



Source Water Protection and Land Use Planning: Partnering for Successful Implementation

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Vermont Rural Water Association (VRWA)

- Non-profit trade association
- Provides training and technical assistance to public water and wastewater systems
- National Rural Water receives funding that is transferred to 49 state associations
- Source water positions funded by United States Department of Agriculture



Source Protection in Vermont

- **600 square kilometers of Groundwater (Wellhead) Source Protection Areas**
- **740 square kilometers of Surface Water Source Protection Areas**

**~6% of the land area in Vermont is
part of a Source Protection Area**

Vermont Source Protection Program

- Administered by the State of Vermont, Department of Environmental Conservation - Drinking Water Program
- Source protection plans (SPPs) required since 1992 for all non-transient systems (schools, mobile home parks, etc)
- One of the few states that requires plans
- Systems range from 25 to 80,000 customers



Vermont Source Protection Program

- Currently no staff at state offices dedicated to source water protection
- VRWA receives requests for assistance from many water systems
- Partnerships are needed to accomplish outreach goals





**Flooding from Tropical Storm Irene
wiped out most of the state's paper
files in 2011 – office destroyed**

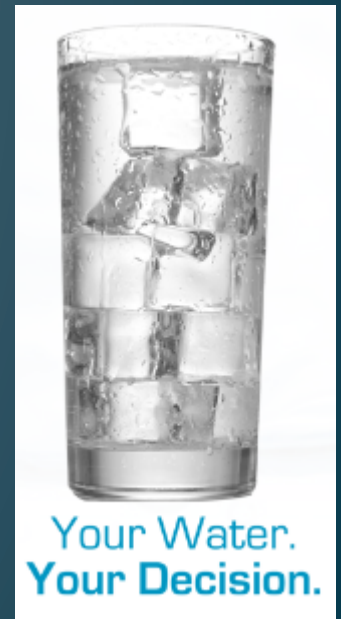
Vermont Source Protection Program

Other partners include:

- Vermont Geological Survey
- United States Environmental Protection Agency
- Vermont Department of Health
- Vermont Agency of Agriculture
- Regional Planning Commissions
- Towns, Villages, Cities and other municipalities
- Vermont Natural Resource Council, Lake Champlain Committee, Vermont Land Trust, many others

Source Water Collaborative

- Many partners are in the national collaborative (total of 26 organizations)
- Some state, regional and local collaboratives
- Vermont has two related groups:
 - Groundwater Coordinating Committee
 - Lake Champlain Coalition of Suppliers



Vermont Government Structure

- 254 towns and 9 cities (plus unincorporated areas)
- Towns govern themselves by direct citizen participation via Town Meeting
- Municipal governments are Town Selectboards and City Councils (elected)
- Vermont limits authority granted to local governments



Source Protection Challenges

- “Towns don’t have to do anything since state regulations provide protection” – THIS IS A MYTH!
- Landowner and agency notification are required but land use activities cannot be restricted based on the source protection plan

Municipal involvement
in source protection
is imperative

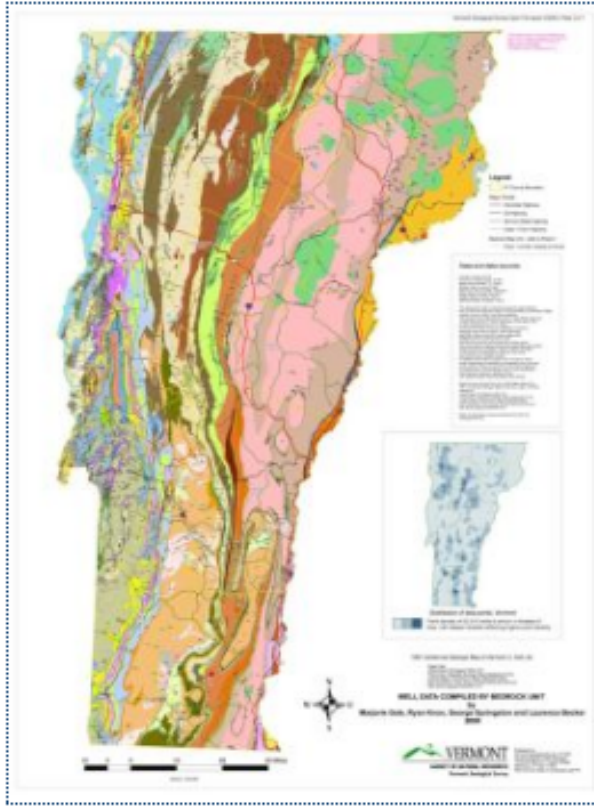


- This presentation will highlight multiple issues related to source protection in Vermont
- Topics were designed to engage planners in groundwater issues
- Many misconceptions about source protection
- Planning efforts have been ignored in some cases



Vermont Groundwater

Well Data Compiled By Bedrock Unit, Plate 2



- Groundwater is a public trust resource managed for the benefit of state citizens
- Two-thirds of Vermont's population relies on groundwater for drinking
- Few towns have comprehensive groundwater mapping
- Naturally-occurring contaminants include arsenic, uranium and radon

Groundwater Use Study

- United States & Vermont Geological Surveys
- Estimated Water Withdrawals and Return Flows in Vermont in 2005 and 2020
- Looked at population growth
- Useful for planners – where will groundwater use likely increase?



Groundwater – Current Hot Issue

- **PFOA (Perfluorooctanoic Acid)** – recently found in private and public drinking water sources
- Toxic and persistent in groundwater
- Used in the production of Teflon and other chemicals for nonstick cookware, stain-resistant carpets/fabrics and water repellent clothing
- Vermont investigation continues – well testing (in areas of concern statewide), blood testing clinics, new drinking water health advisory of 20 ppt

Vermont Source Protection Program

Total of **598** active public water systems* required to have a source protection plan

	Groundwater	Surface Water
Public Community Water Systems	315	38
Non-Transient, Non-Community Systems	242	3
Total	557	41

* Many systems have more than one source and may have multiple source protection areas

Challenges in Source Water Planning

- Source protection areas and water customers may be in different municipalities
- Systems not governed by municipal boards (mobile home parks, condominiums, nursing homes)
- Requirement to plan but not implement
- Other priority water quality or natural resource issues



Source Protection Workshops

- Collaboration between Vermont Agency of Natural Resources, US EPA, VRWA and several other partners



- 2006 Statewide workshop with 100+ attendees
- 2007 Regional workshops (2) with focus on planners
- 2013 Regional workshops (2) with focus on working landscape

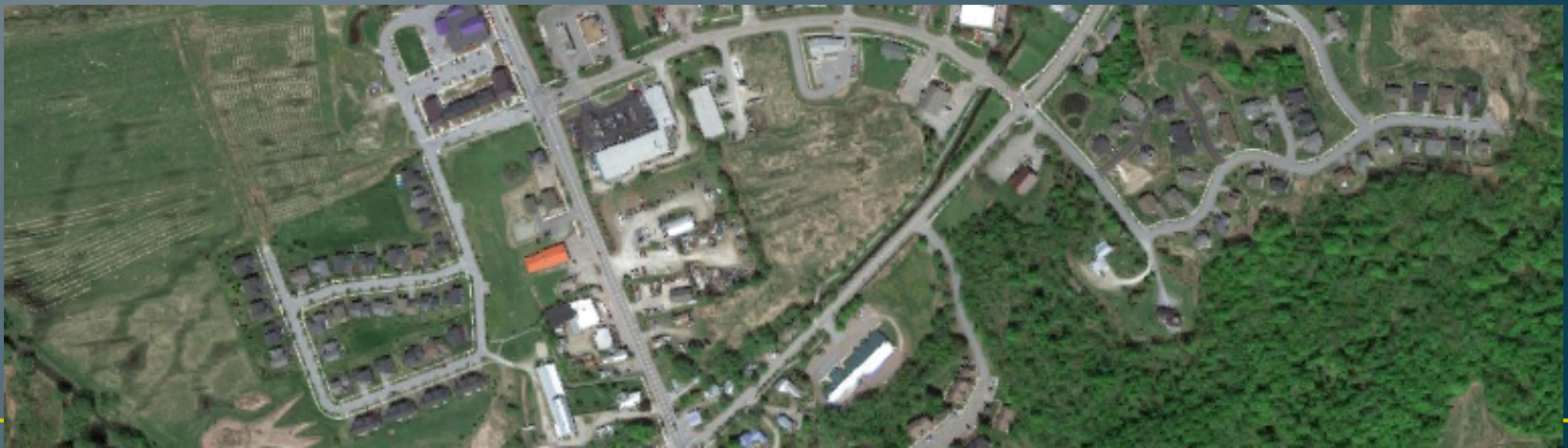
Drinking Water Focus Groups

- Collaboration among Vermont Drinking Water Program, Vermont State Geologist, US EPA and VRWA
- Four meetings in Fall 2015 and Spring 2016
- Attendees from nine regional planning commissions plus several towns, state agencies and consulting firms



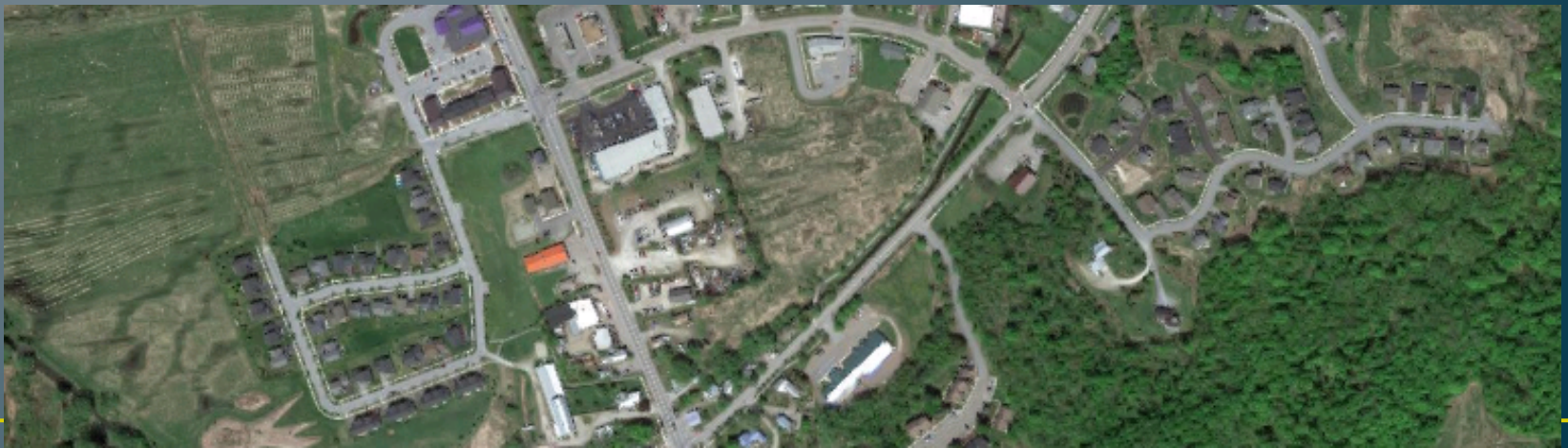
Hinesburg, Vermont – “NoWaterTown”

- Did not plan for managing on-going water system operations
- Did not plan for developing additional source water for its municipal system
- Did not plan for anticipated water system expenses for its municipal system



Hinesburg, Vermont – “NoWaterTown”

- Town placed on a “no expansion” moratorium
- Recalls issued for allocation letters putting a hold on developer’s projects
- Firefighting capacity was jeopardized
- Town-wide water conservation required



Dorset, Vermont – Water Shortages

- Source is reservoir fed by multiple springs
- Drought conditions during spring and summer
- October 2016 – Declared water emergency
- Water shut off between midnight-6 AM
- Customers under boil water order



Dorset, Vermont – Water Shortages

- Vermont Geological Survey assisted Dorset with groundwater mapping in 2009-2010
- Several recommendations were implemented into town planning and zoning
- Potential future water source locations were identified and protected

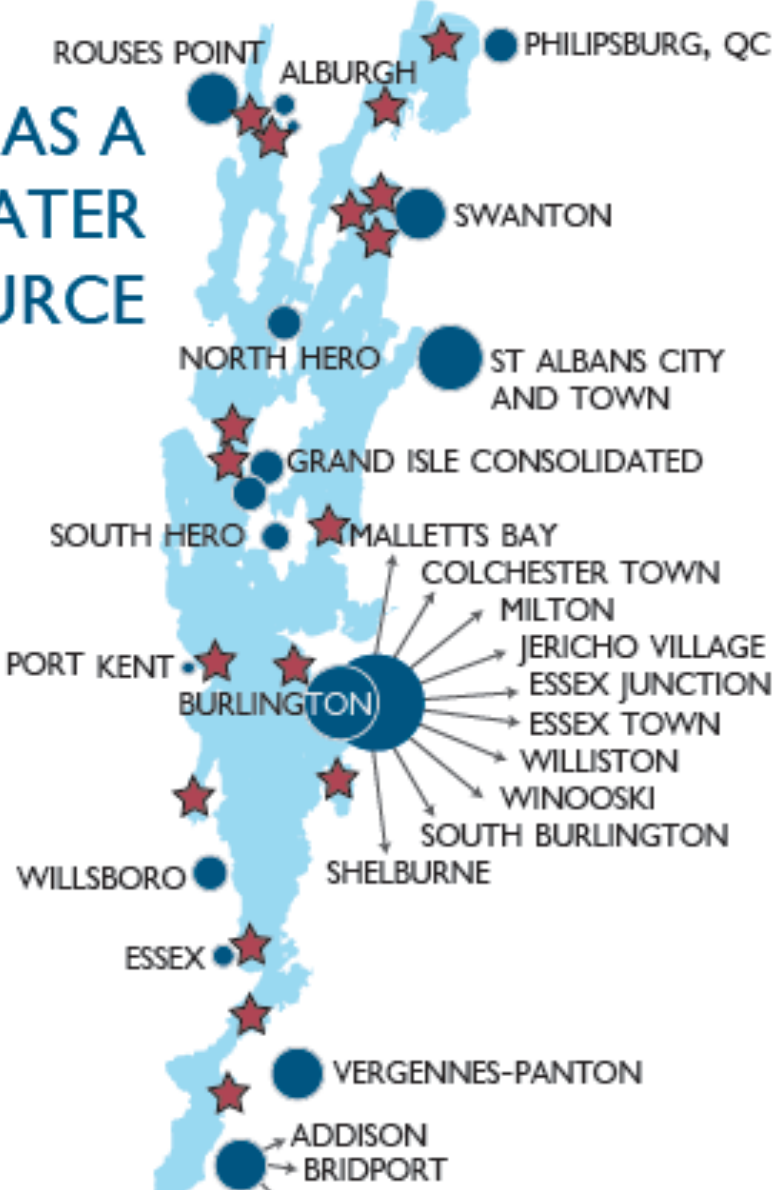


Brandon, Vermont



- Set the bar for municipal protection of public water sources
- First upward reclassification for groundwater in Vermont
- Pursuing federal designation of Sole Source Aquifer

LAKE CHAMPLAIN AS A DRINKING WATER SOURCE



Cyanobacteria Monitoring

- Partnership for training, outreach and lab assistance for Lake Champlain water systems
- Monitoring for microcystin and anatoxin
- Created cyanotoxin response plans for small transient systems (summer resorts, state parks)



Hazard Mitigation Planning: State, Regional and Local

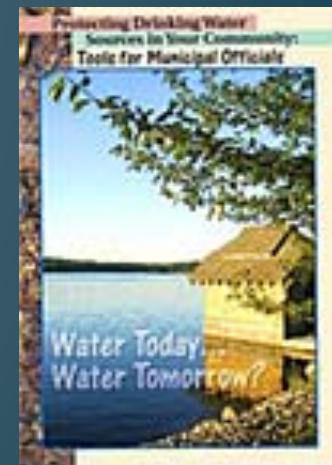
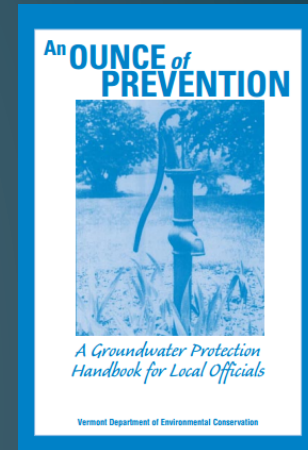
- Recent natural disasters have included floods, ice storms and extreme weather events
- Some local plans include water supply contamination and drought
- Should include source protection plans and input from drinking water system personnel

Collaboration – Outreach can be fun!



Source Water Protection Guides

- Ounce of Prevention: Vermont Groundwater Handbook for Local Officials
- Protecting Drinking Water Sources in Your Community: A Source Water Protection Tool for Municipal Officials



Map Layers

Layer Theme: Atlas Layers (default)

Atlas Layers

Waste Management

Fish and Wildlife

Watershed Protection

Geology

Drinking Water and...

Forests Parks and Recreation

ANR Basemap Data

Buildings (E911)

Act250 Permits ****INCOMPLETE****

Bridge & Culvert Inventory

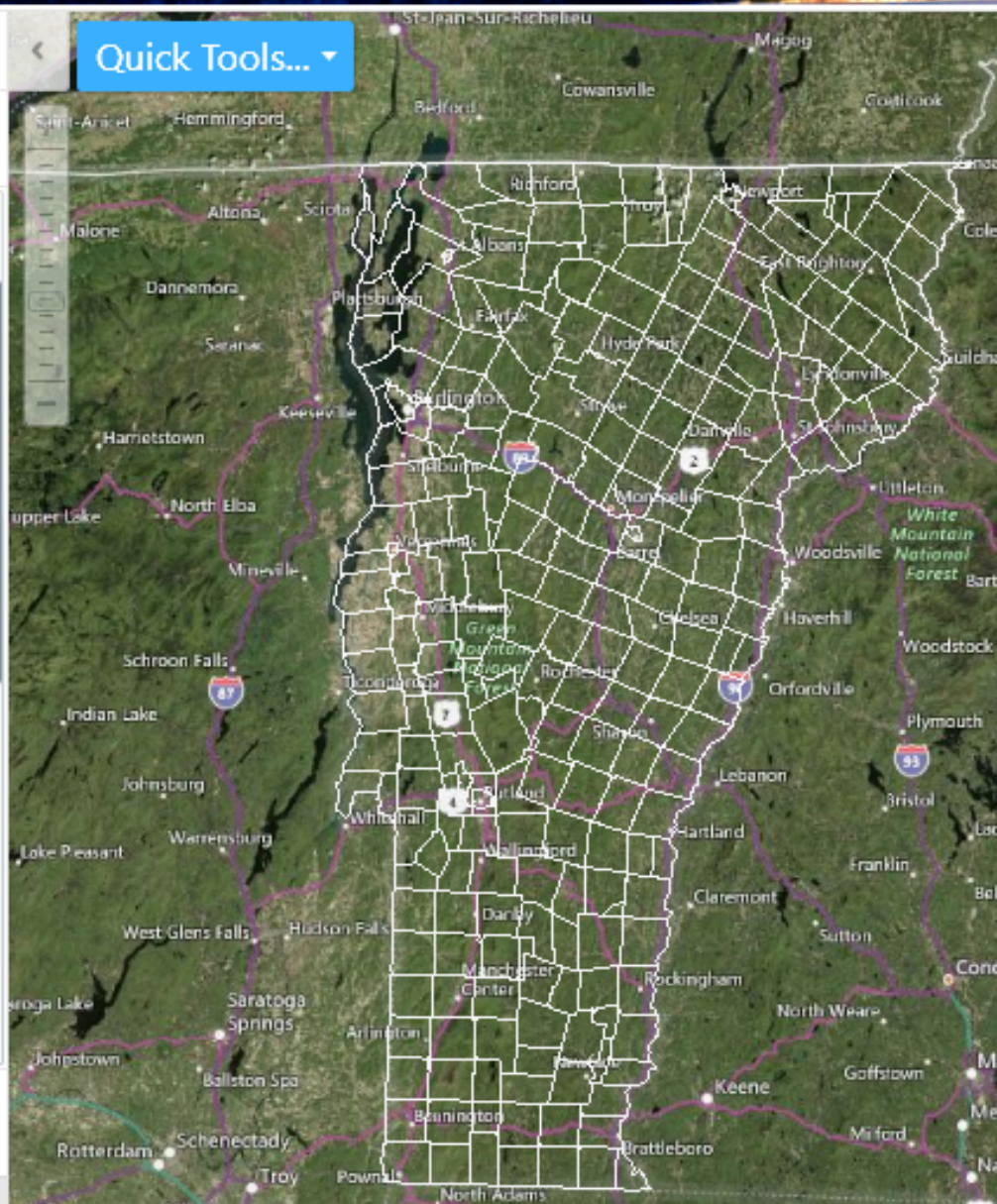
Railroads

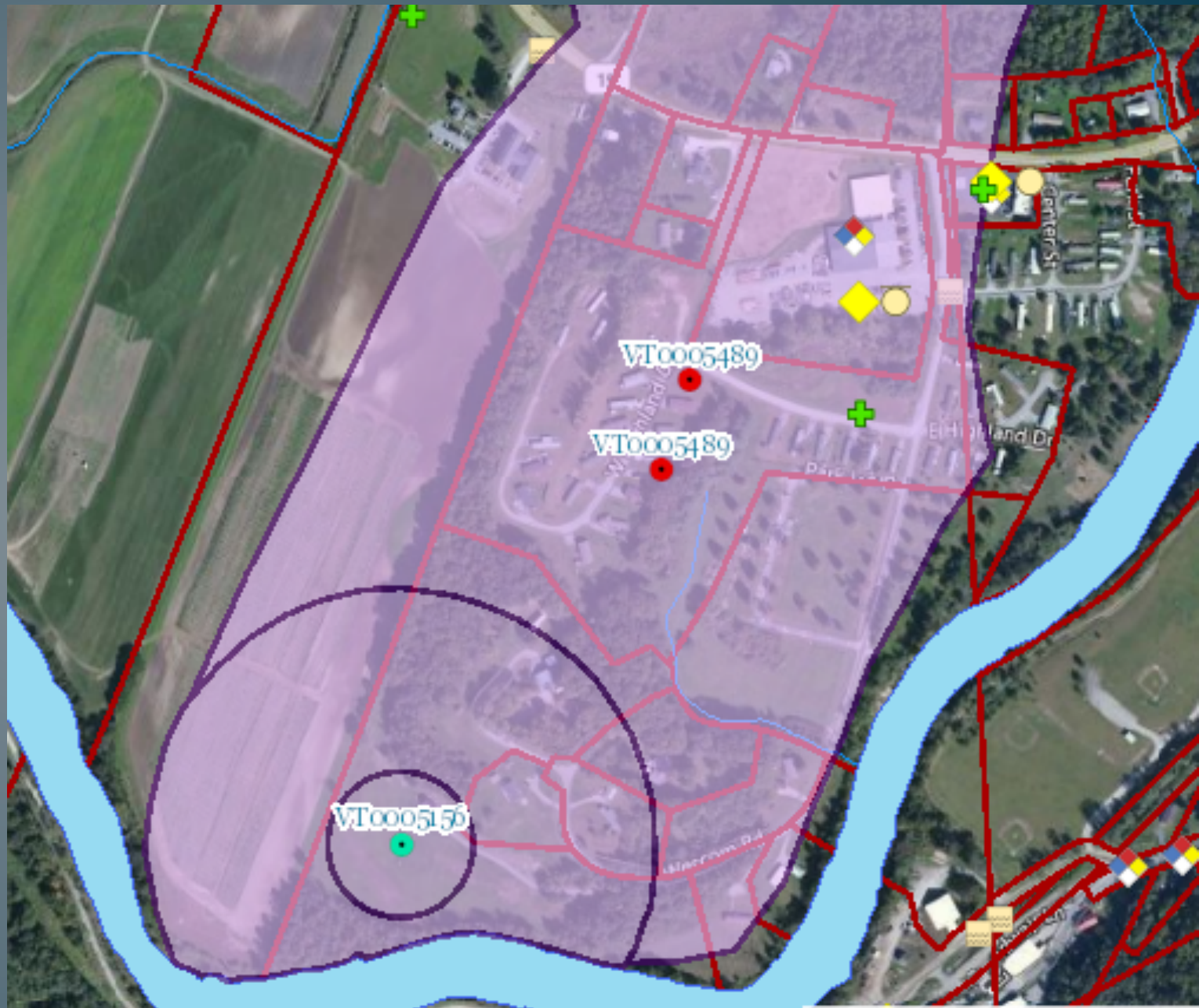
Roads

Show Legend

Filter...

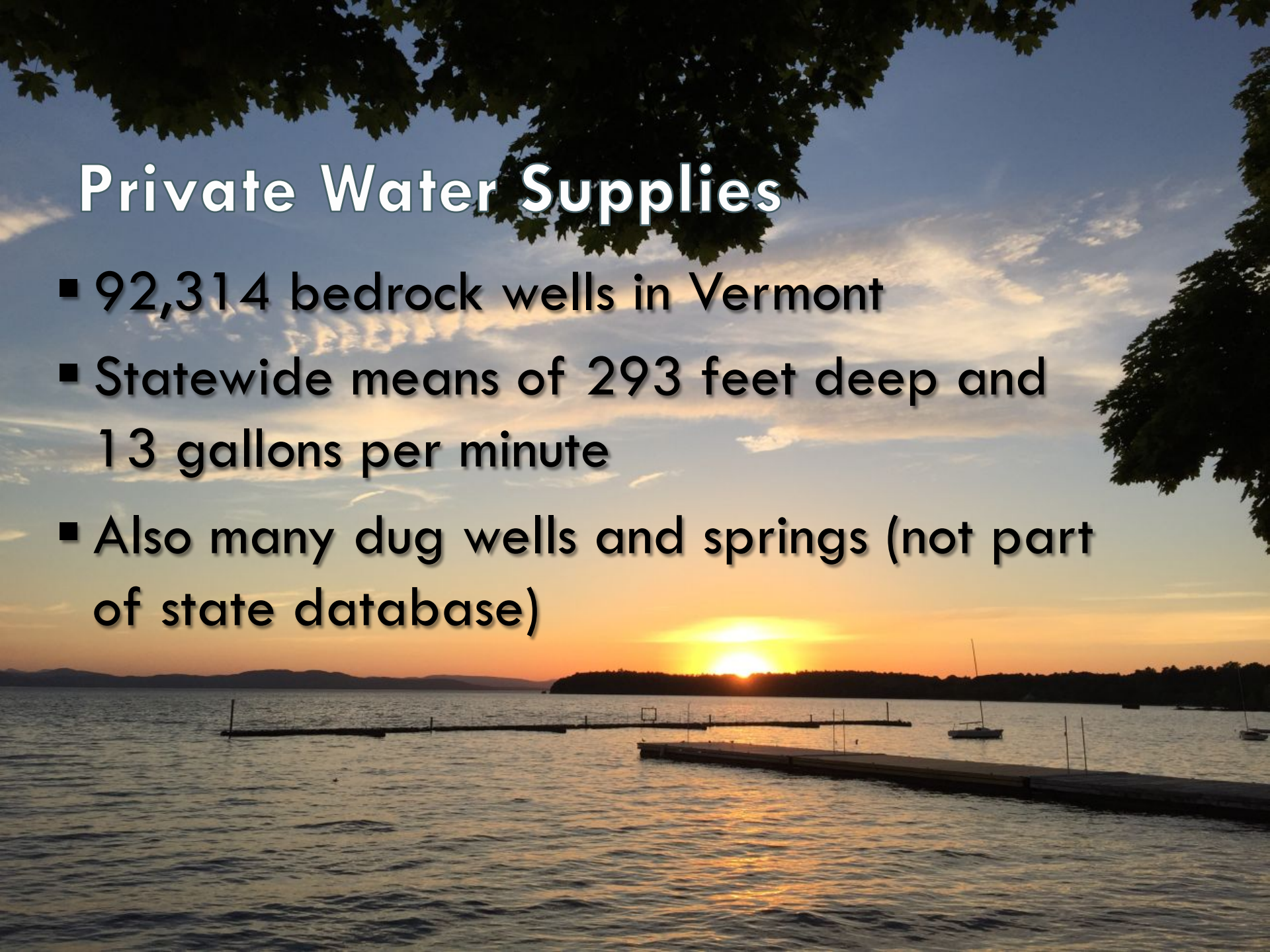
Quick Tools...





Private Water Supplies

- 92,314 bedrock wells in Vermont
- Statewide means of 293 feet deep and 13 gallons per minute
- Also many dug wells and springs (not part of state database)



What level of protection is owed to private water supplies?

- Vermont does not require private well testing – few states do
- Governor vetoed testing bill in 2011 due to concerns about financial burden and privacy
- Some lending institutions require tests for bacteria, nitrates and lead prior to loan approval in a real estate transaction



Future Plans

The background of the slide is a scenic landscape. On the left, there are trees with vibrant autumn foliage in shades of orange, yellow, and brown. The middle ground shows rolling green hills with a few scattered trees, some of which are also showing autumn colors. The sky is a clear, bright blue with some light, wispy white clouds. The overall atmosphere is peaceful and natural.

- Spring 2017 workshops for planners – including PFOA, drought and hazard mitigation topics
- Targeted outreach to towns interested in developing community water or wastewater systems
- Spring 2018 – Private Well Conference at Geological Society of America meeting in Burlington, Vermont

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