

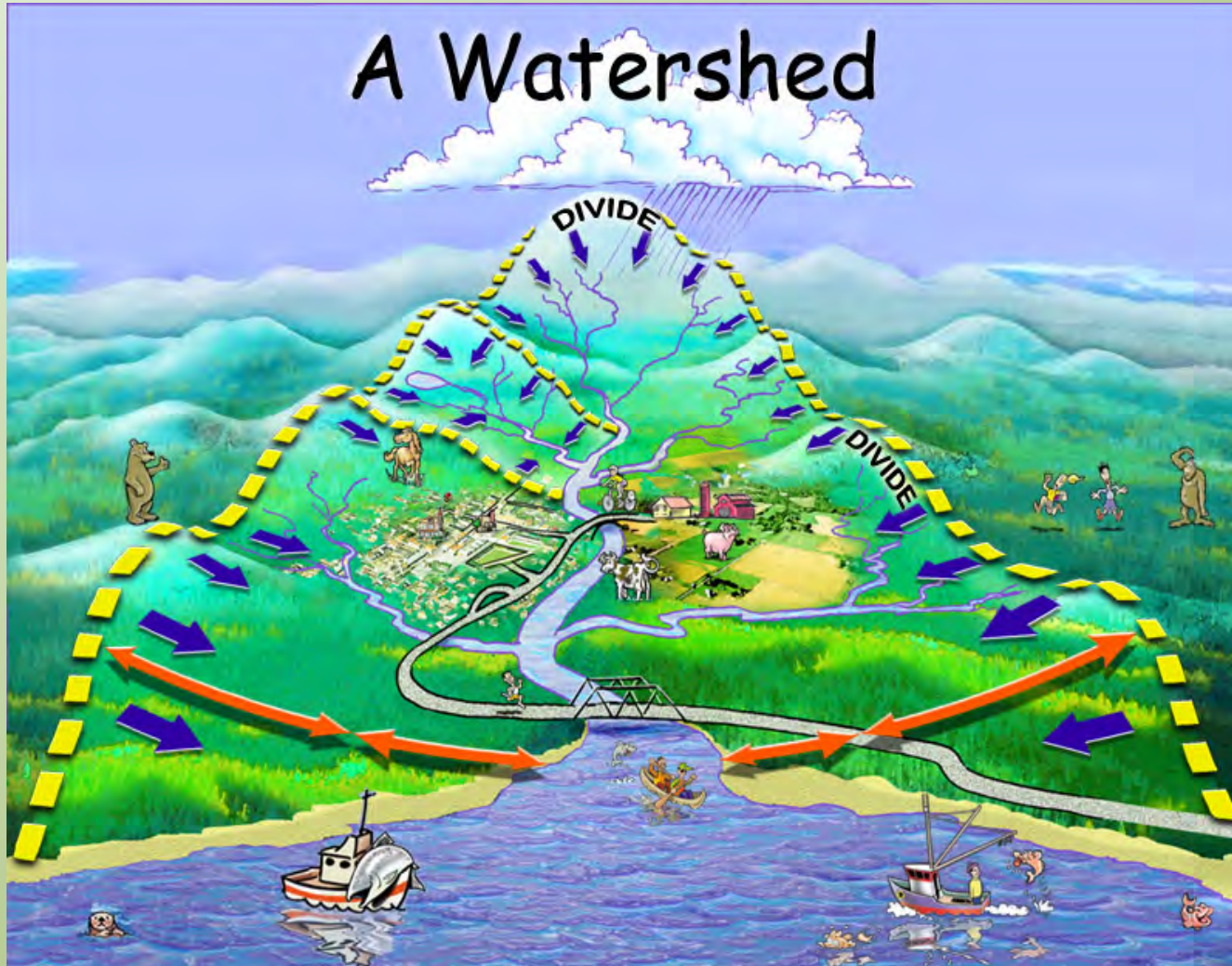
Keeping Phosphorus from Damaging our Lakes

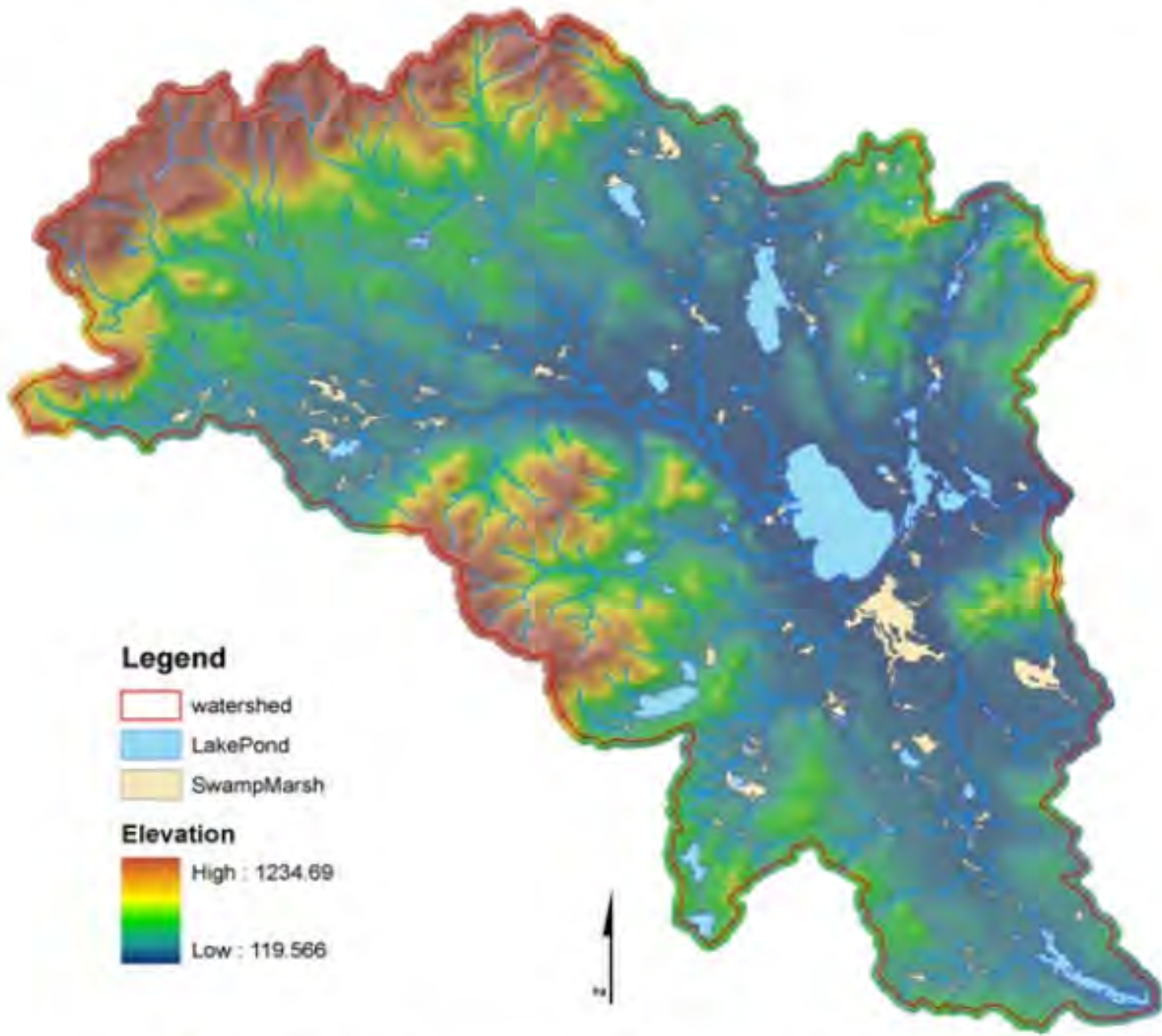
Acton Wakefield Watersheds Alliance
Dustin Johnson – Program Manager






Lake Protection – It's Everyone's Job

- What happens on land, affects the water!

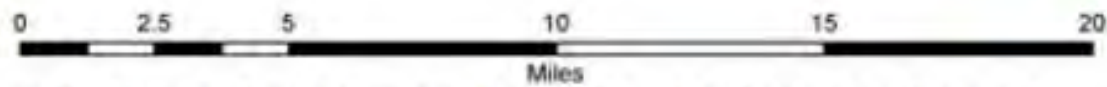


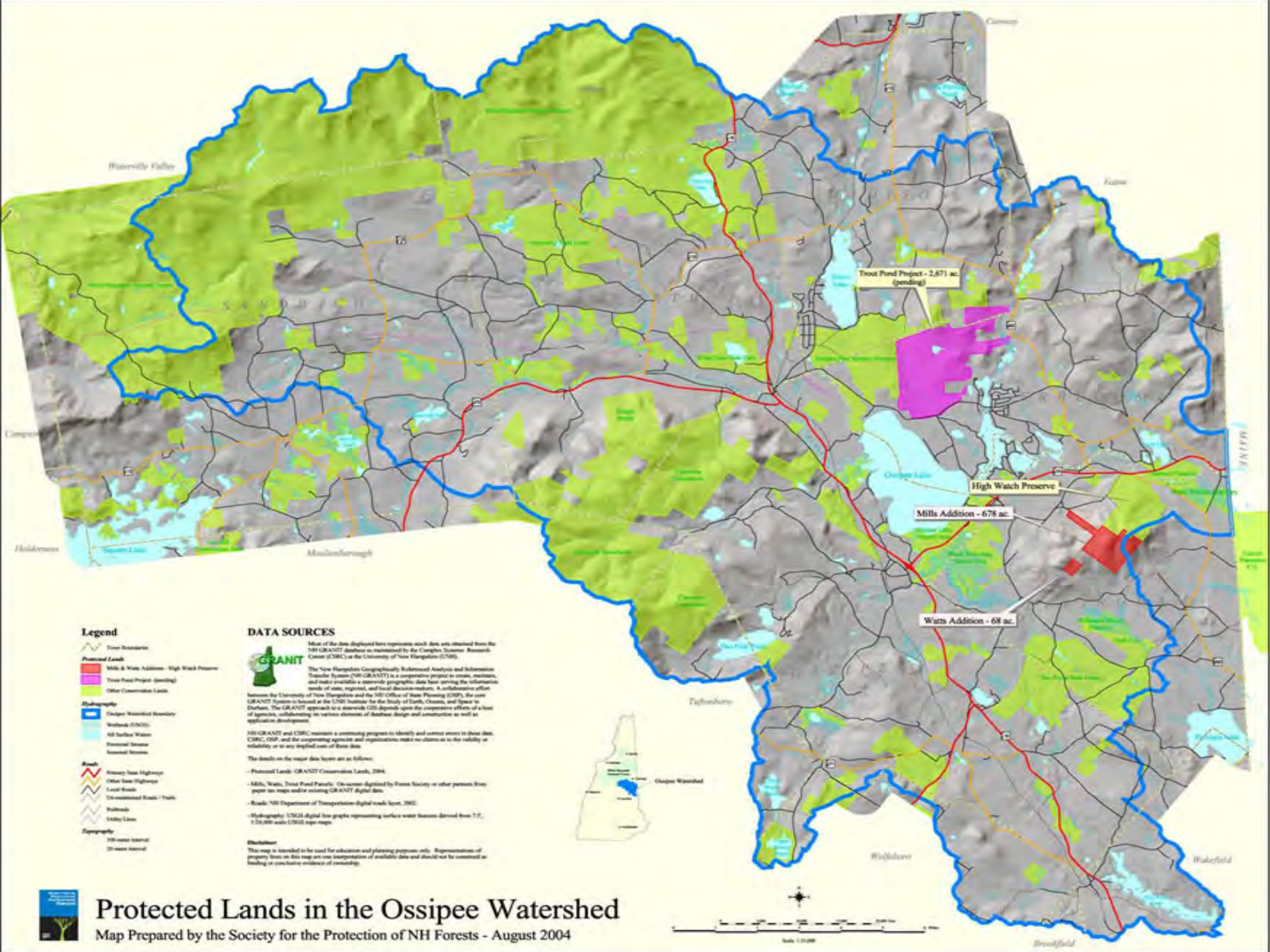


Legend

-  watershed
-  LakePond
-  SwampMarsh

Elevation





Legend

- Town Boundaries
- Protected Lands**
- Mills & Watts Addition - High Watch Preserve
- Trout Pond Project (pending)
- Other Conservation Lands
- Hydrography**
- Ossipee Watershed Boundary
- Wetlands (FWS)
- All Surface Waters
- Potential Stream
- Seasonal Stream
- Roads**
- Primary State Highways
- Other State Highways
- Local Roads
- Un-maintained Roads / Trails
- Railroads
- Utility Lines
- Topography**
- 100-year Inundation
- 20-year Inundation

DATA SOURCES

GRANT

Most of the data displayed here represents vector data obtained from the NH GRANT database as maintained by the Complex Systems Research Center (CSRC) at the University of New Hampshire (UNH).

The New Hampshire Geographically Referenced Analysis and Information Transfer System (NH-GRANT) is a computer program to create, maintain, and make available a statewide geographic data base serving the information needs of state, regional, and local decision-makers. A collaborative effort between the University of New Hampshire and the NH Office of State Planning (OSP), the NH GRANT System is based on the UNH Institute for the Study of Earth, Ocean, and Space in Durham. The GRANT approach is a statewide GIS depends upon the cooperative efforts of a host of agencies, collaborating in various elements of database design and construction as well as application development.

NH-GRANT and CSRC maintain a continuing program to identify and correct errors in these data. CSRC, OSP, and the cooperating agencies and organizations make no claims as to the validity or reliability or to any implied use of these data.

The details on the major data layers are as follows:

- Protected Lands: GRANT Conservation Lands, 2004.
- Mills, Watts, Trout Pond Parcels: On-screen digitized by Forest Society or other persons from paper or maps and/or existing GRANT digital data.
- Roads: NH Department of Transportation digital road layer, 2002.
- Hydrography: USGS digital line graphs representing surface water features derived from 7.5' 1:24,000 scale USGS topographic maps.

Disclaimer

This map is intended to be used for education and planning purposes only. Representations of property lines on this map are not interpretations of available data and should not be considered as binding or constituting evidence of ownership.

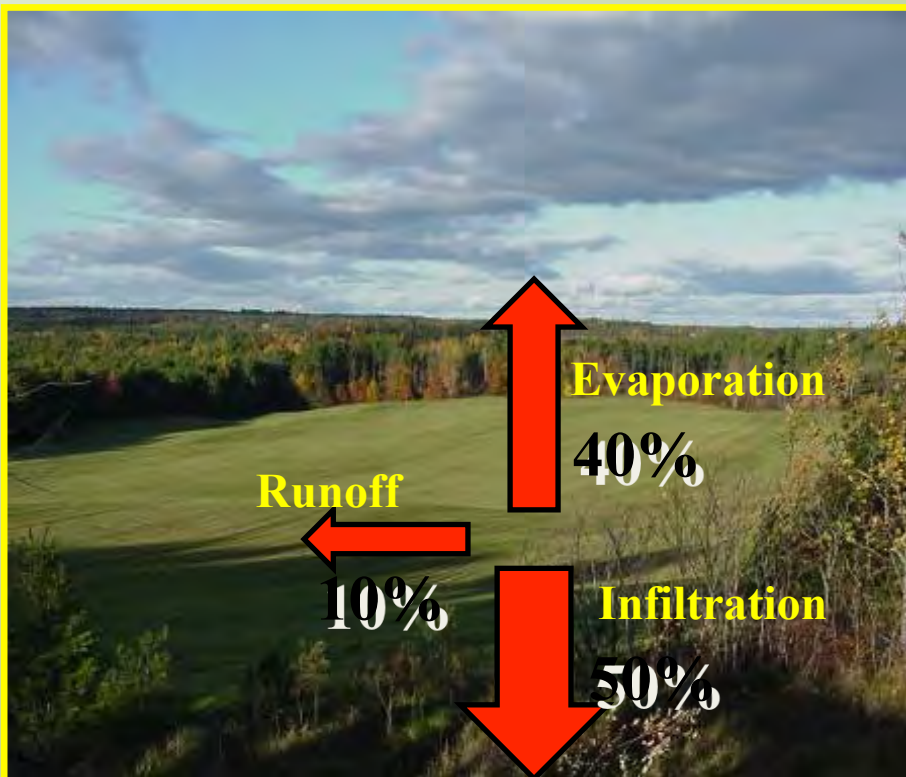


Protected Lands in the Ossipee Watershed
 Map Prepared by the Society for the Protection of NH Forests - August 2004

Lake Protection – It's Everyone's Job

- What happens on land, affects the water!
- When it rains, pollution happens...

Natural Cover

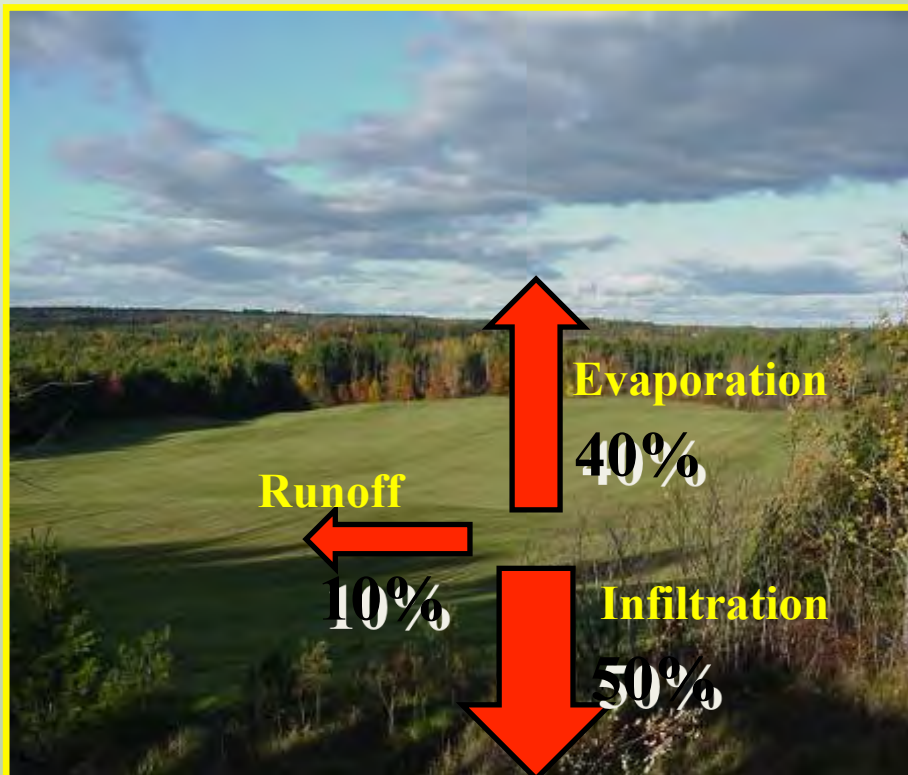


Lake Protection – It's Everyone's Job

- What happens on land, affects the water!
- When it rains, pollution happens...

Natural Cover

75-100% Impervious Surface



Non-point Source Pollution

- Carries contaminants and harmful pollutants from the land to the water



Phosphorus Impacts

Excess algae growth



Phosphorus Impacts

Excess algae growth



Less clear water



Phosphorus Impacts

Excess algae growth



Less clear water



Oxygen depletion



Phosphorus Impacts

Excess algae growth



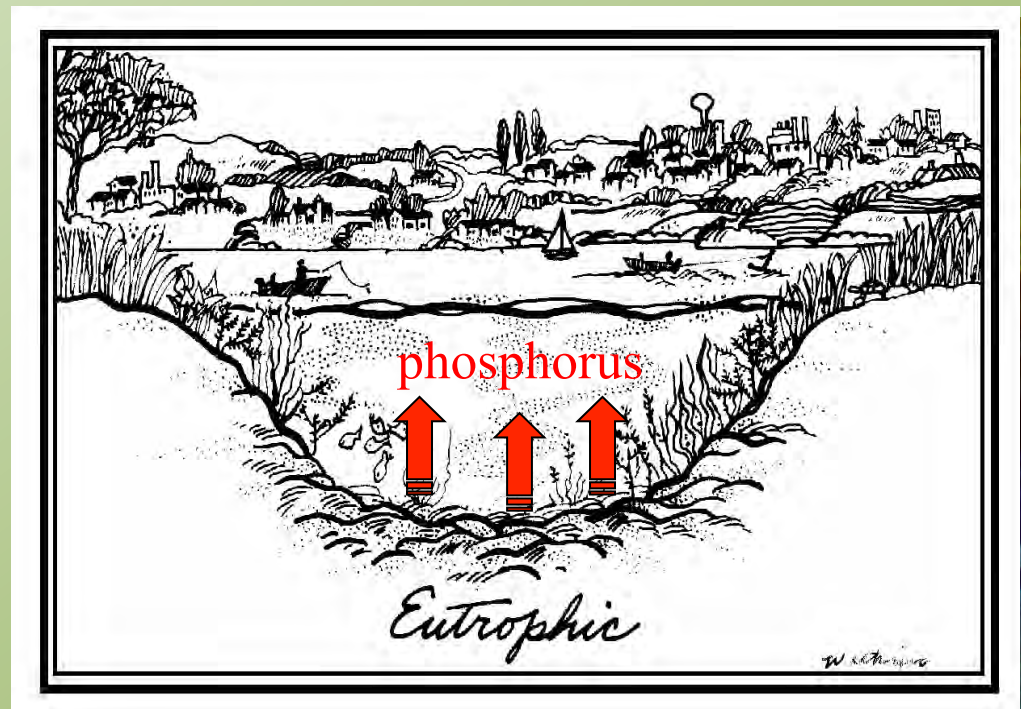
Less clear water



Oxygen depletion



Internal loading



Phosphorus Impacts

Excess algae growth



Less clear water



Oxygen depletion



Internal loading



Algae blooms





Experimental Lake Area Study Canada

- Top-to-bottom curtain divides lake in two
- Carbon and nitrogen added to one side; Carbon, nitrogen and phosphorus added to other side

Experimental Lake Area Study Canada



Less than 10 ppb
Phosphorus

Greater than 20 ppb
Phosphorus

- Top-to-bottom curtain divides lake in two
- Carbon and nitrogen added to one side; Carbon, nitrogen and phosphorus added to other side

Where do we find Phosphorus?

Naturally Occurring Element

Sources: ???

Where do we find Phosphorus?

Naturally Occurring Element

Sources:

Atmosphere

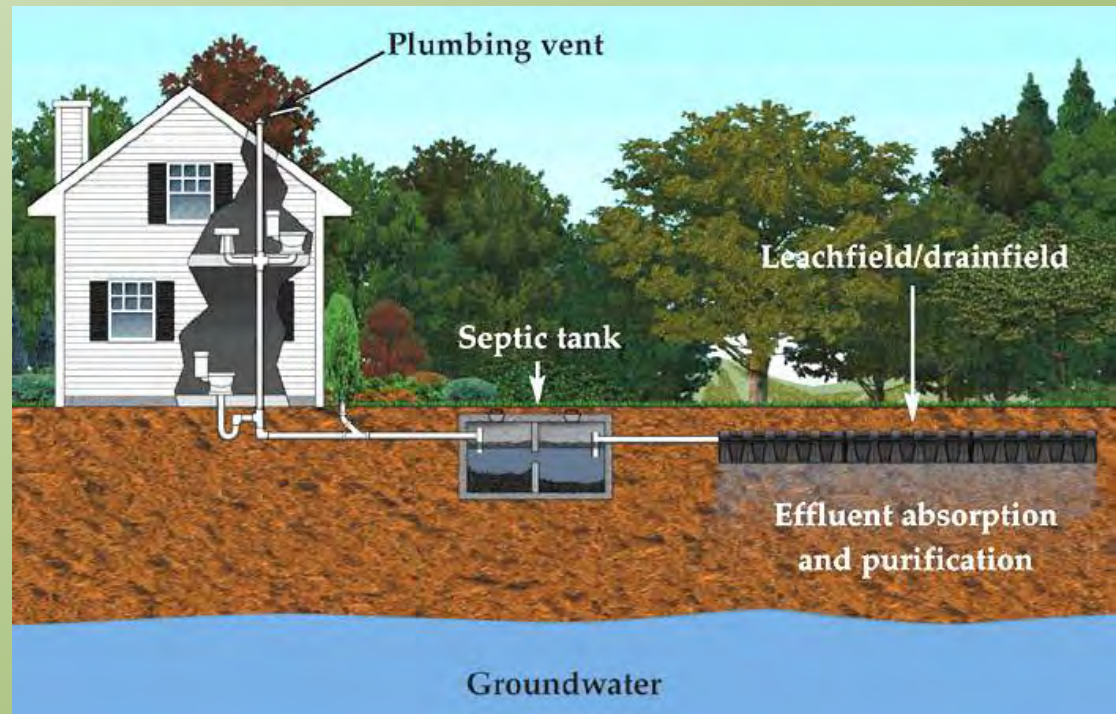
Where do we find Phosphorus?

Naturally Occurring Element

Sources:

Atmosphere

Septic Systems



Where do we find Phosphorus?

Naturally Occurring Element

Sources:

Atmosphere

Septic Systems

Manure & Pet Wastes



Where do we find Phosphorus?

Naturally Occurring Element

Sources:

Atmosphere

Septic Systems

Manure & Pet Wastes

Fertilizers



Where do we find Phosphorus?

Naturally Occurring Element

Sources:

Atmosphere

Septic Systems

Manure & Pet Wastes

Fertilizers

Soil Erosion



Which of these is the largest polluter?

Sources:

Atmosphere

Septic Systems

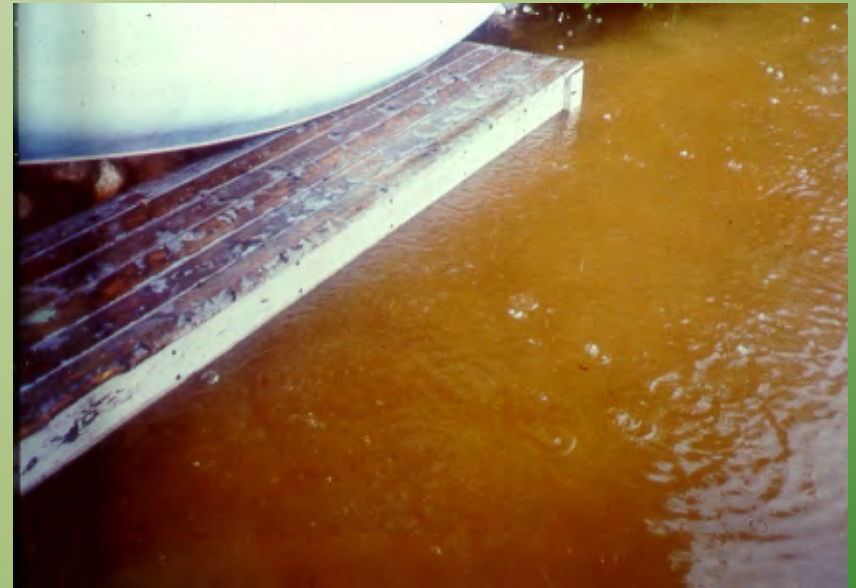
Manure & Pet Wastes

Fertilizers

Soil Erosion

Soil Erosion!!!

Soil particles are extremely “sticky”. Phosphorus in soils sticks to the sediment and is easily transported by runoff to a waterbody.



Therefore...

- By managing polluted runoff and minimizing soil erosion, we minimize the amount of phosphorus that enters our lakes!

But how?

Best Management Practices (BMPs)

- Best Management Practices, or BMPs, are landscaped features that help control runoff and stop/slow erosion on land.
- The goal is have runoff infiltrate into the ground where it can be “cleansed” or “filtered” by sediment before entering the waterbody.

What do BMPs Look Like?



Dripline Trench

Examples of BMPs



Drywell

Examples of BMPs



Erosion Control Mulch

Examples of BMPs



New Infiltration Steps

Examples of BMPs



**Retrofit Infiltration
Steps**

Examples of BMPs



Infiltration Trench



Examples of BMPs



Riprap



Examples of BMPs



Open Top Culvert



Examples of BMPs



Retaining Wall



Examples of BMPs



Paths & Walkways

Examples of BMPs



Buffer Strip

Examples of BMPs



Native Vegetation

Examples of BMPs



Rain Garden



Examples of BMPs



Rubber Razors



Examples of BMPs



Turnouts



Examples of BMPs



Waterbars



Questions?

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