Horsham Water & Sewer Authority
Experience with PFAS Contamination –
Making “Unwell Waters” Well Again

New Jersey Water Environment Association Annual Conference
Atlantic City
May 7, 2019
Horsham Township

- Founded in 1717
- ~ 18 miles north of center city Philadelphia
- 17.32 Square Miles (11,090 acres)
- 26,147 residents
- 32,000 + jobs
  - Over 600 companies in five high-end office parks featuring many Fortune 500 companies including health, financial and technology companies
- In 2011, Horsham Township was named one of the top 100 places to live in America by CNN Money Magazine, and climbed into the top 50 in 2013
- Although the township was disappointed when the local naval base (there since 1942) was closed on September 15, 2011, it was looking forward to the potential redevelopment opportunities presented by the 862 acres of surplus property in the heart of the township (8% of our community)
But in 2014
the 1st shoe drops . . .

Starting in 2014, Horsham became spot-lighted by the media as a community with “PFC” problems.
So what happened?

Prior to 2014, Horsham’s public water supply utilized 14 active groundwater wells (~90%) and 2 interconnections with neighboring suppliers (~10%)

2014: EPA’s UCMR3 sampling revealed the presence of PFAS in 5 of the 14 then-active public supply wells

PFOS concentrations in 2 wells (#26 & #40) exceeded the then-current provisional health advisory level of 200 ppt for PFOS

Well #26: PFOS = 700 ppt/PFOA = 290 ppt
Well #40: PFOS = 1,000 ppt/PFOA = 63 ppt

In “consultation” with EPA & PADEP these wells were immediately shut down and public notice was issued

2015: Analyses at lower detection levels (~2.5 ppt) revealed PFAS concentrations in all HWSA wells and one of the interconnects
What are PFCs/PFAS?

- Group of fluorinated organic, manufactured compounds that have been widely used to make everyday products more impervious to stains, grease and water.
- Perfluoralkyl substances are fully fluorinated (perfluoro-) alkane (carbon-chain) molecules.
- Polyfluoroalkyl substances are not fully fluorinated.
- More than 3,500 manmade fluorinated organic compounds that have been produced since the mid-20th century.
- Extremely long-lived in the environment due to their resistance to environmental degradation and invulnerability to metabolism.
- Class B fluorine-containing firefighting foams include aqueous film forming foam (AFFF) that are a complex mixture of both known and unidentified PFAS of differing molecular structures present in varying proportions.
## Common PFAS Analytes

<table>
<thead>
<tr>
<th>PFAS</th>
<th>Name</th>
<th>Mol.Wt.</th>
<th>Type</th>
<th>Length</th>
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</thead>
<tbody>
<tr>
<td>PFHxA</td>
<td>Perfluorohexanoic acid</td>
<td>314</td>
<td>carboxylate</td>
<td>short</td>
</tr>
<tr>
<td>PFHpA</td>
<td>Perfluorooctanoic acid</td>
<td>345</td>
<td>carboxylate</td>
<td>short</td>
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<tr>
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<tr>
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<td>Perfluorobutanesulfonic acid</td>
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<td>sulfonate</td>
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<tr>
<td>PFHxS</td>
<td>Perfluorohexanesulfonic acid</td>
<td>400</td>
<td>sulfonate</td>
<td>long</td>
</tr>
<tr>
<td>PFOS</td>
<td>Perfluorooctanesulfonic acid</td>
<td>500</td>
<td>sulfonate</td>
<td>long</td>
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</tbody>
</table>
Where does the PFAS come from in Horsham?

The source of the PFAS contamination has been linked to historical activities, particularly to use of AFFF fire-fighting foam, at the former Willow Grove Naval Air Station Joint Reserve Base (NASJRB) and existing Horsham Air Guard Station (HAGS). The former Naval Air Warfare Center in Warminster is ~ 4 miles east.
PFAS Exposure in Southeastern PA

- Affected area = population of 84,184 (2010 census)
- 32,595 households in water service area
Horsham Air Guard Station (210 + acres still active)

NAS-JRB Willow Grove (862 acres of surplus Federal property)

The Redevelopment Plan

Township was slated to receive 860 acres of the former Willow Grove base from the Navy.

Plans for housing, a school, a festival ground, a hotel, office park, and a town center
  - Would create ~ 7,000 new jobs
  - Would net as much as $4.7 million in new municipal taxes
  - Would represent a 22% increase over township’s current annual revenue of $22 million

Since the discovery of PFAS in the soils and groundwater, the redevelopment plan has been halted and property is fast becoming a 862 acre abandoned, decaying property.
APPROVED REDEVELOPMENT PLAN
Navy & HWSA enter into an Environmental Services Cooperative Agreement (ESCA)

- Executed in July 2015
- Navy to provide funding for HWSA to provide PFAS remediation at any HWSA wells containing PFOS/PFOA at or above the existing or any future drinking water standard (Health Advisories are considered a standard under the ESCA)
- ESCA also covers costs for the extension of water mains to areas served by private wells that have been found the drinking water standard and public water supply does not currently exist
- Design of GAC treatment for HWSA’s Wells #26 and #40 begin
Then in 2016, the 2\textsuperscript{nd} Shoe drops ...

- 2016: EPA issued a new combined PFOA/PFOS Lifetime HAL at 70 ppt

- 3 more HWSA wells (#10, #17 & #21) were immediately shut down, and again immediate public notice was given

- Public concern and outcry was much more pronounced in 2016 than 2014
Since then, the township has hosted numerous community education events, congressional roundtables, workgroups, a national EPA PFAS Listening Session, a national health study pilot and recently the PA PFAS Action Team.

The end result is that Horsham Township has become an epicenter to the growing PFAS issue.
Township adopts its own PFAS drinking water standard

By this time, the Horsham Council and the residents had lost faith in following an EPA standard

Council directed HWSA to develop plans to reduce the PFAS levels in the drinking water

In six-weeks, alternatives were presented to Council and in 2016 Short and Long Term PFAS Plans were adopted to enact the “Horsham Standard”:

In light of concerns as to the evolving nature of the science regarding PFAS and the historic, chronic exposure in this community, Horsham Township has chosen to set a local water quality standard with a goal of “non-detect”
Short-Term PFAS Action Plan

• The Short-Term Plan goal is to minimize levels of PFAS in the public supply through optimization of sources with the lowest PFAS concentrations while performing the phased installation of treatment systems
  • 5 wells with Navy-funded PFAS treatment systems restored to service
    • permanent GAC treatment (26 and 40)
    • temporary GAC treatment (17 and 21)
    • temporary Anion Exchange Resin (10)
  • 8 wells suspended from service
  • Temporary increase in purchased water from neighboring supplier while wells are out of service for treatment system installation

• The system-wide average in the HWSA public water system is currently ~ 4 ppt for PFOA/PFOS combined

• Annual cost of Short-Term Plan is currently ~ $1.0 Million and is being funded by Horsham ratepayers in the form of a recurring surcharge (originally ~ $24/quarter for typical residential customer, now ~$14/quarter)
Temporary treatment sites

GAC trailer at Well 17

Anion exchange resin vessels at Well 10
Long-Term PFAS Action Plan

• $10M Long-Term Plan infrastructure is grant funded through PennVest
  • Construct permanent treatment systems on 5 wells < 70 ppt
    • Well 22 was placed in service on 2/28/2019 and we are awaiting an operations permit from PA DEP for Well 20.
    • Wells 2, 4 and 19 are expected back in service by June 30, 2019
  • Construct permanent treatment system on existing interconnection with neighboring supplier
  • Install an additional interconnection with a separate neighboring supplier (Completed)
• Convert temporary treatment systems at 3 Navy-funded wells (10, 17 and 21) and to permanent systems
Long-Term PFAS Action Plan

- 4 wells with a combined production capacity of ~250,000 gpd will be placed in reserve status (#1, #3, #7, #9)
- Increased purchased water commitment
- Total of 11 permanent PFAS treatment systems (either GAC or IX)
- Capital and O&M costs for treatment of the 5 wells > 70 ppt PFOA/PFOS funded by the Navy
- Other long-term plan O&M costs to be borne by HWSA ratepayers
Private wells

- The PFAS contamination is not limited to the public water supply wells:
- Navy has funded private well sampling – Currently 511 wells have been sampled
- 97 private drinking water wells have been tested above the 70 ppt LHAL
  - 1.8 miles of new HWFA water mains in areas where public water was not previously available have been constructed - Navy funded
- 88 have been connected to the public water system – Navy funded
- 5 are in the process of being connected at this time
- 2 have rejected the Navy’s offer to pay for connection to the public water system
- 2 have not responded
- 60 wells detected in the 40–70 ppt range are sampled quarterly
Private Drinking Water Well Sampling

Current figure available on Navy BRAC PMO website
PFAS is not just a drinking water issue

- HWSA Park Creek Wastewater Treatment Plant:
  - HWSA was compelled by PADEP to issue the HAG a discharge permit for flows entering the HWSA collection system
  - Discharge permit required PFAS monitoring only
  - Effluent monitoring results averaging ~ 25 ppt for PFOA/PFOS since installation of temporary treatment on HAGs supply wells
  - HWSA’s NPDES permit renewal effective January 2019 formalized requirements for influent and effluent monitoring for PFOA/PFOS (although there is no approved method for PFAS measurement in wastewater)

- Storm water runoff from the base continues to enter local creeks which feed a larger stream (Neshaminy Creek) that is the source water for a surface water drinking water plant ~11 miles downstream

- Navy/HAG have plugged outfalls, CCTV’d storm pipes and installed temporary treatment on a stormwater basin treating some of the flow but the system needs to be upgraded
So what does this all mean to our health?

- PFAS Exposure Assessment Technical Toolkit (PEATT) Pilot Project in 2018
  - The PA Department of Health conducted 235 (out of 600 contacted) randomly selected community members as part of a pilot project in May to September 2018 to evaluate the PEATT developed by the CDC and the ATSDR
  - The project was funded by the Association of State and Territorial Health Officials (ASTHO)
  - Serum samples were analyzed for 11 PFAS compounds
PEATT Project Summary

- Household level response rate: 46% (276 out of 600 participants)
- Household participation rate: 19.6% (118 out of 600 households)
- Participation rate: 40% (235 out of 584 eligible participants)
- 235 participants (from 118 different households)
- Only 26 children (ages 3-17) prevented any meaningful analysis of the data for this age group
Results Overall—4 main compounds

- Average serum PFAS levels (level of PFAS in the blood) were higher compared to NHANES’s averages
  - 94% had higher levels of PFHxS
  - 81% had higher levels of PFOS
  - 75% had higher levels of PFOA
  - 59% had higher levels of PFNA
- Results are consistent with other studies on PFAS exposure through drinking water

<table>
<thead>
<tr>
<th>PFAS Compound</th>
<th>Community Results</th>
<th>NHANES Results (2013-2014)</th>
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<tbody>
<tr>
<td></td>
<td>Average</td>
<td>95% Confidence Interval</td>
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<tr>
<td>PFOA</td>
<td>3.13</td>
<td>2.81-3.50</td>
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<tr>
<td>PFOS</td>
<td>10.24</td>
<td>8.86-11.83</td>
</tr>
<tr>
<td>PFHxS</td>
<td>6.64</td>
<td>5.51-7.99</td>
</tr>
<tr>
<td>PFNA</td>
<td>0.74</td>
<td>0.67-0.80</td>
</tr>
</tbody>
</table>

- Results shown in ug/L. Range excludes <LOD

Pennsylvania Department of Health
PEATT Project Results

- Of the 11 PFAS compounds tested, only PFOA, PFOS, PFHxS and PFNA were consistently detected in serum samples of the participants.
- The other 7 PFAS compounds were detected in less than 15 participants.
- In general, PFAS levels increased with residence time and water service area’s proximity to military base (The average PFAS Blood level for the 29 participants drinking HWSA’s water was higher than the other 3 water sources).
- For PFAS, the average PFAS blood levels for participants drinking HWSA’s water was 3.69, 12.38, 8.81, and 0.79 µg/l for PFOA, PFOS, PFHxS, and PFNA respectively.
CDC Multi-site Study

- The SEPA PEATT pilot (another pilot was performed in NY) and the recently awarded exposure testing at 8 other sites nationally do not include health outcomes
- A larger multi-site national health study is to be conducted by sampling 8,000 (6,000 adults and 200 children) in 6 PFAS-impacted communities throughout the country
  - Study has a funding level of $32,500,000 over 5 years
  - Proposals are due May 30, 2019
  - PA DOH is in the lead for the SEPA communities
  - Will not include cancer as a health outcome to the “limited” sample size
  - Previous health study funded by DuPont in the Ohio River Valley that did include cancer had 32,000 participants
PFAS Raw Water Sampling Data Review

- Typically only see detectable results for 7 PFAS analytes: PFOS, PFOA, PFHxS, PFNA, PFBS, PFHxA, and PFHpA.
- All 14 wells have detectable results for PFOS/PFOA.
- PFOS is greater than PFOA in 7 wells; ~ the same in 2; and less then PFOA in 5.
- PFOS/PFOA ratios range from 50 to 60% of the detected PFAS.
- Next highest PFAS compound is usually PFHxS, then PFBS or PFHxA, then PFHpA, the PFNA.
- The 4 long chain PFAS compounds (PFOS, PFOA, PFHxS, and PFNA) are typically 70 – 90% of the detected PFAS.
- PFNA is usually ND or right at the detection level. Highest levels are in the 2 wells with the highest PFOS/PFOA levels, but still in the single digits ppt.
GAC Case Study
HSWA - Well 26

2018 Total Volume Treated = 92 million gallons

Intermittent operation
- 12 hours per day
- Flow Rate = 200-250 gpm
- PFOA+PFOS = 1,000 ng/L

Model 10 Adsorption System
- 2 x 10' diameter vessels
- 0,000 lb GAC per vessel
- 2x40 mesh, reagglomerated bituminous
- Lead-Lag Operation
Perfluorooctanoic acid (PFOA) & Perfluorooctanesulfonic acid (PFOS)

Inlet PFOA+PFOS = 1,000 ng/L

USEPA HAL = 70 ng/L

Outlet PFOA+PFOS = non-detect

Date

Perfluorohexanesulfonic acid (long chain sulfonate), Perfluorobutanesulfonic acid (short chain sulfonate) & Perfluorohexanoic acid (short chain carboxylate)

Inlet PFHxS = 400 ng/L
Inlet PFHxA & PFBS = 75 ng/L each
Outlet PFAS = non-detect
Well # 40 - Raw Water

Well 40 Treated Water - Currently Active

*Note that by the time these results were received, subsequent operational samples indicated non-detect
The ABCs of GAC
The ABCs of GAC

Arsenic
The ABCs of GAC

ÅArsenic
ÅBoil Water Advisory
The ABCs of GAC

ÅArsenic
ÅBoil Water Advisory
ÅCorrosion
There is arsenic in coal-based GAC! Who knew?!?! 

Despite significant literature detailing the presence of arsenic in virgin coal-based GAC, that can be removed through flushing, PADEP appeared caught off guard when an IOC compliance sample at a neighboring utility that had just put a well back in service with GAC was analyzed at ~30 ppb for arsenic.

PADEP then emailed a new GAC SOP in June 2018:

Any system new or doing a vessel/filter change out of any bituminous coal-based GAC media shall:

- Determine background arsenic level
- Backwash the media and then filter-to-waste to remove any GAC fines
- Sample the water during the filter-to-waste
- Vessel/filter shall not be placed into service until the results show a before and after treatment increase of 0.001 mg/l or less of arsenic

This SOP is resulting in days of flushing to get to this arbitrary 1 ppb goal with one well lost from production or over a week.
Boil Water Advisory – May 30, 2018

Loss of chlorine application to GW source for > 4 hours is a 4-log virus Treatment Technique violation requiring a Tier 1 (BWA) in PA

BWA’s are never pleasant but in Horsham, it’s another opportunity for the press to talk about the “contaminated” water supply
Lead & Copper Rule Revisited –
Its 1991 all over again!

Despite literature demonstrating that GAC will not impact the corrosivity of a water, PADEP has determined that the installation of GAC warrants a sufficient change in treatment to reset HWSA back to “initial monitoring” under the Lead and Copper Rule.

For HWSA that means we need to find 60 Tier 1 homes and begin six-month monitoring beginning June 1st.

Sending out over 5,500 letters to homes older than ~1990 looking for opportunities to find qualifying homes and improve our materials inventory.

Currently conducting ~2 home inspections a day and will be doing so throughout the summer – huge time burden on an already beleaguered staff.

Talking to customers that have been dealing with PFAS and remember the BWA about lead potentially in their water is not a pleasant experience.
Customer Regenerated GAC

Following the initial acceptance of 2 vessels with virgin bituminous GAC, and starting with the first change out of carbon in the lead vessel, the carbon removed from HWSA wells is sent back for regeneration.

Thus, going forward 3 loads of carbon per well system are owned by HWSA and regenerated by Calgon.

Regeneration destroys PFAS

Regeneration does result is some loss of carbon up that has to be replenished with virgin GAC.
Single-Pass Anion Exchange Pilot Study

Â On April 11, 2017, HWSA placed Well 10 in service with a permitted pilot for anion exchange to remove PFAS.
Â The well was equipped with 2 GAC vessels and 1 anion exchange vessel in series and went to the distribution system.
Â Per permit, once breakthrough occurred with the GAC, the well would be sent to waste rather than the system.
Â On January 16, 2018, the well was removed from service, the GAC filters were by-passed and began pumping to waste 24/7 using only the anion exchange vessel.
Â In September 2018, the pilot was ended.
Â On October 10, 2018, the well with 2 vessels of new IX media in series was placed in service to the distribution system. The first use of anion exchange for PFAS removal in PA.
Anion Exchange Case Study

Temporary PFAS System for Well 10

Inlet Water:

- PFOS: 55 ppt
- PFOA: 27 ppt
- PFBS: 8.4 ppt
- PFHxA: 9.6 ppt
- PFHpA: 4.7 ppt
- PFHxS: 36 ppt

Total PFAS: 140 ppt

Well Water 50 gpm

- Solids Filter
- Total 5.6 min For B-GAC
- Total 40 ft³ Bituminous GAC 3-ft diameter
- 20 ft³ PFA694F selective resin 3-ft diameter

1.8 min @ 2/3rd point
2.8 min. Effluent

16
Perfluorooctanoic acid & Perfluorooctane sulfonic acid

PFOA + PFOS

PFOA + PFOS
PFA694E vs B-GAC

Inlet Water
B-GAC 1+2
Purolite PFA694E Resin

Operating Days

GAC stopped after 515 days; Resin to 653 days
375,000 BV = 2.8 million gallons /cubic foot of resin
Perfluorohexanoic Acid (short-chain carboxylate)

**PFHxA**

**PFHxA**

PFA694E vs B-GAC

- **B-GAC 1+2**
  - 5.6 mins EBCT
  - <15,000 BV

- **PFA694E resin**
  - 1.8 mins EBCT
  - 102,000 BV at ND

*Graph showing concentration of PFHxA over operating days for Inlet Water, B-GAC 1+2, and Purolite PFA694E Resin.*
# GAC vs. IX

## Capacity to Break from ND
Avg. Inlet **140 ppt** total PFAS

*(Horsham #10)*

<table>
<thead>
<tr>
<th></th>
<th>Bituminous GAC 5.6 mins EBCT</th>
<th>Purofine PFA694E PFAS-Selective Resin 1.8 mins EBCT</th>
<th>Ratio IX/ GAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>PFHxA short chain</td>
<td>&lt; 15,000</td>
<td>102,000</td>
<td>~7</td>
</tr>
<tr>
<td>PFHpA short chain</td>
<td>15,000</td>
<td>354,000</td>
<td>24</td>
</tr>
<tr>
<td>PFOA long chain</td>
<td>22,000</td>
<td>375,000</td>
<td>17</td>
</tr>
<tr>
<td>PFBS short chain</td>
<td>15,000</td>
<td>&gt;522,000</td>
<td>35</td>
</tr>
<tr>
<td>PFHxS long chain</td>
<td>22,000</td>
<td>&gt;522,000</td>
<td>24</td>
</tr>
<tr>
<td>PFOS long chain</td>
<td>22,000</td>
<td>&gt;522,000</td>
<td>24</td>
</tr>
</tbody>
</table>

522,000 BV = 3.9 millions gallons/cubic foot of resin
GAC vs. IX Costs (100 gpm)

- **Capital Costs:**
  - Although IX resin is more expensive than GAC (~$400/ft³ vs. $65/ft³), because the EBCT in minutes per vessel is less (3 vs. 10.5), less media is needed.
  - GAC requires 80% more footprint than IX
  - Capital Costs are expected to be ~55% less for IX than GAC

- **Operating Costs:**
  - IX is achieving higher BVs before breakthrough occurs (350,000 vs. 35,000)
  - Annual operating costs are expected to be 75% less for IX than GAC ($8,000 vs. $78,000)

- **Other considerations**
  - IX does not have the arsenic SOP issue
  - IX does not require backwashing which produces a waste stream
  - IX is incinerated leaving
  - IX does potentially raise more legitimate “simultaneous compliance” concerns
  - IX resins are proprietary
Completing the PFAS Long Term Plan

- Once Wells 2, 4, 19 & 20 are returned to service over the next couple of months, the interconnect with neighboring supplier will be taken out of service for installation of GAC treatment.
- Wells 10, 17 and 21 which have been using temporary GAC treatment (Navy funded) will be taken out of service for permanent PFAS installation (Expect permits for IX systems to be submitted within weeks)
- Currently looking to set up IX column testing equipment to test various anion exchange resins versus the one pilot tested at Well 10
Challenges

Not only are the capital costs expensive, but installing GAC treatment on wells, particularly those with small land footprints and/or in residential areas, is significantly altering to the landscape of the neighborhood.
The changes are substantial
Well 2
Well #4
Well #20
Well #22
HWSA Challenges

Å O&M is labor intensive, expensive and obtrusive
  Å Carbon change outs (and associated sampling now being required by PADEP) can result in wells being out of service (with the associated loss of production) for days to weeks at a time
  Å Depending on location, carbon delivery is disruptive to residents
Å GAC/IX treatment on wells is a substantial change in operational complexity and knowledge – these are transformative changes for small/medium groundwater systems
Å Permitting of new treatment is proving to be difficult, which is frustrating considering both GAC and IX are not new technologies for drinking water and PFAS is not “regulated”
Willow Grove NASJRB/HAGs Base PFAS Clean Up

- The Navy is currently investigating the nature and extent of the PFAS contamination on the base.
- Any cleanup actions require comparing the levels of contamination at the base with established standards.
- However, there are no standards for PFAS compounds for soils, surface water, sediment or air. The drinking water standard is only a recommended health advisory from the US EPA.
- Moving forward with the redevelopment without established standards may result in future landowners and residents occupying property which may put them in an environment which is unsafe.

**Note:** On April 25th, EPA released “draft interim” PFAS cleanup guidance for addressing groundwater contaminated with PFOA & PFOS:

- Proposes a 40 ppt screening level for further investigation
- Proposes a 70 ppt “preliminary remediation goal” that can “inform final cleanup levels” of PFOA and PFOS when it is used or could be used for drinking water
- Guidance is still not enforceable and is advisory only
- 45 day comment period ending June 10, 2019
Navy PFAS Investigations/Actions

- Evaluating groundwater extraction and treatment systems using pilot test information
  - Plan to conduct extraction well pilot test at Hanger 680 starting April 2019
  - Pilot test start up and testing in summer of 2019
  - Six month duration after start up
  - NASJRB is supporting ~5.12 M in funded research investigating new assessment and remediation technologies by local and national universities and consulting firms

- Evaluating video inspections of 2 miles of stormwater pipes and requested funding to award repair contracts for 1,400 ft.

- Excavated 3,500 tons of soil with high levels of PFAS adjacent to fire station and Hanger 175.
  - Completed in January 2019
  - Planned to be disposed of at a RCRA Subtitle D lined landfill in NJ
  - Local public concern killed the plan and the soil now sits on the base under tarps

- Navy says it has spent $58 M: $35 on filters for wells or alternative water and $23 M on environmental testing, studies and interim measures to stop PFAS from leaving the base yet there is still no permanent remediation treatment in place
There is still much to do

- The impacts of the past exposure cannot be ignored - While we are proud of our Horsham Standard and our efforts to achieve it, health studies to give people answers to their legitimate concerns to their health from the past exposure, including cancer as a health outcome, must be performed

- The PFAS contamination and all associated pathways must be mitigated at the source in an expedited fashion through a coordinated and concurrent remediation of both the former NASJRB and existing HAGS - The raw water in the aquifer remains contaminated and likely will be for decades to come – pumping and treating the public supply wells cannot be the only long-term remediation method for the aquifer.
Final thoughts

Based on our experience, HWSA and other PFAS impacted water suppliers, need collaboration, cooperation, and a sense of urgency from regulators in implementing new technologies and adjusting to new regulatory burdens on an accelerated schedule – This is still an emergency to us!

We need help with risk communication strategies to address public concerns regarding sources of contamination, impacts of past exposures and explaining regulatory inconsistencies

And lastly, the citizens of Horsham, Warminster & Warrington should not bear any of the costs for removing PFAS from their drinking water – these are manmade chemicals and the residents didn’t put them there.
Thank you

Michael J. Pickel, PE
mpickel@horshamwater-sewer.com

Horsham Water & Sewer Authority
617 Horsham Road
Horsham, PA 19044

Visit us at www.horshamwater-sewer.com