

NEW ENGLAND ENVIRONMENTAL, INC.

**WILDLIFE
AND
HABITAT ASSESSMENT
WARNER'S POND
CONCORD, MA**

November 4, 1999

Prepared for:

**Town of Concord
Division of Natural Resources
141 Keyes Road
Concord, MA 01742**



Prepared by:

**New England Environmental, Inc.
800 Main Street
Amherst, MA 01002**

NEE file 99-1602

NEW ENGLAND ENVIRONMENTAL, INC.

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November 4, 1999

Mr. Markus B. Pinney
Natural Resources Administrator
Town of Concord Division of Natural Resources
141 Keyes Road
Concord, MA 01742

RE: Warner's Pond Biological Survey
NEE file 99-1602

Dear Markus:

Please find eight final copies of our assessment of Warner's Pond. I would like to thank you and the Town of Concord Natural Resources Commission for your thoughtful comments of our draft report. This final report includes the changes you have suggested.

Warner's Pond is a wonderful resource for the Town of Concord, however it appears to have been neglected for too long and is now in need of a major restoration effort to restore it's former water quality. We have provided you with a general overview of the current wildlife use and habitats within the pond, as well as several suggested management tools which may be implemented as Best Management Practices.

I hope that the finding of this report will aid the Town of Concord in the implementation of a restoration effort for Warner's Pond.

Sincerely,
New England Environmental, Inc.



Michael J. Marcus
Senior Scientist
Principal

MJM/sl
enc.

Cc: ACT, Inc.
F:\Shared\LET99\1602 warner's pond draft report

INTRODUCTION

New England Environmental, Inc. (NEE) visited Warner's Pond in Concord between April and August 1999 to complete a biological assessment of the pond. Access to the pond was gained from the conservation land located off Commonwealth Avenue. NEE used a small boat to access the entire pond and islands.

Warner's Pond is fed primarily by a single surface inlet from Fort Pond and Nashoba Brook which join a short distance upstream of the northwest corner of the Warner's Pond. These are fed by a large complex of streams and ponds whose watershed extends over west Concord, the southern part of Westford, the northeast corner of Littleton, the southeastern portion of Boxborough, and all but the very southern portion of Acton. This watershed area includes housing developments, major roadways, such as Route 2 and Interstate 495, commercial and industrial sites and sewage treatment plants. The inlet is located in the northwestern corner of the pond, and the outlet, is located in the southwestern corner of the pond. There is an old mill pond dam and an adjacent newer outlet structure on the brook which flows only a short distance before flowing into the Assabet River.

In general, Warner's Pond appears to be acting as a giant detention basin for the upgradient watershed. The entire northern and western section of the pond has filled with sediment deposited in the Pond from Nashoba Brook and is now a shallow marsh habitat rather than an open water pond. The eastern section of the Pond contains deeper water, but is also densely vegetated with submerged and floating leaved aquatic vegetation. While the current conditions provide excellent waterfowl habitat, particularly in the extensive shallow marsh areas, it is evident that the pond is nutrient rich and that unless the sediment accumulation is prevented, the pond will revert to a shrub-scrub wetlands rather than open water habitat. This is already occurring in the extreme western sections of the pond.

HABITAT ASSESSMENT

This approximately seventy-seven acre man-made pond can be divided into four habitat types which are shown on the attached site locus map (see Figure 1):

- shallow marsh to the north and west of Boy Scout Island;
- a large water willow, *Decodon verticillatus*, marsh at the inlet;
- open water along the eastern side and in the north; and
- mixed upland forest habitat found on the islands.

Shallow Marsh

This habitat consists of areas where the depth of water is typically one to three feet deep, and includes occasional areas of mudflats. The dominant plants in this area consist of: White Water Lily, *Nymphaea odorata*; Yellow Water Lily, *Nuphar luteum*; Pondweeds, *Potamogeton spp.*; Water Milfoil, *Myriophyllum sp.*; and Duckweed, *Lemna sp.* Water chestnut is present, but is not a dominant plant. All submerged aquatic plants were covered with a thick growth of unidentified algae. The water clarity within this area is very poor, containing high levels of fine silt. Many small fish were noted within this area. NEE noted the following waterfowl and wading bird species using this area: Wood Duck; Mallard Duck; Canada Goose; Great Blue Heron; Little Green Heron; Spotted Sandpiper; and Belted Kingfisher. Dragonflies and damselflies also use this area extensively, and at least ten species were noted by NEE throughout the pond. In addition, this area is also used by painted turtles and green frogs. This is a rich area that is heavily used by a wide variety of wildlife. It is ideal waterfowl and warm water fish habitat, and it is likely an important feeding area for migratory waterfowl. Both wood ducks and mallard ducks were observed to be nesting on the small islands within the pond, as were Canada Goose. Several wood duck nesting boxes have been placed within the pond area.

Water Willow

There is an extensive area dominated by Water Willow, *Decodon verticillata* found near the inlet of Nashoba Brook in the northwest corner of Warner's Pond. Water Willow is a native but invasive plant species which once established diminishes the area of open water by rapidly expanding into the shallow pond fringes and accumulating sediments and organic debris. The shallow habitat area is densely overgrown with Water Willow making boat access into this area extremely difficult. Over much of this area, the water depth was only two to three inches, but the bottom substrate was firm, composed of sand and silt rather than muck. Although the vegetation was very dense and the bottom shallow except for the inlet stream channel, the water was relatively clear in this area. A number of small birds were noted in this area including: Goldfinch, Chimney Swift, Least Flycatcher, Eastern Kingbird, and Song Sparrow.

Open Water

The open water habitat in the northeast section of the Pond contains the deepest water found within of the pond with depths of over 6 feet. Canada Goose, Mallard Duck, Belted Kingfisher, and Double-crested Cormorant all used this area. The deep relatively cool water within this community allow fish to escape the warm shallow low oxygen water of the marsh habitats. This deeper community continues south of the islands to the outlet. The water in the deep area in the

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northeast does not appear to be carrying high loads of silt or sediment. In contrast, the water within the outlet channel is carrying an extensive load of silt and is a brown chalky color.

Upland Habitat

The final habitat found within Warner Pond is the upland habitat found on the small islands within the Pond. These areas are primarily forested with deciduous trees and a relatively dense shrub understory. The vegetation found on Boy Scout island, the largest of the islands, consisted of plants such as: Pin Oak (*Quercus palustris*); White Birch (*Betula alba*); Red Maple, (*Acer rubrum*); White Oak, (*Quercus alba*); Tupelo, (*Nyssa sylvatica*); Pitch Pine, (*Pinus rigida*); and White Pine (*Pinus strobus*) in the canopy. There was a very open shrub layer that contained Sweet Pepperbush, (*Clethra alnifolia*); Swamp Azalea, (*Rhododendron viscosum*); Alder, (*Alnus incana*), Highbush Blueberry, (*Vaccinium corymbosum*); Black Huckleberry, (*Gaylussacia baccata*); Lowbush Blueberry, (*Vaccinium angustifolium*); Sheep Laurel, (*Kalmia angustifolia*); European Buckthorn, (*Rhamnus frangula*); Spreading Dogbane, (*Apocynum androsaemifolium*); and Nannyberry, (*Viburnum lentago*).

Signs of beaver were noted on the island as well as numerous chipmunks and gray squirrels. Nesting cavities used by woodpeckers and other hole nesting species were common within the trees, however larger cavities such as those favored by Wood Ducks were not observed. Birds observed using these islands included: Downy Woodpecker; Morning Dove; Catbird; Yellow-shafted Flicker; Cedar Wax Wing; and Black-capped Chickadee. In addition, it appears that the Mallard Duck and Canada Goose are using islands as nesting sites as these may be relatively free of predators. It should be noted that there were several wood duck nesting boxes which had been erected within the shallow marsh areas of the Pond.

This island also sees some use by people. There are the remains of a house foundation on the largest island, and an existing fire circle (see photograph) indicates that this area continues to be used as an informal campground. Use by people appears to be minimal as there is much dead wood on the island despite the fire circle and a semi-worn trail system. Access to the islands is relatively easy from the conservation landing with a canoe or kayak. Use of a small motor boat is possible, but due to the large quantities of submerged aquatic weeds, not practical.

Other smaller islands within Warner's Pond are densely vegetated with shrubs and saplings and are used by nesting and resting areas by waterfowl, especially Canada Goose.

Fish

The Massachusetts Department of Fisheries and Wildlife has previously conducted fish inventories of Warner's Pond and the Nashoba Brook area upstream of the pond. The list of fish provided in Table 1 indicates that at one time Warner's Pond was stocked with and supported rainbow trout. At the present time, the pond is a warm water fishery and no longer provides suitable trout habitat.

Table 1. Fish Species from Warner's Pond and vicinity

Fish Species	Warner' Pond	Nashoba Brook
Golden Shiner	X	X
White Sucker	X	X
White Perch	X	
Pumpkinseed	X	X
Brown Bullhead	X	
Black Crappy	X	
Largemouth Bass	X	X
Yellow Perch	X	X
Bluegill	X	
Yellow Bullhead	X	X
Rainbow Trout	X	
American Eel	X	X
Red-breasted Sunfish		X
Pickereel		X
Banded Sunfish		X
Fall Fish		X

Rare Wetlands Wildlife

Warner's Pond was searched by NEE for occurrences of rare or threatened wildlife, however none were found. The Natural Heritage & Endangered Species Program was contacted for a search of their database of state protected rare species in and within the vicinity of Warner's Pond. Their response (attached) indicates that there are no known occurrences of any rare plants or animals, or exemplary natural communities in this area.

Recommendations for the Management of Warner's Pond

Warner's Pond is a diverse and rich natural resource for the Town of Concord which is in the process of being lost due to long term neglect and degradation from sediment and nutrient input from the upgradient watershed. Our observations lead us to conclude that heavy sediment loads have been deposited within Warner's Pond from the Nashoba Brook watershed and have converted the majority of the pond from open water to shallow marsh and water willow habitats.

We provide the following recommendations:

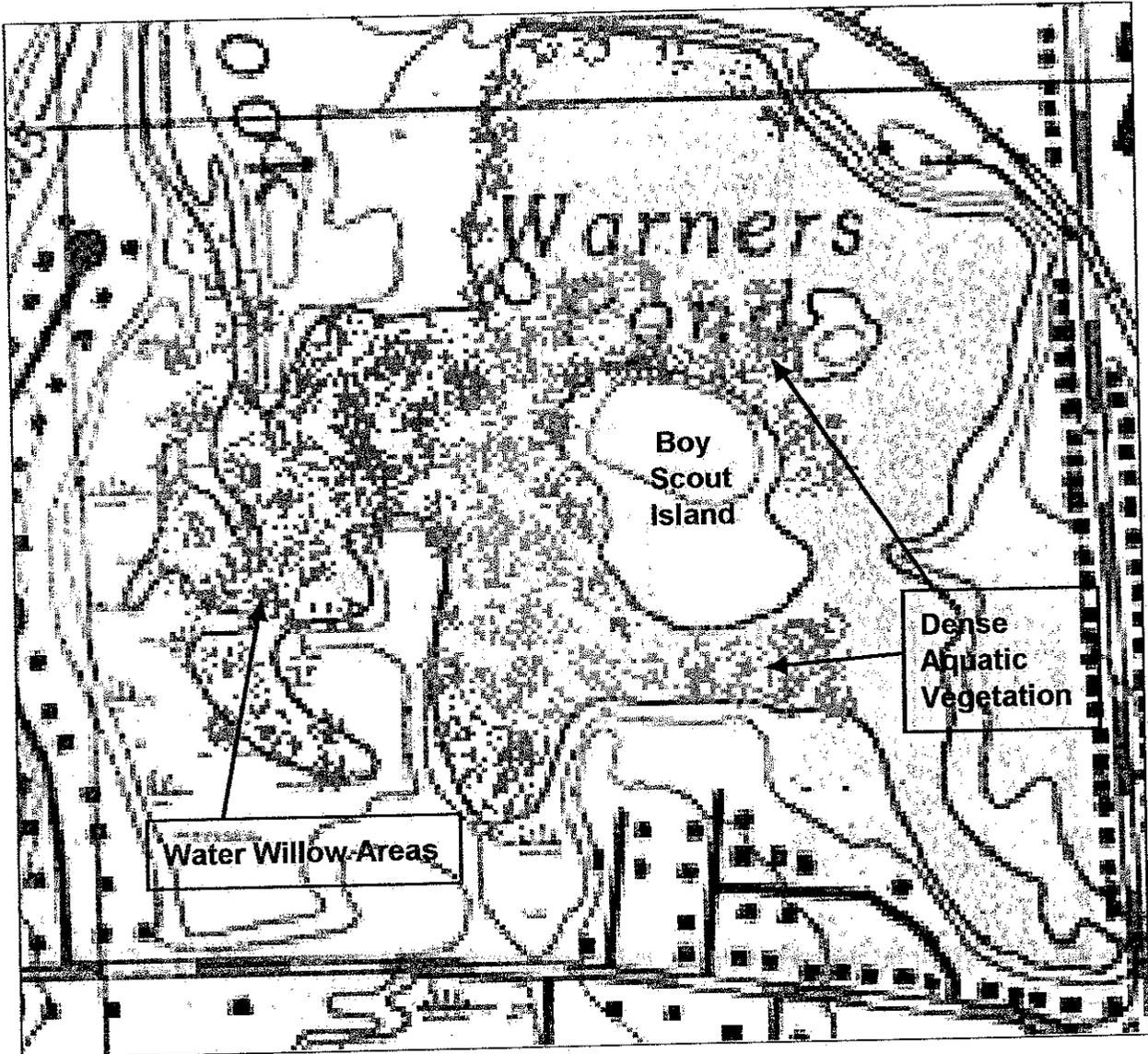
1. Use mechanical (dredging) techniques to recreate a flow through channel between the inlet and outlet of the Pond and to remove sediments deposited in the inlet area and *Decodon* marshes. It is likely that the water levels within the pond will need to be dropped via the outlet structure for this work. Since a man-made dam exists at the outlet, it should be possible to lower the water level within the pond for management and maintenance purposes.
2. Consider the use of chemical techniques to remove invasive submerged aquatic vegetation and algae within the deep water habitat area, and within other areas as required.
3. Consider the draw-down of Warner's Pond to remove invasive aquatic vegetation
4. Create a "sump" at the Nashoba Brook inlet to collect sediment entering the Pond from the upstream watershed by constructing a low berm of rock gabions (or other similar methods). This "sump" should be accessible via the adjacent corn fields, and should be cleaned out on a regular (yearly) basis, thereby preventing sediments from continually filling the Pond. The purpose of this sump, or sediment trap basin, is to provide a means to prevent sediment from upstream sources from

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continually filling-in Warner's Pond.

5. Leave the majority of the extensive shallow marsh area intact as waterfowl habitat.
6. Add additional wood duck nesting boxes.
7. Place appropriate signs on the smaller islands to prevent people from landing canoes and walking on these areas which are used for waterfowl nesting.
8. Establish a policy for camping on Boy Scout Island.
9. Consider the creation of a Town camping area on Boy Scout Island. This is a relatively undisturbed wooded island which has the feel of being far from civilization. Only a short canoe paddle away from the landing, it may serve as an interesting overnight area for nature groups, school groups, scouts, etc.
10. Consider the formation of a Warner's Pond advisory Committee composed of both members of the Natural Resources Commission and local citizens to review the recommendations reported here, and other recommendations as they become available, and to implement these recommendations as funding becomes available.

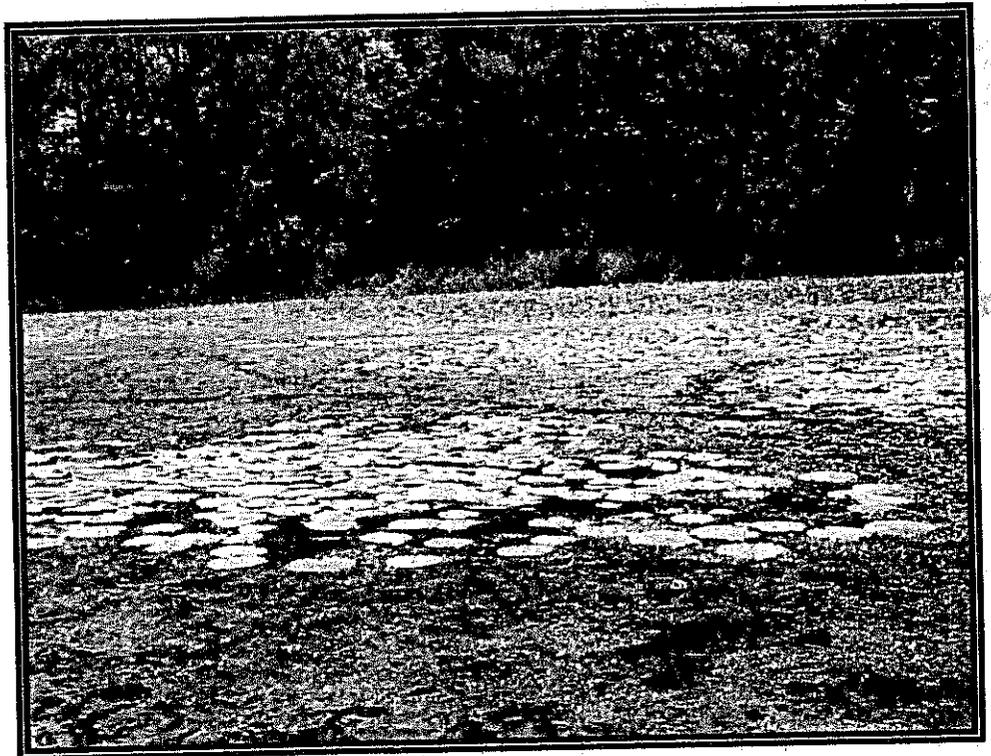
Figure 1. Topographical Map of Warner Pond, Concord, MA, Maynard Quad, 1987



**Photographs of Warner's Pond
August, 1999**



*Typical Northwest Pond Shallow Marsh
Vegetation Cover*



*Visible "trails" within the
floating leaved aquatic
plants are from swimming
Wood ducks*



Typical Water Willow community cover at the Nashoba Brook inlet channel into Warner's Pond.

Nashoba Brook Channel into Warner's Pond





Division of Fisheries & Wildlife

Wayne F. MacCallum, *Director*

22 July 1999

Karro A. Frost
New England Environmental, Inc.
800 Main St.
Amherst, MA 01002

Re: Warners Pond
Concord, MA
NHESP File: 99-5558

Dear Ms. Frost,

Thank you for contacting the Natural Heritage and Endangered Species Program for information regarding state-protected rare species in the vicinity of the site identified above.

At this time we are not aware of any rare plants or animals or exemplary natural communities in the area of this site.

This review concerns only rare species of plants and animals and ecologically significant natural communities for which the Program maintains site-specific records. This review does not rule out the possibility that more common wildlife or vegetation might be adversely affected if this site is developed, especially if it will modify currently undeveloped areas. Should site plans change, or new rare species information become available, this evaluation may be reconsidered.

Please call me at (508) 792-7270 x154 if you have any questions.

Sincerely,

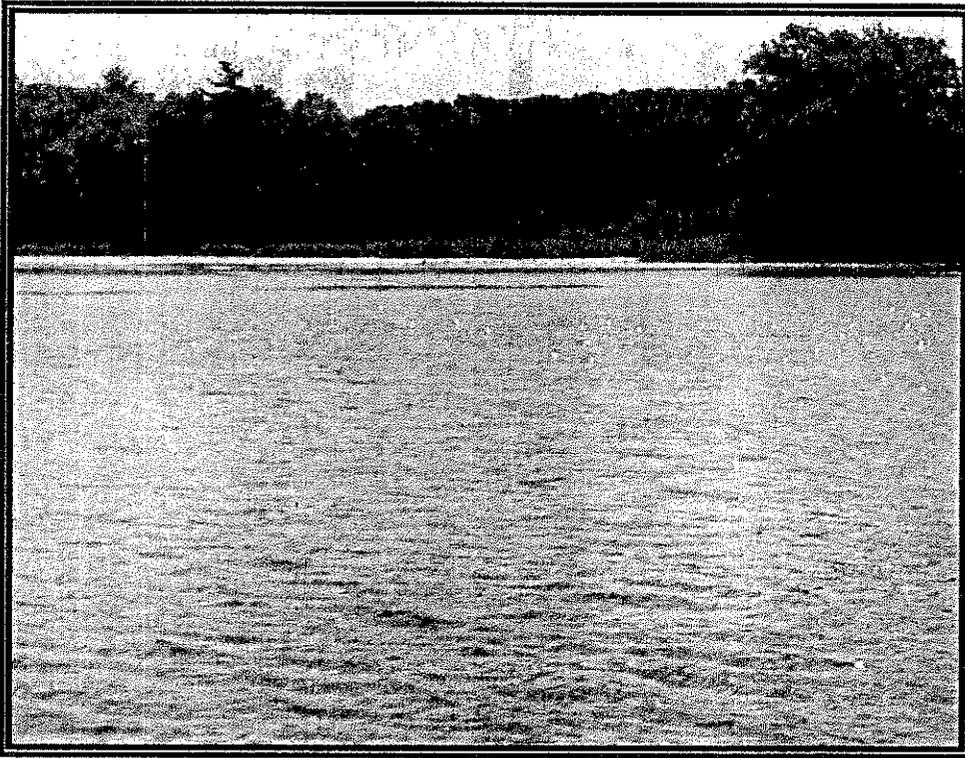
A handwritten signature in cursive script, appearing to read "C. Campbell".

Cindy L. Campbell
Environmental Review Assistant

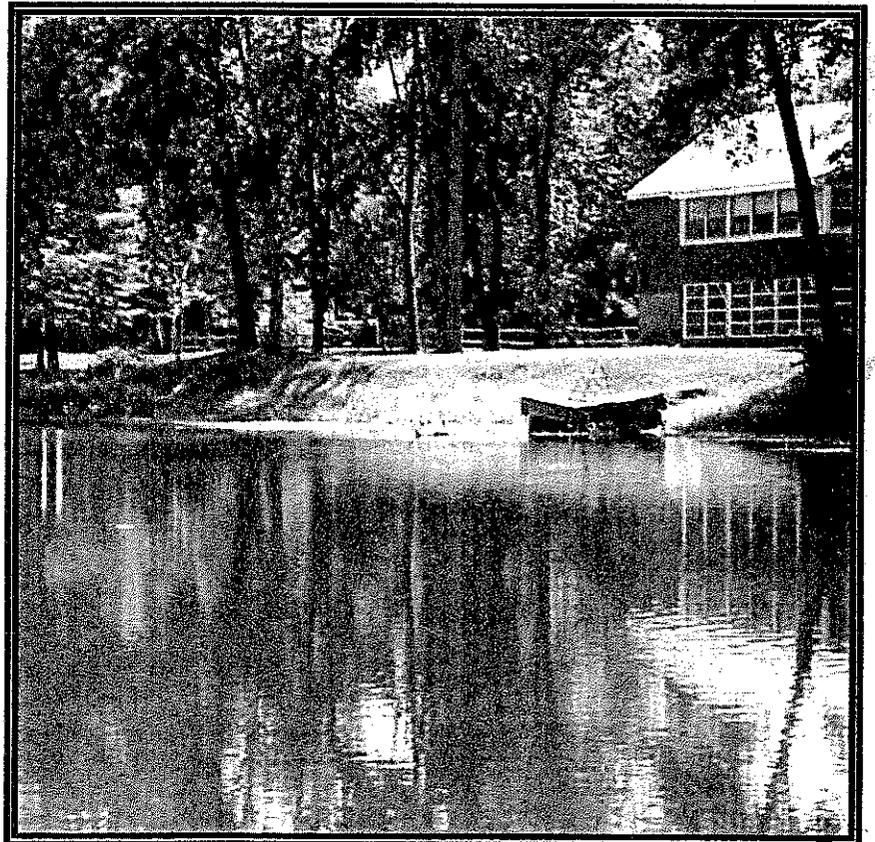


Natural Heritage & Endangered Species Program

Route 135, Westborough, MA 01581 Tel: (508) 792-7270 x 200 Fax: (508) 792-7275
An Agency of the Department of Fisheries, Wildlife & Environmental Law Enforcement
<http://www.state.ma.us/dfwele>



Northeast area of Warner Pond with open water habitat



Open Water outlet channel with silty water and typical channel shore line

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The shorelines throughout the pond are vegetated with Purple Loosestrife, Lythrum salicaria. A large corn field borders Warner's Pond to the northeast. This field is heavily used by the geese from Warner's Pond in both the spring and the fall, when portions of the field are flooded. Note Decodon fringed shoreline, and wood duck box



Fire circle camping area and old foundation on Boy Scout Island.