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PUBLIC NOTICE REGARDING INVITATION TO COMMENT ON PROPOSED PLAN AT SITE 6
NSWC INDIAN HEAD MD
2/1/2009
NAVFAC WASHINGTON



Proposed Plan

Site 6, Radiographic Facility, Building 1349

U.S. Navy Announces the Site 6 Proposed Plan

Naval Support Facility, Indian Head Indian Head, Maryland

February 2009

Introduction

The purpose of this **Proposed Plan** is to present the preferred alternative for a response action for Site 6, Radiographic Facility, Building 1349, at Naval Support Facility, Indian Head (NSF-IH) in Indian Head, Maryland. This Proposed Plan recommends that no further action be taken to address Site 6. This Proposed Plan provides the rationale for this recommendation, based on the investigative activities and removal action performed at Site 6, and explains how the public can participate in the decision-making process. The location of the NSF-IH and Site 6 are shown on 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)(2). Title 40 CFR 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 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 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 included in the glossary are indicated in **bold print** the first time they appear in the plan.

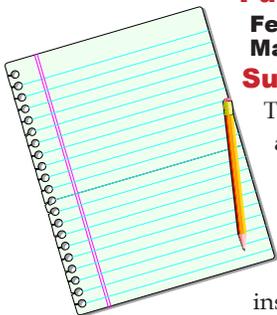
Mark Your Calendar for the Public Comment Period

Public Comment Period

**February 9, 2009 Through
March 9, 2009**

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

**February 19, 2009 from
6:00 P.M. to 7:00 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

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 and (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

Site History

NSF-IH is located in northwestern Charles County, Maryland. It consists of the Main Installation (2,500 acres) on Cornwallis Neck Peninsula and the Stump Neck Annex on Stump Neck Peninsula (Figure 1). NSF-IH was established in 1890 and is the Navy's oldest continuously operating ordnance station. At various times during its operation, NSF-IH has served as a gun and armor proving ground, a powder factory, a propellant plant, and a research facility. Stump Neck Annex which was acquired in 1901 provided a safety buffer for the testing of larger naval guns that were tested by firing into the Potomac River, and at Stump Neck.

The production of gunpowder and development of new explosives during the onset of World War II resulted in the construction of several new facilities at Indian Head, as well as the construction of Route 210 as a Defense Access Road in 1943. Development and improvements at Indian Head continued throughout the 1950s and 1960s, and in 1966, NSF-IH was renamed the Naval Ordnance Station (NOS).

After the Vietnam conflict, the mission of NSF-IH shifted from primarily a production facility to a highly technical engineering support operation. In 1987, the NOS was established as a Center for Excellence to promote technological excellence in the following specialized fields: energetic chemicals; guns, rockets and missile propulsion; ordnance devices; explosives; safety and environmental protection; and simulators and training (Parsons, 2000).

Current military land use includes operations and training; production; maintenance and utilities; research, development, testing and evaluation; explosive storage; supply and nonexplosive storage; administration; community facilities and services; housing; and open space.

Site 6 consists of the area around Building 1349 (the former control building, currently used for storage), Building 1718 (the current control building), and Building 1140 (the radiographic accelerator building) inside the fenced area (Figure 2). Buildings 1349 and 1140 were built in 1965, and Building 1718 was built in 1985. X-ray photographs of explosives are taken in Building 1140, and they are developed in the control building (Building 1349) using silver-contained fixer and developer solutions.

Before 1977, all photographic process liquid wastes, including spent fixer, were discharged to an open ditch (Fred C. Hart Associates Inc., 1983). Since at least the mid-1980s, however, photographic washwater has been discharged to the sanitary sewer system, while the spent fixer has been put in containers for later recovery of the

silver. Therefore, there is no current source of contamination beyond the residue of the photographic process wastewater. As documented in Dolph (2001), the only industrial process that has been performed at Site 6 is the development of x-ray photographs.

Site Characteristics

Site 6 is surrounded by a fence with one gate for vehicles and one gate for pedestrians. Access to the Site 6 buildings is provided by a paved road (Figure 2). The buildings are on top of a grassy knoll, and the area surrounding the buildings is maintained as mowed grass. From the top of the knoll, precipitation runs off into a low area at the base of the knoll. A drainage ditch beginning just south of Building 1718 conveys surface runoff south to the low area. The low area is beneath the outlet of a culvert that carries stormwater from the wooded area west of the site. In addition to the ditch discharging into this low area, stormwater from areas offsite is carried by a culvert that crosses the access road and discharges into this low area. From the eastern edge of the low area, a ditch extends northeast along the edge of the site. This ditch carries water intermittently. On the eastern edge of the site, the ditch crosses under the fence and continues

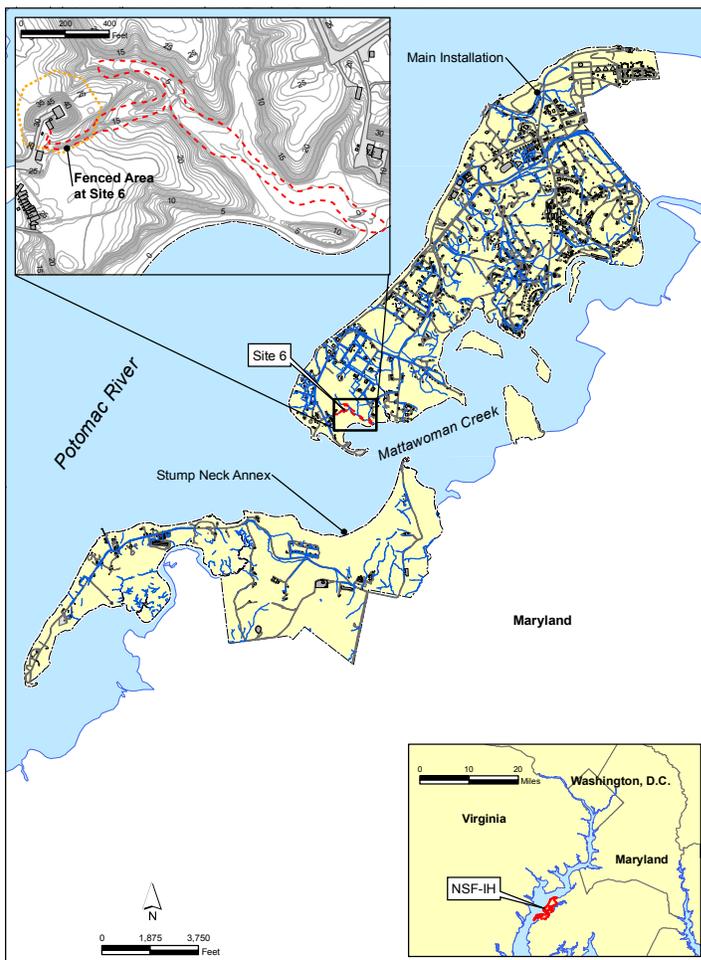


Figure 1 - NSF-IH, Indian Head, MD

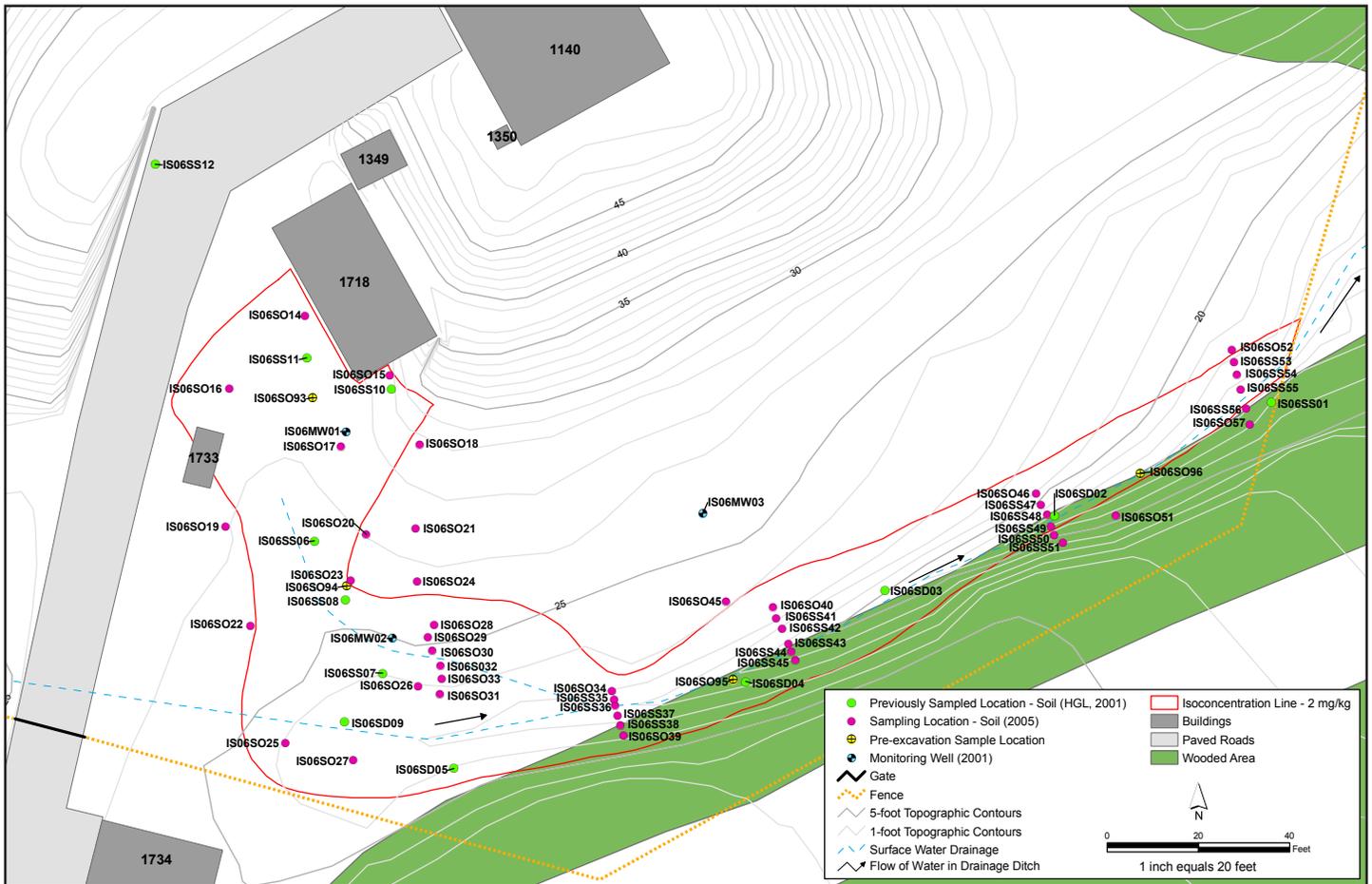


Figure 2 - Sampling Locations Inside Fenced Area

to flow through the adjacent woods. Prior to the 2008 removal action described later in this plan, the ditch had an approximate maximum width of 2 to 3 feet and depth of 3 to 6 inches upgradient of the fence line; it became deeper downgradient towards the fence line.

Outside the fence line, the ditch meanders through a wooded area, eventually forming a small intermittent headwater stream that intersects a second stream before entering a forested wetland (Figure 3). Standing water is present within the forested wetland. Farther downstream, the wetland transitions to a tidal emergent wetland, where the stream discharges into Mattawoman Creek. The wetland and stream system outside the fenced area is surrounded by mixed hardwood and pine forest and provides potential habitat for limited aquatic biota, such as small fish, aquatic insects, amphibians, and reptiles. The forested area may provide refuge and foraging habitats for some mammals and avian species using the areas inside and outside the fence line. The drainage ditch between the fence line and the wetland does not provide a viable habitat for aquatic receptors because the water that accumulates in it is shallow and transitory.

The soil at Site 6 is heterogeneous. It is characterized by silty clay to clay, which is underlain by a layer of sand or sand with silt that may be interbedded with clay. The

elevation of the shallow groundwater, as determined from the monitoring wells installed at the site, ranges from about 14 feet above mean sea level (msl) to 17 feet above msl. Based on the groundwater elevations, groundwater appears to flow to the east. This flow direction is consistent with the expected groundwater flow toward surface drainages to the east that flow southward into Mattawoman Creek.

Investigation History

Several investigations were conducted at Site 6 between 1983 and 2008. Below is a chronological description of each of these investigations.

Initial Assessment Study

The objective of the Initial Assessment Study (IAS) (Fred C. Hart Associates Inc., 1983) was to identify and assess sites posing a threat to human health or to the environment owing to contamination from past hazardous materials operations at NSF-IH. The IAS report identified Site 6 as one of five sites exhibiting a potential threat. The IAS recommended a Confirmation Study for Site 6 only if silver at Site 5 was found to be a danger to aquatic life. Site 5 is the site of the Grain Manufacture and X-ray Building (Building 731). Site 6 is similar to Site 5 in that both sites discharged photographic developing wastes to open ditches. Results of the Confirmation

Study conducted at Site 5 showed elevated levels of silver in soil samples collected from a drainage ditch at Site 5 (CH2M HILL, 1985).

Phase II Resource Conservation Recovery Act Facility Assessment

A Phase II Resource Conservation Recovery Act (RCRA) Facility Assessment (RFA) (A.T. Kearney, Inc. and K.W. Brown & Associates, Inc., 1988) was conducted in 1988 by EPA and consisted of a preliminary review of available documents and a visual site inspection. The RFA report stated that operations at Building 1140 included the development of X-ray photographs. Approximately 2,000 X-ray sheets were developed in a month, and spent fixer and developer were discharged to an open ditch. It also reported that spent solutions were discharged into a 200-gallon polyurethane tank located outside of Building 1140. Building 1140 was constructed in 1965, and the tank was installed in the late 1970s. The tank was observed to be covered and rested on bare soil.

The RFA report noted that approximately 10 gallons of fixer was reportedly spilled behind Building 1349, and a previous site inspection reported bare soil and stressed vegetation in an area covering approximately 200 square feet in the area of the spill. Although areas of bare soil were observed during the visual site inspection, there was no indication of what had caused it.

Remedial Investigation

As documented in Section 6.2.D of the Federal Facility Agreement, which was signed by the Navy and EPA in December 2000, the Navy, EPA, and MDE decided in 1996 to move Site 6 into the RI phase because of potentially high risks associated with this site.

Because no sampling had been conducted at this site as of the Phase II RFA, seven surface soil samples, five surface soil samples from intermittently wet areas, four subsurface soil samples, two surface water samples, and three groundwater samples were collected, as part of the RI conducted at Site 6 and two other sites (Hydro-GeoLogic, Inc., 2004). In addition, a site-specific background surface sample and a subsurface soil sample were collected. All samples were collected from within the fenced area of Site 6 (Figure 2) and analyzed only for silver because it was the only potential contaminant in photographic process wastewater residues. This investigation was conducted to determine whether suspected releases of photographic process wastewaters were the cause of silver contamination of the soil, intermittent surface water, and shallow groundwater at Site 6. In general, surface soil, surface soil from intermittently wet areas, and subsurface soil contained silver at levels that exceeded the facilitywide and site-specific background

concentrations. The results are summarized below:

- For surface soil, the maximum silver concentration (1,160 milligrams per kilogram [mg/kg]) exceeded the 95 percent upper confidence limit (UCL) for facilitywide background (0.84 mg/kg) and the site-specific background (nondetect above 0.56 mg/kg) concentrations.
- For surface soil from intermittently wet areas, the maximum silver concentration (867 mg/kg) exceeded the 95 percent UCL for facilitywide background concentration (0.92 mg/kg).
- For subsurface soil, the maximum silver concentration (1,100 mg/kg; collected at a depth of 30 to 36 inches below ground surface [bgs]) exceeded the 95 percent UCL for the facility-wide background (2.2 mg/kg) and site-specific background concentrations (nondetect above 0.47 mg/kg).
- Dissolved (2 micrograms per liter [$\mu\text{g/L}$]) and total (17.3 $\mu\text{g/L}$) silver were detected in one of the two surface water samples collected. There are no facilitywide background values or site-specific background values against which to compare these concentrations. Silver in surface water was attributed to weathering of surface soil and the surface soil from intermittently wet areas.
- Total silver was not detected in any of the three groundwater samples collected. However, dissolved silver (4.8 $\mu\text{g/L}$) was detected in monitoring well IS06MW03. Typically, a sample would have a higher total silver concentration than dissolved silver. The detection of dissolved silver but not a corresponding total silver in this sample was attributed to the analytical variability that occurs when a concentration is close to the detection limit, which was 1.7 $\mu\text{g/L}$.

Site 6 Additional Investigation

Based on the findings and conclusions of the RI report, three co-located sediment and surface water samples along the drainage ditch beyond the fenced area were collected in November 2004 to evaluate potential offsite migration of silver (Figure 3). The sediment samples were analyzed for silver and the surface water samples for total and dissolved silver. A comparison of the silver results to background levels and ecological screening values indicated that silver could have migrated beyond the fence line.

An additional investigation was conducted in 2005 to: (1) identify the lateral extent of silver contamination to support either a removal action or a finding of no further action inside the fenced area; and (2) assess the need for a baseline ecological risk assessment (BERA) or remediation outside the fenced area. Inside the fenced

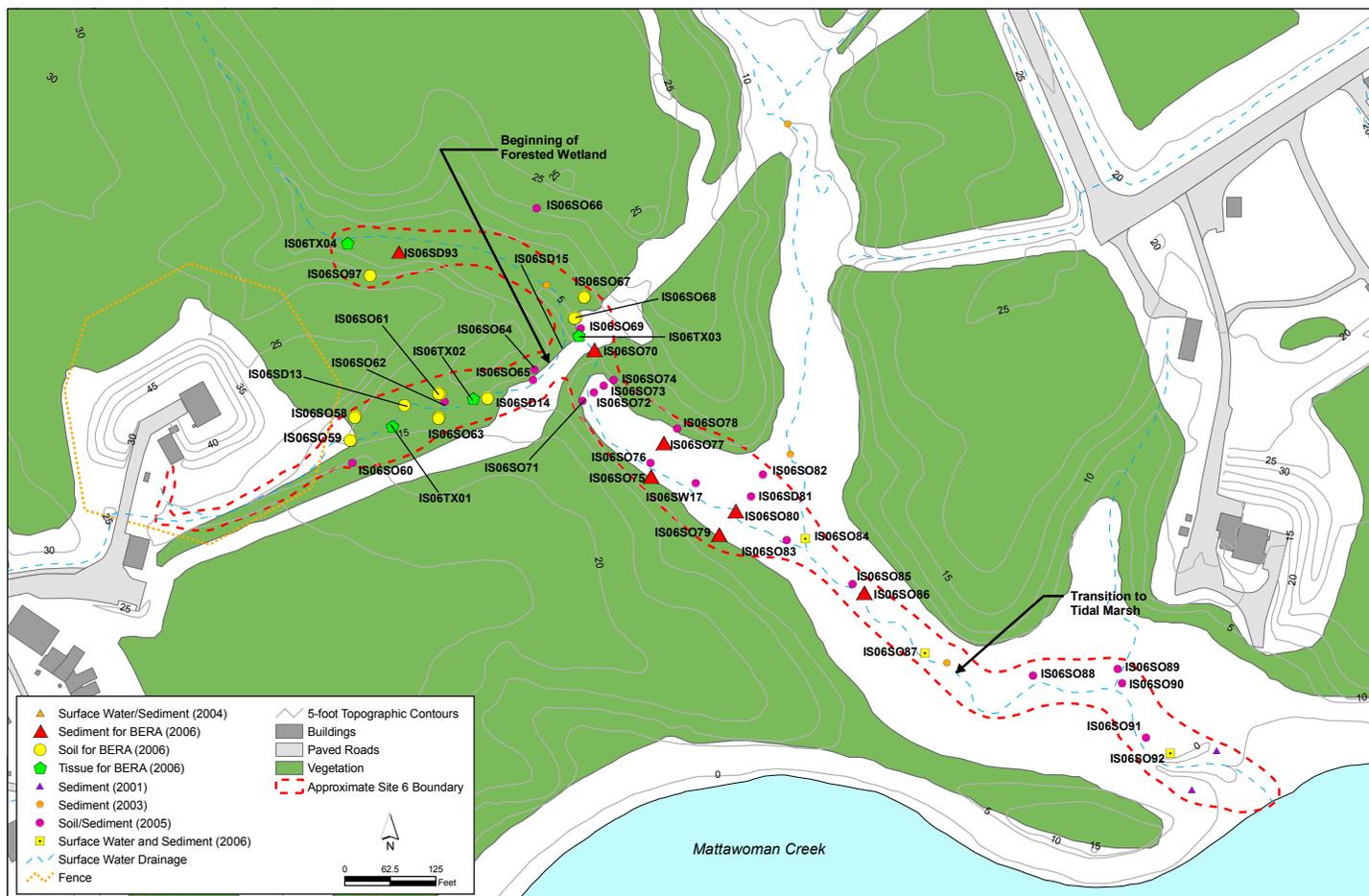


Figure 3 - Sampling Locations Outside Fenced Area

area, 44 surface soil samples were collected (Figure 2); outside the fenced area, 35 surface soil/sediment and 4 surface water samples were collected (Figure 3). All samples were analyzed for silver. The results of the additional investigation (CH2M HILL, 2006a) indicated that an engineering evaluation/cost analysis (EE/CA) should be prepared to address soil removal to a depth of 1 foot bgs using a soil removal cleanup level of 2 mg/kg inside the fenced area. The Navy, EPA, and MDE agreed to a cleanup level of 2 mg/kg because it is a conservative ecological risk-based value. Furthermore, it was recommended that a BERA be conducted for the area outside the fence to evaluate potential risk to ecological receptors.

Streamlined Screening Ecological Risk Assessment for Site 6 (Outside the Fenced Area)

To focus the BERA investigation, Steps 1 and 2 of a streamlined screening ecological risk assessment (SERA) and Step 3A of a BERA were completed before performing the BERA to identify potential ecological risks from the silver in surface soil, sediment, and surface water outside of the fenced area. The assessment used data from the 2004 sampling effort outside the fenced area and data collected during the 2005 additional investiga-

tion. The SERA compared the results from these investigations to ecological benchmarks to develop a screening-level estimate of ecological risk for the area outside the fence line. The results of the assessment suggested that potentially unacceptable ecological risks from silver were present in the sediment and soil outside the fenced area (CH2M HILL, 2006b).

Pre-Excavation Silver Results in Subsurface Soil at Site 6 (Fenced Area)

In 2006, pre-excavation sampling was conducted at four locations along the drainage ditch inside the fenced area (Figure 2). Subsurface soil samples were collected from two depth intervals for silver analysis: 1 foot to 1.5 feet bgs and 2 feet to 2.5 feet bgs. The primary objective of this investigation was to characterize the vertical extent of silver in soil along the ditch. The results confirmed the 1-foot vertical extent for soil removal (CH2M HILL, 2007a). After reviewing the results, the Navy, EPA, and MDE agreed that the excavation should be extended laterally to the 2 mg/kg isoconcentration line and vertically to a depth of 1 foot bgs (Figure 2). The areas around sample locations IS06SS10 and IS06SD09 were to be excavated vertically to a depth of 4 feet bgs to address the elevated silver concentrations observed during the RI in these two discrete areas.

Engineering Evaluation/Cost Analysis Site 6 (Inside Fenced Area)

An EE/CA was prepared for a non-time-critical removal action for soil and sediment inside the fenced area at Site 6 (CH2M HILL, 2007b). The focus of the removal action was the surface soil (0 to 1 foot bgs) from Building 1718 to the fence line. The overall objectives of the EE/CA were to remove and dispose of surface soil contaminated with levels of silver that presented an unacceptable risk to ecological receptors and to mitigate the potential transport of silver from the surface soil to the soil and/or stream and sediment beyond the fence line. In addition, to mitigate unacceptable potential risk to construction workers and child residents based on reasonable maximum exposure (RME) scenarios, soil was to be removed to a depth of 4 feet bgs at locations IS06SS10 and IS06SD09, where silver concentrations of 1,160 mg/kg and 867 mg/kg, respectively, were found (Figure 2). Soil excavation and offsite disposal were selected because the removal would decrease silver concentration in surface soil to acceptable levels, thereby, reducing risks to ecological receptors.

Site 6 (Outside the Fenced Area) Baseline Ecological Risk Assessment Report

A BERA was completed for outside the fenced area at Site 6 (CH2M HILL, 2008). The objective of the BERA investigation was to refine the risk estimates from the SERA and Step 3A. The area of focus was the soil and sediment along the ditch from the fence line to the forested wetland downgradient of the site. In support of the BERA, eight surface soil samples (0 to 6 inches bgs), six surface sediment samples, and three earthworm tissue samples were collected and analyzed for various parameters (Figure 3).

The results indicated that silver in the drainage ditch and floodplain soils does not pose unacceptable risk to terrestrial invertebrates or vermivorous wildlife, and silver in the wetland sediments does not pose unacceptable risk above background conditions to benthic invertebrates, fish, or amphibians. It was concluded that no further action was warranted for soil and sediment in the area outside the fence line.

Site 6 Soil Removal Action

A non-time-critical removal action was completed in September 2008 for soil and sediment along the drainage ditch inside the fenced area in accordance with the remedy selected in the EE/CA. The total excavation area was approximately 8,500 feet² to a depth of 1 foot bgs, which corresponded to approximately 342 cubic yards, or 512 tons, of excavated material. Two discrete 10 foot by 10 foot areas also were excavated to a depth of 4 feet bgs. The excavated material was tested and found to be non-hazardous. Thus, it was disposed offsite as non-hazardous waste in an approved surface mining site, which was

permitted to use the non-hazardous soil as backfill material. Post-excavation sampling was not conducted because the lateral and vertical extents of silver in the soil had been delineated before the removal action took place.

The excavated area was backfilled with clean fill material to existing grade, and the ditch was repaired and reshaped to capture stormwater runoff from the site (Photograph 1). Erosion control matting and seeding with native grasses were done as soil stabilization measures in the upland portion of the site, and riprap was installed along the drainage swale (Photograph 2). In addition, approximately 40 linear feet of corrugated metal culvert piping was replaced within the drainage ditch.

Principal Threats

There are no principal threats in any of the media at Site 6. Principal threats are explained in the box on page 6.

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.

Scope and the Role of the Action

This Proposed Plan addresses the evaluation of the preferred alternative, no further action, for Site 6 only. It does not include or directly affect any other sites at the NSF-IH. The purpose of this plan is to summarize activities performed to date to investigate Site 6 and provide a rationale for the proposed response action of no further action for soil, surface water, sediment, and groundwater. All potentially unacceptable risks identified in the RI for soil and sediment inside the fenced area were mitigated by the September 2008 removal action. As



Photograph 1 - View to the northeast. Repaired ditch adjacent to building 1733.



Photograph 2 - View to the east-northeast. Repair along drainage swale toward the fence line.

described in the following sections, no human health or ecological risks that require further action for soil, surface water, sediment, or groundwater were identified at this site.

Summary of Site Risks

This section summarizes the results of the baseline risk assessment for Site 6. A baseline risk assessment evaluates the potential for chemicals at a site to have an adverse effect on human and ecological **receptors** if no action is taken to clean up the site. A detailed discussion of risks at Site 6 and the risk evaluation process can be found in the following documents: *Final Remedial Investigation Report, Sites 6, 39, and 45* (HydroGeoLogic, Inc., 2004); *Final Streamlined Screening Ecological Risk Assessment for Site 6 (Outside the Fenced Area)* (CH2M HILL, 2006b) and *Final Site 6 (Outside the Fenced Area) Baseline Ecological Risk Assessment Report* (CH2M HILL, 2008).

Past disposal activities at the ditch are presumed to be the source of historical soil and sediment contamination inside the fenced area at Site 6. The concentrations of silver present in the soil and sediment following the removal action do not present an unacceptable risk to human health or the environment; therefore, no further action is recommended for Site 6.

Human Health Risks

A baseline human health risk assessment (HHRA) was performed in 2001 as part of the RI for soil, groundwater, and surface water at Site 6 to evaluate the current and

future effects of silver in site media on human health. The receptors evaluated in the risk assessment were as follows:

- For current uses — adolescent trespassers/visitors, adult trespassers/visitors, and industrial workers
- For future uses — adult resident, child resident, lifetime resident, adolescent trespassers/visitors, adult trespassers/visitors, industrial workers, and construction workers

The Navy evaluated the residential exposure scenario to confirm that no land use restrictions would be necessary at the site. The site is currently used for industrial purposes, is covered with grass, and the area outside of the fence is surrounded by woodland. There are no other current or projected future land uses for this site.

The risk assessment initially screened the observed maximum concentration of silver in each medium against their respective EPA Region III **risk-based concentrations (RBCs)**. Only the media for which the maximum silver concentration exceeded the RBCs were evaluated quantitatively in the risk assessment. For surface water and groundwater, the maximum silver concentrations detected were below their respective RBCs; therefore, silver in these media was not quantitatively evaluated in the risk assessment. The only environmental media quantitatively evaluated in the risk assessment were current and future surface soil. For the future scenario, the surface soil concentration was estimated by pooling the results from the analyses of the surface soil, surface

soil from intermittently wet areas, and subsurface soil because it was assumed that construction or excavation activities in the future would result in mixing of surface and subsurface soils.

Silver is not a human carcinogen; therefore, quantification of carcinogenic risk is not applicable to this site. The HHRA focused on non-cancer risks for each receptor at Site 6. The risk assessment showed that under current conditions, surface soil does not present an unacceptable risk (i.e., the hazard index (HI) was below unity (1) for all receptors). The risk assessment further showed that under future conditions, soil does not present an unacceptable risk to any of the receptors evaluated in the risk assessment, except for the child resident and construction worker. The RME non-cancer HI was 3.2 for the child resident and 1.2 for the construction worker. Two discrete areas dominated the potentially unacceptable risks to these receptors – in the location of sample IS06SS10 (southeast side of Building 1718) and in the location of sample IS06SD09 (adjacent to the culvert). The central tendency exposure (CTE) assessment for the child resident (HI = 0.024) and construction worker (HI = 0.02) resulted in non-cancer hazards below the target value of one. Though the CTE HI was less than one for the child resident and the construction worker, soil was removed down to a depth of 4 feet bgs during the September 2008 removal action. For an explanation of the HHRA process, see the text box on page 8.

Ecological Risks

As part of the RI at Site 6, the Navy also conducted an ecological risk assessment (Steps 1 - 3A) for the area inside the fenced area. The results of this ecological assessment indicated that: (1) silver in surface soil may pose a potential risk to plants and invertebrates; (2) silver might have migrated offsite into the stream; and (3) if silver has migrated offsite, the magnitude of potential threat to ecological receptors is unknown.

Based on topography and the direction of the groundwater flow, it was hypothesized that the Site 6 groundwater intersects surface water downgradient from the site. To provide a conservative evaluation of the groundwater's potential impact on downgradient surface water, the assessment included evaluating the Site 6 groundwater in the same manner as surface water. It was concluded that silver should be retained as a contaminant of concern for a more-detailed ecological risk assessment. To address potential ecological risk, it was recommended that the ecological risk assessment proceed to Step 3B and that additional soil and surface water samples be collected downstream of Site 6. For an explanation of the ecological risk assessment process, see the text box on page 9.

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.

A SERA was completed for the downgradient area outside the fence using data from the 2004 and 2005 sampling outside the fenced area (CH2M HILL, 2006b). The results of the SERA suggested that potentially unacceptable ecological risks exist from silver in the downgradient area. To further refine the risk estimates, additional data and analyses were conducted to support a BERA for the downgradient area. The results of the BERA showed that there are no unacceptable risks to ecological receptors in the drainage ditch, floodplain soils, or wetland sediments downgradient of Site 6 (CH2M HILL, 2008).

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
- 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.

Preferred Alternative

The Navy and EPA, in consultation with MDE, are proposing no further action as the preferred alternative for soil, surface water, sediment, and groundwater at Site 6. Based on the results of investigations conducted and the Navy's September 2008 removal action inside the fenced area, the Navy, EPA, and the MDE have determined that Site 6 does not pose an unacceptable risk to human health and the environment.

Community Participation

The Navy and EPA provide information regarding the cleanup of the 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 **CERCLA** activities that have been conducted at the site.

The 30-day public comment period is February 9, 2009 through March 9, 2009. The public meeting will be held on February 19, 2009, from 6:00 P.M. to 7:00 P.M. at the Senior Center, 100 Cornwallis Square, Indian Head, Maryland [301-744-4627]. The location of the Administrative Record and Information Repository are also 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:

Public Affairs Officer
Naval Support Facility South Potomac
Attn: Public Affairs Officer, Code 00P
6509 Sampson Rd.
Dahlgren, VA 22448-5108
(540) 653-1475
FAX: 540 653-6148
Email: gary.wagner@navy.mil

For further information, please contact:

Mr. Joseph Rail - Remedial Project Manager
Naval Facilities Engineering Command
Washington
Washington Navy Yard, Bldg. 212
1314 Harwood St. SE
Washington Navy Yard, DC 20374-5018
Phone: 202-685-3105
FAX: 202-433-6193
Email: joseph.rail@navy.mil

Mr. Jeffrey Bossart - Installation Restoration Project Manager
Naval Support Facility, Indian Head
Environmental Service
3972 Ward Road, Suite 101
Indian Head, MD 20640-5157
Phone: 301-744-4705
Fax: 301-744-4180
Email: jeffrey.bossart@navy.mil

**Mr. Dennis Orenshaw – Remedial
Project Manager**

U.S. Environmental Protection Agency,
Region III

1650 Arch Street

Philadelphia, PA 19103-2029

Phone: 215-814-3361

FAX: 215-814-3051

Email: orenshaw.dennis@epa.gov

**Mr. Curtis DeTore – Remedial
Project Manager**

Maryland Department of the Environment

1800 Washington Blvd., Suite 645

Baltimore, MD 21230-1719

Phone: 410-537-3791

FAX: 410-537-3472

Email: cdetore@mde.state.md.us

Glossary of Terms

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

CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act (1980), also known as the Superfund Law, as amended 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.

Feasibility Study (FS): A document that identifies the site cleanup criteria, identifies the different approaches that may be used to clean up the site, and evaluates these cleanup approaches.

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.

Information Repository: A file containing information, technical reports, reference documents, and the Administrative Record regarding a National Priorities List site. This file is usually maintained in a place with easy public access, such as a public library. However, for security reasons following September 11, 2001, files are now maintained at NSF-IH in Building 620.

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.

References

CH2M HILL. 1985. *NACIP Confirmation Study, Naval Ordnance Station, Indian Head, Maryland.*

CH2M HILL. 2006a. *Final Site 6 Additional Investigation Results, NSF-IH, Indian Head, Maryland.*

CH2M HILL. 2006b. *Final Streamlined Screening Ecological Risk Assessment for Site 6 (Outside the Fenced Area), Naval Support Facility, Indian Head, Indian Head, Maryland.*

CH2M HILL. 2007a. *Final Pre-Excavation Silver Results in Subsurface Soil at Site 6 (Fenced Area), NSF-IH, Indian Head, Maryland.*

CH2M HILL. 2007b. *Final Engineering Evaluation/Cost Analysis Site 6 (Fenced Area), Naval Support Facility, Indian Head, Indian Head, Maryland.*

CH2M HILL. 2008. *Final Site 6 (Outside the Fenced Area) Baseline Ecological Risk Assessment Report, Naval Support Facility Indian Head, Indian Head, Maryland.*

Dolph, J.E. 2001. *Site #6: Radiographic Facility Accelerator Summary of Use Paper, Naval Surface Warfare Center, Indian Head, Maryland.*

Fred C. Hart Associates, Inc. 1983. *Initial Assessment Study of Naval Ordnance Station, Indian Head, Maryland.*

HydroGeoLogic, Inc. 2004. *Final Remedial Investigation Report, Sites 6, 39, and 45, Naval District Washington, Indian Head, Indian Head, Maryland.*

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

The second phase of the program, the Confirmation Study, is performed if further action is required.

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

Proposed Plan: A public participation requirement of the Superfund Amendments and Reauthorization Act of 1986 (SARA) in which the lead government agency (in this case, the Navy) summarizes the preferred cleanup strategy and rationale for the public. This agency also reviews the alternatives presented in the detailed analysis of the Feasibility Study (FS) or EE/CA. 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.

Receptor: An individual, either a human, plant or animal, which may be exposed to a chemical present at the site.

Remedial Investigation (RI): An in-depth study designed to gather data needed to evaluate 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.

Record of Decision (ROD): An official public document that sets forward the Navy's final remedy for a site. The ROD is based on information and technical analysis generated during the RI and FS or EE/CA and consideration of public comments and community concerns. The ROD explains the remedy selection process and is issued by the Navy following the public comment period.

Response Action: As defined by Section 101(25) of CERCLA. Response Action means remove, 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.

Superfund: The program operated under the legislative authority of CERCLA and SARA that funds and carries

out EPA hazardous waste emergency and long-term removal and remedial activities. These activities include establishing the National Priorities List, investigating sites for inclusion on the list, determining their priority, and conducting and/or supervising the cleanup and other remedial actions.

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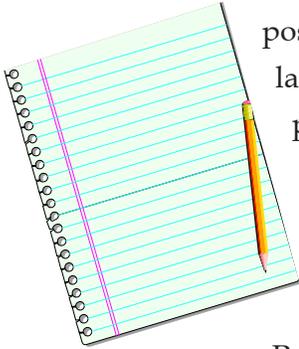
Risk-Based Concentration (RBC): Conservative screening chemical-specific values that are protective of human health, used to identify contaminants of potential concern.

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 National Priorities List, investigating sites for inclusion on the list, determining their priority, and conducting and/or supervising the cleanup and other remedial actions.

Mark Your Calendar for the Public Comment Period

Public Comment Period
February 9, 2009 through
March 9, 2009

Submit Written Comments



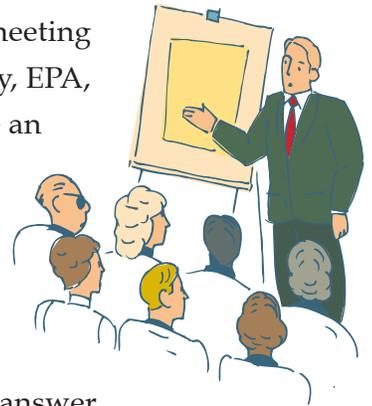
Written comments must be postmarked no later than the last day of the public comment period, which is March 9, 2009. Based on the public comments or on any new information obtained, the Navy may modify the Preferred Alternative. The

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
February 19, 2009 from
6:00 P.M. to 7:00 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 on the Proposed Plan.



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Public Affairs Officer
Naval Support Facility South Potomac
Attn: Public Affairs Officer, Code 00P
6509 Sampson Rd.
Dahlgren, VA 22448-5108
(540) 653-1475