

Connecticut Department of Public Health

Connecticut's Approach to Public Drinking Water and Public Health Protection

Eastern CT State University

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Connecticut's Approach to Public Drinking Water

- Rooted in our state's history
- Public health based
- Crafted to be protective of public health
- Conservative, Unique and Preventative

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Public Drinking Water & Public Health Presentation

- Public Drinking Water Regulation
- Department of Public Health (DPH) Drinking Water Section Responsibilities
- Why Public Health? historic concern
- Current Public Health Drinking Water Law

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Public Drinking Water Regulation



Public Drinking Water Regulation

- History of Public Health & Drinking Water
- US Public Health Service – 1798 & 1912
- Connecticut Health Department - 1880s & 1917
- US Environmental Protection Agency – 1970
- Safe Drinking Water Act (SDWA) – 1974, '86 & '96
- CT DPH received primacy for the SDWA - 1976

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Environmental Protection Agency Public Water Systems

- What is a Public Water System?
- 155,700 Public Water Systems in United States
- 52,000 community systems – serves residential population
- 286 million people served
- 70% by surface water

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Connecticut Public Water Systems

- Over 2,500 Public Water Systems
- Largest number of systems of the New England states
- Considered a Medium Size State by the Environmental Protection Agency

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Department of Public Health Drinking Water Section Responsibilities



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- To protect the public health of Connecticut residents and visitors that consume public drinking water in Connecticut
- Responsible for purity and adequacy oversight statewide for all public water systems
- Work to proactively prevent impacts to health

CT DPH Drinking Water Section

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- Primacy of Safe Drinking Water Act - EPA
 - system engineering reviews
 - treatment/source review & approval
 - Drinking Water State Revolving Loan Fund
 - drinking water quality – oversight of monitoring and reporting for over 100 contaminants
 - Lead & Copper Rule, Radionuclides Rule, Ground Water Rule, Arsenic Rule, Revised Total Coliform Rule, etc
- State Statutory Oversight
 - purity and adequacy of public drinking water
 - water company land regulation
 - recreation permitting, sale of excess water, certified operators, enforcement
 - water supply planning and regional planning (WUCC)

CT DPH Drinking Water Section Responsibilities

- Regulate 2,550 Public Water Systems
- 2.8 million CT residents served – 3.5 million total population
- 550 community systems
- 2,000 non-community systems
- 150 reservoir systems, over 4,000 ground water sources

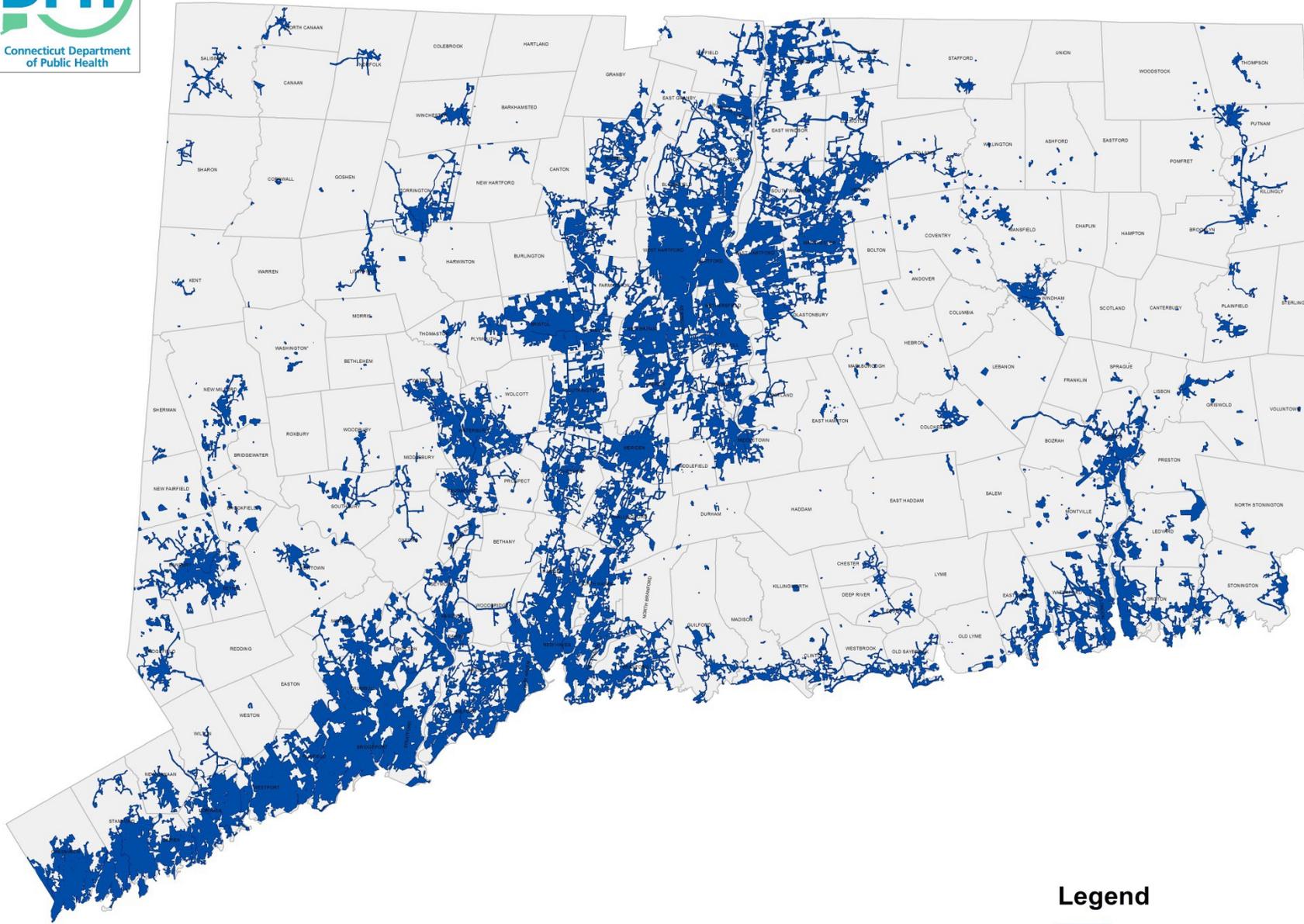
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Public Water Supply Service Area



Legend

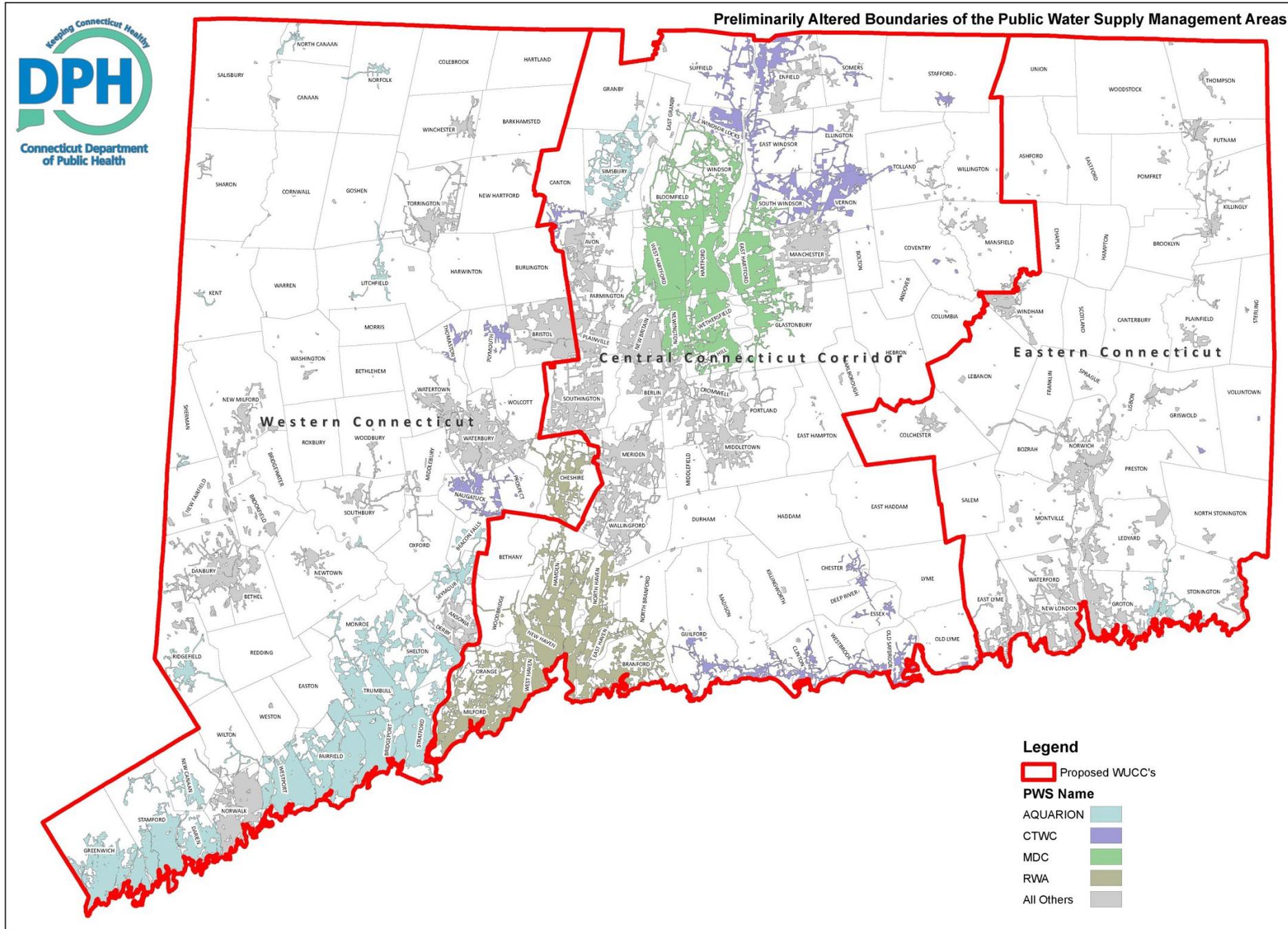
 PWS Service Areas

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Preliminarily Altered Boundaries of the Public Water Supply Management Areas



Legend

Proposed WUCC's

PWS Name

AQUARION

CTWC

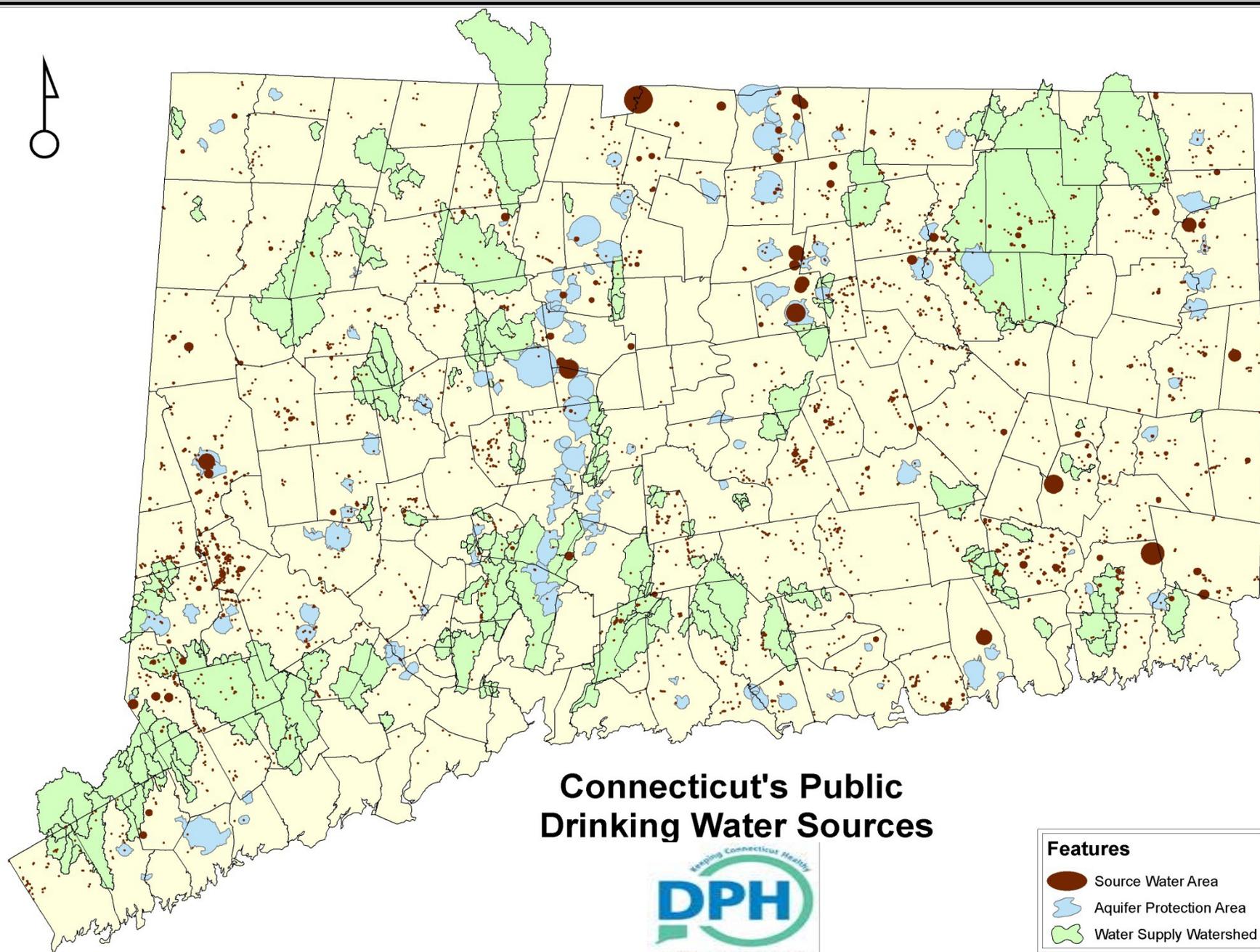
MDC

RWA

All Others

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Drinking Water Section Responsibilities-50 Staff

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- Administer drinking water protection laws
- SDWA, primacy since 1976
- Water quantity oversight – Margin of Safety
- Water quality review, over 500,000 samples per year
- Review and approve all significant improvements to public water systems
- Review and approve new treatment plants and systems
- Conduct sanitary engineering surveys, every 3 or 5 years
- Review and approve water supply plans and regional plans
- Responsive to all hazards, emergency preparedness
- Review of sale/use of 100,00 acres of water company land

DWS Responsibilities

- Drinking Water State Revolving Loan Fund \$150 million since 1999, with another \$200 million moving forward, infrastructure projects, repair, replace upgrade, extend to pollution
- Proactively protect public drinking water sources
- Proactive enforcement of violations, follow-up with system owner, issue NOVs and Orders to assure system compliance
- System takeover if failure, system review, violations, etc.
- Tracking of SDWA compliance and reporting to EPA
- Sources of bottled water in CT and bulk water hauling
- 24/7 coverage and response concerning public water system emergencies
- Track and report program measures
- Administer EPA grants since 1980s
- Assure compliance for all 2500 public water systems

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Reservoir system in Connecticut



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Small public water system well



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Why Public Health?

Water Supply Problems – 19th century

- Industries need water for production, fire safety, consumption
- Population growth in Cities
- Water supply inadequate
- Unfiltered
- Untreated water
- Unprotected, poor distribution systems
- Unsanitary conditions, waste disposal
- 1878 CT State Agency Public Health oversight created

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Public Health Concerns Water Supply 19th Century

- Significant public health issue - consuming drinking water, ground water and surface water
- Waterborne disease
- Gastrointestinal infection
- Typhoid, cholera, dysentery were prevalent
- Microorganisms in 19th century,
- Beginning of 20th century filtration, build technology, disinfection, sanitary protections at source, protection of raw water quality

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Typhoid Fever & Cholera

- Bacterial disease
- Transmitted in water contaminated with feces of infected person
- Occurrence of the disease fell sharply in the developed world with the rise of 20th century sanitation techniques (chlorination) and antibiotics
- 2013 – 161,000 deaths from Typhoid worldwide

Chance of dying from gastrointestinal infection before the age of 70

- **1900** – an American had a 1 in 20 chance
- **1940** – 1 in 3,333
- **1990** - 1 in 2,000,000
- **100,000 fold public health improvement in less than a century**

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Current Public Health Drinking Water Law

Abundant and Safe Water CT Laws – early 20th Century

- 25-32 purity and adequacy DPH to assure and responsible for oversight, broad authority
- 25-33 source approval
- 25-34 investigate and order to stop pollution or threat of pollution
- 25-43 no pollution, no one is allowed to pollute
- 19a assure sanitary conditions
- Regulation 19-13-B32

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Abundant & Safe Public Drinking Water – late 20th Century

- 25-32d water supply plans 1985
- 25-33c to n – Regional Plans and Coordinate water system plans
- 85 Water Supply Plans
- Updated plans periodically
- 25-32 & 25-37 – Water Company Lands
- 25-32b – Emergency Response
- 25-32 – Certified Operators

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Importance of an Abundant Supply of Safe and Pure Water for a Community

- Public health protection
- Preservation of public trust
- Allows for community growth
- Allows for a community to plan for future growth
- Assure sanitary conditions for multiple facilities, schools, nursing homes, restaurants, hospitals, town facilities
- Provides sustainability and viability for community
- Public safety, fire protection
- Economic growth
- Priceless

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Unique CT State Public Health Drinking Water Laws

- Multi-barrier approach
- Treatment and source water protection emphasized and required
- Use of high quality raw water sources, upland watersheds
- Aggressive and proactive laws to protect public health
- DPH Review of local development
- Prohibit sewage discharge in upland watershed areas
- Prohibit industrial waste discharge in upland areas

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Public Drinking Water Challenges of the Future

2015 Top Causes - Public Drinking Water Outbreaks

- Giardia
- Legionella
- Norovirus
- Shigella
- Campylobacter
- Salmonella
- Hepatitis A
- Cryptosporidium
- E. Coli

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Threats Remain

- 1993 Milwaukee Cryptosporidium
 - 400,000 sick and 70 deaths
- 2012 West Virginia – chemical contamination
- 2014 Ohio – Harmful Algal Blooms cyanotoxins
- 2016 – Flint Michigan – Lead and Legionella
- New potential emerging contaminants
- Drought/Climate Change/Extreme Weather
- 2015-Present - Per- and Polyfluoroalkyl Substances (PFAS)
- Legionella

Current EPA Lead & Copper Rule

- Compliance: testing, reporting, exceedance, 15 ppb action level, treatment
- 1,150 Community and NTNC systems required to test under the Lead and Copper Rule
- 170 non-transient non-community systems – schools
- 17 Public Water Systems out of compliance

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Flint Michigan



Flint Timeline

- Change of Source – April 2014 - water chemistry and public health impact
- State Responsible for City of Flint water system due to declared state of financial emergency, not traditional role
- Treatment System – April 2014 – October 2015 - using surface water treatment plant without corrosion inhibitor
- Complaints – start Spring 2014 – resident's concerned, public health issue
- October 13, 2014 – GM announces it will stop using the water at it Flint plant because it is corroding engine parts
- October 2015 Flint changes source of supply back to the Detroit supply
- January 2016 – EPA Headquarters issues Order to State of Michigan and City of Flint
- Significant public health issues continue

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Avoiding Flint MI

- Capable and Consistent State Agency DPH Oversight of the Safe Drinking Water Act
- Use only high quality sources of public drinking water
- Set clear public policy that humans deserve to consume high quality sources with an appropriate level of treatment
- Assure State DPH oversight of adequacy of public drinking water supply through existing planning mechanisms
- Assure strong public health policy in the protection of public health and the consumption of drinking water
- Assure Unique Laws that protect public drinking water in CT remain in effect
- Full fund the DPH concerning Public Drinking Water Oversight through appropriate levels of State and Federal funding

Emerging Contaminants: PFAS

- CT DPH has established a Drinking Water Action Level for the sum of the concentration of Five PFAS.
- DWS has developed a Strategy to address PFAS in public drinking water
- EPA Published its PFAS Action Plan in February

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EPA's PFAS Action Plan: A Summary of Key Actions



EPA's PFAS Action Plan outlines concrete steps the agency is taking to address PFAS and to protect public health.

EPA's Per- and Polyfluoroalkyl Substances (PFAS) Action Plan:

- Demonstrates the agency's critical national leadership by providing both short-term solutions and long-term strategies to address this important issue.
- Provides a multi-media, multi-program, national research and risk communication plan to address this emerging environmental challenge.
- Responds to the extensive public input the agency has received over the past year during the PFAS National Leadership Summit, multiple community engagements, and through the public docket.

EPA is taking a proactive, cross-agency approach to addressing PFAS. The key actions EPA is taking to help provide the necessary tools to assist states, tribes, and communities in addressing PFAS are summarized below.



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EPA is moving forward with the Maximum Contaminant Level (MCL) process for PFOA and PFOS—two of the most well-known and prevalent PFAS chemicals. The Agency is also gathering and evaluating information to determine if regulation is appropriate for a broader class of PFAS.

The next step in the Safe Drinking Water Act process for issuing drinking water standards is to propose a regulatory determination. This provides the opportunity for the public to contribute to the information the EPA will consider related to the regulation of PFAS in drinking water.

CLEANUP

EPA continues strengthening enforcement authorities and clarifying cleanup strategies through actions such as designating PFOA and PFOS as hazardous substances and developing interim groundwater cleanup recommendations.

This important work will provide additional tools to help states and communities address existing contamination and enhance the ability to hold responsible parties accountable.

TOXICS

EPA is considering the addition of PFAS chemicals to the Toxics Release Inventory and rules to prohibit the uses of certain PFAS chemicals.

The Toxics Release Inventory would make information about certain PFAS releases reported by certain industrial sectors and federal facilities available. Additionally, the TSCA new chemicals program will help manage and, as necessary, reduce risk to human health and the environment from new PFAS.

MONITORING

EPA will propose nationwide drinking water monitoring for PFAS under the next UCMR monitoring cycle.

Monitoring results will improve understanding of the frequency and concentration of PFAS occurrence in drinking water, which can be used to inform regulatory action.

RESEARCH

EPA is rapidly expanding the scientific foundation for understanding and managing risk from PFAS.

Improved detection and measurement methods, additional information about PFAS presence in the environment and drinking water, better understanding of effective treatment and remediation methods, and more information about the potential toxicity of a broader set of PFAS will help EPA, states, and others better manage PFAS risks.

ENFORCEMENT

EPA uses enforcement tools, when appropriate, to address PFAS exposure in the environment and assist states in enforcement activities.

EPA seeks to support communities that have PFAS releases by using federal enforcement authorities, where appropriate.

RISK COMMUNICATIONS

EPA will work collaboratively to develop a risk communication toolbox that includes multi-media materials and messaging for federal, state, tribal, and local partners to use with the public.

This will help ensure clear and consistent messages to the public and will help address concerns related to PFAS.

DWS PFAS Strategy: Proactive

- Using existing laws that reduce risks to public health
 - [CGS 22a-471](#) protects consumers of public drinking water from PFAS in the municipal waste stream.
 - [RCSA 25-33d-3\(i\)](#) Water supply plan updates: source vulnerability assessments to include potential PFAS generators.
 - [RCSA 19-13-B102\(b\)](#) Annually inspection of public drinking water supply watersheds must include the potential PFAS generators.
 - Requiring all applicants for new public drinking water supplies to test the water for PFAS before receiving approval for use under [CGS 16-262m](#) and [CGS 25-32](#)
 - Working internally with other DPH programs and externally with sister State agencies, USEPA and professional working groups
 - Providing information through [Circular Letters](#)

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DWS PFAS Strategy: Capacity to Respond

- The DWS PFAS team maintains subject matter expertise on the latest PFAS developments.
- Staff is trained to collect drinking water samples for PFAS analysis.
- Staff is experienced in responding to identified PFAS contamination.
- Has established priority ranking points for funding of projects to deal with emerging contaminants including PFAS through the Drinking Water State Revolving Fund.

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What Northeastern States are doing about PFAS

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	NY	NJ	NH	VT	MA	RI
Providing Drinking Water Sampling and Testing	✓		✓	Pilot sampling program at schools to be expanded	Targeted for vulnerable systems near PFAS generators	Investigative and targeted sampling schools, daycares, water bottling plants and UCMR3 utilities w/lower reporting limits
Extending water mains, providing bottled water or treatment	✓		✓	✓	✓	✓
Conducting Biomonitoring	✓	✓	✓	✓		
Regulating PFAS	Proposed MCLs: PFOA 10 ppt PFOS 10 ppt PFOA and PFOS Hazardous Substance State Superfund Program	DW MCL: 19 ppt PFNA Proposed: 13 ppt PFOS & 14 ppt PFOA	Proposed MCLs (ppt): PFOA 38 PFOS 70 PFOA+PFOS 70 PFHxs 85 PFNA 23	DW MCL: 20 ppt for sum of 5 PFAS Hazardous Substance State Superfund Program	Initiating rulemaking to set MCLs for one or more PFAS	Using EPA HA of 70 ppt for PFOA and PFOS, Considering using sum of 5.
State lab capacity to analyze samples	✓				Proposed	✓
Dept. of Defense lead at military installations	✓		✓		✓	



Challenges of the Future

- Maintain high quality sources for human consumption
- Assure public health protection
- Minimize risk as watersheds are developed and climate change affects source water
- Maintain highly skilled technical staff
- Modernize for efficiency, use of technology
- Addressing new SDWA rules
- Keeping historic public health law current
- Informing the public of the proactive public health role in safe and adequate public drinking water
- Continuing infrastructure investment and upgrades
- Continuing to plan to meet future demands
- Addressing water conservation, water reuse, and use of the “purple pipe”

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CT Planning Initiatives

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- WUCC – State Law 25-33c to 25-33n
 - 2 year process, initiated June 2016
 - Water Supply
- State Water Plan – State Law 22a-358
 - Water Planning Council, DEEP, OPM, DPH and PURA



Moving Forward: The Next 20 years

- Address water quality issues
- Address water quantity needs, plan for the future
- Proactively address and emphasize public health needs
- Stress High Quality drinking water for human consumption
- Emphasize system consolidation in identified areas of need
- Work to address identified system sustainability/resiliency issues

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Connecticut's Approach to Public Drinking Water and Public Health Protection

- Public Health Protection
- Minimize risk to public health
- Proactive & Preventative
- Regulatory
- High Quality Protected Raw Water Sources
- Adequate levels of treatment
- Responsive/adaptable/skilled/knowledgeable technical staff
- 24/7

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Thank You

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