

Planning your Watershed Survey

Eric McPhee
Supervising Environmental Analyst
Source Assessment/Protection Unit
CTDPH-Drinking Water Section



Welcome

- Agenda
- Thank you MDC
- No such thing as a free lunch
- CEUs/Certificates/Expectations

2017 Certificate Training for Public Water System Watershed Inspectors



8:00 am to 8:30 am	Registration			
8:30 am to 8:45 am	Welcome and Introduction by Lori Mathieu, Chief, Drinking Water Section			
8:45 am to 9:15 am	Planning your Watershed Survey		Eric McPhee, Supervising Environmental Analyst	CT DPH, Drinking Water Section
9:15 am to 10:00 am	Septic System overview: What should I look for?		Matt Pawlik, Environmental Analyst 3	CT DPH, Environmental Eng. Program
10:00 am to 10:20 am	Morning Break			
10:20 am to 10:45 am	Case Study #1: Meriden Agricultural Practices		Dennis Waz, Director of Public Utilities	Meriden Water Department
10:45 am to 11:30 am	Working with Agricultural Property Owners		James Hyde, State Agronomist	USDA/NRCS
11:30 am to 12:30 pm	Lunch (on your own)			
12:30 pm to 1:15pm	Case Study #2: Groton - Stormwater		Karl Acimovic, P.E., L.S.	Groton Utilities
1:15 pm to 2:00 pm	Case Study #3: : Ledyard Recycling Facility		Joseph Larkin, Zoning and Wetlands Official	Town of Ledyard
2:00 PM	Adjourn			



Expectations/Benefits

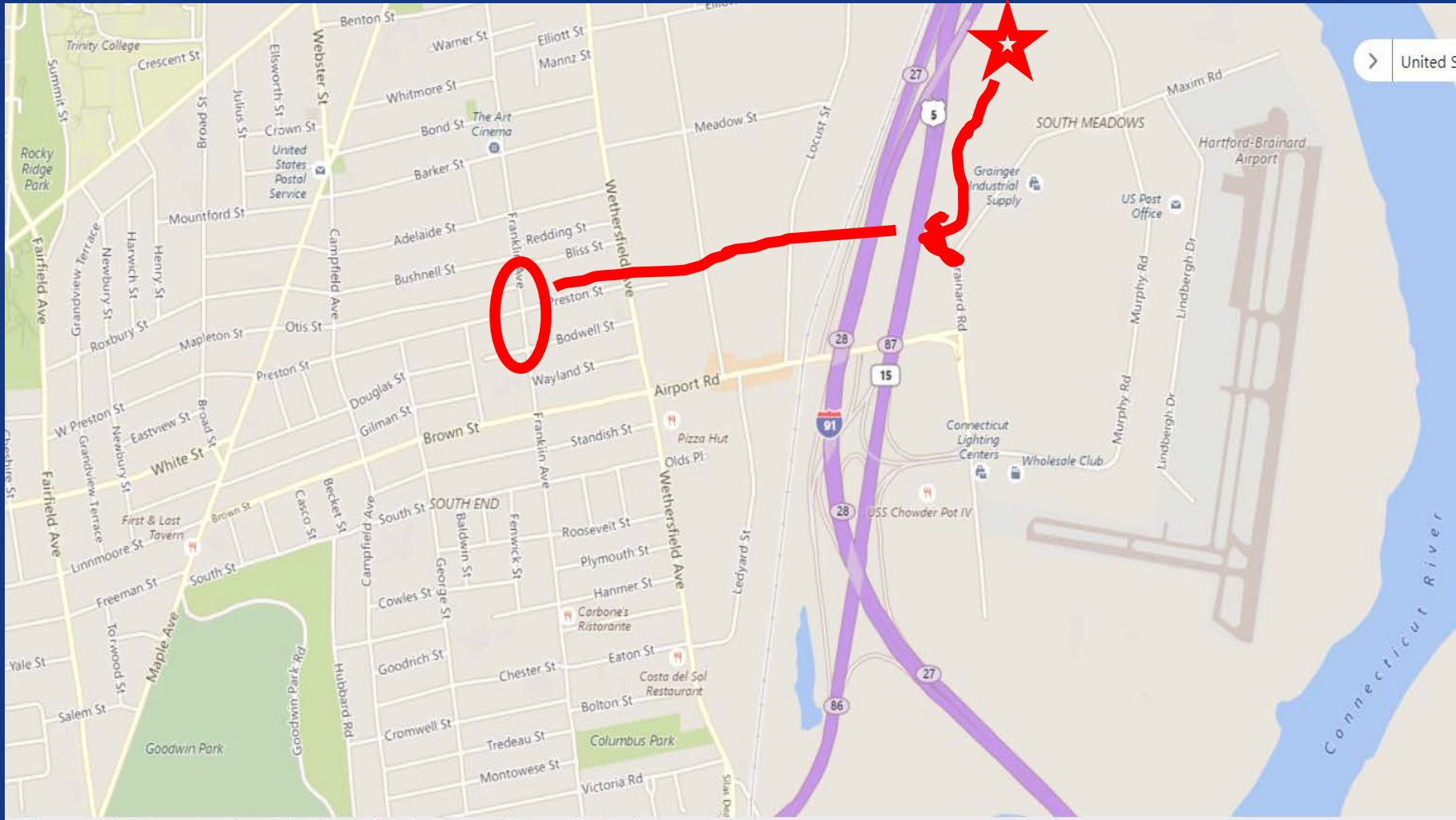
- A well-trained, committed and ethical operator workforce, working to assure regulatory compliance, is essential for the security and safety of our public water supplies.
- As watershed inspector and water operator knowledge increases so too does public health protection.
- Expectations – pay attention, phones on vibrate, please step out if you have to take a call
- No handouts – all materials, presentations will be published on DWS website



Certificates/Contact Hours

- Training Course Certificates/TCHs:
- Certificates will be issued at the end of today's course,
- issued only to those who have signed the roster - course is approved for 4.0 TCHs – applicable to all certification types,
- issued only to those who attend entire course

Lunch



Purpose of Training?

- Protect and Preserve our drinking water
- An effective watershed inspection program is an integral part of source water protection and a multi-barrier approach to ensuring safe drinking water.
- Watershed inspections are an ongoing effort - the report captures the previous year's work.
- Watershed inspections are a critical component of source protection
- Consider all things that may impact your water supply.

Drinking Water Source Protection

- A group of practices to prevent the contamination of surface and groundwater sources that are used as a public drinking water source of supply



Why Source Water Protection?

- Protect and preserve drinking water sources
- Can not rely on treatment technology alone
- Minimize risk to public health
- Limit human exposure, new emerging contaminants
- Minimize treatment, infrastructure and O&M costs, saving \$\$



Watershed Inspection Overview

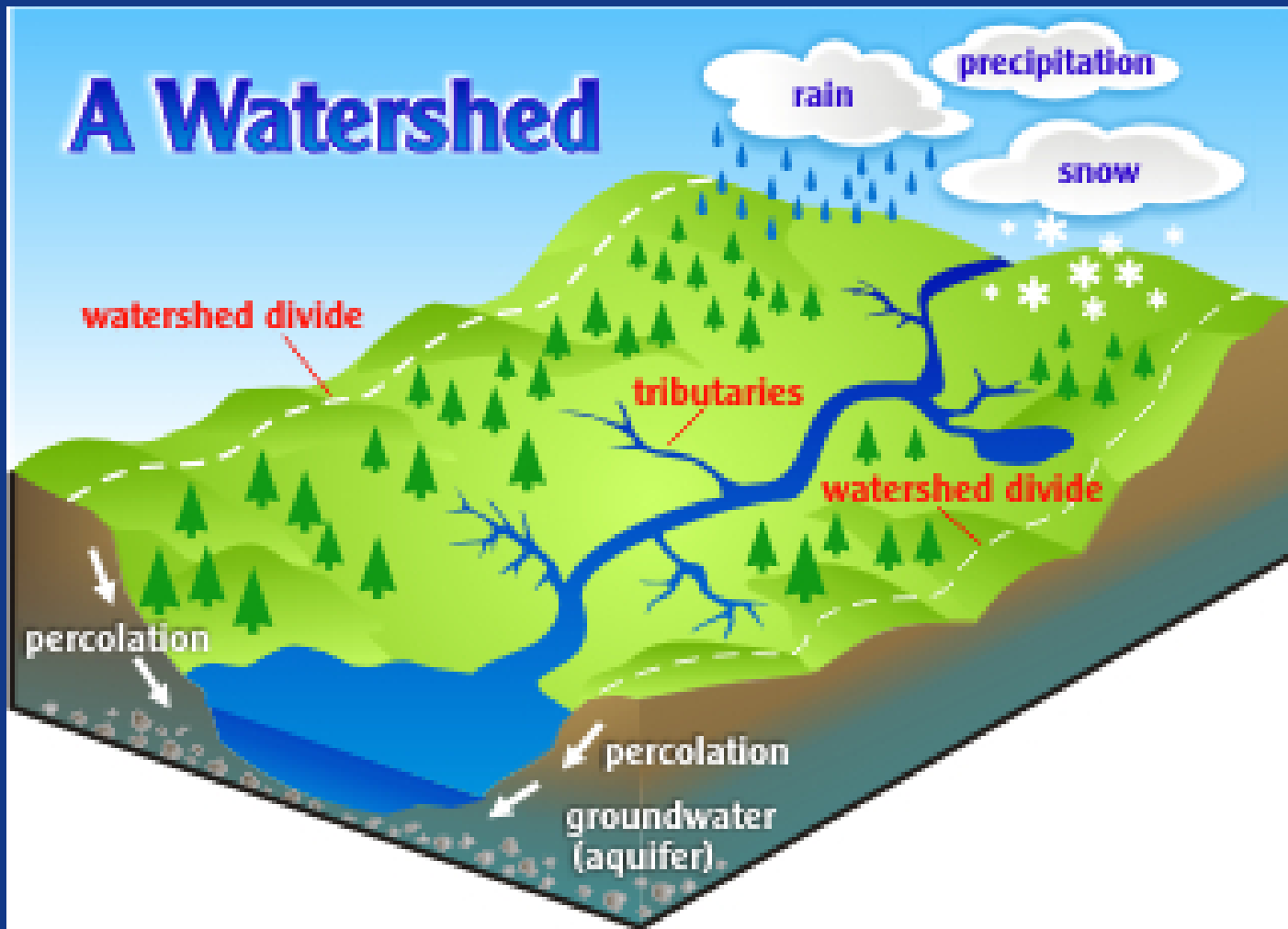
- RCSA Section 19-13-B102(b): **Watershed survey.** A public water system using surface water as an active source of supply shall make a sanitary survey of the watershed to the intake at least annually. A report on the survey shall be submitted to the Department by March 1 each year covering the preceding calendar year.



Watershed

- DPH definition: The area of land that drains by natural or man-made causes to a public drinking water supply intake

Watershed





Watershed Surveys

1. Planning the Survey
2. Conducting the Survey
3. Follow-up
4. Submitting the Report

1. Planning

- No properties should be excluded from consideration: residential, commercial, industrial, agricultural, open/protected space, municipal, yours (water company land)
- Maintain relationships with partners to address shared problems
- Know your watershed(s)
- Maintain an inventory of historical concerns year round
- More frequent visits to problem areas
- Don't rely solely on last year's list
- Use technology to your advantage

Planning Tools

- Consider a Geographic Information System (GIS) as a planning tool:
 - Watershed
 - Sewer/septic
 - Zoning
 - Previous inspections/problems
 - Parcels
 - Other Data (DPH, DEEP, Municipal, etc.)

In Beyond <None>

Out Beyond <None>

Clear Limits

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Swipe

Symbology

Masking

Display Filters

Import

Type Unit

Face Culling

Lighting

3D

Visibility Range

Effects

Drawing

Extrusion

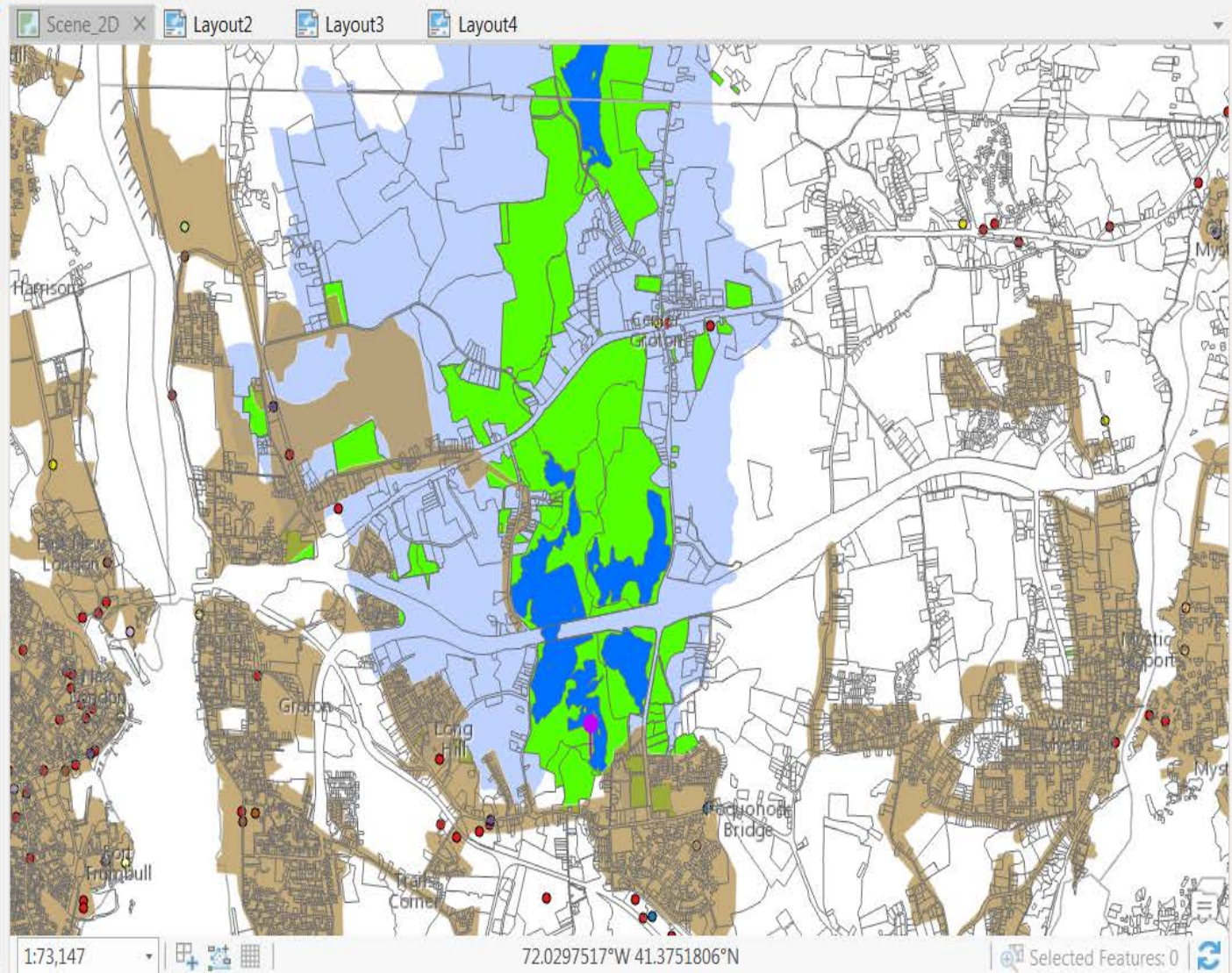
3D

Contents

Search

Drawing Order

- Scene_2D
 - GISPROD.SDE.PARCELS
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 - World Light Gray Reference
 - Remediation_Projects_GISS_Layer
 - GISPROD.SDE.SewerServiceAreas
 - GISPROD.SDE.DWD_TOWNS
 - GISPROD.SDE.PWS_RESERVOIR_INTAKES
 - GISPROD.SDE.PWS_RESERVOIRS
 - PWS_Surface_Water_Company_Lands
 - GISPROD.SDE.PWS_WATERSHEDS



ArcGIS Pro - Watershed Inspections - Scene_2D

Project | Map | Insert | Analysis | View | Edit | Imagery | Share | Appearance | Labeling | Data

Visibility Range: In Beyond <None>, Out Beyond <None>, Clear Limits. Effects: Swipe. Drawing: Symbology, Masking, Display Filters, Import. Extrusion: Type, Unit. 3D: Face Culling, Lighting.

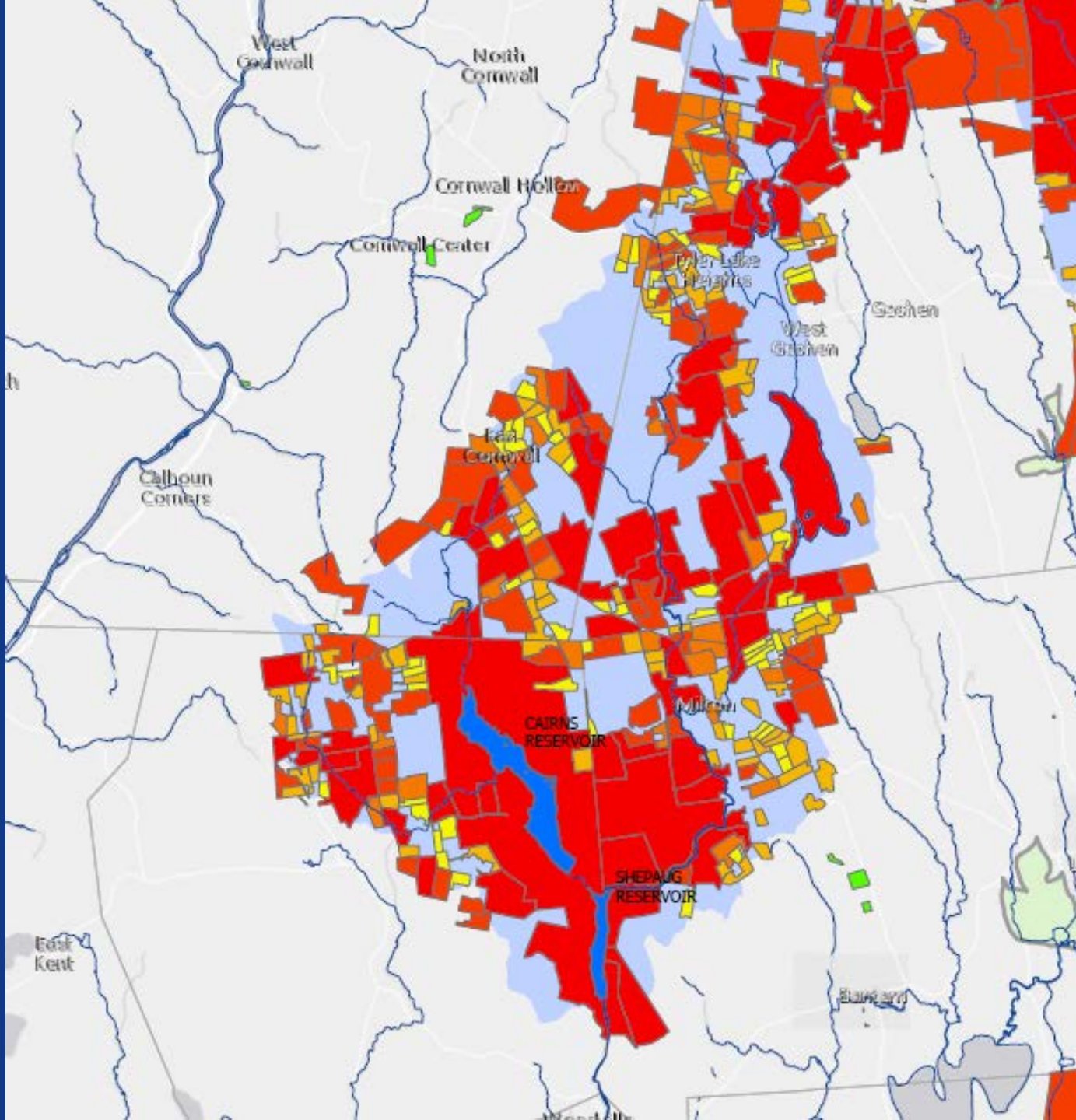
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 - GISPROD.SDE.DWD_TOWNS
 - GISPROD.SDE.PWS_RESERVOIR_INTAKES
 - GISPROD.SDE.PWS_RESERVOIRS
 - PWS_Surface_Water_Company_Lands
 - GISPROD.SDE.PWS_WATERSHEDS

1:6,283 | 72.0175950°W 41.3647177°N | Selected Features: 0



"I don't have access to GIS!"



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

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Local Health Departments

Drinking Water Topics A to Z

DPH Main Menu



H.I.P.A.A NOTICE

HealthCare Reform



Source Water Assessment and Protection

The Source Protection and Assessment Unit is responsible for the purity and adequacy of Connecticut's approximately 4,000 surface and ground water drinking water supply sources. The program elements coordinate, manage, and regulate source protection through the enhancement and oversight of existing source protection laws and regulations, integration with water supply planning, education of local land use officials, and involvement with stakeholders on a continuous basis. For more information view the Source Water Protection Unit [Fact Sheet](#) (pdf)

Forms

- [Watershed or Aquifer Area Project Notification Form](#) (pdf)
- [Class III Water Company Land Verification Form](#) (pdf)
- [Water Company Land Permit Application](#) (doc)
- [Watershed Sanitary Survey Inspection Form](#) (excel)
- [Well Site Permitting and Application](#)

Source Protection Resources

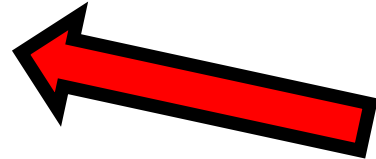
- [Connecticut Department of Energy and Environmental Protection's Aquifer Protection Area Program](#)
- [Connecticut Source Water Collaborative](#)
- [Drinking Water Quality Management Plan](#)
- [General Construction Best Management Practices for Sites within a Public Drinking Water Supply Area](#) (pdf)
- [Summary of CT Statutes & Regulations for the Protection of Public Drinking Water Sources](#) (pdf)
- [2012 DPH/DEEP Memorandum of Agreement for the Use of Aquatic Pesticides in Public Water Supply Watersheds](#) (pdf)

Source Water Protection Reports

- [Report of the Connecticut Council on Water Company Lands 1977](#) (pdf+)
- [Water Quality Task Force 1996 Report](#) (pdf)
- [Connecticut's SWAP Assessment Reports and Findings](#)

Watershed Assessment & Protection

- [Watershed Sanitary Survey Inspection Form](#) (excel)
- [Watershed Inspection Guidelines](#) (pdf)
- [Public Water Supply Watershed Map Viewer](#) (ArcGIS.com)
- [2015 Watershed Inspector Training](#)
- [2017 Watershed Inspector Training](#)



ArcGIS Public Water Supply Watersheds

MODIFY MAP [Sign In](#)

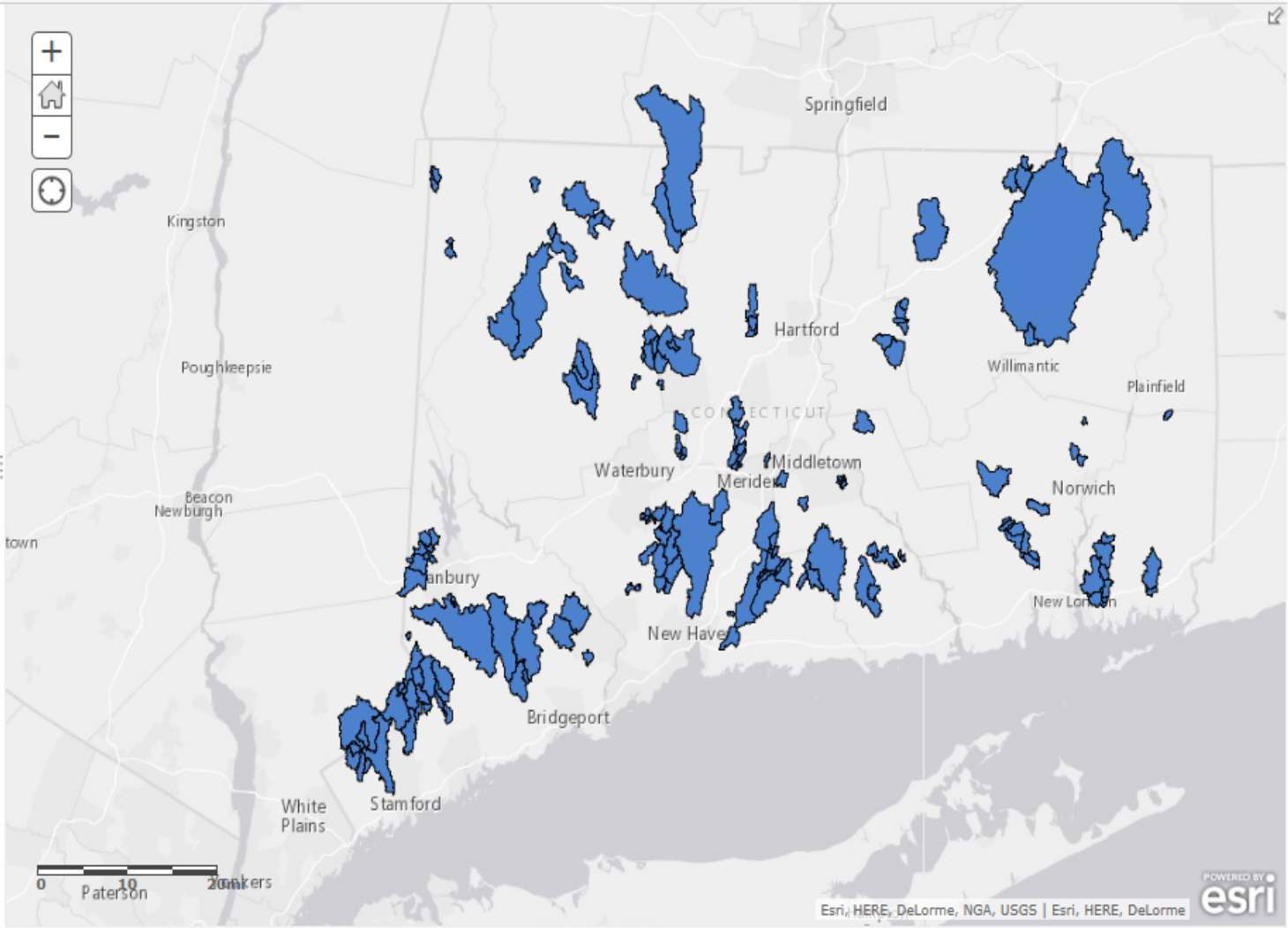
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Share | Print | Measure | Find address or place

About | Content | Legend

Legend

PWS_WATERSHEDS



ArcGIS - Public Water Supply Watersheds

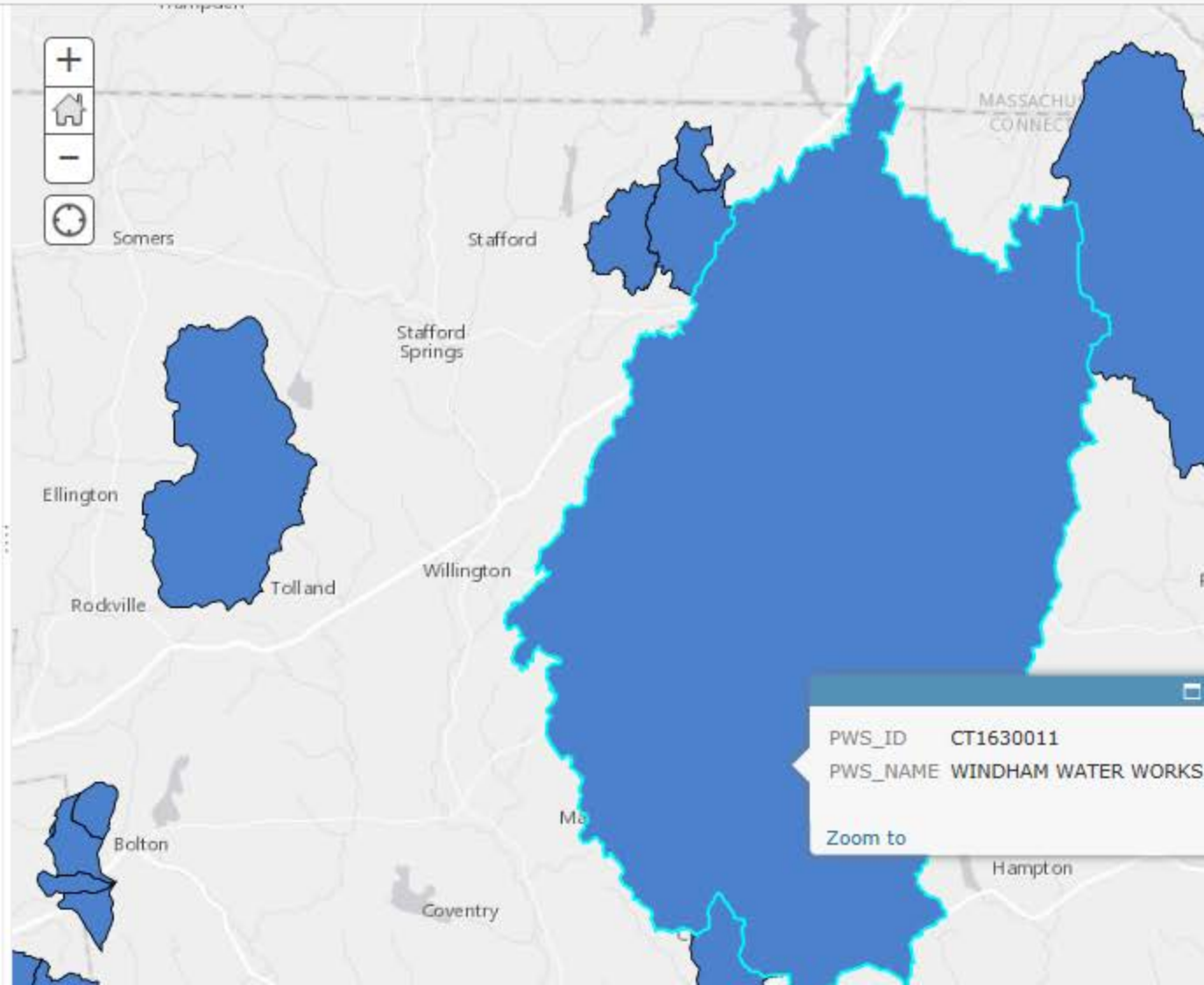
Details | Basemap

Share | Print | Measure | Find address or place

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Legend

PWS_WATERSHEDS



PWS_ID CT1630011
 PWS_NAME WINDHAM WATER WORKS
 Zoom to

Browser address bar: <http://www.arcgis.com/home/webmap/viewer.htm?webmap=5166dc08d4694bcd8b8b4077555e57a&>

Browser tabs: Google Maps, Connecticut Environmental..., ctecoapp1.uconn.edu, ArcGIS - Public Water Su...

Page Title: ArcGIS - Public Water Supply Watersheds

Page Actions: MODIFY MAP, Sign In

Map Tools: Share, Print, Measure, Find address or place

Map Legend:

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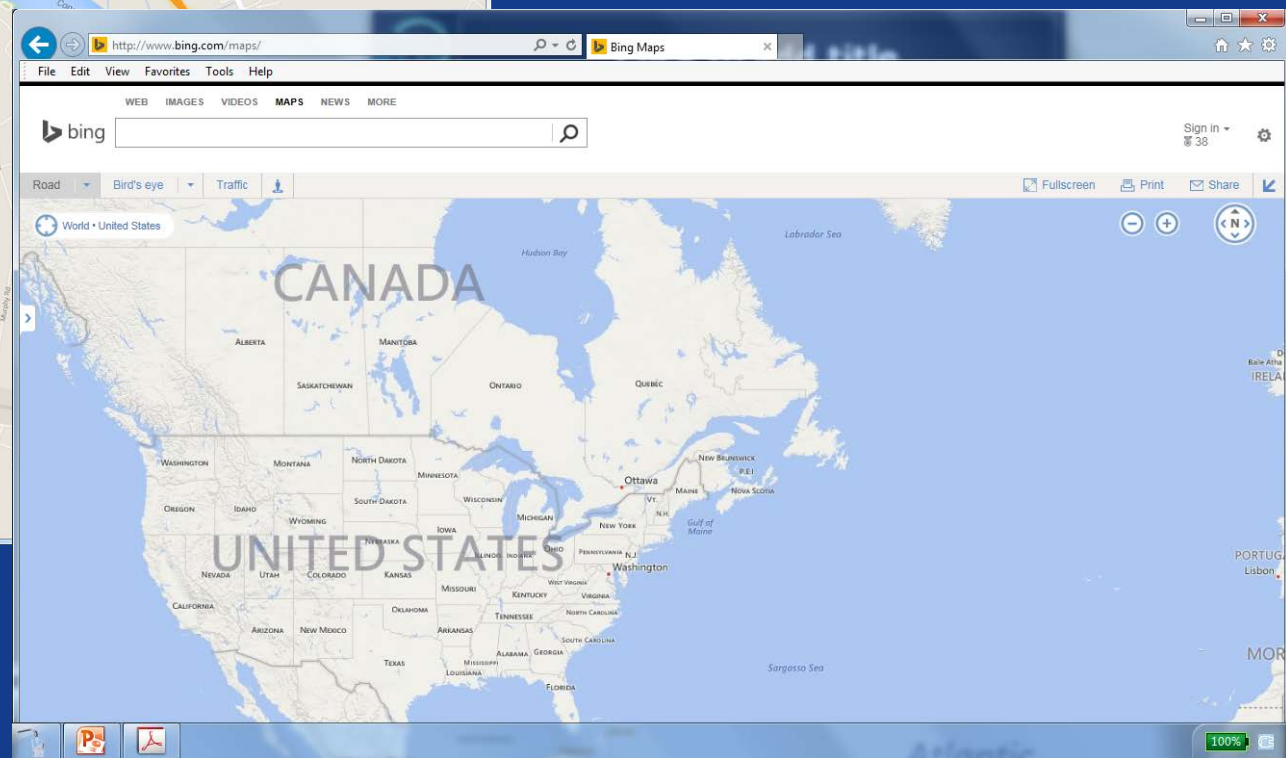
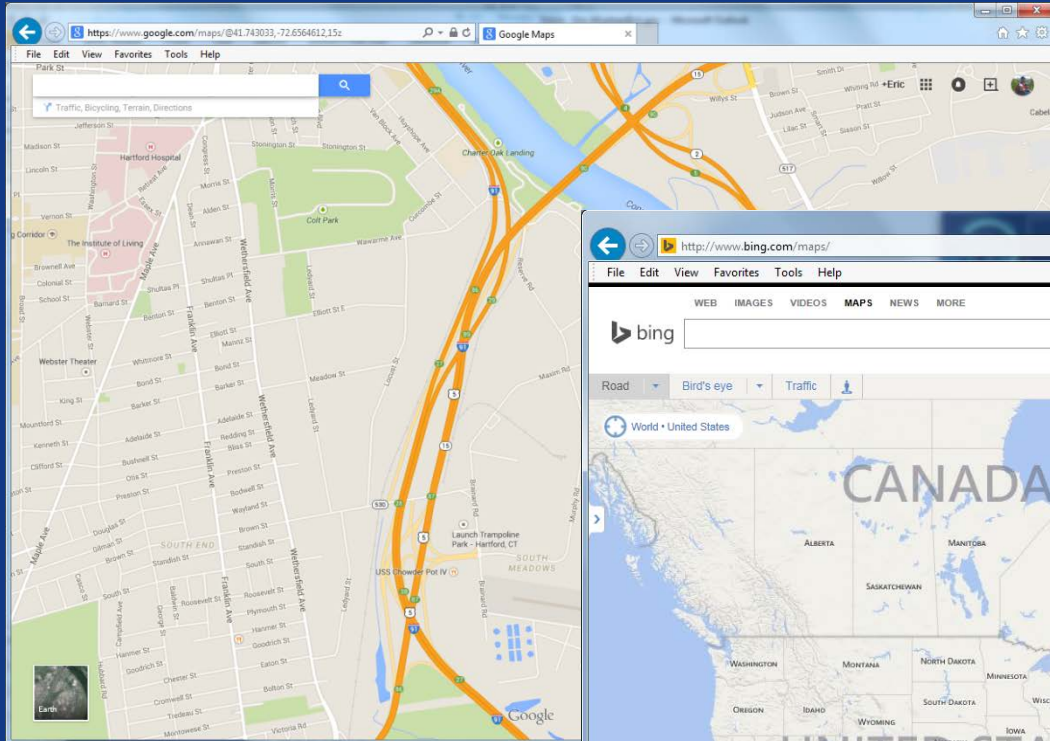
- PWS WATERSHEDS
- Imagery

Map Footer: Esri.com | Help | Terms of Use | Privacy | Contact Esri | Report Abuse

Map Footer: DigitalGlobe, GeoEye, Microsoft, CNES/Airbus DS

Map Footer: powered by **esri**

More Free Help – Aerial Photography





Directions

Traffic

My Places

Print

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Full Screen

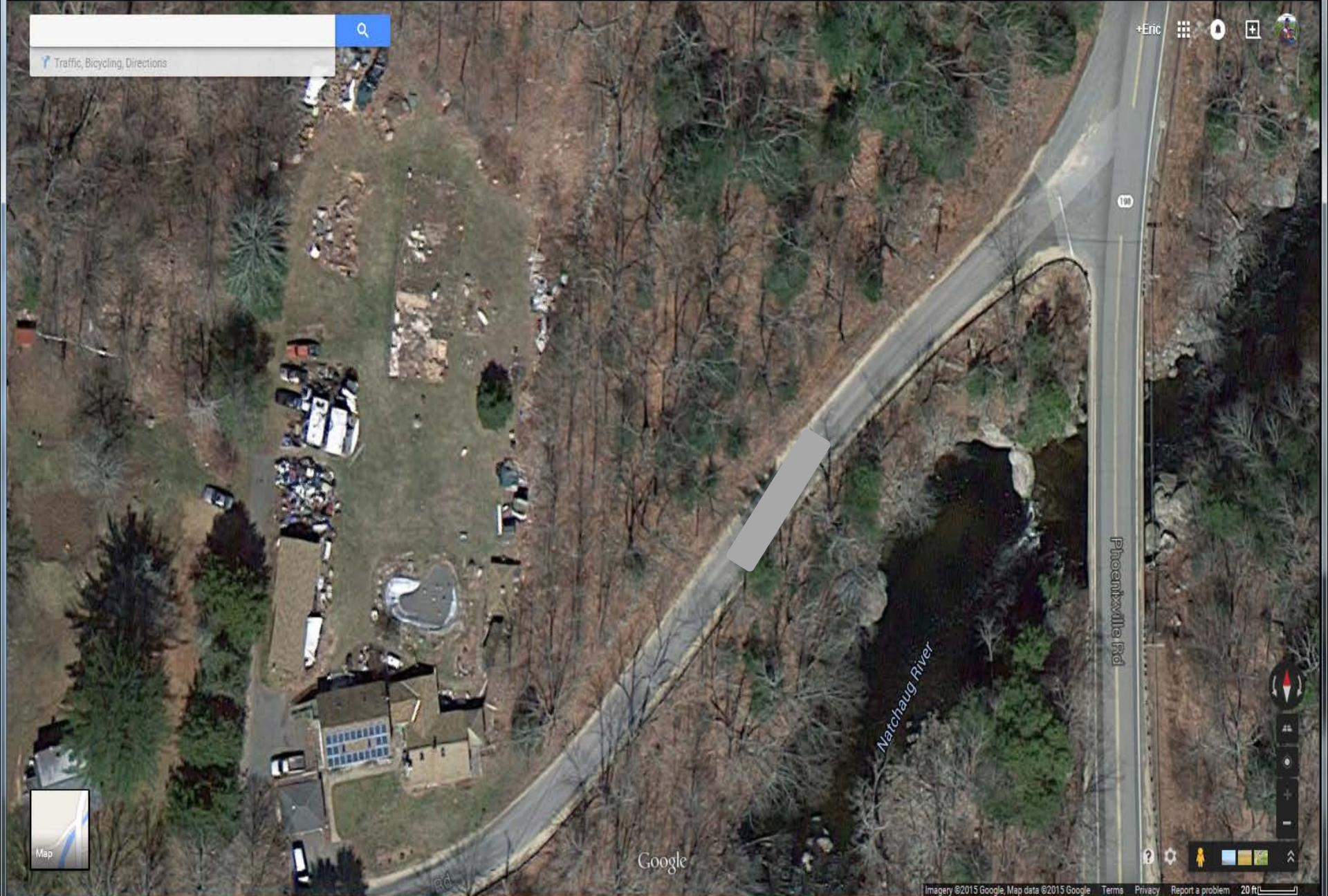
> United States • CT • M



Pictom

Search bar with magnifying glass icon and text: Traffic, Bicycling, Directions

+Eric [Grid icon] [Location pin icon] [Zoom in icon] [Profile icon]



Google



WELLHEAD PROTECTION GIS

locate

search

layers

measure

bookmarks

print

report

clear graphics Aerial Streets Topo legend

Map navigation controls: zoom in (+), zoom out (-), home, pan up/down, and a scale bar (0, 30, 60ft).





Planning Inspections

- Advance notice to the property owners may prevent problems when you arrive on site
- Ideally someone is there to have a conversation with
- Distribute info. Website?
 - Name/bio/picture of inspector
 - Approximately when
 - Contact info
- Official vehicle
- Police/town notification
- ID/Uniform/Phone # to verify
- Familiar face

Planning Inspections

- Enlist the support of the property owners
- Message: You are protecting drinking water
- Handouts: Clean Water and Your Health
http://ctawwa.org/images/downloads/Resources/clean_water_and_your_health.pdf

2. Conducting the Survey

- What specifically should an inspector look for?
Start with: septic systems, fuel storage, chemical storage, pesticide/fertilizer storage, erosion, runoff, animals, dumping
- Regulatory support – refer to RCSA Section 19-13-B32....



19-13-B32: Sanitation of Public Water Supplies

- Applies to land and watercourses tributary to a public water supply including surface and groundwater sources
- Prohibits:
 - accumulation of animal wastes
 - sewage discharges
 - disposal of toxic metals, gasoline, oils & pesticides
- Regulates:
 - stormwater drainage facilities
 - road salt
 - fertilizer applications



Conducting the Survey

- A comprehensive inspection goes beyond the regulations.
- There is a guidance document available that can help ensure that all potential risks are evaluated.



Fall Education Schedule

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Source Water Protection Committee

Reports to: Technical and Standards Council

Responsibilities: To promote protection of groundwater and surface water sources of public drinking water by providing a forum through which members can:

1. Exchange information about common concerns, regulatory and technical developments and compliance issues.
2. Develop new or updated standard procedures and guidelines for source protection activities.
3. Work cooperatively to correct pollution problems.
4. Develop recommendations for new legislation or amendments to existing legislation and regulations.
5. Assist regulatory agencies with the development or improvement of regulations, procedures and policies.

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Water Talk Forum

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The Story of Drinking Water

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[Source Water Protection Annual Report](#)

[Agricultural Guidance](#)

[Clean Water and Your Health](#)

[Conservation/Source Water Protection Brochures](#)

[Watershed Inspection Guidelines](#)

[CT DPH Source Water Protection](#)

Brian Roach, *Chair*
Aqurion Water Company
714 Black Rock Road
Easton, CT 06612-1146
Phone: (203) 452-3508
Fax: (203) 268-4493
Email: broach@aquarionwater.com

Stephen Vitko
Regional Water Authority
90 Sargent Drive
New Haven, CT 06511-5966
Phone: (203) 401-2737
Fax: (203) 603-4973
Email: svitko@rwater.com

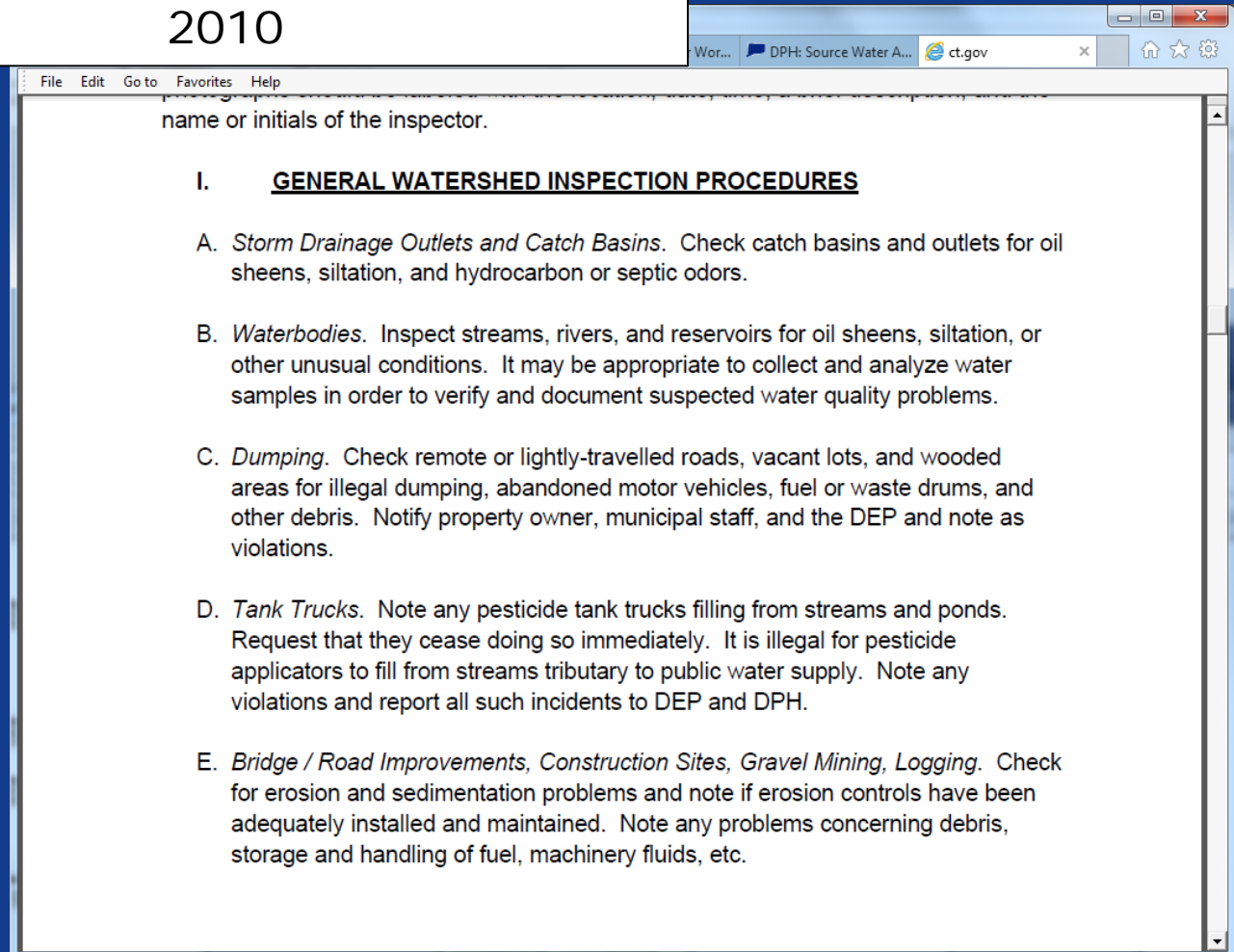
Andrew M. Adinolfi, P.E.
GEI Consultants, Inc.
455 Winding Brook Drive, Suite 201
Easton, CT 06612-1146
Phone: (203) 452-3508

Patricia Bisacky
DPH - Drinking Water Division
410 Capitol Avenue, MS# 51/WAT
Hartford, CT 06103-1000
Phone: (860) 406-1000



WATERSHED INSPECTION GUIDELINES

Prepared by
Source Water Protection Committee
Connecticut Section AWWA
2010



name or initials of the inspector.

I. **GENERAL WATERSHED INSPECTION PROCEDURES**

A. *Storm Drainage Outlets and Catch Basins.* Check catch basins and outlets for oil sheens, siltation, and hydrocarbon or septic odors.

B. *Waterbodies.* Inspect streams, rivers, and reservoirs for oil sheens, siltation, or other unusual conditions. It may be appropriate to collect and analyze water samples in order to verify and document suspected water quality problems.

C. *Dumping.* Check remote or lightly-travelled roads, vacant lots, and wooded areas for illegal dumping, abandoned motor vehicles, fuel or waste drums, and other debris. Notify property owner, municipal staff, and the DEP and note as violations.

D. *Tank Trucks.* Note any pesticide tank trucks filling from streams and ponds. Request that they cease doing so immediately. It is illegal for pesticide applicators to fill from streams tributary to public water supply. Note any violations and report all such incidents to DEP and DPH.

E. *Bridge / Road Improvements, Construction Sites, Gravel Mining, Logging.* Check for erosion and sedimentation problems and note if erosion controls have been adequately installed and maintained. Note any problems concerning debris, storage and handling of fuel, machinery fluids, etc.



Example from Guidelines – Heating Source

- Heating Source. If heating oil is used, determine whether the storage tank is located above or below ground. Inquire about the tanks location, capacity and age. Look for vent pipes and signs of leakage such as oil stained soil. If the tank is located in the basement, inquire if the basement has an impervious floor and if a sump pit or floor drains are present. Note condition of above-ground tanks.

Challenges

- Property access
 - (drones?)
- Repeat offenders/lack of correction
- I found _____, now what do I do?
- Different town, not a customer, etc.
- Property encroachments

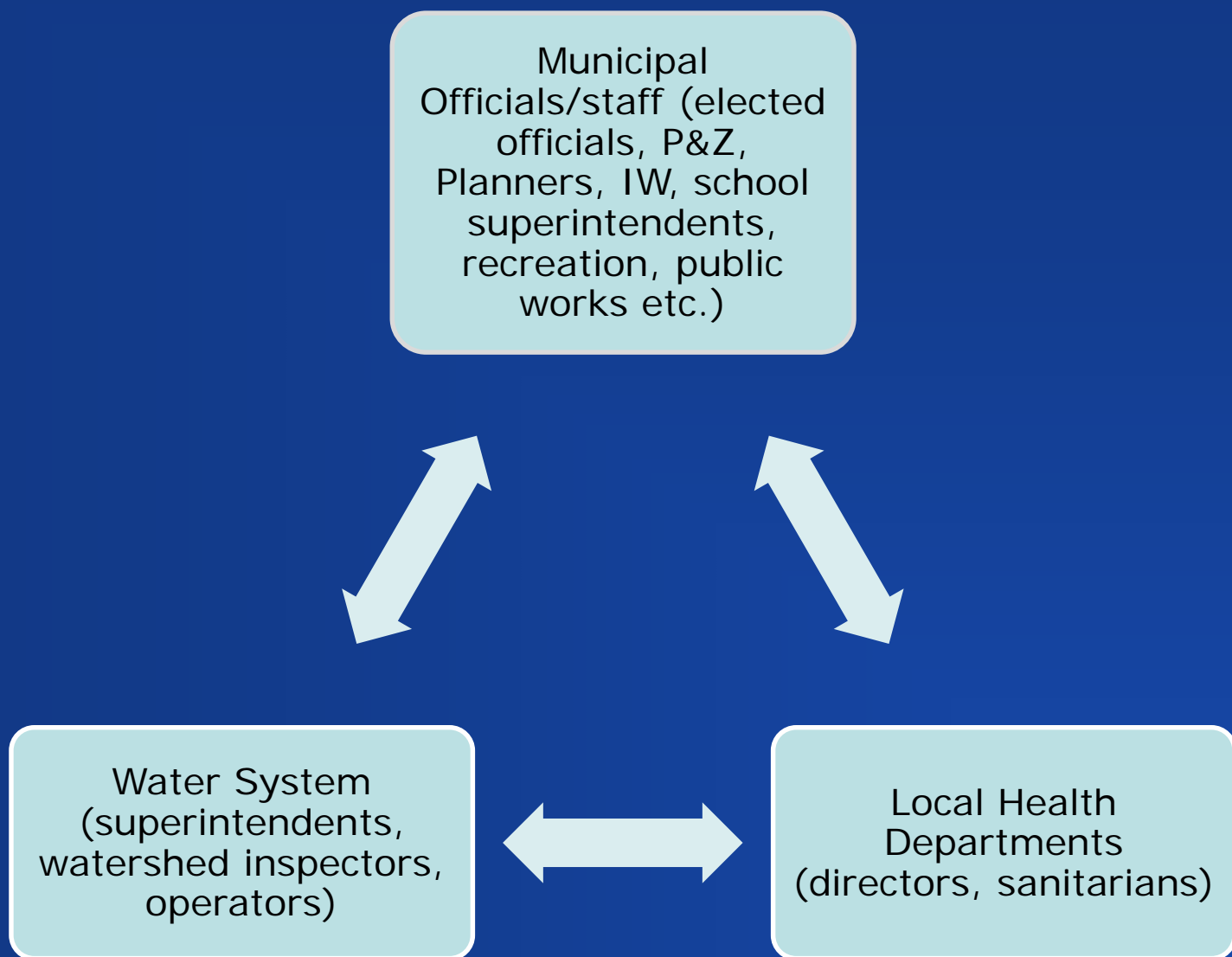
Property Access - Authority?

- CGS Sec. 25-51. Injunction against injury to water supply or source.**The municipality or water company**, by its officers or agents duly appointed, or the local director of health, or the local director's agents **may**, at all reasonable times, **enter upon and inspect any premises within the watershed tributary to**, or aquifer protection area of, **such water supply** and, if any nuisance likely to pollute such water is found therein, the local director of health or the local director's agent may abate such nuisance after reasonable notice to the owners or occupants of such premises and their refusal or neglect to abate the same, and the municipality or water company shall be liable for all unnecessary or unreasonable damage done to such premises.
- i.e. - you have the legal right to inspect these properties

3. Solutions/Follow-up

- Contact appropriate partner: LHD, DPH, DEEP, Municipality, Agriculture (CTAg, DEEP, NRCS, CD) –some ideas in the presentations that follow
- Ask DPH for help in who to contact
- Come to CTAWWA Source Protection Committee meeting – peer discussion/ideas
- Know the laws that support your efforts
- If all else fails, CGS Section 25-34:
 - Sec. 25-34. Investigation of water or ice supply. (a) The Department of Public Health may, and upon complaint shall, investigate any system of water supply or source of water or ice supply from which water or ice used by the public is obtained, and, if it finds any pollution or threatened pollution which in its judgment is prejudicial to public health, it shall notify the owner or operator of such water company or system of ice supply, or the person or corporation causing or permitting such pollution or threatened pollution, and the Commissioner of Energy and Environmental Protection, of its findings and shall make such orders as it deems necessary to protect such water or ice supply and render such water or ice safe for domestic use.

Local Communication is Critical



State of Connecticut Local Health Departments and Districts, July 2017

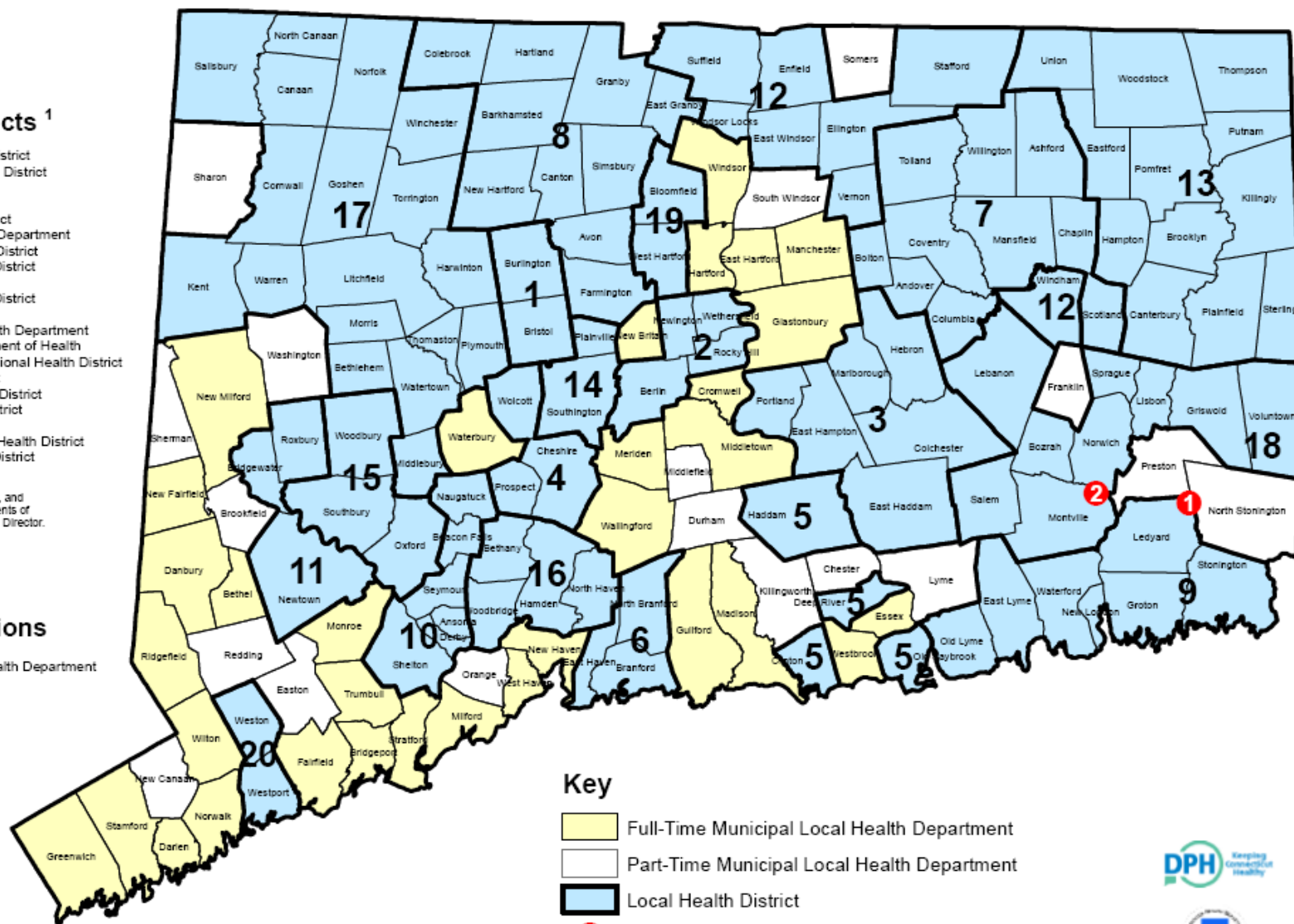
Health Districts ¹

1. Bristol-Burlington Health District
2. Central Connecticut Health District
3. Chatham Health District
4. Chesprocott Health District
5. CT River Area Health District
6. East Shore District Health Department
7. Eastern Highlands Health District
8. Farmington Valley Health District
9. Ledge Light Health District
10. Naugatuck Valley Health District
11. Newtown Health District
12. North Central District Health Department
13. Northeast District Department of Health
14. Plainville-Southington Regional Health District
15. Pomperaug Health District
16. Quinnipiack Valley Health District
17. Torrington Area Health District
18. Uncas Health District
19. West Hartford-Bloomfield Health District
20. Westport Weston Health District

¹ Health Districts are towns, cities, and boroughs united to form departments of health and have a full-time Health Director.

Sovereign Nations

1. Mashantucket Pequot Health Department
2. Mohegan Tribal Health



Key

- Full-Time Municipal Local Health Department
- Part-Time Municipal Local Health Department
- Local Health District
- Sovereign Nations





DEEP Spill Notification contact info

Emergency Response and Spill Prevention

**Report Spills or other Environmental Emergencies to the
CT DEEP 24 hours per day at**

860-424-3338

or Toll Free at

1-866-DEP-SPIL

(1-866-337-7745)

If these numbers are unavailable for any reason, call (860) 424-3333

4. Submissions

- Due by March 1 of the following year
- Send via email if possible
(dph.sourceprotection@ct.gov)
- Send in spreadsheet format if possible (template next slide)
- Typically same DPH analyst review year to year
- If there are properties you are concerned about, don't wait until March 1 to let us know.
- DPH can help with GIS if your inspections are compiled in a spreadsheet

REVIEW

- Know your watershed
- Understand the law and your authority
- Notify property owners, police, town in advance
- Know what to look for
- Document your findings
- Know what to do next if you identify a problem (know your partners)
- Follow up
- Submit report



Source Assessment/Protection Unit (860) 509-7333

www.ct.gov/dph/publicdrinkingwater

- Eric McPhee, Pat Bisacky, Rich Iozzo, Mira Lami, Justin Milardo
- QUESTIONS?