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# FACT SHEET UPDATE ON REMEDIAL ACTIVITIES AT OPERABLE UNIT 4 (OU 4) NTC ORLANDO FL

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# FACT SHEET

March 2002

*This fact sheet was developed to inform interested citizens about the Naval Training Center (NTC), Orlando environmental program. Fact Sheets will be distributed periodically to keep the community informed. Additional copies of these fact sheets can be obtained by calling the NTC Environmental Coordinator Office at (843) 820-5566.*

## Naval Training Center

Orlando, Florida

Update on Remedial Activities at OU 4

### Site Description

Operable Unit 4 (OU 4) occupies approximately 7 acres in the northwestern section of Area C. Area C is located approximately 1 mile west of the Main Base. Figure 1 shows the location of OU 4, immediately adjacent to Lake Druid. The western half of the site is wooded with dense vegetation on the shore of Lake Druid; the eastern half is occupied by Building 1100 and asphalt paving. Building 1100 housed the base dry cleaning and laundry facility from 1941 to 1994, when it was permanently closed. Since approximately 1958, the facility had used tetrachloroethene (PCE), a solvent that was commonly used for dry cleaning.

### Previous Site Investigations and Cleanups

Environmental investigations at the site began in 1994. During these investigations, samples were collected from the groundwater, subsurface soil, sediment of Lake Druid, soil gas, surface soil, and surface water from Lake Druid. Chlorinated volatile organic compounds (CVOCs) were detected at concentrations exceeding Federal and State cleanup standards in all media, including the original contaminant PCE and by-products of its natural subsurface degradation such as trichloroethylene (TCE) and cis- 1,2 dichloroethylene (DCE). Antimony was also detected in groundwater above Florida drinking water standards. Additionally, arsenic, polynuclear aromatic hydrocarbon (PAH), and polychlorinated biphenyl (PCB) were detected in surface soil onsite. To reduce the risk of human exposure, a small quantity of contaminated soil from these areas was excavated and disposed offsite in 1999. To address the presence of CVOCs above cleanup standards in Lake Druid surface water, a groundwater recirculation well system was installed in 1998 to intercept groundwater containing concentrations greater than 100 parts per billion (ppb) of total CVOCs from entering Lake Druid. The groundwater recirculation well system consisted of two wells that simultaneously pumped contaminated water out and reinjected treated groundwater to create a circulation zone below ground that captured all contaminants fl owing into its zone of influence. After some initial success, the recirculation system was shutdown and replaced after 2 years due to operational difficulties.

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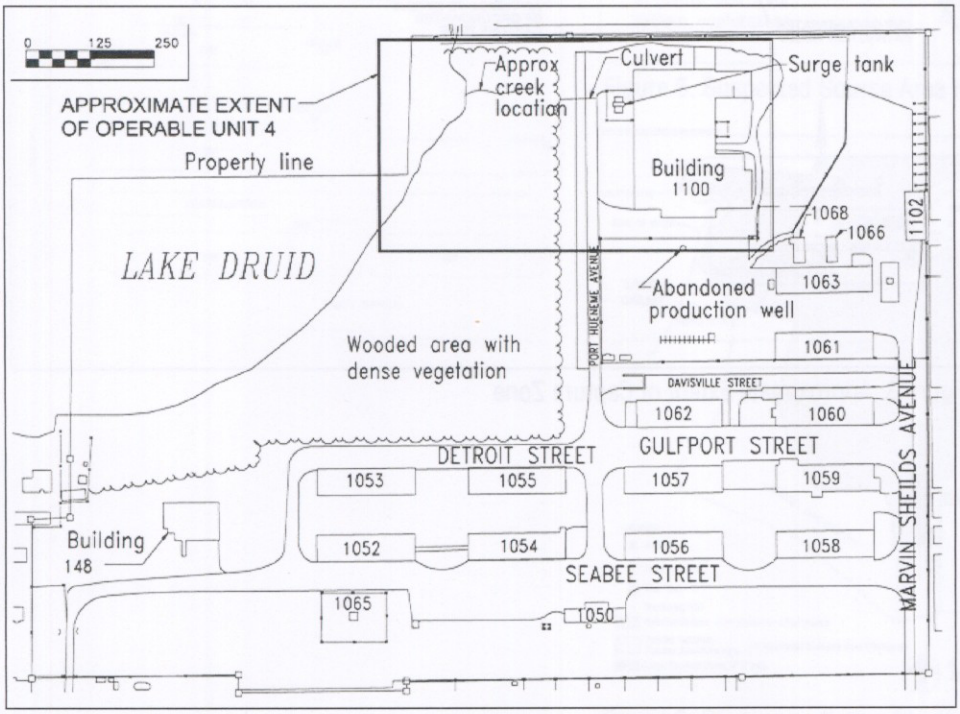


Figure 1. OU 4 Site Location Map

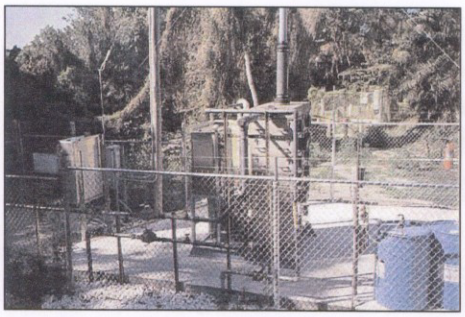

Figure 2. Above-ground Air Stripping Unit

## Update Groundwater Interim Remedial Action

In 2000 to 2001, the existing recirculation system was replaced with a more conventional groundwater extraction and treatment system. The objective of the system upgrade was the same as the original system, to prevent migration of groundwater containing greater than 100 ppb of total CVOCs to Lake Druid.

The system began operations in January 2001 and completed successful startup testing in March 2001. The system has been operating successfully since January 2001. Figure 3 illustrates the approximate extent of the capture zone as it relates to total CVOC concentrations in groundwater. It shows that the system is meeting its objective to capture all groundwater containing greater than 100 ppb total CVOC.

## Update on the Remedial Action

Eight alternatives were considered to remediate CVOCs in groundwater. For all of the CVOC cleanup alternatives; the current groundwater treatment system) would continue to operate until the levels of organic contaminants in the groundwater are low enough that natural processes would "polish" the contaminants to FDEP surface water standards. Earlier studies estimated that if the concentration of CVOCs in the source area near the laundry building could be reduced to approximately 100 micrograms per liter (ug/L), natural processes (such as biodegradation) would further reduce the CVOCs to FDEP surface water criteria before the plume reaches Lake Druid. The aboveground air stripping unit is shown in Figure 2.

After careful consideration of the conditions at OU 4, comparison of cleanup alternatives, and consideration of the proposed reuse of the area, the Orlando Partnering Team selected Chemical Oxidation, Natural Attenuation, and Phytoremediation to address site contamination. Chemical oxidation (with potassium permanganate) will be used to remediate the source area adjacent to and under the laundry building. The remaining areas of the contaminant plume will

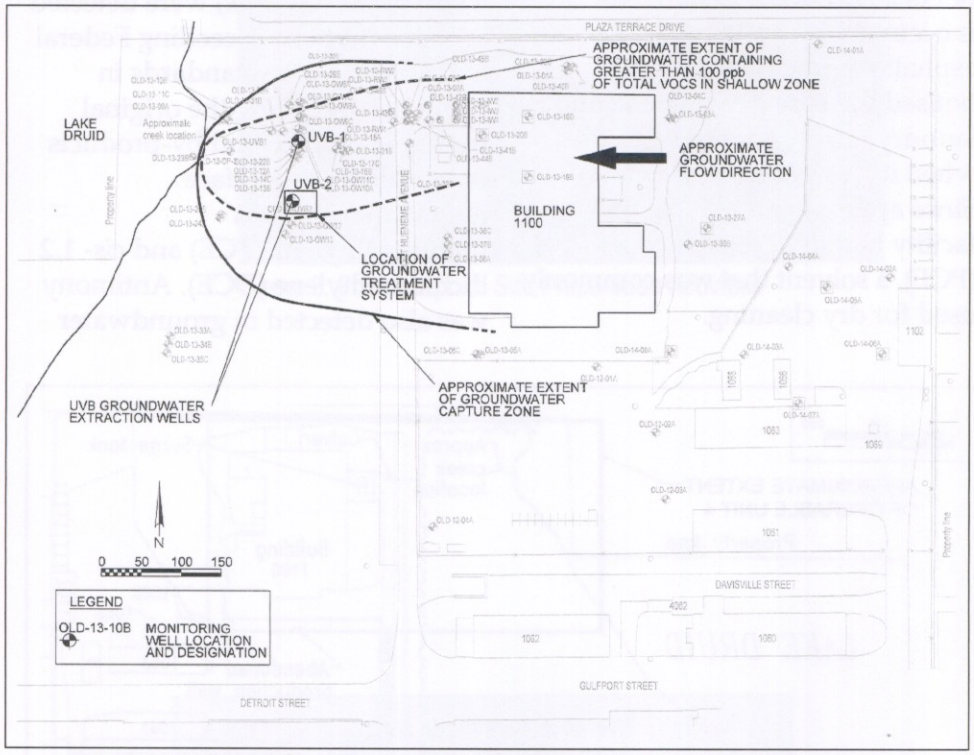


Figure 3. Approximate Extent of Capture Zone

undergo natural attenuation with residual contamination treated by phytoremediation. The area to be treated by the chemical oxidation system is shown on Figure 4. The areas of the site that will be addressed as part of the phytoremediation component of the remedial action is shown on Figure 5. The phytoremediation will consist of a dense planting of hybrid poplar and willow trees to aid in the destruction of CVOCs in groundwater. Phytoremediation has become a more common approach for remediating CVOCs; the OU 4 design has been prepared in partnership with researchers from the University of Georgia. Long-term groundwater monitoring and institutional controls to restrict groundwater use will be implemented to address the antimony plume at the site. The antimony plume will be closely monitored, although the plume currently appears to be stable and is not expected to be of major concern in the future. Figure 6 shows the location of the antimony plume.

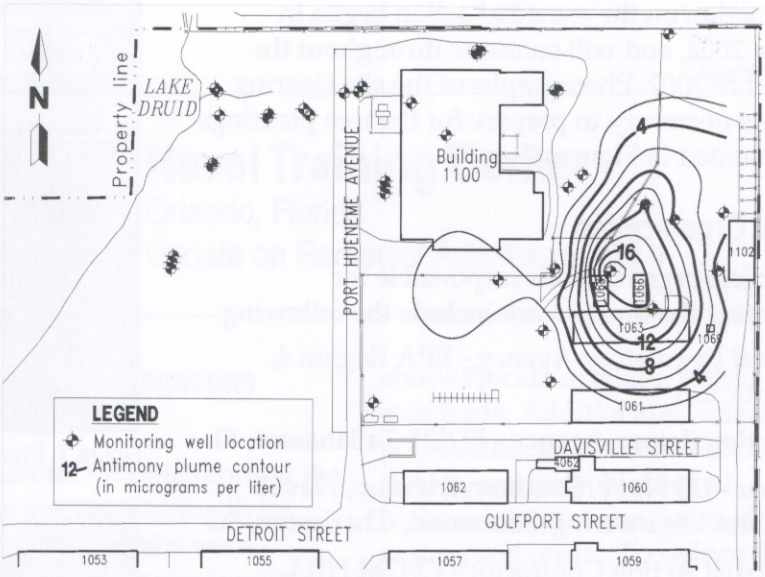


Figure 4. Approximate Horizontal Extent of Antimony Plume

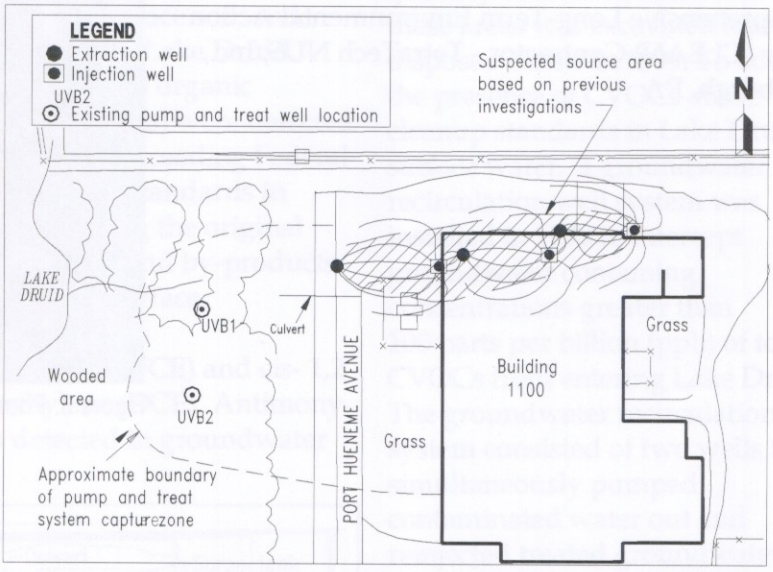


Figure 5. Suspected Source Area to be Treated with Chemical Oxidation

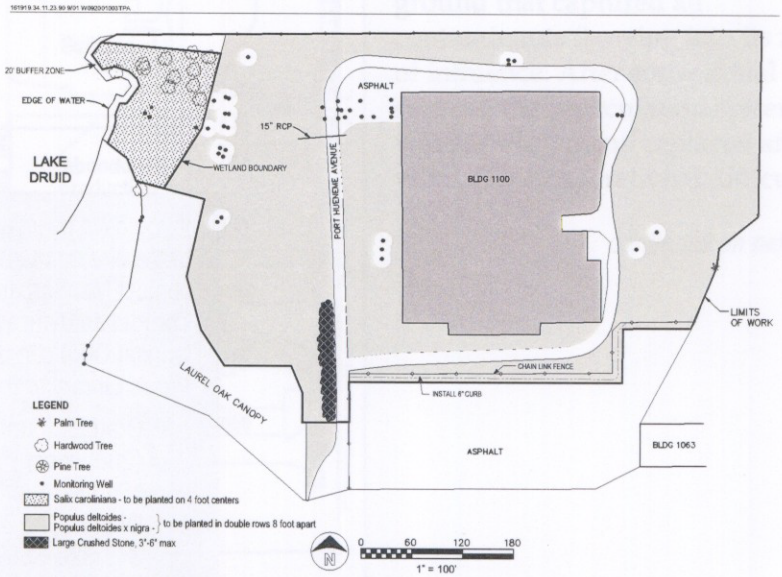


Figure 6. Phytoremediation Planting Plan

Construction on the remedial action began in January 2002, and will continue throughout the summer of 2002. Photographs of the site clearing activities necessary to prepare for the tree plantings are presented in Figures 7 and 8.

## Project Organization

The project organizations responsible for performing the onsite work include the following:

- Federal Regulatory Agency - EPA Region 4, Atlanta, GA
- State Regulatory Agency - FDEP, Tallahassee, FL
- Owner - US Navy, Southern Division, Naval Facilities Engineering Command, Charleston, SC
- Remedial Action Contractor - CH2M HILL Constructors, Inc., Atlanta, GA
- Comprehensive Long-Term Environmental Action Navy (CLEAN) Contractor - TetraTech NUS, Inc., Pittsburgh, PA

Figure 7. Photograph of Site Preparation Activities

Figure 8. Photograph of Site Preparation Activities

If you have questions about the Navy's action at OU 4, or the environmental program at NTC, Orlando, please contact Ms. Barbara Nwokike at the NTC Environmental Coordinator Office (407/ 895- 6714). Reports on the work at OU 4 can be reviewed at the Orange County Public Library at the following address:

Orange County Public Library, Orlando Branch
(2nd Floor)
101 East Central Boulevard
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