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PUBLIC NOTICE REGARDING INVITATION TO COMMENT ON THE PROPOSED CLEANUP AT SITE 11 NSWC INDIAN HEAD MD

8/1/2008

NAVFAC CHESAPEAKE

Proposed Plan

Site 11, Caffee Road Landfill

U.S. Navy Announces the Site 11 Proposed Plan

Naval Support Facility, Indian Head

Indian Head, Maryland

August 2008

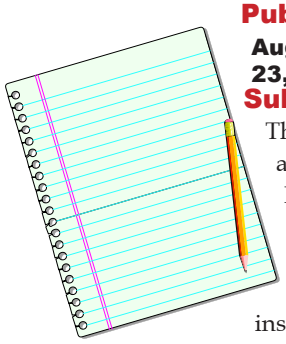
Introduction

This **Proposed Plan** presents the remedial alternatives evaluated and recommended to address contaminated soil, solid waste, and sediment at Site 11, Caffee Road Landfill, at Naval Support Facility, Indian Head (NSF-IH) in Indian Head, Maryland. This Proposed Plan recommends a protective soil cover, **institutional controls (ICs)**, and **groundwater** monitoring for the soil, solid waste, and nearshore sediment in Area A; and an *in situ* cap and ICs for the sediment adjacent to Area B along Mattawoman Creek. Based on the human health and ecological risk assessments performed during the remedial investigation, no **contaminants of concern** (COCs) were identified for surface water; therefore, a remedial action is not warranted for this medium. Contaminants detected in groundwater were either below the federal **maximum contaminant levels (MCLs)** for those with MCL values or less than their respective **background** concentrations for those without MCL values. As a result, a remedial action is not warranted for groundwater. This Proposed Plan provides the rationale for the recommendations, based on investigative activities performed at Site 11 to date, and explains how the public can participate in the decision making process. The locations of NSF-IH and Site 11 are shown in Figure 1.

The Department of the Navy (Navy) (the lead agency for the site activities) and the U. S. Environmental Protection Agency Region III (EPA) (support agency), in consultation with the Maryland Department of the Environment (MDE) (support agency), issue this document as part of the public participation responsibilities under Title 40 of the Code of Federal Regulations (CFR), Section 300.430(f)(3). Title 40 CFR Part 300 is known as the **National Oil and Hazardous Substances Pollution Contingency Plan (NCP)**. This Proposed Plan summarizes information that can be found in greater detail in the **Remedial Investigation (RI)** report, **Feasibility Study (FS)** report, and other documents contained in the **Administrative Record File** for this site.

The Navy and EPA, in consultation with MDE, will make a final decision on the **response action** for the site after reviewing and considering all information submitted during the 30-day public **comment period** and may modify the

Mark Your Calendar for the Public Comment Period



Public Comment Period

August 25, 2008 - September 23, 2008

Submit Written Comments

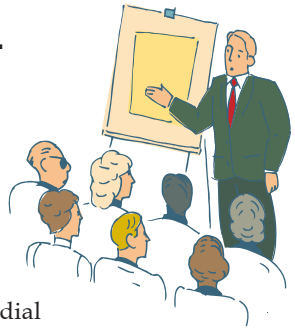
The Navy, EPA, and MDE will accept written comments on the Proposed Plan during the public comment period. To submit comments or obtain further information, please refer to the insert page.

Attend the Public Meeting

September 18, 2008 at 5:00 p.m.

Indian Head Senior Center
100 Cornwallis Square
Indian Head, MD 20640

The public comment period will include a public meeting during which the Navy, EPA, and MDE will provide an overview of the site, previous investigation findings, remedial alternatives evaluated, and the Preferred Alternative, answer questions, and accept public comments.



Location of Information Repository

The Information Repository is available for public viewing at the following locations:

Indian Head Town Hall
4195 Indian Head Hwy.
Indian Head, MD 20640
(301) 743-5511
Hours: Monday through Friday 8:30 a.m. to 4:30 p.m.

Charles County Public Library
2 Garrett Ave.
La Plata, MD 20646-5959
(301) 934-9001 * (301) 870-3520
Hours: Monday through Thursday 9 a.m. to 8 p.m.
Friday and Sunday 1-5 p.m.
Saturday 9 a.m. to 5 p.m.

Naval Support Facility, Indian Head General Library
Building 620 (The Crossroads)
101 Strauss Avenue, Indian Head, MD
Hours: M-F 9:00 a.m. – 5:30 p.m.
Sat/Sun - closed

preferred response action, or select another action based on any new information or public comments. Therefore, community involvement is critical, and the public is encouraged to review and comment on this Proposed Plan. After the public comment period has ended and the comments and information submitted during that time have been reviewed and considered, the Navy and EPA, in consultation with MDE, will document the action selected for the site in a **Record of Decision (ROD)**.

A glossary of specialized terms used in this Proposed Plan is attached. Words listed in the glossary are indicated in **bold print** the first time they appear in this Plan.

Site History

Site 11, Caffee Road Landfill is situated at the southern end of Caffee Road, extending about 200 feet on either side of the road. The landfill is bordered by an unnamed creek and wetland to the west and by Mattawoman Creek to the south (Figure 2). A review of historical aerial photographs (1956 to 1987) indicated that Site 11 was created by landfilling activities, which occurred after 1956. By 1963, most of the area within Site 11 had been cleared and filled. The filling activities extended the shoreline into Mattawoman Creek by as much as 150 feet from its original position. Currently, much of the Mattawoman Creek shoreline adjacent to Site 11 consists of concrete, debris, and **fill** (Photographs 1 and 2).

Site 11 is divided into two areas: (1) Area A and the Upland Area because of past landfilling and disposal activities; and (2) Area B because of historic incineration or waste-burning activities. Area A is the landfill where disposal activities occurred and where metal parts were flashed in the area just west of wetland Area Two (IH-02) (Figure 2). The Upland Area is to the northwest of Area A. A literature search conducted at NSF-IH during the RI (CH2M HILL, 2004) revealed that four open-burning pits previously existed along the eastern edge of Site 11. This area was designated as Area B and was investigated as part of the remedial investigation. The original burn location was just west of Area B. Burning in this area stopped when the area was cleaned up and regraded in 2001. Two incinerators, located on the eastern side of Site 11, were also present in Area B. One was a chemical incinerator (Building 1549) that reportedly was never used and the other was an incinerator for classified documents (Building 1607).

The Area A landfill was used until the early 1960s for the disposal of bulk metal items and trash, rocket motor casings, exploded building debris, rifles, **demilitarized ordnance**, propellant grains, and open-burning residues (Fred C. Hart Associates, Inc., 1983). There is no information concerning the date when the landfill was first used. In 1980, the Navy reportedly removed 5,000 to 6,000 cubic yards of **flashed metal** parts from the wetland area. The **Initial Assessment Study (IAS)** for Site 11 reported that various materials were dumped or left uncovered for extended periods (Fred C. Hart Associates, Inc., 1983). Because the site was never permitted as a landfill, there were no cover application procedures to secure deposited or stored waste materials.

The surface of the landfill had been used previously as the Caffee Road Thermal Treatment Point Pad to store flashed metal parts, which were periodically removed by a metal recycling contractor. With the exception of a new gravel pad, which is now the Caffee Road Thermal Treatment Point Pad, the landfill area was regraded and seeded in 2001.

Site Characteristics

Site 11 is at an elevation of approximately 0 to 15 feet above mean sea level (msl). In Area A and the Upland Area, commingled fill material (clayey sands and gravels)—used for reclaiming the land—and solid waste (wood fragments, concrete, bricks, glass, ash, and slag) were encountered to a depth of 4 feet below ground surface (bgs) in the central and western portions, and to depths greater than 10 feet bgs in the center of the landfill. Based on a geophysical survey conducted in May 2006, the extent of solid waste was further delineated to the north and east of Area A. Soil underlying Area B, which is east of the landfill, consists of sandy, silty clay containing organic matter (e.g., roots). The sand ranges from fine- to medium-grained.

Water table elevations, as obtained from monitoring wells installed at the site, range from 8.42 feet above msl

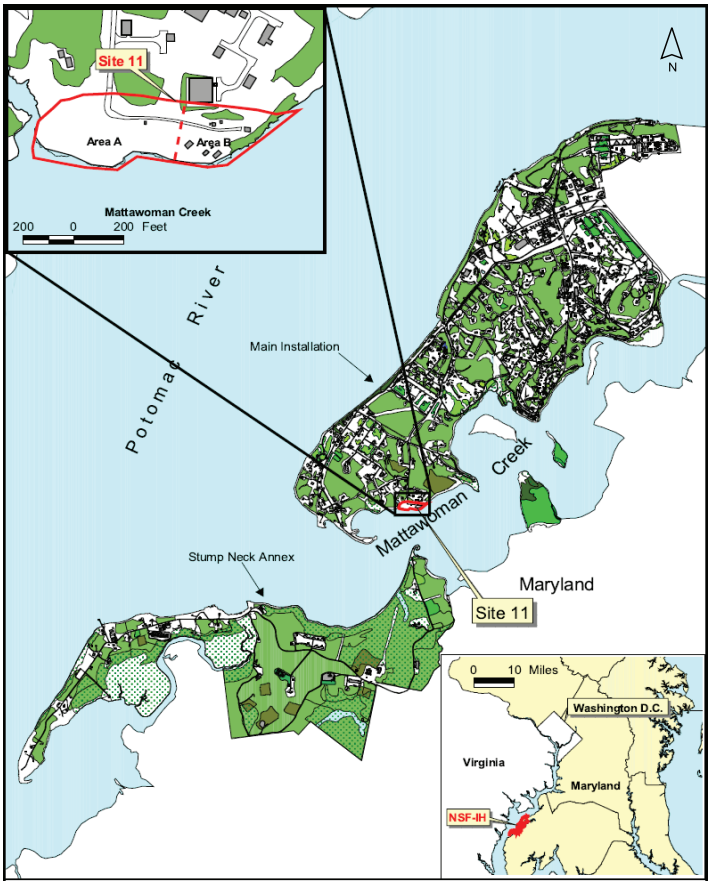


Figure 1 – NSF-IH Facility Map

Photograph 1 – Northern view from Mattawoman Creek of Area A shoreline

Photograph 2 – Northern view from Mattawoman Creek of Area B shoreline

upgradient of Site 11 to 1.89 feet above msl along the shoreline. Groundwater flow at the site is generally from north to south towards Mattawoman Creek and perhaps towards the unnamed creek. Mattawoman Creek is influenced by the tides and, in turn, it is likely that the site water table, at least near the creek, is as well. Although tests were not performed to quantify the effects of the tidal cycle on the water table, it is assumed that the tide would only affect the hydraulic gradient near the shoreline and the general direction of groundwater flow at the site would not vary.

Environmental Investigation History

Several investigations were conducted at Site 11 between 1983 and 2005. Below is a chronological summary of these investigations.

Initial Assessment Study

The objective of the IAS was to identify and assess sites posing a threat to human health or to the environment because of contamination from past hazardous materials operation. The IAS identified Site 11 as the Caffee Road Landfill, based on reported disposal of bulk items and trash and observations of uncontrolled spills, uncovered and leaking drums, and dust covering the site vegetation.

Phase II RCRA Facility Assessment

EPA conducted a Phase II Resource Conservation and Recovery Act (RCRA) Facility Assessment (A.T. Kearny, Inc. and K.W. Brown & Associates, Inc., 1988) in 1988 that consisted of a preliminary review of available documents and a visual site inspection (VSI). During the VSI, uncontrolled spills and uncovered and leaking drums were not observed, as noted in the IAS. However, a large collection of flashed metal parts was observed at the site.

Remedial Investigation

Surface and subsurface soil sampling, monitoring well installation, and groundwater sampling were conducted in July 2000 and February 2002 as part of the RI conducted at Site 11 and four other sites (CH2M HILL, 2004). The RI was conducted in two phases: the initial RI, conducted in 2000, focused on Area A; the follow-up investigation, conducted in 2002, focused on Area B. The objectives of the Area A investigation were to determine: (1) the extent and thickness of waste at the site, (2) whether the waste is a source of contamination to soils and groundwater, (3) whether soils have been affected, and (4) whether the adjacent creeks have been affected. Field activities consisted of surface and subsurface soil sampling, waste sampling, sediment and surface water sampling, direct-push groundwater sampling, and monitoring well installation and sampling. Thirty-two surface soil samples (28 site and 4 background), 7 subsurface soil samples (3 site and 4 background), 2 waste samples, 6 *in situ* groundwater samples, 5 monitoring well groundwater samples (4 site and 1 background), 7 surface water samples, and 7 sediment samples were collected and analyzed for **target compound list (TCL) volatile organic compounds (VOCs)**, TAL **semivolatile organic compounds (SVOCs)**, **target analyte list (TAL)** metals, explosives, and total petroleum hydrocarbons (TPHs).

The objectives of the Area B investigation were to determine: (1) whether environmental media have been affected by former burning pits in this area, (2) whether waste is present in the area east of Building 1607, (3) the extent and thickness of waste, if present, and (4) whether environmental media have been affected from past land use in the area between Building 1607 and the former burning pits. Field activities consisted of surface and subsurface soil sampling, sediment and surface water sampling, and monitoring well installation and sampling. Eleven surface soil samples, 9 subsurface soil samples, 3 monitoring well groundwater samples, 3 surface water samples, and 1 sediment sample were collected and analyzed for VOCs, SVOCs, TAL metals, explosives and TPH. A waste sample was not collected because it was not encountered in Area B.

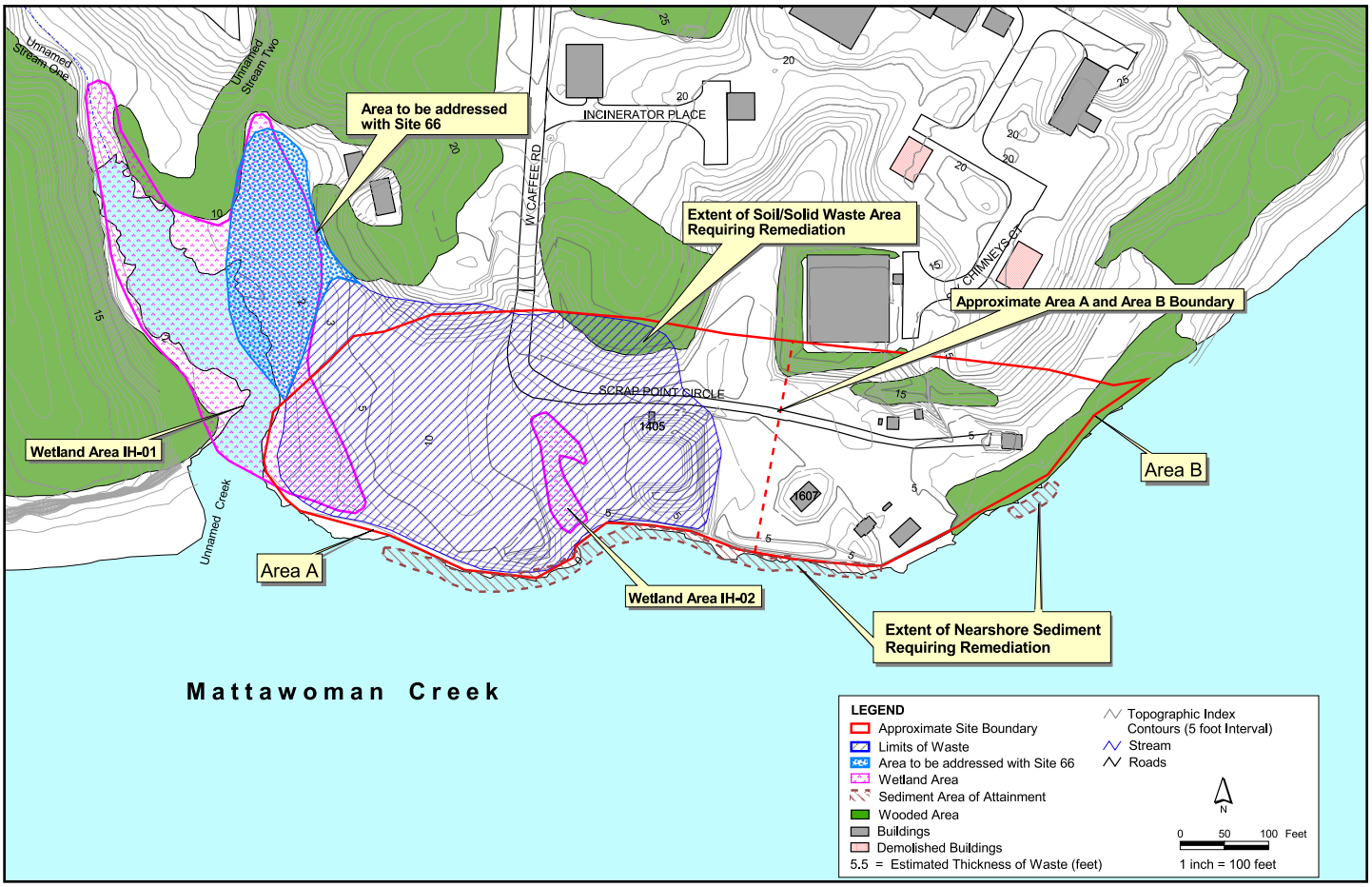


Figure 2 – Areas Requiring Remediation

Figure 3 shows the sample locations in Areas A and B. The sampling analytical results for each area are summarized below.

Area A:

- Surface soil: VOCs were detected at very low concentrations in the site samples. SVOCs were detected in all site samples and one of the site-specific background samples. Metals were detected in all samples, with the highest concentrations and most number of detections in samples collected around Building 24. In general, samples collected along the northwest and northern parts of the site and in the eastern part of the site had the lowest concentrations of metals. Several explosives were detected in a few samples, particularly in the western part of the site. TPH—diesel range organics (TPH-DRO) were detected in the site samples as well as in three background samples, with the highest concentrations in the samples from the western part of the site.
- Subsurface soil: VOCs were detected at very low concentrations in the site samples. SVOCs were detected in three samples, with the highest concentrations and most number of detections in the sample from location IS11SB04 in the center of the site. Metals also were detected in the samples, with the highest concentration in the sample from location IS11SB04. Low concentrations of 1,3-dinitrobenzene were detected in samples from locations IS11SB12 and IS11SB26. TPH-DRO was detected in one sample (location IS11SB04), and TPH-gasoline range organics (GRO) were not detected in any samples. Overall, concentrations of detected compounds were lower in subsurface soil than in surface soil.
- Waste: VOCs were detected in the sample from location IS11WS02. Several SVOCs were detected in both samples. Metals were detected in both samples, with IS11WS02 exhibiting the most detections and higher concentrations. Three explosives were detected in both samples: HMX and 2,6-dinitrotoluene in both samples with perchlorate in IS11WS01 and RDX in IS11WS02. TPH-GRO and TPH-DRO were detected in both samples, but TPH-GRO were detected at very low concentrations.
- Groundwater: VOCs were detected at very low concentrations in in situ samples IS11GW01, IS11GW02, and IS11GW05, and in monitoring wells IS11MW01, IS11MW03, and IS11MW04. SVOCs were detected at very low concentrations in all in situ samples except IS11GW04 and in monitoring well IS11MW03. VOCs and SVOCs were not detected in the background monitoring well IS11MW05. Total and dissolved metals were detected in the in situ and monitoring well samples. Explosives were detected at very low concentrations in each of the in situ

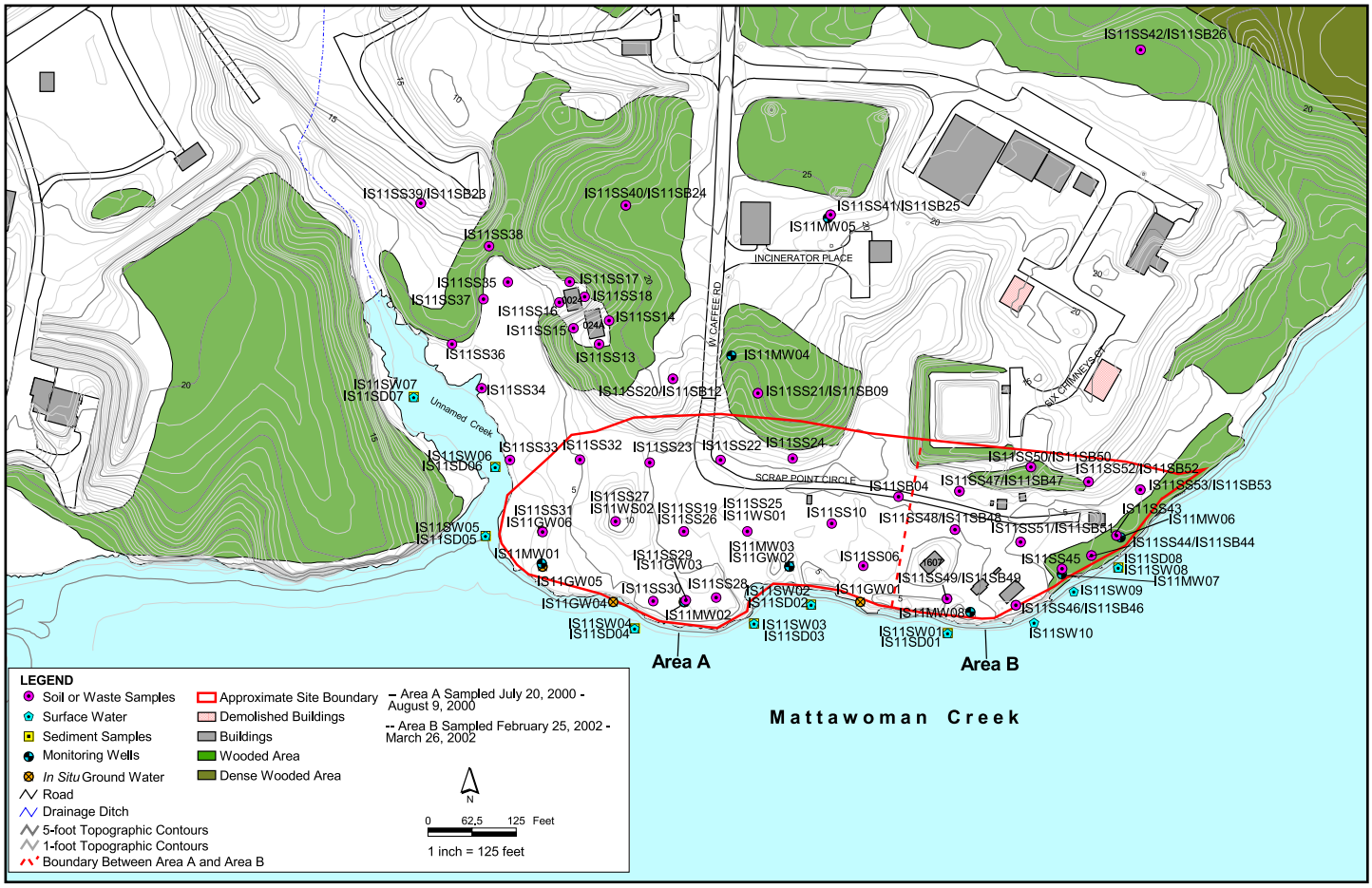


Figure 3 – Site 11 Sampling Locations

groundwater samples; the highest concentrations were detected in sample IS11GW02, collected from near the center of the site. Similarly, very low concentrations of explosives were detected in the samples collected from monitoring wells IS11MW01, IS11MW03, IS11MW04, and IS11MW05. TPH-GRO were not detected in any of the in situ groundwater samples, but TPH-DRO were detected in all samples, with the highest concentrations detected in the western part of the sampled area at the site. Neither TPH-GRO nor TPH-DRO were detected in monitoring well samples.

- Surface water: Only one VOC, methyl-tertiary-butyl-ether, and one SVOC, bis(2-ethylhexyl)phthalate, were detected in surface water sample IS11SW01. Several total and dissolved metals were detected in the samples. One explosive was detected in each sample at very low concentrations, except for the sample from location IS11SW07. TPH-GRO were not detected in any of the samples, but low concentrations of TPH-DRO were detected in surface water samples IS11SW01 through IS11SW04, all collected from the Mattawoman Creek.
- Sediment: VOCs were detected at low concentrations in samples IS11SD01, IS11SD05, IS11SD06, and IS11SD07, with most of them located in the unnamed creek. SVOCs were detected in low concentrations in most sediment samples, with the highest concentrations and the most number of detections observed in the sample from location IS11SD02. Several metals were detected in all samples. Very low concentrations of 3-nitrobenzene and 4-nitrobenzene were detected in sediment samples IS11SD01, IS11SD04, and IS11SD06. TPH-GRO were not detected in any of the samples, but TPH-DRO were detected in sediment samples IS11SD02 through IS11SD07.

Area B:

- Surface soil: VOCs were detected in 8 of the 11 samples; concentrations of all detected VOCs were less than 5 µg/L. Several SVOCs were detected in all samples. Metals were detected in all samples, with the highest concentrations and most number of detections in samples collected north of Building 1607 to Mattawoman Creek on the eastern side of the sampled area. Two explosives, nitroglycerine and perchlorate, were detected. TPH was not detected in the site samples.
- Subsurface soils: VOCs were detected at very low concentrations in the site samples. SVOCs were detected in all samples except IS11SB50. The highest concentrations of some of the SVOCs were collected from the eastern side of Area B, near the burning pads. Metals also were detected in the samples, with the highest concentrations in the sample from location IS11SB44, a former burning pit. Explosives

were not detected in the samples. TPH-DRO were detected in four samples.

- Groundwater: VOCs and SVOCs were detected at very low concentrations in the monitoring well samples. Total and dissolved metals were also detected in all samples. Explosives were not detected in any sample. TPH-GRO were not detected in any of the samples, but TPH-DRO were detected in monitoring well IS11MW06.
- Surface water: VOCs and SVOCs were not detected in any of the samples. Several total and dissolved metals were detected in the samples. Explosives, TPH-DRO, and TPH-GRO were not detected in any of the samples.
- Sediment: One VOC, 2-butanone, was detected in the sample from location IS11SD08. Several SVOCs were also detected in the sediment sample. These include benzo(a)anthracene, benzo(a)pyrene, and benzo(b) fluoranthene. Explosives, TPH-DRO, and TPH-GRO were not detected in any of the samples.

A baseline human health risk assessment and a screening ecological risk assessment (SERA) were performed as part of the remedial investigation. The results are presented in the "Summary of Site Risks" section.

Baseline Ecological Risk Assessment

A baseline ecological risk assessment (BERA) was performed because the results of the SERA indicated there were potentially unacceptable risks to **ecological receptors** from exposures to the soil at the site and the sediment along Mattawoman Creek. The BERA evaluated sediment in the unnamed creek and Mattawoman Creek adjacent to Site 11 (CH2M HILL, 2005). Soil from the landfill and the Upland Area was not evaluated because the landfill will be capped and soil in the Upland Area will be addressed as part of Site 66.

Sediment and **benthic invertebrates** were collected from six locations adjacent to Site 11 along Mattawoman Creek and the unnamed creek, one location adjacent to Site 17, and from a reference location in Mattawoman Creek. All sediment samples were analyzed for TAL metals, polycyclic aromatic hydrocarbons, explosives, total organic carbon, pH, grain size, and bulk sediment toxicity (42-day toxicity test with amphipods, *Hyalella azteca*). In addition, the benthic community structure was evaluated for each sample location. To quantify the risk to **epibenthic** fishes and piscivorous (fish-eating) birds, two composite samples of multiple forage-size epibenthic fishes were collected adjacent to Site 11 at the terminus of the unnamed creek and the samples were analyzed for whole-body chemical analysis (lead, mercury, silver, and zinc). To characterize the potential risk to insectivorous (insect-eating) wetland birds, two composite samples of multiple invertebrate species were collected from the wetland area at Site 11 adjacent to the unnamed creek and submitted for tissue chemical analysis (lead, mercury, silver, and zinc). The results of the BERA are presented in the "Summary of Risks" section.

Wetland Delineation

In February 2005, wetland delineation was conducted to identify wetland areas that could be impacted as a result of the placement of a soil cover on the landfill (CH2M HILL, 2008). Two areas were identified: Area One (IH-01) and Area Two (IH-02) (Figure 2). Area One is located within the western corner of and adjacent to Area A. The area was classified as a jurisdictional wetland based on the vegetation, hydrology, and hydric soils present. Area Two is located within Area A; it is a small freshwater area that resulted from the grading activities in 2001. It currently serves as a drainage basin for the upper grassy fields and the paved access road. Because the area exhibited vegetation and hydrology consistent with wetlands, but did not have hydric soil, it did not meet the full criteria of a wetland or "Water of the U.S." according to the U.S. Army Corps of Engineers' 1987 wetland delineation manual.

Feasibility Study

An FS was completed to address potential sources of contamination at Site 11 and to evaluate remedial alternatives to mitigate potential hazards associated with the landfill soil, waste, and nearshore sediment in Area A, and nearshore sediment adjacent to Area B (CH2M HILL, 2008). Land topographic, geophysical, and hydrographic surveys were conducted in May and July 2005, in May 2006, and in November 2007, respectively, in support of the remedial alternatives evaluation.

Principal Threats

There are no principal threats in any of the media at Site 11. Principal threats are explained in the box on page 7.

Scope and the Role of the Action

This Proposed Plan addresses the evaluation of the preferred alternative for Site 11 only. It does not include or directly affect any other sites at the facility. The purpose of the Proposed Plan is to summarize activities performed to date to investigate Site 11 and provide a rationale for the proposed response action. The preferred remedy is a protective soil cover (including shoreline stabilization), ICs, and long-term groundwater monitoring for Area A; *in situ* cap and ICs for the nearshore sediment adjacent to Area B; no further action for Area B; and no further action for groundwater.

Summary of Site Risks

This section presents an overview of the risks associated with the current and future land uses of Site 11. A detailed discussion of potential risks at Site 11 and the risk evaluation process can be found in the *Final Remedial Investigation Report, Sites 11, 13, 17, 21, and 25, Naval District Washington Indian Head, Indian Head,*

What is a "Principal Threat?"

The National Contingency Plan establishes an expectation that EPA will use treatment to address "principal threats" posed by a site wherever practicable [40 CFR Section 300.430 (a)(1)(iii)(A)]. The "principal threat" concept is applied to the characterization of "source materials" at a Superfund site. A source material is material that includes or contains hazardous substances, pollutants, or contaminants that act as a reservoir for migration of contamination to groundwater, surface water, or air, or acts as a source for direct exposure. Contaminated groundwater generally is not considered to be a source material; however, non-aqueous-phase liquids (NAPLs) in groundwater may be viewed as a source material. Principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur. The decision to treat these wastes is made on a site-specific basis through a detailed analysis of the alternatives using the nine remedy selection criteria. If, through this analysis, a treatment remedy is selected, then this selection is reflected in the Record of Decision, which will include a finding that the remedy uses treatment as a principal element.

Maryland (CH2M HILL, 2004), *Final Baseline Ecological Risk Assessment Report, Sites 11 and 17, Naval District Washington Indian Head, Indian Head, Maryland* (CH2M HILL, 2005), and *Final Site 11 Feasibility Study, Naval Support Facility, Indian Head, Indian Head, Maryland* (CH2M HILL, 2008).

Human Health Risks

As part of the RI, a baseline human health risk assessment (HHRA) was performed for soil, surface water, and groundwater at Site 11 to evaluate the current and future effects of constituents in site media on human health. Exposure to sediment was not evaluated during the HHRA because it was not considered to have a complete pathway. The sediment at Site 11 is completely covered with water and there is no shoreline with exposed sediments. In 2005, after the RI, an additional risk assessment was performed for soil and groundwater only for Area B because of its different historical uses and **contaminant** sources (CH2M HILL, 2008).

Soil

The baseline HHRA performed for soil at Site 11 during the remedial investigation and the separate risk assessment performed for Area B after the RI evaluated the potential current and future risks associated with the presence of contaminants in soil on human health. The potential receptors evaluated in the risk assessment during the RI were as follows:

- For current uses— adolescent trespasser/visitor, adult trespasser/visitor, and industrial worker
- For future uses— adolescent trespasser/visitor, adult trespasser/visitor, adult resident, child resident, lifetime resident, construction worker, and industrial worker

The receptors evaluated in the risk assessment for Area B were as follows:

- For current uses— adolescent trespasser/visitor, adult trespasser/visitor, and industrial worker
- For future uses—adult resident, child resident, lifetime resident, construction worker, and industrial worker

The Navy evaluated the residential exposure scenario to determine if restrictions would be necessary at the site. The site is on an industrial facility. It is unlikely that this land use will change in the future.

The risk assessment initially screened the observed maximum concentration of all constituents against their respective EPA Region III residential soil **risk-based concentrations (RBCs)**. For the current scenario, surface soil concentrations were used in the risk assessment. For the future scenario, the soil concentration was estimated by pooling the results from the analyses of the surface soil and subsurface soil because it was assumed that construction or excavation activities in the future would result in mixing of surface and subsurface soils.

COCs were identified during calculation of risk estimates for human receptors as part of the RI. The COCs in soil were aluminum, antimony, arsenic, cadmium, chromium, copper, iron, manganese, nickel, silver, thallium, vanadium, and zinc. Based on further evaluation in the RI, the baseline risk assessment subsequently concluded that under current site use conditions, surface soil does not represent an unacceptable risk to the adolescent trespassers/visitors and adult trespassers/visitors. This means that the non-cancer **hazard index [HI]** was below 1 and the calculated **carcinogenic** risk was within the EPA's acceptable cancer risk range of 1×10^{-4} to 1×10^{-6}. Under the **reasonable maximum exposure (RME)** scenario, the HI exceeds the EPA value of 1 for the industrial worker (HI = 1.4); however, the **central tendency exposure (CTE)** HI (0.19) was less than 1. Under the RME scenario, potential carcinogenic risk for the industrial worker was within EPA's acceptable risk range. The text box on page 8, provides an explanation of the human health risk assessment process.

Under future land use conditions, combined surface and subsurface soil does not represent unacceptable risks (both non-cancer and cancer) to the adolescent trespassers/visitors, adult trespassers/visitors, and industrial workers. Soil, however, poses unacceptable non-cancer risks to the resident child (HI = 7.7), resident adult (HI = 1.4), and construction worker (HI=2.8), based on RME scenarios. The HIs are above the EPA's benchmark of 1, and are mostly attributable to cadmium and iron. The CTE assessment, however, for the child resident (HI = 1), resident adult (HI = 0.26), and construction worker (HI = 0.75) resulted in non-cancer hazards at or below the target value of 1. The cancer risks associated with exposure to soil by these receptors are within EPA's acceptable risk range. Therefore, there

WHAT IS HUMAN HEALTH 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. The Navy undertakes a four-step process to estimate baseline risk at a site:

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 concentrations 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 help 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, EPA calculates a "reasonable maximum exposure" (RME) scenario that portrays the highest level of human exposure that reasonably could 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 Navy considers two types of risk: cancer risk and non-cancer risk. 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 calculates a "hazard index (HI)." The key concept here is that a "threshold level" (measured usually as a hazard index of less than 1) exists below which adverse, 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 together the potential risks from the individual contaminants to determine the total risk resulting from the site.

are no cancer risks from soil.

The risk assessment for Area B identified aluminum, antimony, arsenic, cadmium, chromium, copper, manganese, thallium, and vanadium as COCs. The RME non-cancer hazards and cancer risks were less than EPA's HI of 1 and within EPA's acceptable risk range, respectively, for all current receptors, future construction worker, and future industrial worker. The RME non-cancer hazard (HI = 0.6) was less than 1 for the future adult resident and the cancer risk (5x10-5) was within the EPA's acceptable risk range for the future lifetime resident. Though the RME non-cancer hazard was above 1 for the resident child (HI = 5.6), the CTE non-cancer hazard was equal to 1. Therefore, soil does not represent an unacceptable risk (non-cancer and cancer) to all receptors.

Surface Water

A human health risk assessment was performed for surface water during the RI. The receptors evaluated in this risk assessment included current child recreational user, current adult recreational user, future child recreational user, and future adult recreational user. The risk assessment screened against 10 times the tap water RBCs. Lead was retained as a COC during calculation of risk estimates. However, the average concentration of lead in the surface water was 7 µg/L, which is below the Safe Drinking Water Act action level for lead of 15 µg/L. Therefore, it is not expected that exposure to lead in the surface water would result in any adverse effects to child or adult recreational users who swim in the Mattawoman Creek or the unnamed creek. Subsequent risk determined that the non-cancer hazard was below the EPA's HI of 1, and the cancer risk was within EPA's acceptable risk range for all receptors. Thus, there is no unacceptable human health risks associated with surface water at Site 11.

Groundwater

The baseline HHRA performed for groundwater at Site 11 (Area A and B) and Area B evaluated the future effects of contaminants in groundwater on human health for the adult resident, child resident, and construction worker. The risk assessment screened against tap water RBCs.

The COCs identified during calculation of risk estimates during the RI for Area A and Area B were aluminum, antimony, arsenic, barium, chromium, iron, manganese, nickel, and vanadium. The non-carcinogenic risks are primarily associated with iron and manganese. The cancer risk is associated with arsenic. The risk assessment for Area B identified antimony, arsenic, and manganese as COCs.

A further comparison of the concentrations of the COCs to federal drinking water MCLs, the risk-based preliminary remediation goals (PRGs), and the facility-wide background concentrations in the FS indicated that the concentrations of the COCs are less than those of the MCLs and PRGs or either less than or consistent with the background concentrations. Therefore, groundwater remediation is not warranted. Furthermore, the shallow groundwater at Site 11 is not a potable source and is not expected to be one in the future. In accordance with the *Guideline for Groundwater Classification under the EPA Groundwater Protection Strategy* (EPA, 1986), the shallow water-bearing unit beneath Site 11 does not meet the requirements for classification as an aquifer. Site 11 was previously a wetland that was filled in to create the existing topography. Aerial photographs confirm the filling in of this area in the past. In its original natural setting, the water would have existed as surface water

associated with the wetland. Groundwater monitoring, however, is included in the remedial alternatives for soil and solid waste as part of the requirement of the landfill remedy.

Ecological Risks

As part of the RI, the Navy conducted a SERA for surface soil, sediment, and surface water at Site 11 (CH2M HILL, 2004). Based on the results of the SERA, a BERA was conducted for Sites 11 and 17 (CH2M HILL, 2005). Both sites were combined for the evaluations in the BERA because they abut one another, share similar physical characteristics, and are hydrologically connected by Mattawoman Creek. The results of this assessment are presented in greater detail in the RI report and the BERA report. The ecological risk assessment process is explained in the box on this page. Below is a summary of the SERA results:

- Cadmium, chromium, copper, iron, lead, mercury, silver, and zinc in soil could pose an unacceptable risk to soil invertebrates and plants and were identified as COCs.
- Barium, cadmium, copper, cyanide, lead, silver, and zinc in sediment could pose an unacceptable risk to benthic invertebrates or aquatic plants and were identified as COCs. The maximum concentrations of these inorganics were detected in Mattawoman Creek, but not in the unnamed creek or tidal wetland.
- Benzo(a)anthracene and explosives-related chemicals (1,3,5-trinitrobenzene; 2,6-dinitrotoluene; 2-amino-4-,6-dinitrotoluene; 3-nitrotoluene; and 4-nitrotoluene) in sediment along a 300-foot stretch of Mattawoman Creek (shoreline area between Area A and Area B) could pose an unacceptable risk to benthic invertebrates or aquatic plants and were identified as COCs.
- Copper, lead, mercury, and zinc were identified as COCs for upper-trophic-level receptors from potential food web exposures. Copper could pose an unacceptable risk to insectivorous terrestrial mammals. Mercury could pose an unacceptable risk to insectivorous terrestrial mammals and piscivorous birds. Lead could pose an unacceptable risk to insectivorous terrestrial mammals, insectivorous terrestrial birds, carnivorous terrestrial birds, piscivorous birds, and wetland insectivorous birds.

To further refine the risk estimates, additional data were collected and analyses were conducted to support a BERA for Site 11 and the unnamed creek. The results of the BERA showed that: (1) conditions in the unnamed creek pose an unacceptable risk to benthic invertebrates, but evidence suggests that the risk is not related COCs from Site 11; (2) there is the potential for an unacceptable risk to epibenthic fishes from zinc in sediment along portions of the shoreline of Site 11; and (3) the bioaccumulative COCs (lead, mercury, silver, and zinc) do not pose unacceptable risk to piscivorous birds and wetland insectivorous birds.

WHAT IS ECOLOGICAL RISK AND HOW IS IT CALCULATED?

An ecological risk assessment evaluates the potential adverse effects that human activities have on the plants and animals that make up ecosystems. The ecological risk assessment process follows a phased approach similar to that of the human health risk assessment. The risk assessment results are used to help determine what measures, if any, are necessary to protect plants and animals.

Ecological risk assessment includes three steps:

Step 1: Problem Formulation

The problem formulation includes:

- Identifying area(s) and environmental media (e.g., surface water, soil, sediment) in which site-related constituents may be present;
- Evaluating potential transport pathways (i.e., movement) of constituents in these areas/media;
- Consideration of site-specific habitat information for identification of ecological receptors; and
- Identifying exposure pathways and routes for these receptors.

Step 2: Risk Analysis

In the risk analysis, potential exposures to plants and animals are estimated and the concentrations of chemicals at which an effect may occur are evaluated.

Step 3: Risk Characterization

The risk characterization uses all of the information identified in the first two steps to estimate the risk to plants and animals. This step also includes an evaluation of the uncertainties (potential degree of error) associated with the predicted risk evaluation and their effects on the conclusions that have been made.

The degraded benthic invertebrate community in the unnamed creek is not related to COCs from Site 11. The physical nature of the creek (high biological oxygen demand and low dissolved oxygen) may be contributing to the degraded condition of the benthic invertebrate community, in addition to a potential upstream contaminant source, which will be addressed under Site 66. The apparent risk to fishes from zinc in sediment is along the immediate shoreline of Site 11 because of the high zinc concentrations detected in the sediments. Zinc concentrations are considerably lower in sediments away from the immediate shoreline, where the samples were collected to support the BERA and where no unacceptable risk to the benthic invertebrate community was found. It is likely that the source for the zinc contamination in the nearshore sediment is the metal debris that is present along the shoreline.

The BERA, however, was not performed for the surface soil because the soil cover will mitigate the ecological risks associated with the surface soil in Area A. The ecological risks associated with the surface soil in Area B warrant no further action because: 1) the concentrations of risk-driving metals are comparable to their respective **no observed adverse effect levels** found in toxicity testing

conducted at Site 47 and the Lab Area at NSF-IH, 2) Area B has been extensively disturbed and graded to support construction activities at other sites and the risk estimates are based on the samples collected in 2002 before the disturbances, 3) Area B will likely be disturbed further as it will be used as a staging area for construction materials and equipment in support of the Area A remedy, and 4) site restoration, as part of standard post-construction activities, which will be performed at Area B following the completion of Area A and the nearshore sediment remedies, will minimize the exposure to the surface soils.

Remedial Action Objectives

The **Remedial Action Objectives (RAOs)** for Site 11 soil, solid waste, and sediment are:

- Reduce or minimize human and ecological receptors' direct contact with the solid wastes in the former landfill in Area A.
- Reduce or minimize exposures to COCs in soil that pose unacceptable risks to human receptors in Area A.
- Reduce or minimize potential risk to ecological receptors (e.g., benthic fishes) from zinc in sediment.
- Minimize and control soil erosion and runoff to surface water and migration of COCs to Mattawoman Creek.

Summary of Remedial Alternatives

In the FS, several alternatives that would satisfy the RAOs were developed. Before the remedial alternatives in the FS were evaluated, the COCs identified during the human health and ecological risk assessments were further screened to identify which contaminants require remediation. A contaminant was deemed to require remediation if its maximum detected concentration and the facility-wide background concentration (95 percent **upper confidence limit**) exceeded its SRG and the detection is not considered isolated in nature. For soil in Area A, the contaminants requiring remediation are arsenic, cadmium, copper, and manganese. For soil in Area B, no constituents require remediation. For the nearshore sediment (within 10 feet of the shoreline adjacent to Site 11), zinc is the only contaminant that requires remediation. For groundwater at Site 11, no contaminants require remediation. For the Upland Area, contaminants requiring remediation will be addressed under Site 66. Areas within Site 11 that require remediation are shown in Figure 2. The SRGs for soil were developed based on the greater of the site-specific, risk-based preliminary remediation goals (PRGs) or background concentrations. The SRG for sediment was developed based on the risk-based PRG. Appendix F and Appendix G of the FS Report provide details on the human health and ecological risk PRG calculations, respectively. The table below shows the SRG for each contaminant requiring remediation in Area A and the nearshore sediment

.

Contaminants Requiring Remediation	SRG (mg/kg)
Area A Soil and Solid Waste	
Arsenic	18.3
Cadmium	36
Copper	1,500
Manganese	533
Sediment	
Zinc	450

Soil, Solid Waste, and Nearshore Sediment in Area A

Four remedial alternatives were developed, as summarized below.

Alternative 1 – No Action

This alternative is required by the NCP as a baseline. Under this alternative, no remediation or action is planned.

Alternative 1 - Estimated Cost	
2007/2008 Capital Cost	$0
Lifetime Operation and Maintenance (O&M) Cost	$0
Lifetime Present-Worth O&M Cost	$0
Projected Time Frame to Achieve RAOs	Not Applicable (NA)

Alternative 2 – Protective Soil Cover, ICs, and Groundwater Monitoring

This alternative involves installing a soil cover, regrading the site, stabilizing the shoreline to manage runoff and eliminate human and ecological exposures, implementing ICs, and performing long-term groundwater monitoring. Long-term groundwater monitoring is required under the soil cover or capping remedy regardless of the absence of groundwater risks.

Alternative 2 - Estimated Cost	
2007/2008 Capital Cost	$2.52 million
Lifetime O&M Cost	$874,000
Lifetime Present-Worth O&M Cost	$488,500
Total Present-Worth Cost	$3.01 million
Projected Time Frame to Achieve RAOs	6 months

Alternative 3 – RCRA Equivalent Subtitle C Cap, ICs, and Groundwater Monitoring

This alternative involves installing a **RCRA Equivalent Subtitle C Cap** in conjunction with ICs and long-term groundwater monitoring. The ICs and long-term

groundwater monitoring will be similar to Alternative 2.

Alternative 3 - Estimated Cost	
2007/2008 Capital Cost	$3.19 million
Lifetime O&M Cost	$970,400
Lifetime Present-Worth O&M Cost	$532,900
Total Present-Worth Cost	$3.72 million
Projected Time Frame to Achieve RAOs	7 months

Alternative 4 – Excavation, Offsite Disposal, and Wetland Creation

This alternative involves excavating the solid waste and contaminated soil within the landfill area and disposing of it offsite in a permitted landfill. The excavation site would be restored as a tidal wetland. ICs will not be implemented because all solid waste and contaminated soil will be removed from the site.

Alternative 4 - Estimated Cost	
2007/2008 Capital Cost	$9.25 million
Lifetime O&M Cost	$72,400
Lifetime Present Worth O&M Cost	$63,200
Total Present-Worth Cost	$9.31 million
Projected Time Frame to Achieve RAOs	4 months

Nearshore Sediment Adjacent to Area B

Three remedial alternatives were developed, as summarized below to address zinc contamination in the nearshore sediment in Area B, which encompasses approximately 5,000 square feet.

Alternative 1 – No Action

This alternative is required by the NCP as a baseline. Under this alternative, no remediation or action is planned.

Alternative 1 - Estimated Cost	
2007/2008 Capital Cost	$0
Lifetime O&M Cost	$0
Lifetime Present-Worth O&M Cost	$0
Projected Time Frame to Achieve RAOs	NA

Alternative 2—Long-Term Monitoring and ICs

This alternative involves long-term monitoring of the sediment for zinc and continuously implementing ICs, such as prohibiting vessel anchoring and establishing a no-wake zone. The reduction of zinc concentration in sediment would entirely depend on the natural recovery processes.

Alternative 2 - Estimated Cost	
2007/2008 Capital Cost	$17,400
Lifetime O&M Cost	$120,800
Lifetime Present-Worth O&M Cost	$71,300
Total Present-Worth Cost	$88,600
Projected Time Frame to Achieve RAOs	30 years

Alternative 3—*In Situ* Capping and ICs

This alternative involves installing a clean cover of gravel over the nearshore sediment to contain zinc and continuously implementing ICs, such as prohibiting vessel anchoring.

Alternative 3 - Estimated Cost	
2007/2008 Capital Cost	$78,800
Lifetime O&M Cost	$54,000
Lifetime Present-Worth O&M Cost	$21,900
Total Present-Worth Cost	$100,600
Projected Time Frame to Achieve RAOs	1 month

Evaluation of Remedial Alternatives

The NCP outlines the approach for comparing remedial alternatives. Remedial alternatives are evaluated using **nine evaluation criteria** to facilitate a comparison of the relative performance of the alternatives and provide a means to identify their advantages and disadvantages. The nine criteria are:

1. Overall protection of human health and the environment
2. Compliance with **Applicable or Relevant and Appropriate Requirements (ARARs)**
3. Long-term effectiveness and permanence
4. Reduction of toxicity, mobility, and volume
5. Short-term effectiveness
6. Implementability
7. Cost
8. State acceptance
9. Community acceptance

The FS provides a detailed analysis and evaluation of the remedial alternatives based on criteria 1 through 8. Criterion 9 will be evaluated after receipt of the public's comments on this Proposed Plan during the 30-day comment period. Table 1 summarizes how each alternative satisfies each criterion and how it compares to the other

alternatives for soil, solid waste, and nearshore sediment in Area A, and Table 2 presents the same summarized information for the nearshore sediment adjacent to Area B.

Preferred Remedial Alternatives

The Navy and EPA, with the support of the MDE, are proposing to implement the following remedial alternatives as the final remedies. These alternatives are expected to be protective of human health and the environment and will comply with the ARARs, including the MDE requirements for landfill closure. A detailed list of ARARs can be found in Section 2.4 of the FS.

Soil, Solid Waste, and Nearshore Sediment in Area A: Alternative 2 - Protective Soil Cover, ICs, and Long-term Groundwater Monitoring

The components of this alternative include the following:

- Constructing 2 feet of soil cover in Area A, consisting of 18 inches of clean fill and 6 inches of topsoil or topsoil created using Class "A" pelletized sewage sludge per Code of Maryland Regulations 26.04.07; the seed mixture for the cover vegetation will be designed so that it will serve as a bio-barrier to burrowing animals.

Table 1 – Soil, Solid Waste, and Nearshore Sediment in Area A

Criteria	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Overall Protectiveness of Human Health and the Environment	○	●	●	●
Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)	○	●	●	●
Long-Term Effectiveness and Permanence	○	◎	◎	●
Reduction of Toxicity, Mobility or Volume Through Treatment	○	○	○	◎
Short-Term Effectiveness	○	●	●	○
Implementability	●	●	●	●
Cost[1]	$0	$3.0	$3.7	$9.3
State/Support Agency Acceptance	○	●	●	●
Community Acceptance	To Be Determined	To Be Determined	To Be Determined	To Be Determined

Ranking: ● Well satisfies criterion ◎ Moderately satisfies criterion ○ Poorly satisfies criterion

Alternative 1 – No Action
Alternative 2 – Protective Soil Cover, ICs, and Groundwater Monitoring
Alternative 3 – RCRA Equivalent Subtitle C Cap, ICs and Groundwater Monitoring
Alternative 4 – Excavation, Offsite Disposal, and Wetland Creation
1 – Cost is the total present worth value ($Million); Cost accuracy ranges from -30% to +50%.

Table 2 – Nearshore Sediment Adjacent to Area B

Criteria	Alternative 1	Alternative 2	Alternative 3
Overall Protectiveness of Human Health and the Environment	○	◎	●
Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)	○	●	●
Long-Term Effectiveness and Permanence	○	◎	●
Reduction of Toxicity, Mobility or Volume Through Treatment	○	○	○
Short-Term Effectiveness	○	●	◎
Implementability	●	●	●
Cost[1]	$0	$88,600	$150,000
State/Support Agency Acceptance	○	◎	●
Community Acceptance	To Be Determined	To Be Determined	To Be Determined

Ranking: ● Well satisfies criterion ◎ Moderately satisfies criterion ○ Poorly satisfies criterion

Alternative 1 – No Action
Alternative 2 – Long-Term Monitoring, and ICs
Alternative 3 – *In Situ* Capping and ICs
1 – Cost is the total present worth value ($Thousand)); Cost accuracy ranges from -30% to +50%.

- Stabilizing the existing shoreline by partially removing surface rubble from the top of the slope, creating a rock and gravel foundation fill to the high tide level, installing an earth fill to extend the soil cover over the remaining rubble and foundation fill, installing a permanent high-velocity erosion control matting, and vegetating the slope with wetland plants and native grasses.
- Implementing institutional controls, including land use and groundwater use restrictions.
- Performing long-term groundwater quality monitoring; a detailed description of the monitoring program will be included in the long-term monitoring plan, which will be prepared after the ROD is signed.
- Conducting 5-year reviews.

Nearshore Sediment Adjacent to Area B: Alternative 3 – *In situ* Capping and ICs

The components of this alternative include the following:

- Constructing a gravel blanket on the nearshore sediment area that encompasses approximately 5,000 square feet.
- Implementing ICs in the form of waterway use restrictions, such as prohibiting anchoring of vessels.
- Conducting 5-year reviews.

Community Participation

The Navy and EPA provide information regarding the cleanup of NSF-IH to the public through public meetings, the Administrative Record File for the site, the **information repository**, and announcements published in the newspaper. The Navy and EPA encourage the public to gain a more comprehensive understanding of the site and the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)** activities that have been conducted at the site.

The public comment period provides the public time to review and comment on the information provided in the Proposed Plan. The 30-day public comment period for this Proposed Plan is August 25, 2008 through September 23, 2008. The public meeting will be held on September 18, 2008, from 5:00 p.m. to 6:00 p.m. at the Indian Head Senior Center, 100 Cornwallis Square, Indian Head, Maryland. The locations of the Administrative Record and Information Repository are provided on Page 1 of this Proposed Plan.

Minutes of the public meeting will be included in the Administrative Record file. All comments received during the public meeting and comment period will be summarized, and responses will be provided in the **Responsiveness Summary** section of the ROD. The ROD is the document that will present the selected remedy and will be included in the Administrative Record file.

Written comments can be submitted via mail, e-mail, or fax and should be sent to the following addressee:

Naval Support Activity South Potomac
Attn: Public Affairs Officer, Code HN00P
6509 Sampson Rd.
Dahlgren, VA 22448-5108
(540) 653-8153

For further information, please contact:

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A.T. Kearney, Inc. and K.W. Brown & Associates, Inc. 1988. *Phase II RCRA Facility Assessment of the Naval Ordnance Station, Indian Head, Maryland.*

CH2M HILL. 2004. *Final Remedial Investigation Report, Sites 11, 13, 17, 21, and 25, Naval District Washington, Indian Head, Indian Head, Maryland.*

CH2M HILL. 2005. *Final Baseline Ecological Risk Assessment Report, Sites 11 and 17, Naval District Washington Indian Head, Indian Head, Maryland.*

CH2M HILL. 2008. *Final Site 11 Feasibility Study, Naval Support Facility, Indian Head, Indian Head, Maryland.*

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EPA. 1986. *Guideline for Groundwater Classification under the EPA Groundwater Protection Strategy.*

Glossary of Terms

Administrative Record File: A record made available to the public that includes all information considered and relied on in selecting a remedy for a site.

Applicable or Relevant and Appropriate Requirements (ARARs): A comprehensive set of state and federal laws and regulations that are relevant to guiding the selection of remediation at a CERCLA (see below) site.

Background: Area not affected by facility or site activities.

Benthic Invertebrates: Animals without backbones that inhabit aquatic bottoms or sediment habitats.

Carcinogenic: Causing or inciting cancer.

Central Tendency Exposure (CTE): The CTE scenario is based on the "average" level of human exposure that may be expected to occur at a site. It is often presented to show the potential range of risks at a site, and is probably more representative of the actual risk to the majority of receptors.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA): A Federal Law passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act of 1986 (SARA). CERCLA provides the authority and procedures for responding to releases of hazardous substances, pollutants, and contaminants from inactive hazardous waste disposal sites.

Comment Period: A time for the public to review and comment on various documents and actions taken, either by the Navy, EPA, or MDE. A minimum 30-day comment period is held to allow community members to review the Administrative Record file and review and comment on the Proposed Plan.

Contaminant: Any physical, biological, or radiological substance or matter that, at a high enough concentration, could have an adverse effect on human health or the environment.

Contaminants of Concern (COCs): Chemicals that are site-related and whose data are of sufficient quality for use in the quantitative risk assessment.

Demilitarized ordnance: Unused munitions that are not economically repairable, or are obsolete or excess to the Department of Defense and that have undergone process(es) to remove their military characteristics. The demilitarization processes include recovery, recycling, open burning/detonation, and incineration.

Ecological Receptors: Non-human plant or animal species that may be exposed to site contaminants.

Epibenthic: Description of species located on the surface of the sediments on the bottom of bodies of waters (e.g., algae).

Feasibility Study (FS): An analysis of the appropriateness, efficacy, feasibility, and cost of potential remedial options or cleanup alternatives for a site.

Fill: Material consisting of soil (sand, gravel, silt, and clay) and/or non-soil materials (such as brick and wood) placed artificially on a property to expand the area to its present shoreline boundary or to raise ground surface elevation.

Flashed metal: Metal debris that is burned to remove trace amounts of explosive residue.

Groundwater: Water beneath the ground surface that fills pore spaces between materials such as sand, soil, or gravel to the point of saturation. In aquifers, groundwater occurs in quantities sufficient for drinking water, irrigation, and other uses. Groundwater may transport substances that have percolated downward from the ground surface as it flows towards its point of discharge.

Hazard Index (HI): The ratio of the daily intake of chemicals from onsite exposure divided by the reference dose for those chemicals. The reference dose represents the daily intake of a chemical not expected to cause adverse health effects. Therefore, an HI of 1, means that the amount of a contaminant to which a receptor is exposed is equivalent to the amount not expected to cause adverse health effects.

Information Repository: A file containing information, technical reports, and reference documents regarding a National Priorities List (NPL) site. This file is usually maintained in a place with easy public access, such as a public library.

Initial Assessment Study (IAS): The first of two phases of environmental investigation under the Navy Assessment and Control of Installation Pollutants program. The IAS is a preliminary evaluation of a facility that (1) identifies areas potentially contaminated by previous handling, storage, and disposal of hazardous substances; (2) assesses the potential effects of the contamination on human health and animals; and (3) recommends remedial measures appropriate for the contaminated areas. The second phase of the Navy Assessment and Control of Installation Pollutants program, the Confirmation Study, is completed if further action is required.

Institutional Control (IC): A legal or administrative action or requirement imposed on a property to limit or prevent property owners or other people from coming into contact with contamination on the property. Institutional controls may be used to supplement a

cleanup (by limiting contact with residual contamination), or may be used instead of conducting a cleanup. Examples include deed notices, deed restrictions, and long-term site monitoring or site security requirements.

National Oil and Hazardous Substances Pollution Contingency Plan (NCP): The organizational structure and procedures for preparing and responding to discharges of oil and releases of hazardous substances, pollutants, or contaminants.

National Priorities List (NPL): The EPA's list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial response. The list is based, primarily, on the score a site receives on the Hazard Ranking System. EPA is required to update the NPL at least once a year.

Nine Evaluation Criteria: Criteria used by EPA at all Superfund sites to evaluate remediation alternatives and select a preferred alternative to be presented in a Proposed Plan.

No Observed Adverse Effect Level (NOAEL): Concentration representing the highest tested dose of a chemical at which no such adverse effect is found in exposed test organisms. Examples of adverse effects are statistically reduced survival and growth rates.

Proposed Plan: A public participation requirement of SARA in which the lead agency summarizes the preferred cleanup strategy and rationale for the public. This agency also reviews the alternatives presented in the detailed analysis of the FS. The Proposed Plan may be prepared either as a fact sheet or as a separate document. In either case, it must actively solicit public review and comment on all alternatives under consideration.

RCRA Equivalent Subtitle C Cap: Multilayered, low-permeability, landfill cap used to cover waste, stabilize surface soil, and reduce surface water infiltration. RCRA Equivalent Subtitle C Cap is a modified RCRA Subtitle C Cap, in which a composite drainage net is used instead of a 12-inch sand layer and a geosynthetic clay liner is used instead of a 2-foot compacted clay layer.

Reasonable Maximum Exposure (RME): The RME scenario portrays the highest level of human exposure that could reasonably be expected to occur. The RME scenario is used to make human-health risk based decisions at the site.

Record of Decision (ROD): An official public document that explains which cleanup alternative(s) will be used at an NPL site. The ROD is based on information and technical analysis generated during the RI/FS and consideration of public comments and community concerns. The ROD explains the remedy selection process and is issued jointly by the lead agency and EPA following the public comment period.

Remedial Investigation (RI): An in-depth study designed to gather data needed to determine the nature and extent of contamination at a Superfund site, establish site cleanup criteria, identify preliminary alternatives for response action, and support technical and cost analyses of alternatives.

Remedial Action Objectives (RAOs): Describe what the proposed site cleanup is expected to accomplish. These objectives typically serve as the design basis for the remedial alternatives.

Response Action: As defined by Section 101(25) of CERCLA, a removal, remedy, or response action, including related enforcement activities.

Responsiveness Summary: A summary of oral and written public comments received by the lead agency during a comment period and the responses to these comments prepared by the lead agency. The responsiveness summary is an important part of the ROD, highlighting community concerns for decision makers.

Risk-Based Concentration (RBC): Conservative screening chemical-specific values that are protective of human health, used to identify contaminants of potential concern.

Semi-volatile organic compound (SVOC): An organic compound which has a boiling point higher than water and which may vaporize when exposed to temperatures above room temperatures, Semi-volatile organic compounds include phenols and PAHs.

Site Remediation Goals (SRGs): The concentration levels of constituents in a particular media that are to be met and are protective of human health and the environment, as a result of remediation activities.

Superfund: The program operated under the legislative authority of CERCLA and SARA that funds and carries out EPA solid waste emergency and long-term removal and remedial activities. These activities include establishing the NPL, investigating sites for inclusion on the NPL, determining their priority, and conducting and/or supervising the cleanup and other remedial actions.

Target Analyte List (TAL): was originally derived from the EPA Priority Pollutant List. In the years since the inception of the Contract Laboratory Program, compounds and analytes have been added to, and deleted from, this list based on advances in analytical methods, evaluation of method performance data, and the needs of the Superfund program.

Target Compound List (TCL): was originally derived from the EPA Priority Pollutant List. In the years since the inception of the Contract Laboratory Program, compounds and analytes have been added to, and deleted from, this list based on advances in analytical methods, evaluation of method performance data, and the needs of the Superfund program.

Upper Confidence Limit: Value of the upper end of the confidence interval, the region of the sample mean that is likely to be representative of site-specific conditions.

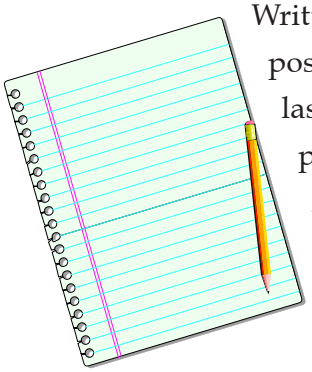
Volatile Organic Compounds (VOCs): Naturally occurring or manmade chemicals containing carbon. Volatile organics can evaporate more quickly than semi-volatile organics.

Please print or type your comments for Site 11 here

Mark Your Calendar for the Public Comment Period

Public Comment Period
August 25 - September 23, 2008

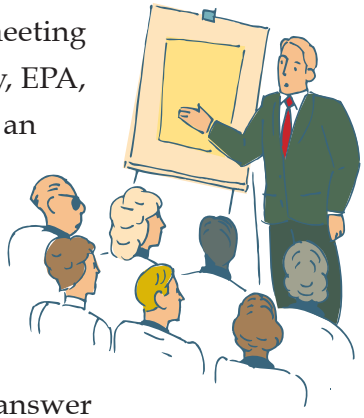
Submit Written Comments



Written comments must be postmarked no later than the last day of the public comment period, which is MMDD, 2008. Based on the public comments or on any new information obtained, the Navy may modify the Preferred Alternative. The insert page of this Proposed Plan may be used to provide comments, although the use of the form is not required. If the form is used to submit comments, please fold page, seal, add postage where indicated, and mail to addressee as provided.

Attend the Public Meeting
September 18, 2008 at 5:00p.m.

Indian Head Senior Center
100 Cornwallis Square
Indian Head, MD 20640



The public comment period will include a public meeting during which the Navy, EPA, and MDE will provide an overview of the site, previous investigation findings, remedial alternatives evaluated and the Preferred Alternative; answer questions; and accept public comments on the Proposed Plan.

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Place stamp here

Public Affairs Officer
Naval Support Activity South Potomac
Attn: Public Affairs Officer, Code HN500P
6509 Sampson Rd.
Dahlgren, VA 22448-5108
(540) 653-8153