



RAB MEETING DETAILS & ATTENDEES

Date/Time: Thursday, August 31, 2023, 6:30 p.m. to 8:30 p.m.

Location: Virtual meeting via Microsoft Teams

Attendees: RAB Community Co-Chairs: Laurie Nehring (People of Ayer Concerned about the Environment [PACE]) and Alix Turner; RAB Community Members: Julie Corenzwit, Amy McCoy, David McCoy, Chris Mitchell Thomas Lineer, Steve Cardon (U.S. Army)
Peter Phillips, Dan Groher, Sally Rigione (U.S. Army Corps of Engineers [USACE])
Michael Daly, Shawn Lowry (U.S. Environmental Protection Agency [USEPA])
Joanne Dearden, Anna Mayor (Massachusetts Department of Environmental Protection [MassDEP])
Meg Delorier, Anne-Marie Dowd (Massachusetts Development Finance Agency [MassDevelopment])
Beth Suedmeyer (Devens Enterprise Commission Development Services [DEC])
Andy Vitolins, Amy Henschke, Whitney Sauve, Heather Levesque (SERES-Arcadis Joint Venture [S-A JV])
Heidi Hulst (Office of the Deputy Assistant Secretary of Defense)
Martha Morgan (Nashua River Watershed Association)
Libby Levison (Harvard Board of Health)
John Kastrinos (Haley & Aldrich, Inc.)
Tim Sueltenfuss (Galen Driscoll)
Karen Cavaoli, Dale Levandier, Kathy Hughes, Edith Stephen, Lisa Engel, Irving Rockwood, and other attendees participating by phone or are otherwise not able to be identified (community and guests)

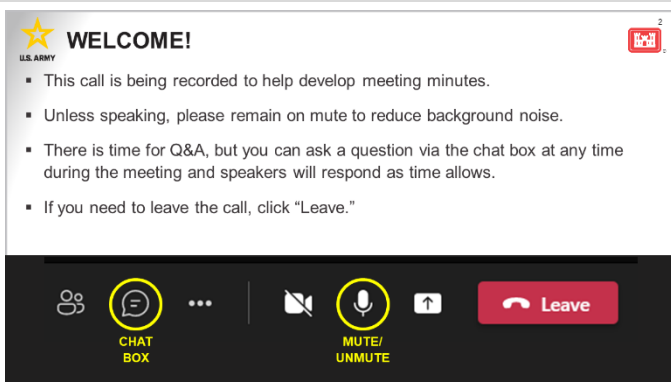
Presentation Slides: RAB meeting slides are available on the project website at:
<https://www.nae.usace.army.mil/missions/projects-topics/former-fort-devens-environmental-cleanup/>.

Please Note: Discussions described in these minutes have been paraphrased as needed for clarity. The invitation for this meeting is provided for reference at the end of these meeting minutes.

WELCOME & OPENING REMARKS



Andy Vitolins (S-A JV Project Manager) opened the meeting and welcomed the attendees to the meeting.



Andy Vitolins indicated that the meeting was being recorded to generate minutes, which will be available after the meeting. He reminded everyone that microphones will be muted to avoid background noise. He noted that attendees can use the mute/unmute button at the bottom of their screen to talk or they can enter questions in the chat box.



WELCOME!
 U.S. ARMY
 Thank you for joining us tonight.

U.S. Army and Support: Thomas Lineer U.S. Army HQDA/ODCS G-9 Base Realignment and Closure (BRAC) Environmental Coordinator (BEC) Dan Groher, P.E. U.S. Army Corps of Engineers (USACE) New England District Pete Phillips U.S. Army Corps of Engineers (USACE) Baltimore District Andy Vitolins and Amy Henschke SERES-Arcadis JV Team	Regulatory and Other Board Members: Michael Daly Shawn Lowry U.S. Environmental Protection Agency (USEPA) Region 1 ZaNetta Purnell USEPA Public Affairs Specialist Joanne Dearden Massachusetts Department of Environmental Protection (MassDEP)	Community Board Members: Julie Corenzwit Amy McCoy Dave McCoy Chris Mitchell Laurie Nehring, Co-Chair Alix Turner, Co-Chair Guests: Heidi Hulst Office of the Deputy Assistant Secretary of Defense (Environment and Energy Resilience) Environmental Cleanup Communication & Outreach Tim Sueltenfuss Galen Driscoll
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Andy Vitolins announced the leaders and contributors for the call: Tom Lineer (U.S. Army); Dan Groher (USACE); Peter Phillips (USACE); Andy Vitolins (S-A JV Project Manager); Amy Henschke (S-A JV); Mike Daly (USEPA); Shawn Lowry (USEPA); Joanne Dearden (MassDEP); and RAB members Julie Corenzwit, Amy McCoy, Dave McCoy, Chris Mitchell, Laurie Nehring, and Alix Turner.

Andy also announced that guests, Heidi Hulst and Tim Sueltenfuss, from the Office of the Deputy Assistant Secretary of Defense (Environment and Energy Resilience) office were in attendance for this meeting. Heidi Hulst introduced her team and noted that they were in town asking community members about how the Department of Defense (DoD) is

communicating about environmental cleanup in the community. She explained that their work is part of a larger initiative called the Environmental Cleanup Communication and Outreach Initiative. This initiative involves talking with communities across the country to determine in what ways the DoD is communicating well about cleanup projects and where there is room for improvement. Part of the effort involves making observations of RABs and determining best practices with the goal to make communication and organization of RABs more consistent across the DoD. She noted that the team is interested in hearing what the community concerns are. She mentioned that if anyone has any questions about the initiative, they can email her (heidi.m.hulst.civ@mail.mil). She also noted that people can go to the DoD per- and polyfluoroalkyl substances (PFAS) website (www.defense.gov/pfas) or the initiative's outreach page (<https://www.acq.osd.mil/eie/eer/ecc/pfas/po/index.html>) for more information.

Laurie Nehring (PACE) asked how local guests found out about the meeting. Responses included direct email, word of mouth from RAB members, and the USEPA website.

WELCOME!
 U.S. ARMY
 Tonight's topics

- 1 Project Updates & Upcoming Work
- 2 Nashua River Military Munitions Update
- 3 Questions & Answers
- 4 Community Involvement & RAB Update
- 5 Next Meeting

Andy Vitolins summarized the topics to be covered: project updates, a military munitions update from Pete Phillips, a Q&A session, updates about community involvement, and next steps.

PROJECT UPDATES & UPCOMING WORK

1 | PROJECT UPDATES & UPCOMING WORK

The map displays the layout of the Former Fort Devens installation. Key features include:

- Discussion Areas:** Indicated by orange circles, these include the Former Main Post, North Post, South Post, and the Nashua River area.
- PFAS Area 1:** A green shaded region located near the Former Main Post.
- Former Fort Devens Boundary:** A dashed red line outlining the entire installation.
- Other Labels:** AOC 21 - FORMER 1st BATTALION AREA, NORTH POST, MOORE ARMY AIRFIELD, SHEPHERD'S HILL LANDFILL, FORMER MAIN POST, and SOUTH POST.

Andy Vitolins noted that there would be updates during the meeting on the former Main Post, the North Post, the former airfield, and the Nashua River. He pointed out on the map PFAS Area 1, which is the first area where the U.S. Army is going to be doing a detailed remedial investigation (RI) for PFAS, and the areas of contamination (AOCs) that would be discussed.



1 | PROJECT UPDATES & UPCOMING WORK

Area 1 Phase 2 PFAS RI Update

Current Concerns

- Horizontal and vertical extent of per- and polyfluoroalkyl substances (PFAS) in soil and groundwater (overburden and bedrock)
- Sources of PFAS in drinking water supply wells at former Fort Devens (Grove Pond, Patton, and Shabokin wells)
- Potential for PFAS to enter surface water bodies
- Potential for PFAS in private wells in Harvard
- Potential for PFAS to move beyond surface water bodies (Cold Spring Brook, Grove Pond)
- Risks to human health and the environment from PFAS presence in the environment

The map shows the approximate extent of the area exceeding the site-specific screening levels (SSSLs) in three categories: > 10x SSSLs (lightest orange), > 50x SSSLs (medium orange), and > 100x SSSLs (darkest orange). It also identifies PFAS Area 1 (green outline), Active Ordnance (AO) locations (AO 43M, AO 43R, AO 43L, AO 43, AO 43N, AO 43S, AO 43W, AO 43E, AO 43W, AO 43E, AO 43W, AO 43E), and Water Supply Wells (Grove Pond Wellfield, Cold Spring Brook Well, Harvard Private Wells, Patton Well, Shabokin Well). The map includes a legend and a scale bar.

Andy Vitolins gave an update on the Area 1 Phase 2 PFAS RI. He noted the current concerns listed on Slide 6.

Once the PFAS evaluation is complete, an assessment will be made of what the potential human health risks are, both in terms of toxicology and exposure. The map on the slide shows the general locations of the known areas of PFAS contamination in Area 1. The investigation of Area 1 will likely kick off later this fall once the work plan is finalized.

Laurie asked what is known about the hot spots shown on the map. Andy noted that site-specific screening levels (SSSLs) were used to designate the colored hot spot areas on the map. The SSSLs are determined by the USEPA based on toxicology and potential risk, and

they are used to help evaluate the nature and extent of PFAS. After the full risk assessment is completed, the SSSLs will be refined.

Laurie Nehring asked when results would be available to review and what the status was of the final draft work plan. Andy reminded everyone that it takes time for work plans of this size and complexity to get through the regulatory process. He noted that the draft work plan was submitted earlier this year and then comments were received from the agencies. Those comments were responded to, and a draft final work plan was submitted. The draft final document is now going through another round of comments and responses before it becomes final. The final version of the work plan is anticipated to be submitted in September. After that, the agencies can comment on it again or, if they find the responses to be acceptable, they can approve it. Once it is approved, the work will get started this fall. That work will include sampling of the existing wells and surface water locations and installation of new wells and soil borings. By the next RAB meeting, the Army may be able to show more details about what specifically will be happening and where.

Laurie asked if the RAB members would be allowed to make comments on the final work plan. Tom Lineer (U.S. Army) replied that once the work plan is finalized, it will go to the RAB members and the public. He noted that a hard copy would be sent to Laurie, as requested. Laurie asked if the final work plan would include the record of all comments and responses to comments. Andy replied that it would. Alix Turner asked when the RAB members should expect to get the work plan and how much time they will have to review. Andy replied that it would go to the RAB members after the USEPA and MassDEP look at the proposed final version and make comments on it. Tom recommended that the RAB have 30 days to look at it, but if more time is needed, the period could be extended.

Anna Mayor (MassDEP) asked if an ecological risk assessment would be performed as part of the project, in addition to the human health risk assessment. Andy replied that the study of ecological risk is further behind that of human health. However, the work plan does call for a screening-level ecological risk assessment. This assessment will compare concentrations in surface water or sediment to screening levels but will not involve the same detailed risk assessment that will be done for human health.

1 | PROJECT UPDATES & UPCOMING WORK

Area 1 Phase 2 PFAS RI Update (continued)

Updates

- Final Work Plan with Responses to Comments (RTC) to be submitted to USEPA and MassDEP in September 2023
- USEPA Recision - 2019 Memorandum "Interim Recommendations to Address Groundwater Contaminated with Perfluorooctanoic Acid and Perfluorooctanesulfonate"

The map is identical to the one in Slide 6, showing the approximate extent of the area exceeding the site-specific screening levels (SSSLs) and identifying PFAS Area 1, Active Ordnance (AO) locations, and Water Supply Wells.

Andy Vitolins invited Mike Daly (USEPA) to talk about the USEPA recission of a 2019 memorandum on PFAS. Mike stated that the memorandum was dated, and there was new toxicity information available. Therefore, the recommendations in the memorandum had become obsolete. He noted that the heat map shown on the map here is based on the more recent, more conservative screening levels. Andy agreed and added that as the work plan has gone through the review process, any updates to screening levels that have come out during that time have been incorporated. For example, in May, the USEPA released new screening levels for other PFAS compounds, which have been incorporated. Mike added that they are using state of the art methodology moving forward with the investigations.



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Former Moore Army Airfield Update

Current Concerns

- PFAS in soil and groundwater at Area of Concern (AOC) 31 - Former Fire Training Area (FFTA)
- PFAS discharge to surface water (Nashua River)
- Perchloroethylene (PCE) in groundwater; plume reduced through remediation since 2004.


FFTA Pre-RI Data Collection and Treatability Study

Objectives: Collect additional data to support bench-scale treatability studies for FFTA soil.

Tasks: Collect soil and groundwater samples to evaluate PFAS concentrations with depth; conduct bench-scale treatability study of potential in-situ remedial technologies for soil.

Updates: Laboratory treatability study is ongoing.

Next Steps: Lysimeter installation (week of September 11th) and data evaluation.



Andy Vitolins summarized the current concerns at the former Moore Army Airfield (AOC 31), as listed on Slide 8.

Andy noted that the Former Fire Training Area (FFTA) was used to practice putting out fires with aqueous film forming foam (AFFF). AFFF is, in a lot of cases, the primary source of PFAS in the environment. Some preliminary studies kicked off late last year and early this year at the FFTA to look at soil samples and potential remedial technologies for soil. Those studies are being done at a small scale and should finish in the next month or two.

Andy stated that lysimeters will soon be installed in the FFTA. Lysimeters are groundwater monitoring wells that are installed above the

groundwater table. They will collect infiltrating water before it gets to the water table to measure if PFAS is going from the surface to the groundwater. Equations can be used to estimate the amount of PFAS infiltrating to groundwater, but the hands-on way to do it is to install lysimeters and measure it. The data collected over the next year will show if and how the contamination is moving and the amount that is moving, which will help inform a potential remedy for the area.

Laurie Nehring asked if there were delays in getting the lysimeters installed. Andy replied that additional soil sampling had been performed in the spring to help decide on the position and depths of the lysimeters. For this reason, the installation of the lysimeters needed to wait until after the results of the sampling were received and analyzed. Since laboratories have been overloaded, it took time to get the results back. Andy noted that, because lysimeters will be sampled over the course of a year, the starting season for sampling will not matter.

Laurie asked if it is anticipated that, because the soil is sandy and not clay, the PFAS will be carried through the sandy soil as opposed to clinging to it. Andy replied that carbon-based contaminants like to cling to tighter soils like clays, and the airfield soil is very sandy.

Laurie asked if there are any new technologies for PFAS that stand out. Andy answered that there are some different technologies that are coming out, but there is not a magic bullet. Dan Groher (USACE) added that the options all have some positives and negatives, and it would take a longer conversation to weigh the pros and cons of each.

Dave McCoy asked if the U.S. Army would run out of money before the cleanup is complete for Fort Devens. Andy replied that the DoD has a total budget for environmental restoration activities nationwide that Congress has to approve. The amounts for the specific installations are determined based on the stage of the investigation and how they are ranked. Tom Lineer added that funding for Fort Devens is currently more than adequate. However, funding can change over time, and since this project will need time to get to a decision document and to a remedy, the funding situation may be different at that time. Dave asked if Tom could disclose the amount of money that is available. Tom noted that over the past 20 to 25 years at Fort Devens, the U.S. Army has spent more than \$200 million on cleanup.

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Shepley's Hill Landfill Update

Current Concerns

- Ability of existing groundwater extraction system to meet cleanup goals
- Safety and reliability of existing aboveground groundwater treatment system (arsenic treatment plant)



Andy Vitolins presented the Shepley's Hill Landfill (SHL) update. He noted the current concerns at this location, as listed on Slide 9.

SHL was started in 1919. It is not lined on the bottom because many landfills of that age were not. The landfill has a surface cap that was constructed in the late 1990s to early 2000s. In addition to the cap, there are two other remedial operations in place. One is the barrier wall, which is a passive remediation technique that consists of a slurry of bentonite or clay material. It was installed to prevent groundwater containing arsenic, iron, and manganese from getting to Plow Shop Pond. The other is a groundwater treatment system that extracts groundwater on the downgradient side of the landfill. It prevents the arsenic in groundwater from going beyond the landfill toward

Nonacoicus Brook. There are several ongoing studies on how these remedies are working and if they can be improved.



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Shepley's Hill Landfill Update
Groundwater Remedy Evaluation

Objective: Evaluate alternatives to existing groundwater extraction system.

Tasks: Focused Feasibility Study (per USEPA 2016 Shepley's Hill Landfill Scope of Work Phase 3).

Updates:

- Draft Focused Feasibility Study: Comments received from USEPA and MassDEP. Meeting to discuss comments held June 2023. Subsequent meeting held August 2023. Draft final report to be submitted Fall 2023.
- 3rd Extraction Well Pilot Testing Work Plan submitted August 2023.

Improve Performance of Existing Groundwater Extraction System

Objectives: Optimize the aboveground treatment process; pilot test of improved groundwater capture with third extraction well.

Tasks: Replace oxidant with permanganate (currently chlorine).

Updates: System upgrades from August through October 2023.

Andy Vitolins discussed the SHL groundwater remedy evaluation. He noted that the U.S. Army has started an SHL Focused Feasibility Study (FFS). Normally in the Superfund process, a feasibility study involves evaluating potentially applicable technologies and the methods to implement those technologies. In this case, the U.S. Army is doing an FFS because there are already remedies in place at SHL. So, the objective is to evaluate the technologies that are available to augment those remedies. The draft study was submitted earlier this year. The USEPA and MassDEP commented on the study and their comments have been discussed. The next step is to respond to those comments and issue a draft final report.

The U.S. Army is installing and testing a third extraction well in the groundwater treatment system. Tests will be performed to see if this well can improve the capture of groundwater coming from the landfill and moving downgradient. The U.S. Army is also upgrading the existing groundwater extraction system. The current system uses chlorine gas to remove arsenic and iron from the groundwater, but it will be upgraded to use permanganate because it is safer. The system was taken down at the end of August and the upgrades will continue through October.

Laurie Nehring noted that this upgrade has taken a long time. Andy replied that it took time to get the equipment. Dan Groher added that the system was operating continuously the entire time, so there were no repercussions for the process being slow other than that there were slightly greater health and safety issues than there will be in the revised system. He also noted that the third well is being installed next week. The schedule for that had been pushed out because of problems with the availability of drilling equipment and teams.

1 | PROJECT UPDATES & UPCOMING WORK

Shepley's Hill Landfill Update
Improve Performance of Existing Groundwater Extraction System

Legend

- Extraction Well
- Monitoring Well
- Proposed Monitoring Well
- Target Groundwater Capture Zone
- Approximate Extent of Landfill (Boundary)
- Approximate Extent of Groundwater Plume (Target)

PROPOSED INVESTIGATION LOCATIONS - ADC 3

Monitoring Well Locations are approximate and subject to change based on site conditions.

Andy Vitolins explained the maps on Slide 11 that show the existing extraction system and the proposed new well. The existing system operates with two extraction wells, EW-01 and EW-04. The third extraction well, EW-03, will be installed further to the east. The yellow line on the map is the approximate extent of the landfill and the cap. The target capture zone for the groundwater coming off the landfill is shaded and outlined by the black line. The red lines are the width of the area with arsenic concentrations that exceed the USEPA cleanup goal (10 parts per billion [ppb]). The black circles are monitoring wells that already exist, and the blue circles are 10 monitoring wells that will be installed in October to determine if the third extraction well can make the system more efficient.

Laurie Nehring asked what the levels of arsenic are and how well the extraction system has been working. Andy replied that he could talk about details and quantities at the next RAB business meeting. He noted that the concentrations vary horizontally and with depth in that area. Dan Groher added that there have been no new sources of arsenic data because EW-01 and EW-04 have been there for years. He noted that they have been monitoring the amounts every year and produce annual reports every year. Laurie added that she would like the people attending the meeting to know that, although the goal is 10 ppb, the concentrations are currently not close to that. Andy confirmed that the concentrations vary from thousands to hundreds to, in some cases, less than 10 ppb. He added that a new annual report will be coming out soon, and the past annual reports are available on the project website. Laurie requested that Andy show where to find these reports on the website at the end of the meeting.

Anna Mayor asked if the third extraction well is being installed because the water is going around the barrier wall. Andy replied that the wall was installed to deflect the groundwater away from Plow Shop Pond toward the extraction wells. The third extraction well is going to be installed based on discussion with the agencies to how well the current system is capturing the arsenic. Installing the third well is a hands-on way to see what is happening and if there is a better way to operate the system. Anna asked if the arsenic is skirting the system at depth or around the outside. Andy replied that there is a question about whether groundwater could be bypassing the extraction wells on the eastern side, but hydrogeologic or hydraulic data indicate that it is not. The agencies and U.S. Army want to check this in more detail. The well will be installed near the bedrock, at approximately the same depth as the other wells.



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Shepley's Hill Landfill Update
 (continued)

Plow Shop Pond Barrier Wall Evaluation

Objective: Confirm that the barrier wall is performing as intended.

Tasks: Conduct field investigation in accordance with work plan approved in April 2022, which includes:

- Surface water sampling (28 samples)
- Sediment sampling (28 locations, 140 samples)
 - Collecting split samples with EPA at 4 locations
- Pore water sampling (28 locations, 12 samples)
- One year of water level monitoring (16 locations)

Updates: Field work started August 2023.

Long-Term Monitoring

Objective/Task: Groundwater sampling performed semi-annually to evaluate remedy performance.

Updates: Spring 2023 sampling completed in June 2023. Fall sampling scheduled for October 2023.

Andy Vitolins explained that the barrier wall evaluation kicked off this month and is going to continue through the fall. The intent of this evaluation is to determine if the barrier wall is working as designed. Long-term monitoring is ongoing. There are two events: one in the spring, which is a limited event, and another one in the fall. At SHL, the fall sampling usually takes about 3 weeks and happens in October and November.

1 | PROJECT UPDATES & UPCOMING WORK

Former Main Post Update

Supplemental Post-ROD RIs for AOCs 69W, 57, and 43G

Current Concern: Is current groundwater remedy still effective/protective?

Objective: Evaluate fate and transport of remaining contaminants.

Tasks: Temporary and permanent groundwater monitoring well installation, groundwater sampling, and groundwater flow evaluation.

Updates: Field work began in July 2023. Monitoring well drilling and vertical aquifer profile sampling completed in August 2023. Baseline groundwater sampling completed in August 2023.

Land Use Control Implementation Plans (LUCIPs) for AOCs 44/52, AOC 69W, AOC 57, and SA 71

Current Concern: Land use controls specified in the Record of Decision (ROD) have been implemented but are not memorialized in CERCLA documents.

Objective: Memorialize requirements for implementing, monitoring, and enforcing ROD-specified land use controls.

Tasks: Prepare LUCIPs for MassDEP and USEPA approval.

Updates: AOC 69W LUCIP approved and final. Draft Final LUCIPs for AOCs 44/52, AOC 57, and SA 71 under review by USEPA and MassDEP.

Andy Vitolins indicated that the U.S. Army is evaluating the current remedies for some of the legacy petroleum AOCs on the Main Post to determine if those remedies are still effective and protective. These locations are AOC 69W, which on the current Parker Elementary Charter School property; AOC 57, which is one of the PFAS areas next to Cold Spring Brook; and area 43G, which is a former Army gas station. The investigations involve collecting groundwater from both temporary and permanent monitoring wells, performing periodic groundwater sampling over a year, and evaluating the flow over the same period.

Field work began in July and is ongoing. Most of the monitoring wells have been installed, and the last of the vertical aquifer profile borings is being finished. The vertical aquifer profile borings are the temporary

borings that collect groundwater from different depths. Once those borings are completed, groundwater will be sampled. The first event was in August and will be completed next week. Sampling will happen again in December and then March and June of next year.

Andy also discussed the land use control implementation plans (LUCIPs) for AOCs 44/52, 69W, and 57 and SA 71. The land use controls dictate soil use and groundwater use as specified in the records of decisions (RODs). The LUCIPs memorialize what is in those decision documents. The LUCIP for AOC 69W is finished, and the LUCIPs for the other AOCs are close to being finalized. Comments from USEPA on the draft final versions have just been received, and those will be moving into the final stage as soon as the comments are addressed.

1 | PROJECT UPDATES & UPCOMING WORK

Final Documents Posted Since Last RAB Meeting

- AOC 69W LUCIP
- AOC 69W Post-ROD Supplemental Remedial Investigation Work Plan
- AOC 43G Post-ROD Supplemental Remedial Investigation Work Plan
- AOC 57 Post-ROD Supplemental Remedial Investigation Work Plan

Draft Documents Since Last RAB Meeting

- None

Response to Comments / Revised Documents Since Last RAB Meeting

- Draft Focused Feasibility Study – Shepley's Hill Landfill Groundwater Remedy
- Draft 2022 Annual Monitoring Reports – Main Post, SHL, MAAF (AOC 50)
- Draft Final LUCIPs for AOCs 44/52, AOC 57, and SA 71

Andy Vitolins gave an update on the status of recent documents. The final documents that have been posted to the website since the last RAB meeting are the work plans for the supplemental RIs and the LUCIP for AOC 69W. There have not been any recent draft documents submitted. There have been comments and responses in progress for the SHL FFS, the annual monitoring port reports, and the LUCIPs.

Laurie Nehring asked for the status of the draft final Area 1 Phase 2 PFAS investigation work plan. Andy replied that this document was mentioned earlier and is at the final stage. It is going back to USEPA and MassDEP for final review. The RAB will receive it once USEPA has approved it.


NASHUA RIVER MILITARY MUNITIONS UPDATE

2 | PROJECT UPDATES & UPCOMING WORK

Nashua River Military Munitions Updates

Project Summary

- Anomaly avoidance activities performed on July 18, 2022, and July 13, 2023, to support water chestnut removal events along river.
- Began field operations to support underwater digital geophysical mapping (UDGM) survey in late February 2023.
- UDGM provides digital record of data to inform follow-up activities (intrusive investigation) and decisions on future actions.
- Goal is to collect reliable, usable data to support overall investigation objectives.
- Site has challenges impacting the ability to collect high-quality, usable UDGM data.
- Purpose of update: review what has been done to date, what has been learned about the project site, and how to achieve objectives moving forward considering the site challenges.



Electromagnetic (EM) Sensor
Towing Mechanism

Pete Phillips (Project Manager with the Environmental and Munitions Design Center with the USACE, Baltimore District) provided the update on the National River military munitions investigation. He noted that anomaly avoidance activities were performed at a recent volunteer event and an underwater digital geophysical mapping (UDGM) survey is being conducted to determine if there is an explosive safety hazard in a 3-mile stretch of the Nashua River from discarded military munitions.

The top photo illustrates the UDGM survey conducted with an electromagnetic sensor. The bottom photo depicts the sensor, which is a high-sensitivity, high-resolution time domain metal detector suitable for detection of iron and other metals. The detector is placed underwater and towed by a motorized vessel.

2 | PROJECT UPDATES & UPCOMING WORK

Nashua River Military Munitions Updates

Anomaly Avoidance Activities

- A Nashua River Watershed Association event was held on July 13, 2023, along Nashua River, similar to last summer, for water chestnut scouting/removal, which occurred from Hospital Rd to West Main St.
- A safety briefing and anomaly avoidance were performed by the Army contractor's Unexploded Ordnance (UXO) Technician in support of volunteers during the event.
- Anomaly avoidance will also be considered to support a potential event next summer.



Pete Phillips gave an update on the recent avoidance activities conducted on July 13, 2023. During the Nashua River Watershed Association event, eight volunteers removed water chestnuts from the river. A technician was present to perform a munitions safety briefing and provide anomaly avoidance with a handheld metal detector by scanning the areas before the water chestnuts were removed. No anomalies were encountered in the river during the activities. Similar avoidance activities will be provided if an event is planned next summer.


Martha Morgan (Nashua River Watershed Association) noted it was nice to have the technician there to give the volunteers a summary of the issues and how to avoid them.

2 | PROJECT UPDATES & UPCOMING WORK

Nashua River Military Munitions Updates

Summary of Completed Field Activities

- Initial side scan sonar (SSS) and bathymetry survey conducted in March 2023.
 - Observed and detected numerous obstructions at water surface and underwater (tree limbs, entire trees, natural debris).
- Quality assurance/quality control seeding conducted in March 2023.
- Began UDGM survey work in April 2023.
- Attempted initial step of survey (instrument verification strip [IVS])
 - UDGM team reported electromagnetic (EM) sensor getting hung up because of obstructions and river bottom sediment conditions.
- New or moved obstructions encountered posed added challenge.
- Second SSS conducted in April 2023 to assess changed conditions within the areas of potential interest (AOPIs) and along study area, for comparison with initial SSS.



Narrow passage due to treefall between Oxbow Boat Launch and State Route 2 Bridge AOP
Underwater Obstructions Between Oxbow Boat Launch and State Route 2 Bridge AOP

Pete Phillips discussed the field activities completed for the UDGM survey. Side-scan sonar was used to identify obstructions under the water, and a bathymetry survey was conducted to determine the depth of the river. During the surveys, many natural obstructions were identified in the river at varying depths. Obstructions were most notable south of the project area from the Oxbow boat launch to the State Route 2 bridge. The photographs show the obstructions at the water surface as well as under the water.

An underwater instrument verification strip (IVS) was intended to be installed south of State Route 2 bridge, outside of the project area. This strip is needed to confirm the equipment is working properly and identify potential noise impacts. However, obstructions and river

bottom sediments impacted the setup of the IVS after changes in the conditions occurred following snowmelt and rain events. To verify these changed site conditions, a second side-scan sonar survey was performed for comparison with the initial data set.

Andy Vitolins asked Pete to briefly explain seeding and the quality assurance process involved with using the IVS. Pete explained that the seeding process involves metal objects being placed at depth to act as dummy items to test that an instrument is working properly. Because the locations of the items have already been tracked and identified, this process can be used to confirm that the instrument is working properly. The USACE provided blind seeding as well, so there were two sets of seeds for quality assurance checks. Andy added that the operators do not know where the objects are, so it is a way to verify that things are working correctly.

Laurie Nehring asked why the natural debris created problems for the instruments. Pete responded that, when the sensor is pulled behind the boat underwater, the instrument will be just above the river bottom. If there are obstacles in the way, such as fallen trees, the sensor can get entangled, causing damage to the instruments as well as jostling around the people on the boat. It is important to locate these obstacles beforehand, so they can navigate around them.

Alix Turner asked how the study site was chosen and if the extents of the site would be expanded based on what is found. Pete replied that the focus is on the bridges and locations where items were encountered in the past. The intent is to determine where the high-density areas are so they can be further investigated. Alix asked if the South Post area would be explored as well. Pete replied that they are only



exploring areas where potentially discarded munitions may have been deposited or areas where items have been found historically. Alix commented that she has heard of unexploded munitions being found outside the border of South Post, Devens, and Lancaster. She asked if there had been any studies done outside of the current study area. Pete replied that the investigation area for this study was defined during the development of the conceptual site model. Alix asked if she could have the results of that investigation. Andy replied that the documents are in the “MEC Documents” folder on the project website: <https://www.nae.usace.army.mil/Missions/Projects-Topics/Former-Fort-Devens-Environmental-Cleanup/Document-Repository/>. Laurie commented that she thinks the study needs to continue if munitions have been found in other places. Tom Lineer added that there were previously two munitions that were found while people were magnet fishing. A third munitions find was made by divers that were inspecting a bridge. He noted he was not aware of other munitions being found outside of the area being studied and would like to see the documentation for those.

Martha Morgan asked about the width of coverage on either side of the sensor. Pete answered that the areas of potential interest (AOPIs) are gridded, and there is overlap between those gridded areas. So, the river bottom is covered from one side to the other with multiple passes of the equipment.

2 | PROJECT UPDATES & UPCOMING WORK

Nashua River Military Munitions Updates

Site Conditions and Resulting Limitations

- Significant obstructions and river bottom sediment within and between AOPIs impacting navigation, safety, and survey coverage capabilities
- Access to project area (Oxbow Boat Launch ~2 miles away) limited with obstructions along river path
- Sediment impacts sensor height above river bottom – for successful detection, measured signal must be greater than the noise profile
- Seasonal water flow variance – high runoff periods move obstructions (typically late winter/early spring with snowmelt) to calmer waters in summer
- River with steep slopes and varying water depth (shallow to deep conditions)
- Tree canopy/vegetation and bridges limit global positioning system (GPS) efficacy

Pete Phillips explained the site conditions and limitations within the Nashua River, which are summarized in a list on Slide 18. The blue line on the map to the right identifies the access route from the Oxbow boat launch to the State Route 2 bridge. The purple line represents the project area. Yellow circles on the purple line indicate the AOPIs.

2 | PROJECT UPDATES & UPCOMING WORK

Nashua River Military Munitions Updates

Additional Examples of Surface and Underwater Obstructions:

Pete Phillips described the photos on the slide, which show more evidence of obstructions along the access route as well as within the AOPIs. The metal signpost shown in the upper right photo was the only metal obstruction identified.

2 | PROJECT UPDATES & UPCOMING WORK

Nashua River Military Munitions Updates

Examples of Obstructions Detected in Study Area:

Pete Phillips explained the images on the slide, which further illustrate the location of underwater obstructions that impeded access and significantly reduced the UDGM coverage. The yellow line on the images defines the AOP boundary, and the green dots illustrate the obstructions targeted from the side-scan sonar survey. The lighter green dots are from the initial side-scan sonar survey, and the darker green dots are from the second side-scan sonar survey. The change of position between the dots of different shades of green illustrates the movement of obstructions between those surveys. The red polygons on the images denote larger vegetation, which makes the areas inaccessible to the UDGM equipment.




2 | PROJECT UPDATES & UPCOMING WORK

Nashua River Military Munitions Updates

UDGM Challenges and Way Forward

- IVS was unable to be performed this summer because of contractor availability and canopy/vegetation impacts on GPS efficacy.
- IVS will be installed and performed in September 2023 and site noise profile assessed (i.e., evaluate target/anomaly picking threshold).
- Navigate obstruction challenges and collect reliable UDGM data from study area if noise does not prohibitively affect project detection requirements.
- Clear natural debris at Jackson Rd Bridge AOPi, as possible, and conduct supplemental analog underwater survey using UXO divers to identify anomalies per responses on the handheld underwater magnetometer.
- If UDGM can gather reliable data, then subsequent underwater intrusive operations will be conducted to investigate target/anomaly locations from UDGM and analog surveys.
- If UDGM cannot gather reliable data, then underwater analog survey will be conducted followed by an intrusive investigation of the anomalies.



Pete Phillips explained that the obstacles impeded safe navigation of the river and prevented the preferred sensor height from being used. These challenges impacted the initial step of the geophysical survey, and the IVS needed to be put on hold. Therefore, the IVS installation and survey will be performed next month at a less impacted location with a raised sensor height. At that time, impacts from so-called electronic “noise” in the data will be evaluated. Sources of noise could be background response, system noise associated with electronics used, and external noise from power lines or rebar within the bridges.

Depending on the noise profile encountered, one of two scenarios will happen. If reliable UDGM data can be collected, then the UDGM data would be used along with a supplemental analog survey at the Jackson

Road Bridge AOPi. The analog survey would involve divers identifying anomalies using a handheld detector (shown in the photos). The analog survey would be needed because the Jackson Road Bridge AOPi is the area most impacted by obstructions. The anomalies and targets identified from the mix of the UDGM and analog surveys would be intrusively investigated following approval of the targets. If reliable UDGM data cannot be collected because of noise interference with the sensor, a second scenario would involve analog survey across the project area. That survey would also be followed by the intrusive investigation after approval of targets. More will be known about which scenario will occur following the upcoming field work. Public safety is of the utmost importance. Although the team encountered unexpected and challenging site conditions, the goal is to address those issues and obtain quality data in a safe manner.


Mike Daly asked what the schedule is for the IVS installation. Pete replied that mobilization is planned the week of September 18, 2023. During the week of September 25, 2023, the noise levels will be evaluated to confirm which scenario will occur. If the first scenario happens, reliable data would be collected from the project area using the UDGM technology, and then a subsequent supplemental analog survey within the Jackson Road Bridge AOPi would occur around late November or early December. If the second scenario occurs and there is no reliable UDGM data, then the analog survey would be conducted throughout the project area, which would take longer and likely push into the winter months when temperatures are not suitable for dive work. Dive operations would be pushed into spring 2024. Mike replied that he would like to observe some of that work. Pete noted that he would keep USEPA posted on scenarios and schedule.

Alix Turner asked if underwater submersible drones could be used for safety and efficiency. Pete replied that he could not speak to the breadth of potential technologies, but that he thought that submersibles are still in development for detecting anomalies and we may still need to tow the sensor if it is not completely wireless. He stated he could speak with the geophysicist on the project to get more information. He noted the instrument selected for the survey is a high-powered transmitter, which typically yields 45 to 60% greater depth of detection than standard power transmitters and is an industry standard.

Chris Mitchell asked via the chat if there were plans to extend the study to the Town of Harvard. Tom Lineer noted that not all discarded munitions are munitions of explosive concern (MEC). Of the three documented munitions finds, two were presumed to be MEC. However, these were not reviewed to determine whether they were MEC before being destroyed by the local bomb squad. The third find was analyzed by the Navy Explosive Ordnance Disposal team, and the items were determined to be discarded munitions, not to be MEC. By presuming that the first two finds were MEC, the U.S. Army had the legal authority to investigate. To extend the investigation, the U.S. Army would need information on a discovery of MEC. The U.S. Army cannot spend money without a legal justification. Chris added that some things were found in Harvard that may not have been reported properly. Tom asked Chris to provide information on these items.

QUESTIONS & ANSWERS

3 | QUESTIONS & ANSWERS



At the end of these minutes, please see the list of additional questions and answers gathered from the Microsoft Team chat box.



COMMUNITY INVOLVEMENT & RAB UPDATE

4 | COMMUNITY INVOLVEMENT & RAB

Next Community Update factsheet will be distributed September 2023 – Plow Shop Pond

Digital Administrative Record (AR) continues to be populated with project documents; Index is live.

Military munitions annual notifications sent in June 2023

The next quarterly RAB meeting will be November 9, 2023 (in-person/hybrid)

The Community Involvement Plan (CIP) and other information is available on the Fort Devens Environmental Cleanup website at: <https://www.nae.usace.army.mil/missions/projects-topics/former-fort-devens-environmental-cleanup/>

Digital AR link is now live and initial documents are available at: <https://www.nae.usace.army.mil/Missions/Projects-Topics/Former-Fort-Devens-Environmental-Cleanup/Administrative-Record/>

8/1/2023

Andy Vitolins gave an update on community involvement. He noted that fact sheets are targeted to be sent out once per quarter. The next fact sheet will be issued in September, with a brief overall update and a highlight on Plow Shop Pond and the barrier wall investigation. The administrative record (AR), which includes relevant project documents going all the way back to the 1990s, is being scanned and uploaded to the website. Andy demonstrated how to find various documents on the general Fort Devens environmental cleanup website (<https://www.nae.usace.army.mil/missions/projects-topics/former-fort-devens-environmental-cleanup/>) and the digital AR webpage (<https://www.nae.usace.army.mil/Missions/Projects-Topics/Former-Fort-Devens-Environmental-Cleanup/Administrative-Record/>).

On the digital AR page, there is a link at the top to the index, which is a PDF document that shows all the documents that are currently updated in the digital AR as of this month. The PDF is searchable, and there will be a separate demonstration on how to access the AR once it is developed further. Available documents are also listed on the AR main page. Andy noted that this is where to find the site investigation (SI) reports that Laurie was asking about.

Andy also noted that there is a digital document repository where there are reports, work plans, and memorandums categorized by subject (<https://www.nae.usace.army.mil/Missions/Projects-Topics/Former-Fort-Devens-Environmental-Cleanup/Document-Repository/>). Dan Groher pointed out that this is where to find the 2021 SHL annual reports that Laurie was asking about. Andy also noted that PFAS reports are located here. The PFAS reports are from 2018 because that was the last year in which PFAS sampling was done. The Area 1 work plan will be added once it is approved.

Laurie asked if the uploaded files could be tagged to show which ones have been recently added to this page. Andy noted that they could ask the USACE webmaster if that was possible. Alix Turner commented that the website goes a long way to meet what was being asked for and is a great organizational tool. She asked if this could be talked about again at the next meeting. Andy agreed and said it could be added to the agenda for the RAB business meetings in between full public RAB meetings.

After discussing the AR and document repository, Andy noted that the annual military munitions notifications were sent out in June and that the next RAB meeting is scheduled for November 9, 2023. Since there had been a request to have in-person meetings again, the next meeting is planned to be a hybrid meeting (both in person and online). The location is still being determined, so it is tentative for now.

NEXT STEPS & MEETING

THANK YOU!
YOUR PARTICIPATION IS APPRECIATED!

NEXT RAB MEETING IS:
NOVEMBER 9, 2023

(Second Thursday of the month)

8/1/2023

The next RAB meeting will be held on Thursday, November 9, 2023.



Question	Answer
<p>Karen Cavaoli—I am a Lancaster landowner and on the board of our Pond Preservation Association. We have detected PFAS in our lake and in some of our wells. Since it abuts the South Post, we are investigating possible ways that contamination is getting to the lake. Do you have any information on South Post and have you finished investigating that area?</p>	<p>Andy Vitolins replied that the site inspections and the preliminary assessments (PAs) did not identify any potential sources of PFAS on the South Post. The South Post is primarily used for range training, which typically is not a source of PFAS. Known sources are things like AFFF, motor pools, and vehicle fluids.</p> <p>Alix Turner noted that she thought there were petroleum recovery exercises and other activities that may have generated PFAS on South Post. Andy replied that petroleum recovery would not have generated PFAS. He noted that the first step of the Superfund process is a PA, which involves looking to see if there were activities that could have resulted in the release of contaminants. For Fort Devens, PAs were done for all the contaminants that were being regulated at the time, including PAs for PFAS in the mid-2010s. No potential PFAS sources were identified. Tom Lineer noted that the reserves have done a separate PFAS PA/SI as well. Andy said that he could show Alix where to find the presentation that was done last year on that.</p> <p>Laurie Nehring mentioned that PACE is an Ayer-based group following issues at Fort Devens since 1997 that has received a grant from USEPA to help them understand the cleanup work. She told Karen to reach out to her if she is interested in learning more about the technical assistance grant to help her organization with the South Post.</p>
<p>Laurie Nehring—Can the slides be released to the RAB members ahead of time?</p>	<p>Tom Lineer noted that the slides go through several iterations and reviews prior to being released. They will try to get them out a day or two before the meeting.</p> <p>Mike Daly added that he agrees that giving folks a little more time to review the slide deck and prepare questions is a good idea.</p>
<p>Amy McCoy—Is there a list of all the land use controls of the properties?</p>	<p>Andy Vitolins replied that the land use controls are in the RODs for the individual sites. For example, land use controls at Moore Army Airfield would be in the ROD for AOC 50. Andy noted that he could go through how to find those on the website at the next RAB business meeting. He noted that the LUCIPs do not add any land use controls, they just summarize how the land use controls are going to be enforced.</p>
<p>Laurie Nehring—How are the fact sheets are distributed?</p>	<p>Andy noted that an email is sent out, but that they could get back to her about whether hard copies are sent out as well.</p> <p>Fact sheets are uploaded to the website and a link is sent out via email. Hard copies of fact sheets are also provided to local town halls and libraries.</p>



RAB MEETING INVITE

Former Fort Devens Army Installation

Notification



**Please join us for the next Former Fort Devens RAB Meeting,
Thursday, August 31, 2023, 6:30 pm**

Our next RAB meeting will be held via Microsoft Teams. Please join by clicking this link:

[Click here to join the meeting](#)

Or you can call in to hear the audio only:

+1 213-379-9608

Phone Conference ID:

833 968 658#

We hope you will join us to actively discuss the following topics and share your ideas:

Welcome to existing members and new participants!

Project Updates & Upcoming Work

Nashua River Military Munitions Update

Questions & Answers

Community Involvement & RAB Board Updates

Next Steps & Meeting

Bring your thoughts about the RAB and questions about the project. This meeting will be recorded and a meeting summary will be posted on the project website at:

<https://www.nae.usace.army.mil/missions/projects-topics/former-fort-devens-environmental-cleanup/>

If you have any questions, please send an email to and we will reply:

FormerFortDevensRAB@arcadis.com