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FINAL BASE REALIGNMENT AND CLOSURE ENVIRONMENTAL SITE SCREENING REPORT STUDY AREA 13 NTC ORLANDO FL

7/1/1996

ABB ENVIRONMENTAL

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BASE REALIGNMENT AND CLOSURE ENVIRONMENTAL SITE-SCREENING REPORT

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STUDY AREA 13

NAVAL TRAINING CENTER ORLANDO, FLORIDA

Unit Identification Code: N65928

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July 1996

CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

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

DATE: July 17, 1996

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(DFAR 252.227-7036)

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GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
AST	aboveground storage tank
bls	below land surface
BRAC	Base Realignment and Closure
CLP	Contract Laboratory program
DCE	dichchloroethene
DQO	data quality objective
DRMO	Defense Reutilization and Marketing Office
EBS	environmental baseline survey
FDEP	Florida Department of Environmental Protection
FID	flame ionization detector
GC	gas chromatograph
GPR	ground-penetrating radar
MCL	maximum contaminant level
mg/kg	milligrams per kilogram
$\mu g/\ell$	micrograms per liter
$\mu g/kg$	micrograms per kilogram
OPT	Orlando Partnering Team
OU	operable unit
PCE	tetrachloroethene
ppb	parts per billion
ppm	parts per million
RBC	risk-based concentration
SCG	soil cleanup goal
TAL	target analyte list
TCE	trichloroethene
TCL	target compound list
TPH	total petroleum hydrocarbons
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank
VOC	volatile organic compound

1.0 STUDY AREA 13, NAVAL TRAINING CENTER LAUNDRY FACILITY, AREA C, BUILDINGS 1100 AND 1101

This report contains information gathered as a result of site-screening activities conducted at Study Area 13. In the fall of 1995, after the review of site-screening results, the Orlando Partnering Team (OPT) assigned the contiguous Study Areas 12, 13, and 14 to operable unit status as Operable Unit (OU) 4. The results of subsequent investigations are not included in this document but may be found in the appropriate OU 4 reports as they become available.

1.1 STUDY AREA 13, BACKGROUND AND CONDITIONS. Buildings 1100 and 1101 are located in the northwest corner of Area C at Port Hueneme Avenue and Davisville Street (Figure 1). Building 1101 was a boiler house located east of Building 1100 that was demolished in the 1980s.

Building 1100 (Figure 2), constructed in 1943, is a single-story wood-framed structure that has always been used as an industrial laundry and drycleaning facility, serving the entire military base. The building occupies 54,916 square feet. The surrounding property is paved asphalt, except for small areas east and west of the building that are landscaped and grass covered. The paved areas around the perimeter of the building include roads and parking lots. Prior to construction of the facility in 1943, the land was undeveloped.

Reportedly, hazardous wastes generated and materials used in the drycleaning process have been poorly managed. At the time of the survey, there were many containers in the building, ranging in volume from ½ to 55 gallons that were open and not labeled. The facility has received a Notice of Violation and a citation from Florida Department of Environmental Protection (FDEP) for unlabeled and unmanifested waste.

Wastewater from the laundry machines discharged to the sanitary sewer through badly deteriorated drainage trenches in the floor. The floor trenches discharge to a single pipe that is connected to a settling and surge tank. Due to the volume of water discharged in this area, a 30,000-gallon surge tank was installed in the mid-1960s. Sludge was removed from this tank annually and disposed of through the Defense Reutilization and Marketing Office (DRMO). Waste filters from the drycleaning machines were also generated at the facility. Tetrachloroethene (PCE) was separated from the water and filters by heating the assemblies in a pressure cooker. The filters were disposed of through the DRMO and the solvent recycled. In the past, the filters were allegedly disposed of in the North Grinder Landfill (ABB Environmental Services, Inc. [ABB-ES], 1994).

Documented discharges of water contaminated with chlorinated solvents have occurred on the property. Discharges of water from the washing machines to Lake Druid have also been documented. Numerous environmental concerns were noted in the Environmental Baseline Survey (EBS) (ABB-ES, 1994), the most urgent being the poor management of hazardous material and hazardous waste. Several incidences of chemical release were also noted in the EBS survey. A review of reference materials indicated a release of 20 gallons of PCE occurred northeast of Building 1100. Additionally, there was a reported spill of contaminated water to the west of Building 1100. Actual quantities of chemicals released at the property are unknown. Additional spills that were noted during the survey included a minor

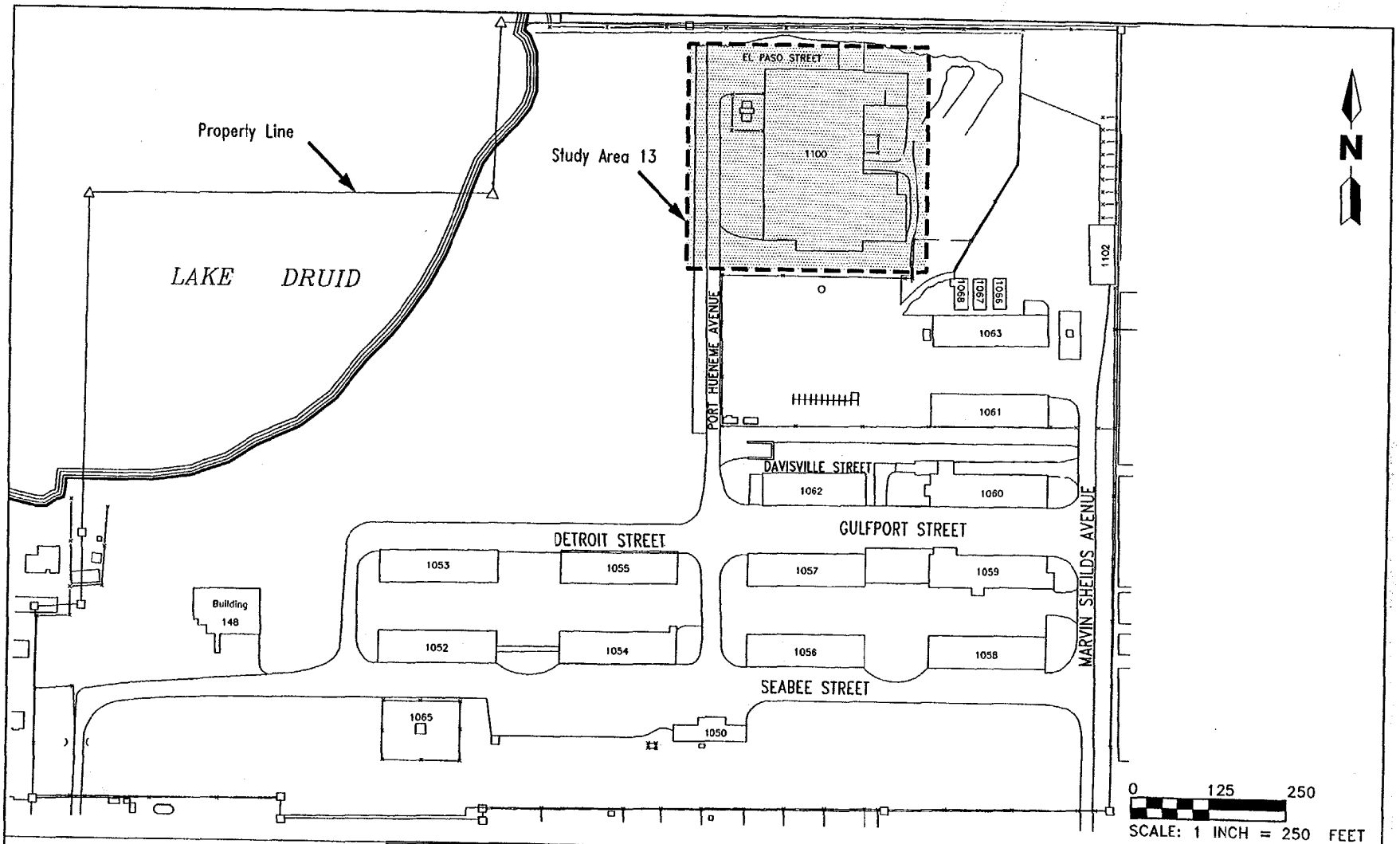

FIGURE 1
LOCATION OF STUDY AREA 13
AREA C

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leak from one of the building's transformers, etching of the concrete floor in the boiler room due to leaking descaler along with petroleum staining, and significant spills of wastewater and drycleaning solvent in the compressor room. A spill of approximately 55 gallons of PCE reportedly occurred on pavement along the north side of Building 1100 in October 1994.

Additional areas of concern beyond the scope of site-screening activities that were noted in the EBS included large quantities of friable asbestos, a 20,000-gallon fuel oil tank, a leaking 150-gallon aboveground storage tank (AST) that contains corrosive wastewater, and 30,000-gallon surge-and-settling tank for machine wastewater located to the west of the building. Aerial photographs suggest additional ASTs and underground storage tanks (USTs) may have been removed from this study area. Review of engineering drawings indicates there were at one time two water supply wells and possible deep drainage wells located near the laundry. The asbestos and storage tank issues will be addressed in the appropriate management plans.

The primary environmental concern addressed by this site-screening program is related to the extended history of industrial cleaning processes and the associated potential for chemical spills or seepage. Documented accounts of chemical spills are referenced in the EBS (ABB-ES, 1994).

Laundry operations have ceased, and the facility is currently inactive.

1.2 STUDY AREA 13, INVESTIGATION SUMMARY. The objectives of screening activities in this area were to evaluate what chemical contaminants, if any, are associated with releases to the environment due to current or past chemical storage and handling operations and wastewater disposal practices.

1.2.1 Geophysical Surveys Geophysical surveys were conducted to evaluate subsurface debris disposal, identify possible USTs, and aid in clearing utilities for subsequent subsurface investigations. The geophysical program consisted of an initial vertical gradiometer (magnetometer) survey followed by a confirmatory ground-penetrating radar (GPR) survey, which focused on anomalies identified by the magnetometer. Geophysical surveys were completed within the area indicated on Figures 1, 2, and 3 in Appendix A.

As anticipated, magnetic interference from sources including chainlink fences, vehicles, heavy equipment, and power lines limited the effectiveness of magnetometry for assessing potential surface debris disposal. The GPR data did not define any areas requiring additional investigation or USTs, but were useful in clearing utilities.

1.2.2 Passive Soil Gas Survey To evaluate if past and/or current waste-handling practices have impacted soil or groundwater in this study area, a passive soil gas survey was conducted to identify any shallow subsurface areas with elevated concentrations of volatile organic compounds (VOCs) and to focus the sampling investigation for confirmatory soil and groundwater sampling. A total of 60 passive collectors were installed within Study Area 13 (Figure 1, Appendix B), and an additional 28 collectors were installed in the adjacent Study Area 14, located to the east. Sample collectors were installed at a depth of 3 feet below land surface (bls) on a 50-foot sampling grid and analyzed on a gas chromatograph

(GC) equipped with an electron capture detector for halogenated hydrocarbons and a GC flame ionization detector (FID) for petroleum hydrocarbons.

Soil gas data are always semiqualitative, as multiple sources in soil and/or groundwater cannot be differentiated. Further, compound concentrations in each collector are compared on a relative basis, depending on whether or not the data are interpreted to be of high, moderate to high, moderate, etc., intensity. These qualitative soil gas values do not represent actual concentrations of the reported compounds. Efforts to relate soil gas response directly to groundwater or soil contaminant concentrations is generally not regarded as productive owing to the assumptions that are required for heterogeneity and source distribution.

Results from the soil gas survey are included as Appendix B and are shown on Figure 3. The highest concentration of PCE was mapped in the vicinity north of Building 1100, which is consistent with the documented release of drycleaning solvent in October 1994. Elevated concentrations of trichloroethene (TCE) in soil gas were observed in the same area and are likely the result of natural degradation of PCE. A lower concentration of PCE was observed along the fence south of Building 1100 and just north of Study Area 12, which may be related to shallow groundwater contamination at Study Area 12 or from an undocumented PCE spill in this area.

Fuel related constituents (benzene, toluene, ethylbenzene, and xylenes) were not detected, with the exception of naphtha found at 93 parts per billion (ppb) in one location in the vicinity of the former location of fuel oil ASTs.

1.2.3 Soil Boring Investigation A shallow soil boring investigation was conducted for screening purposes at Study Area 13 (and the adjacent Study Area 14) to assist in selection of locations for confirmatory sampling. A total of 71 hand-auger explorations was made. Of these, 11 were temporary piezometers, 12 were made for sampling soils at depths of 1 to 2 feet bls and 8 to 10 feet bls in the vicinity of future soil borings, and the remainder were completed in areas of elevated soil gas detections, in areas where documented spills had taken place, and where historical records indicated activity of potential concern. Borings in the drainage ditches, discussed below, were included in this shallow soil boring investigation. Soil samples from the hand-augered borings were screened for VOCs using an FID. Readings were taken from soil cuttings at least every foot while boring. Areas of high FID readings, ranging from 50 parts per million (ppm) to 2,200 ppm at 3 to 6 feet bls, were recorded in the northeast corner along the fence in the vicinity of soil boring 13B01101 at Study Area 13 (Figure 2). Elevated VOCs were not reported in this area from the soil gas survey. However, this area may have been beyond the extent of the survey sampling grid. Low FID detections, 2 ppm to 5 ppm, were noted in samples from hand-augered borings positioned to the north, west, and east of Building 1100, in the vicinity of reported chlorinated solvent releases and the settling tank.

Based on historical records of wastewater discharge to open drainage swales that adjoin the laundry area and drain to Lake Druid, a potential existed for soil or sediment contamination in these swales. The drainage swales were also identified as the most likely areas to have been affected by documented and/or undocumented chemical spills in adjacent areas. Collection of soil and sediment samples from the drainage ditches was proposed. However, standing water was not present in the drainage ditches during the sampling so sediment samples were not collected. Five shallow hand-augered soil borings (13B00901, 13B01001, 13B01101, 13B01201,

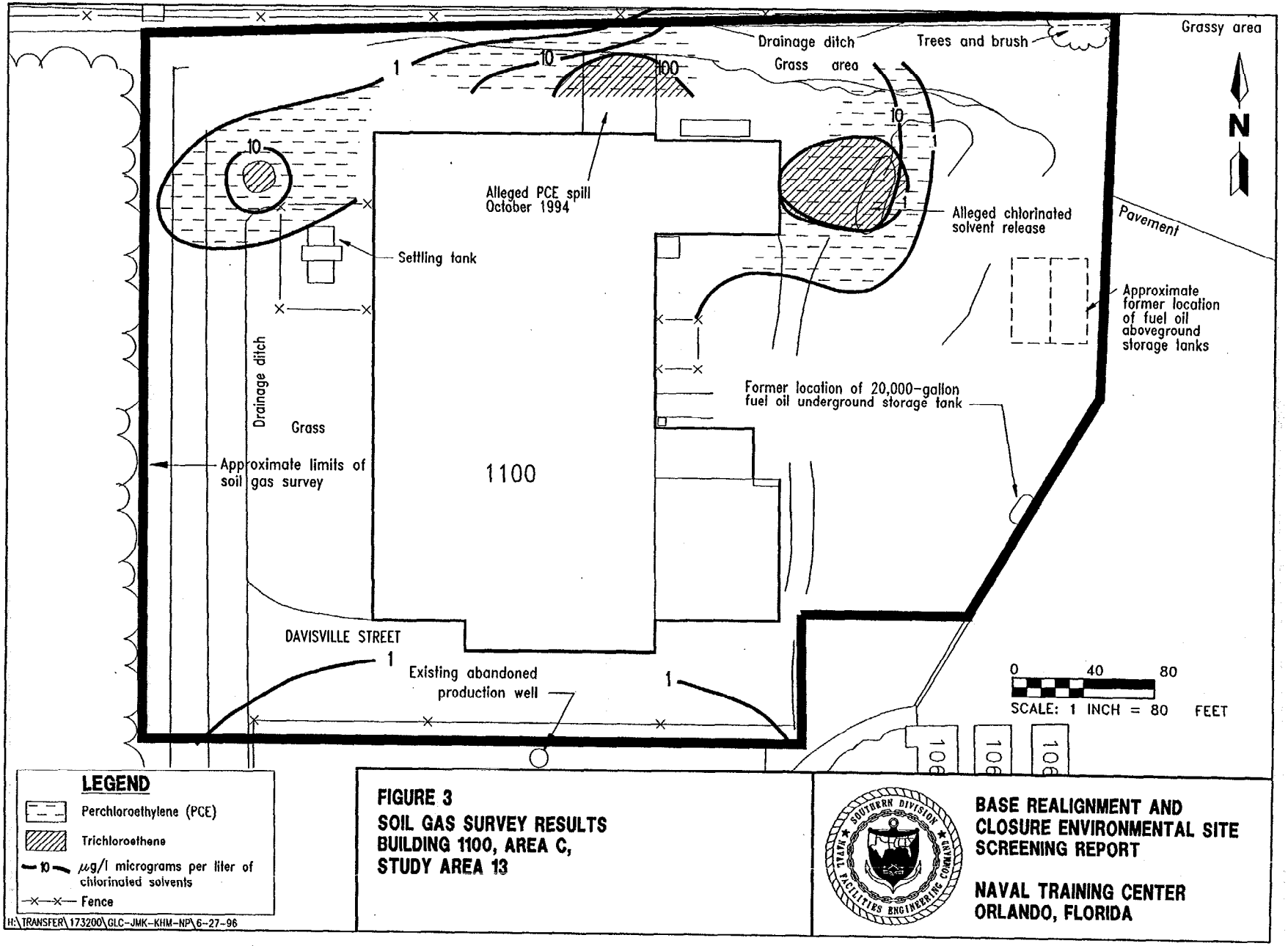

FIGURE 3
SOIL GAS SURVEY RESULTS
BUILDING 1100, AREA C,
STUDY AREA 13

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and 13B01301) (Figure 2) were advanced to the water table along the center line of unpaved surface drainage swales at Study Area 13. Soil cuttings were screened every foot with an FID throughout the augered interval. Elevated concentrations of VOCs were identified during FID screening at two sample locations (13B01001 and 13B01101) in the northeast corner of the study area. Subsurface soil samples were collected from the five locations at intervals immediately above the water table, typically 3 to 6 feet bls, or at intervals determined by FID measurements. Samples were analyzed for total petroleum hydrocarbons (TPH) and full suite Contract Laboratory program (CLP) target compound list (TCL) and target analyte list (TAL) analytes, in accordance with U.S. Environmental Protection Agency (USEPA) Level IV data quality objectives (DQOs).

Eight soil borings (advanced in pairs at four locations) were advanced at Study Area 13 using hollow-stem auger drilling techniques. Boring locations were based upon site history, field observations, FID results from shallow hand-augered borings, and soil gas survey results. Soil borings 13B001 through 13B008 correspond to monitoring wells OLD-13-01A through OLD-13-08C, respectively. Odd numbered locations are shallow (approximately 15 feet bls) and even numbered locations reach the top of the Hawthorn Formation, approximately 60 feet bls. Soil samples were collected continuously with a split-spoon sampler and field-screened with an FID. Soil samples collected from the deep borings at Study Area 13 were also analyzed with a transportable GC at a rate of one sample per 6 linear feet, or as indicated by FID screening. Soil samples were collected from selected shallow and deep borings and submitted for TPH and full suite CLP TCL and TAL laboratory analyses, in accordance with USEPA Level IV DQOs. In general, sampling locations were selected from intervals with the highest VOC concentration as determined by FID screening or at the interval above the water table. Field GC analysis was performed for screening purposes only, and the results were evaluated after installation of the monitoring wells. However, the field GC data permit an evaluation of volatile organic contamination between the screened intervals of the shallow and deep wells. Subsurface soil samples were collected from deep borings 13B004 and 13B008 at the interval above the water table (4 to 8 feet bls) and a second sample was collected from boring 13B008 at the top of the Hawthorn Formation (62 feet bls). Soil samples were not collected from deep soil borings 13B002 and 13B006 due to the absence or low FID deflections. Subsurface soil samples were collected from shallow borings 13B001 and 13B007, but due to the absence of FID detections, a soil sample was not collected from the shallow soil boring 13B003. A surface soil sample was collected 1 to 2 feet bls below the parking lot subgrade at soil boring 13B005 due to the presence of VOCs reported in soil gas survey results.

Boring logs are included in Appendix C.

1.2.4 Groundwater Monitoring Well Installation and Sampling Each soil boring was completed as a 2-inch diameter polyvinyl chloride monitoring well. Four nested pairs of groundwater monitoring wells were installed in the surficial aquifer at locations surrounding Building 1100. One well in each pair was installed to intercept the water table, and the second was installed at the base of the surficial aquifer (corresponding with the top of the Hawthorn Group) to evaluate the potential presence of dense, nonaqueous-phase liquids. The shallow surficial wells (OLD-13-01A, OLD-13-03A, OLD-13-05A, and OLD-13-07A) were completed with 10-foot or 15-foot screens intercepting the upper portion of the shallow aquifer, ranging from 3.5 to 18.5 feet bls. The deep wells (OLD-13-02C, OLD-13-04C, OLD-13-06C, and OLD-13-08C) were installed with a 5-foot screen at

the base of the surficial aquifer at depths ranging from 52 to 64 feet bls. Monitoring well diagrams are included in Appendix C.

One groundwater sample was collected from each of the eight monitoring wells. Groundwater samples were analyzed for full suite CLP TCL and TAL analytes and TPH, in accordance with USEPA Level IV DQOs. Groundwater samples were also submitted for total suspended solids determination to aid in the evaluation of inorganic data and the effectiveness of well development and sampling techniques.

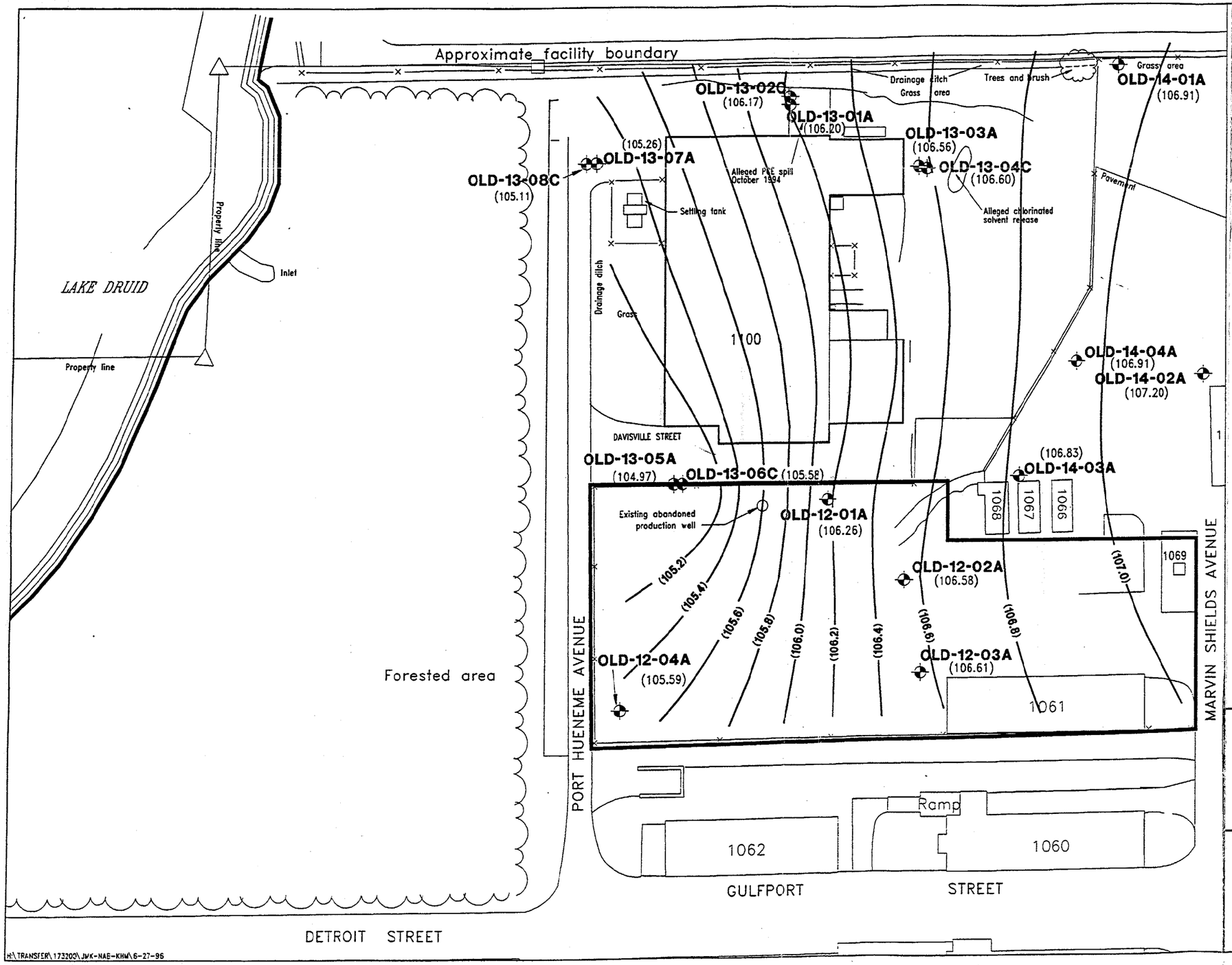
Collection of sludge samples from the floor drains of the laundry facility was proposed in the Site-Screening Workplan (ABB-ES, 1995). Laundry operations were permanently shut down subsequent to the publication of the Site-Screening Workplan.

1.3 STUDY AREA 13, RESULTS.

1.3.1 Soil and Groundwater Analytical Results A summary of positive detections in soil and groundwater analytical results is presented in Appendix D. A complete set of soil and groundwater analytical results is presented in Appendix E. Field GC results for soil collected from the deep borings (13B002, 13B004, 13B006, and 13B008) are summarized in Appendix F.

1.3.1.1 Soil Analytical Results Chlorinated volatile organics detected in soil samples at locations surrounding Building 1100 included PCE and the degradation products TCE and 1,2-dichloroethene (DCE). PCE was detected in subsurface soil sample 13B00101 (31 micrograms per kilogram [µg/kg]) located in the vicinity of the documented October 1994 spill. This concentration exceeds the leachability-based soil cleanup goal (SCG), which was applied because PCE was detected in the groundwater in excess of the FDEP groundwater primary standard. Based on evaluation of field GC results from the adjacent deep boring 13B002, potentially higher concentrations of PCE and contaminants including toluene and xylenes may be present at this location. Field GC results for soil from boring 13B002 included 600 ppb PCE at 6 feet bls, 1,250 µg/kg PCE and 4 µg/kg toluene at 24 feet bls, 204 µg/kg PCE at 42 feet bls and 7 µg/kg PCE, 12 µg/kg toluene and 5 µg/kg xylenes at 64 feet bls. The highest concentration of PCE in the laboratory samples, 220 µg/kg, was observed in subsurface sample 13B00701 at 16 feet bls, which exceeds the leachability-based SCG. This sample was collected in the vicinity of the settling tank and, based on groundwater contours from the September 13, 1995, groundwater elevation survey (Figure 4), is downgradient of the documented October 1994 PCE spill. Field GC screening results and FID readings from this boring and the adjacent deep boring 13B008 suggest additional sampling may be required to assess potential contamination in soil and groundwater at this location. Field GC detections reported for soil from boring 13B008 included 3,774 µg/kg PCE and 1,294 µg/kg TCE at 18 feet bls, and 7 µg/kg PCE at 64 feet bls. PCE was detected at 4 µg/kg in the surface soil sample at soil boring 13B005 consistent with soil gas survey results in this area; however, the concentration of PCE was well below the leachability-based SCG of 30 µg/kg.

Carbon disulfide, acetone, and TPH were also detected in soil borings surrounding Building 1100. The low frequency, low concentrations, and random distribution of acetone and carbon disulfide in soil at Study Area 13 suggest they may be related to sampling or laboratory contamination. TPH concentrations in surface and subsurface soil ranged from 6.2 milligrams per kilogram (mg/kg) to 17.6 mg/kg



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LEGEND

OLD-14-01A Monitoring well and designation

(106.11) Water-level elevation on 9/13/95

A Suffix designates shallow (15 to 20 feet) below land surface (bls) well.

B Suffix designates deep (60 feet) below land surface (bls) well.

107.0 Groundwater elevation

Fence

PCE Perchloroethylene

0 50 100

SCALE: 1 INCH = 100 FEET

FIGURE 3
SHALLOW GROUNDWATER ELEVATION CONTOURS, SEPTEMBER 13, 1995
AREA C STUDY AREAS 12, 13, AND 14

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with concentrations decreasing at depth. Regulatory guidance for TPH in subsurface soil is not available for comparison.

Analytical results from soil samples collected in the ditches at Study Area 13 (13B00901, 13B01001, 13B01101, 13B01201, and 13B01301) include pesticides, acetone, and 2-butanone. 4,4'-dichlorodiphenyldichloroethane and 4,4'dichlorodiphenyldichloroethene were detected in one soil sample (13B01101) at low levels (2.6 and 2.8 µg/kg, respectively). These pesticide concentrations are well below their respective risk-based concentrations (RBCs). The lack of an apparent source and the low frequency of detection of acetone and 2-butanone in soil samples suggests that their presence may be attributed to laboratory or sampling contamination. No other organic compounds were detected in samples collected from the hand-augered borings in the drainage ditches.

Inorganic analytes, aluminum, arsenic, barium, beryllium, cadmium, calcium, chromium, copper, iron, magnesium, mercury, nickel, sodium, thallium, and vanadium, were detected in subsurface soil at concentrations above the background screening values. However, with the exception of beryllium and arsenic in subsurface soil, all inorganic concentrations were below the residential and industrial RBCs. Beryllium was detected in two subsurface soil samples 13B00101 and 13B00802 at concentrations in excess of the residential RBC. Subsurface soil samples 13B001301 and 13B00901 collected in the drainage ditches to the west and to the north of Building 1100 (Figure 2) had concentrations of arsenic that exceeded background screening values and residential RBCs for arsenic as a carcinogen.

1.3.1.2 **Groundwater Analytical Results** Chlorinated solvents, PCE, TCE, and 1,2-DCE, were detected in all of the shallow groundwater samples and two of the four deep groundwater samples collected at Study Area 13. Concentrations of PCE in the shallow groundwater samples ranged from 7 micrograms per liter (µg/ℓ) to 680 µg/ℓ and at trace concentrations in the deep groundwater samples (less than 0.5 µg/ℓ). PCE concentrations in groundwater in all shallow wells exceeded the FDEP groundwater primary standard of 3 µg/ℓ and the Federal maximum contaminant levels (MCLs) of 5 µg/ℓ. The highest concentrations of PCE were detected in the vicinity of the October 1994 spill and in areas adjacent to the settling tank, estimated to be downgradient of the spill area. These results are consistent with the highest concentrations of PCE detected in subsurface soil and the soil gas survey results. TCE and 1,2-DCE were also detected in all of the shallow groundwater samples, but at much lower concentrations. TCE in groundwater from wells OLD-13-01A (17 µg/ℓ) and OLD-13-07A (52 µg/ℓ) exceeded the FDEP groundwater primary standard of 3 µg/ℓ and the Federal MCL of 5 µg/ℓ. Trace concentrations of chloroform, xylenes, and bis(2-ethylhexyl)phthalate were detected in two of the deep groundwater samples, but at concentrations below FDEP groundwater guidance concentrations and tap water RBCs. The low frequency, low concentrations, and random distribution of bis(2-ethylhexyl)phthalate in groundwater at Study Area 13 suggests its appearance is related to either sampling or laboratory contamination. No other organic compounds were detected in groundwater at Study Area 13.

Inorganic analytes, calcium, copper, and mercury, in shallow groundwater samples, and aluminum, arsenic, barium, beryllium, chromium, iron, and zinc, in deep groundwater samples, were detected at concentrations above background screening values; however, with the exception of aluminum, arsenic, beryllium, and iron in deep groundwater, all analytes were below FDEP groundwater guidance concentra-

tions and Federal MCLs. Aluminum (up to 17,300 $\mu g/\ell$) and iron (up to 2,010 $\mu g/\ell$) concentrations were found in excess of the corresponding FDEP groundwater secondary standards of 200 $\mu g/\ell$ and 300 $\mu g/\ell$, respectively, but well below the tap water RBCs.

1.4 STUDY AREA 13, CONCLUSIONS AND RECOMMENDATIONS. Analytical results from Study Area 13 indicate concentrations of PCE and TCE in groundwater at Study Area 13 exceed the FDEP groundwater primary standards and Federal MCLs. Based on the results of the passive soil gas program, analytical test results, and the past use of drycleaning equipment and documented PCE spills on the site, ABB-ES recommends further investigations be conducted to characterize and delineate (horizontally and vertically) the chlorinated solvent plume beneath Study Area 13, along with the adjacent Study Areas 12 and 14. Former wells for the laundry and possible deep drainage wells suspected to be located near the laundry will be considered in future investigations.

Additional surface and subsurface soil sampling at Study Area 13 may also be required to investigate the high FID readings detected in the northeast corner of Study Area 13. In addition, review of field GC data for soil from the four deep and four shallow borings indicate that further delineation (both horizontal and vertical) of chlorinated solvent contamination will be required. For example, maximum PCE (3,774 ppb) and TCE (1,294 ppb) concentrations were detected in field GC samples from approximately 20 feet bls in the boring adjacent to the settling tank. Groundwater was not sampled at this interval. This location is estimated to be downgradient of the likely PCE sources, suggesting that higher concentrations may be present at other areas of the site. This boring is also approximately 300 feet upgradient of Lake Druid.

Exceedances of inorganic concentrations including aluminum and iron in the deep wells may indicate that the deep surficial aquifer has naturally occurring inorganic concentrations higher than those found in the shallow surficial aquifer used as a basis for background. These exceedances may not necessarily be indicative of groundwater contamination.

Additional information on the location of the former water supply wells for the laundry at Study Area 13, their connection to the laundry, and their current disposition is being sought. The asbestos and storage tank issues will be addressed in the appropriate management plans.

As a result of these investigations, and following a review of the data, the OPT has transferred Study Area 13 to OU 4 effective December 1, 1995. A focused field investigation as part of an Interim Remedial Action began in May 1996.

The undersigned members of the OPT concur with the findings of the preceding investigation.

STUDY AREA 13

U.S. Environmental Protection Agency, Region IV	Date 7/24/96
Florida Department of Environmental Protection	Date 7/24/96
U.S. Department of the Navy	Date 7/24/96

REFERENCE

ABB Environmental Services, Inc., 1994, Final Draft Environmental Baseline Survey (EBS) Report, Naval Training Center, Orlando, Florida: prepared for Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), Charleston, South Carolina.

ABB-ES, 1995, Site-Screening Plan, Groups I through V Study Areas and Miscellaneous Additional Sites, NTC, Orlando, Florida: prepared for SOUTHNAVFACENGCOM, Charleston, South Carolina.

APPENDIX A

GEOPHYSICAL SURVEYS

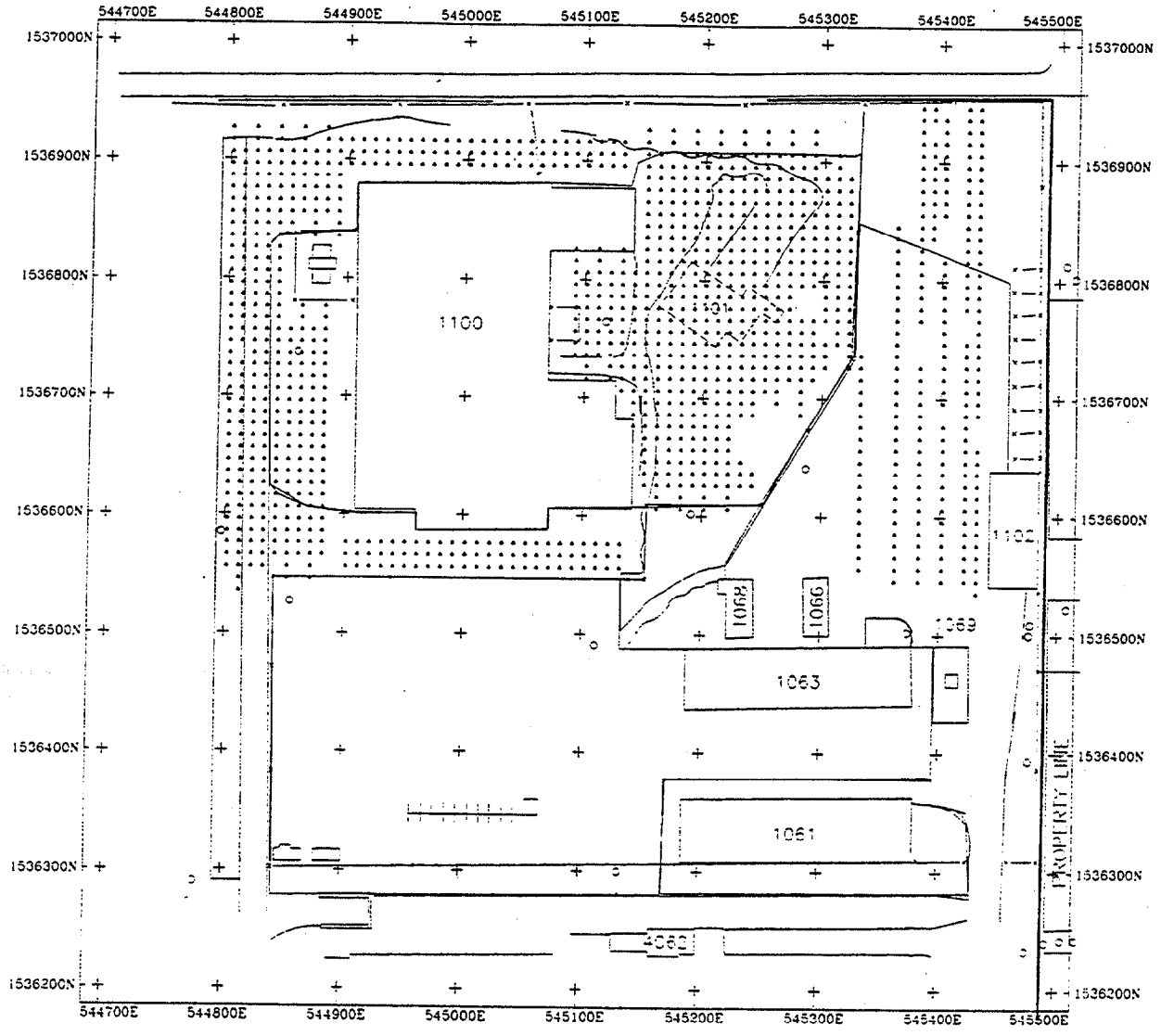
TECHNICAL MEMORANDUM
GEOPHYSICAL SURVEYS
STUDY AREA 13

The following is a summary of the significant findings of the geophysical surveys that took place between February 2 and February 13, 1995 at Naval Training Center, Orlando. Geophysical surveys took place at Study Area 13 (Building 1100, Base Laundry). Surveys also took place at Study Area 14 (Defense Reutilization Management Office), and the discussions below are combined for the two study areas because they are contiguous. The geophysical surveys were conducted to evaluate potential subsurface debris disposal and to aid in clearing utilities for the subsurface investigations. The techniques used were magnetometry and ground-penetrating radar.

The magnetic method is a versatile geophysical technique used for evaluating shallow geologic structures and for locating buried manmade objects and buried debris by measuring local distortions in the earth's magnetic field. The distortions are produced by magnetic objects (steel and other magnetic materials). The ground-penetrating radar (GPR) technique uses high frequency radio waves to determine the presence of subsurface objects and structures. The radio wave energy is reflected from surfaces where there is a contrast in the electrical properties of subsurface materials, such as naturally occurring geologic horizons or manmade objects (e.g., buried utilities, tanks, drums). Typical applications for GPR include mapping buried utilities, and delineating the boundaries of buried hazardous waste materials and abandoned landfills. A discussion of the results of this investigation follows.

Geophysical surveys at the Study Areas 13 and 14 included a magnetometer survey (with a 10- by 10-foot measurement grid), which was followed by a GPR. A total of 1,199 magnetic measurements was made during this study. No geophysical anomalies indicative of buried waste materials were observed, although a number of strong anomalies typical for roadways, buried utilities, chainlink fences, and in one case the probable former site of a building were observed. Figure 1 shows the approximate location of the magnetometer grid completed at Study Areas 13 and 14, and Figure 2 presents the vertical gradient (magnetic) contours for the geophysical data.

The GPR study was completed along the traverses indicated on Figure 3. Figures 4 through 6 present typical recordings made during the study. The data are of good to excellent quality and were useful in guiding intrusive exploration activities (soil gas and monitoring well installation). Annotations have been made on GPR recordings to tentatively identify some of the features observed.



Scale 1 900

50 0 50 100 150

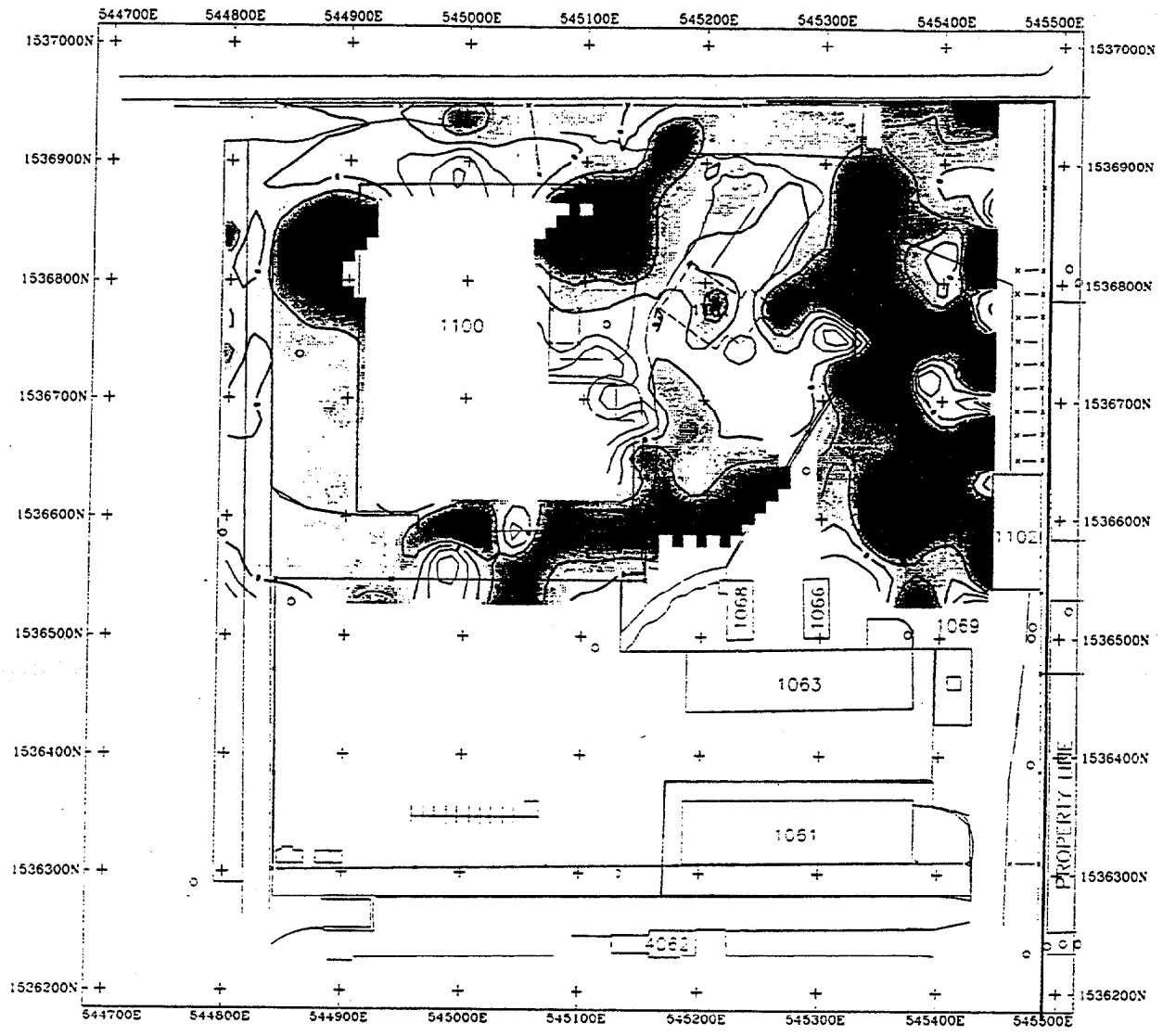
(Feet)

FIGURE 1

SOUTHERN DIVISION

MAGNETOMETER STATION LOCATIONS
STUDY AREAS 13 AND 14
GROUP II STUDY AREAS

ABB ENVIRONMENTAL SERVICES, INC.



Scale 1:900

50 0 50 100 150

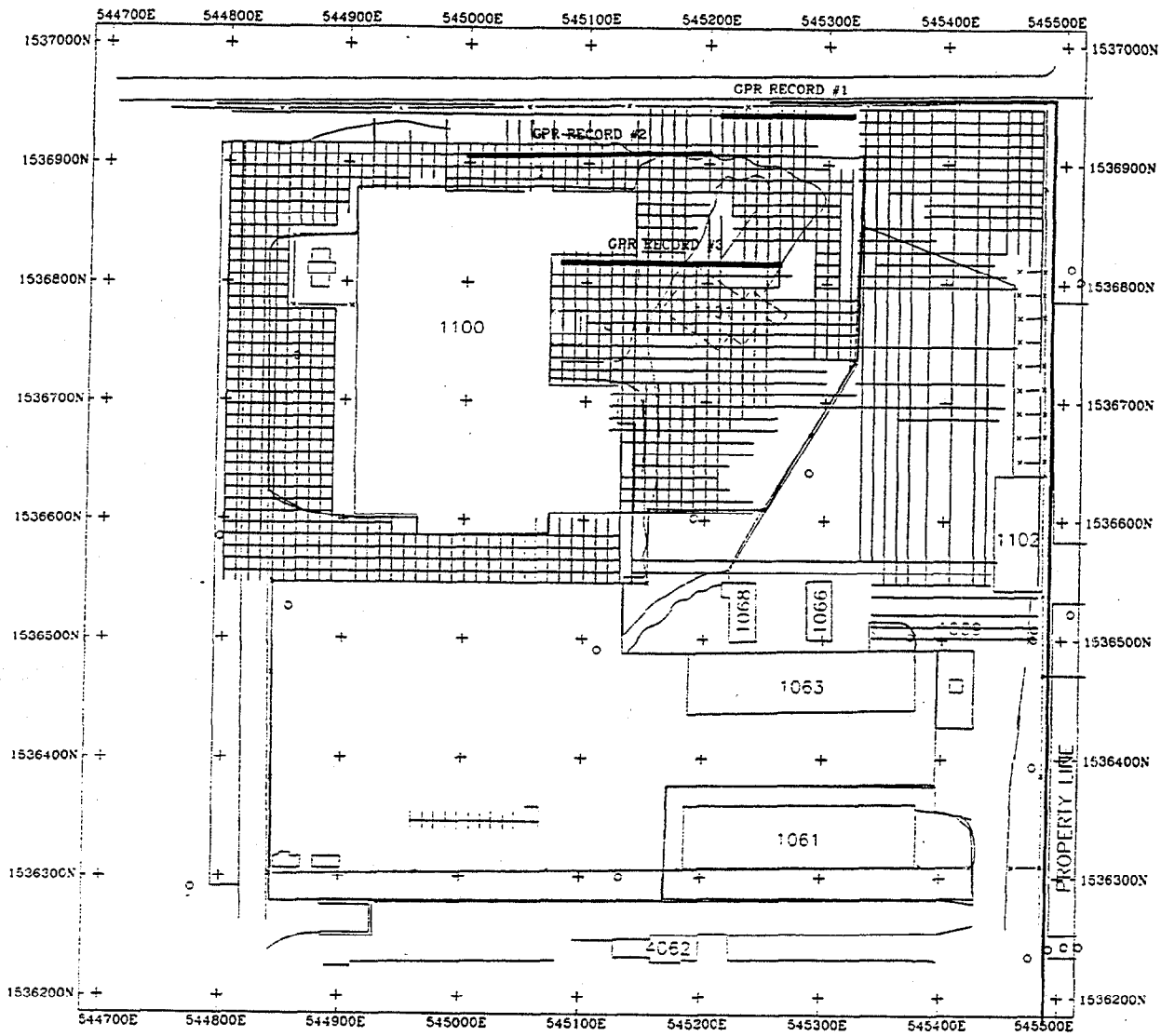
(feet)

FIGURE 2

SOUTHERN DIVISION

VERTICAL MAGNETIC GRADIENT CONTOURS
STUDY AREAS 13 AND 14
GROUP II STUDY AREAS

ABB ENVIRONMENTAL SERVICES, INC.



Scale 1:900

50 0 50 100 150

(feet)

FIGURE 3

SOUTHERN DIVISION

GROUND PENETRATING RADAR TRAVERSES
STUDY AREAS 13 AND 14
GROUP II STUDY AREAS

ABB ENVIRONMENTAL SERVICES, INC.

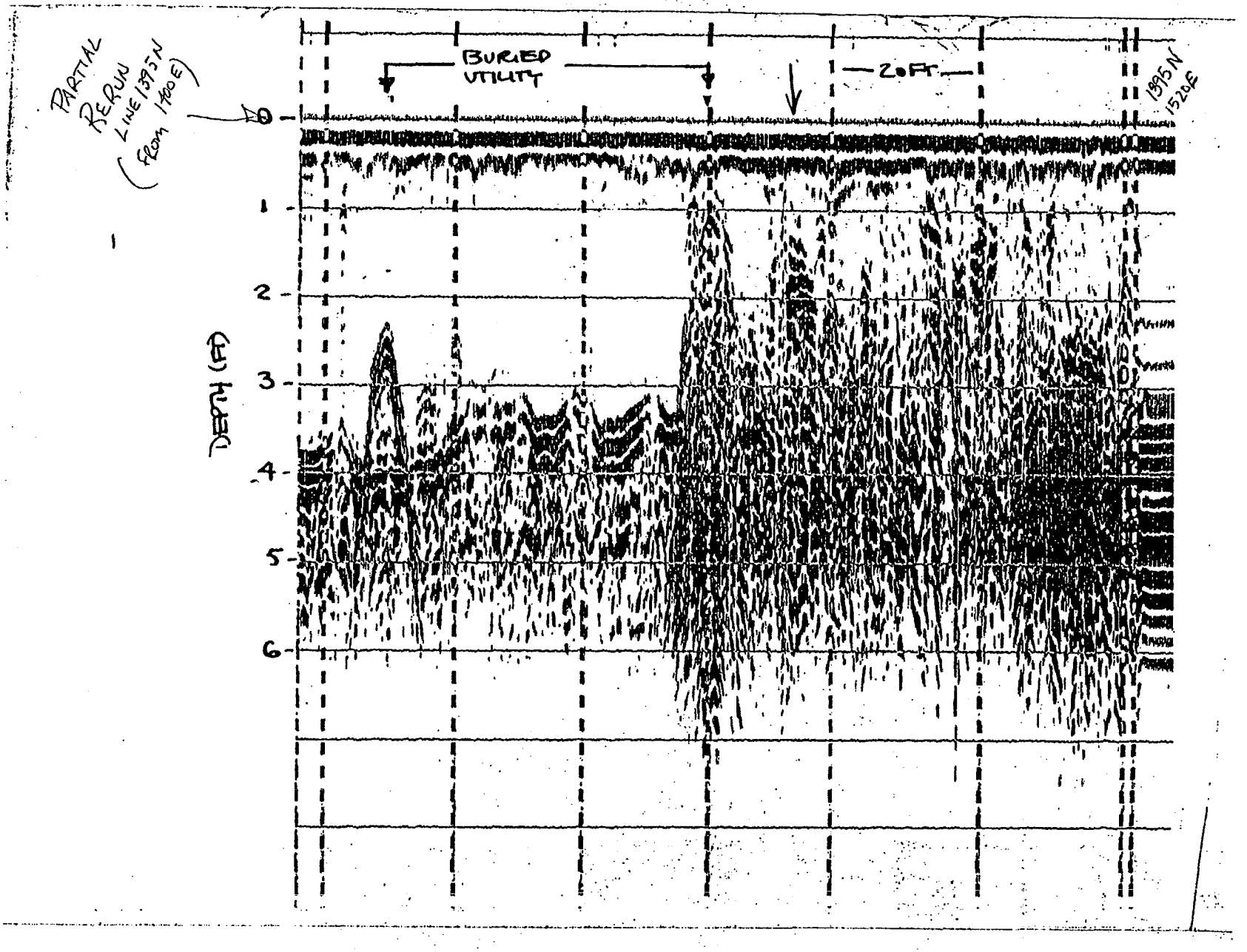


FIGURE 4

SOUTHERN DIVISION
TYPICAL GROUND PENETRATING RADAR RECORDING RECORD #1 STUDY AREAS 13 AND 14 GROUP II AREAS
ABB ENVIRONMENTAL SERVICES, INC.

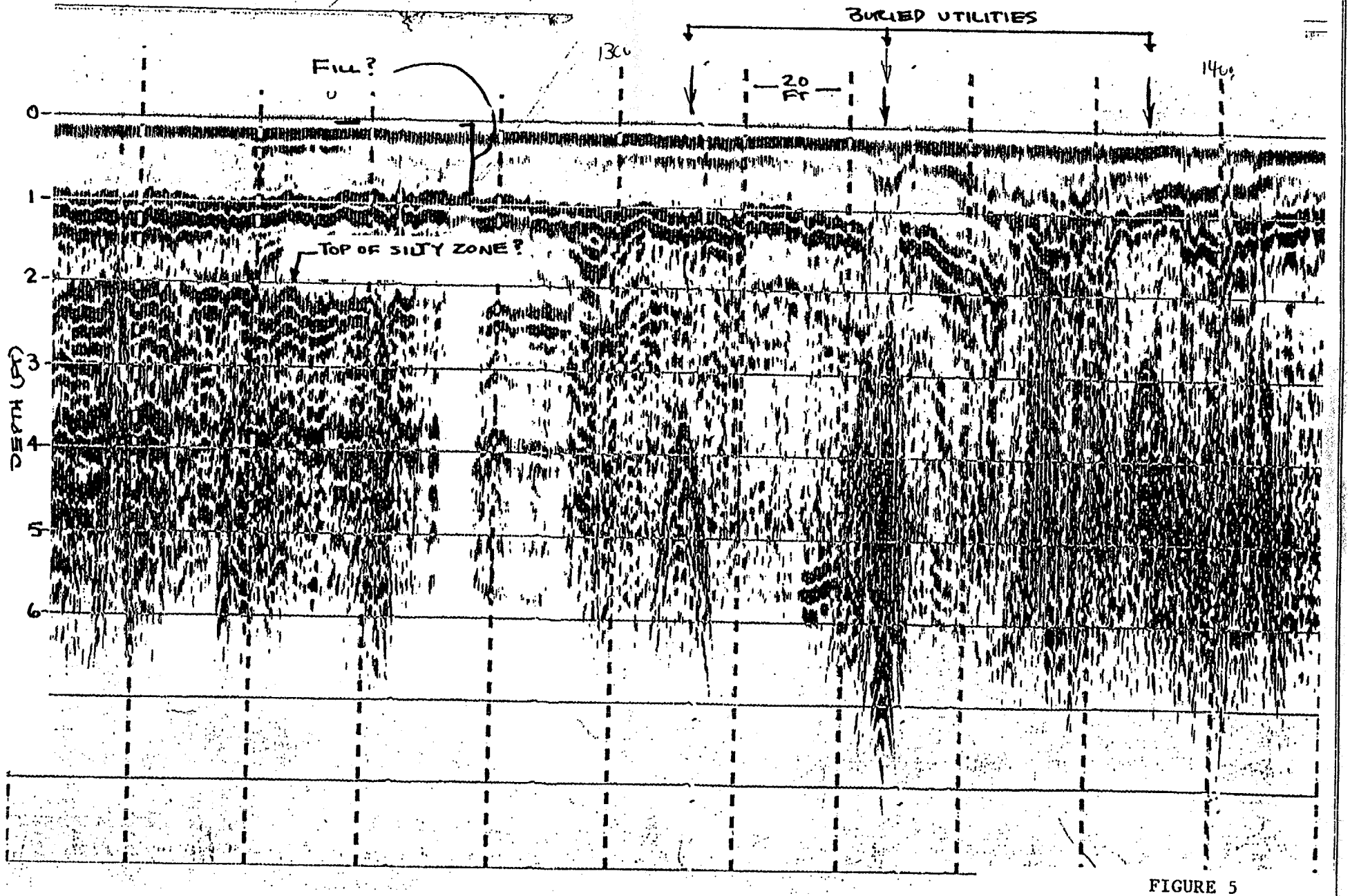


FIGURE 5

SOUTHERN DIVISION
TYPICAL GROUND PENETRATING RADAR RECORDING RECORD #2 STUDY AREAS 13 AND 14 GROUP II STUDY AREAS
ABB ENVIRONMENTAL SERVICES, INC.

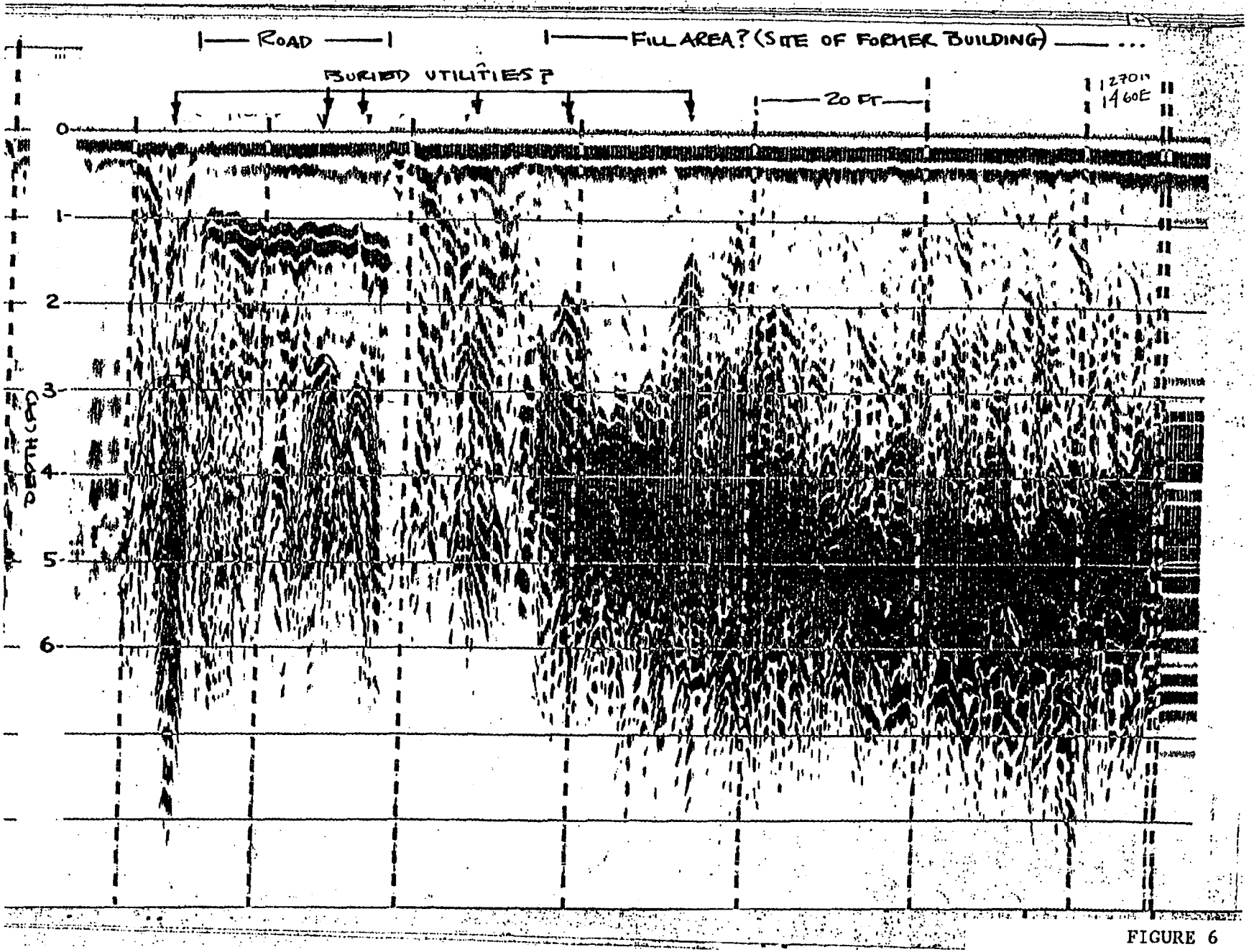


FIGURE 6

SOUTHERN DIVISION

TYPICAL GROUND PENETRATING RADAR RECORDING
RECORD #3
STUDY AREA AND 14
GROUP II AREAS

ABB ENVIRONMENTAL SERVICES INC

APPENDIX B

SOIL GAS SURVEY FINDINGS

FINAL REPORT ON THE FINDINGS OF PASSIVE SOIL GAS SURVEYS STUDY AREAS 13 AND 14 NAVAL TRAINING CENTER (NTC), ORLANDO, FLORIDA

1.0 Executive Summary

The information contained herein has been extracted from the Target Environmental Services, Inc. (TARGET), report and discusses the results of passive soil gas surveys conducted at Study Areas 13 and 14. These sites are contiguous and could not be readily separated. The complete report contains detailed information on quality assurance/quality control, laboratory procedures, and data tables. The complete report may be obtained from ABB Environmental Services, Inc. (ABB-ES), Orlando, Florida.

On February 6-11, 1995, TARGET conducted a soil gas survey at NTC, Orlando. A total of 88 passive soil gas samples was collected at the site from a depth of 3 feet. The samples were analyzed on a gas chromatograph equipped with an electron capture detector (GC/ECD) for halogenated hydrocarbons and a flame ionization detector (GC/FID) for petroleum hydrocarbons. The objective of the survey was to identify and possibly delineate the extent of volatile organic contamination within the shallow subsurface of Study Areas 13 and 14.

An occurrence of tetrachloroethene (PCE) was mapped in the vicinity of the north end of Building 1100 and is, therefore, suggestive of a release of drycleaning solvent, since the building was the base laundry facility. An occurrence of trichloroethene (TCE) was observed in the same area, and is most likely the result of the natural degradation of PCE within the shallow subsurface. A low-level occurrence of PCE was also observed along the fence to the south of Building 1100 and may or may not be related to the occurrence at the north end of the building.

2.0 Introduction

ABB-ES contracted TARGET to perform a passive soil gas survey at NTC, Orlando. The site includes Study Area 13, the base laundry (Building 1100), and Study Area 14, a warehouse (Building 1102) and truck scales. Study Area 13 may have contaminants including naphtha and PCE as well as Number 2 fuel oil for backup boiler fuel. The objective of the survey was to identify and possibly delineate the extent of volatile organic contamination within the shallow subsurface.

The survey grid was designed by ABB-ES, and onsite changes to the sampling plan were, therefore, directed by them in response to site conditions encountered by TARGET during sampling. The proposed sampling plan included 130 passive soil gas samples to be collected at a depth of 3 feet and an approximate grid spacing of 50 feet. The field phase of the survey was conducted on February 6-11, 1995.

3.0 Sample Collection and Analysis

Soil gas samples were collected at a total of 88 locations at the site, as shown on Figure 1, from a total of 90 sample point installations installed to a depth

of 3 feet. Also shown on Figure 1 are sample point locations included as part of Study Area 14, located to the east. Each boring was screened at the surface with a portable FID prior to the installation of a passive sampling point.

All of the samples collected during the field phase of the survey were subjected to dual analyses. One analysis was conducted according to U.S. Environmental Protection Agency Method 8010 (modified) on a gas chromatograph equipped with an ECD and using direct injection. Specific analytes standardized for this analysis were as follows:

- 1,1-dichloroethene (1,1 DCE)
- methylene chloride (CH_2Cl_2)
- trans-1,2-dichloroethene (t1,2 DCE)
- 1,1-dichloroethane (1,1 DCA)
- cis-1,2-dichloroethene (c1,2 DCE)
- chloroform ($CHCl_3$)
- 1,1,1-trichloroethane (1,1,1 TCA)
- carbon tetrachloride (CCl_4)
- trichloroethene (TCE)
- 1,1,2-trichloroethane (1,1,2 TCA)
- tetrachloroethene (PCE)

The chlorinated hydrocarbons in this suite were chosen because of their common usage in industrial solvents and/or their degradational relationship to commonly used compounds.

The second analysis was conducted according to USEPA Method 8020 (modified) on a gas chromatograph equipped with an FID, and using direct injection. The analytes selected for standardization in this analysis were:

- benzene
- toluene
- ethylbenzene
- meta- and para- xylene
- ortho- xylene

These compounds were chosen because of their utility in evaluating the presence of fuel products or petroleum based solvents.

The results of the laboratory analyses of the soil gas samples are reported in micrograms per liter-vapor ($\mu g/\ell$-v), which is not to be confused with "micrograms per liter" (parts per billion) in water analyses. The two are not equivalent in gas analyses due to the difference in the mass of equal volumes of water and gas matrices.

4.0 Results

The results have been mapped and contoured to produce Figures 2 and 3. Dashed contours are used where patterns are extrapolated into areas of less complete data or as auxiliary contours. Map sample points with no data shown indicate that the analyte concentrations in the sample were below the reporting limit.

Portable FID screening results revealed only 2 sampling point borings with detectable total volatiles concentrations. Sample SG15 yielded 45 ppm on the meter, and Sample SG38 yielded approximately 50 ppm.

The only GC/FID analysis result above the reporting limit was 93 micrograms per liter total FID volatiles as naphtha in Sample SG38. Of the GC/ECD analytes, only TCE (Figure 2) and PCE (Figure 3) were observed above the reporting limit. TCE was observed at low concentrations only in the vicinity of the northern end of Building 1100. PCE was observed at higher concentrations in the same area and at low concentrations along the fence south of the building's shipping and receiving area.

5.0 Interpretation

The GC/FID chromatogram signatures did not reveal any identifiable fuel signatures. However, the signature of Sample SG38 did show a peak pattern indicative of terpenes, naturally occurring hydrocarbons exuded by plant roots.

The occurrence of PCE in the vicinity of the north end of Building 1100 suggests a release of drycleaning solvent that was typically used there. The occurrence of low concentrations of TCE in the same area is consistent with the natural degradation of PCE within the shallow subsurface.

The low-level occurrence of PCE along the fence south of Building 1100 suggests one of the following: migration of PCE underneath the building from its north end, a different PCE release related to shipping or receiving the solvent, or migration of the solvent from offsite. A lack of more sampling points in this area leaves the source for this occurrence in question.

No other contamination was observed onsite during this survey.

6.0 Conclusions

- An occurrence of PCE was mapped in the vicinity of the north end of Building 1100 and is, therefore, suggestive of a release of drycleaning solvent, since the building was the base laundry facility. An occurrence of TCE was observed in the same area and is most likely the result of the natural degradation of PCE within the shallow subsurface.

- A low-level occurrence of PCE was also observed along the fence to the south of Building 1100 and may or may not be related to the occurrence at the north end of the building.

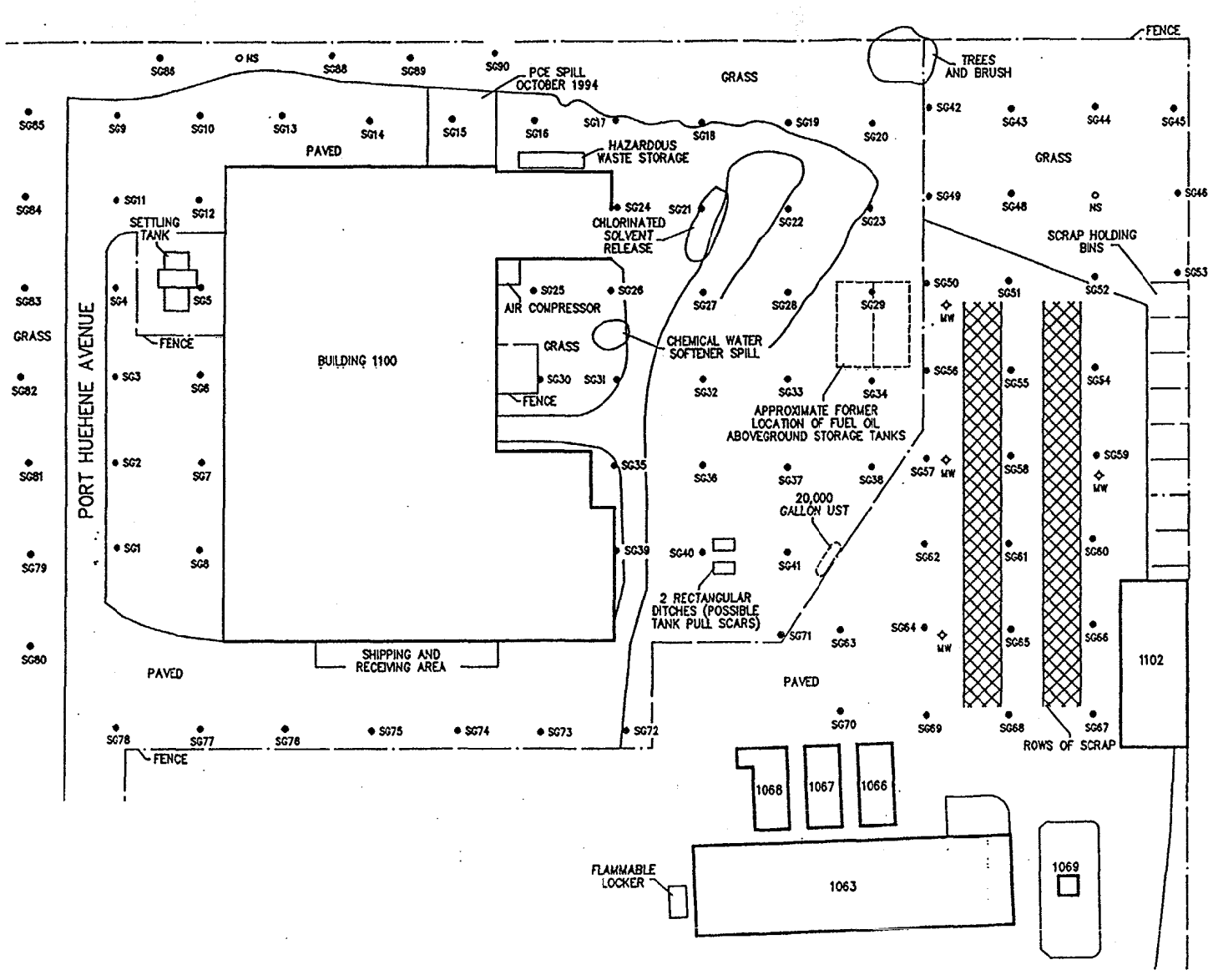


FIGURE 1. Sample Locations

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

TARGET ENVIRONMENTAL SERVICES, INC.

This map is integral to a written report and should be viewed in that context.

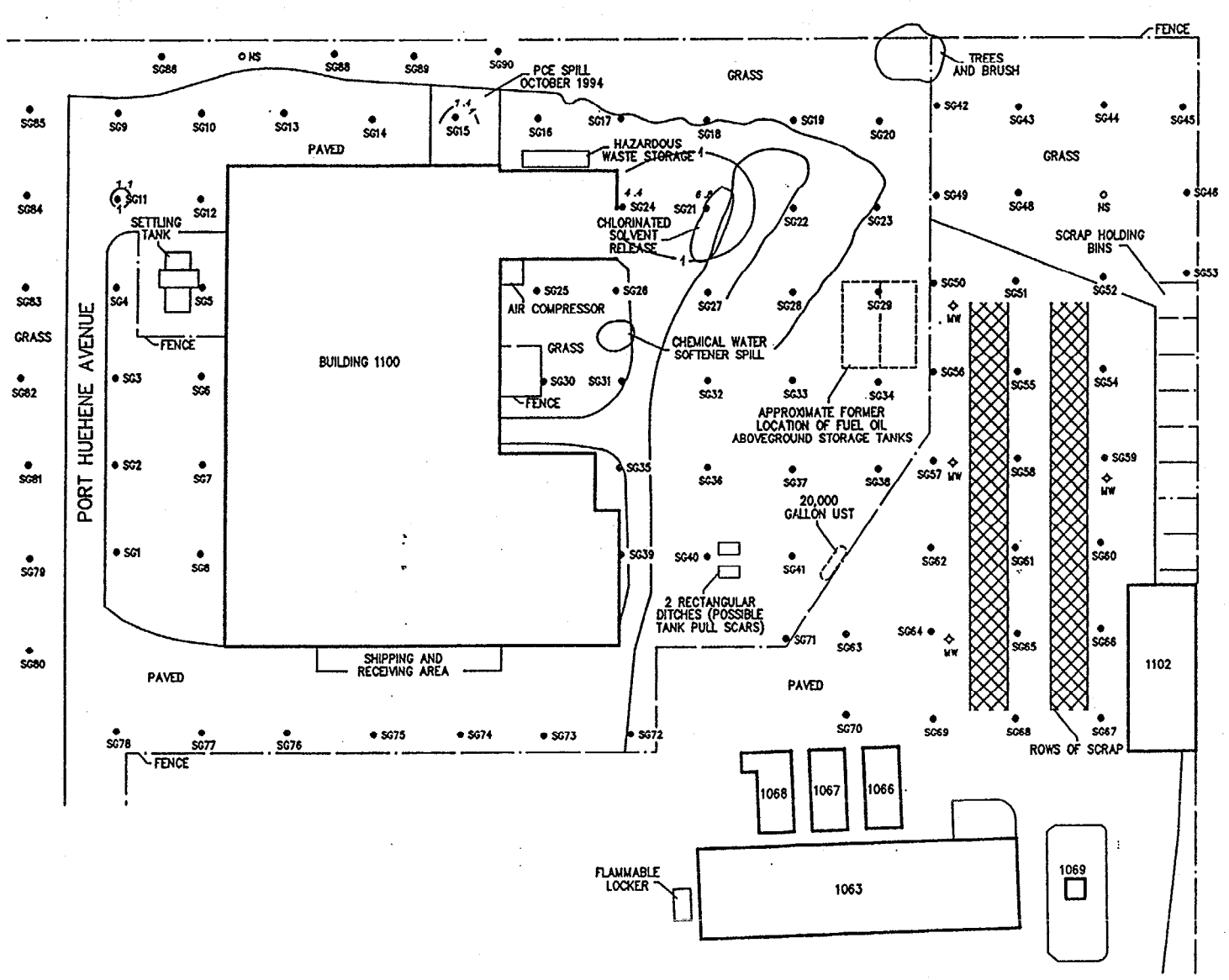


FIGURE 2. trichloroethene (TCE) (µg/l)

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

TARGET ENVIRONMENTAL SERVICES, INC.

This map is integral to a written report and should be viewed in that context.

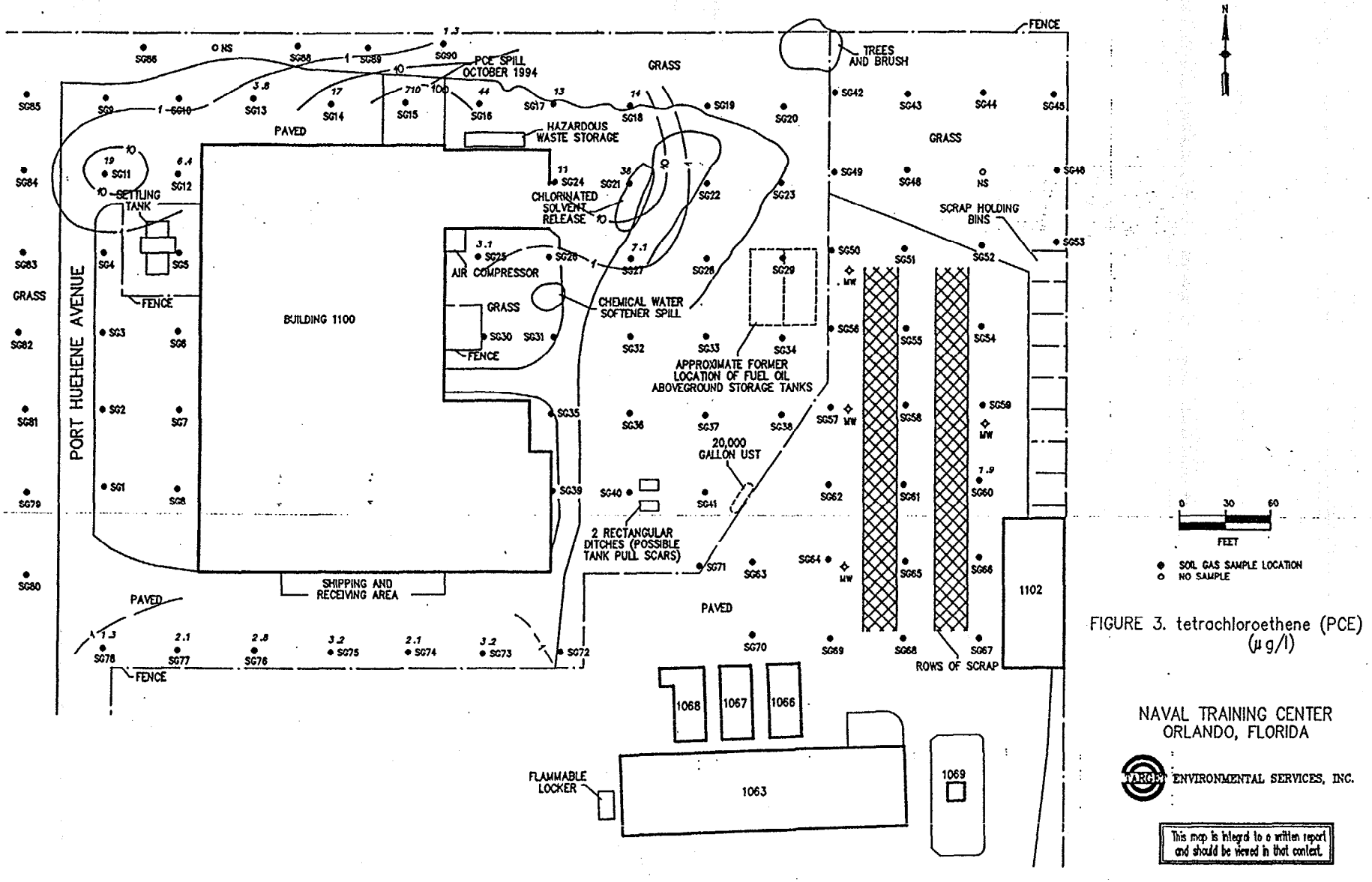


FIGURE 3. tetrachloroethene (PCE) (µg/l)

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

TARGET ENVIRONMENTAL SERVICES, INC.

This map is integral to a written report and should be viewed in that context.

APPENDIX C

BORING LOGS AND MONITORING WELL INSTALLATION DIAGRAMS

Project: BRAC NTC, Group II, Site Screening	**Well ID:** OLD-13-01		**Boring ID:** 13B001
Client: SOUTHNAVFACENGCOM	**Contractor:** Groundwater Protection, Inc.		**Job No.:** CTO-107
Northing: 1536909.45	**Easting:** 545030.18	**Date started:** 02/28/95	**Complid:** 02/28/95
Method: 8.25" Hollow stem auger	**Casing dia.:** 2 in.	**Screened int.:** 5-15 ft. bls	**Protection level:** D
TOC elev.: 110.22 Ft.	**Type of OVM.:** Porta FID	**Total dpth:** 18Ft.	**Dpth to** ▽ 8 * Ft.
ABB Rep.: W. Olson	**Well development date:** 02/28/95		**Site:** Study Area 13

Depth Ft.	Laboratory Sample ID.	Sample	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.	Well diag.
			ph	0	LIMESTONE SUBGRADE		GP	posthole	
			ph	5	SILTY QUARTZ SAND: Gray.		SM	posthole	
5	13B00101		90%	0	QUARTZ SAND: Tan, fine-to medium-grained, some silt, dry, non plastic, sub-rounded.		SP	2,3,4,4	
			80%	1				2,4,4,4	
			50%	0				1,1,1,2	
10			80%	0				n/a	
			90%	0				2,2,4,7	
15			90%	0	SILTY QUARTZ SAND: Dark gray to brown, fine-to medium-grained, sub-rounded, wet.		SM	3,3,6,8	
20					* = approximate depth				

 ABB ENVIRONMENTAL SERVICES, INC.

Project: BRAC NTC, Group I, Site Screening	**Well ID:** OLD-13-02		**Boring ID:** 13B002
Client: SOUTHNAVFACENGCOM	**Contractor:** Groundwater Protection, Inc.		**Job No.:** CTO-107
Northing: 1538914.83	**Easting:** 545029.80	**Date started:** 03/28/95	**Compltd:** 03/28/95
Method: 8.25" Hollow stem auger	**Casing dia.:** 2 in.	**Screened int.:** 57-82 ft.bls	**Protection level:** D
TOC elev.: 109.90 Ft.	**Type of OVM.:** Porta FID	**Total dpth:** 84Ft.	**Dpth to** ▽ 4 ✱ Ft.
ABB Rep.: W. Olson	**Well development date:** 03/28/95		**Site:** Study Area 13

Depth Ft.	Laboratory Sample ID.	Sample	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.	Well diag.
		ph		0	LIMESTONE SUBGRADE		GP	posthole	
					SILTY QUARTZ SAND: Gray.		SM		
		ph		0				posthole	
					QUARTZ SAND: Light tan, fine-to medium-grained, slightly silty, non plastic, damp, wet @ 4'bls.		SP		
5		50%		0				2,2,5,3	
		60%		0				2,2,2,2	
					QUARTZ SAND: Brown, medium-grained, sub-rounded, trace silt, wet.				
		70%		0				1,2,3,5	
10		80%		1				3,4,4,12	
		70%		0	QUARTZ SAND: Dark brown to gray, fine-to medium-grained, rounded, some silt, wet.			3,3,4,8	
				0				3,9,10,12	
15		80%		0				1,5,5,9	
		90%			SILTY QUARTZ SAND: Dark brown, fine-to medium-grained, some levels up to 50% silt.		SM		
		50%		0				11,19,30,42	
20		80%		0	QUARTZ SAND: Gray, medium-grained, grades to silty sand below.		SP	8,13,20,23	
					SILTY QUARTZ SAND: Dark brown, fine-to medium-grained.		SM		
		70%		0				22,17,17,17	
		80%		0	QUARTZ SAND: Tan to brown, fine-to medium-grained, some silt, sub-rounded, some black clasts, non plastic, wet, less silty 30'-32' bls, darker tan @ 45'bls.		SP	4,4,6,6	
25		80%		0				3,6,6,9	
		60%		0				3,10,7,7	
30		80%		0				3,6,7,9	
		70%		0				6,6,16,16	
35		80%		0				3,4,5,6	

 ABB ENVIRONMENTAL SERVICES, INC.

Project: BRAC NTC, Group I, Site Screening	**Well ID:** OLD-13-02		**Boring ID:** 13B002
Client: SOUTHNAVFACENGCOM	**Contractor:** Groundwater Protection, Inc.		**Job No.:** CTO-107
Northing: 1536914.83	**Easting:** 545029.80	**Date started:** 03/28/95	**Compltd:** 03/28/95
Method: 8.25" Hollow stem auger	**Casing dia.:** 2 in.	**Screened int.:** 57-82 ft.bls	**Protection level:** D
TOC elev.: 109.90 Ft.	**Type of OVM.:** Porta FID	**Total dpth:** 84Ft.	**Dpth to** ▽ 4 * Ft.
ABB Rep.: W. Olson	**Well development date:** 03/28/95		**Site:** Study Area 13

Depth Ft.	Laboratory Sample ID.	Sample	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.	Well diag.
					Continued from PAGE 1				
			80%	0			SP	5,10,11,17	
			70%	0				8,7,7,8	
			90%	0				1,4,10,30	
40			40%	nr				1,1,2,2	
			nr	0				2,2,3,5	
45			90%	0				2,2,4,5	
			80%	0				2,2,3,2	
			90%	0				4,4,4,4	
50			90%	0				5,6,5,9	
			90%	0	SILTY QUARTZ SAND: Greenish-gray, fine-to medium-grained, black opalescent grains common, some phosphate gravel, less silty 54'-56' bls.		SM	3,4,4,7	
55			40%	0				3,4,8,10	
			50%	0				6,5,14,16	
			30%	0				3,4,3,5	
60			90%	0	QUARTZ SAND: Light green, fine-grained, some brown clay lenses, becoming darker @ 63.5'bls.		SP	1,2,1,1	
			80%		CLAY: Light green, slightly silty, highly plastic, trace sand, some mottling.		CH		
65					* = approximate depth.				
70									

Project: BRAC NTC, Group I, Site Screening	**Well ID:** OLD-13-03		**Boring ID:** 13B003
Client: SOUTHNAVFACENGCOM	**Contractor:** Groundwater Protection, Inc.		**Job No.:** CTO-107
Northing: 1536850.59	**Easting:** 545158.64	**Date started:** 04/03/95	**Compltd:** 04/03/95
Method: 8.25" Hollow stem auger	**Casing dia.:** 2 in.	**Screened int.:** 4-14 ft.bls	**Protection level:** D
TOC elev.: 111.89 Ft.	**Type of OVM.:** Porta FID	**Total dpth:** 15Ft.	**Dpth to** ▽ 8 * Ft.
ABB Rep.: W. Olson	**Well development date:** 04/03/95		**Site:** Study Area 13

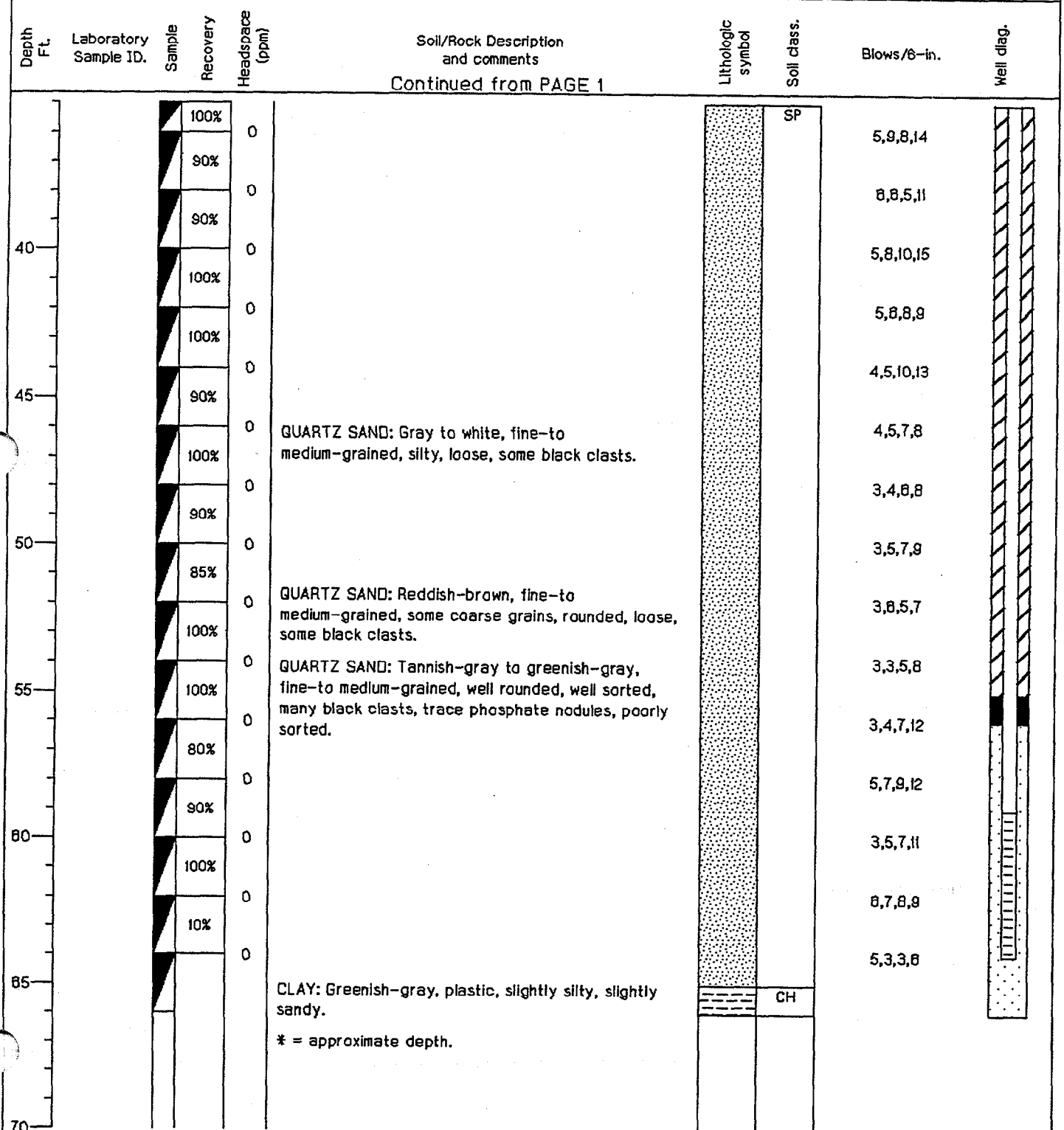
Depth Ft.	Laboratory Sample ID.	Sample	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.	Well diag.
				0	LIMESTONE SUBGRADE		GP	posthole	
			ph		SILTY QUARTZ SAND: Gray, fine-grained, dry, non plastic.		SM		
				0	QUARTZ SAND: Tan, fine-to medium-grained, well rounded, becomes wet @ 8'bls.		SP	posthole	
			ph						
				0				3,2,5,2	
5			80%						
				0				1,2,4,3	
			90%						
				0				1,2,1,1	
			50%						
10				0	SILTY QUARTZ SAND: Tan to gray, fine-to medium-grained, well rounded, loose, wet.		SM	2,2,3,4	
			90%						
				0	QUARTZ SAND: Gray to black, fine-to medium-grained, well rounded, some silt, non plastic, siltier @ 17.5'bls.		SP	2,3,8,10	
			90%						
				0				7,11,15,17	
15			90%		* = approximate depth.				
20									

 ABB ENVIRONMENTAL SERVICES, INC.

Project: BRAC NTC, Group I, Site Screening	**Well ID:** OLD-13-04		**Boring ID:** 13B004
Client: SOUTHNAVFACENGCOM	**Contractor:** Groundwater Protection, Inc.		**Job No.:** CTO-107
Northing: 1538850.18	**Easting:** 545164.43	**Date started:** 03/31/95	**Compltd:** 03/31/95
Method: 8.25" Hollow stem auger	**Casing dia.:** 2 in.	**Screened int.:** 59-64 ft.bls	**Protection level:** D
TOC elev.: 111.83 Ft.	**Type of OVM.:** Porta FID	**Total dpth:** 66Ft.	**Dpth to** ▽ 8 * Ft.
ABB Rep.: W. Olson	**Well development date:** 03/31/95		**Site:** Study Area 13

Depth Ft.	Laboratory Sample ID.	Sample	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.	Well diag.
			ph	0	LIMESTONE SUBGRADE		GP	posthole	
					SILTY QUARTZ SAND: Gray, fine-grained, dry, non plastic.		SM		
			ph	0				posthole	
					QUARTZ SAND: Tan, fine-to medium-grained, well rounded, becomes wet @ 8'bls.		SP		
			80%	0				3,2,5,2	
5	13B00401		90%	0				1,2,4,3	
			50%	0				1,2,1,1	
10			90%	0	SILTY QUARTZ SAND: Tan to gray, fine-to medium-grained, well rounded, loose, wet.		SM	2,2,3,4	
			90%	0	QUARTZ SAND: Gray to black, fine-to medium-grained, well rounded, some silt, non plastic, siltier @ 17.5'bls.		SP	2,3,8,10	
15			90%	0				7,11,15,17	
			90%	0				8,1,3,7	
			90%	0				3,3,8,5	
20			90%	0				2,2,4,4	
			100%	0				8,15,37,20	
				0	SANDY SILT: Reddish-brown, stiff, slightly plastic.		ML	8,8,10,13	
25			90%		QUARTZ SAND: Gray, fine-to medium-grained, some silt, some white coarse sand nodules.		SP		
			100%	0	SILTY QUARTZ SAND: Tan to brown, slightly plastic, contact sharp.			8,8,7,13	
			100%	0				3,3,3,8	
30			100%	0	QUARTZ SAND: Gray to tan, fine-to medium-grained, slightly silty, some coarse grains, well rounded, varies in color from brown to off-white to tan from 32' to 46'bls.			4,4,8,8	
			90%	0				3,2,5,7	
35			100%	0				4,7,9,12	

Project: BRAC NTC, Group I, Site Screening	**Well ID:** OLD-13-04		**Boring ID:** 13B004
Client: SOUTHNAVFACENGCOM	**Contractor:** Groundwater Protection, Inc.		**Job No.:** CTO-107
Northing: 1536850.18	**Easting:** 545164.43	**Date started:** 03/31/95	**Complted:** 03/31/95
Method: 8.25" Hollow stem auger	**Casing dia.:** 2 in.	**Screened int.:** 59-64 ft.bls	**Protection level:** D
TOC elev.: 111.83 Ft.	**Type of OVM.:** Porta FID	**Total dpth:** 66Ft.	**Dpth to** ∇ 8 * Ft.
ABB Rep.: W. Olson	**Well development date:** 03/31/95		**Site:** Study Area 13



Project: BRAC NTC, Group II, Site Screening	**Well ID:** OLD-13-05	**Boring ID:** 13B005
Client: SOUTHNAVFACENGCOM	**Contractor:** Groundwater Protection, Inc.	**Job No.:** CTO-107
Northing: 1538555.29	**Easting:** 544921.84 / **Date started:** 02/28/95	**Complted:** 02/28/95
Method: 6.25" Hollow stem auger	**Casing dia.:** 2 in. / **Screened int.:** 5-15 ft. bls	**Protection level:** D
TOC elev.: 110.20 Ft.	**Type of OVM.:** Porta FID / **Total dpth:** 18Ft.	**Dpth to** ▽ 8 * Ft.
ABB Rep.: W. Olson	**Well development date:** 02/28/95	**Site:** Study Area 13

Depth Ft.	Laboratory Sample ID.	Sample	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.	Well diag.
	13B00501		ph	0	LIMESTONE SUBGRADE		GP	posthole	
			ph	0	SILTY QUARTZ SAND: Gray to brown.		SM	posthole	
			80%	0	QUARTZ SAND: White, fine-grained, sharp contact.		SP	2,2,3,4	
5			50%	0	SILTY QUARTZ SAND: Brown, medium-grained, sub-rounded, some organics (woody material)		SM	5,8,10,9	
			90%	0	SILTY QUARTZ SAND: Brown, stiff, wet, rotten egg odor.			1,3,2,5	
10			90%	0				2,2,2,4	
			80%	0				2,2,2,18	
15			50%	0				2,5,8,15	
					* = approximate depth				
20									

 ABB ENVIRONMENTAL SERVICES, INC.

Project: BRAC NTC, Group I, Site Screening	**Well ID:** OLD-13-08		**Boring ID:** 13B008
Client: SOUTHNAVFACENGCOM	**Contractor:** Groundwater Protection, Inc.		**Job No.:** CTO-107
Northing: 1536555.58	**Easting:** 544918.83	**Date started:** 03/29/95	**Complid:** 03/29/95
Method: 8.25" Hollow stem auger	**Casing dia.:** 2 in.	**Screened int.:** 52-57 ft.bls	**Protection level:** D
TOC elev.: 109.98 Ft.	**Type of OVM.:** Porta FID	**Total dpth:** 58Ft.	**Dpth to** ⊽ 8 * Ft.
ABB Rep.: W. Olson	**Well development date:** 03/29/95		**Site:** Study Area 13

Depth Ft.	Laboratory Sample ID.	Sample	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.	Well diag.
				0	LIMESTONE SUBGRADE		GP	posthole	
			ph		QUARTZ SAND: Light gray, fine-grained, loose, dry.		SP		
				0	SILTY QUARTZ SAND: Reddish-brown, fine-to medium-grained, damp, non plastic.		SM	posthole	
			ph						
				0				4,4,5,3	
5			80%						
				0				4,5,5,8	
			100%						
				0	SILTY QUARTZ SAND: Dark brown, wet, saturated @ 8'bls.			1,1,1,3	
			50%						
10				0				4,4,4,8	
			90%						
				0				1,2,3,7	
			80%						
				0	SANDY SILT: Brown, fine-to medium-grained, well rounded, wet, cohesive sandy horizon 13.5' to 14'bls.		ML	5,34,50+	
15			50%						
				0				4,9,8,11	
			90%						
				0	QUARTZ SAND: Grayish-brown, some silt, fine-to medium-grained, some frosted quartz grains, some black staining, wet, non plastic.		SP	10,10,21,26	
			90%						
20				0	SILT: Light brown, sandy, some coarse grains, cohesive.		ML SP	1,1,5,7	
			70%						
				0	QUARTZ SAND: Light gray, fine-to medium-grained, slightly silty.			7,18,25,30	
			80%						
				0	QUARTZ SAND: Reddish-brown, fine-to coarse-grained, well sorted, well rounded, some frosted quartz and black grains from 24' to 25.5'bls, sharp change back to reddish-brown, some silty horizons 34' to 36'bls, silty clay lens 37' to 37.5'bls, massive silt and clay lens @ 41.5' bls.			5,13,20,25	
25			100%						
				nr				3,11,23,30	
			nr						
				0				2,4,7,11	
			90%						
30				0				7,10,14,18	

Project: BRAC NTC, Group I, Site Screening	**Well ID:** OLD-13-08		**Boring ID:** 13B008
Client: SOUTHNAVFACENGCOM	**Contractor:** Groundwater Protection, Inc.		**Job No.:** CTO-107
Northing: 1536555.56	**Easting:** 544916.83	**Date started:** 03/29/95	**Complted:** 03/29/95
Method: 8.25" Hollow stem auger	**Casing dia.:** 2 in.	**Screened int.:** 52-57 ft.bls	**Protection level:** D
TOC elev.: 109.98 Ft.	**Type of OVM.:** Porta FID	**Total dpth:** 58Ft.	**Dpth to** ▽ 8 * Ft.
ABB Rep.: W. Olson	**Well development date:** 03/29/95		**Site:** Study Area 13

Depth Ft.	Laboratory Sample ID.	Sample	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.	Well diag.
					Continued from PAGE 1				
			80%	0			SP	3,4,7,8	
			90%	0				3,6,8,12	
35			80%	0				7,7,10,7	
			90%	0				7,14,18,19	
			90%	0				4,7,8,8	
40			80%	0				5,11,17,20	
			90%	0				4,4,5,11	
			90%	0				8,13,22,28	
45			90%	0	SILTY QUARTZ SAND: Greenish-gray, fine-to medium-grained, well rounded, non plastic, varies to tan, thin horizon of black grains @ 47'bls.		SM	4,5,7,10	
			90%	0				3,5,10,16	
50			90%	0				4,10,14,22	
			90%	0				4,8,13,10	
			90%	0				1,2,1,1	
55			100%	0	CLAY: Greenish-gray, slightly sandy, plastic.		CH		
					* = approximate depth.				
60									

 ABB ENVIRONMENTAL SERVICES, INC.

Project: BRAC NTC, Group I, Site Screening	**Well ID:** OLD-13-07		**Boring ID:** 13B007
Client: SOUTHNAVFACENGCOM	**Contractor:** Groundwater Protection, Inc.		**Job No.:** CTO-107
Northing: 1538854.83	**Easting:** 544842.57	**Date started:** 04/03/95	**Complted:** 04/03/95
Method: 8.25" Hollow stem auger	**Casing dia.:** 2 in.	**Screened int.:** 3.5-18.5 ft.bls	**Protection level:** D
TOC elev.: 108.71 Ft.	**Type of OVM.:** Porta FID	**Total dpth:** 19Ft.	**Dpth to** ⊽ 4 * Ft.
ABB Rep.: W. Olson	**Well development date:** 04/03/95		**Site:** Study Area 13

Depth Ft.	Laboratory Sample ID.	Sample	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.	Well diag.
				2	LIMESTONE SUBGRADE		GP	posthole	
			ph		SILTY QUARTZ SAND: Gray, fine-grained, dry.		SP		
					SILTY QUARTZ SAND: Dark brown, fine-to medium-grained, non plastic, moist.		SM		
				2				posthole	
			ph						
				0	QUARTZ SAND: Tan to brown, fine-to medium-grained, slightly silty, moist to wet.		SP	3,3,4,4	
5			100%						
				0				1,2,2,3	
			100%						
							SM		
				0				woh,1,1	
			80%		SILTY QUARTZ SAND: Dark brown, fine-to medium-grained, well rounded, some shell material, saturated, some roots, siltier with depth.				
10				0				2,3,5,6	
			90%						
				0				3,4,6,8	
			90%						
				0				6,2,6,5	
15			90%						
	13B00701			8				3,2,7,11	
			100%						
				1	SILTY QUARTZ SAND: Very dark brown, fine-to medium-grained, sharp contacts above, sand interbeds @ 14' and 18'bls.			4,14,19,19	
			90%						
20					* = approximate depth.				

 ABB ENVIRONMENTAL SERVICES, INC.

Project: BRAC NTC, Group I, Site Screening	**Well ID:** OLD-13-08		**Boring ID:** 13B008
Client: SOUTHNAVFACENGCOM	**Contractor:** Groundwater Protection, Inc.		**Job No.:** CTO-107
Northing: 1538854.58	**Easting:** 544832.75	**Date started:** 03/30/95	**Complted:** 03/30/95
Method: 8.25" Hollow stem auger	**Casing dia.:** 2 in.	**Screened int.:** 57-62 ft.bls	**Protection level:** D
TOC elev.: 108.67 Ft.	**Type of OVM.:** Porta FID	**Total dpth:** 64Ft.	**Dpth to** ⊽ 4 * Ft.
ABB Rep.: W. Olson	**Well development date:** 03/30/95		**Site:** Study Area 13

Depth Ft.	Laboratory Sample ID.	Sample	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.	Well diag.
			ph	2	LIMESTONE SUBGRADE		GP	posthole	
							SP		
			ph	2	SILTY QUARTZ SAND: Gray, fine-grained, dry.		SM	posthole	
					SILTY QUARTZ SAND: Dark brown, fine-to medium-grained, non plastic, moist.				
	13B00801		100%	0	QUARTZ SAND: Tan to brown, fine-to medium-grained, slightly silty, moist to wet.		SP	3,3,4,4	
5			100%	0				1,2,2,3	
				0			SM	woh,1,1	
			80%		SILTY QUARTZ SAND: Dark brown, fine-to medium-grained, well rounded, some shell material, saturated, some roots, siltier with depth.				
10			90%	0				2,3,5,8	
			90%	0				3,4,8,8	
				0				8,2,8,5	
15			90%	8				3,2,7,11	
			100%						
			90%	1	SILTY QUARTZ SAND: Very dark brown, fine-to medium-grained, sharp contacts above, sand interbeds @ 14' and 18'bls.			4,14,19,19	
20			90%	0			ML	3,7,11,15	
					SANDY SILT: Light brown to gray, fine-grained, slightly plastic, wet.		SP		
			100%	0	QUARTZ SAND: Gray to reddish-brown, fine-to medium-grained.			8,18,28,30	
				0				3,3,1,2	
25			90%	0				2,4,4,8	
			100%		QUARTZ SAND: Reddish-brown, fine-to medium-grained, some silt, some black clasts, some silty horizons 36' to 37'bls.				
			100%	0				8,7,8,9	
30			100%	0				8,13,14,15	
				0				6,3,8,6	
			50%						
			100%	0				7,8,15,14	
35									

Project: BRAC NTC, Group I, Site Screening	**Well ID:** OLD-13-08		**Boring ID:** 13B008
Client: SOUTHNAVFACENGCOM	**Contractor:** Groundwater Protection, Inc.		**Job No.:** CTO-107
Northing: 1538854.58	**Easting:** 544832.75	**Date started:** 03/30/95	**Compltd:** 03/30/95
Method: 8.25" Hollow stem auger	**Casing dia.:** 2 in.	**Screened int.:** 57-82 ft.bls	**Protection level:** D
TOC elev.: 108.87 Ft.	**Type of OVM.:** Porta FID	**Total dpth:** 84Ft.	**Dpth to** ⊽ 4 * Ft.
ABB Rep.: W. Olson	**Well development date:** 03/30/95		**Site:** Study Area 13

Depth Ft.	Laboratory Sample ID.	Sample	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.	Well diag.
					Continued from PAGE 1				
			100%	0			SP	4,6,10,8	
			100%	0				18,13,18,27	
			90%	0				4,5,9,14	
40			100%	0				2,10,22,27	
			100%	0				2,3,9,13	
			100%	0				8,8,8,21	
45			100%	0	SILTY QUARTZ SAND: Greenish-gray, fine-to medium-grained, sub-rounded to well rounded, some black grains, some fine gravel-sized clay clasts.		SM	3,4,5,8	
			100%	0				4,10,13,20	
50			100%	0				3,8,13,12	
			90%	0				8,13,17,52	
			90%	0				5,7,11,12	
55			100%	0				5,11,21,23	
			90%	0				5,8,5,5	
			80%	0				3,8,11,9	
60	13B00802		90%		SILTY CLAY: Greenish-gray, slightly plastic.		CL		
					* = approximate depth.				
65									
70									

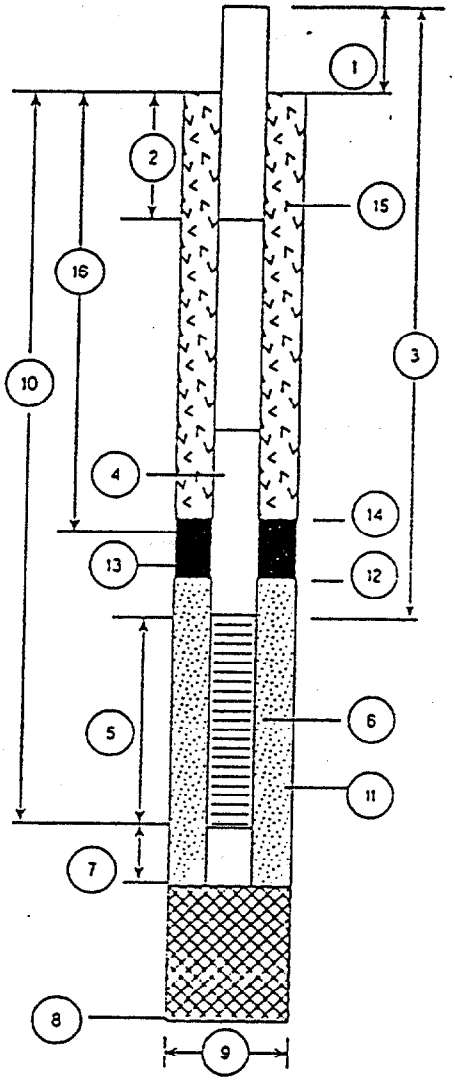
DEPARTMENT OF THE NAVY

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, SC.

WELL CONSTRUCTION DETAIL

WELL NUMBER: OU1-13-01

DATE OF INSTALLATION: 2/26/95



1. Height of Casing above ground: 0'
2. Depth to first Coupling: 0'
   Coupling Interval Depths: 5'
3. Total Length of Riser Pipe: 5'
4. Type of Riser Pipe: 2" DIA PVC
5. Length of Screen: 10'
6. Type of Screen: 2" DIA. PVC, .010 SLOT
7. Length of Sump: 2"
8. Total Depth of Bore: 16'
9. Diameter of Boring: 6¼"
10. Depth to Bottom of Screen: 15'
11. Type of Screen Filter: SILICA SAND
    Quantity Used: 700 lb. 5C 16.5 Size: 20/30 30/65
12. Depth to Top of Filter: 2'
13. Type of Seal: BENTONITE
    Quantity Used: 10.16.5
14. Depth to Top of Seal: 1.5'
15. Type of Grout: NEAT CEMENT
    Grout Mixture: 15% BENTONITE, 85% CEMENT
    Method of Placement: POURED
16. Tot. Depth of 8 in. Steel Casing: N/A

COMMENTS ON INSTALLATION

WCH-NC

WELL CONSTRUCTION DETAIL

PROJECT OPERATIONS PLAN

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

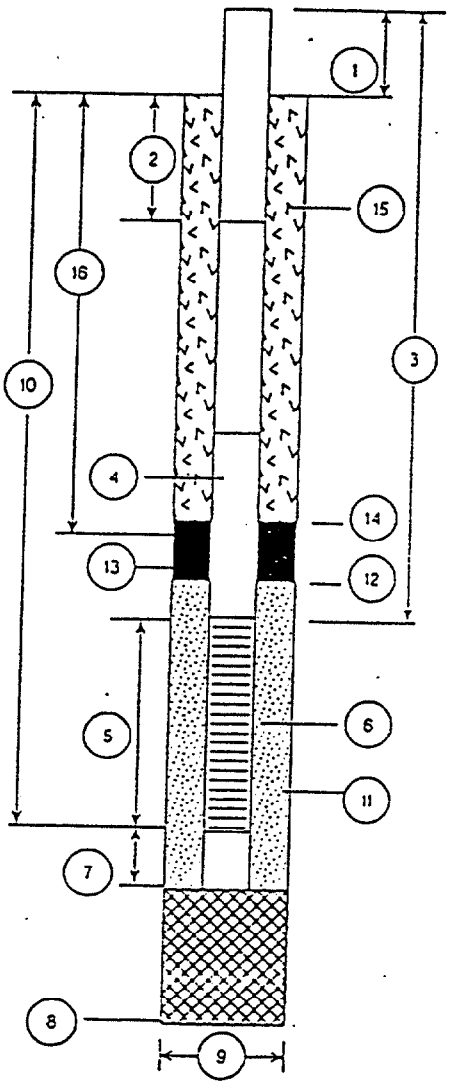
DEPARTMENT OF THE NAVY

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, SC.

WELL CONSTRUCTION DETAIL

WELL NUMBER: OLD-13-02

DATE OF INSTALLATION: 3/28/95



1. Height of Casing above ground: 0'
2. Depth to first Coupling: 7'
   Coupling Interval Depths: 10'
3. Total Length of Riser Pipe: 57'
4. Type of Riser Pipe: 2" DIA. PVC
5. Length of Screen: 5'
6. Type of Screen: 2" DIA. PVC, .010 SLOT
7. Length of Sump: 2"
8. Total Depth of Boring: 64'
9. Diameter of Boring: 6¼"
10. Depth to Bottom of Screen: 62'
11. Type of Screen Filter: SILICA SAND
    Quantity Used: 250 lbs 100 lbs Size: 20/30 30/65
12. Depth to Top of Filter: 57'
13. Type of Seal: SILICA SAND
    Quantity Used: 100 lbs 30/65
14. Depth to Top of Seal: 55'
15. Type of Grout: NEAT CEMENT
    Grout Mixture: 15% BENTONITE, 85% CEMENT
    Method of Placement: TREMMI
16. Tot. Depth of 8 in. Steel Casing: N/A

COMMENTS ON INSTALLATION

KCHC

WELL CONSTRUCTION DETAIL

PROJECT OPERATIONS PLAN

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

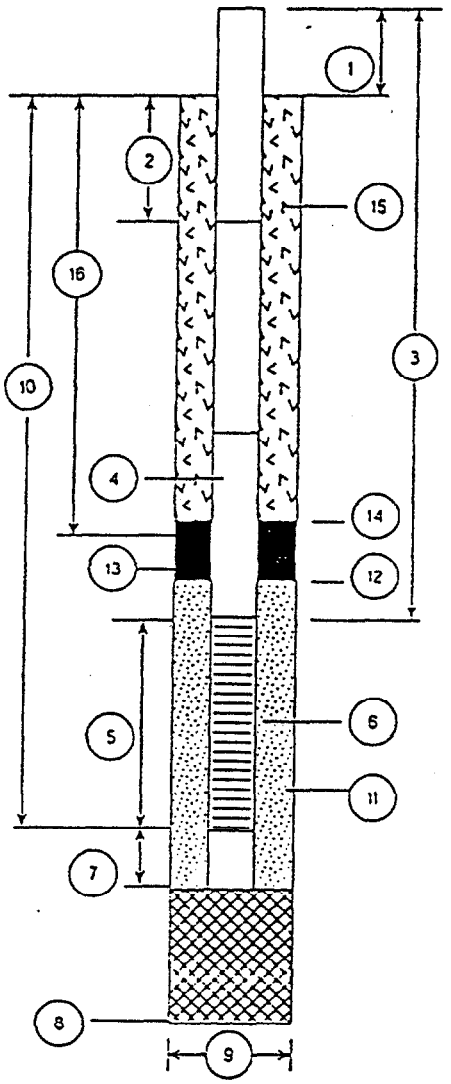
DEPARTMENT OF THE NAVY

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, SC.

WELL CONSTRUCTION DETAIL

WELL NUMBER: OXD-13-03

DATE OF INSTALLATION: 9/3/95



1. Height of Casing above ground: 0.
2. Depth to first Coupling: 4'
   Coupling Interval Depths: 10'
3. Total Length of Riser Pipe: 4'
4. Type of Riser Pipe: 2" DIA. PVC
5. Length of Screen: 10'
6. Type of Screen: 2" DIA. PVC, .010 SLOT
7. Length of Sump: 6"
8. Total Depth of Boring: 14.5'
9. Diameter of Boring: 6 1/4"
10. Depth to Bottom of Screen: 14'
11. Type of Screen Filter: SILICA SAND
    Quantity Used: 4cc to. Size: 20/30
12. Depth to Top of Filter: 2'
13. Type of Seal: BENTONITE
    Quantity Used: 15lb.s
14. Depth to Top of Seal: 1.5'
15. Type of Grout: NEAT CEMENT
    Grout Mixture: 15% BENTONITE, 85% PORTLAND
    Method of Placement: POURED.
16. Tot. Depth of 8 in. Steel Casing: N/A

COMMENTS ON INSTALLATION

WCH-IC

WELL CONSTRUCTION DETAIL

PROJECT OPERATIONS PLAN

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

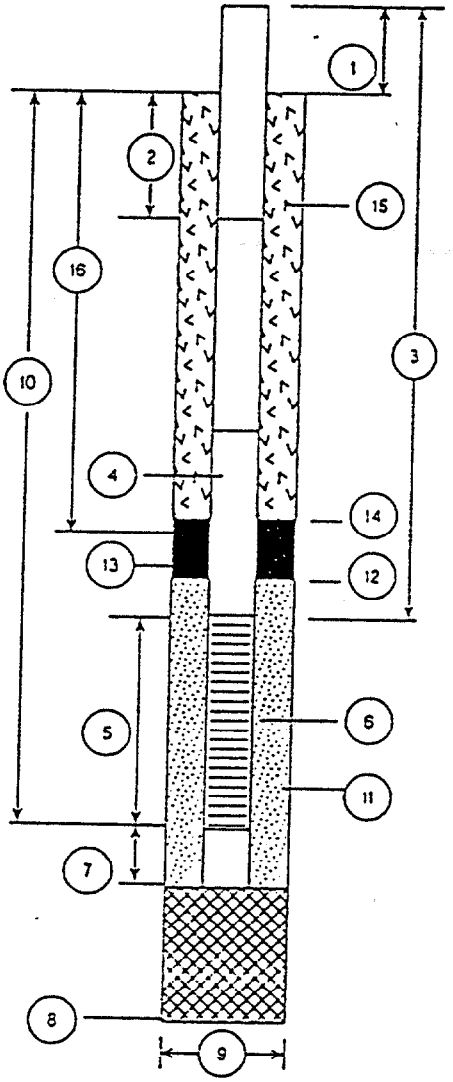
DEPARTMENT OF THE NAVY

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, SC.

WELL CONSTRUCTION DETAIL

WELL NUMBER: OLD-13-04

DATE OF INSTALLATION: 4/3/95



1. Height of Casing above ground: 0'
2. Depth to first Coupling: 9'
   Coupling Interval Depths: 10'
3. Total Length of Riser Pipe: 59'
4. Type of Riser Pipe: 2" DIA. PVC
5. Length of Screen: 5'
6. Type of Screen: 2" DIA. PVC, .010 SLOT
7. Length of Sump: 6"
8. Total Depth of Boring: 66'
9. Diameter of Boring: 6¼"
10. Depth to Bottom of Screen: 64'
11. Type of Screen Filter: SILICA SAND
    Quantity Used: 2 SC 10 Size: 20/30
12. Depth to Top of Filter: 56'
13. Type of Seal: BENTONITE
    Quantity Used: 2 16.5
14. Depth to Top of Seal: 55'
15. Type of Grout: NEAT CEMENT
    Grout Mixture: 15% BENTONITE, 85% PORTLAND
    Method of Placement: TREMMI
16. Tot. Depth of 8 in. Steel Casing: N/A

COMMENTS ON INSTALLATION

KCH-MC

WELL CONSTRUCTION DETAIL

PROJECT OPERATIONS PLAN

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

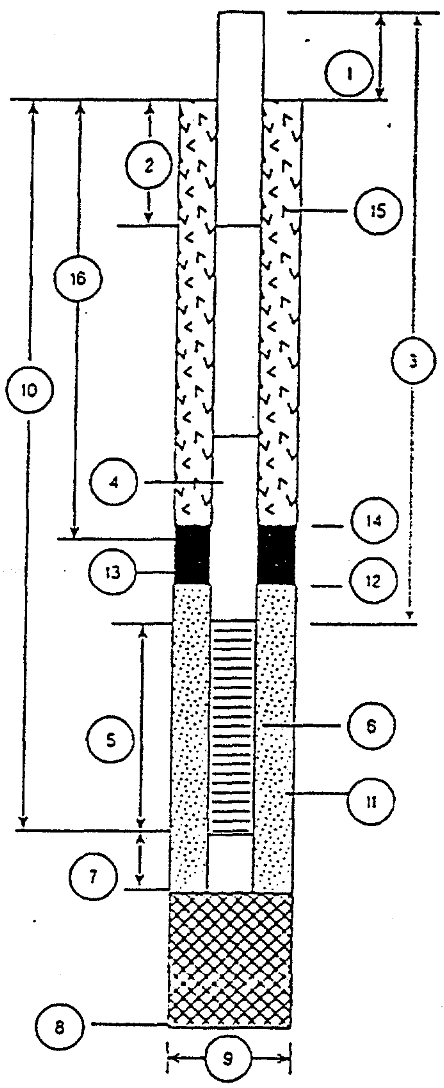
DEPARTMENT OF THE NAVY

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, SC.

WELL CONSTRUCTION DETAIL

WELL NUMBER: CLD-13-05

DATE OF INSTALLATION: 2/26/95



1. Height of Casing above ground: 0'
2. Depth to first Coupling: 5'
   Coupling Interval Depths: 10'
3. Total Length of Riser Pipe: 5'
4. Type of Riser Pipe: 2" DIA PVC
5. Length of Screen: 10'
6. Type of Screen: 2" DIA PVC, .010 SLOT
7. Length of Sump: 2'
8. Total Depth of Boring: 16'
9. Diameter of Boring: 6¼"
10. Depth to Bottom of Screen: 15'
11. Type of Screen Filter: SILICA SAND
    Quantity Used: 50 lbs / 50 lbs Size: 20/30 / 30/65
12. Depth to Top of Filter: 2'
13. Type of Seal: BENTONITE
    Quantity Used: 15 lbs
14. Depth to Top of Seal: 1.5'
15. Type of Grout: NEAT CEMENT
    Grout Mixture: 15% BENTONITE, 85% CEMENT
    Method of Placement: POURED
16. Tot. Depth of 6 in. Steel Casing: N/A

COMMENTS ON INSTALLATION

WELL CONSTRUCTION DETAIL

PROJECT OPERATIONS PLAN

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

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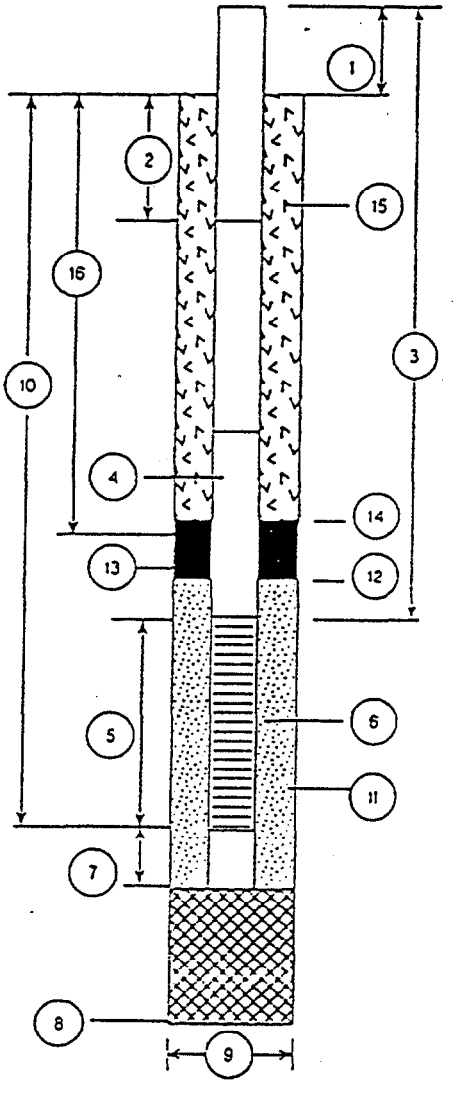
DEPARTMENT OF THE NAVY

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, SC.

WELL CONSTRUCTION DETAIL

WELL NUMBER: AD-13-06

DATE OF INSTALLATION: 3/24/95



1. Height of Casing above ground: 0'
2. Depth to first Coupling: 2'
   Coupling Interval Depths: 10'
3. Total Length of Riser Pipe: 52'
4. Type of Riser Pipe: 2" DIA. PVC
5. Length of Screen: 5'
6. Type of Screen: 2" DIA. PVC, .010 SLOT
7. Length of Sump: 6"
8. Total Depth of Boring: 58'
9. Diameter of Boring: 6 1/4"
10. Depth to Bottom of Screen: 57'
11. Type of Screen Filter: SILICA SAND
    Quantity Used: 400 lbs. Size: 20/30
12. Depth to Top of Filter: 48'
13. Type of Seal: SILICA SAND
    Quantity Used: 100 lbs. 30/65
14. Depth to Top of Seal: 45'
15. Type of Grout: NEAT CEMENT
    Grout Mixture: 15% BENTONITE, 85% CEMENT
    Method of Placement: TREMMI
16. Tot. Depth of 8 in. Steel Casing: N/A

COMMENTS ON INSTALLATION

NCI-NC

WELL CONSTRUCTION DETAIL

PROJECT OPERATIONS PLAN

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

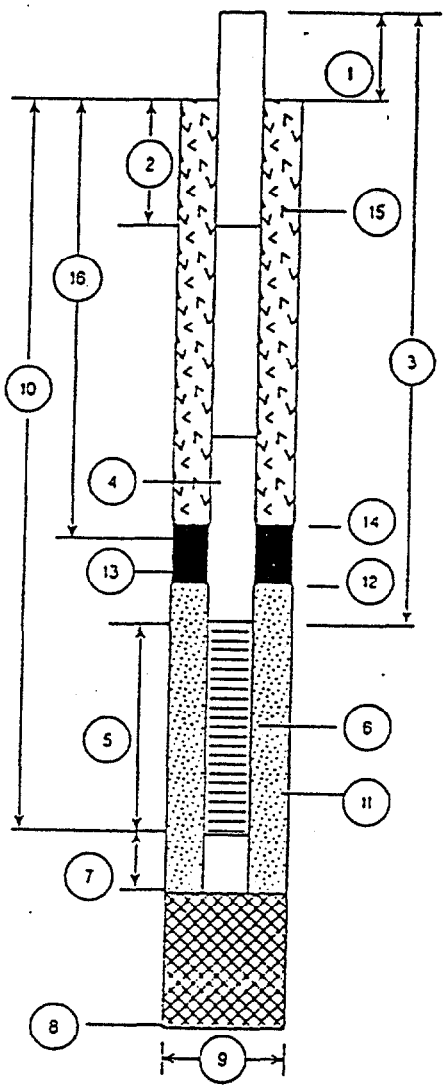
DEPARTMENT OF THE NAVY

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, SC.

WELL CONSTRUCTION DETAIL

WELL NUMBER: OLD-13-07

DATE OF INSTALLATION: 4/3/95



1. Height of Casing above ground: 0'
2. Depth to first Coupling: 4'
   Coupling Interval Depths: 5'
3. Total Length of Riser Pipe: 4'
4. Type of Riser Pipe: 2" DIA. PVC
5. Length of Screen: 15'
6. Type of Screen: 2" DIA. PVC, .010 SLOT
7. Length of Sump: 6"
8. Total Depth of Boring: 19'
9. Diameter of Boring: 6¼"
10. Depth to Bottom of Screen: 18.5'
11. Type of Screen Filter: SILICA SAND
    Quantity Used: 550lb Size: 20/30
12. Depth to Top of Filter: 4'
13. Type of Seal: BENTONITE
    Quantity Used: 20lb, 3
14. Depth to Top of Seal: 3'
15. Type of Grout: NEAT CEMENT
    Grout Mixture: 15% BENTONITE, 85% PORTLAND
    Method of Placement: POURED
16. Tot. Depth of 8 in. Steel Casing: N/A

COMMENTS ON INSTALLATION

HCH-3C

WELL CONSTRUCTION DETAIL

PROJECT OPERATIONS PLAN

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

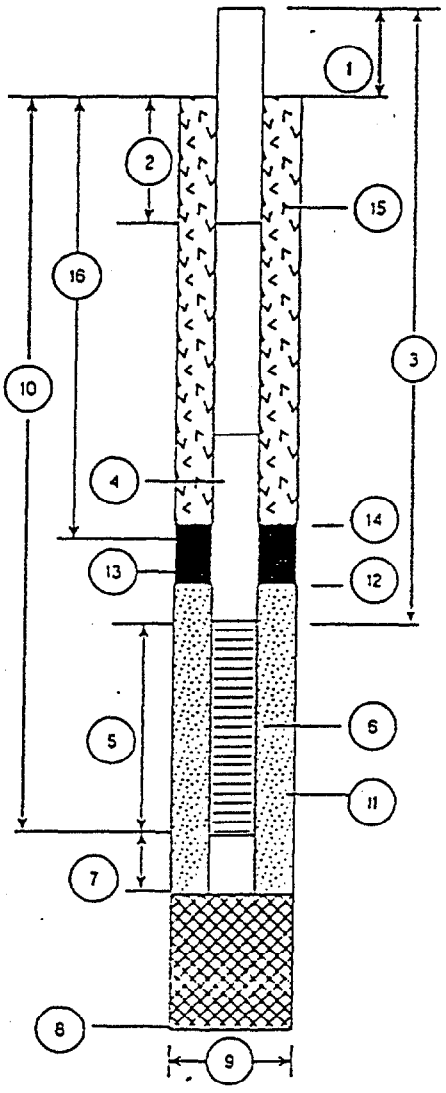
DEPARTMENT OF THE NAVY

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON, SC.

WELL CONSTRUCTION DETAIL

WELL NUMBER: OLD-13-CB

DATE OF INSTALLATION: 3/30/95



1. Height of Casing above ground: 0'
2. Depth to first Coupling: 7'
   Coupling Interval Depths: 10'
3. Total Length of Riser Pipe: 57'
4. Type of Riser Pipe: 2" DIA. PVC
5. Length of Screen: 5'
6. Type of Screen: 2" DIA. PVC, .010 SLOT
7. Length of Sump: 2'
8. Total Depth of Boring: 64'
9. Diameter of Boring: 6¼"
10. Depth to Bottom of Screen: 62'
11. Type of Screen Filter: SILICA SAND
    Quantity Used: 50 lb. 25 lb. Size: 20/30 30/65
12. Depth to Top of Filter: 54'
13. Type of Seal: BENTONITE
    Quantity Used: 25 lbs
14. Depth to Top of Seal: 53'
15. Type of Grout: NEAT CEMENT
    Grout Mixture: 15% BENTONITE, 85% PORTLAND
    Method of Placement: TREMMIE
16. Tot. Depth of 8 in. Steel Casing: N/A

COMMENTS ON INSTALLATION

KCI-NC

WELL CONSTRUCTION DETAIL

PROJECT OPERATIONS PLAN

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

APPENDIX D

SUMMARY OF DETECTIONS IN SOIL AND GROUNDWATER ANALYTICAL RESULTS

Table D-1
Summary of Detections in Soil
Analytical Results, Study Area 13

BRAC Environmental Site-Screening Report
Naval Training Center
Orlando, Florida

Lab Identifier: / Collection Date: / Feet bls:	Background [1] Screening (Subsurface/ Surface)	SCG [2]	RBC [3] for Residential Soil	RBC [3] for Industrial Soil	13B00101 02/26/95 6	13B00401 03/31/95 6	13B00501 02/26/95 1	13B00701 04/03/95 16	13B00801 03/30/95 4	13B00802 03/30/95 62
Volatile Organic Compounds (µg/kg)										
Acetone	--/--	260,000	7,800,000 n	200,000,000 n	130	--	42	--	--	--
Carbon disulfide	--/--	5,200	7,800,000 n	200,000,000 n	--	--	--	--	--	1 J
2-Butanone	--/--	2,200,000	47,000,000 n	1,000,000,000n	--	--	--	--	--	--
1,2-Dichloroethene (total)	--/--	62,000	700,000 n	18,000,000 n	6 J	--	--	10 J	--	--
Trichloroethene	--/--	[4]6,500/10	58,000 c	520,000 c	2 J	--	--	4 J	--	--
Tetrachloroethene	--/--	12,000/[4]30	12,000 c	110,000 n	31	--	4 J	220	2 J	--
General Chemistry										
pH	ND	ND	ND	ND	NA	NA	NA	7.42	NA	NA
Total Petroleum Hydrocarbons (mg/kg)										
Total Petroleum Hydrocarbons	NA/NA	ND	--	--	8.2	16.8	17.6	6.2	15.6	6.6
Inorganic Analytes (mg/kg)										
Aluminum	2,119/2,088	75,000	78,000 n	1,000,000 n	196	503	2,180	629	1,430	2,320
Arsenic	1.1/1.0	0.8	0.43 c/23 n	3.8 c/610 n	0.78 B	--	0.72 B	0.17 B	--	1.5 B
Barium	3.6/8.7	5,200	5,500 n	140,000 n	--	0.4 B	5.7 B	2.5 B	1.6 B	33.8 B
Beryllium	--/0.09	0.2	0.15 c	1.3 c	0.28 B	--	0.13 B	--	--	0.23 B
Cadmium	--/0.98	37	39 n	1,000 n	--	--	--	--	--	0.38 B
Calcium	115/25,295	ND	1,000,000	1,000,000	72.4 J	110 B	346 J	1,680	132 B	3,120
Chromium	3.7/4.6	290	390 n	10,000 n	0.97 B	1.1 B	8.6	2.5 J	1.6 B	4.9
Copper	--/4.1	ND	3,100 n	82,000 n	--	--	3.4 J	1.6 B	--	--
Iron	264/712	ND	23,000 n	610,000 n	17.9 J	96.8	36 J	91.7	280	1,480
Lead	3.9/14.5	500	400	400	0.43 J	0.35 B	8.4 J	2.2	0.7	1.8
Magnesium	32.8/328	ND	460,468	460,468	--	13.4 B	15.7 B	22.6 B	38.6 B	79.2 B
Manganese	2.1/8.1	370 n	1,800 n	47,000 n	--	0.78 B	1.6 B	1.9 J	0.8 B	4.1

See notes at end of table.

Table D-1 (Continued)
Summary of Detections in Soil
Analytical Results, Study Area 13

BRAC Environmental Site-Screening Report
Naval Training Center
Orlando, Florida

Lab Identifier: Collection Date: Feet bls:	Background [1] Screening (Subsurface/ Surface)	SCG [2]	RBC [3] for Residential Soil	RBC [3] for Industrial Soil	13B00101 02/26/95 6	13B00401 03/31/95 6	13B00501 02/26/95 1	13B00701 04/03/95 16	13B00801 03/30/95 4	13B00802 03/30/95 62
Inorganic Analytes (mg/kg) (Continued)										
Mercury	--/0.07	23	23 n	610 n	0.04 B	--	0.07	--	--	--
Nickel	--/4.4	1,500	1,600 n	41,000 n	--	--	3.1 B	--	--	2.5 B
Selenium	1.3/0.9	390	390 n	10,000 n	--	--	--	--	--	0.42 B
Sodium	--/91.4	ND	1,000,000	1,000,000	--	96.8 B	--	136 B	163 B	156 B
Thallium	--/2.0	ND	63 n	160 n	--	--	--	--	--	0.22 B
Vanadium	3.4/3.1	490	550 n	14,000 n	--	0.53 B	1.3 J	1.4 B	1.6 B	4.1 B
Zinc	5.6/17.2	23,000	23,000 n	610,000 n	0.34 B	--	0.36 B	--	--	4
Volatile Organic Compounds (µg/kg)										
Acetone	--	260,000	7,800,000 n	200,000,000 n	--	68	--	--	8 J	
2-Butanone	--	2,200,000	47,000,000 n	1,000,000,000 n	--	--	4 J	--	--	
Pesticides/PCB (µg/kg)										
4,4'-DDD	--	4,500	2,700 c	24,000 c	--	--	2.6 J	--	--	
4,4'-DDE	--	3,000	1,900 c	17,000 c	--	--	2.8 J	--	--	
Total Petroleum Hydrocarbons (mg/kg)										
Total Petroleum Hydrocarbons	--	ND	ND	ND	--	--	11.6	5.7	23.4	
Inorganic Analytes (mg/kg)										
Aluminum	2,119	75,000	78,000 n	1,000,000 n	339	290	455	703	1,030	
Arsenic	1.1	0.8	0.43 c/23 n	3.8 c/610 n	1.2 B	0.48 B	0.62 B	0.75 B	1.3 J	
Barium	3.6	5,200	5,500 n	140,000 n	0.73 B	0.71 B	2.7 B	1.8 B	2.7 B	
Calcium	115	ND	1,000,000	1,000,000	591 B	162 B	288 B	1070 B	394 B	
Chromium	3.7	290	390 n	10,000 n	1.3 B	1.8 B	4.1	1.3 B	3.3	
Copper	--	ND	3,100 n	82,000 n	--	--	2.8 B	0.75 B	1.3 B	
Iron	264	ND	23,000 n	610,000 n	58.9	53.7	183	68.4	118	
Lead	3.9	500	400	400	0.64 B	0.44 B	1.7	1.5	2.4	

See notes at end of table.

Table D-1 (Continued)
Summary of Detections in Soil
Analytical Results, Study Area 13

BRAC Environmental Site-Screening Report
Naval Training Center
Orlando, Florida

Lab Identifier: Collection Date: Feet bls	Background [1] Screening (Subsurface/ Surface)	SCG [2]	RBC [3] for Residential Soil	RBC [3] for Industrial Soil	13B00101 02/26/95 6	13B00401 03/31/95 6	13B00501 02/26/95 1	13B00701 04/03/95 16	13B00801 03/30/95 4	13B00802 03/30/95 62
Inorganic Analytes (mg/kg) (Continued)										
Magnesium	32.8	ND	460,468	460,468	18.7 B	16.4 B	31.9 B	27.4 B	33.8 B	
Manganese	2.1	370	1,800 n	47,000 n	0.42 B	0.38 B	0.92 B	1.1 B	1.3 B	
Vanadium	3.4	490	550 n	14,000 n	--	--	0.5 B	0.79 B	0.96 B	
Zinc	5.6	23,000	23,000 n	610,000 n	1 B	--	4.5 B	1.3 B	2.6 B	

[1] Background values are for subsurface soils and surface soils, respectively. The background screening value is twice the average of detected background concentrations for inorganic analytes. For organic compounds, values are the mean of detected background concentrations, presented for comparison purposes only.

[2] SCG = Soil Cleanup Goals for Florida (Florida Department of Environmental Protection [FDEP] memorandum, September 29, 1995). Arsenic value is as revised in Applicability of Soil Cleanup Goals for Florida (FDEP memorandum, January 19, 1996).Values indicated are from a residential scenario, and apply only to surface soil sample 13B00501. Chromium values are for chromium VI.

[3] RBC = Risk-Based Concentration Table, U.S. Environmental Protection Agency Region III, May 1996, R.L. Smith. RBC indicated for arsenic is based on noncarcinogenic effects. 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 (Office of Solid Waste and Emergency Response directive 9355-4-12). RBC for thallium is based on thallium chloride. For essential nutrients (calcium, iron, magnesium, potassium, and sodium) screening values were derived based on recommended daily allowances.

[4] Residential/Leaching SCGs.

Notes: BRAC = Base Realignment and Closure.
bls = below land surface.
µg/kg = microgram per kilogram.
-- = analyte/compound was not detected at reporting limit.
n = noncarcinogenic effects.
J = estimated value.
c = carcinogenic effects.
ND = not determined.
NA = not analyzed.
mg/kg = milligram per kilogram.
B = reported concentration is between the instrument detection limit and the contract-required detection limit.
PCB = polychlorinated biphenyl.
DDD = dichlorodiphenyldichloroethane.
DDE = dichlorodiphenyldichloroethene.
▒▒ = bolded/shaded value indicate exceedance of regulatory guidance and background.

All inorganic results expressed in mg/kg soil dry weight; organics in µg/kg soil dry weight.

Table D-2
Summary of Detections in Shallow Groundwater
Analytical Results, Study Area 13

BRAC Environmental Site-Screening Report
Naval Training Center
Orlando, Florida

Well ID: Lab Identifier: Collection Date:	Background [1] Screening	FDEPG	FEDMCL	RBC[2] for Tap Water	OLD-13-01A 13G00101 03/09/95	OLD-13-01A 13G00101D 03/09/95	OLD-13-03A 13G00301 04/06/95	OLD-13-05A 13G00501 03/09/95	OLD-13-07A 13G00701 04/06/95
Volatile Organic Compounds (µg/ℓ)									
cis-1,2-Dichloroethene	--	[3]70	70	61 n	29 J	30 J	5.6	6	38 J
Trichloroethene	--	[3]3	5	1.6 c	16 J	17 J	3 J	3	52
Tetrachloroethene	--	[3]3	5	1.1 c	250	270	16	7	880
General Chemistry (mg/ℓ)									
Total Suspended Solids	ND	ND	ND	ND	NA	NA	--	NA	--
Inorganic Analytes (µg/ℓ)									
Aluminum	4,067	[4]200	ND	37,000 n	--	--	51 B	1,040	89.9 B
Arsenic	5.0	[3]50	50	0.045 c/11 n	--	--	3.7 J	--	2.6 B
Barium	31.4	[3]2,000	2,000	2,600 n	2.6 B	3.2 B	2.6 B	10.2 B	3.4 B
Calcium	36,830	ND	ND	1,000,000	60,600	61,100	64,000	36,500	42,300
Copper	5.4	[4]1,000	ND	1,500 n	--	--	--	--	47.9
Iron	1,227	[4]300	ND	11,000 n	34.3 B	33.3 B	78 B	95.2 B	44.7 B
Magnesium	4,560	ND	ND	118,807	1,390 B	1,430 B	1,220 B	1,710 B	2,340 B
Manganese	17.0	[4]50	ND	840 n	6 B	5.4 B	1.7 B	2.6 B	3.1 B
Mercury	0.12	[3]2	2	11 n	--	0.14 B	--	--	--
Potassium	5,400	ND	ND	297,016	1,140 B	841 B	873 B	627 B	2,570 B
Sodium	18,222	[3]160,000	ND	396,022	7,300	7,060	2,320 B	2,060 B	14,700
Vanadium	20.6	[5]49	--	260 n	--	--	--	--	6.8 B
Zinc	4.0	[4]5,000	ND	11,000 n	1.7 B	--	--	--	--

See notes at end of table.

Table D-2 (Continued)
Summary of Detections in Shallow Groundwater
Analytical Results, Study Area 13

BRAC Environmental Site-Screening Report
Naval Training Center
Orlando, Florida

[1] Groundwater background screening value is twice the average of detected concentrations for inorganic analytes. For organic compounds, values are the mean of detected concentration, presented for comparison purposes only.
[2] RBC = Risk-Based Concentration Table, U.S. Environmental Protection Agency (USEPA) Region III, May 1996, R.L. Smith. RBC for chromium is based on chromium VI. RBC for lead is not available, value is treatment technology action limit for lead in drinking water distribution system identified in Drinking Water Standards and Health Advisories (USEPA, 1995). For essential nutrients (calcium, magnesium, potassium, and sodium) screening values were derived based on recommended daily allowances.
[3] Primary standard.
[4] Secondary standard.
[5] Systemic toxicant.

Notes: BRAC = Base Realignment and Closure.
ID = identification.
FDEPG = Florida Department of Environmental Protection, Groundwater Guidance Concentrations, June 1994.
FEDMCL = Federal Maximum Contaminant Levels, Primary Drinking Water Regulations and Health Advisories, February 1996.
µg/ℓ = microgram per liter.
n = noncarcinogenic effects.
J = estimated value.
mg/ℓ = milligram per liter.
ND = not determined.
NA = not analyzed.
-- = analyte/compound was not detected at reporting limit.
c = carcinogenic effects.
B = reported concentration is between the instrument detection limit and the contract-required detection limit.
▒▒ = bolded/shaded value indicate exceedance of regulatory guidance and background.

Table D-3
Summary of Detections in Deep Groundwater
Analytical Results, Study Area 13

BRAC Environmental Site-Screening Report
Naval Training Center
Orlando, Florida

Well ID: Lab Identifier: Collection Date:	Background [1] Screening	FDEPG	FEDMCL	RBC[2] for Tap Water	OLD-13-02C 13G00201 04/06/95	OLD-13-04C 13G00401 04/06/95	OLD-13-06C 13G00601 04/06/95	OLD-13-08C 13G00801 04/06/95
Volatile Organic Compounds (µg/ℓ)								
Chloroform	2.4	[3]100/[4]6	100	0.15 c	0.06 J	--	--	0.1 J
Trichloroethene	--	[3]3	5	1.6 c	--	--	--	0.04 J
Tetrachloroethene	--	[3]3	5	1.1 c	0.4	--	--	0.2
Xylenes (total)	--	[3]10,000/[5]20	10,000	12,000 n	0.06 J	--	--	--
Semivolatile Organic Compounds (µg/ℓ)								
bis(2-Ethylhexyl)phthalate	1	[3]6	ND	4.8 c	--	--	1	1
General Chemistry (mg/ℓ)								
Total Suspended Solids	ND	ND	ND	ND	4	--	--	108
Inorganic Analytes (µg/ℓ)								
Aluminum	4,067	[5]200	ND	37,000 n	1,380	320	588	17,300
Arsenic	5.0	[3]50	50	0.045 c/11 n	27.6	10.3	22.3	18.3
Barium	31.4	[3]2,000	2,000	2,600 n	56.6 B	16.5 B	17.3 B	145 B
Beryllium	--	[3]4	4	0.016 c	0.32 B	--	0.11 B	0.41 B
Calcium	36,830	ND	ND	1,000,000	7,360	4,970 B	8,530	9,850
Chromium	7.8	[3]100	100	180 n	7 B	--	--	20.8
Iron	1,227	[5]300	ND	11,000 n	2,010	1,870	544	1,190
Lead	4.0	[3]15	15	15	--	--	--	2.1 B
Magnesium	4,560	ND	ND	118,807	2,560 B	2,550 B	1,750 B	3,160 B
Manganese	17.0	[5]50	ND	840 n	9 B	6.4 B	6.5 B	5.8 B
Potassium	5,400	ND	ND	297,016	3,600 B	3,730 B	675 B	2,810 B
Sodium	18,222	[3]160,000	ND	396,022	13,700	12,400	12,200	15,400
Vanadium	20.6	[6]49	ND	260 n	6.4 B	3 B	--	16.9 B
Zinc	4.0	[5]5,000	ND	11,000 n	6.8 B	8.6 B	4.7 B	7.2 B

See notes at end of table.

Table D-3 (Continued)
Summary of Detections in Deep Groundwater
Analytical Results, Study Area 13

BRAC Environmental Site-Screening Report
Naval Training Center
Orlando, Florida

[1] Groundwater background screening value is twice the average of detected concentrations for inorganic analytes. For organic compounds, values are the mean of detected concentration, presented for comparison purposes only.
[2] RBC = Risk-Based Concentration Table, U.S. Environmental Protection Agency (USEPA) Region III, May, 1996, R.L. Smith. RBC for chromium is based on chromium VI. RBC for lead is not available, value is treatment technology action limit for lead in drinking water distribution system identified in Drinking Water Standards and Health Advisories (USEPA, 1995). For essential nutrients (calcium, magnesium, potassium, and sodium) screening values were derived based on recommended daily allowances.
[3] Primary standard.
[4] Carcinogen.
[5] Secondary standard.
[6] Systemic toxicant.

Notes: BRAC = Base Realignment and Closure.
ID = identification.
FDEPG = Florida Department of Environmental Protection, Groundwater Guidance Concentrations, June 1994.
FEDMCL = Federal Maximum Contaminant Levels, Primary Drinking Water Regulations and Health Advisories, February 1996.
µg/ℓ = microgram per liter.
c = carcinogenic effects.
J = estimated value.
-- = analyte/compound was not detected at reporting limit.
n = noncarcinogenic effects.
ND = not detected.
mg/ℓ = milligrams per liter.
B = reported concentration is between the instrument detection limit and the contract-required detection limit.
▒▒ = bolded/shaded value indicate exceedance of regulatory guidance and background.

APPENDIX E

SUMMARY OF ANALYTICAL RESULTS

Definition of Data Qualifiers

Naval Training Center
Orlando, Florida

Qualifier	Definition
U	Compound analyzed for but not detected at or below the reporting limit.
J	Reported concentration is an estimated quantity.
R	Data were rejected during data validation, unusable.
B (inorganics)	Reported concentration is between the instrument detection limit and the contract-required detection limit.
E	Estimated value; concentration is outside the instrument calibration range.
D	Value was determined from sample dilution.
P	Indicates greater than 25 percent difference between concentrations from original and confirmatory GC column.
NA	Not analyzed.
NJ	Presumptive evidence for the presence of the material at an estimated value.

Appendix E-1
Summary of Soil Analytical Results
Target Compound List Volatile Organics

Study Area 13
Naval Training Center, Orlando
Orlando, Florida

Sample_ID	13B00101		13B00401		13B00501		13B00701		13B00801		13B00802		13B00901		13B01001		13B01101		13B01201		13B01301	
Lab_ID	G6963001		G7243004		G6963002		G7264001		G7243001		G7243003		G6955001		G6955002		G6955003		G6955004		G6955005	
Collection Date	2/26/95		3/31/95		2/26/95		4/3/95		3/30/95		3/30/95		2/25/95		2/25/95		2/25/95		2/25/95		2/25/95	
Volatile Organics, ug/kg																						
1,1,1-Trichloroethane	13	U	11	U	12	U	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U
1,1,2,2-Tetrachloroethane	13	U	11	U	12	U	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U
1,1,2-Trichloroethane	13	U	11	U	12	U	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U
1,1-Dichloroethane	13	U	11	U	12	U	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U
1,1-Dichloroethene	13	U	11	U	12	U	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U
1,2-Dichloroethane	13	U	11	U	12	U	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U
1,2-Dichloroethene (total)	6	J	11	U	12	U	10	J	12	U	12	U	12	U	12	U	12	U	11	U	12	U
1,2-Dichloropropane	13	U	11	U	12	U	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U
2-Butanone	13	U	11	U	12	U	12	U	12	U	12	U	12	U	12	U	4	J	11	U	12	U
2-Hexanone	13	U	11	U	12	U	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U
4-Methyl-2-pentanone	13	U	11	U	12	U	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U
Acetone	130		11	U	42		12	U	12	U	12	U	58	U	68		58	U	51	U	8	J
Benzene	13	U	11	U	12	U	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U
Bromodichloromethane	13	U	11	U	12	U	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U
Bromoform	13	U	11	U	12	U	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U
Bromomethane	13	U	11	U	12	U	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U
Carbon disulfide	13	U	11	U	12	U	12	U	12	U	1	J	12	U	12	U	12	U	11	U	12	U
Carbon tetrachloride	13	U	11	U	12	U	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U
Chlorobenzene	13	U	11	U	12	U	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U
Chloroethane	13	U	11	U	12	U	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U
Chloroform	13	U	11	U	12	U	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U
Chloromethane	13	U	11	U	12	U	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U
cis-1,3-Dichloropropene	13	U	11	U	12	U	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U
Dibromochloromethane	13	U	11	U	12	U	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U
Ethylbenzene	13	U	11	U	12	U	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U
Methylene chloride	13	U	11	U	12	U	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U
Styrene	13	U	11	U	12	U	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U
Tetrachloroethene	31		11	U	4	J	220		2	J	12	U	12	U	12	U	12	U	11	U	12	U
Toluene	13	U	11	U	12	U	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U
trans-1,3-Dichloropropene	13	U	11	U	12	U	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U
Trichloroethene	2	J	11	U	12	U	4	J	12	U	12	U	12	U	12	U	12	U	11	U	12	U
Vinyl chloride	13	U	11	U	12	U	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U
Xylene (total)	13	U	11	U	12	U	12	U	12	U	12	U	12	U	12	U	12	U	11	U	12	U

Appendix E-2
Summary of Soil Analytical Results
Target Compound List Semivolatile Organics

Study Area 13
Naval Training Center, Orlando
Orlando, Florida

Sample_ID	13B00101		13B00401		13B00501		13B00701		13B00801		13B00802		13B00901		13B01001		13B01101		13B01201		13B01301	
Lab_ID	G6963001		G7243004		G6963002		G7264001		G7243001		G7243003		G6955001		G6955002		G6955003		G6955004		G6955005	
Collection Date	2/26/95		3/31/95		2/26/95		4/3/95		3/30/95		3/30/95		2/25/95		2/25/95		2/25/95		2/25/95		2/25/95	
Semivolatile Organics, ug/kg																						
1,2,4-Trichlorobenzene	390	U	360	U	410	U	390	U	380	U	410	U	390	U	410	U	390	U	380	U	410	U
1,2-Dichlorobenzene	390	U	360	U	410	U	390	U	380	U	410	U	390	U	410	U	390	U	380	U	410	U
1,3-Dichlorobenzene	390	U	360	U	410	U	390	U	380	U	410	U	390	U	410	U	390	U	380	U	410	U
1,4-Dichlorobenzene	390	U	360	U	410	U	390	U	380	U	410	U	390	U	410	U	390	U	380	U	410	U
2,2'-oxybis(1-Chloropropane)	390	U	360	U	410	U	390	U	380	U	410	U	390	U	410	U	390	U	380	U	410	U
2,4,5-Trichlorophenol	970	U	880	U	1000	U	950	U	930	U	990	U	980	U	1000	U	980	U	950	U	1000	U
2,4,6-Trichlorophenol	390	U	360	U	410	U	390	U	380	U	410	U	390	U	410	U	390	U	380	U	410	U
2,4-Dichlorophenol	390	U	360	U	410	U	390	U	380	U	410	U	390	U	410	U	390	U	380	U	410	U
2,4-Dimethylphenol	390	U	360	U	410	U	390	U	380	U	410	U	390	U	410	U	390	U	380	U	410	U
2,4-Dinitrophenol	970	U	880	U	1000	U	950	U	930	U	990	U	980	U	1000	U	980	U	950	U	1000	U
2,4-Dinitrotoluene	390	U	360	U	410	U	390	U	380	U	410	U	390	U	410	U	390	U	380	U	410	U
2,6-Dinitrotoluene	390	U	360	U	410	U	390	U	380	U	410	U	390	U	410	U	390	U	380	U	410	U
2-Chloronaphthalene	390	U	360	U	410	U	390	U	380	U	410	U	390	U	410	U	390	U	380	U	410	U
2-Chlorophenol	390	U	360	U	410	U	390	U	380	U	410	U	390	U	410	U	390	U	380	U	410	U
2-Methylnaphthalene	390	U	360	U	410	U	390	U	380	U	410	U	390	U	410	U	390	U	380	U	410	U
2-Methylphenol	390	U	360	U	410	U	390	U	380	U	410	U	390	U	410	U	390	U	380	U	410	U
2-Nitroaniline	970	U	880	U	1000	U	950	U	930	U	990	U	980	U	1000	U	980	U	950	U	1000	U
2-Nitrophenol	390	U	360	U	410	U	390	U	380	U	410	U	390	U	410	U	390	U	380	U	410	U
3,3'-Dichlorobenzidine	390	U	360	U	410	U	390	U	380	U	410	U	390	U	410	U	390	U	380	U	410	U
3-Nitroaniline	970	U	880	UJ	1000	U	950	UJ	930	UJ	990	UJ	980	U	1000	U	980	U	950	U	1000	U
4,6-Dinitro-2-methylphenol	970	U	880	U	1000	U	950	U	930	U	990	U	980	U	1000	U	980	U	950	U	1000	U
4-Bromophenyl-phenylether	390	U	360	U	410	U	390	U	380	U	410	U	390	U	410	U	390	U	380	U	410	U
4-Chloro-3-methylphenol	390	U	360	U	410	U	390	U	380	U	410	U	390	U	410	U	390	U	380	U	410	U
4-Chloroaniline	390	U	360	UJ	410	U	390	UJ	380	UJ	410	UJ	390	U	410	U	390	U	380	U	410	U
4-Chlorophenyl-phenylether	390	U	360	U	410	U	390	U	380	U	410	U	390	U	410	U	390	U	380	U	410	U
4-Methylphenol	390	U	360	U	410	U	390	U	380	U	410	U	390	U	410	U	390	U	380	U	410	U
4-Nitroaniline	970	U	880	U	1000	U	950	U	930	U	990	U	980	U	1000	U	980	U	950	U	1000	U
4-Nitrophenol	970	U	880	U	1000	U	950	U	930	U	990	U	980	U	1000	U	980	U	950	U	1000	U
Acenaphthene	390	U	360	U	410	U	390	U	380	U	410	U	390	U	410	U	390	U	380	U	410	U
Acenaphthylene	390	U	360	U	410	U	390	U	380	U	410	U	390	U	410	U	390	U	380	U	410	U
Anthracene	390	U	360	U	410	U	390	U	380	U	410	U	390	U	410	U	390	U	380	U	410	U
Benzo(a)anthracene	390	U	360	U	410	U	390	U	380	U	410	U	390	U	410	U	390	U	380	U	410	U
Benzo(a)pyrene	390	U	360	U	410	U	390	U	380	U	410	U	390	U	410	U	390	U	380	U	410	U

Appendix E-2
Summary of Soil Analytical Results
Target Compound List Semivolatile Organics

Study Area 13
Naval Training Center, Orlando
Orlando, Florida

Sample_ID	13B00101	13B00401	13B00501	13B00701	13B00801	13B00802	13B00901	13B01001	13B01101	13B01201	13B01301
Lab_ID	G6963001	G7243004	G6963002	G7264001	G7243001	G7243003	G6955001	G6955002	G6955003	G6955004	G6955005
Collection Date	2/26/95	3/31/95	2/26/95	4/3/95	3/30/95	3/30/95	2/25/95	2/25/95	2/25/95	2/25/95	2/25/95
Benzo(b)fluoranthene	390 U	360 U	410 U	390 U	380 U	410 U	390 U	410 U	390 U	380 U	410 U
Benzo(g,h,i)perylene	390 U	360 U	410 U	390 U	380 U	410 U	390 U	410 U	390 U	380 U	410 U
Benzo(k)fluoranthene	390 U	360 U	410 U	390 U	380 U	410 U	390 U	410 U	390 U	380 U	410 U
bis(2-Chloroethoxy)methane	390 U	360 U	410 U	390 U	380 U	410 U	390 U	410 U	390 U	380 U	410 U
bis(2-Chloroethyl)ether	390 U	360 U	410 U	390 U	380 U	410 U	390 U	410 U	390 U	380 U	410 U
bis(2-Ethylhexyl)phthalate	390 U	360 U	410 U	390 U	380 U	410 U	390 U	410 U	390 U	380 U	410 U
Butylbenzylphthalate	390 U	360 U	410 U	390 U	380 U	410 U	390 U	410 U	390 U	380 U	410 U
Carbazole	390 U	360 U	410 U	390 U	380 U	410 U	390 U	410 U	390 U	380 U	410 U
Chrysene	390 U	360 U	410 U	390 U	380 U	410 U	390 U	410 U	390 U	380 U	410 U
Di-n-butylphthalate	390 U	360 U	410 U	390 U	380 U	410 U	390 U	410 U	390 U	380 U	410 U
Di-n-octylphthalate	390 U	360 U	410 U	390 U	380 U	410 U	390 U	410 U	390 U	380 U	410 U
Dibenz(a,h)anthracene	390 U	360 U	410 U	390 U	380 U	410 U	390 U	410 U	390 U	380 U	410 U
Dibenzofuran	390 U	360 U	410 U	390 U	380 U	410 U	390 U	410 U	390 U	380 U	410 U
Diethylphthalate	390 U	360 U	410 U	390 U	380 U	410 U	390 U	410 U	390 U	380 U	410 U
Dimethylphthalate	390 U	360 U	410 U	390 U	380 U	410 U	390 U	410 U	390 U	380 U	410 U
Fluoranthene	390 U	360 U	410 U	390 U	380 U	410 U	390 U	410 U	390 U	380 U	410 U
Fluorene	390 U	360 U	410 U	390 U	380 U	410 U	390 U	410 U	390 U	380 U	410 U
Hexachlorobenzene	390 U	360 U	410 U	390 U	380 U	410 U	390 U	410 U	390 U	380 U	410 U
Hexachlorobutadiene	390 U	360 U	410 U	390 U	380 U	410 U	390 U	410 U	390 U	380 U	410 U
Hexachlorocyclopentadiene	390 U	360 U	410 U	390 U	380 U	410 U	390 U	410 U	390 U	380 U	410 U
Hexachloroethane	390 U	360 U	410 U	390 U	380 U	410 U	390 U	410 U	390 U	380 U	410 U
Indeno(1,2,3-cd)pyrene	390 U	360 U	410 U	390 U	380 U	410 U	390 U	410 U	390 U	380 U	410 U
Isophorone	390 U	360 U	410 U	390 U	380 U	410 U	390 U	410 U	390 U	380 U	410 U
N-Nitroso-di-n-propylamine	390 U	360 U	410 U	390 U	380 U	410 U	390 U	410 U	390 U	380 U	410 U
N-Nitrosodiphenylamine (1)	390 U	360 U	410 U	390 U	380 U	410 U	390 U	410 U	390 U	380 U	410 U
Naphthalene	390 U	360 U	410 U	390 U	380 U	410 U	390 U	410 U	390 U	380 U	410 U
Nitrobenzene	390 U	360 U	410 U	390 U	380 U	410 U	390 U	410 U	390 U	380 U	410 U
Pentachlorophenol	390 U	360 U	410 U	390 U	380 U	410 U	390 U	410 U	390 U	380 U	410 U
Phenanthrene	390 U	360 U	410 U	390 U	380 U	410 U	390 U	410 U	390 U	380 U	410 U
Phenol	390 U	360 U	410 U	390 U	380 U	410 U	390 U	410 U	390 U	380 U	410 U
Pyrene	390 U	360 U	410 U	390 U	380 U	410 U	390 U	410 U	390 U	380 U	410 U

Appendix E-3
Summary of Soil Analytical Results
Target Compound List Pesticides and PCBs

Study Area 13
Naval Training Center, Orlando
Orlando, Florida

Sample_ID	13B00101		13B00401		13B00501		13B00701		13B00801		13B00802		13B00901		13B01001		13B01001		13B01101		13B01201	
Lab_ID	G6963001		G7243004		G6963002		G7264001		G7243001		G7243003		G6955001		G6955002		G6955002R		G6955003		G6955004	
Collection Date	2/26/95		3/31/95		2/26/95		4/3/95		3/30/95		3/30/95		2/25/95		2/25/95		2/25/95		2/25/95		2/25/95	
Pesticides/PCBs, ug/kg																						
4,4'-DDD	4	U	3.6	U	4	U	3.9	U	3.8	U	4.1	U	4	U	3.9	R	3.9	U	2.6	J	3.8	U
4,4'-DDE	4	U	3.6	U	4	U	3.9	U	3.8	U	4.1	U	4	U	3.9	R	3.9	U	2.8	J	3.8	U
4,4'-DDT	4	U	3.6	U	4	U	3.9	U	3.8	U	4.1	U	4	U	3.9	R	3.9	U	3.8	U	3.8	U
Aldrin	2	U	1.9	U	2	U	2	U	2	U	2.1	U	2	U	2	R	2	U	2	U	2	U
alpha-BHC	2	U	1.9	U	2	U	2	U	2	U	2.1	U	2	U	2	R	2	U	2	U	2	U
alpha-Chlordane	2	U	1.9	U	2	U	2	U	2	U	2.1	U	2	U	2	R	2	U	2	U	2	U
Aroclor-1016	40	U	36	U	40	U	39	U	38	U	41	U	40	U	39	R	39	U	38	U	38	U
Aroclor-1221	81	U	74	U	81	U	80	U	78	U	83	U	81	U	80	R	80	U	78	U	77	U
Aroclor-1232	40	U	36	U	40	U	39	U	38	U	41	U	40	U	39	R	39	U	38	U	38	U
Aroclor-1242	40	U	36	U	40	U	39	U	38	U	41	U	40	U	39	R	39	U	38	U	38	U
Aroclor-1248	40	U	36	U	40	U	39	U	38	U	41	U	40	U	39	R	39	U	38	U	38	U
Aroclor-1254	40	U	36	U	40	U	39	U	38	U	41	U	40	U	39	R	39	U	38	U	38	U
Aroclor-1260	40	U	36	U	40	U	39	U	38	U	41	U	40	U	39	R	39	U	38	U	38	U
beta-BHC	2	U	1.9	U	2	U	2	U	2	U	2.1	U	2	U	2	R	2	U	2	U	2	U
delta-BHC	2	U	1.9	U	2	U	2	U	2	U	2.1	U	2	U	2	R	2	U	2	U	2	U
Dieldrin	4	U	3.6	U	4	U	3.9	U	3.8	U	4.1	U	4	U	3.9	R	3.9	U	3.8	U	3.8	U
Endosulfan I	2	U	1.9	U	2	U	2	U	2	U	2.1	U	2	U	2	R	2	U	2	U	2	U
Endosulfan II	4	U	3.6	U	4	U	3.9	U	3.8	U	4.1	U	4	U	3.9	R	3.9	U	3.8	U	3.8	U
Endosulfan sulfate	4	U	3.6	U	4	U	3.9	U	3.8	U	4.1	U	4	U	3.9	R	3.9	U	3.8	U	3.8	U
Endrin	4	U	3.6	U	4	U	3.9	U	3.8	U	4.1	U	4	U	3.9	R	3.9	U	3.8	U	3.8	U
Endrin aldehyde	4	U	3.6	U	4	U	3.9	U	3.8	U	4.1	U	4	U	3.9	R	3.9	U	3.8	U	3.8	U
Endrin ketone	4	U	3.6	U	4	U	3.9	U	3.8	U	4.1	U	4	U	3.9	R	3.9	U	3.8	U	3.8	U
gamma-BHC (Lindane)	2	U	1.9	U	2	U	2	U	2	U	2.1	U	2	U	2	R	2	U	2	U	2	U
gamma-Chlordane	2	U	1.9	U	2	U	2	U	2	U	2.1	U	2	U	2	R	2	U	2	U	2	U
Heptachlor	2	U	1.9	U	2	U	2	U	2	U	2.1	U	2	U	2	R	2	U	2	U	2	U
Heptachlor epoxide	2	U	1.9	U	2	U	2	U	2	U	2.1	U	2	U	2	R	2	U	2	U	2	U
Methoxychlor	20	U	19	U	20	U	20	U	20	U	21	U	20	U	20	R	20	U	20	U	20	U
Toxaphene	200	U	190	U	200	U	200	U	200	U	210	U	200	U	200	R	200	U	200	U	200	U

Appendix E-3
Summary of Soil Analytical Results
Target Compound List Pesticides and PCBs

Study Area 13
Naval Training Center, Orlando
Orlando, Florida

Sample_ID	13B01301	
Lab_ID	G6955005	
Collection Date	2/25/95	
Pesticides/PCBs, ug/kg		
4,4'-DDD	4	U
4,4'-DDE	4	U
4,4'-DDT	4	U
Aldrin	2	U
alpha-BHC	2	U
alpha-Chlordane	2	U
Aroclor-1016	40	U
Aroclor-1221	81	U
Aroclor-1232	40	U
Aroclor-1242	40	U
Aroclor-1248	40	U
Aroclor-1254	40	U
Aroclor-1260	40	U
beta-BHC	2	U
delta-BHC	2	U
Dieldrin	4	U
Endosulfan I	2	U
Endosulfan II	4	U
Endosulfan sulfate	4	U
Endrin	4	U
Endrin aldehyde	4	U
Endrin ketone	4	U
gamma-BHC (Lindane)	2	U
gamma-Chlordane	2	U
Heptachlor	2	U
Heptachlor epoxide	2	U
Methoxychlor	20	U
Toxaphene	200	U

Appendix E-4
Summary of Soil Analytical Results
Target Analyte List Metals and General Chemistry

Study Area 13
Naval Training Center, Orlando
Orlando, Florida

Sample_ID	13B00101		13B00401		13B00501		13B00701		13B00801		13B00802		13B00901		13B01001		13B01101		13B01201		13B01301	
Lab_ID	G6963001		G7243004		G6963002		G7264001		G7243001		G7243003		G6955001		G6955002		G6955003		G6955004		G6955005	
Collection Date	2/26/95		3/31/95		2/26/95		4/3/95		3/30/95		3/30/95		2/25/95		2/25/95		2/25/95		2/25/95		2/25/95	
Inorganics, mg/kg																						
Aluminum	196		503		2180		629		1430		2320		339		290		455		703		1030	
Antimony	5.4	U	2	U	5.4	U	2.1	U	2.1	U	2.2	U	5.5	U	5.6	U	5.3	U	5.2	U	5.5	U
Arsenic	0.78	B	0.15	U	0.72	B	0.17	B	0.16	U	1.5	B	1.2	J	0.48	B	0.62	B	0.75	B	1.3	J
Barium	0.47	U	0.4	B	5.7	B	2.5	B	1.6	B	33.8	B	0.73	B	0.71	B	2.7	B	1.8	B	2.7	B
Beryllium	0.28	B	0.04	U	0.13	B	0.05	U	0.05	U	0.23	B	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
Cadmium	0.74	U	0.29	U	0.74	U	0.31	U	0.3	U	0.38	B	0.75	U	0.77	U	0.72	U	0.7	U	0.76	U
Calcium	72.4	J	110	B	346	J	1680		132	B	3120		591	B	162	B	288	B	1070	B	394	B
Chromium	0.97	B	1.1	B	8.6		2.5	J	1.6	B	4.9		1.3	B	1.8	B	4.1		1.3	B	3.3	
Cobalt	0.48	U	0.67	U	0.48	U	0.65	U	0.63	U	0.91	U	0.48	U	0.49	U	0.47	U	0.45	U	0.49	U
Copper	0.53	U	0.79	U	3.4	J	1.6	B	0.87	U	1.5	U	0.53	U	0.54	U	2.8	B	0.75	B	1.3	B
Iron	17.9	J	96.8		36	J	91.7		280		1480		58.9		53.7		183		68.4		118	
Lead	0.43	J	0.35	B	8.4	J	2.2		0.7		1.8		0.64	B	0.44	B	1.7		1.5		2.4	
Magnesium	5.9	U	13.4	B	15.7	B	22.6	B	38.6	B	79.2	B	18.7	B	16.4	B	31.9	B	27.4	B	33.8	B
Manganese	0.52	U	0.78	B	1.6	B	1.9	J	0.8	B	4.1		0.42	B	0.38	B	0.92	B	1.1	B	1.3	B
Mercury	0.04	B	0.03	U	0.07		0.03	U	0.03	U	0.03	U	0.03	UJ	0.04	UJ	0.04	UJ	0.03	UJ	0.04	UJ
Nickel	2.3	U	1.1	U	3.1	B	1.2	U	1.2	U	2.5	B	2.3	U	2.4	U	2.2	U	2.2	U	2.3	U
Potassium	112	U	101	U	113	U	110	U	107	U	113	U	113	U	116	U	110	U	107	U	115	U
Selenium	0.55	U	0.13	U	0.55	U	0.14	U	0.14	U	0.42	B	0.54	U	0.57	U	0.54	U	0.53	U	0.55	U
Silver	0.65	U	0.5	U	0.65	U	0.55	U	0.54	U	0.57	U	0.65	U	0.67	U	0.63	U	0.61	U	0.66	U
Sodium	6.2	U	96.8	B	5.9	U	136	B	163	B	156	B	5.4	U	5.5	U	5.2	U	5.1	U	5.4	U
Thallium	0.43	U	0.13	UJ	0.43	U	0.14	U	0.14	UJ	0.22	B	0.43	U	0.45	U	0.42	U	0.42	U	0.44	U
Vanadium	0.5	UJ	0.53	B	1.3	J	1.4	B	1.6	B	4.1	B	0.51	U	0.52	U	0.5	B	0.79	B	0.96	B
Zinc	0.34	B	1.1	U	0.36	B	2.2	U	1.3	U	4		1	B	0.47	U	4.5	B	1.3	B	2.6	B
General chemistry																						
pH (units)	NA		NA		NA		7.42		NA		NA		NA		NA		NA		NA		NA	
Total Petroleum Hydrocarbons, mg/k	8.2		16.8		17.6		6.2		15.6		6.6		4.8	U	5.8	U	11.6		5.7		23.4	

Appendix E-5
Summary of Groundwater Analytical Results
Low Detection Limit Volatile Organics

Study Area 13
Naval Training Center, Orlando
Orlando, Florida

Sample_ID	13G00101		13G00101D		13G00201		13G00301		13G00401		13G00501		13G00601		13G00701		13G00801	
Lab_ID	G7063005		G7063006		G7289007		G7289008		G7289009		G7063007		G7289006		G7289010		G7289011	
Collection Date	3/9/95		3/9/95		4/6/95		4/6/95		4/6/95		3/9/95		4/6/95		4/6/95		4/6/95	
Volatile Organics, ug/L																		
1,1,1-Trichloroethane	40	U	40	U	1	U	5	U	1	U	1	U	1	U	250	U	1	U
1,1,2,2-Tetrachloroethane	40	U	40	U	1	U	5	U	1	U	1	U	1	U	250	U	1	U
1,1,2-Trichloroethane	40	U	40	U	1	U	5	U	1	U	1	U	1	U	250	U	1	U
1,1-Dichloroethane	40	U	40	U	1	U	5	U	1	U	1	U	1	U	250	U	1	U
1,1-Dichloroethene	40	U	40	U	1	U	5	U	1	U	1	U	1	U	250	U	1	U
1,2-Dibromo-3-chloropropa	40	R	40	R	1	R	5	R	1	R	1	R	1	R	250	R	1	R
1,2-Dibromoethane	40	U	40	U	1	U	5	U	1	U	1	U	1	U	250	U	1	U
1,2-Dichloroethane	40	U	40	U	1	U	5	U	1	U	1	U	1	U	250	U	1	U
1,2-Dichloropropane	40	U	40	U	1	U	5	U	1	U	1	U	1	U	250	U	1	U
2-Butanone	200	R	200	R	5	R	25	R	5	R	5	R	5	R	1200	R	5	R
2-Hexanone	200	U	200	U	5	U	25	U	5	U	5	U	5	U	1200	U	5	U
4-Methyl-2-pentanone	200	U	200	U	5	U	25	U	5	U	5	U	5	U	1200	U	5	U
Acetone	200	R	200	R	5	R	25	R	5	R	5	R	5	R	1200	R	5	R
Benzene	40	U	40	U	1	U	5	U	1	U	1	U	1	U	250	U	1	U
Bromochloromethane	40	U	40	U	1	U	5	U	1	U	1	U	1	U	250	U	1	U
Bromodichloromethane	40	U	40	U	1	U	5	U	1	U	1	U	1	U	250	U	1	U
Bromoform	40	U	40	U	1	U	5	U	1	U	1	U	1	U	250	U	1	U
Bromomethane	40	U	40	U	1	U	5	U	1	U	1	U	1	U	250	U	1	U
Carbon disulfide	40	U	40	U	1	U	5	U	1	U	1	U	1	U	250	U	1	U
Carbon tetrachloride	40	U	40	U	1	U	5	U	1	U	1	U	1	U	250	U	1	U
Chlorobenzene	40	U	40	U	1	U	5	U	1	U	1	U	1	U	250	U	1	U
Chloroethane	40	U	40	U	1	U	5	U	1	U	1	U	1	U	250	U	1	U
Chloroform	40	U	40	U	0.06	J	5	U	1	U	1	U	1	U	250	U	0.1	J
Chloromethane	40	U	40	U	1	U	5	U	1	U	1	U	1	U	250	U	1	U
cis-1,2-Dichloroethene	29	J	30	J	1	U	5.6		1	U	6		1	U	38	J	1	U
cis-1,3-Dichloropropene	40	U	40	U	1	U	5	U	1	U	1	U	1	U	250	U	1	U
Dibromochloromethane	40	U	40	U	1	U	5	U	1	U	1	U	1	U	250	U	1	U
Ethylbenzene	40	U	40	U	1	U	5	U	1	U	1	U	1	U	250	U	1	U
Methylene chloride	80	U	80	U	2	U	10	U	2	U	2	U	2	U	500	U	2	U
Styrene	40	U	40	U	1	U	5	U	1	U	1	U	1	U	250	U	1	U
Tetrachloroethene	250		270		0.4		16		1	U	7		1	U	680		0.2	
Toluene	40	U	40	U	1	U	5	U	1	U	1	U	1	U	250	U	1	U
trans-1,2-Dichloroethene	40	U	40	U	1	U	5	U	1	U	1	U	1	U	250	U	1	U
trans-1,3-Dichloropropene	40	U	40	U	1	U	5	U	1	U	1	U	1	U	250	U	1	U
Trichloroethene	16	J	17	J	1	U	3	J	1	U	3		1	U	52		0.04	J
Vinyl chloride	40	U	40	U	1	U	5	U	1	U	1	U	1	U	250	U	1	U
Xylene (total)	40	U	40	U	0.06	J	5	U	1	U	1	U	1	U	250	U	1	U

Appendix E-6
Summary of Groundwater Analytical Results
Target Compound List Semivolatile Organics

Study Area 13
Naval Training Center, Orlando
Orlando, Florida

Sample_ID	13G00101		13G00101D		13G00201		13G00301		13G00401		13G00501		13G00601		13G00701		13G00801	
Lab_ID	G7063005		G7063006		G7289007		G7289008		G7289009		G7063007		G7289006		G7289010		G7289011	
Collection Date	3/9/95		3/9/95		4/6/95		4/6/95		4/6/95		3/9/95		4/6/95		4/6/95		4/6/95	
Semivolatile Organics, ug/L																		
1,2,4-Trichlorobenzene	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
1,2-Dichlorobenzene	40	U	40	U	1	U	5	U	1	U	1	U	1	U	250	U	1	U
1,3-Dichlorobenzene	40	U	40	U	1	U	5	U	1	U	1	U	1	U	250	U	1	U
1,4-Dichlorobenzene	40	U	40	U	1	U	5	U	1	U	1	U	1	U	250	U	1	U
2,2'-oxybis(1-Chloropropane)	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2,4,5-Trichlorophenol	25	U	25	U	25	U	25	U	25	U	25	U	25	U	25	U	25	U
2,4,6-Trichlorophenol	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2,4-Dichlorophenol	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2,4-Dimethylphenol	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2,4-Dinitrophenol	25	U	25	U	25	U	25	U	25	U	25	U	25	U	25	U	25	U
2,4-Dinitrotoluene	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2,6-Dinitrotoluene	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2-Chloronaphthalene	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2-Chlorophenol	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2-Methylnaphthalene	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2-Methylphenol	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2-Nitroaniline	25	U	25	U	25	U	25	U	25	U	25	U	25	U	25	U	25	U
2-Nitrophenol	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
3,3'-Dichlorobenzidine	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
3-Nitroaniline	25	U	25	U	25	U	25	U	25	U	25	U	25	U	25	U	25	U
4,6-Dinitro-2-methylphenol	25	U	25	U	25	U	25	U	25	U	25	U	25	U	25	U	25	U
4-Bromophenyl-phenylether	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
4-Chloro-3-methylphenol	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
4-Chloroaniline	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
4-Chlorophenyl-phenylether	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
4-Methylphenol	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
4-Nitroaniline	25	U	25	U	25	U	25	U	25	U	25	U	25	U	25	U	25	U
4-Nitrophenol	25	U	25	U	25	U	25	U	25	U	25	U	25	U	25	U	25	U
Acenaphthene	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Acenaphthylene	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Anthracene	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Benzo(a)anthracene	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Benzo(a)pyrene	0.1	U	0.1	U	0.02	U	0.02	U	0.02	U	0.1	U	0.02	U	0.02	U	0.02	U
Benzo(b)fluoranthene	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Benzo(g,h,i)perylene	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Benzo(k)fluoranthene	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U

Appendix E-6
Summary of Groundwater Analytical Results
Target Compound List Semivolatile Organics

Study Area 13
Naval Training Center, Orlando
Orlando, Florida

Sample_ID	13G00101	13G00101D	13G00201	13G00301	13G00401	13G00501	13G00601	13G00701	13G00801
Lab_ID	G7063005	G7063006	G7289007	G7289008	G7289009	G7063007	G7289006	G7289010	G7289011
Collection Date	3/9/95	3/9/95	4/6/95	4/6/95	4/6/95	3/9/95	4/6/95	4/6/95	4/6/95
bis(2-Chloroethoxy)methane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethyl)ether	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	1 U	8 U	1 U	1 U	1 U	1 U	1	1 U	1
Butylbenzylphthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbazole	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-butylphthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-octylphthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibenz(a,h)anthracene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibenzofuran	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Diethylphthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dimethylphthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Hexachlorobutadiene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Isophorone	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
N-Nitroso-di-n-propylamine	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
N-Nitrosodiphenylamine (1)	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Phenanthrene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Phenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pyrene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Appendix E-7
Summary of Groundwater Analytical Results
Target Compound List Pesticides and PCBs

Study Area 13
Naval Training Center, Orlando
Orlando, Florida

Sample_ID	13G00101		13G00101D		13G00201		13G00301		13G00401		13G00501		13G00601		13G00701		13G00801	
Lab_ID	G7063005		G7063006		G7289007		G7289008		G7289009		G7063007		G7289006		G7289010		G7289011	
Collection Date	3/9/95		3/9/95		4/6/95		4/6/95		4/6/95		3/9/95		4/6/95		4/6/95		4/6/95	
Pesticides/PCBs, ug/L																		
4,4'-DDD	0.1	UJ	0.1	U	0.1	UJ	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
4,4'-DDE	0.1	UJ	0.1	U	0.1	UJ	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
4,4'-DDT	0.1	UJ	0.1	U	0.1	UJ	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Aldrin	0.05	UJ	0.05	U	0.05	UJ	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
alpha-BHC	0.05	UJ	0.05	U	0.05	UJ	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
alpha-Chlordane	0.05	UJ	0.05	U	0.05	UJ	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
Aroclor-1016	0.5	UJ	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Aroclor-1221	0.5	UJ	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Aroclor-1232	0.5	UJ	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Aroclor-1242	0.5	UJ	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Aroclor-1248	0.5	UJ	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Aroclor-1254	0.5	UJ	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Aroclor-1260	0.5	UJ	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
beta-BHC	0.05	UJ	0.05	U	0.05	UJ	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
delta-BHC	0.05	UJ	0.05	U	0.05	UJ	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
Dieldrin	0.1	UJ	0.1	U	0.1	UJ	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Endosulfan I	0.05	UJ	0.05	U	0.05	UJ	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
Endosulfan II	0.1	UJ	0.1	U	0.1	UJ	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Endosulfan sulfate	0.1	UJ	0.1	U	0.1	UJ	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Endrin	0.1	UJ	0.1	U	0.1	UJ	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Endrin aldehyde	0.1	UJ	0.1	U	0.1	UJ	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Endrin ketone	0.1	UJ	0.1	U	0.1	UJ	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
gamma-BHC (Lindane)	0.05	UJ	0.05	U	0.05	UJ	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
gamma-Chlordane	0.05	UJ	0.05	U	0.05	UJ	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
Heptachlor	0.05	UJ	0.05	U	0.05	UJ	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
Heptachlor epoxide	0.05	UJ	0.05	U	0.05	UJ	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
Methoxychlor	0.5	UJ	0.5	U	0.5	UJ	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Toxaphene	5	UJ	5	U	5	UJ	5	U	5	U	5	U	5	U	5	U	5	U

Appendix E-8
Summary of Groundwater Analytical Results
Target Analyte List Metals and General Chemistry

Study Area 13
Naval Training Center, Orlando
Orlando, Florida

Sample_ID	13G00101		13G00101D		13G00201		13G00301		13G00401		13G00501		13G00601		13G00701		13G00801	
Lab_ID	G7063005		G7063006		G7289007		G7289008		G7289009		G7063007		G7289006		G7289010		G7289011	
Collection Date	3/9/95		3/9/95		4/6/95		4/6/95		4/6/95		3/9/95		4/6/95		4/6/95		4/6/95	
Inorganics, ug/L																		
Aluminum	87.2	U	56.8	U	4380		51	B	320		1040		588		89.9	B	17300	
Antimony	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
Arsenic	1.9	U	1.9	U	27.6		3.7	J	10.3		1.9	U	22.3		2.6	B	18.3	
Barium	2.6	B	3.2	B	56.6	B	2.6	B	16.5	B	10.2	B	17.3	B	3.4	B	145	B
Beryllium	0.2	U	0.2	U	0.32	B	0.1	U	0.1	U	0.2	U	0.11	B	0.1	U	0.41	B
Cadmium	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U	3.1	U
Calcium	60600		61100		7360		64000		4970	B	36500		8530		42300		9850	
Chromium	2.5	U	2.5	U	7	B	3.1	U	3.1	U	2.5	U	3.1	U	3.1	U	20.8	
Cobalt	2	U	2	U	2.9	U	2.9	U	2.9	U	2	U	2.9	U	2.9	U	2.9	U
Copper	2.2	UJ	2.2	UJ	2	U	1.4	U	1.7	U	2.2	UJ	1.4	U	47.9		2.9	U
Iron	34.3	B	33.3	B	2010		78	B	1870		95.2	B	544		44.7	B	1190	
Lead	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U	2.1	B
Magnesium	1390	B	1430	B	2560	B	1220	B	2550	B	1710	B	1750	B	2340	B	3160	B
Manganese	6	B	5.4	B	9	B	1.7	B	6.4	B	2.6	B	6.5	B	3.1	B	5.8	B
Mercury	0.12	U	0.14	B	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U
Nickel	9.6	U	9.6	U	14.2	U	14.2	U	14.2	U	9.6	U	14.2	U	14.2	U	14.2	U
Potassium	1140	B	841	B	3600	B	873	B	3730	B	627	B	675	B	2570	B	2810	B
Selenium	2.3	U	2.3	U	2.3	UJ	2.3	UJ	2.3	UJ	2.3	U	2.3	UJ	2.3	UJ	2.3	UJ
Silver	2.7	U	2.7	U	2.6	U	2.6	U	2.6	U	2.7	U	2.6	U	2.6	U	2.6	U
Sodium	7300		7060		13700		2320	B	12400		2060	B	12200		14700		15400	
Thallium	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	UJ	1.8	U	1.8	U
Vanadium	2.1	U	2.1	U	6.4	B	2.5	U	3	B	2.1	U	2.5	U	6.8	B	16.9	B
Zinc	1.7	B	1.2	U	6.8	B	1.1	U	8.6	B	1.2	U	4.7	B	1.1	U	7.2	B
General chemistry, mg/L																		
Total Petroleum Hydrocarbons	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Total Suspended Solids	1	U	NA		4		1	U	1	U	1	U	1	U	1	U	108	

APPENDIX F

FIELD GC RESULTS

TABLE L-1
FIELD GC RESULTS
STUDY AREA 13
GROUP II SITE SCREENING

	SAMPLE ID	DEPTH (FT)	BENZENE	TOLUENE	ETHYLBENZENE	M-,P-XYLENE	O-XYLENE	TCE	PCE	DCA	ΣBETX	Σchlor	ΣVOCs
1	13P00201	6							601.0			601.0	601.0
2	13P00202	12							6.3			6.3	6.3
3	13P00203	18							0.5			0.5	0.5
4	13P00204	24		3.8					1252.0		3.8	1252.0	1255.8
5	13P00205	30							26.7			26.7	26.7
6	13P00206	36							6.3			6.3	6.3
7	13P00207	42							204.0			204.0	204.0
8	13P00208	48							13.1			13.1	13.1
9	13P00209	54							12.5			12.5	12.5
10	13P00210	60											
11	13P00211	64		12.0		3.9	0.7		6.5		16.6	6.5	23.1
12	13P00401	6							16.0			16.0	16.0
13	13P00402	8						2.6	115.0			117.6	117.6
14	13P00403	12							4.6			4.6	4.6
15	13P00404	18											
16	13P00405	24											
17	13P00406	30											
18	13P00407	36											
19	13P00408	42											
20	13P00409	48											
21	13P00410	54											
22	13P00411	60											
23	13P00412	66											
24	13P00601	6							9.1			9.1	9.1
25	13P00602	12											
26	13P00603	18			0.8	9.5	3.2		0.8		13.5	0.8	14.3
27	13P00604	24		4.0		4.9	6.9				15.8		15.8
28	13P00605	30					4.8				4.8		4.8
29	13P00606	36											
30	13P00607	42			1.0	10.0	4.4				15.4		15.4
31	13P00608	48				5.0					5.0		5.0
32	13P00609	54											
34	13P00610	60											
35	13P00801	6						21.0	702.0			723.0	723.0
36	13P00802	12						14.0	2522.0			2536.0	2536.0
37	13P00803	18						1294.0	3774.0			5068.0	5068.0
38	13P00804	24						284.0	5.8			289.8	289.8
39	13P00805	30							11.6			11.6	11.6
40	13P00806	36						8.6	9.3			17.9	17.9
41	13P00807	42											
42	13P00808	48											
43	13P00809	54											
44	13P00810	60							2.8			2.8	2.8
45	13P00811	64							6.6			6.6	6.6