

Restoring Freshwater Wetlands & Buffers

Land and Water Conservation Summit

March 21, 2009

Christine Caron, NEIWPC @ RI DEM

Carol Murphy, RI DEM

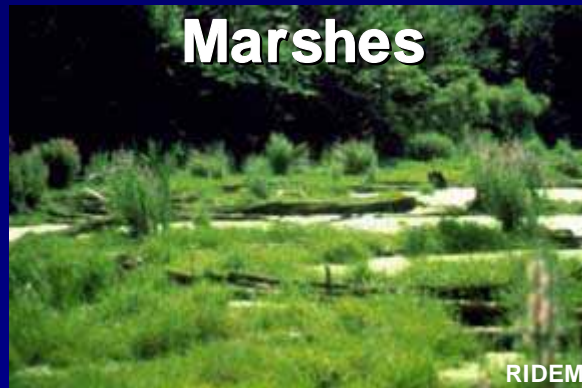


DEM Regulated Wetlands

Swamps



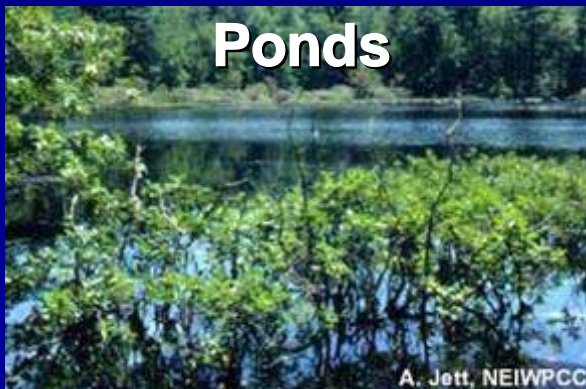
Marshes



Bogs



Ponds



Rivers & Streams



Also: Forested & shrub wetlands, emergent & submergent plant communities, special aquatic sites, intermittent streams, ASF, ASSF, flood plains, floodways, riverbanks, perimeter wetland

A photograph of a forest stream. The water is clear and flows over moss-covered rocks. The surrounding forest is dense with trees and green plants. The text is overlaid on the image.

Clean Water Act
RI Freshwater Wetlands Act

***Preserve, protect, and
restore wetlands***

DEM Water Quality & Wetland Restoration Team

- Creates partnerships between project proponents and regulators
- Helps ensure that projects are successful and meet regulatory requirements
- Streamlines the DEM permitting process



“Exempt” Activities

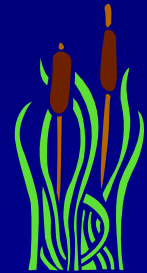
*Certain restoration activities may be completed without a wetland permit *...*

- Removal of manmade trash (Rule 6.03J)
- Limited planting in perimeter & riverbank (Rule 6.18) **NEW**
- Cutting for invasive species control (Rule 6.02K) **NEW**



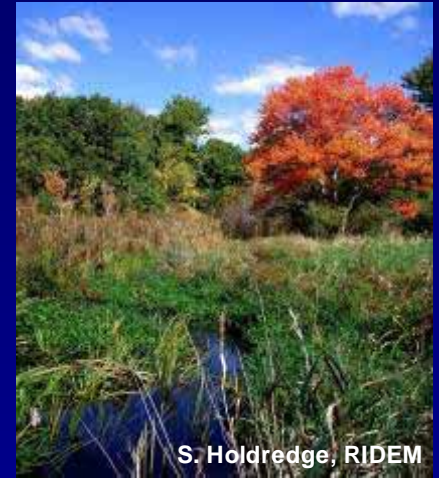
Limited Planting Activities

- Limited planting in perimeter or riverbank wetland does not need a wetland permit if conditions of Rules 6.01 and 6.18 are met.
- *Conditions in Rule 6.18 include:*
 - Maintain existing vegetation
 - Plant natives and maintain them
 - Limit disturbance of soil, area, pavement
 - Limit introduction of new soil
 - Planting window to protect nesting turtles



Why are there limitations?

- Maintain existing functions
- Prevent invasive species
- Prevent/minimize erosion
- Avoid sediment contamination
- Protect turtle nesting areas



Cutting/Clearing Invasives

- Limited cutting or clearing of invasive plants in freshwater wetland may be completed without a wetland permit, if:
 - Conditions of Rule 6.01 & 6.02K are met
 - Project plans are reviewed by WQ/WR team
 - Plan contains necessary controls, expertise, and follow-up monitoring
- Other permits may be required (such as from DEM Agriculture if using herbicides)

DEM Water Quality & Wetland Restoration Team



*To learn more about the team,
or if you are planning a
restoration project, contact:*

Lisa McGreavy

Lisa.McGreavy@dem.ri.gov

(401) 222.4700, Ext. 7611

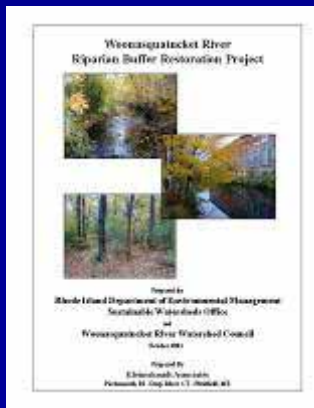
Plan Ahead

Tools

Identifying potential restoration sites

Previously identified sites

- Woonasquatucket Plans
 - www.dem.ri.gov/programs/bpoladm/suswshed/rbdp.htm
 - www.dem.ri.gov/programs/benviron/water/wetlands/woonrest/files/p2.pdf
- Greenwich Bay Plan
 - www.dem.ri.gov/programs/bpoladm/suswshed/pdfs/greenbuf.pdf



Tools

Identifying potential restoration sites

- Stakeholder nomination/Self-nomination

Appendix E3. Stakeholder site nomination form and guidelines.

Field Identification of Potential Freshwater Wetland Restoration Sites

The University of Rhode Island and the Rhode Island Department of Environmental Management are collaborating on a project funded by the Environmental Protection Agency to develop a freshwater wetland restoration strategy for the State. The ultimate goal is to restore natural functions of wetlands that have been destroyed or degraded as a result of human activities. As part of a preliminary effort, we are attempting to identify potential restoration sites in two watersheds—the Woonasquattuck and the Queens. We are using several methods in this identification process, including aerial photo-interpretation, GIS computer applications, and field surveys. Your help in locating potential restoration sites in the field would be greatly appreciated.

We are interested in restoration of all types of freshwater wetlands, including

Appendix E3.

Development of a Statewide Freshwater Wetland Restoration Strategy

Available at: [www.dem.ri.gov/programs/
benviron/water/wetlands/pdfs/strategy.pdf](http://www.dem.ri.gov/programs/benviron/water/wetlands/pdfs/strategy.pdf)

Woonasquattuck Watershed Riparian Buffer Restoration

Site Nomination Form

The Woonasquattuck River Watershed Council is seeking assistance in the identification of potential riparian restoration opportunities along the Woonasquattuck River. This project is funded by the U.S. Forest Service and is being conducted in collaboration with the Rhode Island Department of Environmental Management. Your help in locating potential restoration sites would be greatly appreciated.

Riparian Forested Buffers

A riparian buffer is a naturally vegetated zone adjacent to a body of water. It is a three-dimensional area that extends vertically from the groundwater to the tree canopy, and laterally from the water edge into the adjacent terrestrial habitat for a variable distance that can be as wide

Appendix C.

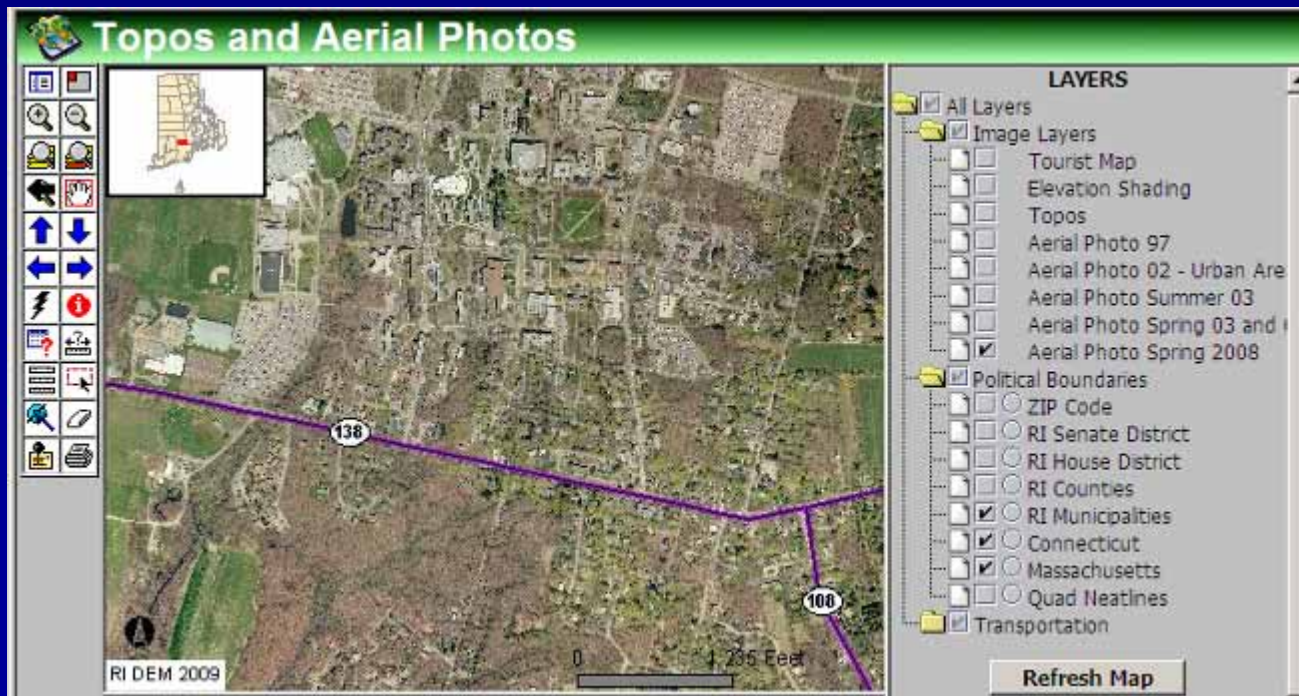
Woonasquattuck River Riparian Buffer Restoration Project

Available at: [www.dem.ri.gov/programs/
bpoladm/suswshed/rbdp.htm](http://www.dem.ri.gov/programs/bpoladm/suswshed/rbdp.htm)

Tools

Identifying potential restoration sites

- Aerial photos
 - maps.live.com (Windows Live Search Maps)
 - www.dem.ri.gov/maps/ (Topo Map & Aerial Photo Viewer)



Funding



- USDA-NRCS Programs
 - www.ri.nrcs.usda.gov/programs/
 - Environmental Quality Incentives Program (EQIP)
 - Wetland Reserve Program (WRP)
 - Wildlife Habitat Incentives Program (WHIP)
- DEM Programs
 - www.dem.ri.gov/programs/benviron/water/finance/index.htm
 - Nonpoint Source Funding (Section 319)
 - Riparian Buffer Restoration
- Other sources
 - www.dem.ri.gov/programs/benviron/water/wetlands/restfresh.htm

PLANTING PROJECTS

Benefits of Reestablishing Wetland Buffers



Improve water
quality



Protect fish
and wildlife
from noise &
pollution




Provide nesting,
roosting,
foraging areas
for wildlife



Increase size of
natural areas



Buffer Plantings

 RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
FACT SHEET
Office of Water Resources / Fall 2007 WETLANDS # 10

WETLAND BUFFER PLANTINGS

Wetland buffer zones are vegetated areas that are left in a natural condition to help protect wetland functions and values. Wetland buffer zones reduce the effects of human disturbance on wetlands. As part of the application process DEM may require buffer plantings near the limits of work in wetlands. Buffer plantings reduce noise and visual disturbances to the nearby wetland and provide food for wildlife (especially if they are berry producing shrubs/trees). The following trees and shrubs are ones that DEM commonly permits as buffer plants.

TREES:

- Eastern arborvitae, *Thuja occidentalis*
- American mountain ash, *Sorbus americana*
- White pine, *Pinus strobus*
- American holly, *Ilex opaca*
- Red maple, *Acer rubrum*
- Weeping willow, *Salix babylonica*
- Silver maple, *Acer saccharinum*
- Spruce, *Picea* spp.
- Tupelo, *Nyssa sylvatica*
- Eastern red cedar, *Juniperus virginiana*
- Hawthorn, *Cornus* spp.
- White Ash, *Fraxinus americana*
- Oaks, *Quercus* spp.
- Gray Birch, *Betula populifolia*

SHRUBS:

- Mountain laurel, *Kalmia latifolia*
- Highbush blueberry, *Vaccinium corymbosum*
- Silky dogwood, *Cornus amomum*
- Giant rhododendron, *Rhododendron maximum*
- Flowering dogwood, *Cornus florida*
- Spice bush, *Lindera benzoin*
- Red osier dogwood, *Cornus sericea*
- Boyberry, *Myrica pensylvanica*
- Gray dogwood, *Cornus racemosa*
- Rugosa rose, *Rosa rugosa*
- Purple osier willow, *Salix purpurina*
- Sweet pepperbush, *Claytonia virginica*

- Use native species
- Determine appropriate species for site conditions



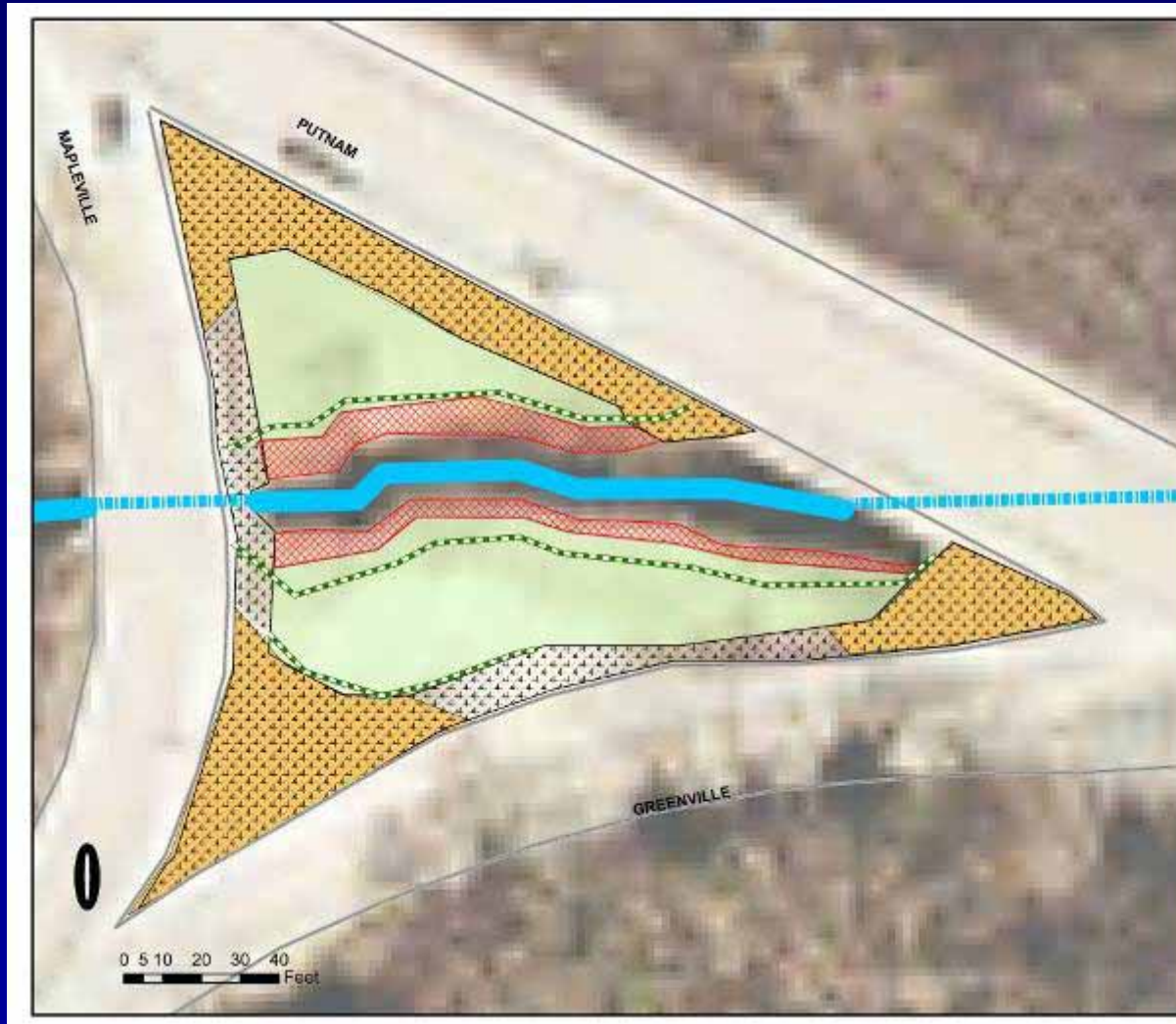
Erica Asai @ USDA-NRCS PLANTS Database

Stillwater Brook Riparian Buffer Restoration



Project initiated by Woonasquatucket River Watershed Council with RI DOT

Stillwater Brook Riparian Buffer Restoration



Project Location

- Key:**
- Stillwater Brook
 - Culverted Reach
 - Road Limits
 - Coir - Fiber Roll
 - Zone A: Upland Buffer
 - Zone B: Mesic Buffer
 - Zone C: Roadside Plantings
 - Line-of-Sight Clear Zone

See Details For Plant Schedule

Stillwater Brook
Riparian Buffer Restoration
Sheet 1 of 2
Planting Plan - Layout



Smithfield DPW

Stormwater drainage & perimeter wetland restoration



**1997
photo**

Project completed by Town of Smithfield & Woonasquatucket River Watershed Council

Smithfield DPW

Stormwater drainage & perimeter wetland restoration



Spring 2002

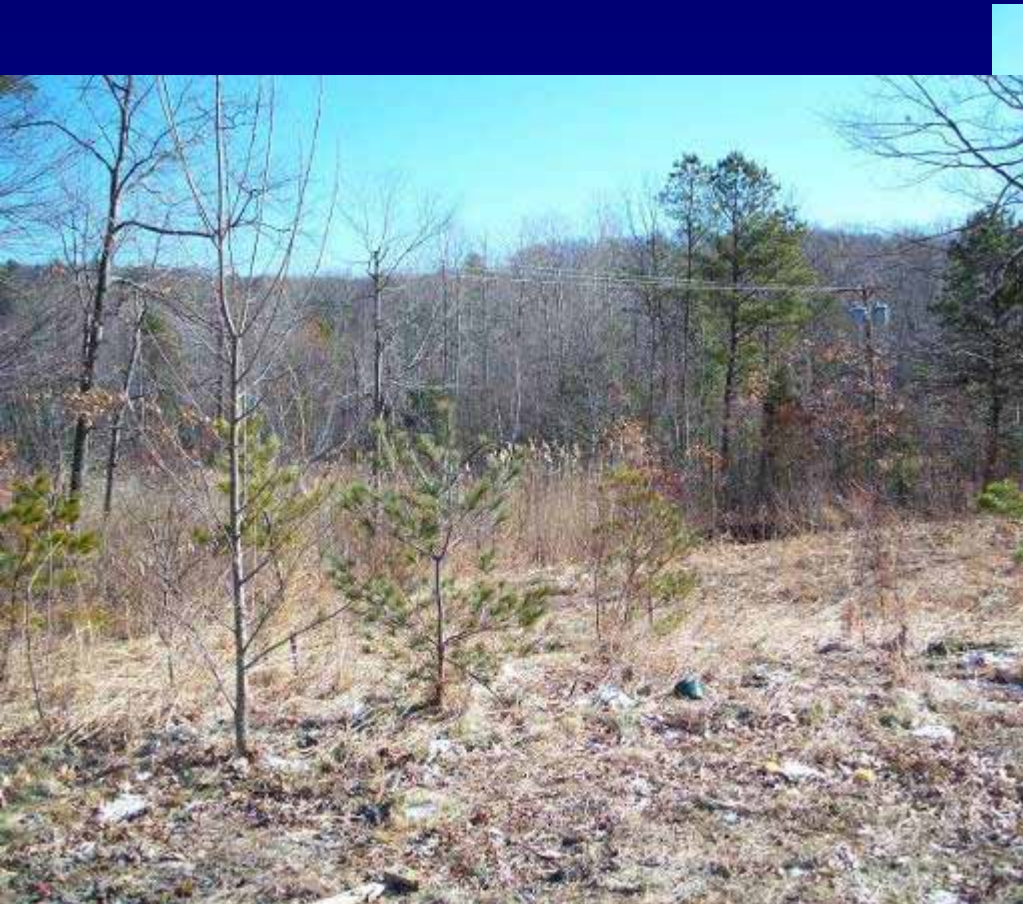


Spring 2008

Smithfield DPW



C. Caron, NEIWPC



C. Caron, NEIWPC

March 2009

West Warwick River Walk Riparian Buffer Restoration



Project completed by Town of West Warwick

West Warwick River Walk Riparian Buffer Restoration



INVASIVE CONTROL PROJECTS

Invasive Plants in RI Wetlands

Glossy Buckthorn



Multiflora Rose



Japanese Barberry



Common Reed



Purple Loosestrife



Oriental Bittersweet



Japanese Knotweed



Reed Canary Grass



Benefits of Controlling Invasive Vegetation



Improves wildlife habitat, especially for wetland-dependent species



Protects regional biodiversity and heritage value

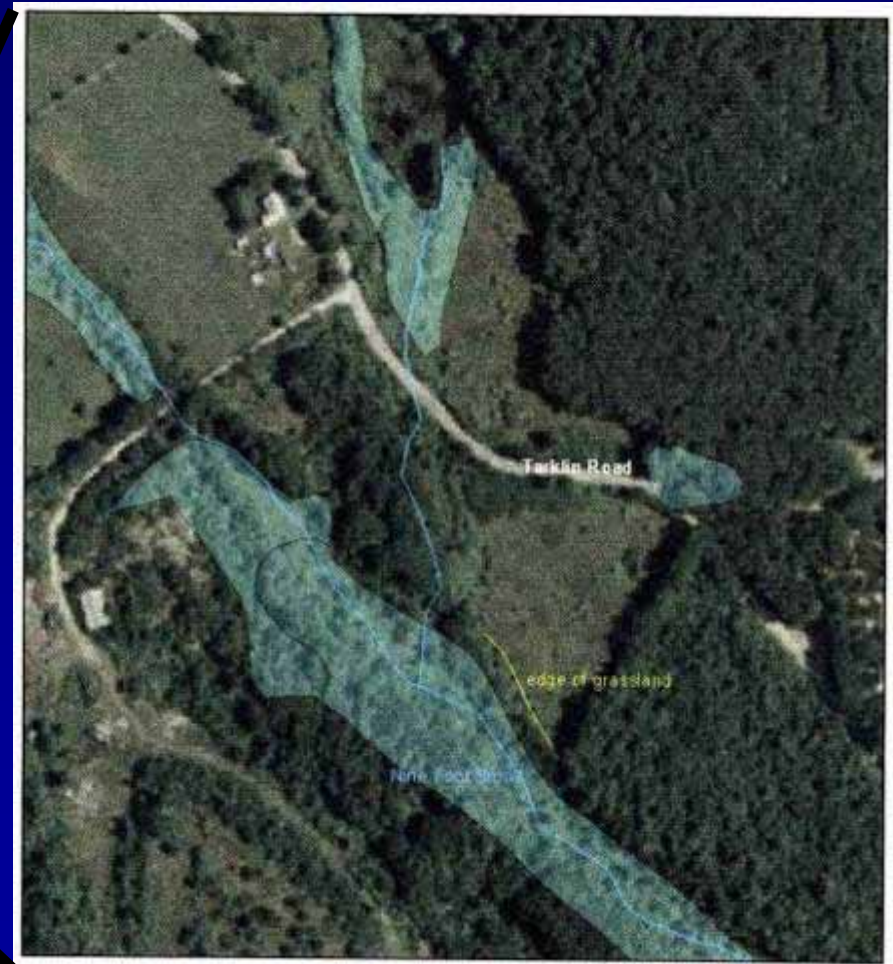
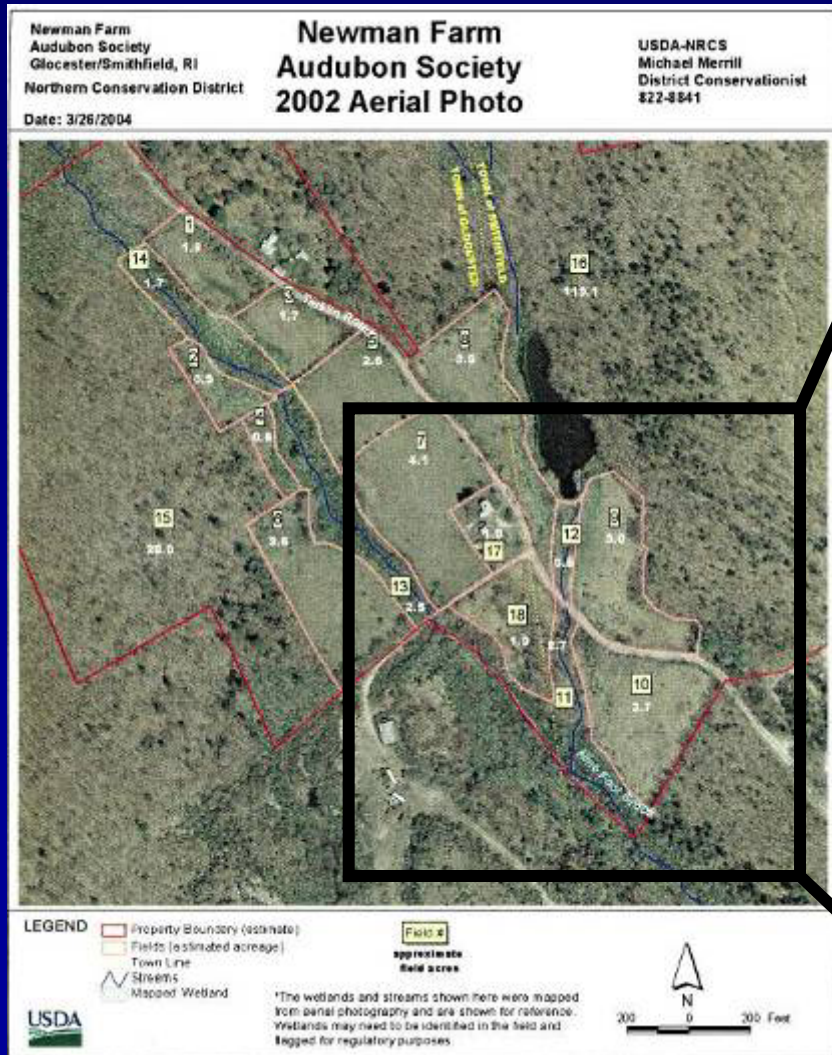


Some Considerations for Project Assessment

- Is removal the best option?
- What functions will be improved?
- What is the source of the problem?
- What level of effort will be required?
- How will the project affect habitat?
 - Prior land use, soil contamination potential
 - Rare, threatened, endangered species habitat
 - Potential for erosion and sedimentation
- Monitoring and maintenance plan in place?



Newman Farm Grassland & Riparian Restoration



Newman Farm Grassland & Riparian Restoration

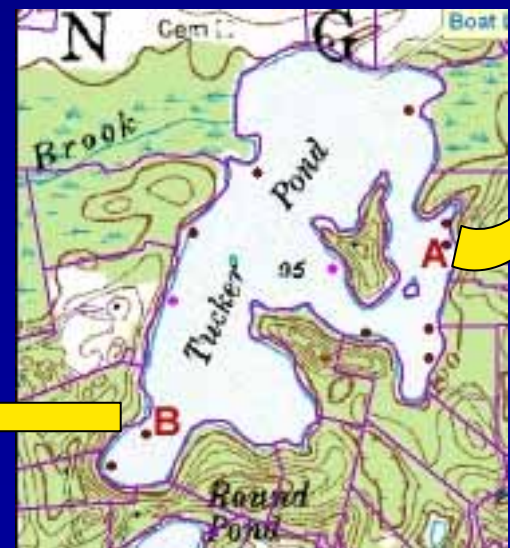


S. Ruhren, ASRI

Aug 2006

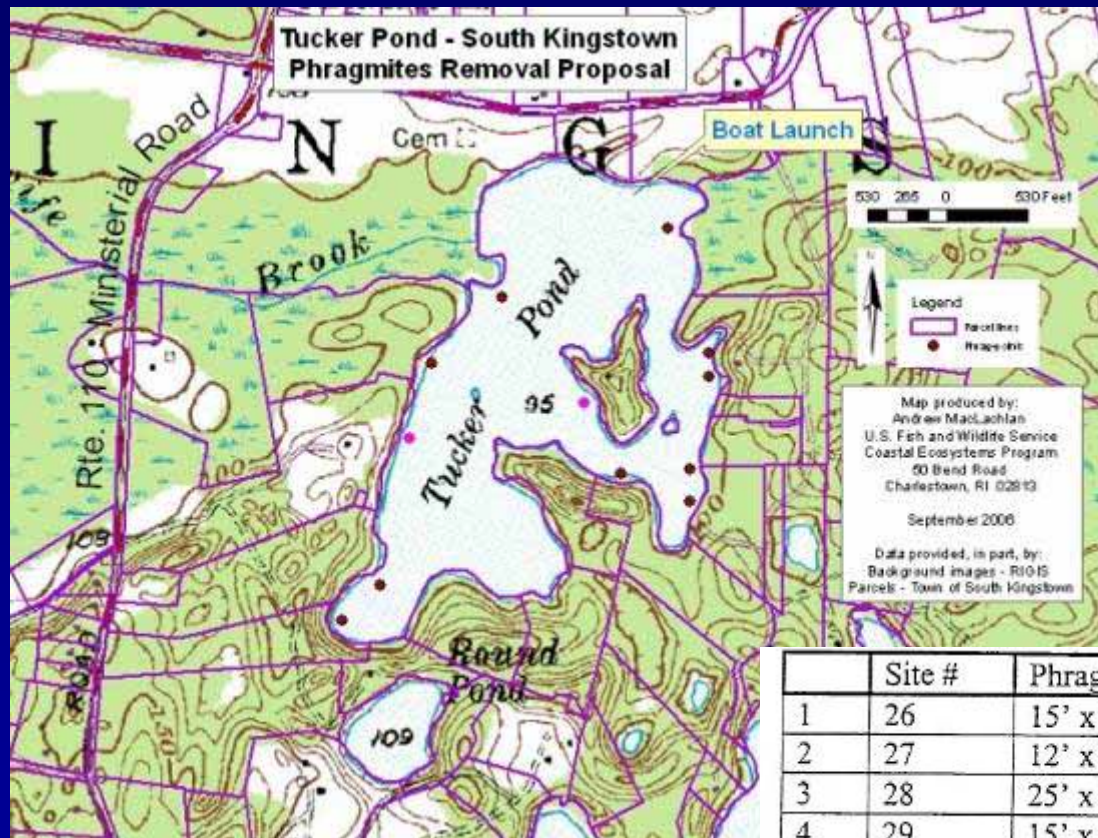
Tucker Pond - *Phragmites* Control

Before
treatment
(Sept 2006)



Project implemented by A. MacLachlan, USFWS Coastal Ecosystems Program, Charlestown, RI

Tucker Pond - *Phragmites* Control



| | Site # | Phragmites Extent | Area Estimate - Sq-ft |
|----|--------|---------------------------------------|-----------------------|
| 1 | 26 | 15' x 1 stem wide | 1.2 |
| 2 | 27 | 12' x 1 stem wide | 1.0 |
| 3 | 28 | 25' x 6' deep, plus 30' x 1 stem wide | 150, plus 2.5 |
| 4 | 29 | 15' x 1 stem wide | 1.2 |
| 5 | 30 | 30' x 2' deep | 60 |
| 6 | 31 | A dozen stems | -- |
| 7 | 32 | A dozen stems | -- |
| 8 | 33 | 70' x 6' deep | 420 |
| 9 | 34 | 10' x 4' deep, plus 36' x 1 stem wide | 40, plus 3.0 |
| 10 | 35 | 25' x 1 stem wide | 2.0 |

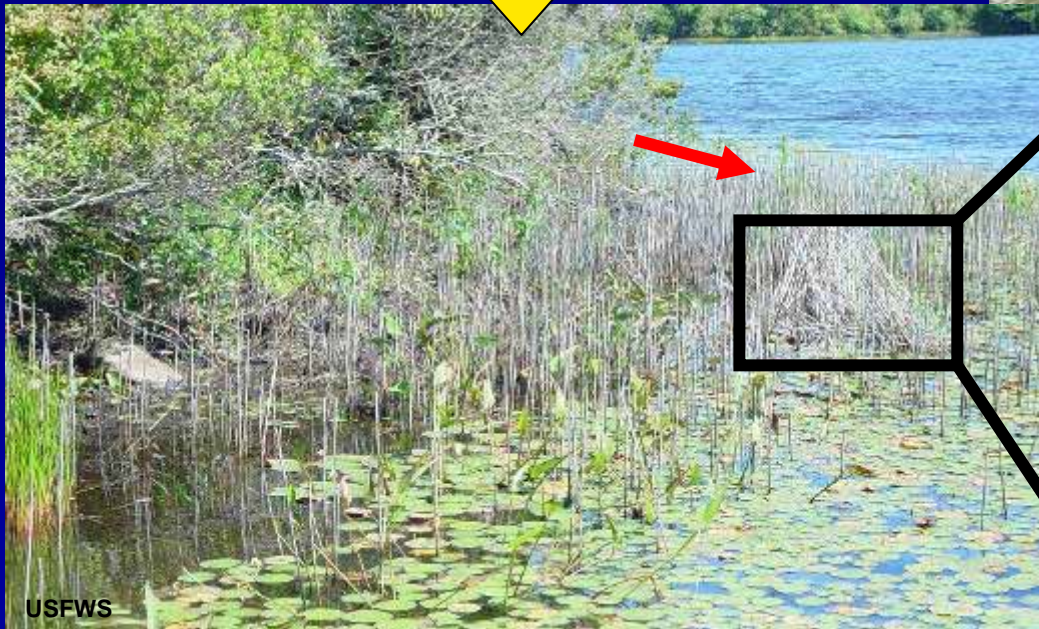
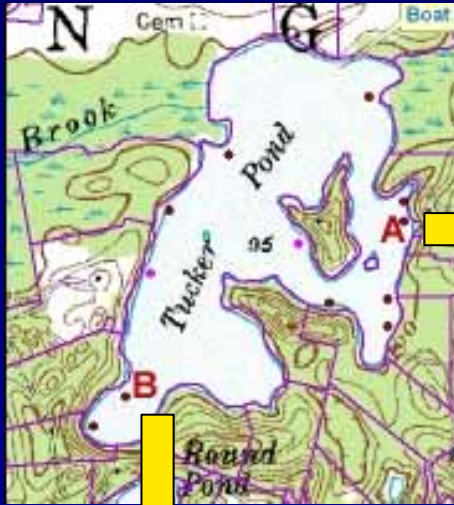
Tucker Pond - *Phragmites* Control

After
Fall 2006
treatment
(Aug 2007)



Tucker Pond - *Phragmites* Control

After
Fall 2007
treatment
(Aug 2008)



North Kingstown Pond *Phragmites* Control

Pre-treatment (~2006)



J. Petrillo



Project initiated by Janice Fuller

North Kingstown Pond *Phragmites* Control



J. Fuller

June 2008 – post Oct 2006 treatment; pre Aug 2008 treatment

Stagecoach Inn Invasive Vegetation Control



W. Bokon



W. Bokon

Oct 2007

Project initiated by William and Debra Bokon

Stagecoach Inn Invasive Vegetation Control



W. Bokon



W. Bokon

Photos & Credits



Valuable assistance provided by:

Sue Kiernan, Lisa McGreavy, Gregg Cassidy, RIDEM

Photos and images courtesy of:

Christine Caron, NEIWPC; Rick Enser, formerly DEM; Shawna Holdredge, DEM; Anne Jett, formerly NEIWPC; Dan Kowal, DEM; Jay Osenkowski, DEM; Bill and Debra Bokon; Janice Fuller; Andrew MacLachlan, USFWS; Jon Petrillo, EA Engineering/Essex Partnership; Scott Ruhren, ASRI; NRCS; Town of West Warwick; Erica Asai @ USDA-NRCS PLANTS Database; Marlene Cashen via AL DCNR; Alan D. Wilson, Wikipedia.org; DEM Fish and Wildlife publications; RIDEM website; IPANE, UConn; Vernal Pool Association.