Welcome to the RAB Meeting!

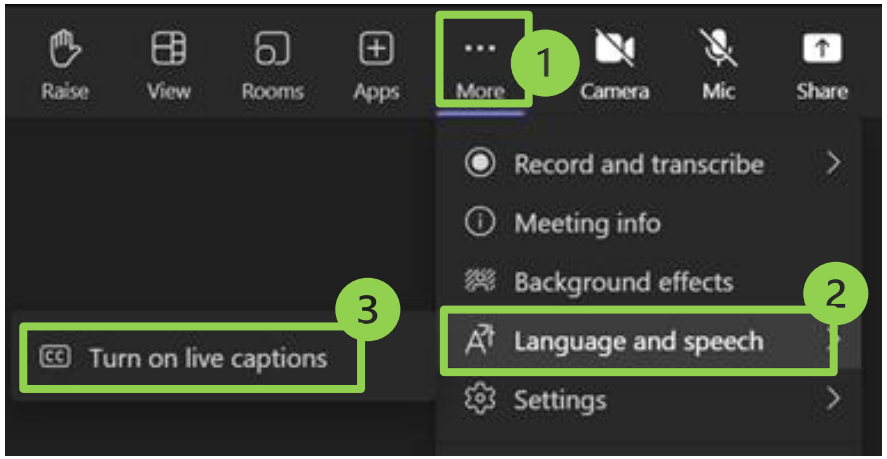
Thank you for joining the

Restoration Advisory Board Meeting For NASJRB Willow Grove And Biddle Air National Guard Base

The meeting will start at 6:00 p.m.

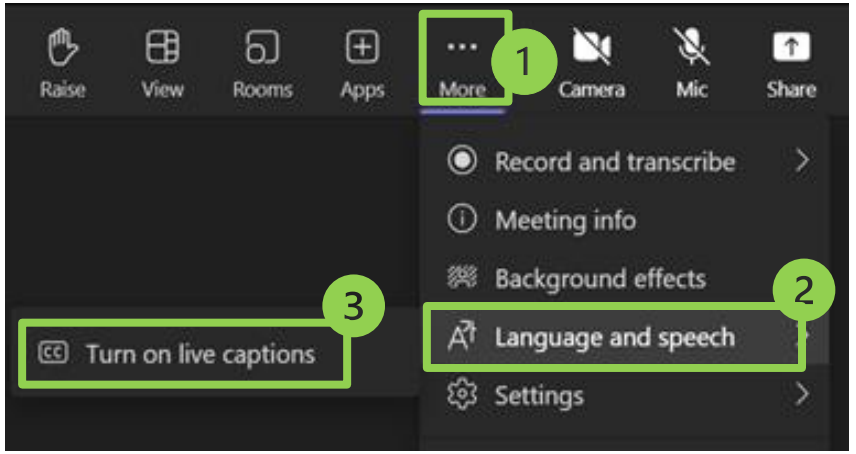
For captions:

- Click More ●●● on the screen
- Select ‘Language and Speech’
- Click ‘Turn on live captions’



Teams Tools

- **Closed Captioning**
  - Click More ●●● at the top of the screen
  - Click ‘Language and Speech’
  - Click ‘Turn on live captions’



- **Screen Layout**
  - –To adjust the layout on your screen, select View

  - –Choose the preferred view from available choices. Options include Full Screen, Gallery View, and Focus on Content

NASJRB Willow Grove Restoration Advisory Board (RAB) Meeting

July 17, 2025

Virtual Meeting Information

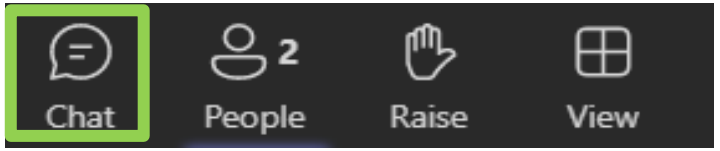
- This is a hybrid meeting with in-person and virtual attendees.
- The virtual meeting will show the presentations.
- The presenters and in-person attendees will be audio-only.
- The meeting is not being recorded; minutes will be prepared. Webinar and in-person sign-in names will be used for the minutes.
- Public notices were published on July 3 and July 10, posted on the Navy website, and provided to the mailing list.

Outline / Agenda

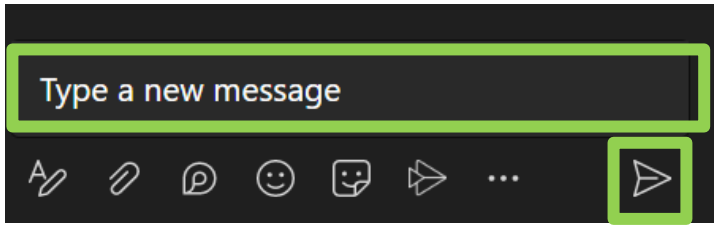
- Welcome and Announcements
- Navy Environmental Restoration Program Presentation
- Navy Groundwater Extraction and Treatment System Presentation
  - RAB Member or Community Comments / Questions
- Air National Guard Environmental Restoration Presentation
  - RAB Member or Community Comments / Questions
- Regulator Comments
  - RAB Member or Community Comments / Questions
- Environmental Updates Conclude
- Meeting Conclusion

Q&A Options

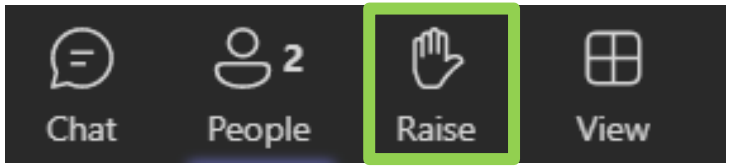
1) To ask a question, select ‘Chat’



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



2) Raise your hand to be recognized and have your microphone unmuted. Select Raise your hand icon.



3) Phone-only attendees can dial *5 to raise their hand and have the opportunity to ask a question. Once recognized, dial *6 to unmute the microphone.

NAVFAC Naval Facilities Engineering Systems Command

RAB Background Information

- A Restoration Advisory Board (RAB) is a stakeholder group that meets on a regular basis to discuss environmental restoration at a specific property that is either currently or was formerly owned by Department of Defense (DoD), but where DoD oversees the environmental restoration process.
- RABs enable people interested in the environmental cleanup at a specific installation to exchange information with representatives of regulatory agencies, the installation, and the community. RABs may only address issues associated with environmental restoration activities.
- Mr. Bill Walker, Horsham Township Manager, is the RAB community co-chair.
- Health-related issues are not addressed by the RAB. Health agency professional contact information will be provided after the Navy and Air National Guard Environmental Restoration presentations.

Source: 10 USC 2705 and DoD Restoration Advisory Board Rule Handbook
https://denix.osd.mil/rab/home/unassigned/rab-rule-handbook/

Current RAB Members

RAB Co-Chairs:

- Colonel Brian Silver (ANG Co-Chair)
- Jonathan Harris (Navy Co-Chair)
- Mr. Bill Gildea-Walker (Community Co-Chair)

RAB Community Members:

- David Craig
- Hope Grosse
- Alan McPeak
- Alex Meyers
- Rick Newsome
- Mike Pickel
- Danette Richards
- Samantha Slaff
- Joanne Stanton
- Mike Shinton
- Tom Ames

Future Planned RAB Meetings

Future RAB Meeting Target Dates:

- Thursday, November 13, 2025
- Thursday, March 19, 2026

Environmental Restoration Program Update

Private Drinking Water Well Sampling for PFAS

- January 14, 2023: PA maximum contaminant levels (MCLs) for PFOA (14 ppt) and PFOS (18 ppt) were published.
- April 10, 2024: EPA established final MCLs for several PFAS in drinking water.
  - MCLs for PFOA and PFOS: 4 ppt
  - MCLs for PFHxS, PFNA, HFPO-DA: 10 ppt
  - Mixtures of two or more of PFHxS, PFNA, HFPO-DA, and PFBS: Hazard Index MCL of 1
- Department of Defense policy released in September 2024.
  - Set prioritization levels of 3x the MCLs for removal actions
  - Directed addressing drinking water down to the MCLs or background during remedial actions

Private Drinking Water Well Sampling for PFAS *(Cont.)*

- September 2023: Awarded modification to the Cooperative Agreement with Horsham Water and Sewer Authority (HWSA) to address 100 additional properties.
- November 2023: Began issuing offer letters for municipal water connections in HWSA service area for locations above PA MCLs.
  - The Navy has provided over $22 million to HWSA to address PFAS via Cooperative Agreement:
    - Filtration systems at five HWSA municipal wells
    - Over 100 public water connections for private wells
- September 2024: DoD issued guidance to prioritize cleanup actions to implement Federal drinking water standards for PFAS. Three times EPA MCLs are being used to prioritize interim actions.

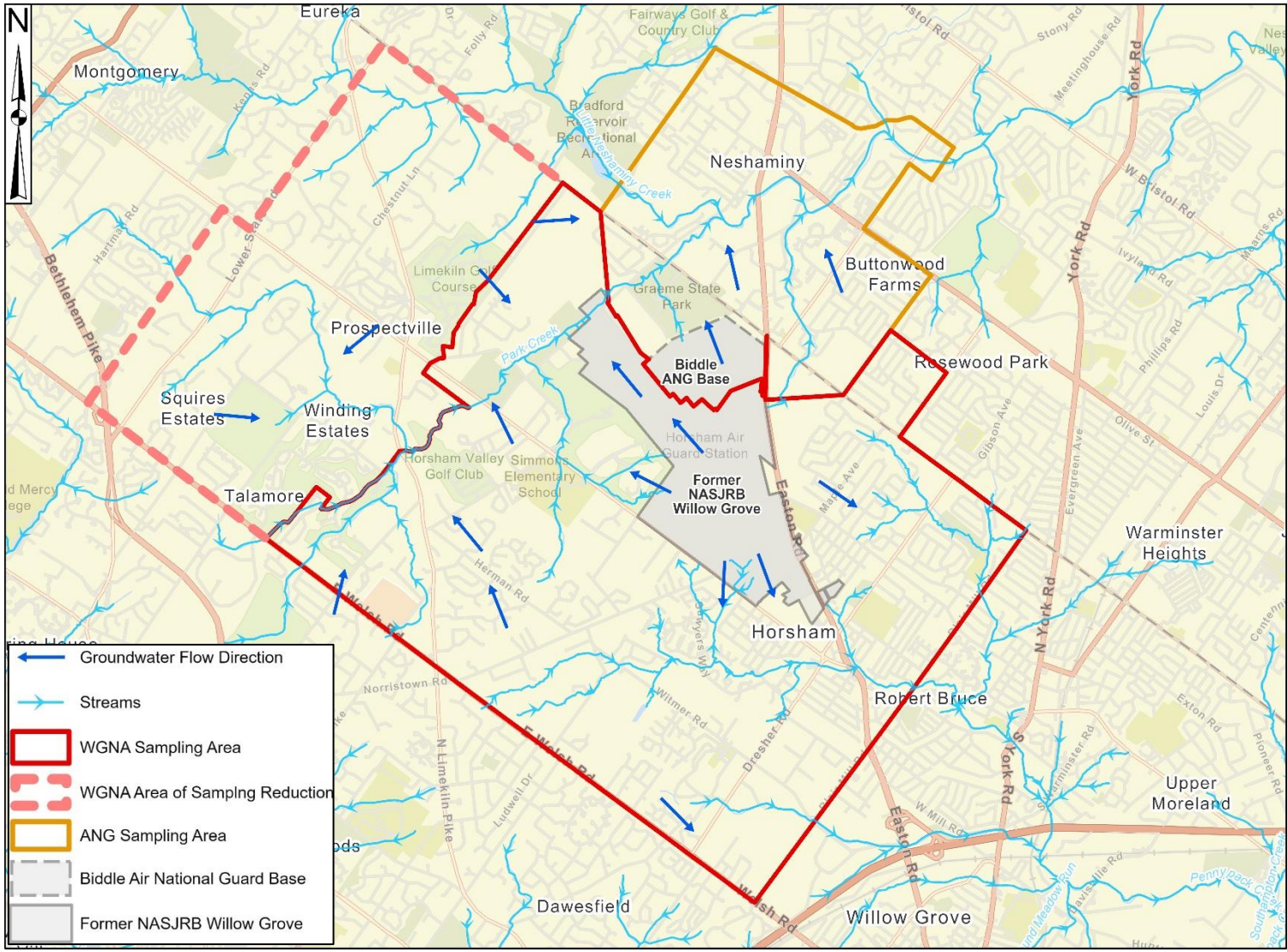
NAVFAC Naval Facilities Engineering Systems Command

Private Drinking Water Well Sampling Area

If you have a private drinking water well in the Navy's sampling area please reach out to Tetra Tech, a U.S. Navy contractor to schedule an appointment.

Point of contact is:
Sue Herbert
Tetra Tech Deputy Project Manager
E-mail: Sue.herbert@tetratech.com
Phone: (610) 382-1537

- > 600 wells sampled to date
- > 450 wells have been connected to municipal water under prior actions
- 57 wells to be connected to municipal water due to exceedance of 3x EPA MCLs
- 19 wells with PFAS between the EPA MCL and 3x the EPA MCL



Groundwater Extraction and Treatment System

- A full-scale groundwater extraction and treatment system (GWTS) is planned as an interim action for PFAS in groundwater.
- The GWTS approach was selected in the Final Engineering Evaluation/Cost Analysis (EE/CA) issued July 11, 2024.
- An Action Memorandum describing the GWTS action has been reviewed by regulators and comments are now being addressed.
- Public comments are addressed in the Action Memorandum.
- The GWTS 90% design has been reviewed by regulatory agencies and other stakeholders and comments are being addressed.
- PADEP issued GWTS discharge limits on January 28, 2025.
- System construction is anticipated to begin in Summer 2025.

Action Summary Since Previous RAB Meeting (cont.)

- Submitted Sampling And Analysis Plans (SAPs) to regulators for multiple planned investigations and responding to comments:
  - Final Phase 2 RI Off-Base Groundwater Sampling SAP
  - Draft Final Private Well Sampling SAP update (responding to comments)
  - Draft Final Northern Ponding Area Investigation SAP (with regulators)
  - Draft Phase 2 RI On-Base Groundwater SAP (responding to comments)
  - Draft Site 12 Supplemental Groundwater Sampling SAP (with regulators)
- Submitted the Final Site 5 Fire Training Area Bioremediation Year 8 Annual Report, prepared the Site 5 Year 9 Annual Report, and updated the Site 5 SAP for ongoing groundwater monitoring.
- Updated the Surface Water and Sediment SAP for Navy review.
- Updated the Site 3 and Site 12 LTM SAP for Navy review.

NAVFAC Naval Facilities Engineering Systems Command

Action Summary Since Previous RAB Meeting

- Responded to HWSA comments on Final Preliminary Hydrogeology Report for Delaware River Basin Commission GWTS coordination.
- Prepared Internal Draft Surface Water and Sediment Sampling Annual Report and September 2024 Technical Memorandum.
- Performed UAS drone flights at NPA to collect thermal imagery for groundwater seep and overland flow location confirmation for SAP.
- Conducted groundwater sampling at off-Base HWSA observation wells (Westbay demonstration to sample at multiple depths).
- Issued Final Site 5 Findings Memorandum for PFAS Pilot Testing.
- Issued Final Off-base HWSA Well Discrete Groundwater Sampling Addendum summarizing past well packer testing results.

Actions Anticipated to be Completed by Next RAB

- Continue interim actions for private wells off-Base:
- Continue to coordinate GWTS implementation:
  - Finalize the GWTS Action Memorandum
  - Finalize the GWTS Design
  - Finalize the GWTS Construction QA Plan
  - Schedule system construction
- Finalize multiple SAPs (e.g., private well sampling, NPA, Site 12)
- Continue surface water / sediment sampling in Summer 2025.
- Initiate investigation activities at the Northern Ponding Area.
- Perform Site 12 supplemental groundwater sampling.
- Perform Site 5 bioremediation groundwater monitoring.

Actions Anticipated to be Completed by Next RAB (Cont.)

- Complete the following additional documents:
  - Final 2024 Site Management Plan
  - Final 2024 Annual Drinking Water Report
  - Final Community Environmental Response Facilitation Act Report
  - Final FOST 1 Maple Avenue Technical Addendum
  - Final Surface Water and Sediment Sampling Annual Report
  - Final Surface Water and Sediment September 2024 Technical Memorandum
  - Final Interim Findings Memo For Site 5 and Building 1177 Discrete Groundwater Sampling For PFAS Addendum
  - Draft Soil Pore Water Sampling Results Technical Memorandum

Groundwater Extraction and Treatment System Design

Former NASJRB Willow Grove
Horsham Township, PA

Project Background

- An Evaluation of Potential Sources of Perfluorinated Compounds throughout the Former NASJRB Willow Grove (Base) was conducted in 2014
- A multi-phased Remedial Investigation (RI) beginning in 2014 included installation of groundwater monitoring wells and sampling and analysis of groundwater, surface water, soil, and sediment throughout Base
- The highest concentrations of PFOA and PFOS were observed in the vicinity of Building 680 and IR Site 5
- The Navy completed an Engineering Evaluation/Cost Analysis (EE/CA) to evaluate options for construction of an interim groundwater extraction and treatment system (GWTS) in 2024.
- The Navy is finalizing an Action Memo to document the decision to construct the GWTS.

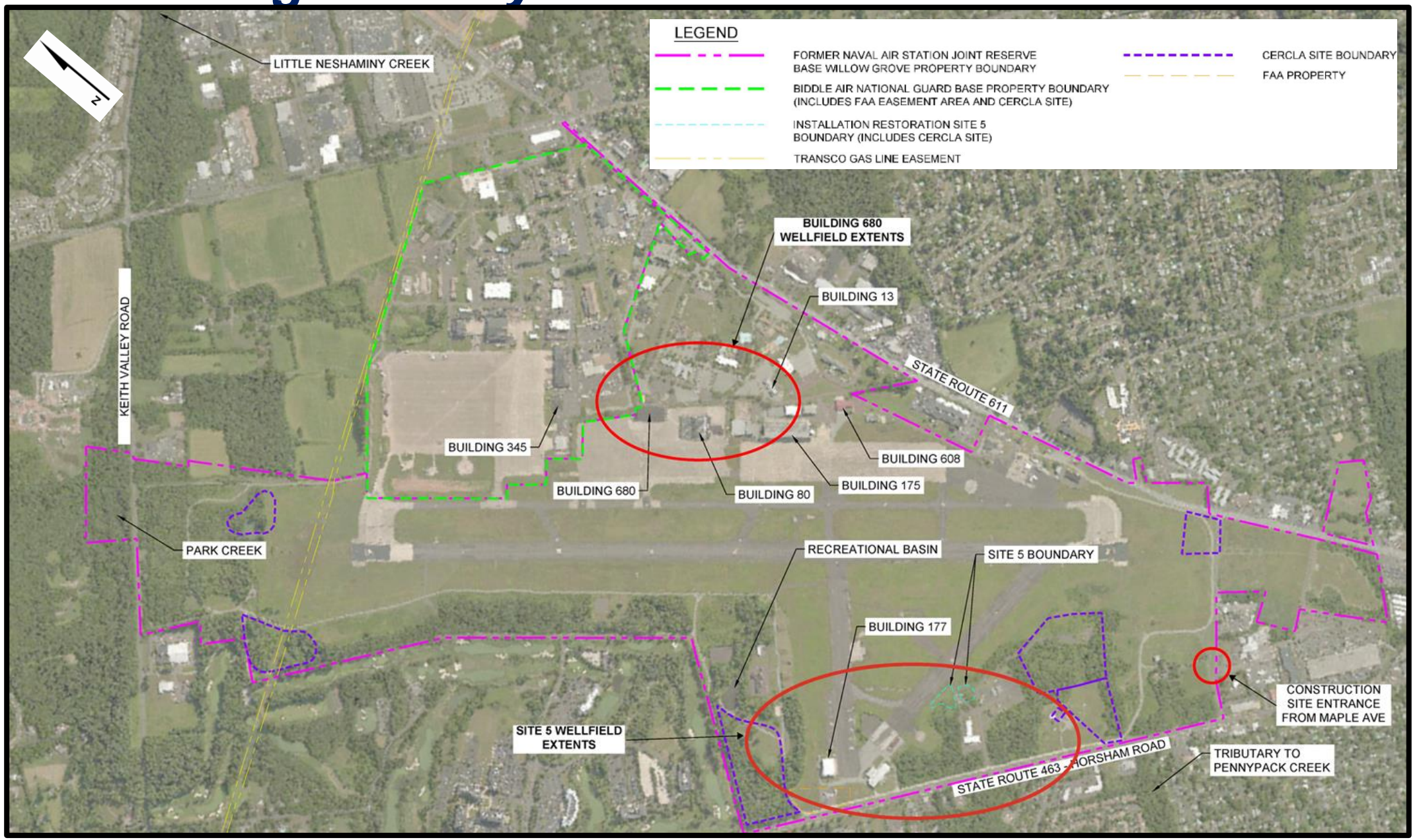
Project Objective

- Reduce the mass of PFAS in groundwater in and around Building 680 and IR Site 5. Additional PFAS removal will also be targeted in the vicinity of Building 177.

- Treat extracted groundwater to meet discharge criteria established by PADEP.

- Size the treatment system to treat 125% (approx. 500 gpm) of the maximum groundwater flow (400 gpm) expected to be extracted from 29 extraction wells and the basement of Building 80, to allow for potential future expansion of treatment system (i.e. additional extraction wells and/or higher individual well flow rates).

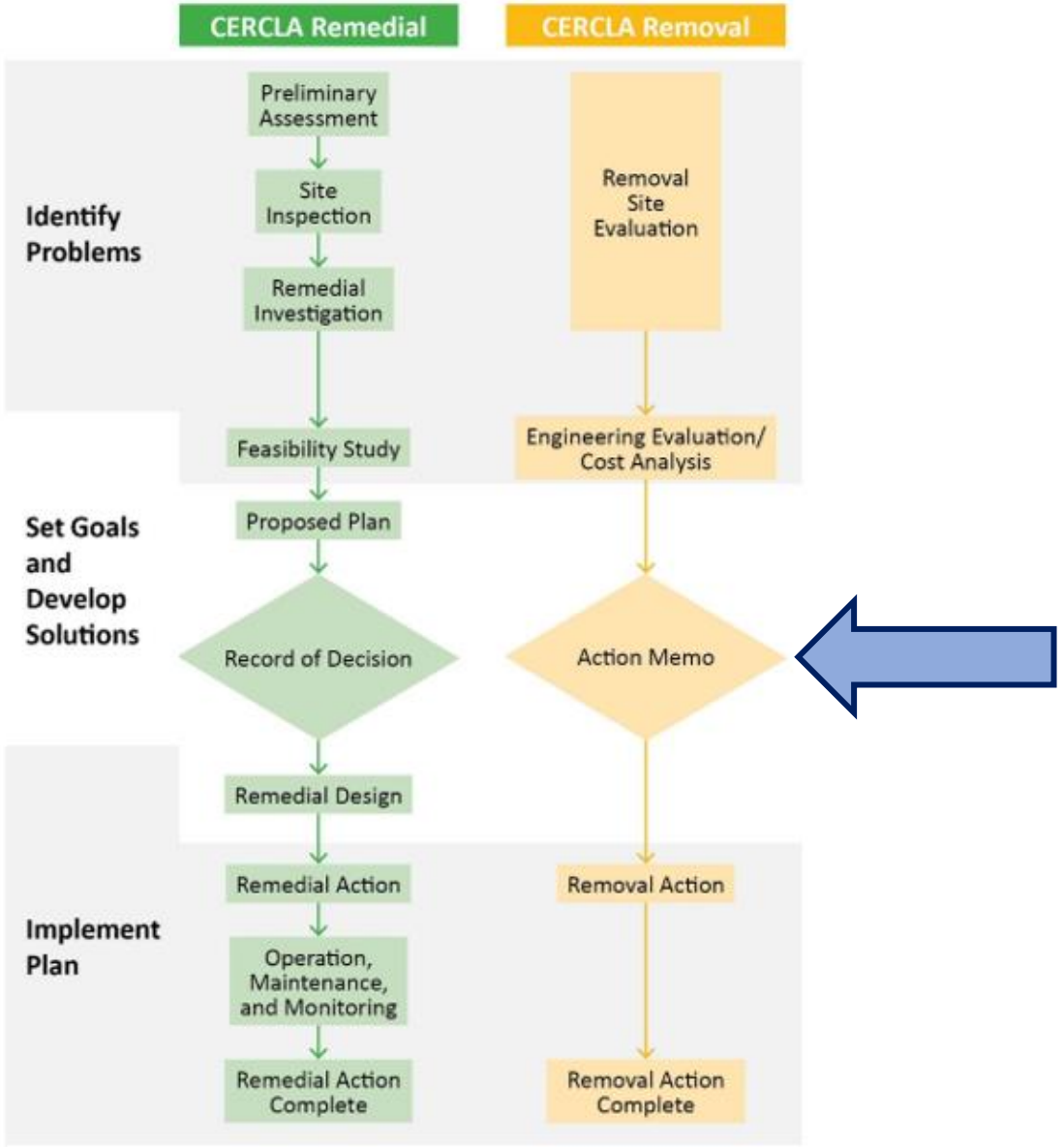
Existing Site Layout



Removal Action Evaluation

- 14 Extraction Wells (EWs) within the Building 680 Wellfield and 15 EWs within the Site 5 Wellfield were installed.
- Two previous pilot studies conducted by Tetra Tech employed the use of pilot treatment systems to observe performance in removal of PFAS from groundwater and to collect data to be used as the design basis for a permanent, full-scale treatment system
- Tetra Tech incorporated data from the pilot studies into an EE/CA completed in 2024.
- EA-Wood MP Joint Venture (EA-Wood) was selected to complete the design and construct the GWTS in 2023..

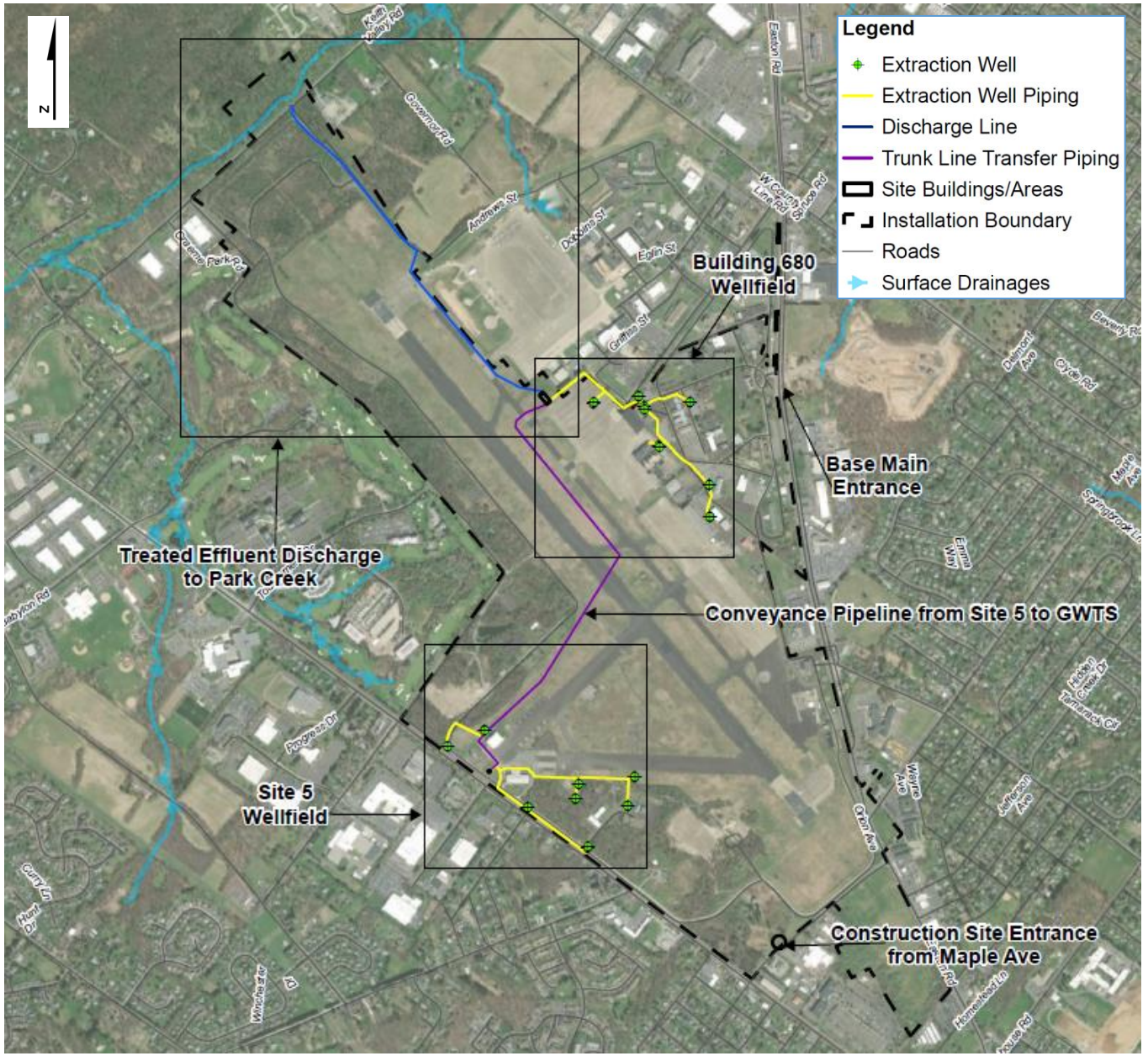
Regulatory Framework



Design Alternative Overview

- The design consists of three main components as outlined by the EE/CA: Treatment System, Plant Location, and Discharge Location.
- The EE/CA developed and compared multiple alternative solutions for each component. The project design implements Treatment Alternative T3, Location Alternative L5, and Discharge Alternative D4 as proposed by the EE/CA:
  - Alternative T3: Treatment System Using granulated activated carbon (GAC) and Single-Use Ion Exchange (IX) Resin systems to remove PFAS and other contaminants
  - Alternative L5: One Groundwater Treatment System (GWTS) Building Constructed on the North Ramp Area and One Manifold Station Building Constructed at IR Site 5
  - Alternative D4: Discharge to Park Creek via a New Piping System

Site Layout and Access



Site Layout – Building 680 Wellfield

Site Layout – Site 5 Wellfield

Site Layout – Effluent Discharge Line

Discharge Basis of Design

- The design includes discharging treated effluent through a gravity sewer line on the northwest side of the Base that will cross beneath Keith Valley Road and discharge to Park Creek.

- Treated effluent will be discharged through a buried concrete structure with an aboveground slotted weir opening to control and regulate outlet flow.

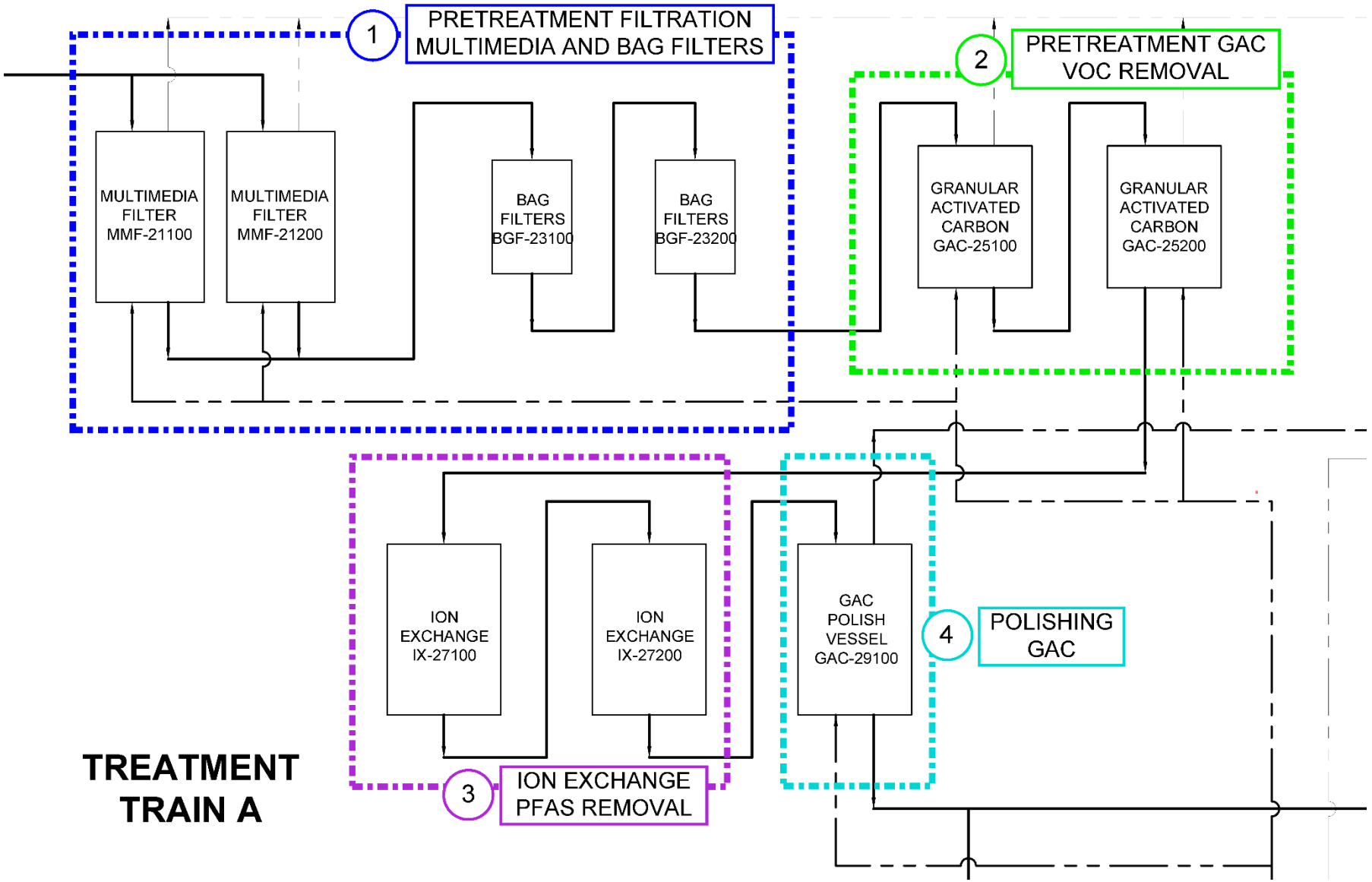
- A float switch at the outlet structure will trigger temporary deactivation of the treatment and discharge system should Park Creek experience a flood stage event.

NAVFAC Naval Facilities Engineering Systems Command

Treatment System Basis of Design

- Tetra Tech utilized data and results from previous pilot testing to inform the EE/CA and select the treatment method. Alternative T3 as proposed includes the following:
- Pretreatment
  - Multimedia Filters (MMFs) filled with mix of crushed rock, garnet sand, and anthracite to remove particles 10 microns and larger
  - 3-basket Bag Filters after MMFs to remove particles 5 microns and larger
  - GAC pretreatment vessels filled with coconut GAC to remove volatile organic compounds (VOCs); these vessels may also achieve partial removal of PFAS
- Treatment
  - IX Treatment Vessels loaded with single-use IX resin to be used as the primary mechanism for PFAS removal
  - GAC polishing vessels filled with coal GAC to remove any breakthrough PFAS or other contaminants that bypass prior treatment stages

Process Flow Diagram



Site Layout Basis of Design

- Extraction wells within the Building 680 Wellfield will pump directly to the new GWTS Building on the North Ramp Area.
- Extraction wells within the Site 5 Wellfield will pump to a new Manifold Building located within Site 5 where piping from each extraction well will join into a common gravity line that will then convey the combined flow to the GWTS.
- The GWTS will be a pre-engineered steel building to be delivered to the proposed location and installed on a concrete slab.
- The GWTS will discharge treated water effluent through a gravity-flow pipeline to Park Creek.

System Operation

- Water level sensors and switches in wells, tanks, and at the effluent outfall, and flow and pressure transmitters in piping will continuously monitor and collect system data as digital information.

- Programmable Logic Controller (PLC) devices will interpret system data to automatically control the speed and activation of pumps and other equipment in response to changes in depth, flow rate, and pressure.

- A Supervisory Control and Data Acquisition (SCADA) computer interface located in the GWTS will allow for operators to monitor and control the system from a computer display in a central location.

- The treatment system is configured to split into two parallel treatment trains that will each process and treat 50% (200 gpm) of the total startup flow rate of 400 gpm.

Waste Management

- All onsite soil will be treated as if it contains PFAS.
- To avoid spreading PFAS-impacted material, soil excavated from any area on site will not be allowed for use as fill / backfill elsewhere onsite.
- Surplus soils will be disposed of offsite at a disposal facility that accepts PFAS-impacted material.
- Excavated soil associated with linear trenching to install buried utilities will be stockpiled alongside the trench then used to backfill the trench to the extent practicable to minimize the amount of soil disposal needed.
    - No surplus soil is anticipated to be generated by installation of the conveyance line from the Site 5 Manifold Building to the GWTS or the effluent discharge pipeline. Remaining surplus soil will be sampled and disposed of as appropriate at an approved landfill.
- Concrete waste will be stockpiled on-base under roof cover in a location identified by the Navy. Asphalt waste will be recycled.
- Water from construction dewatering and investigation-derived waste (IDW) may contain PFAS and will be treated onsite using the former Site 5 Pilot Treatment system.

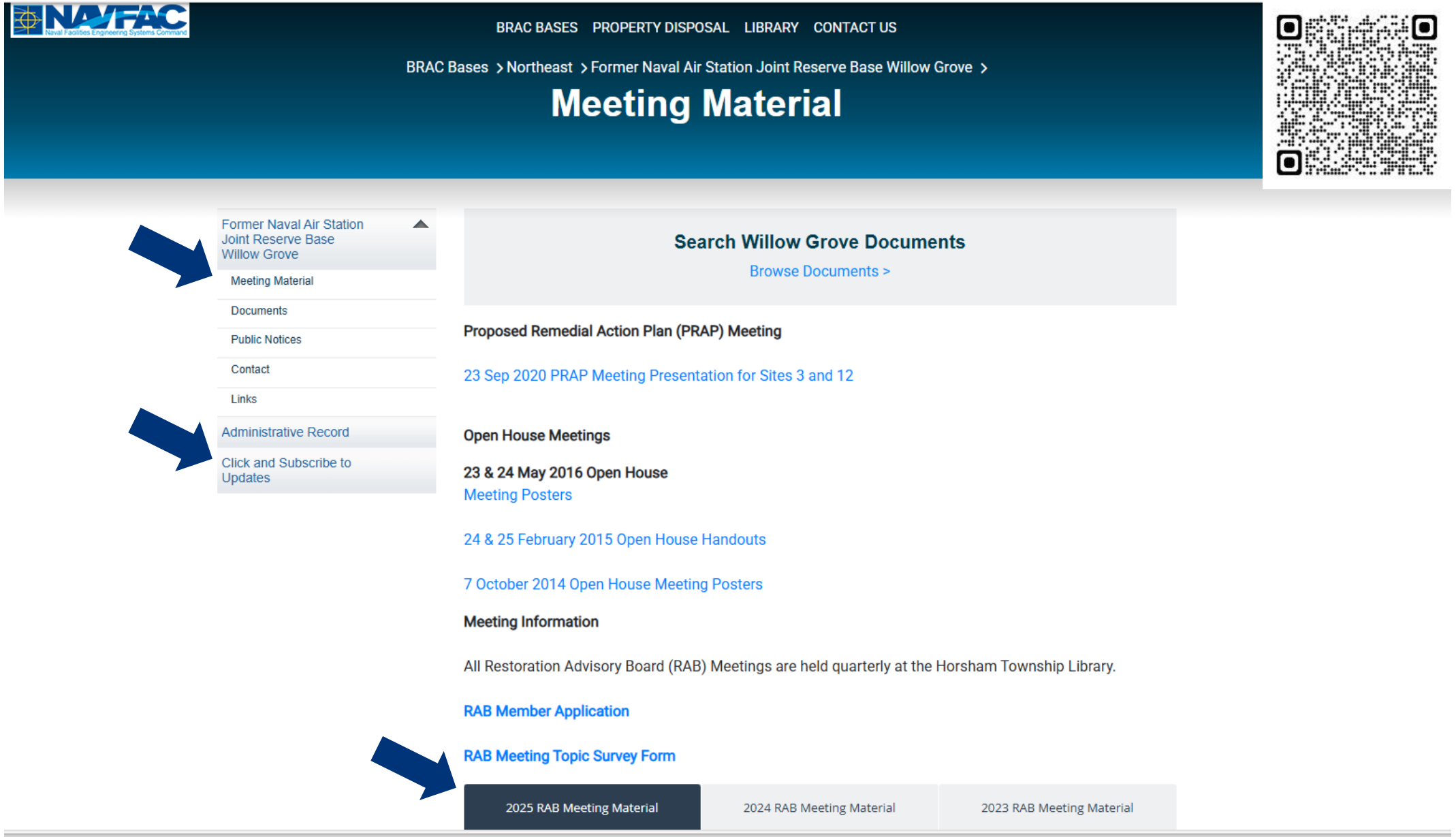
Worksite Coordination

- NASJRB Willow Grove
  - Most work will take place on former NASJRB Willow Grove property; construction entrance will be through existing gate at Maple Ave and Horsham Rd.
  - Electric and natural gas service for the manifold building will be provided by PECO from Horsham Rd.
- Biddle Air National Guard (ANG) Base
  - GWTS water, sewer, storm, and natural gas utilities will tie-in to existing services on Biddle ANG Base.
- Keith Valley Road
  - The treated effluent discharge line crossing of Keith Valley Road will require a Road Opening Permit and coordination with the Horsham Township
  - Keith Valley Road must remain open to traffic during construction
  - Contractor to coordinate with Horsham Township regarding need for police detail

Project Status

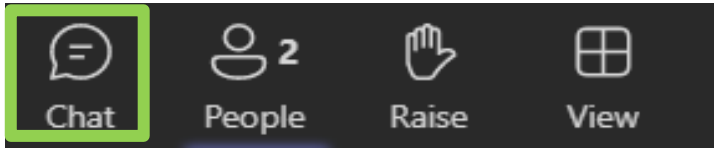
- Delaware River Basin Commission (DRBC)
  - DRBC has approved Navy's hydrogeologic report describing a planned 72-hr pump test to be completed following GWTS construction.
- Action Memorandum
  - Navy is addressing regulator comments
- Engineering Design
  - Regulators are reviewing the Draft Final Design
- Schedule
  - Summer 2025 – Completion of Final Design, Bid Solicitation and Award
  - Fall / Winter 2025 – Construction Startup
  - Summer / Fall 2026 – Construction Completion; EA-Wood to conduct startup and initial Operations and Maintenance (O&M)
  - Fall 2027 – End initial O&M period

Additional Information and Resources - Website

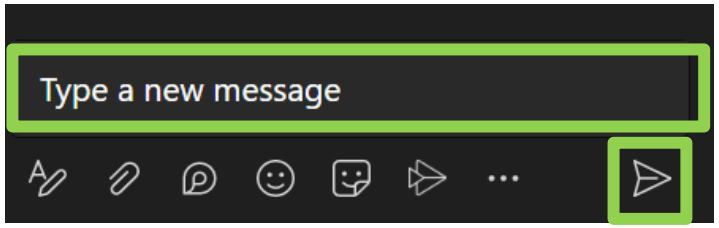


Q&A Options

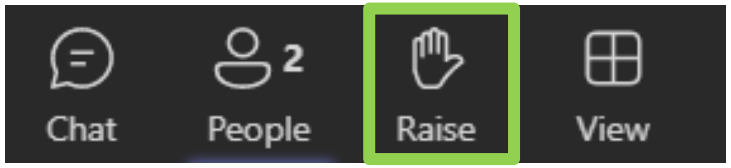
1) To ask a question, select ‘Chat’



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



2) Raise your hand to be recognized and have your microphone unmuted. Select Raise your hand icon.



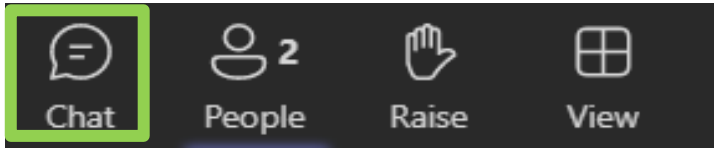
3) Phone-only attendees can dial *5 to raise their hand and have the opportunity to ask a question. Once recognized, dial *6 to unmute the microphone.

NAVFAC Naval Facilities Engineering Systems Command

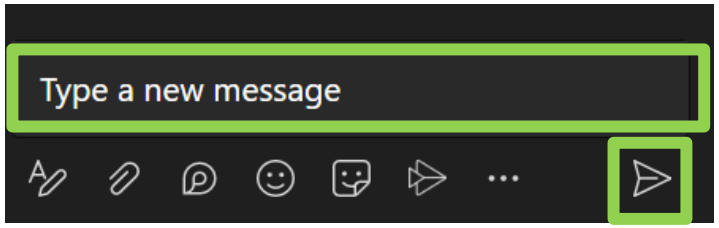
Environmental Protection Agency and Pennsylvania Department of Environmental Protection Comments

Q&A Options

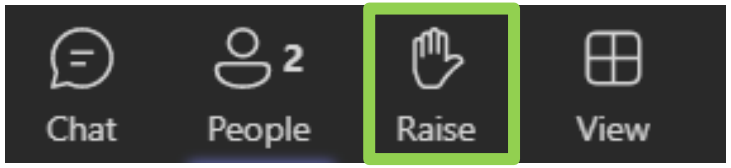
1) To ask a question, select ‘Chat’



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



2) Raise your hand to be recognized and have your microphone unmuted. Select Raise your hand icon.



3) Phone-only attendees can dial *5 to raise their hand and have the opportunity to ask a question. Once recognized, dial *6 to unmute the microphone.

NAVFAC Naval Facilities Engineering Systems Command

Next RAB Meeting

Next Restoration Advisory Board (RAB) meeting:
November 13, 2025 at 6:00 p.m.

Environmental Restoration discussions have concluded.

Health Professional Contact Information

Susan Wood

PADOH
Per and Polyfluoroalkyl Substances (PFAS) Project

c-swood@pa.gov

Dr. Linda Brown

RTI International

lindabrown@rti.org
(301) 816-4626

The Centers for Disease Control and Prevention (CDC) and the Agency for Toxic Substances and Disease Registry (ATSDR) will host a virtual open house to provide updates on the PFAS Multi-site Study (MSS) **on July 28, 2025, from 5:00pm-6:45pm EDT**. Please find the Microsoft Teams link below.

During the open house, CDC/ATSDR will discuss the recently published manuscript, Multi-Site Study of Communities with PFAS-Contaminated Drinking Water: Methods, Demographics, and Serum PFAS Concentrations.

Investigators from each of the MSS sites will provide early findings on PFAS exposure and health effects including lipids, cardiovascular disease, hypertension, diabetes, metabolic syndrome, thyroid, and obesity. These findings are preliminary and may change as manuscripts are finalized.

Due to the size of the meeting and platform limitations, we will only be able to answer study-related questions that are submitted in advance. We are not able to answer individual health/medical questions.

If you have questions about the PFAS Multi-site Study, please submit them to mss@cdc.gov.

Microsoft Teams Need help?
Join the meeting now
Meeting ID: 299 785 293 157 2
Passcode: 3M232iK3

Dial in by phone
+1 404-718-3800,,197621025# United States, Atlanta
(888) 994-4478,,197621025# United States (Toll-free)
Find a local number
Phone conference ID: 197 621 025#

Thank you for joining the Restoration Advisory Board (RAB) meeting for the Former Naval Air Station Joint Reserve Base (NASJRB) Willow Grove and Biddle Air National Guard Base.

The meeting has concluded.

ADDITIONAL / BACKUP INFORMATION

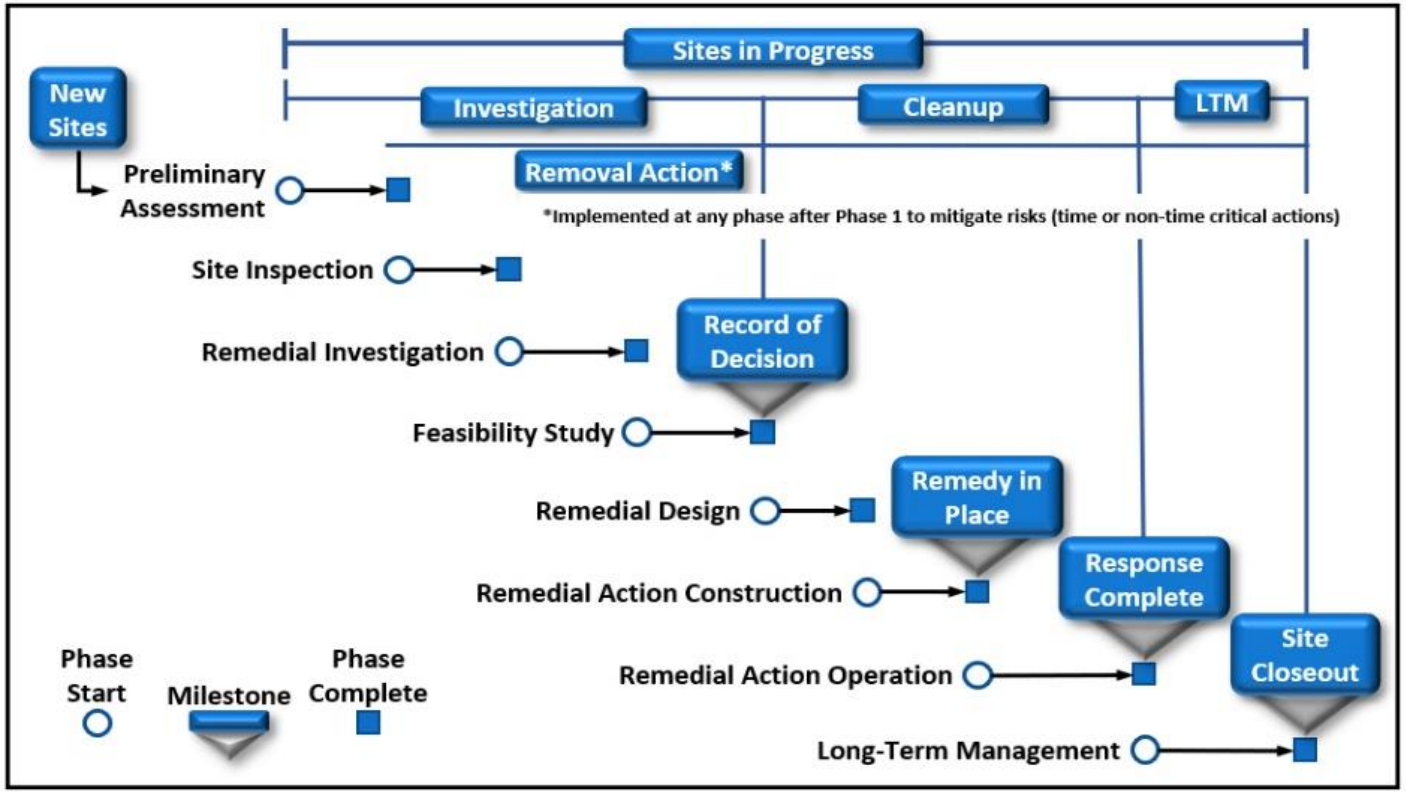
NAVFAC
Naval Facilities Engineering Systems Command

Installation Restoration Program

- The Comprehensive Environmental Response Compensation and Liability Act (CERCLA) is legislation passed in 1980 for the cleanup of old hazardous waste sites.
- The Defense Environmental Restoration Program (DERP) was established by Congress in 1984 for the cleanup of DoD hazardous waste sites following CERCLA.
- The Installation Restoration Program (IRP) provides for the investigation and cleanup of those DoD hazardous waste sites and releases of pollutants.
- Previous investigations identified a total of 12 sites at NASJRB Willow Grove and Biddle ANG Base for evaluation and, in some cases, cleanup under the IRP.

NAVFAC Naval Facilities Engineering Systems Command

CERCLA Process Overview



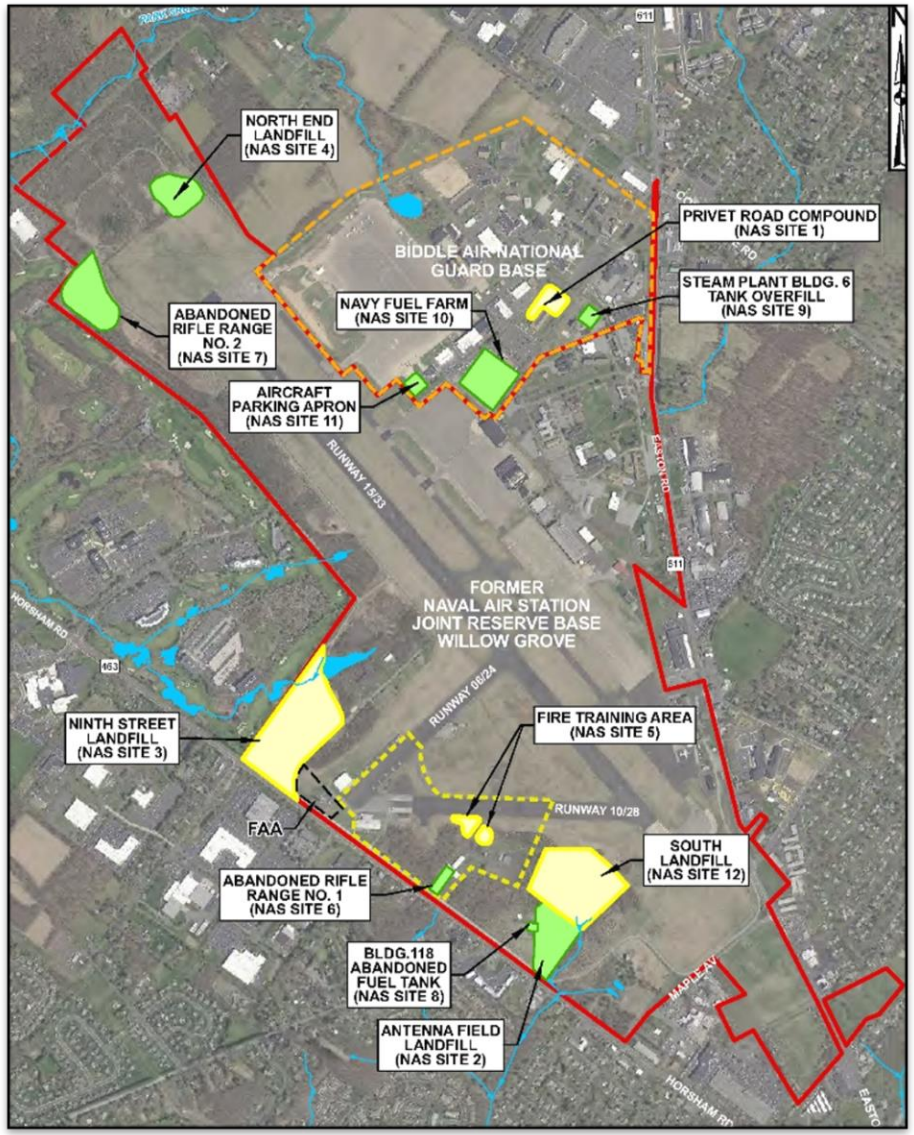
Installation Restoration (IR) Site List

SITE NO.	OPERABLE UNITS	SITE DESCRIPTION	STATUS	NOTES
Site 1	OU-1 (Soil) OU-3 (Groundwater)	Privet Road Compound	Active	Soil (OU-1) NFA ROD Sept. 2006. Groundwater (OU-3) ROD Sept. 29, 2008. Transferred to ANG.
Site 2	OU-5 (Soil, sediment, surface water) OU-7 (Groundwater)	Antenna Field Landfill	Closed	Soil (OU-9) No Action ROD June 17, 2010. Groundwater (OU-1A) No Action ROD June 17, 2010.
Site 3	OU-6 (Soil) OU-10 (Groundwater)	Ninth Street Landfill	Active	Soil (OU-6) ROD Sept. 23, 2021; RA completed in 2022. Groundwater (OU-10) ROD Sept. 23, 2021.
Site 4	- -	North End Landfill	Closed	Consensus Agreement for No Action, January 2009.
Site 5	OU-4 (Soil) OU-2 (Groundwater)	Fire Training Area	Active	Soil (OU-4) NFA ROD Sept. 22, 2007. Groundwater (OU-2) ROD Sept. 25, 2012.
Site 6	- -	Abandoned Rifle Range No. 1	Closed	Consensus Agreement for No Action December 2007.
Site 7	- -	Abandoned Rifle Range No. 2	Closed	Consensus Agreement for No Action August 2008.
Site 8	- -	Building 118 Abandoned Fuel Tank	Closed	Non-CERCLA issue. NFA Agreement October 2006.
Site 9	- -	Steam Plant Building 6 Tank Overfill	Closed	Non-CERCLA issue. NFA Agreement October 2006. Transferred to ANG.
Site10	- -	Navy Fuel Farm	Closed	Non-CERCLA issue; NFA at this time. Transferred to ANG.
Site 11	- -	Aircraft Parking Apron	Closed	NFA Determination in 2004 by PADEP and in 2007 by EPA. Transferred to ANG.
Site 12	OU-11 (Soil) OU-13 (Groundwater)	South Landfill	Active	Soil (OU-11) ROD signed Oct. 21,2021; RA completed in 2022. Groundwater (OU-13) RI in progress.

NASJRB Willow Grove Sites (Other Sites Managed By ANG Biddle)

Text in gray indicates sites managed by Biddle ANG Base.

Installation Restoration Program Site Locations



Legend

- Biddle National Guard Base
- Former NASJRB Willow Grove
- Completed IR Site
- Active IR Site
- Site 5 Land Use Control Boundary
- FAA Easement

Installation Restoration Program Sites

Site 1	Privet Road Compound
Site 2	Antenna Field Landfill
Site 3	Ninth Street Landfill
Site 4	North End Landfill
Site 5	Fire Training Area
Site 6	Abandoned Rifle Range No.1
Site 7	Abandoned Rifle Range No.2
Site 8	Building 118 Abandoned Fuel Tank
Site 9	Steam Plant Building 6 Tank Overfill
Site 10	Navy Fuel Farm
Site 11	Aircraft Parking Apron
Site 12	South Landfill