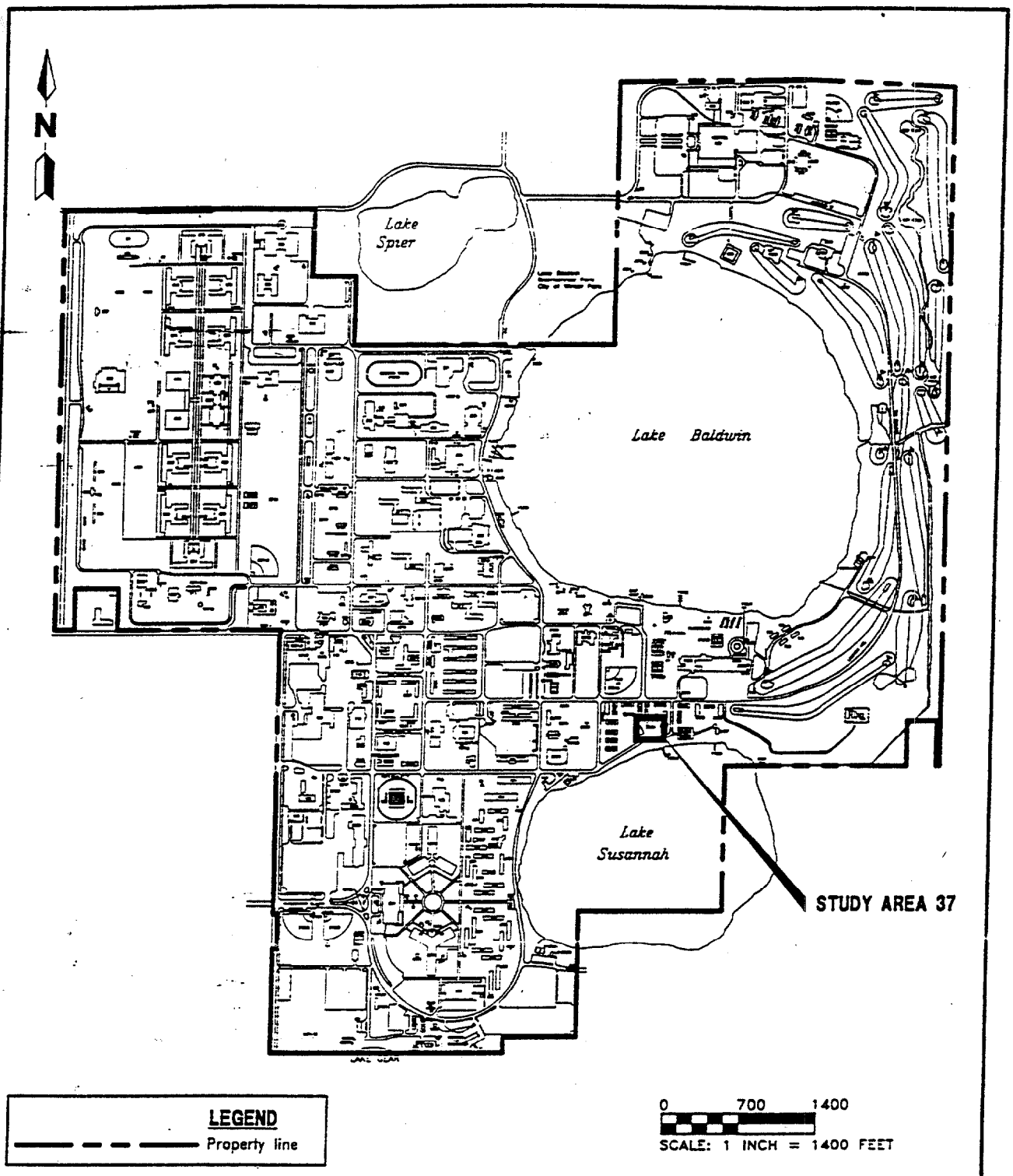


FIGURE 1
LOCATION OF STUDY AREA 37

K:\02530\02530-04\CA\02530775.DWG, BB-PDP 08/14/98 17:44:54, AutoCAD R14

BASE REALIGNMENT AND CLOSURE WORK PLAN FOR INTERIM REMEDIAL ACTION, STUDY AREA 37

NAVAL TRAINING CENTER ORLANDO, FLORIDA

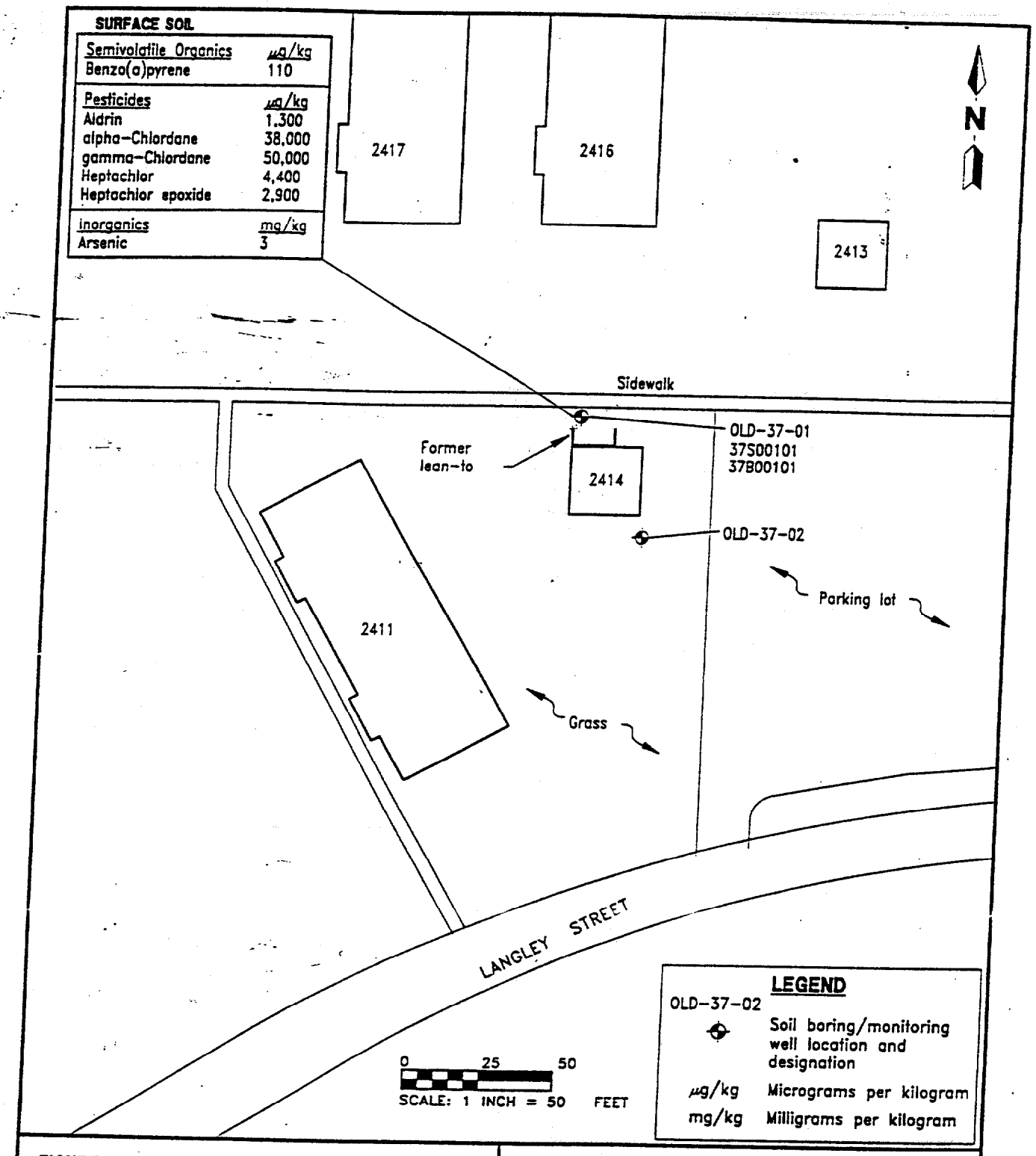


FIGURE 2
STUDY AREA 37 INITIAL SCREENING LOCATIONS, BUILDING 2414

BASE REALIGNMENT AND CLOSURE WORK PLAN FOR INTERIM REMEDIAL ACTION, STUDY AREA 37

NAVAL TRAINING CENTER ORLANDO, FLORIDA

N:\025301\02530-04\ICA\02530777.DWG, BB-PDP 09/15/98 11:26:16, AutoCAD R14

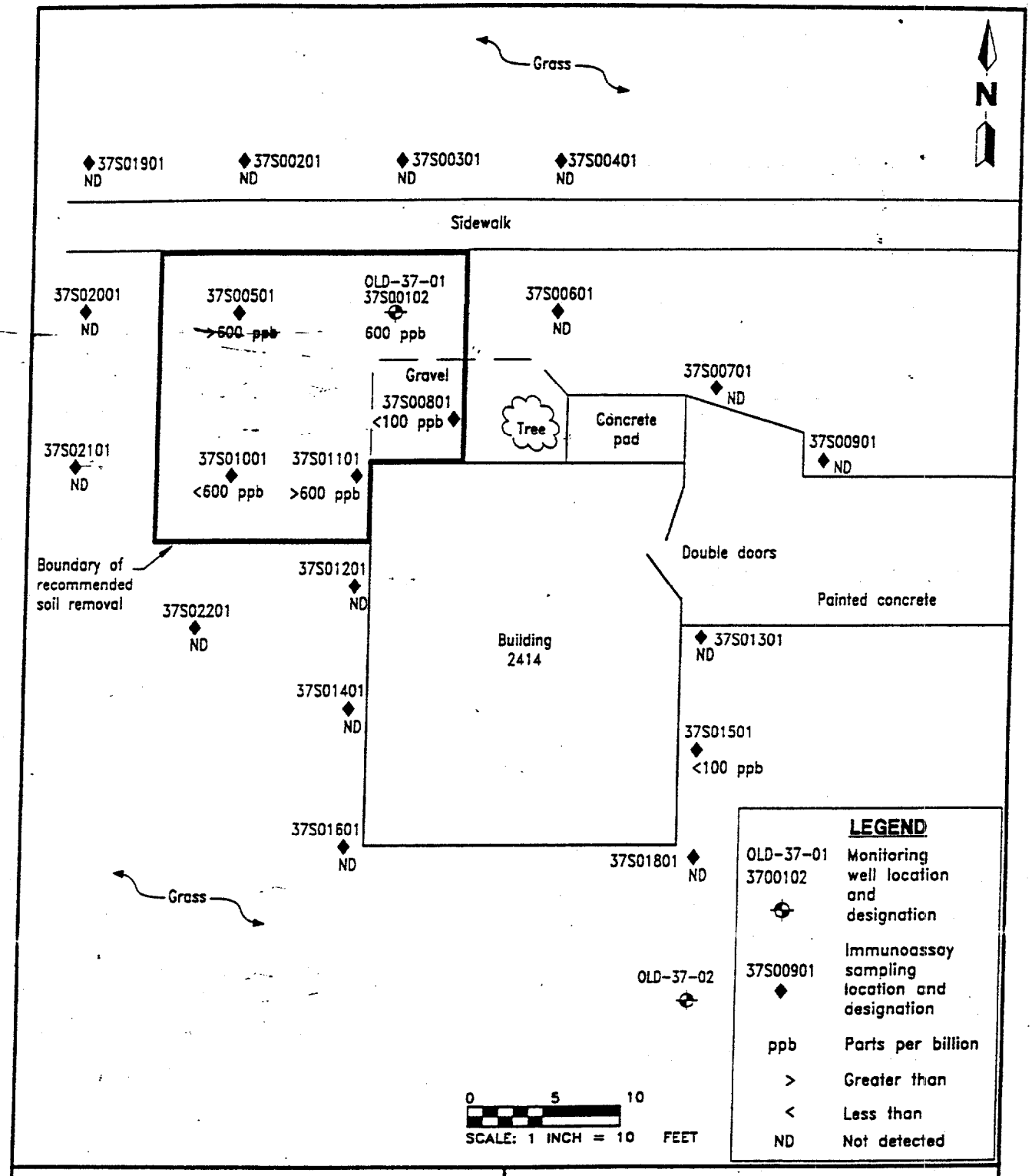
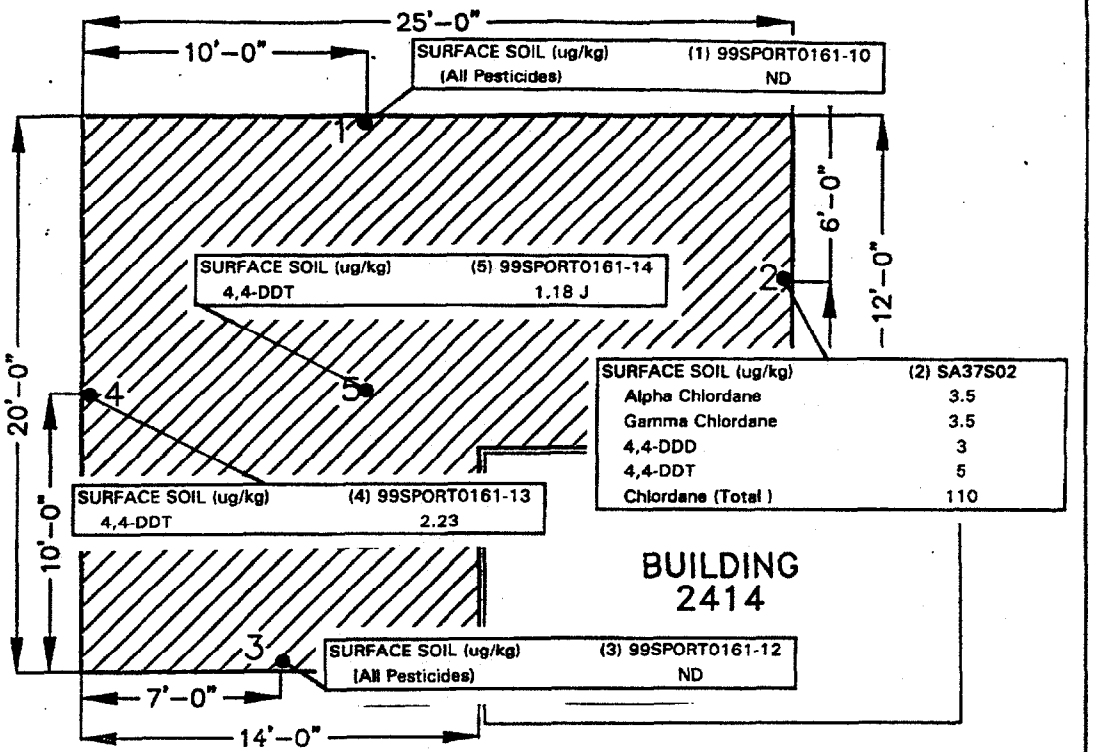


FIGURE 3
IMMUNOASSAY SAMPLING LOCATIONS AND SOIL REMOVAL BOUNDARY

I:\02530\02530-04\ICA\0253077F.DWG, -PDF 08/16/98 08:50:54, AutoCAD R14

BASE REALIGNMENT AND CLOSURE WORK PLAN FOR INTERIM REMEDIAL ACTION, STUDY AREA 37

NAVAL TRAINING CENTER ORLANDO, FLORIDA



LEGEND

1 ● CONFIRMATORY SAMPLE ID 99SPORT0161-10

2 ● CONFIRMATORY SAMPLE ID SA37S02

3 ● CONFIRMATORY SAMPLE ID 99SPORT0161-12

4 ● CONFIRMATORY SAMPLE ID 99SPORT0161-13

5 ● CONFIRMATORY SAMPLE ID 99SPORT0161-14

NOTE: Exceedances of residential SCTLs are bolded (there were no exceedances in the confirmation samples).

EXCAVATED TO 2 FEET DEEP

N

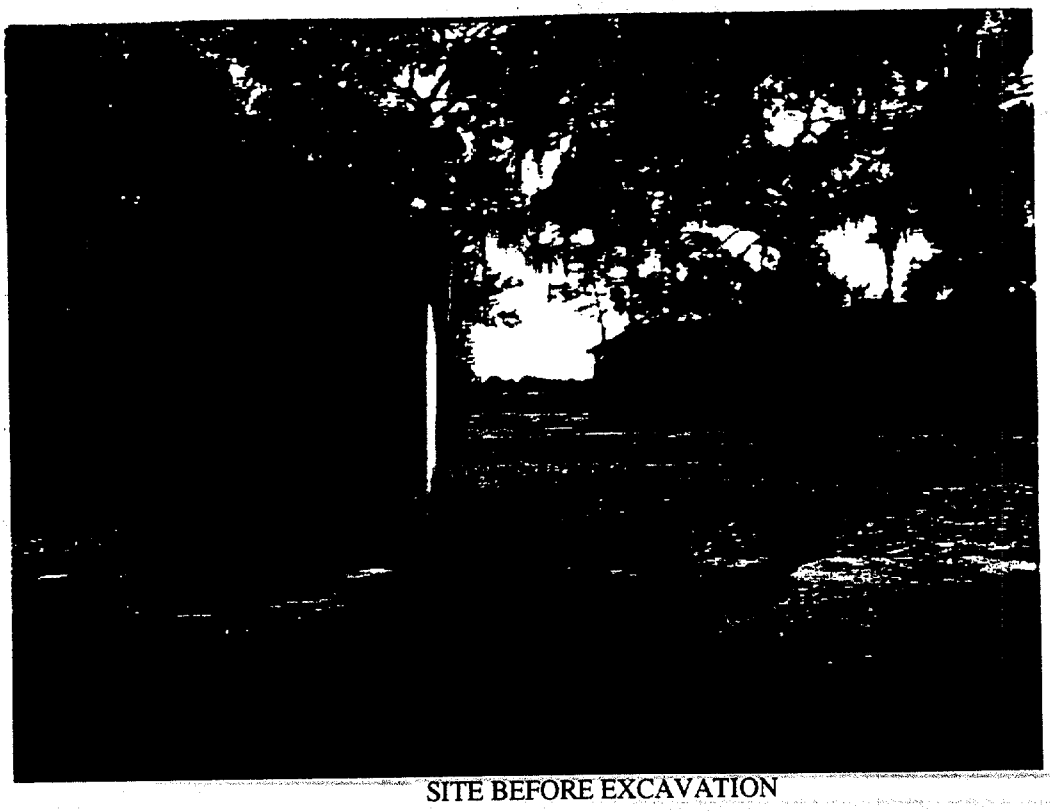
ENVIRONMENTAL DETACHMENT CHARLESTON
1899 NORTH HOBSON AVENUE – BUILDING 30
NORTH CHARLESTON, SOUTH CAROLINA 29405-2106

FIGURE 4
NAVAL TRAINING CENTER ORLANDO SA 37
EXCAVATION BOUNDARIES AND CONFIRMATORY SAMPLE LOCATIONS

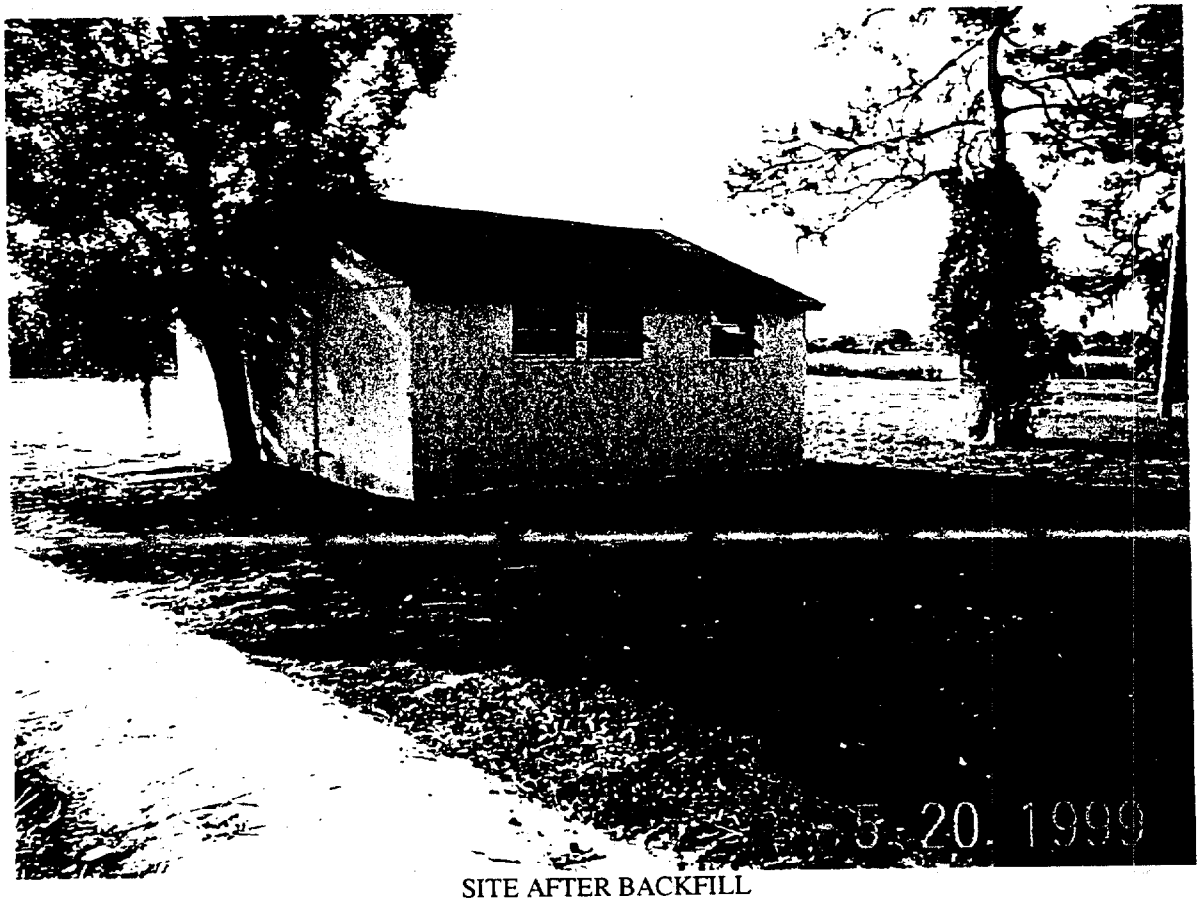
DATE:	PREPARED BY:	REV
12 AUGUST 1999	A. J. MOYER	–

SCALE: NONE | SHEET: –

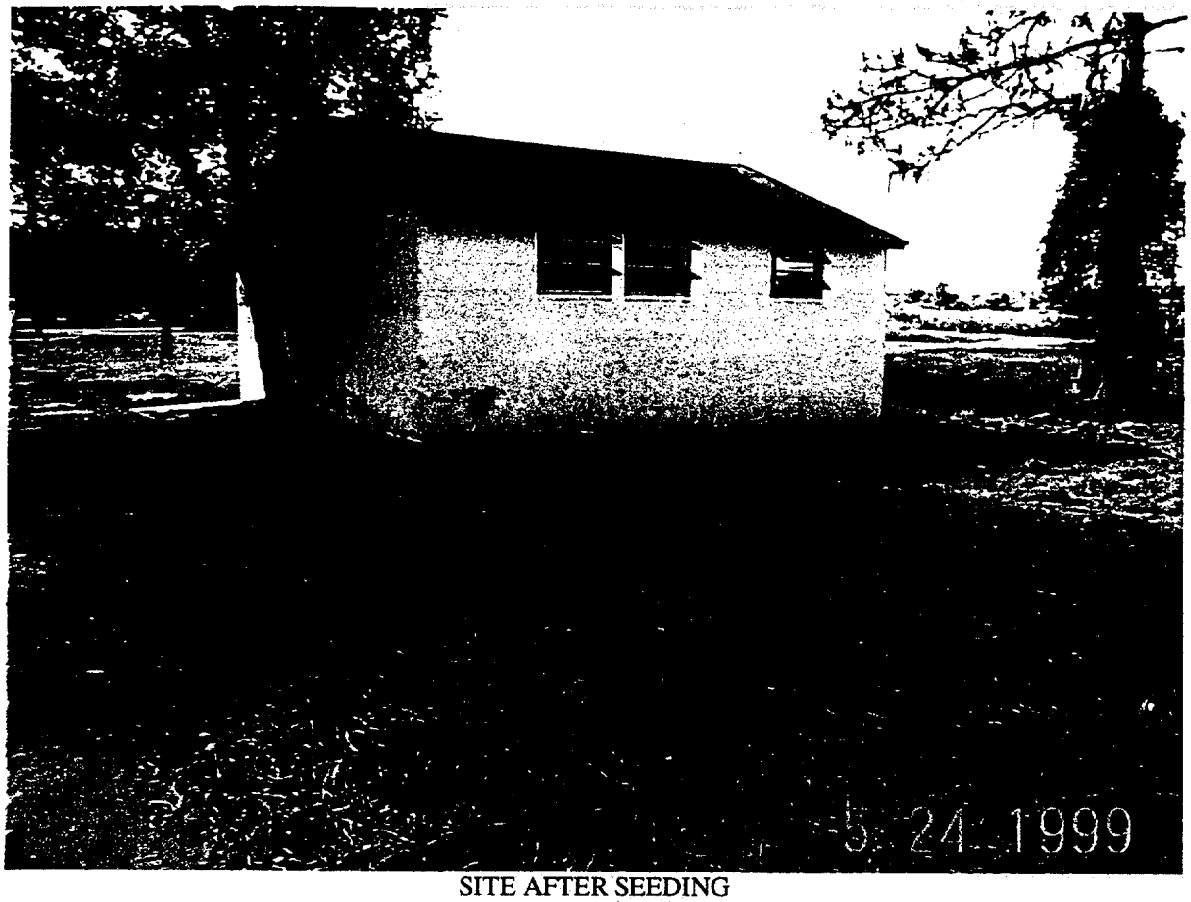
SITE PHOTOGRAPHS



SITE BEFORE EXCAVATION



SITE AFTER BACKFILL



SITE AFTER SEEDING

SAMPLING DOCUMENTATION

CONFIRMATION SAMPLES

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 05, 1999

Sample ID : 99SPORT0161-10
Lab ID : 9904953-10
Matrix : Soil
Date Collected : 04/29/99
Date Received : 04/30/99
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	2.98	6.66	ug/kg	5.0	SJ	05/04/99	1743	148068	1
4,4'-DDE	U	ND	2.78	6.66	ug/kg	5.0					
4,4'-DDT	U	ND	4.03	6.66	ug/kg	5.0					
Aldrin	U	ND	1.32	3.33	ug/kg	5.0					
Dieldrin	U	ND	3.71	6.66	ug/kg	5.0					
Endosulfan I	U	ND	2.30	3.33	ug/kg	5.0					
Endosulfan II	U	ND	3.45	6.66	ug/kg	5.0					
Endosulfan sulfate	U	ND	4.61	4.61	ug/kg	5.0					
Endrin	U	ND	3.45	6.66	ug/kg	5.0					
Endrin aldehyde	U	ND	5.03	6.66	ug/kg	5.0					
Endrin ketone	U	ND	4.08	6.66	ug/kg	5.0					
Heptachlor	U	ND	2.20	3.33	ug/kg	5.0					
Heptachlor epoxide	U	ND	1.10	3.33	ug/kg	5.0					
Methoxychlor	U	ND	18.0	33.3	ug/kg	5.0					
Toxaphene	U	ND	55.4	167	ug/kg	5.0					
alpha-BHC	U	ND	1.33	3.33	ug/kg	5.0					
alpha-Chlordane	U	ND	2.23	3.33	ug/kg	5.0					
beta-BHC	U	ND	1.96	3.33	ug/kg	5.0					
delta-BHC	U	ND	1.43	3.33	ug/kg	5.0					
gamma-BHC	U	ND	1.76	3.33	ug/kg	5.0					
gamma-Chlordane	U	ND	2.36	3.33	ug/kg	5.0					

The following prep procedures were performed:

Pesticides							RDH	05/03/99	1000	148068	2

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

9904953-10

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/8745
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 05, 1999

Sample ID : 99SPORT0161-10

Surrogate Recovery	Test	Percent%	Acceptable Limits
4CMX	PEST-8081A	60.0	(36.5 - 131.)
Decachlorobiphenyl	PEST-8081A	71.2	(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

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407

(843) 556-8171 • Fax (843) 766-1178

9904953-10

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 05, 1999

Sample ID : 99SPORT0161-12
Lab ID : 9904953-12
Matrix : Soil
Date Collected : 04/29/99
Date Received : 04/30/99
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.	SI	05/04/99	1837	148068	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							RDH	05/03/99	1000	148068	2

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

9904953-12

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 05, 1999

Sample ID : 99SPORT0161-12

Surrogate Recovery	Test	Percent%	Acceptable Limits
4CMX	PEST-8081A	71.5	(36.5 - 131.)
Decachlorobiphenyl	PEST-8081A	79.0	(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

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407

(843) 556-8171 • Fax (843) 766-1178

9904953-12

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 05, 1999

Sample ID : 99SPORT0161-13
Lab ID : 9904953-13
Matrix : Soil
Date Collected : 04/29/99
Date Received : 04/30/99
Priority : Rush
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Extractable Organics											
Pesticides - 21 items											
4'-DDD	U	ND	0.596	1.33	ug/kg	1.0	SJ	05/04/99	1904	148068	
4'-DDE	U	ND	0.556	1.33	ug/kg	1.0					
4,4'-DDT		2.23	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	U	ND	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	U	ND	0.473	0.670	ug/kg	1.0					

The following prep procedures were performed:

Pesticides RDH 05/03/99 1000 148068

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

9904953-13

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 05, 1999

Sample ID : 99SPORT0161-13

Surrogate Recovery	Test	Percent%	Acceptable Limits
4CMX	PEST-8081A	78.5	(36.5 - 131.)
Decachlorobiphenyl	PEST-8081A	79.5	(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

P O Box 30712 • Charleston, SC 29417 • 2040 Savage Road • 29407

(843) 556-8171 • Fax (843) 766-1178

9904953-13

GENERAL ENGINEERING LABORATORIES

Meeting today's needs with a vision for tomorrow.

Laboratory Certifications

STATE	GEL	EPI
FL	E87156/87294	E87472/8745
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 05, 1999

Sample ID : 99SPORT0161-14
Lab ID : 9904953-14
Matrix : Soil
Date Collected : 04/29/99
Date Received : 04/30/99
Priority : Rush
Collector : Client

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	M
Extractable Organics											
Pesticides - 21 items											
'-DDD	U	ND	0.596	1.33	ug/kg	1.0	SJ	05/04/99	1932	148068	1
,4'-DDE	U	ND	0.556	1.33	ug/kg	1.0					
4,4'-DDT	J	1.18	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	U	ND	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	U	ND	0.473	0.670	ug/kg	1.0					

The following prep procedures were performed:

Pesticides			RDH	05/03/99 1000	148068 2

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

Sample ID : 99SPORT0161-14

Surrogate Recovery	Test	Percent%	Acceptable Limits
4CMX	PEST-8081A	74.5	(36.5 - 131.)
Decachlorobiphenyl	PEST-8081A	62.1	(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

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

9904953-14

— 3-DAY TURNAROUND —

CHAIN OF CUSTODY RECORD

General Engineering Labs, Inc.
2040 Savage Road
Charleston, South Carolina 29407
P.O. Box 30712
Charleston, South Carolina 29417
(803) 556-8171

Client Name/Facility Name: NTC Orlando SA42&37

Collected by/Company: ENV DET CHASN

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	Pesticides 8081	Herbicide	Total Phenol	Acid Extractables	B/N Extractables	PCB's	Cyanide	Coliform - specify type	PAH 8310	Remarks
99Sport 0161-1	4/29/99	1300		X	X		1																X	SA42S002 Location
99Sport 0161-2	4/29/99	1310		X	X		1																X	"
99Sport 0161-3	4/29/99	1325		X	X		1																X	
99Sport 0161-4	4/29/99	1335		X	X		1																X	
99Sport 0161-5	4/29/99	1400		X	X		1																X	SA42S001 Location
99Sport 0161-6	4/29/99	1409		X	X		1																X	
99Sport 0161-7	4/29/99	1420		X	X		1																X	
99Sport 0161-8	4/29/99	1430		X	X		1																X	
99Sport 0161-9	4/29/99	1435	X				2																X	Field Blank SA-42S001 location SA42F-0161-9
99Sport 0161-10	4/29/99	1450		X	X		1								X									SA-37 Location
99Sport 0161-11	4/29/99	1500		X	X		1								X									
99Sport 0161-12	4/29/99	1509		X	X		1								X									
99Sport 0161-13	4/29/99	1517		X	X		1								X									

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

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:
R W Cope	4/29/99	1800	RWC Michael P. Schuler	Michael P. Schuler	4/30/99	1145	
Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:	
				4-30-99	1145		

White = e collector Yellow = file Pink = with report

— 3 DAY TU AROUND —

CHAIN OF CUSTODY RECORD

General Engineering Lab ies, Inc.
2040 Savage Road
Charleston, South Carolin. 407
P.O. Box 30712
Charleston, South Carolina 29417
(803) 556-8171

Client Name/Facility Name: NTC ORLANDO SA-42+37

Collected by/Company: ENV DET CHASN

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
99Sport0161-14	4/29/99	1525		X		X	1								X								SA-37 LOCATION

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

Relinquished by:	Date:	Time:	Received by:	Relinquished by:	Date:	Time:	Received by:
K W Cope	4/29/99	1800	Michael P. Schuler	Michael P. Schuler	4/30/99	1145	
Relinquished by:	Date:	Time:	Received by lab by:	Date:	Time:	Remarks:	
			T. G. Clark	4-30-99	1145		

White .e collector Yellow = file Pink = with report

Client:	Environmental Detachment Charleston	Report #:	OR6460
		Date Submitted:	3-May-99
		Date Reported:	6-May-99
Address:	1899 N. Hobson Ave	Project #:	SA
	Charleston, SC 29405-2106	Project Name:	NTC Orlando

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6460-9	SA37S02	5/1/99 12:10	8081	alpha-BHC	1.8	U		µg/Kg	1.8	1.8
OR6460-9	SA37S02	5/1/99 12:10	8081	beta-BHC	1.8	U		µg/Kg	1.8	1.8
OR6460-9	SA37S02	5/1/99 12:10	8081	gamma-BHC (Lindane)	1.8	U		µg/Kg	1.8	1.4
OR6460-9	SA37S02	5/1/99 12:10	8081	Heptachlor	1.8	U		µg/Kg	1.8	1.8
OR6460-9	SA37S02	5/1/99 12:10	8081	delta-BHC	1.8	U		µg/Kg	1.8	1.8
OR6460-9	SA37S02	5/1/99 12:10	8081	Aldrin	1.8	U		µg/Kg	1.8	0.35
OR6460-9	SA37S02	5/1/99 12:10	8081	Heptachlor Epoxide	1.8	U		µg/Kg	1.8	1.4
OR6460-9	SA37S02	5/1/99 12:10	8081	Chlordane gamma	3.5			µg/Kg	1.8	0.3
OR6460-9	SA37S02	5/1/99 12:10	8081	Chlordane alpha	3.5			µg/Kg	1.8	0.35
OR6460-9	SA37S02	5/1/99 12:10	8081	Endosulfan I	1.8	U		µg/Kg	1.8	1.8
OR6460-9	SA37S02	5/1/99 12:10	8081	4,4'-DDE	1.8	U		µg/Kg	1.8	1.8
OR6460-9	SA37S02	5/1/99 12:10	8081	Dieldrin	1.8	U		µg/Kg	1.8	1.8
OR6460-9	SA37S02	5/1/99 12:10	8081	Endrin	1.8	U		µg/Kg	1.8	1.8
OR6460-9	SA37S02	5/1/99 12:10	8081	4,4'-DDD	3	I		µg/Kg	1.8	1.4
OR6460-9	SA37S02	5/1/99 12:10	8081	Endosulfan II	1.8	U		µg/Kg	1.8	1.8
OR6460-9	SA37S02	5/1/99 12:10	8081	4,4'-DDT	5	I		µg/Kg	1.8	1.8
OR6460-9	SA37S02	5/1/99 12:10	8081	Endrin aldehyde	1.8	U		µg/Kg	1.8	1.4
OR6460-9	SA37S02	5/1/99 12:10	8081	Endosulfan sulfate	1.8	U		µg/Kg	1.8	0.72
OR6460-9	SA37S02	5/1/99 12:10	8081	Methoxychlor	11	U		µg/Kg	2	11
OR6460-9	SA37S02	5/1/99 12:10	8081	Endrin Ketone	2.5	U		µg/Kg	1.8	2.5
OR6460-9	SA37S02	5/1/99 12:10	8081	Chlordane (Total)	110			µg/Kg	36	1.8
OR6460-9	SA37S02	5/1/99 12:10	8081	Toxaphene	72	U		µg/Kg	72	3.5
OR6460-9	SA37S02	5/1/99 12:10	8081	Isodrin	3.5	U		µg/Kg	3.5	3.5
OR6460-9	SA37S02	5/1/99 12:10	8081	Mirex	3.5	U		µg/Kg	3.5	3.5
OR6460-9	SA37S02	5/1/99 12:10	8081	2,4,5,6-TCMX	86			%		
OR6460-9	SA37S02	5/1/99 12:10	8081	DBC	108			%		

SAMPLE ID	CLIENT ID	COLLECT DATE	METHOD	PARAMETER	RESULTS	QUAL	DIL	UNITS	RDL	MDL
OR6460-9	SA37S02	5/1/99 12:10	SM2540G	Percent Solids	93			%		

U = Compound was analyzed for but not detected to the level shown.
I = Analyte deteched; 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.: SA
P.O. NUMBER:
PROJECT LOC. (State): FL
SAMPLER(s) NAME: Rusty Cope
PHONE: 496-2173
FAX:
CLIENT NAME: Env DET ChasN
CLIENT PROJECT MANAGER: A Moyer
CLIENT ADDRESS (CITY, STATE, ZIP): 1899 N Hobson Ave, N Charleston, SC 29405

PAGE: OF:

☐ STANDARD REPORT DELIVERY
☑ EXPEDITED REPORT DELIVERY (surcharge)

Date Due 5/5/99

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	FLTRPH	Arsenic (ICP)	8081 Pesticides	REMARKS
1	5/1/99	1100	X		SA35SI23 ✓					X						1		
2	5/1/99	1110	X		SA35SI24 ✓					X						1		
3	5/1/99	1118	X		SA35SI25 ✓					X						1		Duplicate of SA35SI22
4	5/1/99	1125	X		SA35SG26 ✓					X						1		
5	5/1/99	1134	X		SA35SG27 ✓					X						1		
6	5/1/99	1141	X		SA35SG28 ✓					X						1		
7	5/1/99	1150	X		SA35SG29 ✓					X						1		
8	5/1/99	1200	X		SA37S01 ✓					X					RWC+		1	
9	5/1/99	1210	X		SA37S02 ✓					X					RWC+		1	
10	5/1/99	1218	X		SA37S03 ✓					X					RWC+		1	
11	5/1/99	1226	X		SA37S04 ✓					X					RWC+		1	
12	5/1/99	1300	X		SA8S019 ✓												1	
13	5/1/99	1310	X		SA8S020 ✓												1	
14																		

NUMBER OF CONTAINERS SUBMITTED

	DATE	TIME		DATE	TIME		DATE	TIME
SAMPLE KIT PREPARED BY: ☐ JACKSONVILLE ☐ ORLANDO			RELINQUISHED BY: (SIGNATURE) RW Cope	5/3/99	1415	RECEIVED BY: (SIGNATURE) James W. Gregory	5/3/99	1415
RELINQUISHED BY: (SIGNATURE)			RECEIVED BY: (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
Kim J ☐ Jacksonville ☒ Orlando	5/3/99	3:30PM	☐ YES ☒ NO	OR6...	

WASTE MANIFESTS

Required under authority of Part 111 and Part 121 of Act 451, 1994, as amended.

Failure to file may subject you to criminal and/or civil penalties under Sections 324.11151 or 324.12116 MCL.

DNR WASTE MANAGEMENT DIVISION
MICHIGAN DEPARTMENT OF NATURAL RESOURCES

DO NOT WRITE IN THIS SPACE
ATT. ☐ DIS. ☐ REJ. ☐ PR. ☐

Please print or type.

Form Approved. OMB No. 2050-0039 Expires 5-30-96

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: FL5170024736 Manifest Document No.: 33130
2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: NTC ORLANDO, 1350 GRACE HOPPER AVENUE, BLDG 2016, ORLANDO, FL 32813-8405 SA-37
4. Generator's Phone ( ) 843 743-3239

A. State Manifest Document Number: MI 4452165
B. State Generator's ID

5. Transporter 1 Company Name: Robbie D. Wood, Inc.
6. US EPA ID Number: ALD [illegible]
C. State Transporter's ID
D. Transporter's Phone: (205)744-8440

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone: (000)000-0000

9. Designated Facility Name and Site Address: Michigan Disposal Waste Treatment Plant, 49350 North I-94 Service Drive, Belleville, MI 48111
10. US EPA ID Number: MID000724831
G. State Facility's ID
H. Facility's Phone: (313) 699-6959

	HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID NUMBER)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.	N/H
a.	X	Hazardous waste, solid, n.o.s., (Contains Chlordane and Heptachlor), 9, NA3077, PG-III T# 117288	001	DT	22	T	L031 D020	H
b.								
c.								
d.								

J. Additional Descriptions for Materials Listed Above
A: S/E ERG# 171
B:
C: 05/06/99 MD
D:

Mail manifest to:
Caretaker Site Office
NTC Orlando
1850 John Paul Jones Ave.
Orlando, FL 32803

K. Handling Codes for Wastes Listed Above
a/ b/ c/ d/

15. Special Handling Instructions and Additional Information
Emergency Contact (800) 535-5053 Infotrac
Caller must identify EMS as registrant

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: G.R. WHIPPLE Signature: [signature] Date: 05/06/99

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Rick Lynch Signature: [signature] Date: 05/06/99

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name Signature Date: Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Reynaldo Sale Sr. Signature: [signature] Date: 05/10/99

ALL SPILLS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM, (PEAS) AT 1-800-292-4706 OR OUT OF STATE AT 517-373-7660 AND THE NATIONAL RESPONSE CENTER AT 1-800-424-8802 24 HOURS PER DAY.

EPA Form 8700-22 (Rev. 9/88)

PR 5110 Rev 8/95

TSDF COPY

7.3

Michigan Disposal Waste Treatment Plant

49350 North I-94 Service Drive, Belleville, Michigan 48111

Receipt

ENVIRONMENTAL MANAGEMENT SOL
302-A POMONA DR
GREENSBORO, NC 27407

Receipt ID: 241512
EQ Account #: 2403
Manifest: MI4452165
Shipper:
Hauler: rd wood
Date: 05/10/1999
Time In: 5:11 PM
Time Out: 7:19 PM

Line#	Approval/Service	Waste Code	Generator Bill Unit	Gross	Tare	Net	Quantity
01	051099MO		FL5170024736 NTC ORLANDO				
		D020	TONS	79.300	32.860	46.440	23.220
		Surcharge Exempt					

understand and acknowledge that entry into an EQ environmental protection facility is permitted only at my own risk. I, both personally and on behalf of my employer, release EQ-the Environmental Quality Company from any and all liability not caused by its gross negligence or willful misconduct.

DELIVERED BY

NO SALVAGING ON PREMISES

Required under authority of Part 111 and Part 121 of Act 451, 1994, as amended

DNR WASTE MANAGEMENT DIVISION
MICHIGAN DEPARTMENT OF NATURAL RESOURCES

DO NOT WRITE IN THIS SPACE
ATT. ☐ DIS. ☐ REJ. ☐ PR. ☐

Failure to file may subject you to criminal and/or civil penalties under Sections 324.11151 or 324.12116 MCL

Please print or type.

Form Approved. OMB No. 2050-0039 Expires 9-30-99

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: FL5170024736 Manifest Document No. 43196
2. Page 1 of 1
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: NTC ORLANDO, 1350 GRACE HOPPER AVENUE, BLDG 2026, ORLANDO, FL 32813-8405
4. Generator's Phone ( ) 843 743-0239 SA-37

A. State Manifest Document Number: MI 4452164
B. State Generator's ID: SAME

5. Transporter 1 Company Name: Robbie D. Wood, Inc.
6. US EPA ID Number: ALD983171339391
C. State Transporter's ID
D. Transporter's Phone (205)744-8440

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone (000)000-0000

9. Designated Facility Name and Site Address: Michigan Disposal Waste Treatment Plant, 49350 North I-94 Sevrice Drive, Belleville, MI 48111
10. US EPA ID Number: MID000724831
G. State Facility's ID
H. Facility's Phone (313) 699-6959

	HM	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID NUMBER)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.	N/H
a.	X	Hazardous waste, solid, n.o.s., (Contains Chlordane and Heptachlor), 9, NA3077, PG-III T3117	001	DT	4240	T	D031 D020	H
b.								
c.								
d.								

J. Additional Descriptions for Materials Listed Above
A: 3/E ERG# 171
B:
C:
D: 051099MO

Mail manifest to:
Caretaker Site Office
NTC Orlando
1850 John Paul Jones Ave.
Orlando, FL 32803

K. Handling Codes for Wastes Listed Above
a/ /
b/ /
c/ /
d/ /

15. Special Handling Instructions and Additional Information: Emergency contact (800) 535-5053 Infotrac. Caller must identify EMS as registrant

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: G.B. WHIPPLE
Signature: G B Whipple
Date Month Day Year: 05 06 99

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: DAVID RUSS
Signature: [signature]
Date Month Day Year: 05 10 99

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Date Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: DUANE JONES
Signature: [signature]
Date Month Day Year: 05 11 99

IN CASE OF EMERGENCY OR SPILL, CONTACT THE NATIONAL RESPONSE CENTER AT 1-800-424-8802 OR THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM. ALL SPILLS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM AT 1-800-292-4706 OR OUT OF STATE AT 517-373-7660 AND THE NATIONAL RESPONSE CENTER AT 1-800-424-8802 24 HOURS PER DAY.

EPA Form 8700-22 (Rev. 9/88)

PR 6110 Rev. 6/96

TSDF COPY

G.D. hi

Michigan Disposal Waste Treatment Plant

49350 North I-94 Service Drive, Belleville, Michigan 48111

Receipt

ENVIRONMENTAL MANAGEMENT SOL
302-A POMONA DR
GREENSBORO, NC 27407

Receipt ID: 241514
EQ Account #: 2403
Manifest: MI4452164
Shipper:
Hauler: rd wood
Date: 05/10/1999
Time In: 5:18 PM
Time Out: 7:01 PM

Line#	Approval/Service	Generator	Waste Code	Bill Unit	Gross	Tare	Net	Quantity
01	051099MO	FL5170024736 NTC ORLANDO						
		D020		TONS	71,700	31,220	40,480	20.240
		Surcharge Exempt						

I understand and acknowledge that entry into an EQ environmental protection facility is permitted only at my own risk. I, both personally and on behalf of my employer, release EQ-the Environmental Quality Company from any and all liability not caused by its gross negligence or willful misconduct.

DELIVERED BY

NO SALVAGING ON PREMISES

APPENDIX E

LETTER WORKPLAN FOR SUPPLEMENTAL SITE SCREENING INVESTIGATION

Harding Lawson Associates

June 23, 1999
Commanding Officer
SOUTHNAVFACENGCOM
2155 Eagle Drive
North Charleston, SC 29419-9010

ATTN: Ms. Barbara Nwokike, Code 187300

Subject: **Supplemental Site Screening Plan**
Study Area 37
NTC, Orlando
Contract: N62467-89-D-0317

Dear Barbara:

With the completion of the excavation of pesticide-contaminated soil at Study Area 37 by the Charleston Detachment, HLA has prepared this supplemental site screening plan to characterize the shallow aquifer in the vicinity of the formerly contaminated soils. The soil contamination was detected during the initial site screening investigation. HLA presented a summary of the site screening data at the May, 1998 OPT meeting, and indicated that additional groundwater characterization would be conducted at SA 37. To avoid the possibility of destroying wells potentially needed for long term monitoring, the groundwater sampling activities were delayed until the IRA was completed.

Introduction

This workplan has been prepared to describe the remaining site screening activities slated for Study Area (SA) 37, located on the Main Base, NTC Orlando. These investigation activities, based on current site knowledge, are intended to provide sufficient information to complete the screening investigation for SA 37. Depending on site conditions, this investigation may also provide sufficient data to make a final determination of the transfer status for SA 37.

Previous Investigations

During the SA 37 site screening investigation, a surface soil sample was collected from the northwest corner of Building 2414 (Figure 1). Pesticides, including alpha chlordane, gamma chlordane, aldrin, heptachlor, and heptachlor epoxide were detected at concentrations above their respective industrial screening values. Arsenic also was detected above its residential screening value, but below industrial screening concentrations. Arsenic and heptachlor were detected in the groundwater sample collected from the monitoring well installed at the surface soil sample locations at concentrations below primary drinking water standards.

An additional screening investigation was conducted to further delineate pesticides in the surface and subsurface soil in the vicinity of Building 2414 (Figure 2). Soil samples from around the perimeter

Engineering and
Environmental Services
1536 Kingsley Avenue, Suite 127, Orange Park, FL 32073 904/269-7012 Fax: 904/264-5632

of the building were analyzed onsite with pesticide immunoassay analysis (IA) kits. Samples were sent offsite to confirm the onsite results. The results of the IA screening indicated that pesticide exceedances in surface soil were confined to the northwest corner of Building 2414.

Based on the results of the additional screening investigation, a surface soil removal was implemented as an interim remedial action (IRA) for this site. An IRA workplan was prepared which recommended removal and offsite disposal of surface soil to a depth of two feet from a 20 feet by 20 feet area at the northwest corner of Building 2414. The IRA soil removal was conducted by Environmental Detachment Charleston (DET) during May 1999. The monitoring well installed during the site screening investigation, which was located in the excavation area, was abandoned prior to the IRA. Soil samples, collected from the walls and floor of the excavation, were analyzed to ensure that remedial objectives were met. The final excavation dimensions were approximately 20 feet by 25 feet (Figure 2). DET personnel reported that the confirmatory samples collected from the excavation met the remedial objectives specified in the workplan.

Groundwater Investigation

To complete the site screening at SA 37, HLA will conduct a supplemental groundwater investigation. The rationale for the supplemental investigation is to determine if hazardous materials released to the surface soil at SA 37 have migrated to groundwater. Arsenic and heptachlor were detected at concentrations below screening values in a groundwater sample collected previously at the site.

HLA will install and sample 5 microwells at SA 37. One microwell will be installed at the approximate center of the IRA excavation. This microwell will replace the well abandoned before the IRA excavation and will provide water quality data from immediately below the release area. Four additional microwells will be installed around the perimeter of the excavation, one on each side, to provide upgradient and downgradient water quality data. The perimeter wells will be placed approximately 5 feet outside of the excavation boundary (Figure 2).

This approach to well placement is based on hydrogeologic conditions previously encountered at SA 37. Two monitoring wells were installed during the initial investigation, one at the corner of Building 2414 (OLD-37-01) and one south and east of the building (OLD-37-02), towards Lake Susannah. The well installed south of the building was presumed to be in the downgradient direction from the SA. Water levels measured from these wells indicated that the static water level in OLD-37-02 was approximately 2 feet higher than in OLD-37-01, rather than lower, which would indicate groundwater flow away from Lake Susannah.

These anomalous water level conditions may be due to a cemented sand layer approximately eight feet below land surface (bls). By placing four wells around the perimeter of the excavation, upgradient and downgradient samples can be collected and groundwater flow direction at the site can be evaluated without additional piezometers. The microwells will be screened above the cemented sand layer if possible, in case the cemented sand acts as an aquitard and restricts vertical groundwater migration in the area.

The microwells will be installed and developed according to methods presented in the Project Operations Plan. A groundwater sample will be collected from each microwell and OLD-37-02 using the low flow sampling technique. The groundwater samples will be submitted to a certified laboratory for CLP pesticides and arsenic analysis. The data collected during this investigation will be incorporated into the final site screening report for SA 37.

Workplan Summary

The activities described in this groundwater sampling workplan are intended to complete site screening activities at SA 37. It is assumed that the IRA will adequately address human health and environmental concerns due to releases to surface soil at SA 37. The groundwater sampling and analysis will provide data to determine if material released to the surface soil at this site have migrated to groundwater. The groundwater sample data will be incorporated into the final site screening report for SA 37, and used to support recommendations for a change in transfer status and/or additional activities at the site, as appropriate.

Should you have any questions or need additional information, please call me at (904) 772-7688.

Very Truly Yours,

Harding Lawson Associates

Richard P. Allen
Project Technical Lead

cc: Wayne Hansel, Southern Division
Nancy Rodriguez, USEPA Region IV
David Grabka, FDEP
LT Gary Whipple, NTC-Public Works Officer
Robin Manning, BEI
Steve McCoy, TetraTech NUS
Al Aikens, CH2M Hill
John Kaiser
file

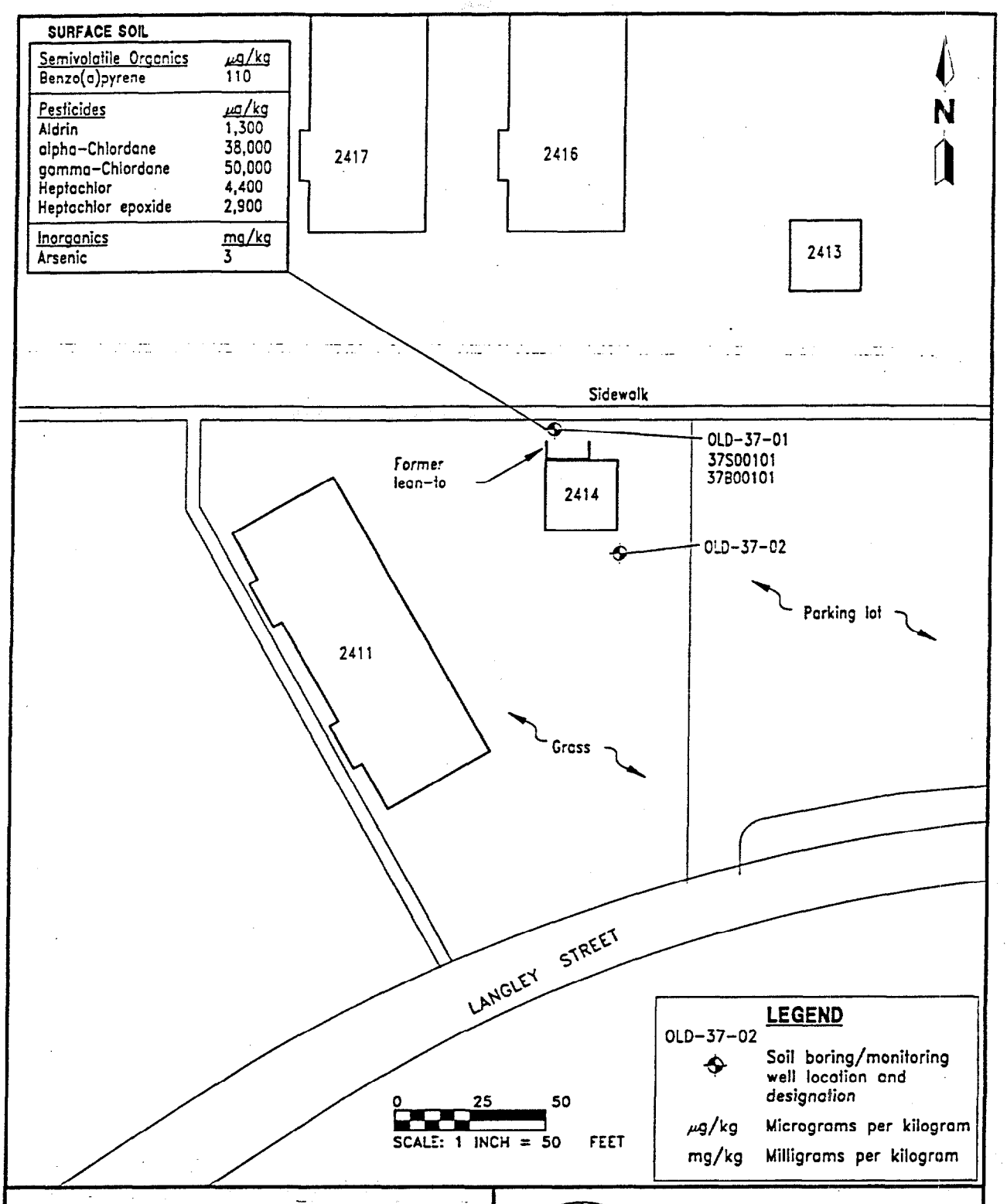


FIGURE 1
STUDY AREA 37, INITIAL SCREENING LOCATIONS, BUILDING 2414

K:\02530\02530-04\CA\0253C777.DWG, 99-POP 09/15/98 11:26:16, AutoCAD R14

BASE REALIGNMENT AND CLOSURE WORK PLAN FOR INTERIM REMEDIAL ACTION, STUDY AREA 37

NAVAL TRAINING CENTER ORLANDO, FLORIDA

NTC-SA37.WkP
FGW.09.98

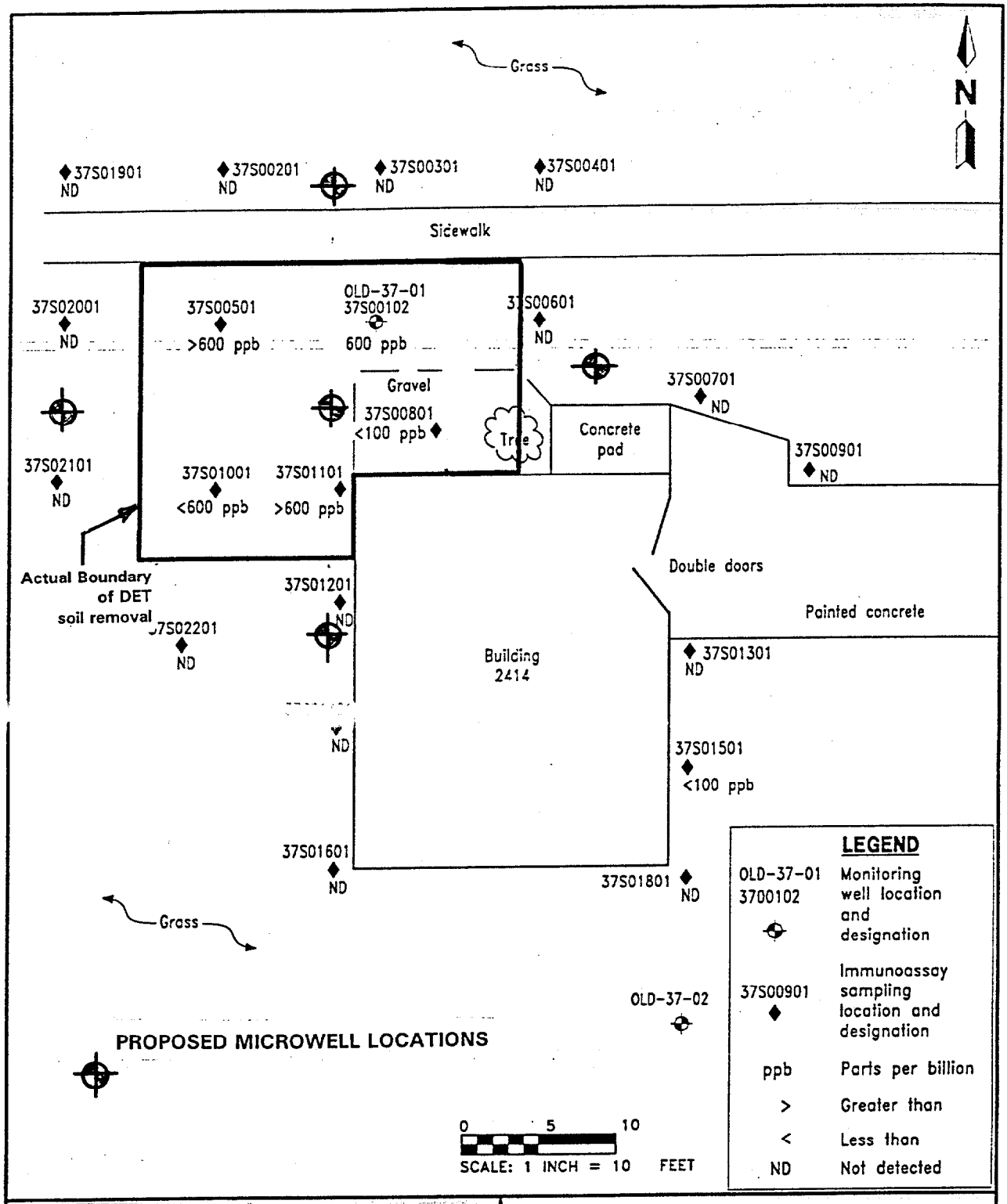


FIGURE 2
PROPOSED MICROWELL LOCATIONS IMMUNOASSAY SAMPLING LOCATIONS AND ACTUAL SOIL REMOVAL BOUNDARY

K:\...\02530-04\JCA\02530776.DWG, -PDP 09/16/98 08:50:54, AutoCAD R14

BASE REALIGNMENT AND CLOSURE WORK PLAN FOR INTERIM REMEDIAL ACTION, STUDY AREA 37

NAVAL TRAINING CENTER ORLANDO, FLORIDA

NTC-SA37.WkP
FGW.09.98

APPENDIX F

GROUNDWATER FLOW DATA

Survey Data and Groundwater Elevations
NTC, Orlando

FORESIGHT

	ROD	Instrument Height	TOC Elevation	9/9/99 SWL	GW Elevation
OLD-37-02	6.22	105.99	**99.77**	4.78	94.99
OLD-37-03	4.66		101.33	9.34	91.99
OLD-37-04	5.16		100.83	8.71	92.12
OLD-37-05	4.98		101.01	9.10	91.91
OLD-37-06	4.83		101.16	9.43	91.73

BACKSIGHT

	ROD	Instrument Height	TOC Elevation
OLD-37-02	5.42		99.76
OLD-37-06	4.02	105.18	101.16

Harding Lawson Associates
Infrastructure, Inc.

Engineering, Planning, and Construction Services

SHEET_____ OF_____

JOB NO._____

DATE_____

PROJECT SA 37 GW Characterization

COMPUTED BY_____

SUBJECT_____

CHECKED BY_____