



# Restoration Advisory Board Biddle Air National Guard Base

Keith Freihofer  
NGB/A4VR  
10 March 2021

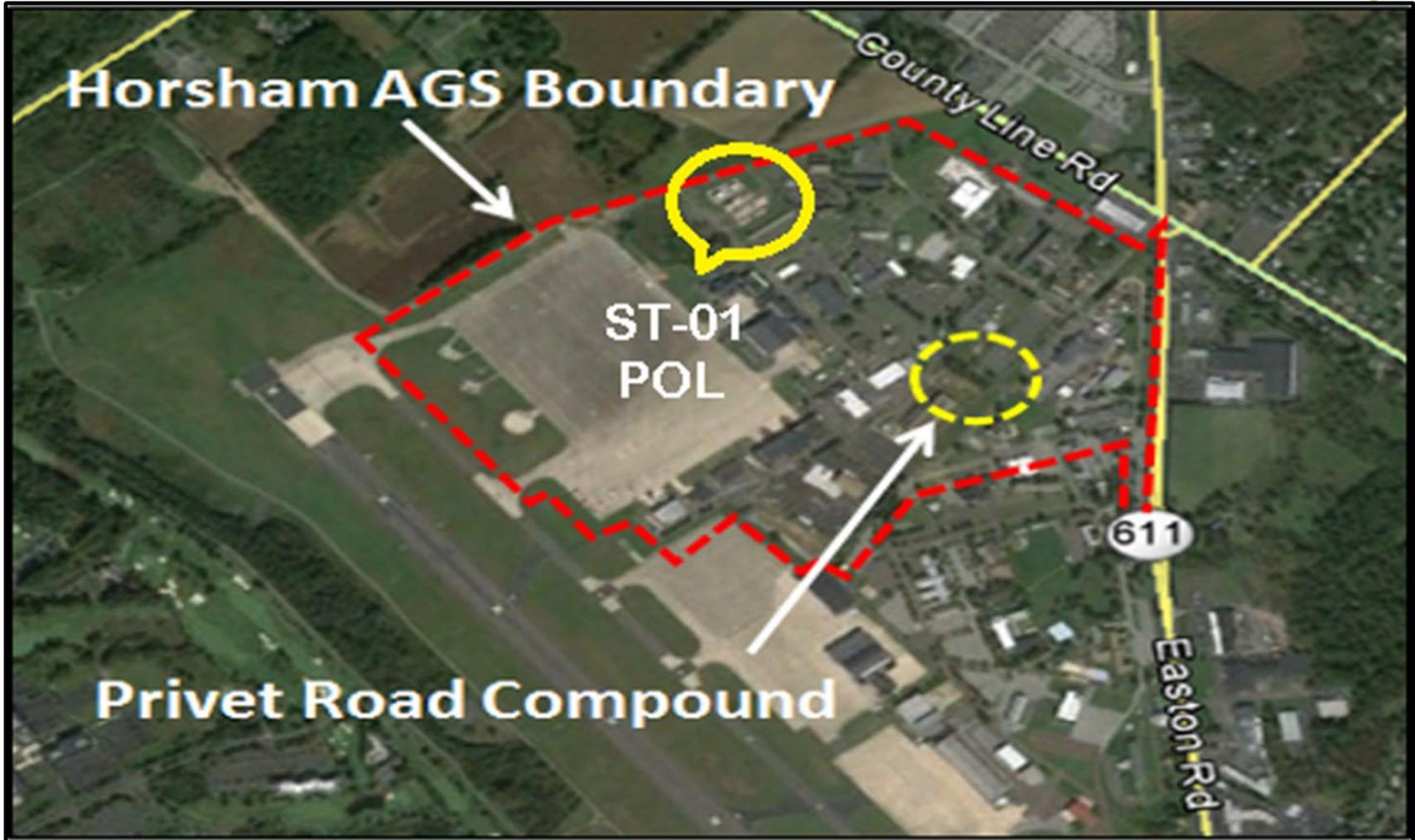


# Updates Since December



- Environmental Restoration Program Sites:
  - Update on ST-01
- PFAS Remedial Investigation:
  - Continued Phase I field investigation with multiport monitoring well installations and groundwater sampling
  - Draft Technical Memorandum for Phase I field investigation activities
  - Conducted regional surface water sampling in coordination with the Navy
- PFAS surface water treatment:
  - 180 gallons per minute system continues to operate
  - Draft NPDES Industrial Stormwater permit under review
  - 500 gallons per minute surface water treatment system under construction

# Environmental Restoration Program Sites



# Air Force Reserve ST-01 POL



- Former Air Force Reserve Petroleum Tank Area
  - Originated from a jet fuel spill in the 1970's
  - Injections of persulfate and Epsom salt followed a biosparge system in 2016
  - Petroleum tanks were dismantled in 2016
    - Disposed 175 tons of petroleum impacted soil at licensed facility
    - Confirmatory sampling in accordance with 25 Pennsylvania Code, Section 245.310 results were accepted by PA DEP on 10 Sep19
  - Remedial Action Plan approved by PA DEP 8 Feb 21
  - Remedial Action programmed for FY22
- POC: Ms. Margaret Patterson: [margaret.patterson@us.af.mil](mailto:margaret.patterson@us.af.mil)



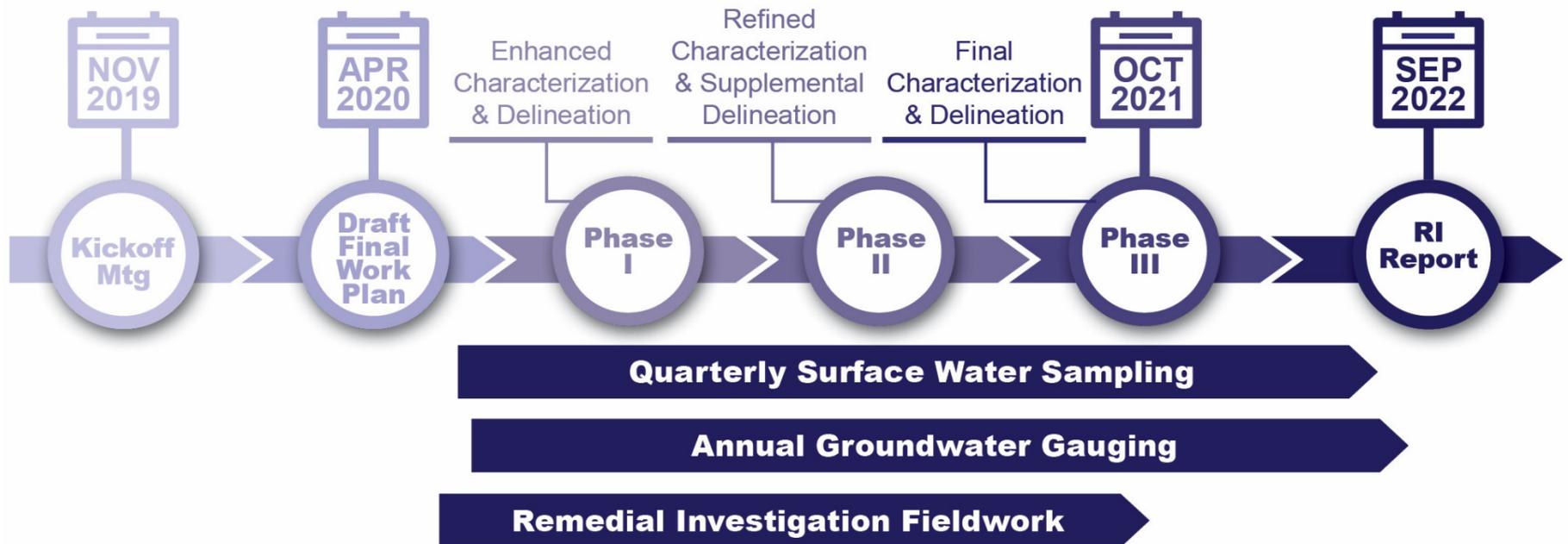


# Remedial Investigation Project Objectives



- 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 to support USGS model.

# General Project Steps and Schedule



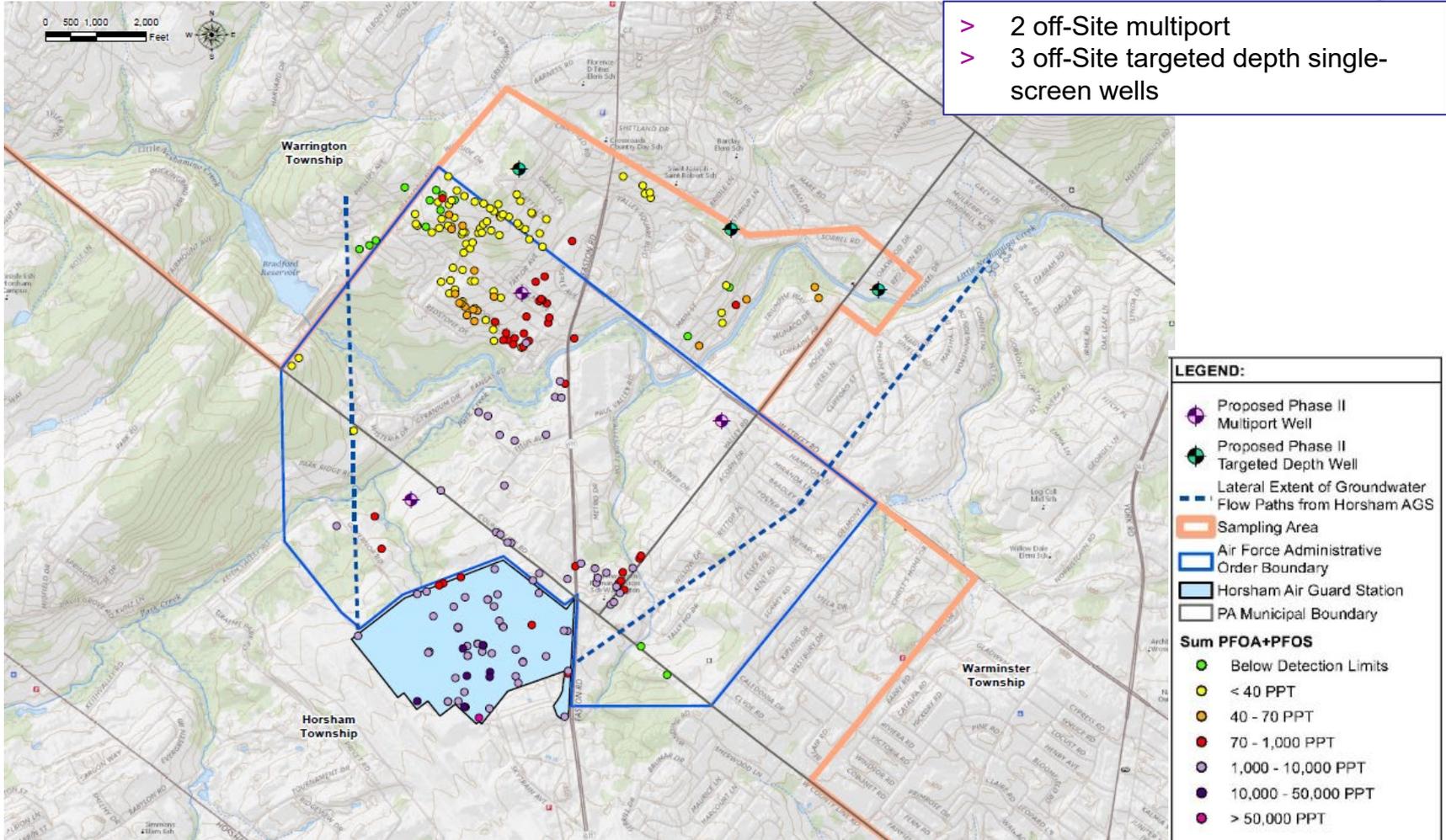
# Remedial Investigation Progress



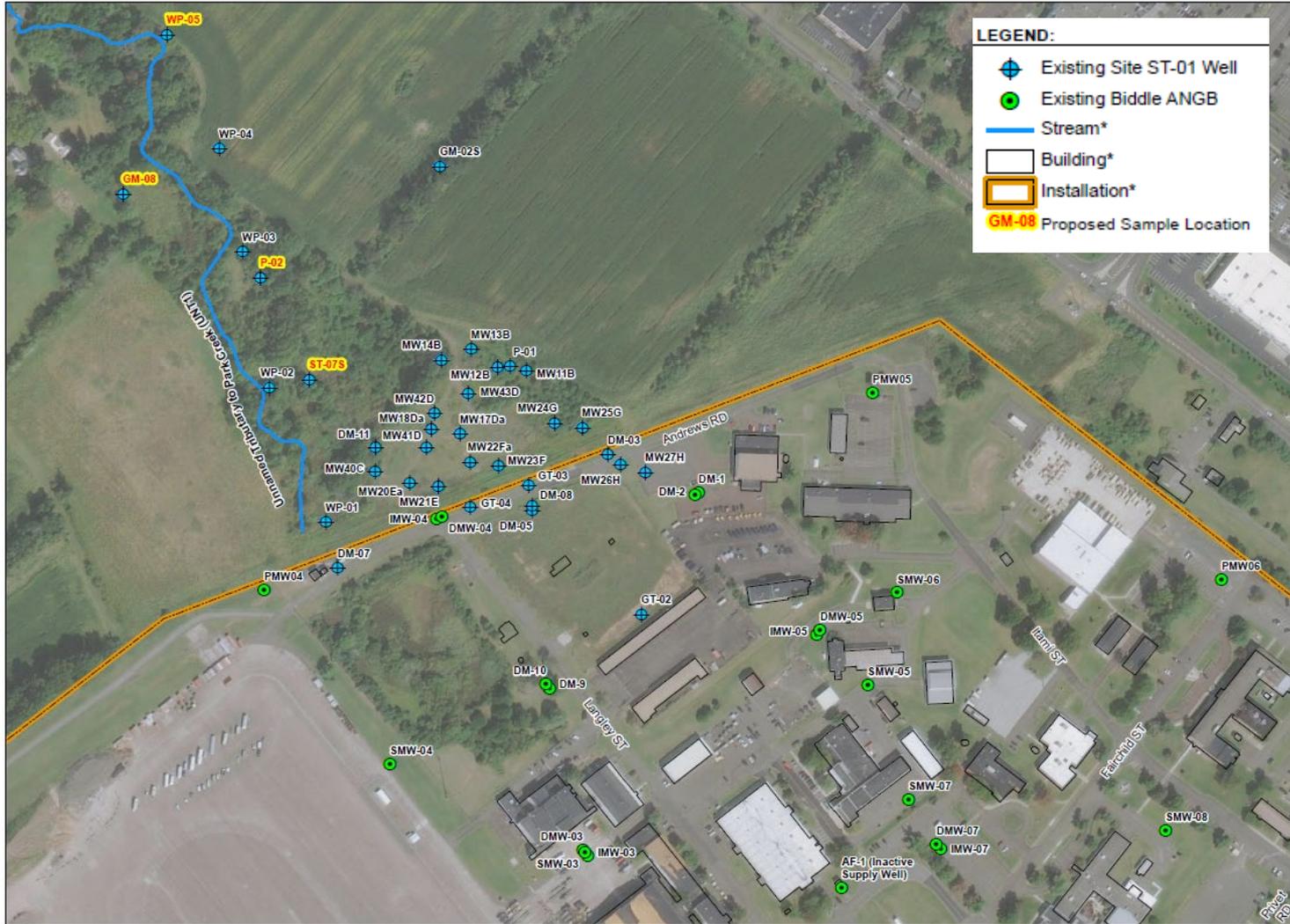
- 19 January: Draft Technical Memorandum for Phase I field investigation submitted to ANG
- 1 March: Draft Final Tech Memo for Phase I field investigations submitted to EPA, DEP, Townships, Navy, and USGS
- 2-17 February: Installed multipoint monitoring wells PMW-09, PMW-10, and PMW-11
- 22 February – 2 March: Sampled PMW-09, PMW-10, and PMW-11
- Ongoing: Coordinating access for offsite monitoring well locations with Warrington Township



# Remedial Investigation Progress



# Remedial Investigation Progress



# Quarterly Surface Water Sampling



- Performed regional Surface Water Sampling with Navy during January Quarterly Event.
- Data validated by Leidos and provided to Navy for presentation as part of the regional data set.



# Actions Planned for Next 3 Months



- Actions Planned for Next 3 Months
  - Continue regional surface water sampling in coordination with the Navy
  - Obtain access for offsite monitoring wells and begin installations
  - Sample existing wells along tributary to Park Creek
  - Design and plan comprehensive groundwater sampling event

# PFOS/PFOA in Surface Water on Biddle ANGB



- PFOS/PFOA has been detected in surface water leaving the Biddle Air National Guard Base. This water flows from a stormwater detention basin on the northwest boundary of the Base to Park Creek which flows to the Little Neshaminy Creek.
  - 500 gallon per minute treatment plant under construction to replace current temporary plant
  - Treatment Units:
    - Sand Filter – remove particles and material that may foul other units
    - Zeolite Filter – remove algae, heavy metals, some organics
    - Granular Activated Carbon (GAC) – remove organic compounds
    - Ion Exchange Resin – remove PFAS
  - Construction started October 2020
  - Treatment building and treatment vessels installed, interior work continuing. Detention basin work weather dependent
  - Anticipated completion and start-up summer 2021

# PFOS/PFOA in Drinking Water



- Warrington Township sold its drinking water system to North Wales Water Authority (NWWA). ANG transferred the Warrington Township cooperative agreement to NWWA for filtration of municipal wells and connection of private homes with PFOS/PFOA Lifetime Health Advisory exceedances to municipal water.



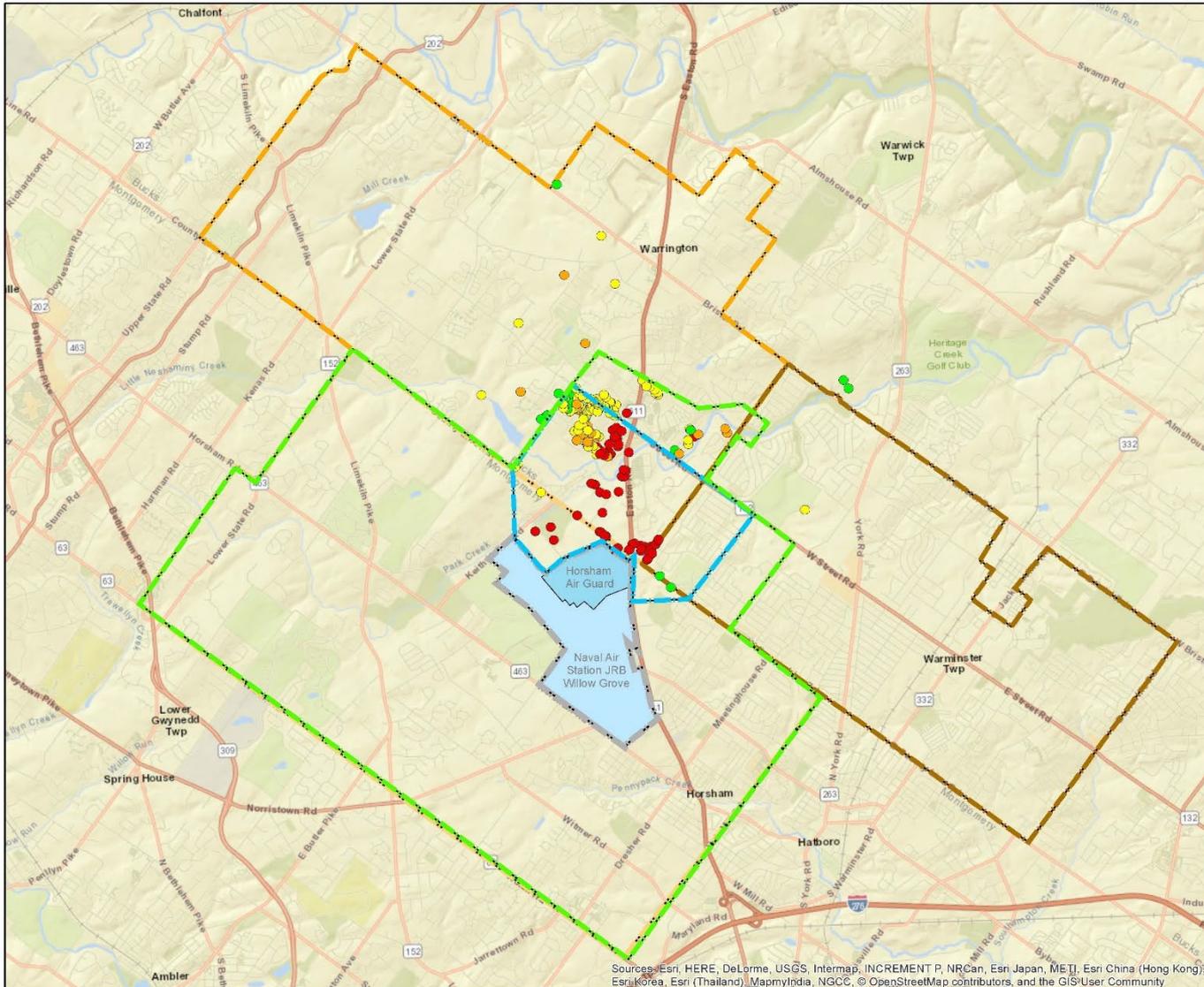
# Private Well Sampling



- 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 Lifetime Health Advisory level (LHA) for residents within our area of responsibility in Horsham, Warminster, and Warrington
  - The number of private wells sampled by ANG are:
    - Horsham: 6, 5 above LHA; 4 have been connected to municipal water (remaining one not in use)
    - Warrington: 150, 46 are above LHA; 35 have been connected
    - Warminster: 12\*, 11 are above LHA; 8 have been connected
- \*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: David Side at [david.side@woodplc.com](mailto:david.side@woodplc.com) or (610) 877-6111



# Private Well Sampling Map



PFC Sample Location Map  
as of October 2018

Horsham Air Guard Station  
Horsham and Warrington Township

### Legend

**Health Advisory Level (HAL)**  
HAL is the sum of both PFOA+PFOS (PFOA 0.070 ug/L, PFOS 0.70 ug/L)

- Sum of PFOA+PFOS concentrations above 0.070 ug/L
- Sum of PFOA+PFOS concentrations detected between 0.040 ug/L and 0.070 ug/L
- Sum of PFOA+PFOS concentrations detected at or below 0.040 ug/L
- PFOA & PFOS not detected

- Horsham Air Guard
- Former NAS JRB Willow Grove
- Sampling Area
- Air Force Administrative Order Boundary
- Horsham Township
- Warrington Township
- Warminster Township

### Notes & Sources

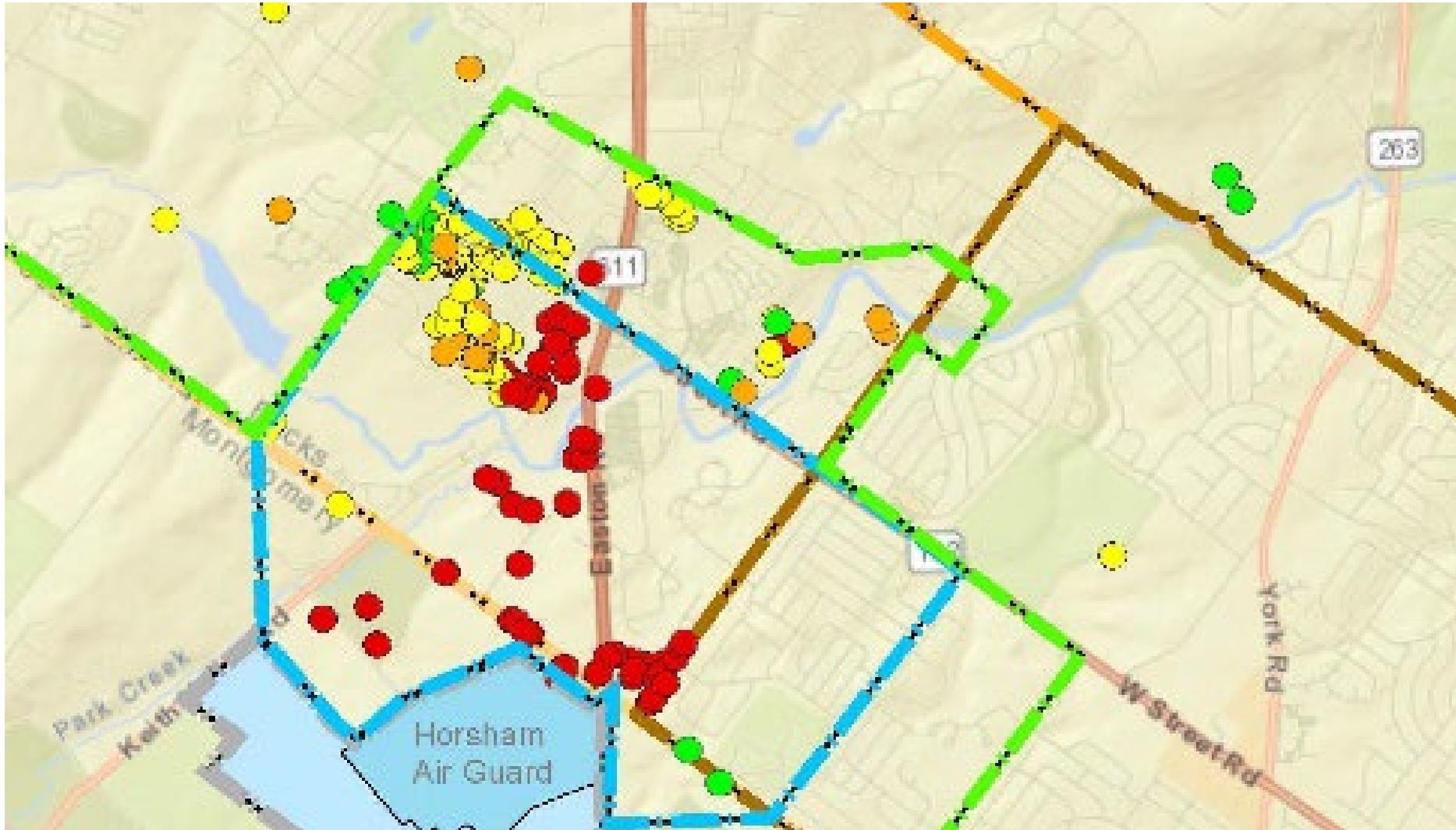
Sources:  
Street Base Map hosted by ESRI.

**wood.**  
Wood  
Environment & Infrastructure, Inc.  
751 Arbor Way  
Blue Bell, PA 19422  
(610) 828-8100

Figure  
**2**



# Private Well Sampling Map





# Actions Planned for Next 3 Months

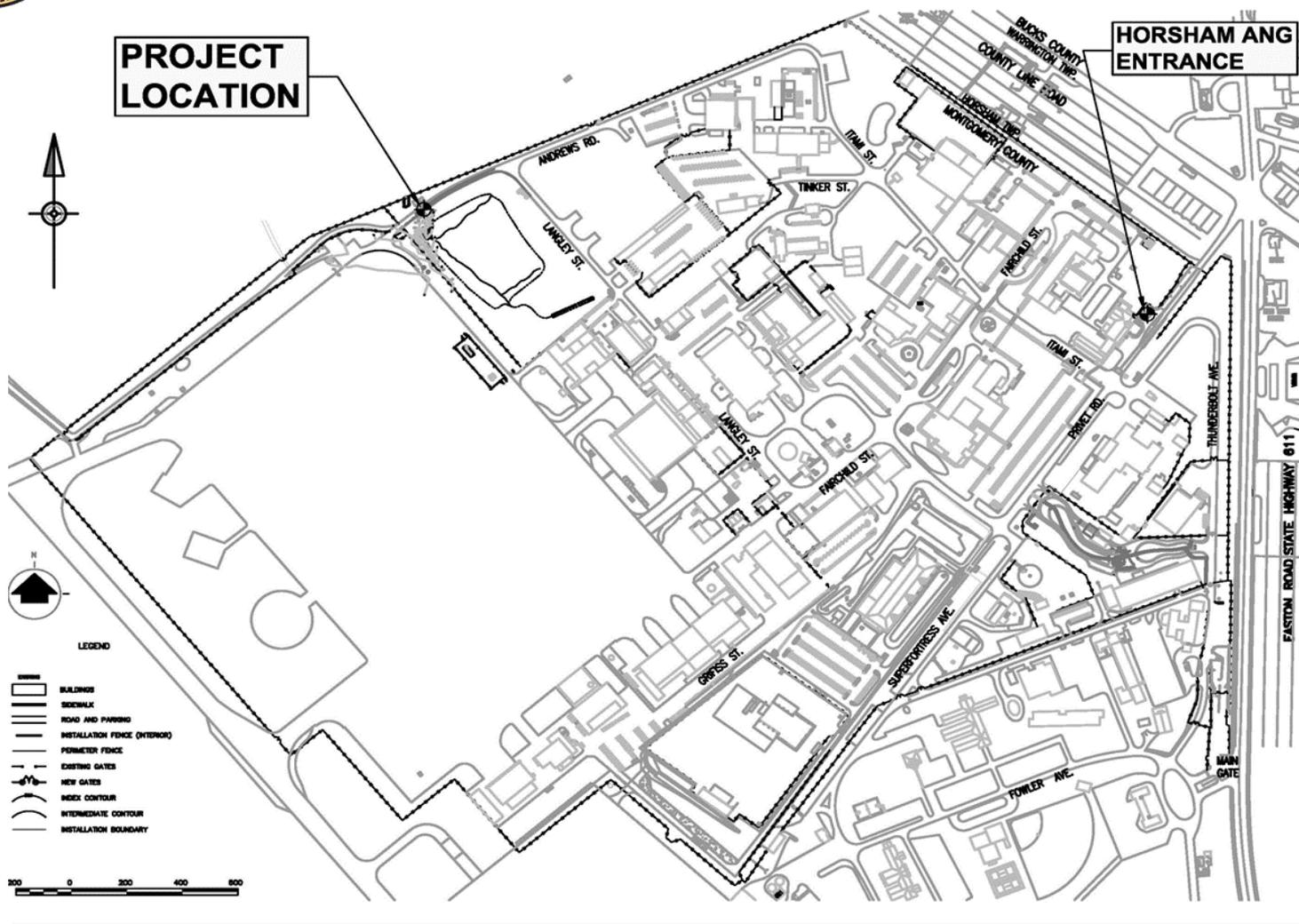


- PFAS Remedial Investigation:
  - Continue regional surface water sampling in coordination with the Navy
  - Obtain access for offsite monitoring wells and begin installations
  - Sample existing wells along tributary to Park Creek
  - Design and plan comprehensive groundwater sampling event
- Surface water treatment:
  - Continue construction of permanent treatment plant
  - Draft NPDES Stormwater Permit is under review
- Continued private well sampling
- Note: Administrative Record now listed under Biddle ANGB: <https://ar.afcec-cloud.af.mil/>

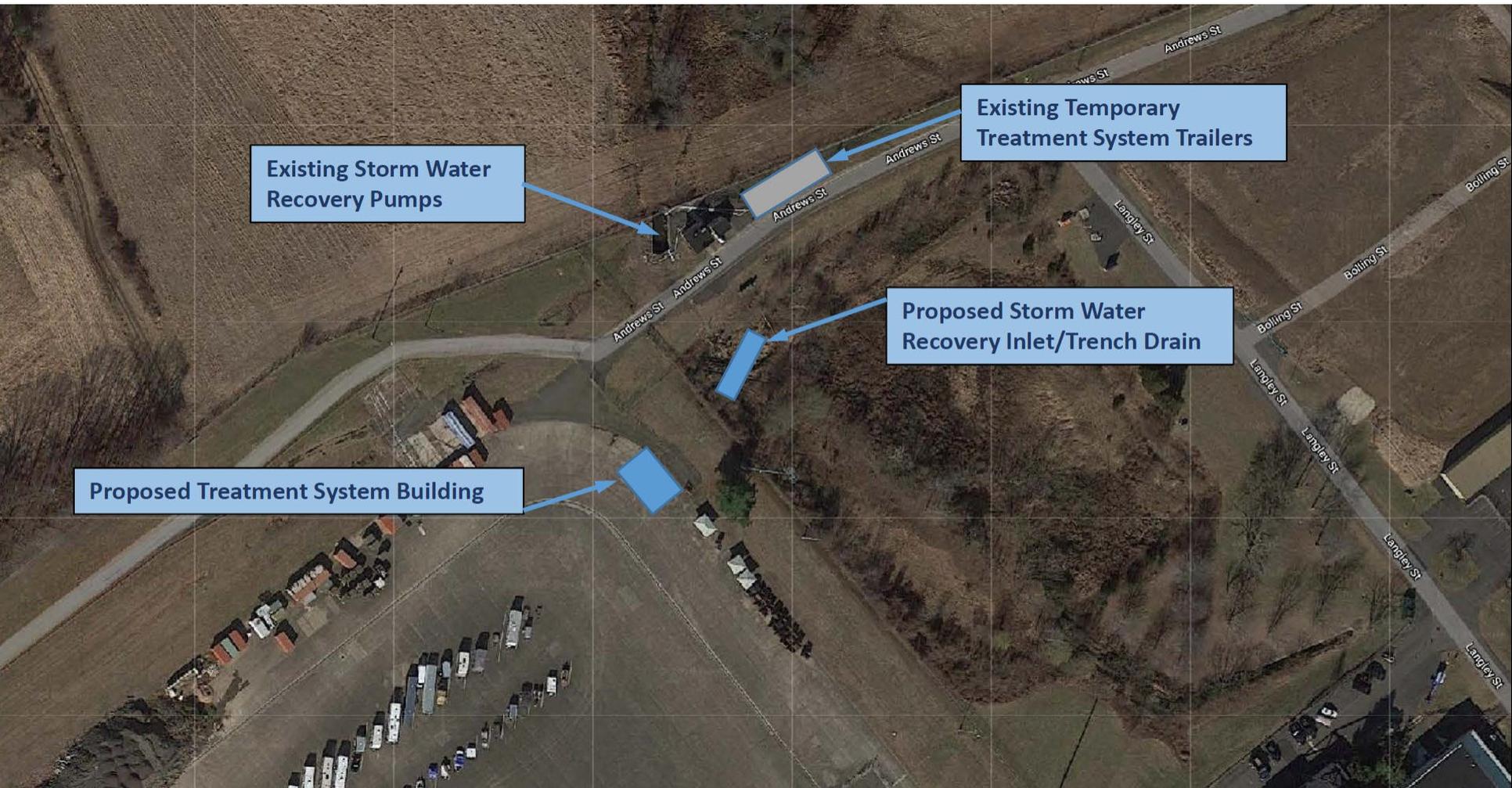


# Previously Presented Data

# PFOS/PFOA in Surface Water on Horsham AGS



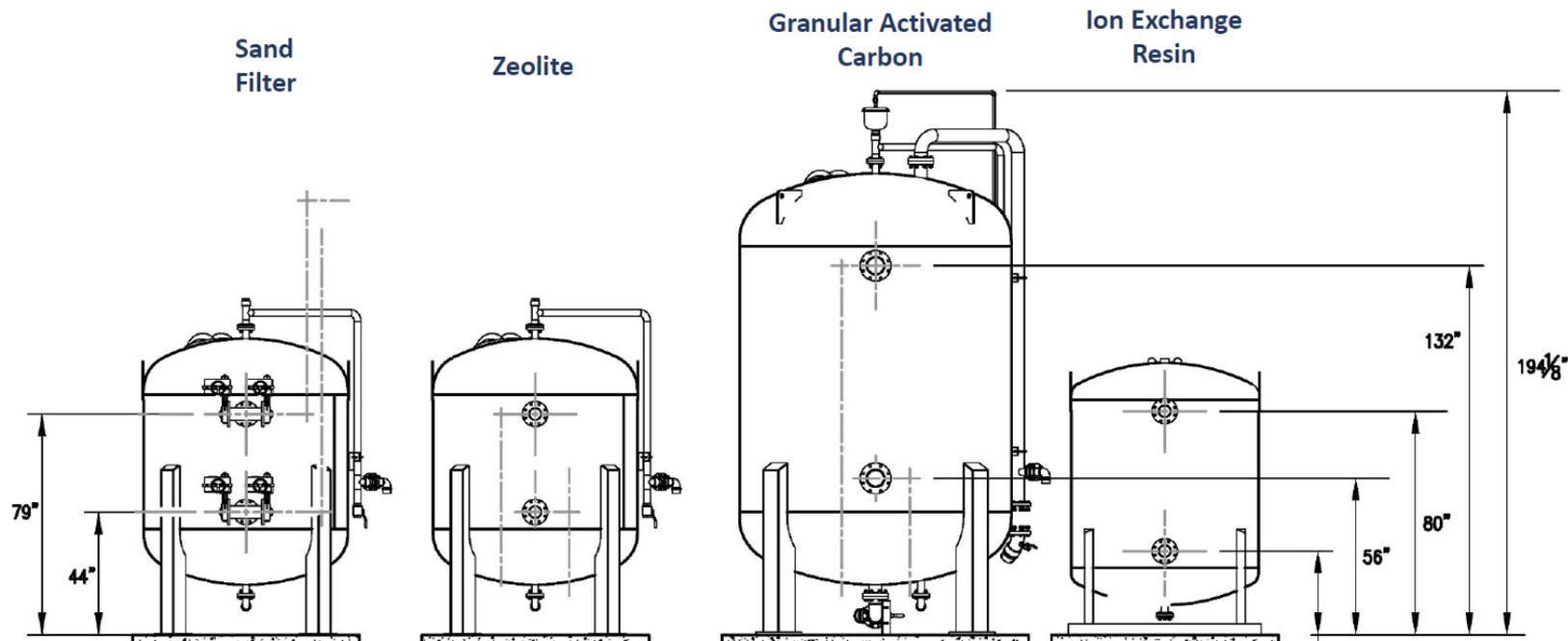
# PFOS/PFOA in Surface Water on Horsham AGS



# 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)



# Potential PFOS/PFOA Source Areas



# Groundwater Data Update



- Gauging conducted 8-9 March 2018
  - Semi-confined multilayer aquifer system, subdivided into four zones for contouring
  - Gradients trends northwest in each zone
- Sampling event conducted 5-15 March, 2018
  - Concentrations similar to previous events
  - 78 of 85 locations exceeded 70 PPT (ng/l) (combined PFOA/PFOS)
  - Highest concentrations found in three general areas: along the southern boundary, near Building 335, and near Building 201.
  - Highest concentrations at PMW01, Zones A, B, and C: 329,500 PPT, 147,400 PPT, and 186,900 PPT, respectively.
  - Next highest concentration at IMW-06 (49,000 PPT) along the southern boundary).
  - Four wells near Buildings 201 and 335 contained concentrations above 10,000 PPT.

# GW Results: March 2018

