



NAVAL AIR STATION JOINT RESERVE BASE (NAS JRB) WILLOW GROVE Restoration Advisory Board (RAB) Meeting Minutes

Meeting Date: May 19, 2022
Meeting Time: 6:00 p.m.
Meeting Place: WebEx Webinar

	<u>Name</u>	<u>Organization</u>
Panelist	Dawn DeFreitas (R)	Department of Navy (Navy) Base Closure and Realignment (BRAC) Program Management Office (PMO)
	Willington Lin (R)	Navy BRAC PMO
	Brian Helland (R)	Navy BRAC PMO
	Dave Barclift	Navy BRAC PMO
	Lee dePersia	Air National Guard (ANG)
	Jonathan Dahms	ANG
	Elaine Magdinec	ANG
	Keith Freihofer	ANG
	Timothy Runkle	Leidos
	Sarah Kloss (R)	Environmental Protection Agency (EPA) Region 3
	Nathan Doyle	EPA Region 3
	Deb Goldblum	EPA Region 3
	Leah Zedella	EPA Region 3
	Lisa Trakis	EPA Region 3
	Kathy Davies	EPA Region 3
	Colin Wade (R)	Pennsylvania Department of Environmental Protection (PADEP) Southeast
	Thomas Magge	PADEP Southeast
	Emily Adler	Agency for Toxic Substances and Disease Registry (ATSDR) Region 3
	Karl Markiewicz	ATSDR
	Tricia Moore	Tetra Tech (Consultant to the Navy)
	Micah Forbes	Tetra Tech
	Jackie Boltz	Tetra Tech
	Steve Carriere	APTIM
	Meghan Smith	APTIM
	Tara Wilson	Blum-Moore Reporting Services
Attendees	Tina O'Rourke	Horsham Water and Sewer Authority
	Thomas Ames	HLRA (Horsham Land Redevelopment Authority)
	Mike Mcgee	HLRA

Steffanie Metzger	ANG
Joseph McGrath (R)	Member of the public and former employee
Tim Cherry	PADEP Southeast
Bonnie McClennen	PADEP Southeast
Leanne Wiskemann	EPA Region 3
Shea Bauersmith	Pennsylvania Representative Stephens' Office
Joe Duris	United States Geological Survey (USGS)
Lisa Senior	USGS

(R) Designates RAB Member

Dawn DeFreitas, the BRAC Environmental Coordinator, opened the virtual meeting by greeting the attendees. Ms. DeFreitas explained that the Horsham Library's regular meeting location was unavailable due to the COVID-19 social distancing requirements. Ms. DeFreitas noted that the meeting would include presentations from the Navy, ANG, PADEP, and EPA. RAB meeting notices were published in the newspaper on May 5 and 11, 2022, posted to the Navy website, and mailed to the mailing list. For those unable to attend the meeting, an opportunity to download the presentations and have a copy sent by mail was provided.

Ms. DeFreitas informed the attendees that questions could be submitted via WebEx during the meeting. Ms. DeFreitas explained that the presenters would answer questions at the end of each presentation. Ms. DeFreitas also noted that the ATSDR is available after the RAB meeting to discuss health concerns. Ms. DeFreitas introduced RAB members and government representatives known to be present on the call. Ms. DeFreitas added that participants in the meetings should be able to see all the attendees on Webex, as requested in community feedback from the previous meeting.

A brief overview of WebEx features was presented to the attendees to explain the commenting process during the presentations.

Ms. DeFreitas briefly discuss the purpose and background of the RAB. Ms. DeFreitas mentioned that the community co-chair position is vacant. Anyone interested in filling this position could contact her for additional information. The dates for the 2022 RAB meeting were shown. The next RAB meeting will be held on Thursday, September 15, 2022, and the remaining meeting is scheduled for December 8, 2022. The meetings have been moved from Wednesdays to Thursdays to accommodate the Horsham Township meetings.

Ms. DeFreitas commenced the Navy presentation with an update on the cleanup sites, including landfill Sites 3 and 12 and Site 5 Former Fire Training Area. Ms. DeFreitas noted that the Navy is addressing regulatory comments to the groundwater technical memorandum submitted for review in March 2022. The work plan and sampling and analysis plan (SAP) for Site 3 and Site 12 were finalized in February 2022. Site clearing began in early February 2022, and construction of the landfill cap began in late February 2022.

Ms. DeFreitas introduced Steve Carriere, who continued the Navy presentation. Mr. Carriere commenced an overview of remedial actions and the backgrounds of Sites 3 and 12, stating that

they were former landfills used by the Public Works Department. Clearing activities, utility clearance, and site setup activities began in February 2022. Following these actions, sediment and erosional controls were put in place. Mr. Carriere showed images from the excavation and restoration activities on Slides 13 through 23 of the Navy presentation at Sites 3 and 12 that have occurred since February 2022.

Ms. DeFreitas discussed the remediation for Site 5 groundwater. The anaerobic bioremediation system continues to operate at Site 5, and performance monitoring is being conducted in accordance with the approved plan. Sampling results continue to show that the breakdown of volatile organic compounds (VOCs) is occurring. A response to comments is being drafted based on the regulatory comments received on the 2021 annual report for Site 5.

Then Jackie Boltz gave a brief overview of how the question and answer interface worked within WebEx for all the attendees before the floor was opened to questions regarding the Navy's presentation.

Joseph McGrath inquired about the excavated soil at the landfills on Sites 3 and 12. Mr. Carriere replied that all excavated materials in the sediment removal areas went to be incorporated into the landfill limit. Therefore, they are now in the interim grade of the landfill.

Willington Lin began the presentation for the next agenda item, per- and polyfluoroalkyl substances (PFAS). Mr. Lin provided a summary of the Navy's private well sampling activities. As of May 2022, 593 private wells have been sampled, 103 private wells had results above the lifetime health advisory levels, and 50 wells are still being monitored.

Tricia Moore discussed the remedial investigation (RI) for PFAS. The eleventh round of surface water sampling was performed in March 2022. Round 8 of the sampling occurred in June 2021, and the annual report that includes Rounds 5 through 8 is in the internal Navy review. The reports from Rounds 9 and 10 of sampling that occurred in September 2021 and December 2021 are also currently in internal review. The sampling was performed in conjunction with the USGS, and the local water purveyors were invited to participate. The next round of surface water sampling is scheduled for June 2022.

Ms. Moore provided an update on the off-base groundwater investigation and evaluation of existing off-base monitoring and production wells. Horsham Water and Sewer Authority (HWSA) has offered access to 15 existing observation and supply wells. Work was initiated in August 2020 and included geophysical logging and packer testing. Geophysical logging has been conducted at 13 well locations to date. Packer testing has been performed at 12 well locations. PADEP has also offered access to nine existing monitoring wells, and it is planned to sample those wells once the property owners have granted access.

Additionally, a draft final sampling and analysis plan for on-base soil was submitted for regulatory review in April 2021. The draft SAP for on-base groundwater sampling was submitted for regulatory review in July 2021. Comments were resolved in February 2022, and the draft final was sent to the regulators in May 2022.

Ms. Moore gave an overview of the on-base soil and VOCs investigation at Site 5, Building 177, Site 7, Building 80, Building 680, Building 681, Northern Ponding Area, Building 175, Building 183, Building 13, and the 1979 Aircraft On-Base Incident Area. The draft final SAP was submitted 15 to EPA on March 18, 2021. Conditional approval to begin work at all areas except the Northern Ponded Area was granted in December 2021. 164 soil borings and over 750 PFAS samples were completed between January and February 2022. A limited investigation for VOCs was also completed within Site 5. The work in the Northern Ponding Area was completed in April 2022, following approval in March 2022.

Ms. Moore discussed the pilot test for groundwater treatment in the aircraft maintenance facility area around Hangar 680, where the highest PFAS levels were identified. On March 2, 2020, the system was placed online. All effluent results have met all the discharge requirements issued by the PADEP. Approval to extend the pilot test for another six months was granted by PADEP in January 2022. A request to modify the system by adding an extra extraction well was granted by the PADEP and placed online in November 2021. The well was subsequently taken offline to troubleshoot communication and electrical issues, and troubleshooting is ongoing. A summarized layout and trend charts of the pilot test were reviewed.

Ms. Moore discussed the Site 5 pilot test for PFAS treatment. The wells and treatment cannot interfere with the existing in-situ bio-stimulation treatment system for VOCs. Lessons learned from the Hangar 680 pilot test will be applied. The final work plan was submitted to the regulators in September 2021. Construction of the system started in October 2021 and was completed in November. The discharge permit was effective as of February 2021 and is valid for five years. Confirmation sample results were sent to the PADEP for review and approval. The DEP has approved the discharge of water. EPA approved the SAP in January 2022 following comment resolution, and full-time operations of the system commenced following the approval. Fifteen extraction/monitoring points were installed between October and November of 2020. This includes the two extraction wells used for the Site 5 pilot test. These 15 wells have been sampled, and geophysical logging has been completed. A brief overview of the process of supplying power, treatment trailers, and piping for the pilot test was reviewed.

The Engineering Evaluation/Cost Analysis (EE/CA) for a non-time-critical removal action was submitted to the regulators for review in May 2021. Following the EE/CA finalization, a public comment period will be held. A final interim action memo will be drafted after the public comments are received.

Ms. DeFreitas finished the Navy presentation by giving an action summary of the current progress that had just been discussed and actions anticipated to be completed before the next RAB meeting. Then Jackie Boltz gave a brief overview of how the question and answer interface worked within WebEx for all the attendees before the floor was opened to questions regarding the Navy's presentation.

Mr. McGrath requested additional information about the new Hangar 680 extraction well that is trying to be brought online. Ms. Moore responded that some engineering challenges are halting the progress of bringing the extraction well online to help optimize the mass removal at Hangar 680. The pilot test, when fully optimized, will run at around 23 gallons per minute (gpm). Currently, the pilot test targets areas with higher levels of PFAS to determine the most effective

areas to pump. Mr. Lin added that the pilot test is being conducted to understand better how a larger system will work and be more productive.

Mr. Lin read a question from Tom Ames regarding the time it takes between sample collection and disseminating the data to the public. Ms. DeFreitas replied that the data validation process that follows the sample collection has several reviews with the Navy, ANG, and the regulators before it can be uploaded to the website. Ms. DeFreitas said that they would work on reducing the length of administrative review time and clarifying the file names as they are uploaded to the BRAC PMO website.

Mr. Lin delivered a question from Mr. Ames concerning the analytical results for the PFAS samples depicted on Slide 32. Ms. DeFreitas responded that the data is expected to be validated in June 2022 and should be ready for release around that time.

With no further questions for the Navy, Ms. DeFreitas introduced Lee dePersia to commence the ANG presentation.

Mr. dePersia gave a brief update on changes that have occurred since the last RAB meeting and a future forecast for upcoming activities. The Privet Road landfill site is due to have a five-year review completed, and the work has already begun. Coordination is underway with the EPA and PADEP on transitioning from the Safe Drinking Water Act Administrative Order to the Navy Federal Facilities Agreement. The ANG and EPA have resolved technical issues related to the well installation procedures needed to move forward with the RI. Finally, the surface water treatment at the drainage basin has continued, and over 82 million gallons of water have been treated as of the end of April 2022. Over the next three months, forecasted activities include finalizing the Federal Facilities Agreement, continuing drinking water response actions, and restarting the RI field efforts.

Mr. dePersia introduced Timothy Runkle with Leidos to discuss the RI they have been contracted to perform. Mr. Runkle explained that the RI would be conducted to determine the nature and extent of the contamination and the potential threat to human health and the environment. Leidos will be collecting soil, sediment, surface water, and groundwater on the Biddle Air National Guard Base and off-site. A Baseline Risk Assessment will also be completed. In addition, there will be four quarters of groundwater sampling, twelve quarters of surface water sampling, and an annual stream gauging event.

Mr. Runkle discussed the progress of the RI at the time of the RAB meeting. Leidos has received additional comments from the regulators on the work plan for the RI. In addition, Leidos is working on a revised scope of work and contractual modification with the ANG to conduct the additional work. The final sampling memo for Round 8 of quarterly surface water sampling was finalized. The EPA and PADEP are reviewing the draft final memos for Rounds 9 and 10. Mr. Runkle turned the presentation over to Lee dePersia.

Mr. dePersia provided an overview of PFOS and PFOA in the surface water at the Horsham Air Guard Station. The ANG has taken action to reduce PFOS and PFOA releases by implementing the treatment system discussed earlier in the meeting. A permanent treatment system currently in operation at the stormwater basin went online in August 2021. This system captures and treats

base flow. The new system increases the treatment capacity between 200 and 500 gallons per minute (gpm). Monthly monitoring of the plant's effluent water has been ongoing since August 2021. The monthly monitoring reports are submitted to PADEP, and the data is publicly available. The combined PFOA plus PFOS concentration is consistently below 2 parts per trillion (ppt). As of April 2022, the plant has treated approximately 82 million gallons of water. The new plant consists of a sand filter, zeolite filter, granular activated carbon (GAC), and ion exchange (IX) resin. No treatment media changes have been required to date.

Mr. dePersia then discussed the involvement of the North Wales Water Authority. There was an agreement with Warrington Township to install carbon filtration on five of their supply wells and extend water mains for connections. Warrington Township has sold its water system to the North Wales Water Authority. The ANG has transferred the cooperative agreement to the North Wales Water Authority. They will continue connecting properties to municipal water for private well locations with detections above 70 ppt.

Mr. dePersia presented PFOS and PFOA results in drinking water in the Horsham, Warrington, and Warminster areas. In addition, Mr. dePersia discussed slides 12 and 13 of the ANG presentation showing the number of private wells sampled above the 70 ppt EPA health advisory level and the number of connections completed.

Mr. dePersia then concluded the ANG presentation.

Ms. Boltz reminded the attendees to utilize the question and answer box in the WebEx during the meeting. Then, the floor was opened to questions.

Mr. McGrath requested that the information from the PFAS Multi-Site Health Study being conducted at RTI International, Temple University, and Brown University be disseminated during the upcoming retiree day at Biddle ANG. Mr. dePersia responded that the Navy and the ANG are aware of the study. A fact sheet with information on the study was put together and distributed to base personnel. Mr. dePersia stated that he would get in touch with leadership on the base and see how they would like to proceed. Following the meeting Mr. dePersia contacted the organizers of the retiree day who committed to making a table and space available to Mr. McGrath during the retiree day activities at Biddle to disseminate information regarding the Multi-Site Health Study.

With no more questions regarding the ANG presentation, Mr. dePersia introduced Colin Wade of PADEP to the attendees. Mr. Wade provided an update on the status of the PADEP rulemaking discussed in the March 2022 RAB meeting. The public comment period for PADEP's proposed maximum contaminant level (MCL) for PFOA and PFOS ended on April 27, 2022. More than 3,500 comments were submitted, and PADEP is in the process of reviewing them. A final form of rulemaking is expected to be presented to the Environmental Quality Board (EQB) by the end of the year.

Mr. Wade then turned the presentation over to Sarah Kloss of the EPA. Ms. Kloss reminded the attendants that the EPA is having a Mid-Atlantic Summit on May 25, 2022, and anyone who would like to participate should reach out via email.

Ms. Kloss read a question from Mr. Ames about the ongoing Site 5 remediation, which included a previous remedial investigation, and how it relates to the PFAS RI timeline. Ms. Kloss responded that given the smaller footprint that VOCs have, the Navy and the EPA choose to use an in-ground technology to treat the VOCs. Currently, there are not any proven in-ground treatment technologies for PFAS. This has resulted in the need to update the PFAS RI to use the best methodology available to address the PFAS in a fractured bedrock system.

Ms. Kloss relayed a follow-up from Mr. Ames regarding the time it takes to revise a sampling plan and implement the changes. Ms. Kloss replied that all parties are trying to move efficiently through the required processes to ensure that the data is robust and that all changes are properly addressed.

There were no other questions. Ms. DeFreitas announced the next RAB meeting would be held on September 15, 2022 and adjourned the RAB meeting. After a short break, Lora Werner of the ATSDR led a health discussion with community members.

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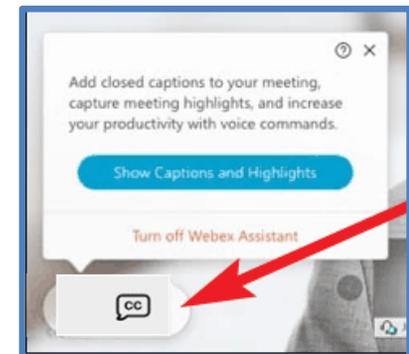
Welcome to the RAB Meeting!



Thank you for joining the
Restoration Advisory Board (RAB) Meeting for NASJRB Willow
Grove and the Biddle Air National Guard Base

The meeting will start at 6:00 pm

For closed captioning, select Show
Captions in the lower left of the screen.



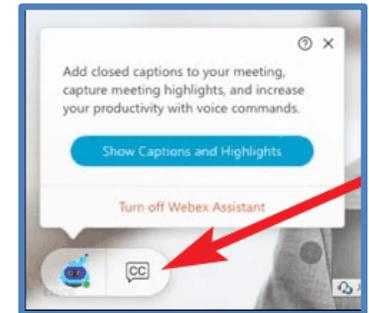
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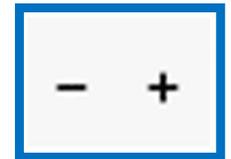
- **Closed Captioning**

- To turn on captions during the meeting, click **SHOW CLOSED CAPTIONS** in the lower left of the screen



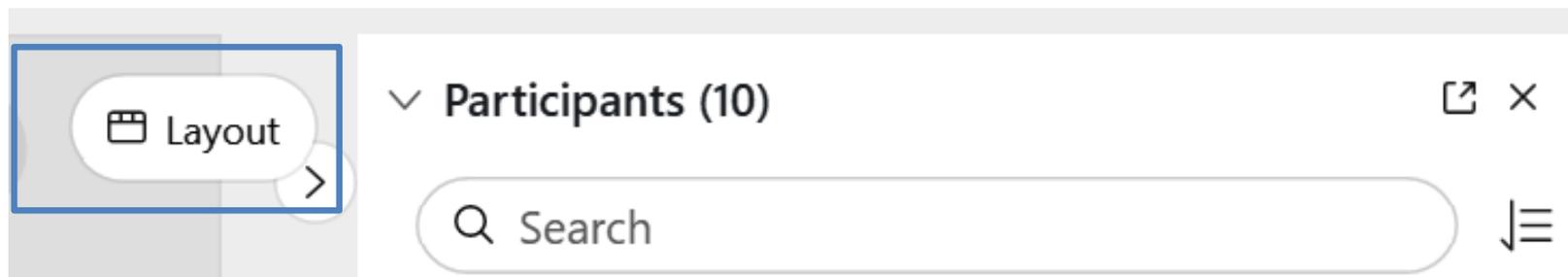
- **Zoom In/Out**

- To zoom in/out on a slide, use the magnifying tool at the top of the screen



- **Screen Layout**

- To adjust the layout on your screen, click the **LAYOUT** button at the top right of the screen



WebEx Screen



The screenshot shows a WebEx meeting interface. At the top, there is a participant list with names: Nate Doyle - EPA, Meghan Smith, Dawn DeFreitas Navy, Timothy Runkle Leidos, Brian Helland Navy, Colin Wade - DEP, and Emily Adler. A 'Zoom' label with a blue arrow points to the 'Dawn DeFreitas Navy' tile. A 'Layout' label with a blue arrow points to a 'Layout' button in the top right corner. The main content area displays a presentation slide titled 'RAB Meeting Agenda' with the following items:

Time	Topic
6:00 p.m.	Welcome and Announcements
6:10 pm	Navy Environmental Restoration Presentation
6:50 pm	RAB member or community comments/questions
7:05 pm	Air National Guard Environmental Restoration Presentation
7:20 pm	RAB member or community comments/questions
7:30 pm	Regulator comments
7:35 pm	RAB member or community comments/questions
7:45 pm	Environmental updates conclude. Health professionals available for questions.
8:00 pm	Virtual Meeting conclusion

At the bottom, there is a control bar with buttons for 'Unmute', 'Start video', 'Share', 'Raise Hand', 'Participants', and 'Chat'. A 'Closed Captioning' label with a blue arrow points to a 'CC' button on the far left. A 'Participants Panel' label with a blue arrow points to the 'Participants' button. A 'Panel Options > Q&A' label with a blue arrow points to a 'More' button on the far right.

Zoom

Layout

Layout

**Panel Options >
Q&A**

CC

Closed Captioning

Hand

Raise Hand

Participants

Participants Panel



Virtual Meeting Information



- The virtual meeting will show the presentations
- The presenters will be audio only
- The meeting is not being recorded; minutes will be prepared. WebEx sign-in names will be used for the record.
- Public notices were published May 5, 2022 and May 11, 2022, posted on the Navy website, and provided to the mailing list

Questions:

- Via telephone and e-mail prior to the meeting
- Q&A Feature and hand raise features available in WebEx
- BRAC PMO, ANG, EPA, and PADEP contacts after meeting



RAB Meeting Agenda



- | | |
|-----------|---|
| 6:00 p.m. | Welcome and Announcements |
| 6:10 pm | Navy Environmental Restoration Presentation |
| 6:50 pm | RAB member or community comments/questions |
| 7:05 pm | Air National Guard Environmental Restoration Presentation |
| 7:20 pm | RAB member or community comments/questions |
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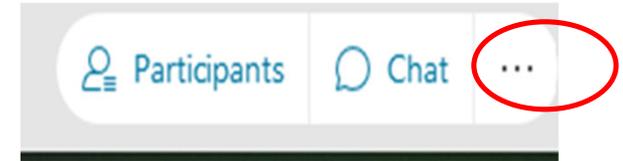


How To Ask a Question



1) Ask a question by typing it in the **Q&A box**.

To open the Q&A box, click the three white dots in the control panel.



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



3) **Phone-only** attendees can dial ***3** to request to have their microphone unmuted and to ask a question.

On a Mobile Device

For iOS and Android phones, tap **More options**



then tap **Raise hand**



For iPads and Android tablets, tap **Raise hand**



NASJRB Willow Grove

Restoration Advisory Board (RAB)

19 May 2022

Proposed 2022 RAB Meeting Dates



New meeting day of the week!

- Thursday, September 15, 2022
- Thursday, December 8, 2022

Navy Presentation



- RAB Background
- Environmental Restoration Status
- Per- and Polyfluoroalkyl Substances (PFAS)
- Action Summary
- Questions

RAB Meeting Background



- 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.
- The community co-chair position is vacant. Please contact the BEC if you are interested.
- Health related issues are not addressed by the RAB. Health agency professionals will be available after the Navy and Air National Guard Environmental Restoration presentations.

Source: DoD RAB Rule Handbook

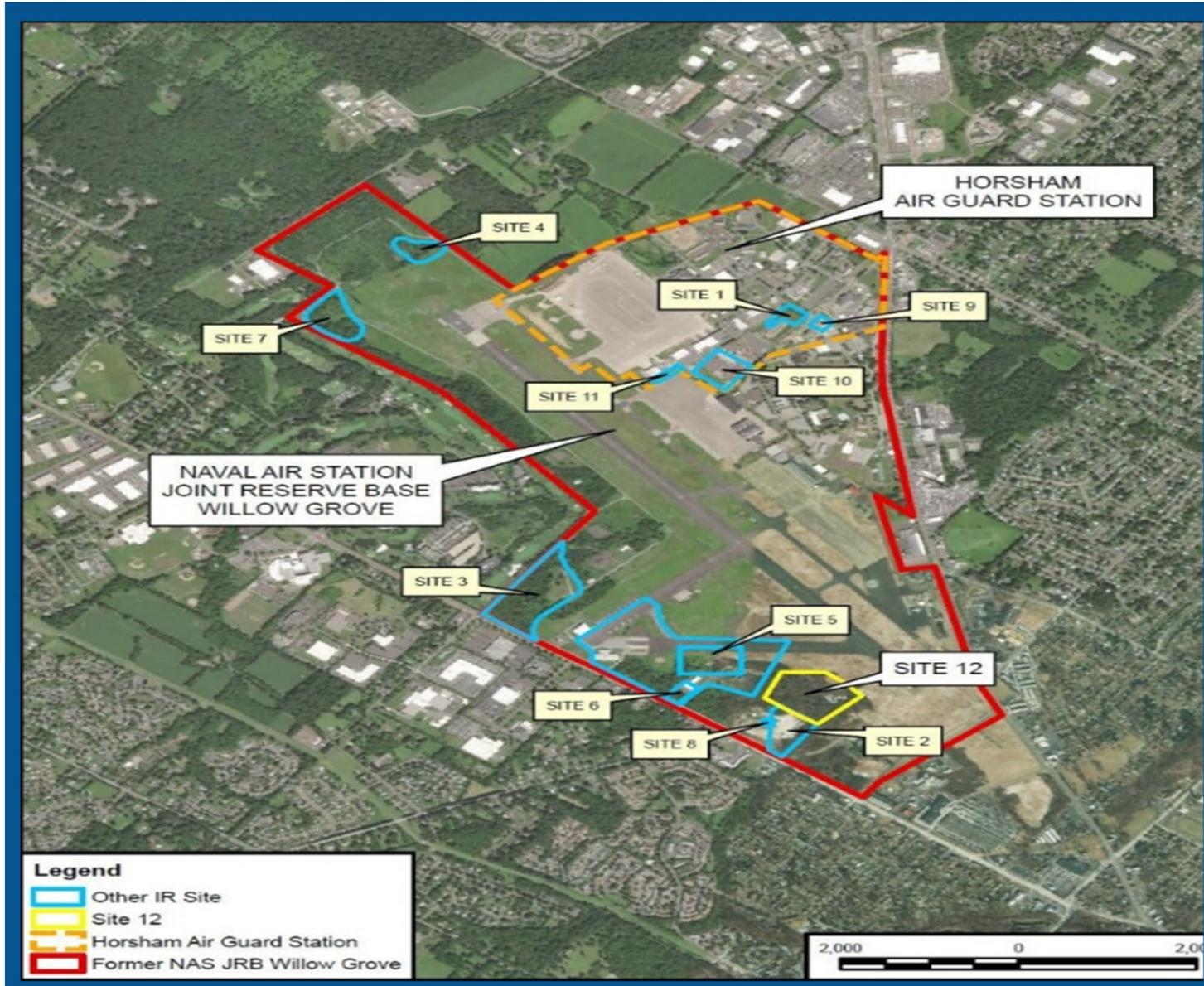
Environmental Restoration Status

Site 3 and Site 12 Landfills

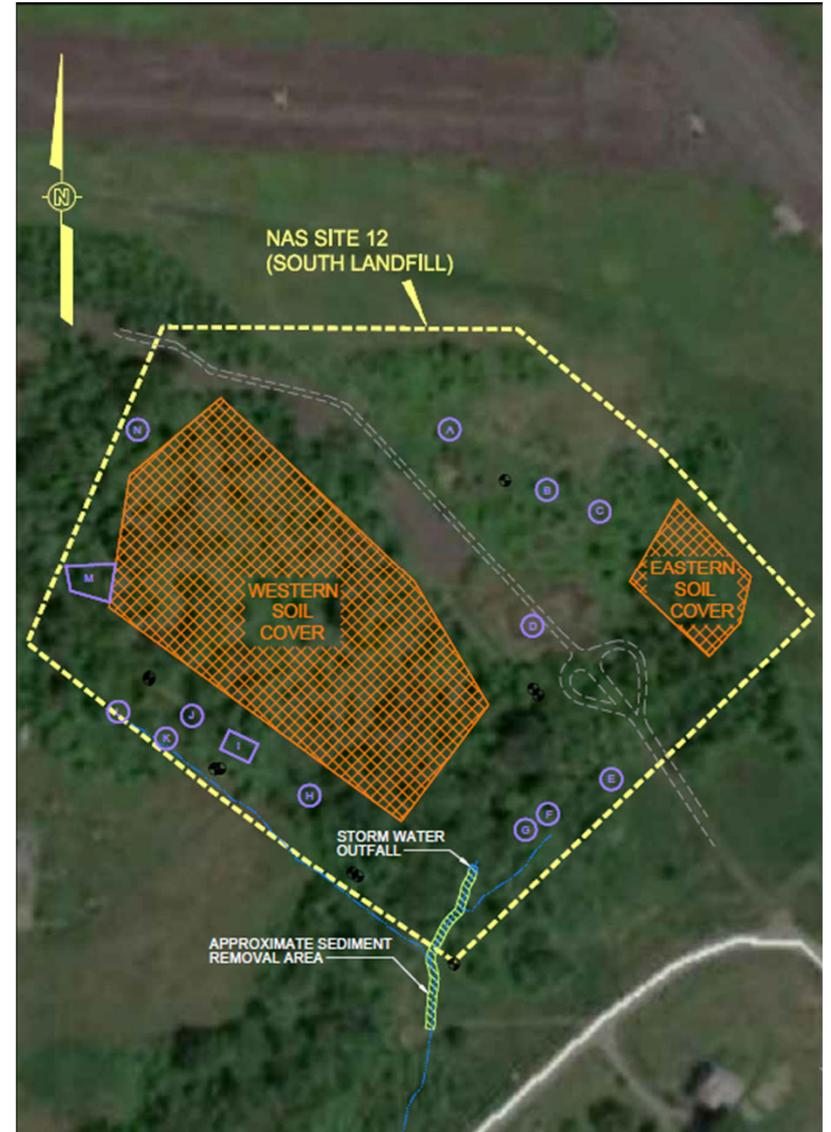


- Site 12 Groundwater Sampling
 - The EPA requested additional groundwater sampling for dioxins and chromium at Site 12. A technical memo summarizing the findings was submitted for regulatory review in March 2022. Navy is currently addressing regulator comments on the document.
- Remedial Action Work Plan
 - The work plans and SAPs for the selected remedy for Site 3 and Site 12 were finalized in February 2022.
 - Site clearing began in early February 2022 and construction started on 2/28/22.

Site 3 and Site 12 Locations



Site 3 and Site 12 Landfills



Site Setup



Trees were cleared from the limits of disturbance in order to complete the cap installations.



Utility mark-out performed within the limits of disturbance of both landfills prior to an intrusive activities being performed.

Erosion and Sediment Controls



- Erosion and sediment controls were installed in accordance with the approved Erosion and Sediment Controls Plans
 - Stabilized construction entrance



- Compost filter sock

Site 3 Sediment Removal Area

- Temporary rock filter and compost filter sock installed at the Site 3 sediment removal area outlet.
- Excavation was conducted to a depth of 18 inches along the stream and post excavation sampling was performed.



Site 3 Sediment Removal Area



Excavation was completed at Site 3 sediment removal area to a depth of 18 inches along the stream.



Hot Spot Excavations



Site 3



Site 12



Site 12 Sediment Removal Area

Excavation was conducted to a depth of 18 inches along the stream.



Backfilling and Restoration of Site 12 Sediment Removal Area



Backfilling and restoration was conducted at each sediment removal area after all post excavation samples results were confirmed to be below the Remediation Goals.



Restoration of Site 12 sediment removal area

Backfilling and Restoration of Site 3 Sediment Removal Area



Backfilling and restoration was conducted at each sediment removal area after all post excavation samples results were confirmed to be below the Remediation Goals.



Restoration in progress and restoration of Site 3 sediment removal area

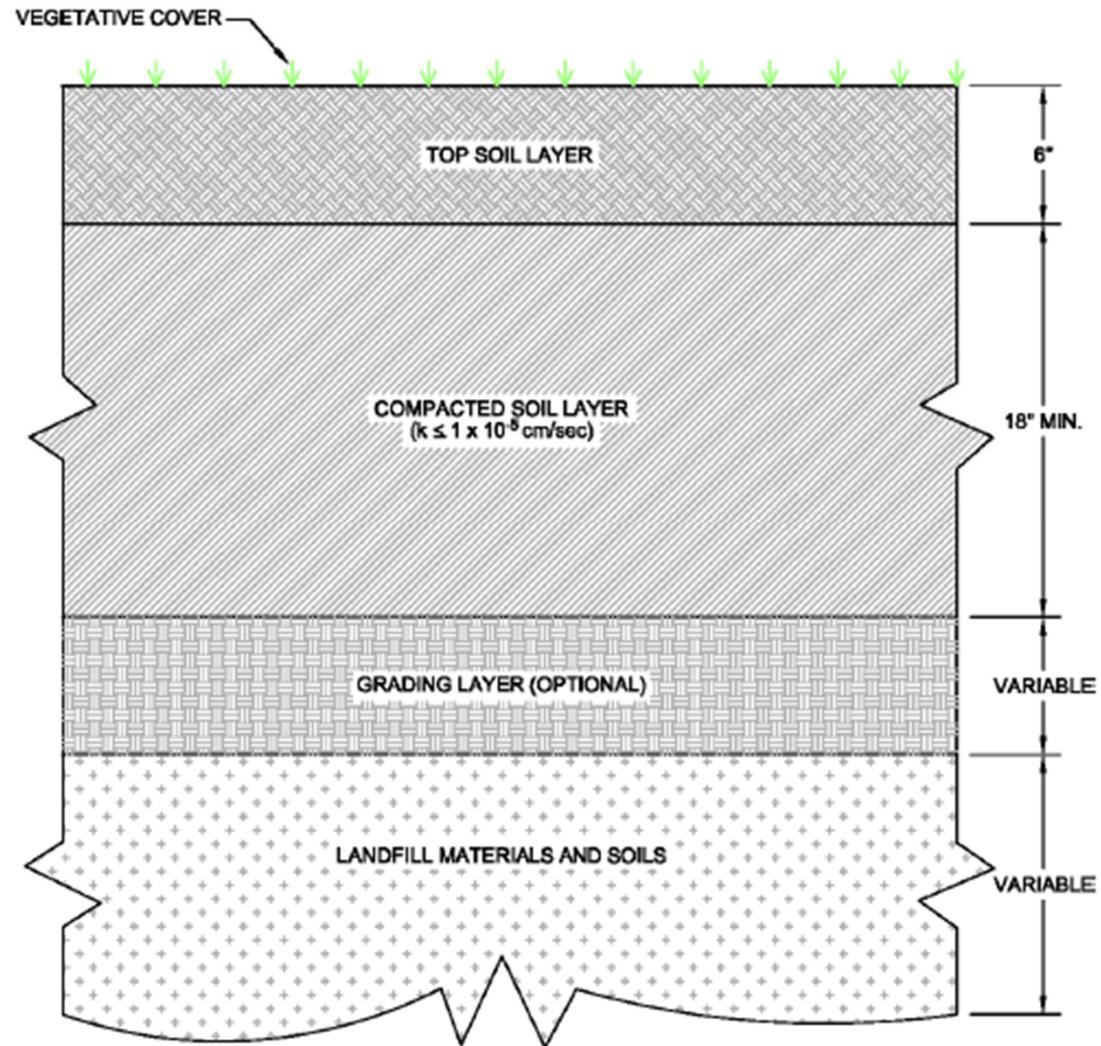
Landfill Caps



- Grading the Landfill Caps Subgrade (Site 3 and Site 12)
 - Excavated material from the sediment removal areas and hot spot areas was transported to the soil cover/landfill cap areas at each site and incorporated into the interim grading layer.
 - Once the excavation and backfill are completed along with interim grading, the landfill caps will be installed.
 - Estimated completion date for the both landfill caps is August 2022.



Landfill Cap



Site 5 Groundwater

Remedial Action



- Anaerobic bioremediation system continues to operate successfully.
- Monitoring is conducted in accordance with approved Operation, Maintenance, and Monitoring Plan.
- Results continue to show good conditions for biodegradation of the volatile organic compounds (VOCs) at the site.
- Draft 2021 Annual report was sent to EPA and PADEP for review on 1/13/22. Navy is currently addressing regulatory comments.
- The next quarterly post-injection monitoring event and annual Land Use Control inspection are scheduled for May 2022.

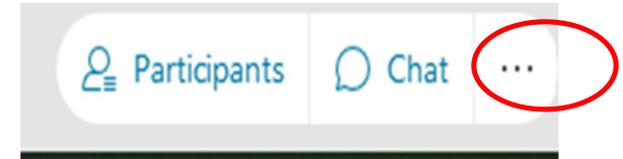


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then tap **Raise hand**



For iPads and Android tablets, tap **Raise hand**



Per- and Polyfluoroalkyl Substances (PFAS)

Summary of Drinking Water Actions



- The Navy has provided funds to HWSA for filtration system costs and drinking water connections above the LHA. The total funding is over \$18 million.
- The Navy has funded filtration systems at five Horsham Water and Sewer Authority (HWSA) public wells (#10, 17, 21, 26, and 40) which were found to be above the LHA. All are back to drinking water service, some are being modified with improved treatment systems.

Private well sampling (as of 25 April 2022)	Current
Private wells sampled for PFOA/PFOS*	593
Private wells above lifetime HA (>70 ppt)	103
Private wells not yet connected **	7
Private wells below HA/monitored (>40 ppt) ***	<u>50</u>

* Wells sampled in Warrington, now managed by Air National Guard are not included

** This include rejected connection offers and connections in progress

*** Some monitored wells are now below 40 ppt and are sampled annually instead of quarterly

Private Drinking Water Well Sampling Area



Private drinking water well sampling for PFOA/PFOS and provision of bottled drinking water is being performed by Tetra Tech, a U.S. Navy contractor.

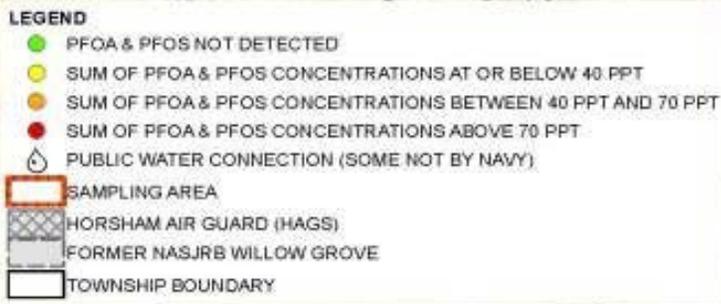
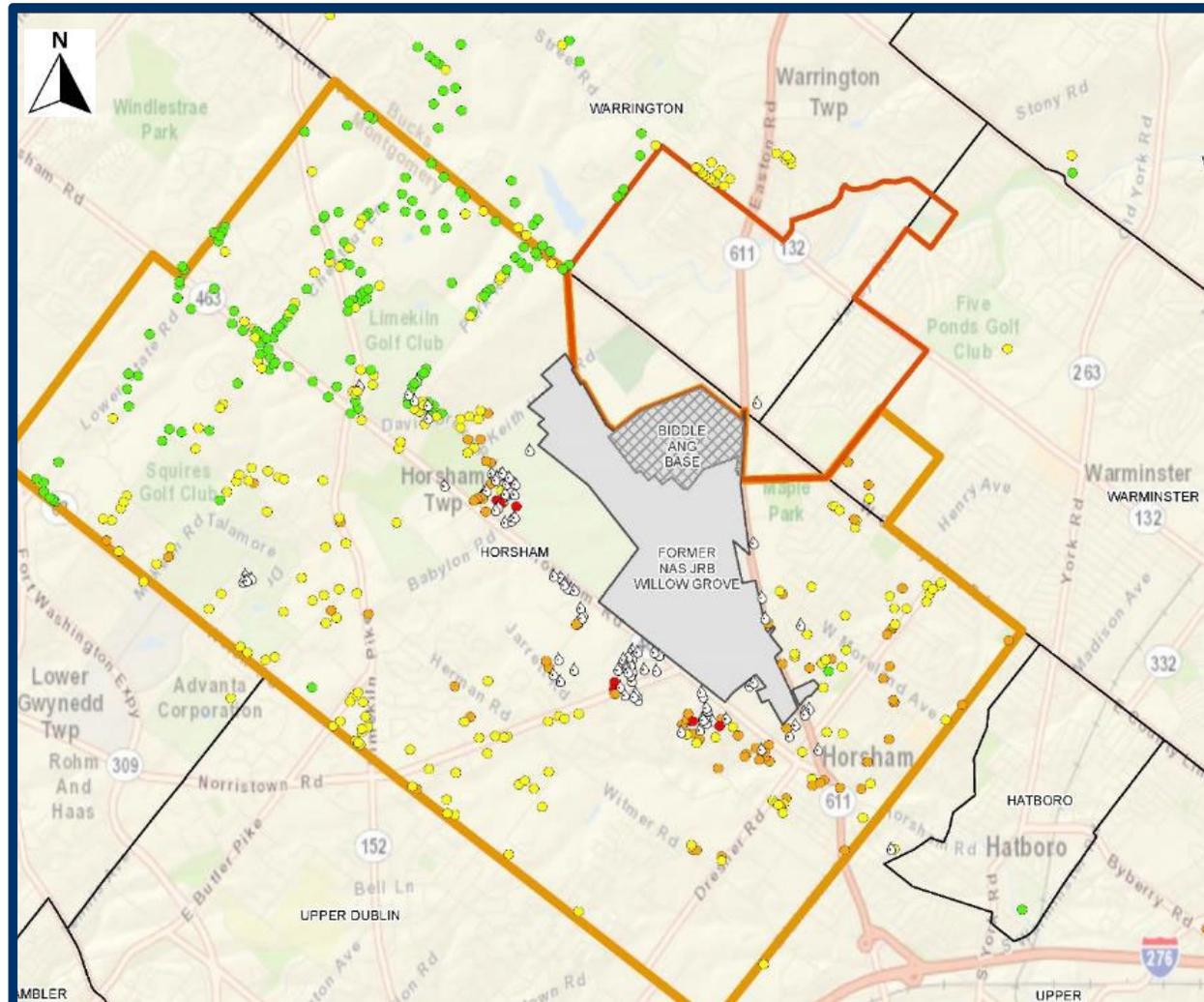
Point-of-contact is:

Tricia Moore

Tetra Tech Project Manager

tricia.moore@tetrattech.com

Phone: (610) 382-1171



Updated figure (4-19-2021) is available on Navy BRAC PMO website

Phase II PFAS Investigation

Surface Water / Sediment Monitoring



- The Navy has continued sampling in cooperation with the Air National Guard. USGS will support the sampling efforts.
 - Quarterly surface water sampling event (Round 8) was performed in June 2021. The results are posted to the Navy website. The Annual Report which includes Rounds 5 to 8 is currently in internal Navy review.
 - Quarterly surface water sampling event (Round 9) and annual sediment sampling event (Round 3) was performed in September 2021. The technical memo which is currently in internal Navy review.
 - Quarterly surface water sampling event (Round 10) was performed 12/14/22 and 12/15/21. Figures are currently in internal Navy review.
 - The most recent quarterly surface water sampling event (Round 11) was completed the week of 3/21/22. The data is currently being validated.
 - The next quarterly surface water sampling event (Round 12) is being planned for June 2022.

Phase II PFAS Investigation

Phase II Remedial Investigation



- Evaluation of Existing Off-Base Monitoring and Production Wells
 - HWSA has offered access to fifteen existing observation and supply wells:
 - Work was initiated in August 2020 and includes geophysical logging and packer testing.
 - Borehole geophysical logging has been performed at 13 of 15 well locations.
 - Packer testing has been performed at 12 of 15 well locations.
 - Planning for future sample collection activities at 2 of 3 locations.
 - PADEP has offered access to nine existing monitoring wells. Sampling is anticipated in Spring 2022. One well cluster was sampled in March 2022. The other two well clusters will be sampled once access to the properties granted by the property owner.
- The draft final Sampling and Analysis Plan (SAP) for on-base soil was submitted for regulatory review in April 2021. Comments were resolved in February 2022. The draft final revision will be sent to the regulators in May 2022.
- The draft SAP for on-base groundwater was submitted for regulatory review on 7/27/21. Navy is currently preparing a response to EPA comments which includes the preparation of geologic cross-sections.

Phase II PFAS Investigation

Basewide Soil Investigation



- Phase II RI for PFAS in On-Base Soil and VOCs in Former Fire Training Area Soil
 - Scope of work includes work at the Former Fire Training Area (Site 5), Building 177, Former Rifle Range Area (Site 7), Building 80, Building 680, Building 681, Northern Ponding Area, Building 175, Building 183, Building 13, the 1979 Aircraft On-Base Incident Area and along the former runways to support FOST activities
 - Draft Final SAP submitted to EPA and PADEP on 3/18/21. Conditional approval to begin work at all areas except the Northern Ponded Area was granted on 12/16/21. The EPA approved the technical approach for the Northern Ponded Area in March 2022. The revised Draft Final SAP will be submitted in May 2022.
 - 164 soil borings and over 750 PFAS samples were completed between 1/4/22 and 2/25/22. A limited investigation for VOCs was also completed within the Former Fire Training Area. Analytical results are currently being validated.
 - Work at the Northern Ponding Area was completed on 4/22/22.
 - Results will support the ongoing Phase II RI.

Phase II PFAS Investigation

Hangar 680 Groundwater Treatment Pilot Test



- Pilot Test at former Aircraft Maintenance Hangar 680
 - Full-time operations commenced in March 2020. Over 20.0 million gallons of water have been treated to date.
 - Influent concentration ranges of combined PFOA and PFOS:
 - 17,700 to 83,300 ppt in the shallow extraction well.
 - 8,100 to 80,000 ppt in the intermediate extraction well.
 - 9,400 to 50,600 ppt in the system influent.
 - System effluent continues to meet all PADEP discharge requirements.
 - A 6-month permit equivalency extension was granted by PADEP on 1/13/22. Another permit equivalency extension is currently being drafted.
 - PADEP also approved the request to add one additional extraction point into the pilot test system on 1/27/21. The well was placed online on 11/24/21. The well was subsequently taken offline to troubleshoot communications issues. Tetra Tech has continued to trouble shoot the issues since the last meeting.

Pilot tests provide valuable groundwater and treatment information for design of a full-scale treatment system.

Phase II PFAS Investigation

Hangar 680 Groundwater Treatment Pilot Test (cont.)



Location of Hangar 680 treatment system

Phase II PFAS Investigation

Hangar 680 Groundwater Treatment Pilot Test (cont.)



Hangar 680 Pilot Test System Photos

Phase II PFAS Investigation

Former Fire Training Area Groundwater Treatment Pilot Test



- Pilot Test at the former Fire Training Area (Site 5)
 - Full-time operations commenced on 1/31/22. Over 2.4M gallons of water have been treated to date.
 - Influent concentration ranges of combined PFOA and PFOS:
 - 2,072 to 5,079 ppt in the shallow extraction well.
 - 9,040 to 16,640 ppt in the intermediate extraction well.
 - 7,240 to 12,158 ppt in the system influent.
 - System effluent continues to meet all PADEP discharge requirements.

Phase II PFAS Investigation

Former Fire Training Area Groundwater Treatment Pilot Test (cont.)



Non-Time-Critical Removal Actions

EE/CA



- Navy submitted an Engineering Evaluation/Cost Analysis (EE/CA) for a 500-gpm groundwater extraction and treatment system for regulatory review in May 2021. EPA and PADEP comments have been received. The Navy is currently preparing a response to comments.
- A public comment period will be held when the EE/CA is finalized.
- Following the public comment period, an Action Memo will be generated to document the selected interim remedy and will include a response to public comments.

Action Summary Since Previous RAB Meeting



- Continued operation of the Site 5 PFAS treatment system.
- Continued operation of the aqueous IDW PFAS treatment system.
- Continued operation of the Hangar 680 PFAS pilot test system.
- Continued site work for cap construction at Sites 3 and 12.
- Completed Phase II PFAS Soil Investigation at the Northern Ponding Area.
- Resolved remaining comments on the draft final On-Base Soil SAP for the Northern Ponding Area.
- Completed Round 11 surface water sampling (March 2022) event.
- Completed packer testing at off-base well HWSA-Well #21 for PFAS.
- Continued private drinking water well sampling.
- Submitted draft-final Five Year Review Addendum.

Actions Anticipated to be Completed by next RAB



- Continue RA activities at Sites 3 and 12.
- Submit the draft final Site 12 technical memo for dioxin/chromium results in groundwater.
- Submit the draft final EE/CA for a 500-gpm groundwater pump and treat system.
- Complete annual sampling and LUC inspection at the Site 5 bioremediation system.
- Continue operation of the aqueous IDW groundwater treatment system.
- Continue operation of the Hangar 680 PFAS Pilot Test system.
- Continue operation of the Site 5 PFAS Pilot Test system
- Complete Round 12 surface water sampling (June 2022) event.
- Submit the draft 2020-2021 Annual surface water and sediment sampling report.
- Submit the draft Round 9 and 10 surface water tech memos.
- Finalize the on-Base soil SAP.
- Respond to comments on the draft on-base groundwater SAP
- Continue private drinking water well sampling.

NASJRB Willow Grove



The Navy presentation has concluded.

**RAB member or community comments/questions
will now be addressed.**

Additional Navy information is available at the NASJRB Willow Grove website:

https://www.bracpmo.navy.mil/brac_bases/northeast/reserve_base_willow_grove.html

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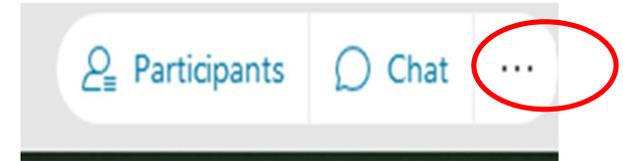


How To Ask a Question



1) Ask a question by typing it in the **Q&A box**.

To open the Q&A box, click the three white dots in the control panel.



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



3) **Phone-only** attendees can dial ***3** to request to have their microphone unmuted and to ask a question.

On a Mobile Device

For iOS and Android phones, tap **More options**



then tap **Raise hand**



For iPads and Android tablets, tap **Raise hand**



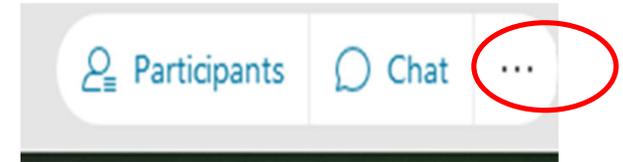


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***Comments from the
Environmental Protection Agency
or the Pennsylvania Department
of Environmental Protection***

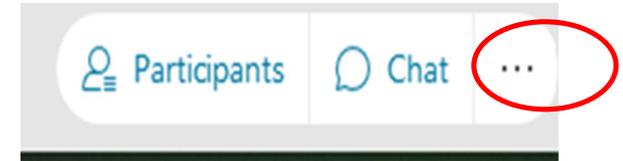


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For more Information

Email and phone contact are preferred due to current COVID restrictions.

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Colin Wade

Project Officer
Pennsylvania Department
of Environmental
Protection
2 East Main Street
Norristown, PA 19401
Phone: (484) 250-5722
cowade@pa.gov

Next Restoration Advisory Board (RAB) meeting:
Thursday, September 15, 2022 at 6:00 p.m. (in-person
meeting is being evaluated)

Environmental Restoration discussions have concluded.

Health Professional discussions will now follow.



Health Professional Discussion

Emily Adler

Regional Representative, Region 3

Office of Community Health & Hazard Assessment
Agency for Toxic Substances and Disease Registry

(ATSDR)/Center for Disease Control & Prevention

1650 Arch Street

Philadelphia, PA 19103

215-880-7304

ggk3@cdc.gov

Susan Schrack Wood

PA Department of Health

c-swood@pa.gov

PFAS Health Study website

<https://papfas.rti.org/>



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

The meeting has concluded.

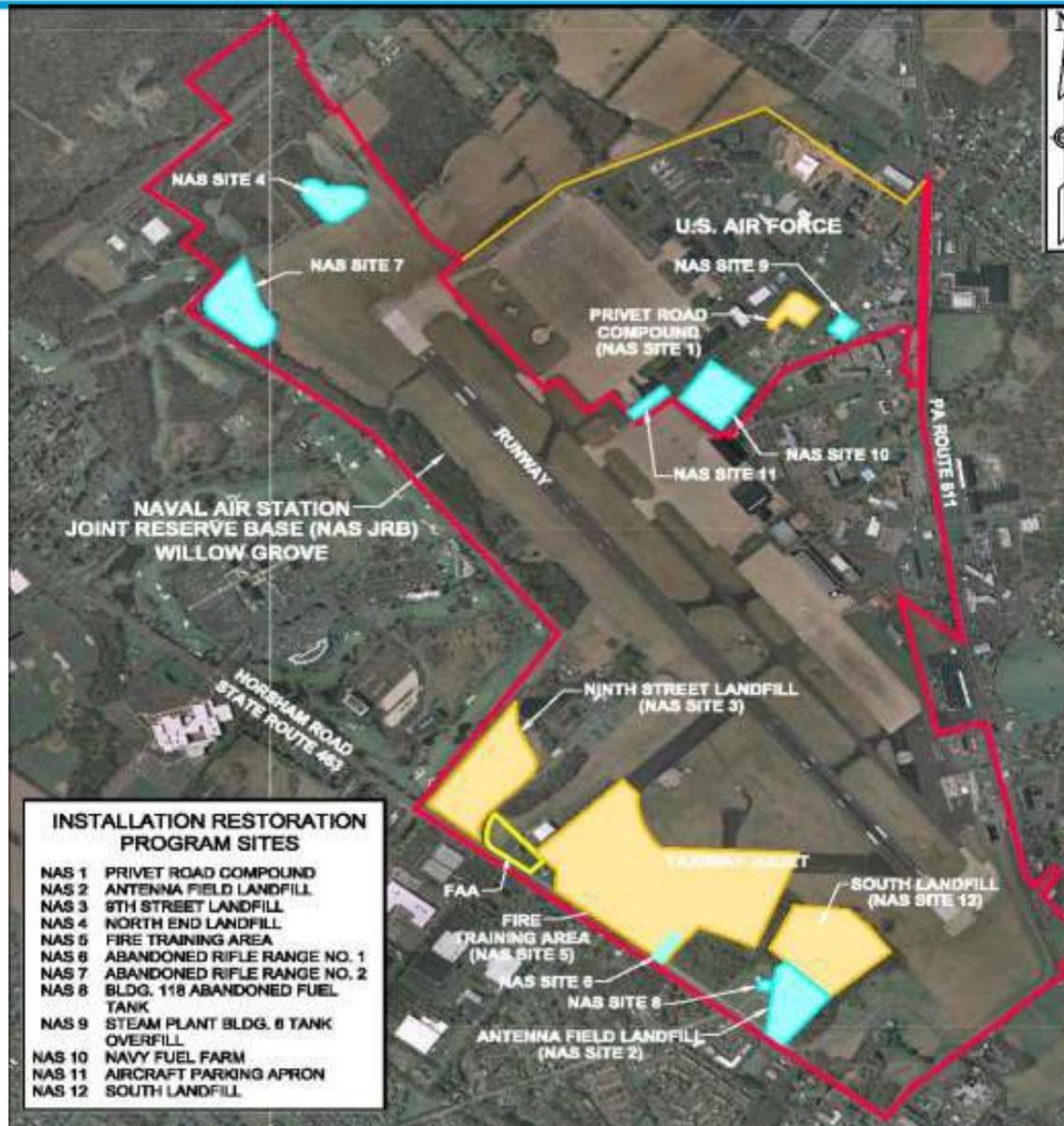
Back-up / Additional Information

Environmental Restoration Sites



Site	Name	Operable Unit (OU)	Status
2	Antenna Field Landfill	Soil - OU 5 Groundwater - OU 9	No Action ROD Signed June 17, 2010
3	Ninth Street Landfill	Soil - OU 6 Groundwater - OU 10	RI completed October 2011. FS and PRAP completed. ROD was finalized in September 2021. RD was finalized in January 2022. RA is in progress.
4	North End Landfill	. . .	Consensus Agreement for No Action Jan. 2009
5	Fire Training Area	Soil - OU 4 Groundwater - OU 2	Soil (OU 4) NFA ROD signed September 2007 Groundwater (OU 2) ROD signed September 2012 Groundwater (OU 2) RACR signed September 2014 Groundwater (OU 2) Final OPS and OM&M Plan May 2015
6	Abandoned Rifle Range No. 1	. . .	Consensus Agreement for No Action December 2007
7	Abandoned Rifle Range No. 2	. . .	Consensus Agreement for No Action August 2008
8	Building 118 Abandoned Fuel Tank	. . .	NFA Agreement October 2006
SSA 11	Aircraft Parking Apron	. . .	Eliminated From Consideration
12	South Landfill	OU 11 (Soil)	Final RI Feb. 2014. FS and PRAP completed. ROD in progress. ROD was finalized in October 2021. RD was finalized in January 2022. RA is in progress.
		OU TBD (Groundwater)	RI is still in progress.
PFCs/PFAS	Perflourinated Compounds/Per- and Polyfluoroalkyl substances	OU 12	TCRA September 2015, Final PA/SI Mar. 2016. RI phase I completed 2019. RI phase II in progress.

NASJRB Willow Grove Environmental Restoration Sites



PFOA / PFOS Background



- In mid-2014, PFAS known as perfluorooctanoic Acid (PFOA) and perfluorooctane Sulfonate (PFOS) were found in public drinking water wells near NASJRB Willow Grove through an EPA program known as the Unregulated Contaminant Monitoring Rule (UCMR).
- The health advisory levels at that time were 0.4 micrograms per liter ($\mu\text{g/L}$), or 400 parts-per trillion (ppt), for PFOA and 0.2 $\mu\text{g/L}$, or 200 ppt, for PFOS.
- PFOA/PFOS are man-made chemicals used in many products, including fire-fighting solutions known as aqueous film-forming foam (AFFF), which were used at NASJRB Willow Grove.
- In the summer of 2014, the Navy began sampling for PFOA/PFOS in private drinking water wells and worked with Horsham Water and Sewer Authority (HWSA) on the municipal drinking water wells.

PFOA / PFOS Background (cont.)



- In May 2016, the Environmental Protection Agency established a lifetime Health Advisory (HA) level of 70 parts-per-trillion (0.07 µg/L) for combined PFOA and PFOS.
- The Navy's priority continues to be eliminating exposure to PFOA/PFOS above health advisory levels in drinking water.
- Any health concerns should be addressed with your health professional. Weblinks to health information is provided at the end of this presentation.

Removal (Interim) Actions for PFOA / PFOS

- PFOA and PFOS above the EPA provisional health advisory (PHA) levels in drinking water sources (2015). The PHA levels were 0.4 micrograms per liter ($\mu\text{g/L}$), or 400 parts-per trillion (ppt), for PFOA and 0.2 $\mu\text{g/L}$, or 200 ppt, for PFOS.
- PFOA and PFOS above the EPA lifetime health advisory levels in private drinking water sources (2017).
- PFOA and PFOS above the EPA lifetime health advisory levels in municipal drinking water sources (2017).
- Removal of soils containing PFOS exceeding project screening levels (2018).

Other interim actions to reduce PFOA and PFOS in drinking water sources are being considered.

The interim action memorandums are available in the administrative record

Phase I PFAS Investigation Summary

- Soil, groundwater, and surface water samples were collected in potential sources area.
- Human health screening assessment:
 - PFOS or PFOA sample results exceeding screening levels were detected in the soil, groundwater, and surface water.
 - PFBS sample results did not previously exceed screening levels for soil, groundwater, and surface water. However, PFBS sample results exceed the new screening level in groundwater based on updated toxicity values (May 2021)

Phase I PFAS Investigation Summary (cont.)



- Ecological screening assessments:
 - Screening levels for PFAS have not been developed by EPA, so the Navy identified criteria and performed the screening assessment based on a review of available literature. Screening levels were updated in January 2021 with new data available.
 - In sediments:
 - PFOA exceeds screening levels for invertebrate and wildlife.
 - PFOS exceeds screening levels for wildlife at one location.
 - In surface water:
 - PFOS exceeds screening levels for aquatic organisms and wildlife.
 - In soil:
 - PFOS exceeds screening levels.

Phase II PFAS Investigation

PlumeStop Design Verification Test (DVT)



- A workplan for a PlumeStop Design Verification Test (DVT) at the Northern Ponding Area was submitted to the EPA and PADEP in January 2020. The purpose of the study is to evaluate the feasibility of PlumeStop as a permeable reactive barrier (PRB) along the Keith Valley Road property line.
- PlumeStop is an in-situ (in ground) technology composed of very fine particles of activated carbon suspended in water using unique organic polymer dispersion chemistry.
- The test is planned for a phased approach:
 - Phase I - Overburden groundwater and soil study
 - Phase II - PlumeStop injection test
- Phase I occurred in late March 2020. A draft technical memo summarizing Phase I results and the revised workplan for the injection test is currently under regulatory review.

Stormwater System Evaluation



- The NASJRB storm water system was evaluated to locate portions where PFAS impacted groundwater may infiltrate and discharge to surface water. Over four miles of storm sewer lines reviewed, using remote video inspections.
- A Tech Memo with recommended repairs was finalized in July 2020.
 - Joint Rehabilitation on 6,136 LF of concrete pipe (cleaning, joint sealing, testing)
 - Abandonment of four pipes and three structures
 - Replacement of 201 LF of 24” metal pipe
- Repairs were completed in October 2021.

PFAS Information and Resources



Department of the Navy (DON) Perfluorinated Compounds (PFC) / Perfluoroalkyl Substances (PFAS) website

<http://www.secnav.navy.mil/eie/pages/pfc-pfas.aspx#>

NAVFAC BRAC PMO Websites (includes links to environmental information and the administrative record):

- http://bracpmo.navy.mil/brac_bases/northeast/reserve_base_willow_grove/documents.html
- http://bracpmo.navy.mil/brac_bases/northeast/former_warfare_center_warminster/documents.html

A subscription service is available on these websites to receive e-mail notification of new information.

PFAS Information and Resources

(continued)



Environmental Protection Agency

<https://www.epa.gov/pfas>

<https://www.epa.gov/superfund/willowgrove>

Agency for Toxic Substances and Disease Registry

<https://www.atsdr.cdc.gov/pfc/index.html>

Pennsylvania Department of Environmental Protection

http://www.dep.pa.gov/Citizens/My-Water/drinking_water/Pages/default.aspx

Horsham Township

<http://www.Horsham.org/default.aspx>

Warminster Township

<http://warminstertownship.org/information-on-perfluorinated-chemicals-pfoa-and-pfos/>

PFAS Information and Resources

(continued)



Horsham Water and Sewer Authority
<https://www.horshamwater-sewer.com>

Warminster Township Municipal Authority
<https://www.warminsterauthority.com/>

Pennsylvania Department of Health
<http://www.health.pa.gov/My%20Health/Environmental%20Health/Pages/default.aspx>

Horsham Township Library Information Repository
<https://www.horshamlibrary.org/willow-grove-nas>



Restoration Advisory Board Biddle Air National Guard Base

Bill Myer
NGB/A4VR
19 May 2022

Updates Since 10 March 2022



- Environmental Restoration Program Sites:
 - Willow Grove Site 1 (Privet Road):
 - Starting Five Year Review (BB&E)
 - Contract action summer 2022 for Final Record of Decision/Long Term Monitoring
- Coordinating with EPA/PADEP on the transition from SDWA AO to Navy Federal Facility Agreement
- PFAS Remedial Investigation:
 - Leidos developed geologic cross sections to support data quality objectives and conceptual site model discussions for Phase II and Phase III RI to support monitoring well selection and data gap analysis
 - ANG agreed to use traditional monitoring wells in lieu of multiport wells to complete the RI
 - EPA/PADEP/ANG agreed to not conduct comparative analysis study of bedrock monitoring well groundwater quality versus multiport well groundwater quality
 - ANG is modifying Leidos contract to include scope of work changes to RI UFP QAPP to include additional wells and additional down hole geophysics/packer testing/groundwater sampling
 - Submitted final Surface Water Technical Memorandum for Event 8 and draft final for Events 9 and 10
 - Regional Surface Water Sampling Event 21-22 March 2022
- PFAS Interim Groundwater Action:
 - Request for Proposals in June 2022 to support acquisition
- PFAS surface water treatment:
 - 11 August 2021 New Surface Water Treatment System started; as of 30 April 2022 treated 82M gallons
 - Submitted February 2022 and March 2022 NPDES Discharge Monitoring Reports to EPA/PADEP

3 Month Forecast of Activities



- Sign Navy Federal Facilities Agreement:
 - Complete Surface Water Response Action Memorandum
 - Complete Residential Drinking Water Action Memorandum
- Continued drinking water response actions (sampling, bottled water, and coordination with North Wales Water Authority (NWWA) and Warminster
- Complete RI Contract modification
- Prepare revised UFP QAPP modifications related to bedrock groundwater characterization and revised scope of work Phase II and III RI.
- Award Interim Groundwater Action Contract
- Surface Water Sampling June 13, 2022
- Continued storm water treatment operations (Warminster)



Remedial Investigation Project Objectives

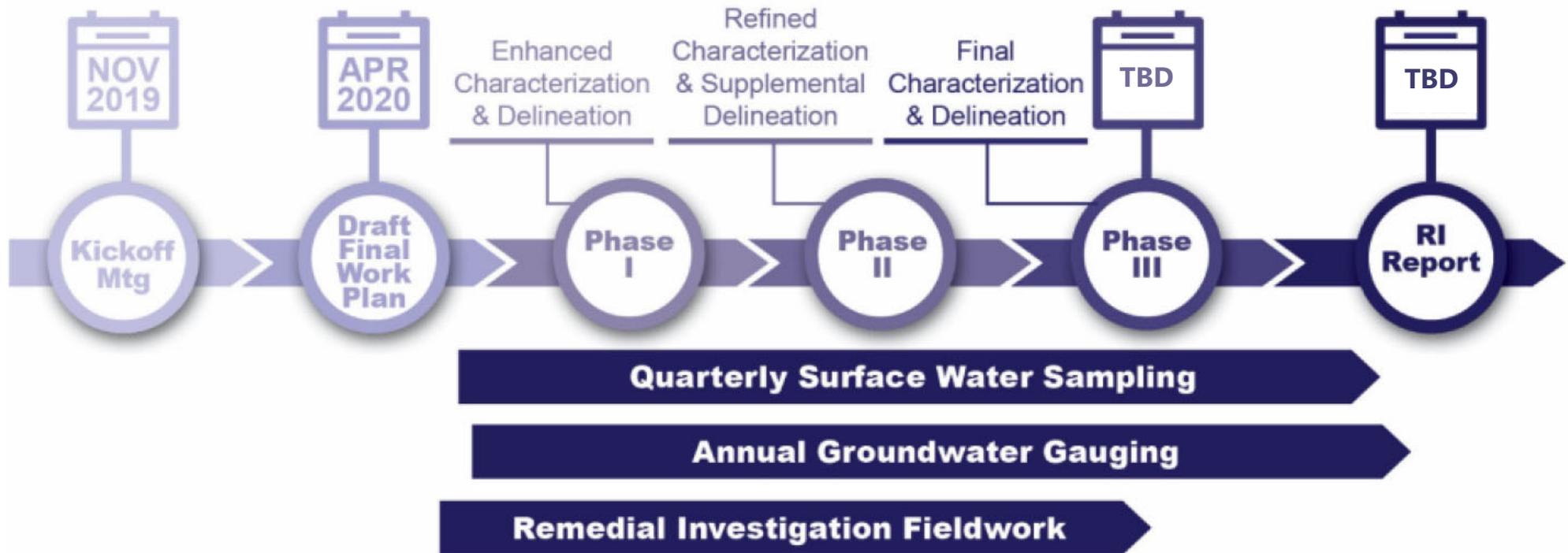


- Delineate the nature and extent of PFAS contamination, the threat to human health and the environment and prepare a Remedial Investigation (RI) Report.
 - Collect soil, sediment, surface water, and groundwater PFAS data on and around Biddle ANGB.
 - Conduct Baseline Risk Assessment (BRA).
 - Investigate link between groundwater and unnamed tributary to Park Creek.
 - Obtain data required to inform future development of a Feasibility Study.
 - Conduct quarterly surface water sampling for PFAS in coordination with the Navy.
 - Conduct annual potentiometric gauging, as needed to support USGS model.

Previously Identified Potential PFOS/PFOA Source Areas



Remedial Investigation General Process and Schedule



Remedial Investigation Progress



- EPA provided updated comments on the UFP-QAPP, previously approved in July 2020
- EPA, ANG, and Leidos are developing the path forward for RI. UFP-QAPP addendum will be developed to address revised scope
- Revised scope of work and contract modification in progress for additional/modified RI effort
- Held discussions with EPA and PADEP regarding revised scope of work for Phase II and III
- Developing a series of cross-sections to evaluate nature and extent of PFAS impacts to guide subsequent investigation

Quarterly Surface Water Sampling



- Performed regional Surface Water Sampling with Navy and USGS between March 21 & 22, 2022
- Finalized Sampling Memo for Round 8
- Delivered Draft Final Sampling Memo for Rounds 9 and 10 to EPA/PADEP
- The next Surface Water sampling event is planned for the week of June 13

Actions Planned for Next 3 Months



- Actions Planned for Next 3 Months
 - Pending contract modification, refine scope of work for RI Phase II and III in consultation with EPA and PADEP
 - Conduct regional Surface Water sampling in coordination with the Navy and USGS
 - Finalize quarterly Surface Water memos for Rounds 9 and 10
 - Draft quarterly Surface Water memo for Round 11
 - Perform next Surface Water sampling event the week of June 13

PFOS/PFOA Water Treatment

Biddle ANGB



- PFOS/PFOA has been detected in surface water leaving the Biddle Air National Guard Base. This water is primarily groundwater that discharges to a storm water detention basin on the northwest boundary of the Base and flows to Park Creek which flows to the Little Neshaminy Creek.
- 500 gallon per minute treatment plant began operations on 11 August 2021. ~ 82M gallons treated through the end of April 2022.
- First media change-out scheduled for May 2022 – GAC
- Treatment plant effluent PFOS+PFOA < 2ppt (<70 ppt required)
- Construction and O&M through Warminster Cooperative Agreement

NWWA Activities



- North Wales Water Authority assumed responsibility for Warrington water service area
- Cooperative agreement for water system actions
- PFAS treatment added to 3 municipal wells
- Construction underway to add PFAS treatment to 2 additional wells – 99% complete as of 1 May 2022
- Two water main extensions – project awarded 16 March 2022, construction start in May 2022
- Service line connections and private well decommissioning ongoing

Private Well Sampling

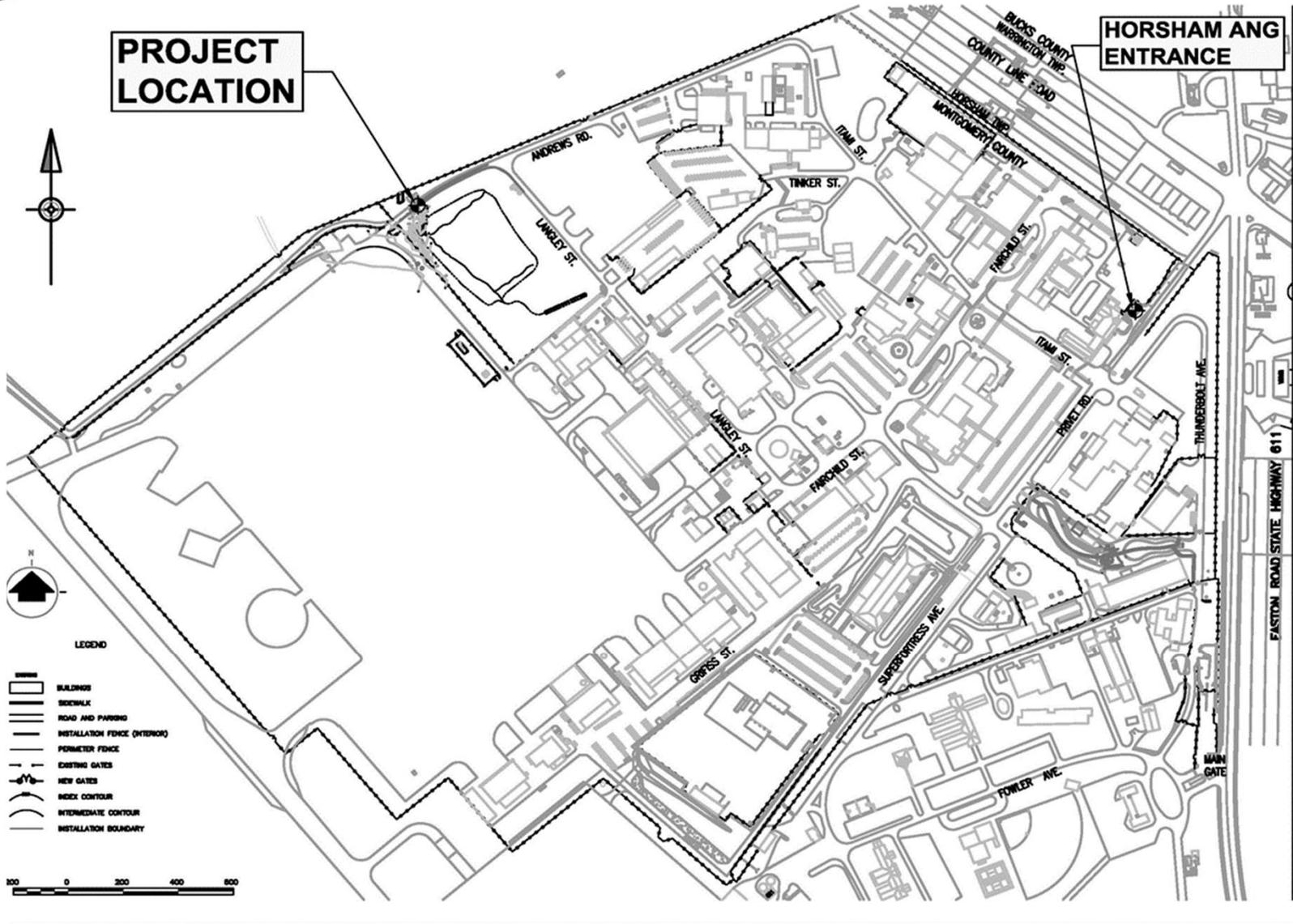


- ANG has contract in place with Wood to provide PFOS/PFOA testing of private drinking water wells and supply bottled water to properties with PFOS/PFOA at or above the EPA Health Advisory level (HA) for residents within our area of responsibility in Horsham, Warminster, and Warrington
- Total number of private wells sampled by ANG are:
 - Horsham
 - 6 wells sampled
 - 5 were above HA
 - 4 have been connected to municipal water
 - 1 well abandoned by Wood
 - Warrington:
 - 150 well sampled
 - 53 are above HA
 - 55 have been connected, NWWA has 13 signed agreements to connected this summer
 - Warminster: 12* well sampled
 - 11 are above HA
 - 8 have been connected municipal water
- *Some of these properties are on Valley Road with Warminster mailing addresses but are located in Warrington Township
- Sampling contact for ANG area of responsibility: Brad LaForest at brad.laforest@woodplc.com or (207) 828-3620

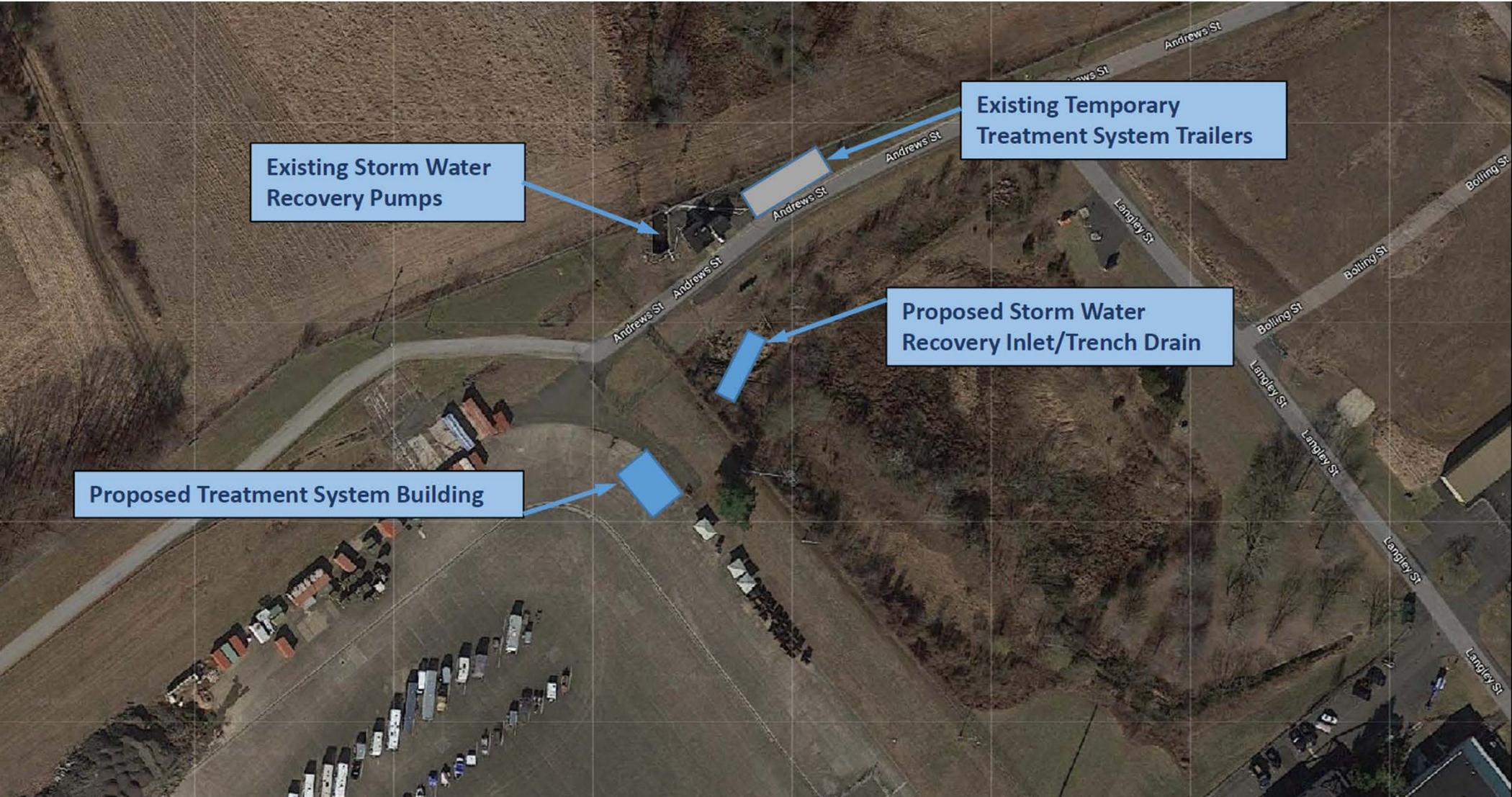


Previously Presented Data

PFOS/PFOA in Surface Water on Horsham AGS



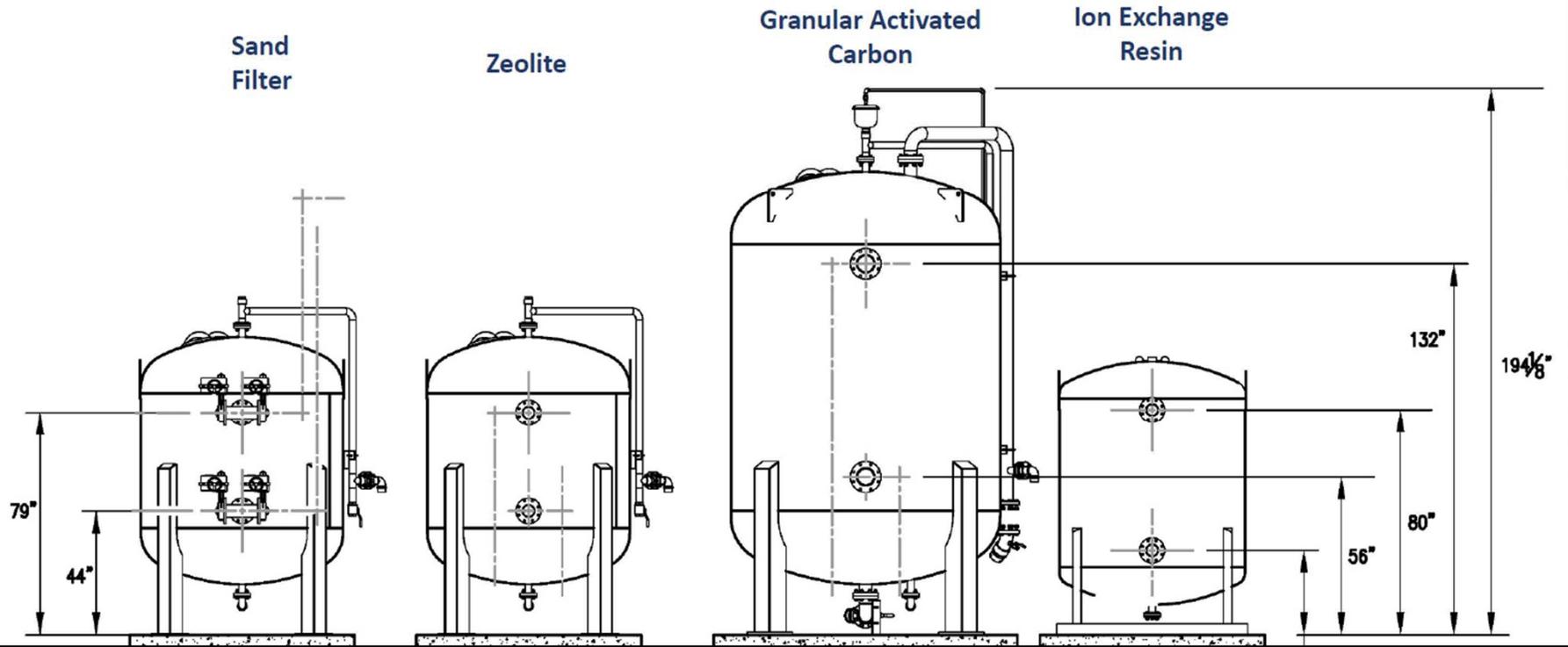
PFOS/PFOA in Surface Water on Horsham AGS



PFOS/PFOA in Surface Water on Horsham AGS



New Treatment System Process/Layout

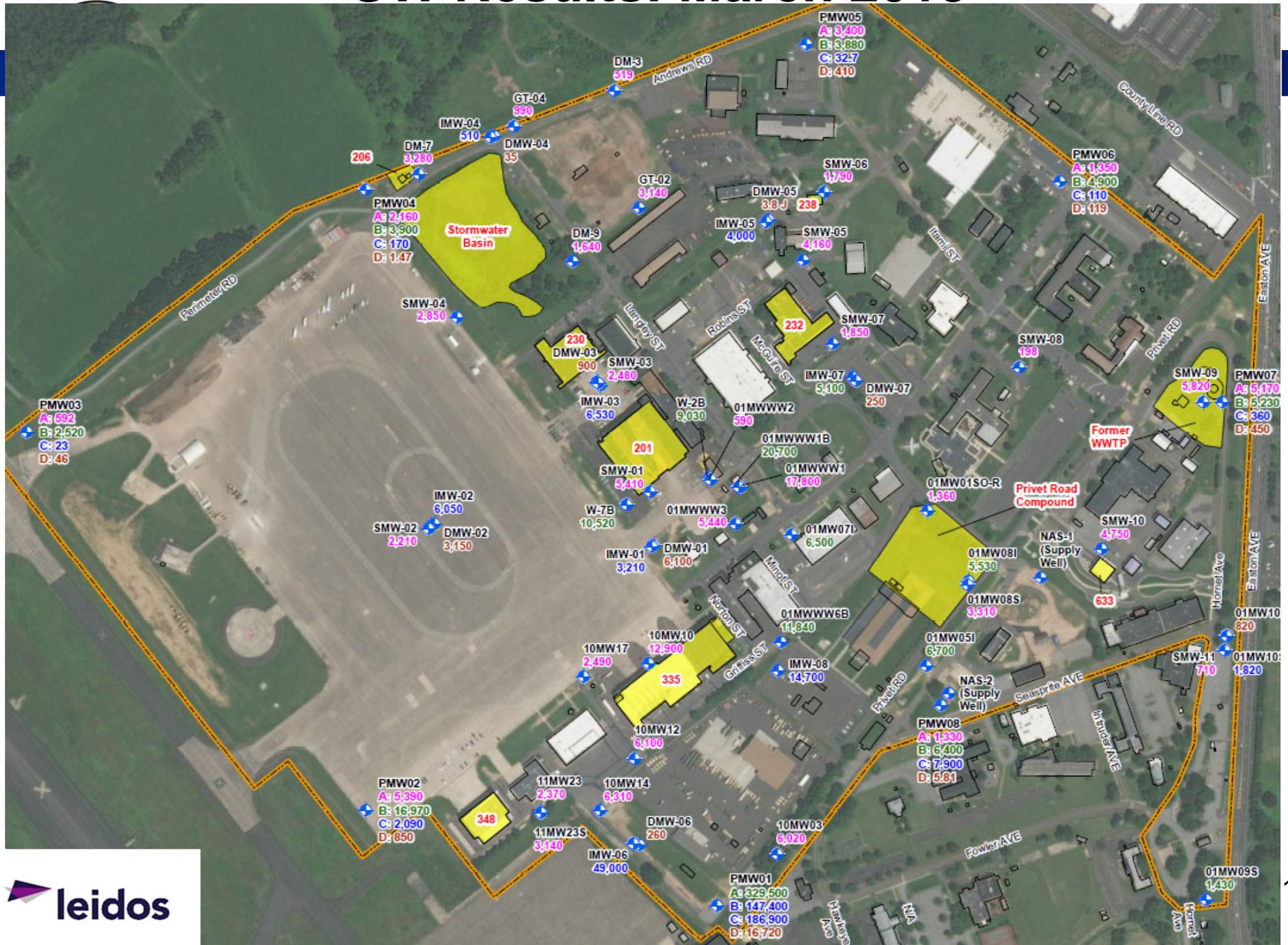


PFOS/PFOA on Biddle ANGB



- In 2015, ANG completed a Preliminary Assessment of potential PFOS/PFOA release sites at the Biddle Air National Guard Base (ANGB). Ten potential source areas identified in the PA include:
 - Buildings that contained foam fire suppression systems
 - Areas that may have received runoff from foam releases
 - Stormwater sediment basin
 - Former waste water treatment plant
 - Former storage area for wastewater treatment sludge
- These potential source areas were further investigated by Leidos in a PFOS/PFOA Facility Investigation and additional investigation is underway in the Remedial Investigation (RI)

GW Results: March 2018



Groundwater Sampling Results (28-29 April 2021)

