

**RECORD OF DECISION**

**OPERABLE UNIT 1  
SOILS AND SEDIMENT AT  
SITE 1 - NORTHEAST  
POND DISPOSAL AREA**

**NAVAL WEAPONS INDUSTRIAL  
RESERVE PLANT  
Calverton, New York**



**Engineering Field Activity, Northeast  
Naval Facilities Engineering Command  
10 Industrial Highway, Mail Stop 82  
Lester, Pennsylvania 19113-2090**

**September 2002**

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**ATTACHMENTS**

- A Administrative Record
- B Responsiveness Summary

# **DECLARATION STATEMENT – RECORD OF DECISION**

## **Site Name and Location**

Installation Restoration Site 1 – Northeast Pond Disposal Area  
Naval Weapons Industrial Reserve Plant (NWIRP), Calverton  
Town of Riverhead  
Suffolk County, New York  
EPA ID: #NYD003995198  
Funding Source: Environmental Restoration, Navy (ER,N)

## **Statement of Purpose and Basis**

This Record of Decision (ROD) document presents the selected remedial action for Operable Unit (OU) 1 - soils and sediment at Site 1, Northeast Pond Disposal Area, located at the Naval Weapons Industrial Reserve Plant (NWIRP) in Calverton, New York. The U.S. Navy (Navy), in consultation with the New York State Department of Environmental Conservation (NYSDEC), Suffolk County Department of Health Services (SCDHS), and New York State Department of Health (NYSDOH) is issuing this remedy in accordance with State applicable requirements. The site is not listed on the National Priorities List (NPL); however, a copy of this document will be sent to the USEPA Region II offices for information.

This decision is based on the Administrative Record for the site and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the Navy. A listing of the documents in the Administrative Record are provided in Attachment A of this ROD.

## **Assessment of the Site**

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action described in this Record of Decision (ROD), present a current or potential threat to human health and the environment.

### **Description of Selected Remedy**

The selected remedy in this ROD, Alternative 3, consists of excavating all landfill waste materials, contaminated soil, and contaminated sediment with subsequent off site disposal. Short-term groundwater monitoring would be conducted to determine the impacts, if any, that excavation of the landfill will have on groundwater quality and whether groundwater use restrictions will be necessary. The soil and sediment remediation goals for this project are NYSDEC's Technical and Administrative Guidance Memorandum (TAGM) 4046 and NYSDEC's Technical Guidance for Screening Contaminated Sediments, respectively. Alternative 3 would meet these remediation goals by preventing exposure to site-related contaminants in both soils and sediments.

The major components of the selected remedy are: (1) excavation and offsite disposal of all landfilled waste materials and contaminated soils, and adjacent sediments between the toe of the east face of the landfill and the Northeast Pond island; and (2) site restoration.

Approximately 21,000 cubic yards of landfilled waste materials and contaminated soil would be excavated. Contaminated sediments will be excavated from the adjacent pond on the east face of the landfill. Approximately 17,740 square feet or about 1,315 cubic yards of pond sediments will be excavated. The excavated materials will be transported to an appropriate offsite permitted landfill for final disposal. Post-excavation sampling will be conducted to ensure that remediation goals have been met.

Following excavation, the disturbed areas will be restored to pre-landfill conditions that will allow the boundaries of the current wetlands to expand into areas previously occupied by the landfill. In addition the hill on the western side of the landfill will be cut back and regraded to provide a long-term stable slope.

Short-term groundwater samples will be collected for a period of up to 2 years on a semi-annual basis to determine what impacts, if any, the excavation of landfill materials has had on groundwater quality. Long-term groundwater sampling is not expected since the source of contamination will have been removed. Based upon the results of the short-term groundwater sampling program, the Navy, with consultation by NYSDEC, NYSDOH, and SCDHS will determine if any additional actions will be required. Any actions found to be necessary to address groundwater quality (including No Further Action) will be the subject of a separate Operable Unit requiring submission of a separate Record of Decision.

**Regulatory Acceptance**

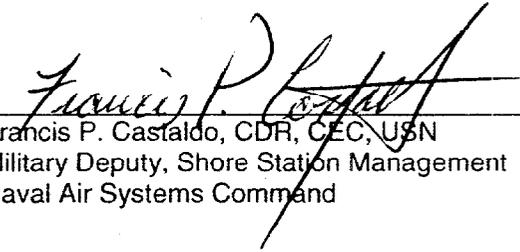
The NYSDEC, NYSDOH, and SCDHS concur with the remedy selected for this site as being protective of human health.

**Declaration**

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

12 SEP 02

Date

  
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Francis P. Castaldo, CDR, CEC, USN  
Military Deputy, Shore Station Management  
Naval Air Systems Command

**RECORD OF DECISION**  
**OPERABLE UNIT 1**  
**Naval Weapons Industrial Reserve Plant**  
**Calverton, New York**  
**August 2002**

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**SECTION 1    SUMMARY OF THE RECORD OF DECISION**

The Navy, in consultation with the New York State Department of Environmental Conservation (NYSDEC), Suffolk County Department of Health Services (SCDHS), and New York State Department of Health (NYSDOH) is issuing a remedy to address the significant threat to human health and/or the environment created by the presence of hazardous materials (Operable Unit 1) at Site 1 Northeast Pond Disposal Area at the NWIRP in Calverton, New York (see Figures 1 and 2). As more fully described in Section 3 of this document, historical operations that resulted in hazardous material generation at the facility included, but were not limited to, metal finishing processes, maintenance operations, fueling operations, painting of aircraft and components, and various training operations. Site 1 was used until 1984 primarily for the disposal of construction and demolition debris (e.g., concrete, brick, wood), aircraft sections, junked aircraft assembly tooling, office materials and furniture, and paint cans. Hazardous materials that may have been disposed include petroleum, oils, lubricants, halogenated and non-halogenated solvents, and paint sludges. Contaminants associated with waste disposal operations include volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs) including polynuclear aromatic hydrocarbons (PAHs), pesticides, polychlorinated biphenyls (PCBs), and metals. The NYSDEC, NYSDOH, and Suffolk County Department of Health Services (SCDHS) concur with the selected remedy. The Navy is the lead agency for the project and provides funding for site clean-ups. Site 1 (see Figure 2) is one of several Installation Restoration (IR) sites located at the NWIRP facility.

**SECTION 2    SITE LOCATION, AND DESCRIPTION**

NWIRP Calverton is located in Suffolk County, Long Island, approximately 80 miles east of New York City (see Figure 1). NWIRP Calverton consists of four separate parcels of land totaling approximately 358 acres. Eight Areas of Concern (AOCs) are included within these parcels as follows (see Figure 2):

- Parcel A (32 acres): Site 2 – Fire Training Area
- Parcel B1 (40 acres): Site 6A – Fuel Calibration Area and Site 10B – Engine Test House

- Parcel B2 (131 acres): Southern Area
- Parcel C (10 acres): Site 7 – Fuel Depot and Site 10A – Jet Fuel Systems Laboratory
- Parcel D (145 acres): Site 1 – Northeast Pond Disposal Area and Site 9 – ECM Area

Site 1 is located approximately 1,000 feet south of Middle County Road (NY Route 25) and 0.95 mile east of the north gate (see Figure 2). The site consists of a relatively flat borrow and disposal area that covers approximately 2 acres (see Figure 3). The apparent disposal area measures approximately 400 feet by 200 feet and is oriented south-southwest to north-northeast. The top of the disposal area slopes gently from west-southwest to east followed by a steep 15- to 20-foot slope to the adjacent marsh/pond surface (Northeast Pond). The steep slope is unstable, contains sinkholes, and is eroding into the pond. Northeast Pond is glacially formed and approximately 2.3 acres in size. The pond has no outlet. The center of the pond is covered by a thick marsh growth that forms an island. Northeast Pond and the surrounding area have been identified as a highly sensitive archeological area. Prehistoric artifacts from 8,000 to 500 years ago have been identified in the immediate vicinity of Northeast Pond.

### **SECTION 3 SITE HISTORY AND ENFORCEMENT ACTIVITIES**

#### **3.1 Operational/Disposal History**

The former NWIRP Calverton facility was owned by the Navy since the early 1950's and originally consisted of approximately 6,000 acres. The Northrup Grumman Corporation (formerly Grumman Aerospace Corporation) was the sole operator of the facility, which was known as a government-owned, contractor-operated (GOCO) facility. The facility was used in the testing, refitting, and retrofitting of combat naval aircraft. The majority of industrial activity at NWIRP Calverton was confined to the developed area in the center and south center of the facility between the two runways. Northrup Grumman ceased operations in February 1996. In September 1998, the majority of land within the fenced-in portion of the facility was transferred to the Town of Riverhead for redevelopment. Because of the need for additional environmental investigations and the potential need for remediation, the Navy retained four parcels of land within the developed section. In September 1999, an additional 2,935 acres of undeveloped land outside the fenced areas was transferred to NYSDEC who will continue to manage the property for resource development and recreational uses. An additional 140 acres of the northwest buffer zone was transferred to the Veteran's Administration (VA) for expansion of the Calverton National Cemetery.

Site 1 – Northeast Pond Disposal Area was used primarily for the disposal of demolition debris and other construction materials (e.g., concrete, brick, wood) until 1984. Other materials reportedly

disposed include junked aircraft assembly tooling, office materials and furniture, pallets, and paint cans. Hazardous materials are not known to have been purposefully disposed in the area. However, it was reported that any of the following wastes might be present at the site: petroleum, oils, lubricants, asphalt paving material, halogenated and non-halogenated solvents, and paint sludge.

The wastes were placed in a depression adjacent to Northeast Pond, and some waste may have been used to fill portions of the pond. Soil borrowed from an adjacent hillside was used as cover material, creating a level area approximately 2 acres in size with steep embankments up to 20 feet high leading into the pond from the eastern edge of the disposal area. A final soil cover was placed over the landfill in 1984.

No exposed wastes were observed on the surface or eastern embankment of the fill area during the field investigations. A small amount of debris (e.g., concrete chunks, wood scraps, metal pieces) was exposed on the embankment leading into the woods from the southern edge of the fill area. Also, sink holes have begun to appear over the last few years which now represent a significant physical hazard.

### **3.2 Remedial History**

The work at Site 1 is part of the Navy's IR Program, which is designed to identify contamination at Navy and Marine Corps lands and facilities resulting from past operations and to institute corrective measures, as needed. There are typically four distinct stages. Stage 1 is the Preliminary Assessment (PA), which was formerly known as the Initial Assessment Study (IAS). Stage 2 is a RCRA Facility Assessment – Sampling Visit (RFA), which is also referred to as a Site Investigation (SI), which augments the information collected in the PA. Stage 3 is the RCRA Facility Investigation/Corrective Measures Study (RFI/CMS), also referred to as a Remedial Investigation/Feasibility (RI/FS), which characterizes contamination at a facility and develops options for remediation of a site. Stage 4 is the Corrective Action, also referred to as the Remedial Action, which results in the control or cleanup of contamination at sites.

An IAS (or PA) was performed for the NWIRP Calverton facility in 1986. This study identified eight potential areas of concern, including Site 1. A follow-up SI (or RFA) was conducted for these sites.

A RFI (or RI) was conducted in 1994 and 1995 to identify the nature and extent of contamination that was found in previous investigations and estimate potential risks to human health and the environment. A Phase 2 RI (or Phase 2 RFI) was conducted in 1997 to fill data gaps identified after the previous RFI.

A Focused Feasibility Study (FFS) was prepared to develop and evaluate remedial alternatives to address the contamination and risks to human health and the environment. The FFS was completed in February 2002.

### **3.3 Enforcement History**

Portions of NWIRP Calverton (IR Sites 2 and 6a) are listed on the NYSDEC Registry of Inactive Hazardous Waste Disposal Sites. None of the IR Sites at NWIRP Calverton are listed on the Federal National Priorities List (NPL).

The RCRA Facility Investigation (RFI) and Phase 2 Remedial Investigation (RI) were conducted in accordance with the requirements of the previous New York State RCRA Hazardous Waste Permit for the facility (NYSDEC 1-4730-00013/00001-0) dated March 25, 1992. The NYSDEC was the lead oversight agency. The work was also conducted in accordance with the previous EPA facility permit (EPA ID Number NYD003995198) dated May 11, 1992. The EPA supported NYSDEC in its oversight activities. The requirements of both permits are basically the same, although the terminology and format varied.

The FFS was conducted in accordance with the requirements of the NYSDEC Division of Solid & Hazardous Materials Part 373 Permit that was re-issued to the Navy on April 18, 2000, under the NYSDEC implementing regulations (6 NYCRR Part 621). This permit supercedes and replaces the original Part 373 Permit to Operate a Hazardous Waste Storage Facility that was issued to then Grumman Aerospace Corporation on March 25, 1992. The new permit, issued only to the Department of the Navy, deals exclusively with those Solid Waste Management Units that remain on the former NWIRP Calverton property and any corrective actions that may be required to adequately address each site. Although the Part 373 Permit is the enforceable document governing the Navy's remedial actions, the NYSDEC's Division of Environmental Remediation, located in the Albany office, retains primary responsibility for regulatory oversight of the Navy's actions at Site 1. As such, the Navy has agreed to a request by the NYSDEC's Division of Environmental Remediation to utilize terminology associated with the NYSDEC State Superfund program that is closely related to the Federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The CERCLA terminology parallels the RCRA terminology. The implementation phases of each program have been determined to meet the substantive requirements of both programs and will also satisfy the corrective action requirements included in Module III of the Part 373 Permit.

## **SECTION 4     SITE CONTAMINATION**

To evaluate the contamination present at the site, and to evaluate alternatives to address the significant threat to human health and the environment posed by hazardous materials, the Navy has conducted an RI/FS for Site 1.

### **4.1     Summary of the Remedial Investigation**

The purpose of the RI was to define the nature and extent of soil and sediment contamination resulting from previous activities at Site 1. The RI was conducted in two phases. The first phase was conducted in 1994 and 1995, and the second phase was conducted in 1997. Two reports entitled "RCRA Facility Investigation for Naval Weapons Industrial Reserve Plant, Calverton, New York", dated August 1995, and "Phase 2 Remedial Investigation and Focused Feasibility Study for Site 1 – Northeast Pond Disposal Area, Naval Weapons Industrial Reserve Plant, Calverton, New York", dated February 2002, describe the field activities and findings of the RIs in detail.

A FFS was prepared to address soil and sediment contamination. A report entitled "Phase 2 Remedial Investigation and Focused Feasibility Study for Site 1 – Northeast Pond Disposal Area, Naval Weapons Industrial Reserve Plant, Calverton, New York", dated February 2002, describes the development and analysis of alternatives in detail.

The following investigation techniques were used to achieve the goals for the RI:

- Test pits were excavated to delineate the nature and extent of the fill material.
- Soil samples were collected from various locations throughout the site to identify the nature and extent of soil contamination related to waste disposal activities.
- Sediment samples were collected to identify impacts to Northeast Pond.
- Samples of benthic organisms were collected from Northeast Pond and a nearby reference pond and analyzed for diversity and abundance.

To determine whether soil and sediment were contaminated at levels of concern, the RI analytical data were compared to environmental Standards, Criteria, and Guidance values (SCGs). Soil SCGs are based on the NYSDEC Technical and Administrative Guidance Memorandum on Determination of Soil

Clean-Up Objectives and Soil Clean-Up Levels (TAGM 4046). Soil SCGs are based on protection of groundwater and protection of human health. Groundwater SCGs are based on Federal drinking water standards, Part 5 of the New York State Sanitary Code (state drinking water standards), and NYSDEC ambient groundwater quality standards and guidance values. Surface water SCGs are based on NYSDEC ambient surface water quality standards and guidance values. Sediment SCGs are based on NYSDEC Technical Guidance for Screening Contaminated Sediments.

Based on the RI results, comparison to the SCGs, and potential public health and environmental exposure routes, the soil and sediment at Site 1 required remediation. The RI results are summarized below. More detailed information can be found in the RFI and Phase 2 RI/FFS reports on file in the document repository.

#### **4.1.1 Site Geology and Hydrogeology**

NWIRP Calverton is underlain by the following five geologic/hydrogeologic formations (descending from ground surface):

- Upper Glacial Formation (Upper Glacial aquifer) consisting of silty, fine-grained sand with varying amounts of peat and clay near the ground surface and fine-grained sand with varying amounts of medium- to coarse-grained sand and pebbles farther below the ground surface.
- Magothy Formation (Magothy aquifer) consisting of stratified, fine to coarse sand and gravel.
- Raritan Clay Member of the Raritan Formation consisting of clay and silty clay.
- Lloyd Sand Member of the Raritan Formation (Lloyd Sand aquifer) consisting of fine to coarse sand and gravel.
- Bedrock.

The Upper Glacial Formation, Magothy Formation, and Lloyd Sand are the major regional aquifers and the sole source of drinking water for residents of Long Island. The Upper Glacial and Magothy aquifers are of principal importance in Suffolk County because of their proximity to the land surface. They are used the most as a source of drinking water. The Lloyd Sand aquifer is not widely used because of its depth and the abundant water in the overlying aquifers. The Upper Glacial and Magothy aquifers are believed to be hydraulically interconnected and to function as a single

unconfined aquifer. The confining nature of the Raritan Clay is believed to minimize potential contamination to the underlying Lloyd Sand aquifer.

#### **4.1.2 Nature of Contamination**

As described in the RFI and Phase 2 RI/FFS reports, soil, surface water, and sediment samples were collected at the site to characterize the nature and extent of contamination.

A summary of the soil analytical data generated during the RI is presented in Table 1. Four volatile organic compounds (VOCs), one polychlorinated biphenyl (PCB), and five metals exceeded their respective soil SCGs. Trichloroethene (TCE) exceeded its SCG at two locations, while 1,1-dichloroethane, 1,2-dichloroethane, and 1,1,1-trichloroethane exceeded their respective SCGs at one location each. Aroclor 1248 was detected once above its SCG out of 31 samples. Antimony, cadmium, chromium, lead, and silver were all detected above their respective SCGs in at least two samples.

A summary of the sediment analytical data generated during the RI is presented in Table 2. Sediment contaminants that exceeded SCGs include a VOC, a semi-volatile organic compound (SVOC), pesticides, PCBs, and metals. The VOC is toluene, and the SVOC is bis(2-ethylhexyl)phthalate. Pesticides detected above their respective SCGs include 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, and endrin. The PCBs include Aroclor 1248 and Aroclor 1260. The metals include cadmium, lead, nickel, and silver. Exceedances of SCGs for pesticides, PCBs, and metals were more numerous than for VOCs and SVOCs.

#### **4.1.3 Extent of Contamination**

The soil contaminants were detected throughout the fill material. The estimated areal extent of fill material is approximately 70,000 square feet (1.6 acres) (see Figure 4). At an average depth of 8.0 feet, the estimated volume of fill material is 21,000 cubic yards (see Figure 5).

Sediment contamination was generally detected in samples collected between the landfill bank and the island in Northeast Pond. The concentrations of chemicals detected in sediment decrease by approximately a factor of 10 from the shallowest samples (0 to 6 inches deep) and the deepest samples (18 to 24 inches). The estimated extent of sediment contamination is approximately 17,740 square feet (0.4 acre) (see Figure 6). At an average depth of 2.0 feet, the estimated volume of contaminated sediment is 1,315 cubic yards.

## **4.2 Interim Remedial Measures**

An Interim Remedial Measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before completion of the RI/FS. The only interim remedial measure conducted at Site 1 was the off site disposal of a drum of waste. A buried drum was encountered during the RFI test pit program. Testing of the drum contents and adjacent soil detected a relatively high concentration of 1,1,1-trichloroethane. The drum was excavated, placed in an overpack container, and disposed off site in the spring of 1995. Confirmation sampling was not conducted. No other remedial actions have been conducted.

## **4.3 Summary of Human Exposure Pathways**

This section describes the types of human exposures that may present added health risks to persons at or around the site. A baseline human health risk assessment was conducted as part of the RFI. A more detailed discussion of the potential health risks can be found in Section 4.6, Baseline Risk Assessment, of the RFI Report.

An exposure pathway is the manner by which an individual may be exposed to a contaminant. The five elements of an exposure pathway are as follows: the source of contamination, the environmental media and transport mechanisms, the point of exposure, the route of exposure, and the receptor population. These elements of an exposure pathway may be based on past, present, or future events.

The potential receptors evaluated for the current land use scenario were a maintenance worker performing tasks near Site 1 and a hypothetical adolescent recreational user. The exposure pathway for the maintenance worker includes direct contact with (dermal absorption) and ingestion of contaminated soil 250 days per year over a 25-year period. The exposure pathway for the hypothetical adolescent recreational use includes direct contact with (dermal absorption) and ingestion of surface water and sediment. According to the risk assessment, no unacceptable health risks to current workers or hypothetical recreational users would be expected.

Risks to hypothetical receptors assuming a future residential land use scenario were also evaluated. The exposure pathways for this receptor are direct contact with (dermal absorption) and ingestion of contaminated soil. Noncarcinogenic health risks were identified for exposure to soil.

#### **4.4 Summary of Environmental Exposure Pathways**

A variety of ecological receptors could potentially be exposed to chemicals in soil and sediment. Aquatic biota, benthic macroinvertebrates, fish, amphibians, and emergent wetland vegetation may be exposed to chemicals that have migrated into the pond.

A preliminary ecological risk characterization was conducted during the Phase 2 RI. The ecological risk evaluation eliminated most of the chemicals detected in Northeast Pond from further consideration. However, toluene, several SVOCs, several pesticides/PCBs, cadmium, lead, nickel, and silver in sediment could represent potential environmental risk. For surface soil on the landfill cover, chromium and PCBs represent a potential ecological risk.

Although the potential for ecological risks from exposure to pond water and sediment has been identified, the results of the benthic macroinvertebrate investigation did not indicate adverse impacts. The diversity of feeding groups suggests a normally functioning ecological community.

### **SECTION 5 ENFORCEMENT STATUS**

#### **Resource Conservation and Recovery Act**

The purpose of this ROD is to set forth the corrective measures for the remediation of the Site 1 Northeast Pond Disposal Area, in accordance with the requirements of the New York State Department of Environmental Conservation Division of Solid and Hazardous Materials Part 373 Permit that was issued to the Navy on April 18, 2000 under the NYSDEC implementing regulations [6 New York Codes, Rules, and Regulations (NYCRR) Part 621]. 6 NYCRR Part 373 is commonly known as the Resource, Conservation and Recovery Act (RCRA) program. The permit deals exclusively with those Solid Waste Management Units (SWMUs) that remain on the former NWIRP Calverton property and any Corrective Actions that may be required. The RCRA program as promulgated under NYSDEC regulations is authorized by the USEPA to issue RCRA permits.

#### **NWIRP**

The United States Navy has undertaken their environmental studies pursuant to the Navy's Installation Restoration Program. The State of New York provided oversight of the work conducted by the Navy pursuant to a Memorandum of Understanding (MOU) between the State and the Department of Defense. The Department of the Navy entered into a MOU with the NYSDEC in 1993. The MOU

brought the NYSDEC into the Department of the Navy's Installation Restoration program. Upon issuance of the Record of Decision for Site 1 Northeast Pond Disposal Area, the NYSDEC will approach the Navy to implement the selected remedy.

## **SECTION 6    SUMMARY OF THE REMEDIATION GOALS**

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. The overall remedial goal is to meet all SCGs and be protective of human health and the environment. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous waste and/or hazardous waste constituents disposed at the site through the proper application of scientific and engineering principles.

The remediation goals selected for this site are as follows:

### **Soil**

- Prevent human exposure (ingestion, dermal contact, dust inhalation) to contaminated soil in concentrations greater than the remediation goals.
- Prevent ecological receptor exposure to contaminated soil.
- Prevent leaching of contaminants at resultant groundwater concentrations in excess of groundwater standards.
- Comply with chemical-specific, location-specific, and action-specific ARARs and guidance.

### **Sediment**

- Prevent contact of contaminated sediment with surface water and aquatic life.
- Comply with chemical-, location-, and action-specific ARARs and guidance.

Contaminated surface water is believed to only be associated with contaminated sediment and does not represent a separate contaminated medium. Therefore, remediation of the contaminated sediment should also address the surface water.

## **SECTION 7 SUMMARY OF THE EVALUATION OF ALTERNATIVES**

The selected remedy must be protective of human health and the environment, be cost effective, comply with other statutory laws and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for Site 1 were identified, screened, and evaluated in the February 2002 report entitled, "Phase 2 Remedial Investigation and Focused Feasibility Study for Site 1 – Northeast Pond Disposal Area".

Remedial alternatives for waste, soil, and sediment were developed and evaluated in the FS. A summary of the detailed analysis follows. As presented below, the time to implement reflects only the time required to put the remedy in place, and does not include the time required to design the remedy, procure contracts for design and construction, or to negotiate with responsible parties for implementation of the remedy.

### **7.1 Description of Alternatives**

#### **Alternative 1: No Action**

This alternative is the baseline alternative to which the other alternatives will be compared. Under this alternative, no remedial actions would be implemented at the site. Implementation of Alternative 1 would leave the site in its present condition and would not provide any additional protection of human health or the environment.

There are no costs associated with the No Action alternative.

#### **Alternative 2: Bank Stabilization and Capping**

Alternative 2 was developed as a containment alternative to minimize direct human and ecological receptor exposure to contaminated media, minimize contaminant transport through precipitation infiltration, and prevent continued erosion of contaminants to Northeast Pond. Under Alternative 2, the slope would be regraded back from the existing toe such that there would be no loss of pond area. Regrading of the site would be conducted to achieve acceptable cap sub-grade slopes to ensure a stable final grade. The bank would be regraded to approximately a 3 horizontal to 1 vertical (3H:1V) slope. Oversize material that may be encountered during excavation and could not be consolidated within the landfill would be disposed off site. Any hazardous waste encountered near the location of a former buried drum would be excavated and disposed at an off site RCRA landfill.

Contaminated sediment would be removed to an estimated average depth of 2 feet between the toe of the east face of the landfill and the Northeast Pond Island (see Figure 6). The sediment would be dewatered (or otherwise stabilized) and placed on top of, or consolidated within, the regraded landfill. Sediment would not be placed within 30 feet of the top of the slope to avoid saturating the bank. It is anticipated that wetland vegetation would re-establish itself naturally.

A cap system with an impermeable synthetic geomembrane would be constructed on top of the regraded landfill. Prior to installation of the cap system, visible sinkholes in the slopes would be filled with flowable grout. The cap would be constructed in accordance with New York State solid waste regulations (6 NYCRR Part 360). The cap would consist of, from bottom to top, a 12-inch thick gas venting layer, a geomembrane cover, a 24-inch thick barrier protection layer, and a 6-inch thick vegetative layer. An area of approximately 65,500 square feet would be capped. Temporary erosion and sedimentation controls would be placed near the pond to minimize the potential for contaminants to migrate to the pond during construction. Permanent erosion controls would also be constructed. Drainage channels would be installed north and south of the site to provide run-on and runoff controls.

Institutional actions would be implemented after the cap and permanent erosion and sedimentation controls are in place. Deed restrictions on land use would be necessary to ensure that the cap is not disturbed or damaged. Site development restrictions would be included in the NWIRP Calverton facility transfer documents. Fencing would be constructed if necessary to control unauthorized access to the site.

Groundwater monitoring would be conducted to determine the effectiveness of the remedy and whether there have been releases to groundwater from the capped landfill. Groundwater samples would be collected for a period of up to 2 years on a semi-annual basis. A reevaluation of the site would be performed to determine whether any changes to the controls or remedy would be required.

The estimated costs for Alternative 2 are as follows:

Capital Cost:	\$2,103,000
O&M Cost:	\$74,000 (Year 1); \$25,000 (Years 2 to 30) plus \$20,000 (every 5 years)
Present Worth:	\$2,505,000

### **Alternative 3: Excavation and Off site Disposal**

Alternative 3 is a removal alternative developed to eliminate direct human and ecological receptor exposure to contaminated material and contaminant transport through precipitation infiltration, and prevent erosion of contaminants into the Northeast Pond. All landfilled material, contaminated soil, and contaminated sediment would be excavated and transported off site for disposal. The landfill area would not be backfilled, but would be returned to approximate pre-fill conditions and revegetated.

All landfill waste and contaminated soil will be excavated and hauled to an off site landfill. This excavation will be initially based on visual evidence of waste and subsequently confirmed with post excavation sampling. Based on preliminary estimates, approximately 21,000 cubic yards of material would be excavated and disposed off site at appropriate landfills. Of this material, it is estimated that approximately 2,000 cubic yards of contaminated soil and fill material have the potential to be classified as a hazardous waste. Any hazardous waste will be treated as required by applicable regulations prior to placement in a landfill. The extent of fill material and soil contamination is shown on Figures 4 and 5. Implementation of the selected remedy will require the use of an environmentally-trained archeologist to oversee the excavation to insure that no artifacts of archeological significance are disturbed.

Contaminated sediments would be excavated to an estimated average depth of 2 feet between the toe of the east face of the landfill and the Northeast Pond Island. Approximately 0.4 acre (1,315 cubic yards) of pond sediments would be excavated, dewatered, or otherwise stabilized, and hauled off site for disposal. The extent of sediment contamination is shown on Figure 6.

Post-excavation soil and sediment sampling will be conducted to ensure that remediation goals have been met. The site would then be restored to near pre-landfill conditions. This will result in allowing the boundaries of the current wetlands to expand into areas previously occupied by the landfill.

Short-term groundwater samples would be collected for a period of up to 2 years on a semi-annual basis to determine what impacts, if any, the excavation of landfill materials has had on groundwater quality. Long-term groundwater sampling would not be expected since the source of contamination would have been removed. Based upon the results of the short-term groundwater sampling program, the Navy, with consultation by NYSDEC, NYSDOH, and SCDHS will determine if any additional actions will be required. Any actions found to be necessary to address groundwater quality (including No Further Action) will be the subject of a separate Operable Unit requiring submission of a separate Record of Decision.

The estimated costs for Alternative 3 are as follows:

Capital Cost:	\$6,268,000
Annual O&M Cost:	\$0
Present Worth:	\$6,268,000

## 7.2 Evaluation of Alternatives

The criteria used to compare potential remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste sites in New York State (6 NYCRR Part 375). For each of the criteria, a brief description is provided, followed by an evaluation of the alternatives against that criterion. A detailed discussion of the evaluation criteria and comparative analysis is included in the Phase 2 Remedial Investigation and Focused Feasibility Study.

The first two evaluation criteria are termed **threshold criteria** and must be satisfied in order for an alternative to be considered for selection.

1. **Protection of Human Health and the Environment.** This criterion is an overall evaluation of each Alternative's ability to protect public health and the environment. This evaluation is based upon a composite of factors assessed under other criteria, especially short/long term effectiveness and compliance with ARARs.

Alternative 1 would not be protective of human health and the environment as no remedial measures would be implemented. Alternative 2 would provide adequate protection of human health and the environment by eliminating, reducing, or controlling risk through containment, engineering controls, and institutional controls. Contaminated sediment from Northeast Pond would be excavated and placed within the capped landfill. The implementation of institutional controls restricting future land-use and preventing groundwater use would ensure long-term protection of human health. Because Alternative 2 does not remove all waste or contaminants from the landfill, monitoring of groundwater would be performed to provide confirmation of the continued effectiveness of the remedial action. Alternative 3 would be the most protective of human health and the environment as all of the waste materials, contaminated soil, and contaminated sediment would be permanently removed from the site. Short-term groundwater samples would be collected for a period of up to 2 years on a semi-annual basis. Based on an evaluation of this groundwater data, a separate groundwater ROD for Site 1 will be prepared to address the need for additional action, if any.

**2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs).**

Compliance with ARARs addresses whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance.

ARARs are available on both a state and federal level that address clean-up objectives for groundwater, surface water, and sediment. NYSDEC has guidance values to address clean-up goals for soils. Alternative 1 would not comply with state groundwater quality standards, drinking water standards, or surface water quality standards. This alternative also would not comply with state guidance on clean-up objectives for soil (TAGM 4046) or for screening contaminated sediments. Alternatives 2 and 3 are expected to comply with chemical-, location-, and action-specific ARARs and To Be Considered Criteria (TBCs). The alternatives do not include measures to actively reduce surface water or groundwater contaminant concentrations, however following the stabilization/capping of the site or the removal and off site disposal of the landfilled materials, site-related surface water and groundwater contaminant concentrations are expected to decrease.

The next five ***primary balancing criteria*** are used to compare the positive and negative aspects of each of the remedial alternatives.

- 3. Short-Term Effectiveness.** This item evaluates the potential short-term impacts of the remedial action upon the community, the workers, and the environment. The length of time needed to achieve the remedial objectives is also estimated and compared against other alternatives.

No short-term impacts to the community or the environment would be expected to occur as the result of implementing Alternative 1 as no remedial measures would be taken. Under Alternative 2, the remedial activities associated with construction of the cap are not expected to have an adverse impact on the community. During the implementation of either Alternative 2 or 3, onsite workers might be exposed to contaminated media during intrusive activities of the contaminated media. Such exposure would be minimized by the use of personal protective equipment (PPE), engineering controls, and compliance with a site-specific health and safety plan (HASP) and Occupational Safety and Health Administration (OSHA) regulations. Implementation of Alternative 3 would have a short-term impact on the community as additional traffic would be expected due to the removal and off site hauling of the landfilled wastes and contaminated sediments. For both Alternatives 2 and 3 removal of contaminated sediments would have a short-term impact on the wetlands in the area, however it is expected that the wetlands will naturally reestablish. Erosion controls would be provided during any bank stabilization or waste excavation activities, including sediment removal, to prevent additional contamination of the pond during implementation.

For Alternative 2, it is expected that the remediation goals could be achieved within a 6 month construction duration. For Alternative 3, it is expected that the remediation goals could be achieved within a 15 month construction duration.

4. **Long-Term Effectiveness and Permanence.** This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude and nature of the risk posed by the remaining wastes; 2) the adequacy of the controls intended to limit the risk; and 3) the reliability of these controls.

Alternative 3 would be the most effective and permanent remedy because all buried wastes, surface soil, and sediment contaminated at levels exceeding the remediation goals would be excavated and removed from the site and either disposed in a permitted off site landfill or recycled. After the construction is complete, the site groundwater would be evaluated. Based on this evaluation, a separate ROD will be prepared to address the need for additional action, if any.

Under Alternative 2, site-related contaminated media and waste materials would remain, however the construction of an impermeable cap system over exposed waste materials, contaminated soil, and contaminated sediment would reduce risks to human health and the environment by limiting infiltration and potential contaminant migration to groundwater. Land and groundwater use restrictions would reduce the potential human health hazard from the waste remaining in the landfill, and monitoring could confirm the continued effectiveness of the cap performance.

5. **Reduction of Toxicity, Mobility, or Volume.** Preference is given to alternatives that permanently, and by treatment, reduce the toxicity, mobility, or volume of the wastes at the site.

None of the alternatives reduce toxicity or volume of waste through treatment, as no treatment is proposed. Alternative 3 provides the highest degree of reduction in the mobility of contaminants present in the buried waste, surface soil, and sediment because they would be removed from the site and either recycled, if appropriate, or placed in a permitted landfill facility. Alternative 2 would provide some reduction in the mobility of site-related contaminants due to the placement of the impermeable cap.

6. **Implementability.** The technical and administrative feasibility of implementing each alternative is evaluated. Technical feasibility includes the difficulties associated with the construction and the ability to monitor the effectiveness of the remedy. For administrative feasibility, the availability of the necessary personnel and material is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc.

Alternatives 2 and 3 are fairly easy to implement technically and administratively. Landfill capping and/or waste excavation/off site hauling have been implemented at numerous waste disposal sites. Experienced contractors and workers are available and the type of equipment required for either alternative is available locally. Alternative 3 would require more waste handling, but is expected to have minimal post-remediation requirements.

7. **Cost.** Capital and operation and maintenance costs are estimated for each alternative and compared on a present worth basis. Although cost is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the remaining criteria, cost effectiveness can be used as the basis for the final decision. The costs for each alternative are summarized in Table 3.

The last two criteria are identified as *modifying criteria*. These are taken into account after evaluating those above and after receipt of public comments on the proposed plan. They can alter the preferred remedy if the alternative does not receive favorable public response.

8. **State Acceptance.** State acceptance (NYSDEC) of the preferred alternative described below has been given. NYSDEC has reviewed the Navy's document and provided comments. All comments have been incorporated and NYSDEC concurs with the selected remedy.
9. **Community Acceptance.** Community acceptance of the preferred alternative outlined in the Proposed Remedial Action Plan (PRAP) was evaluated at the conclusion of the public comment period. The public comment period ran from February 13, 2002 through March 15, 2002. A public meeting was held on February 27, 2002. Comments were received at the public meeting and a related Restoration Advisory Board (RAB) meeting held on February 26, 2002. Comments were not received via mail. A "Responsiveness Summary" has been prepared (see Attachment B) that describes the public comments received and the Navy's responses.

## **SECTION 8     SUMMARY OF THE SELECTED REMEDY**

Based upon the results of the RI/FS, the evaluation summarized in Section 7 of this ROD, and the reasons presented below, the Navy is proposing Alternative 3, as described in detail in this ROD. The selected remedy, Alternative 3, consists of excavating all landfill waste, contaminated soil, and contaminated sediment with subsequent off site disposal. Short-term groundwater monitoring (up to 2 years) would be conducted to evaluate the impacts that excavation of the landfill will have on groundwater quality. Based on this evaluation, a separate ROD will be prepared to address the need for groundwater action, if any.

The soil and sediment remediation goals for this project are NYSDEC's Technical and Administrative Guidance Memorandum (TAGM) 4046 and NYSDEC's Technical Guidance for Screening Contaminated Sediments, respectively. It was determined that Alternative 3 will meet these remediation goals by preventing exposure to site-related contaminants in soils and sediments. Alternative 3 will also prevent deterioration of downgradient groundwater conditions. The remedial goal for attainment of groundwater and surface water SCGs will be met.

The present worth cost to construct and implement the remedy in this ROD is estimated to be \$6,268,000.

### **The elements of the selected remedy are as follows:**

- A remedial design program to verify the components of the conceptual design and provide details necessary for the construction and monitoring of the remedial program. Any uncertainties identified during the RI/FS would be resolved.
- Some of the excavated material may be classified as a hazardous waste. Based on preliminary estimates, approximately 2,000 cubic yards of contaminated soil and fill material have the potential to be classified as a hazardous waste. Material determined to be a hazardous waste would be excavated and transported to an off site hazardous waste treatment/disposal facility.
- Excavate all landfill waste and contaminated soil and haul to an off site landfill. Based on preliminary estimates, approximately 21,000 cubic yards of material will be excavated and disposed off site. The extent of fill material and soil contamination is shown on Figures 4 and 5. Implementation of the selected remedy will require the use of an environmentally-trained archeologist to oversee the excavation to insure that no artifacts of archeological significance are disturbed.

- Excavate contaminated sediments to an estimated average depth of 2 feet between the toe of the east face of the landfill and the Northeast Pond Island. Approximately 0.4 acre (1,315 cubic yards) of pond sediments would be excavated, dewatered, or otherwise stabilized, and hauled off site for disposal. The extent of sediment contamination is shown on Figure 6.
- Restore the site to pre-landfill conditions. This will result in allowing the boundaries of the current wetlands to expand into areas previously occupied by the landfill.
- Conduct short-term groundwater monitoring (up to 2 years) to evaluate groundwater impacts. Based on this evaluation, a separate ROD will be prepared to address the need for additional action, if any.
- Regrading or cutting back of the hill located on the western side of the landfill to eliminate the "cliff" that will be developed after removal of the landfill material. This will allow for both a safe and stable slope of the hillside from different points of elevation.

## **SECTION 9    COMMUNITY PARTICIPATION**

In 1997, the Navy established a Restoration Advisory Board (RAB) for NWIRP Calverton. The purpose of the RAB is to discuss and exchange information between the Navy, regulatory agencies, and the community on environmental restoration topics. As of June 2002, 11 RAB meetings have been held to discuss past activities and future plans for NWIRP Calverton sites, including Site 1. The Site 1 PRAP was presented to the RAB on February 26, 2002.

A copy of the Proposed Remedial Action Plan was available to the public in the Administrative Record and at the Navy's information repository located at the Riverhead Free Library. Public notice was provided in the News Review on February 14 and 21, 2002 and Suffolk Life Newspaper on February 13 and 20, 2002. A poster session and public meeting was held in the Riverhead Town Hall on February 27, 2002. A Responsiveness Summary was prepared which summarized public comments received during the February 26, 2002 RAB meeting and February 27, 2002 public meeting and Navy's responses. The Responsiveness Summary has been included as Attachment B to this ROD.

**TABLE 1**  
**NATURE AND EXTENT OF SOIL CONTAMINATION**  
**SITE 1 – NORTHEAST POND DISPOSAL AREA**  
**NWIRP CALVERTON, NEW YORK**  
**PAGE 1 OF 2**

Chemical	Frequency of Detection	Range of Positive Detections	Frequency Exceeding Remediation Goal	Remediation Goal
<b>Volatile Organics (<math>\mu\text{g}/\text{kg}</math>)</b>				
Benzene	1/9	2	0/9	6
1,1-Dichloroethane	1/9	340	1/9	20
1,1-Dichloroethene	1/9	8	0/9	40
1,2-Dichloroethane	1/9	40	1/9	10
1,2-Dichloroethene	1/9	2	0/9	30
Styrene	2/9	0.3 – 3	0/9	NA
1,1,2,2-Tetrachloroethane	3/9	0.7 – 10	0/9	60
Tetrachloroethene	2/9	4 - 10	0/9	140
1,1,1-Trichloroethane	1/9	120	1/9	76
1,1,2-Trichloroethane	1/9	35	0/9	NA
Trichloroethene	3/9	31 – 240	2/9	70
<b>Semivolatile Organics (<math>\mu\text{g}/\text{kg}</math>)</b>				
Benzo(a)anthracene	3/16	36 - 140	0/16	224 or MDL
Benzo(a)pyrene	5/16	19 – 110	1/16	61 or MDL
Benzo(b)fluoranthene	6/16	18 – 120	0/16	1,100
Benzo(g,h,i)perylene	2/16	28 – 41	0/16	50,000
Benzo(k)fluoranthene	4/16	28 – 120	0/16	1,100
Bis(2-ethylhexyl)phthalate	4/16	21 – 97	0/16	50,000
Butylbenzyl phthalate	5/16	32 – 270	0/16	50,000
Carbazole	1/16	380	0/16	NA
Chrysene	5/16	19 – 94	0/16	400
Di-n-butyl phthalate	6/16	20 – 270	0/16	50,000
Diethyl phthalate	3/16	25 – 50	0/16	7,100
Fluoranthene	9/16	20 – 230	0/16	50,000
Indeno(1,2,3-cd)pyrene	3/16	27 – 62	0/16	3,200
Phenanthrene	3/16	52 – 150	0/16	50,000
Pyrene	10/16	20 – 240	0/16	50,000
<b>Pesticides/PCBs (<math>\mu\text{g}/\text{kg}</math>)</b>				
Aldrin	10/31	0.46 – 24	0/31	41
alpha-Chlordane	4/31	0.67 – 11	0/31	200
beta-BHC	1/31	0.78	0/31	20
4,4'-DDD	7/31	0.52 – 45	0/31	770

**TABLE 1**

**NATURE AND EXTENT OF SOIL CONTAMINATION  
SITE 1 – NORTHEAST POND DISPOSAL AREA  
NWIRP CALVERTON, NEW YORK  
PAGE 2 OF 2**

<b>Chemical</b>	<b>Frequency of Detection</b>	<b>Range of Positive Detections</b>	<b>Frequency Exceeding Remediation Goal</b>	<b>Remediation Goal</b>
4,4'-DDE	17/31	0.72 – 25	0/31	440
4,4'-DDT	19/31	0.56 – 180	0/31	250
Dieldrin	2/31	1.1 – 8.4	0/31	10
Endosulfan I	1/31	3.3	0/31	90
Endrin aldehyde	3/31	2.3 – 7.8	0/31	NA
Endrin ketone	7/31	0.68 – 1.3	0/31	NA
gamma-Chlordane	10/31	0.43 – 15	0/31	540
Heptachlor	1/31	0.63	0/31	10
Methoxychlor	2/31	2.5 – 9.7	0/31	10,000
Aroclor 1242	1/31	110	0/31	1,000
Aroclor 1248	14/31	15 – 2,500	1/31	1,000
Aroclor 1254	15/31	21 – 2,900	1/31	1,000
Aroclor 1260	10/31	27 – 460	0/31	1,000
<b>Metals (mg/kg)</b>				
Antimony	10/31	14 - 47.7	2/31	6.6 (ND, SB)
Cadmium	26/31	1.4 – 165	10/31	1.9 (SB)
Chromium	31/31	2.3 – 426	9/31	50 <sup>(1)</sup>
Lead	21/31	3.9 - 3,490	9/31	48.6 (SB)
Selenium	11/31	0.86 - 1.0	0/31	2
Silver	18/31	2.3 – 320	10/31	2.1 (ND, SB)

NA Not available.

ND Not detected in background sample set. The detection limit is presented as the remediation goal.

SB The remediation goal is identified as site background.

MDL Method Detection Limit.

(1) Chromium value is based on the 1995 update of the NYSDEC TAGM 4046.

TABLE 2

**NATURE AND EXTENT OF SEDIMENT CONTAMINATION  
SITE 1 – NORTHEAST POND DISPOSAL AREA  
NWIRP CALVERTON, NEW YORK  
PAGE 1 OF 2**

Chemical	Frequency of Detection	Concentration Range	Frequency Exceeding Remediation Goal	Remediation Goal
<b>Volatile Organics (µg/kg)</b>				
2-Butanone	1/14	83	0/14	NA
1,1-Dichloroethane	1/14	18	0/14	NA
Toluene	5/14	2 – 610	1/14	49
1,1,1-Trichloroethane	2/14	1 – 7	0/14	NA
<b>Semivolatile Organics (µg/kg)</b>				
Benzo(a)anthracene	3/23	39 – 75	0/23	330
Benzo(a)pyrene	1/23	66	0/23	NA
Benzo(b)fluoranthene	4/23	38 - 63	0/23	NA
Benzo(k)fluoranthene	3/23	48 - 83	0/23	NA
Bis(2-ethylhexyl)phthalate	11/23	81 – 1,100	1/23	330
Butylbenzyl phthalate	4/23	56 – 260	0/23	NA
Chrysene	4/23	49 – 62	0/23	NA
Fluoranthene	8/23	36 – 140	0/23	1,020
4-Methylphenol	1/23	53	0/23	330
Phenanthrene	6/23	41 - 99	0/23	330
Phenol	2/23	44 – 46	0/23	330
Pyrene	8/23	43 - 200	0/23	961
1,2,4-Trichlorobenzene	1/23	61	0/23	91
<b>Pesticides/PCBs (µg/kg)</b>				
Aldrin	4/23	1.6 – 5.3	0/23	8
alpha-Chlordane	5/23	0.48 – 1.6	0/23	80
beta-BHC	2/23	0.41 – 2.4	0/23	8
4,4'-DDD	9/23	1.2 – 2,000	4/23	16
4,4'-DDE	11/23	1.6 – 380	3/23	16
4,4'-DDT	3/23	2.3 – 900	1/23	16
Endosulfan I	1/23	0.79	0/23	16
Endrin	2/23	4.5 – 11	1/23	8
Endrin aldehyde	3/23	5.4 – 21	0/23	NA
gamma-Chlordane	5/23	0.71 - 28	0/23	80
Heptachlor epoxide	2/23	4.1 – 7.1	0/23	8
Aroclor 1248	6/23	76 – 380	3/23	160
Aroclor 1254	2/23	76 – 93	0/23	160

TABLE 2

NATURE AND EXTENT OF SEDIMENT CONTAMINATION  
 SITE 1 – NORTHEAST POND DISPOSAL AREA  
 NWIRP CALVERTON, NEW YORK  
 PAGE 2 OF 2

Chemical	Frequency of Detection	Concentration Range	Frequency Exceeding Remediation Goal	Remediation Goal
Aroclor-1260	3/23	130 – 730	2/23	160
<b>Metals (mg/kg) <sup>(1)</sup></b>				
Cadmium	5/23	0.32 – 4.1	2/23	1.9 <sup>(4)</sup> /9.0 <sup>(3)</sup>
Lead	16/23	3.0 – 136	1/23	48.6 <sup>(4)</sup> /110 <sup>(3)</sup>
Nickel	9/23	5.7 – 23	1/23	16 <sup>(2)</sup> /50 <sup>(3)</sup>
Selenium	6/23	0.73 – 2.3	0/23	NA
Silver	4/23	1.1 – 28.2	4/23	1.0 <sup>(2)</sup> /2.2 <sup>(3)</sup>

NA Not available.

1 Only includes metals detected above background levels.

2 The remediation goal is the lowest effect level.

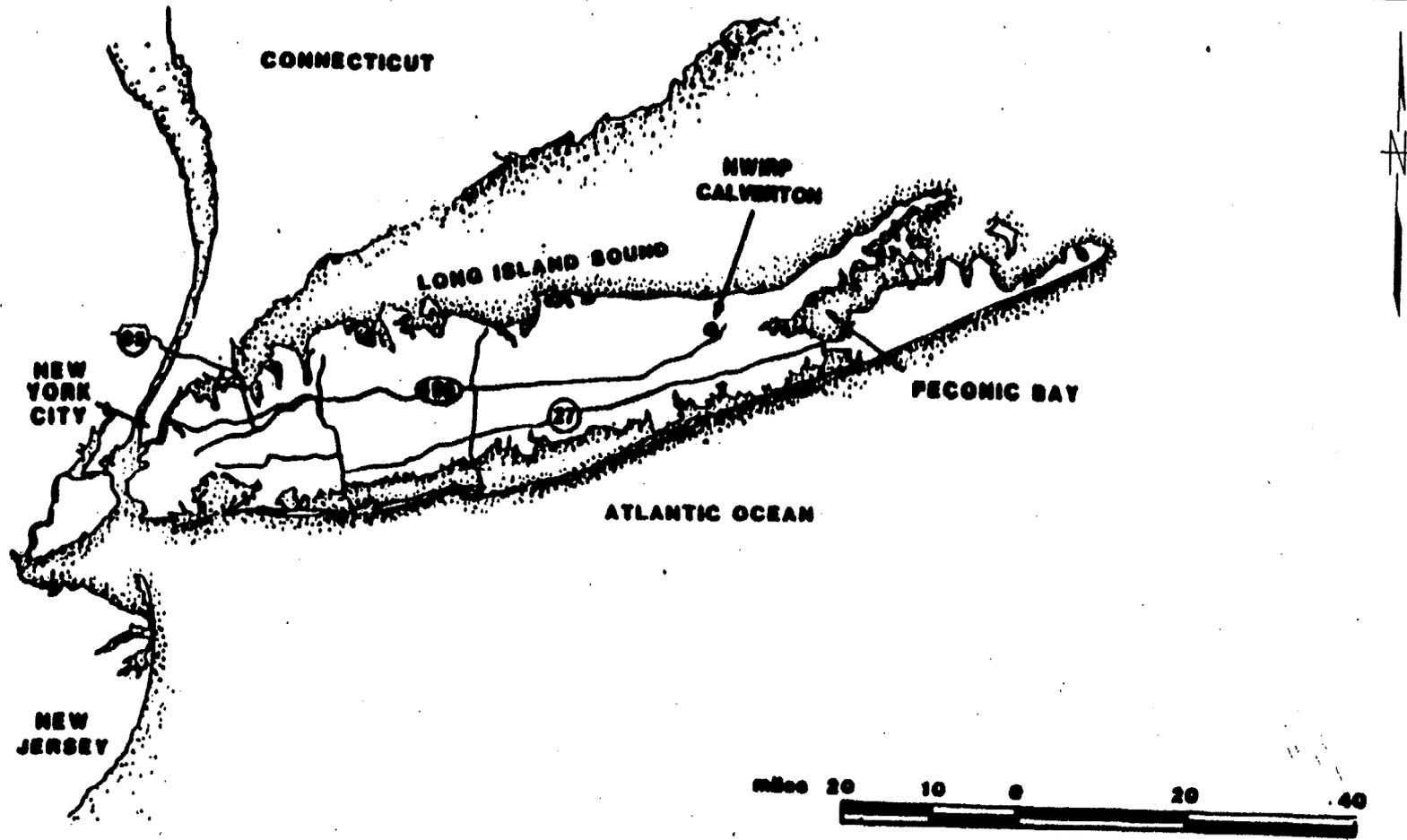
3 The lowest effect levels are close to site background concentrations and analytical detection limits. In the event that minor and infrequent exceedances of the lowest effect level are noted during the confirmation testing, then a remediation goal between the lowest effect level and the severe effect level will be considered as an alternative remediation goal.

4 The minimum remediation goal is based on Site Background levels, the lowest effect level is less than Site Background.

**TABLE 3**

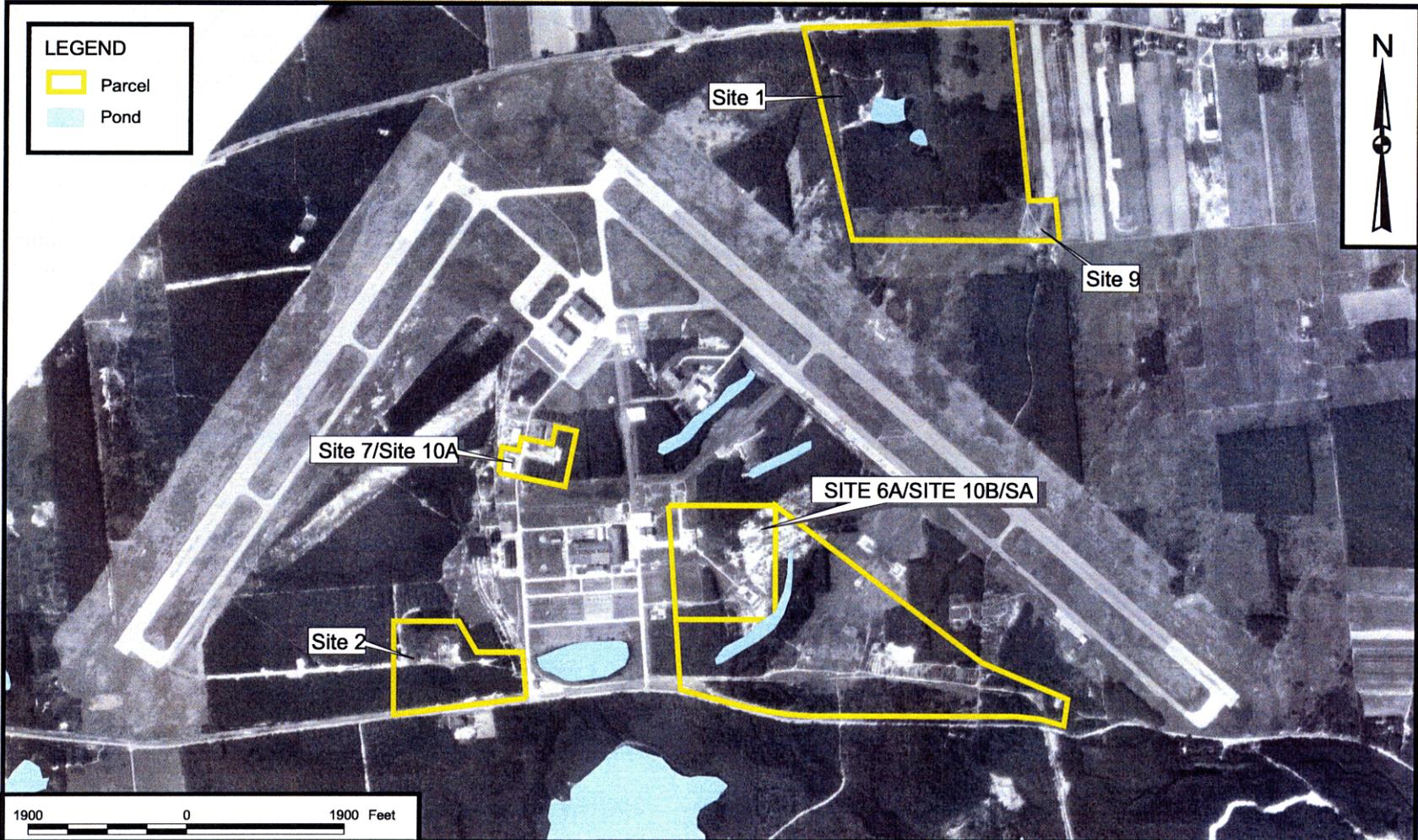
**REMEDIAL ALTERNATIVE COSTS  
SITE 1 – NORTHEAST POND DISPOSAL AREA  
NWIRP CALVERTON, NEW YORK**

<b>Remedial Alternative</b>	<b>Capital Costs</b>	<b>Annual O&amp;M Costs</b>	<b>Total Present Worth</b>
Alternative 1	\$0	\$0	\$0
Alternative 2	\$2,103,000	\$74,000 (Year 1) \$25,000 (Years 2 to 30) \$20,000 (every 5 years)	\$2,505,000
Alternative 3	\$6,268,000	\$0	\$6,268,000



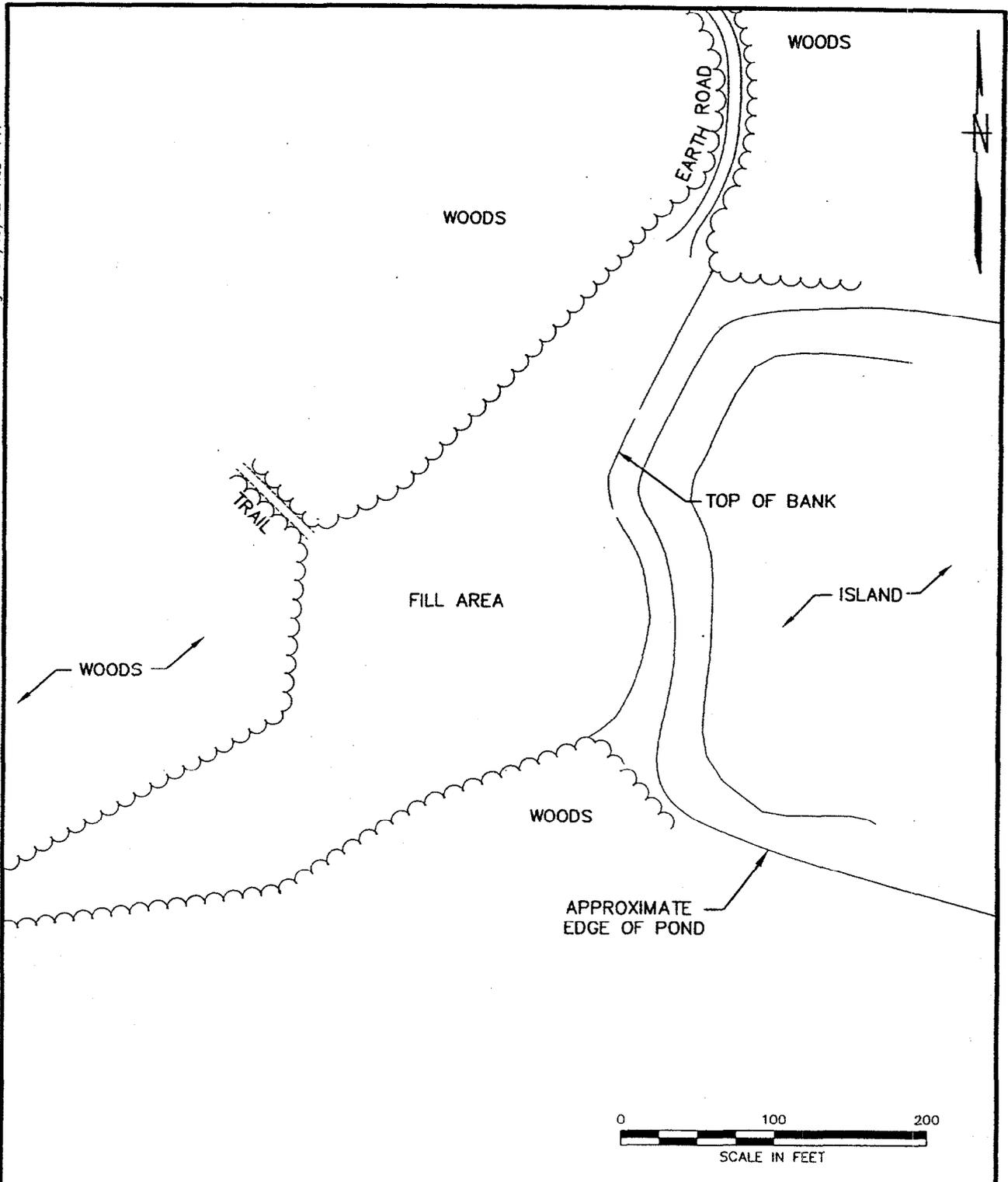
25

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CHECKED BY _____	DATE _____		APPROVED BY _____	DATE _____
COST/SCHED-AREA _____		GENERAL LOCATION MAP NAVAL WEAPONS INDUSTRIAL RESERVE PLANT CALVERTON, NEW YORK	APPROVED BY _____	DATE _____
SCALE AS NOTED			DRAWING NO. FIGURE 1	REV. 0



DRAWN BY J. LAMEY		DATE 11/22/99		Tetra Tech NUS, Inc.		CONTRACT NUMBER 7398		OWNER NUMBER 0270	
CHECKED BY		DATE				APPROVED BY		DATE	
COST/SCHEDULE-AREA				APPROVED BY		DATE			
SCALE AS NOTED		SITE LOCATION MAP NWIRP CALVERTON, NEW YORK				DRAWING NO. FIGURE 2		REV 0	

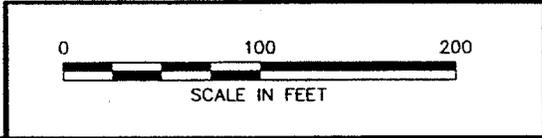
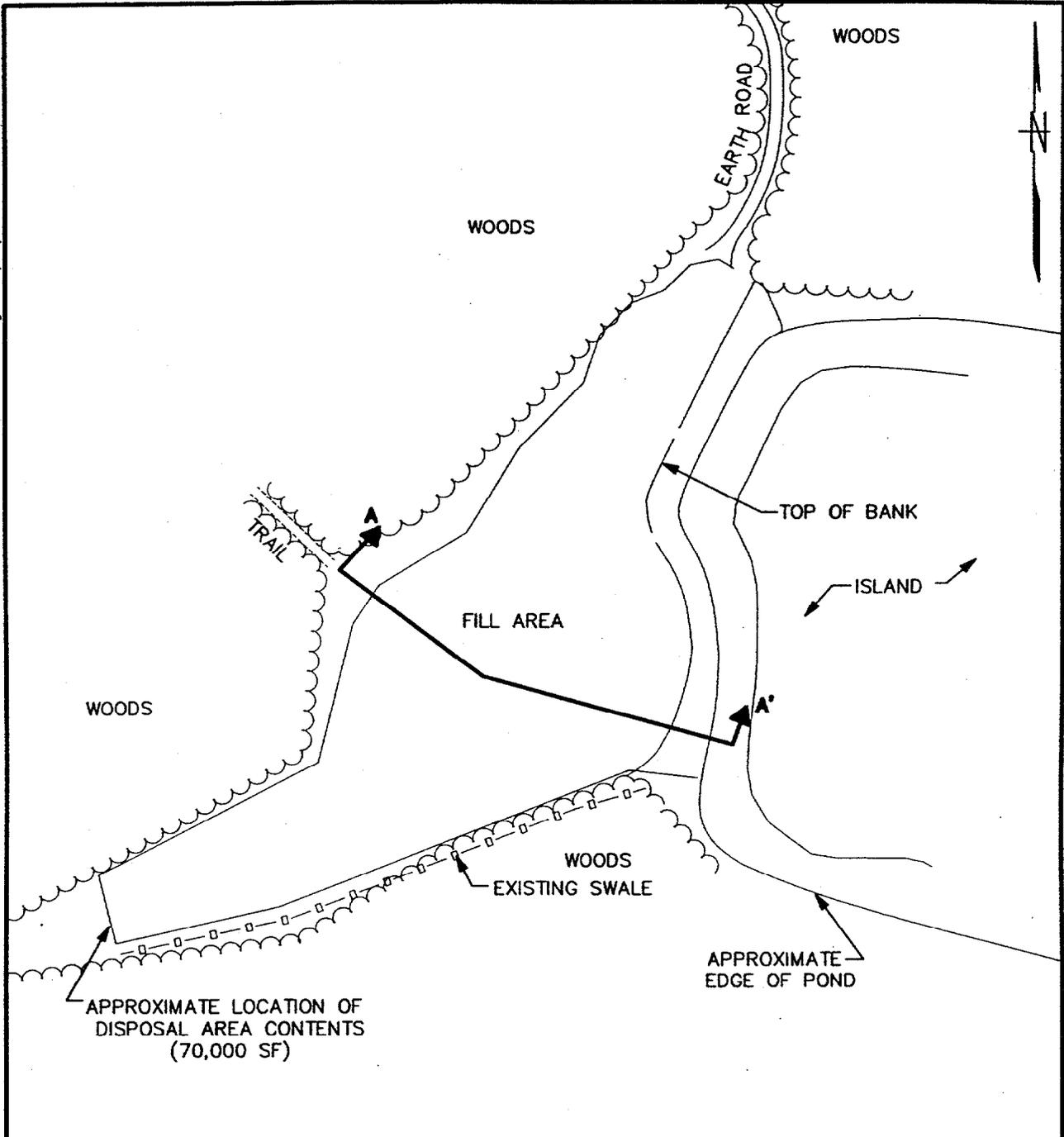
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CHECKED BY	DATE		APPROVED BY	DATE
COST/SCHED-AREA	SITE LAYOUT MAP SITE 1 - NORTHEAST POND DISPOSAL AREA NAVAL WEAPONS INDUSTRIAL RESERVE PLANT CALVERTON, NEW YORK		APPROVED BY	DATE
SCALE AS NOTED	DRAWING NO. FIGURE 3			REV. 0

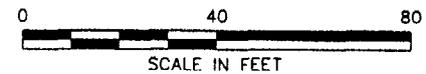
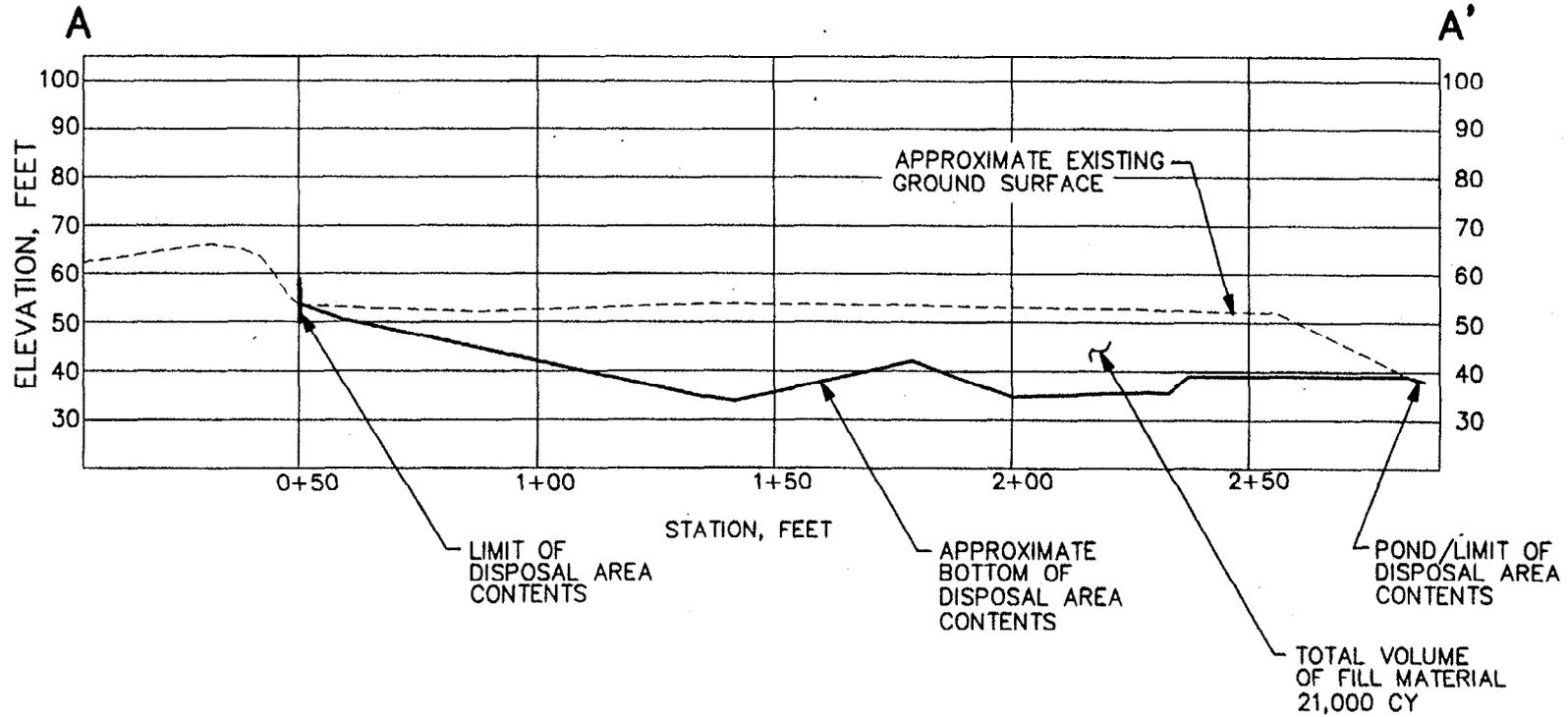
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CHECKED BY	DATE		APPROVED BY	DATE
COST/SCHED-AREA	EXTENT OF FILL MATERIAL AND SOIL CONTAMINATION SITE 1 - NORTHEAST POND DISPOSAL AREA NAVAL WEAPONS INDUSTRIAL RESERVE PLANT CALVERTON, NEW YORK		APPROVED BY	DATE
SCALE AS NOTED			DRAWING NO. FIGURE 4	REV. 0

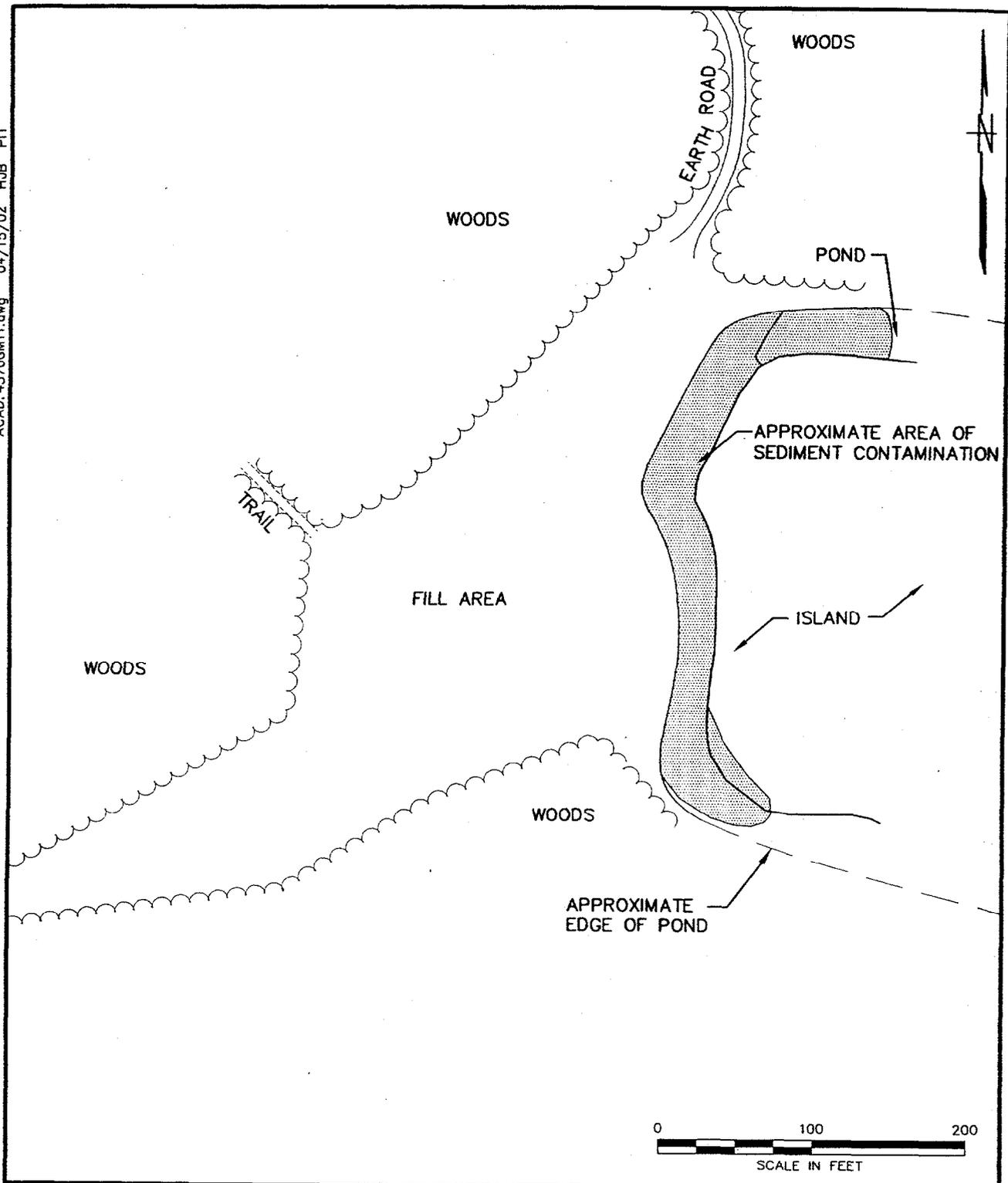
FORM CADD NO. T+NUS\_AV.DWG - REV 0 - 1/22/98



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CHECKED BY DATE		APPROVED BY DATE	APPROVED BY DATE	
COST/SCHED-AREA		CROSS SECTION A-A' AT EXISTING CONDITIONS SITE 1 - NORTHEAST POND DISPOSAL AREA NAVAL WEAPONS INDUSTRIAL RESERVE PLANT CALVERTON, NEW YORK		DRAWING NO. FIGURE 5
SCALE AS NOTED				REV. 0

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CHECKED BY	DATE		APPROVED BY	DATE
COST/SCHED-AREA	EXTENT OF SEDIMENT CONTAMINATION SITE 1 - NORTHEAST POND DISPOSAL AREA NAVAL WEAPONS INDUSTRIAL RESERVE PLANT CALVERTON, NEW YORK		APPROVED BY	DATE
SCALE AS NOTED			DRAWING NO. FIGURE 6	REV. 0

FORM CADD NO. TENUS\_AV.DWG - REV 0 - 1/22/98

## GLOSSARY OF TERMS

AOCs	Areas of Concern
ARARs	Applicable or Relevant and Appropriate Requirements
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CMS	Corrective Measures Study
DD	Decision Document
EPA	U.S. Environmental Protection Agency
FFS	Focused Feasibility Study
GOCO	government owned, contractor operated
IAS	Initial Assessment Study
IR	Installation Restoration
IRM	interim remedial measure
MDL	Method Detection Limit
$\mu\text{g}/\text{kg}$	micrograms per kilogram
$\text{mg}/\text{kg}$	milligrams per kilogram
NPL	National Priorities List
NWIRP	Naval Weapons Industrial Reserve Plant
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PA	Preliminary Assessment
PAH	polynuclear aromatic hydrocarbons
PCB	polychlorinated biphenyl
PRAP	Proposed Remedial Action Plan
RAB	Restoration Advisory Board
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RI	Remedial Investigation
ROD	Record of Decision
SCDHS	Suffolk County Department of Health Services
SCGs	standards, criteria, and guidance
SI	Site Investigation
SVOC	semivolatile organic compound
TAGM	Technical Assistance and Guidance Memorandum
TBCs	To Be Considered (guidance)
VA	Veterans Administration
VOC	volatile organic compound

ATTACHMENT A  
ADMINISTRATIVE RECORD

**ADMINISTRATIVE RECORD**  
**SITE 1 - NORTHEAST POND DISPOSAL AREA**  
**NAVAL WEAPONS INDUSTRIAL RESERVE PLANT**  
**CALVERTON, NEW YORK**

1. Initial Assessment Study of NWIRP Bethpage, NY and NWIRP Calverton, NY, prepared by Rogers, Golden, & Halpern, 1986.
2. Natural Resources Management Plan, Naval Weapons Industrial Reserve Plant, Calverton, New York 1989.
3. Hazard Ranking System Preliminary Scoring and Site Inspection Report Form, Naval Weapons Industrial Reserve Plant, Calverton, New York, prepared by Halliburton NUS Corporation, 1992.
4. Final Site Investigation, Naval Weapons Industrial Reserve Plant, Calverton, New York, prepared by Halliburton NUS Corporation, 1992.
5. RCRA Facility Investigation, Naval Weapons Industrial Reserve Plant, Calverton, New York, prepared by Halliburton NUS Corporation, 1995.
6. RCRA Facility Investigation Addendum, Naval Weapons Industrial Reserve Plant, Calverton, New York, prepared by Halliburton NUS Corporation, 1995.
7. Phase 2, RCRA Facility Investigation Field Sampling Plan for Naval Weapons Industrial Reserve Plant, Calverton, New York, prepared by C.F. Braun Engineering Corporation, 1997.
8. Phase 2 Remedial Investigation and Focused Feasibility Study for Site 1 – Northeast Pond Disposal Area, Naval Weapons Industrial Reserve Plant, Calverton, New York, prepared by Tetra Tech NUS, Inc., February 2002.
9. Proposed Remedial Action Plan for Site 1 – Northeast Pond Disposal Area, Naval Weapons Industrial Reserve Plant, Calverton, New York, February 2002.
10. Fact Sheet, Site 1 – Northeast Pond Disposal Area, Proposed Remedial Action Plan, February 2002.
11. Transcript of February 27, 2002 Public Meeting on Proposed Remedial Action Plan for Site 1 – Northeast Pond Disposal Area, Naval Weapons Industrial Reserve Plant Calverton, Riverhead Town Hall, Riverhead, New York.
12. Transcript of February 26, 2002 Restoration Advisory Board for Naval Weapons Industrial Reserve Plant Calverton, Riverhead Masonic Lodge, Riverhead, New York.

**ATTACHMENT B**  
**RESPONSIVENESS SUMMARY**

**RESPONSIVENESS SUMMARY**  
**FOR**  
**PROPOSED REMEDIAL ACTION PLAN**

The issues addressed below were raised during a Restoration Advisory Board meeting held on Tuesday, February 26, 2002 at the Masonic Lodge in Riverhead New York and a public meeting held on Wednesday, February 27, 2002, at the Riverhead Town Hall in Riverhead, New York. The purpose of the public meeting was to present the Proposed Remedial Action Plan (PRAP) for Site 1, Northeast Pond Disposal Area and to receive comments regarding the PRAP for consideration when choosing the final selected remedy. The transcript from the meeting is included in the administrative record for the facility (Attachment A) and is available for public review at the information repository located at the Riverhead Free Library. The public comment period ran from February 13, 2002 through March 15, 2002.

The following pages list the comments, which were received during the comment period and their corresponding response. In the event when similar comments were received they were combined into a general comment for which a response was prepared.

1. Comment: A director for the Town of Riverhead asked if the deed would contain a restriction that the site is not appropriate for residential use, even though there would be no future land use restrictions in this area.

Response: There would be a restriction in the deed that the site can only be used for non-residential economic redevelopment use. This restriction is not due to environmental reasons, but is the result of an agreement outlined by congress that former military owned lands can be deeded over to local governments or municipalities for economic redevelopment.

2. Comment: Has Site 9 which is also within the overall 145 acres been remediated and will a ROD for Site 9 also be issued.

Response: Based on the site investigations conducted at Site 9, the Navy determined that no contaminants were present in Site 9 soils. The Navy also recommended to the State that groundwater beneath the site was also not an issue. The State concurred with the recommendations.

3. Comment: A resident wanted to know how much usable land will be available for redevelopment once the Site 1 landfill is remediated.

Response: The entire parcel is approximately 140 acres and the landfill and pond are about two acres each. The Navy is aware that there will be some restrictions on the area to be developed due to the presence of archaeological artifacts and wetlands. A copy of the archaeological survey can be obtained from the Town of Riverhead.

4. Comment: A resident had several questions regarding community input to the acceptance of the Proposed Remedial Action Plan.

Response: Under the New York State Citizen's Participation Law and as part of the CERCLA process, the Navy must hold public information meetings and obtain public input before a proposed remediation plan can be accepted by the state and/or EPA. Specifically, for the Calverton site, a Restoration Advisory Board has been established. The group meets on a regular basis and citizens may attend any of the meetings and can also participate by becoming members of the Restoration Advisory Board.

5. Comment: A resident had several questions regarding how the landfill was established on the slope adjacent to the pond and the depth of waste in the landfill. He also wanted to know how the contaminants, PCBs and pesticides were deposited in the landfill and where the excavated waste materials would be disposed.

Response: Based on test pits constructed during the RI, the Navy believes that the landfill ranges from 10 to 20 feet in depth as it was probably constructed along the natural slope that went to the edge of the pond.

The Navy interviewed older employees who recalled that empty paint cans and other types of containers were placed in the landfill. These are most likely the source of the contaminants that have been detected in the various environmental media (soil, groundwater, sediments).

Currently, the Navy has a contractor preparing a Work Plan to address the actual means of how the materials will be excavated, handled, transported, and recycle or disposed. This Work Plan will be submitted to the state agencies for review and comments, prior to remediation. As part of the remediation, the excavated soils will be tested to determine if they are hazardous or non-hazardous and then sent to the appropriate facility. The Navy, at this time, does not know what landfill facilities will be used, but it expects that any wastes will be sent off of Long Island. Following the excavation activities, the site slopes will be graded, stabilized and revegetated to pre-landfill conditions.

6. Comment: A resident wanted to know what endangered species is present at the site.

Response: The DEC Natural Resources Department has identified that the Tiger Salamander and/or Tiger Salamander habitat is present at the site. Prior to any construction activities the Navy will conduct a survey of the site to identify potential habitat areas so they will not be disturbed during the remediation.

7. Comment: A resident wanted to know how many trucks per day will be leaving the site and what roads they will be using. Another resident wants to know if the waste will be going to Pennsylvania or New Jersey. Also, another resident identified concerns about dust being formed by truck traffic.

Response: The Navy currently does not know how many truck loads of waste and contaminated materials will be leaving the site each day. A gate will be installed in the site perimeter fence so that trucks can exit directly onto Route 25. The Work Plan will detail ingress and egress routes at the site. Once the project is bid, the Navy will know what disposal sites will be used and their locations. Dust levels will be monitored during the construction and controlled as needed on the interior gravel access roads.

8. Comment: A resident wanted to know when the remediation project might go to bid, the length of remediation and types of artifacts found at the site.

Response: The Navy anticipates starting the remediation work in the Fall of 2002. The project should be completed in a two to three month time frame. The endangered species survey is scheduled for the end of March 2002. A historic preservation plan must also be in place. Historical artifacts from colonial days were found during the historical survey that was conducted over the entire NWIRP Calverton property.

9. Comment: A NYSDEC representative indicated that during the State's review of the Navy's Work Plan, the State will specifically address wetland restoration issues regarding the size of the post excavation wetland, control of invasive wetland species, migration of silt during the excavation. Also, staging areas and access roads should be limited to existing disturbed areas to minimize impacts to the existing upland vegetation.

Response: The Navy concurs and indicated that specific details will be worked out during the preparation of the Work Plan. Initial discussions have already occurred between the State and Navy wetland specialists. In general, the new wetland is expected to be larger than the current wetland. However, since this area is also archeologically sensitive, the Navy will need to balance

wetland enhancement with archeological preservation requirements. The Navy indicated that the construction activities will be conducted to minimize impact on upland vegetation.

10. Comment: A RAB member questioned how the Navy plans to address the groundwater contamination at the site.

Response: The Navy indicated that the groundwater contamination found at the site was very low and only slightly exceeded drinking water standards. Once the contaminated soils and sediments have been removed from the site, the Navy will re-evaluate the groundwater quality through sampling and analysis and then determine if any groundwater action is required. Groundwater at Site 1 will be the subject of a separate ROD.