
September 13th, 2018
CONNECTICUT
Department of Public Health
PFAS: Responding to an Emerging Contaminant
INTRO
STRATEGY
CASE STUDY
LESSONS LEARNED
Lori Mathieu and Caroline Baisley

WHO WE SERVE

- 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

Where can it be found

Pathways to Contamination

Per- and polyfluoroalkyl substances (PFAS) are a group of man-made chemicals that includes PFOA, PFOS, GenX, and many other chemicals. PFAS have been manufactured and used in a variety of industries around the globe, including in the United States since the 1940s. PFOA and PFOS have been the most extensively produced and studied of these chemicals. Both chemicals are very persistent in the environment and in the human body – meaning they don't break down and they can accumulate over time. There is evidence that exposure to PFAS can lead to adverse human health effects.

PFAS CAN BE FOUND IN:

Food packaged in PFAS-containing materials, processed with equipment that used PFAS, or grown in PFAS-contaminated soil or water.

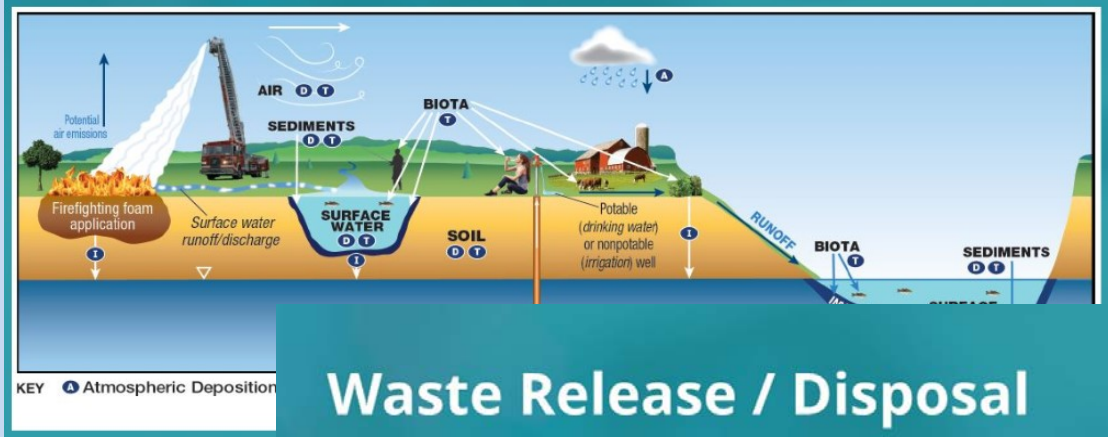
Commercial household products, including stain- and water-repellent fabrics, nonstick products (e.g., Teflon), polishes, waxes, paints, cleaning products, and fire-fighting foams (a major source of groundwater contamination at airports and military bases where firefighting training occurs).

Workplace, including production facilities or industries (e.g., chrome plating, electronics manufacturing or oil recovery) that use PFAS.

Drinking water, typically localized and associated with a specific facility (e.g., manufacturer, landfill, wastewater treatment plant, firefighter training facility).

Living organisms, including fish, animals and humans, where PFAS have the ability to build up and persist over time.

Fire Foam



Waste Release / Disposal

Landfills

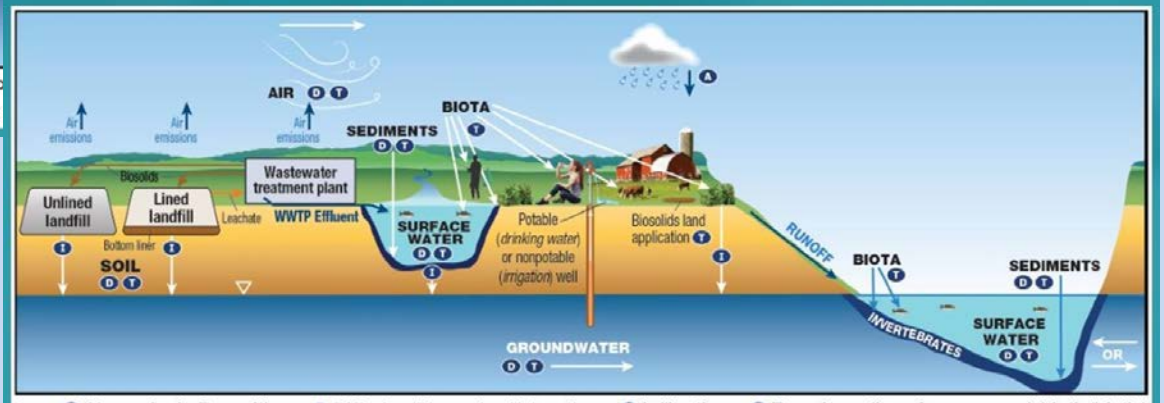


Figure 3. Conceptual site model for landfills and WWTPs.

Timeline

PFAS

2013

- 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

2014 Flint, Michigan

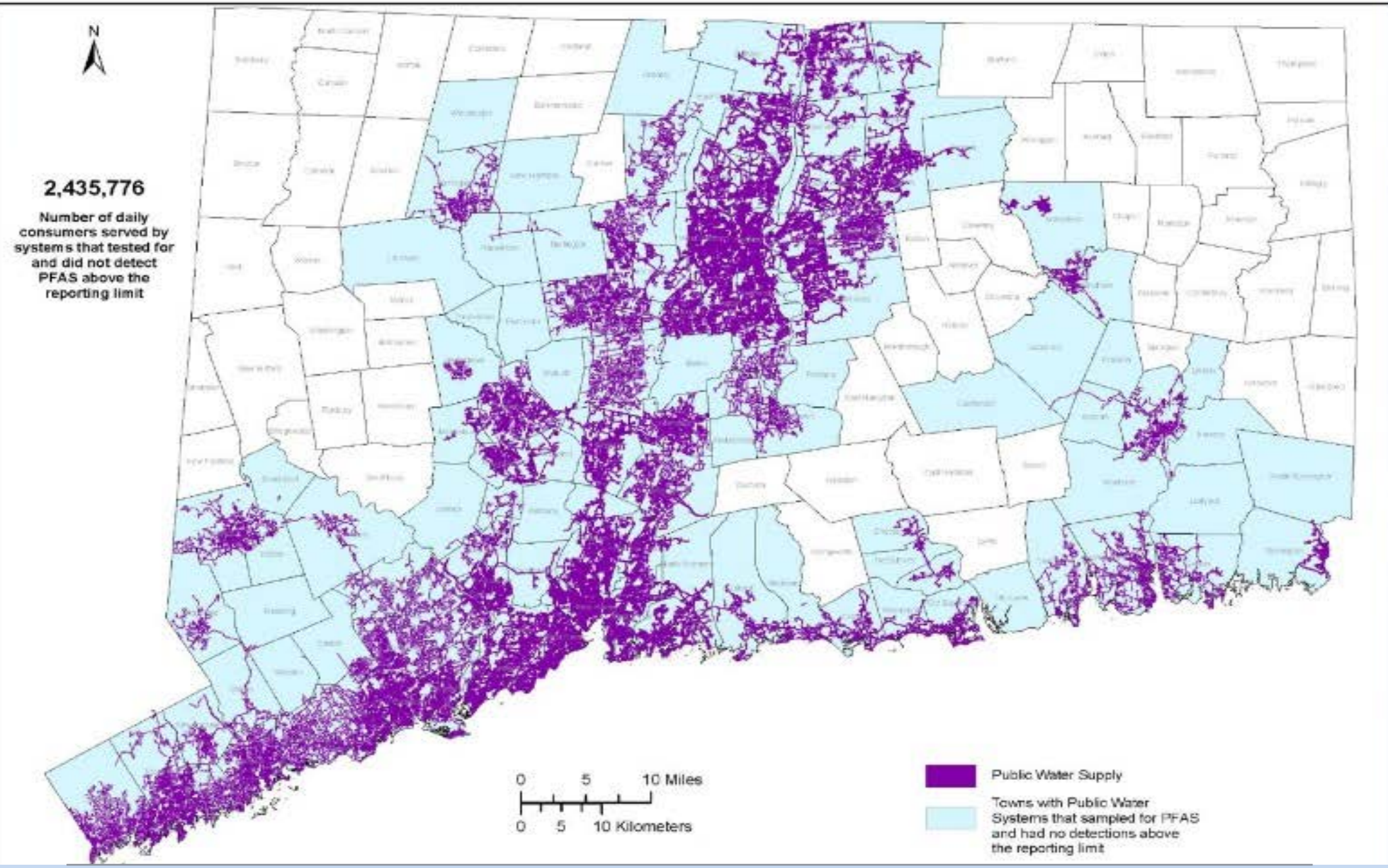
LEAD

2016

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.
- DPH Environmental Health Section publishes a Drinking Water Action level for 5 PFAS

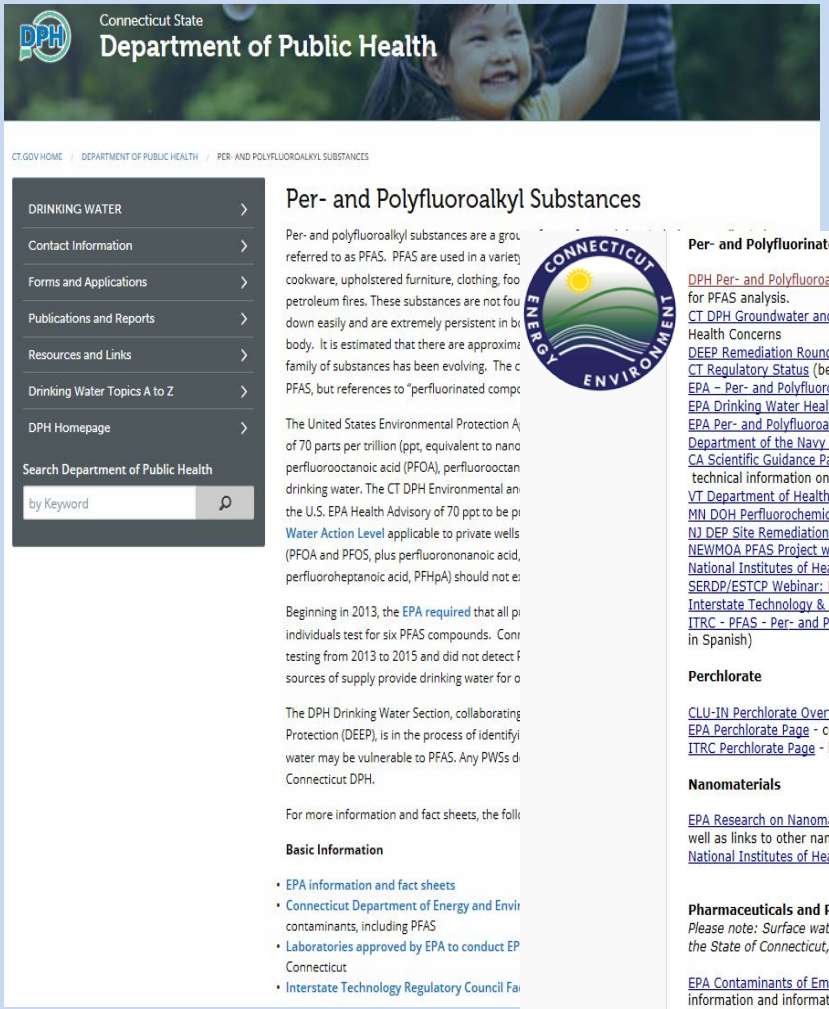
Connecticut Towns Served by Public Water Systems that have Tested for PFAS



Strategy

CT DPH 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


Connecticut State
Department of Public Health

CT.GOV HOME / DEPARTMENT OF PUBLIC HEALTH / PER- AND POLYFLUOROALKYL SUBSTANCES

DRINKING WATER
Contact Information
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Per- and Polyfluoroalkyl Substances

Per- and polyfluoroalkyl substances are a grou
referred to as PFAS. PFAS are used in a variet
cookware, upholstered furniture, clothing, foo
petroleum fires. These substances are not fou
down easily and are extremely persistent in bo
body. It is estimated that there are approxima
family of substances has been evolving. The c
PFAS, but references to "perfluorinated compo

The United States Environmental Protection A
of 70 parts per trillion (ppt, equivalent to nano
perfluorooctanoic acid (PFOA), perfluorooctan
drinking water. The CT DPH Environmental an
the U.S. EPA Health Advisory of 70 ppt to be pr
Water Action Level applicable to private wells
(PFOA and PFOS, plus perfluorononanoic acid,
perfluoroheptanoic acid, PFHpA) should not e

Beginning in 2013, the EPA required that all pr
individuals test for six PFAS compounds. Con
testing from 2013 to 2015 and did not detect F
sources of supply provide drinking water for o

The DPH Drinking Water Section, collaborating
Protection (DEEP), is in the process of identifyi
water may be vulnerable to PFAS. Any PWSs d
Connecticut DPH.

For more information and fact sheets, the follo

Basic Information

- EPA information and fact sheets
- Connecticut Department of Energy and Envir
contaminants, including PFAS
- Laboratories approved by EPA to conduct EP
Connecticut
- Interstate Technology Regulatory Council Fa

Per- and Polyfluorinated Alkyl Substances (PFASs)

DPH Per- and Polyfluoroalkyl Substances - Health information, well treatment options, and CT approved labs for PFAS analysis.
CT DPH Groundwater and Well Contamination - PFAS Drinking Water Action Level and PFAS in Drinking Water: Health Concerns
DEEP Remediation Roundtable: June 20, 2017 Poly- and Perfluorinated Alkyl Substances (PFASs) Briefing on CT Regulatory Status (begins on slide 82)
EPA – Per- and Polyfluoroalkyl Substances (PFAS) in Your En
EPA Drinking Water Health Advisories for PFOA and PFOS - b
EPA Per- and Polyfluoroalkyl Substances (PFASs) under TSCA
Department of the Navy PFC/PFAS webpage - information on
CA Scientific Guidance Panel Biomonitoring California: Perflu
technical information on numerous PFCs and bioaccumulatio
VT Department of Health PFOA (Perfluorooctanoic Acid) - ger
MN DOH Perfluorochemicals (PFCs) in Minnesota - general in
NJ DEP Site Remediation Program Contaminants of Emerging
NEWMOA PFAS Project webpage - includes links to presentat
National Institutes of Health: Perfluorinated Chemicals - gen
SERDP/ESTCP Webinar: PFASs: Analytical and Characterizati
Interstate Technology & Regulatory Council PFAS Team webp
ITRC - PFAS - Per- and Polyfluoroalkyl Substances - technica
in Spanish)

Perchlorate

CLU-IN Perchlorate Overview - numerous state and federal li
EPA Perchlorate Page - contaminant profile and regulatory in
ITRC Perchlorate Page - links to technical documents and we

Nanomaterials

EPA Research on Nanomaterials - information regarding whic
well as links to other nanomaterial research
National Institutes of Health: Nanomaterials - general health

Pharmaceuticals and Personal Care Products (PPCPs)

Please note: Surface water bodies to which sewage effluent i
the State of Connecticut, limiting certain exposures reference

EPA Contaminants of Emerging Concern including Pharmaceu
information and information regarding aquatic life
NEIWPCC Pharmaceuticals and Personal Care Products (PPCP
Workgroup and links to federal, state, and regional resources
CA Dept. of Toxic Substances Control Toxicological Issues As
NY Pharmaceuticals in Our Waters: An Emerging Concern (PD
Occurrence of Unregulated Compounds in Surface Waters, G
in NJ - general information and links to NJ studies of PPCPs i
EPA Method 1694: Pharmaceuticals and Personal Care Produ
technical document describing laboratory procedures

Content Last Updated January 31, 2018

Perfluoroalkyl Substances (PFASs) in Drinking Water:
Health Concerns

Environmental & Occupational Health Assessment Program • August 2017

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, and in firefighting foam used by firemen to put out petroleum fires, but not typically in home fire extinguishers.

The most studied PFASs are perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS). While we know the most about the harmful effects and environmental fate of these two PFASs, several others of high concern are also discussed in this fact sheet, perfluoro-nonanoic acid (PFNA), perfluorohexane sulfonate (PFHxS) and perfluoroheptanoic acid (PFHpA). PFOS and PFOA have been phased out of production but the other three PFASs have not. Further, these are very persistent chemicals which can remain in the environ-ment for long periods after being removed from the marketplace.

How do PFASs get into drinking water?

The way in which these chemicals reach groundwater is still being investigated. Drinking water contamination has occurred near industries manufacturing or using these chemicals to make consumer products. PFAS use at chrome plating facilities for mist suppressant can also be a source of groundwater contamination. Because of their use in firefighting foams, it is possible that fire training schools, airports and sites where there was a major fire may have releases of PFASs. Once on the ground, these chemicals can gradually migrate down through the soil when it rains and affect groundwater.

Connecticut Department of Public Health
PO Box 340308, Hartford, CT 06134-0308
http://www.ct.gov/dph

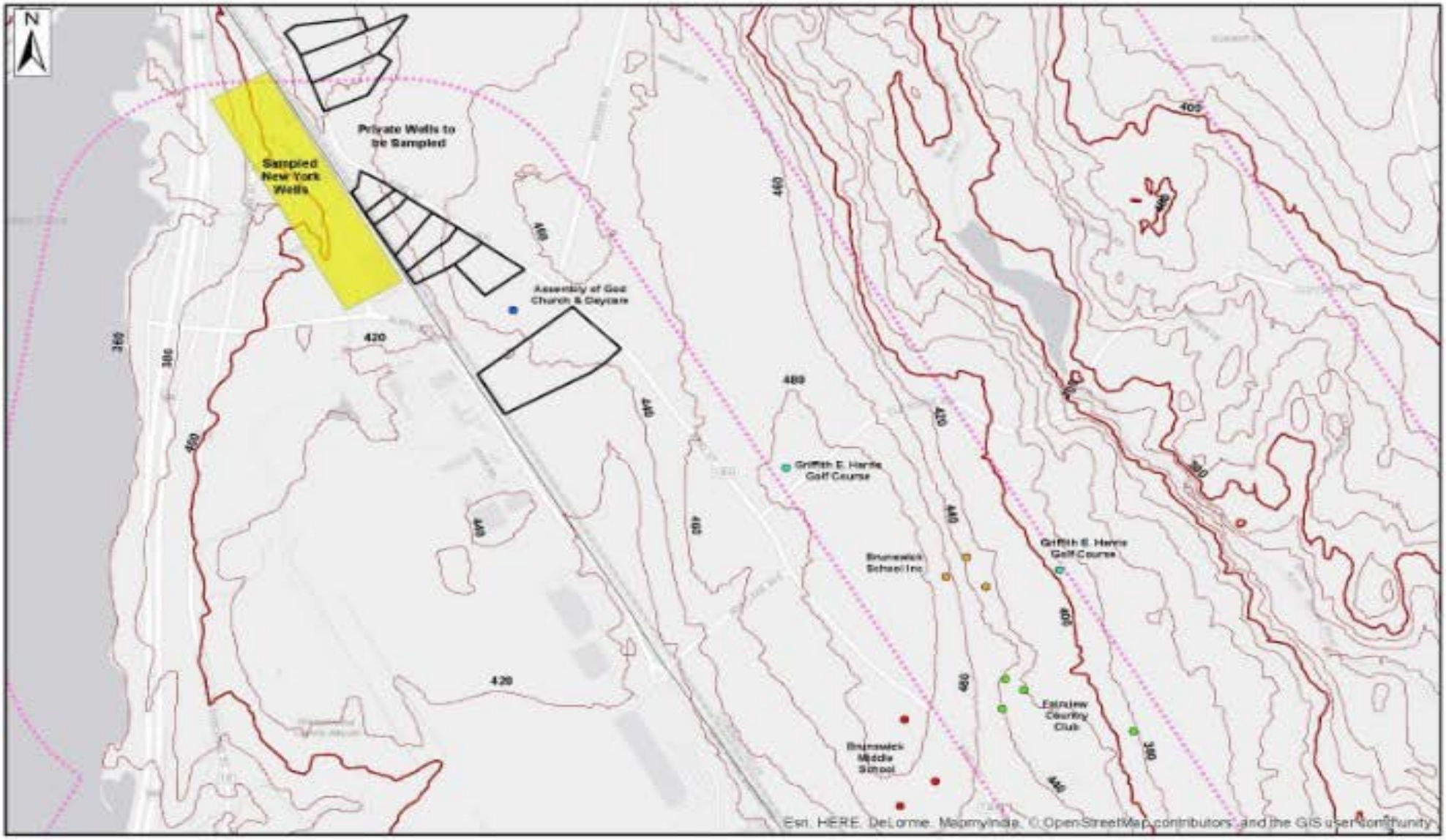
Strategy

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

CT DPH uses a GIS Mapping Tool to identify areas that are vulnerable to PFAS Contamination

CT DPH coordinates with Local Health

Public Water Systems Vulnerable to PFAS Contamination in Greenwich, CT

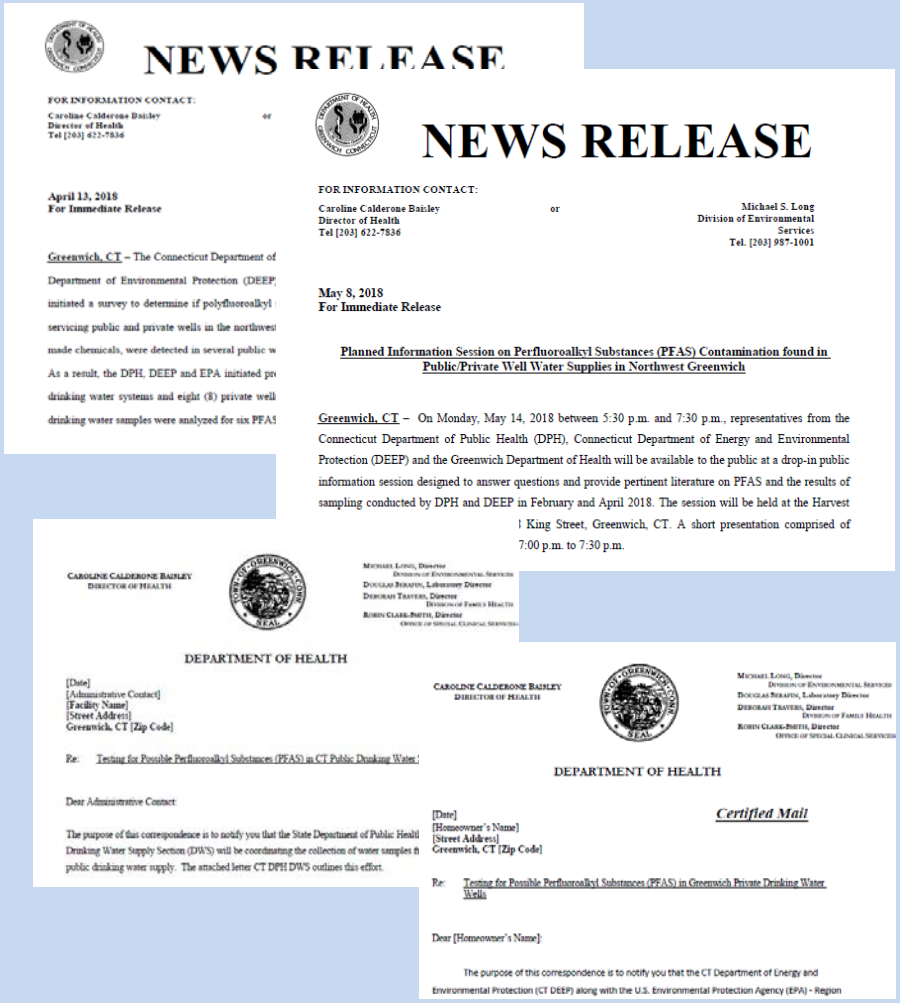


Greenwich, CT

- 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

Local Challenges and Team Approach – PFAS Strategy

- Working with differences between federal, State and local strategies
- Collaboration and coordination of all agencies (DPH, DEEP and EPA) for well water collection
- Communication and timing of mailing to owners of public/private well water supplies about PFAS contamination/scheduling water sampling
- Notification to media (general public) elected officials, boards, community groups, town agencies about PFAS contamination



NEWS RELEASE

FOR INFORMATION CONTACT:
Caroline Calderone Bailey
Director of Health
Tel [203] 622-7836

April 13, 2018
For Immediate Release

Greenwich, CT – The Connecticut Department of
Department of Environmental Protection (DEEP)
initiated a survey to determine if polyfluoroalkyl
servicing public and private wells in the northwest
made chemicals, were detected in several public w
As a result, the DPH, DEEP and EPA initiated pr
drinking water systems and eight (8) private well
drinking water samples were analyzed for six PFAS

NEWS RELEASE

FOR INFORMATION CONTACT:
Caroline Calderone Bailey
Director of Health
Tel [203] 622-7836
or
Michael S. Long
Division of Environmental Services
Tel. [203] 987-1001

May 8, 2018
For Immediate Release

Planned Information Session on Perfluoroalkyl Substances (PFAS) Contamination found in Public/Private Well Water Supplies in Northwest Greenwich

Greenwich, CT – On Monday, May 14, 2018 between 5:30 p.m. and 7:30 p.m., representatives from the Connecticut Department of Public Health (DPH), Connecticut Department of Energy and Environmental Protection (DEEP) and the Greenwich Department of Health will be available to the public at a drop-in public information session designed to answer questions and provide pertinent literature on PFAS and the results of sampling conducted by DPH and DEEP in February and April 2018. The session will be held at the Harvest
King Street, Greenwich, CT. A short presentation comprised of
7:00 p.m. to 7:30 p.m.

CAROLINE CALDERONE BAILEY
DIRECTOR OF HEALTH

DEPARTMENT OF HEALTH

[Date]
[Administrative Contact]
[Facility Name]
[Street Address]
Greenwich, CT [Zip Code]

Re: Testing for Possible Perfluoroalkyl Substances (PFAS) in CT Public Drinking Water

Dear Administrative Contact:

The purpose of this correspondence is to notify you that the State Department of Public Healt
Drinking Water Supply Section (DWS) will be coordinating the collection of water samples fr
public drinking water supply. The attached letter CT DPH DWS outlines this effort.

CAROLINE CALDERONE BAILEY
DIRECTOR OF HEALTH

DEPARTMENT OF HEALTH

Certified Mail

[Date]
[Homeowner's Name]
[Street Address]
Greenwich, CT [Zip Code]

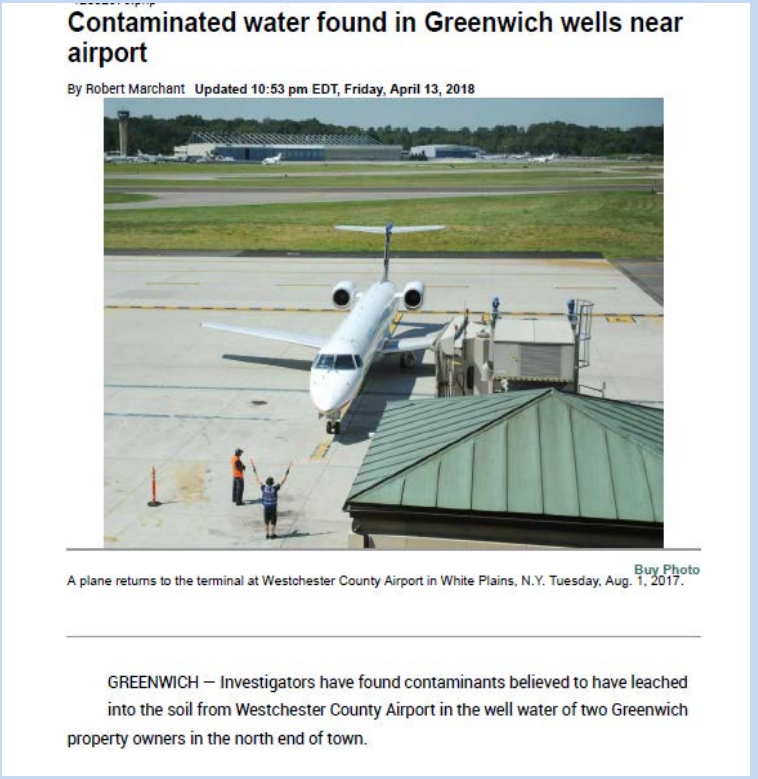
Re: Testing for Possible Perfluoroalkyl Substances (PFAS) in Greenwich Private Drinking Water Wells

Dear [Homeowner's Name]:

The purpose of this correspondence is to notify you that the CT Department of Energy and Environmental Protection (CT DEEP) along with the U.S. Environmental Protection Agency (EPA) - Region

Local Challenges and Team Approach –PFAS Strategy

- Handling resident reactions with knowledge of past general contamination problems in the community
- Dealing with public/political response to Westchester County Airport problems past/present
- Organization of local health availability to all impacted residents/facilities
- Handling media inquiries and local resident questions



Contaminated water found in Greenwich wells near airport

By Robert Marchant **Updated 10:53 pm EDT, Friday, April 13, 2018**

A plane returns to the terminal at Westchester County Airport in White Plains, N.Y. Tuesday, Aug. 1, 2017. Buy Photo

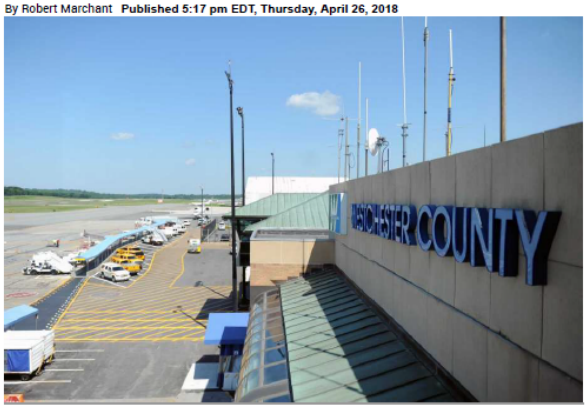
GREENWICH — Investigators have found contaminants believed to have leached into the soil from Westchester County Airport in the well water of two Greenwich property owners in the north end of town.

Local Challenges and Team Approach –PFAS Strategy

- Organizing convenient location for DPH, DEEP and EPA well water supply team
- Organization of a convenient location for a public information session once well water sampling results were verified
- Dealing with problems associated with out of state contaminations and handling new information on PFAS

Greenwich sets meeting on water contamination as testing continues

By Robert Marchant **Published 5:17 pm EDT, Thursday, April 26, 2018**



Buy Photo

Westchester County Airport in White Plains, N.Y., photographed on Tuesday, Aug. 1, 2017. The new airport master plans calls for more than $450 million in spending over 15 years for expansions including two new

Residents Ask Tough Questions on PFAS Contamination of Well Water

from

By: GREENWICHFREEPRESS | May 15, 2018

Caroline Baisley from the town's Health Dept at Harvest Time Church for the meeting on Contamination in Well Water in Greenwich. May 14, 2018 Photo: Leslie Yager

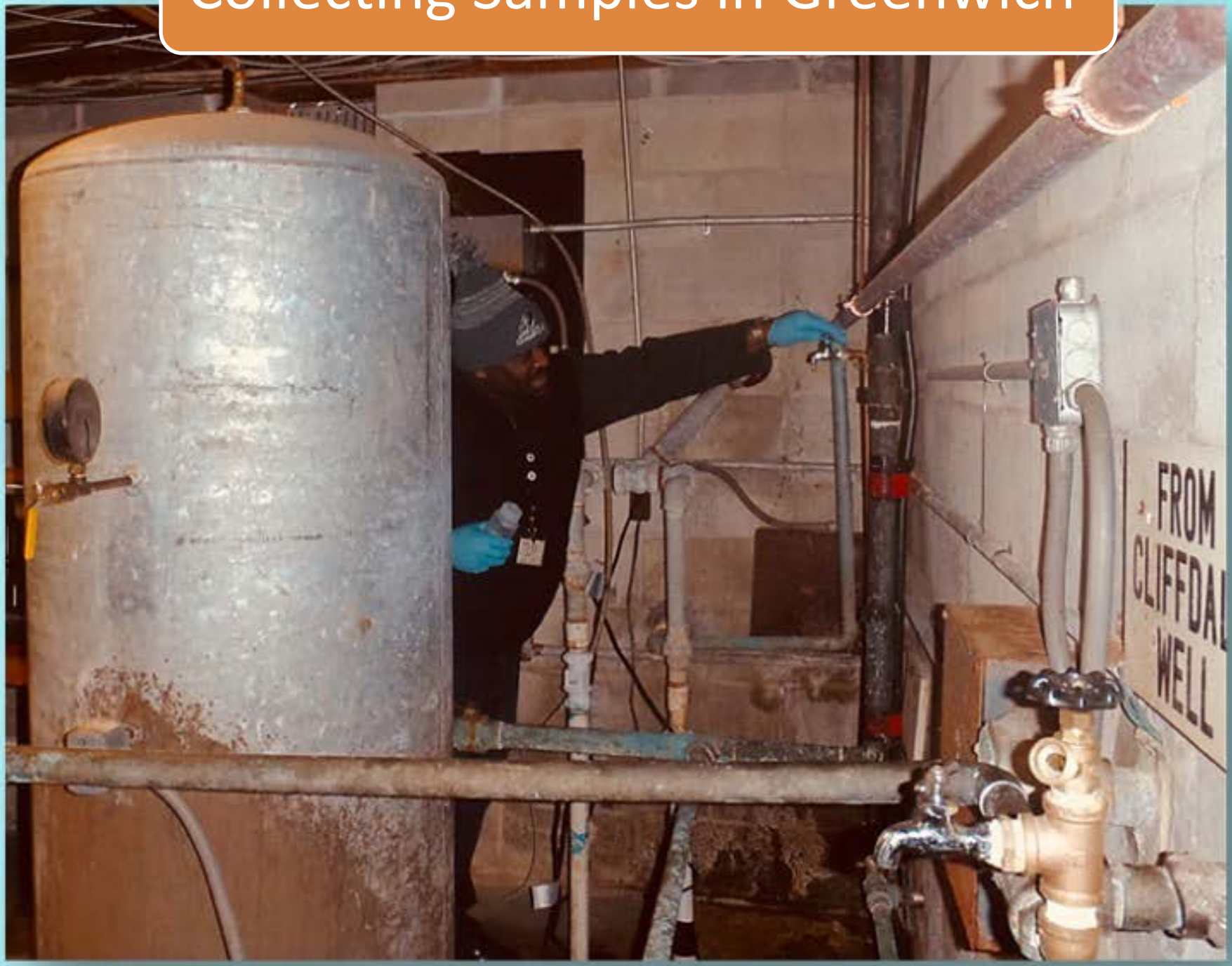
On Monday, officials from the Greenwich Health Dept and the State Health Dept answered questions about potential well water contamination in northwest Greenwich.

The meeting was held at Harvest Time Church on King Street with its clear view of planes taking off and landing at Westchester County Airport, the possible source of well water contamination.

On the agenda was a chemical called Perfluoroalkyl Substances (PFAS), which in February and April was found to have contaminated well water in the King Street area, near the airport. Ten wells were tested and one well was found to have PFAS at a level of 70 parts per trillion.

Though the EPA has yet to set a standard for PFAS, when the well in tested at about 70 parts per trillion, that triggered an EPA "health advisory threshold."

Collecting Samples in Greenwich



Community Outreach

- 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**

CONNECTICUT

Department of Public Health

PFAS: Responding to an Emerging Contaminant

Conclusion

- Knowledge of PFAS is evolving rapidly and we get frequent updates and webinar invitations.
  - We are creating a list serve of those who would like the most up to date information, please email Patricia.Bisacky@ct.gov .