PARTICIPANTS:

<u>Panelists</u> <u>Representing</u>

Eric Ross Naval Facilities Engineering Systems Command (NAVFAC)

Mike Daly U.S. Environmental Protection Agency (EPA)

Randi Augustine Massachusetts Department of Environmental Protection

Steven Passafaro Sovereign Consulting

Robert Davis Tetra Tech
Paul Probasco Tetra Tech
Jacqueline Boltz Tetra Tech

Robert McCarthy Resolution Consultants

Attendees

Ann Kiesseing
Cameron Heller
Charles Lindberg
Chris Boles
Chris McGovern

Matt Greenberg
Jennifer Boles
Mike Rosenberg
Patty Dahlgren
Paul Corwell

Heidi Porter

ATTACHMENTS:

- Meeting Announcement (published in the 11/24/2022 and 12/1/2022 editions of Lexington Minuteman; uploaded to the Town of Bedford website and The Bedford Citizen websites; emailed or mailed to current RAB members)
- Presentation Slides

MINUTES/NOTES:

7:00 PM –Mr. Ross started the meeting. Mr. Ross introduced himself. Ms. Boltz covered the Microsoft Teams information regarding the virtual meeting and how to ask or submit questions. Mr. Ross:

- Introduced the members of the NWIRP Bedford Team that includes the regulators and Navv contractors.
- Introduced the new Bedford RAB Co-chair, provided information on the RAB and how to become a member.
- Provided details on how to find more information on NWIRP Bedford through the Navy's public website and where to find the Administrative Record.
- Introduced the Navy's PFAS Reading room. Provided details on the Community Involvement Plan (CIP) and the Site Management Plan.
- Provided an overview and presented ongoing cleanup actions for each of the environmental restoration sites at NWIRP Bedford.
- Summarized land use controls (LUCs) in place and the five-year review process.
- Described the conclusions and recommendations of the previous five-year review completed in 2019.

Provided details on the initiation and completion of the next five-year review.

7:22 PM – Mr. Ross handed the meeting over to Mr. Passafaro. Mr. Passafaro introduced himself. Mr. Passafaro:

- Introduced himself
- Provided details on groundwater treatment and extraction system at Site 3 and the long- term monitoring that is conducted each year.
- Summarized the Advanced Oxidation Process (AOP) to treat 1,4-dioxane.
- Provided details on the long-term monitoring that is conducted each year for Site 3, Site 4, and the SFTA property.
- Provided details on the long-term maintenance and surveillance.

7:28 PM – Mr. Passafaro hands the meeting back to Mr. Ross. Mr. Ross:

- Described additional post-ROD investigations that are being conducted and described the plan for an expanded groundwater extraction system.
- Provided details on the plans for the future.

The presentation slides are attached.

7:36 PM – The presentation was completed, and the floor was opened to questions from the audience. A summary of the questions and responses are provided below.

8:13 PM – Asked for any additional questions to be submitted to the PAO by December 30th. Reviewed the Bedford Public Website and where to find the online Administration Record.

8:15 PM – No additional questions and Mr. Ross thanked the audience and adjourned the RAB meeting. Anticipate next RAB meeting in September 2023.

ATTENDEE QUESTIONS:

- Which site is on the eastern side of the facility?
 Site 3.
- 2. Was there any particular reason or any factor that is the reason for the time critical remedial action?
 - The Site 3 plume and the expansion of that plume to the east is still being evaluated. If there is a way to quickly perform an action, we would perform pursue the action
- 3. What makes the Navy and contractors think that the time critical remedial action is necessary to consider?
 - We are looking at options that are available. Many investigations take time to understand the best path forward. There are other options for the Navy but the intent of the time critical remedial action is for a quicker response.

4. What are some of the options for the Navy?

Some of the options are pilot studies, time critical actions, or non-time critical actions. Non-time critical takes longer but evaluate multiple options and considers costs and other remedial actions. Time critical remedial actions put a short-term solution in place while long term solutions are evaluated and discussed. When there is new information that is identified during the Superfund process that requires more immediate action as you continue to evaluate/study the site. That is what the Navy is considering for the eastern portion of the plume. As you get more data or new data you can react quickly. With the state of technology now, treatment includes pump and treat that was used 20 to 30 years ago to new technologies using in-situ treatment processes to stimulate biodegradation of these contaminants. You are seeing more of these in-situ treatment processes to sort of polish/get the remaining contamination out when you are at some asymptotic level. These processes sort of accelerate the clean up to reach the standards or cleanup goals that were established.

5. Are there any other emerging contaminants other than dioxane and fluorinated hydrocarbons?

The Navy is not aware of any new contaminants as of right now. Does USEPA know of any? The DoD maintains a list and uses lots of hazardous materials. Toxicity information is updated when chemicals are identified as a health issue when they become known. The Environmental Protection Agency keeps a list of emerging contaminants and that is how PFAS came to be. Chemicals come into use and new information about toxicity become a focus for health concerns. The objective of the Navy was to look at dioxane and PFAS as part of the operational history of the site and the Navy is still working on that. There is nothing new at this point other than the 1,4-dioxane.

6. Are there new extraction wells in the northwest beyond the site boundary for dioxane and PFAS?

Yes, there are new extraction wells in the northwest.

7. Would the current system need to be upgraded to treat new emerging contaminants like PFAS?

The treatment plant uses carbon as part of the treatment. Carbon is commonly used as treatment for PFAS. Treatment of PFAS depends on the contact time, concentrations of carbon and other chemistry data. The system has carbon but can only treat PFAS up to a certain concentration. That needs to be evaluated.

8. How do the new extraction well locations get determined based on sampling of the plume of 1,4 dioxide and PFAS?

The groundwater modeling is how the extraction well locations are determined. Sampling the wells and modeling the groundwater flow or where the most preferential pathways might be. The extraction wells are for TCE and 1,4-dioxane, not PFAS.

Are you extracting water that could potentially have PFAS?
 No, a source of PFAS has not been identified in the northern tract area.

- 10. Has the source of PFAS been searched for?
 No, but there are discussions taking place to try and answer this question. When the data is obtained it will be shared with the Town of Bedford.
- 11. Beyond the NWIRP Bedford property, how many Bedford enclosed structures lie with in the 100-foot buffering zone of TCE vapor intrusion plume front recommended on the Mass.gov website?
 - Possibly one but less than a handful is a good approximation of structures. A line would need to be drawn on a figure to determine the number.¹
- 12. Has the NWRIP Bedford site infrastructure such as water, gas lines, electrical conduits, septic piping, storm sewers, etc. been looked at as preferential pathways for TCE vapor contaminants to travel beyond the 100-foot buffering zone and cross into residential or business areas?
 - No, it is not likely to be a preferential pathway in that area considering the depth of water at this site being 10 or more feet below ground surface.
- 13. Could local juveniles, who have been exploring the abandoned building for years, have been exposed to the TCE vapor intrusion through old plumbing fixtures, storage areas, etc.?
 - There is a possibility of vapor intrusion in the buildings although we do not know that it is occurring. We know there are trespassers entering the building and we are trying to stop that from happening. Without knowing if there is vapor intrusion it should be noted that there is a low possibility of exposure to vapor intrusion as the trespassers are not in the buildings for a long time and there is air flow from the broken windows. Vapor intrusion exposure would have to be continuous and over time. There have been additional efforts to board up the buildings and add camera systems to stop trespassing from happening.
- 14. Which buildings have been repaired and boarded up because the photographs from October of 2021 showed the same windows broken as 2019 and 2020? Within the last month, the windows on every building out there on the first floor have been boarded up and secured. The next report will have more up to date photos of these buildings.
- 15. When did the treatment plant begin operation? Where is the discharge point for the treated water from the treatment plant after it is treated and the TCE and other contaminants are stripped out?

 The plant began operation in 1997. The discharge point is on a hillside porthwest of the plant began operation in 1997.
 - The plant began operation in 1997. The discharge point is on a hillside northwest of the treatment plant on the asphalt area.
- 16. Does the 330,000 gallons per month of water travel to Elm Brook?

¹ A follow-up review of the site data and aerial imagery after the RAB meeting identified one structure within the 100 foot buffer zone of the TCE plume.

No, Elm Brook is a significant distance from the area and the plant is not running continuously. The water is discharged in batches, so it is a lower flow. The water goes out about 20 to 30 yards before petering out and soaking into the soil. Also, the extraction wells are located in between the discharge point and Elm Brook.

17. Has there been any sampling of the water at the discharge point to the stream to verify it is not reaching Elm Brook now that we know that 1,4-dioxane was discharged to the ground surface?

The water gets sampled before being discharged, and there are wells downgradient that are being sampled for 1,4-dioxane along Elm Brook.

- 18. When did the sampling for 1,4-dioxane begin?
 Sampling for 1,4-dioxane began in 2020 by Elm Brook.
- 19. Is there a way to estimate how much 1,4-dioxane was pumped up and then discharged onto the surface in the wetland area between 1997 and 2020?

 No, there is no way of estimating how much was discharged.
- 20. Was there something that caused the sudden decision to board up the building after such a long time?

The decision was not made recently. Since 2014 there have been contractors out there multiple times boarding the buildings up and welding the doors shut. The trespassers would bring battery powered tools and cut through the plywood on the windows, so it was a constant project for the last 8 to 9 years. There has recently been more funding to get it better closed up, cleaned up, and added more signage so that it's a little more protected.

21. Is there surveillance?

Yes, in the treatment building and the pump house because they are the only areas that have power. A new company is providing video monitoring. The surveillance has also been upgraded to include audible warnings if there is a trespasser detected within the fence line of the treatment plant. If there is still a trespasser detected after the verbal warning a call is made to the police.

- 22. What does the surveillance system say on the verbal warning?
 It says "You've been detected within government property. Please vacate or the police will be called, this is your only warning."
- 23. Is there a plan for the building or the site? No plans right now.

RESTORATION ADVISORY BOARD (RAB) PUBLIC MEETING FORMER NAVAL WEAPONS INDUSTRIAL RESERVE PLANT (NWIRP) BEDFORD. MA

Regarding: Status of Navy's Continuing Cleanup Actions **Date/Time**: Thursday December 8, 2022, starting at 7:00 p.m.

The Navy will hold a hybrid (in person and virtual) RAB meeting on Thursday December 8, 2022, from 7:00 to 9:00 p.m. The meeting is open to the public.

To attend the meeting in person it will be at the Bedford Town Center Building
Flint Room, 2nd Floor
12 Mudge Way
Bedford, MA

To attend the meeting virtually it is being held online

Meeting Link: https://tinyurl.com/RAB8DEC

Meeting ID: 256 649 053 618

Passcode: fBkvM4

Join by phone: 1 617-865-5234 Access code: 835 449 599#

The meeting will include a presentation specific to the ongoing environmental cleanup activities for the Environmental Restoration sites at former NWIRP Bedford consisting of Site 3 (Chlorinated Solvent Groundwater Plume), and Site 4 (Benzene, Toluene, Ethylbenzene, and Xylenes Groundwater Plume). The environmental cleanups at former NWIRP Bedford are being conducted under the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as "Superfund". The meeting will include a summary of the current status of the ongoing remedial actions implemented at the environmental restoration sites. Representatives from the U.S. Navy, USEPA, and MassDEP will be available to answer questions during the meeting.

Reports on environmental actions are made available to the public through the Navy's Administrative Record (AR) File for former NWIRP Bedford. The AR File contains data and documentation supporting past site decisions regarding the Navy's environmental restoration cleanup of former NWIRP Bedford. The AR File for former NWIRP Bedford is available electronically at:

https://administrative-records.navfac.navy.mil/?ML6J U3JG4XM3TL

For those with no internet and/or computer access, a copy of the AR File was placed in a binder (called the AR File CD Binder) that is updated yearly and is available at the Bedford Public Library (located at 7 Mudge Way, Bedford, MA 01730). For more information on the Administrative Record or about this public meeting, please contact NAVFAC Mid-Atlantic Public Affairs at (757) 341-1410/11 or email NAVFAC ML PAO@navy.mil.



Welcome to the Hybrid RAB Meeting!



Thank you for joining the Hybrid Restoration Advisory Board (RAB) Meeting for Naval Weapons Industrial Reserve Plant (NWIRP) Bedford

The meeting will begin at 7:00 p.m.

For captions, click

More ●●● at the top of the screen and then Click 'Turn on live captions'







Restoration Advisory Board (RAB) December 8, 2022

Naval Weapons Industrial Reserve Plant (NWIRP)
Bedford, Massachusetts

Eric Ross – NAVFAC Mid-Atlantic

TEAMS TOOLS



Closed Captioning

- To use live captions, select More ●●●
- Click "Turn on live captions"



Screen Layout

- To adjust the layout on your screen, select More ●●●
- Choose the preferred view from available choices. Options include Full Screen, Gallery View, and Focus on Content

Q&A Options



1) To ask a question, select 'show conversation'



Type question in the text box, and then select Send.



2) Raise your hand to be recognized and have your microphone unmuted. Select 'Show reactions' icon in the meeting controls at the upper-right area of the screen, and then choose Raise your hand icon.

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3) Phone-only attendees can dial *6 to raise their hand and have the opportunity to ask a question.

HYBRID MEETING INSTRUCTIONS



- Hybrid Meeting: In-person and Virtual Attendees
- Virtual Attendees via Microsoft Teams
 - Cameras are not being used.
 - Attendee microphones will remain muted except when recognized for questions.
- In-person and Microsoft Teams sign-in names will be used for the record.
- Please hold all questions or comments until after the presentations.
- The meeting will be recorded, but the recording will not be made public. Meeting minutes will be prepared and made available in the Administrative Record.

NWIRP BEDFORD TEAM



Eric Ross – Navy RPM

- Steve Passafaro Sovereign
- Robert Davis Tetra Tech
- Paul Probasco Tetra Tech
- Rob McCarthy Resolution Consultants
- Michael Daly USEPA Region 1
- Randi Augustine MassDEP
- Heidi Porter New RAB Co-Chair
- Jacqueline Boltz Teams Host

RAB Meeting Agenda



7:00 pm Welcome; Hybrid RAB Meeting Instructions/Protocols
7:05 pm Introduction of NWIRP Bedford Team and RAB Purpose
7:10 pm Navy Environmental Restoration Presentation

- Navy Public Website and Administrative Record Update
- Update to Community Relations Plan
- Site Management Plan
- Site Overview, Land Use Controls, and Next Five-Year Review
- Groundwater Treatment with New Advance Oxidation Process
- Long-Term Monitoring
- Additional Post-ROD Investigations
 - Preliminary Assessment for Emerging Chemicals PFAS & 1,4-DX
 - 1,4-dioxane Groundwater Investigation
 - Additional Extraction Well Design and Installation
- Future Plans

8:30 pm Final comments/questions

9:00 pm End of Meeting

RESTORATION ADVISORY BOARD PURPOSE



- A Restoration Advisory Board (RAB) is a stakeholder group that meets to discuss environmental restoration at a specific property that is either currently or was formerly owned by Department of Defense (DoD), but where DoD oversees the environmental restoration process.
- RABs enable people interested in the environmental cleanup at a specific installation to exchange information with representatives of regulatory agencies, the installation, and the community. RABs may only address issues associated with environmental restoration activities.

Source DoD RAB Rule Handbook

RAB Membership & Contact Information



If you would like to be added to our electronic mailing list or become a RAB member please contact:

NAVFAC Mid-Atlantic Public

Affairs

email
 NAVFAC_ML_PAO@navy.mil

NAVY PUBLIC WEBSITE



https://www.navfac.navy.mil/Business-Lines/Environmental/Products-and-Services/Environmental-Restoration/administrative records/p instln id/BEDFORD NWIRP/

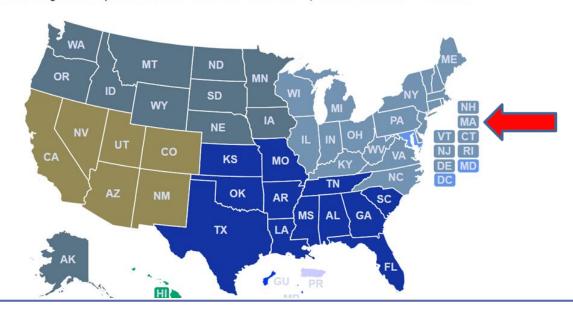


Environmental restoration (also locum as ecological restoration) in the proc experience impairment or duringle include scroom, takes, streams, fields, for

In 1976, Congress passed the Resource Conservation and Recovery Act (RIC passed the Comparisons on Environmental Registers, Compensation, and List of sites contaminated by part releases of fractions solutioners. Congress a managed by the Office of the Deputy Shade Societary of Odesice (Institute Institutioners, politicates, contaminants and military manafesis remaining more programs to accomplicit cleaning guilar. The Institution Restoration Program governmental health and sofety risks. The Military Musifices Response operational ranges.

REGIONAL INSTALLATION MAP

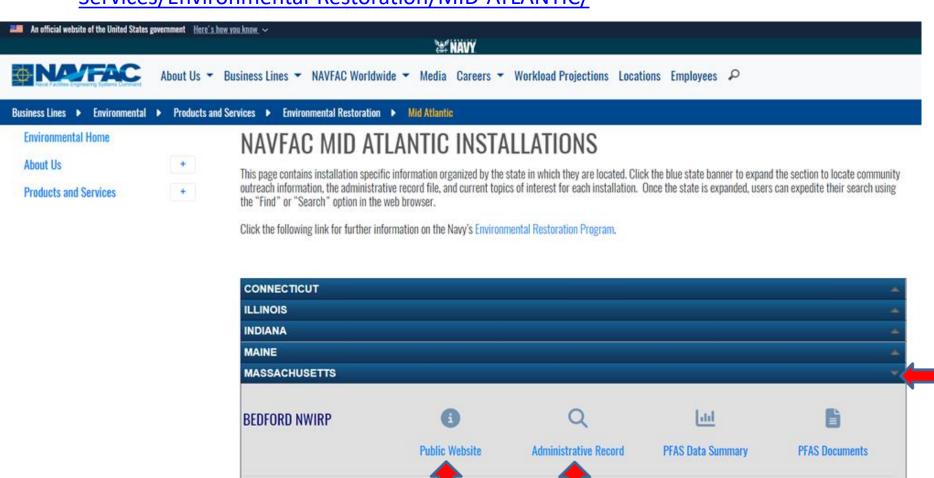
Click on a region in the map below to obtain a list of installations with community information and administrative record access.



NAVY PUBLIC WEBSITE



https://www.navfac.navy.mil/Business-Lines/Environmental/Products-and-Services/Environmental-Restoration/MID-ATLANTIC/



BEDFORD PUBLIC WEBSITE



https://www.navfac.navy.mil/Business-Lines/Environmental/Products-and-Services/Environmental-Restoration/Mid-Atlantic/Bedford-NWIRP/



BACKGROUND

Naval Weapons Industrial Reserve Plant (NWIRP) Bedford covers 46 acres in eastern Massachusetts in the Town of Bedford, in Middlesex County, Massachusetts. It is bounded by the Lawrence G. Hanscom Field and Hanscom Air Force Base to the south: Instrumentation Laboratory and Edge Sports Center, wetlands, and residences to the west: by woods and wetlands to the north: and by woods, residences, and wetlands to the east. NWIRP Bedford is divided into northern and southern sections that are separated by Hartwell Road.

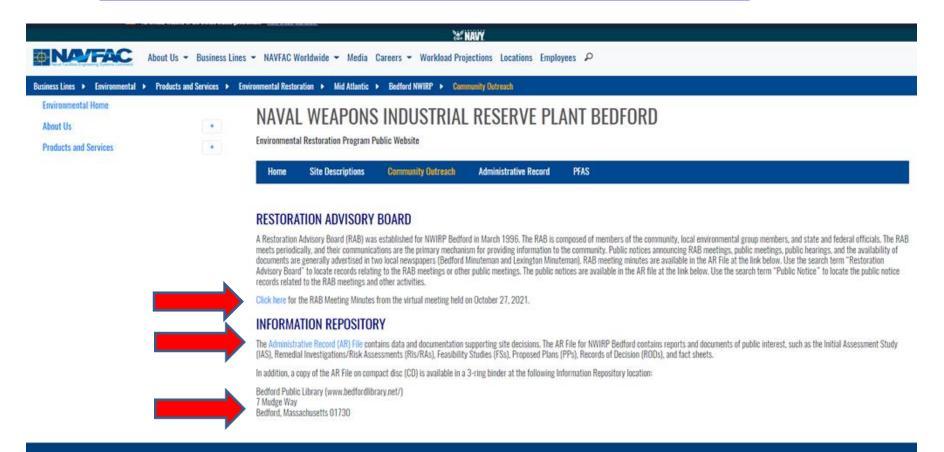
NWIRP Bedford was established in 1952 and its mission was to design, fabricate, and test prototype equipment for missile guidance and control systems. NWIRP Bedford was an active research facility from the mid-1950s until December 2000



COMMUNITY OUTREACH



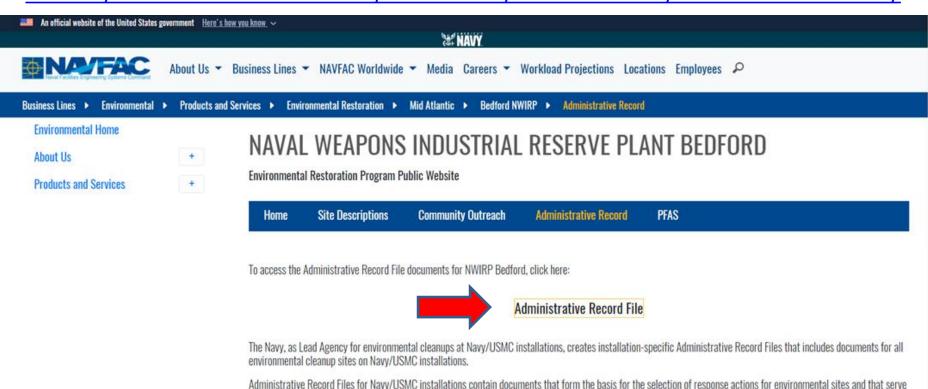
https://www.navfac.navy.mil/Business-Lines/Environmental/Products-and-Services/Environmental-Restoration/Mid-Atlantic/Bedford-NWIRP/



BEDFORD ADMINISTATIVE RECORD



https://www.navfac.navy.mil/Business-Lines/Environmental/Products-and-Services/Environmental-Restoration/Mid-Atlantic/Bedford-NWIRP/Administrative-Record/



Department of the Navy (DON) Freedom of Information Act (FOIA) Central Request Office

not proceed to a DoD website, however, there is no harm in continuing to the website.

Restoration Program Home

as vehicles for public participation in the selection of response actions at these installations. To learn more about the Administrative Record File, click here: Environmental

Note: Some internet browsers do not include Department of Defense (DoD) digital security certificates. This may result in a security warning recommending that the user

BEDFORD ADMINISTATIVE RECORD (CONT.)

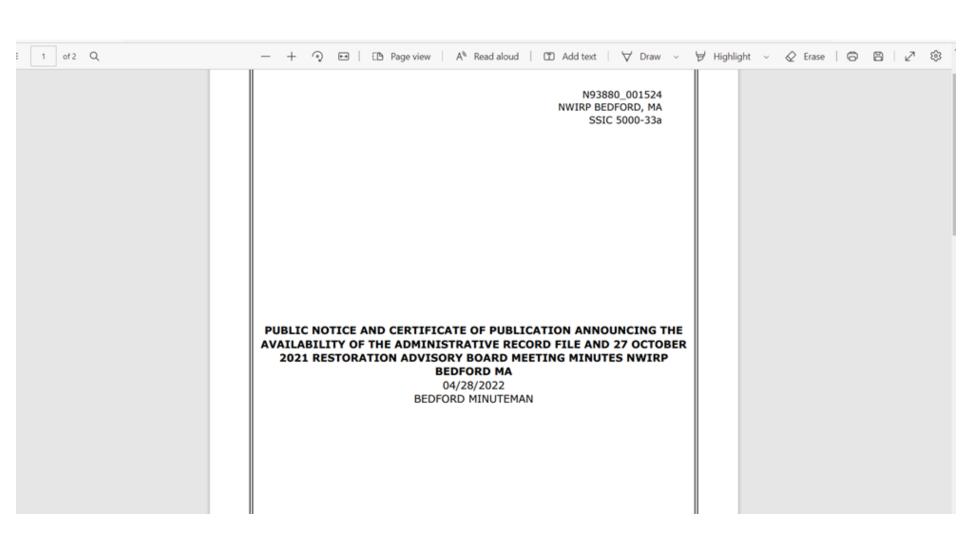


https://administrative-records.navfac.navy.mil/?ML6J U3JG4XM3TL

NAVY					
NAVFAC		Search Administrative Records		Search Q	
		From Date	To Date		
BEDFORD NWIRP - Administrative Records 1066 Records Found					
Filter By					Sort by Date 💃
Record Type ANALYTICAL DATA CORRESPONDENCE FACT SHEET	RESPONSE TO U S EPA COMMENTS D NWIRP BEDFORD MA Sites(s): SITE 00003	ATED 3 JUNE 2022 AND 11 JULY 202	22 REGARDING AQUIFER TEST WORK PLAN FOR E	XTRACTION SYSTEM DESIGN	TETRA TECH 8/1/2022 CORRESPONDENCE Record#: 001534 View Document
MINUTES OTHER PUBLIC NOTICE REPORT	AQUIFER TEST WORK PLAN TECHNIC. Sites(s): SITE 00003	AL MEMORANDUM NWIRP BEDFORD	MA		TETRA TECH 7/31/2022 REPORT Record#: 001533 View Document
Category PFAS Attachment	U S EPA COMMENTS REGARDING DRA Sites(s): SITE 00003	AFT AQUIFER TEST WORK PLAN NWI	RP BEDFORD MA		U S EPA 7/10/2022 CORRESPONDENCE Record#: 001535 View Document
✓ Available for Download ✓ Request Document RESET	U S EPA COMMENTS REGARDING AQU Sites(s): SITE 00003	JIFER TEST WORK PLAN NWIRP BEDF	FORD MA		U S EPA 6/2/2022 CORRESPONDENCE Record#: 001536 View Document
			VOLATILE ORGANIC COMPOUNDS AND 1,4-DIOX.		TETRA TECH

BEDFORD ADMINISTATIVE RECORD (CONT.)





PFAS



https://www.navfac.navy.mil/Business-Lines/Environmental/Products-and-Services/Environmental-Restoration/PFAS-Reading-Room/



BACKGROUND

PER-AND POLYFLUOROALKYL SUBSTANCES (PFAS)

PFAS are chemicals used in many consumer products to prevent stains, and to repel water, oil, and grease. Commercial and consumer products containing these compounds were first introduced in the 1950s. They were used in a variety of products such as for the treatment of upholstered furniture fabric and carpets, in nonstick cookware, floor wax, the lining of food containers/packaging and firefighting foam. PFAS are now present virtually everywhere in the world because of the large amounts that have been manufactured and used by international consumers and industry. Once these compounds are released to the environment, they break down very slowly.



PFAS are chemicals of emerging concern, which have no Safe Drinking Water Act regulatory standards or routine water quality testing requirements. The EPA is currently studying PFAS to determine if national regulation is needed. Studies by the EPA, the Agency for Toxic Substances and Disease Registry (ATSDR), and others indicate that exposure to PFAS may cause elevated serum cholesterol levels and developmental effects to fetuses during pregnancy (e.g., low birth weight, accelerated puberty, skeletal variations) or to breastfed infants.

DEPARTMENT OF DEFENSE

The Department of Defense (DoD) is actively investigating and taking measures to mitigate PFAS contamination within their facilities across the nation. More information about the DoD's efforts and additional resources are available through the link below

COMMUNITY INVOLVEMENT PLAN (CIP)



- Original Community Relations Plan 1992
- Plan to updated CIP to help us better communicate with the community
- Community input, gathered through a survey, community outreach, small group meetings, etc., may be an important piece of the update
- Updated CIP anticipated in late 2023

SITE MANAGEMENT PLAN



- NWIRP Bedford is a National Priorities Listed site
- Required by the Federal Facilities Agreement signed by the USEPA and Navy
- Updated yearly
- Management tool for the environmental investigations and remedial responses planning, reviewing, and setting priorities
- Available in the Administrative Record



Naval Facilities Engineering Systems Command Mid-Atlantic Norfolk, Virginia

Final

Fiscal Year 2022 Site Management Plan

Naval Weapons Industrial Reserve Plant Bedford, Massachusetts

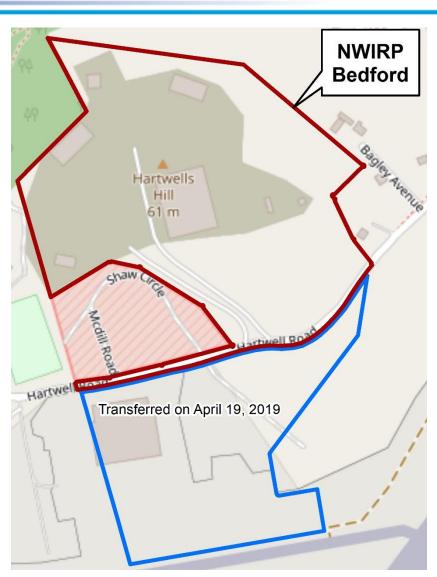
September 2021

Distribution Statement A - Approved for public release: distribution unlimited

Technical Presentation Topics



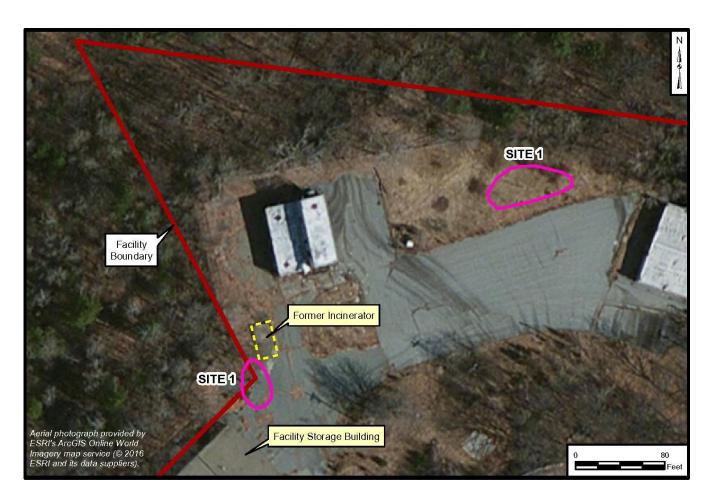
- Site Overview, Land Use Controls, & Five-Year Reviews
- Groundwater Treatment with New Advance Oxidation Process
- Long-Term Groundwater Monitoring
- Additional Post-Record of Decision (ROD) Investigations
- Future Plans
- Questions and Answers





Site 1 - Old Incinerator Ash Disposal Area

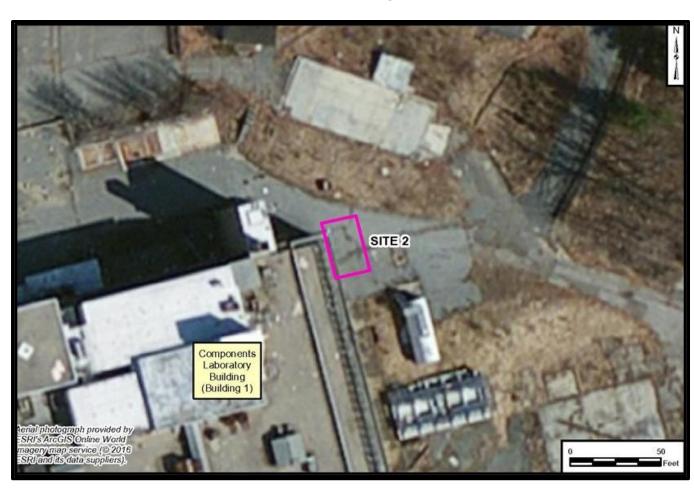
- Record of Decision (ROD) in 2000
- No Further Action





Site 2 – Components Laboratory Fuel Tank

- Record of Decision (ROD) in 2000
- No Further Action





Site 4 – Benzene, Toluene, Ethylbenzene & Xylene Plume

- Record of Decision (ROD) in 2009
- Monitored Natural Attenuation
- Land Use Controls
- Five-Year Reviews
- Cleanup expected in 2018 but 10 more years added

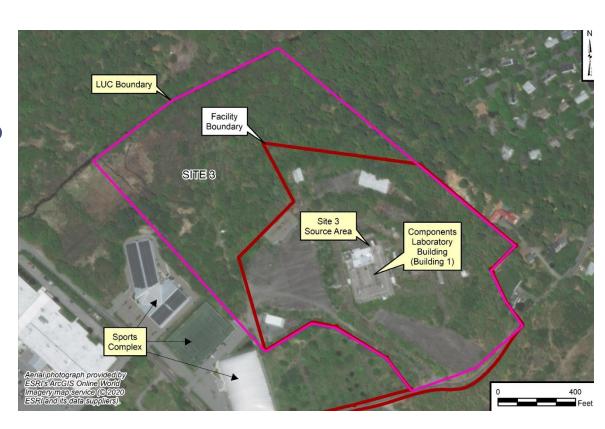




Site 3 – Chlorinated Solvent Groundwater Northern Plume

- Record of Decision (ROD) in 2010
- Source Remediation
- Groundwater Extraction
 & Treatment (GWETS) to
 Contain Plume
- In-situ Enhanced
 Bioremediation in

 Source Area
- Semi-Annual Monitored Natural Attenuation
- Land Use Controls
- Five-Year Reviews





Southern Flight Test Area (SFTA)

- Explanation of Significant Differences in 2014 (added to Site 3 ROD)
- Semi-Annual Monitored Natural Attenuation
- Land Use Controls
- Five-Year Reviews
- Transferred on April 19, 2019
- Navy reviews documents from new owner per the LUC & NAUL



LAND USE CONTROLS (LUCs)



- Applies to Site 4, SFTA, and Site 3
- Easements and deed restrictions when the property is transferred
 - Prevent Residential Development
 - Prevent Groundwater Use
 - SFTA Deed Restrictions & MA Notice of Activity and Use Limitation (NAUL) is in place
- Maintain monitoring wells and fences
- Conduct annual inspections

FIVE-YEAR REVIEW



<u>Purpose</u>

- Review sites every five years where contaminants remain above levels for unrestricted use.
- The five-year review identifies deficiencies and recommends steps to correct them.
- Three key questions
 - Is the remedy functioning as intended?
 - Are exposure assumptions, toxicity data, cleanup levels, and remedial action objectives still valid?
 - Has any other information come to light that could call into question the protectiveness of the remedy?

FIVE-YEAR REVIEW (cont.)



- Second Five-Year Review Completed in September 2019
 - Sites 3, 4, and SFTA were reviewed and found to be protective; however, the Site 3 remedy in the long term may not be effective and must be investigated
 - Evaluated the emerging chemicals PFAS and 1,4dioxane
 - Optimize the LTM monitoring network for Sites 3 and 4. Site 4 optimization was completed
 - Revise LUC Remedial Design to indicate no unacceptable risks associated with soil exposure

FIVE-YEAR REVIEW (cont.)



Next Five-Year Review

- Will be initiated in 2023
- A public notice will be provided when it is started
- Completed by September 2024



Naval Facilities Engineering Command Mid-Atlantic Norfolk, Virginia

Final Second Five-Year Review

Naval Weapons Industrial Reserve Plant Bedford, Massachusetts September 2019

Approved for public release: distribution unlimited

Groundwater Treatment – Site 3 Groundwater Extraction System

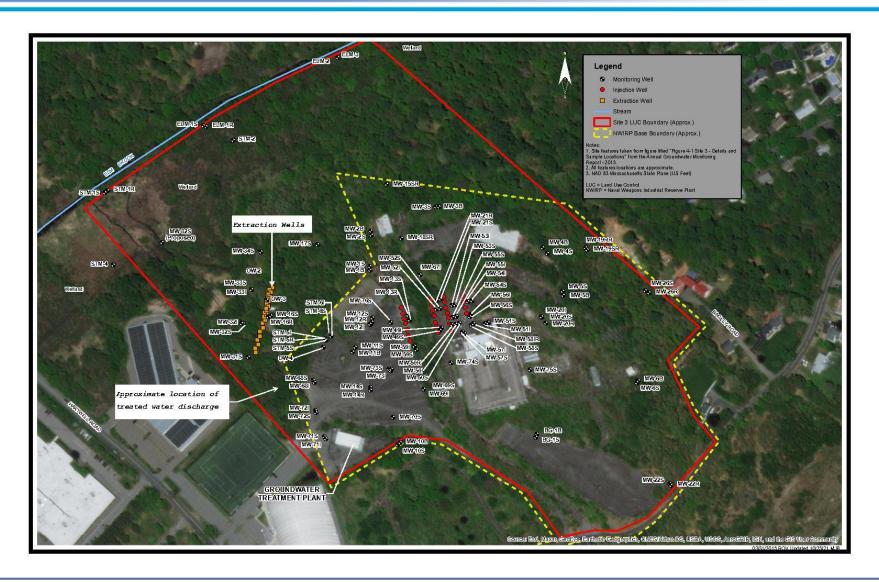


- System operation began in 1997 to contain contaminant plume.
- Pump groundwater from 23 extraction wells off-site on the western side of NWIRP through carbon at an average of 16 gpm.
- As of October 2022, approximately 175.08 pounds of VOCs removed (<1lb/month).



Groundwater Treatment – Site 3 Groundwater Extraction System





Groundwater Treatment - Site 3





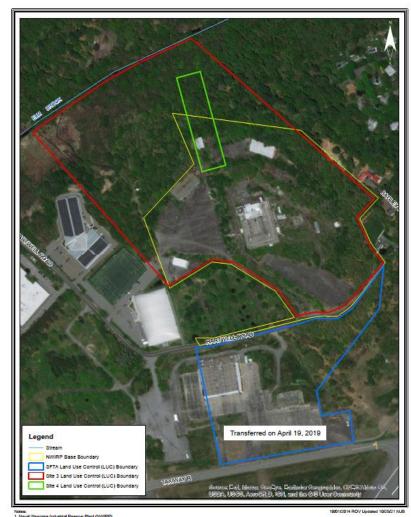
- AOP Modifications completed in August 2021.
- Hydrogen peroxide and ultraviolet light added to remove 1,4-dioxane.
- Operation and Maintenance minimum 2-3 times per week.



Long-Term Monitoring Site 4, SFTA, and Site 3



- Annual Land Use Control Inspection (Site 4, SFTA, and Site 3) conducted 8/22/2022, report issued 9/15/2022.
- Performance groundwater monitoring events conducted annually at Site 4 and semi-annually at SFTA and Site 3.



face: Navel Weapons Industrial Reserve Plant (NWFP) Southern Flight Teal Area (SFTA) All boundaries are approximate. NAD 83 Missouchusette State Plane (US Feet)

Long-Term Monitoring Site 4



- Annual Groundwater Sampling conducted 6/7/2022, report issued 8/31/2022
- Gauge and sample 8 monitoring wells for benzene



Long-Term Monitoring SFTA



- Semi-annual Groundwater Sampling conducted
 9/19/2022, report pending
- Gauge 12 monitoring wells
- Sample 6 monitoring wells for TCE
- Sample 10 monitoring wells for PFAS
- Monitored natural attenuation parameters analysis at 5 monitoring wells



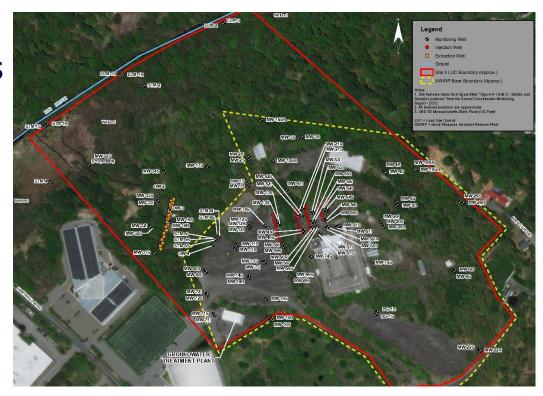
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Navid Wespons Industrial Reserve Ptent (NWRP)
Southern Flight TestAnse (SFTA)
All boundaries are approximate.
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Long-Term Monitoring Site 3



- Semi-annual Groundwater Sampling conducted 9/20-9/28/2022, report pending
- Gauge 44 monitoring wells
- Sample 20 monitoring wells for TCE
- Sample 4 monitoring wells for 1,4-dioxane
- Sample 4 surface water locations for 1,4-dioxane
- Monitored natural attenuation parameters analysis at 3 monitoring wells



Long-Term Maintenance and Surveillance



Beginning in November 2022:

- The video surveillance service in the area of the Treatment System was upgraded to include audible alarms.
- Vegetation has been removed from along the fence line & fence cuts have been repaired.
- Building doors have been welded shut & holes in buildings and windows have been boarded up.
- Additional "No Trespassing" signs have been posted along the fence line and at each building.





ADDITIONAL POST-ROD WORK



Preliminary Assessment

- Formally documents the potential or actual emerging chemicals (PFAS & 1,4-dioxane) sources at NWIRP Bedford following latest Navy guidelines
- Preliminary Assessment consists of
 - Document searches for keywords
 - Public database searches
 - Interviews with personnel familiar with NWIRP Bedford
 - Review of Previous Investigations
 - Summarizing the results of the 2014 and 2015 1,4-dioxane groundwater investigation at Site 3 and SFTA
 - Summarizing the results of the 2014 and 2015 PFAS groundwater investigation at SFTA
 - Summarizing the results of the 2018 to present Long-Term Monitoring PFAS groundwater results at SFTA
- Report is draft final and being revised based on regulator review comments. Navy and regulator review in early 2023
- Final report anticipated by spring/summer next year



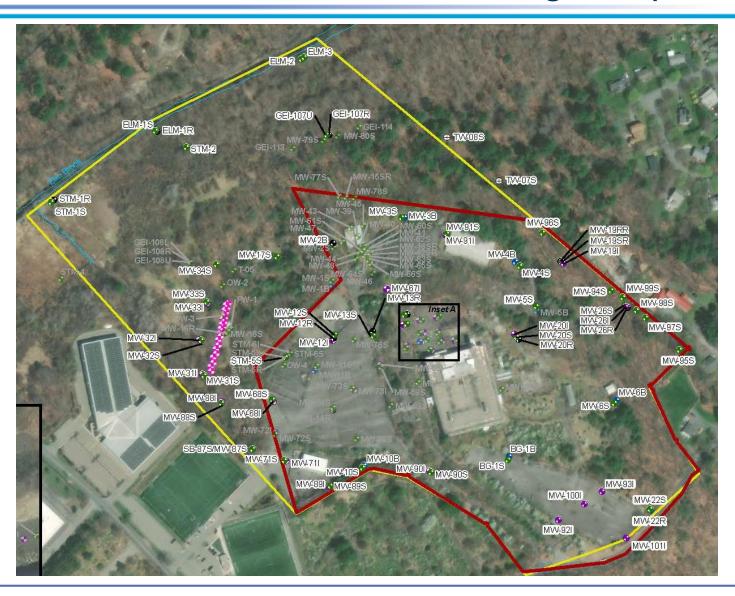
- Emerging chemical investigation for 1,4-dioxane was completed in 2014 & 2015 and it was detected at Site 3. Additional work was conducted in early 2020 (1st round)
- Groundwater investigation to determine nature & extent of 1,4-dioxane & trichloroethene (TCE) at Site 3 continues
- Focus of the groundwater investigation is to the north, east, and south of Site 3
- Additional groundwater monitoring wells were installed in 2021 and 2022 in areas identified as data gaps by Navy, USEPA, and MassDEP.

ADDITIONAL POST-ROD WORK (cont.) 1,4-Dioxane & TCE Groundwater Investigation (cont.)

- Monitoring wells sampled in 2020 along with the new monitoring wells will be sampled this winter (2nd round)
- Groundwater modeling is also being conducted with the well installation and laboratory data information
- Long-Term Monitoring at Site 3 program is being reviewed and the recommendations of which monitoring wells to be sampled in the future will be provided
- Supplemental Response Action report will be revised and issued in 2023.



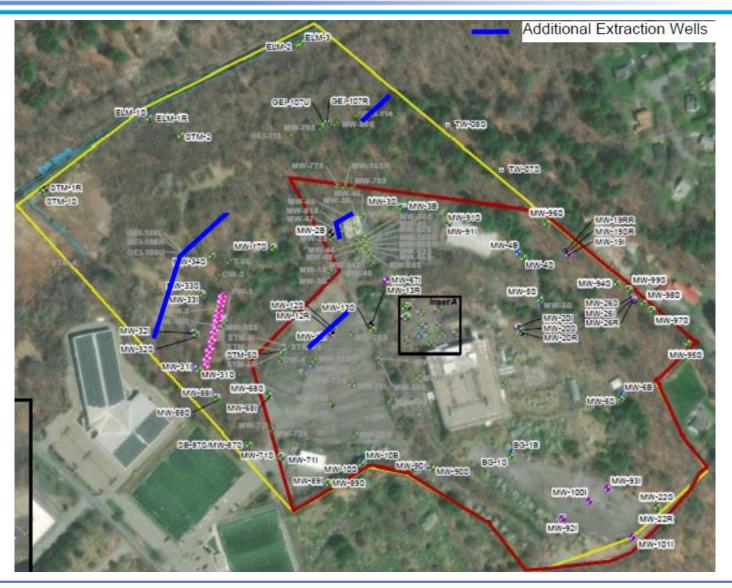
1,4-Dioxane & TCE Groundwater Investigation (cont.)



Additional Extraction System

- Design includes 28 additional extraction wells to the north and northeast of the existing extraction system and 1,4-dioxane high concentration area to improve the capture of the 1,4-dioxane and TCE plume and pull-back the eastward expansion
- 4 different rows of additional extraction wells similar to the existing extraction wells based on a Capture Model that was used to evaluate the groundwater flow. A pre-design aquifer pump test will be conducted based on a request by USEPA to support the results of the Capture Model
- Extraction wells will discharge to the existing wet well and will be pumped to the GWETS for treatment
- The GWETS is designed to treat up to 40 gallons per minute and can accommodate the new extraction wells
- 85% design will be revised based on Navy and regulator review comments. Final report anticipated in the 2nd quarter of 2023.
 Construction expected to begin in fall 2023.





FUTURE PLANS



- Continue to conduct annual LUC inspections and Five-Year Reviews
- Continue in-situ enhanced biodegradation injection every 5 years to augment natural attenuation of TCE in the Site 3 source area – next injection is planned in 2023
- Continue operating Site 3 GWETS to contain TCE & 1,4-dioxane plume

FUTURE PLANS



- Continue to sample and monitor groundwater wells for Sites 3, 4, and SFTA until cleanup goals are achieved
- A Time Critical Removal Action is planned for the eastern TCE plume
- Prepare an Operating Properly & Successfully/ Interim Remedial Action Closeout Report for Site 3 once the remedial actions have been implemented (required for excessing the northern tract)

Q&A Options



1) To ask a question, select 'show conversation'



Type question in the text box, and then select Send.



2) Raise your hand to be recognized and have your microphone unmuted. Select 'Show reactions' icon in the meeting controls at the upper-right area of the screen, and then choose Raise your hand icon.

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3) Phone-only attendees can dial *6 to raise their hand and have the opportunity to ask a question.

Additional Questions



If you have additional questions after the RAB meeting please send them by the end of day <u>December</u>

30th to: NAVFAC Mid-Atlantic
Public Affairs

email
 NAVFAC_ML_PAO@navy.mil

Resources



Documents are Available

- Bedford Public Library
 - Administrative Record CD Binder
- On-line NWIRP Bedford Public Web Site
 - Google Search Bedford-NWIRP
 - https://www.navfac.navy.mil/Business-Lines/Environmental/Products-and-Services/Environmental-Restoration/Mid-Atlantic/Bedford-NWIRP/
- On-line Public Administrative Record is a tab on the NWIRP Bedford Public Web Site
 - https://administrativerecords.navfac.navy.mil/?ML6J_U3JG4XM3TL

THANK YOU FOR ATTENDING



NWIRP Bedford Restoration Advisory Board December 8, 2022

Meeting notes will be available in the Administrative Record

Next meeting: To Be Determined



Thank you for joining the RAB meeting for the NWIRP Bedford.

The meeting has concluded.