Connecticut Department of Public Health

Public Drinking Water Roles, Responsibilities, Public Health & Future Challenges

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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
- Challenges of the Future

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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

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

Connecticut Public Water Systems

- 2,550 Public Water Systems
  - 2,000 Non-Community
  - 550 Community
- Largest number of systems of the New England states
- Considered a Medium Size State by the Environmental Protection Agency

Department of Public Health
Drinking Water Section

Responsibilities

DPH
Drinking Water Section

- 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
- No waterborne disease outbreaks

CT DPH Drinking Water Section

- 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
  - ground water rule
  - revised total coliform rule
- 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

Keeping Connecticut Healthy

DPH

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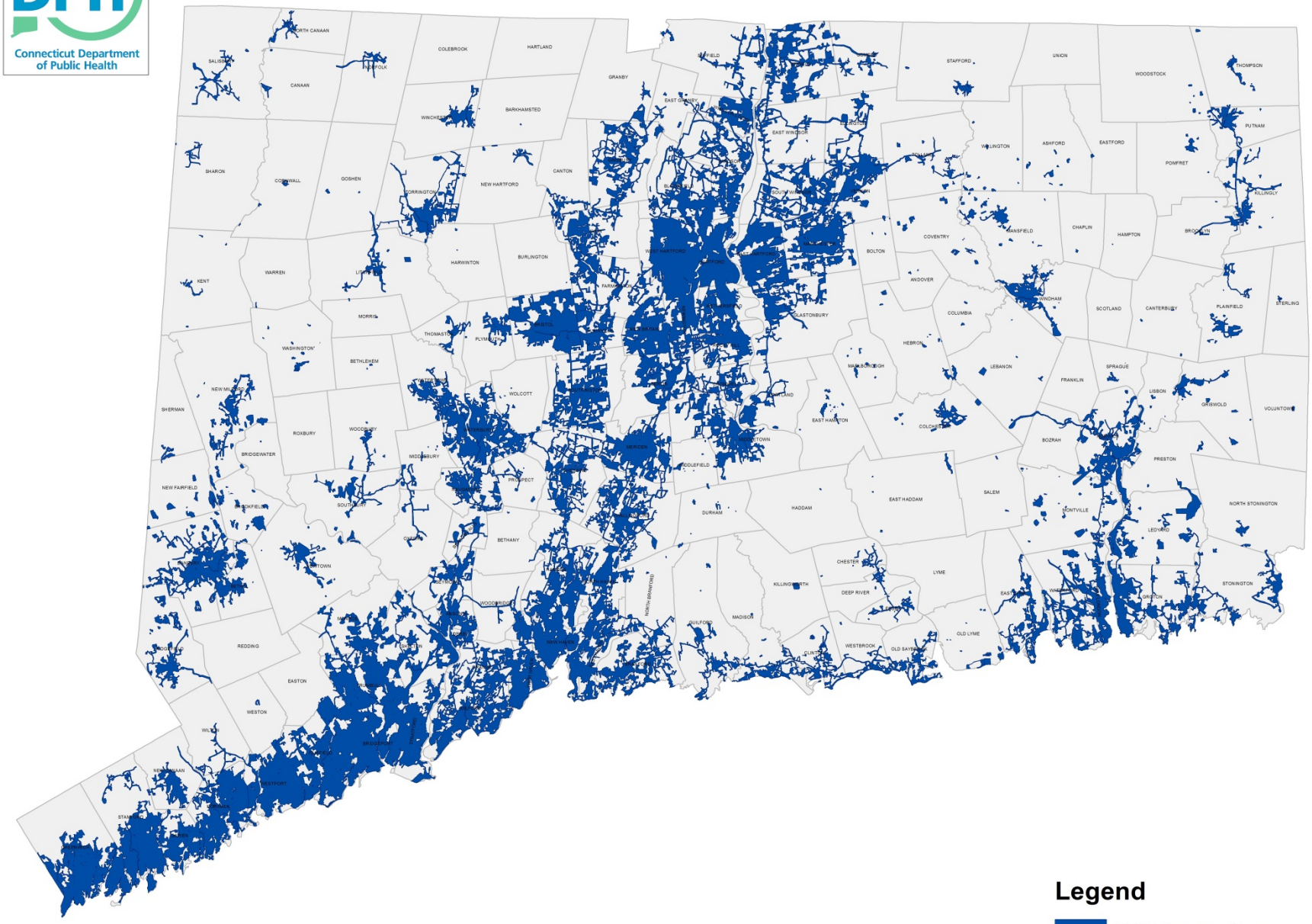
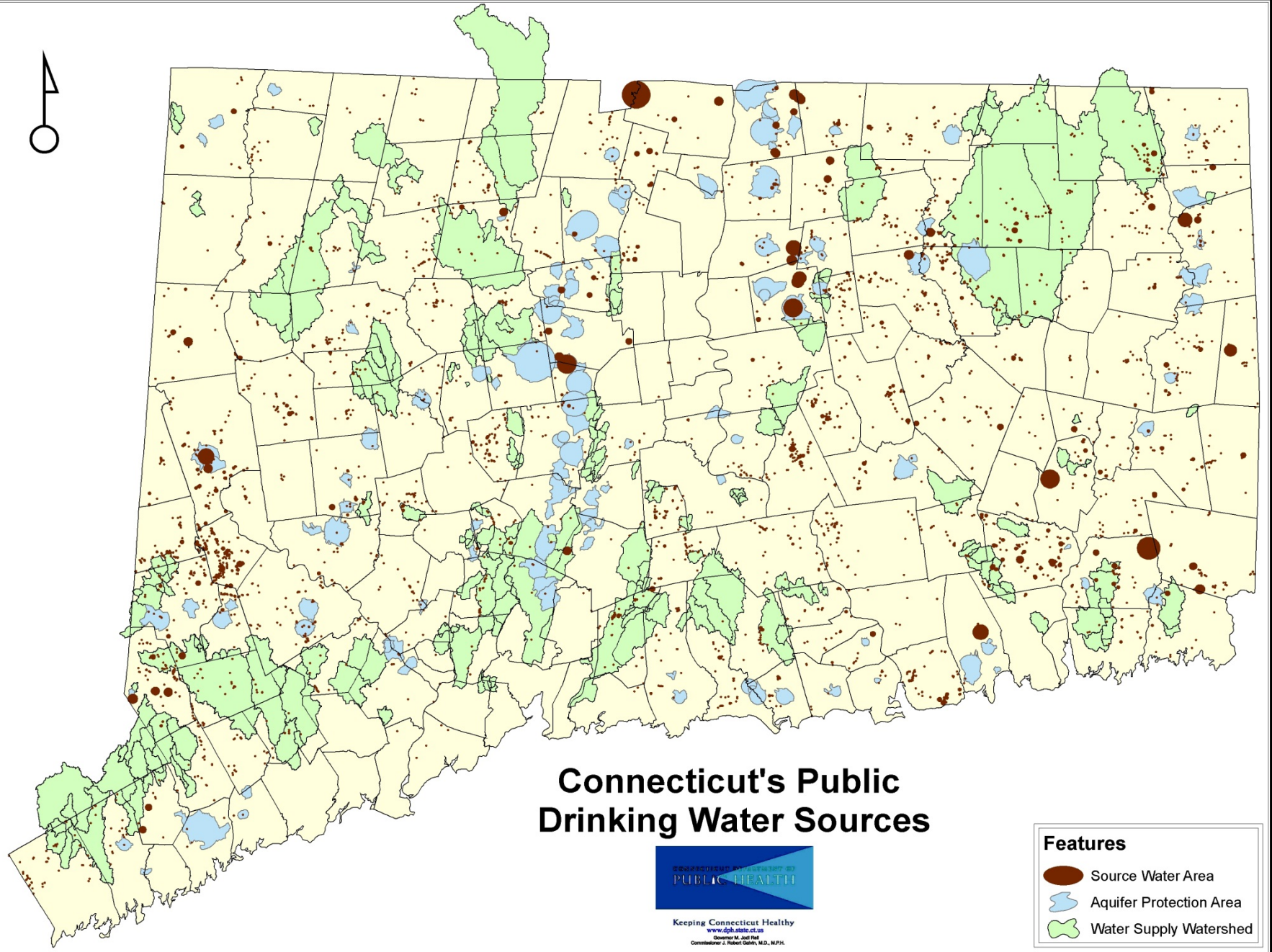
Public Water Supply Service Area




Connecticut's Public
Drinking Water Sources
PUBLIC HEALTH
Keeping Connecticut Healthy
www.dph.state.ct.us
Governor M. Jodi Rell
Commissioner J. Robert Galvin, M.D., M.P.H.
Features
Source Water Area
Aquifer Protection Area
Water Supply Watershed

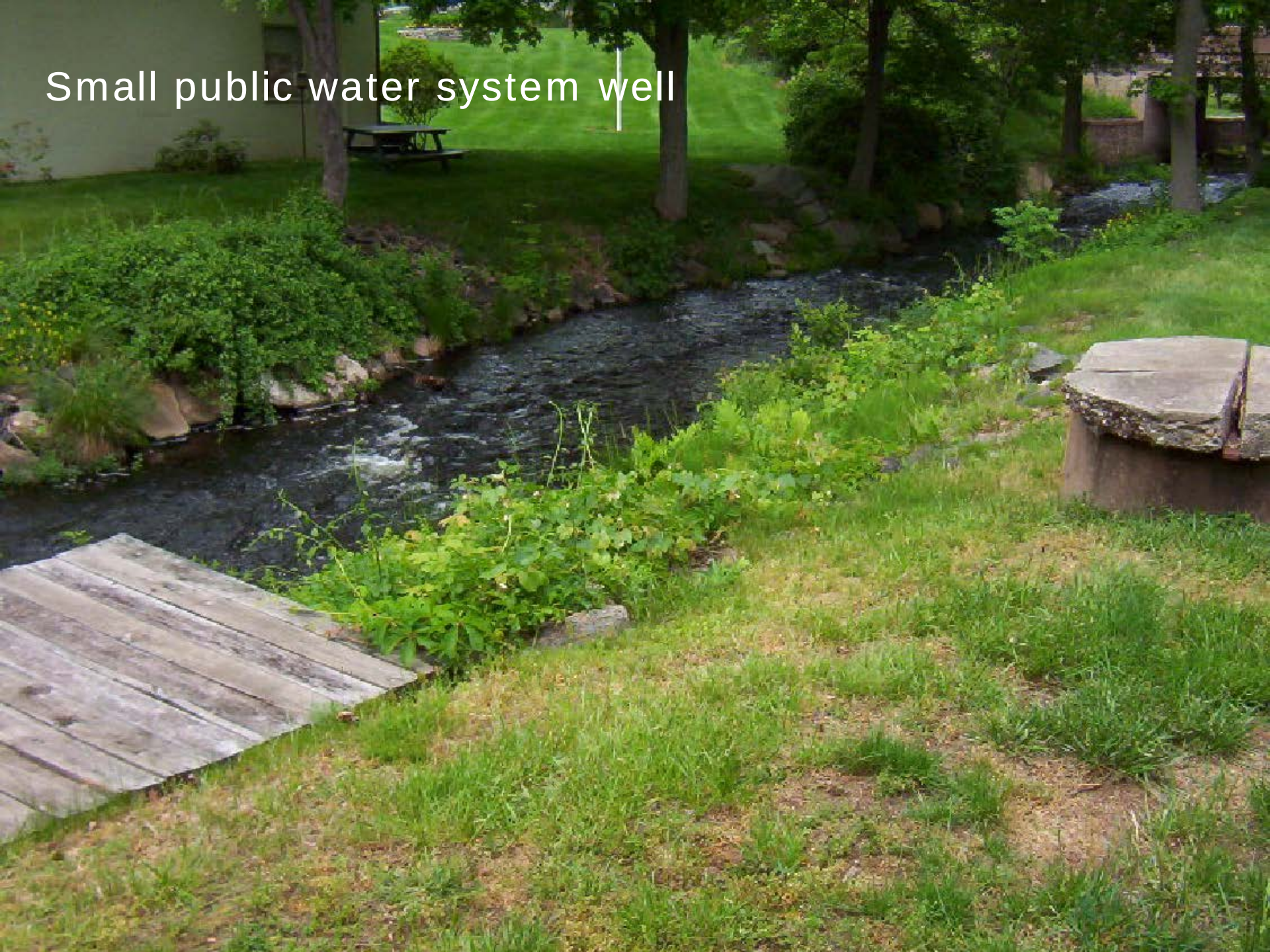
Responsibilities – 50 Staff

- 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

Reservoir system in Connecticut


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

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

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

Current Public Health Drinking Water Law

Abundant and Safe Water
CT Laws – early 20th Century

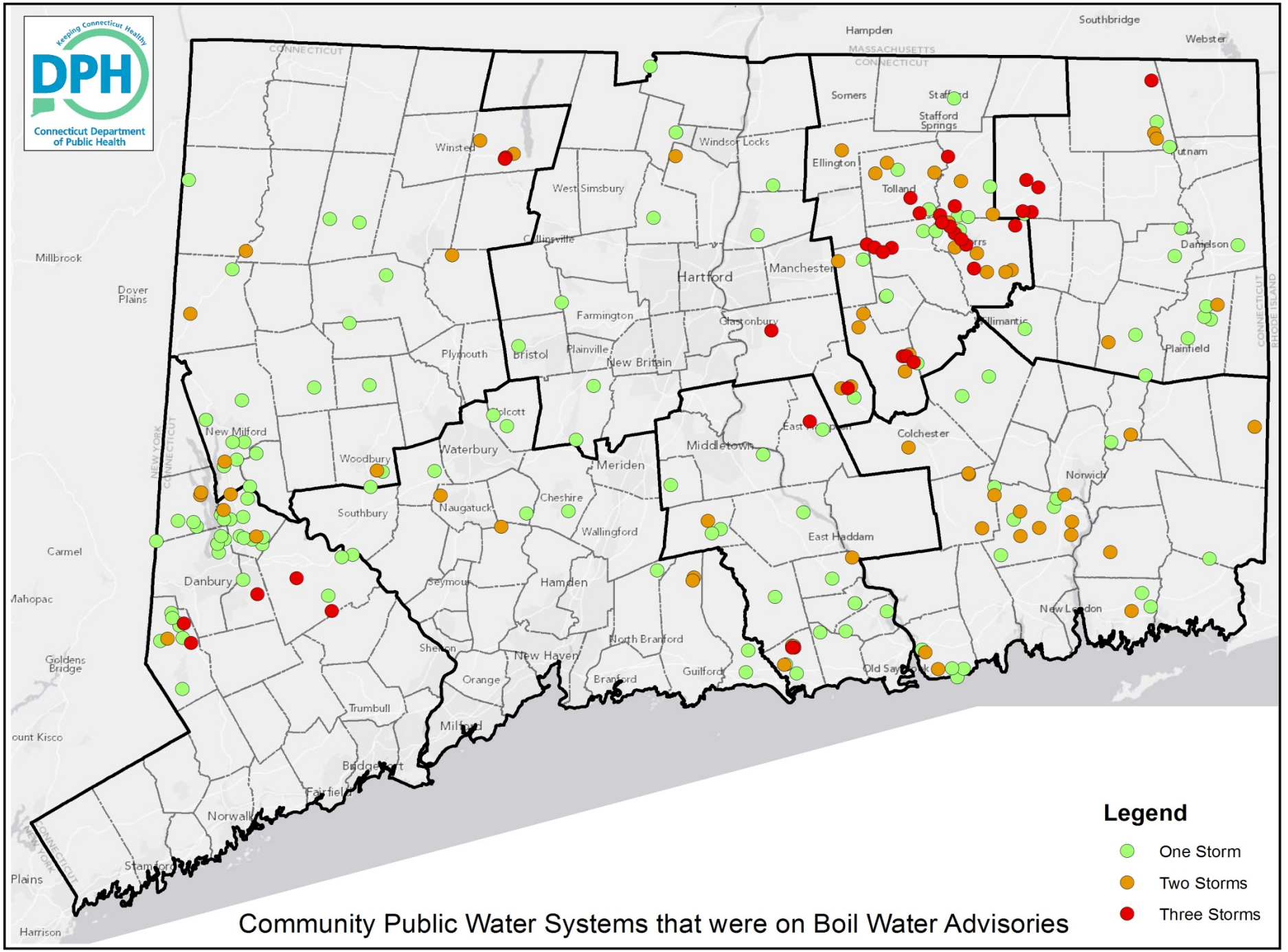
- 25-32 purity and adequacy DPH to assure and responsible for oversight, broad authority
- 25-33 source approval
- 25-34 investigate and order to stop pollution or threat of pollution
- 25-43 no pollution, no one is allowed to pollute
- 19a assure sanitary conditions

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

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



Community Public Water Systems that were on Boil Water Advisories

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

Benefits of upland reservoir

- Maximize protection
- Source water protection
- Water quality protection, high quality source water
- Limit threats, minimize public health threat
- Limited density land use
- Watershed protection land
- Water company land law
- DPH municipal review laws and notice
- State policy protection
- Lower density, large lot zoning
- Public Act 85-279, watershed inspection & review annual since early 1900s
- Reduce the need for chemical treatment, reduce costs of supply
- Improved reliability of raw water quality, better treatment control due to consistent raw water quality

Public Drinking Water Challenges of the Future

Top Causes
Public Drinking Water Outbreaks

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

Giardia

- Microscopic parasite
- Causes diarrheal illness
- Found in water contaminated with human or animal feces
- Protected by outer shell
- Tolerant to chlorine
- Water most common method of transmission

Legionella disease

- Type of bacterium
- Named in 1976 following outbreak at American legion convention
- Type of pneumonia lung infection
- Disinfection addresses

Norovirus

- Very contagious virus, new strains emerge every 2 to 4 yrs
- Contaminated food, person or water, touching contaminated surfaces
- Water contaminated with feces
- Causes acute gastroenteritis, stomach pain, nausea, and diarrhea
- Serious for young and older adults
- Maintain sanitary conditions, disinfection
- Worldwide leader in acute gastroenteritis (inflammation of stomach/intestines)

E coli

- Large group of Bacteria
- Most strains harmless
- Others can make you sick, diarrhea, UTI, and other illnesses
- Unsanitary conditions in water system
- Lack of appropriate treatment

Cryptosporidium

- Microscopic parasite
- Causes diarrheal disease
- Outer shell, survive outside the body for a long time,
- Very tolerant to chlorine disinfection
- Water most common method of transmission
- Milwaukee outbreak 1993

Threats still remain

- 1993 Milwaukee Cryptosporidium
  - 70 deaths, 400,000 sick
- 2012 West Virginia – chemical contamination
- 2014 Ohio – Harmful Algal Blooms cyanotoxins
- New potential emerging contaminates

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”

Issues, Concerns, Challenges and Opportunities

- Sustainability of Small Community systems
- Number of Non-community systems
- System Capacity and Asset Management
- Addressing Climate change
- Emphasis on Water Supply Planning
- Aging Certified Operators
- Town Government, Council of Governments and growth of public drinking water systems
- High Quality Source List

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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Thank You

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