

NASJRB WILLOW GROVE RESTORATION ADVISORY BOARD (RAB)

MARCH 14, 2019



Agenda



- Welcome
- Navy Presentation
 - Environmental Restoration
 - Per- and Polyfluoroalkyl Substances (PFAS)
- Air National Guard Presentation
- EPA/Regulator Update
- Questions
- RAB meeting adjournment



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 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.
- 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



NASJRB Willow Grove



Environmental Restoration Status



Site 3 and Site 12 Landfills



- Both are former landfills, Remedial Investigations showed elevated levels of metals and PAHs in surface and subsurface soils. Site 3 groundwater has low levels of PCE.
- Feasibility Studies (FS) evaluated remedial alternatives, EPA and PADEP have reviewed both and commented.
- Navy responses to comments provided to EPA/PADEP and awaiting concurrence before finalizing the FS.
 - Final-draft Site 3 FS submitted March 8, 2019
 - Final-draft Site 12 FS to be submitted March 2019.
- Proposed Remedial Action Plans (PRAP) and Records of Decision (ROD) will be prepared in 2019.
- Site 3 PRAP public meeting projected for 30 May 2019. Public notice will be issued by end of April 2019.



Site 5 – Fire Training Area Groundwater





Site 5 Groundwater Remedial Action



- Anaerobic bioremediation system continues to operate successfully.
- Annual performance monitoring is being conducted in accordance with approved Operation, Maintenance, and Monitoring Plan.
 - Annual performance monitoring sampling conducted in May 2018
- Quarterly monitoring of anaerobic conditions conducted
 - Monitoring conducted February 25 to 28, 2019
- Additional injections of amendments will be conducted based on monitoring results.
- Results continue to show good conditions for biodegradation of volatile organic compounds (VOCs) and decreasing trends of VOCs.



NASJRB Willow Grove



Per- and Polyfluoroalkyl Substances (PFAS) Status



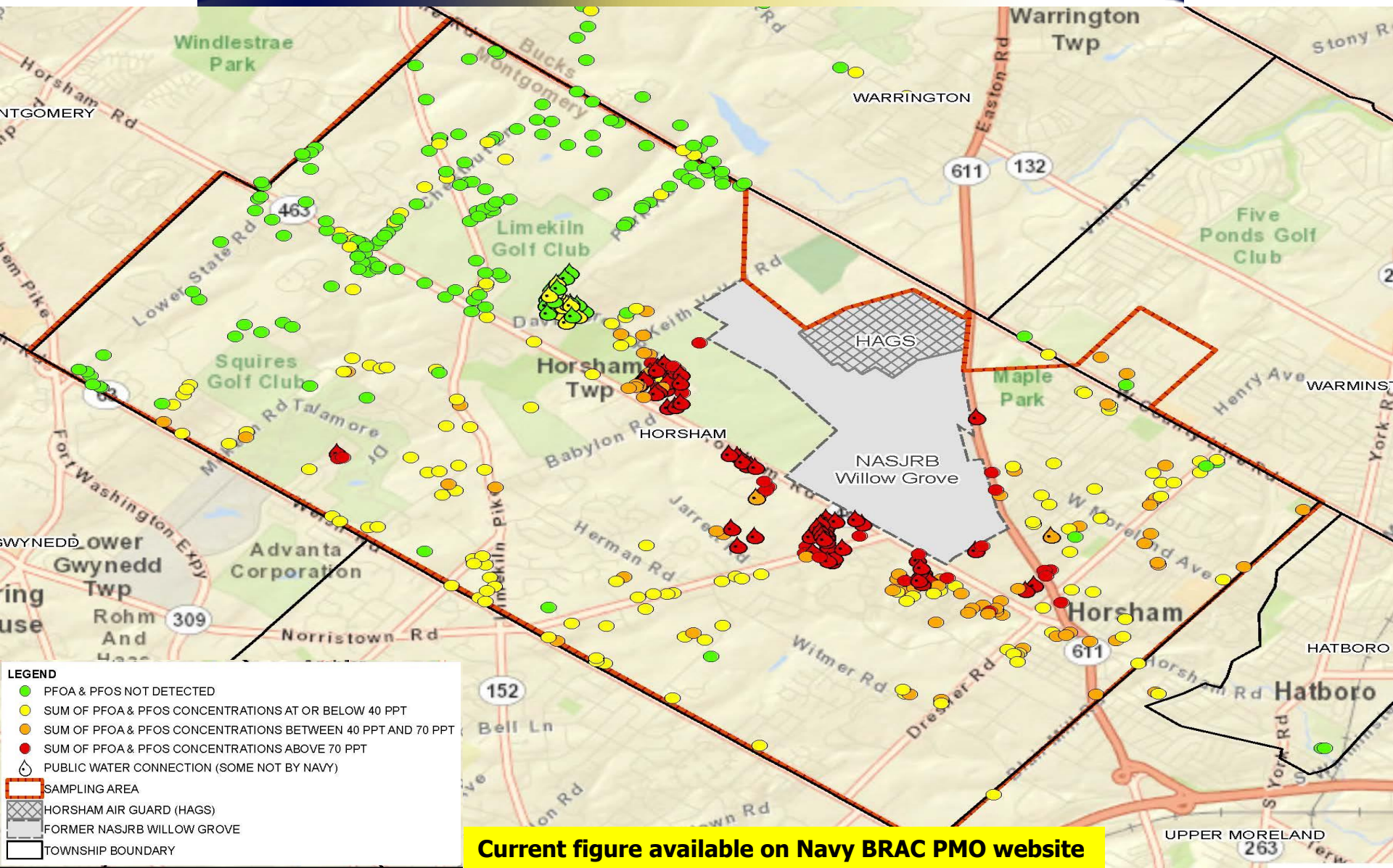
Private Drinking Water Well Sampling



- From 2014 – mid 2017, the Navy requested support from the EPA to sample nearby private drinking water wells for Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS).
- Private drinking water well sampling for PFOA/PFOS and provision of bottled drinking water is now being performed by Tetra Tech, a U.S. Navy contractor.
- The primary point-of-contact is:
 - **Mr. Andrew Frebowitz, Tetra Tech Project Manager**
 - **E-mail: andy.frebowitz@tetrattech.com**
 - **Phone: (610) 382-1170**



Private Drinking Water Well Sampling





Summary of Drinking Water Actions



- The Navy has provided funds to HWSA for filtration system costs and drinking water connections above the HA. The total funding is nearly \$18 million. Additional funds will be provided in 2019.
- The Navy has funded filtration systems at five Horsham Water and Sewer Authority (HWSA) public wells (#10, 17, 21, 26, and 40) which are above the HA. All are back to drinking water service.

Private well sampling	Feb 2017	Current
Private wells sampled for PFOA/PFOS*	490	511
Private wells above lifetime HA (>70 ppt)	89	99
Private wells not yet connected	27	13
Private wells below HA/monitored (>40 ppt)	70	60

*Includes 47 wells sampled in Warrington, now managed by Air National Guard



Phase I PFAS Investigation



- The Navy is performing a Remedial Investigation (RI) to better understand the nature and extent of the PFAS contamination, and facilitate evaluation of potential remedies.
- Draft RI Data Report prepared November 2016, copy is available at Horsham Township Library
- Draft Phase I RI Report issued for regulatory review December 2018 with a copy provided to Horsham Township Library. Report identifies data gaps for further investigation, including potential migration pathways via storm water systems.




Phase I PFAS Investigation

Stormwater Control and Stream Sampling



- Outfalls along the northern end of the base that discharge to Park Creek have been plugged and abandoned.
- The retention basin has been modified to hold additional storm water by raising inlet height. Actions to access existing but under-utilized retention areas is planned for Spring 2019.
- As requested by the Environmental Protection Agency, the Navy and Air National Guard have sampled the Little Neshaminy and Pennypack Creeks, which drain storm water from the air station.
- Concentrations of combined PFOA and PFOS in creeks have decreased over time, as the following figure shows. New sampling expected in Spring 2019.

Preliminary Information only – not to scale

 Stream flow direction

Little Neshaminy Downstream of Willow Grove Inputs

Sample Date	PFOA + PFOS (ppt)	Sampled by
April 2016	250	Navy
August 2017	205	Navy
October 2017	308	Air National Guard
October 2017	161	Air National Guard
March 2018	175	Air National Guard
June 2018	72	Air National Guard

Neshaminy Downstream from where it meets with Little Neshaminy

Sample Date	PFOA + PFOS (ppt)	Sampled by
October 2017	64	Air National Guard
October 2017	59	Air National Guard
March 2018	58	Air National Guard
June 2018	29	Air National Guard

Pennypack Downstream of Willow Grove Inputs

Sample Date	PFOA + PFOS (ppt)	Sampled by
August 2017	48	Navy

NASJRB/HAGS

NAWC

(Prepared by EPA Region III, 2019)



Phase I PFAS Investigation Stormwater System Evaluation



- The NASJRB storm water system was evaluated to locate portions where PFAS impacted groundwater may infiltrate and discharge to local surface water. Over two miles of storm sewer lines reviewed, using remote video inspections in the fall of 2018.
- A tech. memorandum identifying leaking storm sewer lines was completed in March 2019 with a copy provided to the Horsham Township Library.
- The Navy is evaluating the report and has requested funding to award repair contracts in 2019.



Phase II PFAS Investigation



- Scoping Sessions with PADEP and EPA held in December 2018 and January 2019
- The Phase II investigation includes, but is not limited to:
 - Additional monitoring wells and soil sampling in source areas
 - Evaluation of groundwater extraction and treatment systems using pilot test information
 - Further evaluation of on-base storm water systems
 - Periodic surface water monitoring



Pilot Test



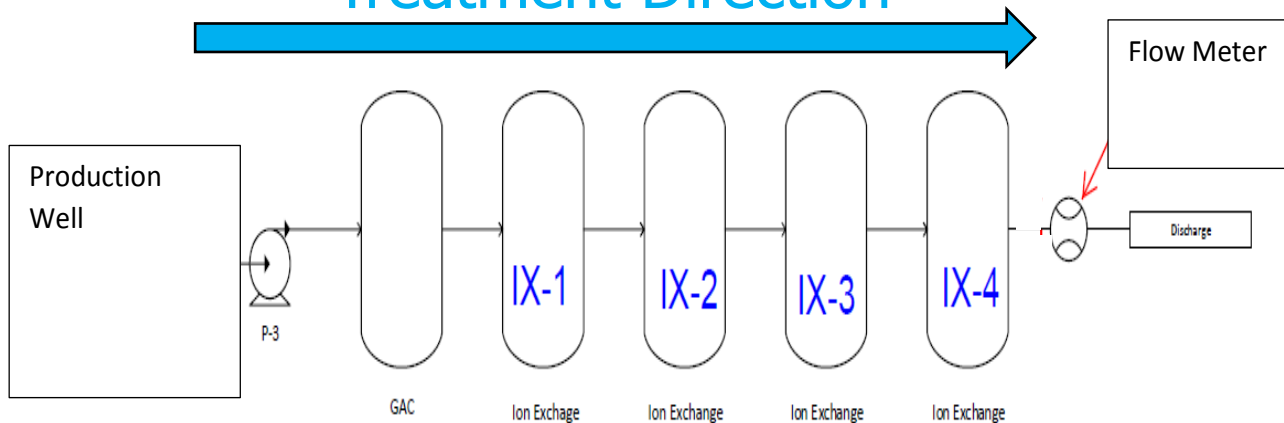
- Groundwater Treatment Pilot Test at former Aircraft Maintenance Facility, Hangar 680
 - Comments received from Nov. 2018 draft work plan and addressed
 - Final Work Plan – March 2019
 - Pilot Test Construction Start – April 2019
 - Electrical work, in coordination with Air Guard
 - System Construction
 - Extraction Well Installation
 - Pilot Test Start Up and Testing – Summer 2019
 - 6 month duration after start up



Pilot Test Treatment System



Treatment Direction



Example of a modular pilot ground water treatment system



Pilot Test Location



- Monitoring will be performed prior to discharge of the effluent.
- The effluent will be treated to below 70 ppt combined PFOA and PFOS.





PFAS Removal Action



- A removal action to excavate soils with high levels of PFAS began in November. Excavation areas were adjacent to fire station and Hangar 175.
- The Time-Critical Removal Action Memorandum and work plan is available in the administrative record or the Horsham library.
- Excavation was completed in January 2019.
- Excavation is being backfilled to grade with clean fill material that was tested prior to use.



PFAS Removal Action (cont.)



- Approximately 3,500 tons were excavated.
- Excavated soil is protected from rain/wind erosion.
- Planned to be disposed at a RCRA Subtitle D lined landfill.



Photo as of March 7, 2019



Participation in DoD Funded PFAS Research



- SERDP/ESTCP are DoD-funded environmental research programs.
- NASJRB Willow Grove is supporting ~\$5.12M of SERDP funded research investigating new PFAS assessment and remediation technologies being performed by nationwide, and local, universities and contractors.
- Will continue to seek participation in additional SERDP/ESTCP work at NASJRB Willow Grove or nearby NAWC Warminster.
- Project list with Universities or Companies leading the research:

Soil or Groundwater Treatment

- ER18-1306 – Clarkson University
- ER18-1599 – Clemson University
- ER18-1515 – Auburn University
- ER18-1570 – Drexel University
- ER18-1593 – Geosyntec Consultants
- ER18-1603 – Jacobs Engineering
- ER18-1545 – Univ. of Rhode Island
- ER18-1620 – Texas A&M Univ.
- ER18-1300 – College of Wooster

Passive stormwater treatment

- ER18-1230 – Oregon State Univ.

Surface water fate and transport

- ER19-1073 – Academy of Natural Sciences/Drexel Univ. **(New Start)**

Additional information can be found on DOD's SERDP/ESTCP website:

<https://www.serdp-estcp.org/Program-Areas/Environmental-Restoration/Contaminated-Groundwater/Emerging-Issues>



Action Summary since previous RAB



ACTIONS COMPLETED

- Final-Draft Site 3 Feasibility Study
- Monitoring sampling at Site 5
- Draft Phase I PFAS RI report
- Draft tech. memo. evaluation of leaking storm sewers
- Scoping session meetings for Phase II PFAS RI
- Soil excavation

ACTIONS SOON TO BE COMPLETED (by end of March)

- Final pilot study work plan
- Draft PFOA and PFOS sampling plan for streams and creeks



NASJRB Willow Grove



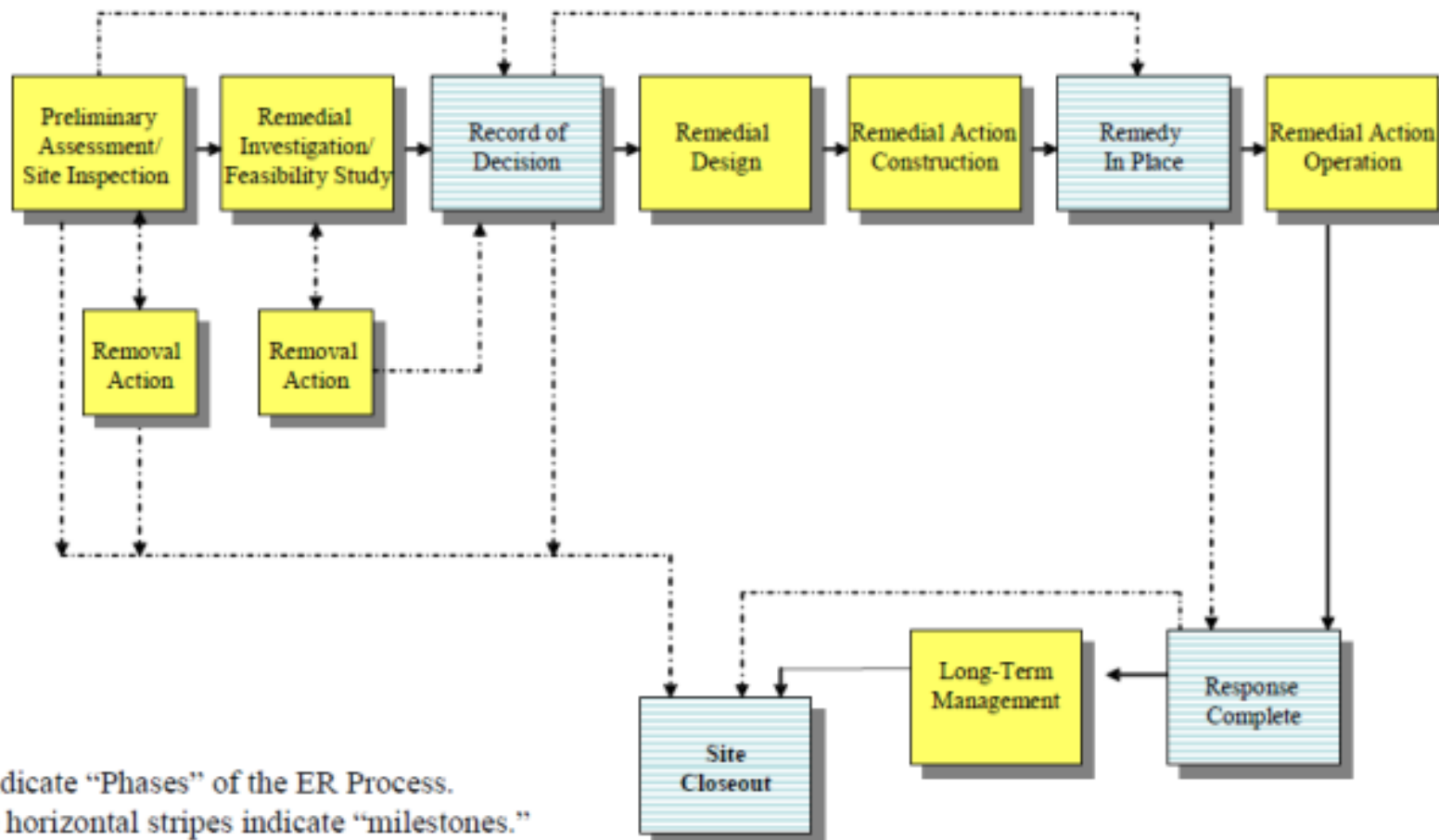
- Questions or comments from the RAB?
- Community questions or comments?
- Next RAB Meeting
 - May 30, 2019 @ 6:00 p.m. (Thurs.)
- Closing Navy Remarks



NASJRB Willow Grove



Back-up / Additional Information



Notes:

Yellow boxes indicate “Phases” of the ER Process.

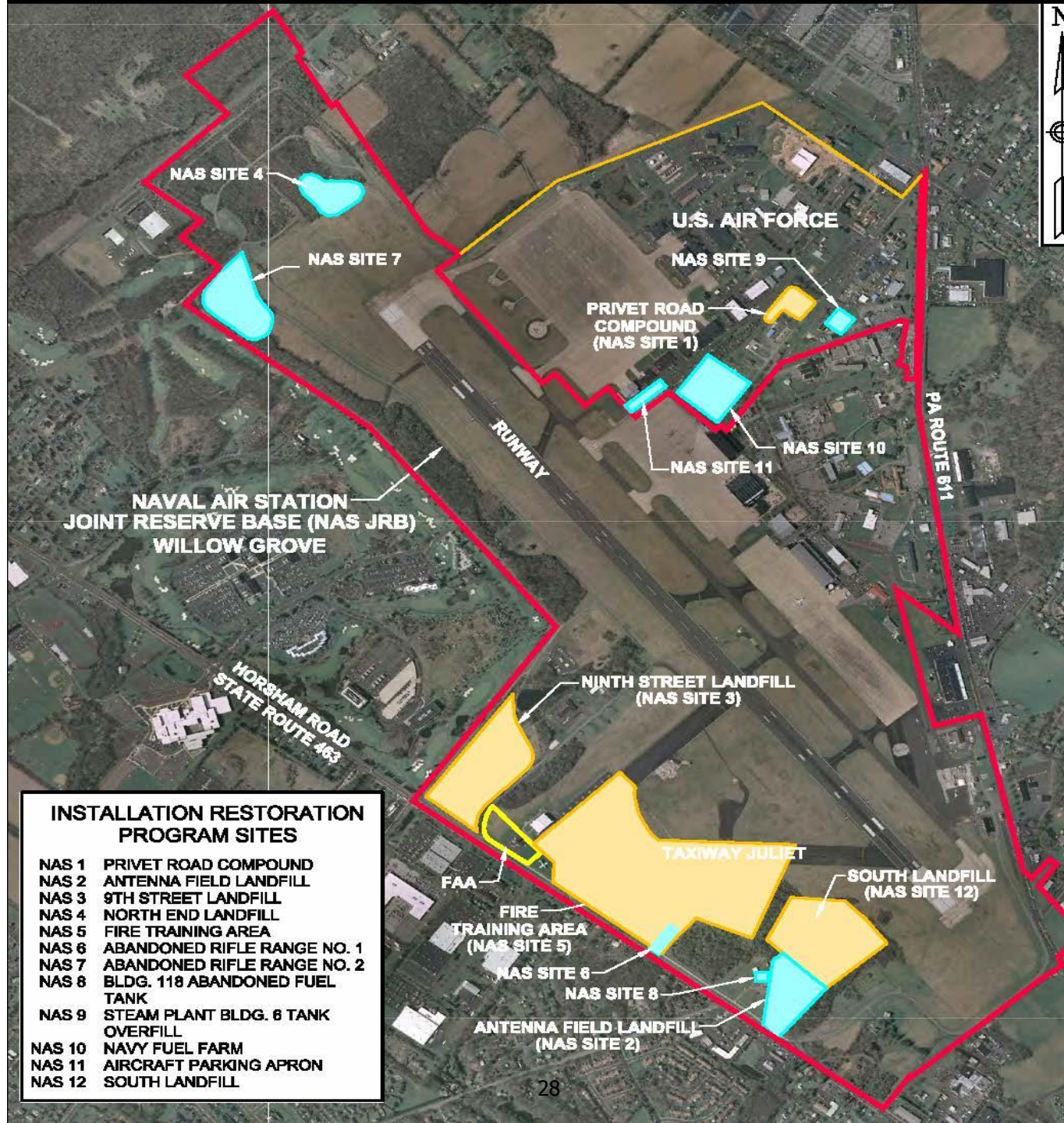
Boxes with blue horizontal stripes indicate “milestones.”



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 Oct. 2011/FS Pending
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 Sept. 2007 Groundwater (OU 2) ROD signed Sept. 2012 Groundwater (OU 2) RACR Signed Sept. 2014 Groundwater (OU 2) Final OPS and OM&M Plan May 2015
6	Abandoned Rifle Range No. 1	...	Consensus Agreement for No Action Dec. 2007
7	Abandoned Rifle Range No. 2	...	Consensus Agreement for No Action Aug. 2008
8	Building 118 Abandoned Fuel Tank	...	NFA Agreement Oct. 2006
SSA 11	Aircraft Parking Apron	...	Eliminated From Consideration
12	South Landfill	OU 11	Final RI Feb. 2014, FS to follow
PFCs/PFAS	Perflourinated Compounds/Per- and Polyfluoroalkyl substances	OU 12	TCRA Sept. 2015, Final PA/SI Mar. 2016, RI in progress.



INSTALLATION RESTORATION PROGRAM SITES

- NAS 1 PRIVET ROAD COMPOUND
- NAS 2 ANTENNA FIELD LANDFILL
- NAS 3 9TH STREET LANDFILL
- NAS 4 NORTH END LANDFILL
- NAS 5 FIRE TRAINING AREA
- NAS 6 ABANDONED RIFLE RANGE NO. 1
- NAS 7 ABANDONED RIFLE RANGE NO. 2
- NAS 8 BLDG. 118 ABANDONED FUEL TANK
- NAS 9 STEAM PLANT BLDG. 6 TANK OVERFILL
- NAS 10 NAVY FUEL FARM
- NAS 11 AIRCRAFT PARKING APRON
- NAS 12 SOUTH LANDFILL



PFOA / PFOS Background



- In mid-2014, PFCs 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.



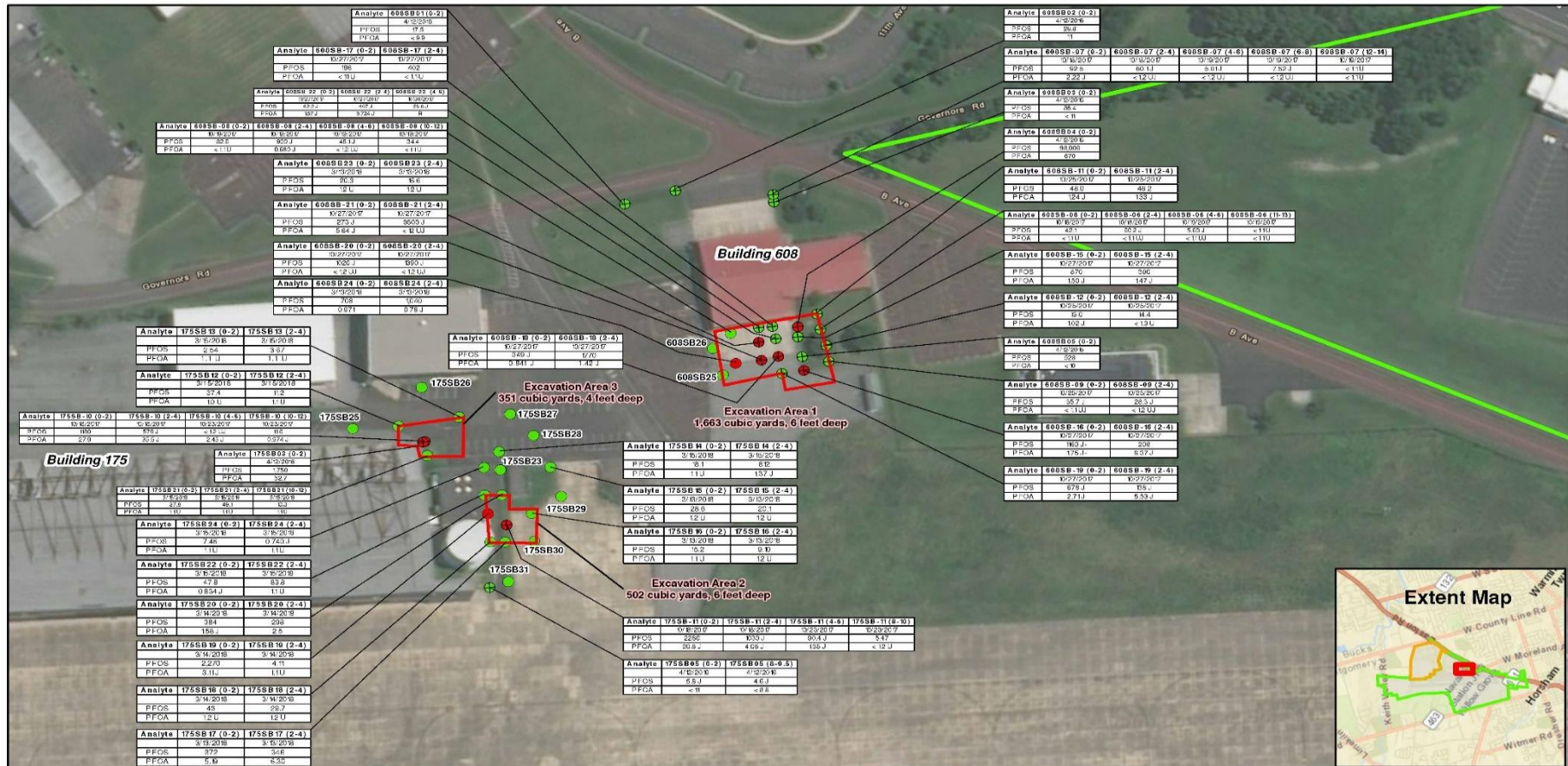
PFOA / PFOS Background (cont.)



- In May 2016, the Environmental Protection Agency established a lifetime Health Advisory (HA) level of 70 parts-per-trillion ($0.07 \mu\text{g/L}$) 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.



PFAS Removal Action





PFAS Removal Action (cont.)



Photo as of December 2018



PFAS Removal Action (cont.)



Photo as of December 2018



PFAS Information and Resources



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

<http://www.secnave.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>

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

<http://oldhtl.mclinc.org/WillowGroveNASindex.html>