

Pease Tradeport Water System PFOA/PFOS Case Study



Brian Goetz – Deputy Director of Public Works



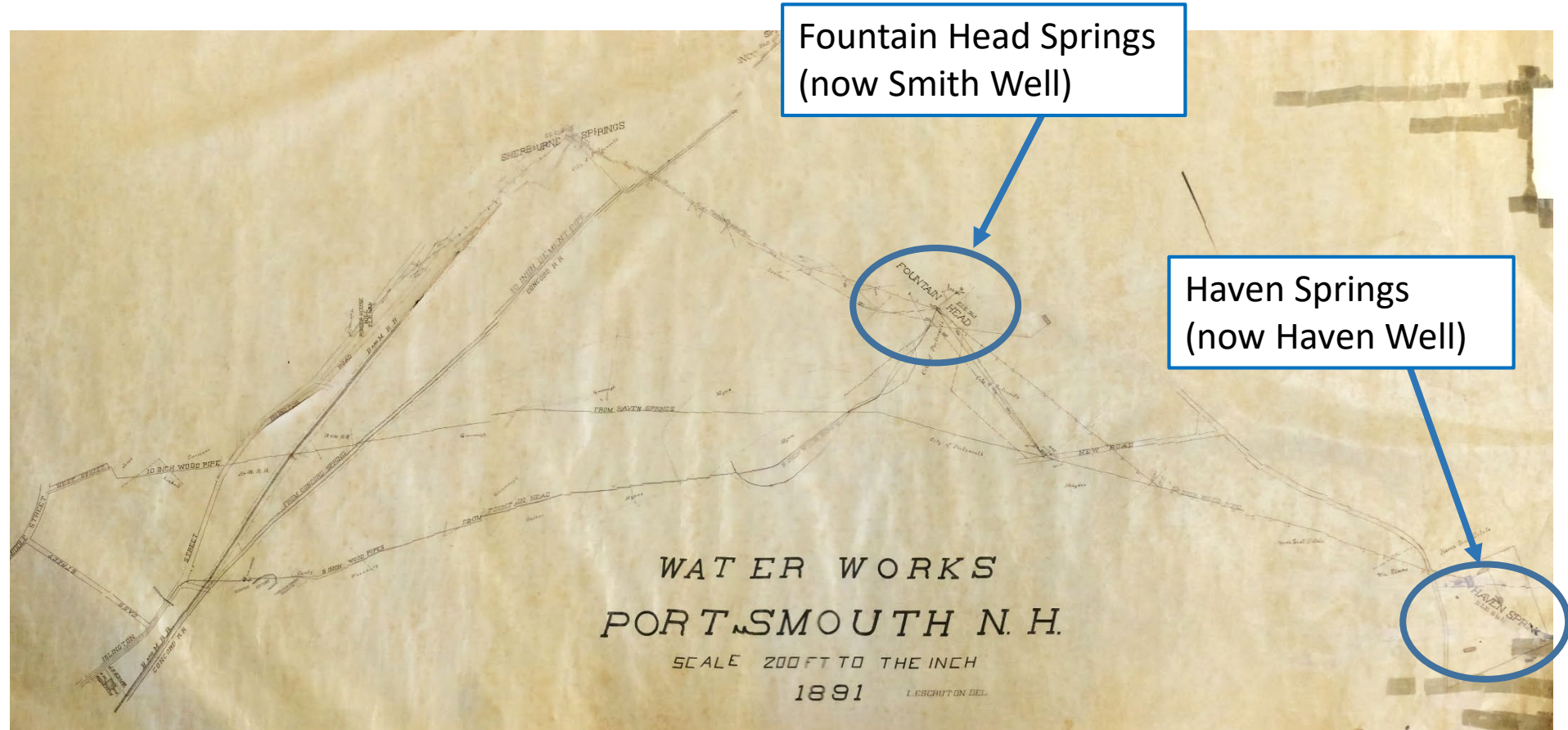
Portsmouth and Pease Tradeport Water Systems



Photo: courtesy of Underwood Engineers



Portsmouth (Pease) Water Sources in 1891



Pease International Tradeport Water System

- Pease wells taken over in 1950's to serve the Pease Air Force Base
- Turned back over to Pease Development Authority (PDA) in the 1990's
- Operated by the City of Portsmouth under agreements with PDA since 1992
- Three groundwater sources:
 - Haven Well (originally developed in 1875 by the City of Portsmouth's water system)
 - Smith Well (installed in 1958 as part of Air Base water system)
 - Harrison Well (reactivated in 2007)
- Two Elevated Storage Tanks
 - Hobbs Hill Landing
 - Air National Guard

Haven Well – 534 Gallons per Minute

- Installed in 1875 – (143 years ago)
- Pease Air Base: 1956 to 1992
- PDA/Portsmouth: 1992 to present
- Previous Contamination:
 - 1976: TCE from jet fuel
 - 1990's: Nitrates



Haven Well Monitoring TCE Levels – 2001 to May 2014

CB&I FEDERAL SERVICES LLC

HAVEN WELL MONTHLY DATA REPORT—MARCH 2014

Haven Well Monthly Data Report March 2014 (NHDES Site Number 100330300)

This *Haven Well Monthly Data Report, March 2014* is submitted in accordance with the *Zone 3 Long-Term Monitoring Plan, Revision 3* (URS Group, Inc. [URS], 2011). Routine monthly sampling of the Haven Well was performed. A sample was collected from the Haven Well (Location ID: 99-034) on March 17, 2014, and was submitted for expedited volatile organic compound (VOC) laboratory analysis. Additional separate analyses were also performed on the Haven Well sample to comply with New Hampshire Department of Environmental Services (NHDES) analytical requirements: 1,2-dibromoethane (also known as ethylene dibromide or EDB) and 1,2-dibromo-3-chloropropane (also known as dibromochloropropane) by U.S. Environmental Protection Agency (EPA) Method 504.1 and 1,4-dioxane by SW846 Method 8270D SIM.

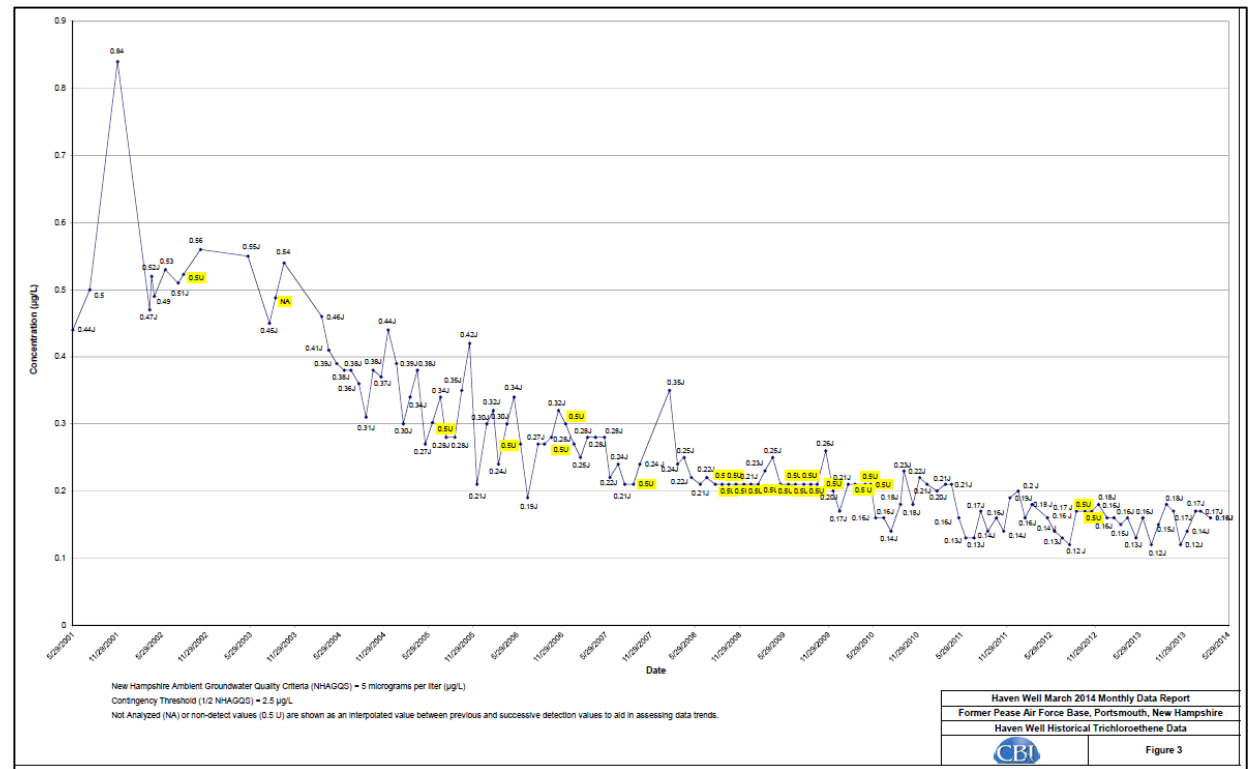
Sample collection date: March 17, 2014

Sample collected by: CB&I Federal Services LLC

Sample from the Haven Well was analyzed for: VOCs by EPA Method 524.2 and EPA Method 504.1 and 1,4-dioxane by SW846 Method 8270D SIM

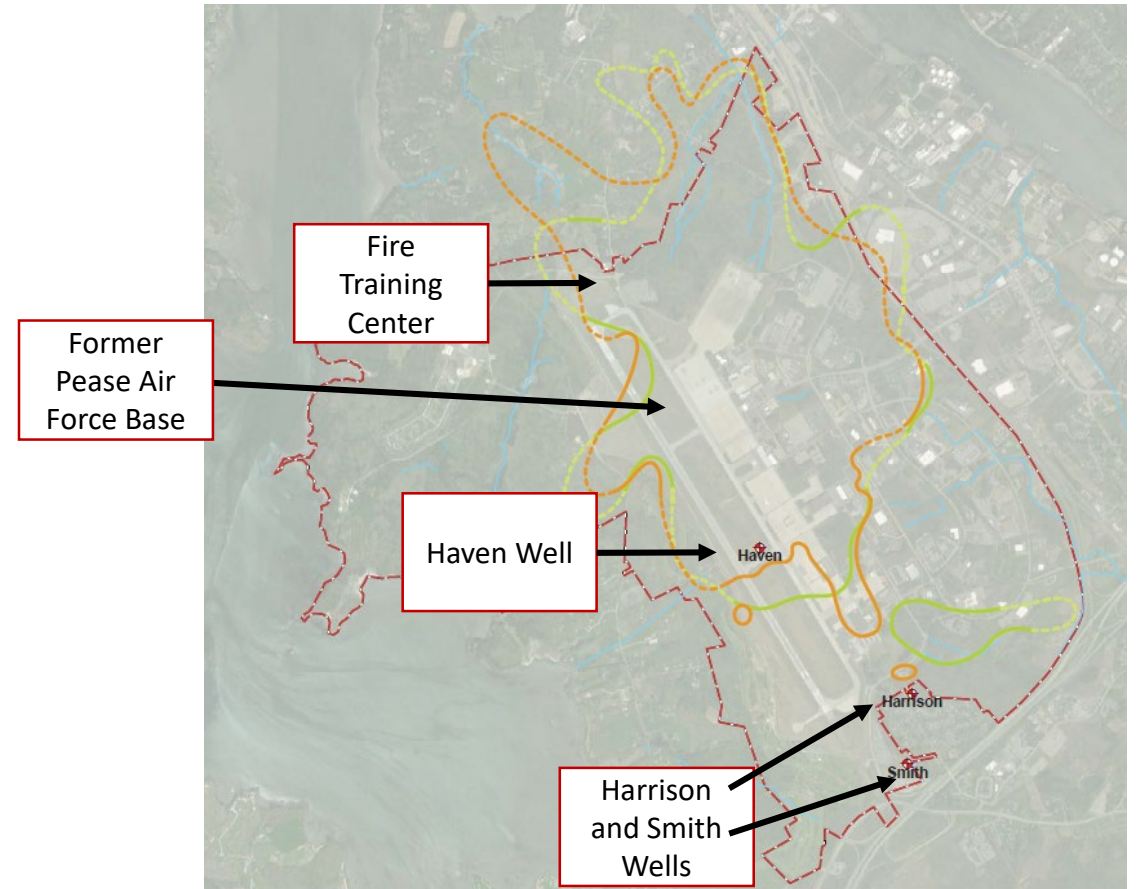
Sample analyzed by: Katahdin Analytical Services of Scarborough, Maine

Unvalidated data report distribution date: March 31, 2014



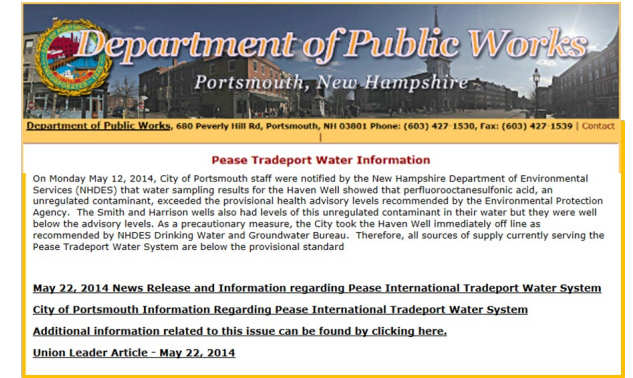
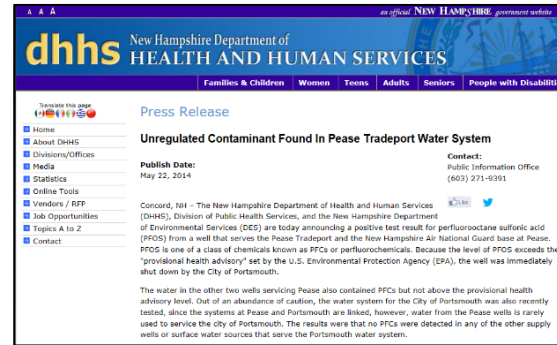
Pease PFOA/PFOS Contamination

- April 2014 – NHDES contacts City of Portsmouth to sample the three Pease Tradeport water system wells for PFAS due to detections at former Fire Training Center and past use of AFFF
- May 12, 2014 – City staff are notified that PFAS levels in Haven Well exceeded the EPA's Health Advisory Standard for PFOS
 - 2,500 ppt (Preliminary Health Advisory = 200 ppt)
- May 12, 2014
 - Haven Well is shut down
 - Portsmouth water supplements water lost from Haven Well
 - Smith and Harrison wells remain in service



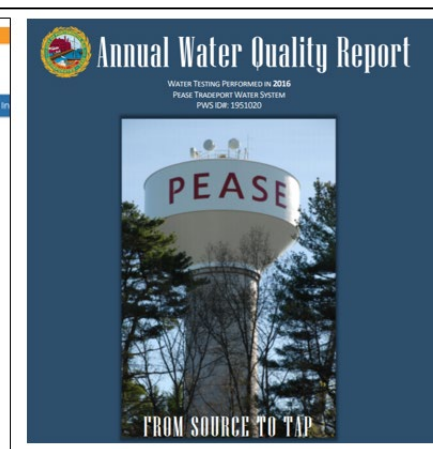
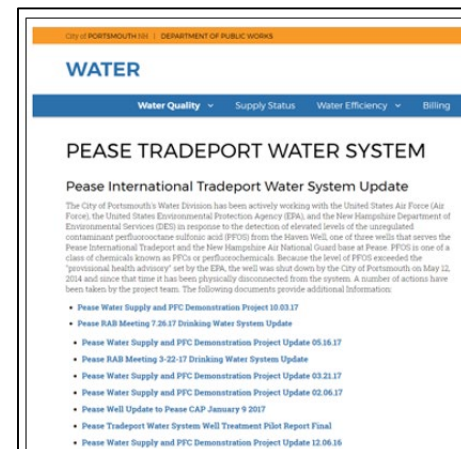
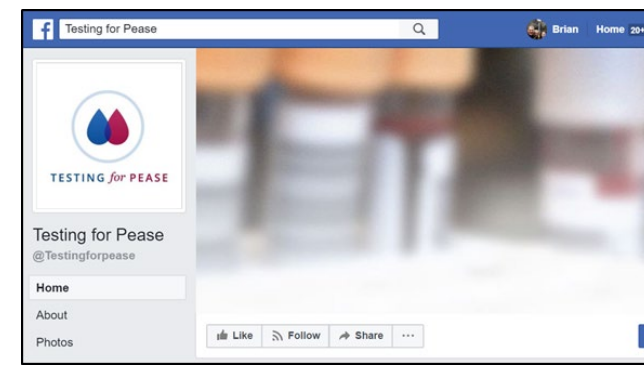
Public Involvement and Outreach:

- Press Releases by NHDHHS and City
- Public Meeting at Pease – May 28, 2014
- Presentations to Portsmouth City Council and Other Groups
- Federal and State delegation involvement
- Haven Well Community Advisory Board
 - 14 public meetings in 2014/2015

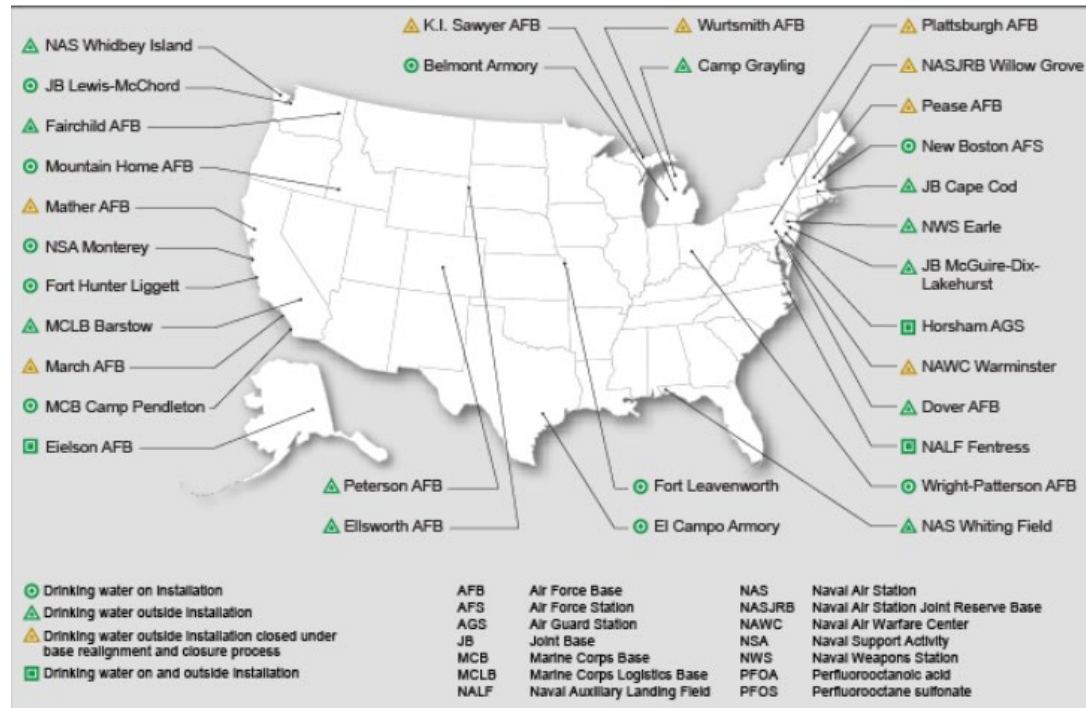


Public Involvement and Outreach:

- “Testing for Pease” Facebook Group Forms
- Blood Testing
 - March 31st, 2015 – Public Meeting where NHHS Announces Protocol for Pease Blood Testing
 - Three public meetings announcing blood test results
- ATSDR Community Assistance Panel (CAP)
 - Formed in 2016 to address long-term health concerns
- Pease Restoration Advisory Board (RAB)
 - Reestablished in 2016 – Meets every quarter
- Extensive Information by City and State:
 - www.cityofportsmouth.com
 - Full page dedicated to PFAS in Annual Water Quality Report
- “A lot” of News Coverage!



We are not alone...



Portsmouth officials contacted by:

- Peterson AFB in Colorado
- Wurtsmouth AFB in Michigan
- Horsham, Pennsylvania
- Airway Heights, Washington

New Hampshire's PFAS Investigation

- Saint Gobain Facility Contamination – Merrimack, NH
- Voluntary Public Water Supply Sampling
- Class B Foam Outreach – Letters & online forms
- Waste Sites Sampling
- Groundwater Discharge Permit Sites
- Wastewater/ Biosolids Assessment
- Surface Water Sampling
- Sampling at other suspected sites:
 - Air deposition
 - Car washes
 - Fire Departments with their own wells

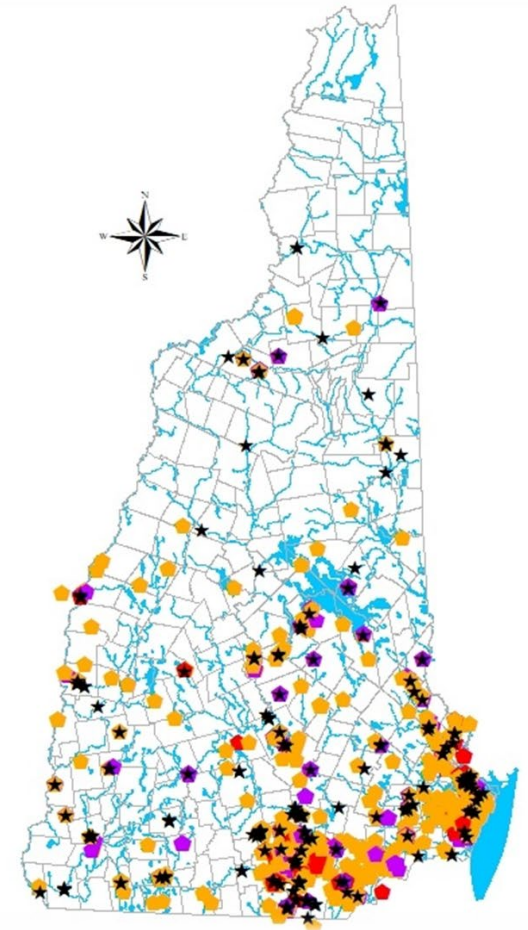
* Information from: Brandon Kernen, NHDES

PFAS INVESTIGATION *Updated: May 14, 2018*

SAMPLES WITH PFAS DETECTS **TOTAL PFAS (ppt)**

- ◆ 70+
- ◆ 45 - <70
- ◆ Detect - <45
- ★ Existing Remedial Site with PFAS Detections
- Political Boundary
- Major Waterbody

0 12.5 25 50 Miles



2018 EPA Summits:

**PFAS Community Engagement
EPA New England
Event**

per- and polyfluoroalkyl substances

June 25
4:30-10:00pm

June 25-26, 2018
Exeter High School
Exeter, New Hampshire

EPA United States Environmental Protection Agency

Environmental Topics Laws & Regulations About EPA Search EPA.gov

CONTACT US SHARE

PFAS National Leadership Summit and Engagement

U.S. Environmental Protection Agency (EPA) hosted a National Leadership Summit in Washington, D.C. to take action on Per- and Polyfluoroalkyl Substances (PFAS) in the environment.

The National Leadership Summit was held in Washington, D.C. from May 22-23, 2018. During the summit, participants worked together to:

- Share information on ongoing efforts to characterize risks from PFAS and develop monitoring and treatment/cleanup techniques

PFAS Community Engagement

Learn more about [EPA's plans to visit states with communities impacted by PFAS](#).

TESTING for PEASE

The PFAS Contamination at Pease: A Community Perspective

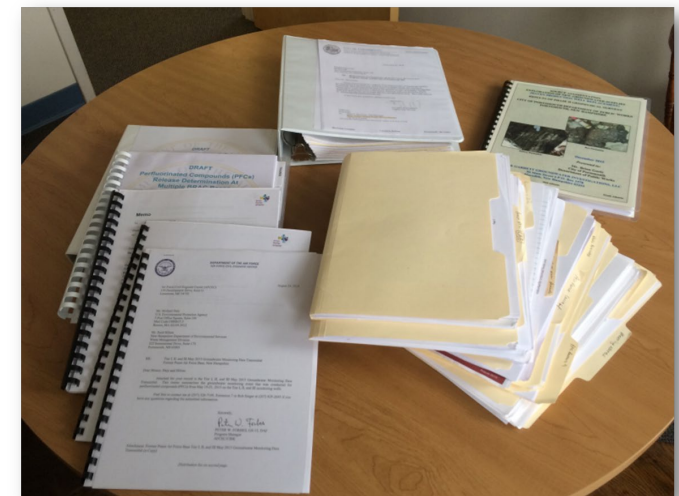
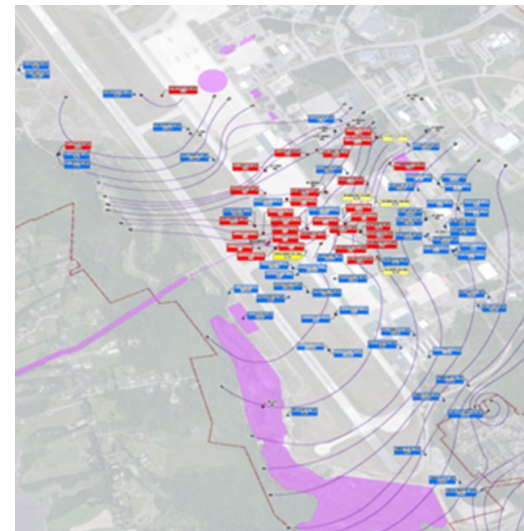
EPA Region 1 PFAS Summit | Exeter, NH | June 25, 2018
Andrea Amico, Alayna Davis, Michelle Dalton

Identifying PFAS In Your Community

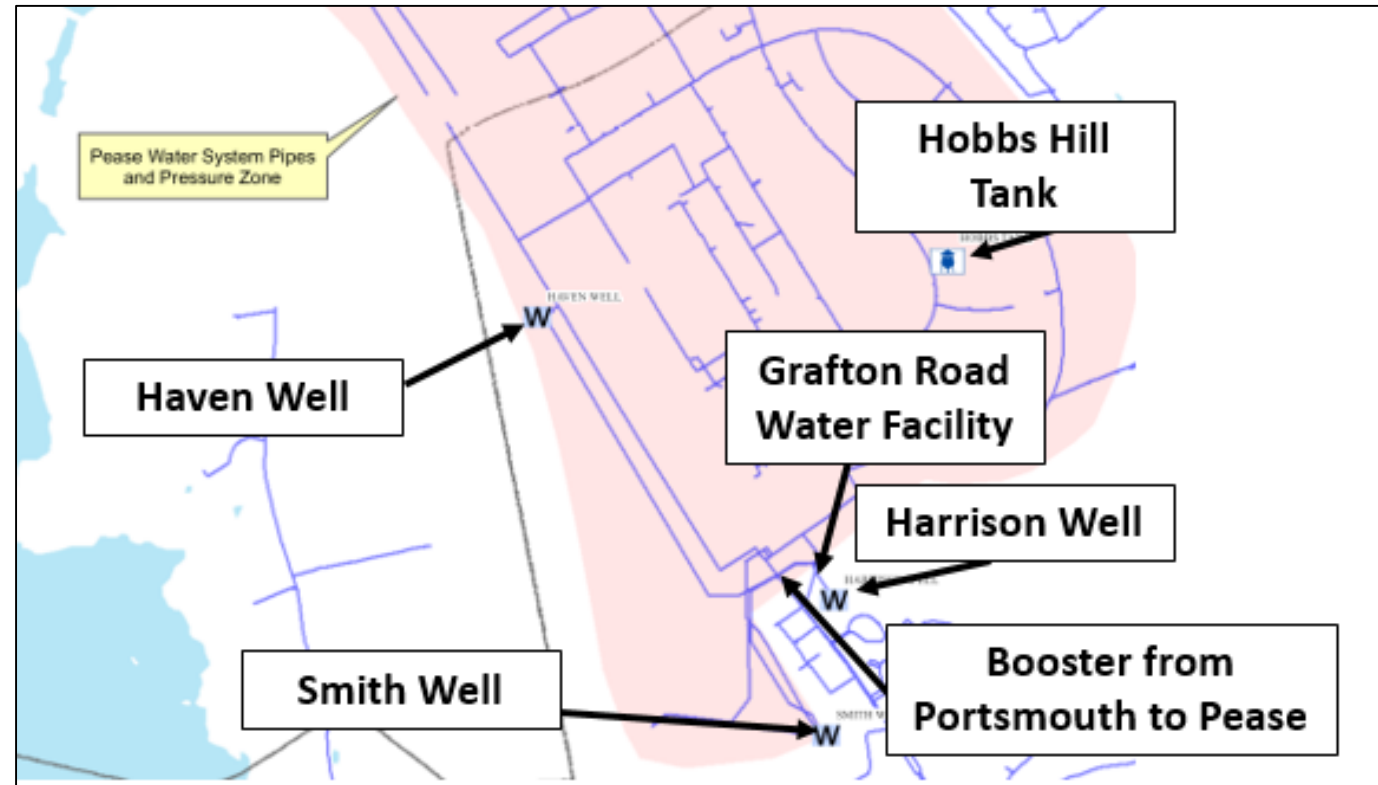
Brian Goetz
City of Portsmouth, New Hampshire
New England PFAS Community Engagement Event
June 26, 2018

Pease Tradeport PFAS Investigation

- Technical Team
 - Air Force Civil Engineering
 - Air Force Engineering Consultants
 - EPA Region 1
 - NHDES Waste Division
 - NHDES Drinking Water and Groundwater Program
 - Pease Development Authority
 - City of Portsmouth Staff and Consultants



Current Pease Tradeport Grafton Road Water Facility



Grafton Road Water Facility Process Schematic Prior to PFAS Contamination

Supply Well Capacities	
Description	Capacity (gpm)
Harrison Well	286
Smith Well	343
Haven Well	534
TOTAL	1,163



- Chlorine
- Fluoride
- Orthophosphate

To
Distribution
System



Grafton Road Water Facility Process Schematic

May 2014 to September 2016

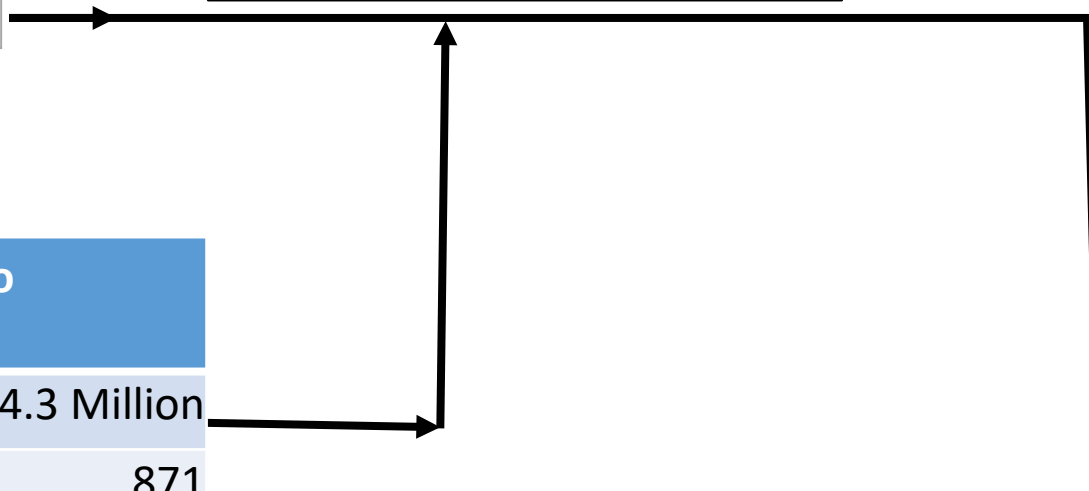
Supply Well Capacities	
Description	Capacity (gpm)
Harrison Well	286
Smith Well	343
Haven Well	504
TOTAL	1,160
	629



Portsmouth Booster to Pease	May '14 to Sept '16
Total Gallons	254.3 Million
Total Days	871
Average Gallons/Day	291,928

- Chlorine
- Fluoride
- Orthophosphate

To
Distribution
System




Pease Tradeport Water System PFOA/PFOS Contamination - Treatment Options

- Investigated other public water systems treating PFOA/PFOS contamination
- Piloted Activated Carbon System
- Installed Calgon F-400 Carbon filters on Harrison and Smith wells to Demonstrate effectiveness



Pease Well PFOA/PFOS Response – Demonstration Filters in Service Since September 2016





**City of
Portsmouth**
Department of Public Works

September 28, 2018
PEASE TRADEPORT WATER SUPPLY UPDATE

Demonstration Filter Performance

The City's engineering consultant continues to sample the performance of the activated carbon filters based on the amount of water treated. The graphic below shows the most recent source water sampling and treated filter water quality results for the PFOS and PFOA.

Pease Tradeport Water System
Activated Carbon Treatment
Demonstration Project Sampling:
September 13, 2018 Results

Source Water: Harrison and Smith Wells			Filter #1 314 Million Gallons Filtered since September 2016		Filter #1 Effluent		Filter #2 85 Million Gallons Filtered since April 23, 2018		Water To Distribution System	
Well	PFOS	PFOA	PFOS	PFOA	PFOS	PFOA	PFOS	PFOA	PFOS	PFOA
Combined Influent	0.018	0.004	ND	ND	ND	ND	ND	ND	ND	ND

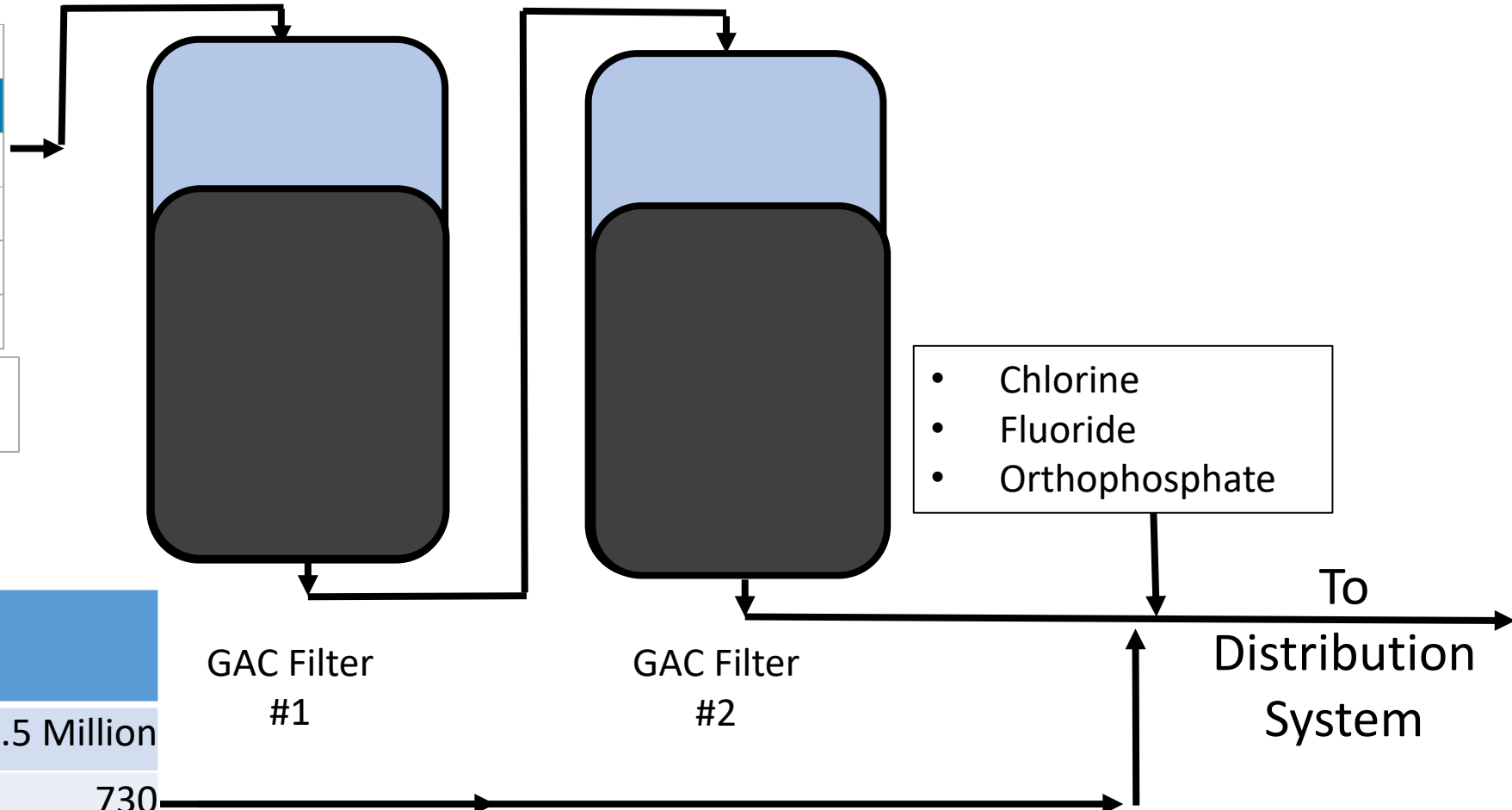
Notes: All samples in parts-per-billion (ppb)
 ND = Non Detect
 All samples collected by Weston & Sampson and analyzed by Maxxam Laboratory

Grafton Road Water Facility Process Schematic

Granular Activated Carbon Demonstration Filters

Supply Well Capacities	
Description	Capacity (gpm)
Harrison Well	286
Smith Well	343
Haven Well	504
TOTAL	1,160

400
(maximum filter rate)



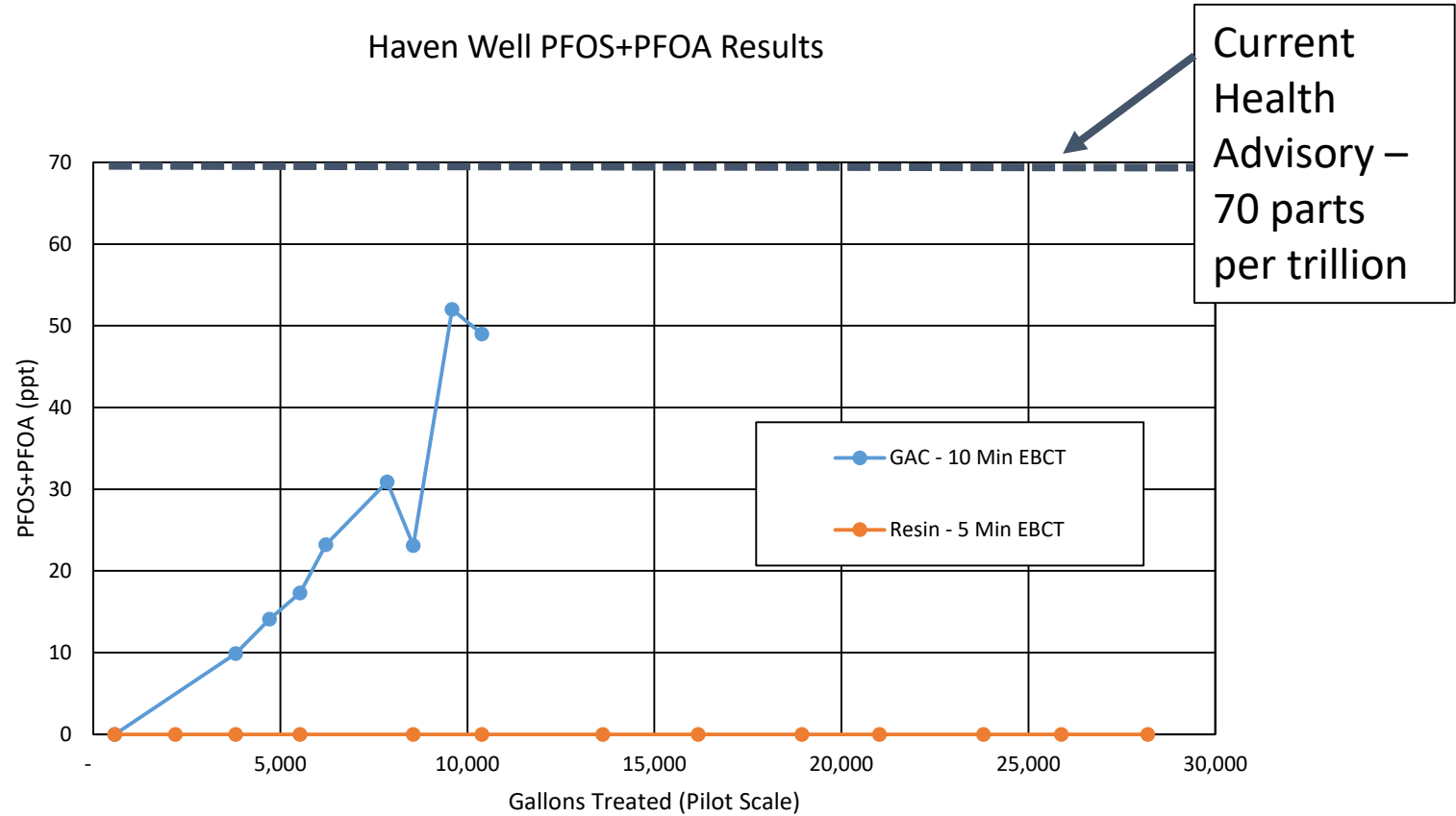
Portsmouth Booster to Pease	Sep '16 to Sept '18
Total Gallons	110.5 Million
Total Days	730
Average Gallons/Day	151,456

364 Million Gallons from Portsmouth to Pease from May 2014 to Sept 2018

Activated Carbon and Resin Piloting – Haven Well

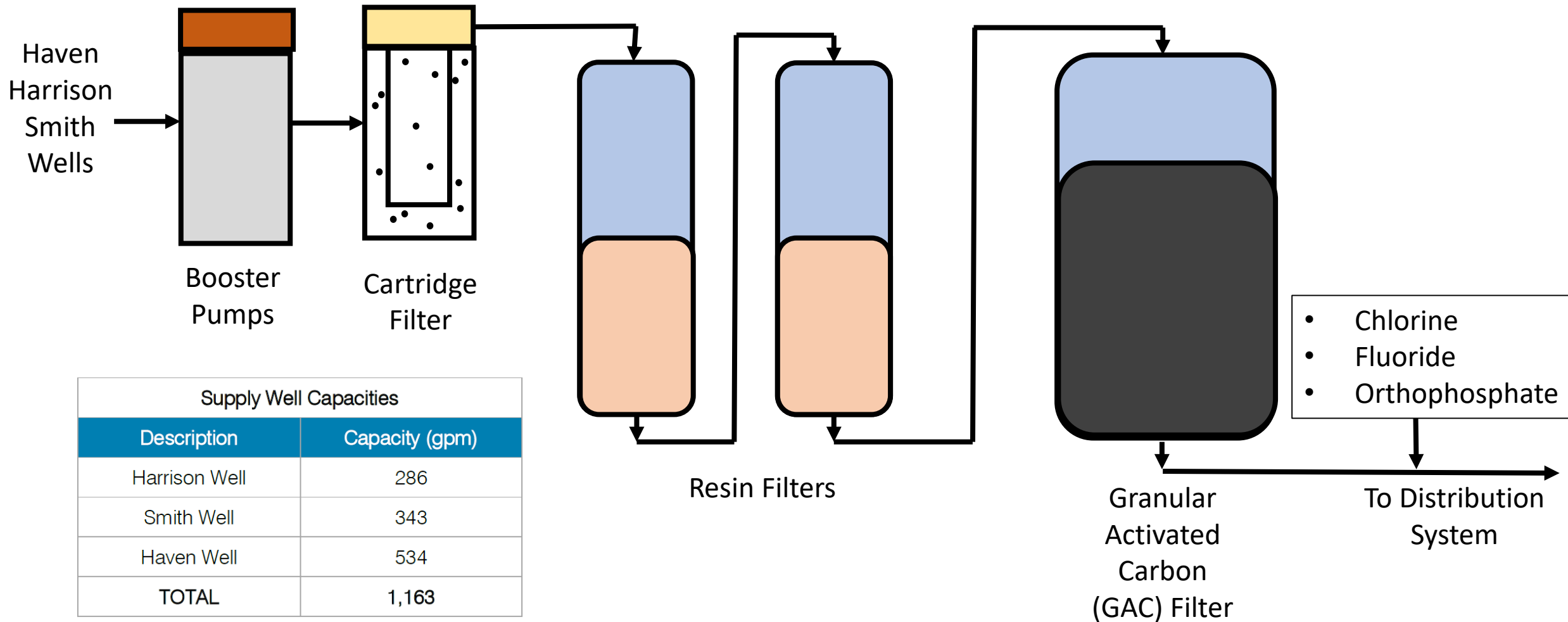


Haven Well PFOS+PFOA Results



Grafton Road Water Facility Process Schematic

Current Treatment System Design



Description	Capacity (gpm)
Harrison Well	286
Smith Well	343
Haven Well	534
TOTAL	1,163

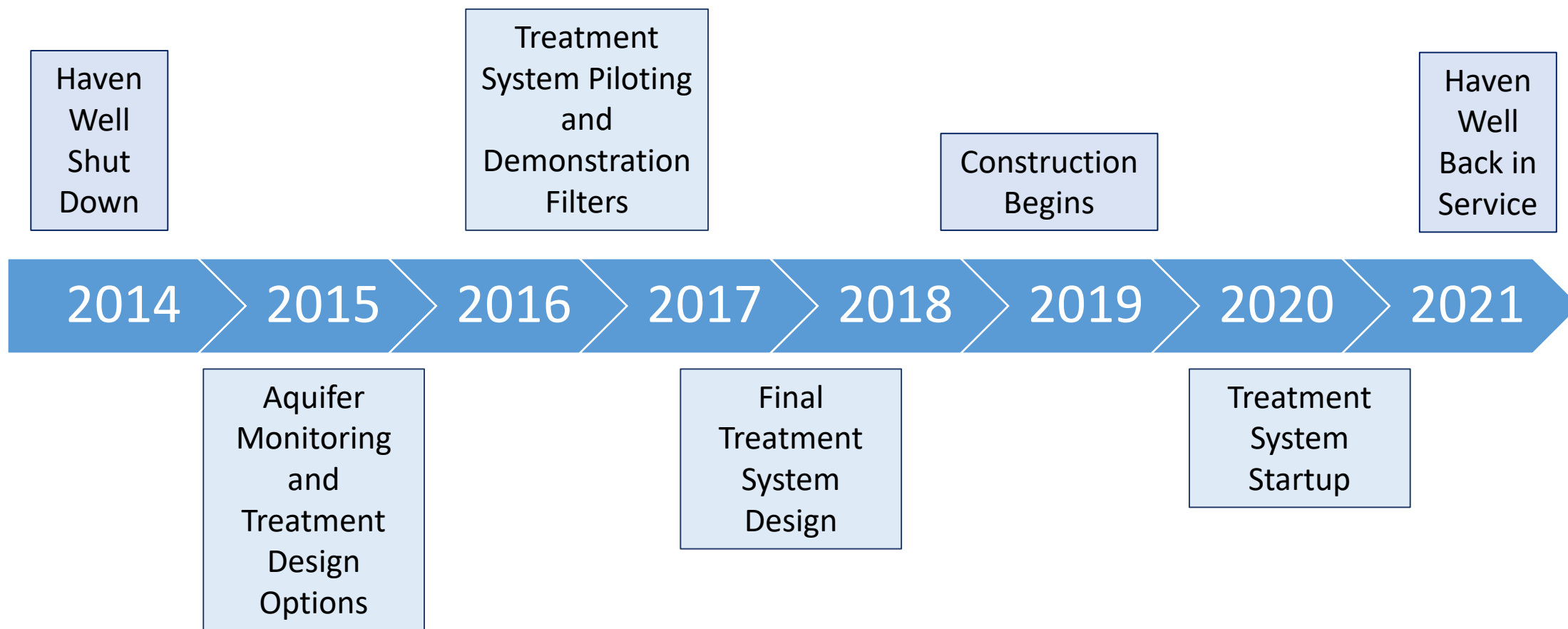
Anticipated Construction Schedule

Activity	Duration	Start	Finish	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	
Bidding	61	11/15/2018	1/15/2019	█	█																														
Contract Award	56	1/15/2019	3/12/2019			█	█	█																											
Notice to Proceed	0	3/12/2019	3/12/2019					★																											
Submittals	181	3/13/2019	9/10/2019					█	█	█	█	█	█	█																					
Equipment Procurement	224	6/4/2019	1/14/2020																																
Phase 1 - Building Addition & GAC Filters	379	6/10/2019	6/23/2020																																
GAC Filters On-Line with Smith & Harrison	27	5/27/2020	6/23/2020																																
Phase 2 - Resin Skid, Cartridge Filters, Booster Pumps	279	5/29/2020	3/4/2021																																
Full System Start-Up with Smith & Harrison	48	1/15/2021	3/4/2021																																
Phase 3 - Admin Area, Site Work, Haven Well Online	200	10/15/2020	5/3/2021																																
Full System Start-Up with Haven	42	3/4/2021	4/15/2021																																
Final Completion	4	4/29/2021	5/3/2021																																

Milestones:

- Spring 2019 – Begin Construction
- June 2020 – New GAC Filters (switchover of Harrison/Smith Wells)
- Spring 2021 – Startup with Resin/GAC filters (Harrison/Smith Wells)
- Summer 2021 – Haven Well Startup

Seven Years...



Thank You



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