



# Naval Submarine Base - New London

SITE 15 - SPENT ACID STORAGE AND DISPOSAL AREA AND SITE 18 - SOLVENT STORAGE AREA GROUNDWATER, AND SITE 16 - HOSPITAL INCINERATOR AND SITE 18 - SOLVENT STORAGE AREA SOIL - OPERABLE UNIT 11  
PROPOSED PLAN

## Introduction

In accordance with Section 117 of the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)**, the law more commonly known as Superfund, this **Proposed Plan** summarizes the Navy's preferred remedies for the groundwater at Site 15 - Spent Acid Storage and Disposal Area and Site 18 - Solvent Storage Area (Building 33), and the soil at Site 16 - Hospital Incinerator and Site 18. Sites 15, 16, and 18 are three of 25 sites at Naval Submarine Base - New London (NSB-NLON), Groton, Connecticut (Figure 1) being addressed by the Navy's **Installation Restoration (IR) Program**. The **IR Program** is being conducted to identify and clean up sites created by past operations that do not meet today's environmental standards. A total of 11 **Operable Units (OUs)** have been defined to date at NSB-NLON to address portions of the 25 IR Program sites.

The groundwater at Sites 15 and 18 is only a portion of the Basewide Groundwater **OU 9**. The proposed remedy for the groundwater at these two sites is the first and final action and the remaining portions of **OU 9** will be addressed in future decision documents. The soil at Site 15 [**OU 6**] was addressed previously in a separate decision document. The soil at Sites 16 and 18 has been designated **OU 11**. The proposed remedy for **OU 11** is the first and final action.

Detailed descriptions of Sites 16 and 18 are provided in the **Basewide Groundwater Operable Unit Remedial Investigation (BGOURI) Report**. A description of Site 15 is provided in both the **BGOURI Report** and in the **BGOURI Update/Feasibility Study (FS) Report**. Both documents are available in the Information Repositories at the locations identified on page 7. The soil associated with Site 15 (**OU 6**) was addressed in a No Further Action (NFA) Source Control **Record of Decision (ROD)** in 1997.

This Proposed Plan recommends NFA for these sites. The **BGOURI** and **BGOURI Update/FS Reports** did not identify excessive risks to human health or the environment from these sites.

### The Cleanup Proposal...

After careful study the Navy proposes NFA for:

- Sites 15 and 18 groundwater (portion of OU 9)
- Sites 16 and 18 soil (OU 11)

There are two ways to formally register a comment:

1. Offer oral comments during the June \_\_, 2004 public meeting, or
2. Send written comments post-marked no later than June \_\_, 2004 following the instructions provided at the end of the Proposed Plan.

To the extent possible, the Navy will respond to your oral comments during the June \_\_, 2004 public meeting and hearing. In addition, federal regulations [40 C.F.R. §300.430(f)(3)(i)(F)] require the Navy to respond to all significant comments in writing. The Navy will review the transcript of the comments received at the meeting and all written comments received during the formal comment period before making a final decision and providing a written response to the comments in a document called a **Responsiveness Summary**. The **Responsiveness Summary** will be included in the **ROD**.

## What Do You Think?

The Navy is accepting public comments on this **Proposed Plan** from May \_\_, 2004 to June \_\_, 2004. You do not have to be a technical expert to comment. If you have a comment or concern, the Navy wants to hear it before making a final decision.

**Technical terms shown in bold print are defined in the glossary on Pages 7 and 8.**

## Learn More About the Proposed Plan

The Navy will describe the **Proposed Plan** and hear your questions at an informational public meeting. A formal public hearing will immediately follow this meeting.

February ____	<b>PUBLIC MEETING</b>
<b>Meeting:</b> 6:30 pm	
<b>Hearing:</b> 7:00 pm	
<b>Date:</b> (Day of Week) June __, 2004	
<b>Location:</b> Best Western Olympic Inn, Route 12, Groton, Connecticut	

For further information on the meeting, call Ms. Melissa Griffin at the NSB-NLON Environmental Department, (860) 694-5191

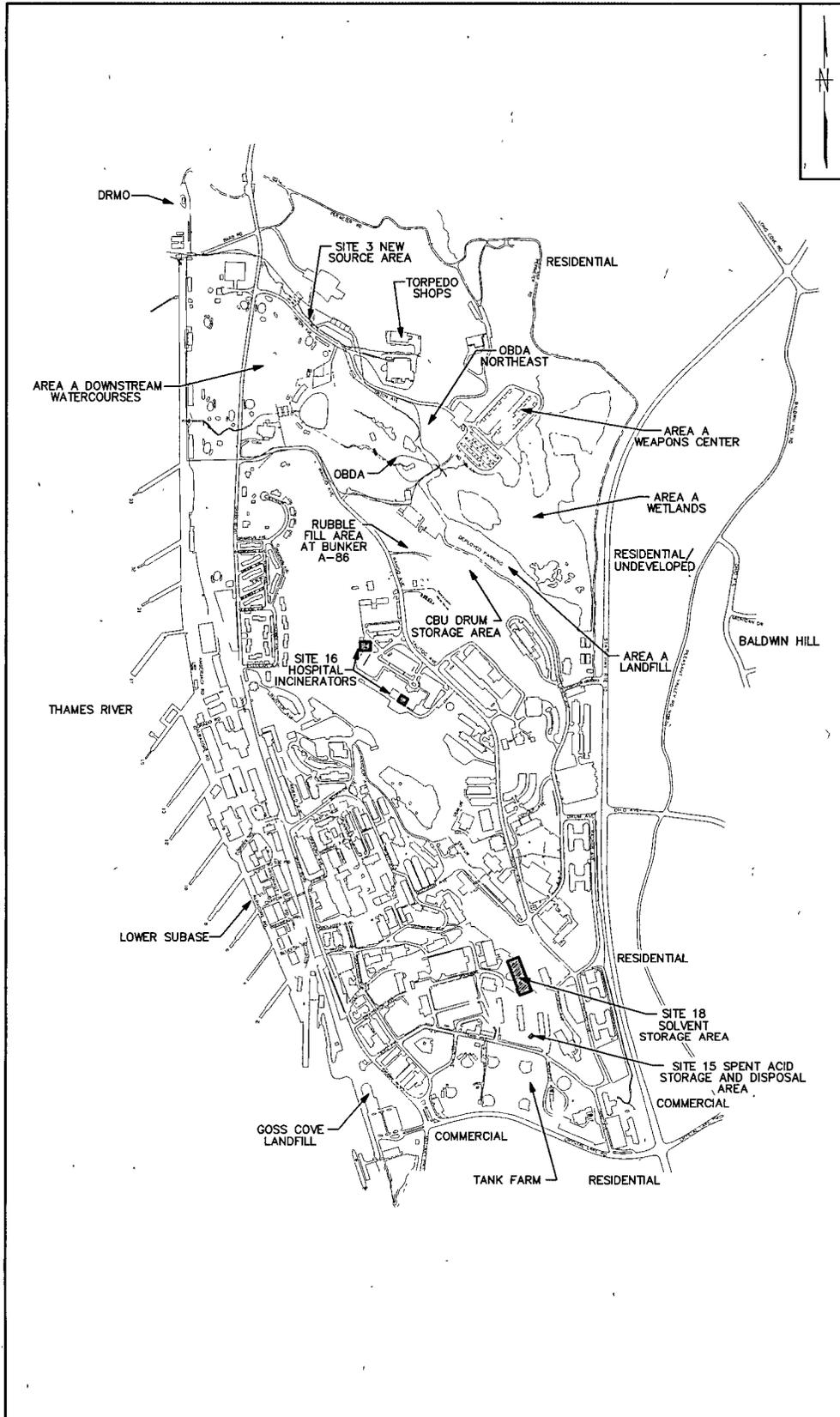


Figure 1. Site Location Map

## History

Site 15 is located in the southern portion of NSB-NLON (Figure 1). It is centrally located between the southern sides of Buildings 409 and 410 (Figure 2). This site was used before and after World War II for the temporary storage of waste battery acid in a rubber-lined underground tank. The tank was reportedly 12 feet long by 4 feet wide by 4 feet high. The batteries were placed on a concrete pad next to the tank onto which some acids occasionally leaked. No major spills were ever recorded. A 1951 aerial photograph shows that the area around the tank was not paved. Acid from the batteries was stored in the tank and was subsequently pumped into a tank truck and disposed in the Area A Landfill (Site 2).

Historical investigations completed at Site 15 include the Phase I Remedial Investigation (RI) (1992), Focused Feasibility Study (FFS) (1994), Phase II RI (1997), Supplemental Sampling Event (1997) and BGOURI (2002). Based on the

results of the Phase I RI and FFS, it was determined that a time-critical removal action (TCRA) was necessary for Site 15. The removal action was completed in 1995 and included removal of the tank, its contents, and 318 tons of lead-contaminated soil. Subsequent to the TCRA, completion of the Phase II RI, and confirmation sampling, an NFA Source Control ROD was signed for OU 6 at Site 15 in 1997. Additional groundwater samples were collected at the site during the BGOURI in 2000. A data gap investigation (DGI) that included soil and groundwater sampling was conducted at the site in the fall of 2002 for the BGOURI Update.

Site 16 (see Figure 1) consists of the two locations where a mobile incinerator was used at Naval Hospital Groton. In the 1980s, the Naval Hospital Groton operated a skid-mounted waste incinerator at two sites adjacent to the hospital. The two sites (16A and 16B) are located west of Tautog Road,

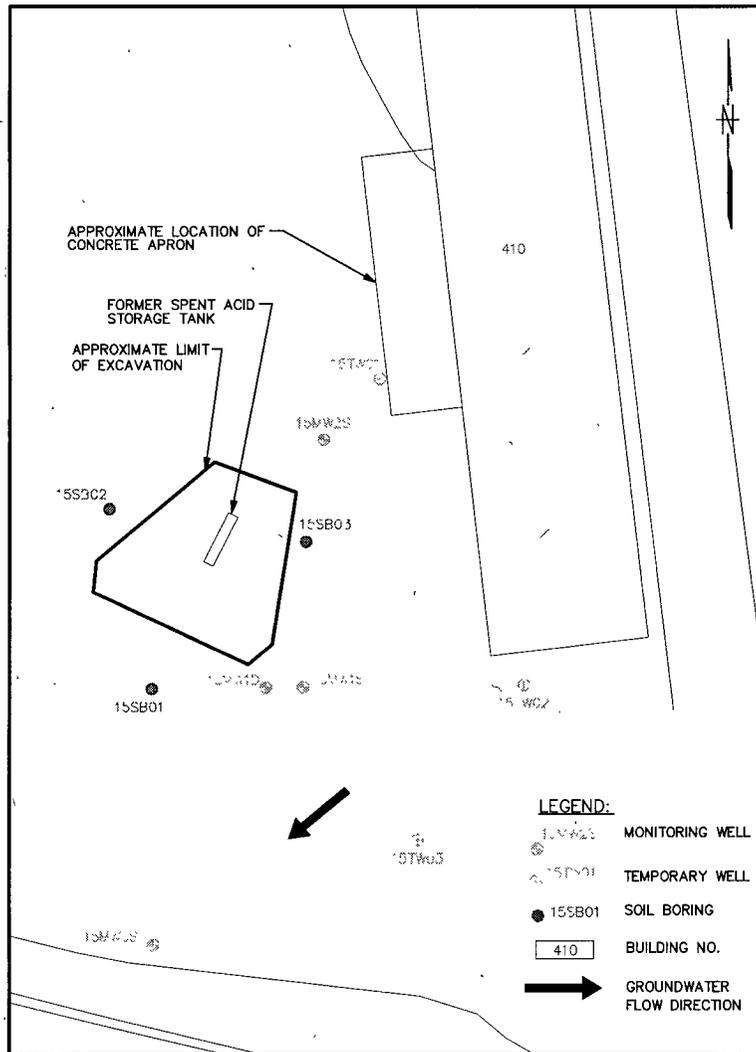


Figure 2. Site 15 Layout Map Map

adjacent to Building 452 and Building 449, respectively (Figure 3). According to the Federal Facility Agreement (FFA), the incinerator was used to destroy medical records and medical waste contaminated with pathological agents. Ash generated by the waste incinerator was transferred to dumpsters for disposal at the municipal landfill.

Site 16 was evaluated during the Initial Assessment Study (IAS) conducted for NSB-NLON (March 1983). No sampling activities were conducted as part of the study. The study's recommendation for this site was to not pursue further investigation of the site because, at the time of the IAS study, the site was still operational. As a result, no investigation of Site 16 was conducted during either of the early RIs conducted at NSB-NLON, i.e., the Phase I or Phase II RI. The Navy subsequently ceased operation of the incinerator at the hospital and investigated the site during the BGOURI (2001) to determine the impact of the operation of the incinerator. Only soil samples were collected at the site during the BGOURI because of site conditions.

Site 18 consists of Building 33, the Solvent Storage Area. The location of Building 33 is shown on Figure 1 and Figure 4. This building has been used for the storage of gas

cylinders and 55-gallon drums of solvents such as trichloroethene (TCE) and dichloroethene.

The Solvent Storage Area at Building 33 was identified during the IAS. The site was identified as Study Area F in the FFA and is now identified as Site 18 for the IR Program. Soil and groundwater samples were collected from the site during the BGOURI (2002).

### Findings of the Field Investigations

After the TCRA at Site 15, groundwater samples were collected at the site during the Phase II RI and BGOURI. The BGOURI identified TCE, a chlorinated volatile organic compound (VOC), and metals as the primary groundwater chemicals of potential concern (COPCs). TCE had not been detected in previous sampling events. Additional soil and groundwater samples were collected during the DGI in 2002 to confirm the results of the BGOURI and further define the nature and extent of contamination at the site and to determine the risks to human receptors from exposure to Site 15 media. TCE was not detected in the DGI groundwater

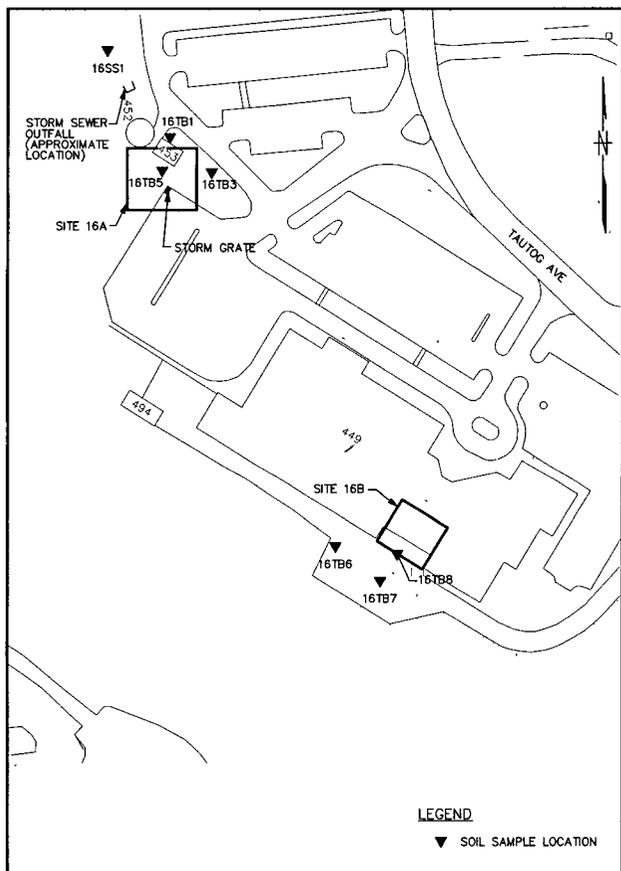


Figure 3. Site 16 Layout Map

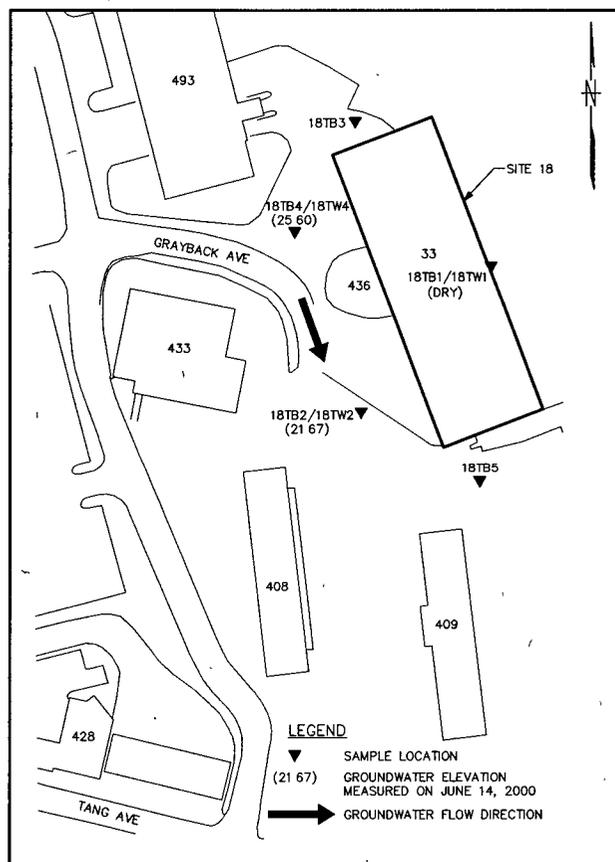


Figure 4. Site 18 Layout Map

samples, which indicated that the detections of TCE found in groundwater samples during the **BGOURI** were anomalies and not indicative of a site or upgradient source issue. The **metals** cadmium, chromium, lead, nickel, silver, and zinc were identified as groundwater **COPCs** at Site 15 during the **BGOURI**. The results of the **DGI** showed that the chromium, lead, nickel, and silver concentrations were anomalies and that the elevated concentrations may have been caused by the groundwater sampling technique.

The **DGI** results showed that there is no contamination remaining in the soil that is acting as a source of contamination to the groundwater and that there is no significant groundwater contamination at Site 15. Comparison of historical and **DGI** analytical results to the **BGOURI** results indicates that the **BGOURI** results were anomalies and were not representative of site conditions. The cause(s) of the **BGOURI** anomalies may have been the field sampling methodology and/or laboratory issues.

The **human health risk assessment (HHRA)** and data screening results showed that there are no soil or groundwater **chemicals of concern (COCs)** for Site 15. The **HHRA** performed for the **BGOURI Update** included construction workers, full-time employees, adolescent trespassers, and future child and adult residents as receptors. The results of the **HHRA** indicate that all incremental cancer risks (ICRs) from exposure to soil at Site 15 were less than or within the United States Environmental Protection Agency's (EPA's) target risk range of  $10^{-4}$  to  $10^{-6}$  and less than the Connecticut Department of Environmental Protection's (CTDEP's) acceptable level of  $1 \times 10^{-5}$  for cumulative exposures. Although all ICRs were less than CTDEP's target level for cumulative exposures, chemical-specific ICRs for arsenic (full-time employee, adolescent trespasser, child resident, and adult resident) exceeded CTDEP's target level of  $1 \times 10^{-6}$  for individual chemicals. Only one detection of arsenic exceeded the CTDEP RSR for residential exposure and the remaining detections were all less than the NSB-NLON background concentration. Consequently, arsenic was not retained as a **COC**. All hazard indices (HIs), which provide an indication of the noncarcinogenic risks from exposure to the chemicals in the soil at Site 15, were less than or equal to EPA's and CTDEP's acceptable level of 1.0. The results of the **HHRA** also indicated that all ICRs from exposures to groundwater at Site 15 were less than or within EPA's target risk range of  $10^{-4}$  to  $10^{-6}$  and less than CTDEP's acceptable level of  $1 \times 10^{-5}$  for cumulative exposures and  $1 \times 10^{-6}$  for individual chemicals. All HIs for exposure to groundwater at Site 15 were less than or equal to EPA's and CTDEP's acceptable level of 1.0.

The maximum detected concentrations of antimony and arsenic in Site 15 soil exceeded screening criteria for the migration from soil to groundwater. Antimony and arsenic were not detected in **DGI** groundwater samples, which indicates that antimony and arsenic are not migrating from soil to groundwater. Based on this information, the **metals** were not retained as **COCs**. The maximum detected concentrations of cadmium and zinc in Site 15 groundwater exceeded

## What is Risk and How is it Calculated?

A human health risk assessment estimates "baseline risk." This is an estimate of the likelihood of health problems occurring if no cleanup action were taken at a site. To estimate baseline risk at a site, the Navy undertakes a four-step process:

- Step 1: Analyze Contamination
- Step 2: Estimate Exposure
- Step 3: Assess Potential Health Dangers
- Step 4: Characterize Site Risk

In Step 1, the Navy looks at the concentration of contaminants found at a site as well as past scientific studies on the effects these contaminants have had on people (or animals, when human studies are unavailable). Comparisons between site-specific concentrations and concentrations reported in past studies helps the Navy to determine which concentrations reported in past studies helps the Navy to determine which contaminants are most likely to pose the greatest threat to human health.

In Step 2, the Navy considers the different ways that people might be exposed to the contaminants identified in Step 1, the concentrations that people might be exposed to, and the potential frequency and duration of exposure. Using this information, the Navy calculates a "reasonable maximum exposure" (RME) scenario, which portrays the highest level of human exposure that could reasonably be expected to occur.

In Step 3, the Navy uses the information from Step 2 combined with information on the toxicity of each chemical to assess potential health risks. The likelihood of any kind of cancer resulting from a site is generally expressed as an upper bound probability; for example, a "1 in 10,000 chance." In other words, for every 10,000 people that could be exposed, one extra cancer may occur as a result of exposure to site contaminants. An extra cancer case means that one more person could get cancer than would normally be expected to from all other causes. For non-cancer health effects, the Navy calculated a "hazard index." The key concept here is that a "threshold level" (measured usually as a hazard index of less than 1) exists below which non-cancer health effects are no longer predicted.

In Step 4, the Navy determines whether site risks are great enough to cause health problems for people at or near the site. The results of the three previous steps are combined, evaluated, and summarized. The Navy adds up the potential risks from the individual contaminants to determine the total risk resulting from the site.

screening criteria for the migration from groundwater to surface water. However, Site 15 is not located close to any surface water bodies; therefore, these exceedances were not considered significant and neither **metal** was retained as a **COC**.

At Site 16, the nature and extent of contamination and **HHRA** results from the **BGOURI** indicated that the past operation of the skid-mounted incinerator did not significantly impact the surrounding soil and that site soils do not pose significant risks to any potential human receptors. The **HHRA** considered construction workers, full-time employees, older child trespassers, and future child and adult residents. All ICRs from exposure to soil at Site 16 were less than or within EPA's target risk range of  $10^{-4}$  to  $10^{-6}$  and less than CTDEP's acceptable level of  $1 \times 10^{-5}$  for cumulative exposures. Although all ICRs were less than CTDEP's target level for cumulative exposures, chemical-specific ICRs for arsenic (full-time workers, older child trespassers, child residents, and adult residents) and benzo(a)pyrene (child residents) exceeded CTDEP's target level of  $1 \times 10^{-6}$  for individual chemicals. It should be noted that the maximum detected concentrations of arsenic and benzo(a)pyrene were less than their respective CTDEP RSRs for residential exposures. All HIs for exposure to soil at Site 16 were less than EPA's and CTDEP's acceptable level of 1.0.

Even though several chemicals at Site 16 were detected at concentrations that exceed screening criteria for contaminant migration from soil to groundwater, it is unlikely that the groundwater beneath this site is impacted because the CTDEP pollutant migration criteria used to identify migration **COPCs** are very conservative, and the **COPCs** at this site [(i.e., **dioxins/furans**, **polychlorinated biphenyls (PCBs)**, and **metals**)] are not typically mobile in dissolved phase. In addition, asphalt pavement covers a majority of the site and limits infiltration through the soil and erosion of surface soil. Finally, relatively competent bedrock is very shallow at this site and it is likely that it would impede vertical contaminant migration.

At Site 18, the nature and extent of contamination and **HHRA** results from the **BGOURI** indicated that past storage of solvents at Building 33 (Site 18) did not significantly impact the surrounding media and that the site does not pose significant risks to any potential human receptors. No groundwater **COPCs** were identified at Site 18. The **HHRA** determined that health risks from exposure to soil at Site 18 were within target risk ranges. Potential receptors for exposures to soil at Site 18 included construction workers, fulltime employees, older child trespassers, and future residents. All ICRs for exposures to soil at Site 18 were less than or within EPA's target risk range of  $10^{-4}$  to  $10^{-6}$  and less than CTDEP's acceptable level of  $1 \times 10^{-5}$  for cumulative exposures. Although

all ICRs were less than CTDEP's target level for cumulative exposures, chemical-specific ICRs for arsenic (full-time workers, future child residents, and future adult residents) exceeded CTDEP's target level of  $1 \times 10^{-6}$  for individual chemicals. It should be noted that the maximum detected concentration of arsenic was less than its CTDEP RSRs for residential exposures. All HIs for exposure to soil at Site 18 were less than EPA's and CTDEP's acceptable level of 1.0.

Site 15 is located in a paved parking area; Site 16 is adjacent to a hospital; and Site 18 is a storage building surrounded by a parking lot. All three sites are in well developed portions of NSB-NLON. None of these sites nor the areas near these sites represent habitats suitable for supporting a wildlife population. Given the site conditions, it is unlikely that ecological receptors are at risk as a result of contaminants associated with Sites 15, 16, and 18.

## The Navy's Proposed Remedy

Based on the results of the **BGOURI** and **BGOURI Update**, it is the Navy's current judgment that NFA is required for the groundwater at Sites 15 and 18, which make up a portion of **OU 9**, and the soil at Sites 16 and 18, which is designated as **OU 11**. These sites pose no current or future potential threat to human health or the environment; therefore, the Navy proposes that no treatment, engineering controls, or institutional controls be implemented at these sites. The EPA and CTDEP concur with the Navy's preferred remedy.

## The Public's Role in Alternative Selection

Community input is integral to the selection process. The Navy, EPA, and CTDEP will consider all comments in selecting the remedy prior to signing the **ROD**. The public is encouraged to participate in the decision-making process.

This **Proposed Plan** for Site 15 groundwater, Site 16, and Site 18 is available for review, along with supplemental documentation, at the:

Groton Public Library  
52 Newtown Road  
Groton, CT 06340  
(860) 441-6750

Hours:  
Mon. - Thur.: 9:00am - 9:00pm  
Fri.: 9:00am - 5:30pm  
Sat.: 9:00am - 5:00pm  
Sun.: noon - 6:00pm

Bill Library  
718 Colonel Ledyard Highway  
Ledyard, CT 06339  
(860) 464-9912

Hours:  
Mon. - Thur.: 9:00am - 9:00pm  
Fri. & Sat.: 9:00am - 5:00pm  
Sun.: 1:00pm - 5:00pm

For further information, please contact:

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## Glossary of Technical Terms

**Chemical of Concern (COC):** A regulated chemical that is present at a concentration deemed to pose an unacceptable risk to human health or the environment, taking into account the acceptable level of risk, land-use definitions (i.e., current and reasonable potential future), and exposure scenario (i.e., completed pathways).

**Chemicals of Potential Concern (COPCs):** Chemicals identified as potential concerns to human health or the environment through a screening-level assessment because their concentrations exceed regulatory criteria.

**Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA):** A federal law passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act (SARA). The act created a special tax that goes into a trust fund to investigate and clean up abandoned and uncontrolled hazardous waste sites.

**Connecticut Remediation Standard Regulations (RSRs):** Connecticut regulations (Sections 22a-133k-1 through -3 of the Regulations of Connecticut State Agencies) concerning the remediation of polluted soil, surface water, and groundwater.

**Contaminants:** Any physical, biological, or radiological substance or matter that, at a certain concentration, could have an adverse effect on human health and the environment.

**Data Gap Investigation (DGI):** A follow-up investigation performed to address data gaps identified in the results of the previous investigation.

**Dioxins:** A family of 75 organic compounds known chemically as polychlorinated dibenzo-p-dioxins. The individual compounds are technically referred to as congeners. Concern about them arises from their potential toxicity as contaminants and their hydrophobic nature and resistance towards metabolism. Dioxins are typically created and released

into the air during combustion processes such as commercial or municipal waste incineration and from burning fuels (e.g., wood, coal, or oil). They can also be created in small quantities during certain types of chemical manufacturing and processing.

**Furans:** A family of 135 organic compounds known chemically as polychlorinated dibenzofurans. The individual compounds are technically referred to as congeners. Typically found with dioxins and having similar properties, concern about furans arises from their potential toxicity as contaminants and their hydrophobic nature and resistance towards metabolism.

**Human Health Risk Assessment (HHRA):** Scientific method to evaluate the effects on human receptors from exposure to contaminants in site-specific media.

**Installation Restoration (IR) Program:** The purpose of the IR Program is to identify, investigate, assess, characterize, and clean up or control releases of hazardous substances and to reduce the risk to human health and the environment from past waste disposal operations and hazardous material spills at Navy activities in a cost effective manner.

**Metals:** Metals are naturally occurring elements in the earth. Some metals, such as arsenic and mercury, can have toxic affects. Other metals, such as iron, are essential to the metabolism of humans and animals.

**Operable Unit (OU):** Operable units are site management tools that define discrete steps towards comprehensive actions as part of a Superfund site cleanup. They can be based on geological portions of a site, specific site problems, initial phases of action, or any set of action performed over time or concurrently at different parts of the site.

**Polychlorinated Biphenyls (PCBs):** A family of 204 organic compounds, formerly used in the manufacture of plastics and in electrical transformers. They were used because they conducted heat well while being fire resistant and good electrical insulators. PCBs tend to bioaccumulate in fish and other animals. PCBs are probable human carcinogens. Studies also suggest non-cancer effects on humans and animals.

**Proposed Plan:** A public participation requirement in which the lead agency summarizes for the public the preferred cleanup strategy and rationale for preference and reviews the alternatives presented in the detailed analysis of the FS. The document is used to solicit public review and comment on all alternatives under consideration.

**Record of Decision (ROD):** An official document that describes the selected remedy for a site. The ROD documents the remedy selection process and is typically issued by the lead agency following the public comment period.

**Remedial Action (RA):** Activities to control exposure to, treat, or remove contaminated media, waste, or material.

**Remedial Investigation (RI), Basewide Groundwater Operable Unit RI (BGOURI) and BGOURI Update/Feasibility Study (FS):** A Remedial Investigation report describes the site, documents the nature and extent of contaminants detected at the site, and presents the results of the risk assessment. An FS report presents the development, analysis, and comparison of remedial alternatives.

**Responsiveness Summary:** A summary of written and oral comments received during the public comment period, and the Navy's responses to these comments. The Responsiveness Summary is an important part of the ROD, highlighting community concerns for decision makers.

**Volatile Organic Compounds (VOCs):** Carbon-based chemical compounds that have high vapor pressures and evaporate readily at normal temperatures. Examples of VOCs are the components of gasoline (i.e., benzene, toluene, ethylbenzene, and xylenes) and solvents (e.g., trichloroethene).

**USE THIS SPACE TO WRITE YOUR COMMENTS**

Your input on the Proposed Plan for Site 15 groundwater, Site 16, and Site 18 at Naval Submarine Base – New London is important to the Navy. Comments provided by the public are valuable in helping the Navy select the final remedy for these sites.

You may use the space below to write your comments, then fold and mail. Comments must be postmarked by May \_\_, 2004. Comments can be submitted via mail or e-mail and should be sent to either of the following addresses:

Mr. Mark Evans, Remedial Project Manager  
Naval Facilities Engineering Command  
Engineering Field Activity Northeast  
10 Industrial Highway  
Mail Stop 82, Code 1823/ME  
Lester, Pennsylvania 19113-2090  
Tel: (610) 595-0567 ext. 162  
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Ms. Melissa Griffin  
Installation Restoration Manager  
Naval Submarine Base - New London  
Building 439  
Groton, CT 06349-5039  
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e-mail: griffinm@cnrne.navy.mil

If you have any questions about the comment period, please contact Mr. Mark Evans at (610) 595-0567 ext. 162.

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Name \_\_\_\_\_

Address \_\_\_\_\_

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