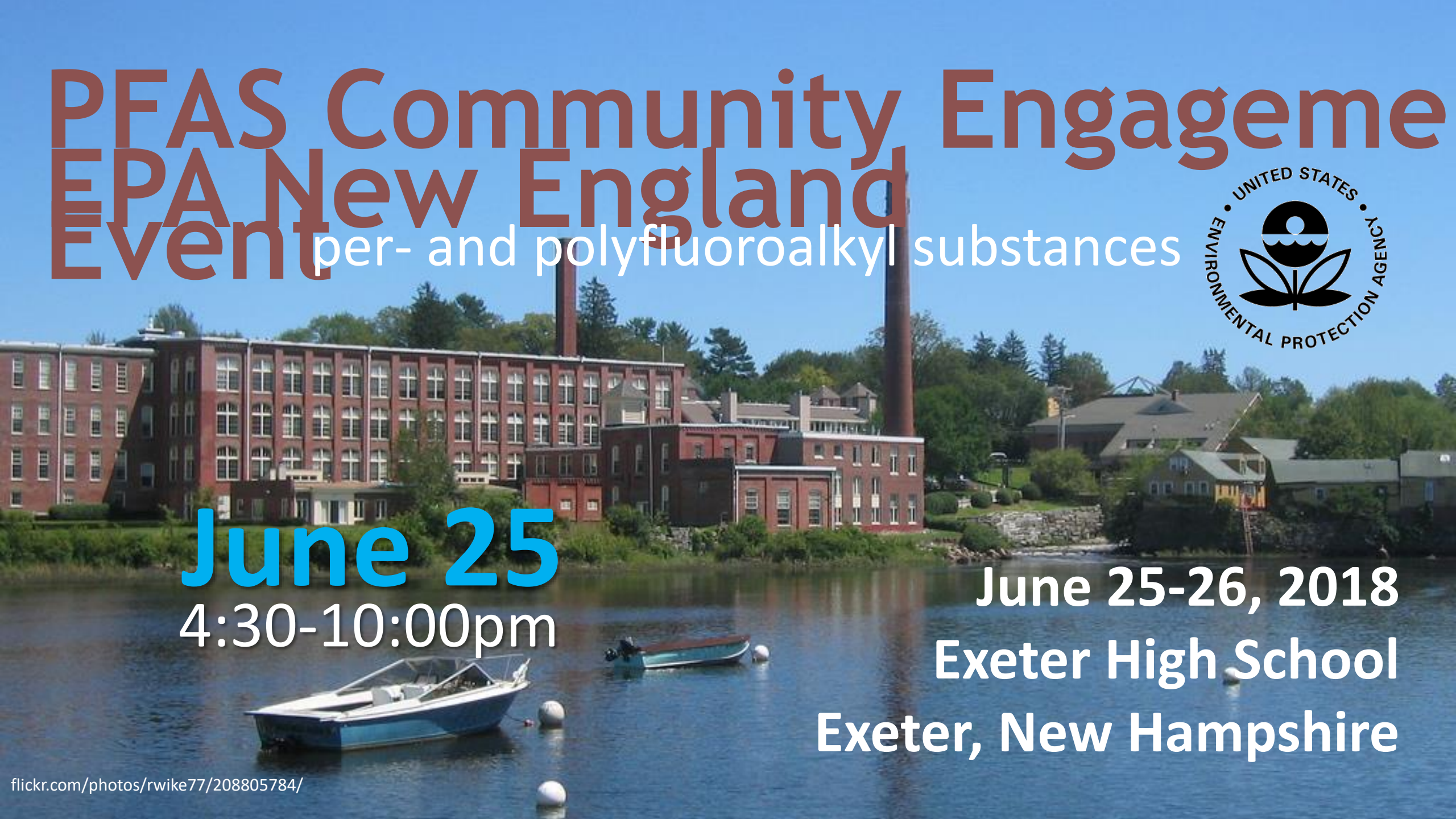
PFAS Community Engageme
EPA New England
Event

per- and polyfluoroalkyl substances



June 25

4:30-10:00pm

June 25-26, 2018

Exeter High School

Exeter, New Hampshire

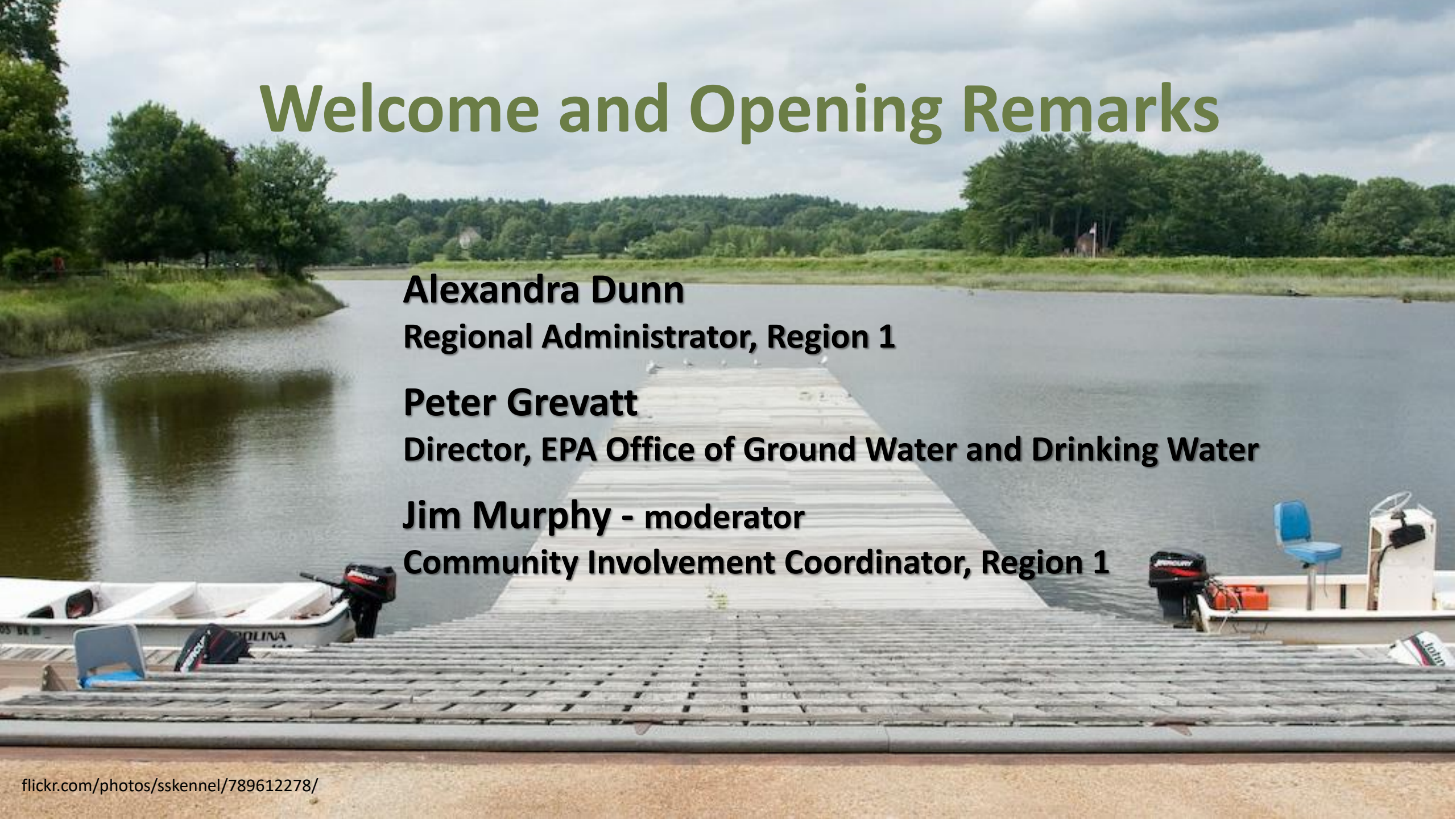
flickr.com/photos/rwike77/208805784/

Welcome and Opening Remarks

Alexandra Dunn
Regional Administrator, Region 1

Peter Grevatt
Director, EPA Office of Ground Water and Drinking Water

Jim Murphy - moderator
Community Involvement Coordinator, Region 1



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Welcome to the PFAS Community Stakeholder Meeting

EPA held a National Leadership Summit in Washington, D.C. May 22-23, 2018, that brought together federal, state, tribal and local partners.

1. EPA will initiate steps to evaluate the need for a maximum contaminant level (MCL) for PFOA and PFOS. We will convene our federal partners and examine everything we know about PFOA and PFOS in drinking water.
2. EPA is beginning the necessary steps to propose designating PFOA and PFOS as “hazardous substances” through one of the available statutory mechanisms, including potentially CERCLA Section 102.
3. EPA is currently developing groundwater cleanup recommendations for PFOA and PFOS at contaminated sites and will complete this task by fall of this year.
4. EPA is taking action in close collaboration with our federal and state partners to develop toxicity values for GenX and PFBS by this summer.

Community Presentations

Alyana Davis, Portsmouth NH
Stephen Seymour, Barnstable MA
Jillian Lane, Greenland NH
Kristen Mello, Westfield MA
Laurene Allen, Merrimack NH
David Bond, Bennington, VT

flickr.com/photos/sskennel/2386958761/

Community Presentations

New England PFAS Community Engagement Event

June 25, 2018
Exeter High School, Exeter, NH
5:30 PM

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

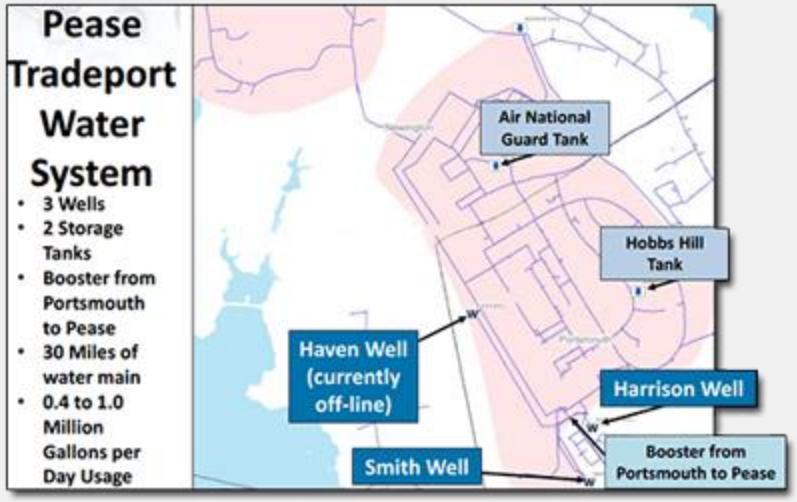
Who is Testing for Pease?

Testing for Pease is a community action group, whose mission is to be a reliable resource for education and communication while advocating for a long-term health plan on behalf of those impacted by the PFAS water contamination at the former Pease Air Force Base in Portsmouth, NH

From left to right: Alayna, Andrea & Michelle

Why Did We Form?

- May 2014 – newspaper revealed that PFAS contamination was discovered in three wells supplying drinking water to the Pease International Tradeport (former Pease Air Force Base)
- One well (Haven well) tested over the EPA PHAs that were in place at that time (PFOS = 2500 ppt)
- All of our families were exposed to contaminated public drinking water at Pease



History of the Pease Air Force Base

- 1956 to 1991 Strategic Air Command (SAC) Base
- 4,365 acres of land with 3 on site wells
- In 1989 there were ~4500 total employees on Pease (active-duty military, civil service workers and non-appropriated fund employees)
- In 1990 military personnel began leaving the base
- In 1991 Pease AFB closed and became the first base in the nation to be closed under BRAC
- In 1991 Pease became a Superfund site

History of the Pease Tradeport

- Pease International Tradeport started development in 1991
- 3 wells supply drinking water (Haven, Smith, & Harrison)
- Currently home to ~ 250 businesses and still growing
  - 2 large daycare centers
  - Restaurants
  - Healthcare/medical office buildings
  - Multiple colleges
  - Golf course
- ~9,525 people employed on Pease daily
- Portsmouth International Airport (PSM) currently in operation

How was Pease Contaminated with PFAS?

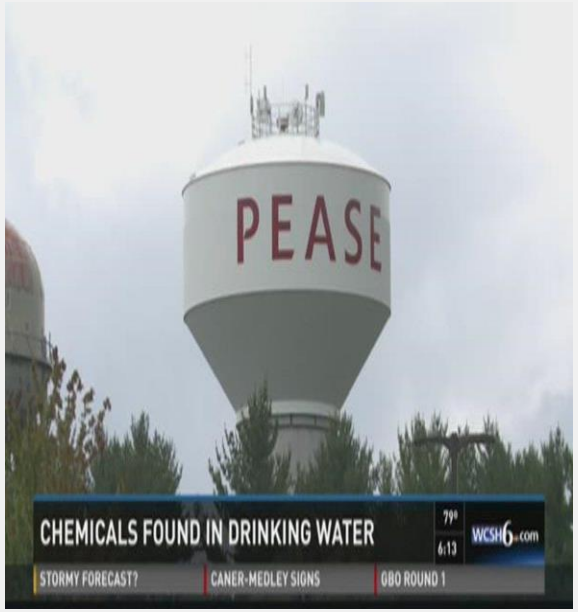
- Pease drinking water became contaminated with PFASs by a fire fighting foam known as AFFF (Aqueous Film Forming Foam)
- Used by the Air Force since the 1970's
- 21 areas identified where AFFF was used, stored, or released on Pease
- AFFF used because it is effective in putting out petroleum based fires

What PFAS are detected in the Pease water?

- PFAS first tested in drinking water at Pease in April & May of 2014:
  PFOS = 2500 ppt
  PFOA = 350 ppt
  PFHxS = 960 ppt

- Multiple other PFAS detected in drinking water at low levels at Pease

- Community is concerned about **all** the PFAS in the drinking water despite lack of health advisories



TIMELINE OF EVENTS: 2015

- Blood testing program open to anyone exposed to contaminated drinking water prior to 2014 (almost 2000 people blood tested to date)
- CAB (Community Advisory Board) established through City of Portsmouth – 14 community meetings held between May and December

- EPA places strict order on AF to clean up the PFAS contamination at Pease
- US AF agrees to remediate all three wells on Pease
- Pease community meets with ATSDR for the first time and discusses forming a CAP

TIMELINE OF EVENTS: 2016

- Blood testing results reveal elevated levels of PFASs for members of Pease community
- ATSDR recruits and forms Pease Community Assistance Panel (CAP)
- US AF recruits and forms Pease Restoration Advisory Board (RAB) - quarterly meetings open to the public

- US EPA lowers PHA for PFOS & PFOA to 70 ppt combined – Lowered from 600 ppt (200 ppt for PFOS & 400 ppt for PFOA)
- 2 large GAC filters placed on the Smith & Harrison wells at Pease

TIMELINE OF EVENTS: 2017

- ATSDR releases Feasibility Assessment re: possible health studies at Pease
- US Senator Jeanne Shaheen successfully includes amendment in the NDAA authorizing DoD to fund a nationwide study on impacts of PFAS
- Ongoing remediation efforts at Pease by US Air Force to clean up groundwater
- PFAS Conference at Northeastern University in Boston - community groups, scientists, policy makers, and others come together/ collaborate
- Formation of national coalition as result of the networking done at the PFAS conference with multiple community leaders from many different states across the country

TIMELINE OF EVENTS: 2018

- US Senator Jeanne Shaheen successful in appropriating $10 million for a multi-site PFAS health study by ATSDR for FY2018
- ATSDR announces Pease will be the first community to participate in the multi-site PFAS health study
- TFP co-founder attends EPA National PFAS Summit in DC; meets EPA Administrator Pruitt
- US Senator Maggie Hassan speaks at briefing in D.C. highlighting the need to address concerns/protect drinking water from PFAS & other emerging contaminants

Challenges We Have Faced

- Unregulated contaminants – communities still being exposed/Lack of PHAs for many other PFAS still present in drinking water
- Community has to advocate to be seen as critical stakeholders and push for progress, research, guidelines - government moves slow
- Need for medical monitoring program with limited support at state and federal level
- Physicians need PFAS education to help patients be proactive in protecting health
- Lack of funding is major roadblock in testing and making decisions for public safety at state/federal level

- Inconsistent messaging from government agencies - told health effects are inconclusive/getting blood tested not recommended, yet many scientific studies contradict (need to protect most vulnerable)
- Limited labs capable of testing water and blood = testing is not easily accessible, time consuming and expensive
- Difficulty streamlining communication between multiple agencies and community

Positive Aspects

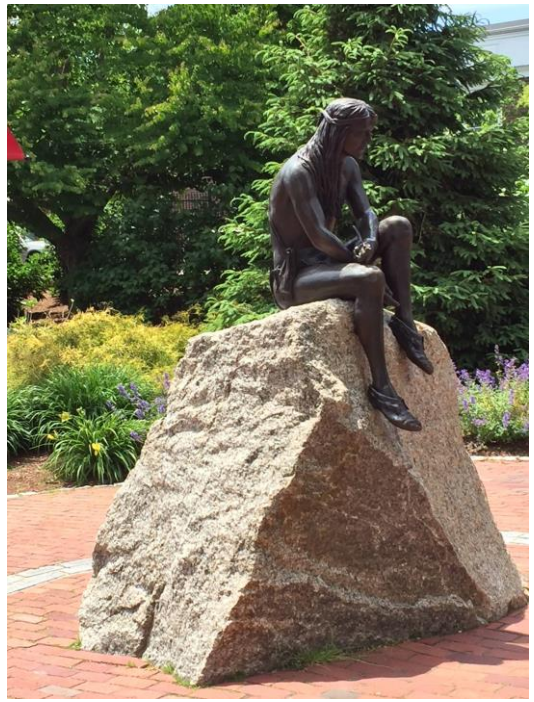
- Engagement and collaboration with other PFAS impacted community groups across the US
- Developed relationships with multiple government agencies and elected officials
- GAC treatment on two of the Pease wells w/ongoing remediation efforts
- Working with highly respected doctors, epidemiologists, scientists & environmental health experts
- Opportunity for grants to support community efforts and pursue additional water testing
- ATSDR Multi-Site PFAS Health study with Pease to be first community studied
- Media has been critical in raising awareness and promoting accountability

Thank you for listening…

"Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it's the only thing that ever has."

~ Margaret Mead

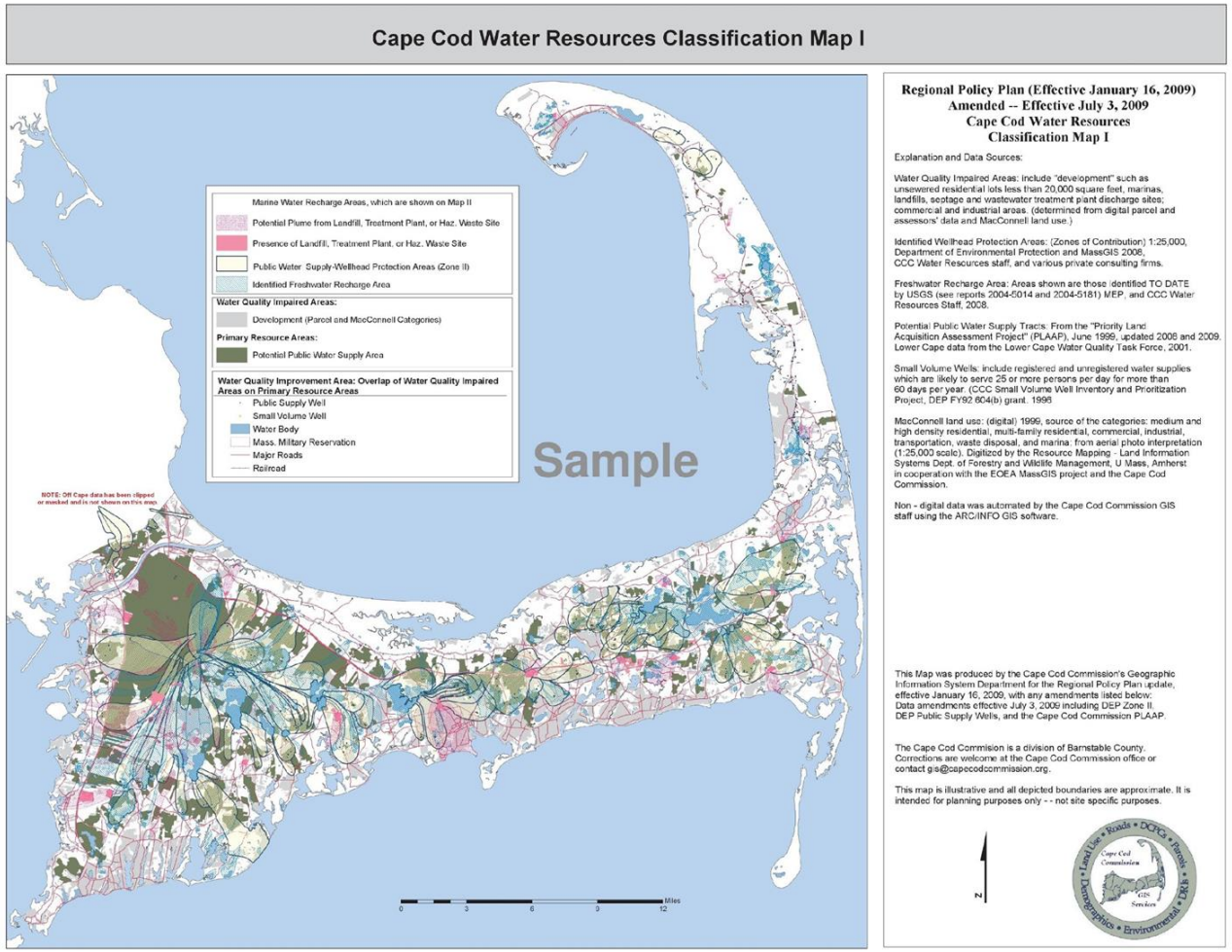
www.testingforpease.com



MAIN STREET HYANNIS ON CAPE COD


WACKENHABBER'S


JFK MUSEUM



EPA DESIGNATED SOLE SOURCE AQUIFER NO OTHER VIABLE SOURCE OF WATER

GREEN

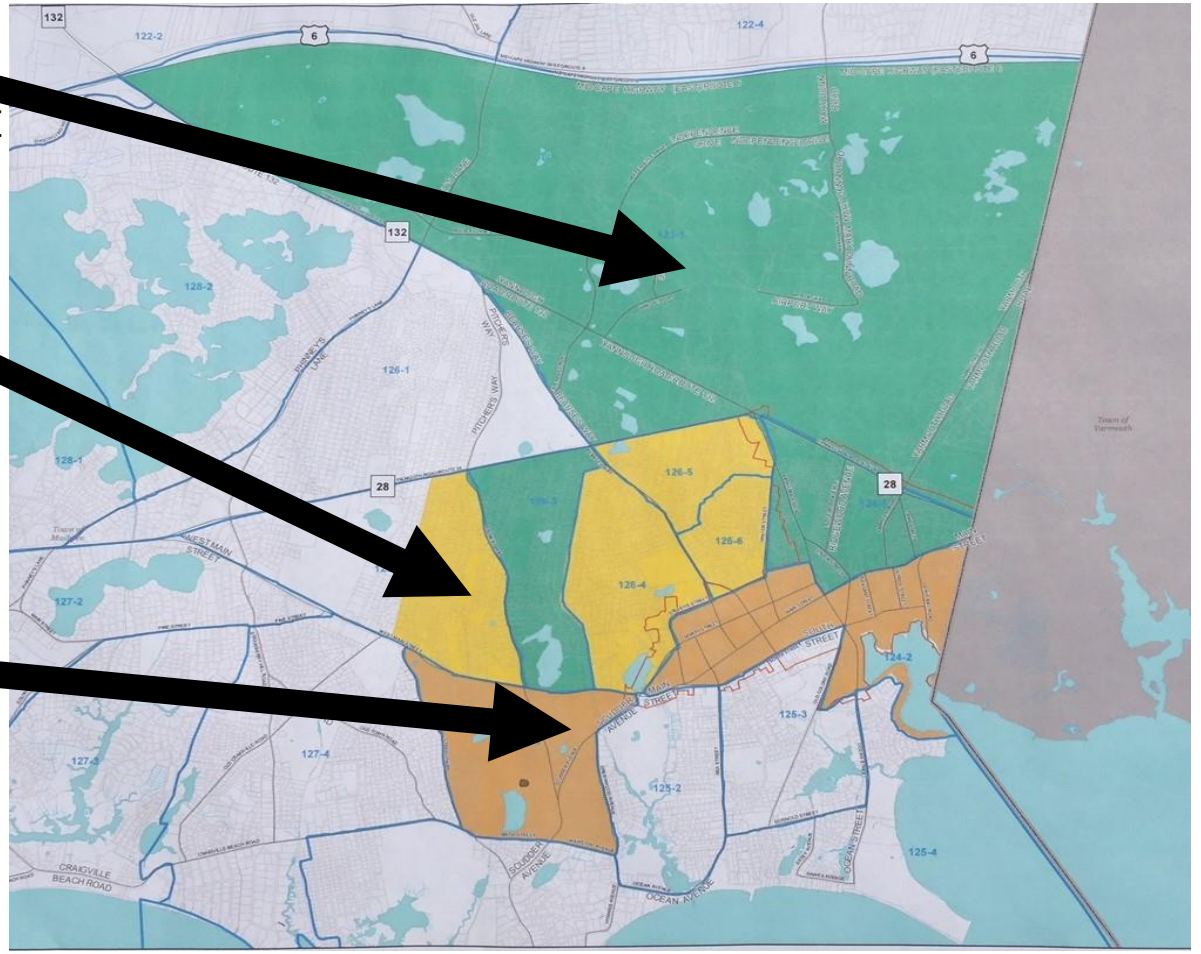
ENVIRONMENTAL JUSTICE
POPULATION
INCOME AND MINORITY

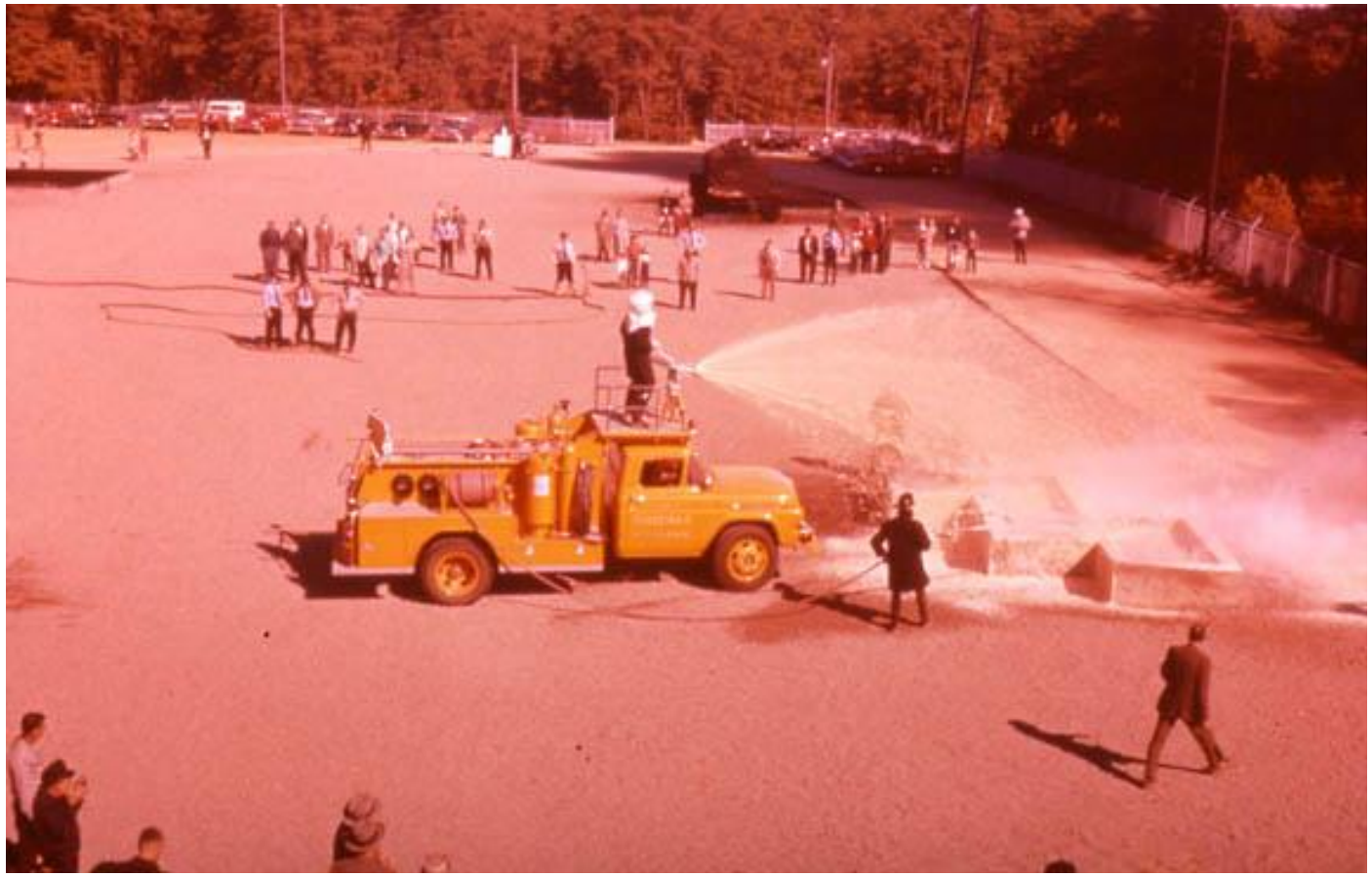
YELLOW

ENVIRONMENTAL
JUSTICE
POPULATION
INCOME

BROWN

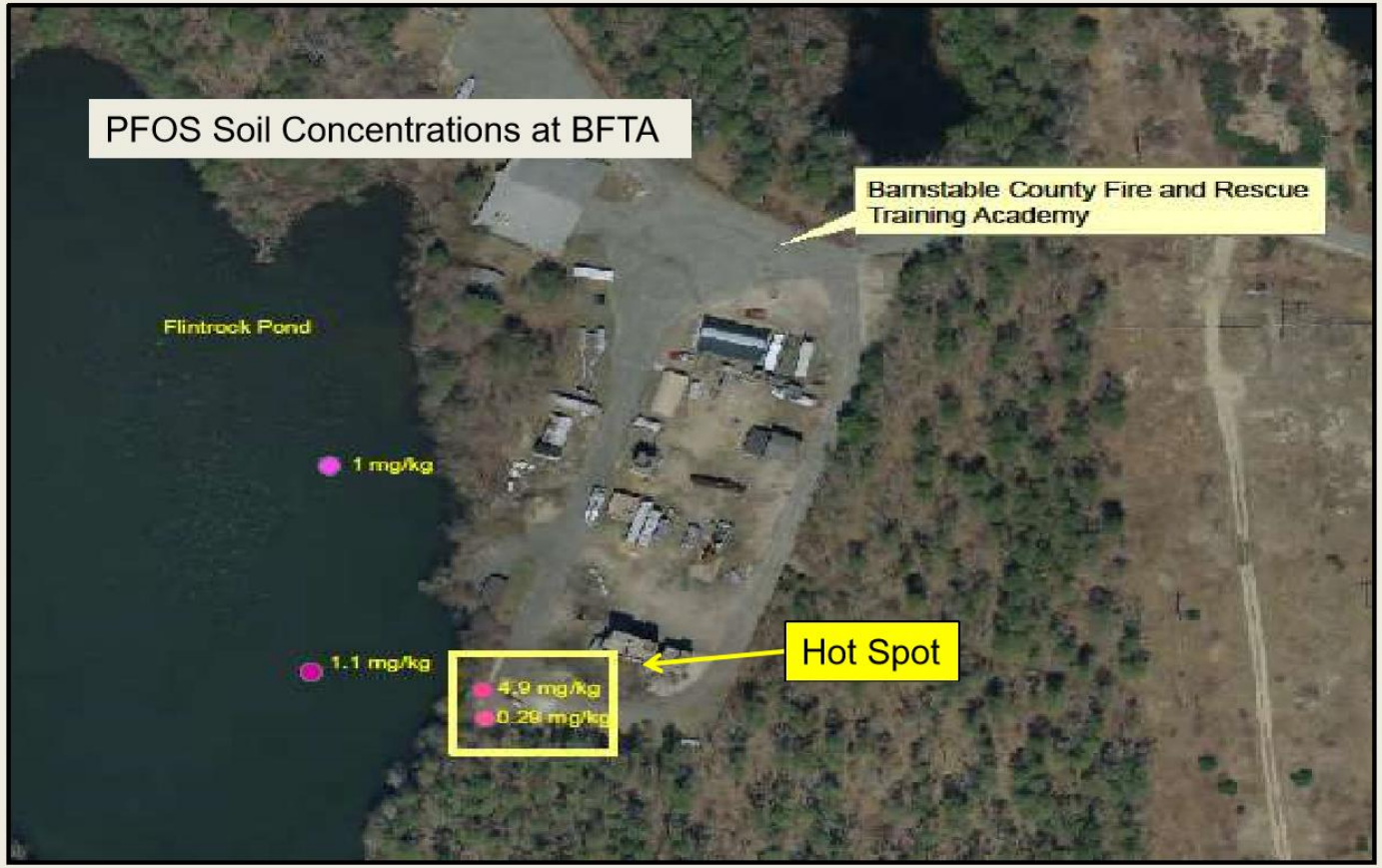
ENVIRONMENTAL
JUSTICE
POPULATION
MINORITY



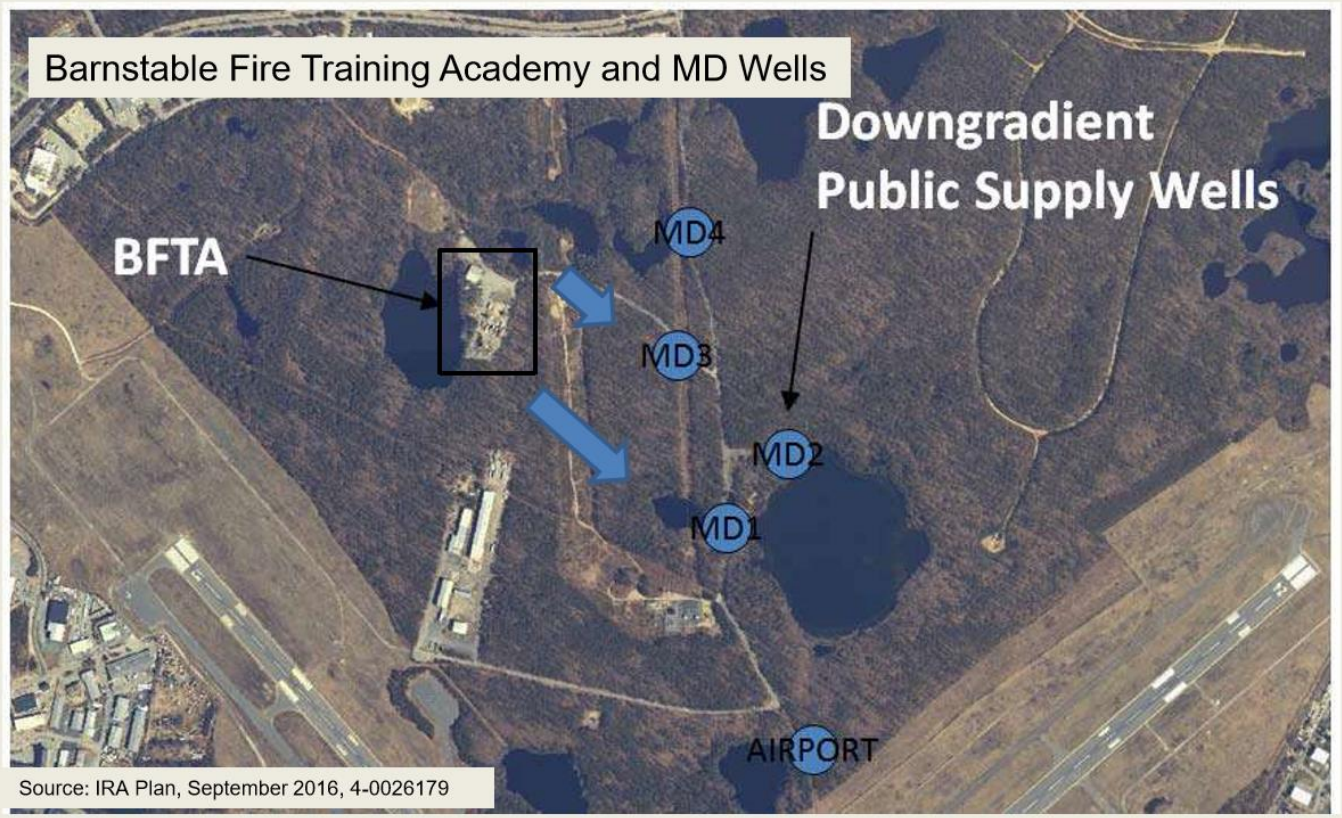


OPENING OF THE BARNSTABLE C0UNTY FIRE AND
RESCUE TRAINING ACADEMY 1959

PFAS Case Study Example #1, cont.
Mary Dunn Water Supply Wells



PFAS Case Study Example #1, cont.
Mary Dunn Water Supply Wells



GAC TREATMENT INSTALLED

PFAS Case Study Example #1, cont.
Mary Dunn Water Supply Wells

- IRA Status Report 2-28-2017
  - Soil excavation completed on 1-27-2017 (5’ and 10’)
    - Pre- and post-treatment soil samples
    - 297 tons of excavated PFAS soil disposed at lined landfill in Massachusetts under BOL
  - Remedial Additive applied to bottom of excavation

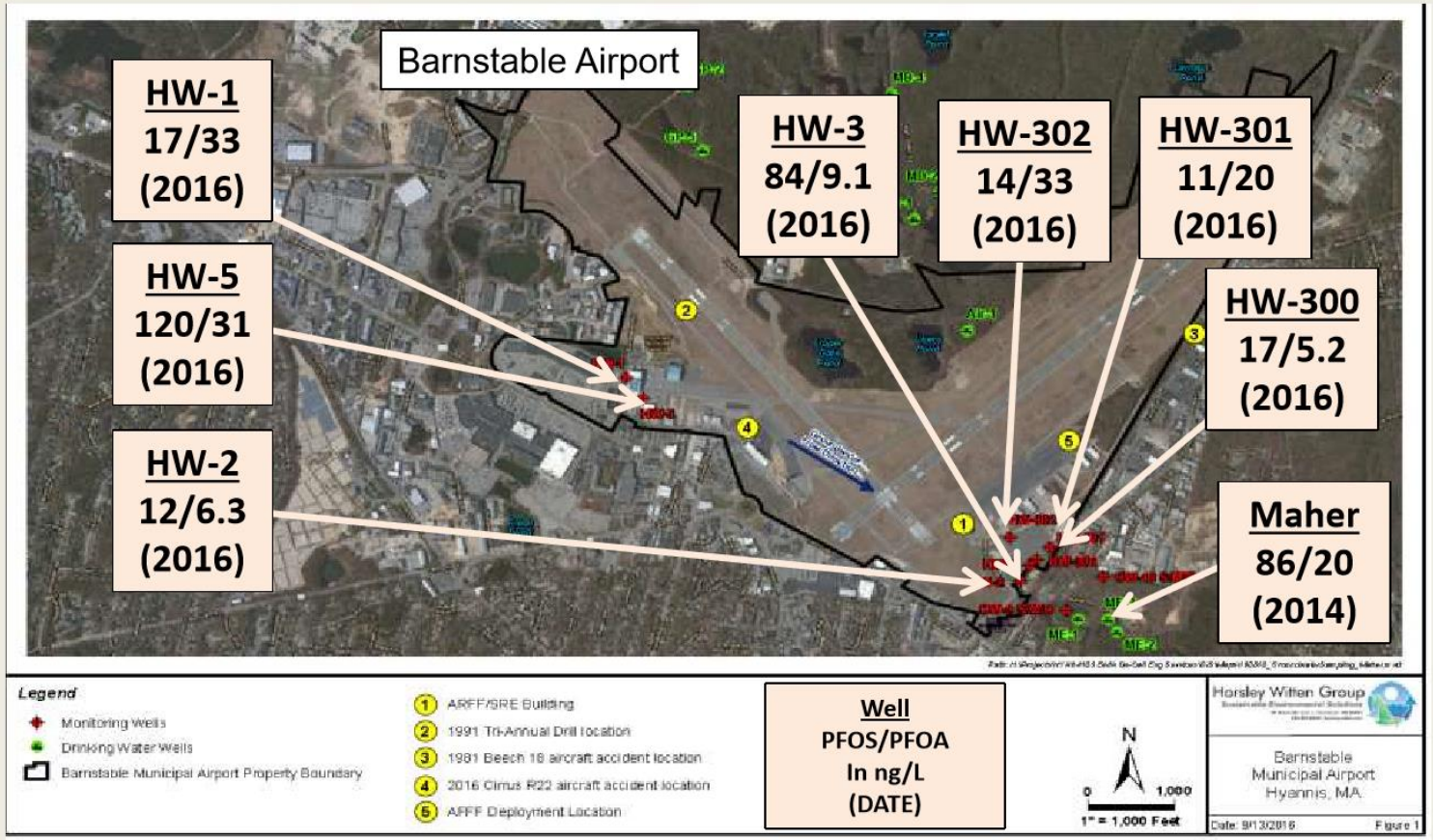
PFAS Case Study Example #1
Mary Dunn Water Supply Wells

- UCMR3 data – PFOS > PHA in 2013/2014
  (PFOA – 0.4 µg/L; PFOS – 0.2 µg/L)
  - Wells taken off line (off-season)
  - GAC system installed and working as of July 2015

Analyte	PHA	MD 1		MD 2		MD 3	
		11/20/2013	5/22/2014	11/20/2013	5/22/2014	11/20/2013	5/22/2014
PFOS	0.2	0.19	0.098	0.17	**0.43**	0.11	**0.21**
PFOA	0.4	<0.02	<0.02	0.02	0.062	<0.02	0.02
Total	NA	0.19	0.098	0.19	0.49	0.11	0.23

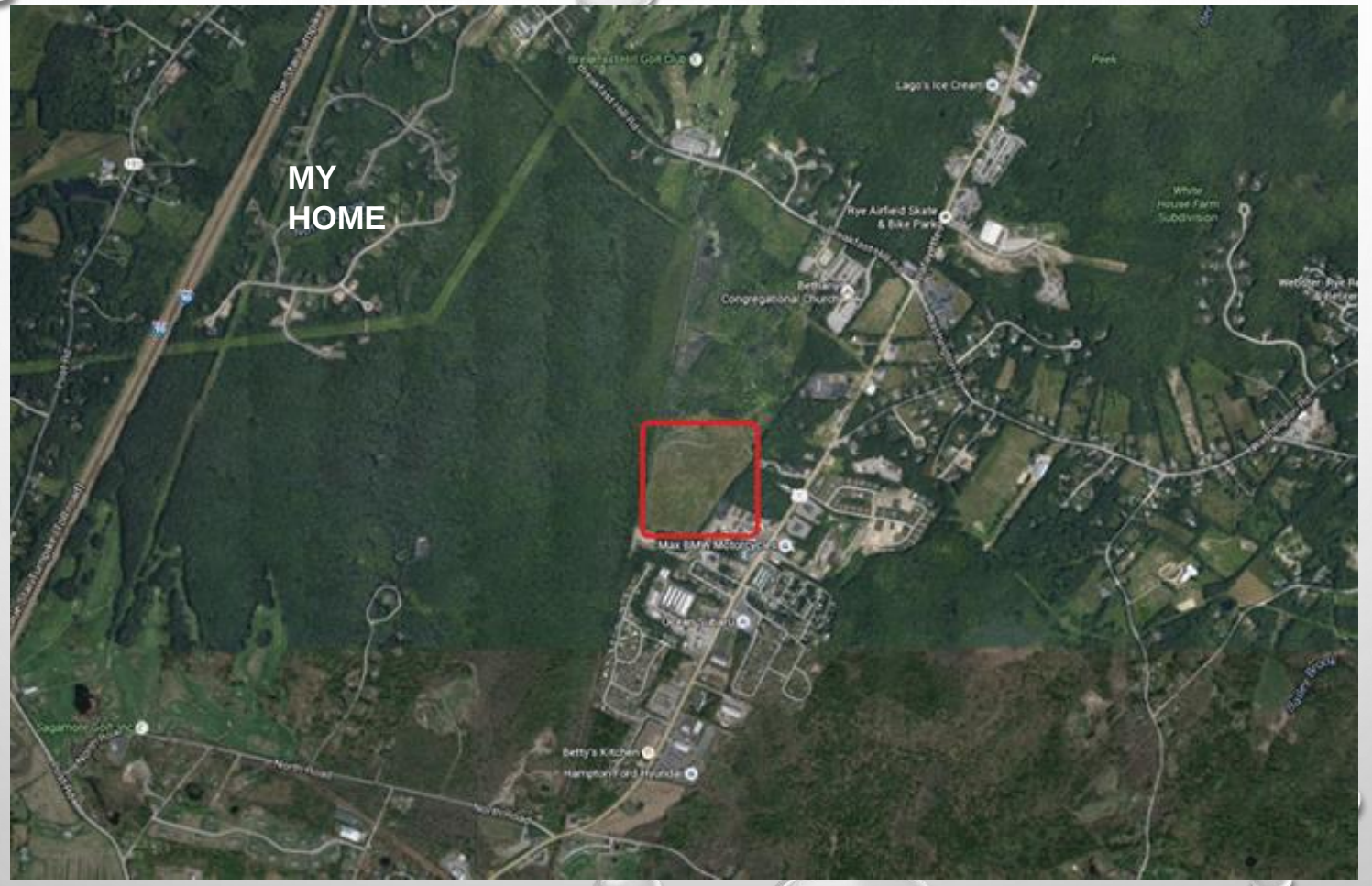
Results are in µg/L

PFAS Case Study Example #2, cont.
Maher Public Water Supply Wells



"WHEN YOU LIVE ON WHAT'S ESSENTIALLY A SANDBAR, POLLUTION, SEPTIC SYSTEMS, AND POLITICAL ROADBLOCKS ADD UP TO ONE TOUGH CHALLENGE."

COAKLEY LANDFILL SUPERFUND SITE



GREENLAND, NH ~ SEACOAST
POPULATION 3,892

MY STORY

MOVED TO NH SEACOAST IN 2010

MY HUSBAND AND I WANTED TO RAISE OUR DAUGHTERS WHERE I HAD GROWN UP, NEAR EXTENDED FAMILY. WE BUILT OUR DREAM HOME ON A BEAUTIFUL WOODED LOT IN GREENLAND.

CANCER CLUSTER ON THE NH SEACOAST

IN FEBRUARY 2016, A DOUBLE PEDIATRIC CANCER CLUSTER, INVOLVING 2 RARE FORMS OF CANCER, RMS AND PPB, WAS REPORTED IN 5 TOWNS ON THE NH SEACOAST. COAKLEY IS GEOGRAPHICALLY CENTRAL TO THESE TOWNS.

GREENLAND
Safe Water Action

WORKING TO PROTECT MY FAMILY & NEIGHBORS

IT WAS DEVASTATING TO LEARN ABOUT THE BEAST IN MY BACKYARD. MY NEIGHBORS AND I FORMED THE GREENLAND SAFE WATER ACTION. WE WON'T STOP FIGHTING FOR ACCESS TO SAFE, ABUNDANT WATER.

WHEN CONTAMINATION WAS DISCOVERED

- IN JUNE 2016, PFAS WERE DETECTED ONSITE IN MONITORING WELLS BY THE PRP, COAKLEY LANDFILL GROUP (CLG). LEVELS WERE OVER 1,000 PPT.
- IN DECEMBER 2016, CONSERVATION LAW FOUNDATION (CLF) DETECTED PFAS CONTAMINANTS OFFSITE, LEACHING IN TO THE HEADWATERS OF BERRY'S BROOK, WHICH WINDS THROUGH OUR SEACOAST TOWNS TO THE OCEAN.
- NHDES CONDUCTED THEIR OWN TESTING AND DISCOVERED EVEN HIGHER RESULTS UPWARDS OF 1,250 PPT PFOA AND PFOS LEACHING OFF SITE IN TO SURFACE WATER.

Photos courtesy of Seacoast Media Group

DETECTION LEVELS: MONITORING WELLS

Sample ID	Sample Date	PFC Concentration (ng/L)						
		PFOA	PFOS	PFBS	PFHpA	PFHxS	PFNA	Total PFAS
GW-BP-4	5/24/16	57.6	13.3	2.72	26.2	12.1	1.55	113.47
	4/26/17	62.3	ND	ND	27.4	ND	ND	89.7
	9/13/17	48.6	ND	ND	22.8	ND	ND	71.4
GW-MW-11	5/25/16	693	308	10.8	423	60.2	84.9	1579.9
	5/1/17	799	318	ND	401	68.8	73.4	1660.2
	9/19/2017	809	273	ND	401	58.2	86.7	1627.9
GW-MW-4	5/24/16	756	30.8	5.06	440	40.4	19.3	1291.56
	5/1/17	1240	55.8	ND	707	35.7	59.8	2098.3
	9/18/17	887	25.5	ND	427	40.5	25.5	1405.5
GW-MW-4 Dup	5/24/16	728	31	4.96	441	32.8	19.4	1257.16
	5/1/17	1050	60.6	ND	709	31.3	54.5	1905.4
	9/18/17	887	25.5	ND	427	40.5	25.5	1405.5
GW-MW-5D	5/25/16	61.2	29.3	27.5	44.8	42.9	ND	205.7
	4/27/17	119	23.9	29.2	47.8	49	ND	268.9
	9/18/17	84.1	25.2	31.9	49.5	42.9	NA	233.6
GW-MW-5S	5/24/16	647	84	10.1	468	58.6	62.6	1330.3
	4/27/17	849	89.5	ND	448	71.1	50.9	1508.5
	9/15/17	689	70.3	ND	430	62.3	63.8	1315.4
GW-MW-8	5/24/16	262	212	30.8	179	93.6	5.36	782.76
	4/25/17	435	224	29.6	194	120	ND	1002.6
	9/12/17	326	237	25.8	171	87.3	ND	847.1
GW-MW-9	5/24/16	656	452	3.53	345	17.9	169	1643.43
	4/25/17	386	429	ND	135	ND	128	1078
	9/19/2017	744	444	ND	435	39	165	1827
GW-MW-11	May-16	693	308	10.5	423	60.2	84.9	1579.6
	5/1/2017	799	318	ND	401	68.8	73.4	1660.2
	9/19/2017	809	273	ND	401	58.2	86.7	1627.9

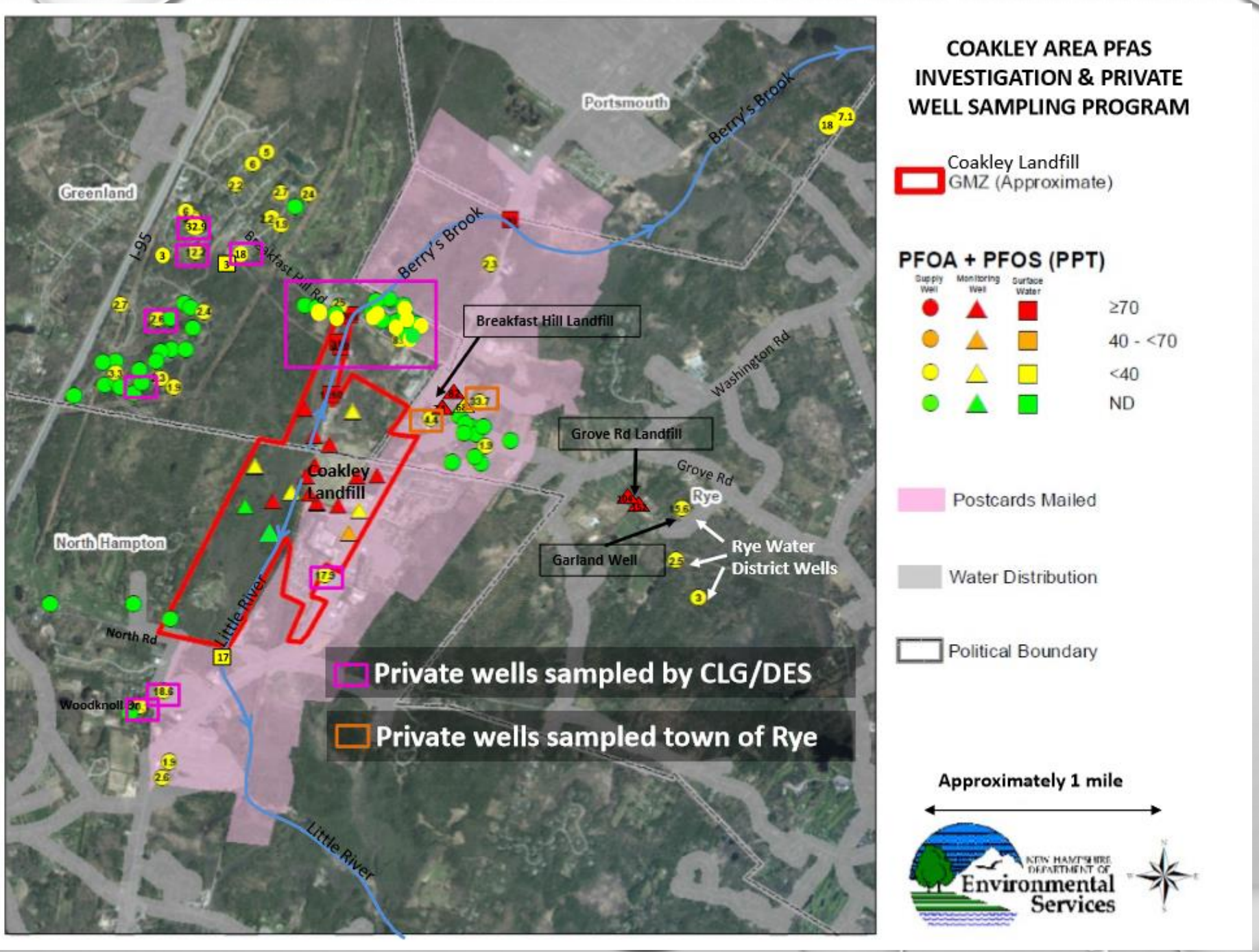
DETECTION LEVELS: SURFACE WATER

Sample ID	Sample Date	Location	PFC Concentration (ng/L)										
			PFOA	PFOS	PFBS	PFHpA	PFHxS	PFHxA	PFNA	PFBTA	PFDA	PFPEA	TOTAL PFAS
NHDES													
CLK_SW10	12/20/16	Berry Brook 1	210	87	ND	86	9.7	42	43	16	13	21	**527.7**
	12/20/16	Berry Brook 2	220	88	ND	92	6.5	46	37	16	15	23	**543.5**
CLK_SW11	12/20/16	Berry Brook 3	240	71	ND	110	7.8	48	42	18	7.6	26	**570.4**
CLK_SW12	12/20/16	Berry Brook 4	310	100	ND	130	9.2	62	54	20	7.6	31	**723.8**
CLK_SW13	12/20/16	Berry Brook 5	850	400	5.4	410	19	220	170	72	40	140	**2326.4**
CLK_SW14	12/20/16	Berry Brook 6	73	17	ND	37	ND	19	11	ND	ND	9.3	**166.3**
Coakley Landfill Group/ CES													
SW-4	5/2/17		129	36.2	ND	58.4	ND	N/A	ND	N/A	N/A	N/A	**223.6**
	9/15/17		145	42.1	ND	74.3	ND	N/A	34.9	N/A	N/A	N/A	**296.3**
SW-5	5/2/17		794	391	ND	222	ND	N/A	296	N/A	N/A	N/A	**1703**
	9/19/17		648	1120	ND	336	ND	N/A	249	N/A	N/A	N/A	**2353**
SW-103	4/25/17		763	758	ND	233	ND	N/A	235	N/A	N/A	N/A	**1989**
	9/19/17		675	993	ND	336	ND	N/A	287	N/A	N/A	N/A	**2291**
SW-110	4/25/17		198	77.1	ND	68.3	ND	N/A	38	N/A	N/A	N/A	**381.4**
	9/13/17		88.6	68.2	ND	42.7	ND	N/A	57.2	N/A	N/A	N/A	**256.7**
SW-111	5/2/17		57	25.5	ND	ND	ND	N/A	ND	N/A	N/A	N/A	**82.5**
	9/19/17		26.6	23.9	ND	ND	ND	N/A	ND	N/A	N/A	N/A	**50.5**
SW-LR	5/1/17		ND	ND	ND	ND	ND	N/A	ND	N/A	N/A	N/A	**ND**
	9/13/17		ND	ND	ND	ND	ND	N/A	ND	N/A	N/A	N/A	**ND**
SW-881	5/2/17		178	88.1	ND	55.5	ND	N/A	36.9	N/A	N/A	N/A	**358.5**
	9/13/17		108	80.1	ND	51.3	ND	N/A	64.4	N/A	N/A	N/A	**303.8**
SW-882	5/2/17		293	176	ND	104	ND	N/A	80.7	N/A	N/A	N/A	**653.7**
	9/15/17		213	205	ND	88.2	ND	N/A	127	N/A	N/A	N/A	**633.2**

COMMUNITY IMPACT

Photos courtesy of Seacoast Media Group

- ABOUT 300 HOMES HAVE BEEN DEVELOPED WITH PRIVATE DRINKING WATER WELLS WITHIN A 2 MILE RADIUS OF THE DUMP IN THE PAST 20 YEARS.
- MANY OF THESE HOMES HAVE HEAVILY TAXED IRRIGATION SYSTEMS.
- THE 1,4 DIOXANE PLUME HAS MIGRATED OFF SITE AND RESIDENTS ARE CONCERNED THE PFAS PLUME HAS/WILL ALSO MIGRATE OFF SITE. WE ARE CONCERNED ABOUT OUR DRINKING WATER WELLS.
- RESIDENTS CURRENTLY HAVE DETECTIONS IN THE SINGLE DIGITS, TEENS, 20'S, AND 30'S PPT IN OUR WELLS. WE CAN'T SIT AND WAIT FOR OUR LEVELS TO HIT 70 PPT BEFORE WE HAVE ACCESS TO SAFE DRINKING WATER FOR OUR FAMILIES.


COAKLEY AREA PFAS INVESTIGATION & PRIVATE WELL SAMPLING PROGRAM
Coakley Landfill GMZ (Approximate)
PFOA + PFOS (PPT)
Supply Well
Monitoring Well
Surface Water
≥70
40 - <70
<40
ND
Postcards Mailed
Water Distribution
Political Boundary
Approximately 1 mile
NEW HAMPSHIRE DEPARTMENT OF Environmental Services
Private wells sampled by CLG/DES
Private wells sampled town of Rye
Portsmouth
Greenland
North Hampton
Rye
Berry's Brook
Little River
I-95
Breakfast Hill Rd
Washington Rd
Grove Rd
North Rd
Woodknoll
Breakfast Hill Landfill
Grove Rd Landfill
Coakley Landfill
Garland Well
Rye Water District Wells

CHALLENGES

- IN JULY 2016, NHDES DECLARED THE REMEDY ONSITE NEEDED IMPROVEMENT TO REMAIN PROTECTIVE OF HUMAN HEALTH. DAYS LATER, EPA STATED THE REMEDY IS PROTECTIVE OF HUMAN HEALTH.
- EPA HAS DIRECTED CLG TO EXPAND MONITORING TO ASSESS GROUNDWATER FLOW IN AND AROUND THE DUMP. IT IS PROJECTED TO BE 2-5 YEARS BEFORE THIS STUDY IS COMPLETE.
- ONGOING TESTING OF RESIDENTIAL WELLS SURROUNDING THE DUMP ACCOUNTS FOR LESS THAN 6% OF HOMES WITHIN A TWO MILE RADIUS.

Photos courtesy of Seacoast Media Group

ACTION ITEMS

- COMPEL CLG TO PROVIDE ALL IMPACTED RESIDENTS ACCESS TO SAFE, ABUNDANT WATER.
- COMPEL CLG TO INSTALL AN EFFECTIVE REMEDIATION SYSTEM AT THE COAKLEY SITE. THE CURRENT PLAN FOR MONITORED NATURAL ATTENUATION WAS SET IN PLACE BEFORE THE DISCOVERY OF PFAS AND 1,4 DIOXANE.
- ENSURE THAT THE PFAS MAXIMUM CONTAMINANT LEVEL (MCL) THAT THE EPA COMMITTED TO AT ITS PFAS LEADERSHIP SUMMIT IN MAY IS AS STRONG AS POSSIBLE. THE MCL SHOULD BE SIGNIFICANTLY LOWER THAN THE EPA'S CURRENT 70 PPT ADVISORY LIMIT AND INCLUDE ALL OF THE CHEMICALS IN THE PFAS FAMILY.
- COMPEL CLG TO EXPAND RESIDENTIAL WELL TESTING TO EVERY HOME IN A PATHWAY DETERMINED THROUGH COLLABORATION WITH USGS, WITH TESTS PERFORMED BY AN INDEPENDENT BODY.
- COMPEL CLG TO INSTALL AND MAINTAIN FILTERS AT EVERY HOME WITHIN 2 MILES THAT REQUESTS THEM, AND AT NEARBY SCHOOLS. WE NEED FILTERS TO BE ABLE TO TRUST THE WATER THAT COMES OUT OF OUR TAP, BOTH IN OUR HOMES AND OUR SCHOOLS.

Westfield, Massachusetts

A PFAS Contamination Story

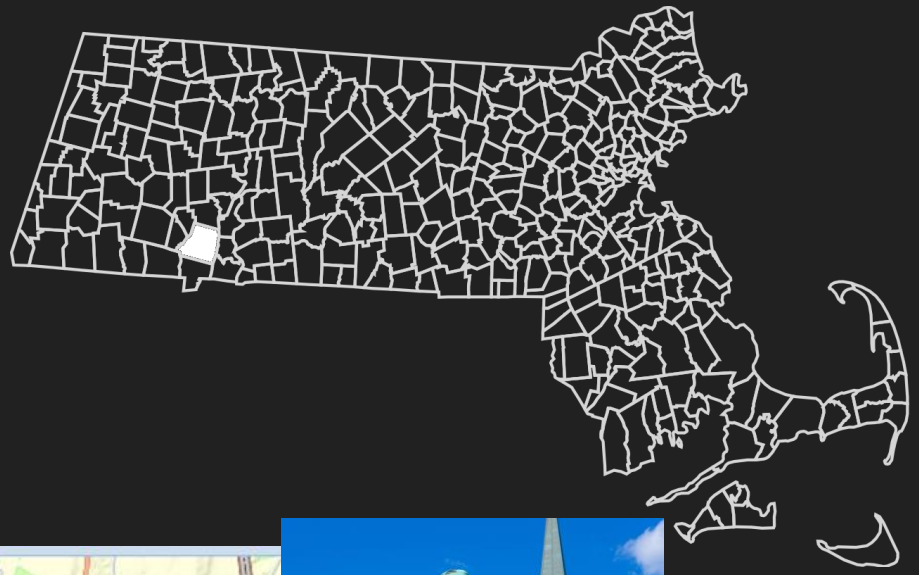
By Kristen Mello

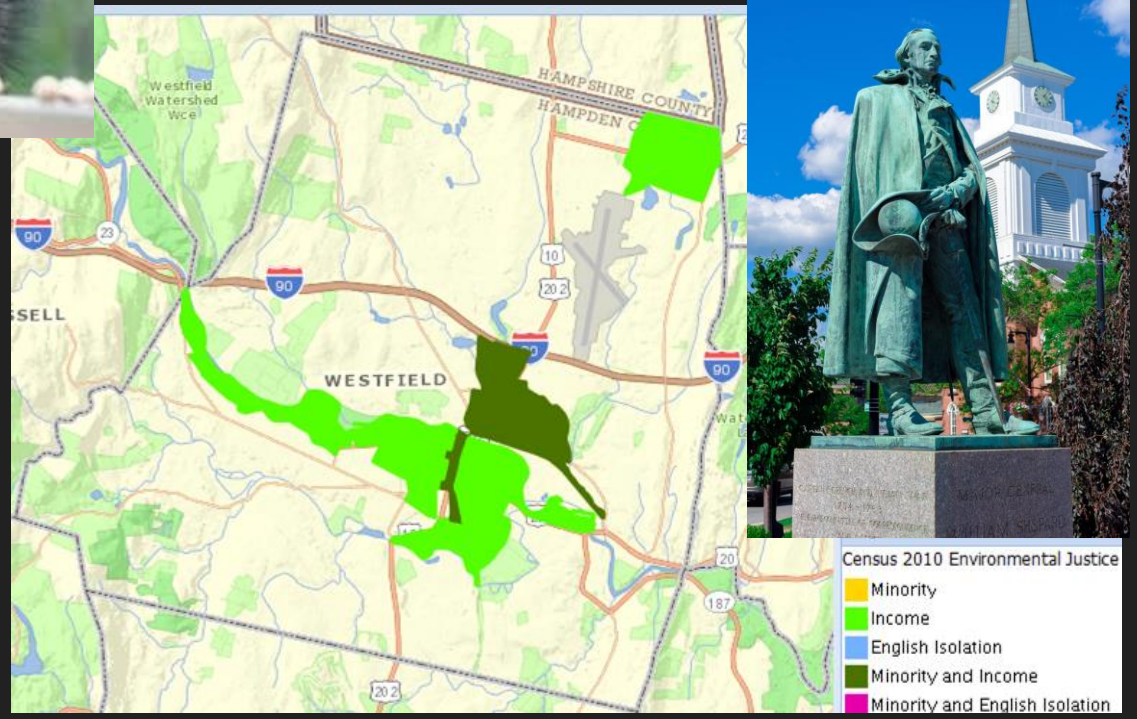
US EPA Region 1 Community Engagement Event
Exeter High School, Exeter, NH
Monday, June 25, 2018

WRAFT
Westfield Residents Advocating For Themselves

What about Westfield?

Population: 41,552 (2016 Census)





WESTFIELD RESIDENTS ADVOCATING FOR THEMSELVES

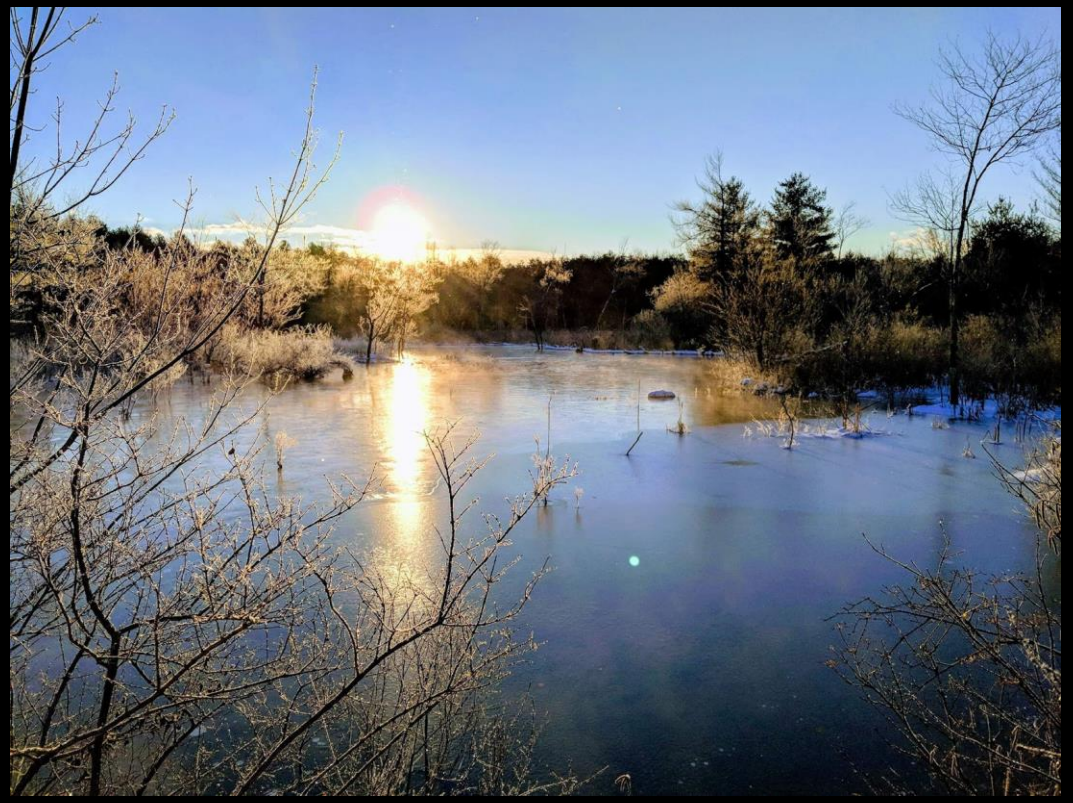
PFAS in Westfield

Area	Well 7 & 8 Wellfield																			Barnes Airport		
Well ID	PWS Well 7		7OBS (R)	Well A	Well B		Well C		Well F	Well J		Well K		Well L		Well M		Well N		MW - 7A	MW - 7B	MW - 7C
Screen Depth (ft.)/ Type	122 (est.) / Deep		122 / Deep	130.5 Deep	20.2 / Shallow		127.9 / Deep			130.5 / Deep		14.4 / Shallow		129.8 / Deep		12.5 / Shallow		10.5 / Shallow		117.9 / Deep	73.3 / Intermediate	37.5 / Shallow
Sample Date	2/27/13	8/19/13	6/22/16	03/13/17	6/22/16	03/13/17	6/22/16	03/13/17	03/13/17	6/22/16	03/13/17	6/22/16	03/13/17	6/22/16	03/13/17	6/22/16	03/13/17	6/22/16	03/13/17	6/22/16		
Perfluorobutane sulfonic acid (PFBuS)	< 2.7	< 30	38	7.4	8.8	14	12	19	4.1	11	19	< 0.85	< 0.85	10	12	6.5	8.5	51	65	38	100	12
Perfluorohexanoic acid (PFHxA)	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Perfluorohexane sulfonic acid (PFHxS)	170	100	310	55	120	160	200	230	32	130	160	1.4*	2.4	120	150	39	150	240	280	310	650!	240
Perfluoroheptanoic acid (PFHpA)	11	< 3.3	29	5.2	15	16	23	27	2.5	13	16	< 0.74	< 0.74	12	12	4	3.5	17	19	29	42	12
Perfluorooctane sulfonic acid (PFOS)	**160**	**120**	**540**	**140**	**160**	**230**	**320**	**410**	27	**150**	**230**	< 1.2	< 1.2	**130**	**150**	50	45	49	**80**	**540**	**1200!**	**200**
Perfluorooctanoic acid (PFOA)	43	28	**140**	15	50	57	**96**	**110**	9.2	48	63	1.5*	1.3*	40	40	14	40	22	27	**140**	**73**	18
Perfluorononanoic acid (PFNA)	< 0.6	< 0.67	1.6*	NS	0.73*	1.0*	1.3*	1.4*	NS	0.60*	1.3*	< 0.61	< 0.61	< 0.63	< 0.64	0.71*	NS	< 0.58	NS	1.6*	4.4	1.3*
Total PFAS	380	250	1100	220	350	480	650	800	75	350	490	3.7	2.9	310	360	110	250	380	470	1100	2100	480
PFOS + PFOA	**200**	**150**	**680**	**160**	**210**	**290**	**420**	**520**	36	**200**	**290**	1.5	1.3	**170**	**190**	64	**85**	**71**	**110**	**680**	**1300**	**220**
PFOS + PFOA + PFHxS + PFHpA + PFNA	380	250	1000	220	350	460	640	780	71	340	470	2.9	3.7	300	350	110	240	330	410	1000	2000	470
U.S. EPA Health Advisory Level	70																					

Potential Release Location (PRL)	1	3	4	6		7	8
Location	TW-03	MW-6	TW-02	TW-01		TW-05	TW-04
	Former Fire Training Area, IRP Site 1	Stormwater Drainage Basin	Hangars 27A & 27B	Current Fire Station, Building 040		Hush House	Fire Department Equipment Test Area
Sample ID	BARNS-01-GW-TW03-062917-37	MW-6-063017-25	BARNS-04-GW-TW02-062817-30	BARNS-06-GW-TW01-062817-37	BARNS-06-GW-TW01-062817-Dup	BARNS-07-GW-TW05-062917-49	BARNS-08-GW-TW04-063017-36
Sample Depth (ft.)	37.0-37.0	25.0-25.0	30.0-30.0	37.0-37.0	37.0-37.0	49.0-49.0	37.0-37.0
Sample Type	N	N	N	N	FD	N	N
Sample Date	06/29/17	06/30/17	06/28/17	06/28/17	06/28/17	06/29/17	06/30/17
Perfluorobutane sulfonic acid (PFBuS)	12.8	5.17 U	3.58 J	39.5	42.6	53.5	5.08 U
Perfluorohexanoic acid (PFHxA)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Perfluorohexane sulfonic acid (PFHxS)	319	10.8	30.5	641	737	694	19.6
Perfluoroheptanoic acid (PFHpA)	28.7	5.17 U	5.05 J	20	23.8	27.5	5.08 U
Perfluorooctane sulfonic acid (PFOS)	**101**	6.84 J	**99.4**	**609 J**	**950 J**	**634**	3.8 J
Perfluorooctanoic acid (PFOA)	45.5	2.76 J	5.2 J	69.9	79.3	59.7	5.08 U
Perfluorononanoic acid (PFNA)	4.32J	5.17 J	5.25 J	5.04 U	5.04 U	5.0 U	5.08 U
Total PFAS	510	26	150	1400	1800	1500	23
PFOS + PFOA	**150**	9.6	**100**	**680**	**1000**	**690**	3.8 J
PFOS + PFOA + PFHxS + PFHpA + PFNA	500	26	150	1300	1800	1400	23
U.S. EPA Health Advisory Level	70						

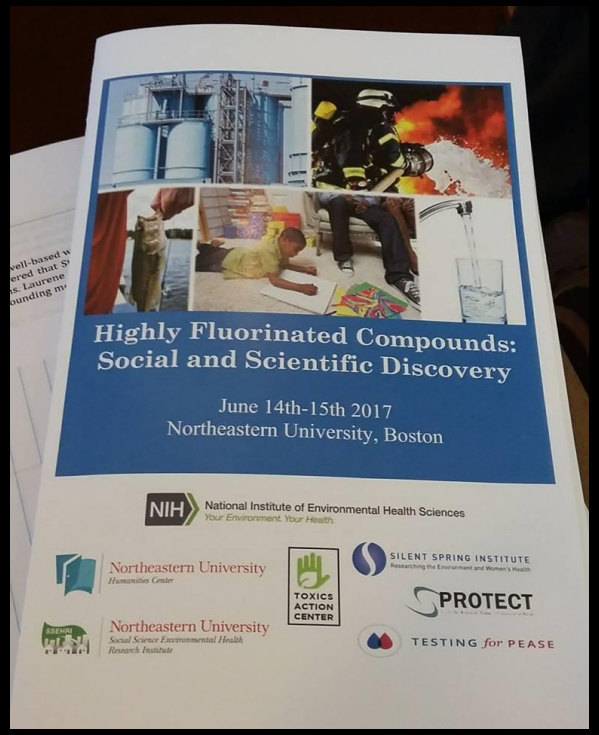
WESTFIELD RESIDENTS ADVOCATING FOR THEMSELVES

Official Response



WESTFIELD RESIDENTS ADVOCATING FOR THEMSELVES

Community Response



Westfield Residents Advocating For Themselves
Present a Free, Public, Educational Event

PFAS Panel Discussion

Wednesday, October 11, 2017
6:30 – 8:30 PM

North Middle School Auditorium
350 Southampton Road, Westfield, MA 01085

Featuring:

Laurel Schaider, Silent Spring Institute
Courtney Carignan, Michigan State University
Testing For Pease, Portsmouth, NH
Lauren Richter, Northeastern University
Shaina Kasper, Toxics Action Center

with Opening Remarks by:

Mary Ann Babinski, Ward 1 City Councilor

WESTFIELD RESIDENTS ADVOCATING FOR THEMSELVES

Find us on @WRAFT01085

Replacements: Short-chain PFASs

- Mainly shorter versions of PFOA, PFOS, and related compounds
- Retained in body for days to weeks
  - Shorter than long-chains
  - Longer than some other chemicals of concern

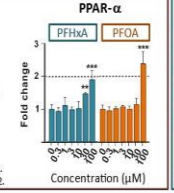
Half-lives in the human body (geometric means)		
PFHxS	7.3 years	Long chain
PFOS	4.8 years	
PFOA	3.5 years	
PFHxA	32 days	Short chain
PFBS	26 days	
BPA	3-6 hours	

SILENT SPRING INSTITUTE

Olsen *et al.* 2007. *EHP.* 115:1298.
Olsen *et al.* 2009. *Toxicol.* 256:65.
Russell *et al.* 2013. *Chemosphere.* 93:2419.
Taylor *et al.* 2011. *EHP.* 119:422.

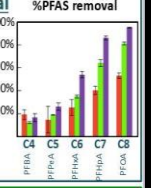
Concerns about short-chain PFASs

Similar biological activity in *in vitro* lab testing



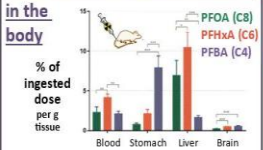
Rosenmai *et al.* 2016. *Andrology.* 4:662-672.

Poorer removal during GAC drinking water treatment



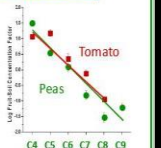
Sun et al. 2016. *ES&T Letters.* 3:415-419.

Varying patterns of accumulation in the body



Burkemper *et al.* 2017. *ES&T Lett.* 3/9/17

More accumulation in plant shoots and fruits



Blaine *et al.* 2014. *ES&T.* 48:7858.

Antibody Response Suppression

Children with higher blood levels of PFAS produce fewer antibodies after vaccination for diphtheria and tetanus (DTaP)
Morgensen et al. 2015

VACCINATION USED AS A MODEL OF IMMUNE FUNCTION

Extrapolation suggests drinking water standard closer to 1 ppt
Grandjean and Clapp *New Solutions* (2015)

Routine Physical

- Cholesterol
- Thyroid
- Iodine sufficiency
- Vitamin D sufficiency
- Kidney function
- Reproductive cancers

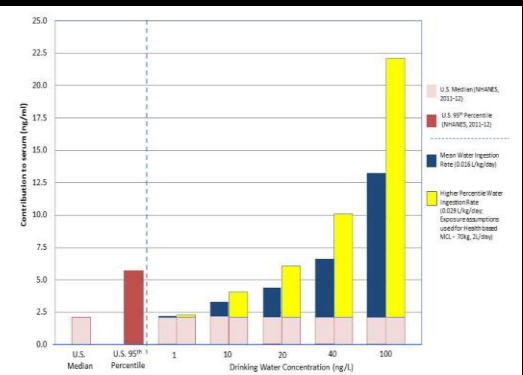
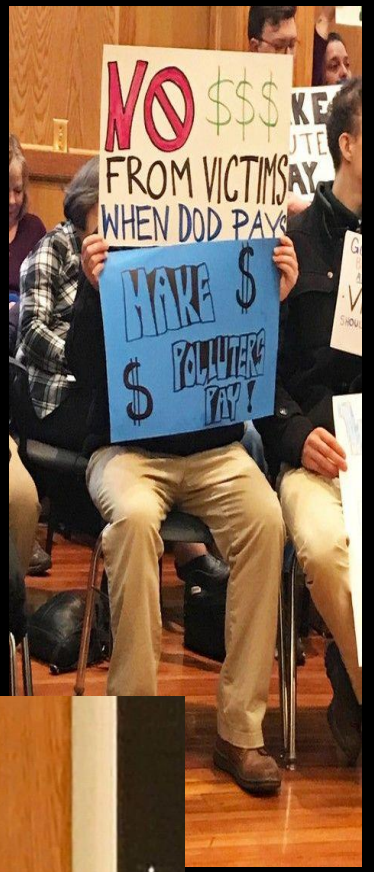


Figure E-1. Increases in serum PFOA concentrations predicted from mean and upper percentile consumption of drinking water with various concentrations of PFOA, as compared to U.S median and 95th percentile serum PFOA levels (NHANES, 2011-12).

WESTFIELD RESIDENTS ADVOCATING FOR THEMSELVES

Community Response



WESTFIELD RESIDENTS ADVOCATING FOR THEMSELVES

WE'RE PFAS'D OFF!!!

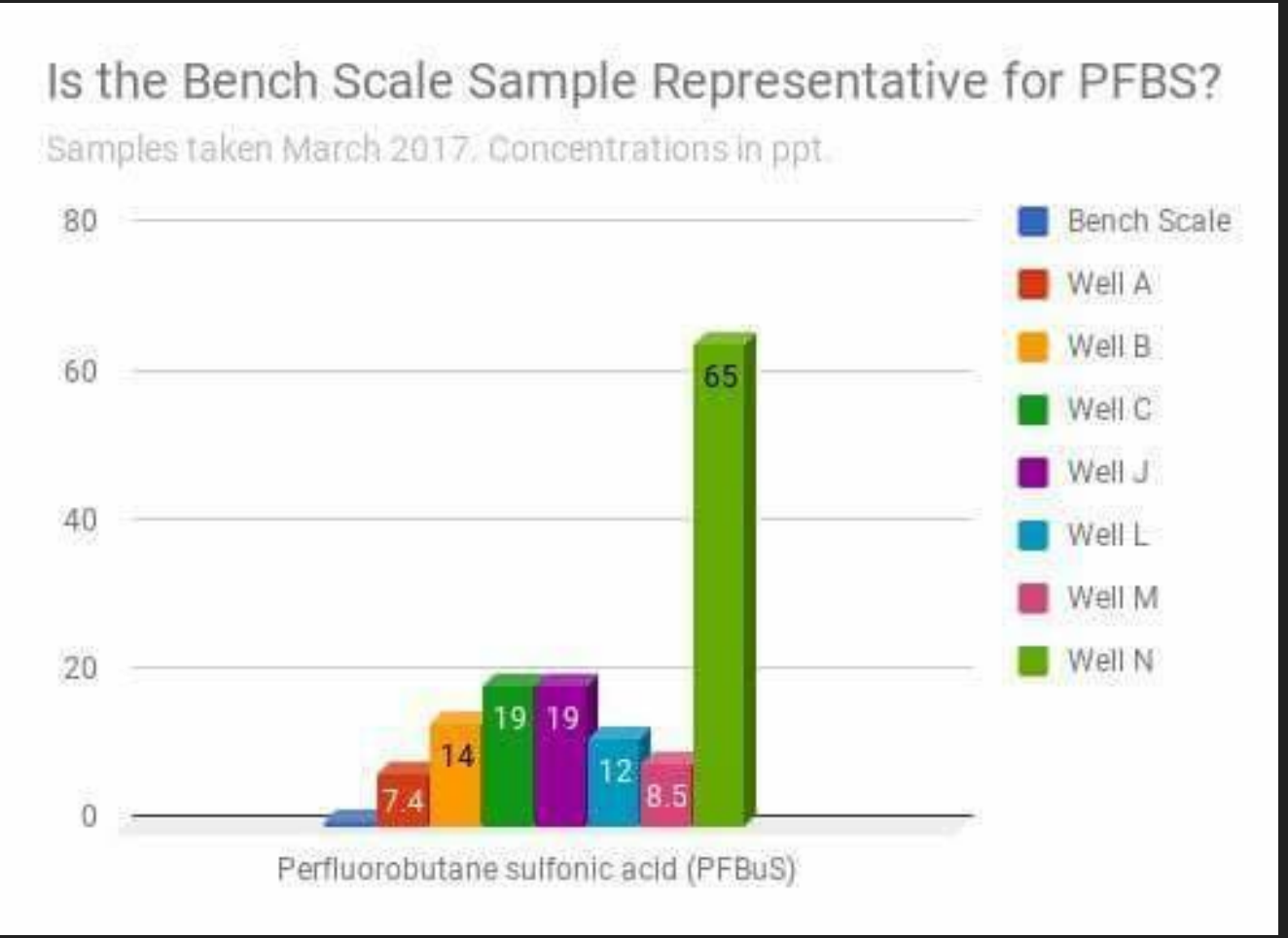
AND WE'RE NOT GONNA
DRINK IT ANYMORE!

Community Response

MassDEP

WESTFIELD RESIDENTS ADVOCATING FOR THEMSELVES

Challenges For Westfield



WESTFIELD RESIDENTS ADVOCATING FOR THEMSELVES

Community Needs

A PFAS-free Water Supply

Legal Framework to Make Polluters Pay

PFAS Testing: blood, food, surface water

Biomonitoring and Health Supports

WRAFT
Westfield Residents Advocating For Themselves

MassDEP

New England Grassroots Environmental Fund

Testing for Pease, GreenCAPE, Greenland Safe Water Action, and Merrimack Citizens for Clean Water

Toxics Action Center

National PFAS Contamination Coalition

UMASS Amherst School of Public Health Health and Health Sciences

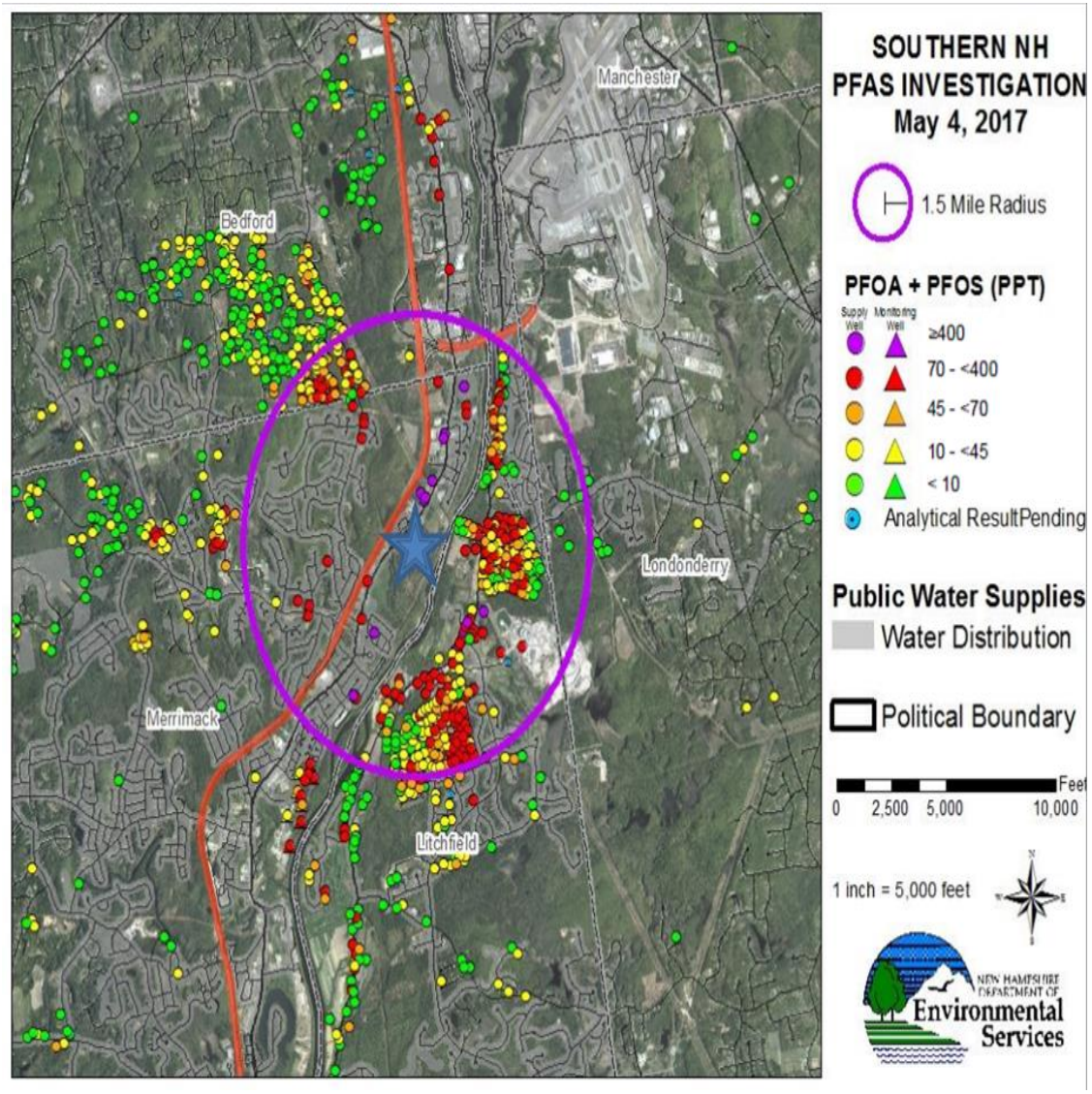
WRAFT
Westfield Residents Advocating For Themselves

*… and to **you** for listening to our story!*


MERRIMACK
1750
ONE TOWN
FOUR VILLAGES
MERRIMACK
TOWN HALL

News coverage of Merrimack PFOA Information Meeting
March 23, 2016

NHDES Contamination Map



Merrimack Private Wells
21 Private Wells > 70ppt PFOA
50 Private Wells > 20ppt PFOA

Private wells falling within the 1.5mi radius

Merrimack Public Wells
Wells 2/3 avg > 13ppt PFOA
Wells 4/5 avg > 70ppt PFOA
Wells 7/8 avg > 25ppt PFOA

Public wells serve 25,500 water users.

ATSDR 6/20/18 Draft MRLs
PFOA: 11ppt
PFOS: 7 ppt
PFNA: 10.5ppt
PFHxS: 70ppt

Critical Reviews in Toxicology

http://informahealthcare.com/txc
ISSN: 1040-8444 (print), 1547-6898 (electronic)

Crit Rev Toxicol, 2014; 44(S1): 1–81
 DOI: 10.3109/10408444.2014.905767

informa
healthcare

REVIEW ARTICLE

A critical review of perfluorooctanoate and perfluorooctanesulfonate exposure and cancer risk in humans

Ellen T. Chang[1], Hans-Olov Adami[2], Paolo Boffetta[3], Philip Cole[4], Thomas B. Starr[5], and Jack S. Mandel[1]

- The toxicology review above by Chang and colleagues was funded by the 3m company, a PFC manufacturer.
- The toxicological profile to the right by CDC/ATSDR is an independent review of the science.

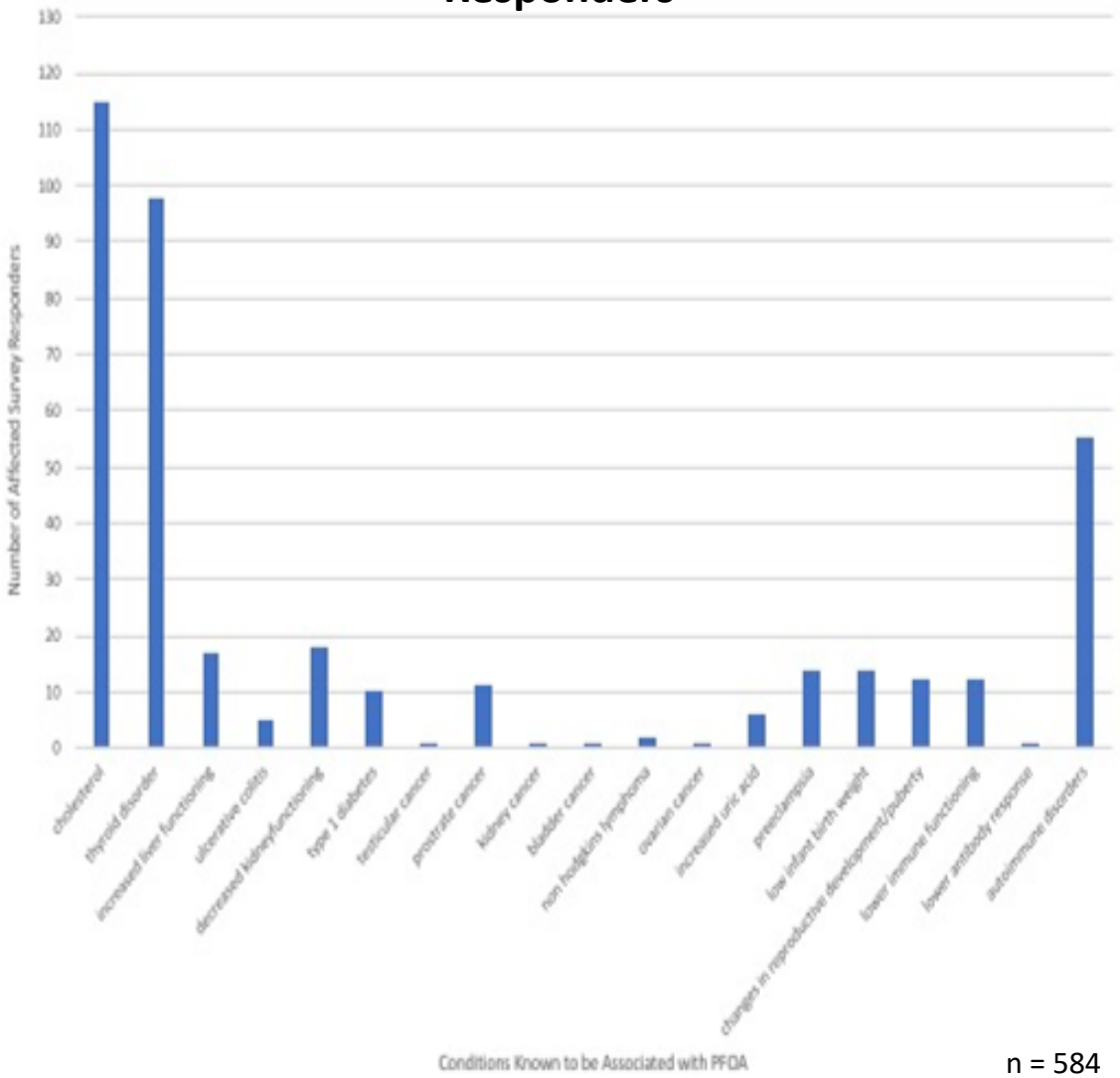
DRAFT
TOXICOLOGICAL PROFILE FOR PERFLUOROALKYLS

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry

August 2015

NH DIVISION OF Public Health Services
Improving health, preventing disease, reducing costs *for all*
New Hampshire Department of Health & Human Services

PFOA-Affiliated Conditions Reported by Survey Responders



n = 584

Impacts to the human body include:

Thyroid hormone level changes
Increases in cholesterol levels
Ulcerative colitis
Testicular cancer
Kidney cancer
Prostate cancer
Pregnancy-induced hypertension
Elevated liver enzymes
Increases in uric acid levels
Lower immune function
Changes in reproductive development and puberty
Low birth weight
Autoimmune disorders

NH DHHS Limited MVD Random Blood Testing

•A NH DHHS conducted random blood sampling of 217 Merrimack MVD public water consumers (2016-17) reported the following blood serum averages:

- PFOA: 3.9 ug/l (over 2 times the 2014 national average)
- PFOS: 5.5 ug/l
- PFHxS: 1.3 ug/l

•Merrimack public water consumers who reported consumption of 8+ cups of tap water per day averaged:

- PFOA: 4.7 ug/l (2.5 times the 2014 national average)

•Merrimack public water consumers within 1.5 miles of Saint Gobain/Wells 4 and 5 averaged:

- PFOA: 6.3 ug/l (3+ times the 2014 national average)

Merrimack NH Cancer Incident Report

Prepared by NH DHHS

Table 2. Observed and Expected Numbers of Cancer Cases, Merrimack, NH, 2005-2014*

Cancer Type/Site	Observed	Expected	Significant Difference
Oral Cavity and Pharynx	28	33	Not significantly different
Esophagus	20	18	Not significantly different
Stomach	13	14	Not significantly different
Colorectal	115	101	Not significantly different
Liver and Intrahepatic	12	15	Not significantly different
Pancreas	30	30	Not significantly different
Gall Bladder	<5	<5	Not significantly different
Larynx	9	10	Not significantly different
Lung and Bronchus*	138	152	Not significantly different
Mesothelioma	6	<5	Not significantly different
Females Only:			
Breast	197	203	Not significantly different
Cervical	5	8	Not significantly different
Uterus	55	49	Not significantly different
Ovary	17	18	Not significantly different
Males Only:			
Prostate*	198	173	Not significantly different
Testis	8	9	Not significantly different
Bladder	79	68	Not significantly different
Kidney and Renal Pelvis	51	41	Not significantly different
Brain and Other CNS	22	20	Not significantly different
Thyroid	52	41	Not significantly different
Hodgkin Lymphoma	5	8	Not significantly different
Non-Hodgkin Lymphoma	48	54	Not significantly different
Kaposi Sarcoma	<5	<5	Not significantly different
Multiple Myeloma	14	15	Not significantly different
Leukemia	43	36	Not significantly different
Melanoma of Skin	61	75	Not significantly different
Other Cancers	95	95	Not significantly different

Saint Gobain Storm Drain Outfall 6/29/17

PFOA: 1820ppt

PFHxA: 1170ppt

PFPeA: 565ppt

PFHPA: 561ppt

PFOS: 206ppt

PFBA: 158ppt

PFNA: 25ppt

PFHXS: 23ppt

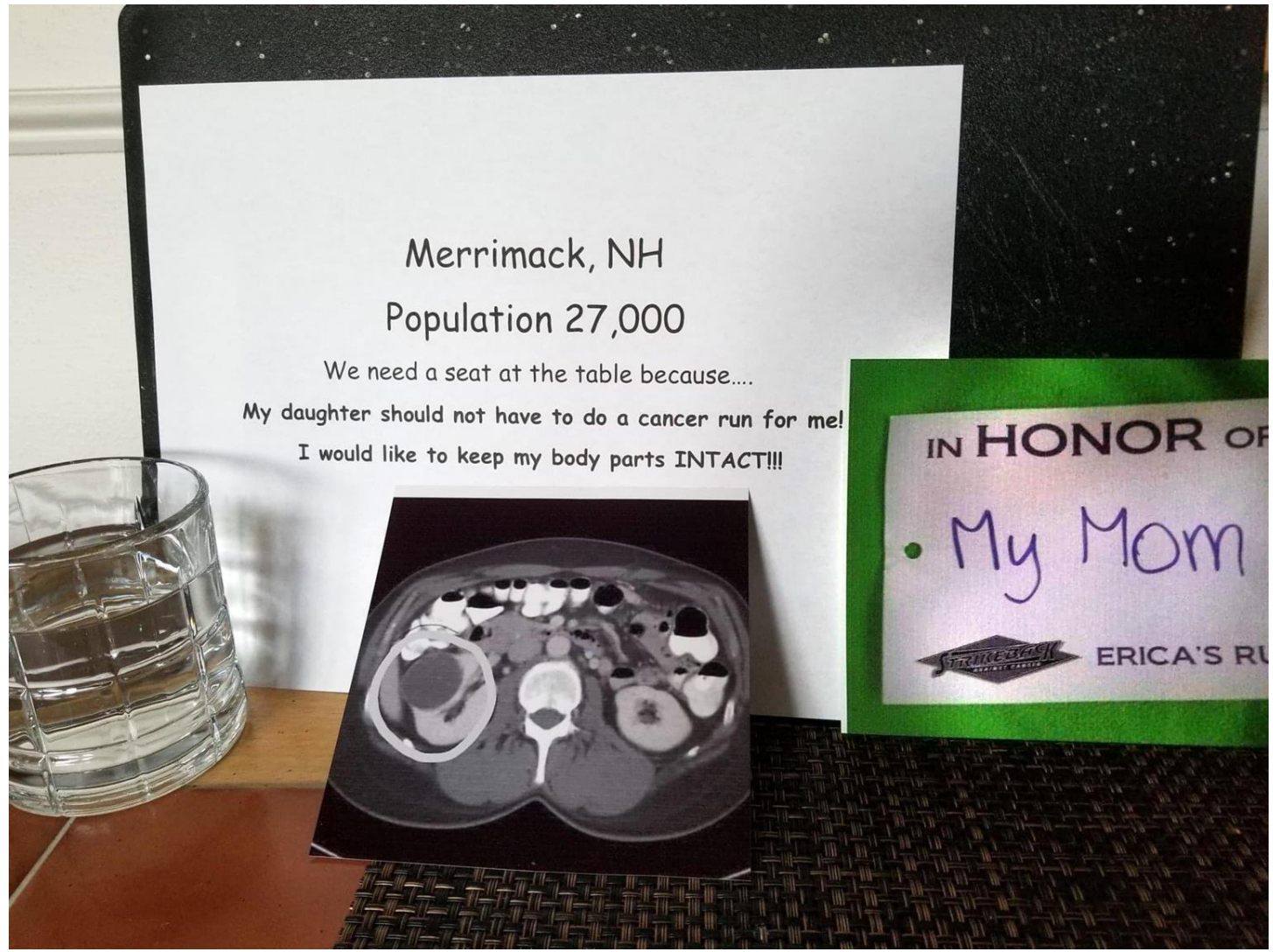
PFBS: 9ppt

“This is not how we expected to celebrate Father’s Day but love is love, doesn’t matter where you are.”

“My son was diagnosed with Rhabdomyosarcoma in October 2014 and is only 25 years old. As a mom trying to do the right thing for my child I encouraged them to drink water throughout their childhood in order to be healthy.

There is no excuse for the agency that is supposed to protect human health to knowingly do the opposite. Get PFAS out of the air, water, and soil. It is your duty. All my son ever wanted to do was grow up and defend his country and he joined the military, only to be told within a year of enlisting that he has cancer and cannot stay in the military. This is a terminal cancer, he cannot live out his dreams…

I have many unanswered questions and so does my son. How many people have to suffer before something is done?”


Merrimack, NH
Population 27,000
We need a seat at the table because....
My daughter should not have to do a cancer run for me!
I would like to keep my body parts INTACT!!!
IN HONOR OF
My Mom
ERICA'S RU

15 min.
Break

Welcome to the PFAS Community Stakeholder Meeting

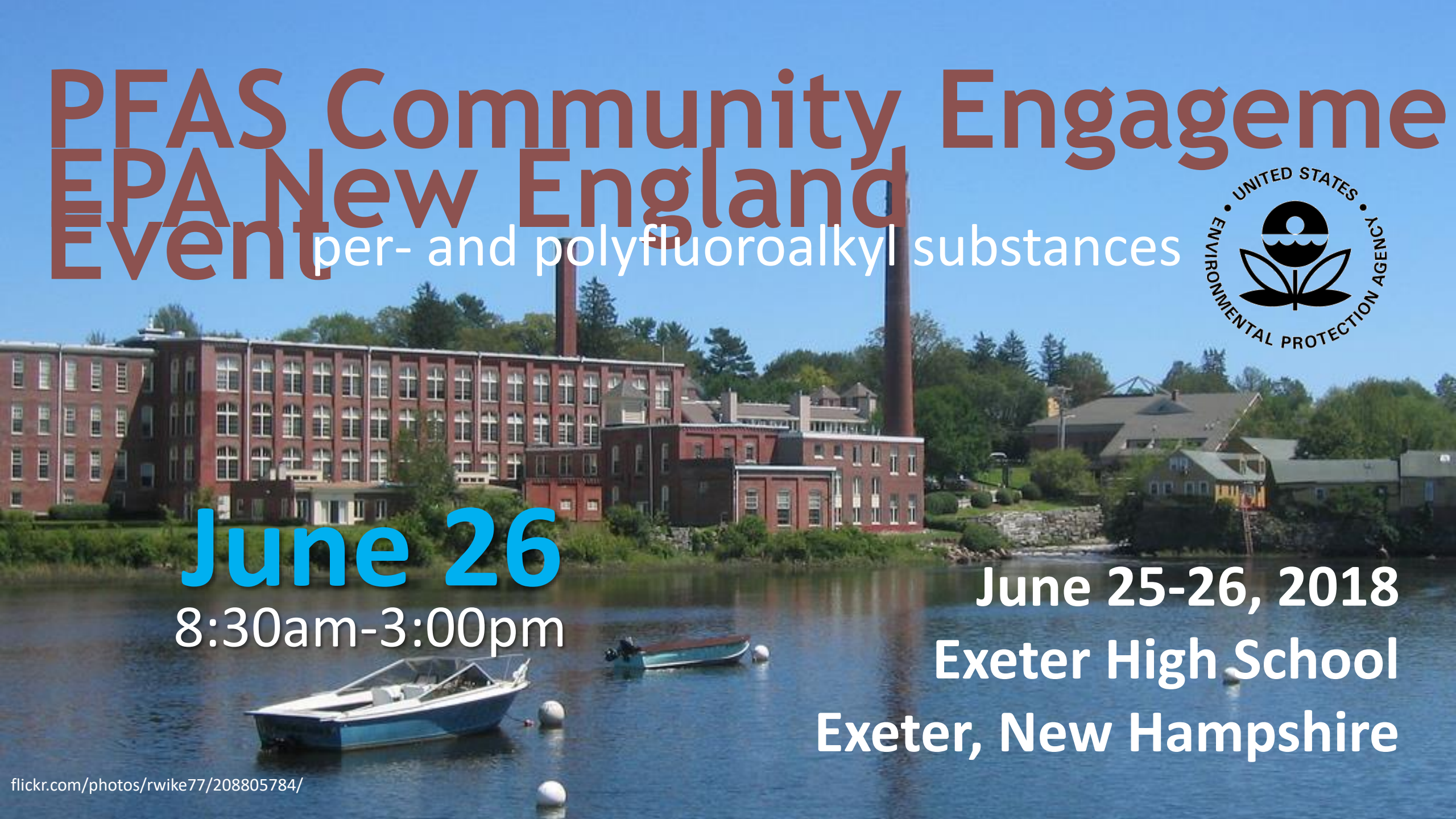
EPA held a National Leadership Summit in Washington, D.C. May 22-23, 2018, that brought together federal, state, tribal and local partners.

1. EPA will initiate steps to evaluate the need for a maximum contaminant level (MCL) for PFOA and PFOS. We will convene our federal partners and examine everything we know about PFOA and PFOS in drinking water.
2. EPA is beginning the necessary steps to propose designating PFOA and PFOS as “hazardous substances” through one of the available statutory mechanisms, including potentially CERCLA Section 102.
3. EPA is currently developing groundwater cleanup recommendations for PFOA and PFOS at contaminated sites and will complete this task by fall of this year.
4. EPA is taking action in close collaboration with our federal and state partners to develop toxicity values for GenX and PFBS by this summer.

Listening Session

PFAS Community Engageme
EPA New England
Event

per- and polyfluoroalkyl substances



June 26

8:30am-3:00pm

June 25-26, 2018

Exeter High School

Exeter, New Hampshire

flickr.com/photos/rwike77/208805784/

Welcome to the PFAS Community Stakeholder Meeting

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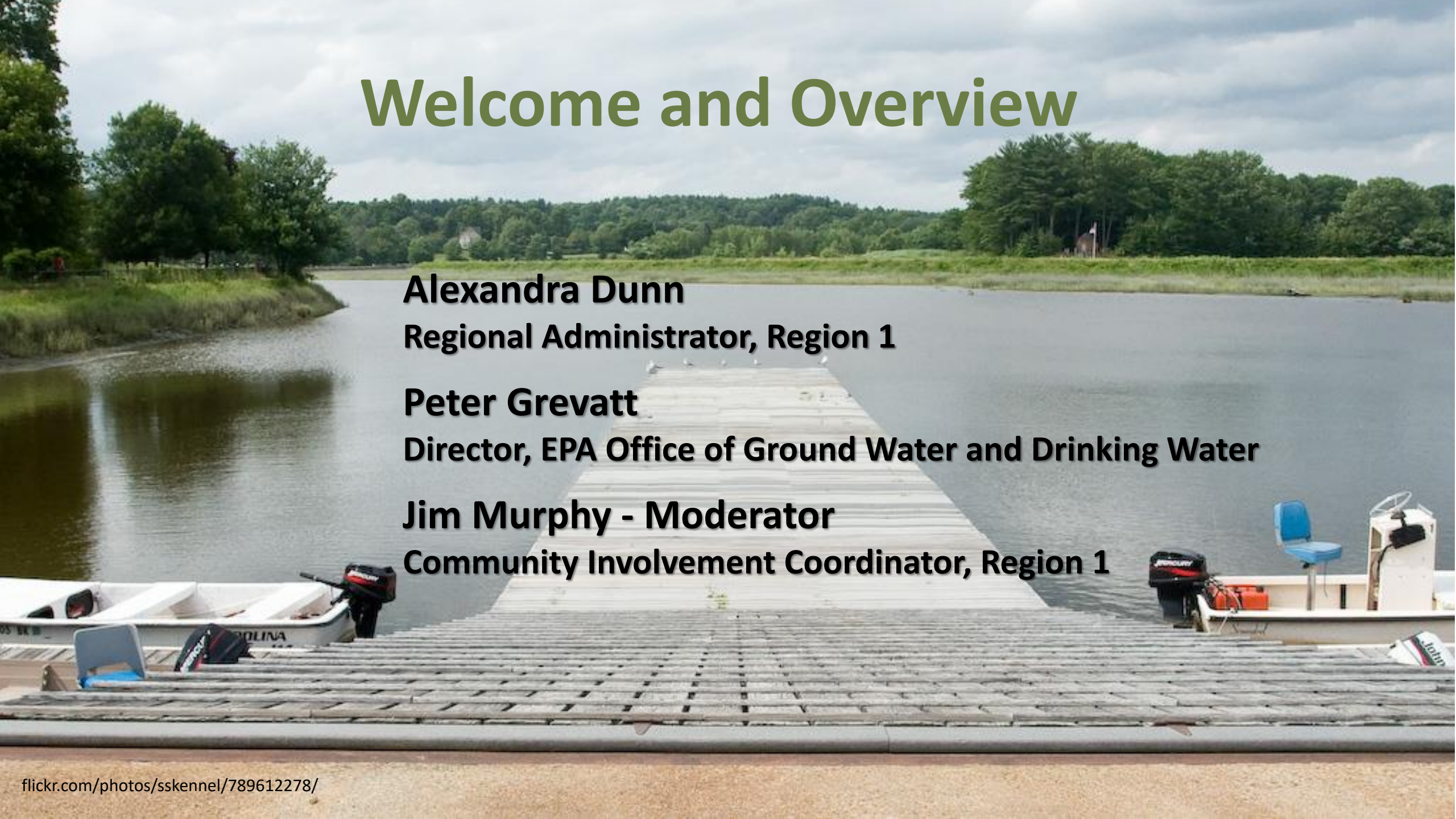
Welcome and Overview



Alexandra Dunn
Regional Administrator, Region 1

Peter Grevatt
Director, EPA Office of Ground Water and Drinking Water

Jim Murphy - Moderator
Community Involvement Coordinator, Region 1

flickr.com/photos/sskennel/789612278/

PFAS Region 1 Session

Meghan Cassidy
Chief, Superfund Technical & Enforcement Support Section
EPA Region 1

flickr.com/photos/sskennel/4826373845/

Per and Polyfluoroalkyl Substances (PFAS) in New England

Meghan Cassidy
EPA Region 1

What are PFAS?

- Family of man-made substances
- Used in products to resist heat, oils, grease, stains and water.
- Persistent and mobile in environment.
- Wide-spread occurrence due to use in numerous products.

What are PFAS Used For?

What are PFAS used for?

PFAS are used in a wide variety of industries and commercial products for their valuable properties, including fire resistance, dust suppression, and oil, stain, grease, and water repellence.

- Fire fighting foams(e.g. AFFF)
- Food surfaces
- Polishes, waxes, paints
- Stain repellants on carpets, upholstered furniture
- Cleaning products
- Building materials
- Dust suppression for chrome plating
- Electronics manufacturing
- Oil and mining for enhanced recovery
- Performance chemicals (hydraulic fluid, fuel)
- Water resistant cloth, clothing

PFAS in New England

PFAS – Challenges

- Incomplete science/understanding.
- Some challenges include:
  - Incomplete toxicity information
  - Limited analytical methods
  - Lack of enforceable standards
  - Regulatory status
  - Risk communication

EPA New England Actions

- Senior level involvement
- Coordination across regional programs
- National Priority List (NPL) sites
- State Technical Assistance/Coordination
  - EPA/New England States PFAS Working Group
  - Regional lab – PFAS analysis
  - Sampling assistance
  - NEWMOA/EPA/States coordination/info sharing
  - Coordination with ORD and states

EPA Actions - Nationally

- EPA Cross-Agency PFAS Committee
- National Leadership Summit on PFAS
- Community Engagement
- Develop tools for states/tribes/locals
- ORD Research

EPA Actions

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ORD Research Activities

- Human Health/Toxicity
- Analytical Methods
- Exposure
- Treatment/Remediation
- Technical Assistance

Action Moving Forward

- EPA Management Plan
- Toxicity values/information
- Analytical methods/data quality
- Treatment/remediation technologies
- Wide-spread use/occurrence
- Risk communication
- Collaboration with state partners
- Community engagement

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY

State Panel Session

CT Robert Kaliszewski, Deputy Commissioner CT Dept. of Energy & Environmental Protection
MA Gary Moran, Deputy Commissioner MA Dept. of Environmental Protection
ME Melanie Loyzim, Deputy Commissioner, ME Dept. of Environmental Protection
NH Clark Friese, Assistant Commissioner NH Dept. of Environmental Services
RI Nick Noons, Project Manager, RI Dept. of Environmental Management
VT Peter Walke, Deputy Secretary, VT Agency of Natural Resources

www.flickr.com/photos/cdevers/4085797266/

30 min.
Break

Community Par

Andrea Amico, Portsmouth, NH
Michelle Dalton, Durham, NH

flickr.com/photos/tonybaldasaro/3847239746/

Community Panel

EPA Region 1 Community Engagement Meeting

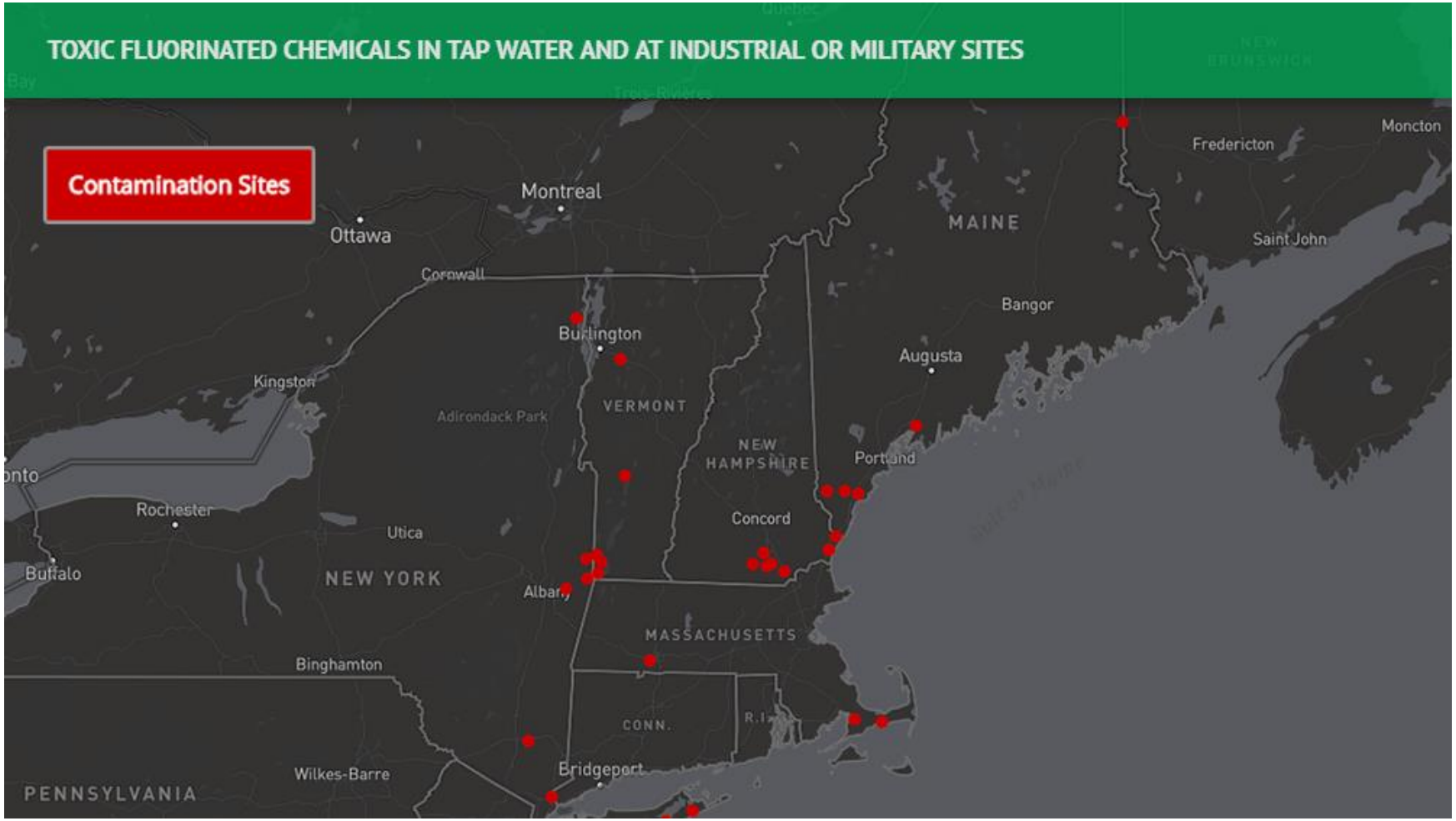
Tuesday, June 26, 2018

Presenter:
Andrea Amico

Topics of Discussion

- Region 1 PFAS Communities
- Challenges & Concerns
- Recommendations for PFAS Management Plan

Community Stories

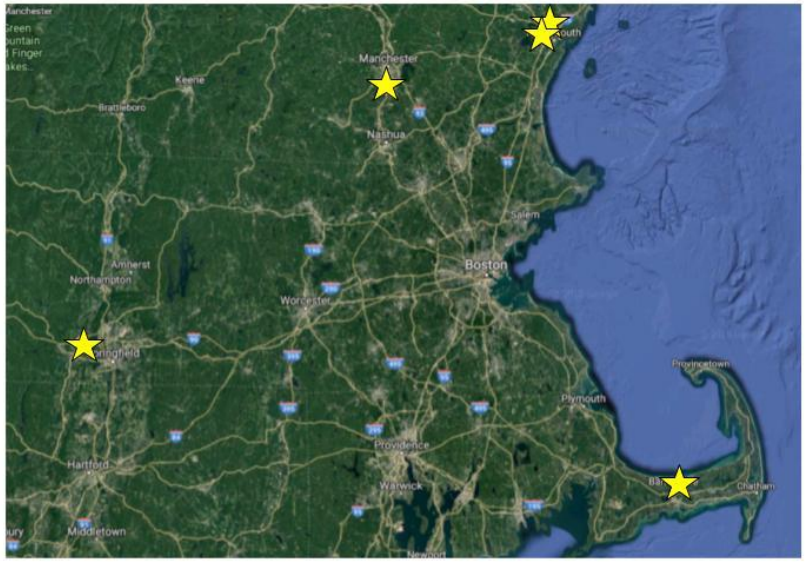


Community Stories

GREENLAND Safe Water Action

TESTING for PEASE

CITIZENS FOR CLEAN WATER

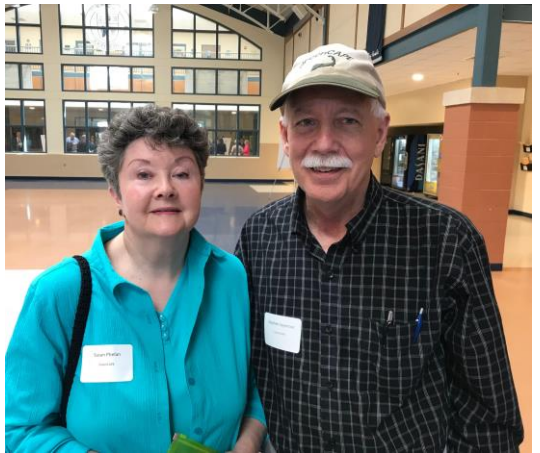


From East to West:

Hyannis, MA; Portsmouth, NH; Greenland, NH; Merrimack, NH; Westfield, MA

WESTFIELD RESIDENTS ADVOCATING FOR THEMSELVES

Green CAPE



Community Stories

Many sources of PFAS in our communities:

- Military/AFFF
- Industrial sites
- Landfills
- Airports
- Firefighting training facilities/AFFF

Community Stories

Action steps and responses have been inconsistent across New England communities

- Blood testing
- Filtration
- Remediation
- Health studies
- Regulations

CDC

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

VERMONT
DEPARTMENT OF HEALTH

Community Stories

Community Members' PFAS Response Evaluation

Location	Filtration	Blood Testing	Remediation	Communication	Medical & Biomonitoring	Results
Greenland, NH	0	0	0	3	0	1
Merrimack, NH	1	1	0	1	0	1
Portsmouth, NH	2	2	2	2	0	2
Barnstable, MA	1	0	1	0	0	0
Westfield, MA	1	0	0	1	0	0
Bennington, VT	3	2	0	3	0	3

Scoring Key: -1 = Was Detrimental, 0 = No Action, 1 = Needs Improvement, 2 = Satisfactory, 3 = Exemplary

Members rated the response, across all polluters/agencies, based on 11 criteria in 6 general categories

Community Stories

National PFAS Contamination Coalition

- Formed June 2017 at NEU PFAS Conference
- 58 community leaders from 11 states + Guam
- Bi-monthly strategy calls & webinars
- National collaboration and support
- Working together towards common goals

Impacted community leaders gather with scientists, academics, lawyers, and community organizers to show solidarity at the National PFAS Conference in June.

Community Concerns & Challenges

- PFAS are presumed safe until proven toxic

- Lack of federal health advisories for **all** PFAS

- Current LHAs for PFOS & PFOA are too high and not protective of public health and sensitive populations (infants, children, already exposed populations)

Community Concerns & Challenges

- Lack of health and toxicology data for **all** PFAS

- Multiple health effects impacting many systems in the body associated with PFAS exposure

Community Concerns & Challenges

- Communities should not be financially responsible for the cost of alternative water supply, remediation, filtration, blood testing, etc
- Replacement PFAS are replacing “one evil with another”
- Limited labs capable of standardized testing of water and blood = testing is not easily accessible, time consuming, and expensive

Community Concerns & Challenges

- Cost of PFAS is more than just remediation/filtration and has significant economic consequences on individuals, businesses, and our entire society
  - Property values decreased
  - Businesses lack the ability to attract/retain talented employees and customers
  - Chronic illness reduces employee attendance & productivity and drives up healthcare costs

Community Concerns & Challenges

- Chronic illness as a result of PFAS exposure:
  - loss of work/wages,
  - loss of happiness,
  - loss of productivity,
  - loss of life

- Additional expenses related to PFAS exposure:
  - medical bills
  - bottled water
  - home filtration
  - diagnostic testing
  - community organizing/operating costs

Community Concerns & Challenges

- Not seen as stakeholders that deserve a seat at the table for critical decisions
- Lack of transparency from government agencies
- Inconsistent responses to contamination at local, state, and federal level

Community Concerns & Challenges

- Lack of funding = roadblock in research/remediation and making decisions for public safety at state/federal level
- Data is technical and not easily understood
- Inconsistent messaging from government agencies re: health effects, blood testing, and medical monitoring that downplays risks

Community Concerns & Challenges

- Difficulty streamlining communication between multiple agencies and community

- Unregulated contaminants = communities continue to be exposed

Community Concerns & Challenges

- Impacted communities worry about:
  - adverse health effects
  - safety/quality of their water
  - lost property value
  - chronic health issues
  - financial burden
  - how to monitor health
  - lack of accessible labs
  - lack of government guidance
  - lack of accountability from responsible parties

Community Recommendations for EPA

- Establish MCL of 1 ppt for **all** PFAS
- Classify PFAS as hazardous substance
- Treat PFAS as a class/family and regulate them together and **not** one compound at a time

Community Recommendations for EPA

- Improve lab analytical methods to test for many PFAS in water and make those more accessible nationwide

- Prioritize public health and not chemicals when making critical regulatory decisions

Community Recommendations for EPA

- Improve response time on taking meaningful action

- Value community members as critical stakeholders by including us in meetings and ask for our input on important decisions – **“Nothing about us without us”**

Community Recommendations for EPA

- Provide more funding to states to allow for more testing and community response

- Do not give into industry and political pressure when making important decisions that impact public health

Community Recommendations for EPA

- Work with DoD to find non fluorinated firefighting foam alternatives and to completely phase out the use of fluorinated foams

- Do not allow the introduction of any new PFAS into production due to the large number already in production/environment with limited data

Community Recommendations for EPA

- Conduct another round of UCMR testing that includes more communities and a greater number of PFAS to test for with lower detection limits

- Be honest and fully transparent in all the action steps taken to address PFAS contamination

Conclusion

- Communities need…
  - a consistent and coordinated action plan from federal agencies to address PFAS contamination

- Communities are…
  - used to dealing with uncertain information. Be honest about what you know and what you don't know to help strengthen community trust.

- Communities plea to EPA…
  - take the leadership role that is yours and manage this huge, public health crisis facing our nation – take action now!

Thank you…

Thank you for listening and for your consideration of our requests. We look forward to working with EPA and other federal partners on this very important issue impacting our nation.

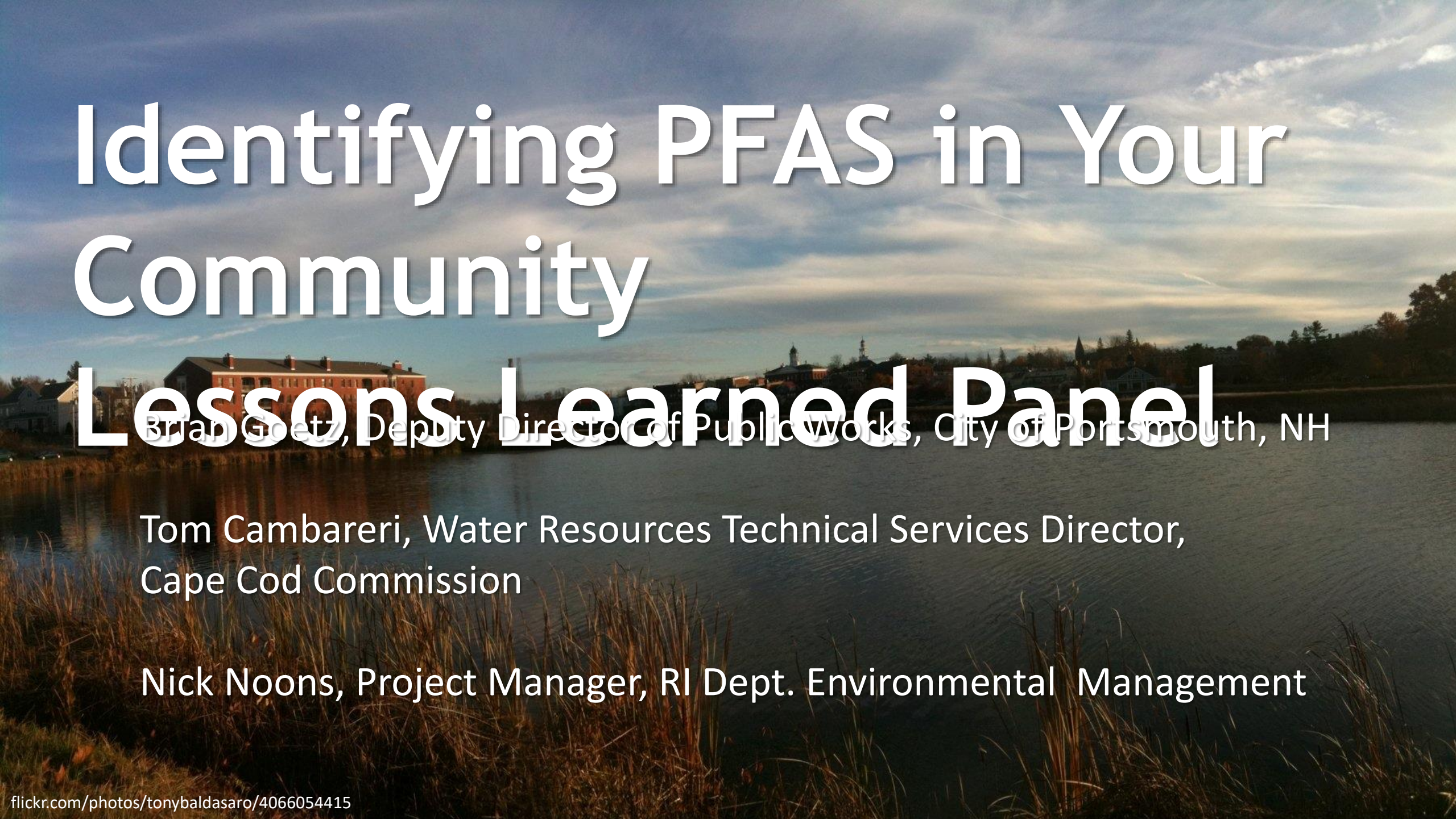
"Never doubt that a small group of thoughtful committed citizens can change the world; indeed, it's the only thing that ever has." ~Margaret Mead

flickr.com/photos/jcl86/38340556086

Welcome to the PFAS Community Stakeholder Meeting

EPA held a National Leadership Summit in Washington, D.C. May 22-23, 2018, that brought together federal, state, tribal and local partners.

1. EPA will initiate steps to evaluate the need for a maximum contaminant level (MCL) for PFOA and PFOS. We will convene our federal partners and examine everything we know about PFOA and PFOS in drinking water.
2. EPA is beginning the necessary steps to propose designating PFOA and PFOS as “hazardous substances” through one of the available statutory mechanisms, including potentially CERCLA Section 102.
3. EPA is currently developing groundwater cleanup recommendations for PFOA and PFOS at contaminated sites and will complete this task by fall of this year.
4. EPA is taking action in close collaboration with our federal and state partners to develop toxicity values for GenX and PFBS by this summer.



Identifying PFAS in Your Community

Lessons Learned Panel

Brian Goetz, Deputy Director of Public Works, City of Portsmouth, NH

Tom Cambareri, Water Resources Technical Services Director,
Cape Cod Commission

Nick Noons, Project Manager, RI Dept. Environmental Management

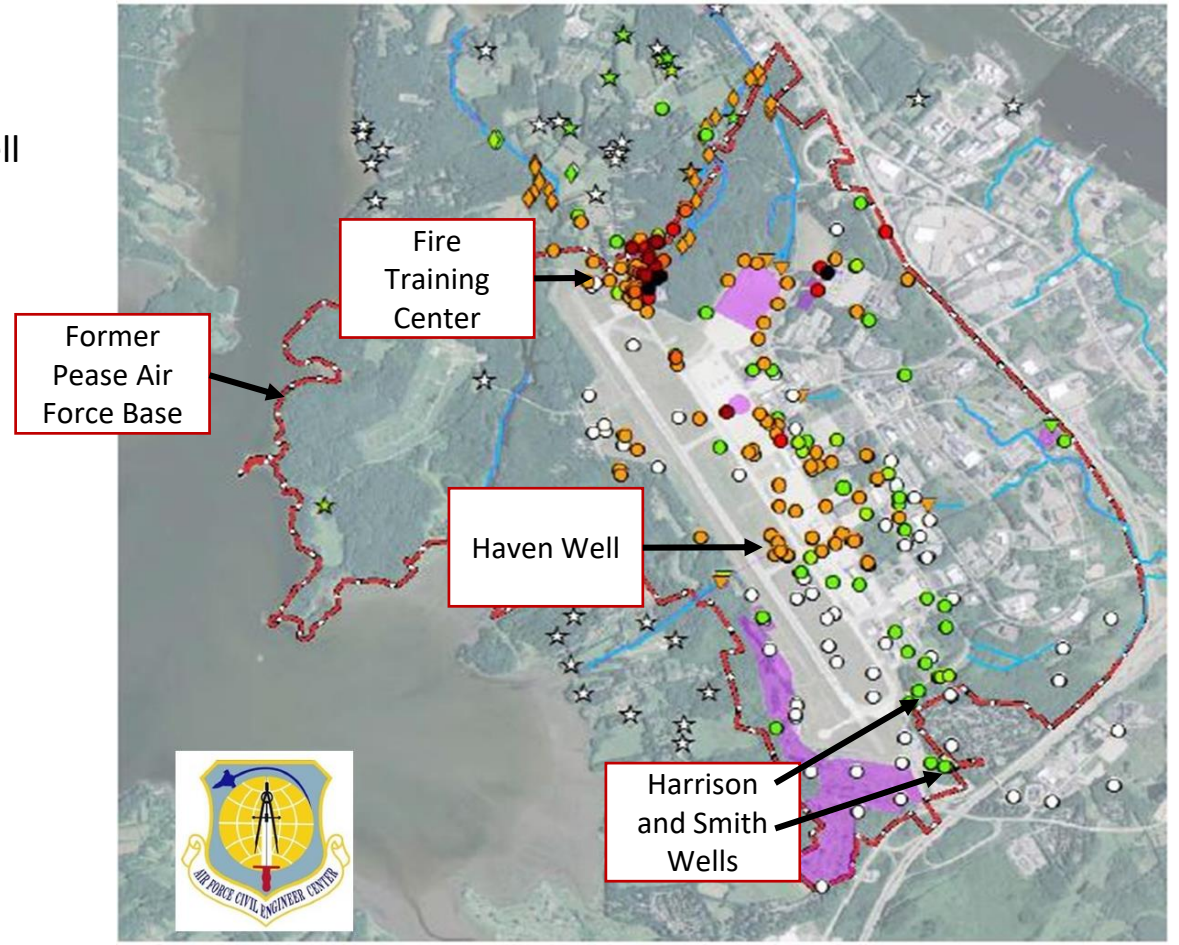
flickr.com/photos/tonybaldasaro/4066054415

Identifying PFAS In Your Community

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

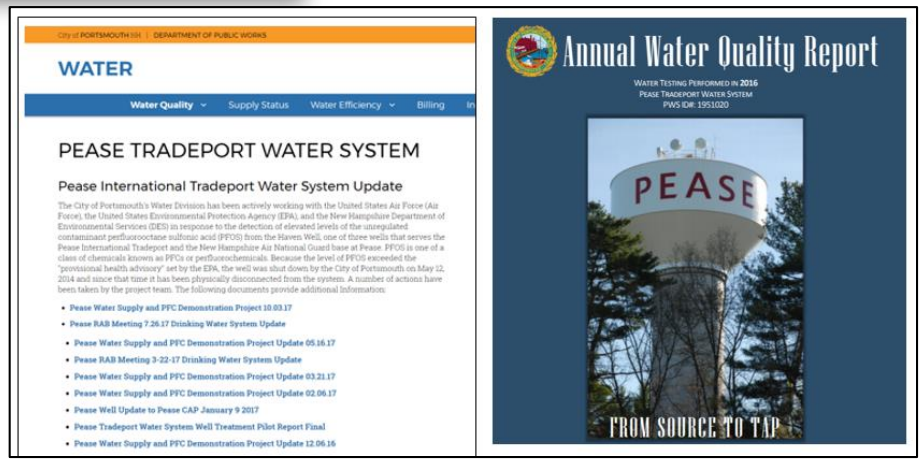
Pease Tradeport Water System PFAS Contamination

- 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
- Extensive Monitoring of PFAS by the Air Force's consultant
- July 2015 – EPA Order to Air Force to treat aquifer and wells
- 2015 and 2016 – Preliminary treatment design and treatment piloting studies
- September 2016 – Activated Carbon Filters on Harrison and Smith Wells
- 2017-2018 – Design of treatment system for all three Pease wells
- 2019-2020 – Anticipated construction of final treatment system



Public Involvement and Outreach:

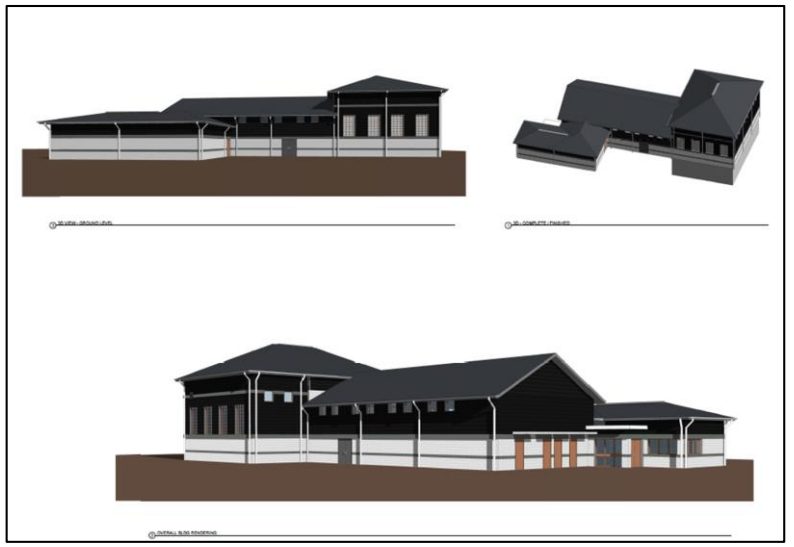
- Press Releases by NHDES and City
- Public Meeting at Pease – May 28, 2014
- Presentations to Portsmouth City Council and Other Groups
- Federal and State delegation involvement
- “Testing for Pease” Facebook Group Forms
- Haven Well Community Advisory Board
  - 14 public meetings in 2015
- Blood Testing
  - 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!



6/26/2018

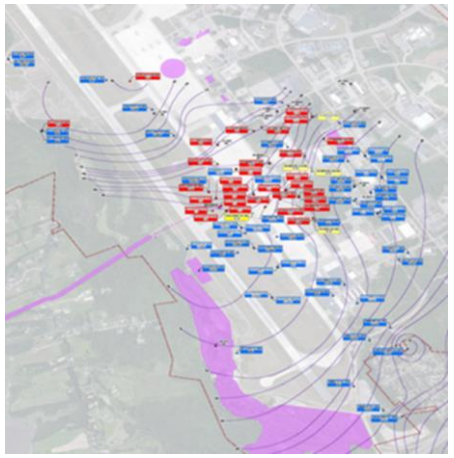
Pease Tradeport Water System PFAS Contamination - Treatment Options

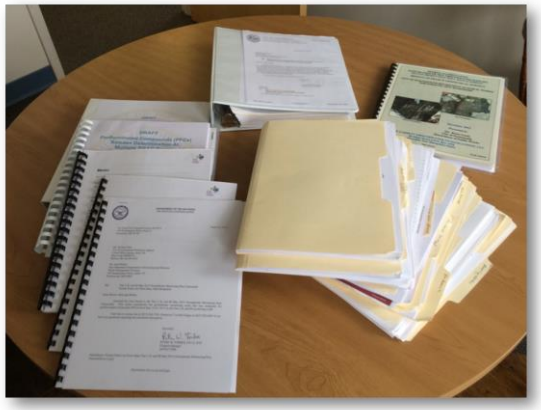
- Investigated other public water systems that treat PFAS
- Piloted Activated Carbon System
- Installed Calgon F-400 Carbon filters on Harrison and Smith wells to Demonstrate effectiveness
- Piloted alternative treatment – resins
- Current design includes resin and carbon filters



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



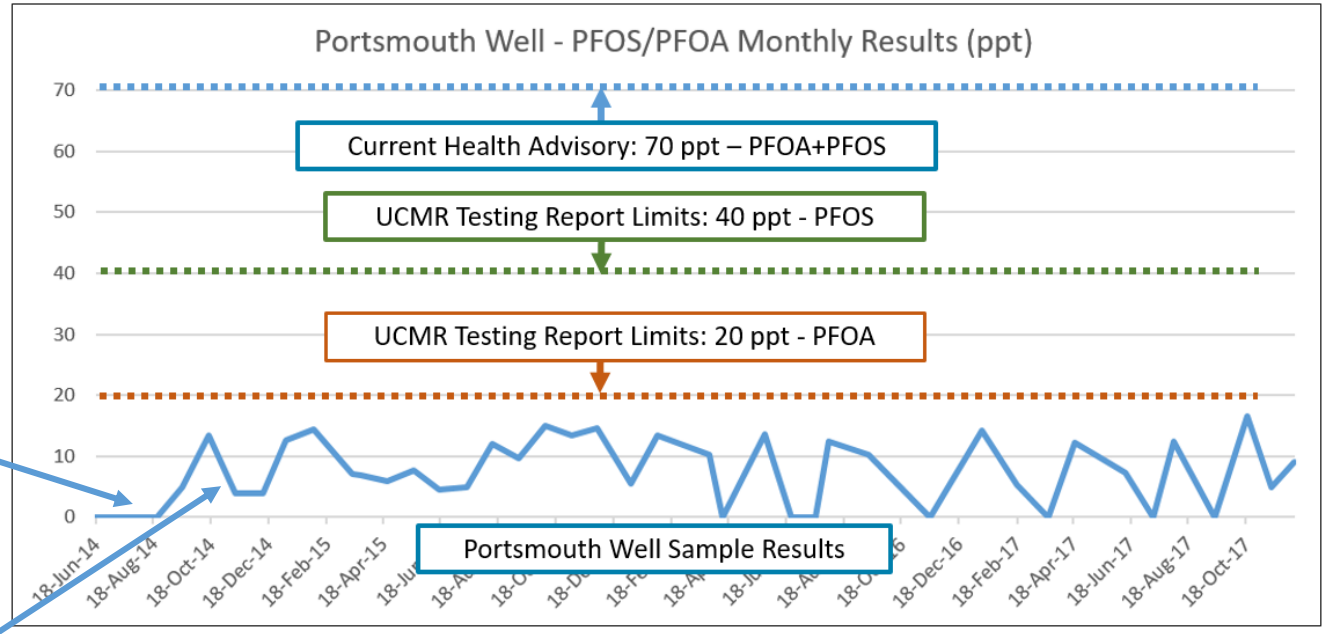


Over Four Years of Data and Analysis

- The third Unregulated Contaminant Monitoring Rule (UCMR 3) was published on May 2, 2012.
- This monitoring provides a basis for future regulatory actions to protect public health
- Applied to water systems serving over 10,000 people.
- 6 PFAS compounds sampled:
  - PFBS - Perfluorobutane Sulfonate
  - PFHpA - Perfluoroheptanoic Acid
  - PFHxS - Perfluorohexane Sulfonate
  - PFOA - Perfluoro-n-Octanoic Acid
  - PFNA - Perfluorononanoic Acid
  - PFOS - Perfluorooctane Sulfonate
- Pease Technical Group opted to sample for 23 compounds and also use lower detection levels
- 4 years of sampling:
  - Initially, sampling every week
  - Currently sampling monthly at some wells and quarterly at others
- No discernable plume or increasing trend in the wells
- Hydrogeological modeling and additional monitoring sites continue to fill the gaps in analysis
- Monitoring data posted on City's Website

Sampling of Portsmouth Water Sources

- All water sources sampled initially in May 2014 and again in 2015 as part of the EPA's Unregulated Contaminant Monitoring Program (UCMR3) – Two Rounds of Sampling:
  - Surface Water - "non detect"
  - Madbury Wells - "non detect"
  - Portsmouth Well - "non detect"
  - Collins Well - "non detect"
  - Greenland Well - "non detect"
- When resampled using lower detection limits (same as Pease sampling), some sources show low levels of detections



PFAS Sampling of Public Water Systems in New Hampshire

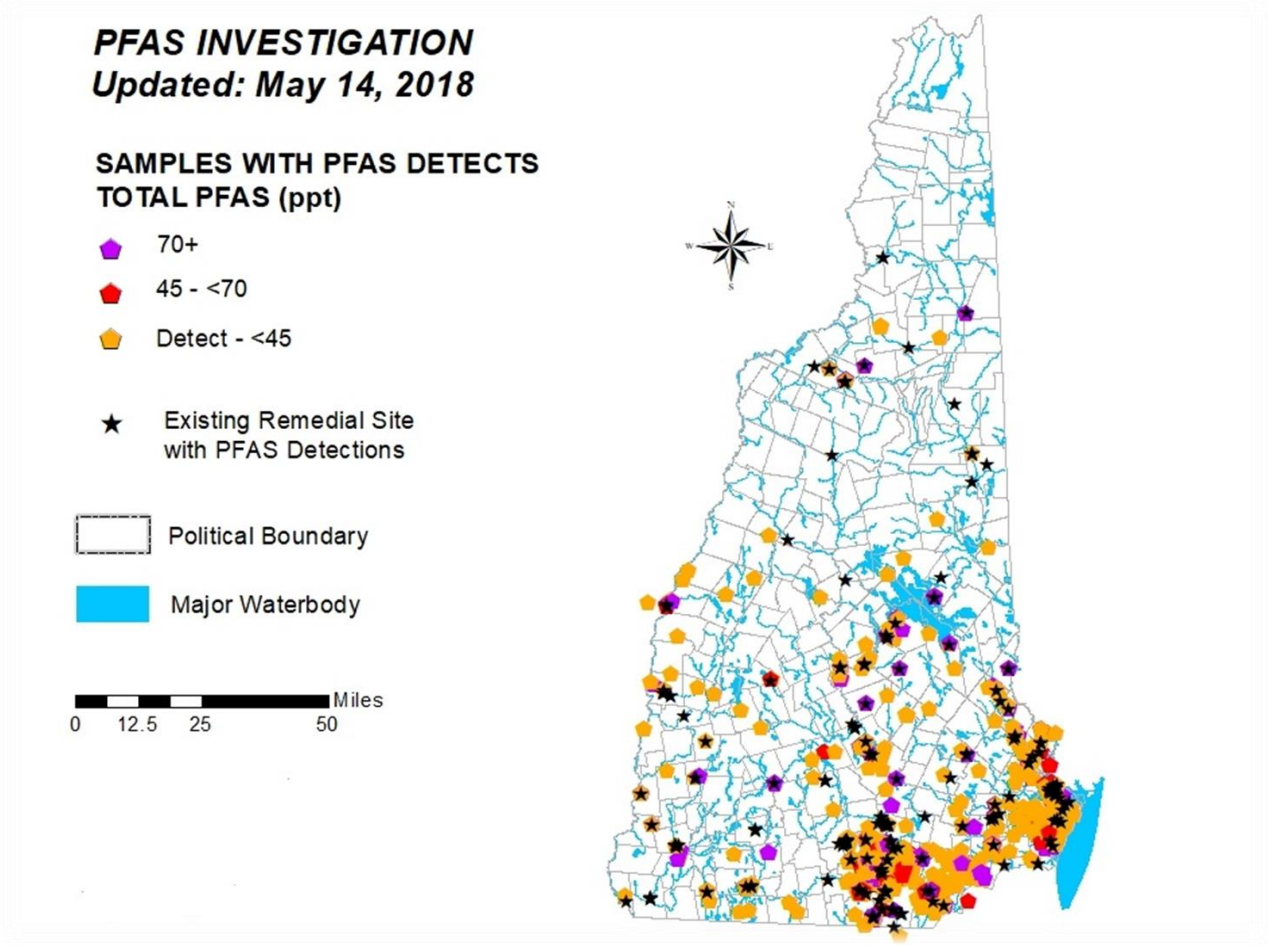
- 23 Systems Sampled as part of the UCMR3 Program
- 3/23 systems had detections
  - 13%
- July 19, 2016 letter request from NHDES to voluntarily sample again using lower detection limits and include more analytes
- 12/15 systems that resampled had detections:
  - 80%

PWSName	UCMR Detect	PFAS Detect with Lower Reporting Limits or Longer List of Analytes
Aquarion Water - NH	Yes	Yes
Chesterfield Central School	No	Not Sampled
Concord Water Department	No	Not sampled
Cow Hill Wellhouse	No	No
Derry Water Department	No	Yes (via Manchester testing)
Dover Water Department	Yes	Yes
Exeter Water Department	No	Not Sampled
Hudson Water Department	No	Yes
Keene Water Department	No	No
Laconia Waterworks	No	Yes
Lebanon Water Department	No	Not Sampled
Littleton Water & Light Dept.	No	Not Sampled
Lower Bartlett Water Pct.	No	No
Manchester Waterworks	No	Yes
Merrimack Village District	Yes	Yes
N. Walpole Village District/ Low	No	Not Sampled
Pennichuck Waterworks	No	Yes
Portsmouth Waterworks	No	Yes
Rochester Water Department	No	Yes
Salem Water Department	No	Yes
Seabrook Water Department	No	Yes
Somersworth Waterworks	No	Not Sampled
UNH - Durham Water System	No	Yes

* Information from: Brandon Kernen, NHDES

New Hampshire's PFAS Investigation

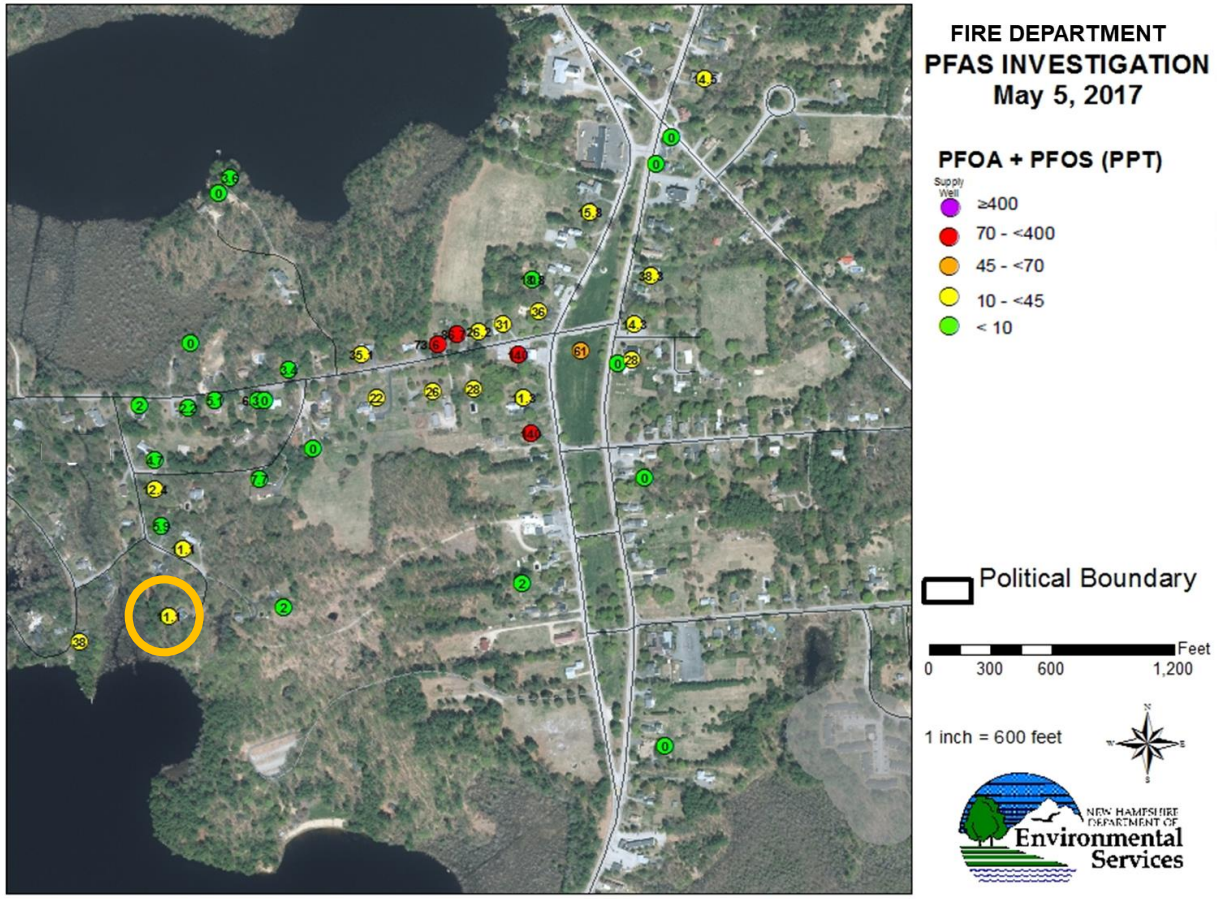
- Voluntary Public Water Supply Sampling
- Class B Foam Outreach – Letters & online forms
- Waste Sites Sampling
- Groundwater Discharge Permit Sites
- Wastewater/ Biosolids Assessment
- Surface Water Sampling
- Sampling at other suspected sites:
  - Air deposition
  - Car washes
  - Fire Departments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



* Information from: Brandon Kernen, NHDES

How Do you Identify PFAS In Your Community?...

Sample for It…



Community Response to Per Fluoro Alkyl Substances in Groundwater and Soils in the Cape Cod Aquifer

EPA Region 1
PFAS Community Engagement
Exeter High School
Exeter, NH

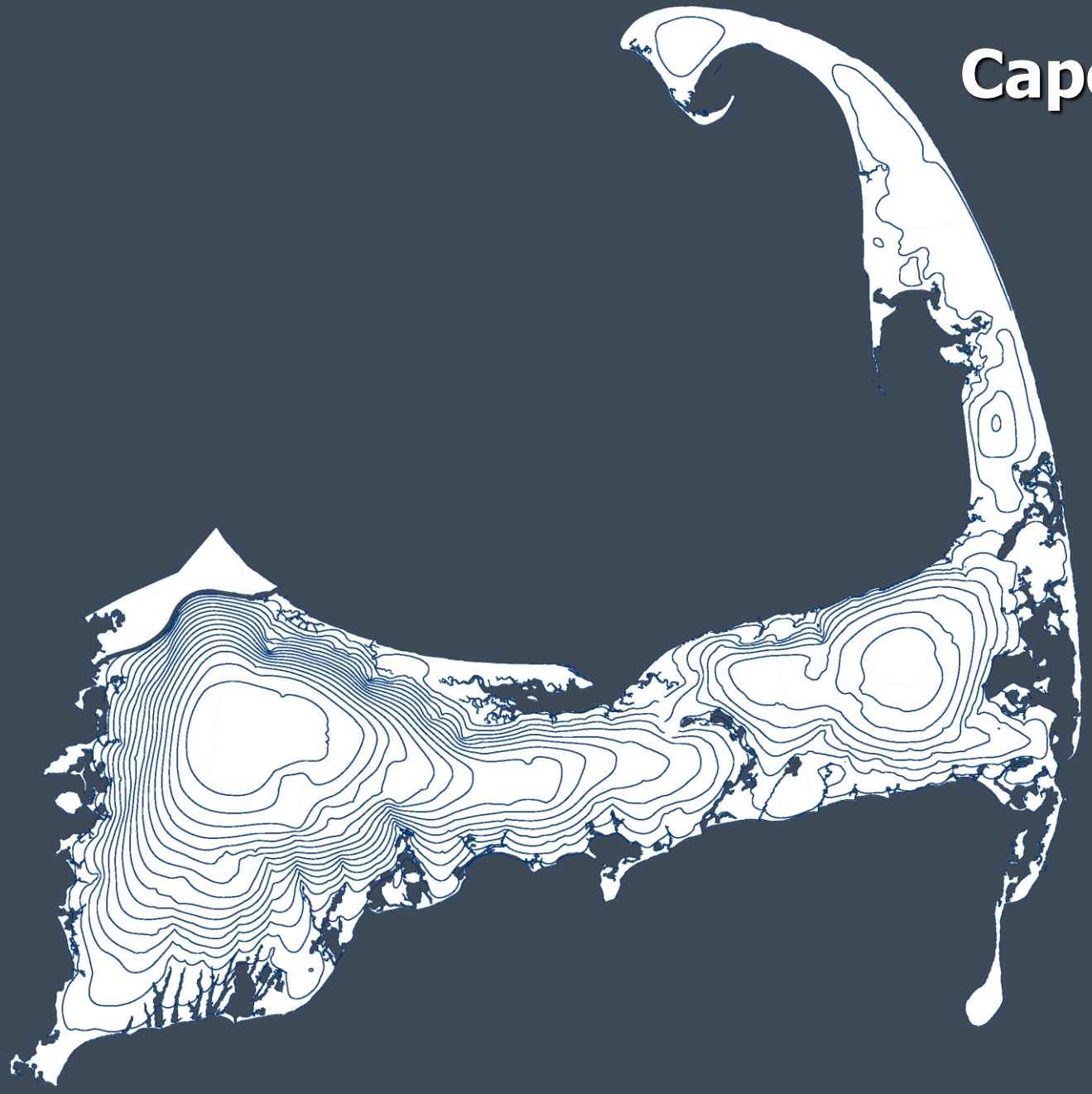
June 26, 2018

Thomas C Cambareri, LSP, CGWP

CAPE COD COMMISSION

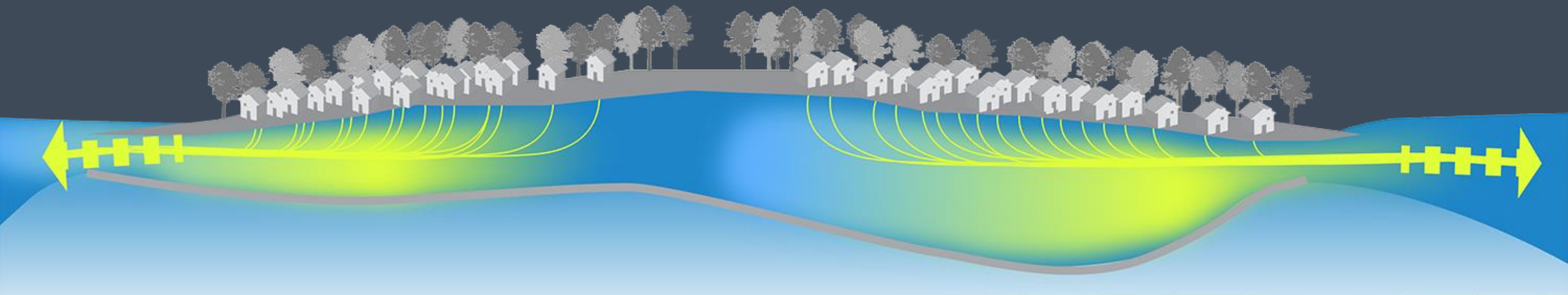
Maintain a sustainable supply of high quality untreated drinking water and protect and restore the ecological integrity of fresh and marine surface waters.

Cape Cod Sole Source Aquifer



- Replenished by Precipitation
- Six Separate Lenses
- Sole Source of Drinking Water
- Feeds Kettlehole Ponds

CAPE COD HAS A WASTEWATER PROBLEM



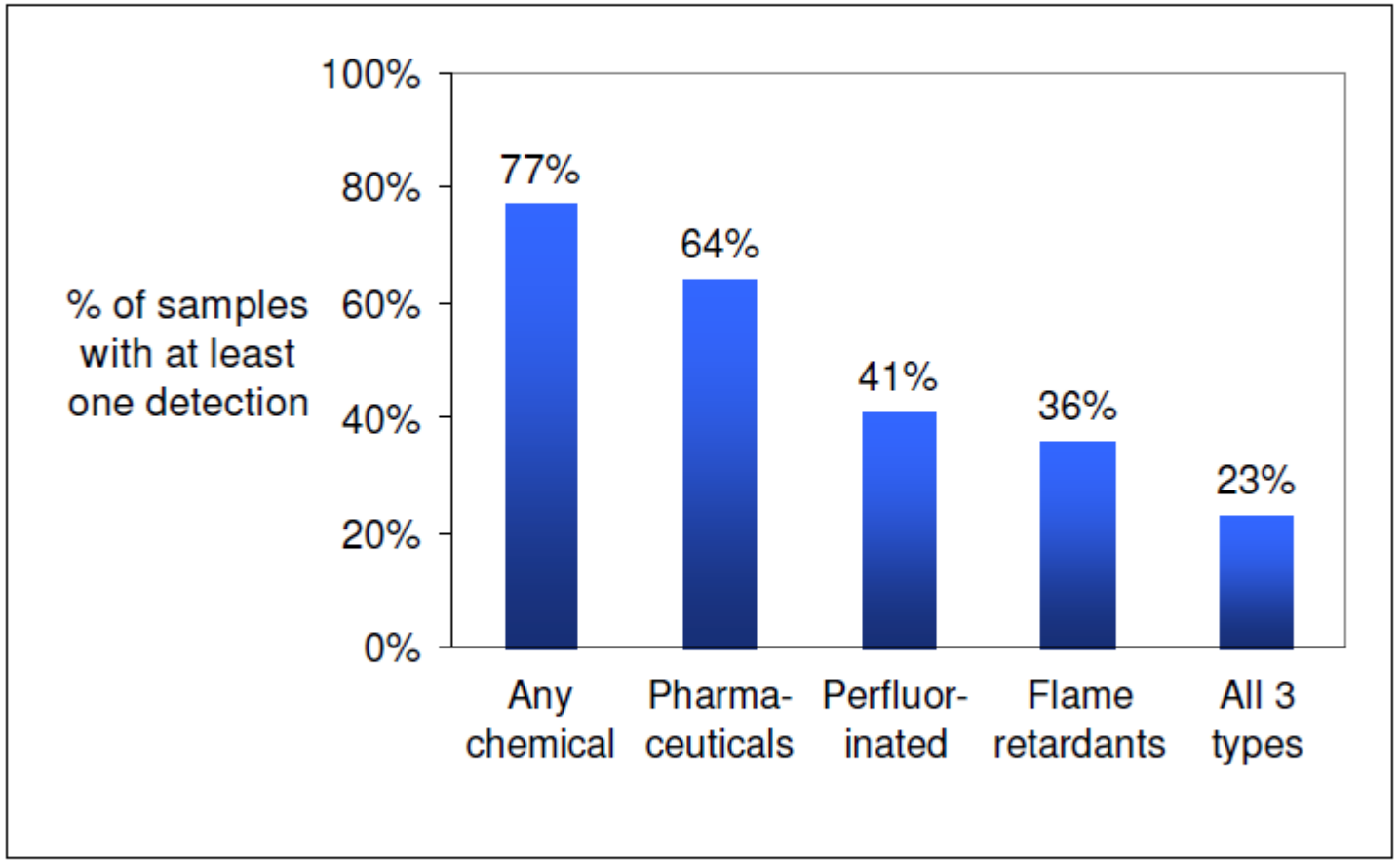
HEADS UP in 2009

- Silent Spring
- 2009
- 20 public wells
- 90 chemicals

- STEEP 2018

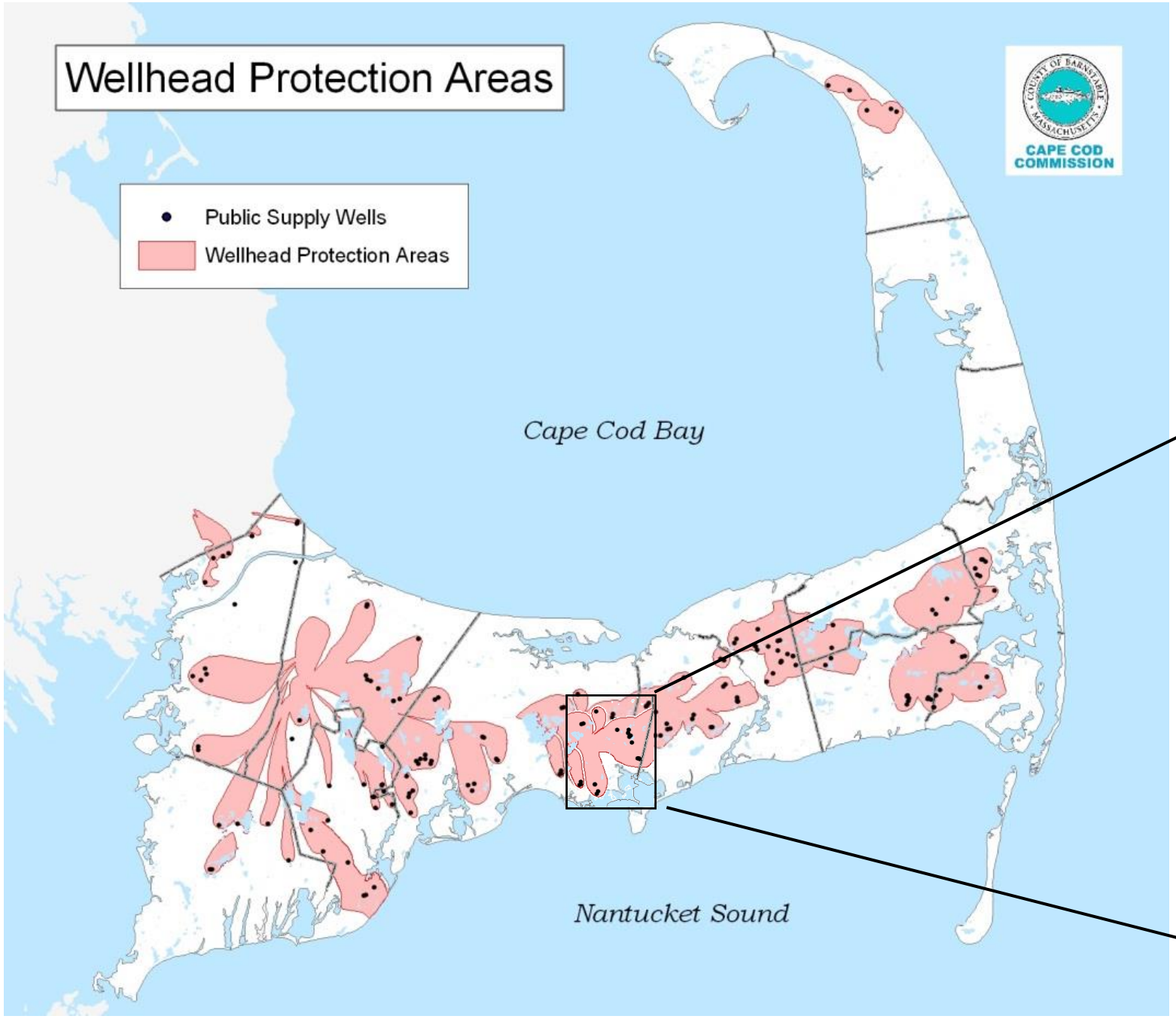
SILENT SPRING INSTITUTE

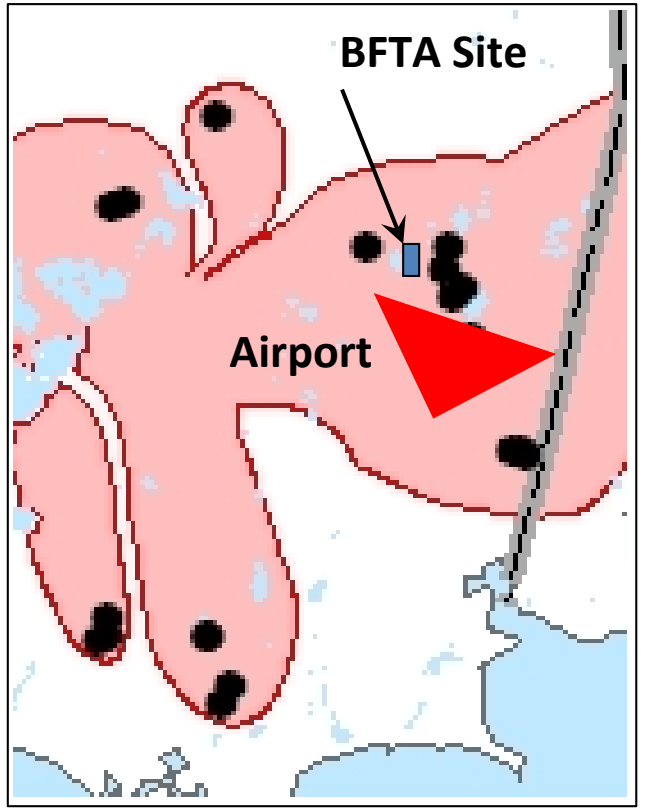
Figure 1. Frequency of detection of three categories of emerging contaminants.



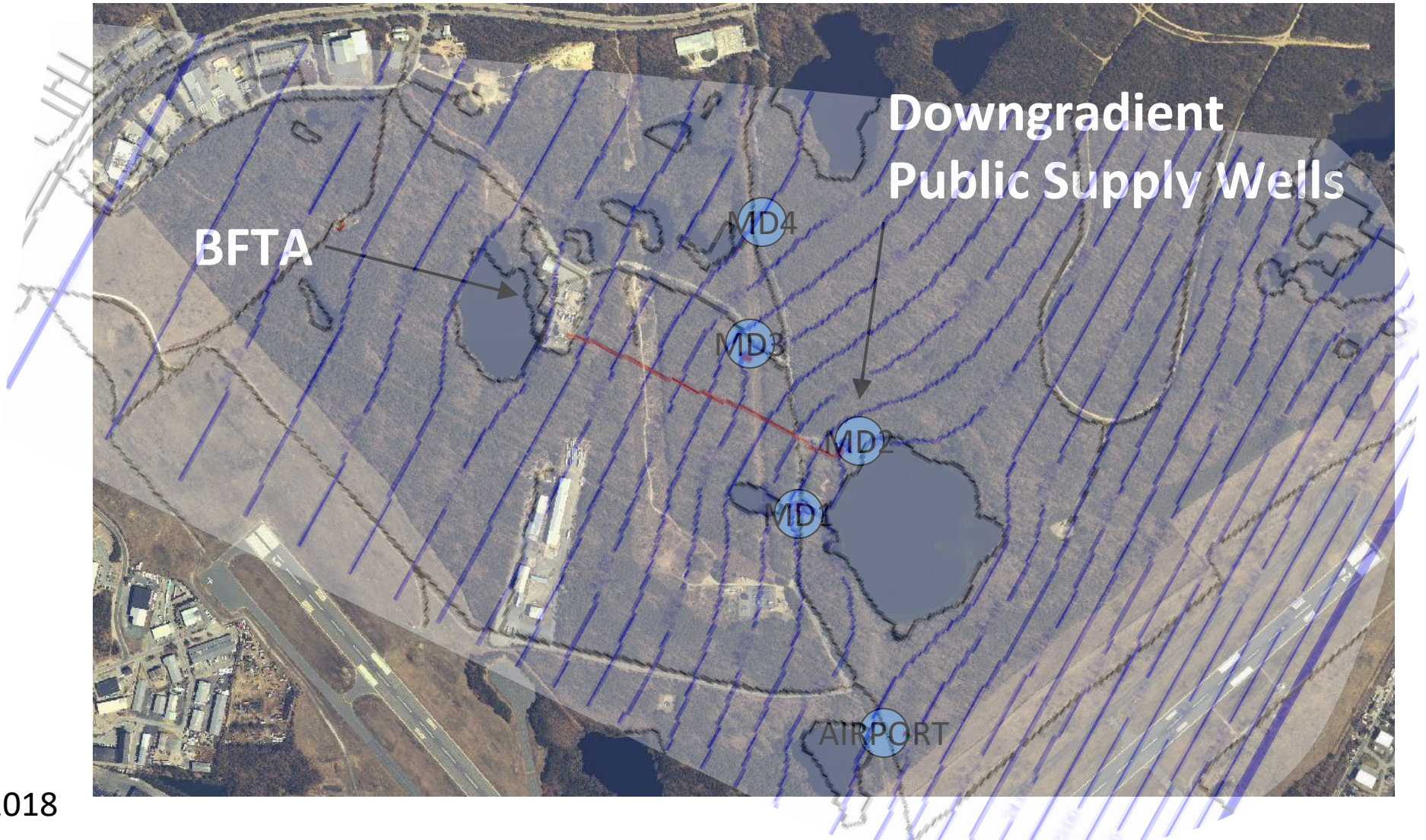
Number of drinking water samples (raw and distribution system) that contain at least one emerging contaminant; at least one of chemical classified as a pharmaceutical, organophosphate flame retardant or perfluorinated chemical; and all 3 types of chemicals.

Hyannis Area Case Study



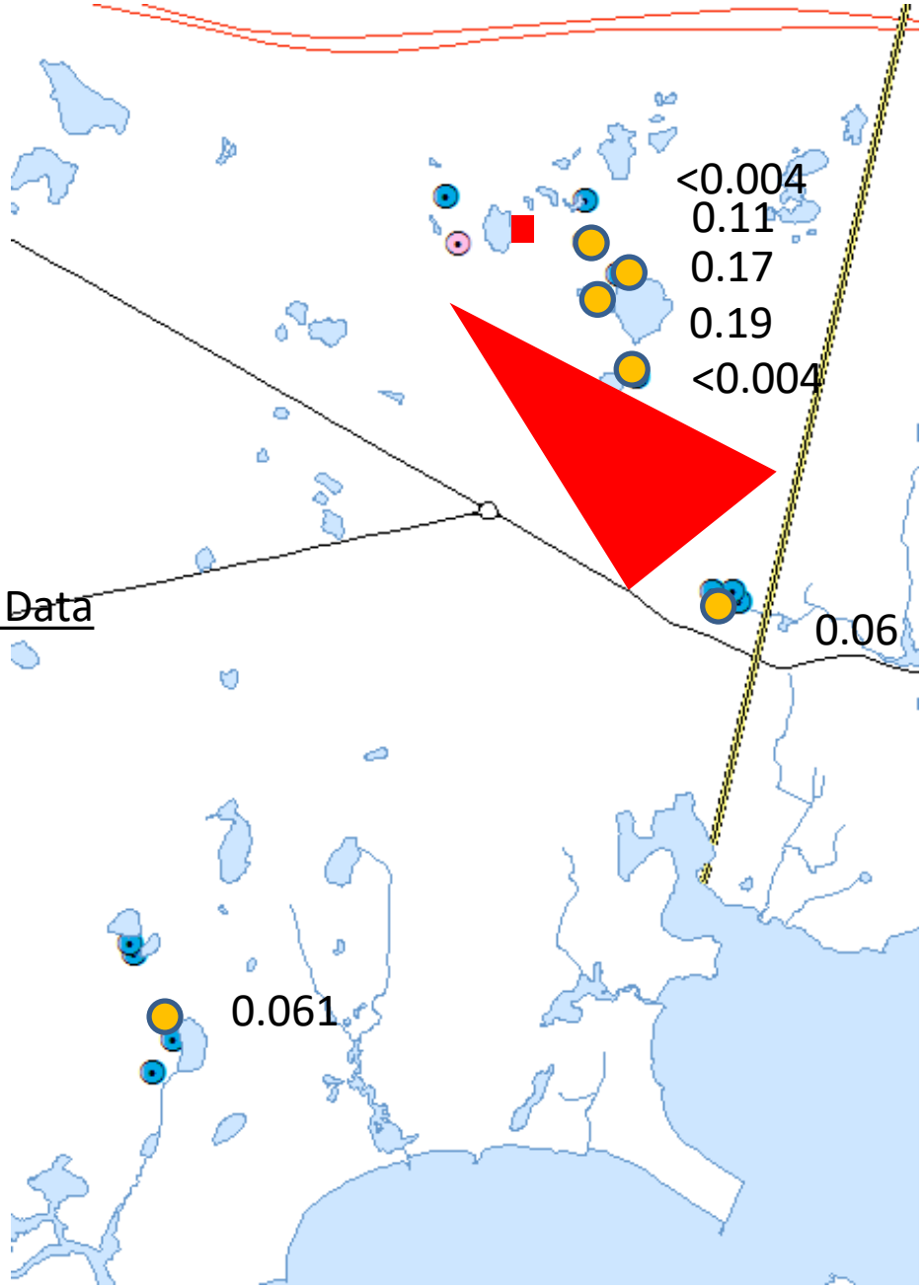



Falmouth Fire Department at the Barnstable County Fire Academy 1966


Downgradient
Public Supply Wells
BFTA
MD4
MD3
MD2
MD1
AIRPORT

PFOS in Groundwater

EPA UCMR 2013 Nov Data

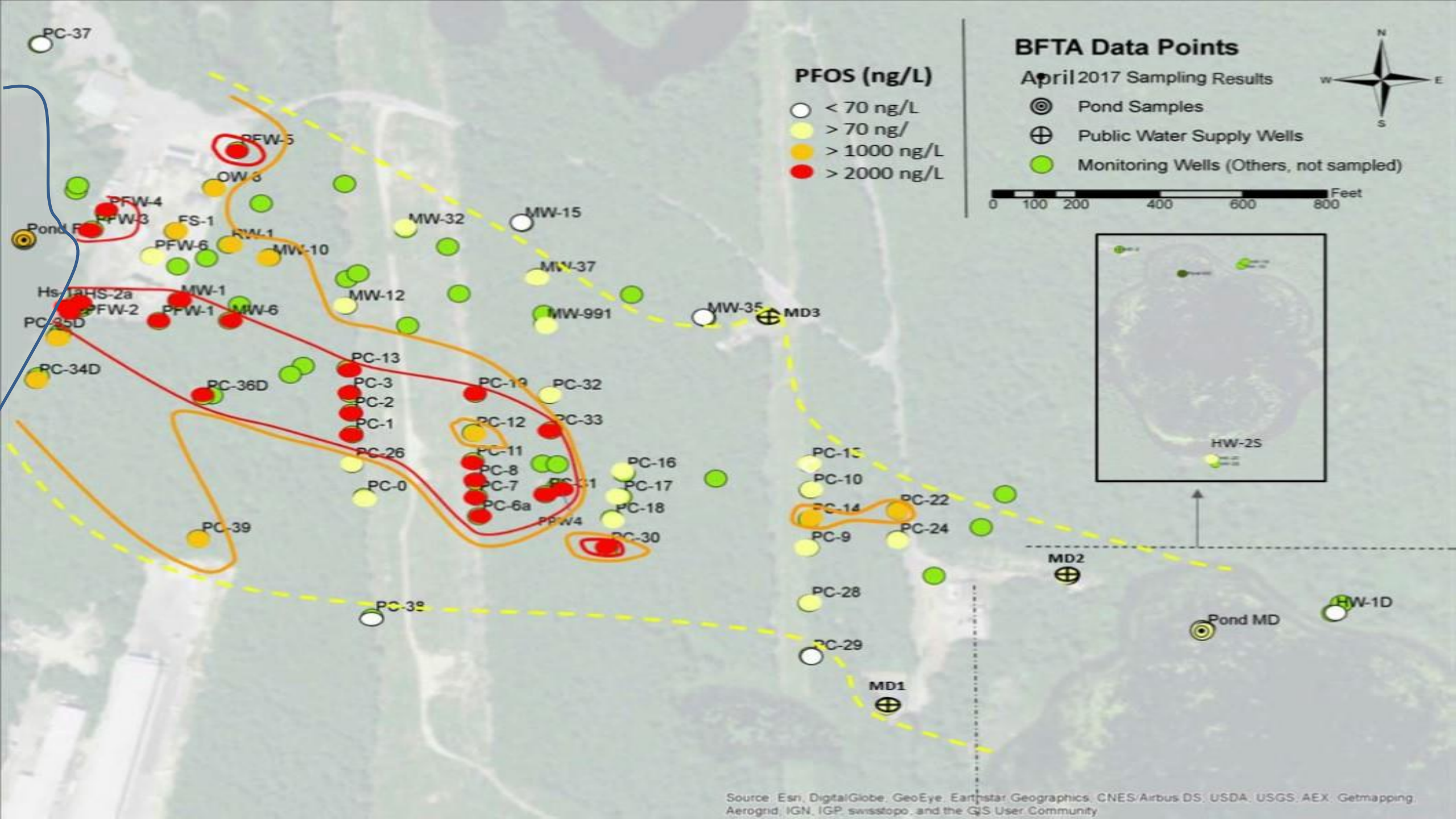


- PFOS < 0.2
- PFOS > 0.2

Safe Drinking Water Act

Unregulated
Contaminant
Monitoring
Rule

UCMR


BFTA Data Points
April 2017 Sampling Results
Pond Samples
Public Water Supply Wells
Monitoring Wells (Others, not sampled)
PFOS (ng/L)
< 70 ng/L
> 70 ng/
> 1000 ng/L
> 2000 ng/L
Feet
0 100 200 400 600 800
N
S
E
W
PC-37
PFW-5
OW-3
PFW-4
PFW-3
FS-1
Pond B
PFW-6
MW-10
MW-32
MW-15
MW-37
MW-12
MW-991
MW-35
MD3
HS-2a
PFW-2
PFW-1
MW-1
MW-6
PC-35D
PC-34D
PC-36D
PC-13
PC-3
PC-2
PC-1
PC-26
PC-0
PC-39
PC-19
PC-32
PC-12
PC-33
PC-11
PC-8
PC-7
PC-6a
PC-16
PC-17
PC-18
PC-30
PFW4
PC-15
PC-10
PC-14
PC-22
PC-24
PC-9
PC-28
PC-29
MD1
MD2
HW-2S
HW-1D
Pond MD
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

May – July 2016
EPA New Health Advisory's
Exceedences of PFOS and 1-4 Dioxane in Hyannis System

Comparison of PFOS / PFOA to 5 Guidance Compounds

PFAS Compounds in Groundwater (ng/l)	2017 Comprehensive Sampling STATS			
	High	Median	Avg	% Detection
6:2 Fluorotelomer sulfonate	6200	95	468	78%
8:2 Fluorotelomer sulfonate	3100	9.8	158	55%
N-ethylperfluorooctane sulfonamide	0	0	0	0%
N-ethylperfluorooctane sulfonamidoe	0	0	0	0%
N-methylperfluorooctane sulfonamide	5.7	0	0	0%
N-methylperfluorooctanesulfonamidol	0	0	0	0%
Perfluorobutane Sulfonate (PFBS)	230	41	50	74%
Perfluorobutanoic acid	350	50	76	84%
Perfluorodecane Sulfonate	0	0	0	0%
Perfluorodecanoic Acid (PFDA)	74	7.85	9	66%
Perfluorododecanoic Acid (PFDoA)	0	0	0	0%
Perfluoroheptane sulfonate	740	29	67	78%
Perfluoroheptanoic Acid (PFHpA)	580	109	139	97%
Perfluorohexane Sulfonate (PFHxS)	4800	500	856	95%
Perfluorohexanoic Acid (PFHxA)	1800	220	352	97%
Perfluoro-n-Octanoic Acid (PFOA)	2000	110	207	95%
Perfluorononanoic Acid (PFNA)	420	66.5	92	93%
Perfluorooctane Sulfonamide (PFOSA)	2700	8.8	72	55%
Perfluorooctane Sulfonate (PFOS)	38000	1600	3611	98%
Perfluoropentanoic Acid (PFPeA)	1800	190	307	97%
Perfluorotetradecanoic Acid	0	0	0	0%
Perfluorotridecanoic Acid	7.4	0	0	2%
Perfluoroundecanoic Acid (PFUnA)	760	21	64	72%

Comparison of PFOS / PFOA to 5 Guidance Compounds

PFAS Compounds in Groundwater (ng/l)	2017 Comprehensive Sampling STATS			
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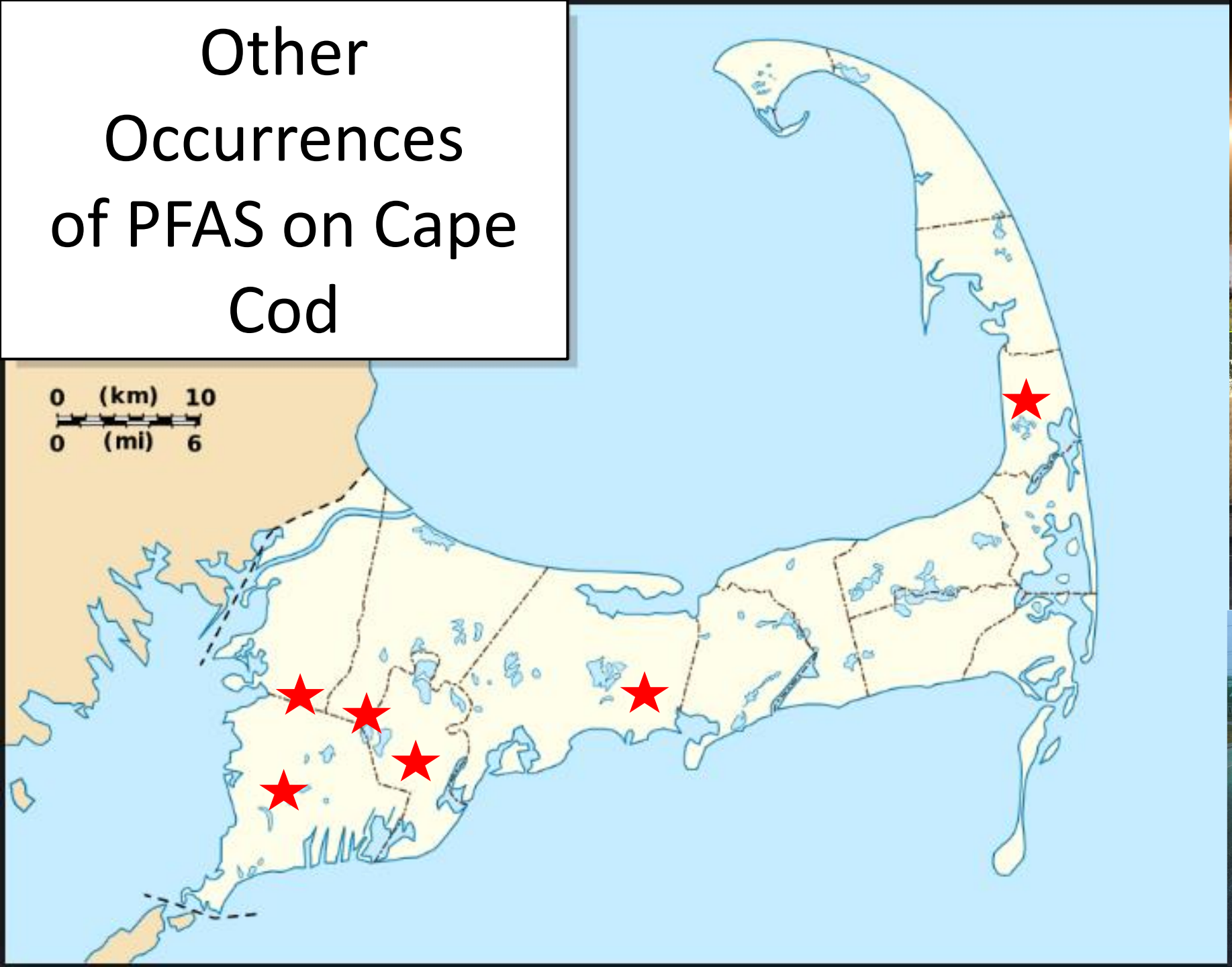
Perfluoroheptanoic Acid (PFHpA)	580	109	139	97%
Perfluorohexane Sulfonate (PFHxS)	4800	500	856	95%
Perfluorohexanoic Acid (PFHxA)	1800	220	352	97%
Perfluoro-n-Octanoic Acid (PFOA)	2000	110	207	95%
Perfluorononanoic Acid (PFNA)	420	66.5	92	93%
Perfluorooctane Sulfonamide (PFOSA)	2700	8.8	72	55%
Perfluorooctane Sulfonate (PFOS)	38000	1600	3611	98%
Perfluoropentanoic Acid (PFPeA)	1800	190	307	97%
Perfluorotetradecanoic Acid	0	0	0	0%
Perfluorotridecanoic Acid	7.4	0	0	2%
Perfluoroundecanoic Acid (PFUnA)	760	21	64	72%
Total of Guidance PFAS	45843	2429	4947	
PFOS Percentage	83%	66%	73%	

Other Occurrences of PFAS on Cape Cod



The End

Tom Cambareri
www.capecodcommission.org

Identifying Impacts from PFAS in Rhode Island

Nicholas Noons, PE

Rhode Island Department of Environmental Management

Previously Identified Impacts

- Sampling for PFAS conducted at Naval Station (NAVSTA) Newport in advance of property transfer at Former Melville Defense Fuel Support Point (DFSP) in December 2015
  - PFAS detected in groundwater in ug/L (ppb) range associated with AFFF Fire Suppression Infrastructure (>20 ppb in some locations)
- Base-Wide Preliminary Assessment and Site Inspection ongoing.
  - PFAS detected at nearly all sites sampled to date.

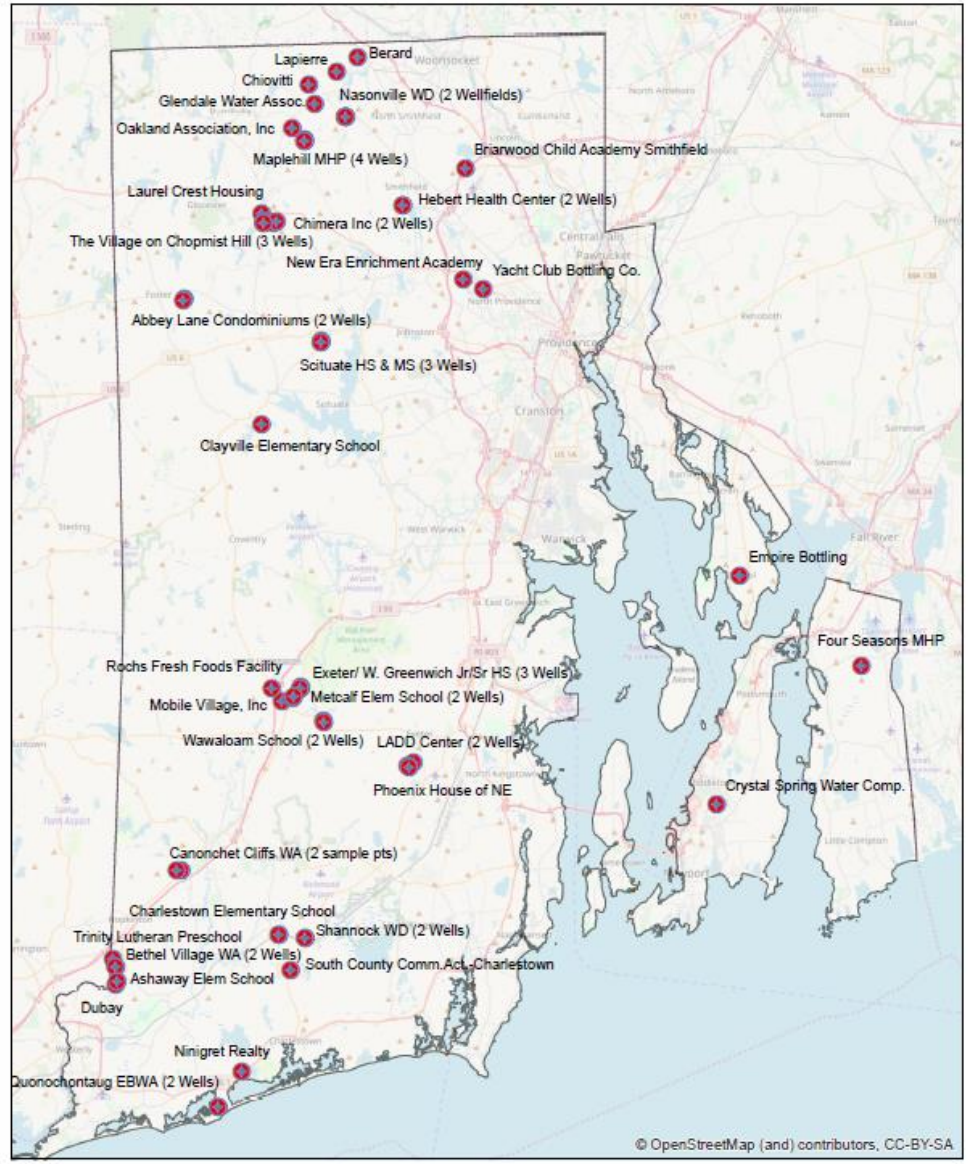
2017 Surveillance Monitoring Study

- Rhode Island Department of Health (RIDOH) initiated a state-wide sampling effort of small public water systems, license bottlers, and licensed childcare facilities.

- Collaborative effort with RIDEM and Brown University Superfund Research Program (Dr. Jennifer Guelfo)
- Focused on sampling those systems within one mile of a potential PFAS source.

2017 Surveillance Monitoring Study

- Potential Sources Considered
  - Airports
  - Fire Training Areas
  - EPCRA Tier II
  - Industrial Facilities with certain NAICS Codes
  - DOD Facilities and NPL Sites
  - Electroplating Operations
  - Oil Terminals (Tank Farms)
  - Wastewater Lagoons
  - Emergency Response Incidents (Limited information)
- Team from Brown University conducted separate geospatial analysis of potential impacts across the State



RI Priority Public Wells, Bottlers, and Childcares within 1 Mile of Potential PFAS facility

RIDOH Center for Drinking Water Quality
2017 PFAS Surveillance Monitoring Study

0 10 20 Miles

N

July 25, 2017
Amy B. Parmenter

Study Results

- < MRL: 26 water systems
- Detected < 35 ng/L (ppt): 8 water systems
  - 4 - 24 ppt (Average and Median = 13 ppt)
- 35 – 70 ppt: 1 water system
  - Raw 43.2 ppt, Treated (GAC) 11.0 ppt
  - Has since connected to municipal water
- > 70 ppt: Oakland Water Association, Inc.

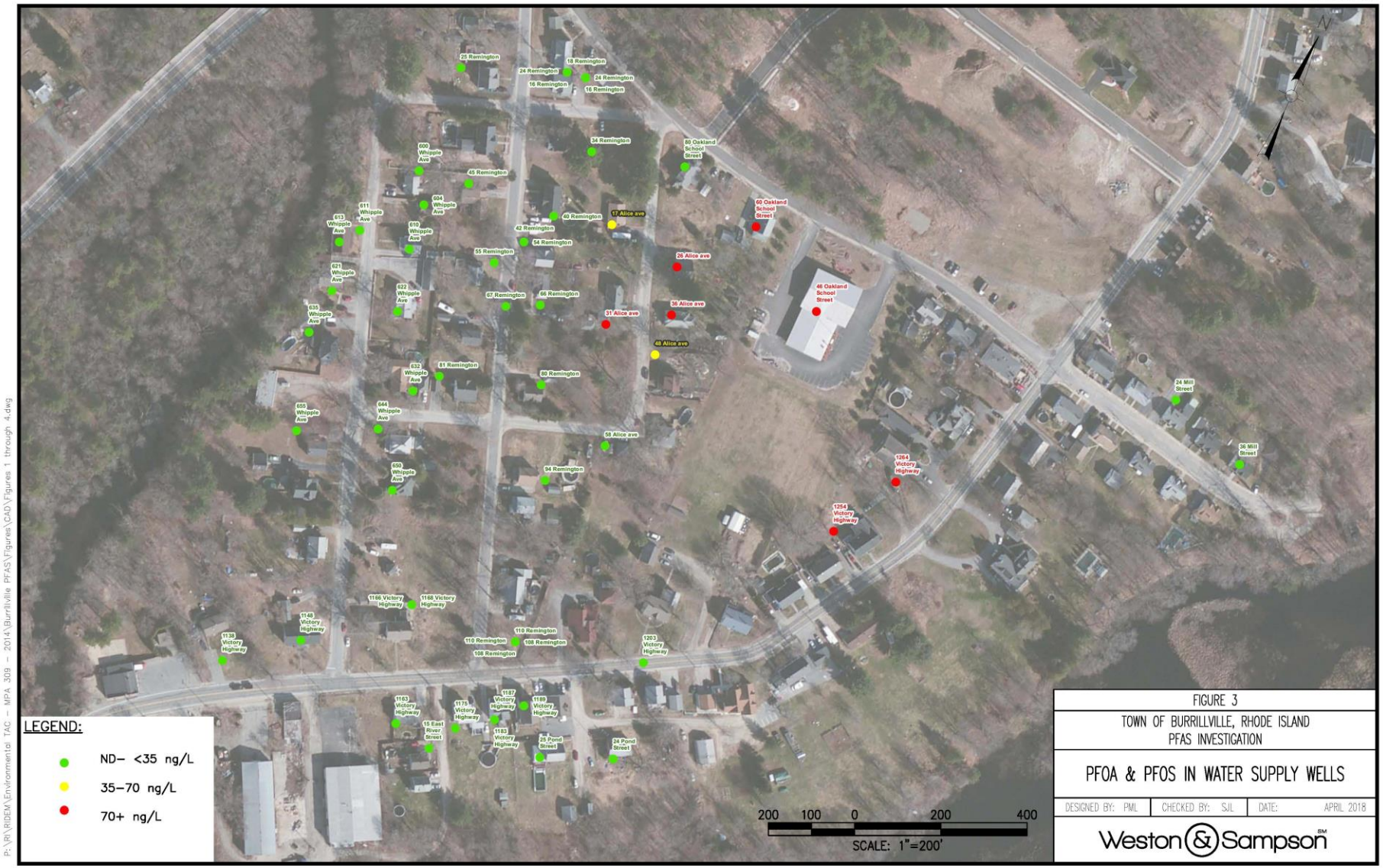


FIGURE 3

TOWN OF BURRILLVILLE, RHODE ISLAND
PFAS INVESTIGATION

PFOA & PFOS IN WATER SUPPLY WELLS

DESIGNED BY: PML	CHECKED BY: SJL	DATE: APRIL 2018

Weston & Sampson℠

P:\RI\RIDEM\Environmental TAC – MPA 309 – 2014\Burrillville PFAS\Figures\CAD\Figures 1 through 4.dwg

Oakland-Mapleville Fire Dept.

Next Steps

- RIDEM is conducting follow-up sampling of private wells in the vicinity of public water systems that tested positive for PFAS
  - Two source investigations ongoing… those locations with highest density of private wells in ¼ mile radius.
- RIDOH is considering another round of public well sampling
  - Approximately 30% of PWS sampled thus far
  - Include additional potential sources (i.e. fire stations)

Other Initiatives

- RIDEM adopted EPA Health Advisory of 70 ng/L (ppt) combined PFOA/PFOS for groundwater classified as GAA or GA (presumed safe for drinking without treatment)
- Waste Facilities Management Program will require all landfills to sample for PFAS.
  - Action limits still being considered.
- Site Remediation and Brownfields Program is requiring sampling where warranted on new and active sites.

Communicating Around PFAS

Lessons Learned Pane

Lori Mathieu, Public Health Section Chief, CT Dept. of Public Health

John Schmeltzer, Hazardous Site Manager, VT Dept. of Environmental Conservation

Karen Craver, Epidemiologist, NH Dept. of Health & Human Services

flickr.com/photos/marcn/15320532190/

Drinking Water Section

DPH

Connecticut Department of Public Health

Communicating PFAS: Interagency Collaboration and Community Outreach

Lori J. Mathieu, Public Health Section Chief

CT DPH – Drinking Water Section

EPA Region 1 Community Engagement
Exeter, NH
June 26, 2018

Overview

Drinking Water Section

DPH

- PFAS Public Water Testing History in Connecticut
- CT DPH Drinking Water Section PFAS Strategy
- Pilot testing the PFAS Strategy: Greenwich CT
- Community Outreach
- Lessons Learned

Connecticut Public Water Systems

Drinking Water Section

DPH

- 2,550 Public Water Systems, serving 2.9 million people
  - 550 community water systems
  - 600 non-transient non-community systems
  - 1,400 transient systems
- 150 reservoir systems
- 4,000 wells

- CT Department of Public Health (CTDPH)
  - Regulates public drinking water under its Drinking Water Section (DWS)
  - Primacy of the Safe Drinking Water Act

PFAS Drinking Water History in Connecticut

Drinking Water Section

DPH

2010-2015 Safe Drinking Water Act UCMR3

- EPA – Third Unregulated Contaminant Monitoring Rule (UCMR 3)
- Under the UCMR3 - No Public Water System in Connecticut that tested for PFAS had detections above the minimum reporting limits
- These Public Water Systems serve over 2,400,000 people

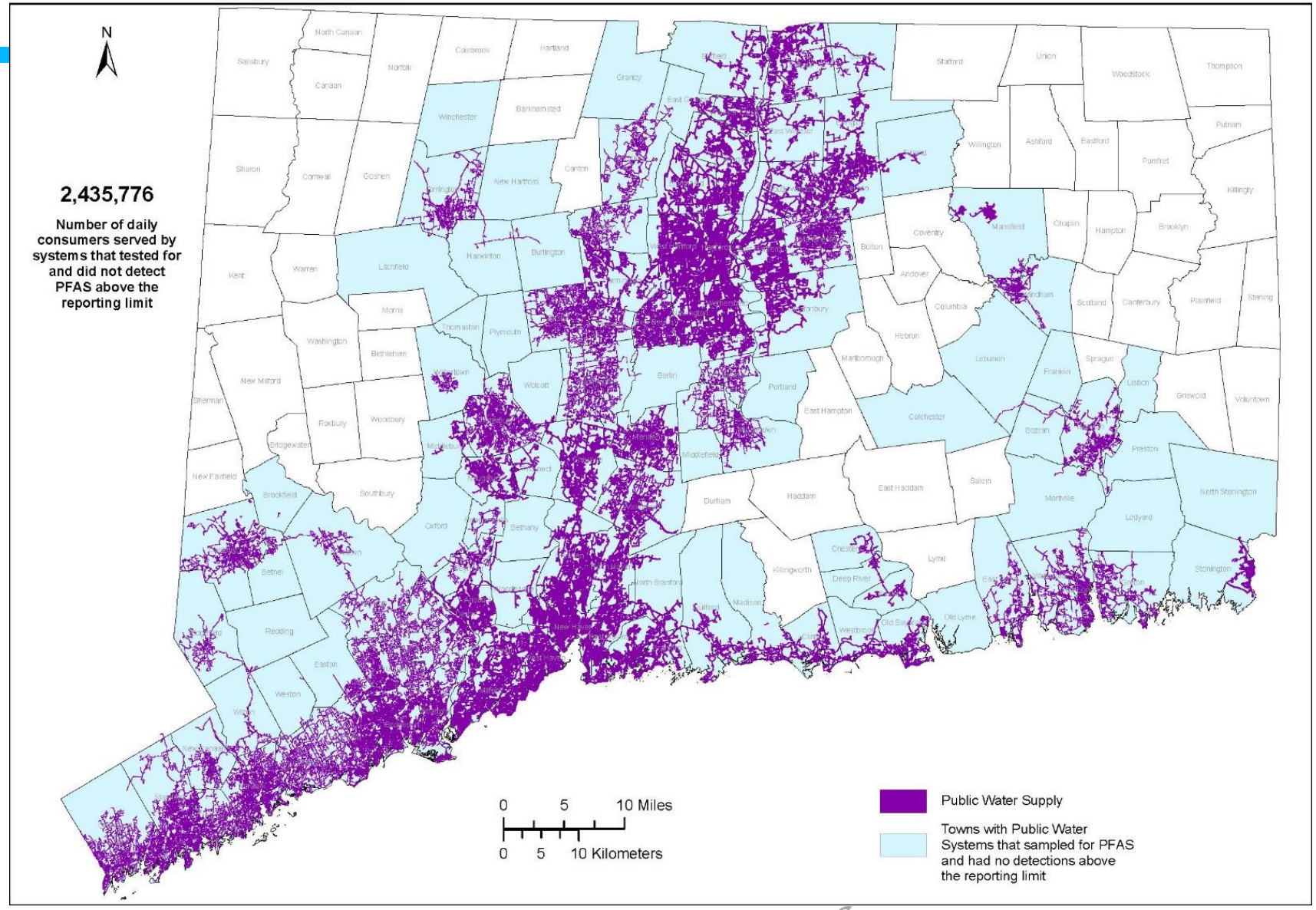
2016

- EPA issues Health Advisory for PFOA and PFOS
- DWS issues a **"Circular Letter"** to public water systems and local health departments informing them of the Health Advisory and UCMR 3 results.
- Other Drinking Water Issues

Drinking Water Section

DPH

Connecticut Towns Served by Public Water Systems that have Tested for PFAS



Drinking Water Section PFAS Strategy

Drinking Water Section

DPH

- CT DPH DWS worked with Dept. of Energy and Environmental Protection (DEEP) Remediation on strategy development
  - **Identify areas where PFAS may have been released to the environment**
  - **Identify public drinking water supplies that may be vulnerable to PFAS contamination**
  - **Develop web pages (DWS and DEEP) and public information**
  - **Propose actions if PFAS is found**
- EPA Boston Region 1 developed a GIS Mapping Tool to assist states - identify areas that are vulnerable to PFAS Contamination

Drinking Water Section PFAS Strategy

Drinking Water Section

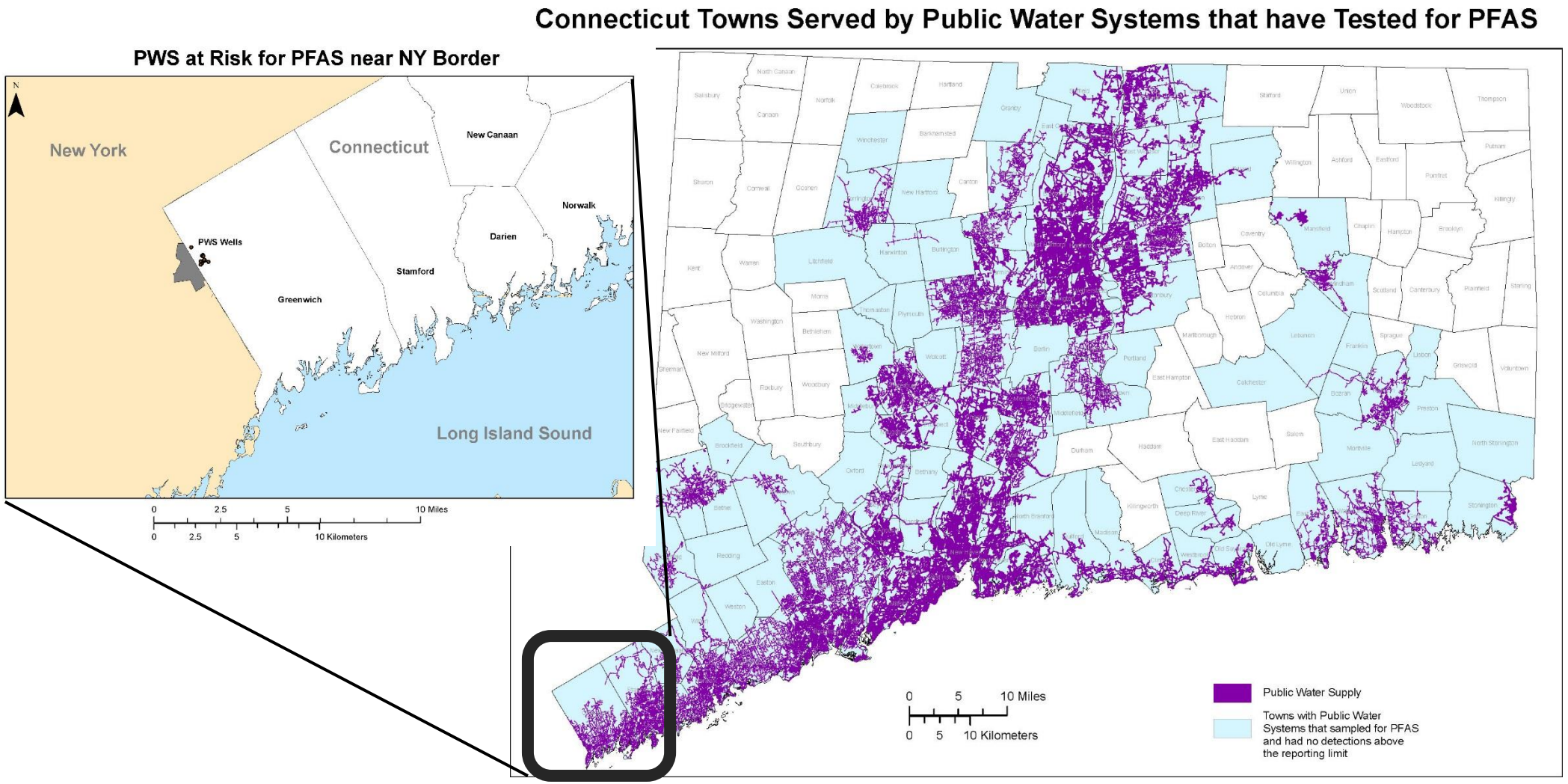
DPH

- Analysis identified focus areas where PWS sources may be vulnerable to PFAS.
  - **Tier 1 Focus Area**: Areas within a one-mile radius of known PFAS contamination.
  - **Tier 2 Focus Area**: Areas within a one-mile radius of a facility that is known to have used or released PFAS
  - **Tier 3 Focus Area**: Areas within a one mile radius of types of facilities that may have used or released PFAS.
- CT DPH receives call from New York Dept. of Health: PFAS contamination is identified in PWS wells on the NY/CT border in New York

Tier 1 Focus Area

Drinking Water Section

DPH



Greenwich Approach

Drinking Water Section

DPH

- Receive direct support, involvement and direction from DPH Commissioner's Office
- Focus on Health
- Work with, involve, and listen to Local Health Department
- Work with Team of agency experts including EPA
- Use PFAS strategy to identify who will be sampled,
- Use DPH developed Action Level for PFAS (sum of 5 PFAS)
- Request EPA Chelmsford Lab assistance
- Provide educational information to all parties; treatment, health
- Make direct contact with the people to be sampled, phone calls and letters
- Hold informational session in community following receipt of results
- Provide updates

PFAS Team Approach - PFAS Strategy

Drinking Water Section

DPH

- Gathered and Partnered with a Team of Experts from within the CTDPH and Locally
  - **Environmental and Occupational Health Assessment Program**-Private Well Drinking Water Action Level (70 ppt for Σ five PFAS) and Public Messaging toxicologists
  - **Katherine A. Kelly Public Health Laboratory**-Train sample team and collect samples from public water systems
  - **Private Well Program**-Private well identification and treatment advice
  - **Environmental Laboratory Certification Program**-Publish list of laboratories registered in CT
  - **Greenwich Local Health Department** – detailed knowledge of local area, guide public interaction/engagement, a wealth of experience with local water quality

Drinking Water Section

DPH

Perfluoroalkyl Substances (PFASs) in Drinking Water: Health Concerns

Environmental & Occupational Health Assessm

What are These Chemicals?

Perfluoroalkyl substances (PFASs) are a family of man-made chemicals with many useful properties including the ability to repel water, prevent staining and increase heat resistance. PFASs have many industrial and consumer uses including the coating of fabrics and non-stick cookware, in food packaging (e.g., microwave popcorn bags), as a mist suppressant in chrome plating, a firemen to put out petroleum fires, but not typically in ho

The most studied PFASs are perfluorooctanoic acid (PFO (PFOS). While we know the most about the harmful effe two PFASs, several others of high concern are also discus nonanoic acid (PFNA), perfluorohexane sulfonate (PFHx (PFHpA). PFOS and PFOA have been phased out of pro have not. Further, these are very persistent chemicals wh ment for long periods after being removed from the mark

How do PFASs get into drin

The way in which these chemicals reach groundwater is sti contamination has occurred near industries manufacturing consumer products. PFAS use at chrome plating facilities source of groundwater contamination. Because of their use that fire training schools, airports and sites where there was PFASs. Once on the ground, these chemicals can gradually it rains and affect groundwater.

Connecticut Department of Pu
PO Box 340308, Hartford, CT
http://www.ct.gov/d

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

Raul Pino, M.D., M.P.H.
Commissioner

Dannel P. Malloy
Governor
Nancy Wyman
Lt. Governor

Questions & Answers on PFAS Drinking Water Sampling in Public Water Supply Wells

What are PFAS? What are the potential sources of PFAS? Per- and Polyfluoroalkyl Substances (PFAS) are a class of man-made chemicals that are used in a variety of products and applications including non-stick cookware, upholstered furniture, clothing, food packaging, and firefighting foam used to extinguish petroleum fires. PFAS release to groundwater may come from use or disposal at factories, airports, fire training academies, landfills, and other industrial facilities. The United States Environmental Protection Agency (USEPA) has a site devoted to Basic Information about Per- and Polyfluoroalkyl Substances. The Connecticut Department of Public Health (CTDPH) Environmental and Occupational Health Assessment (EOHA) Program has developed a fact sheet entitled "Perfluoroalkyl Substances (PFASs) in Drinking Water: Health Concerns" (Attached).

Why is the State of Connecticut conducting this water sampling? Currently there are no enforceable drinking water standards for PFAS. However, emerging information shows a health concern which has prompted the development of a drinking water health advisory level. Under the USEPA's Unregulated Contaminant Monitoring Rule, all public water systems in Connecticut that serve over 10,000 people were tested between 2013 and 2015. PFAS were not detected in the water from these systems that serve over 2.4 million people. We are now further sampling wells in a section of Greenwich because of recent detections in a nearby area.

Who will be conducting the water sampling? A sampling team consisting of representatives from the State of Connecticut Department of Energy and Environmental Protection (CTDEEP) Remediation Division Potable Water Program and the CTDPH Drinking Water Section (DWS), Private Wells Program and Katherine A. Kelley State Public Health Laboratory have been trained in the collection of PFAS samples. Representatives of one or more of these agencies will be involved in the sampling.

Will I need to be present during the sampling? Yes. Someone will need to meet the sampler to show them where the raw water tap is for each public water supply well. In addition, each well must be purged for 20 minutes before sampling, and it would be most helpful if that were completed before the sampler arrives.

Phone: (860) 509-7333 • Fax: (860) 509-7359
410 Capitol Avenue, MS#12DWS, P.O. Box 340308
Hartford, Connecticut 06134-0308
www.ct.gov/dph
Affirmative Action/Equal Opportunity Employer

Team Approach - PFAS Strategy

Drinking Water Section

DPH

- Coordinate with sister Environmental Agency (DEEP)
  - **Remediation Division Western Region**
  - **Potable Water Program**
- Request Assistance - EPA Region 1
  - **EPA Region 1 Laboratory** in Chelmsford, MA provides analytical services on an as-available basis
  - **EPA contractor** collects one round of samples at up to ten private homes with assistance from DEEP staff.
- Team – took 2 rounds of samples (5 PFAS) at private and public water systems, communicated results to entities, worked together on educational information, no funding available
- Learned and gathered information from other States and EPA

Team Approach - PFAS Strategy

Drinking Water Section

DPH

- Town of Greenwich Local Health Department - Community Outreach and Engagement
  - **Knows the Community that they serve**
  - **Provided valuable input and guidance on the best way to communicate with their community**
  - **Provided cover letters and was a point of contact for the community**
  - **Organized a "public availability session" once verified results were available**
  - **Lead the local media interaction**

- ***Provided invaluable support***

Community Outreach: Public Availability Session

Drinking Water Section

DPH

- Held in the impacted community
- Provided Personal invitations plus press releases
- Facilitated by Local experts
- Staffed tables with hand-outs and display boards
- Guests were free to circulate and choose the programs to visit
- Convenient locations for confidential consultation
- Team Presentation at end of session
- Team members stayed to answer any and all questions

greenwich time https://www.greenwichtime.com/local/article/Residents-ask-questions-on-well-water-in-12914107.php

Residents ask questions on well water in northwestern Greenwich

By Robert Marchant **Updated 6:00 pm, Tuesday, May 15, 2018**

Residents of the King Street area meet with health and water-safety officials at an informational event at the Harvest Time Church.

Lessons Learned From the Public Availability Session

- Hold the public session as soon as practical
- Directly and consistently Communicate with all entities sampled
- Work with Local Health Department
- Involve the team of experts in the session
- Format allowed for individual attention; affirmed that guests' concerns were taken seriously
- Take the time to make sure that questions are answered satisfactorily
- Admit what you don't know
- Important involvement from all levels, State, Local and Federal
- Assure the guests that you will continue to share information and engage
- Provide understandable, updated, science based information
- Trust important at all levels

Drinking Water Section

DPH

Thank You

Lori.mathieu@ct.gov
Patricia.bisacky@ct.gov
860-509-7333

CTDPH

Drinking Water Section

State Communications:
PFAS Response Bennington Vermont

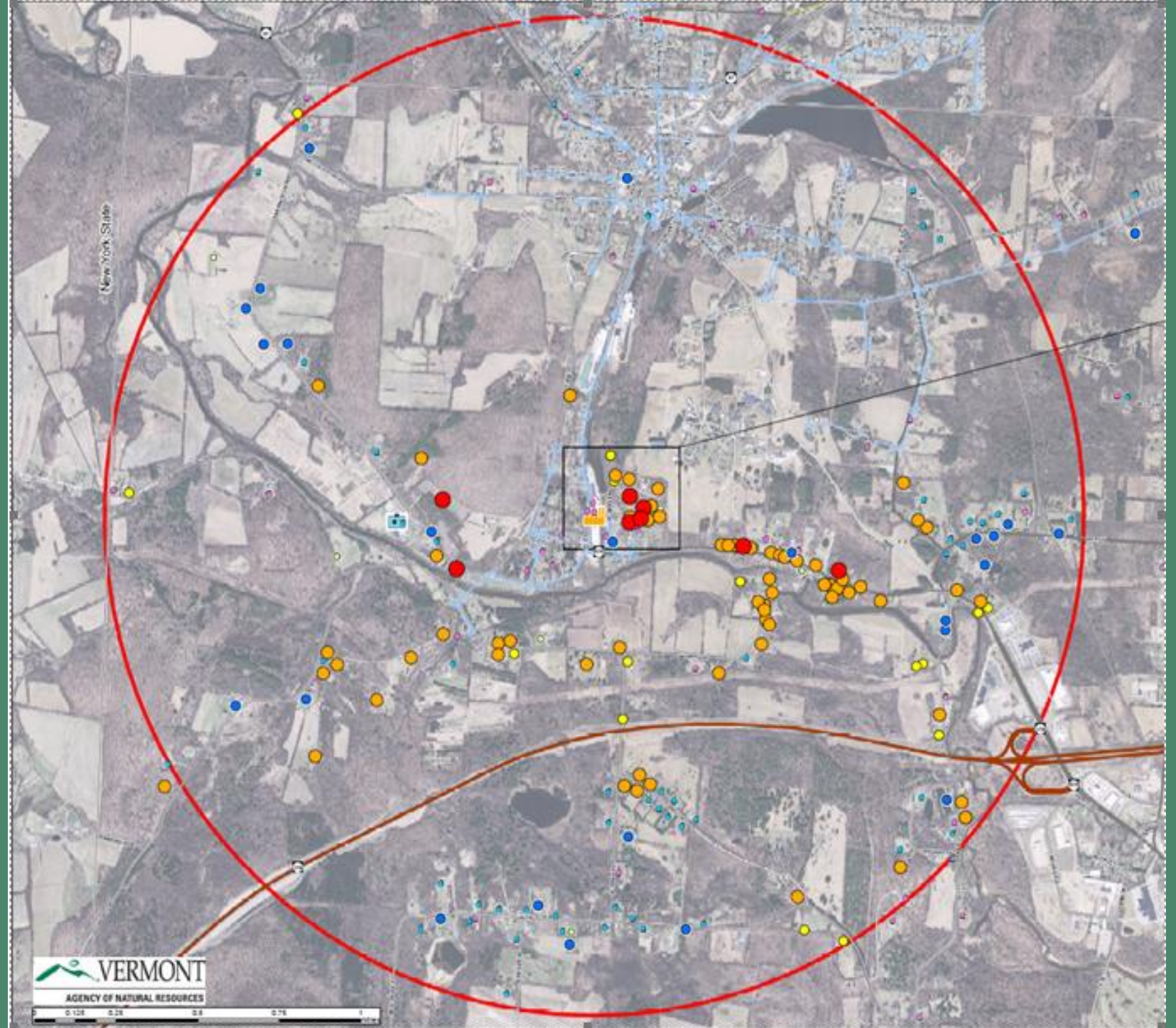
JUNE 26, 2018

How Did We Start?

- Citizen Inquiry via State Representative
- Mid February- Five water supply samples with PFOA detections-41 ppt to 2330 ppt around Chemfab
- February 25th-Governor Press Conference (two hours after receiving data)
- First Community Meeting a few days after Press Conference to discuss results

Our Outreach Goal

- Transparent
- Proactive
- Responsive to Community Concerns


New York State
VERMONT
AGENCY OF NATURAL RESOURCES

Bottled Water for Everyone within the 1 ½ Radius-Prior to Sampling Results

Communications-

- Immediate notification to sampled parties (initially door to door)

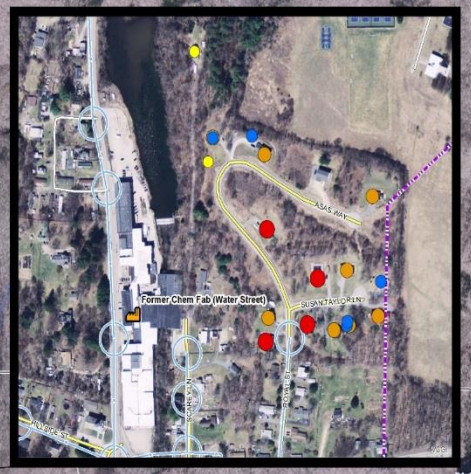
- Continued Community Outreach-
  - Information Center
  - Press releases
  - Mass emails to community (attempt to send monthly at minimum)
  - Public Meetings,
  - Fact Sheets
  - Reports and site investigations on website

PFOA Response Challenges

- Magnitude of effected area
- Developing health advisory levels for water, soil, crops, fish, etc.
- Messaging of health advisory levels in Vermont
- Understanding how water supplies got contaminated
- Presence of Arsenic in point-of-entry treatment systems
- Desire to have immediate answers and remedies (State and Community)

North Bennington/Bennington PFOA

Sampling Test Results (Highest Concentration) - May 30, 2018



MAP LEGEND

PFOA

- <6.7 ppt (Original Detection Limit)
- 6.7 - 20 ppt (VDH Advisory)
- 20 - 100 ppt
- 100 - 1000 ppt
- >1000 ppt
- Landfill Monitoring

LAYERS

- Factory
- Landfill
- Wastewater Treatment Plant
- Town Water Sample
- WaterLine

BOUNDARIES

- Village Boundary (VCGI)
- Sampling Boundary
- Town Boundary

N

June 21, 2018

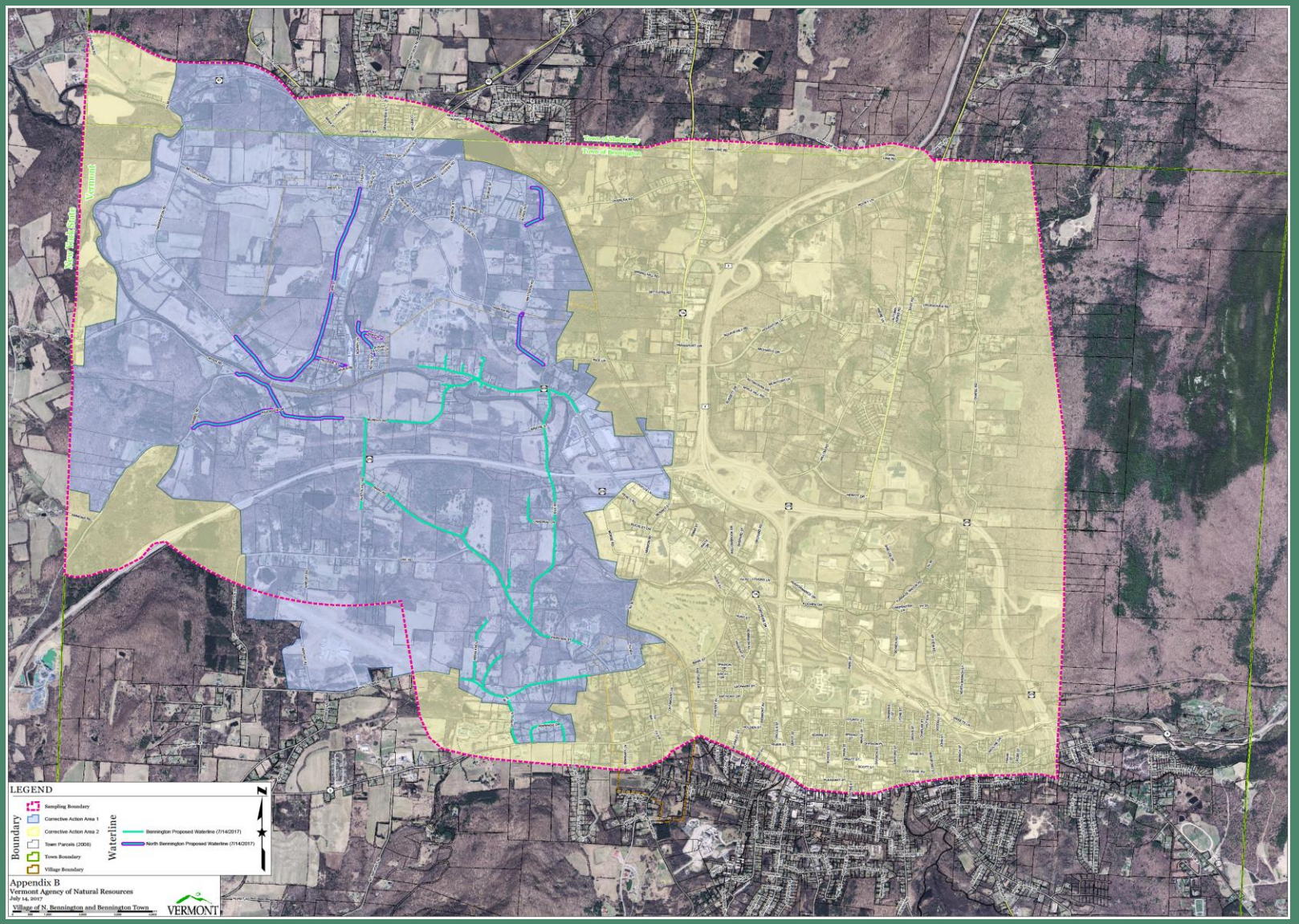
Notes:
Sources: Roads (VTRANS), Basemap (VCGI), Geocoding Service (VCGI), Sampling Results (VTDEC/Weston & Sampson), Waterline (Otter Creek Engineering), Streams and Waterbodies (NHD).

Sampling locations are determined by geocoded addresses as provided. Latitude/Longitude used in instances where well locations were recorded.

0 0.25 0.5 1 1.5 2
Miles

VERMONT
AGENCY OF NATURAL RESOURCES

Map of Corrective Action Area II



Division of Public Health Services

Communicating around Health Risk and PFAS

Karen Craver, MPH
Chronic Disease Epidemiologist
603-271-1568
karen.craver@dhhs.nh.gov

NH Healthy Lives
PREVENT · PROMOTE · PROTECT

NH DIVISION OF
Public Health Services
Improving health, preventing disease, reducing costs *for all*
Department of Health & Human Services

As the health department…

- Almost entirely Federally-funded by grants
- Funded for specific activities
- Focus on high impact prevention strategies

Also…

- Accountable to NH residents to address concerns → teams pulled together
  - Exposure
  - Outcomes

} Unable to connect the two

Chronic Disease Epidemiology

Gather, analyze, and disseminate data and information and conduct evaluation to inform, prioritize, deliver, and monitor programs and ***population health***.

HPV-Associated Cancers in New Hampshire, 1999–2013

Data Brief / October 2016

NH DIVISION OF Public Health Services

Improving health, preventing disease, reducing costs for all

Department of Health and Human Services

Background

HPV is associated with certain types of cancer including cervical, vaginal, vulvar, penile, anal, and oropharyngeal.

The human papillomavirus (HPV) is the name for a group of more than 150 related viruses, each type with an identifying number, named for the papillomas (warts) that are caused by certain types. The virus is contracted through sexual contact, primarily through vaginal or anal sex, but also through oral sex and other sexual activity. In rare cases, it can be passed on during childbirth. With over 40 types that can infect the genital areas and mouth and throat of both males and females, HPV is the most common sexually transmitted infection in the United States.

Most sexually active individuals will get at least one type of HPV in their lifetime; about 79 million Americans are currently infected and about 14 million become newly infected each year. In most cases, HPV is asymptomatic and will resolve without treatment within 2 years of infection; however, some HPV infections persist and can cause certain types of cancer, including cervical, vaginal, vulvar, penile, anal, and oropharyngeal. HPV-associated cancer can take years or even decades to develop after infection occurs.

Key findings in this data brief:

- When limiting analysis to the two types of cancer that affect both sexes, anal and oropharyngeal cancer, the total number of cases likely attributable to HPV among males from 1999 to 2013 exceeds the number of cases among females by a factor of 1.93.
- Despite the fact that males are increasingly affected by HPV-associated cancers, the rate of vaccination among males remains lower than that of females.

HPV-associated cancer is preventable. The HPV vaccine protects against the types of the virus that can cause cancer. It is recommended by the United States Centers for Disease Control and Prevention (CDC) that boys and girls receive the vaccine at age 11 or 12 before they are likely to be exposed to HPV; however, according to the recommendation, females can be vaccinated through age 26, and males through age 21.

Cervical cancer can be found early and even prevented with routine screening tests. The Pap test looks for changes in cervical cells caused by HPV infection. The HPV test looks for the infection itself. While there are no routine screening tests for HPV-associated cancers other than cervical, the CDC recommends that people visit their doctor regularly for checkups.

Using data from the New Hampshire State Cancer Registry and from the CDC, this report describes the prevalence of HPV-associated cancers in New Hampshire, with estimates of the proportion that are likely attributable to HPV.

Number of Cancers in New Hampshire in Sites Where HPV Is Found

Between 1999 and 2013, 2,251 new cases of cancer were found in parts of the body where HPV is often found. It is estimated that HPV caused 1,786 of these cases.

Between the years of 1999 and 2013, there were a total of 2,251 cancer cases diagnosed in sites where HPV is often found. The number of cases among females outnumbered cases among males. According to CDC estimates, approximately 1,786 of these cases (79%) were probably caused by HPV. Cancer of the

NH Department of Health and Human Services
Division of Public Health Services
Chronic Disease Prevention and Screening Section

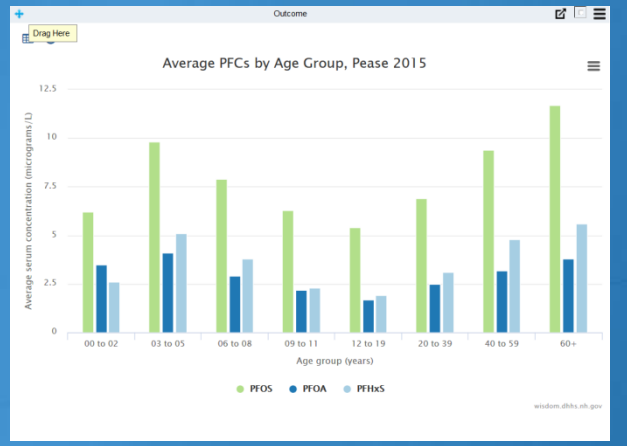
-1-

October 2016
HPV-Associated Cancers in New Hampshire, 1999-2013

NH DIVISION OF Public Health Services
Improving health, preventing disease, reducing costs for all
Department of Health & Human Services

What we've tried…

- Written reports
- Web-based information
- State-led large community presentations
- State-led community advisory groups
- State-led meetings with impacted individuals
- Community-led small group discussions



What we've learned:

- Timely communication is best
- Say what you know, and what you **don't know**
- Involve local trusted community members
- Communication has to be two-way
- Focus on what can be done

Continuing evolution→ Next Step….

Station Style Meeting- PFAS Health Fair

- Community wide
- Two-way discussion
- Information sharing
- Provides people with resources
- Partners to address a variety of concerns, most importantly *what people can do*

Thank You!

Karen Craver, MPH
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NH Healthy Lives
PREVENT · PROMOTE · PROTECT

NH DIVISION OF
Public Health Services
Improving health, preventing disease, reducing costs *for all*
Department of Health & Human Services

Identifying for PFAS Solutions

Alexandra Dunn
Regional Administrator, Region 1

Peter Grevatt
Director, EPA Office of Ground Water and Drinking Water

Sean Dixon
Senior Policy Advisor, Region 1

flickr.com/photos/tonybaldasaro/7995694558/in

Thank you

©Photos by Nate Wilson flickr.com/photos/natetech/13016019145/

Welcome to the PFAS Community Stakeholder Meeting

EPA held a National Leadership Summit in Washington, D.C. May 22-23, 2018, that brought together federal, state, tribal and local partners.

1. EPA will initiate steps to evaluate the need for a maximum contaminant level (MCL) for PFOA and PFOS. We will convene our federal partners and examine everything we know about PFOA and PFOS in drinking water.
2. EPA is beginning the necessary steps to propose designating PFOA and PFOS as “hazardous substances” through one of the available statutory mechanisms, including potentially CERCLA Section 102.
3. EPA is currently developing groundwater cleanup recommendations for PFOA and PFOS at contaminated sites and will complete this task by fall of this year.
4. EPA is taking action in close collaboration with our federal and state partners to develop toxicity values for GenX and PFBS by this summer.