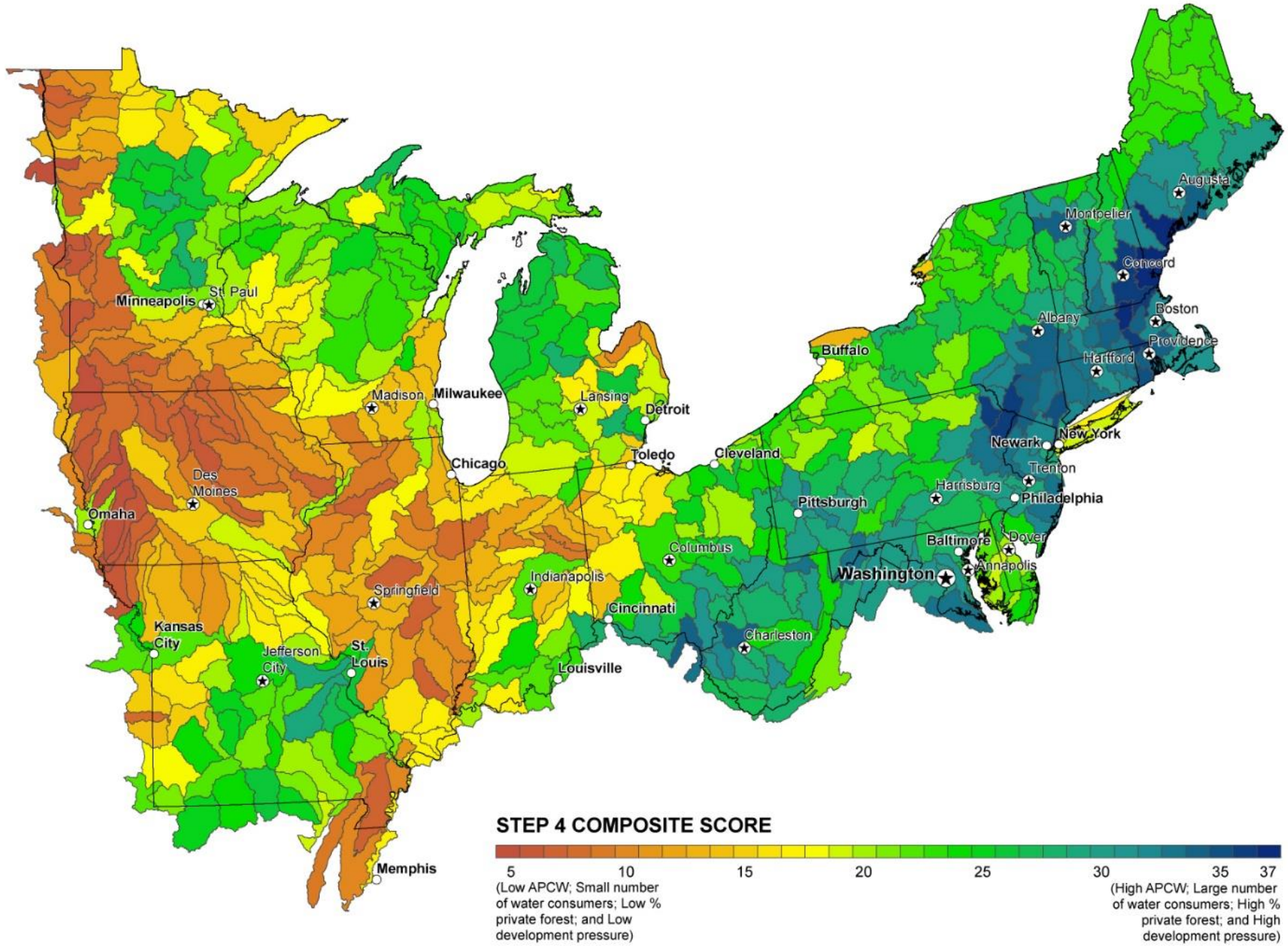
Tapping our Forests: Investments in Healthy Watersheds for Drinking Water

Marcy Lyman, Paul Susca, John O'Neill,
Jeff Lerner, Spencer Meyer

Session 1-E
Regional Conservation Partnership Network Gathering
Nashua, NH
November 16, 2017


Minneapolis
St. Paul
Madison
Milwaukee
Chicago
Des Moines
Omaha
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Springfield
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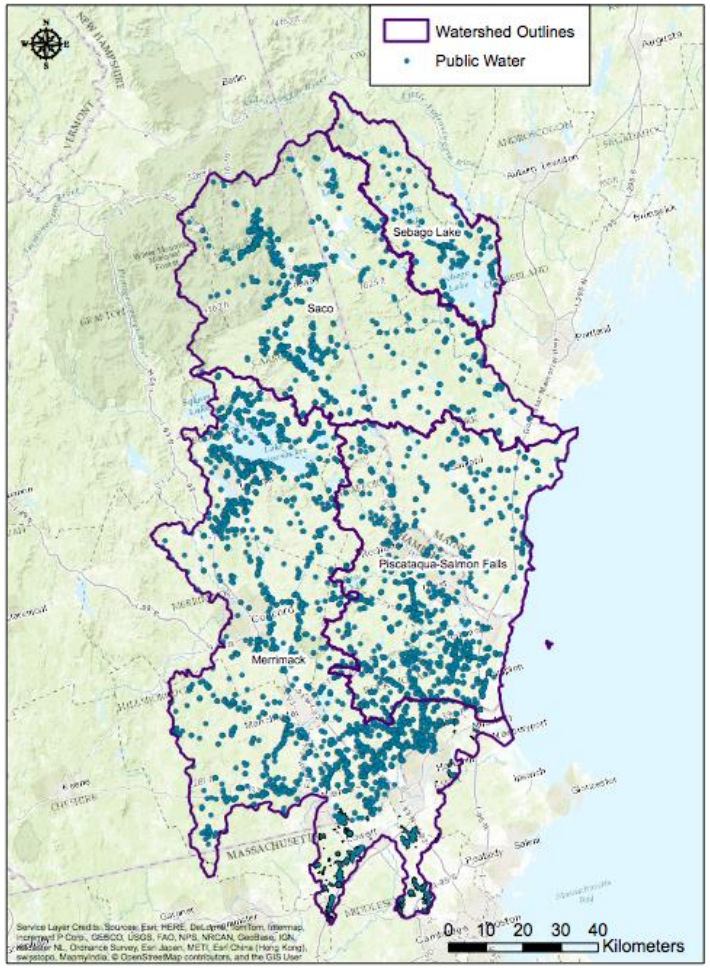
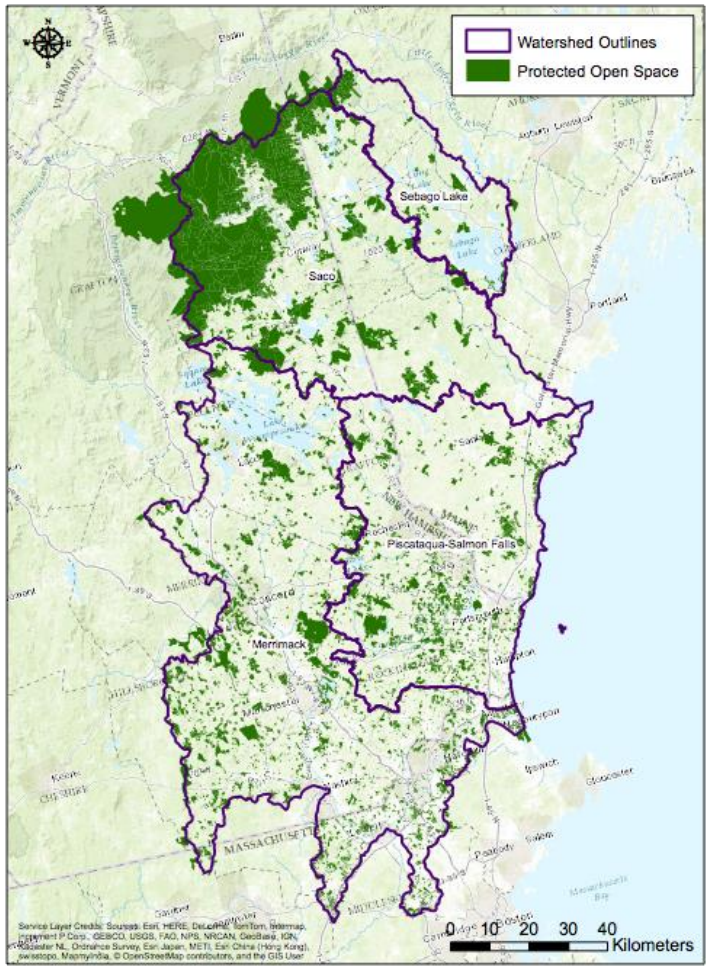
Cleveland
Buffalo
Indianapolis
Columbus
Cincinnati
Louisville
Pittsburgh
Charleston
Washington
Harrisburg
Baltimore
Dover
Annapolis
Philadelphia
Trenton
Newark
New York
Albany
Hartford
Providence
Boston
Concord
Montpelier
Augusta
STEP 4 COMPOSITE SCORE
5
10
15
20
25
30
35
37
(Low APCW; Small number of water consumers; Low % private forest; and Low development pressure)
(High APCW; Large number of water consumers; High % private forest; and High development pressure)

WATER SUPPLIES AND LAND CONSERVATION

Designated Water Protection Areas



Protected Open Space in Potential Watersheds



Paul Susca - NH Department of Environmental Services

New Hampshire's Drinking Water Land Protection Plan

2017 RCP Gathering

WHY A PLAN, AND WHY NOW?

- Need
  - Water supply protection a high priority for land conservation organizations
  - Multiple data sets create confusion
  - Land conservation orgs ask for clarity
- Opportunity
  - Drinking Water and Groundwater Trust Fund

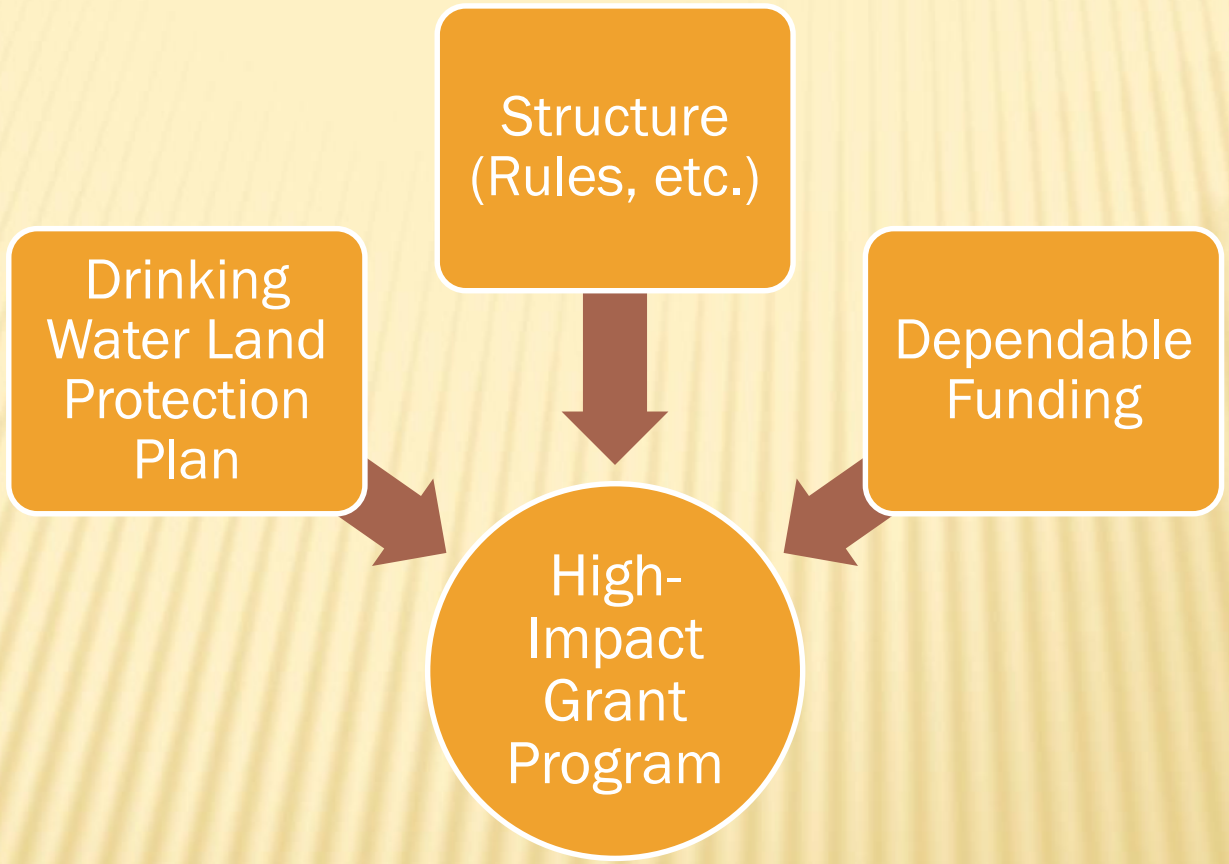
Methyl Tertiary Butyl Ether (MtBE) Lawsuit

- $90 million legal settlement (2013)
  - NHDES MtBE Remediation Bureau
- $236 million judgment (2015)
  - Drinking Water & Groundwater Trust Fund
  - directed by DW&GW Advisory Commission

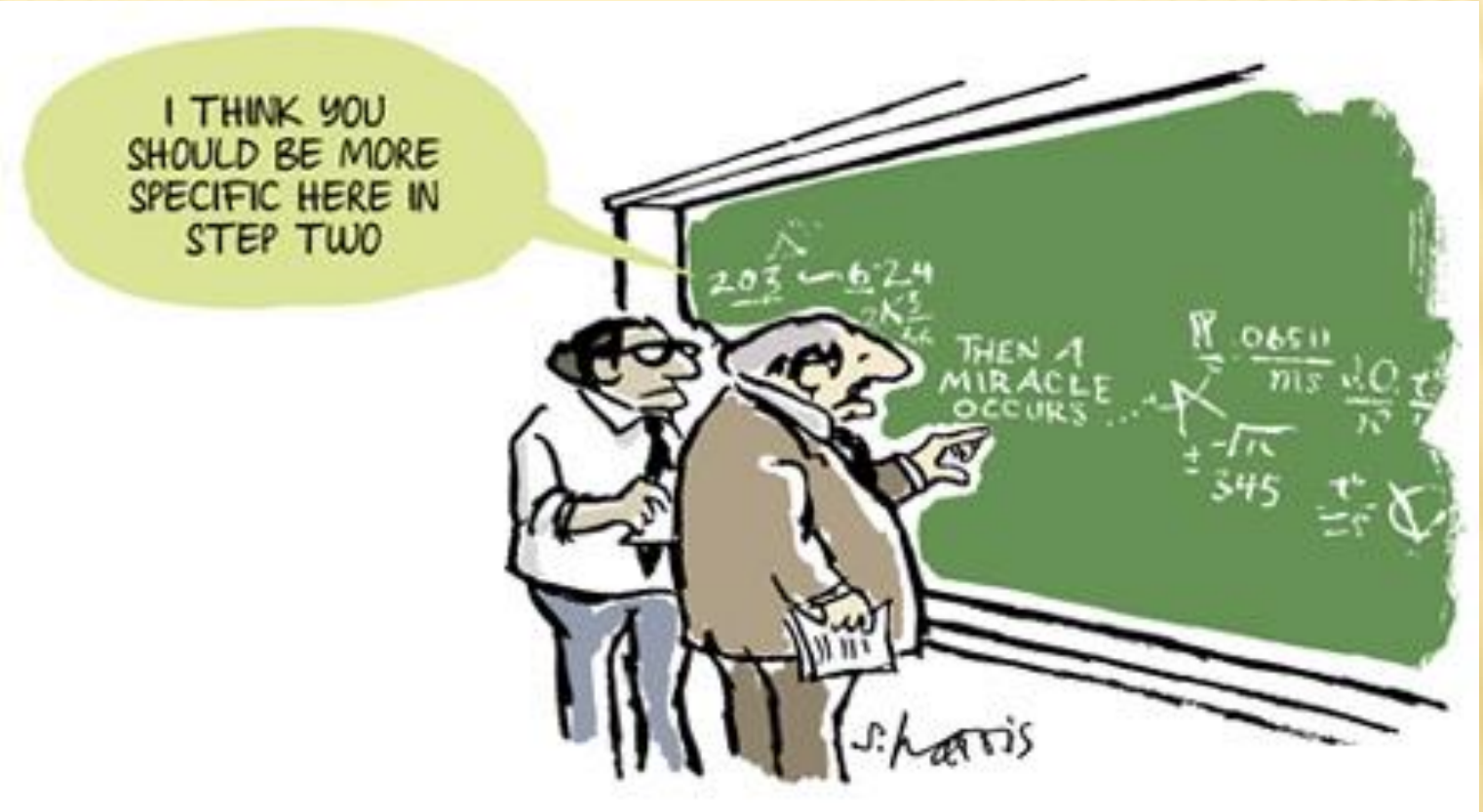
"This is the most significant environmental victory in the history of the state."

NH Attorney General Joseph Foster

THE IDEAL WATER SUPPLY LAND PROTECTION GRANT PROGRAM



HOW DO WE GET THERE?



PARALLEL PROCESSES

PLAN

- NHDES formed advisory group to develop consensus on High Priority Water Supply Lands and next steps
  - Progress Report makes the case for protecting water supply lands and identifies HPWSL

GRANT PROGRAM

- DW & GW Advisory Commi$$ion decides on broad outline
- "Rules Committee" established
- DWGWA Commi$$ion makes first round of loans & grants

Advisory Commi$$ion works with stakeholders and NHDES to finalize HPWSL, decide technical and program issues.

- Finalize* and publish the Plan and HPWSL data set
- Develop guidance and training materials, grant application and criteria (pending)

- Rules Committee designs program, adopts rules
- Next grant round apps due September 2018?

ADVISORY GROUP

- NH Water Works Assoc.
- 4 Public water systems
- 5 Land trusts, etc.
- NH Planners Assoc.
- NH Association of Regional Planning Commissions
- NH Assoc. of Conservation Commissions
- Marcy Lyman

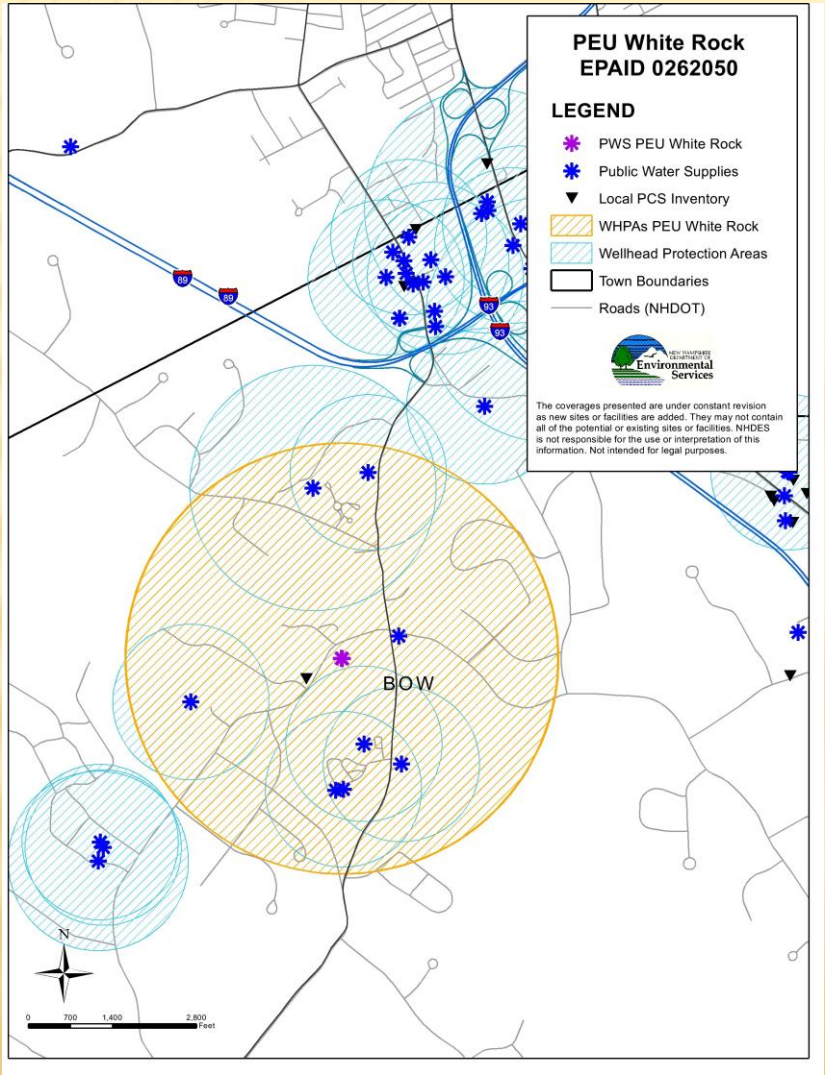
WATER SUPPLY LANDS IN NEW HAMPSHIRE GENERALLY CONSIST OF

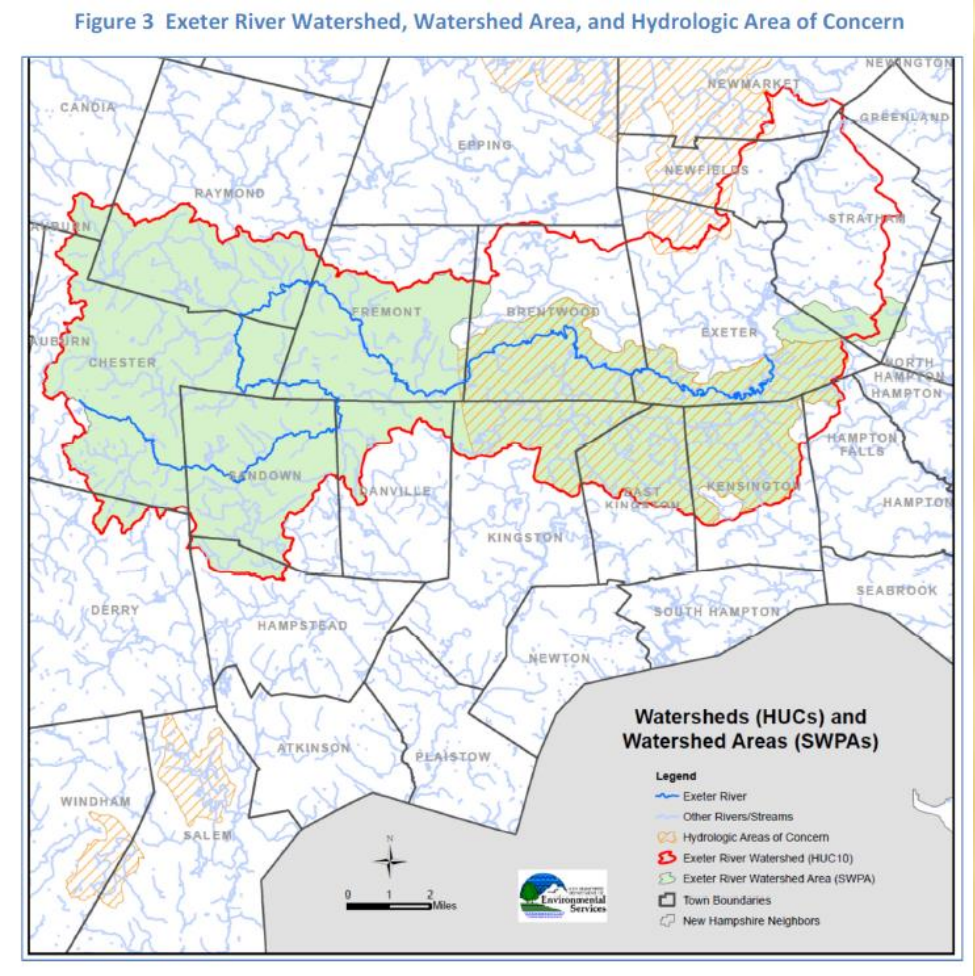
1. Water supply watersheds

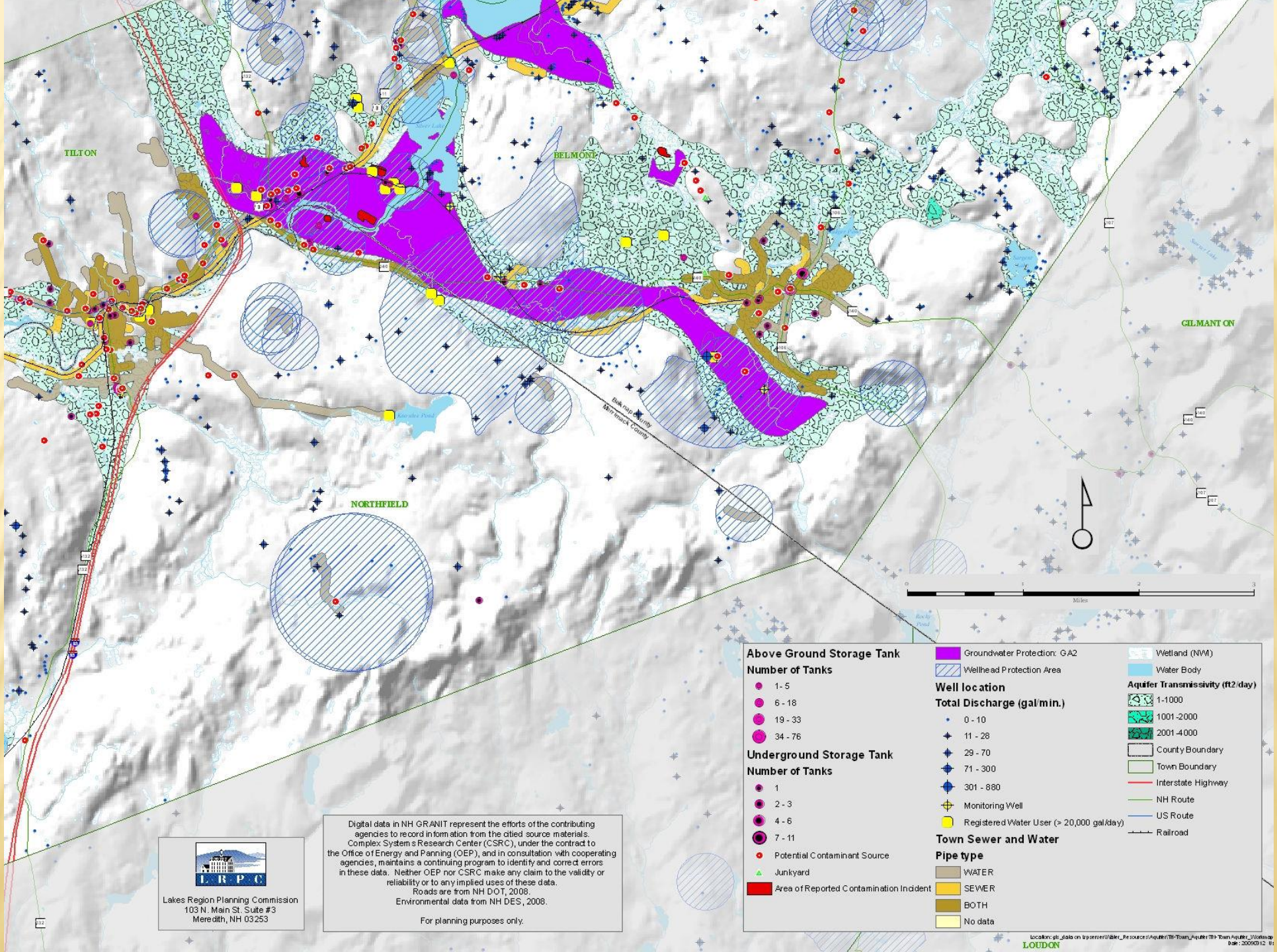
2. Wellhead protection areas (WHPAs) for public water system (PWS) wells

3. Potential future public water supply sources, such as stratified-drift aquifers

HIGH PRIORITY – WHPAs, HACs, SDA






TILTON
BELMONT
GILMANTON
NORTHFIELD
LOUDON
Belknap County
Merrimack County
Above Ground Storage Tank
Number of Tanks
1 - 5
6 - 18
19 - 33
34 - 76
Underground Storage Tank
Number of Tanks
1
2 - 3
4 - 6
7 - 11
Potential Contaminant Source
Junkyard
Area of Reported Contamination Incident
Groundwater Protection: GA2
Wellhead Protection Area
Well location
Total Discharge (gal/min.)
0 - 10
11 - 28
29 - 70
71 - 300
301 - 880
Monitoring Well
Registered Water User (> 20,000 gal/day)
Town Sewer and Water
Pipe type
WATER
SEWER
BOTH
No data
Wetland (NWI)
Water Body
Aquifer Transmissivity (ft2/day)
1-1000
1001-2000
2001-4000
County Boundary
Town Boundary
Interstate Highway
NH Route
US Route
Railroad
Miles
L R P C
Lakes Region Planning Commission
103 N. Main St. Suite #3
Meredith, NH 03253
Digital data in NH GRANIT represent the efforts of the contributing agencies to record information from the cited source materials. Complex Systems Research Center (CSRC), under the contract to the Office of Energy and Planning (OEP), and in consultation with cooperating agencies, maintains a continuing program to identify and correct errors in these data. Neither OEP nor CSRC make any claim to the validity or reliability or to any implied uses of these data.
Roads are from NH DOT, 2008.
Environmental data from NH DES, 2008.
For planning purposes only.

SUMMARY WATER SUPPLY LANDS (NH)

Table 1 Water Supply Lands in N.H.

Categories of water supply lands	Land in Each Category		Percent Permanently Conserved*	Percent Developed**	Unprotected, Undeveloped Land	
	Acres	% of State			Acres	% of State
1. Water supply watersheds	4,136,020	70	27	6.8	2,762,963	47
Hydrologic Areas of Concern (HACs)	**454,755**	**7.7**	**37**	**10**	**241,014**	**4.1**
2. Wellhead Protection Areas (WHPAs)	**387,529**	**6.5**	**11**	**19**	**266,496**	**4.5**
3. Stratified-Drift Aquifers (SDAs)	711,717	12	13	23	451,962	7.6
High-Yield SDAs (>= 1,000 ft^2/day)	**166,448**	**2.8**	**14**	**25**	**102,434**	**1.7**
High-Priority Water Supply Lands (HACs + WHPAs + High-Yield SDAs)* **	**930,138**	**16**	**24**	**15**	**561,930**	**9.5**

** Based on NH GRANIT Conservation Lands data*

***Based on National Land Cover Database 2011, inferred from satellite imagery.*

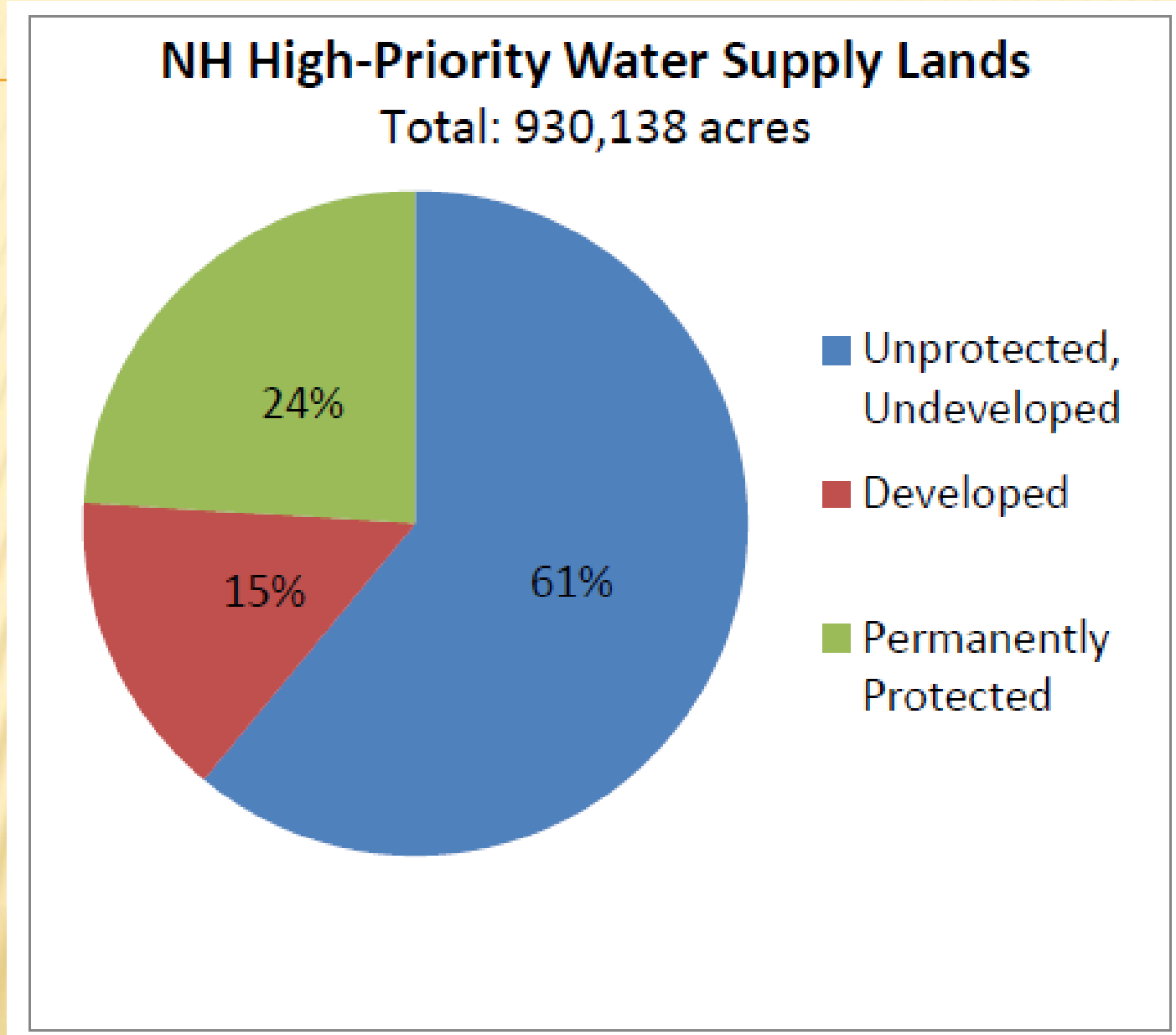
**** Totals do not necessarily add up due to rounding and overlap.*

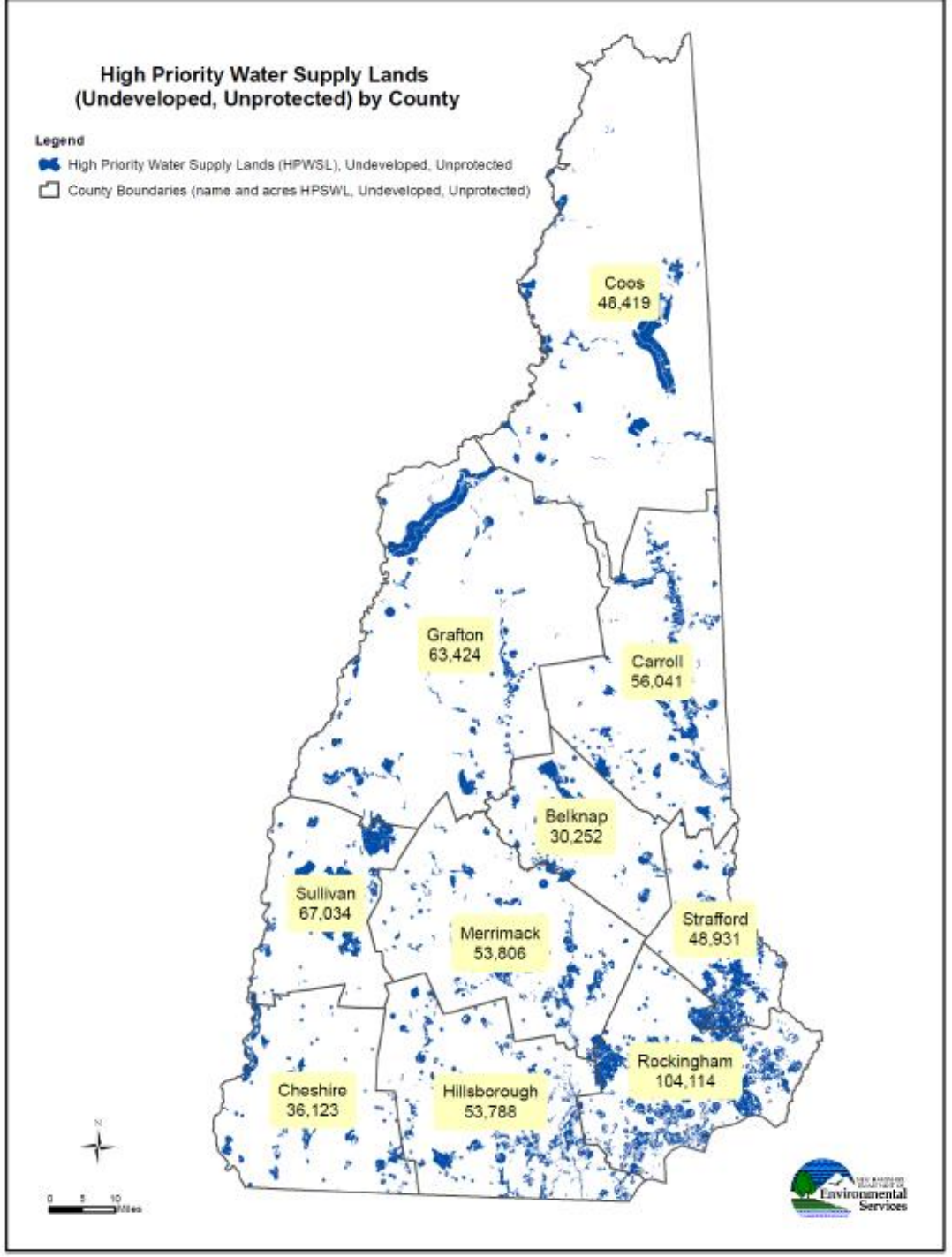
PRIORITY WATER SUPPLY LANDS

Table 2 Acreage of High-Priority Water Supply Lands

Category	High Priority		Unprotected, Undeveloped High-Priority Water Supply Lands	
	Description and % of State	Unprotected as % of State	Acres	% of State
Wellhead Protection Areas (WHPAs) for public water system wells	WHPAs for all community water systems 6.5	5.8	266,496	4.5
Water Supply Watershed Areas for surface sources used by public water systems	Hydrologic Areas of Concern* 7.7	4.9	241,014	4.1
High-Yield Aquifers – potential future water supplies	Stratified-drift aquifers where minimum transmissivity >= 1,000 ft^2/day 2.8	2.4	102,434	1.7
TOTAL	**16**	**12**	**561,930**	**9.5**

*Provisional – water suppliers will be invited to suggest adjustments for their respective watersheds.
**Preliminary estimate based on watersheds in N.H. where PAAs have been delineated.


NH High-Priority Water Supply Lands
Total: 930,138 acres
24%
15%
61%
Unprotected, Undeveloped
Developed
Permanently Protected


High Priority Water Supply Lands
(Undeveloped, Unprotected) by County
Legend
High Priority Water Supply Lands (HPWSL), Undeveloped, Unprotected
County Boundaries (name and acres HPSWL, Undeveloped, Unprotected)
Coos
48,419
Grafton
63,424
Carroll
56,041
Belknap
30,252
Sullivan
67,034
Merrimack
53,806
Strafford
48,931
Rockingham
104,114
Cheshire
36,123
Hillsborough
53,788
N
0 5 10
Miles
Environmental
Services

NEXT STEPS

- Identify top-tier lands (“Highest Priority”)?
- Adjust Hydrologic Areas of Concern (within watersheds) based on PWS input
- Develop cost estimate?
- Draft Plan, solicit public input, publish Plan
- Publish HPWSL dataset
- Develop guidance and training materials
- Provide TA and training

QUESTIONS

- How does 9.5% strike you?
- What should the “Plan” consist of?
- How to estimate cost of protection?
- How to estimate demand for grants?

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City of Manchester, NH
Water Supply Protection History

- 1871 City chooses Lake Massabesic for drinking water supply.
- 1871-1950 Over 400 deeds are bought compiling 8,000 acres of buffers around Lake Massabesic and its associated ponds and streams.
- Properties are managed as working forests for water treatment.
- Property taxes become a significant challenge from 1970-present as most of the land is out of Manchester and forbidden from Current Use Program tax relief.

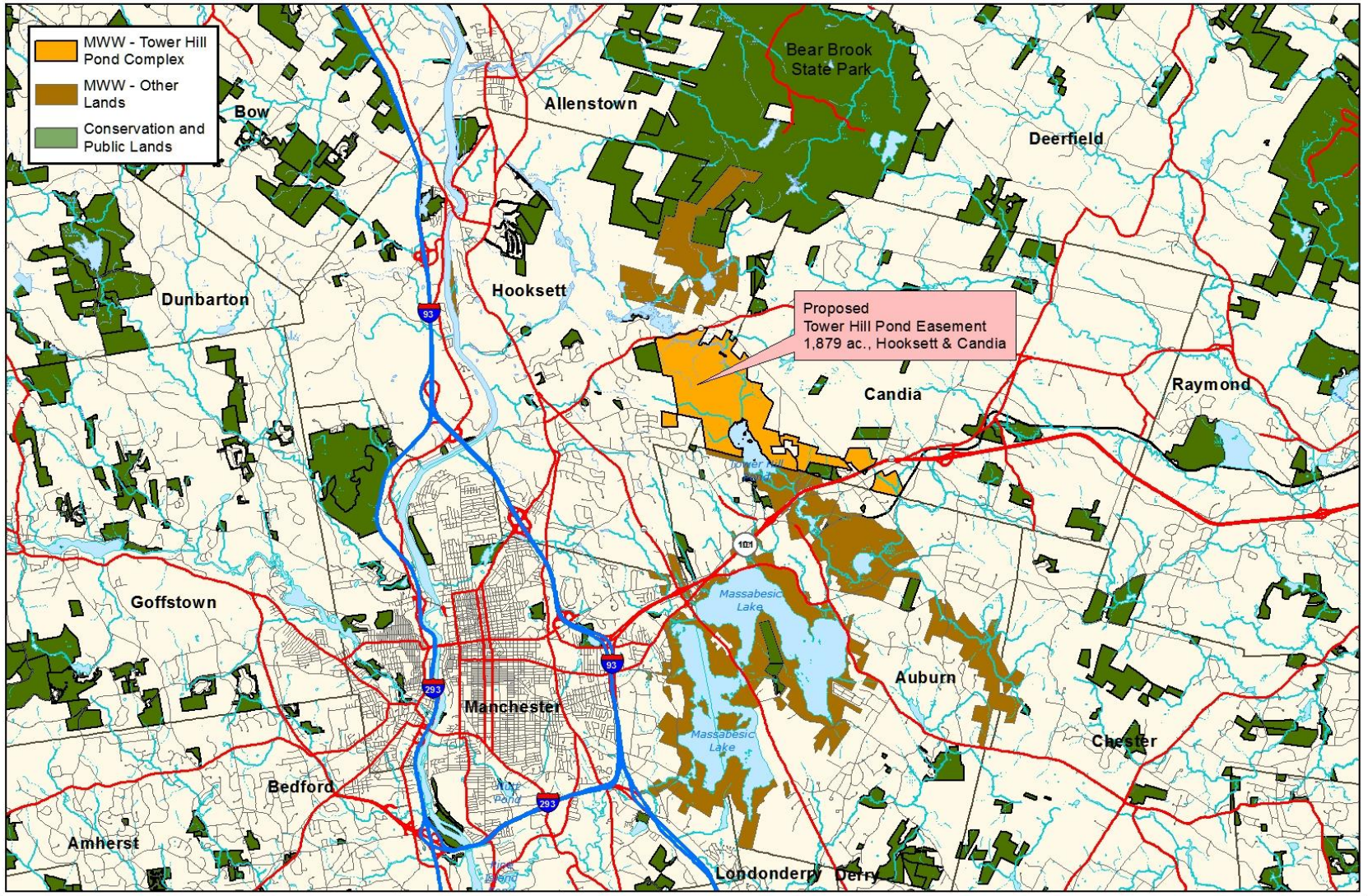
The New Age of Land Protection

- Manchester Water Works forms a working group with Forest Society, Southeast Land Trust and Bear-Paw Regional Land Trust to explore sale of conservation easements.
- Tower Hill Project is selected as pilot project.
- Forest Society takes first project and runs with it.
- As project budget numbers are solidified, new opportunities become reality: Three additional land purchases made in anticipation of project completion.

Tower Hill Pond Easement Project
1,870 acres, Candia & Hooksett, NH

Manchester Water Works
Society for the Protection of New Hampshire Forests

Tower Hill Pond Easement Project



Three Additional Lands

- Vaillancourt Property: 21 acres in Auburn, NH. Very close to Lake Massabesic. Property abuts a major wetland complex which feeds a major tributary to Lake Massabesic. Purchase Price $100,000.
- Harrison Trust Property: 6 acres in Hooksett, NH abutting Tower Hill Complex. It has a ROW access, a building lot, and designated prime wetlands. Purchase price $22,000.
- Babin Property: 2 acres in Auburn, NH. Purchase price $470,000.

Land Acquisition Plan

- Currently MWW owns 400+ deeds, totaling over 8,000 acres and were bought for $2.6 million (mostly before 1950).
- Vacant land in watershed is around 400 properties, totalling almost 8,000 acres, with an assessed value of $32 million.
- Homes with backland are around 300 properties, totaling 5,000 acres, with an assessed value of $76 million (The home costs need to be removed).

Treatment Cost Savings

- Taste and Odor Problems from high algae levels
  - Increased ozone treatment.
  - More pressure on carbon filters.
  - Increased use of chlorine/chloromines.
- Turbitity levels
  - Cost of more filter backwashes.
  - Cost of more sludge disposal.

Using Watershed Property Assets to Fund Conservation Efforts

- Easement sales to buy properties, cleanup troubled sites, or buy easements on properties.
- Win/win for water utility and community.
- Great news/public relations for water supply.
- Leaves Board Members feeling good.
- Permanently protects land that many think is already permanently protected but is not.

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Tapping our Forests: Investments in Healthy Watersheds for Drinking Water

Healthy Watersheds Consortium Grant Program

Jeff Lerner
U.S. Endowment for Forestry & Communities

Healthy Watersheds Consortium Grant Program

A partnership to accelerate watershed protection

United States Department of Agriculture
NRCS Natural Resources Conservation Service

U.S. Endowment for Forestry and Communities

U.S. Endowment for Forestry and Communities

- Created in 2006 at request of U.S., Canadian governments
- 501 c(3) Public Charity; ~$200 million perpetual endowment
- Based in Greenville, S.C.; 8 staff
- Extensive partnerships with USDA Forest Service, NRCS, DOD
- No management fees charged to EPA—100% of EPA funds to projects
- Consulting help from Jeff Lerner, Kitty Weisman, Todd Gartner (WRI)

Challenge:
National Impact with Available $$$?

- How to accelerate the protection of watersheds in relatively good condition?
- Learn from the best
  - World Resources Institute Watershed Protection Success Factors
  - Bonneville Environmental Foundation: Long-term funding, social support
- Seek high financial leverage projects
  - Modest HWC grant to tap big money from others
- Proactively seek partnerships

U.S. Endowment for Forestry and Communities

Healthy Watersheds Consortium Grant Program

- Focus: large-scale, landscape protection (land)
- Use modest HWC award to leverage results
- ~$3 M available for grants (EPA, NRCS, Endowment)
- 3 funding categories:
  - Watershed Action Projects—quick, high-leverage results
  - Building Watershed Protection Capacity—social, human
  - Advancing the State of Practice—technologies, practices

U.S. Endowment for Forestry and Communities

HWC Year 1&2 Awards Summary

- $4.2 million awarded
- 25 awards; 20 NGOs and 1 State agency, 1 Tribe, 1 publicly owned water utility, 1 local government consortium, 1 Consulting firm
- Expected Results:
  - 586,000 acres/>50 stream miles protected in next 3 years
  - 7.5 million acres additional protection possible (20 years)

U.S. Endowment for Forestry and Communities

Pacific Forest Trust – California

- Healthy Watersheds California
- Advancing the State of Practice/$225,000/3 years
- Goal: 7 million acres to be protected and restored
- Generate $4.25 billion – WIFIA, SRF, beneficiaries pays
- State policy: watershed management funding on par with dams, etc.
- Why? Game Changer with potential large acreage impacts, replicable model

PACIFIC FOREST TRUST

U.S. Endowment for Forestry and Communities

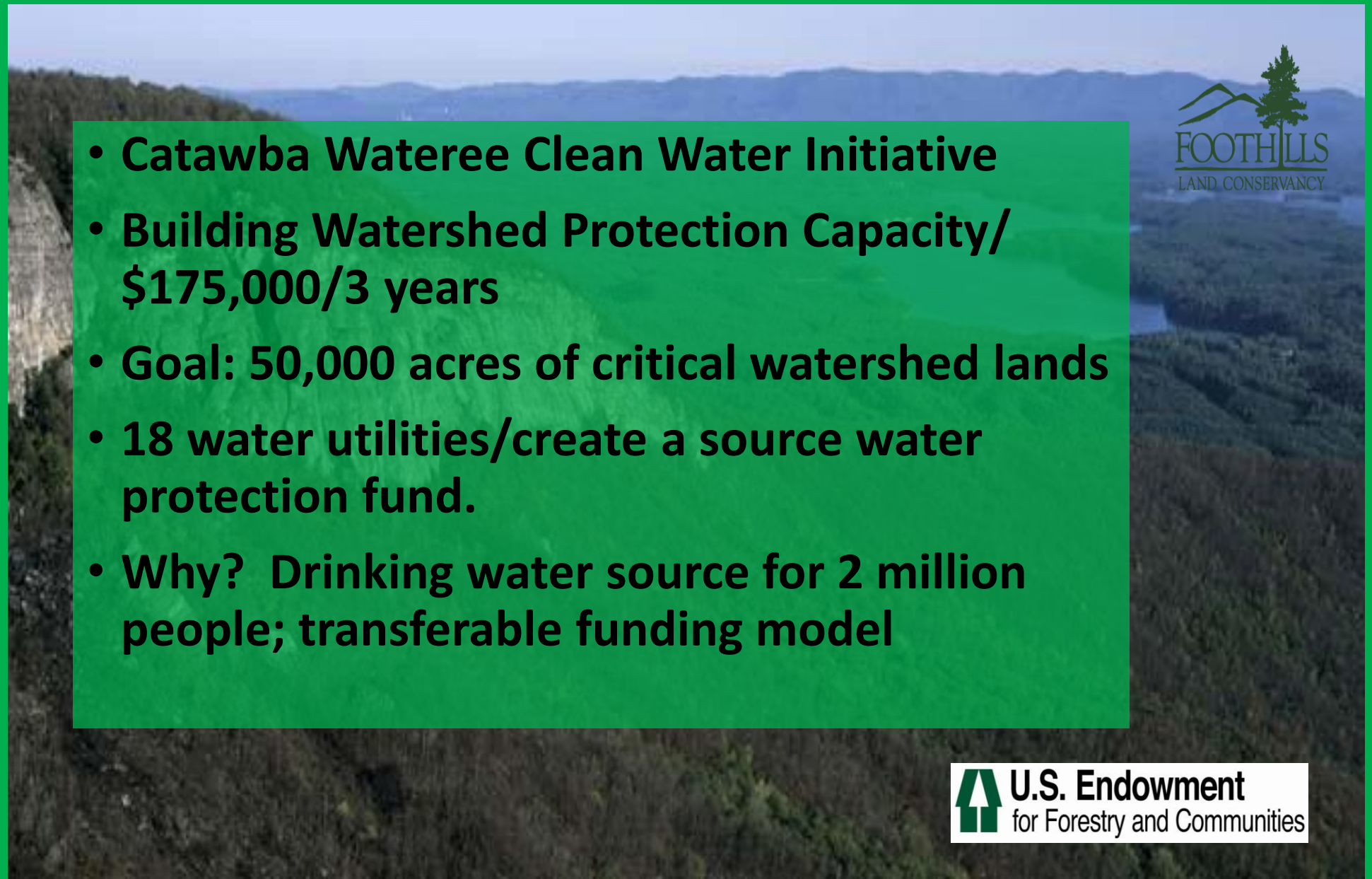
Downeast Salmon Federation - Maine

- Permanently Protecting Largest Rivers in Eastern Maine
- Building Watershed Protection Capacity/$150,000 over 3 years
- Goal: 80% of habitat corridors in Washington County by 2025
- Protect stream corridors faster – 10 miles/year.
- Why? Ecologically intact; available inexpensive land; passion of salmon anglers; fishery helps local economy

Downeast Conservation Network - Maine

- 11 member network, land trusts, educational institutions, applied conservation organizations
- Increased community engagement via workshops
- Goal: 15,000 acres of critical watershed lands
- Building Watershed Protection Capacity/ $150,000/3 years
- Bonus: potential for hundreds of thousands of acres of watershed protection on timber company lands.

Foothills Land Conservancy – North Carolina



- Catawba Wateree Clean Water Initiative
- Building Watershed Protection Capacity/ $175,000/3 years
- Goal: 50,000 acres of critical watershed lands
- 18 water utilities/create a source water protection fund.
- Why? Drinking water source for 2 million people; transferable funding model

FOOTHILLS LAND CONSERVANCY

U.S. Endowment for Forestry and Communities

Chagrin River Watershed Partners - Ohio

- Collaborating to Protect Ohio's Central Lake Erie Basin Watersheds
- Building Watershed Protection Capacity/ $200,000/3 years
- Goal: 30,000 acres of watershed lands, 425 miles of streams
- Work with 75 local communities to protect watersheds
- Why? Community engagement; Local policies; SRF funds

CHAGRIN RIVER WATERSHED PARTNERS

U.S. Endowment for Forestry and Communities

Trust for Public Land - California

- Clean Water State Revolving Loan Fund to secure >$150 million
- Goal: Protect >150,000 acres of watershed forests
- Watershed Action Project/$200,000/3 years
- Bonus: SRFs for watershed protection

THE TRUST for PUBLIC LAND

U.S. Endowment for Forestry and Communities

How SRF Programs Work

Federal Capitalization Grants

State Matching Funds

Bond Sales (Leveraging)

Clean Water State Revolving Fund

Disbursements

Repayments P&I (20 yr. loan)

Water Quality Improvement Projects

Ohio Environmental Protection Agency

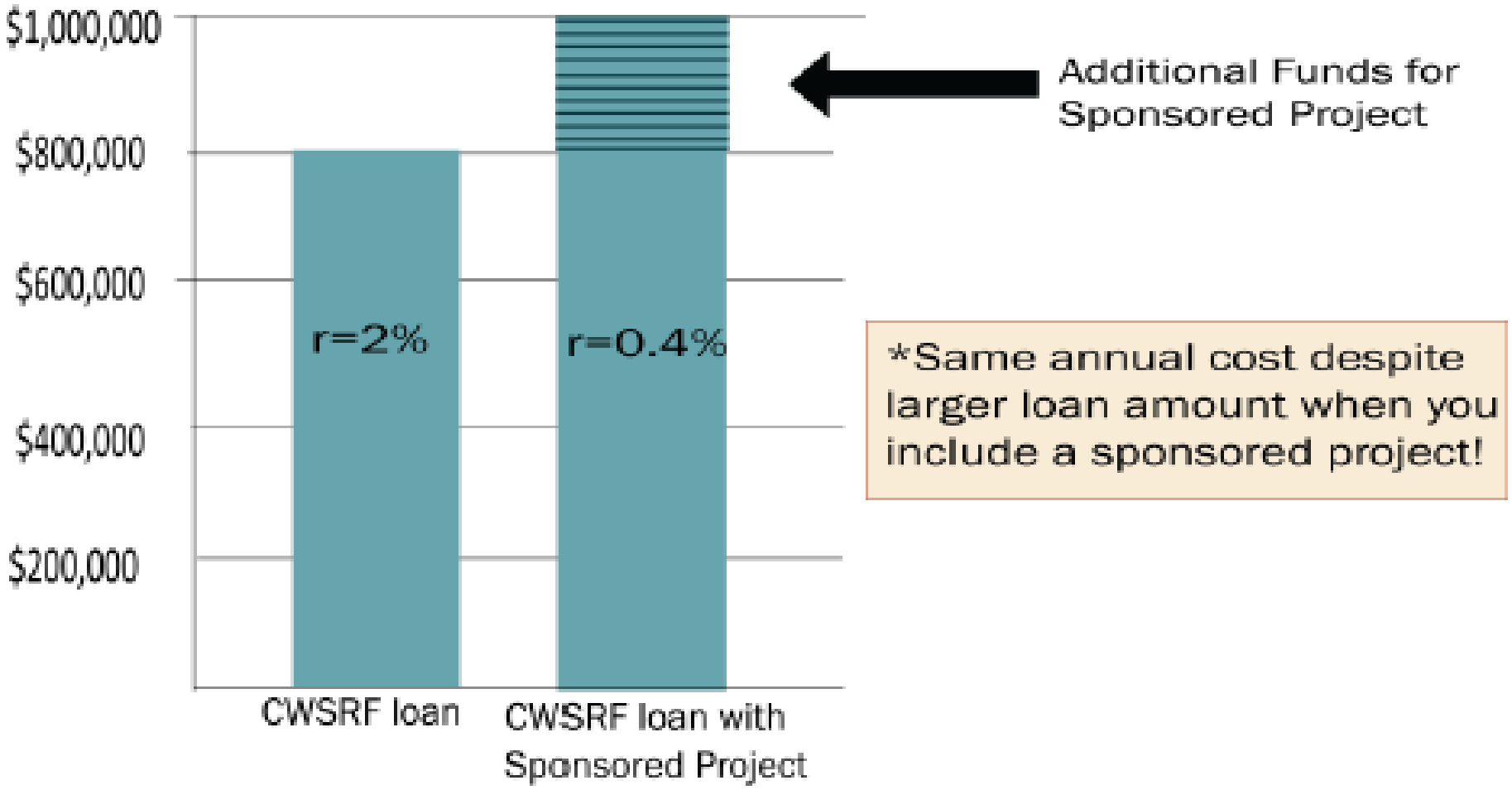
Problem with a Loan Program

This generates revenue thru P&I payments from sewer bills…

This doesn't…

Ohio Environmental Protection Agency

	Loan Amount	Interest Rate (r)	Annual Amortized Cost*
CWSRF Loan	$800,000	2%	$35,484
CWSRF Loan with Sponsored Project	$1,000,000	0.4%	$35,376



*Same annual cost despite larger loan amount when you include a sponsored project!

WRRSP is *Not* a Grant Program

Federal Capitalization Grants

State Matching Funds

Bond Sales (Leveraging)

Clean Water State Revolving Fund

Disbursements

Repayments P&I (20 yr. loan)

Water Quality Improvement Projects

Advance portion of interest payment to a WRRSP project when the WPCLF loan is awarded

WRRSP Project

Ohio Environmental Protection Agency

WRRSP Results thru 8/2016

- 16th funding cycle
- 128 projects funded
- $165,000,000 awarded
- $133,000,000 disbursed
- 39 different sponsors
- 53 different implementers
- 174 covenants/53 Use restrictions

Ohio Environmental Protection Agency

Program Assistance

For questions or clarification please contact:

- **Peter Stangel (peter@usendowment.org; 404-915-2763)**
- **Jeff Lerner (jalanlerner@gmail.com ; 202-236-1883)**

- **Also EPA and NRCS technical assistance**

www.usendowment.org/healthywatersheds

United States Department of Agriculture
NRCS Natural Resources Conservation Service

U.S. Endowment for Forestry and Communities

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ebago Clean Wat

Western Foothills Land Trust

Loon Echo Land Trust

Portland Water District
From Sebago Lake to Casco Bay

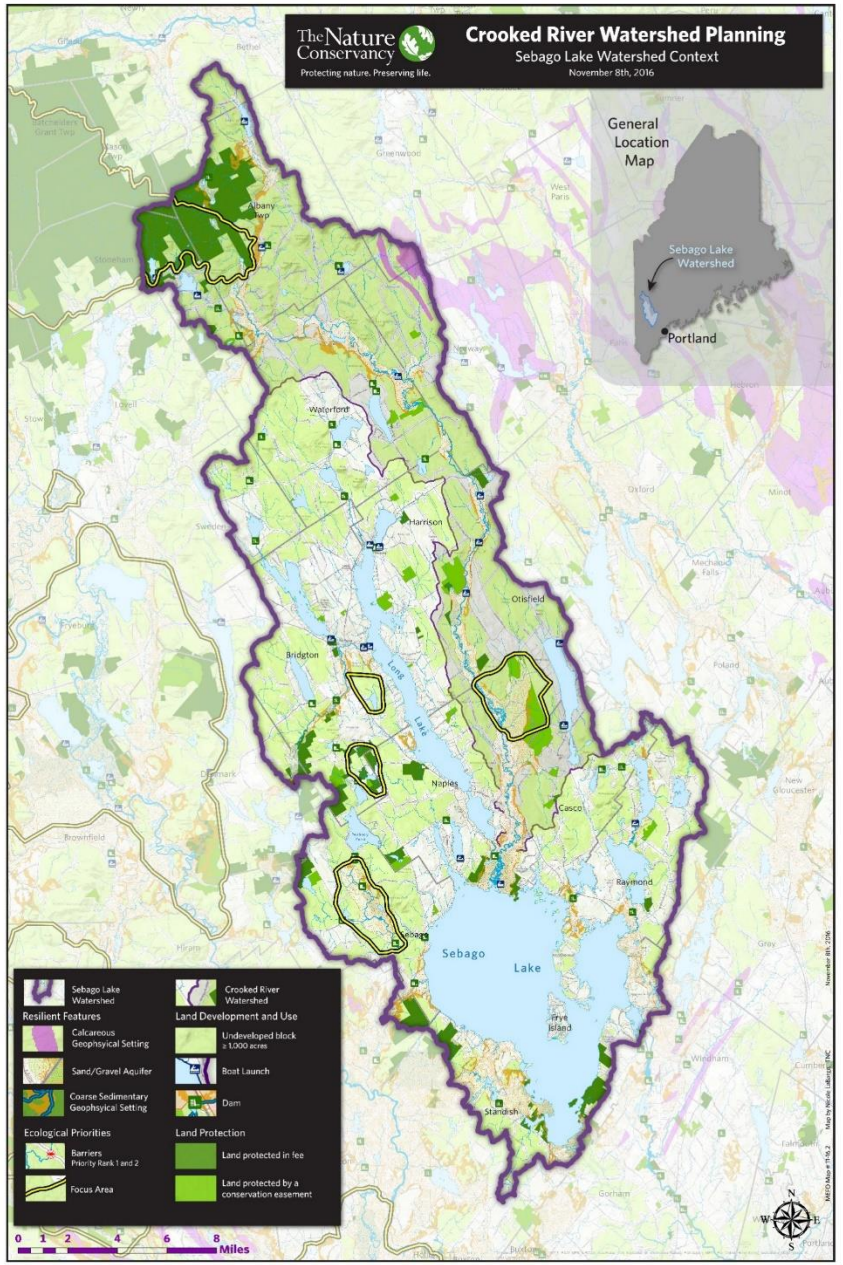
Casco Bay Estuary Partnership

Highstead

Open Space Institute

The Nature Conservancy
Maine

The Trust for Public Land



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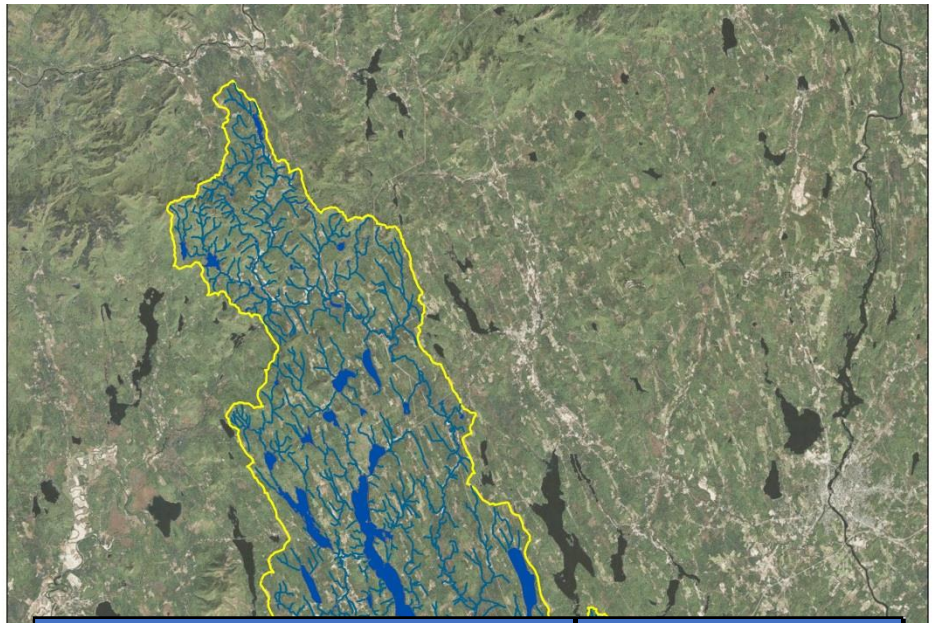


Largest Water Users	Gallons/Year
Calpine	502,860,952
Texas Instruments	261,244,236
Sappi Fine Paper	204,481,508
ON Semiconductor (Fairchild)	119,671,024
Yarmouth Water District	114,945,908
EcoMaine	89,870,704
Maine Medical Center	77,959,552
B&G Foods	58,982,792
Portland Housing Authority	42,312,116
All Breweries	53,384,760
Total Consumption	**1,525,713,552**

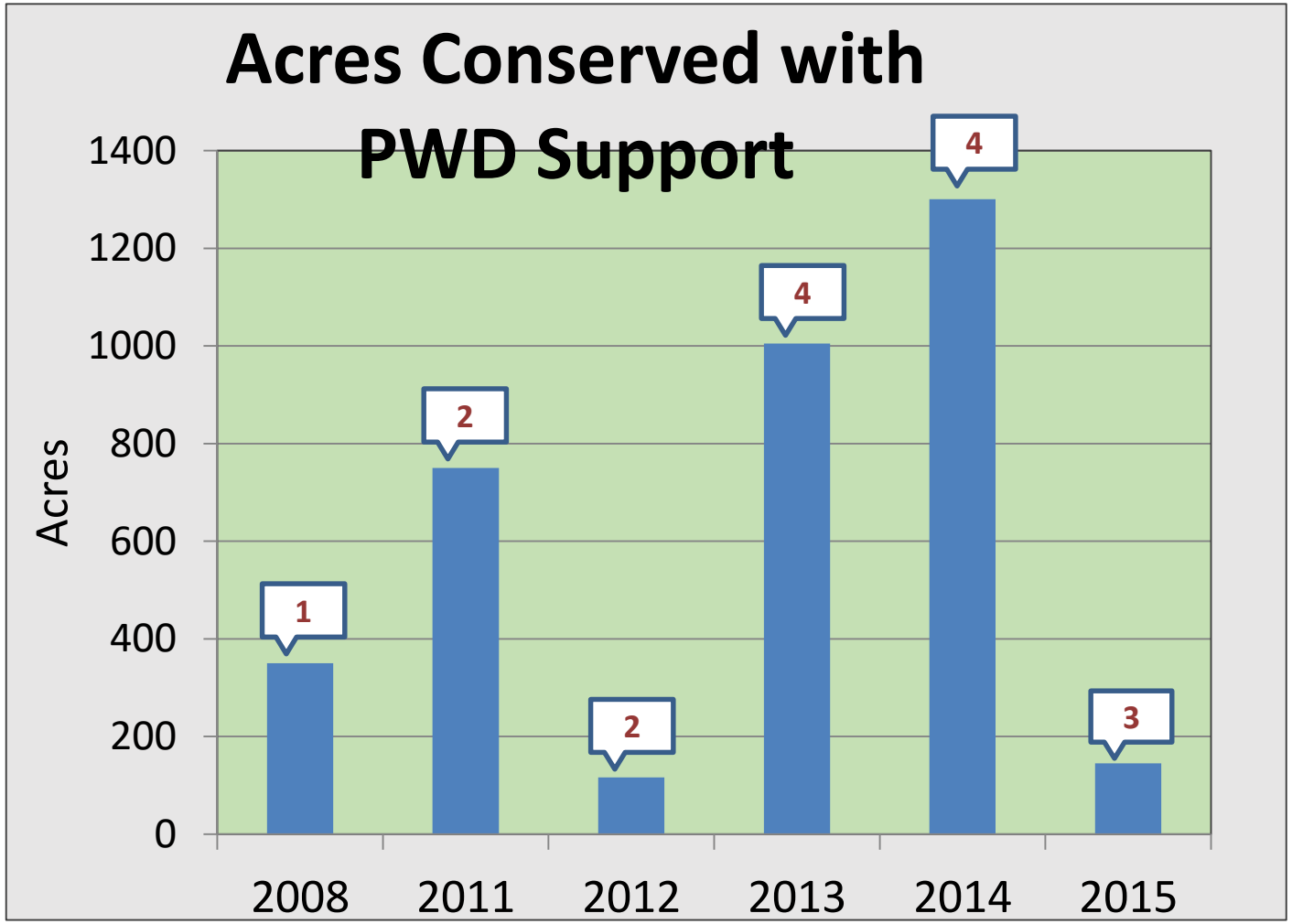
The Context

- The Greater Portland area is home to 1/5 of Maine's population and many of its fastest growing businesses
- Since 1869, municipal drinking water has come from Sebago Lake and its watershed
- Portland Water District is a quasi municipal non-profit
- 6.5 Billion Gallons in 2016:
  - 52% residential users
  - 22% largest water users

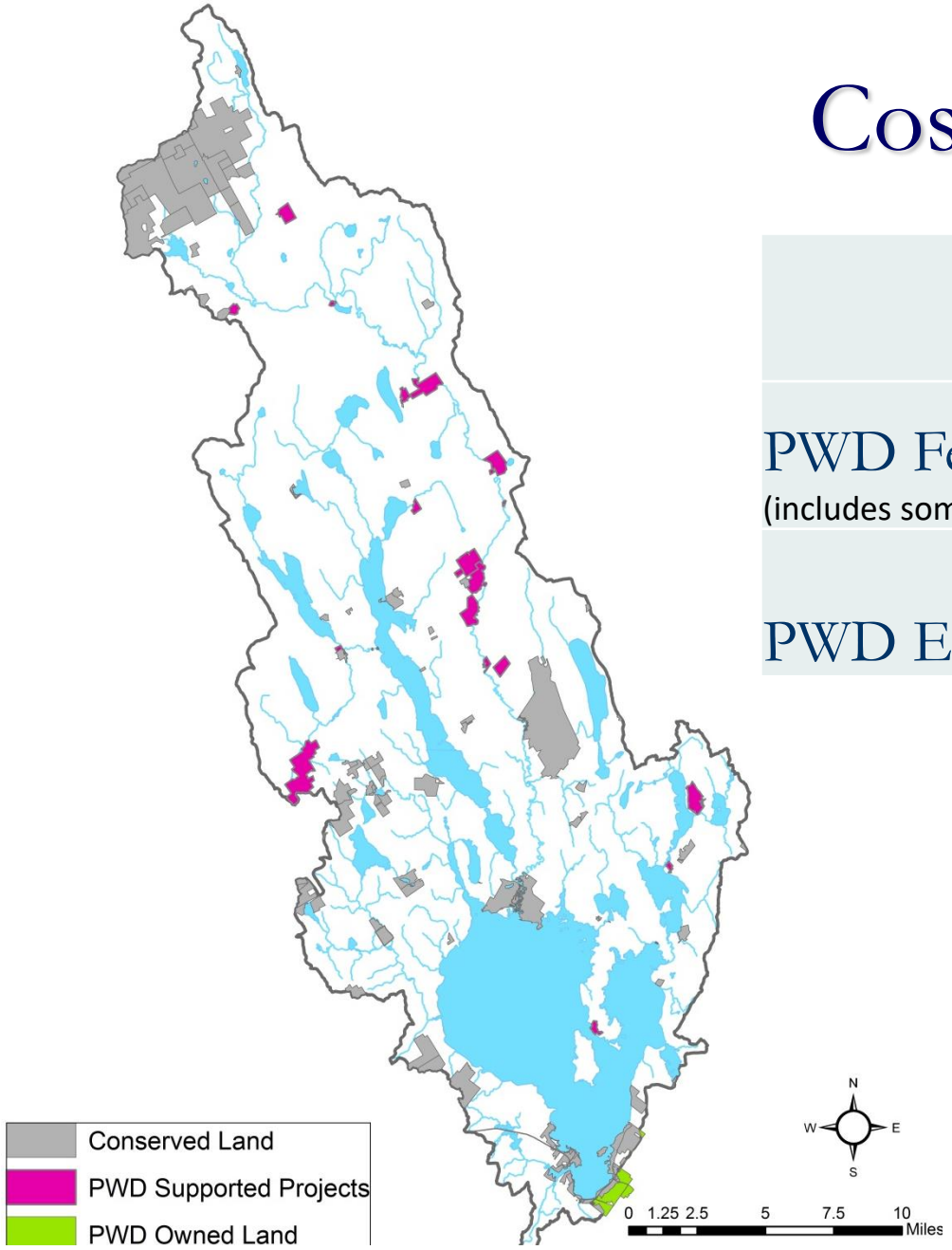
Highstead

Portland Water District
Watershed Land Conservation Initiative

- Began in 2007, informally
- Created formal program in 2013
- PWD will fund up to 25% of conservation transactions
- Projected ~ $6M over next 25 years
- Works primarily with two local land trusts
- 18 total projects, ~4,000 ac



Cost of Protection



	Acres	Appraised value/ac	PWD cost/ac	Leverage
PWD Fee-owned Lands (includes some donations and swaps)	52	$ 607,363	$ 57,440	10.6 x
PWD Easement Grants	4,056	$ 1,660	$ 126	13.2 x

Goal: Protect 25% of watershed

$24-36 million

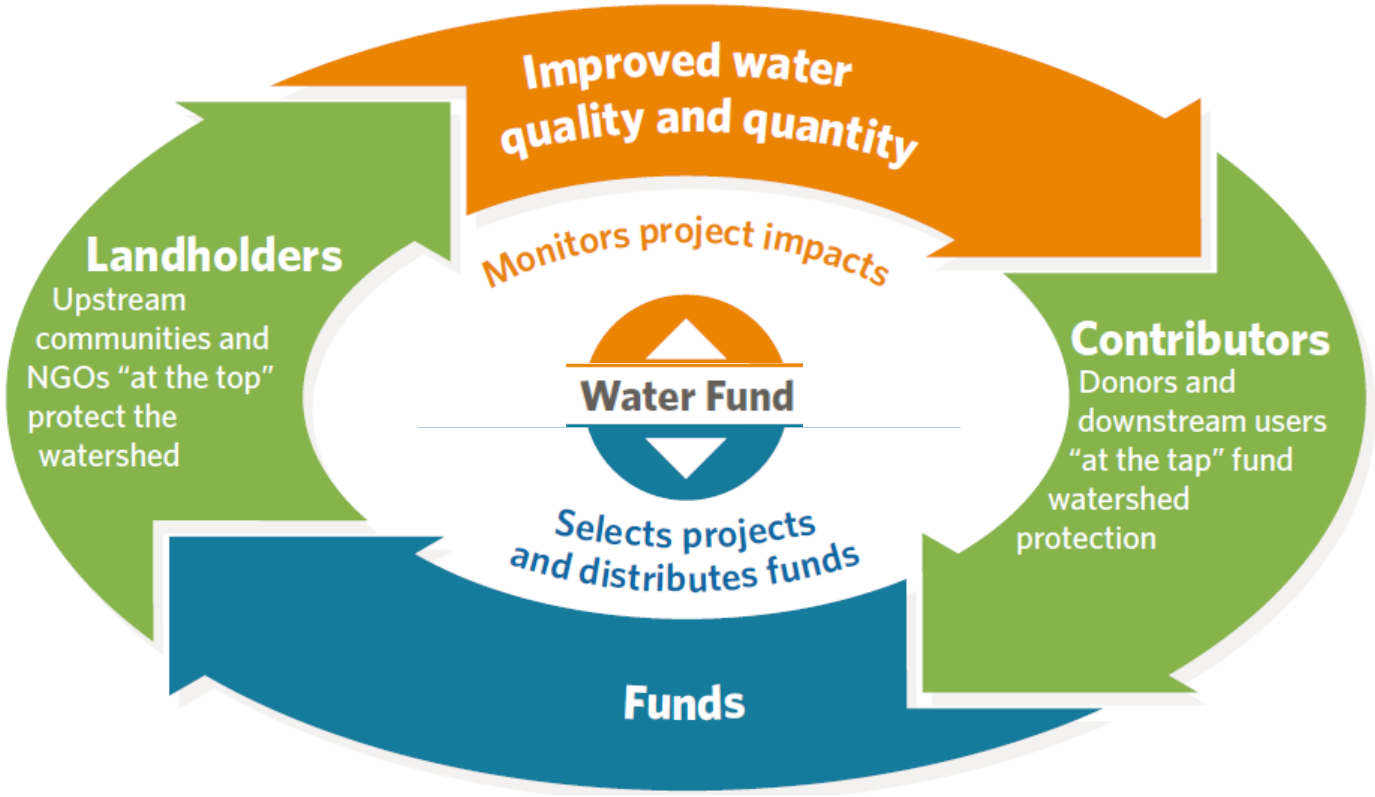
Highstead

The Opportunity

- Collaborate to identify the highest priority places and increase the pace of land protection
- Create new sources of private and public funding for watershed conservation
- Engage large water users and the general public to increase awareness and action

How We're Working

- Conservation planning
- Large water user interviews
- Economic Impact Case
- New Water Fund Sources
  - Private foundation
  - Brewery engagement
  - State revolving funds
- Communications & Marketing



Highstead

Value Proposition

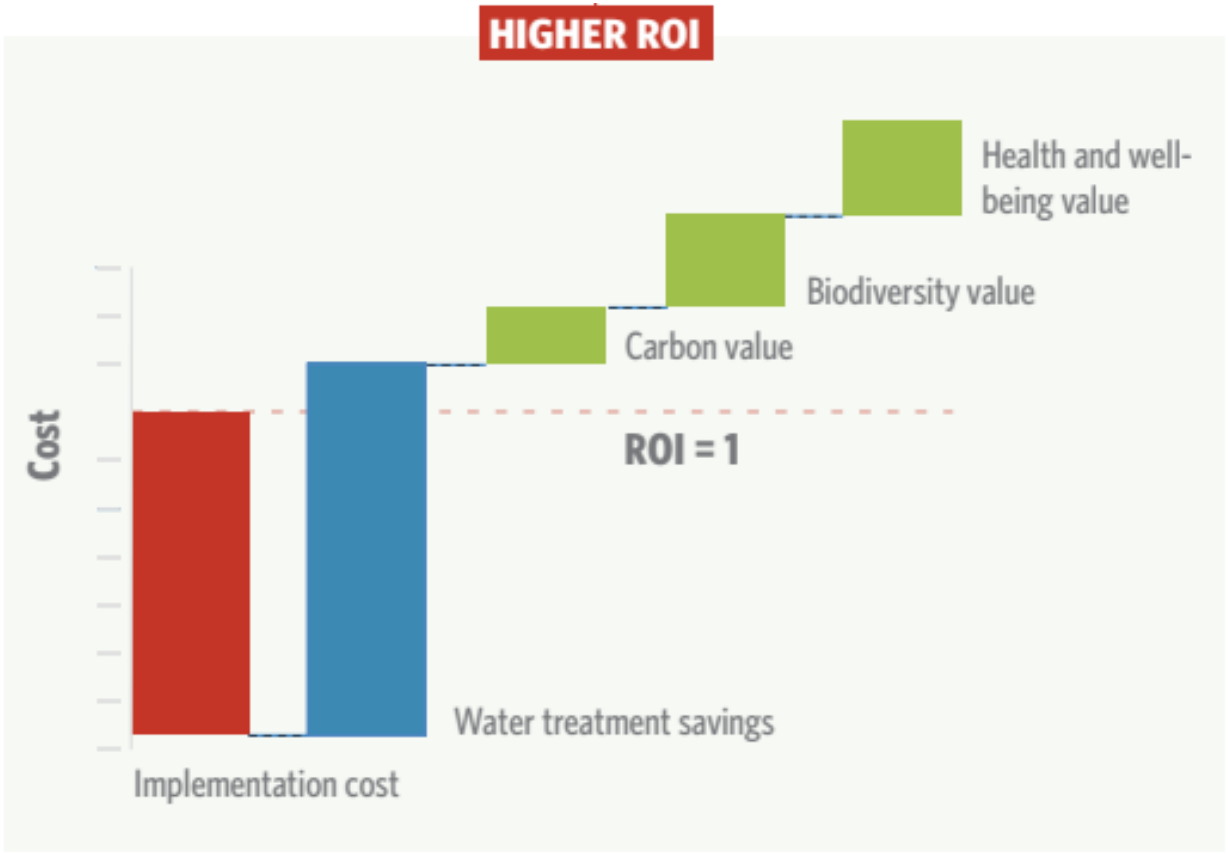
"Cost-savings is a huge benefit. Water is cheaper because we don't have to filter it as much, and it's a huge input for what we do. Portland has more than two dozen local breweries and this is likely why."

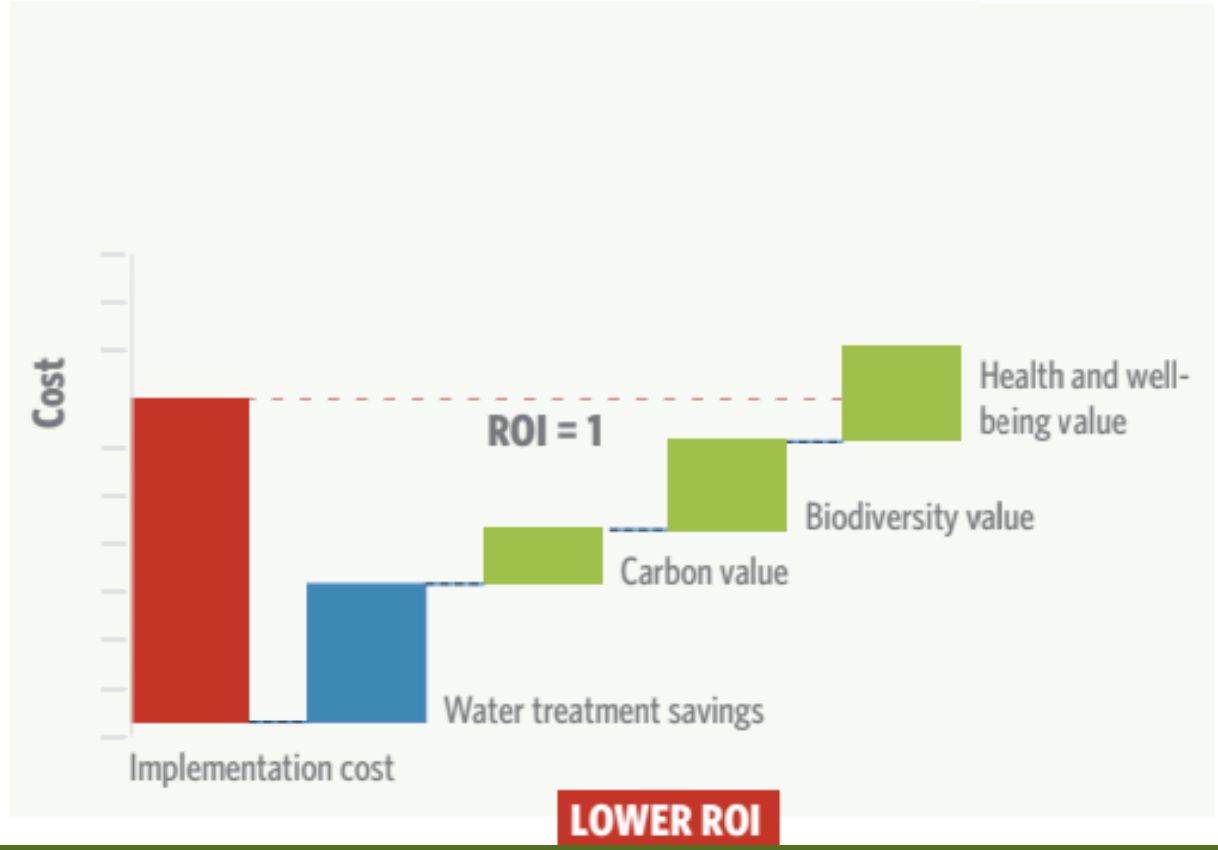
"People coming as tourists want to see pristine lakes. If they fall off their canoe, they don't freak out. It's a huge selling point for the whole state."

"Maine is the most sparsely populated state on the East Coast. There's not a lot of development where that water comes from."

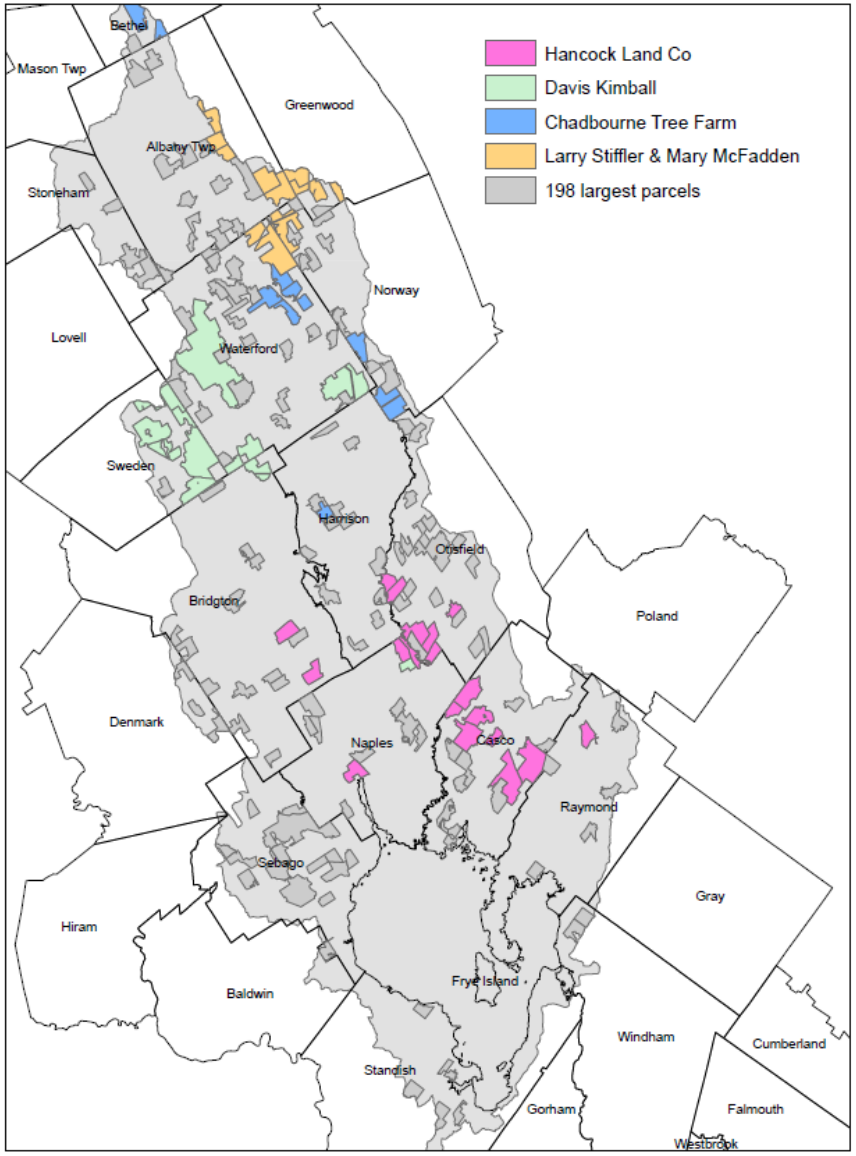
Highstead

Co-Benefits: Added Return on Investment

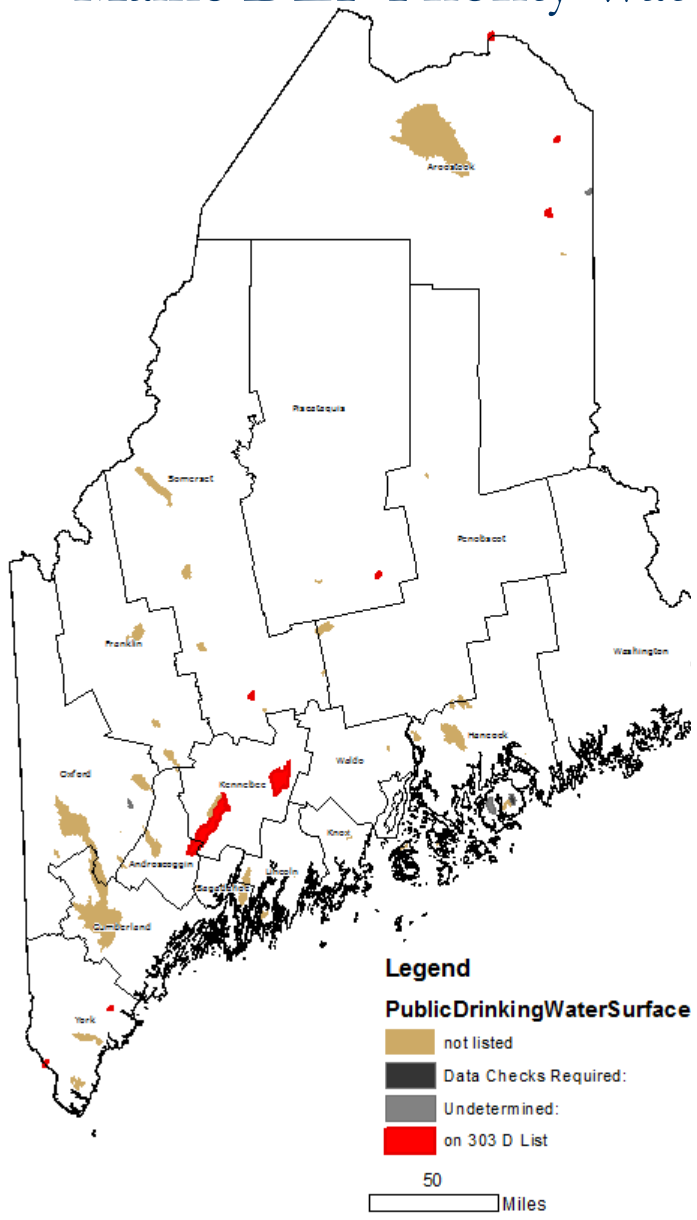




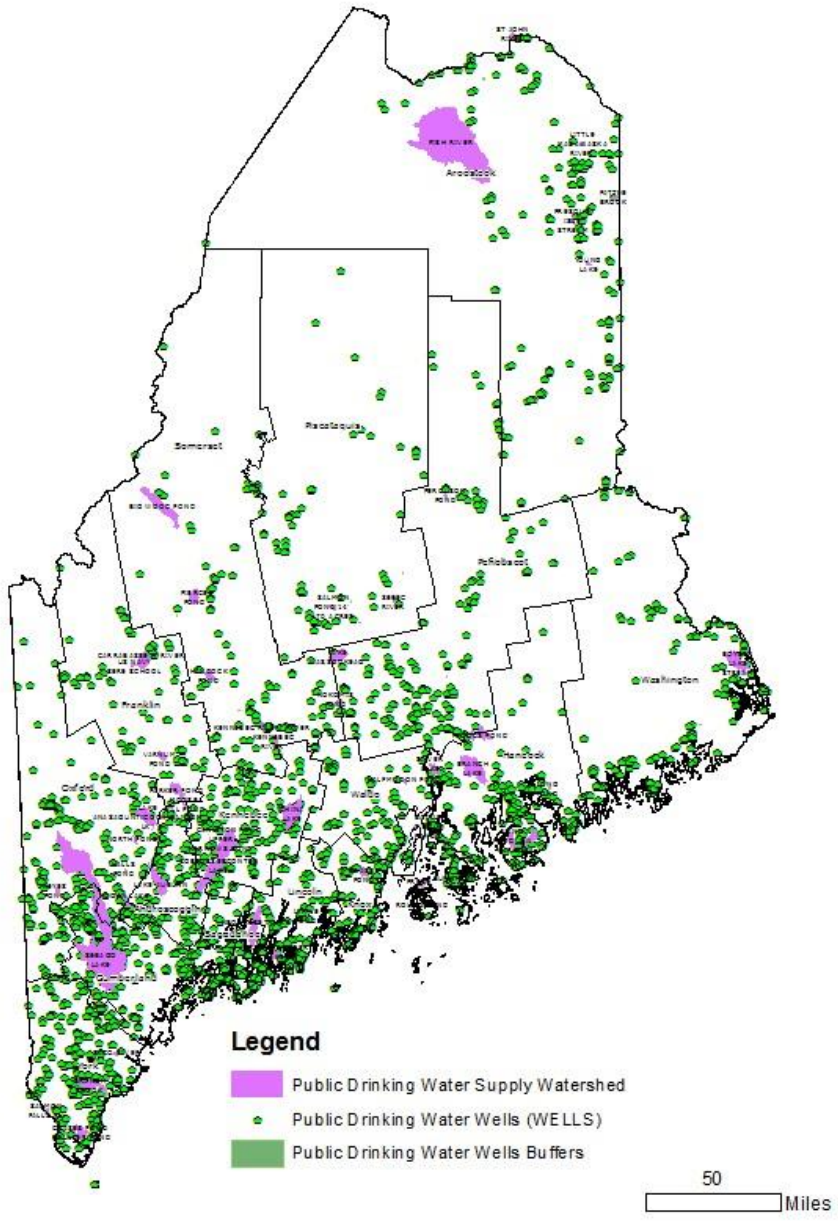
Large Landowners



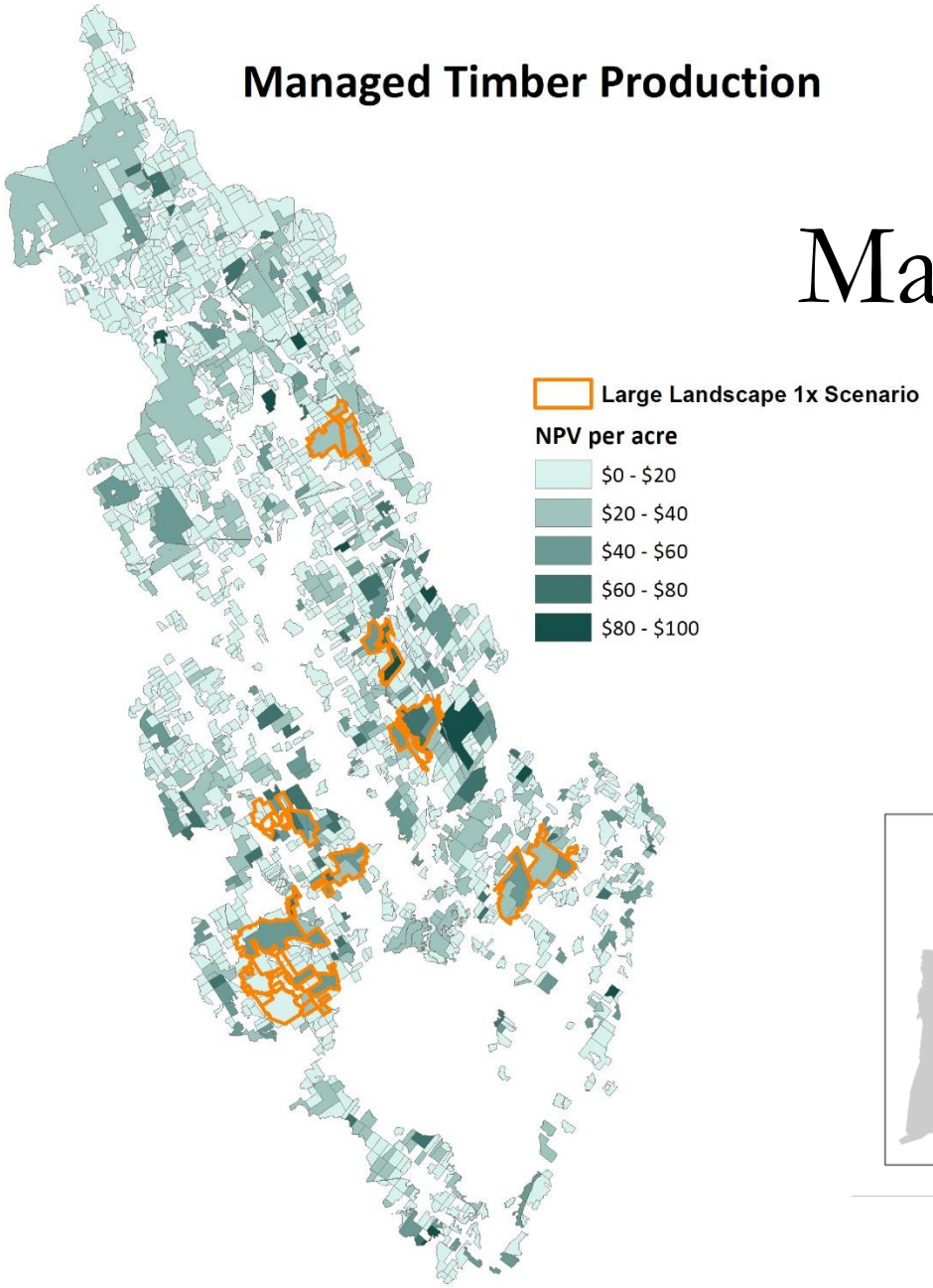
Maine DEP Priority Wat

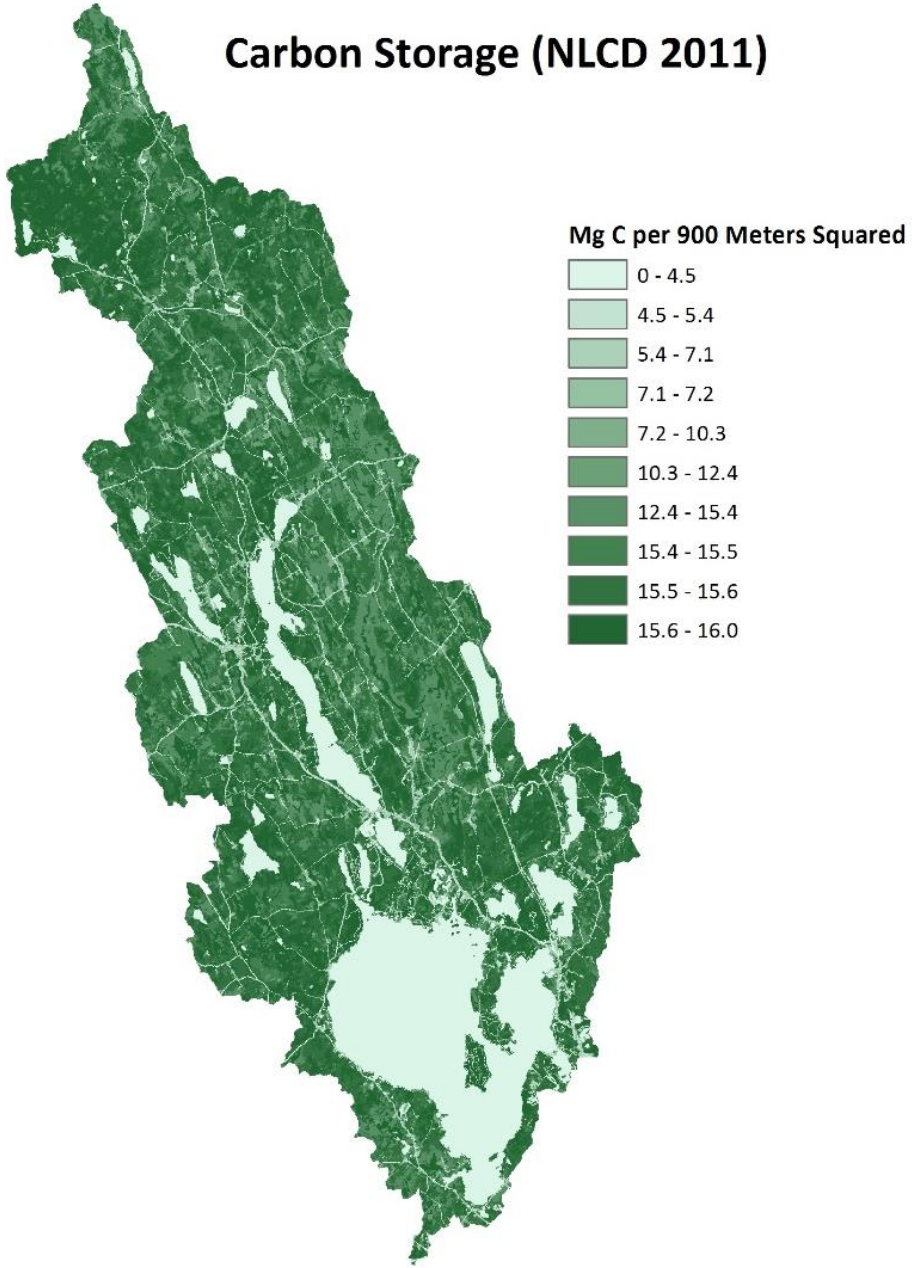


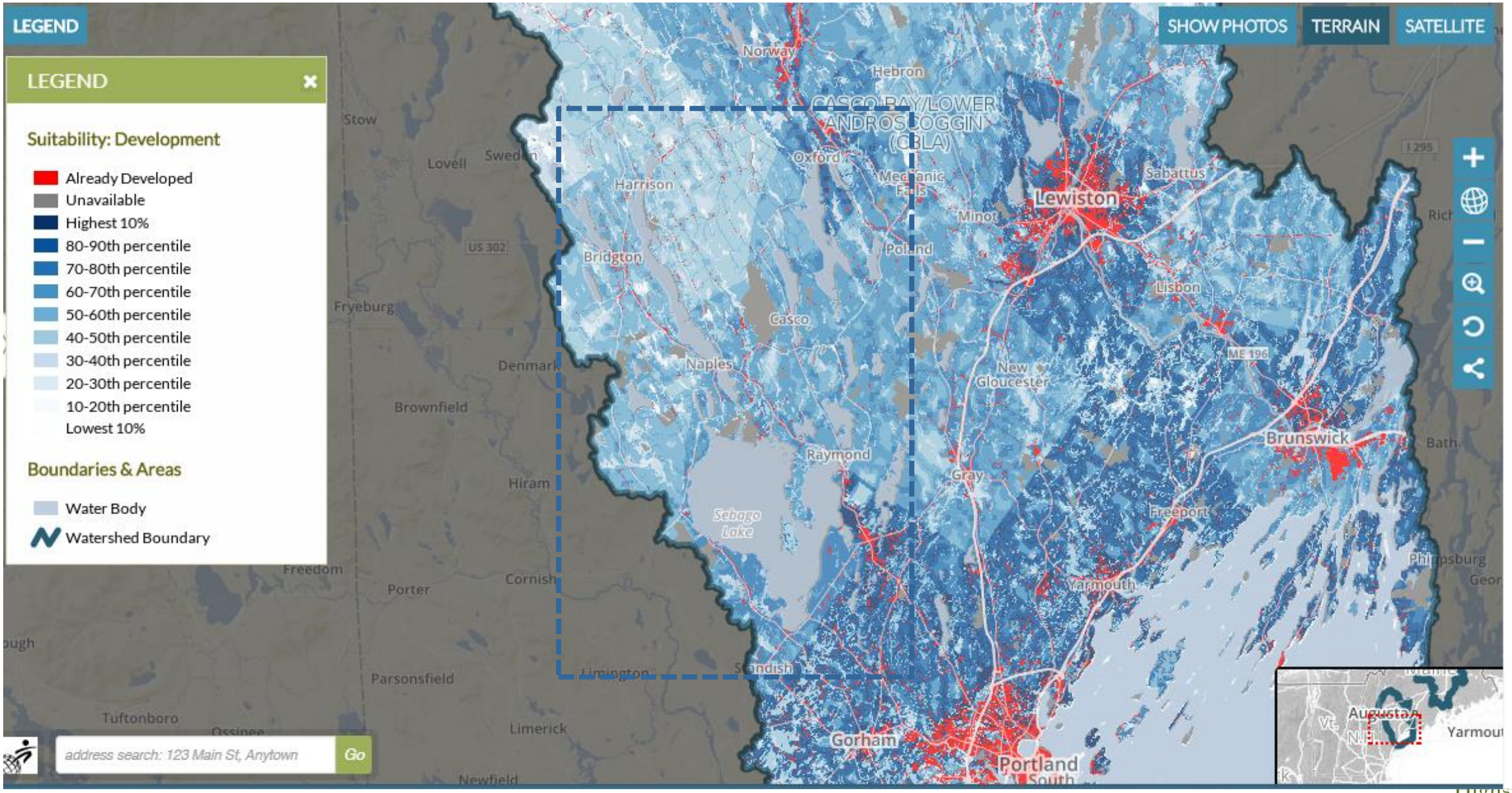
Drinking Water Supplies



Forest Management

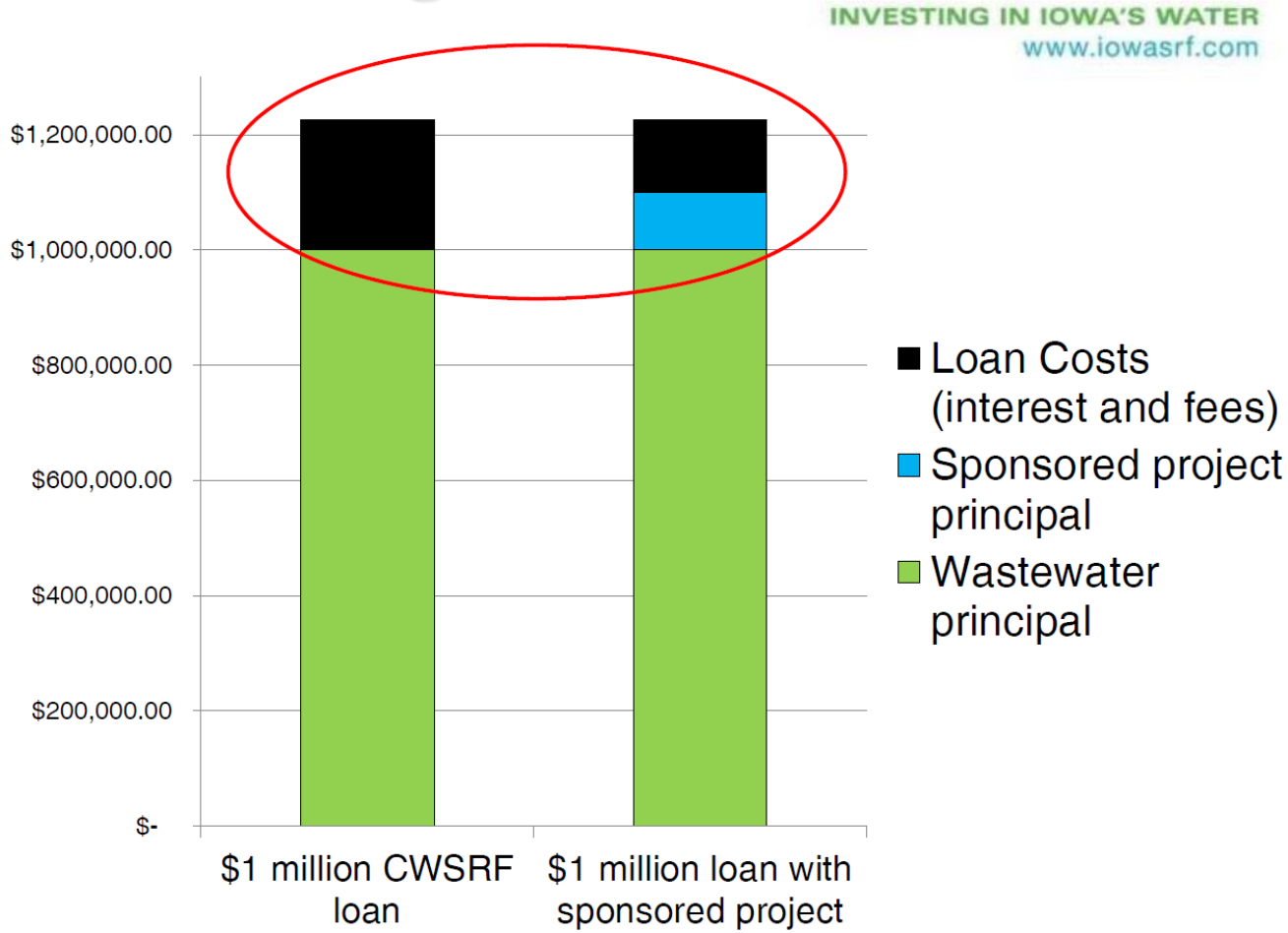





LEGEND
LEGEND
Suitability: Development
Already Developed
Unavailable
Highest 10%
80-90th percentile
70-80th percentile
60-70th percentile
50-60th percentile
40-50th percentile
30-40th percentile
20-30th percentile
10-20th percentile
Lowest 10%
Boundaries & Areas
Water Body
Watershed Boundary
SHOW PHOTOS
TERRAIN
SATELLITE
CASCO BAY/LOWER ANDROSCOGGIN (CBLA)
Lewiston
Brunswick
Portland
Gorham
Yarmouth
Freeport
Gray
New Gloucester
Raymond
Sebago Lake
Naples
Casco
Bridgton
Harrison
Oxford
Norway
Hebron
Poland
Minot
Sabattus
Lisbon
Bath
Limington
Parsonsfield
Limerick
Newfield
Tuftonboro
Freedom
Porter
Cornish
Hiram
Brownfield
Denmark
Fryeburg
Lovell
Stow
address search: 123 Main St, Anytown
Go

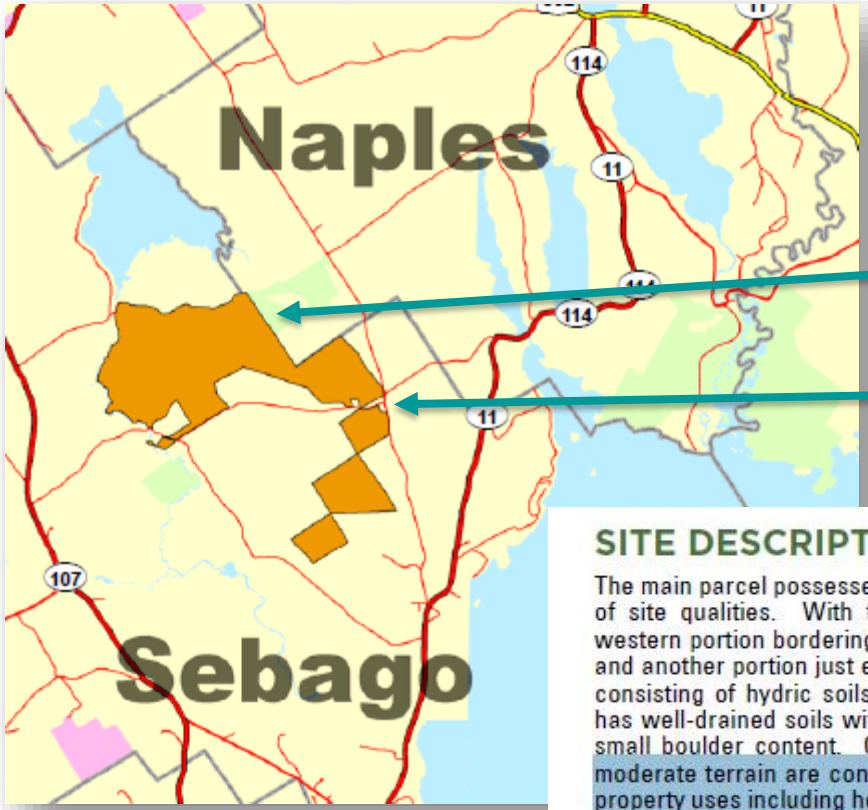
Highstead

Clean Water State Revolving Funds



EPA U.S. Endowment for Forestry and Communities Highstead

Identifying Pilot SRF Projects: 1,400 ac in Naples



SITE DESCRIPTION

The main parcel possesses the greatest variety of site qualities. With the exception of the western portion bordering the Northwest River and another portion just east of Tiger Hill (both consisting of hydric soils), most of the parcel has well-drained soils with course cobble and small boulder content. Overall, the soils and moderate terrain are conducive to a variety of property uses including home development.

Two substantial wetland complexes, one controlled in part by beavers, offer waterfowl habitat and add an aesthetic water amenity to the forest. The Northwest River shoreline is almost entirely lined with heath, alders and other wetland vegetation—a prime habitat for various species of migratory waterfowl including mallard, pin tail and Canada geese. The forest/wetland transition zone near the river corridor is also favorable for woodcock.

One of two ponds on the main parcel, offering significant wetland habitat, waterfowl hunting and recreational paddling.

Highstead


Western Foothills Land Trust
Loon Echo Land Trust
Portland Water District
From Sebago Lake to Casco Bay
Casco Bay Estuary Partnership
Highstead
Open Space Institute
The Nature Conservancy Maine
The Trust for Public Land
sebago clean waters
smeyer@Highstead.net