

Making it Happen: Putting Protections in Place, i.e. “Implementation”

Case Study
Canaan Street Lake
Canaan Source Water Protection Committee
Town of Canaan, NH

Your Water, Your Decision Workshop
West Lebanon, NH
February 1, 2011

Contents

- Developing a source water protection plan
- Accomplishments
 - Data gathering and analysis
 - Regulations, policies, ordinances
 - Education and outreach
 - Successes and failures
- Future Goals

Developing a Plan

- Team of local officials and interested parties
 - Add experienced consultant
 - Several municipalities may be involved
- Identify threats to water source
 - Point sources of pollution
 - Non point sources of pollution
 - Background pollutants already in water source
 - Examine entire watershed
 - Phosphorous is major threat in Upper Valley

Developing a Plan (cont)

- Each water source is unique
 - Urban, suburban, rural
 - Stormwater might be greater threat in urban areas
 - Septic systems might be greater threat in suburbs
 - Pesticides and fertilizer might be a rural threat
 - Recreation can be a source of pollutants
 - Road salt and sediment control are needed
 - Examine all sources and prioritize

Developing a Plan (cont)

- Identify actions to address threats
- Identify responsible parties and funding
 - Funding: DES, municipal, business, residents
- Actions may include:
 - Additional data collection
 - Modified or added regulations
 - Education
 - Conservation easements
 - Coordination with other agencies

Canaan Watershed Plan



Canaan Street Lake Watershed Protection Plan Town of Canaan, NH



August 2006

Canaan Plan

- Committee members
 - Selectman, conservation commission, planning board, health inspector, water system operator, citizens, Granite State Rural Water Association
 - Watershed entirely within Canaan
- NH DES VLAP and Lake Survey data examined
 - Phosphorus, sodium, chloride, conductivity rising
 - EPA disinfection byproduct near limit

Canaan Plan

- Chlorine reacts with high organic carbon
 - Creates carcinogens near EPA limit
- Organics caused by phosphorous, sun, temp
- Lake also high in sodium and chloride
- Flushing Rate = 0.7 times/yr
- Plan addresses lawns, geese, roads, septic, recreation, stormwater, fuel, buffers, reservoir markers, emergency plan, hazards
- Recommendations include, data collection, education, and regulations

Lake is Slowly Changing

- Home sites are being added
- Conversions from seasonal to year round
- Old septic systems are no longer efficient
- Lawns and gardens are stressing the lake
- Stormwater brings undesirables into lake
- Tributaries and springs are bringing trouble
- Milfoil threat surrounds us

Canaan Street Lake Watershed



Water quality has been getting worse, but it is still OK.

Water Quality Monitoring

Date	Chloro- phyll-a	Color	Secchi	Phos- phorous	Conduc- tivity	Chloride	PH
1979	2.7	10	5.0	3	44	3	6.5
1990	2.5	16	4.0	9	54	5	7.2
2005	6.8	18	4.7	7	75	11	7.1

Guide							
Good	0-5	0-25	2-4.5	Below 10	0-100	*	6-8
Poor	Above 15		0-1.9	Above 20		**	

* NH remote surface water chloride mean is 4

** NH drinking water chloride typically below 75

DES Lake Survey data

Hope people will still be able to say the lake is a good source of drinking water in 100 years.

Accomplishments

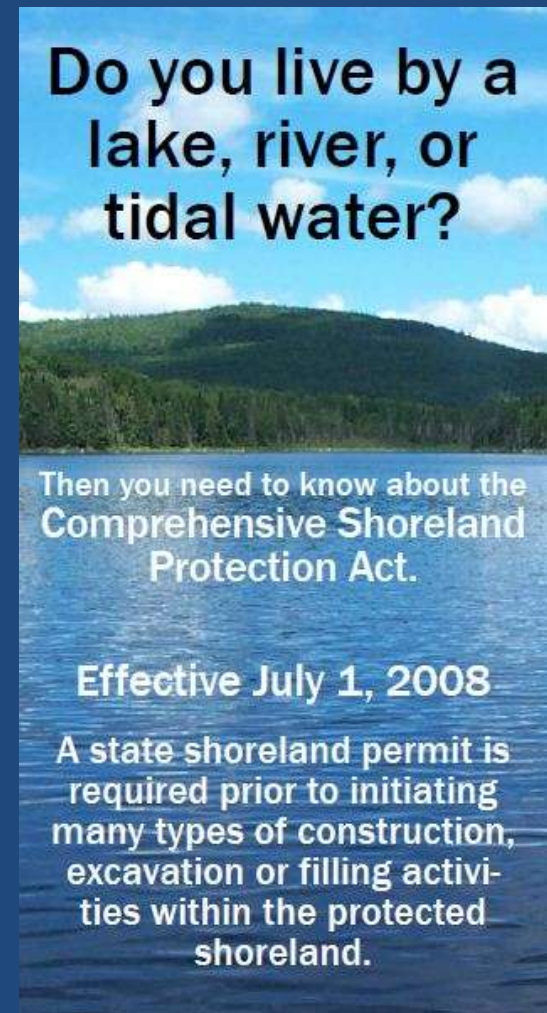
- Major support from Plymouth State University Center For the Environment (PSU CFE)
 - Two year comprehensive testing program
 - Testing confirms organic carbon needs attention
 - Other parameters are not perfect but still OK
- Septic survey conducted
 - Several old systems are a threat
 - Free septic system inspections offered
 - Education resulted in maintenance and upgrades

Accomplishments

- Land planning recommendations by PSU CFE
 - Revise subdivision regulations for stormwater control
 - Low impact development (LID)
 - Adopt zoning to control density and risky uses
 - Adopt site plan review
 - Adopt Innovative Land Use Controls (ILUC)
 - Stormwater, erosion, sediment, wetlands, drinking water
- One toxic cyanobacteria bloom detected
 - Phosphorous, nitrogen, sun, temperature, calm
 - Some level is present in all area lakes

Accomplishments

- Education and outreach
 - Mailings: Lakefront, watershed, & town wide
 - Presentations to organizations
 - Door to door outreach
 - High and middle school projects
 - Old home day booth
 - Beach kiosk,
 - BBQ, games, prizes, exhibits



Outreach and Education

- Explain the threats to drinking water
 - Sediments, geese, fertilizers, septic systems, road salt, petroleum, pesticides
- Explain the mitigation approaches
 - Comprehensive shoreland protection act
 - Septic maintenance
 - Road maintenance practices
 - Best management practices

Sample High School Graphics Class Brochure

What is a watershed and its importance?

A watershed is an area of land that drains into a lake or river. As rainwater and melting snow run downhill, they carry sediment and other materials into our streams and lakes. Watersheds are the places we call home, where we work and where we play. Everyone relies on water and other natural resources to exist.

What you do on the land impacts the quality of the water and natural resources. Healthy watersheds are vital for a healthy environment. Our watersheds provide water for drinking, irrigation and industry. Managing the water and other natural resources is an effective and efficient way to sustain the local environmental health.



Automotive

- ♣ Recycle used oil & antifreeze at service stations.
- ♣ Have automotive fluid leaks fixed.
- ♣ Clean up spills immediately.
- ♣ Drive only when necessary.

DON'T

- X Pour used oil, antifreeze, or other chemicals on the ground or down a storm drain.

Plumbing/Septic Systems

DO

- ♣ Have your septic tank inspected annually.
- ♣ Have your septic tank pumped at LEAST every five years.
- ♣ Use phosphate free detergents.
- ♣ Take unwanted chemicals to hazardous waste collection sites.

DON'T

- X Pour chemicals down the drain.
- X Use toilets as trash cans.
- X Use septic system additives or "cleaners."

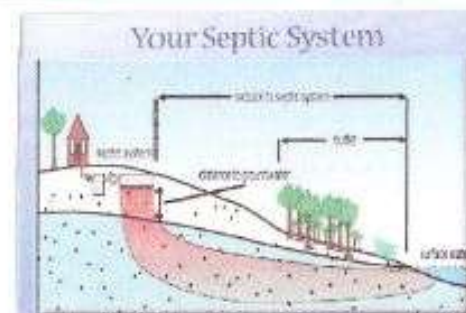
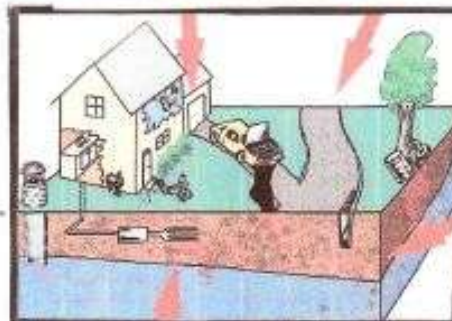
Yard Maintenance

DO

- ♣ Apply chemicals only as directed. More is not always better!
- ♣ Cultivate plants which discourage pests. This reduces pesticide usage.
- ♣ Leave lawn clippings on lawn or compost them.
- ♣ Pull weeds by hand.
- ♣ Clean up after pets.

DON'T

- X Overapply fertilizers, herbicides, or pesticides.
- X Use gas powered leaf blowers or weed whackers.



Successful Experiences

- Education and outreach exceeded goals
 - Personal contact
 - Presentations to groups, associations, clubs
 - Face to face septic survey
 - School projects
 - Brochure distribution
- Not very successful
 - Minimal interest in free septic system inspections
 - Return of mailed septic survey forms

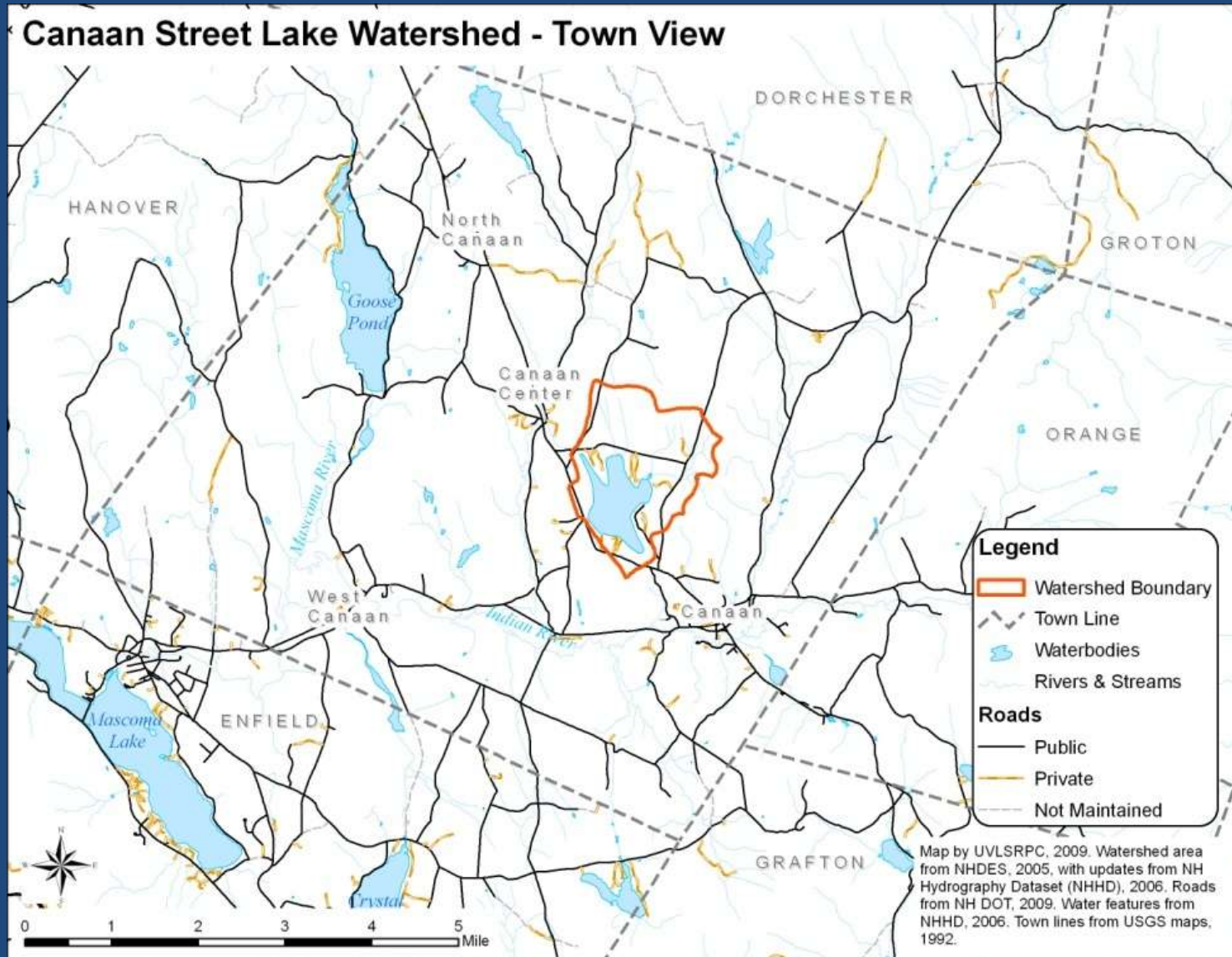
Future Goals

- Continue organic carbon testing
 - Look for lower cost method: E. coli, color
- Hydrologic study: flow paths, spring feed
- Perimeter conductivity survey
- Adopt septic system management plan
 - Maintain septic system database
 - Require some level of maintenance
- Revise subdivision regulations
 - Stormwater, low impact development
 - Intercept, treat, & infiltrate runoff onsite

Future Goals

- Adopt zoning around lake
 - Limit density and risky uses
 - Innovative land Use Controls: Stormwater, erosion, sediment, wetlands, drinking water protection
 - Site plan review: commercial and apartments
- Conservation easements
- Education and outreach must continue

Adopt a Zoning Ordinance



Conservation Easements

- Most of the watershed is forested
- Reservoir cove is not developed
- Cardigan Mountain School is largest owner
- Upper Valley Land Trust is reviewing options
- Fund raising is biggest obstacle

Drinking Water Protection Summary

- Watershed Plan is the first step
- Comprehensive testing
- Septic survey
- Land planning regulations
- Conservation easements
- Outreach & education

Thank you! Questions?

