Subject:

Minutes
Annual Restoration Advisory Board (RAB) Meeting
Hanscom Air Force Base

Place:

Bedford Town Center, 12 Mudge Way, Bedford, Massachusetts and Virtual Meeting via Teams

Date/Time:

Thursday, 24 October 2024; 7:00 PM

Attendees:

Ms. Emily Mitchell	Bedford Select Board
Ms. Jennifer Boles	Community Member
Ms. Patty Dahlgren	Community Member
Mr. Archie Church	Community Member
Ms. Heidi Porter	Health and Human Services, Director, Town of Bedford
Mr. Charles Strickland	U.S. Air Force, Hanscom Air Force Base (AFB), Civil Engineering
Mr. Matthew Greenberg	U.S. Air Force, AFCEC, Hanscom AFB Environmental Restoration Program
Mr. Nick Turbesi	U.S. Air Force, Hanscom AFB, Environmental Element
Ms. Renata Welch	U.S. Air Force, Hanscom AFB, Environmental Element
Ms. Jessica Casserly	U.S. Air Force, Hanscom AFB, Public Affairs Office
Ms. Nicole Collins	U.S. Air Force Hanscom AFB, Public Affairs Office
Ms. Leah Santangelo	U.S. Geological Survey (USGS)
Mr. Joe Ayotte	USGS
Mr. James Degnan	USGS
Mr. Mark Becker	AECOM Technical Services, Inc. (AECOM)
Mr. Neil Thurber	AECOM
Mr. Shawn Lowry	U.S. Environmental Protection Agency (EPA), Region 1
Ms. Randi Augustine	Massachusetts Department of Environmental Protection (MassDEP)
Ms. Madeline Soule	Massachusetts Port Authority (Massport)
Ms. Erin Kirby	U.S. Army Corps of Engineers, New England District
Mr. Mike Rosenberg	The Bedford Citizen
Ms. Jennifer Sandorf	Seres-Arcadis 8(a) Joint Venture, LLC (Seres-Arcadis)
Mr. Andy Vitolins	Seres-Arcadis
Ms. Carmen Vidal	Seres-Arcadis
Ms. Carissa Koski	Seres-Arcadis
Ms. Katrina Harris	Bridge Consulting Corp./Seres-Arcadis Team

Attachments

- Hanscom AFB Restoration Advisory Board, 24 October 2024 Presentation Slides
- Newspaper Notices Announcing the Meeting

Call to Order and Introductions:

The meeting was called to order by Mr. Charles Strickland, Government Co-Chair. He welcomed everyone and thanked everyone for attending the hybrid in-person/virtual RAB meeting
Mr. Strickland introduced Mr. Matt Greenberg.

Mr. Matt Greenberg, Environmental Restoration Program Manager at Hanscom AFB, thanked everyone for attending the annual community update on environmental restoration activities. Mr. Greenberg invited everyone online and in person to introduce themselves. He introduced the first presenter, Mr. Andy Vitolins of Seres-Arcadis.

Mr. Vitolins reviewed some meeting logistics and noted the meeting was being recorded solely for the purpose of doing meeting minutes. He invited questions at any time during the meeting.

Mr. Vitolins reviewed the agenda for the meeting. He showed the environmental project team at Hanscom AFB which includes representatives from the Army Corps of Engineers, the U.S. EPA, and MassDEP), most of whom had introduced themselves and were present for the meeting.

Mr. Vitolins displayed a map and reviewed the location of various sites that would be discussed further during presentations. He explained there are two ongoing programs: the Installation Restoration Program (IRP) legacy sites and the Per- and Polyfluoroalkyl Substances (PFAS)/Aqueous Film Forming Foam (AFFF) sites. He noted there is also one IRP site addressed through the Massachusetts Contingency Plan program, IRP Site 22, a service station where petroleum releases occurred. Mr. Vitolins displayed a table showing the breakdown of the sites.

PFAS Remedial Investigation Update

Mr. Vitolins reviewed the Air Force's two-stage investigation process, noting the Air Force first investigated where AFFF or firefighting foam releases may have occurred, followed by non-AFFF releases. He noted the Air Force is following the EPA Comprehensive Environmental Restoration, Compensation and Liability Act (CERCLA) process. He stated the first step in the CERCLA process, a Preliminary Assessment, was completed to determine if there is a potential release present that required further investigation. Mr. Vitolins said the next step is a Remedial Investigation which looks at the nature and extent of contamination and the potential risks to human health and the environment. He explained the following step would be a Feasibility Study to evaluate potential remedies, followed by a Proposed Plan for the public's review, and then documenting the selected remedy in a Record of Decision. He stated any cleanup actions needed would then be implemented, followed by any needed long-term management. Mr. Vitolins noted the AFFF investigation is in the Remedial Investigation phase, while the non-AFFF source investigation is in the Preliminary Assessment phase.

Mr. Vitolins explained the three-phased approach to the PFAS Remedial Investigation. He said the first phase is the Prescriptive Phase which is the initial investigation of the areas of impacts and sources. He stated the next phase, the Adaptive Phase, includes delineating sources, determining source concentration, and defining the extent of the plume, as well as evaluating potential human and ecological receptors. He explained that temporary well points were installed during the Prescriptive Phase while permanent monitoring wells would be installed

during the Adaptive Phase. Mr. Vitolins advised the final Delineation Phase will include monitoring to confirm the nature and extent of any contamination.

Ms. Heidi Porter asked how PFAS could enter the Bedford Town's system. Mr. Vitolins said AFFF releases could have resulted from fire readiness training activities, nozzle testing, or from firefighting during active fire incidents, and then the PFAS could infiltrate the soil into the groundwater and then migrate. He explained that PFAS compounds are very stable in the environment, and therefore do not readily break down. He added that groundwater may discharge to surface water or streams and could enter drinking water wells downstream if the surface water is a source for drinking water. Mr. Vitolins added that the Prescriptive Phase of the Remedial Investigation is designed to address both potential migration pathways for PFAS compounds.

Mr. Vitolins discussed the backgrounds of the AFFF source areas included in the Remedial Investigation, starting with AFFF Site 1, the Taxiway Echo Release Site. He stated that flushing of hoses containing residual AFFF was historically performed at this site, with AFFF rinse water released to the ground surface. He showed a map of the site location which is a grassy area on Hanscom Field between Runway 11 and Runway 5.

Mr. Vitolins next discussed AFFF Site 2, the Former Fire Training Site II, and Outfall 001 located near the end of Runway 23. He stated fire training activities were conducted at the site from the 1960s to 1973 when all Air Force flying activities were terminated. He advised Site 2 contained two burn pits, a water runoff area, and an aircraft disposal area. He explained Site 2 is co-located with Operable Unit 1 IRP Site 1, and this area is currently owned by Massport. Mr. Vitolins stated Outfall 001 discharges storm sewer water collected from eastern portions of Hanscom Field and immediately next to Outfall 001, and a groundwater treatment plant pipeline previously discharged effluent but is not currently operating.

Mr. Vitolins reviewed the background on AFFF Site 4, the Motor Pool Release Site on Hanscom AFB, where 8 to 10 gallons of AFFF was accidentally released during an October 2022 training exercise. He noted the release location was at the northeast corner of the Motor Pool paved parking area; the released AFFF flowed northeast across the pavement into a storm drain.

Mr. Vitolins advised the Remedial Investigation baseline field work was conducted in October 2023 and included groundwater analyses of 57 samples collected from existing monitoring wells. He stated the analytical results will be reviewed in the final Remedial Investigation Report which is anticipated to be completed in 2027. He explained the Prescriptive Phase fieldwork was conducted from April through September 2024 and included 33 soil borings, 67 soil samples, 40 groundwater vertical aquifer profiles, and 122 groundwater samples. He noted these analytical results will also be discussed in the final Remedial Investigation Report.

Mr. Vitolins next discussed the Prescriptive Phase field work which was conducted in September and October 2024 and included 34 surface water samples collected from Elm Brook, Hartwell Brook, and the Shawsheen River. He stated 26 sediment samples were collected from aboveground drainage ditches, Elm Brook, Hartwell Brook, Shawsheen River, and selected tributaries. He noted these analytical results will also be discussed in the final Remedial Investigation Report.

Ms. Porter asked what a finding of PFAS in soil would mean. Mr. Vitolins responded that depending on the soil type, it could be a continuing source with water infiltrating through the soil moving the PFAS into groundwater. Ms. Porter asked if PFAS moves quickly through soil or more slowly, and Mr. Vitolins responded that PFAS tends to cling to soil particles and be released slowly.

Mr. Vitolins reviewed upcoming tasks under the PFAS Remedial Investigation, noting from November 2024 through March 2025 results would be received and evaluated from the Prescriptive Phase investigation. He stated a work plan addendum would be developed for the Adaptive Phase sampling and submitted to EPA and MassDEP for review, with the Adaptive Phase investigation to be conducted between April and August 2025.

Ms. Porter advised that the Town of Bedford is undertaking an investigation of PFAS in private drinking wells and irrigation wells through a grant. Mr. Greenberg asked if Ms. Porter was aware of any private wells downstream of any of Hanscom AFB's potential source areas, and Ms. Porter advised that the Town does not have any data indicating anyone is impacted at this point because the locations have not yet been selected. She stated MassDEP had a robust program to evaluate primarily private potable wells; she noted there are very few private potable wells in the town (less than 12), but the new evaluation will reach out to those well owners to coordinate evaluation of current conditions. She continued explaining there is additional funding available to look at private irrigation wells as sometimes owners use these wells for other purposes such as filling pools. Ms. Porter stated the town hopes to have additional data within the next four to six months and will share it with Air Force.

Ms. Jennifer Boles asked when AFFF stopped being used by Hanscom AFB and Hanscom Field. Mr. Greenberg responded that the Air Force at Hanscom AFB no longer uses AFFF but will confirm when usage stopped.

He also explained that he has no knowledge of Massport's AFFF use history and suggested Ms. Boles contact Massport for that information. Ms. Boles asked about the incorporation of other releases in the Remedial Investigation, particularly a 2014 plane crash at Hanscom Field, and Mr. Greenberg explained that the Air Force responded as part of a support agreement with Massport.

Ms. Boles asked when Massport stopped using PFAS at Hanscom Field? Mr. Greenberg explained that he was not privy to that information.

Mr. Greenberg further explained that during the Preliminary Assessment/Site Inspection phase, a review of Air Force records and personnel interviews were conducted, including interviews with firefighting personnel regarding where and how training was done with AFFF. He said that assessment found that there were no other areas besides the Fire Training Area Site up until 1974 where AFFF training was conducted at Hanscom AFB. Ms. Boles asked Mr. Greenberg, about Massport's fire training. Mr. Greenberg stated that Massport has had their own Fire Department since 2015 and that he was not aware where training was conducted after the Fire Training Area Site use stopped in 1973. Mr. Greenberg also clarified that the 2014 plane crash was not the responsibility of Air Force and is not directly being investigated; because of its

location downgradient of the Motor Pool Release Site, Remedial Investigation activities would encompass PFAS present due to this release.

Hanscom AFB Sites in Northeast Optimized Remediation Contract (ORC)

Mr. Vitolins stated Seres-Arcadis is conducting work under an ORC through the Army Corps of Engineers, Baltimore District, and the Air Force Civil Engineering Center.

Mr. Vitolins advised the contract includes five CERCLA Sites: Site 1 (Fire Training Area), Site 2 (Paint Waste Disposal Area), and Site 3 (Jet Fuel Residue/Tank Sludge Disposal Area) are part of Operable Unit 1 or OU-1; Operable Unit 2 is the closed Sanitary Landfill; and Operable Unit 3 is the Former Filter Bed/Landfill Area and the Unit 1 Petroleum Release Site. He explained all these sites followed the CERCLA process he discussed earlier, and most are past the Record of Decision stage. He noted the contract also includes one Massachusetts Contingency Plan (MCP) site, Site 22, the AAFES Service Station Petroleum Releases. Mr. Vitolins provided the website for the Air Force's Administrative Record where documents can be reviewed: https://ar.afcec-cloud.af.mil/.

Mr. Vitolins displayed a map showing the location of each site and stated he would be discussing the sites in more detail.

Mr. Vitolins first discussed Operable Unit 1 which includes Site 1 (FT001) Fire Training Area II, Site 2 (WP012) Paint Waste Disposal Area, and Site 3 (WP011) Jet Fuel Residue/Tank Sludge Disposal Area. He noted the sites were used in the late 1960s until early 1970s, and waste oils, solvents, paint thinners, and degreasers burned during training exercises, as well as buried drums of waste solvents and paint, have impacted the soil and groundwater. He stated there was a removal action at both sites in 1988 to remove the immediately accessible contaminated soil, and in 1991 a Groundwater Treatment Plant began operating and operated until 2021 when it was taken offline for equipment repairs. Mr. Vitolins advised there was a request in January 2022 by EPA and MassDEP to keep the plant shutdown due to PFAS present in the system effluent, which discharges to a tributary to the Shawsheen River. He explained that the treatment plant was designed to treat chlorinated volatile compounds like trichloroethene (TCE), a solvent, but the plant was not designed to treat PFAS, which are emerging contaminants. He advised a Plume Stability Study for chlorinated volatile organic compounds in groundwater is currently being conducted to aid in evaluating the future of the Groundwater Treatment Plant (GWTP) while the system is shut down.

Mr. Vitolins reviewed the other components of the Record of Decision which are land use and institutional controls (such as deed restrictions and no use of the groundwater), Remedial Action Operation Monitoring (sampling program), and Five-Year Reviews (last one was in 2021 and the next one is due in 2027).

Mr. Vitolins discussed the current status of Operable Unit 1 and noted that the site is still in the Remedial Action Operation Monitoring phase. He advised that the Land Use Control (LUC) Implementation Plan has been implemented and includes site access for quarterly and annual inspections (most recent inspection was completed in September 2024).

Mr. Vitolins said another current activity is evaluating the performance of the treatment plant through a Plume Stability Study and a Supplemental Site Investigation to determine if the treatment plant is still necessary, and if so, if any changes need to be made to the plant to optimize its performance. He advised five of eight quarterly groundwater monitoring events have been completed, and additional groundwater monitoring wells were installed in October 2024.

Groundwater Treatment Plant (GWTP) PFAS Treatability Study

Mr. Vitolins introduced Mr. Mark Becker of AECOM to provide an update on the GWTP PFAS Treatability Study. Mr. Mark Becker advised the GWTP Treatability Study was performed to address PFAS in the effluent of the GWTP. The GWTP was designed to treat volatile organic compounds (VOCs) associated with Operable Unit 1 (OU-1). The purpose of this study was to identify alternatives to treat PFAS to MassDEP PFAS standards and continue treatment of volatile organic compounds. He explained regulations at the State and Federal levels for PFAS continue to evolve and that any future resulting GWTP upgrades would factor in approved standards at the time of design and construction.

Mr. Becker explained the study involved collection of water from both the treatment plant influent and effluent. He continued explaining the treatment media tested which included granular activated carbon (three types), ion exchange resin (two types), and novel sorbents (two types), and the evaluation criteria included effectiveness, implementability, and cost (capital cost and long-term operation cost).

Mr. Becker reviewed the Groundwater Treatment Plant study results, noting the recommended alternative is volatile organic compound treatment using air stripper technology and PFAS treatment using ion exchange resin. He stated the final Treatability Study Report was submitted to the regulators on August 30, 2024, and any changes to the treatment plant are pending findings from the Plume Stability Study/Supplemental Site Investigation.

Ms. Porter suggested the results from the Town's PFAS investigation also be considered in addition to the findings from the Plume Stability Study.

Ms. Boles asked where the GWTP discharges to the Shawsheen River. Mr. Vitolins responded that the GWTP discharges to a pipe adjacent to an airfield surface water outfall at the northeast end of the runway, into the wetland/former cranberry bog area into an unnamed tributary and eventually into the Shawsheen River.

Ms. Mitchell asked how the Air Force felt about the use of novel sorbents, given that we have to live with a certain amount of uncertainty of possible safety of these new technologies. The AF noted the comment and indicated they would take that into account should any of the new technologies be proposed.

Plume Stability

Mr. Vitolins reviewed the annual sampling performed in November 2023 which included 51 sampling points – 44 monitoring wells, 6 remediation system interceptor wells, and 1 surface water sample from the airfield. He advised the next annual sampling is proposed for November

2024, and Long-Term Monitoring Reports are prepared after each event. He summarized the 2023 sampling results, noting there is a continued presence of TCE and degradation products at Fire Training Area II above cleanup criteria, chlorinated volatile organic compounds remain above cleanup criteria at the Paint Waste Disposal Area, and chlorinated volatile organic compounds are lower than cleanup criteria at the Jet Fuel Residue Area/Tank Sludge Area.

Mr. Vitolins discussed upcoming planned activities at OU-1 which include 2024 annual sampling, ongoing quarterly and annual LUC inspections, preparing the 2024 Long-Term Monitoring Report, additional quarterly groundwater monitoring for the Plume Stability Study/Supplemental Site Investigation Work Plan field work, and determining what changes to the existing remedy are appropriate and developing plans for implementation.

Ms. Porter asked when implementation of a remedy might occur, and Mr. Vitolins said the estimated timeline will be several years after the completion of the study, unless it was determined there was an immediate risk that needed to be addressed, then a remedy could be implemented sooner/faster.

Ms. Boles asked if the risk of the chlorinated solvent plume was evaluated close to some neighborhoods near Hartwell Road? She asked if anyone had looked at vapor intrusion in particular around sewer lines? She also asked how close Family Camp was to the plume? Mr. Greenberg responded that if you review the Record of Decision from 2007 there is a section specifically addressing the risk for vapor intrusion. Also, the most recent map of the chlorinated solvent plume shows that there are no impacts in the shallow aquifer near residents or sewer lines, so there is no vapor intrusion risk. Mr. Vitolins also confirmed that there are no structures that would provide a vapor intrusion pathway at Family Camp.

Landfill 4 Remedial Investigation

Mr. Vitolins next discussed Operable Unit 2, the former Hanscom AFB municipal solid waste landfill which operated from 1964 to 1974. He advised a low permeability cap was constructed in 1988 over the 10.5-acre landfill to prevent water from infiltrating the cap, and the cap includes the softball field. He stated the remedy had been completed and accepted by EPA and MassDEP, but the process followed in the 1990s did not include a Feasibility Study, Proposed Plan or Record of Decision, so the Air Force is conducting an additional remedial investigation which Mr. Becker will discuss shortly.

Mr. Vitolins said other activities at the landfill are maintaining the cap to ensure there is no erosion or depressions and implementing any needed repairs. He noted annual inspections and reports are completed each year, then introduced Mr. Becker.

Mr. Becker discussed the Supplemental Remedial Investigation for the Site 4 landfill. He described the agreement reached between the Air Force, EPA and MassDEP to proceed with the CERCLA process at the landfill. He reviewed the work conducted before and after the landfill cap was installed and advised that human health and ecological risk assessments conducted in 1997 found no unacceptable risk to human health or the environment. He advised fieldwork for the Supplemental Remedial Investigation began in January 2024 with the objectives of groundwater and surface water characterization, evaluation of the

groundwater/surface water interaction and whether the compounds under the landfill cap are upwelling or leaching into groundwater. He added that updated human health and ecological risk assessments would also be completed as part of the Supplemental Remedial Investigation.

Ms. Porter asked if updated risk assessments would be completed since the original risk assessments were completed in1997 and if there were more recent risk standards compared to the original 1997 standards. Mr. Becker responded that the risk assessments would be updated and would include most current risk standards.

Mr. Becker reviewed the field work conducted since January 2024 which has included installing seven monitoring well and repairing existing monitoring wells, Spring 2024 groundwater and surface water sampling (Round 1), hydraulic conductivity testing, and recording surface water levels continuously for six months.

Mr. Becker summarized the next steps for the landfill which includes evaluation of the Round 1 analytical data, conducting Round 2 sampling in November 2024, and preparing a draft Supplemental Remedial Investigation Report planned for June 2025. He explained a Feasibility Study, Proposed Plan, and Record of Decision will follow the Supplemental Remedial Investigation Report with revised risk assessments.

Mr. Greenberg stated the PFAS reporting for the associated sampling events will be a report of the results; conclusions as far as risk and possible remedies would not be included but instead will be evaluated later in coordination with the overall Hanscom AFB PFAS activities.

Ms. Porter asked why PFAS was taking a different path from the legacy compounds at the landfill and Mr. Greenberg explained that this is the way that the Air Force is handling their PFAS projects, meanwhile it will not derail the legacy contaminants project.

Operable Unit 3 (Site 6)

Mr. Vitolins reviewed activities at Operable Unit 3 (Site 6), which includes three landfill areas with permeable caps: the Former Filter Bed Area, the South Landfill Area, and the West Landfill Area, in addition to the compliance boundary (a line of groundwater wells with contaminant concentrations below EPA's Maximum Contaminant Levels [MCLs]).

Mr. Vitolins explained that the remedy for Site 6 includes a permeable cap. He noted the primary compounds detected in the groundwater are metals. He stated other components of the remedy are institutional controls and a groundwater compliance boundary to ensure future land use does not increase the risk of exposure and that groundwater in the compliance zone is not used for human consumption. He said other components of the remedy include annual maintenance to maintain the integrity of the cap system, annual sampling of groundwater and wetland surface water to ensure compliance with groundwater quality standards, annual LUC inspections, and five-year reviews to ensure continued protection of human health and the environment. Mr. Vitolins said Site 6 attained a Response Complete designation in 2016; however, the Air Force continues to maintain the institutional controls and conduct groundwater monitoring.

Mr. Vitolins reviewed current activities at Site 6, noting that the annual water level gauging, and surface water and groundwater sampling were conducted in June 2024, with the samples analyzed for dissolved metals, pesticides, and semi-volatile organic compounds. He advised fallen trees on the fence line were removed in August 2024. He noted a 2024 Long Term Monitoring and Remedial Action Report will be prepared, and the next sampling event is scheduled for June 2025, with the next annual inspections scheduled for November 2024.

Mr. Vitolins presented an update on Site 21, a former jet fuel and aviation gasoline fueling facility, used from the 1940s to 1973 to store and distribute No. 2 fuel oil and to store cleaning solvents and other petroleum products associated with aircraft and vehicle maintenance. He stated the site included aboveground storage tanks (ASTs), underground storage tanks (USTs), and an associated piping network. He noted a number of interim actions or removal actions were performed before there was a final remedy for the site. He explained a Record of Decision was signed in 2001 to address primarily petroleum hydrocarbons and chlorinated volatile organic compounds such as TCE.

Mr. Vitolins noted that in 2015 Oxygen Release Compound (ORC®) socks were installed in 12 wells to reduce petroleum concentrations and RemOx® Cylinders were installed in three wells in 2019, 2020, 2022, and 2023 to promote treatment of TCE and other chlorinated solvents in groundwater. He stated the annual gauging and sampling was performed in June 2024, and the ORC® socks were replaced after the annual sampling. RemOx® Cylinders are no longer being manufactured and were not replaced following the June 2024 sampling. Mr. Vitolins said an annual LUC inspection was performed in September 2024. He advised the 2024 Annual Report is being prepared. He reported upcoming activities include maintaining treatment of the groundwater using ORC® socks, evaluating if an alternative to RemOx® Cylinders is required going forward, and performing the annual gauging and groundwater sampling in the Spring of 2025. He stated annual LUC inspections will continue.

Mr. Vitolins summarized recent activities at Site 22, the former AAFES Gas Station/Convenience Store/Automotive Repair Shop, where five reported petroleum releases occurred from 1981 to 2001. He stated this site is regulated under the MCP and not CERCLA. He explained that Site 22 is currently in a temporary solution status because groundwater concentrations above EPA's MCLs and MCP standards are confined to the site boundary, and soil excavation and subsequent monitoring are planned to evaluate reaching a permanent solution and MCP site closure. He advised the 2024 activities included the annual gauging and sampling and annual ORC® sock replacement performed in June 2024.

Ms. Porter asked about the current use of Site 22. Mr. Greenberg confirmed there is currently nothing happening at the site.

Mr. Vitolins provided background on the Supplemental Site Investigation at Site 22 for soil and groundwater, which has provided guidance for the soil excavation scheduled for Fall 2024.

USGS Data Collection Update

Ms. Leah Santangelo discussed work being done by the USGS to fill data gaps identified by the Air Force. She displayed links for the project page and current and ongoing publications. She noted current work and upcoming data publications include surface water, groundwater,

seepages, sediment and stormwater sampling results; regional groundwater flow model; borehole and surficial geophysical surveys; and discrete and continuous surface water and groundwater measurements in support of the flow model.

Ms. Santangelo summarized 2024 work which included a comprehensive data review of 2023 sample collection efforts; continuous and discrete surface water gauging and groundwater monitoring in support of the regional groundwater flow model; and sampling for PFAS mass loading to streams study.

Ms. Boyles asked about whether sampling at the outfall to Elm Brook near Werfen had been completed. Ms. Santangelo confirmed they did collect samples in that area.

Ms. Santangelo reviewed a list of anticipated products and publications which will be listed on the USGS project page.

Additional Information

Mr. Vitolins showed a slide with website links for additional information including Hanscom AFB's website, the AFCEC Administrative Record, and EPA's site profile page. He also displayed information about EPA's and the Air Force's technical assistance programs for communities.

RAB and Public Comments/Questions

Ms. Porter asked whom the Town's PFAS data should be sent to, and Mr. Greenberg said it should be sent to him.

Ms. Boles asked about the availability of the presentation slides, and Mr. Greenberg said they would be sent with the meeting minutes in about six weeks.

Meeting Adjourned

The RAB Meeting was formally adjourned upon the completion of the public comment and question period.

The presentations ended at 9:12 PM.

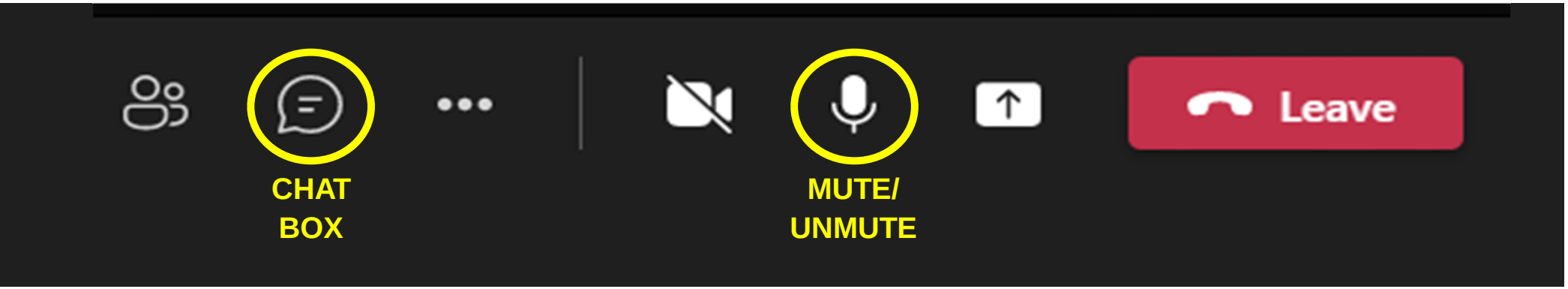
Air Force Installation & Mission Support Center

Hanscom Air Force Base Restoration Advisory Board Meeting

24 October 2024
7 pm EDT

Welcome!

- This call is being recorded to help develop meeting minutes.
- Unless speaking, please remain on mute to reduce background noise.
- There will be a dedicated time for Q&A, but you can also ask a question via the chat box at any time during the meeting and speakers will respond as time allows.
- If you need to leave the call, click “Leave.”



Overview

- **Welcoming Remarks and Introductions**
- **Environmental Restoration Program Update for Hanscom Air Force Base (AFB)**
  - Per- and Polyfluoroalkyl Substances (PFAS) Remedial Investigation (RI) Update
  - Hanscom AFB Sites in Northeast Optimized Remediation Contract (ORC) Updates
    - OU-1 and Plume Stability Study and Supplemental Investigation (CVOCs)
    - OU-1 Groundwater Treatment Plant Evaluation
    - OU-2 Site 4 (LF004) and Remedial Investigation
    - OU-3 Site 6 (DP007)
    - OU-3 Site 21 (ST021)
    - MCP ST022 (Site 22) and Supplemental Site Investigation
- **USGS Data Collection Activities Update**
- **Discussion and Meeting Wrap-Up**

• PFAS - per- and polyfluoroalkyl substances, RI – remedial investigation, ORC – Optimized Remediation Contract, CVOC – chlorinated volatile organic compound

Environmental Restoration Program Project Team

U.S. Air Force and Support:

U.S. Air Force (USAF)
- Matt Greenberg - Remedial Project Manager (RPM)

U.S. Army Corps of Engineers (USACE)
- Brant Crumbling – ORC Project Manager (PM)
- Erin Kirby – PFAS RI PM

Regulators:

U.S. Environmental Protection Agency (USEPA) Region 1
- Shawn Lowry

Massachusetts Department of Environmental Protection (MassDEP)
- Randi Augustine

Contractors:

Seres-Arcadis Joint Venture (ORC and PFAS RI)
- Andy Vitolins – Contract PM
- Jennifer Sandorf – PFAS RI Deputy Project Manager
- Carmen Vidal – Task Manager
- Allison Nelan – Technical Lead

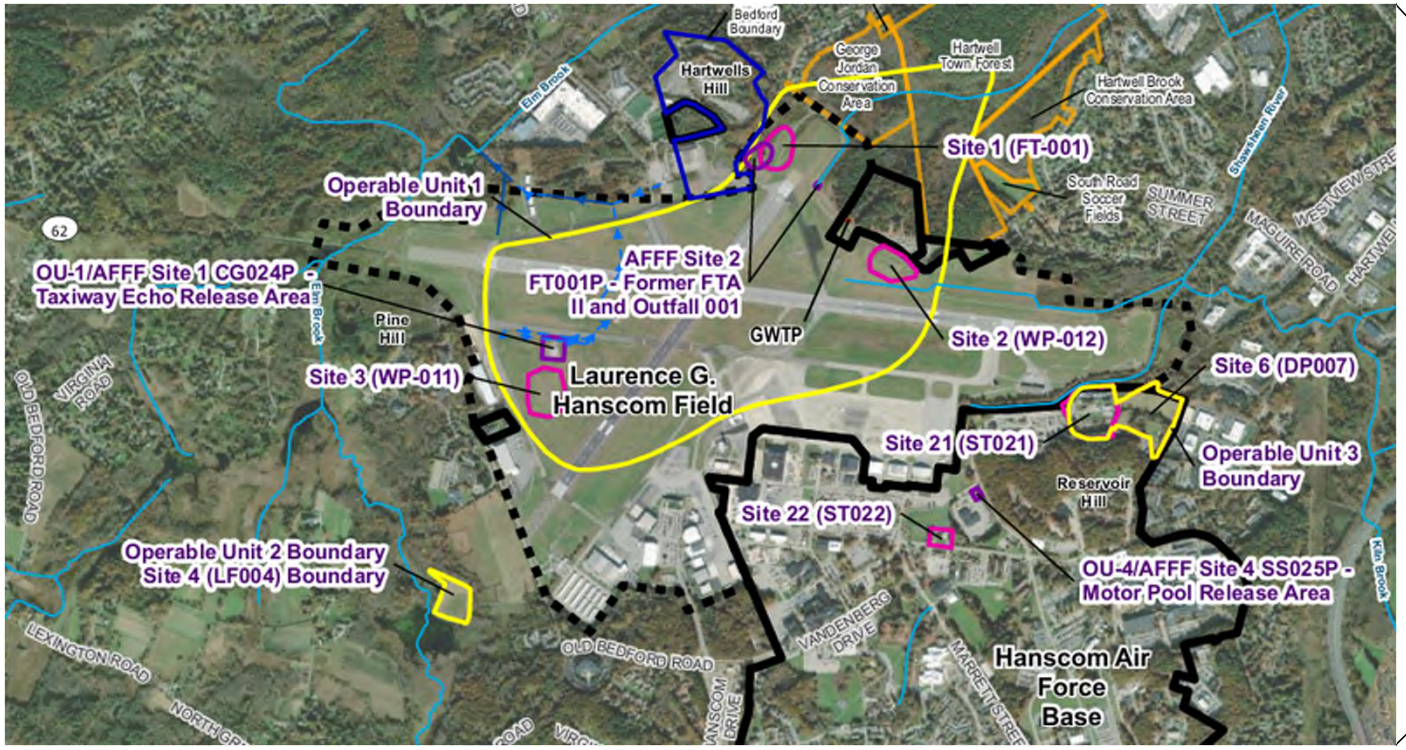
AECOM (Site 4 RI, OU-1 GWTP Evaluation)
- Mark Becker, Caryn DeJesus

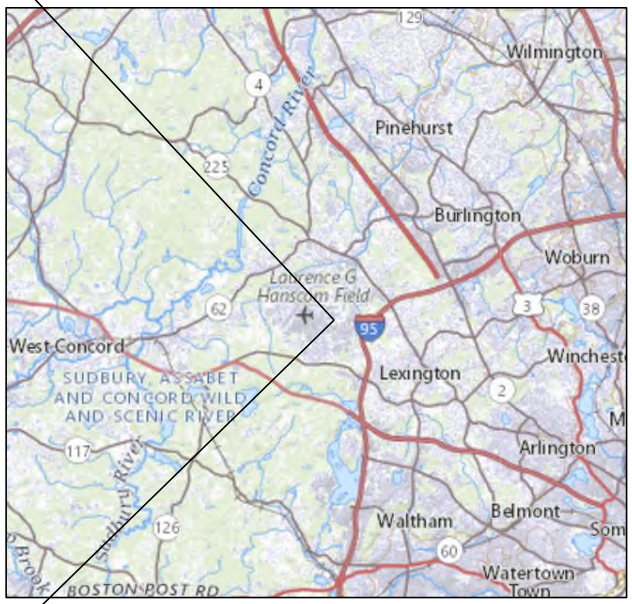
Other Support:

United States Geological Survey (USGS)
- Leah Santangelo
- Joe Ayotte

• USAF – U.S. Air Force, USACE – U.S. Army Corps of Engineers, USEPA – U.S. Environmental Protection Agency, MassDEP – Massachusetts Department of Environmental Protection, ORC – Optimized Remediation Contract, GWTP – groundwater treatment plant, PFAS - per- and polyfluoroalkyl substances, RI – remedial investigation, PM – project manager, RPM – remedial project manager, OU – Operable Unit, USGS – United States Geological Survey

Site Overview





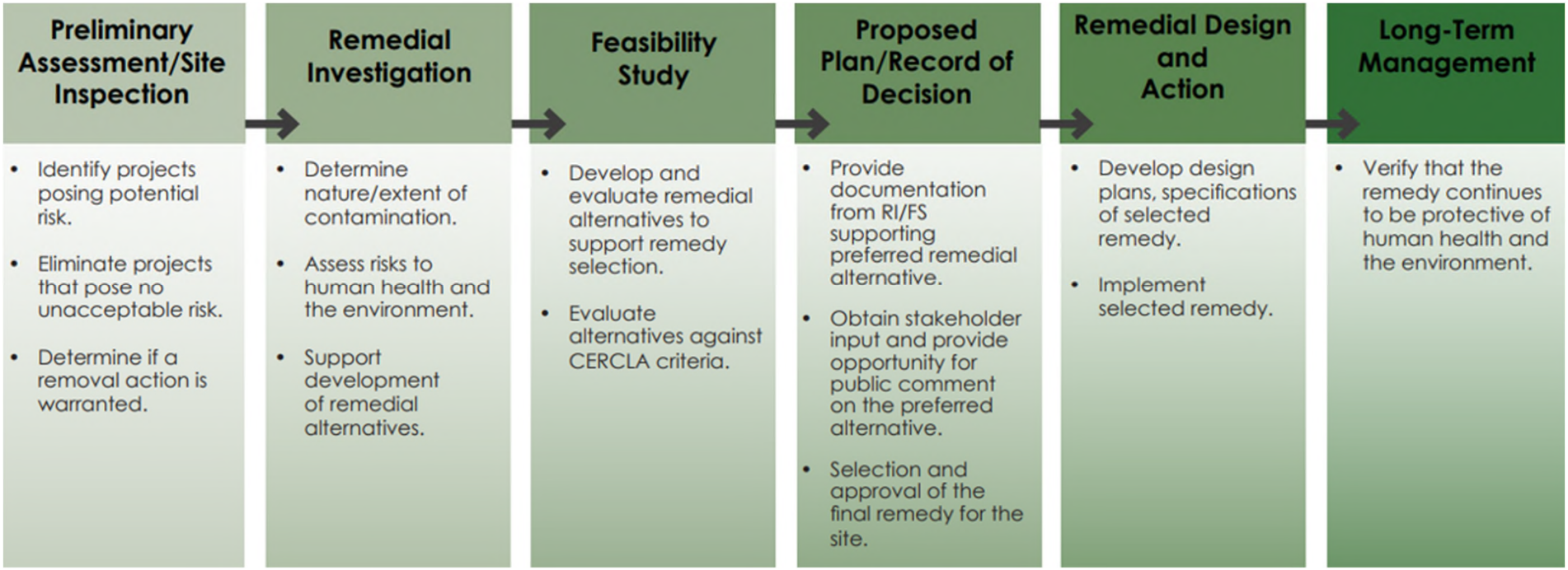
Site Overview by Operable Unit

Operable Unit (OU)	Installation Restoration Program (IRP) or Aqueous Film Forming Foam (AFFF) PFAS Site(s)
OU-1	IRP Site 1: Fire Training Area II (FT001) IRP Site 2: Paint Waste Disposal Area (WP012) IRP Site 3: Jet Fuel Residue/Tank Sludge Disposal Area (WP011)
	AFFF Site 1: Taxiway Echo Release Area (CG024P) AFFF Site 2: Fire Training Area II (FT001P) and Outfall 001
OU-2	IRP Site 4: Sanitary Landfill (LF004)
OU-3	IRP Site 6: Former Filter Bed/Landfill Area (DP007), IRP
	IRP Site 21: Unit 1 Petroleum Release Site (ST021)
OU-4	AFFF Site 4: Motor Pool Release Area (SS025P)
Massachusetts Contingency Plan (MCP)	IRP Site 22: AAFES Service Station Petroleum Releases (ST022)

•NPL – National Priorities List, OU – Operable Unit, IRP – Installation Restoration Program, AFFF - aqueous film forming foam, PFAS – Per- and Polyfluoroalkyl Substances, MCP – Massachusetts Contingency Plan, AAFES – Army & Air Force Exchange Service

Per- and Polyfluoroalkyl Substances (PFAS) Remedial Investigation (RI) Update

PFAS Response Chronology



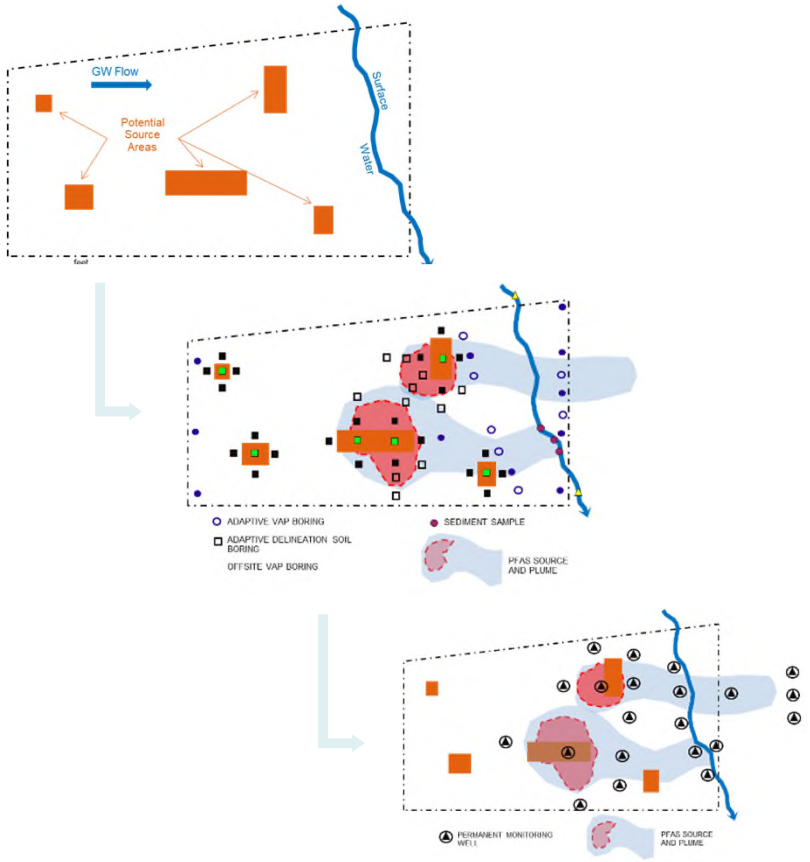
- *AFCEC has the ability to implement interim remedial actions any time during the CERCLA process if an imminent risk to human health is identified.*

• AFFF – aqueous film forming foam, PFAS – per- and polyfluoroalkyl substances, EPA – Environmental Protection Agency, CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act, SI – site inspection, RI – remedial investigation, FS- feasibility study, PP – proposed plan, ROD – record of decision

PFAS RI Process

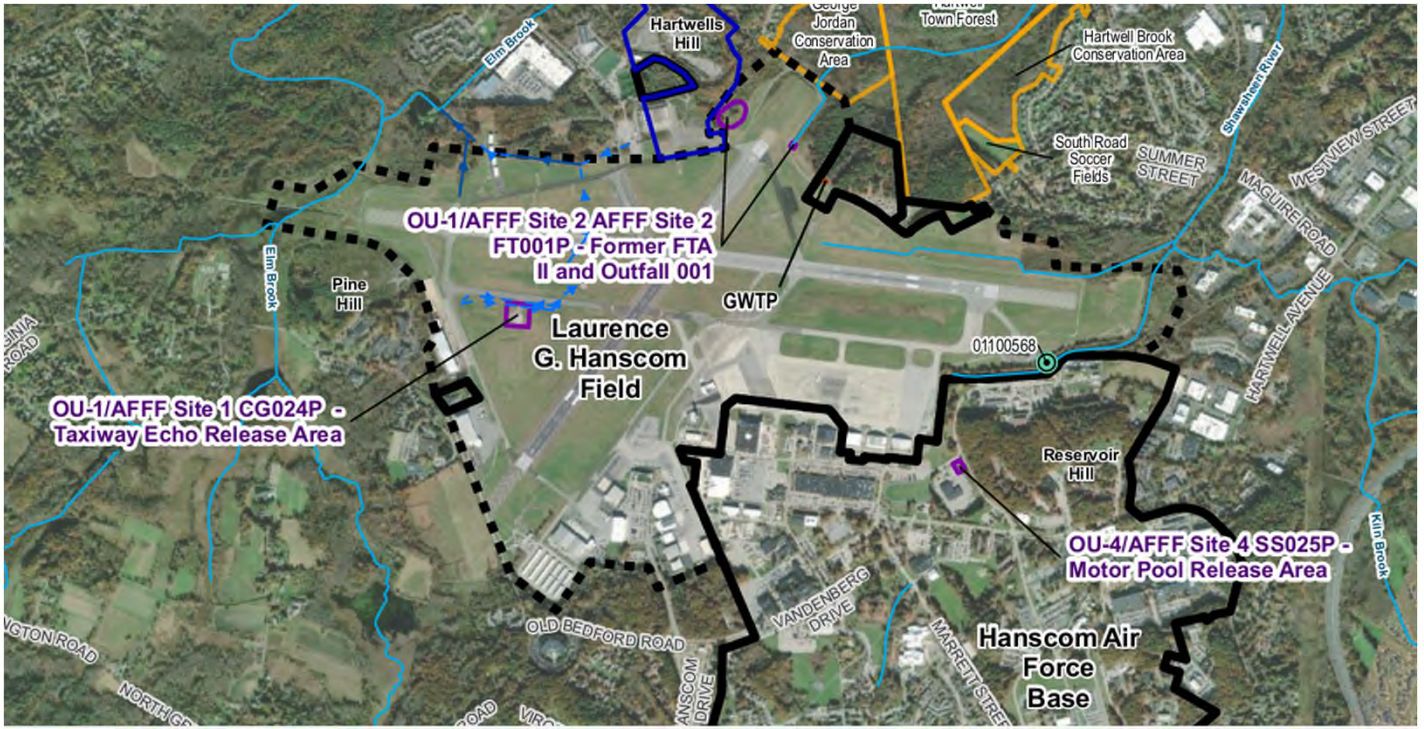
Phased Approach – Each step builds upon the previous step to achieve RI objectives

1. **Prescriptive Phase**
   - » Initial investigation of area of impacts and sources—soil borings, vertical aquifer profiles (VAP) groundwater samples, surface water sampling, and geophysical investigations
2. **Adaptive Phase**
   - » Delineate sources, determine source strength, and define geometry of plume
   - » Evaluate potential impacted human and ecological receptors
   - » Permanent monitoring wells (overburden and bedrock)
3. **Final Delineation Phase**
   - » Monitoring to confirm nature and extent (groundwater and surface water)



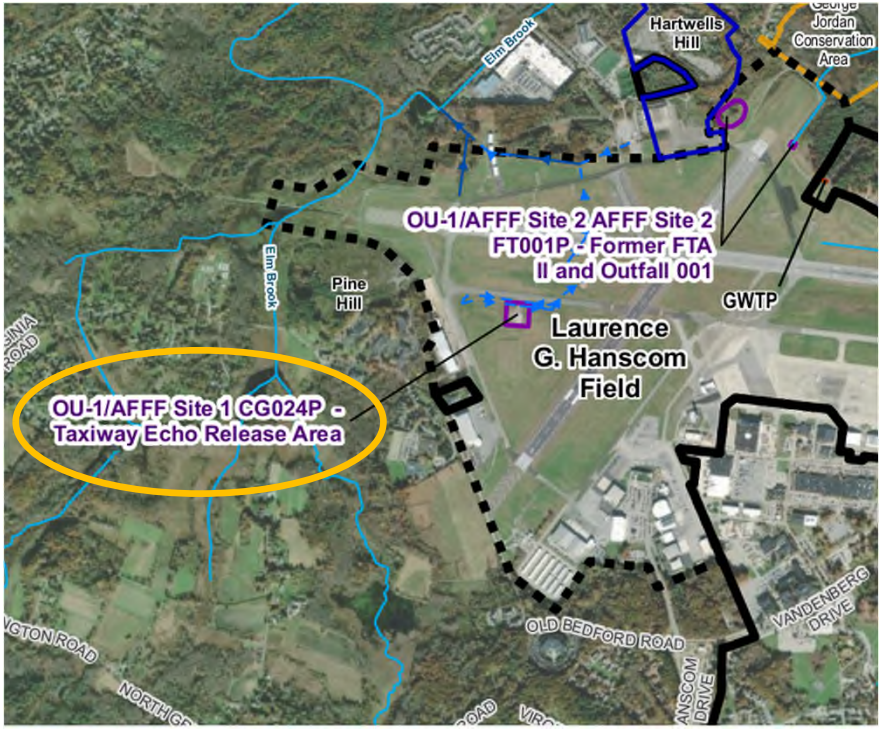
• PFAS – per- and polyfluoroalkyl substances, RI – remedial investigation, VAP – vertical aquifer profiles

PFAS RI AFFF Source Areas



AFFF Area Background
Site 1: Taxiway Echo Release Area

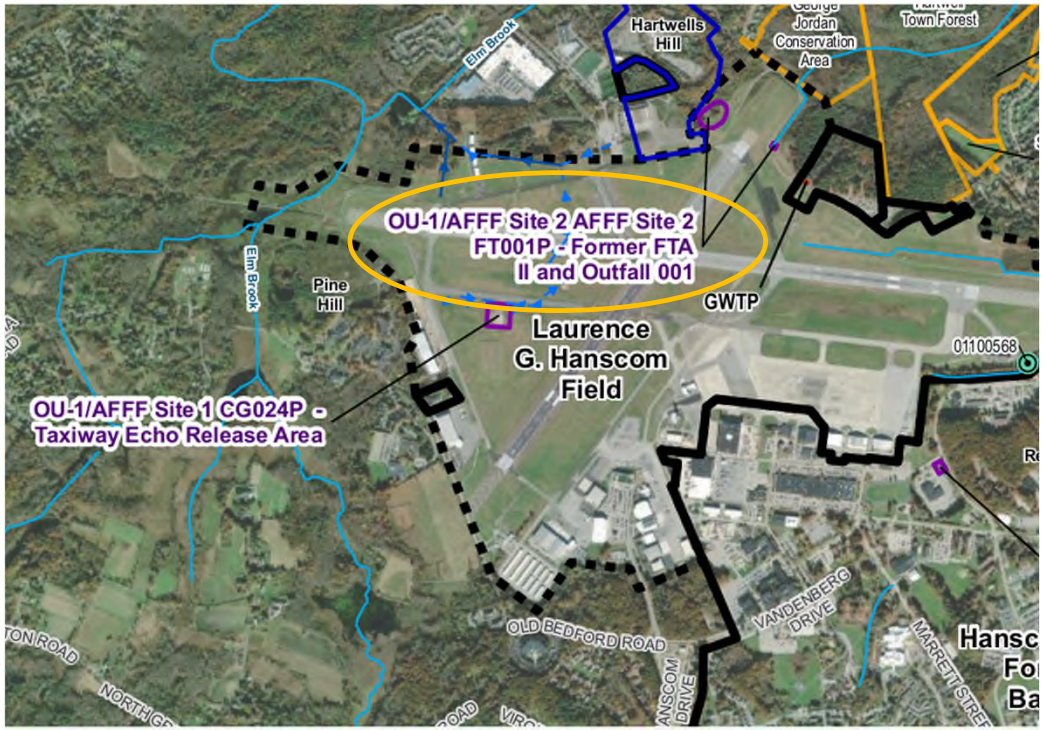
- Flushing of hoses containing residual Aqueous Film Forming Foam (AFFF) were historically performed at AFFF Area 1. When the testing and hose flushing were performed, AFFF was released directly to the ground surface.
- Area is on Hanscom Field, in grassy area surrounded by taxiways and runways.



- AFFF – aqueous film forming foam

AFFF Area Background
Site 2: Former FTA II and Outfall 001

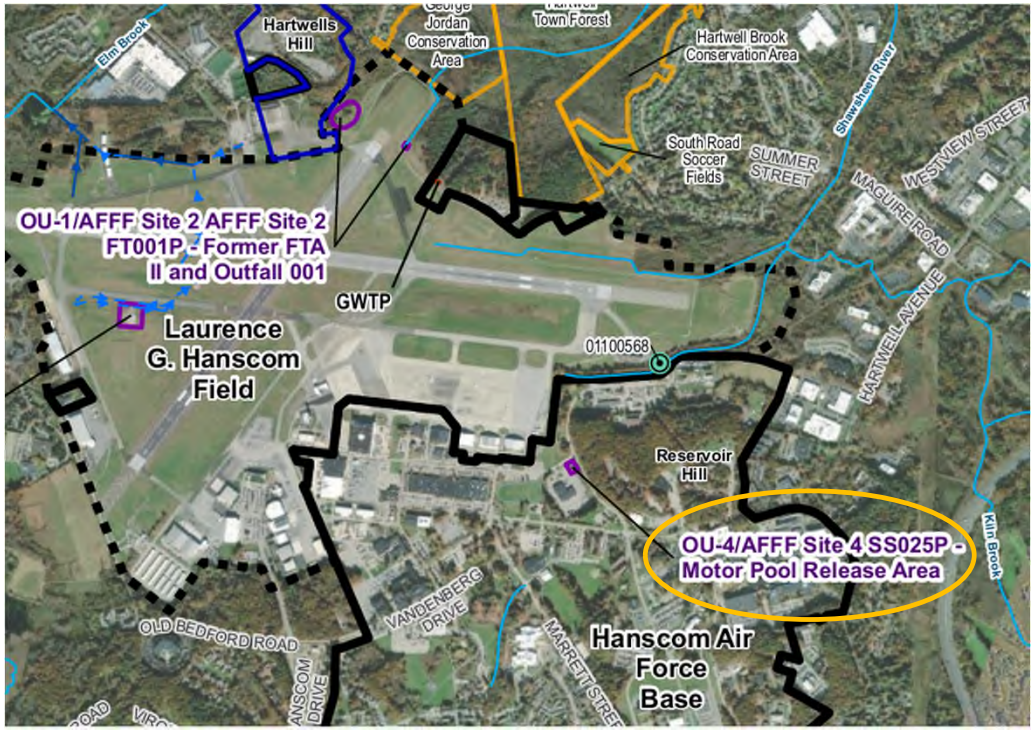
- Fire training activities were conducted (1960s to 1973) at the site until termination of all base flying activities. Area 2 contained two burn pits and a water runoff area. The remains from aircraft wrecks and burned fuselages were disposed of here as well.
- AFFF Area 2 is collocated with OU-1 IRP Site 1. This area is owned by MassPort.
- Outfall 001 discharges storm sewer water collected from eastern portions of Hanscom Field. Immediately next to Outfall 001, a GWTP (Area 2) pipeline discharges effluent from the GWTP for treatment of OU-1 groundwater. Currently not operating. GWTP will be discussed later in the presentation.



• FTA – fire training area, AFFF – aqueous film forming foam, OU– Operable Unit 1, GWPT – groundwater treatment plant

AFFF Area Background
Site 4: Motor Pool Release Area

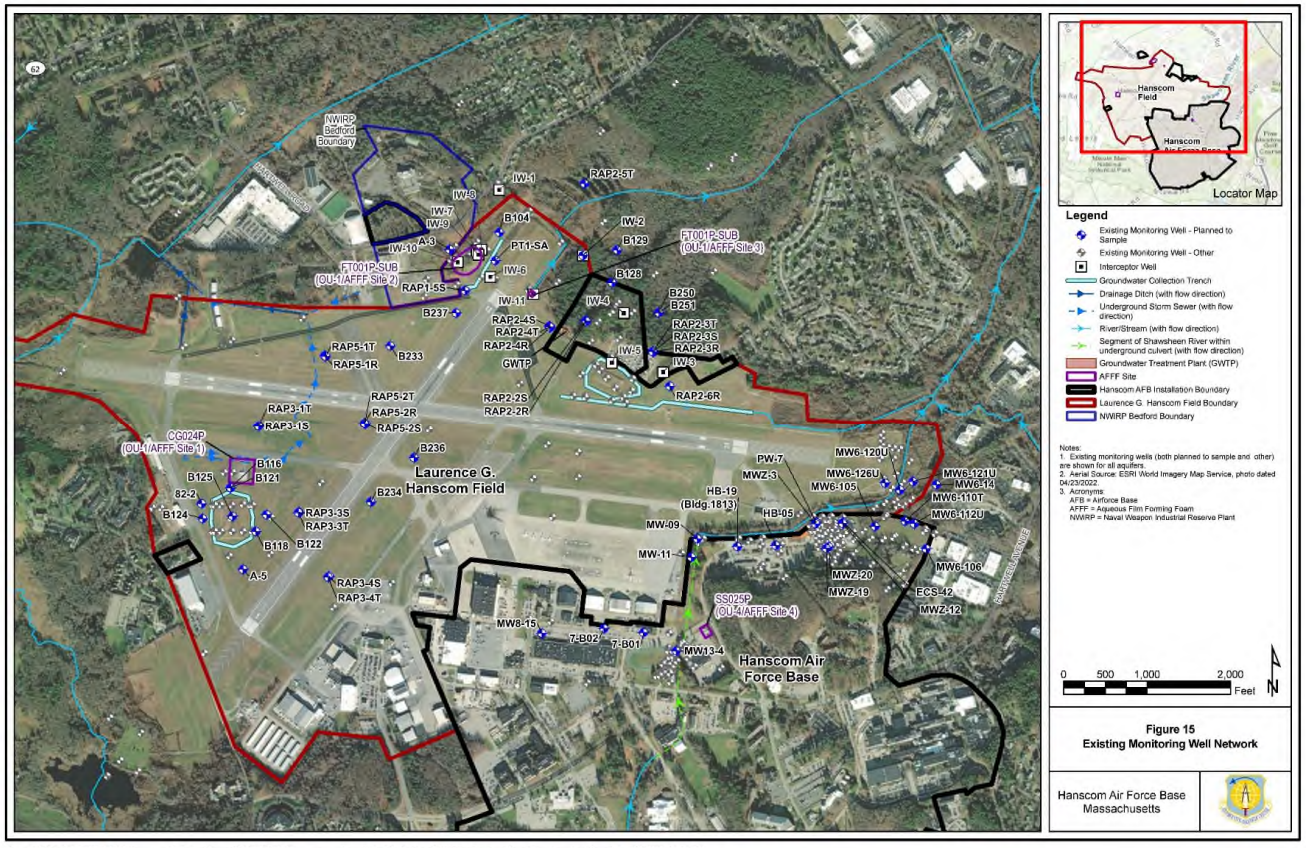
- October 2002, approximately 8 to 10 gallons of AFFF were accidentally released from a P-19 Crash Response Vehicle during the demonstration of a "No Foam Unit for Aircraft Rescue and Fire Fighting Vehicles."
- The release location was at the NE corner of the motor pool paved parking area. The released AFFF flowed NE across the pavement into a storm sewer.



• AFFF – aqueous film forming foam, NE – northeast

PFAS Phase I RI Field Activities

- **Baseline Field Work: October 2023**
  - **Baseline Groundwater Sampling**
    - 57 samples collected from existing monitoring wells and submitted for PFAS analyses
  - **Analytical results will be discussed in the Final RI Report (anticipated to be completed in 2027)**



• PFAS – per- and polyfluoroalkyl substances, RI – Remedial Investigation

PFAS Phase I RI Field Activities

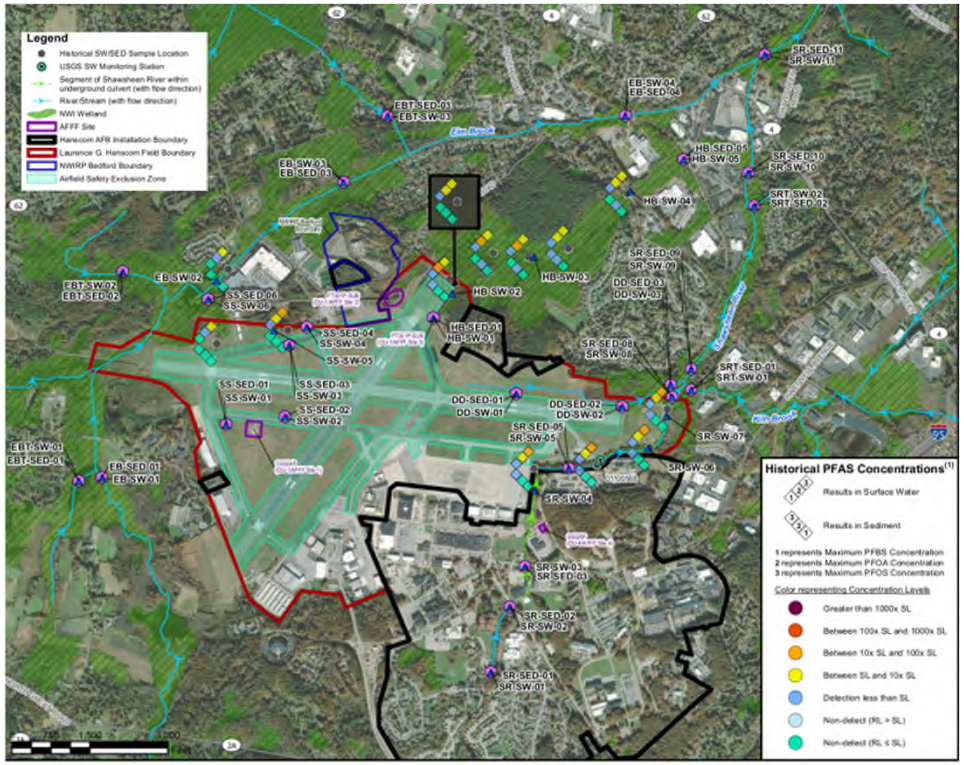
- **Prescriptive Phase Field Work: April through September 2024**
  - **Soil Borings**
    - 33 soil borings completed
    - 67 soil samples collected and submitted for PFAS analyses
  - **Groundwater Samples**
    - 40 Vertical Aquifer Profiles (VAPs) completed
      - Overburden and bedrock
    - 122 groundwater samples collected and submitted for PFAS analyses
  - **Analytical results will be discussed in the Final RI Report**

Soil boring being advanced.

• PFAS – per- and polyfluoroalkyl substances, RI – Remedial Investigation, VAP – vertical aquifer profile

PFAS Phase I RI Field Activities

- **Prescriptive Phase Field Work September 2024:**
  - **Surface Water Samples**
    - 34 samples collected and submitted for PFAS analyses
    - Collected from Elm Brook, Hartwell Brook, and Shawsheen River
  - **Sediment Samples**
    - 26 sediment samples collected and submitted for PFAS analyses
    - Collected from above-ground drainage ditches, Elm Brook, Hartwell Brook, Shawsheen River, and selected tributaries
  - **Analytical results will be discussed in the Final RI Report**



• PFAS – per- and polyfluoroalkyl substances, RI – Remedial Investigation

PFAS RI Upcoming Tasks

- **November 2024 – March 2025**
  - Receive and evaluate results from prescriptive phase investigation
  - Develop work plan addendum for adaptive phase sampling
  - Submit work plan addendum to USEPA and MassDEP for approval
- **April 2025 – August 2025**
  - Conduct adaptive phase investigation

• PFAS – per- and polyfluoroalkyl substances, RI – remedial investigation, USEPA – U.S. Environmental Protection Agency, MassDEP – Massachusetts Department of Environmental Protection

Hanscom AFB Sites in Northeast Optimized Remediation Contract (ORC)

Hanscom AFB IRP Sites (Non-PFAS)

National Priorities List (NPL) Operable Unit 1 (OU-1)

- IRP Site 1: Fire Training Area II (FT001)
- IRP Site 2: Paint Waste Disposal Area (WP012)
- IRP Site 3: Jet Fuel Residue/Tank Sludge Disposal Area (WP011)

NPL OU-2

- IRP Site 4: Sanitary Landfill (LF004)

NPL OU-3

- IRP Site 6: Former Filter Bed/Landfill Area (DP007)
- IRP Site 21: Unit 1 Petroleum Release Site (ST021)

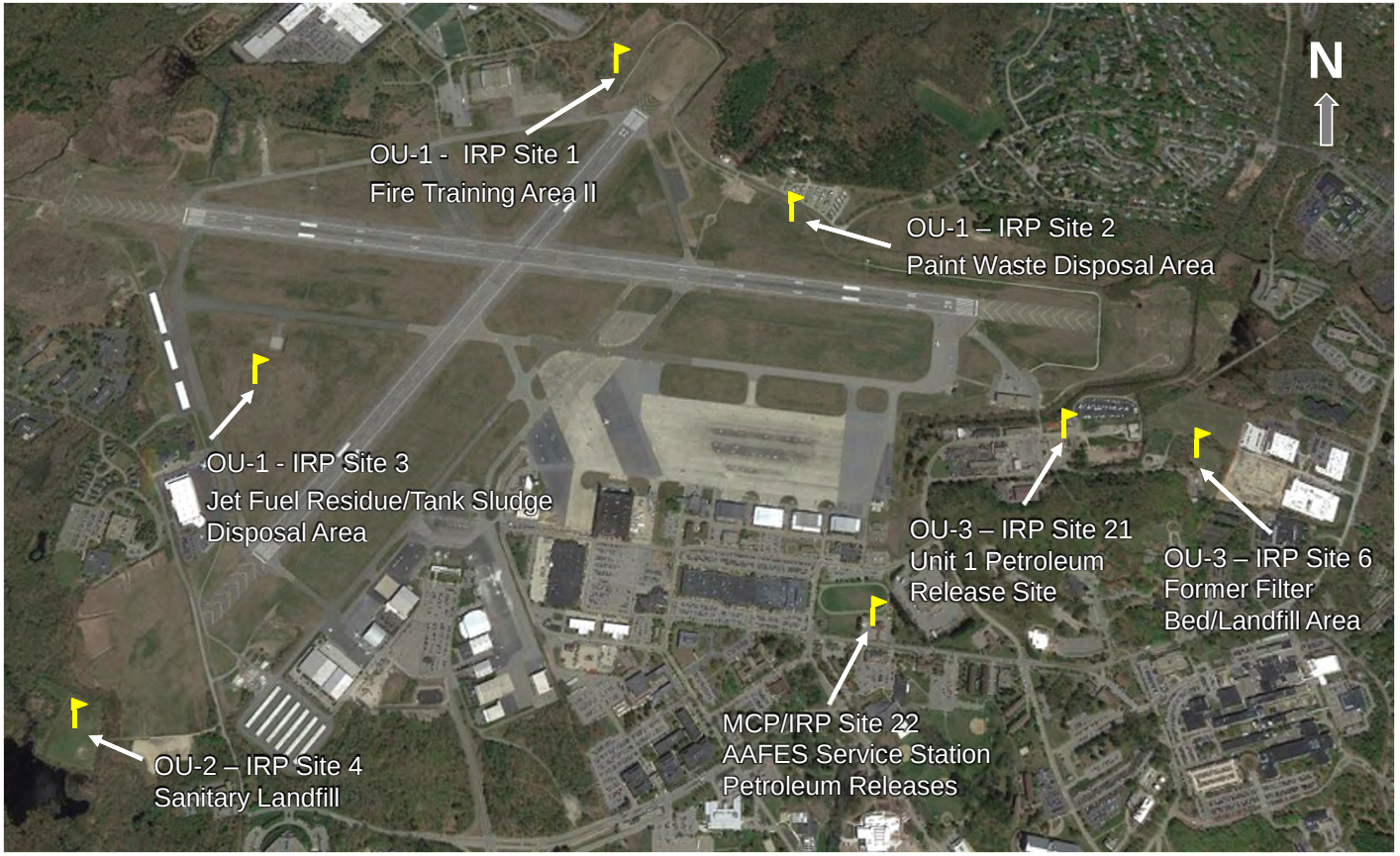
Massachusetts Contingency Plan (MCP) Lead

- MCP/IRP Site 22: AAFES Service Station Petroleum Releases (ST022)

AFCEC Administrative Record (filter by Hanscom AFB): *https://ar.afcec-cloud.af.mil/*

- AFB – Air Force Base, NPL – National Priorities List, OU – Operable Unit, IRP – Installation Restoration Program, MCP – Massachusetts Contingency Plan, AAFES - Army & Air Force Exchange Service

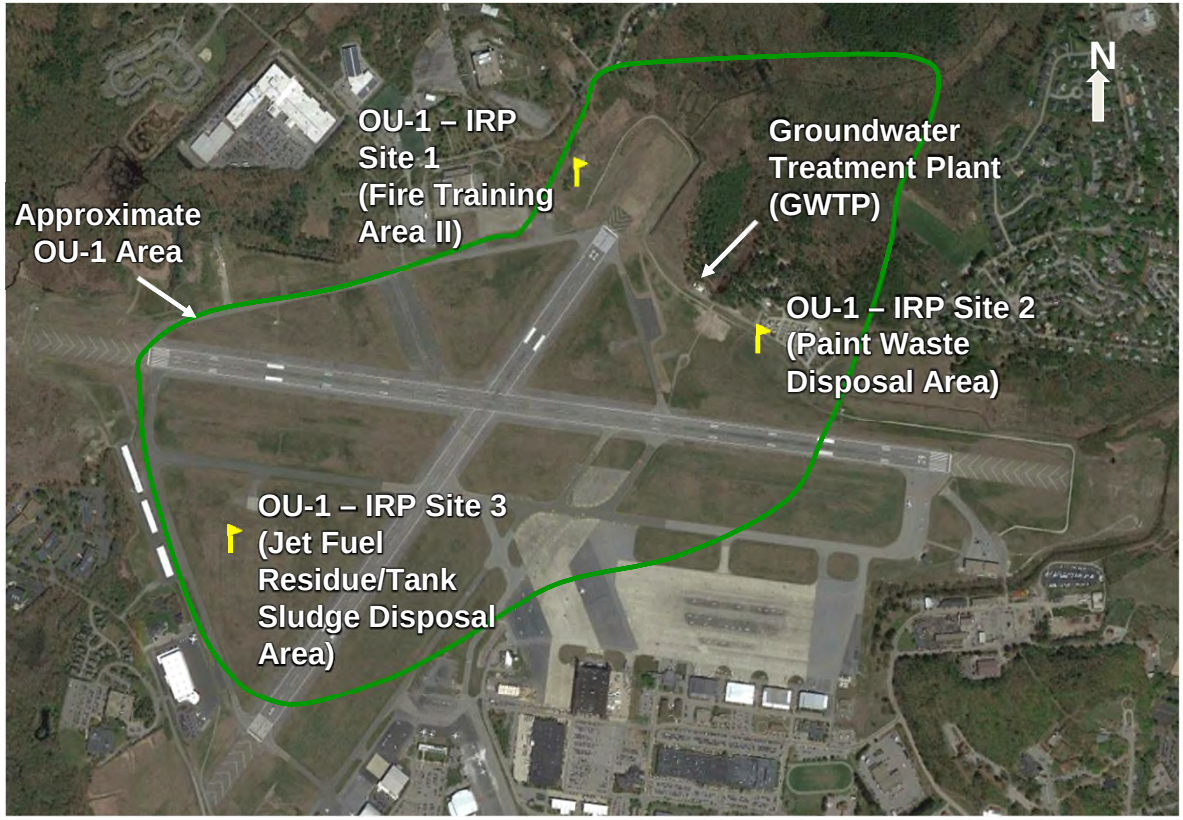
Approximate Site Locations



- IRP – Installation Restoration Program, OU – Operable Unit, AAFES - Army & Air Force Exchange Service

Operable Unit 1 (OU-1)

- **Site 1 (FT001) Fire Training Area II**
  - Used in late 1960s-1973: Waste oils, solvents, paint thinners, and degreasers burned during fire training exercises
- **Site 2 (WP012) Paint Waste Disposal Area**
  - Drum burial 1966-1972: waste solvents and paint
- **Site 3 (WP011) Jet Fuel Residue/ Tank Sludge Disposal Area**
  - Drum burial from 1959-1969: airplane fuels, oil, and paint
- **1988: Removal Action (excavation) to remove waste and impacted soil**



• IRP – Installation Restoration Program, OU – Operable Unit, GWTP – groundwater treatment plant

OU-1 Background

- The groundwater treatment plant (GWTP) came online in 1991, and was temporarily shut down for equipment failure in November 2021.
  - GWTP remains shut down in accordance with January 2022 request by EPA and MassDEP due to PFAS present in the system effluent, which discharges to a tributary to the Shawsheen River.
  - During the ongoing shut down of the GWTP, an evaluation is being conducted to address PFAS in the effluent.
  - A Plume Stability Study (PSS) for chlorinated volatile organic compounds (CVOCs) in groundwater is concurrently being conducted.

• OU – Operable Unit, GWTP – groundwater treatment plant, MassDEP – Massachusetts Department of Environmental Protection, EPA – Environmental Protection Agency, PFAS – per- and polyfluoroalkyl substances, PSS – Plume Stability Study, CVOC – chlorinated volatile organic compounds

OU-1 Groundwater Remedy

- **OU-1 2007 Record of Decision (ROD):**
  - Operation of the GWTP to treat chlorinated volatile organic compounds (CVOCs)
    - Groundwater treated using air stripping (does not treat PFAS)
  - Land use and institutional controls and quarterly inspections
  - Remedial Action Operation (RA-O) Monitoring (annual sampling program)
  - Five-Year Reviews

• OU – Operable Unit, ROD – record of decision, GWTP – groundwater treatment plant, CVOCs – chlorinated volatile organic compounds, PFAS - per- and polyfluoroalkyl substances, RA-O – Remedial Action Objective

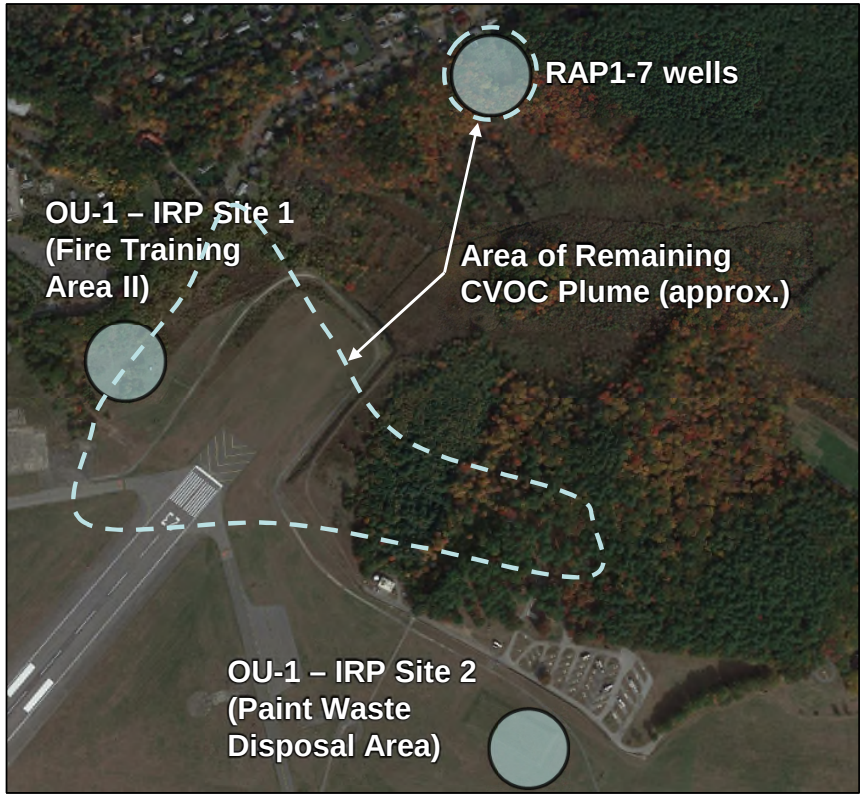
Current OU-1 Status

- Annual RA-O monitoring and semi-annual water level measurements were measured in November 2023 and is planned for November 2024
- Land Use Control Implementation Plan has been implemented
- Quarterly and annual Land Use Control inspections were completed in November 2023, December 2023, March 2024, May 2024, and September 2024
- Land Use Control inspections are planned for November 2024
- Plume Stability Study (PSS) and Supplemental Site Investigation (SSI)
  - 5 of 8 quarterly groundwater monitoring events completed
  - Additional groundwater monitoring wells installed in October 2024
- Completed GWTP evaluation to address PFAS in effluent

• RA-O – Remedial Action Objective, MFR – Memorandum for Record, GWTP – groundwater treatment plant, PSS – Plume Stability Study, SSI – Supplemental Site Investigation, EPA – Environmental Protection Agency, PFAS - per- and polyfluoroalkyl substances, RI – Remedial Investigation, OU – Operable Unit

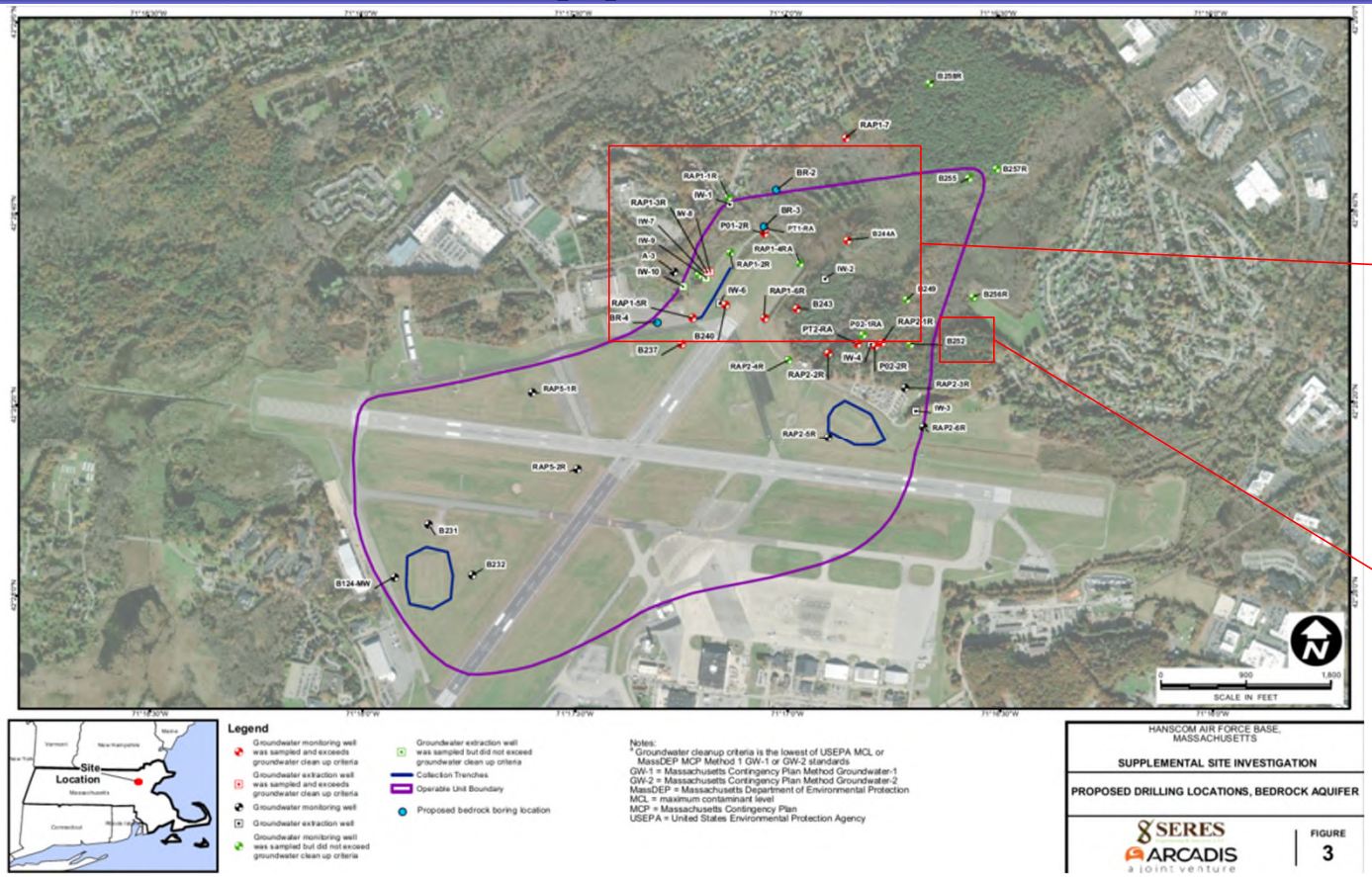
OU-1 Plume Stability Study (PSS) and Supplemental Site Investigation (SSI)

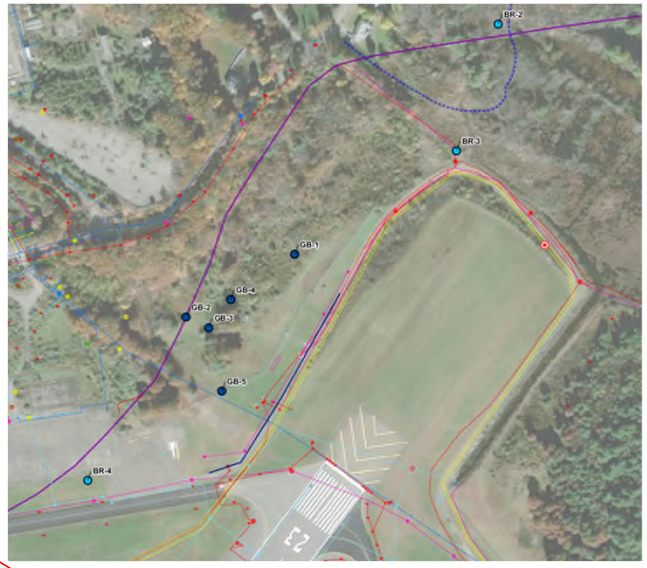
- Includes additional characterization of contaminant plume and evaluation of the remedy.
- Plume stability study is designed to assess the stability (extent and concentration trends over time) of chlorinated volatile organic compounds (CVOCs) in groundwater in the absence of GWTP operation. Groundwater monitoring is frequent (every 3 months). Results will be used to optimize groundwater remedy.
- The Supplemental Site Investigation (SSI) scope includes work to further characterize CVOCs in groundwater and evaluate the potential source of CVOCs in groundwater in the Community Garden area (RAP1-7 monitoring well cluster).



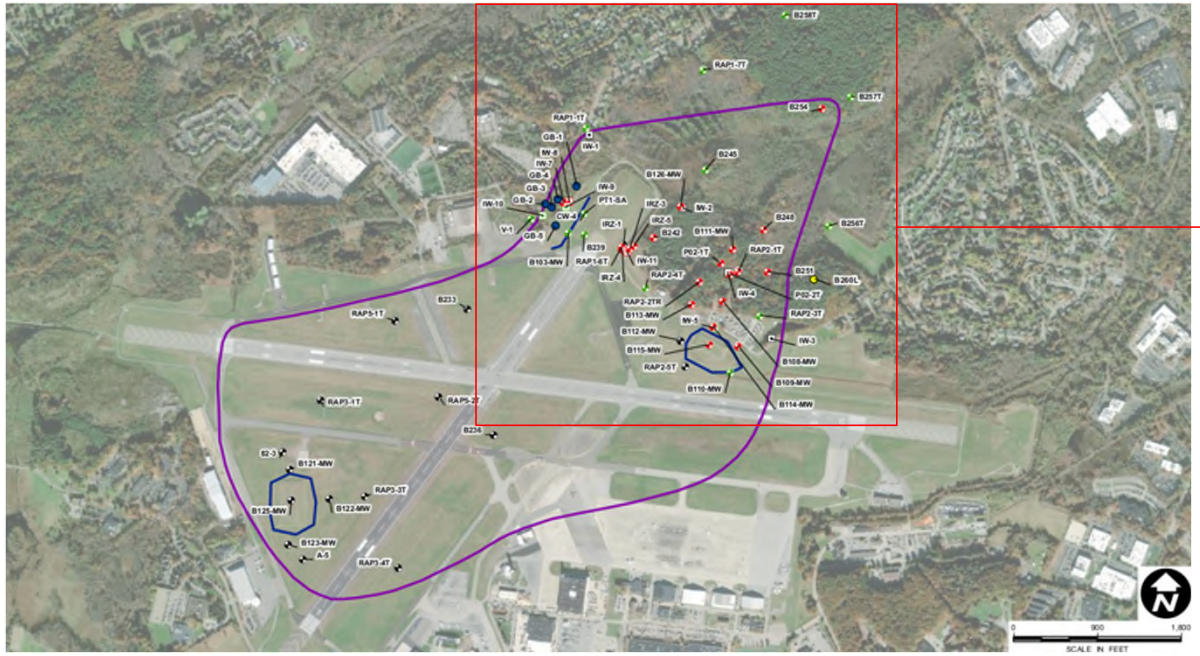
• OU – Operable Unit, PSS – Plume Stability Study, SSI – Supplemental Site Investigation, CVOCs – chlorinated volatile organic compounds, GWTP – groundwater treatment plant

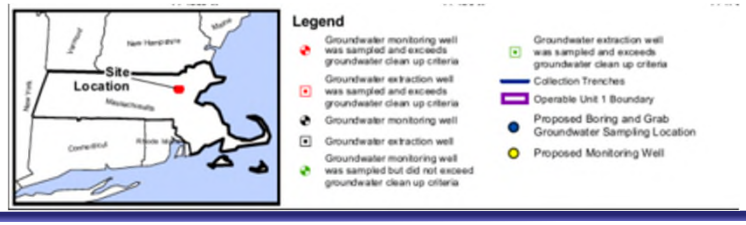
OU-1 Plume Stability Study (PSS) and Supplemental Site Investigation (SSI)

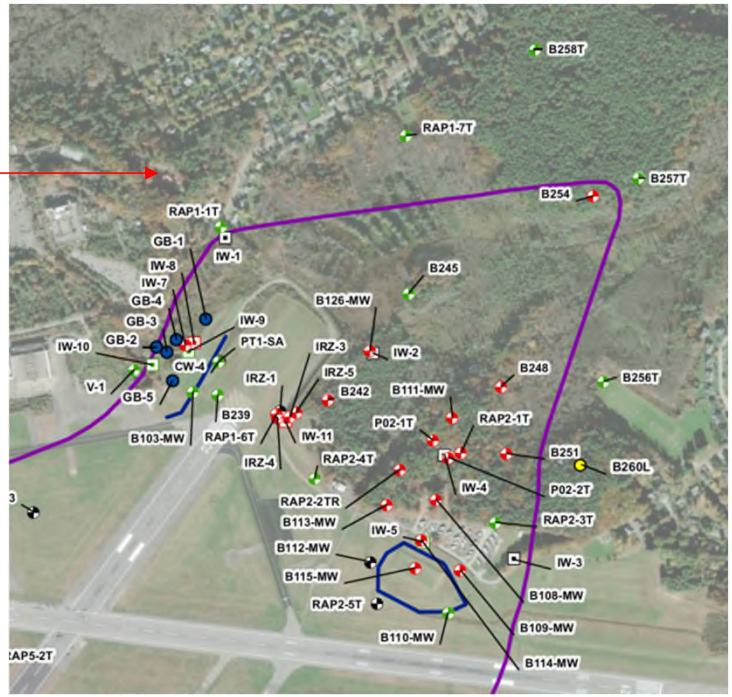




OU-1 Plume Stability Study (PSS) and Supplemental Site Investigation (SSI)







Regulator approval for locations shown in figure is pending

OU-1 GWTP – Treatability Study

- **OU-1 GWTP Treatability Study - Background**
  - **The OU-1 GWTP has been in operation since 1991, treating groundwater for VOCs using air stripper technology.**
  - **In 2016, PFAS compounds were detected in the GWTP effluent to Shawsheen River at concentrations exceeding USEPA and MassDEP criteria.**
  - **The GWTP was shut down in 2021 due to equipment failure. In 2022 USEPA and MassDEP requested it stay offline due to the presence of PFAS.**
  - **The purpose of the treatability study was to:**
    - **Identify alternatives to treat PFAS to MassDEP PFAS**
    - **Continue treatment of VOCs**

GWTP: Groundwater Treatment Plant
PFAS: Per- and Polyfluoroalkyl substances
VOCs: Volatile organic compounds
USEPA: United Stated Environmental Protection Agency
MassDEP: Massachusetts Department of Environmental Protection
PFAS6: 20 nanograms per liter (ng/L)
Maximum Contaminant Level (MCL) for the total of six PFAS compounds

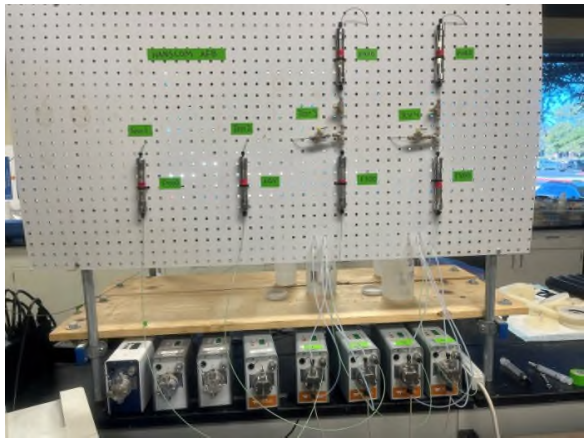
OU-1 GWTP – Treatability Study

- **The Treatability Study involved collection of water from:**
  - **GWTP influent (i.e., before air stripper treatment) to evaluate VOC and PFAS treatment**
  - **GWTP air stripper effluent to evaluate PFAS treatment**
- **Testing was done by running water through columns containing treatment media including:**
  - **Granular Activated Carbon – 3 types**
  - **Ion Exchange Resin – 2 types**
  - **Novel Sorbents – 2 types**
- **Evaluation criteria included:**
  - **Effectiveness**
  - **Implementability**
  - **Cost (capital cost and long-term operation cost)**

GWTP: Groundwater Treatment Plant

PFAS: Per- and Polyfluoroalkyl substances

VOCs: Volatile organic compounds



GWTP Influent Water Treatability Study Setup

OU-1 GWTP – Treatability Study

- OU-1 GWTP Treatability Study Results
  - Recommended alternative is:
    - VOC treatment using air stripper technology
    - PFAS treatment using ion exchange resin
  - Final Treatability Study Report submitted 30 August 2024.
  - Any changes to the GWTP, based upon the results of the Treatability Study, are pending findings from the Plume Stability Study/Supplemental Site Investigation.

GWTP: Groundwater Treatment Plant

PFAS: Per- and Polyfluoroalkyl substances

VOCs: Volatile organic compounds

OU-1 Annual Monitoring Scope

- **Annual sampling was performed in November 2023**
  - 51 sample points
    - 44 monitoring wells (surface, lower/till, and bedrock aquifers)
    - 6 remediation system interceptor wells
    - 1 surface water sample from airfield
  - Measure depth to groundwater
  - Analyze samples for CVOCs
  - Monitoring scope completed under static conditions (i.e., with the GWTP offline)
- **Prepare 2023 Long Term Monitoring Report**
- **Annual sampling is proposed for November 2024**

• CVOCs – chlorinated volatile organic compounds, GWTP – groundwater treatment plant, OU – Operable Unit

OU-1 2023 LTM Sampling Results

- **Site 1 (FT001) Fire Training Area II**
  - Continued presence of trichloroethene (TCE) and degradation products (primarily cis-1,2-dichloroethene or vinyl chloride) above cleanup criteria in surface, lower/till, and bedrock aquifers.
  - Highest concentrations of primary contaminants of concern (COCs) are at monitoring well locations RAP1-3R (Site 1 source area) and RAP1-6R (downgradient of the Site 1 source area) in the bedrock aquifer.
- **Site 2 (WP012) Paint Waste Disposal Area**
  - Groundwater samples collected indicate that CVOCs remain above cleanup criteria in the surface and lower/till aquifers.
  - The highest concentrations of primary COCs are at monitoring well locations B115-MW (Site 2 source area) and RAP2-1T (downgradient of Site 2 source area) in the lower/till aquifer.
- **Site 3 (WP011) Jet Fuel Residue Area/Tank Sludge Area**
  - Groundwater samples collected indicate that CVOCs are less than cleanup criteria in surface, lower/till, and bedrock aquifers since 2020.

• LTM – Long Term Monitoring Report, TCE – trichloroethene, COCs – contaminants of concern, CVOCs – chlorinated volatile organic compounds, OU – Operable Unit

OU-1 Planned Activities

- **Complete 2024 annual sampling in November**
- **Conduct ongoing quarterly and annual Land Use Control inspections**
- **Prepare 2024 LTM Report**
- **Plume Stability Study and Supplemental Site Investigation Work Plan field work**
  - Quarterly groundwater monitoring to continue through August 2025
    - Includes new wells installed in September/October 2024
    - Remedy Evaluation and Recommendations report is anticipated to be completed in 2026
- **Determine what changes to existing remedy are appropriate and develop plans for implementation**
  - Will be based upon results of PSS/SSI and GWTP PFAS evaluation

• OU – Operable Unit, GWTP – groundwater treatment plant, PFAS - per- and polyfluoroalkyl substances, LTM – Long Term Monitoring Report, PSS – Plume Stability Study, SSI – Supplemental Site Investigation

Operable Unit 2 (OU-2)
Site 4 (LF004)

- **Former Hanscom AFB municipal landfill**
  - In operation from 1964 to 1974
  - 10.5-acre landfill located southwest of Hanscom runways
  - Low permeability cap constructed in 1988 and achieved closure
  - Cap includes softball field
  - Achieved closure but did not have a Feasibility Study, Proposed Plan or Record of Decision.

• OU – Operable Unit, AFB – Air Force Base

OU-2 Site 4 (LF004) Landfill Recent & Planned Activities

- Most recent annual LUC inspection was completed in December 2023
- Landfill cap repairs completed in June 2024 (filling and seeding of depressions in capped areas)
- Annual vegetation clearing will be completed in October 2024
- Next annual inspection will be completed in November 2024
- Prepare 2024 Annual Remedial Action Report

• LUC – land use control, OU – Operable Unit

OU-2 Site 4 (LF004)
Remedial Investigation

OU-2 Site 4 (LF004) - Overview

- **OU-2 Site 4 Landfill Environmental Response Background**
  - An agreement was reached between USAF and USEPA/MassDEP to proceed with CERCLA activities.
  - The subsurface consists of
    - The upper aquifer (water bearing unit), which includes the landfill material
    - Low-conductivity lacustrine deposits approximately 30 feet thick
    - Lower aquifer, consisting primarily of sand (higher conductivity)
  - The long-term monitoring included monitoring of VOCs, SVOCs, pesticides, PCBs, metals and cyanide.
  - Groundwater samples contained VOCs, SVOCs lead, nickel in shallow groundwater.
  - Human Health Risk Assessment (HHRA) and an Ecological Risk Assessment (ERA) were conducted in 1997 by CH2MHill.
    - HHRA – No unacceptable risks associated with exposure.
    - ERA – No significant ecological risks.

VOCs: Volatile organic compounds
SVOCs: Semi-volatile organic compounds
PCBs: Polychlorinated biphenyls
HHRA: Human Health Risk Assessment
ERA: Ecological Risk Assessment

OU-2 Site 4 (LF004) – Supplemental Remedial Investigation

- **OU-2 Site 4 Landfill Supplemental Remedial Investigation**
  - Objectives:
    - Groundwater and surface water characterization
    - Evaluation of the groundwater – surface water interaction
    - Determine if compounds under the landfill cap are upwelling or leaching
  - Fieldwork started in January 2024.
  - Two rounds of groundwater and surface water sampling for historical site contaminants and PFAS.
  - Supplemental Remedial Investigation Report will include updated HHRA and ERA.

PFAS: Per- and Polyfluoroalkyl Substances
HHRA: Human Health Risk Assessment
ERA: Ecological Risk Assessment

OU-2 Site 4 (LF004) – Field Activities

- **Drilling program conducted in January and February 2024 included:**
  - Installation of seven monitoring wells and repair of existing wells.
- **Round 1 Sampling Activities Performed May – June 2024 included:**
  - Groundwater sampling.
  - Surface water sampling.
    - Surface water samples located in Elm Brook and seeps located around the landfill.
  - Conducting hydraulic conductivity testing.
  - Recording surface water levels continuously for six months.

OU-2 Site 4 (LF004) – Next Steps

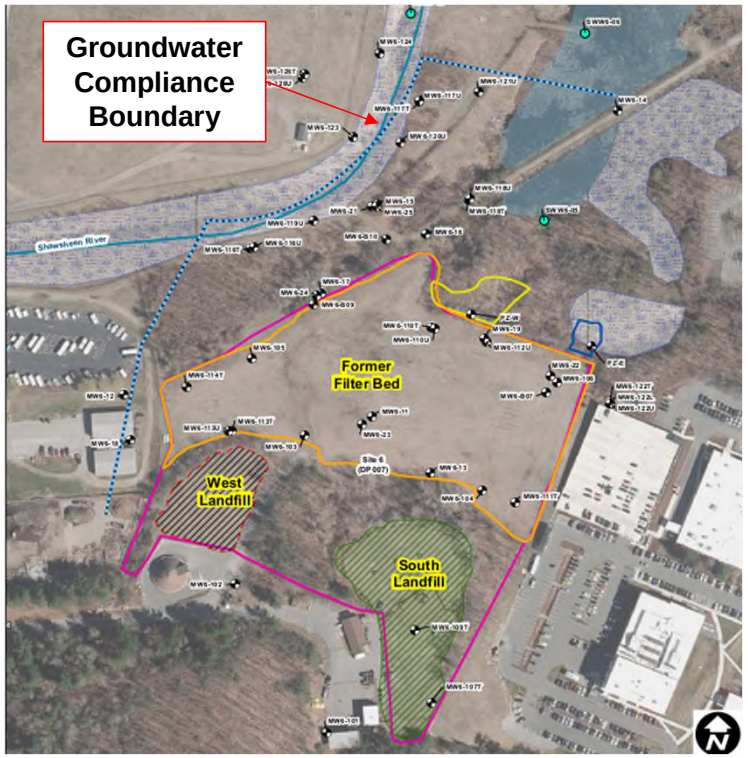
- **OU-2 Site 4 Landfill Next Steps**
  - Evaluation of Round 1 analytical data.
  - Conduct Round 2 sampling which is planned for November 2024.
  - Draft Supplemental Remedial Investigation Report planned for June 2025.
  - Following the Remedial Investigation Report, a Feasibility Study, Proposed Plan, and Record of Decision will be prepared.

Operable Unit 3 (OU-3)

- IRP – Installation Restoration Program, OU – Operable Unit

OU-3 Site 6 (DP007) Background

- Site consists of three landfill areas with permeable caps:
  - Former Filter Bed Area
  - South Landfill Area
  - West Landfill Area
- Contaminants of concern are arsenic, barium, nickel, pentachlorophenol, and 4,4'-DDD in groundwater.
- Compliance Boundary is the line of groundwater monitoring wells with contaminant concentrations below MCLs.
- Contaminant concentrations in some areas of the Former Filter Bed Area are above the MCL.



• OU – Operable Unit, MCLs – maximum contaminant levels

OU-3 Site 6 (DP007) Remedy

- Annual sampling of groundwater and wetland surface water to ensure compliance with groundwater quality standards.
- Annual maintenance to maintain the integrity of the cap system.
- Institutional controls (ICs) and a groundwater compliance boundary to ensure future land use does not increase risk of exposure and groundwater in the compliance zone is not used for human consumption.
- Five-Year Reviews to ensure continued protection of human health and the environment.
- Remedial action objectives in the Record of Decision (ROD) have been achieved: Groundwater compliance boundary is protective; Response Complete (RC) attained in 2016.

• OU – Operable Unit, IC – institutional controls, ROD – Record of Decision, RC – response complete

OU-3 Site 6 (DP007) Recent Activities

- **Annual water level gauging, surface water, and groundwater sampling were conducted in June 2024**
  - Samples analyzed for dissolved metals, pesticides, semi-volatile organic compounds
- **Fallen trees on fence line removed in August 2024**

• OU – Operable Unit

OU-3 Site 6 (DP007) Planned Activities

- **Continue annual water level gauging, surface water, and groundwater sampling (next sampling event is in June 2025)**
  - Samples analyzed for dissolved metals, pesticides, semi-volatile organic compounds
- **Annual vegetation clearance, annual landfill inspection, and land use control inspection will be completed in November 2024**
- **Prepare 2024 Long-Term Monitoring and Remedial Action Report**

OU-3 Site 21 (ST021) Background

- Former jet fuel and aviation gasoline fueling facility from 1940s to 1973
- Used to store and distribute No. 2 fuel oil during the 1970s and to store cleaning solvents and other petroleum products associated with aircraft and vehicle maintenance
- Site included aboveground storage tanks (ASTs), underground storage tanks (USTs), and associated piping network
- Several interim and removal actions have been conducted since jet fuel release discovered in 1990
- Contaminants addressed by remedy in the 2001 ROD include petroleum hydrocarbons and CVOCs such as trichloroethene (TCE)

• ASTs – aboveground storage tanks, USTs – underground storage tanks, LNAPL – light nonaqueous phase liquid, ROD – Record of Decision, CVOCs – chlorinated volatile organic compounds, TCE – trichloroethene, IRP – Installation Restoration Program, OU – operable unit

OU-3 Site 21 (ST021) Remedy

- In 2015, Oxygen Release Compound (ORC®) socks were installed in 12 wells to reduce petroleum concentrations and are replaced annually.
- RemOx® SR+ cylinders installed in 3 wells in 2019, 2020, 2022, and 2023 to promote treatment of chlorinated solvents in groundwater.
- Annual sampling of groundwater to ensure compliance with groundwater quality standards.
- Institutional controls (ICs) to ensure that land remains the same as when the site remedy was selected and groundwater is not used for human consumption.
- Five-Year Reviews to ensure continued protection of human health and the environment.

• ORC – oxygen release compound, OU – Operable Unit, IC – institutional controls

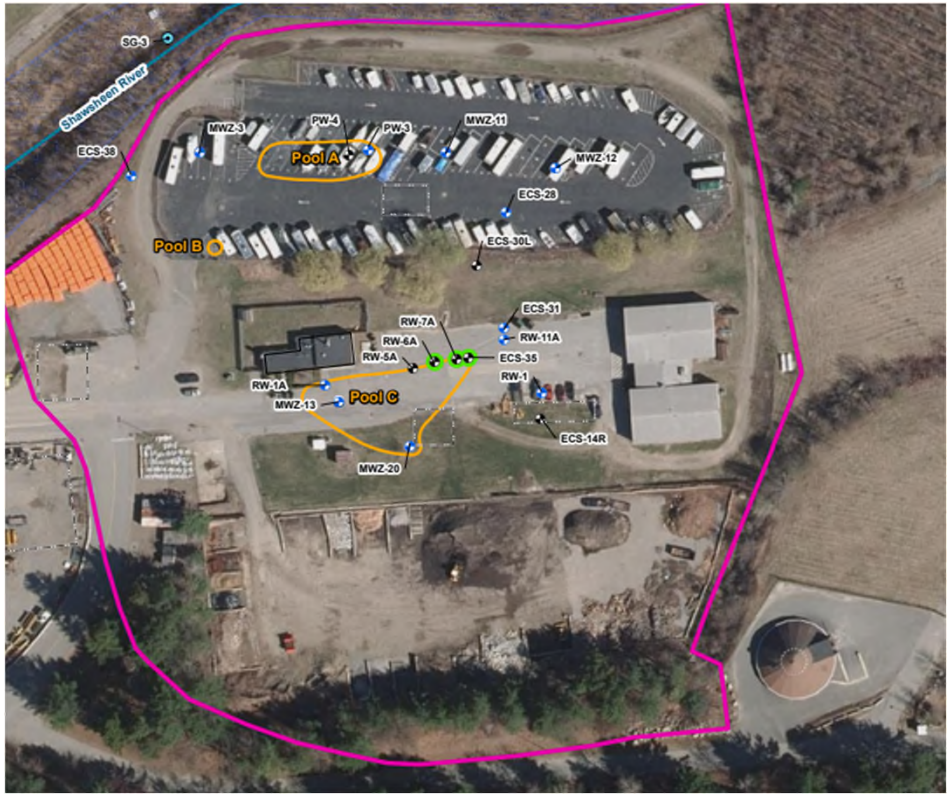
OU-3 Site 21 (ST021) Recent Activities

- **2015: Oxygen Release Compound (ORC®) socks were installed in 12 wells to reduce petroleum concentrations and are replaced annually**
  - Oxygen in the socks is released to groundwater, promoting biological activity of microbes naturally present in the groundwater. These microbes break down petroleum hydrocarbons in groundwater.
- **RemOx® SR+ cylinders installed in 3 wells in 2019, 2020, 2022, and 2023 to promote treatment of chlorinated solvents in groundwater**
  - RemOx cylinders are no longer being manufactured. A study will be conducted to evaluate if alternatives are required going forward.
- **Annual gauging and sampling was performed in June 2024**
- **ORC® socks were replaced in June and July 2024 following the annual sampling**
- **Annual land use control inspection was performed in September 2024**

• ORC – Oxygen Release Compound, TCE – trichloroethene, OU – operable unit

OU-3 Site 21 (ST021) Planned Activities

- Maintain treatment of groundwater using ORC socks to treat petroleum hydrocarbons. Treatment is focused at improving conditions where contaminant concentrations in groundwater exceed cleanup goals.
- Evaluate if alternative to RemOx cylinders are required.
- Perform annual gauging and groundwater sampling in Spring 2025.
- Prepare 2024 Annual Long-Term Monitoring Report.
- Continue annual Land Use Control inspections.



• ORC – Oxygen Release Compound, TCE – trichloroethene, OU – operable unit

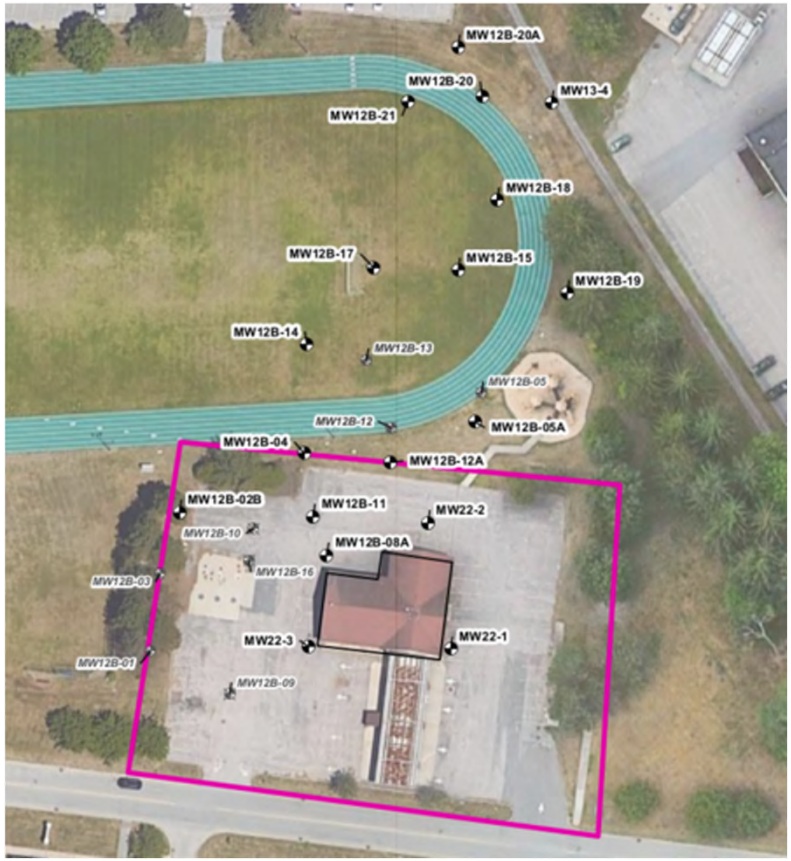
MCP / IRP Site 22 (ST022)

- **Former AAFES Gas Station / Convenience Store / Automotive Repair Shop**
  - USTs installed in 1991 to replace prior leaking USTs
  - USTs removed August 2022
- **Five reported petroleum releases from 1981 to 2001**
- **ORC (Oxygen Release Compound) socks in three wells**
- **Post-Temporary Solution Status**
  - Groundwater analyte concentrations above EPA MCLs and MCP standards are confined to the site boundary
  - A soil excavation and subsequent monitoring is planned to evaluate reaching a Permanent Solution (MCP site closure)

• MCP – Massachusetts Contingency Plan, IRP – Installation Restoration Program, AAFES – Army & Air Force Exchange Service, UST – underground storage tank, ORC – oxygen release compound, EPA – Environmental Protection Agency, MCLs – Maximum Contaminant Levels

MCP Temporary Solution Status

- **Site 22 achieved the current Temporary Solution Status in 2001.**
- **MCP Temporary Solution Conditions (310 CMR, § 40.1050 Section 40.1050).**
  - A condition of No Substantial Hazard exists and has been documented
  - Sources of contamination have been identified, characterized, and to the extent feasible, eliminated, or controlled
  - Control of plumes dissolved in groundwater and vapor-phase in the vadose zone has been achieved to the extent feasible
  - Achievement of a Permanent Solution is not feasible or is feasible and actions will be taken toward a Permanent Solution



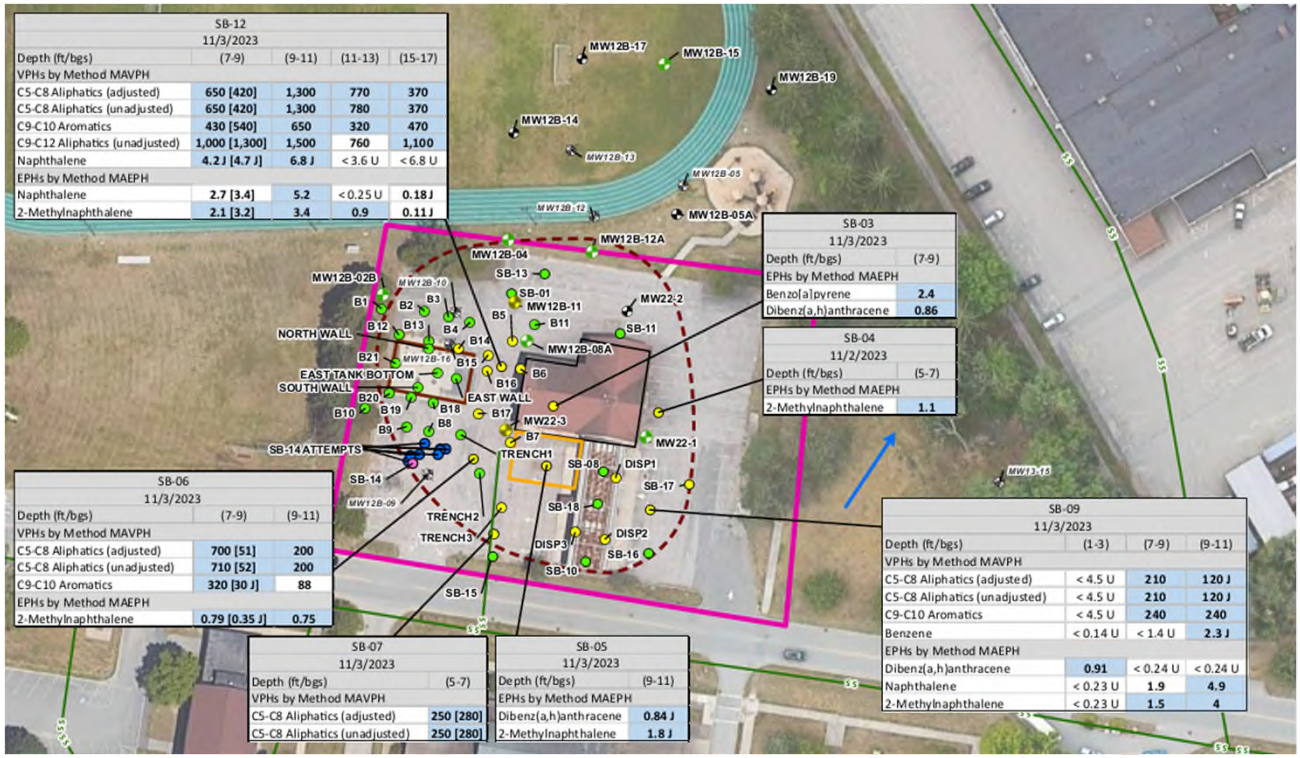
• MCP – Massachusetts Contingency Plan, CMR – Code of Massachusetts Regulations

Site 22 (ST022) Background & Recent Activities

- **Annual replacement of ORC (Oxygen Release Compound) socks in three wells**
  - ORC socks release oxygen to the groundwater to enhance natural biodegradation of petroleum hydrocarbons.
- **Post-Temporary Solution Status**
  - Monitored natural attenuation (MNA) through annual groundwater monitoring. MNA is the natural decrease in the concentration of impacts through environmental and ecological processes such as microbe biodegradation and sorption.
- **Supplemental Site Investigation**
  - Assess current site conditions and the remedial approach to support planned Post Temporary Solution Status excavation.
- **Annual gauging and sampling performed in June 2024**

• AAFES – Army & Air Force Exchange Service, ORC – Oxygen Release Compound, UST – underground storage tank, MNA – monitored natural attenuation

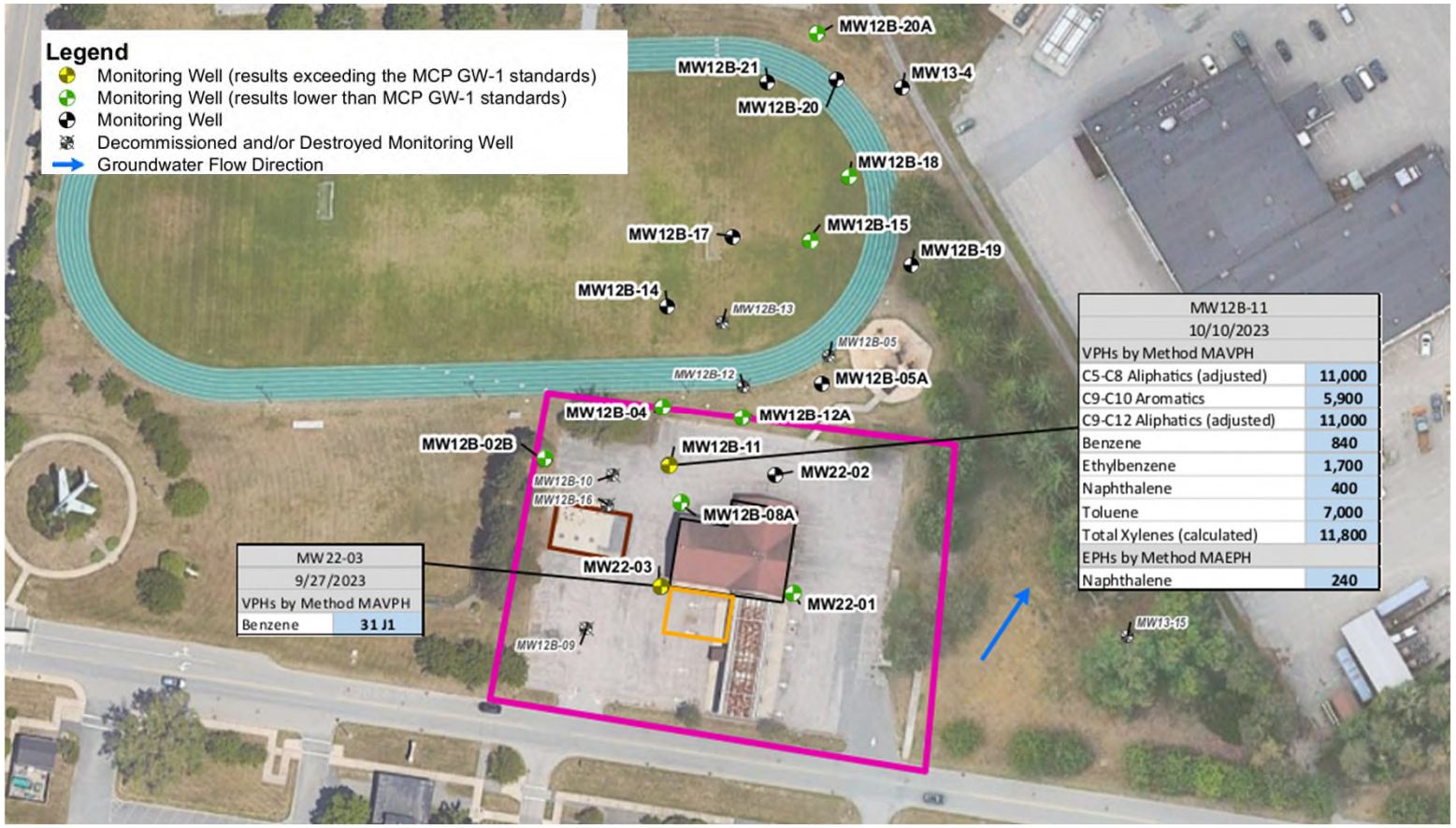
Site 22 (ST022) Supplemental Site Investigation - Soil



Legend

- Monitoring Well (results above the MCP GW-1 standards)
- Monitoring Well (results lower than MCP GW-1 standards)
- Monitoring Well
- Decommissioned and/or Destroyed Monitoring Well
- Soil Boring (results lower than MCP S-1/GW-1 standards)
- Soil Boring (results above the MCP S-1/GW-1 standards)
- Proposed Step Out Boring Location Not Sampled
- Attempted Soil Boring Location With Obstruction

Site 22 (ST022) Supplemental Site Investigation - Groundwater



Site 22 (ST022) Planned Activities – Soil Excavation

- **Soil excavation to remove extent of petroleum-impacted soil**
  - Intent is to move the site closer to permanent solution status, if feasible
  - Scheduled for Fall 2024
  - Horizontal and vertical extents based upon Supplemental Site Investigation

USGS Data Collection Update

- USGS – United States Geological Survey

USGS Support at Hanscom Air Force Base

10/24/2024: Restoration Advisory Board Meeting

Leah Santangelo, Hydrologist, USGS

Overview of work from 2023 to 2024

Project Page: USGS Assessment of Water Resources near Hanscom Air Force Base | U.S. Geological Survey

Current and ongoing publications:

- Elevation-Derived Hydrography in the Upper Shawsheen River Basin, Massachusetts | U.S. Geological Survey (usgs.gov)
- Thermal Infrared Images of Groundwater Seeps in the Upper Shawsheen River Watershed, Massachusetts | U.S. Geological Survey (usgs.gov)
- Spatial profiles of waterborne self-potential and water-quality-property data acquired September 8–11, 2023, in Elm and Hartwell Brooks and the Shawsheen River near Hanscom Air Force Base, Bedford, Massachusetts, to identify groundwater seepage locations. - ScienceBase-Catalog
- Continuous streamgaging
- Continuous groundwater-level monitoring

Current work and upcoming data publications:

- **Surface-water, groundwater, seepage, sediment and stormwater sampling results**
- **Regional groundwater-flow model**
- **Borehole & surficial geophysical surveys**
- **Discrete and continuous surface-water and groundwater measurements in support of the flow model**

USGS science for a changing world

2024 work summary

- Comprehensive data review of 2023 sample-collection efforts
- Continuous and discrete surface-water gaging and groundwater monitoring in support of the model
- Begin regional groundwater-flow model
- Geophysical mapping of surficial aquifer and aquitard via borehole and surficial geophysical methods
- Sampling for per- and polyfluoroalkyl substances (PFAS) mass loading to streams study

A photo of a groundwater well located in a grassy field near Hanscom Air Force Base in Bedford, Massachusetts

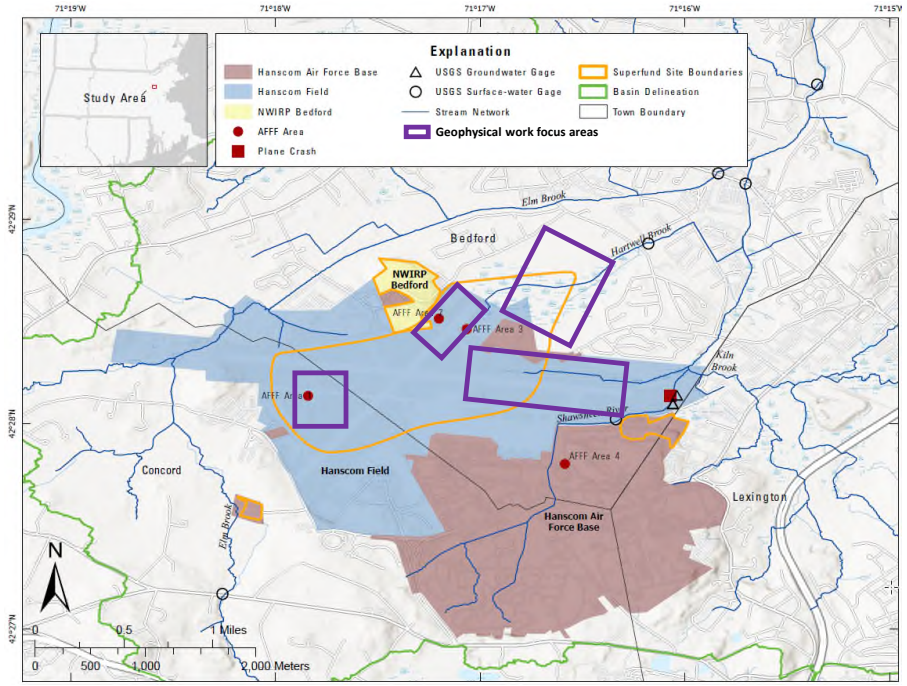
USGS science for a changing world

Regional groundwater-flow model

- Model will be used to identify gaps in understanding of the groundwater-flow system
- Tasks completed:
  - Determined the model extent for the upper and middle Shawsheen River Basin
  - Compiled publicly available data, including over 900 borehole logs

The red outline in the above graphic outlines the preliminary extent of the model

Geophysical overburden mapping and characterization



A USGS field team testing surficial geophysical survey equipment at a soccer field located in Bedford, Massachusetts

USGS science for a changing world

PFAS mass loading to streams study

- Identify where and how much PFAS is discharging from groundwater and entering streams in the upper and middle Shawsheen River Basin under different flow conditions
- First round of sampling in low-flow conditions is completed:
  - Field measurements include discharge, water temperature, pH, dissolved oxygen, specific conductance
  - Chemical analyses include PFAS and dissolved and total organic carbon

A USGS field crew is assessing a potential surface water sampling location at Elm Brook, Bedford, Massachusetts

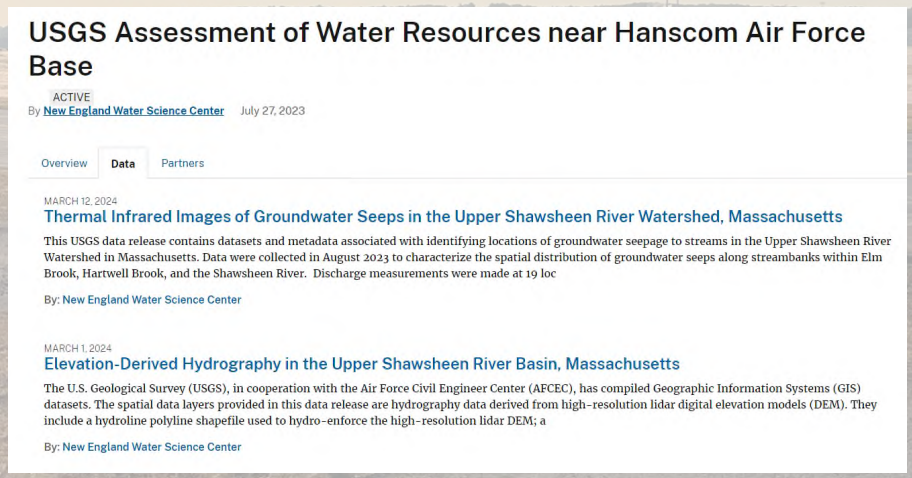
USGS science for a changing world

Anticipated products and publications

Publications can be found via the USGS Project Page:

[USGS Assessment of Water Resources near Hanscom Air Force Base | U.S. Geological Survey]

- Surficial geophysical data will be published as data releases via USGS ScienceBase
- Borehole geophysical data will be published via the USGS GeoLog Database
- Chemical data will be published via the Water Quality Database
- Discrete and continuous surface-water and groundwater measurements are published via the National Water Dashboard



USGS Assessment of Water Resources near Hanscom Air Force Base

ACTIVE

By New England Water Science Center July 27, 2023

Overview | Data | Partners

MARCH 12, 2024

Thermal Infrared Images of Groundwater Seeps in the Upper Shawsheen River Watershed, Massachusetts

This USGS data release contains datasets and metadata associated with identifying locations of groundwater seepage to streams in the Upper Shawsheen River Watershed in Massachusetts. Data were collected in August 2023 to characterize the spatial distribution of groundwater seeps along streambanks within Elm Brook, Hartwell Brook, and the Shawsheen River. Discharge measurements were made at 19 loc

By: New England Water Science Center

MARCH 1, 2024

Elevation-Derived Hydrography in the Upper Shawsheen River Basin, Massachusetts

The U.S. Geological Survey (USGS), in cooperation with the Air Force Civil Engineer Center (AFCEC), has compiled Geographic Information Systems (GIS) datasets. The spatial data layers provided in this data release are hydrography data derived from high-resolution lidar digital elevation models (DEM). They include a hydroline polyline shapefile used to hydro-enforce the high-resolution lidar DEM; a

By: New England Water Science Center

Additional data collection and interpretation will be a continuation of the work described in this presentation, pending funds availability.

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For Additional Information

- **Hanscom AFB: https://www.hanscom.af.mil/**
- **AFCEC Administrative Record: https://ar.afcec-cloud.af.mil/**
- **EPA's Site Profile Page for Hanscom AFB: http://www.epa.gov/superfund/hanscom**
- **EPA's Technical Assistance for Communities: https://www.epa.gov/superfund/superfund-technical-assistance-communities**
- **If RAB members would like additional AF-funded independent technical assistance associated with cleanup activities, there is a process available. Specific requirements apply. Please contact Matthew Greenberg at matthew.greenberg.2@us.af.mil**

Discussion & RAB Meeting Wrap Up

Hanscom AFB Stormwater Update

Oct 2024

Discussion Items

- MS4 Permit / Plans
- Annual Report Key Statistics
- Proposed Changes to Stormwater Management Plan
- Future Activities

MS4 Permit / Plans

- MS4 permit effective July 2018; permit administratively continued by EPA - no expiration
- All required plans in place
  - Stormwater Management Plan (last annual update 26 Dec 2023)
  - Illicit Discharge Detection & Elimination Plan
  - Construction Site Stormwater Runoff Control Plan
  - Post Construction Stormwater Runoff Program
  - Stormwater Pollution Prevention Plans
  - Public Education and Outreach Program
  - Operations and Maintenance Procedures
  - Street Design and Parking Lot Assessment
  - Identification of 5 properties that could be retrofitted with BMPs
  - Phosphorus Source Identification Report

Annual Report Key Statistics

- Key statistics for the Year 6 period: 1 Jul 2023 to 30 Jun 2024
  - No sanitary sewer overflows occurred
  - Annual river cleanup was held 29 May 2024 with Hanscom Middle School students
  - Public education messages completed: 8
  - Construction site plans reviewed: 38
  - Construction site inspections completed: 12
  - Catch basins inspected/cleaned: 660 (100%)
  - Weight of material removed from catch basins: 48,000 lbs
  - Volume of street sweepings collected: 142 cubic yards
  - No new stormwater BMPs were constructed

Proposed Changes to SWMP

- SWMP annual update estimated completion Dec 2024
  - Update with new Hanscom Stormwater Coordinator (Mr. Nicholas Turbesi)
  - Administrative text changes to better mirror the permit

Future Activities (Year 7)

- Complete construction of Year 6 structural best management practices (BMPs).
- Continue with existing BMPs
- Initiate design of year 8 BMPs
- Continue annual river cleanup in April 2025

For More Information

- **Stormwater Management Plan (SWMP) and supporting documentation is available for public review upon written request to the program manager:**
  - **nicholas.turbesi@us.af.mil**
- **Public input on the Hanscom SWMP is accepted anytime throughout the year and will be addressed during the next annual update.**

Your Success is Our Mission!