WHAT IS A WATERSHED?

- A watershed is the area of land where all of the water that is under it or drains off of it goes into the same place. – EPA

- Watersheds vary in size and scale:
  - Potash Brook
  - Winooski River
  - Lake Champlain
  - St. Lawrence River

- We all live in a watershed
WHAT IS A RIPARIAN BUFFER?

- The forested landscape in between rivers and streams and human land use activities
- Ecotone: an area of great diversity where two habitats merge
- Historically contiguous with upland forests
- Currently they’re fragmented and undersized
What are the benefits of a buffer?
HABITAT

- Terrestrial and Aquatic
- Migratory birds, insects, amphibians, mammals, fish...
- Food
- Cover
Bank Stabilization

- Tree roots create structure and hold the soil in place
- Trees help to slow down water, decreasing damage on site as well as downstream
- Minimize the loss of soil and land
WATER QUALITY

- Reduce erosion
- Filter surface water containing excess nutrients, sediment and pollutants
- Reduce flow rates and increase storage
- Shading the waters helps to maintain cool in stream temperatures
Creating Flood Resiliency

- Damaged infrastructure
- Crop loss
- Loss of income
- Pollutants
- Erosion/Deposition
- Debris and clean up
MORE ON FLOOD RESILIENCY...

- **On Site Benefits:**
  - Protection from debris
  - Minimizes sediment deposition
  - Decreases the loss of soil and nutrients

- **Watershed scale benefits:**
  - Reduces flooding potential and severity
  - Decreased sediment and pollutant distribution
More on Flood Resiliency...

- Buffers do not ensure flooding will not happen
- Increased numbers of buffers will create a cumulative beneficial effect
HOW CAN WE RESTORE THESE BENEFITS?
Changes in Land Use

Before spring planting - 2011

Hundreds of naturally seeded cottonwoods!

1 Year and four months later

Planted speckled alder
**TREE PLANTING**

- Natural community and soils based planning
- Planting native trees and shrubs
- Assisting the site towards regeneration
Livestock Exclusion

- Fencing
- Water systems
- Crossing structures
INVASIVE PLANT MANAGEMENT

- Pre planting site preparation
- Follow-up site maintenance
  - Mechanical control
  - Chemical control
- Strategic planting
- Frequent invaders:
  - Japanese knotweed
  - Reedcanary grass
  - Bindweed
  - Phragmites...
SUCCESS...
Buffer Programs

- Conservation Reserve Program (CRP)/Conservation Reserve Enhancement Program (CREP)
- Partners for Fish and Wildlife Program (PFW)
- Trees For Streams
- VTDEC River Management Program, River Corridor Easements
- Others
  EQIP, Specialized Grant Programs, local initiatives...
CRP/CREP
U.S. DEPARTMENT OF AGRICULTURE & VERMONT AGENCY OF AGRICULTURE

Practices
- Tree and Shrub Establishment/ Riparian Forest Buffer
- Livestock Exclusion Fencing
- Stream Crossings
- Water Systems

Incentives
- Upfront signing incentive payment
- Annual Land rental payments
- Practice costs can be 100% covered

Standards
- 15 year min. contract
- Minimum buffer width of 35 feet
- Unmanaged buffer
PARTNERS FOR FISH AND WILDLIFE
U.S. FISH AND WILDLIFE SERVICE

Practices
  o Technical Assistance
  o Habitat Restoration
    o Riparian
    o Wetland
    o Fish Passage

Incentives
  o Technical assistance
  o Financial assistance

Standards
  o 10 year min. contract
  o Minimum buffer width of 35 feet
  o Unmanaged buffer
TREES FOR STREAMS

Practices
- Education and Outreach
- Tree planting
- Volunteer/Community based
- Cost share opportunity

Standards
- May vary across organizations
- Minimum buffer?

Incentives
- Some or all of the cost of material and labor is covered
- Allows flexibility to meet specific landowner/site needs
CORRIDOR EASEMENTS
RIVERS PROGRAM
STATE OF VERMONT DEC

Practices
- Easement is based on river dynamics
- Maintain a 50 foot unmanaged buffer
- Cease all river channel manipulation activities (excavation, placement of fill, repairing or removing revetments or levees)

Incentives
- Landowner sells development rights within the river corridor
GROWING IN YOUR BUFFER

Practice:
- Grow perennial crops like elderberry

Incentives
- Buffer provides ecological benefits and crops.

John Hayden from The Farm Between
BUILDING Farmland Flood Resilience

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