

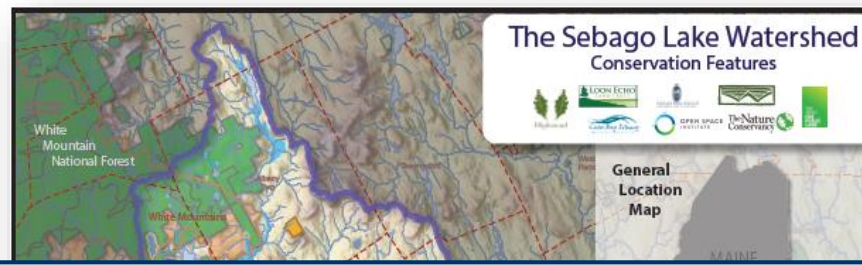


An Economic case for the Sebago Watershed Water and Forest Conservation Fund

Dr. Adam Daigneault
University of Maine
School of Forest Resources
adam.daigneault@maine.edu

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The Partners



The Watershed

- Municipal water source since 1860

Questions of Concern:

At what level of development is the filtration waiver at risk?

What is the return on investment of forest conservation in the watershed?

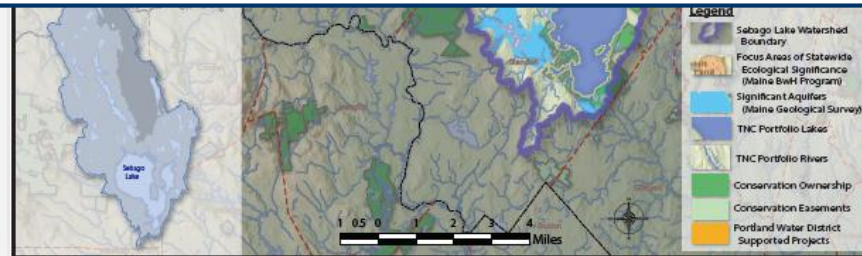
water to 1/6 of population and its growing businesses

tion Avoidance

Water District is a municipal non-profit

ns in 2016

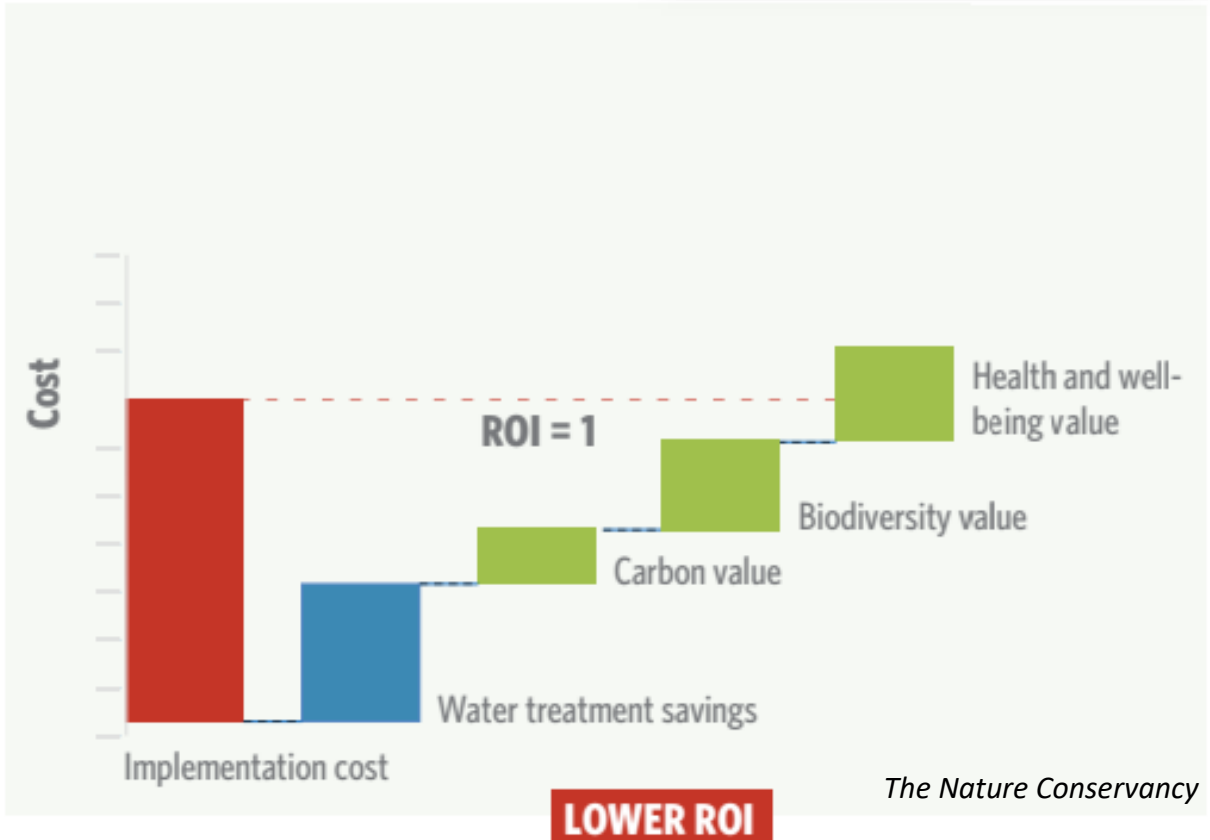
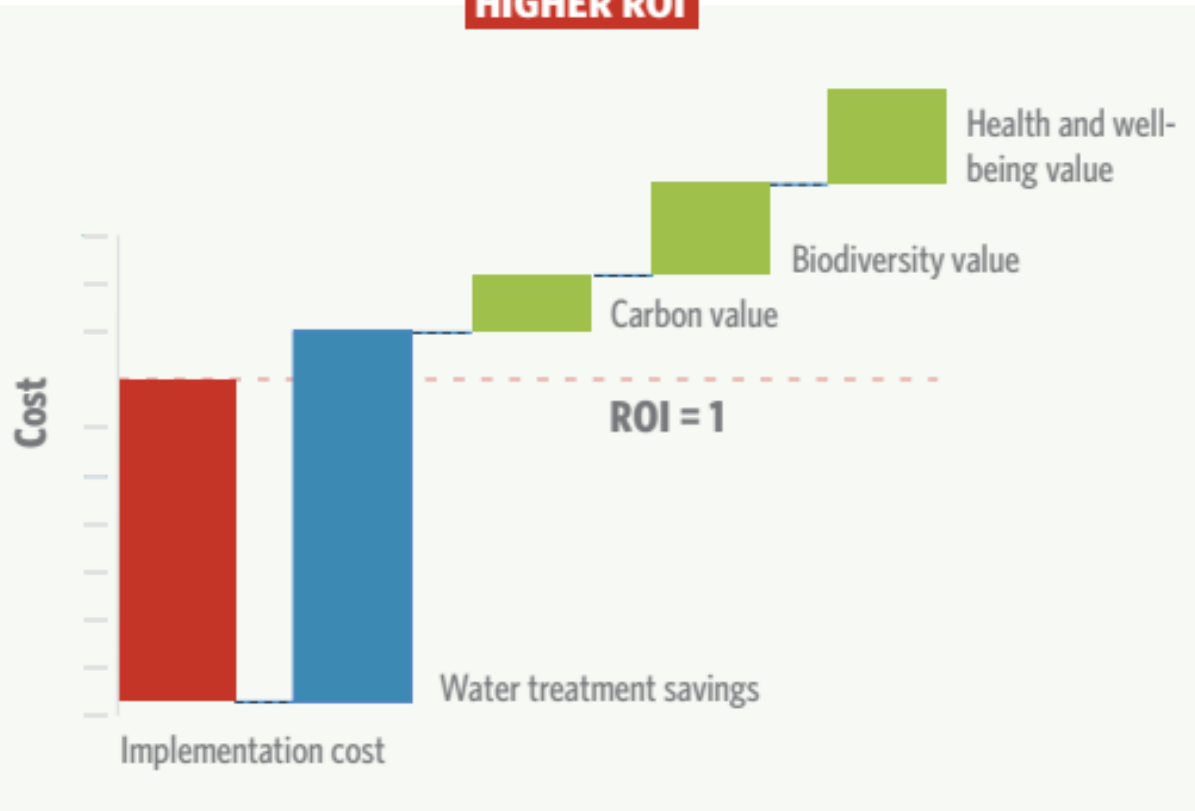
- 52% residential users
- 22% largest water users



Making the Economic Case for Conservation Investment



HIGHER ROI



Key Forest Ecosystem Services

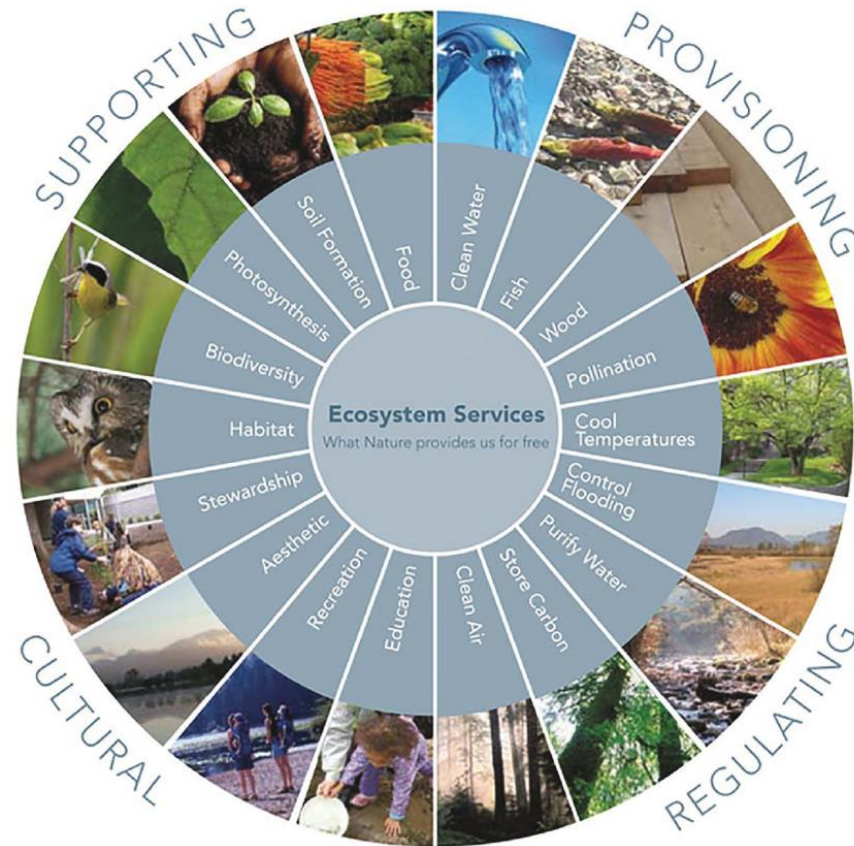


Economic Study Methodology

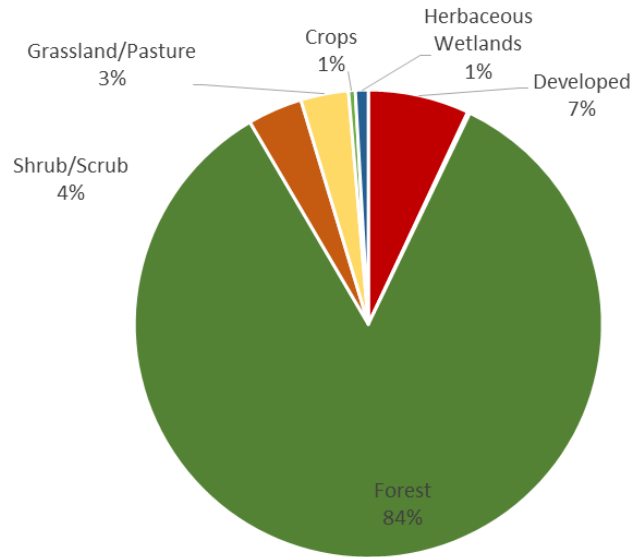
1. **Determine Forest Ecosystem Services** to value in study
2. **Model Sebago Lake Watershed 'baseline'** using current land use and climatic conditions
3. Explore **scenarios** to estimate impact of **converting** various levels of **forest** to **development** based on Maine Futures Community Mapper risk projections
4. **Value (monetize)** the **forest ecosystem service benefits, land acquisition and filtration plant costs** from forest conservation
5. Conduct **Benefit-Cost Analysis** to identify areas with **greatest net benefit** to target for conservation
6. Test **sensitivity of findings to key areas of uncertainty** such as ecosystem service values, conservation cost, and land use change

Forest Ecosystem Services Valued for Sebago Lake Watershed

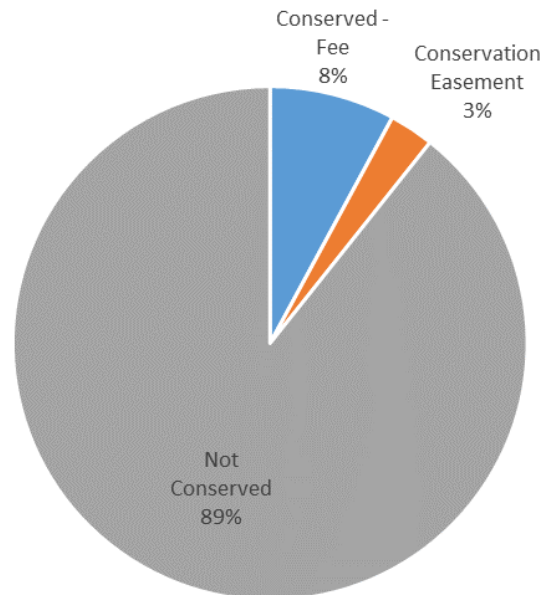
- Timber, fuel and fiber
- Nutrient retention (N and P)
- Sediment retention
- Climate regulation
- Air (Ozone and PM)
- Habitat provision
- Recreation & ecotourism



84% Forest
7% Developed



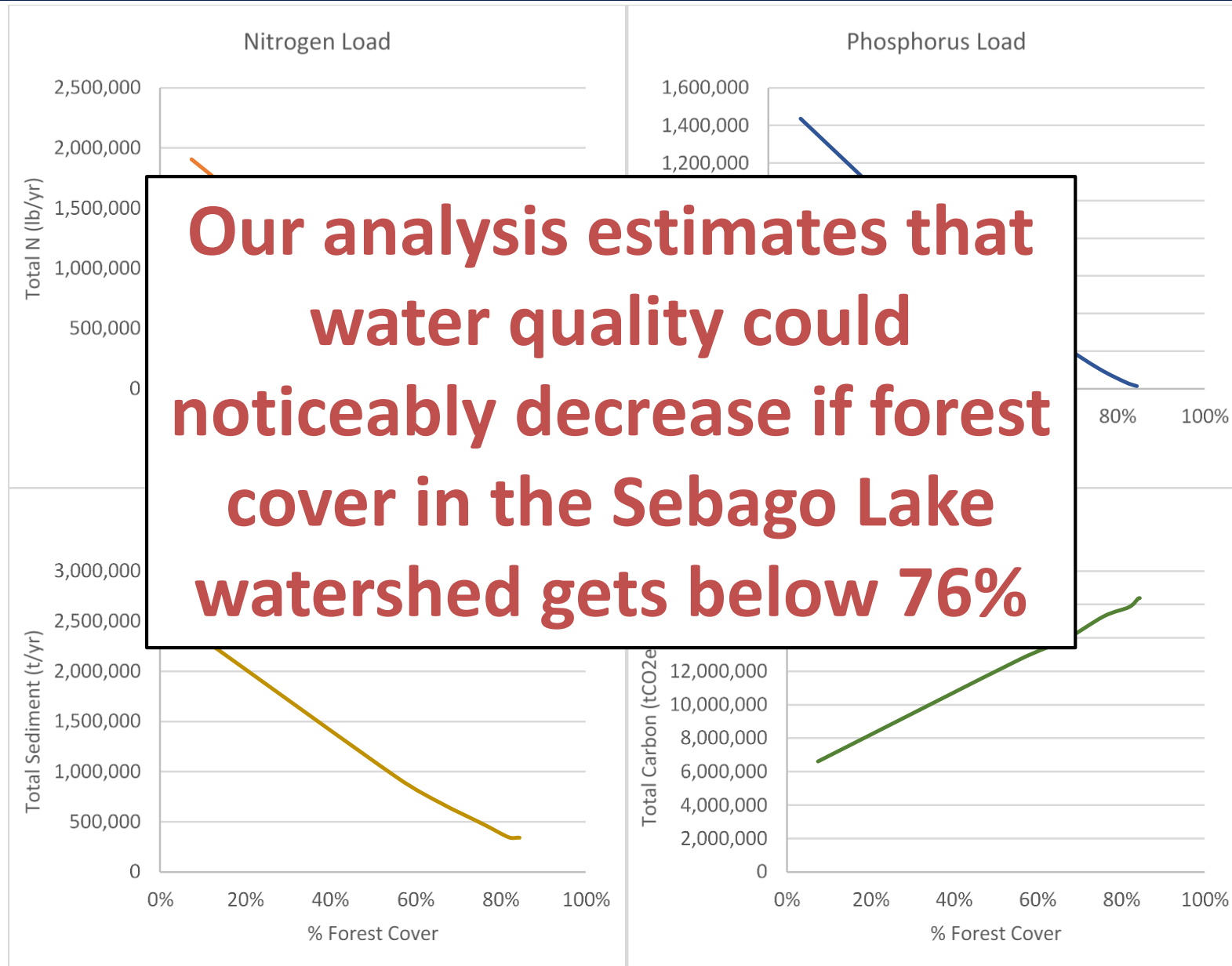
8% Cons. Fee
3% Easement

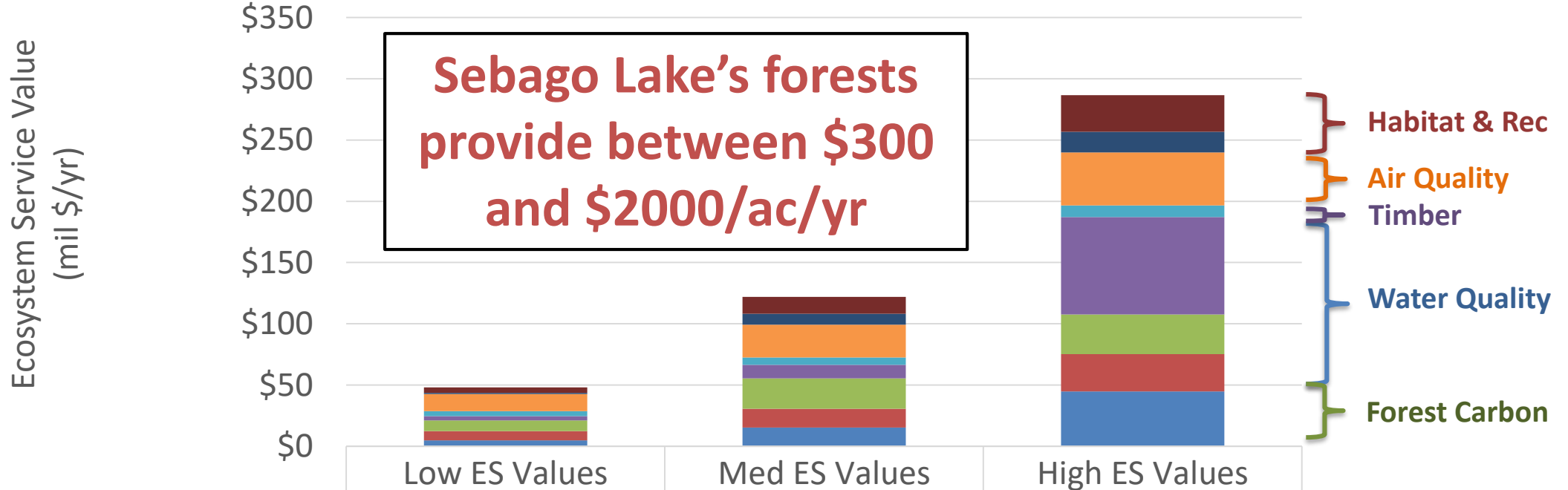


Sebago Watershed Baseline Land Cover



Scenario Estimates





	Low ES Values	Med ES Values	High ES Values
Habitat Provision	\$4.4	\$13.9	\$29.8
Recreation	\$1.0	\$8.9	\$16.9
Air Purification	\$13.9	\$26.7	\$43.4
Wood Supply	\$4.2	\$5.9	\$9.5
Sediment Retention	\$3.5	\$11.1	\$79.5
Phosphorus Retention	\$8.7	\$24.9	\$32.4
Nitrogen Retention	\$7.6	\$15.2	\$30.4
Carbon Sequestration	\$4.7	\$15.3	\$44.8

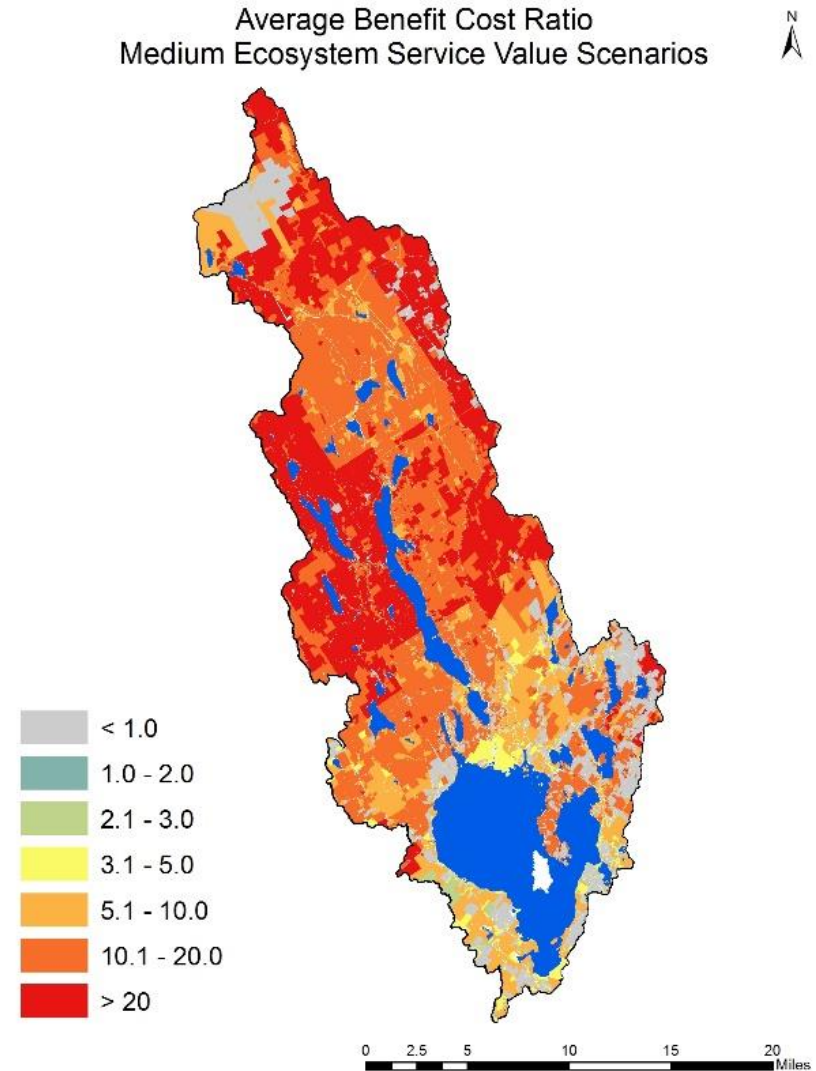
What are the costs?

- **Conservation Land Cost:** 'Average' **cost** of conserving a parcel of land in the Sebago Lake watershed could be about **\$950/acre**.
 - Would likely be done through a mix of 'fee' and easements
 - Compare this to the average **benefits** of **\$800/acre...per year!**
- **Filtration Plant Cost:** 'Medium' **cost** estimate equivalent to **about \$15 million/yr** in additional costs to PWD
 - Use this as a proxy for customer willingness to pay for forest conservation



Summary of Results

- Mean net benefits of conservation in Sebago Lake watershed: **\$100+ mil/yr**
- For every **\$1 invested** in conservation land, average return of **\$8 in benefits**
- Highest benefits from **water quality**, **air purification**, and **climate regulation**
- Filtration plant → **84% increase in water rates** → equivalent to **\$2.1 mil/yr** for top 50 water users or cost of **2,500 acres**
- Estimates consistent with other studies using similar methods



Thanks...Questions?

Dr. Adam Daigneault

Giddings Asst Prof of Forest, Recreation and Conservation Policy

University of Maine School of Forest Resources

Mitchell Center for Sustainability Solutions

adam.daigneault@maine.edu

