INSTALLATION RESTORATION PROGRAM



NAVAL SUPPORT FACILITY INDIAN HEAD

3838 STRAUSS AVENUE INDIAN HEAD, MARYLAND 20640-5133



RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES

Date of Meeting: October 11, 2023, 6 p.m.

RAB Member Attendees:

Mr. Joseph Rail (N) *

Ms. Cassie Shoup (N) *

Mr. Curtis Detore (S)

Additional Attendees:

Mr. Russell Ashley (S) Mr. Patrick Pence (S)
Mr. Andrew Louder (N) Ms. Celeste Ostman (N)
Ms. Tara Meadows (N) Ms. Jeron Hayes (N)

Ms. Tara Carlson (C)

RAB Members Not in Attendance:

Mr. Robert Thomson (F)

Mr. Charles Charlesworth (F)

Ms. Karen Wiggen (L)

Mr. Fred Pinkney (F)

C= Community

F= Federal Official

K= Contractor

L= Local Official

N= Navy Official

R= Newspaper Reporter

S= State Official

Topics Discussed:

1. Arrival/Welcome

Mr. Joseph Rail of the Naval Facilities Engineering Systems Command, Washington (NAVFAC Washington) began the meeting by conducting introductions and welcoming everyone to the Indian Head Senior Center. Copies of RAB presentations and the agenda were offered to anyone in attendance. Mr. Rail then presented the meeting agenda, which is included in Attachment A.

2. RAB Presentations

^{*} Co-chair

Presentations and updates were given by Mr. Rail and Ms. Shoup of NAVFAC Washington and Mr. Louder of Naval Support Facility Indian Head. Mr. Rail presented the FY24 Budget Update, the Non-Time Critical Removal Action Update (Sites 43, 67 & 68), and the Site 69 Proposed Plan/Record of Decision Update. Ms. Shoup presented the Basewide Five Year Review Update and the PFAS Preliminary Assessment/Site Inspection Update. Mr. Louder presented the UXO 20 Remedial Investigation Update, the Site 66 Remedial Investigation Fieldwork Update, and the Main Area MRP Fieldwork Update for UXO 6, 11, 13, & 30. Copies of all presentations are included in Attachment D.

3. Comments, Questions and Answers

Any comments made or questions asked during the meeting were noted. These comments, questions and answers are provided in Attachment B. Additional correspondence concerning the Installation Restoration Program (IRP) or the Munitions Response Program (MRP) at the facility can be directed to:

Public Affairs Officer Naval Support Facility South Potomac Attn: Public Affairs Officer, Code 00P 6509 Sampson Rd. Dahlgren, VA 22448-5108 PHONE: (540) 284-0129 FAX: (540) 653-4269

Email: jeron.l.hayes.civ@us.navy.mil

4. Meeting Adjourn

Mr. Rail presented the tentative agenda for the next RAB meeting, which is scheduled for October 10, 2024. A copy of the draft agenda is included in Attachment C. Mr. Rail then concluded the meeting at 8:00 pm and thanked everyone in attendance.

NAVAL SUPPORT FACILITY INDIAN HEAD INSTALLATION RESTORATION (IR) PROGRAM RESTORATION ADVISORY BOARD (RAB) MEETING AGENDA

October 11, 2023

6:00 - 6:05 pm	ARRIVAL/WELCOME Mr. Joseph Rail Naval Facilities Engineering Command, Washington (NAVFACWASH) Remedial Project Manager
6:05 – 6:15 pm	FY24 BUDGET UPDATE Mr. Joseph Rail
6:15 – 6:30 pm	NON-TIME CRITICAL REMOVAL ACTION UPDATES (SITES 43, 67, & 68) Mr. Joseph Rail
6:30 – 6:40 pm	SITE 69 PROPOSED PLAN/RECORD OF DECISION UPDATE Mr. Joseph Rail
6:40 – 7:00 pm	BASEWIDE FIVE YEAR REVIEW UPDATE Ms. Cassie Shoup
7:00 – 7:15 pm	PFAS PRELIMINARY ASSESSMENT/SITE INSPECTION UPDATE Ms. Cassie Shoup
7:15 – 7:30 pm	UXO 20-SAFETY THERMAL TREATMENT POINT REMEDIAL INVESTIGATION UPDATE Mr. Andrew Louder
7:30 – 7:45 pm	SITE 66 TURKEY RUN DISPOSAL AREA REMEDIAL INVESTIGATION UPDATE Mr. Andrew Louder
7:45 – 8:00 pm	MAIN AREA MRP FIELDWORK UPDATES (UXO 6, 11, 13, & 30) Mr. Andrew Louder
8:00 pm	ADJOURN

INSTALLATION RESTORATION PROGRAM



NAVAL SUPPORT FACILITY-INDIAN HEAD

3838 STRAUSS AVENUE INDIAN HEAD, MARYLAND 20640-5133



RESTORATION ADVISORY BOARD (RAB) MEETING COMMENTS, QUESTIONS AND ANSWERS

October 11, 2023

Arrival/Welcome

No questions were asked nor comments made during this topic.

FY24 BUDGET UPDATE

No questions were asked nor comments made during this topic.

NON-TIME CRITICAL REMOVAL ACTION UPDATES (SITES 43, 67, & 68)

Question: What's the difference between a non-time critical removal action (NTCRA) and a remedial action?

Answer: A NTCRA is conducted under the parameters outlined in an Engineering Evaluation/Cost Analysis (EE/CA) while a remedial action is typically conducted after a Record of Decision (ROD) is signed.

Question: How does a NTCRA expedite the cleanup process?

Answer: Since a NTCRA can be completed without a Proposed Plan (PP) and ROD, several months (and sometimes years) needed for regulatory reviews can be reduced in the schedule which accelerates cleanup of a site.

Question: Does a NTCRA identify imminent danger or a critical problem?

Answer: In some cases, a NTCRA may identify contamination that poses an immediate threat to human health and the environment. The NTCRA is an approved mechanism within the cleanup process to address contamination more quickly than a remedial action.

Question: Was the radiological site considered for a timecritical removal action (TCRA)?

Answer: The radiological site (Site 1-Thorium Spill) was

Addressed via a NTCRA rather than a TCRA. While there was some radioactive contamination in soil that exceeded background levels, routes of exposure to workers, residents, and trespassers was limited as the site was in a restricted area of the installation. This

supported the decision to proceed with a NTCRA vs. a

TCRA.

SITE 69 PROPOSED PLAN/RECORD OF DECISION UPDATE

Question: Do we address active building sites within our program?

Answer: No, the Environmental Restoration, Navy (ER, N) Program

only addresses closed sites or releases from a closed or inactive building. Active building sites would typically be addressed under another program such as the Resource Conservation and Recovery Act (RCRA).

BASEWIDE FIVE YEAR REVIEW UPDATE

Question: Have toxicity levels for cobalt been recently adjusted?

Answer: Yes, the Environmental Protection Agency (EPA) has

recently lowered the toxicity level for cobalt.

Consequently, cobalt will need to be re-evaluated for

some sites to determine if it's a contaminant of

concern (COC) in groundwater.

PFAS PRELIMINARY ASSESSMENT/SITE INSPECTION UPDATE

Question: When was aqueous film forming foam (i.e. AFFF) first used and does the base have good records of release?

Answer: AFFF was developed in the 1960s and was put into

routine use by the early 1970s. The base has some records of use which were reviewed during the

Preliminary Assessment (PA). For more information, refer to Appendix C-Summary of Records Reviewed in the Final PA Report for Per- and Polyfluoroalkyl Substances

dated March 2023.

Question: Is Building 878 still used as a firehouse?

Answer: Yes, Building 878 is still the main firehouse located

in the northern portion of the Main Area.

Question: How often do helicopters land at the Stump Neck field

pad?

Answer: Helicopters land on the field pad very infrequently

(estimated at less than 5 times per year) as observed

during sampling events and site visits.

UXO 20-SAFETY THERMAL TREATMENT POINT REMEDIAL INVESTIGATION UPDATE

Question: Is UXO 20 the site that had concerns with burning and

air emissions?

Answer: UXO 20 was historically used for thermal treatment of

explosives and flammable waste in the 1940s-1950s. It

has since been closed and concerns with munitions

constituents exist. Burning is no longer conducted and

air emissions are not an issue.

Question: Was UXO 20 the site that underwent a groundwater Pilot

Study and had some issues during injection of

amendments?

Answer: No, that was Site 57-Buildng 292 TCE Contamination.

Site 57 is still being monitored and is in the Remedial

Action-Operation phase.

SITE 66 TURKEY RUN DISPOSAL AREA REMEDIAL INVESTIGATION UPDATE

Question: Does Dahlgren have a site similar to Site 66 that was

capped and monitored?

Answer: Dahlgren does have some landfill sites that were capped

and monitored, but they are slightly different than Site 66. Additional investigation and test trenching are planned for Site 66 and a final remedy has not been

chosen.

MAIN AREA MRP FIELDWORK UPDATES (UXO 6, 11, 13, & 30)

Question: For UXO 11, if all contaminants of concern are

naturally occurring and concentrations are within acceptable levels, will the cleanup alternative be no

further action (NFA)?

Answer: No, NFA will not be the selected remedy because Land

Use Controls (LUCs) will be required to address the potential presence of Munitions and Explosives of

Concern (MEC).

Question: For UXO 13, are all of the old aerial photos available in a repository?

Answer: No, not all of the photos are available in a repository since they were discovered at different offices within the installation. More information will be available in a forthcoming Remedial Investigation Report that will include all aerials used.

Question: Are shotgun shells still present at UXO 13 along with lead shot?

Answer: The site has been inactive since the 1960s; however, some degraded shotgun shells can be seen at the site and lead has been identified as a COC.

GENERAL QUESTIONS

Question: Is your annual RAB meeting the only time your presentations are shown to the public?

Answer: Yes, the annual RAB meeting is the only time the presentations are shown in person to the public. However, the RAB meeting minutes with all presentations are sent out via an email list. They are also uploaded to the Indian Head public website and can be viewed at any time.

Question: Can you include more photos and less technical information in your presentations?

Answer: Yes, in the future, an effort will be made to include more photos (when available).

NAVAL SUPPORT FACILITY INDIAN HEAD INSTALLATION RESTORATION (IR) PROGRAM RESTORATION ADVISORY BOARD (RAB) DRAFT MEETING AGENDA

October 10, 2024

6:00 - 6:05 pm	ARRIVAL/WELCOME Mr. Joseph Rail Naval Facilities Engineering Command, Washington (NAVFACWASH) Remedial Project Manager
6:05 – 6:15 pm	FY25 BUDGET UPDATE Mr. Joseph Rail
6:15 – 6:30 pm	NON-TIME-CRITICAL REMOVAL ACTION UPDATES (SITES 43, 67, & 68) Mr. Joseph Rail
6:30 – 6:45 pm	SITE 69-BUILDING 1018-OXIDIZER PROCESS BUILDING REMEDIAL DESIGN UPDATE Mr. Andrew Louder
6:45 – 7:00 pm	SITE 70-GROUNDWATER CONTAMINATION ALONG WATER WORKS WAY REMEDIAL INVESTIGATION UPDATE Mr. Andrew Louder
7:00 – 7:15 pm	PFAS SITE INSPECTION/REMEDIAL INVESTIGATION UPDATE Ms. Cassie Shoup
7:15 – 7:30 pm	UXO 9-SINGLE-BASE PROPELLANT GRAIN SPILL AREA SAMPLING UPDATE Ms. Cassie Shoup
7:30 – 7:45 pm	UXO 19-IGNITER AREA REMEDIAL INVESTIGATION UPDATE Mr. Andrew Louder
7:45 – 8:00 pm	STUMP NECK MRP UXO 27 & 31 UNDERWATER REMEDIAL INVESTIGATION UPDATE Mr. Joseph Rail
8:00 pm	ADJOURN Attachment C

Attachment D- RAB Presentations



FY24 BUDGET & SCHEDULE UPDATE

Presented By
Joseph Rail
Naval Facilities Engineering Systems Command
(NAVFAC) Washington

10/11/23

FY24 Budget & Schedule Update



Approximate budget for FY 2024:

- \$1.5 mil for Installation Restoration Program (IRP)
- \$1.3 mil for Munitions Response Program (MRP)

Planned work includes:

- Remedial Investigation (RI)/Feasibility Study (FS)
- Remedial Action (RA)
- Remedial Action-Operation (RA-O)
- Long-Term Monitoring (LTM)

FY24 Budget & Schedule Update



• RI/FS for:

- UXO 6 NG Slums Burning Site
- UXO 9 Single-Base Propellant Grains Spill Area
- UXO 11 The Valley
- UXO 13 FDR Skeet Range
- UXO 19 Igniter Area
- UXO 20 Safety Thermal Treatment Point
- UXO 30 Gate 3 Burning Ground

• RA for:

- Site 69 - Building 1018- Oxidizer Process Building

FY24 Budget & Schedule Update



• RA-O for:

- Site 17 Disposed Metal Parts Along Shoreline
- Site 47 Mercuric Nitrate Disposal Area
- Site 57 Building 292 TCE Contamination

LTM for:

- Site 28 Original Burning Ground
- Site 38 Rum Point Landfill

Contacts and Questions



Points of Contact:

- NAVFAC Washington: Joseph Rail
- NAVFAC Washington (Base RPM): Andrew Louder

Questions?



Non-Time Critical Removal Action (NTCRA) UPDATE-Site 43, 67, & 68

Presented By
Joseph Rail
Naval Facilities Engineering Systems Command
(NAVFAC) Washington

10/11/23

Site 43- Toluene Disposal Area



-Site 43 is located in the southern portion of the restricted area on Naval Support Facility Indian Head. It extends from east of Glennon Road proceeding westward toward the Potomac River shore.

-Previous investigations identified Trichloroethylene (TCE) in the soil. Current action is a non-time critical removal action (NTCRA) to address "hot spots" of TCE-impacted soils.

IR43



U.S. Navy

Site 43 NTCRA Overview



Selected Remedy- Excavation and off-site disposal for soil only; groundwater to be addressed separately.

Removal Action Objectives (RAOs):

- Reduce exposure risk to human receptors associated with inhalation, ingestion, or dermal exposure by addressing highest concentrations of TCE in groundwater and soil.
- Minimize potential leaching of TCE from impacted soil to groundwater in excess of cleanup levels.

Planned Removal Action Includes:

- Established a Preliminary Remediation Goal (PRG) of 300 ug/kg for TCE.
- Excavate to approximately 8 feet below ground surface (bgs) for 5,156 cubic yards (CY) of contaminated soil and 118 CY of asphalt.
- Off-site disposal at a Subtitle D landfill.

Site 43 Current Status



Project Status:

- Contract awarded in September 2021 for \$1.1 mil.
- Work Plan and Erosion and Sediment (E&S) Control Plan finalized in August 2022.
- Start of fieldwork delayed due to base operations (generation of explosive arcs) at Building 720.
- Tentative start date of removal is November 2023.
- Work anticipated to last 3 months.

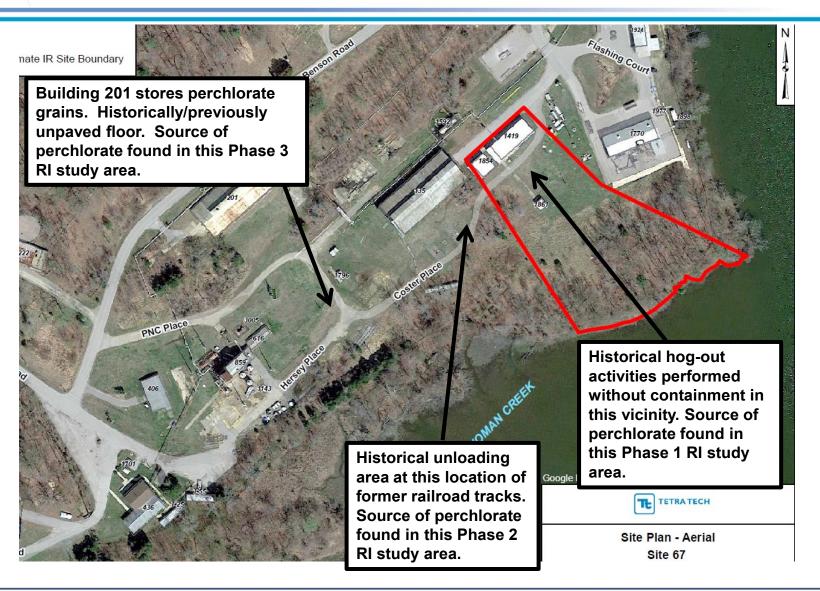
Site 67- Hogout Facility





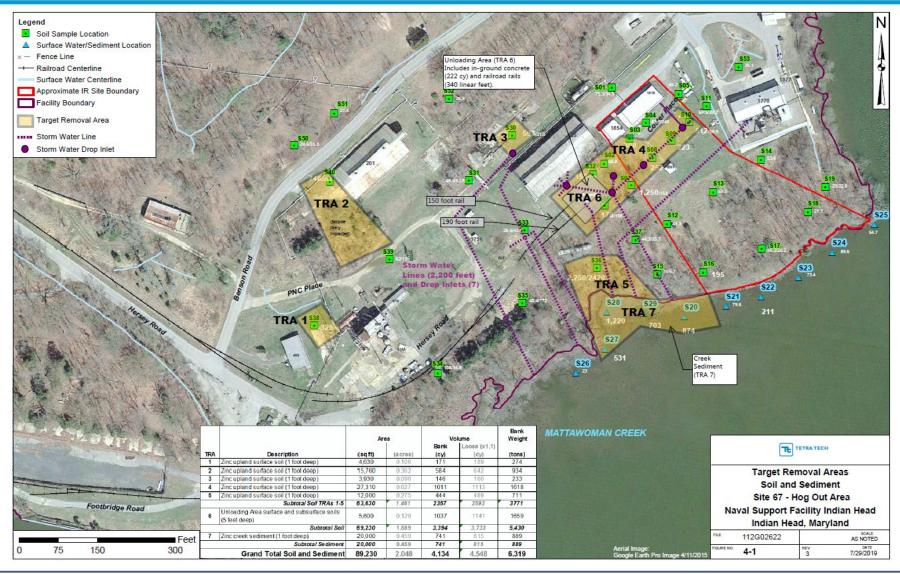
Site 67- Hogout Facility





Site 67 Target Removal Areas





Site 67 Overview



Removal Action Objectives (RAO) included:

- Reduce unacceptable risks to human and ecological receptors from exposure to chemicals of concern (COCs) in the Unloading Area soil.
- Reduce unacceptable risks to ecological receptors from exposure to zinc in surface soil and sediment.
- Reduce migration of zinc from upland soil to sediment in Mattawoman Creek.

Selected remedy was excavation and off-site disposal for soil only.

NOTE: Groundwater to be addressed separately.

Site 67- Hogout Facility



Project Status:

- NTCRA fieldwork began in February 2021.
- Excavation completed for target removal areas (TRAs) 1-5.
- Transportation & Disposal (T&D) of on-site soils complete.
- Wetland restoration completed in September 2022.
- Additional contamination found in TRA 6 (mostly arsenic and lead) that didn't meet cleanup goals; will
 require additional investigation and characterization.
- Zinc remains a potential COC within TRA 7 and Mattawoman Creek; may be addressed by ongoing pilot study.
- Current contract value- \$2.9 mil.

Future Work:

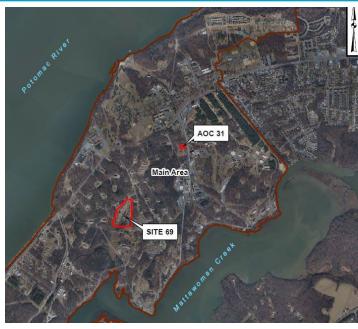
- Stormwater repair/pipe lining to start in late 2023/early 2024.
- Sampling and Analysis Plan forthcoming to address additional contamination in soil and groundwater.
- Additional phase Remedial Investigation with a potential Baseline Ecological Risk Assessment (BERA).

Site 68- Building 259



- Site 68 (old AOC 31)
- "Detonator Production / Old Storehouse"
- Former Building 259 (demolished)





Site 68 Overview



Selected Remedy- Excavation and off-site disposal for soil.

Removal Action Objectives (RAOs):

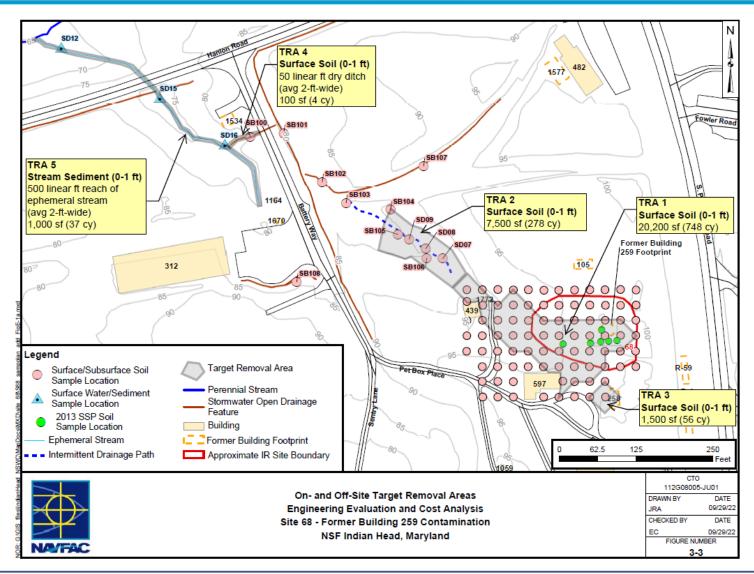
- Reduce unacceptable risks to human and ecological receptors from exposure to lead and mercury contamination in soil.
- Mitigate the potential erosion of contaminated soil, transport of contaminants, and subsequent exposure.
- Ensure that post-removal action conditions provide an acceptable level of protection for ecological receptors against lead and mercury in soil and stream sediment.

Planned Removal Action Includes:

- Established surface soil cleanup goal of 200 mg/kg for lead and 3 mg/kg for mercury. Stream sediment cleanup goal is 1.06 mg/kg for mercury.
- Excavate approximately 1,122 cubic yards (CY) of soil and sediment in five Target Removal Areas (TRAs).
- Off-site disposal at an appropriate facility.
- Work will result in unlimited use/unrestricted exposure (UU/UE).

Site 68- Target Removal Areas





Site 68- Current Status



Project Status:

- Contract awarded in January 2023 for \$412K
- Draft Work Plan and Erosion and Sediment (E&S) Control Plan submitted in May 2023 and currently under regulatory review.
- Engineering Evaluation/Cost Analysis (EE/CA) finalized in August 2023 and public review period from September 18 through October 17, 2023.
- Tentative start date of removal is first quarter of 2024.
- Work anticipated to last 1 month.

Contacts and Questions



Points of Contact:

- NAVFAC Washington: Joseph Rail
- NAVFAC Washington (Base RPM): Andrew Louder

Questions?



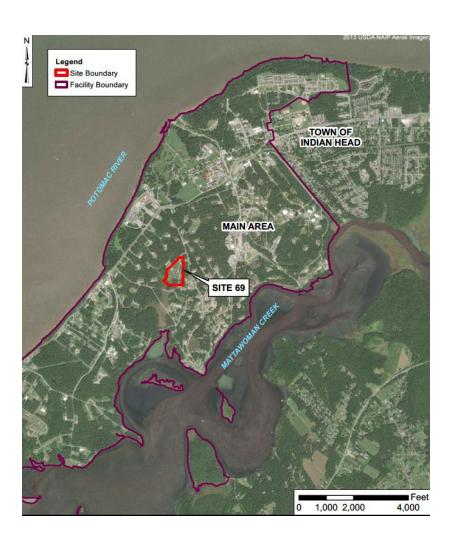
Site 69- Building 1018- Oxidizer Process Building Proposed Plan/Record of Decision

Presented By
Joseph Rail
Naval Facilities Engineering Systems Command
(NAVFAC) Washington

10/11/23

Site 69 Location







Site 69 Photos





U.S. Navy



U.S. Navy



U.S. Navy

Site 69 Background/History



- Site is located in the center of the Main Area of NSFIH and consists of former Building 1018 and all its associated former structures/features.
- Encompasses over 9 acres, extending from former Building 1018 (source area) down to the receiving waster body, Town Gut Creek.
- Perchlorate is the main contaminant released from spills during unloading/transferring activities at Building 1018 between the 1960s-2000s.
 - Perchlorate grains were transferred from rail cars to loading dock to be processed for use at the surrounding oxidizer process facility.
 - Building interior was washed out periodically onto the surrounding ground surface.
 - 2006-2010: Wastewater and military construction sampling discovered and confirmed elevated perchlorate in soil, pooled surface water, and groundwater.
 - 2012: Building 1018 decontaminated and demolished.
- Site Screening Process (SSP) fieldwork was completed in 2013.
- Remedial Investigation (RI) fieldwork was completed in 2017 and a RI Report was finalized in 2020.
- A Feasibility Study (FS) was finalized in 2021.

Site 69 Proposed Plan



Proposed Plan (PP) Overview:

- A virtual online public meeting to present the PP and public review period were held prior to finalizing the PP in January 2022.
- The PP outlines feasible alternatives and recommends course of action.
- Selected FS Soil Alternative 3- Excavation and Off-Site Disposal and FS Groundwater Alternative 2- Monitored Natural Attenuation (MNA) and Land Use Controls (LUCs)

PP Remedial Action Objectives (RAOs):

- Prevent residential child exposure to perchlorate in subsurface soil at concentrations that would pose an unacceptable risk.
- Prevent residential adult and child and construction worker exposure to perchlorate in groundwater at concentrations above the EPA Lifetime Health Advisory Level.
- Return groundwater to beneficial use to the extent practicable.

Site 69 Record of Decision



Record of Decision (ROD) Overview:

- ROD was finalized in January 2023 and signed in May 2023
- Selected remedy for subsurface soil is excavation and off-site disposal.
- Selected remedy for groundwater is MNA and LUCs.

Remedy Components Include:

- Excavation of subsurface soil (to approximately 6 feet below ground surface followed by restoration to original grade).
- Long-term monitoring (LTM) of shallow groundwater to confirm MNA processes continue to be effective over time and that contaminants are not migrating from the site. LTM is anticipated to occur approximately 28 years until perchlorate cleanup goals are met.
- LUCs will be implemented to prohibit (i) potable use of shallow groundwater and (ii) construction activities in contact with groundwater without appropriate mitigation measures.

Contacts and Questions



Points of Contact:

- NAVFAC Washington: Joseph Rail
- NAVFAC Washington (Base RPM): Andrew Louder

Questions?



NSF INDIAN HEAD – BASEWIDE FIVE YEAR REVIEW UPDATE

Presented By
Cassie Shoup, Remedial Project Manager (RPM)
Naval Facilities Engineering Command (NAVFAC) Washington

[10/11/2023]

Presentation Objectives



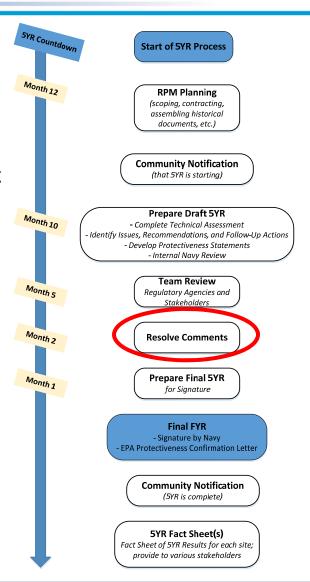
Objectives:

- Present a brief overview of the Five-Year Review (5YR) process for Navy Environmental Restoration (ER,N) sites at NSF Indian Head (NSFIH)
- Update site statuses based on the **Draft** 2022 5YR document and responses from regulator. <u>Final draft and acceptance is still pending.</u>

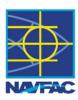
5YR Process



- A 5YR occurs at sites that have a record of decision (ROD) that implement a selected remedy at a site to address contamination per the 1980 Comprehensive Environmental Response Compensation and Liability Act (CERCLA).
- 5YR is required for sites with remedial action that does not (or does not yet) allow for unlimited use and unrestricted exposure (UU/UE), per CERCLA §121, as amended.
- Ultimate 5YR outcome is protectiveness determination for human health and the environment for each site/remedy, per EPA (2001) 5YR Comprehensive Guidance:
 - ✓ Protective
 - ✓ Will Be Protective
 - ✓ Protective in the Short-Term
 - ✓ Not Protective
 - ✓ Protectiveness Deferred
- Indian Head's 5YR process is underway and expected to be completed by the end of December 2023
- The next 5YR is due to be completed by September 2027



The 5YR and CERCLA



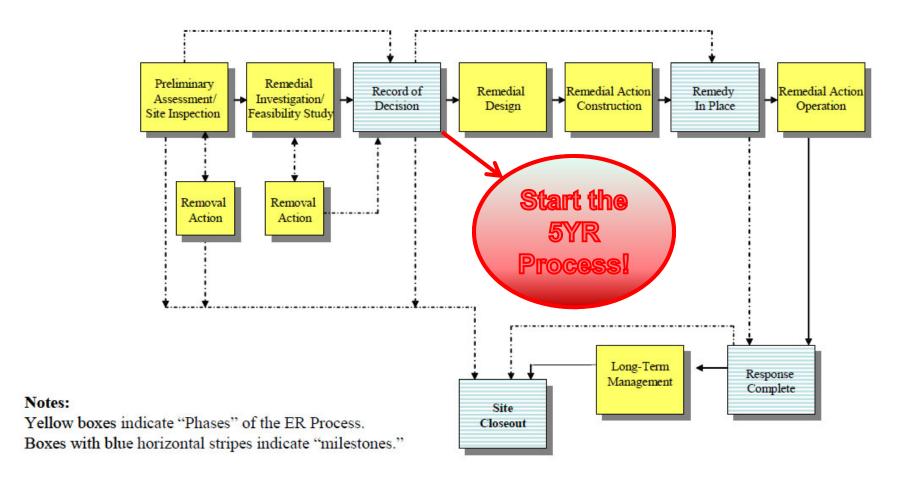


Figure 5-1. DON Environmental Restoration Process – Phases and Milestones

- Navy Environmental Restoration Program (NERP) Manual, 2006

2022 Draft 5YR Update



The Draft 5YR results answer the following:

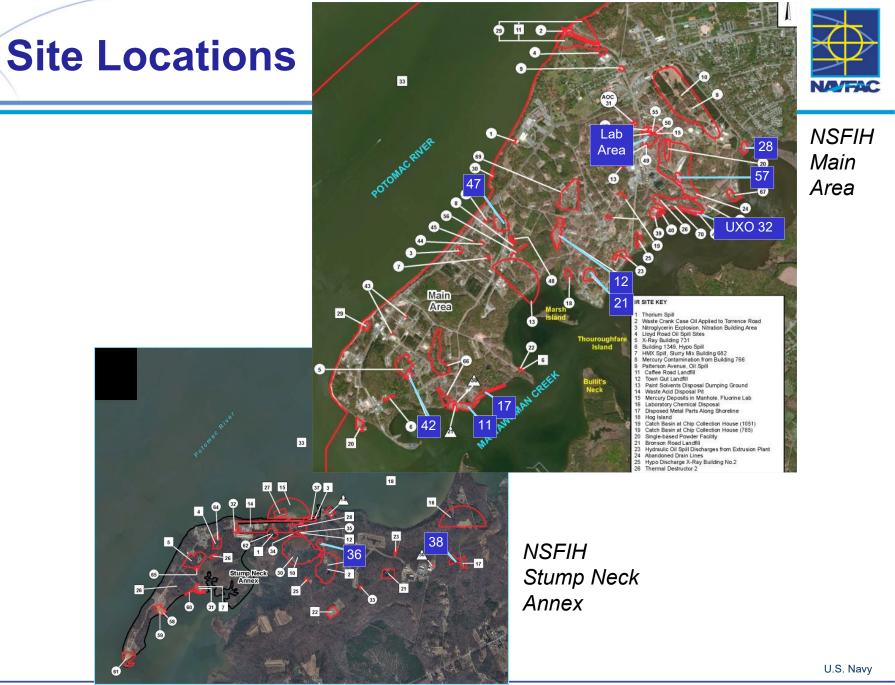
- Question A (Implementation & Performance):
 Is the Selected Remedy functioning as intended per the ROD?
- Question B (Data Review):
 Are the exposure assumptions, toxicity data, and remedial action objectives (RAOs) used at the time of the remedy selection and ROD still valid?
- Question C (Protectiveness Statement):
 Has any other information come to light that calls into question the protectiveness of the selected remedy?

From the 5YR Technical Assessment Questions (EPA, 2001)

Twelve Sites for Fourth 5YR (2022)



- Site 11 Caffee Road Landfill
- Site 12 Town Gut Landfill
- "Lab Area" (Sites 14, 15, 16, 49, 50, 53, 54, and 55)
- Site 17 Disposed Metal Parts Along Shoreline
- Site 21 Bronson Road Landfill
- Site 28 Original Burning Ground
- UXO 32 Scrap Yard (formerly IRP Site 41)
- Site 36 Closed Landfill
- Site 38 Rum Point Landfill
- Site 42 Olsen Road Landfill
- Site 47 Mercuric Nitrate Disposal Area
- Site 57 TCE Building 292 Area



Recommended Actions: Long-term Monitoring



- Continuing long-term monitoring (LTM)
- Type and frequency vary by site, but may include:
 - Land Use ControlInspections
 - Operation and Maintenance Inspections of controls
 - Groundwater monitoring
 - Surface water monitoring
 - Sediment monitoring
 - Passive methane monitoring



Recommended Actions: Cobalt Evaluation

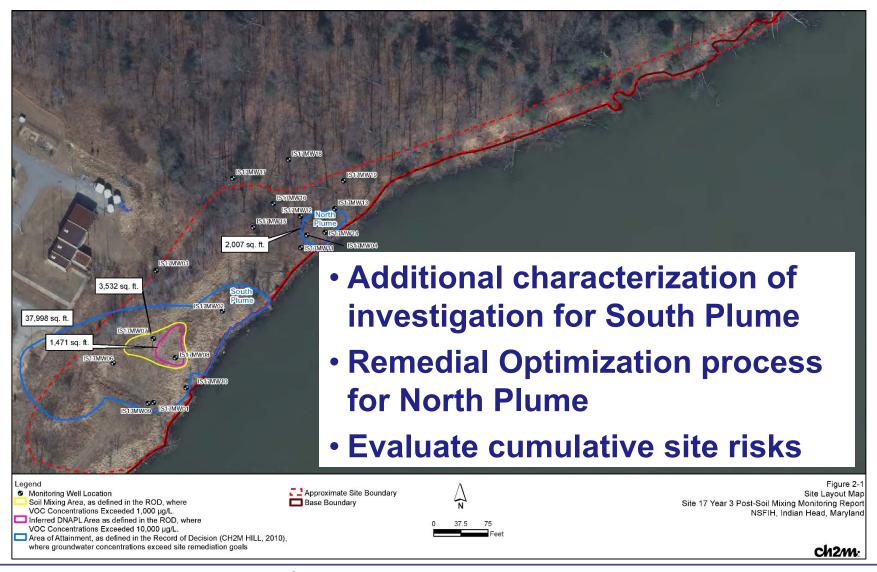


- Toxicity factors for cobalt have been revised (USEPA, 2008).
- Screening level used for chemical of potential concern reduced from 730 µg/L to 6 µg/L.
- The current background groundwater concentration for cobalt is 17.7 μg/L, which would serve as the remedial goal for cobalt.

Due to these changes, cobalt will be reevaluated as a potential groundwater human health chemical of concern at Sites 12, 17, 21, 28, 47, and 57.

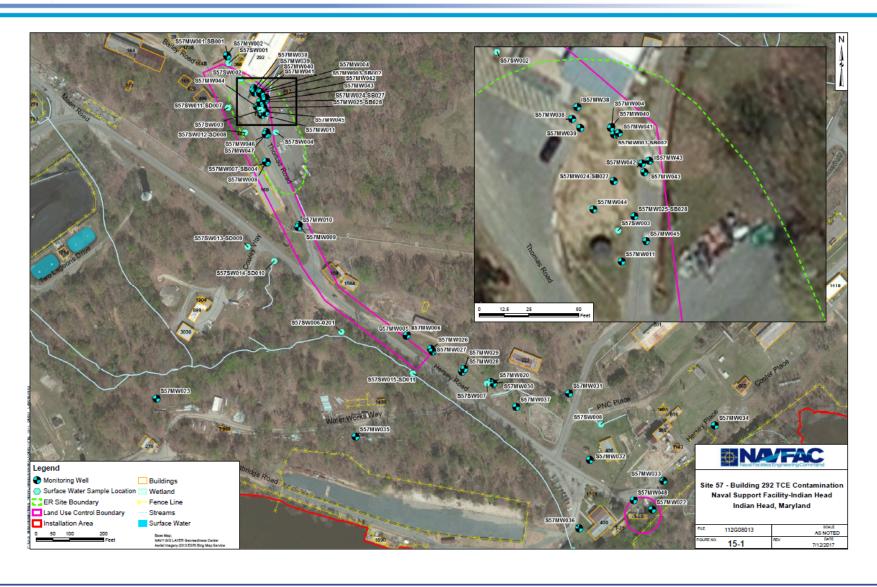
Recommended Actions for Site 17 – Disposed Metal Parts Along Shoreline





Recommended Actions: Site 57 – Building 292 TCE Contamination

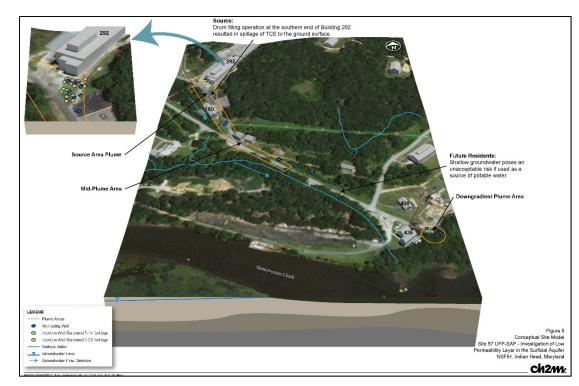




Recommended Actions: Site 57 – Building 292 TCE Contamination



- Complete vapor intrusion investigation for current conditions.
- Modify LUC Remedial Design (Tetra Tech, 2009) to include updated boundary and future vapor intrusion evaluation requirements if site usage or structures change
- Submit FYR Addendum and establish worker protectiveness based on results of investigation.



Other Recommended Actions



- Formalize site remediation goals at Sites 36, 42, and 47
- Evaluate groundwater outside landfill boundaries for Sites 21 and 42
- Remedial Optimization Process and pilot study for Site 47
- Groundwater Long-Term Remedial Action Closeout Report for Site 38

Schedule



- Finalize and sign FYR 15 DEC 2023
- Complete Recommended Actions Prior to Next FYR in 2027



Contacts and Questions

Points of Contact:

- NAVFAC Washington Remedial Project Manager:
 - Cassie Shoup, email: cassandra.shoup@navy.mil
- Indian Head PM: Andrew Louder

Questions?



NSF INDIAN HEAD – PFAS SITE INVESTIGATION UPDATE

Presented By

Cassie Shoup, Remedial Project Manager (RPM)

Naval Facilities Engineering Command (NAVFAC) Washington

[10/11/2023]

Presentation Objectives



Objective:

- Summarize the findings from the Site Inspection (SI) for polyfluoroalkyl substances (PFAS) conducted at NSF Indian Head.
- Future steps for evaluating the environmental impact of PFAS.

What is PFAS?



Polyfluoroalkyl Substances, known as <u>PFAS</u> for short, are a group of thousands of chemicals that persist in the environment.

- Their many formulations are widely used in numerous consumer, commercial, and industrial products for their unique properties.
- Because PFAS are widespread and commonly found in the blood of humans and animals as well as the water and soil at locations across the world, they are challenging to study and assess their potential human health and environmental risks.
- More information regarding PFAS according to the EPA can be found at: https://www.epa.gov/pfas/pfas-explained.

PFAS SI Objectives



The PFAS SI report for NSF-Indian Head (NSFIH) has been drafted and reviewed, and is currently being finalized. The goals of this effort were to:

- Determine whether PFAS are present in soil and/or groundwater at concentrations warranting further Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) investigation.
- Refine the understanding of site geology and hydrogeology to update the conceptual site model and support data.

SI Findings – Main Installation

- A total of 5 areas were evaluated for the Main Installation in the SI.
- A total of 4 areas were recommended for further investigation as a part of an RI.
- One site was recommended for supplemental SI sampling.

Main Installation



Main Firehouse – Building 878

Main Firehouse – Building 878 is located in the northern portion of the Main Installation and houses the NSFIH Fire Department.

- Installed and sampled 3 monitoring wells
- Collected surface and subsurface soil samples collocated with monitoring well
- Monitoring wells were not installed at 2 proposed locations due to lack of groundwater prior to refusal
 - Collected surface and subsurface soil samples at both locations



Main Firehouse – Building 878

- PFBS, PFHxS, PFNA, PFOA, PFOS were detected in groundwater in exceedance of RSLs
- PFOS was detected in soil in exceedance of RSLs
- Recommended for Remedial Investigation (RI)



Open Field by Tracks

Open Field by Tracks is located in the north portion of the Main Installation.

- Installed and sampled 5 monitoring wells
- Collected surface and subsurface soil samples collocated with monitoring wells

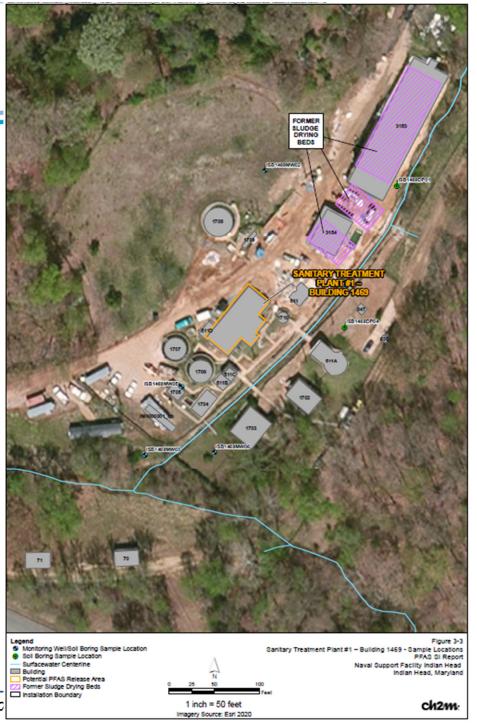
- PFHxS, PFOA, PFOS were detected in groundwater in exceedance of RSLs
- No PFAS were detected in soil in exceedance of RSLs
- Recommended for RI



Sanitary Treatment Plant #1 – Building 1469

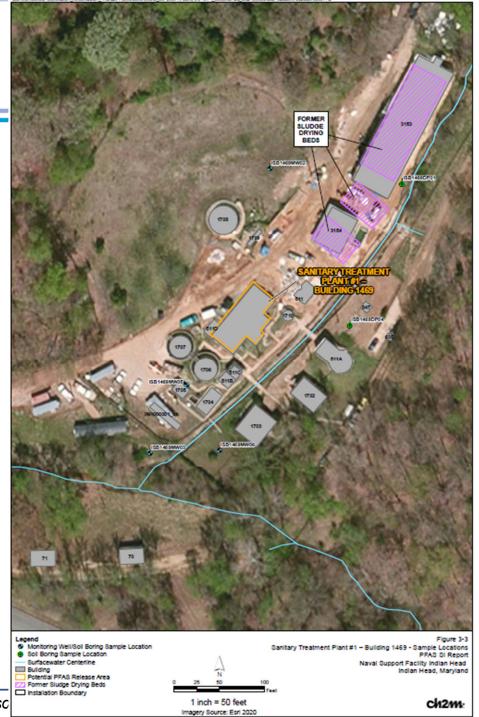
Sanitary Treatment Plant #1 is located in the northern portion of the Main Installation near the Old Navy Proving Ground.

- Sampling locations were adjusted due to subsurface utilities
- Installed 4 monitoring wells
- 3 monitoring wells were sampled; location MW02 was dry
- Collected surface and subsurface soil samples collocated with monitoring wells
- Monitoring wells were not installed at 2 proposed locations due to refusal prior to groundwater
- Collected surface and subsurface soil samples at both locations



Sanitary Treatment Plant #1 – Bldg 1469

- PFOA and PFOS were detected in groundwater in exceedance of RSLs
- No PFAS were detected in soil in exceedance of RSLs
- Recommended for RI



Site 21 – Bronson Road Landfill

Site 21 – Bronson Road Landfill is a 2-acre abandoned borrow pit located in the southeastern portion of the Main Installation.

Sampled 5 existing monitoring wells

- PFOA and PFOS were detected in groundwater in exceedance of RSLs
- Recommended for RI.

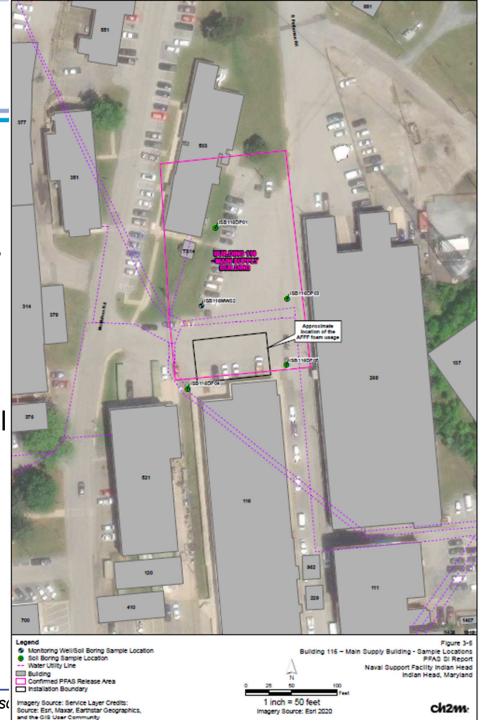


Building 116 – Main Supply Building

Building 116 – Main Supply Building is located in the northern portion of the Main Installation.

- Installed 1 monitoring well; well was dry and not sampled
- Additional monitoring wells were not installed due to lack of groundwater prior to refusal
- Collected surface and subsurface soil samples from each location

- No PFAS were detected in soil in exceedance of RSLs.
- Recommended for supplemental SI sampling.



SI Findings – Stump Neck Annex





- A total of 3 areas were evaluated for Stump Neck Annex in the SI.
- A total of 2 areas were recommended for further investigation as a part of an RI.
- One recommended for no further action at this time due to sampling results.

Old Firehouse

The Old Firehouse is located in the northwestern portion of Stump Neck Annex.

- Installed and sampled 5 monitoring wells
- Collected surface and subsurface soil samples collocated with monitoring wells

- PFHxS, PFOA, PFOS were detected in groundwater in exceedance of RSLs
- No PFAS were detected in soil in exceedance of RSLs.
- Recommended for RI.



Helicopter Field Pad

The Helicopter Field Pad is located in the north portion of Stump Neck Annex.

- Installed and sampled 5 monitoring wells
- Collected surface and subsurface soil samples collocated with monitoring wells

- PFOS and PFOA were detected in groundwater in exceedance of RSLs but less then the RSL with an HQ = 1.0.
- No PFAS were detected in soil in exceedance of RSLs
- Recommended for no further action at this time



Field by Contractor Lot

The Field by Contractor Lot is located in the north portion of Stump Neck Annex.

- Installed and sampled 5 monitoring wells
- Collected surface and subsurface soil samples collocated with monitoring wells

- PFOS and PFOA were detected in groundwater in exceedance of RSLs
- No PFAS were detected in soil in exceedance of RSLs
- Recommended for RI.



Next Steps



- Finalize PFAS SI Report
- Prepare SI Addendum for supplemental SI sampling conducted for Bldg 116
- For areas that the SI concluded further evaluation was needed, the site will move to a RI to characterize the nature and extent of risks posed by PFAS releases.
- Develop RI SAP/Work Plan

Timeline Summary



- Final Preliminary Assessment March 2023
- Final SI (anticipated) December 2023
- Draft RI SAP/Work Plan (anticipated) January 2025
- RI Fieldwork (anticipated) Beginning February 2025

All finalized CERCLA process documents are available for the public to view on Navy's Environmental Restoration website for NSF Indian Head. Please visit:

http://go.usa.gov/DyQF



Contacts and Questions

Points of Contact:

- NAVFAC Washington Remedial Project Manager:
 - Cassie Shoup, email: cassandra.shoup@navy.mil
- Indian Head PM: Andrew Louder

Questions?



UXO 20- Safety Thermal Point Site Remediation Goals

Presented By
Andrew Louder
Naval Facilities Engineering Systems
Command (NAVFAC) Washington

10/11/23

Site Background

- 0.97-acre site at the tip of of the manmade Cornwallis Neck peninsula (primary burn area and spits)
- It extends southwest from the Main Installation into the confluence of Mattawoman Creek and the Potomac River
- It was built between approximately 1940 and 1942, and was constructed of sand, fill material, rocket motor casings, empty cartridges, and coal fly ash
- It operated from the late 1940s to 1988
- Used as a burn area and for munitions testing



Previous Investigations

- Preliminary Assessment, 2005
- Site Inspection, 2010
- BERA Report, 2021
- Remedial Investigation (RI) Report, 2023

Contaminants of Concern (COCs) from the RI

Media	Human Health COCs	Ecological COCs
Surface Soil	None (risks for exposure to surface soil	Metals: cadmium and lead
	evaluated for current maintenance worker and adult and adolescent recreational user/trespasser/visitor, risks for exposure to	Dioxin/Furans (Step 3A COPC)
	only surface soil not evaluated for future site	
	use [resident, industrial worker, or construction worker])	
Subsurface Soil	Not applicable (risks for exposure to	Metals: lead
	subsurface soil alone not evaluated, risks for exposure to combined surface and subsurface soil evaluated for future exposure scenarios)	Dioxin/Furans (Step 3A COPC)
Combined	Dioxins/Furans	Not applicable
Surface Soil/Subsurface Soil	Metals: arsenic, chromium (based on assumption that chromium is Cr(VI)), lead, manganese, and thallium	
	 Arsenic, hexavalent chromium, manganese, thallium, and dioxins/furans are only COCs if resident is exposed to both combined surface and subsurface soil and groundwater. 	
Groundwater	Metals: arsenic and manganese	None
	VOCs: trichloroethene	
	SVOCs: benzo(a)anthracene	

Development of Site Remediation Goals (SRGs)

- For each COC, the proposed SRG was selected based on the human healthrisk- based PRG, the ecological risk based PRG, and the facility-wide background concentration, if available
- If the facility-wide background concentration was higher than the risk-based PRGs, the background concentration was selected as the SRG

сос	Medium	Unit	MCL	Facility-wide Background Concentrations ^{1,2}	Human Health Risk-Based PRGs (Residential)	Ecological Risk-Based PRGs	
Dioxins/Furans			N/A	N/A	N/A	0.00001	
Cadmium	Surface Soil	mg/kg	N/A	0.8	N/A	1. <mark>23</mark>	
Lead			N/A	<mark>100</mark>	N/A	32	
Dioxins/Furans	Subsurface		N/A	N/A	N/A	0.00001	
Lead	Soil	mg/kg	N/A	21.7	N/A	<mark>32</mark>	
Dioxins/Furans				N/A	0.00005	N/A	
Arsenic	Combined Surface Soil and Subsurface			10.5	<mark>17</mark>	N/A	
Hexavalent Chromium		mg/kg	N/A	N/A	5	N/A	
Lead				21.7	<mark>200</mark>	N/A	
Manganese	Soil			250	1, <mark>200</mark>	N/A	
Thallium	1			N/A	0.38	N/A	
Trichloroethene			5	N/A	8.8	NR	
Benzo(a)anthracene	Shallow Groundwater (total)	r μg/L	N/A	N/A	0.58	NR	
Arsenic		1 0/	<mark>10</mark>	7.09	1.7	NR	
Manganese]		N/A	<mark>897</mark>	430	NR	

COCs Requiring Remediation

COC	Unit	Max Detected	Frequency of Detection	Facility-wide Background Concentration	Number of Background Exceedances	Proposed SRG ^{1,2}	Basis	Number of SRG Exceedances	Require Remedial Action?
Surface Soil		•		,				,	•
Dioxins/Furans		0.000272	20/20	N/A	N/A	0.00001	Ecological PRG	9	Yes
Cadmium	mg/kg	55.3	18/23	0.8	13	1.23	Ecological PRG	13	Yes
Lead	7	5,130	23/23	100	17	100	Background	17	Yes
Subsurface Soil	_	'		,					-
Dioxins/Furans	mg/kg	0.0000578	19/19	N/A	N/A	0.00001	Ecological PRG	5	Yes
Lead	IIIg/kg	2,510	8/8	21.7	8	32	Ecological PRG	8	Yes
Combined Surface Soil and Subsur	face Soil	1	-	1	_	1	_	'	1
Dioxins/Furans		0.000272 (SS) 0.0000578 (SB)	20/20 (SS) 19/19 (SB)	N/A	N/A	0.00005	Residential PRG	3	Yes
Arsenic		10.4 (SS) 17.2 (SB)	23/23 (SS) 21/21 (SB)	10.5	2 (SB only)	17	Residential PRG	2 (SB only)	No
Hexavalent Chromium ¹	7	3.14 (SS)	8/9 (SS)	N/A	N/A	5	Residential PRG	0	No
Lead	mg/kg	5,130 (SS) 2,510 (SB)	23/23 (SS) 29/29 (SB)	21.7	43	200	Residential PRG	26	Yes
Manganese		881 (SS) 344 (SB)	23/23 (SS) 29/29 (SB)	250	10	1,200	Residential PRG	0	No
Thallium		0.863J (SS) 0.57J (SB)	5/23 (SS) 3/21 (SB)	N/A	N/A	0.38	Residential PRG	5	Yes
Shallow Groundwater				•					-
Trichloroethene		1.99J	1/4	N/A	N/A	5	MCL	0	No
Benzo(a)anthracene	μg/L	0.035J	1/4	N/A	N/A	0.58	Residential PRG	0	No
Arsenic	μg/L	23	4/4	7.09	3	10	MCL	3	Yes
Manganese	7	661	4/4	897	0	897	Background	0	No

Remedial Action Objectives (RAOs)

MEC

Prevent or minimize direct exposure by human receptors to MEC items at UXO 20 under potential construction worker scenario.

Combined Surface and Subsurface Soil – Human Health Risk

Prevent incidental ingestion of, dermal contact with, and inhalation of particulate emissions of dioxins/furans, arsenic, hexavalent chromium, lead, manganese, and thallium in combined surface soil and subsurface soil by future residents (only a potential unacceptable risk if future residents also use groundwater as a potable water supply).

Soil – Ecological Risk

Surface Soil – Reduce risks for omnivorous birds and vermivorous mammals from exposure through the food chain to cadmium, lead, and dioxins/furans in surface soil to acceptable levels. Subsurface soil – Reduce risks for vermivorous mammals from exposure through the food chain to lead and dioxin/furans in subsurface soil to acceptable levels.

Shallow Groundwater

Prevent potable use of groundwater by future residents (which would include ingestion of groundwater and dermal contact with and inhalation of volatiles from groundwater while bathing), and therefore, prevent ingestion of and dermal contact with TCE, benzo(a)anthracene, arsenic, and manganese in groundwater and inhalation of TCE from groundwater until conditions allow for unlimited use and unrestricted exposure.

Return the shallow groundwater to beneficial use with a goal of reducing the COC concentrations to meet the SRGs.

Proposed Remedial Action Alternatives-MEC

MEC	
Alternative 1:	No Action: This alternative is required by NCP to be evaluated as a baseline and involves no planned remediation activities.
Alternative 2:	 Institutional Controls: This alternative consists of: Designating the site as a "restricted use" area with ICs. These ICs will include the prohibition of residential development (including housing, elementary and secondary schools, childcare facilities, and playgrounds). The ICs will also provide a warning to workers who may be conducting intrusive activities such as excavation that there is some potential for encountering MEC. These ICs will apply to the area within the entire site boundary (Figure 1) and will be placed in the Base GIS system. The requirements of ICs will be integrated into the CWAP system and made into one of the criteria in the CWAP approval for any future work at the site. The ICs will remain in effect as long as the potential for MEC remains at the site that do not allow for unlimited use and unrestricted exposure. Conducting 5-year reviews to confirm that the land is being used appropriately according to the ICs and to report on site conditions.

Proposed Remedial Action Alternatives-Soil

Dioxins/Furans in	Surface and Subsurface Soil
Alternative 1:	No Action: This alternative is required by NCP to be evaluated as a baseline and involves no planned
	remediation activities.
Alternative 2:	Hot spot removal action at ISUXO20SO45 and ISUXO20SO46. This alternative consists of:
	Excavating the surface soil and subsurface soil down to a depth of 10 feet bgs (assumes)
	exposure to subsurface soil will be down to this depth). Horizontal extent around
	ISUXO20SO45 and ISUXO20SO46 will be calculated during the FS.
	Conducting lateral post-excavation confirmatory sampling. Vertical confirmatory sampling
	would not be necessary because the depth of excavation will be to 10 feet bgs.
	Restoring the excavated area by backfilling the area with clean fill and topsoil, followed by reseeding.
	Transporting and disposing of the excavated material to an offsite permitted facility.
	, Lead, Thallium in Surface and Subsurface Soil
Alternative 1:	No Action: This alternative is required by NCP to be evaluated as a baseline and involves no planned remediation activities.
Alternative 2:	Institutional Controls: This alternative consists of implementation of ICs as described in Alternative 2 for
	MEC for the target treatment zones shown on Figure 4 for each COC. The ICs will remain in effect
	as long as contaminants remain at the site at levels that do not allow for unlimited use and
	unrestricted exposure.
Alternative 3:	Potential options include: paving/capping, removal action, phytoremediation for
	lead and cadmium with hot spot removal for arsenic and thallium.
	I

Proposed Remedial Action Alternatives-Groundwater

Arsenic in Shallov	w Groundwater
Alternative 1	No Action: This alternative is required by NCP to be evaluated as a baseline and involves no planned remediation activities.
Alternative 2	 Long-Term Groundwater Monitoring and ICs: This alternative consists of: Implementing ICs in the form of groundwater-use restrictions for the area of attainment shown on Figure 5. The AA will be designated as "restricted use" area in the base GIS database, which would prohibit use of groundwater. The requirements of ICs will be integrated into the CWAP system and made into one of the criteria in the CWAP approval for any future work at the site. This designation would remain in place until groundwater monitoring indicates that the SRGs have been met. Conducting groundwater sampling to monitor groundwater conditions. Conducting 5-year reviews.
Alternative 3:	Phytoremediation with LTM and ICs.

Next Steps

- Prepare a technical memorandum
- Prepare Remedial Alternatives Analysis For Navy review and approval
- Prepare Feasibility Study Report

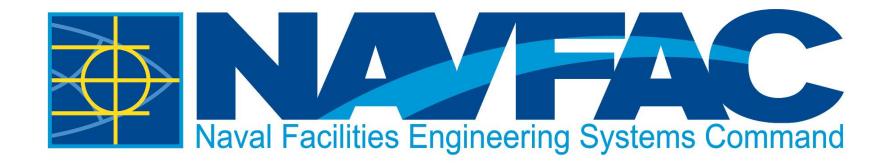
Contacts and Questions

Points of Contact:

- •NAVFAC Washington: Cassandra Shoup
- •NAVFAC Washington (Base RPM): Andrew Louder

Questions?





IR Site 66-Turkey Run Remedial Investigation Update

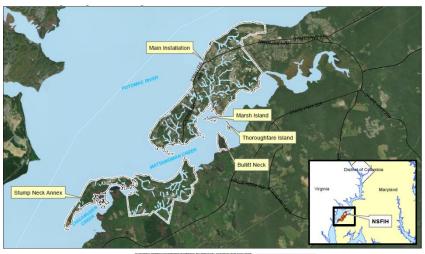
Presented By

Andrew Louder

Naval Facilities Engineering Systems Command (NAVFAC) Washington 10/11/23

Site Background

Site 66, the Turkey
Run Disposal Area, is
defined as the area
where wastes were
observed on the land
surface during Site
Inspection (SI)
activities in 2007, and
covers approximately
8.2 acres.





Naval Facilities Engineering Systems Comma

RI Objectives

Refine the vertical and lateral extents of the landfill to determine the landfill footprint.

Define the nature and extent of contamination from contaminants of interest in shallow groundwater, surface soil, subsurface soil, surface water, and ash.

Evaluate whether contaminant concentrations attributable to releases from the site present unacceptable risk to human health or the environment.

RI Field Activities

- Site boundary survey Completed (8/22)
- Vegetation clearing Completed (8/22)
- Digital geophysical mapping (DGM) Completed (9/22)
- Gamma walkover Completed (9/22)
- Hydrogeological testing (completed), which consisted of:
 - Conducting hydraulic conductivity tests
 - Performing high-resolution site characterization at 36 locations to infer hydraulic conductivity, or permeability, and electrical conductivity data with depth
 - Installing 3 staff gauges to evaluate the site hydrology, and groundwater-surface water interactions (recharging or discharging)
 - Conducting dye test to determine the hydraulic connections of Site 66 and surface water south of Olsen Road
- Collecting environmental samples (soil, groundwater, sediment, surface water, and ash) for chemical analyses – Completed
- Excavate test pits to confirm the landfill boundary from the DGM, identify waste types and depth within the landfill boundary (collect samples for environmental analyses) – To be done





RI Sample Locations

- Figure 6 shows the original and moved locations for the HRSC and
- MW locations (soil samples were collected from these locations during DPT and monitoring well installation)
- Figure 8 shows the proposed surface water and sediment sample locations. Some locations were adjusted in the field.
- Figure 9 shows the proposed ash sample locations. Some locations were adjusted in the field.







RI Sample Results

Groundwater

- Total metals Several detections of various metals
- Dissolved metals Several detections of various metals
 - Hexavalent chromium No detections
- Pesticides Two compounds detected: 4,4'-DDD (5 locations) and 4,4'-DDE (1location)

Surface Water

- Total metals Several detections of various metals
- Dissolved metals Several detections of various metals
- VOCs Two compounds detected: 1,2,4-Trichlorobenzene (1 location;
 IS66SW44) and acetone (both locations)
- SVOCs Most detections in sample from location IS66SW44 with a few detections at IS66SW45
- Pesticides/PCBs One detection each of 4,4'-DDD and 4,4'-DDE at IS66SW45

RI Sample Results

Sediment

- Metals (12 samples) Several detections in each sample
- Hexavalent chromium (10 samples) Detected in 5 of 10 samples
- VOCs (3 samples instead of 2 samples) Two or more of five compounds (2-butanone, acetone, methylene chloride, styrene, and toluene) detected in each sample
- SVOCs (3 samples instead of 2 samples) Several detections in each sample
- Pesticides and PCBs (12 samples) One or more detections in each of 10 samples
- Copper and lead (10 samples; locations IS66SD33 to IS66SD42) Both compounds are detected in all samples

Ash

- Metals Several detections of metals in each of 10 samples
- Hexavalent chromium Detected in 9 of 10 samples
- Dioxins/furans several detections in each of 4 samples

RI Sample Results

Surface Soil and Subsurface Soil

- Metals Several detections in all samples
- Hexavalent chromium Detected in several samples
- Pesticides and PCBs One or more detections in several samples
 - Atrazine Not detected in any of the samples
 - PAHs Several detections in each sample
- Copper and lead (30 surface soil samples; locations IS66SO51 through IS66SO80)
 - Detected in all samples except location IS66SO80

RI Next Steps

Sampling and Analysis Plan (SAP)

- Draft under regulatory review
- Finalize SAP
- Validate current data
- Excavate test pits Collect and analyze subsurface soil samples
- Prepare Phase III RI report

Contacts and Questions

Points of Contact:

- •NAVFAC Washington: Cassandra Shoupe
- •NAVFAC Washington (Base RPM): Andrew Louder

Questions?



Munition Response Site Fieldwork UXO 6, 11, 13 and 30

Presented By

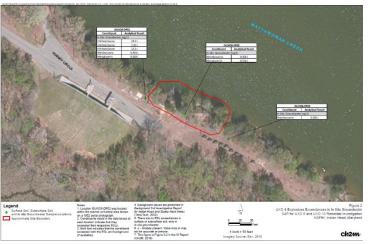
Andrew Louder

Naval Facilities Engineering Systems Command (NAVFAC) Washington 10/11/23

Site Background-UXO 6

 UXO 6, NG Slums Burning Ground, is a 0.3-acre site on the southeastern side of the Main Installation. The site lies along the northern side of a small peninsula extending into Mattawoman Creek





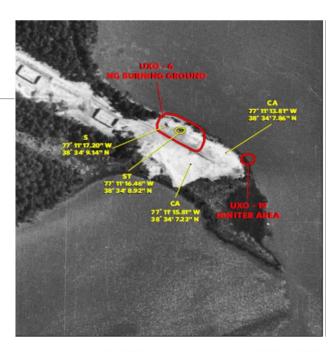
Site Background-UXO 6

- UXO 6 was reportedly used as an open burning (OB) ground for nitroglycerin (NG) slums from the late 1940s to approximately 1953.
- Another burn point (Safety Thermal Treatment Point) was in operation during this time, so the use of UXO 6 for OB of NG is suspect.
- NG slums, a production disposal byproduct, are a mixture of excess NG from the NG production facility and sawdust. Mixing of the NG with sawdust was to stabilize the NG and make it easier and safer to handle and transport.
- Types and quantities of accelerants used to burn the NG slums, if any, are unknown.



Previous Investigations

- Preliminary Assessment (Malcolm Pirnie, 2005)
 - No samples were collected.
 - PA recommended an SI to verify the presence of MEC and/or MC.
- Site Inspection (CH2M HILL, 2010)
 - Objective Determine if explosives (plus nitroguanidine, nitrocellulose, and NG) and PAHs are present in surface soil, subsurface soil, and groundwater.
 - Aerial photographic analysis Performed to identify areas where burning could have occurred to bias sample collection as the exact location of the OB area was unknown.
 - Historic aerial photographs from 1937 through 1962 were reviewed.
 - Up until 1943, no environmentally significant findings were noted, although an access road led to the site.
 - 1950 photograph, a structure was present east of the site.
 - 1952 photograph, a stained or burned area is visible at the end of the access road; an additional structure is shown west of the stained or burned area. This area was present at least through 1957.
 - 1962 photo, the site was observed to be revegetated. A loop road with a structure or object at its end was present on the site in photos from 1954 onwards.



June 19, 19

Previous Investigations Continued

Results

- Surface soil 3 samples were collected (from 0 to 0.5-foot bgs).
 PAHs and explosives were detected but none exceeded the RSLs.
- Subsurface soil 6 samples were collected from 2 depth intervals (from 0.5 foot to 2 feet bgs and approximately 1.5 feet above the water table). No PAHs were detected. Explosives were detected but none exceeded the RSLs.
- Groundwater 3 grab samples were collected (see figure on next slide).
 - One PAH (pyrene) was detected in ISUXO6-DP1, but it did not exceed the adjusted tap water RSL.
 - Several explosives were detected at each location. One or more of five explosives—2-nitrotoluene, 3-nitrotoluene, 4-nitrotoluene, nitrobenzene, and NG— exceeded the RSLs at each location.

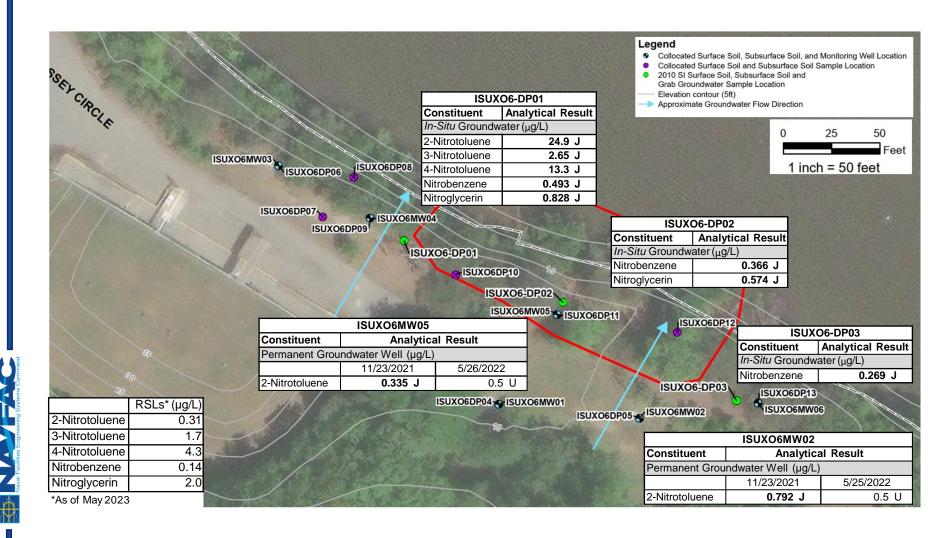
SI Sample Locations and Exceedances



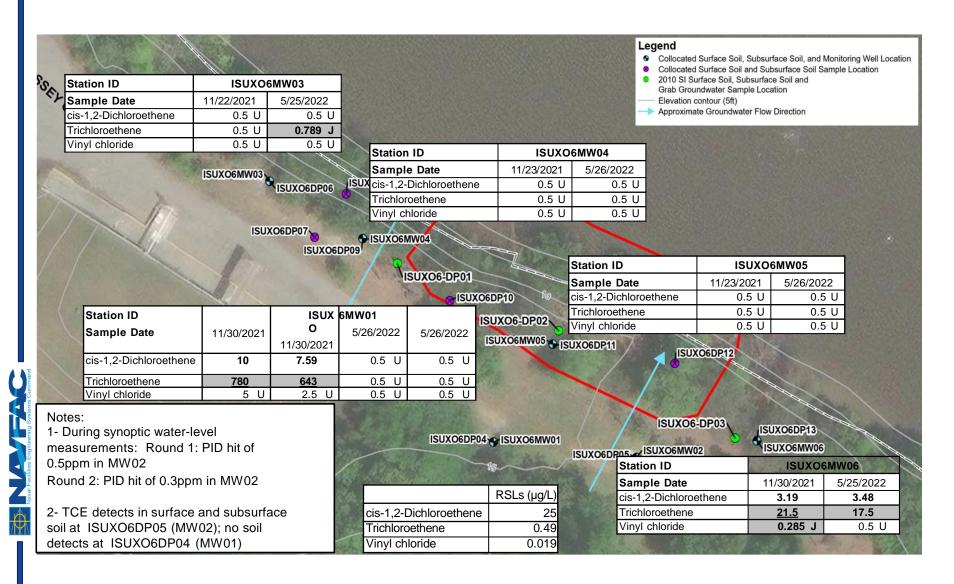




RI Results-Explosives in Groundwater



RI Results-TCE in Groundwater



Next Steps

- Determine path forward for TCE at UXO 6
- Prepare RI report for UXO 6 (pre-draft, draft, and final versions)

Site Background-UXO 11

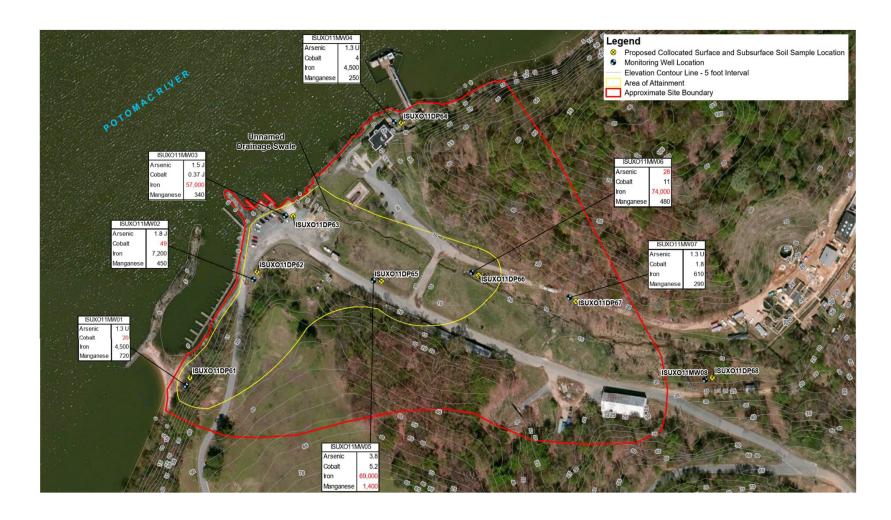
- UXO 11 is a 21-acre site adjacent to the Potomac River along the northwestern portion of the Main Installation. In the 1890s, the Bureau of Ordnance identified the site as ideal for testing guns and armor because the hills on both sides would absorb shots and potential explosions of new types of gun barrels. The site was used for developing and testing numerous ordnance items between 1891 and 1921, conducting jet propulsion research from 1940 through 1944, and proving various calibers of guns (1-inch through 16-inch), including various other projectiles and armor-piercing shells.
- Tested projectiles contained a variety of explosive fillers, including high explosives, and the projectiles tested ranged from 4 to 10 inches in diameter. Testing of cartridge cases, fuzes, primers, firing devices, gun implements, powders, steel armor plates intended for shipboard use, and experimental guns also was conducted.



UXO 11 Geochemical Investigation Goal

• Determine if shallow groundwater COCs (arsenic, cobalt, iron, and manganese) concentrations that pose unacceptable human health risks are the result of a CERCLA release or are naturally occurring.

2013 Remedial Investigation Results



Geochemistry Evaluation Approach

- General chemistry parameters and COCs run for each of eight UXO 11 well samples in 2022
- Compare geochemical properties in groundwater along the flow path towards Potomac River
- Use previous soil data to check for potential sources of COCs in groundwater
- Use all data to assess evidence for anthropogenic sources

Geochemistry Observations

- General chemistry parameters and COCs run for each of eight UXO 11 well samples in 2022
- Compare geochemical properties in groundwater along the flow path towards Potomac River
- Use previous soil data to check for potential sources of COCs in groundwater
- Use all data to assess evidence for anthropogenic sources
 - Wells MW03 through MW07: more reducing conditions
 - Most likely associated with natural conditions (stream and river influence)
 - These conditions support increased natural levels of redox-sensitive elements such as iron, manganese, and arsenic
 - Wells MW01, MW02, and MW08: more oxidizing conditions
 - Located away from stream/river influence
 - Low or ND concentrations of iron, manganese, arsenic

Geochemistry Conclusions

- Elevated concentrations of iron, manganese, and arsenic in groundwater are most likely from natural sources in aquifer matrix exposed to reducing conditions near stream and Potomac River
- Elevated cobalt in southwest area of UXO 11 appears to result from deep soil source of cobalt (assumed to be natural) based on available data in this area.

Next Steps

- Prepare draft Geochemical Investigation Report for UXO 11
 - The Valley
- Update FS
- Prepare Proposed Plan and Record of Decision

Site Background-UXO 13

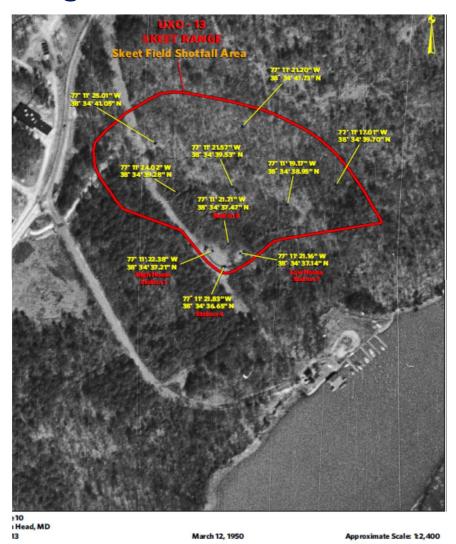
- 34-acre site in the southwestern portion of the Main Installation adjacent to Mattawoman Creek known as the FDR Skeet Range.
- Reportedly used as a recreational skeet range from the 1940s to the 1960s.
- It is assumed use of munitions was limited to shotgun ammunition and clay targets.
- Quantity of ammunition deployed or fired is unknown.
- PA reported that historic facility maps from the 1940s showed two small structures in the area of the site that were identified as possible trap houses.
- Based on the inferred orientations of the trap houses, firing would have been to the northeast.



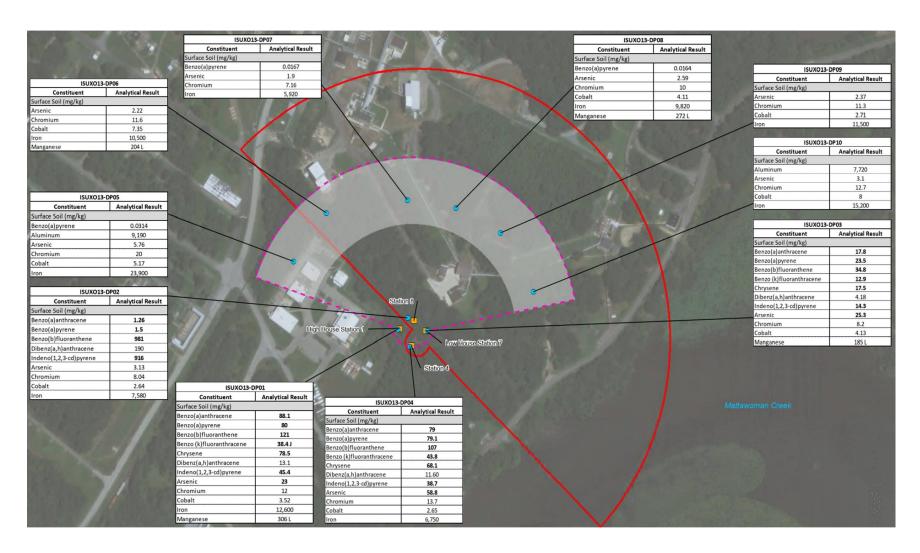
General view of the site. Possibly remnants of a trap house. Photograph was taken in June 2010 during the SI.

Previous Investigations

- Preliminary Assessment (Malcolm Pirnie, 2005)
 - No samples were collected.
 - PA recommended soil sampling in the area that would have been the maximum shot fall zone to verify the presence of munitions constituents in the suspected range area.
- Site Inspection (CH2M HILL, 2010)
 - Objective Determine if PAHs and metals are present in surface soil at concentrations that exceed the adjusted residential soil RSL.
 - Aerial photographic analysis Performed to assist in the observation of the trap houses, if they had existed, to focus the area of investigation.
 - Historic aerial photographs from 1943 through 1962 were reviewed.
 - 1943 photograph showed a skeet range.
 - 1950 photo, the range appeared inactive.
 - 1961 photo Only two of the structures associated with the former skeet range are visible.
 - 1962 photo These structures were completely surrounded by vegetation.

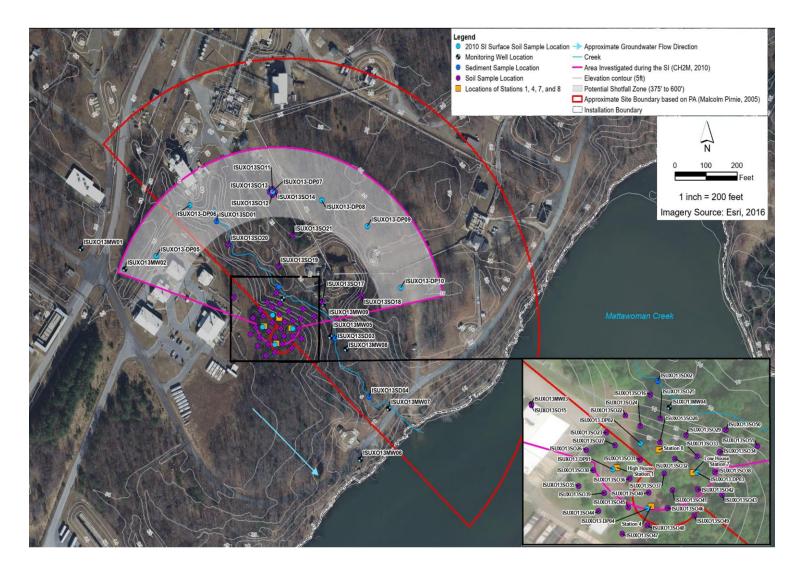


SI Sample Locations and Exceedances



Remedial Investigation (RI) Objectives

- Define the nature and extent of contamination from TCL SVOCs (PAHs) and TAL metals in surface soil, subsurface soil, sediment, and shallow groundwater
- Delineate the extent of lead in surface soil around location ISUXO13-DP07 (based on ecological screening performed in support of SAP)
- Evaluate whether contaminant concentrations attributable to releases from the site present unacceptable risk to human health or the environment



Preliminary Summary of Available Data

Surface Soil

- SVOCs Lots of detects and exceedances primarily of PAHs primarily in the trap house area
- Metals Lots of detects and exceedances; aluminum, arsenic, chromium, cobalt, copper, iron, lead, manganese, mercury, selenium, thallium, vanadium, and zinc

Subsurface Soil

- SVOCs Lots of detects and some exceedances primarily of PAHs in the trap house area
- Metals Lots of detects and exceedances; aluminum, arsenic,
 chromium, cobalt, iron, manganese, thallium, and vanadium

Preliminary Summary of Available Data

Sediment

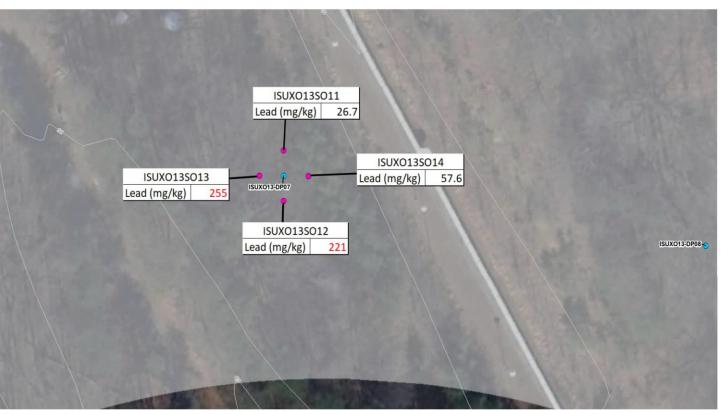
- SVOCs Detects of 5 PAHs at ISUXO13SD03 but no exceedances
- Metals Lots of detects and exceedances; aluminum, arsenic,
 barium, chromium, cobalt, cyanide, iron, and vanadium

Groundwater

- SVOCs Some detects with exceedances of 1 to 5 PAHs in 5 wells (ISUXO13MW01, MW02, MW03, MW08, MW09)
- Total Metals Lots of detects and exceedances; aluminum, arsenic,
 barium, beryllium, cadmium, chromium, cobalt, copper, cyanide, iron,
 magnesium, manganese, nickel, selenium, and zinc
- Dissolved Metals Lots of detects and exceedances; aluminum, arsenic,
 barium, cadmium, cobalt, copper, iron, manganese, mercury, nickel, selenium,
 and zinc

Preliminary Summary of Available Data

 Based on the lead results for ISUXO13SO13 and ISUXO13SO12, additional surface soil sampling may be needed to the west and south of ISUXO13-DP07

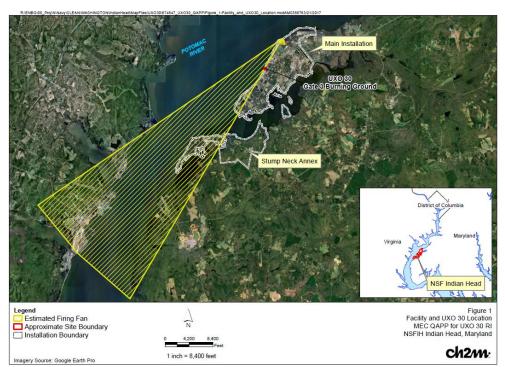


Next Steps

- Determine path forward for lead delineation around ISUXO13- DP07
- Prepare RI report for UXO 13 (pre-draft, draft, and final versions)

Site Background-UXO 30

UXO 30, Gate 3 Burning Ground, is located along the western boundary of the Main Installation along the shoreline of the Potomac River. The Preliminary Assessment (PA) report (Malcolm Pirnie, 2005) indicates the site was a potential burning ground operating from 1955 to 1961. Explosives may have been brought to the site for burning; however, the types and quantities of explosives are unknown.



Groundwater Monitoring Well Installation

- Installed 4 of 6 proposed permanent groundwater monitoring wells in December 2021
- 3 wells were developed; the 4th has not produced water since installation (ISUXO30MW02)
- The 2 other wells were not installed because no water was found at the proposed locations above the hard, clay layer (ISUXO30MW03 and ISUXO30MW04)





Sampling Results-Groundwater

- No groundwater exceedances of Tapwater RSLs for TCL VOCs, dioxins, furans, explosives (including nitrocellulose, nitroguanadine, and perchlorate)
- Exceedances of RSLs include:
 - MW01 (upgradient well) arsenic, cobalt, iron, and manganese
 - MW05 manganese
 - MW06 naphthalene, cobalt, and manganese
- SVOC data rejected and recommended for resampling

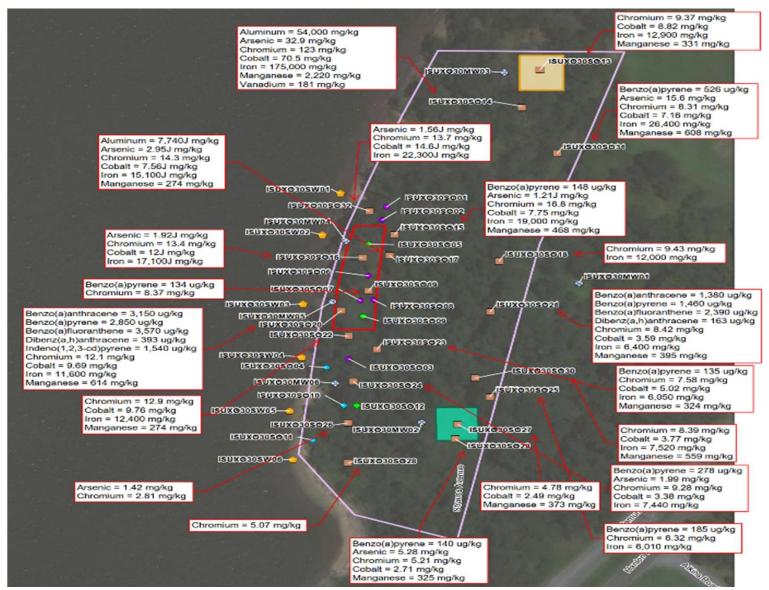
Sampling Results-Groundwater



Sampling Results-Soil

- No surface or subsurface soil exceedances of Residential RSLs for TCL VOCs, dioxins, furans, explosives (including nitrocellulose, nitroguanadine, and perchlorate [where data is available])
- Exceedances of RSLs include:
 - Metals (aluminum [ISUXO30SO17], arsenic, chromium, cobalt, cyanide [SB ISUXO30SO13], iron, manganese, vanadium [SB ISUXO30SO16])
 - PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene)
- Recommended for resampling:
 - Surface soil: Perchlorate, antimony, and selenium at 4 locations (ISUXO30SS15, 16, 17, and 32)
 - Subsurface soil: Perchlorate, antimony, and selenium at 5 locations (ISUXO30SB14, 15, 16, 17, and 32)

Sampling Results-Soil





Next Steps

- Is the Groundwater zone bounded around MW05?
- Do any more wells need to be installed?

Contacts and Questions

Points of Contact:

- •NAVFAC Washington: Cassandra Shoup
- •NAVFAC Washington (Base RPM): Andrew Louder

Questions?