Designation of Sensitive Areas
in
Big Roche-a-Cri Lake, Adams County

December 2005
Wisconsin Department of Natural Resources
Eau Claire, WI

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

This is a 2011 revision of the original 2005 document.

Photographic files that were too large to include in the original document have been compressed so that they may now be included in this revision. Original text and references in this document are unchanged -- including references to photographs not present in the original document. Sensitive Area Designation nomenclature has given way to Critical Habitat Designated (CHD) Area nomenclature. Revision of the lake map came at the request of a DNR permit issuer so that nuisance aquatic plant harvesting operations could be verified. The new map does not change any CHD acreage or shoreline extent. Only CHD boundaries in open water areas under exclusive DNR jurisdiction were changed / simplified to facilitate current and future nuisance aquatic plant harvesting operations. These open water CHD boundary changes were kept as minimal as possible and utilize the original GPS field data control points of record. -- N. Trombly, Feb, 2011

Sensitive Area Designation
Big Roche-a-Cri Lake, Adams County

I. INTRODUCTION

Designation of sensitive areas within lakes provides a holistic approach to ecosystem assessment and the protection of those areas within a lake that are most important for preserving the very character and qualities of the lake. These sites are those sensitive and fragile areas that support the wildlife and fish habitat, provide the mechanisms that protect the water quality in the lake, harbor quality plant communities and preserve the places of serenity and aesthetic beauty for the enjoyment of lake residents and visitors. Sensitive areas are dependent on the protection of shoreline and in-lake habitat.

Protecting the terrestrial plant community on shore provides a buffer that absorbs nutrient runoff, prevents erosion, protects water quality, maintains water temperatures and provides important habitat. This habitat is important for species that require habitat on shore and in the water as well as those species that require a corridor in order to move along the shore (Figure 1).

Protecting the littoral zone and littoral zone plant communities is critical for fish, wildlife and the invertebrates that both feed upon (Figure 1).

The sensitive area designation will provide a framework for management decisions that impact the ecosystem of the lake.

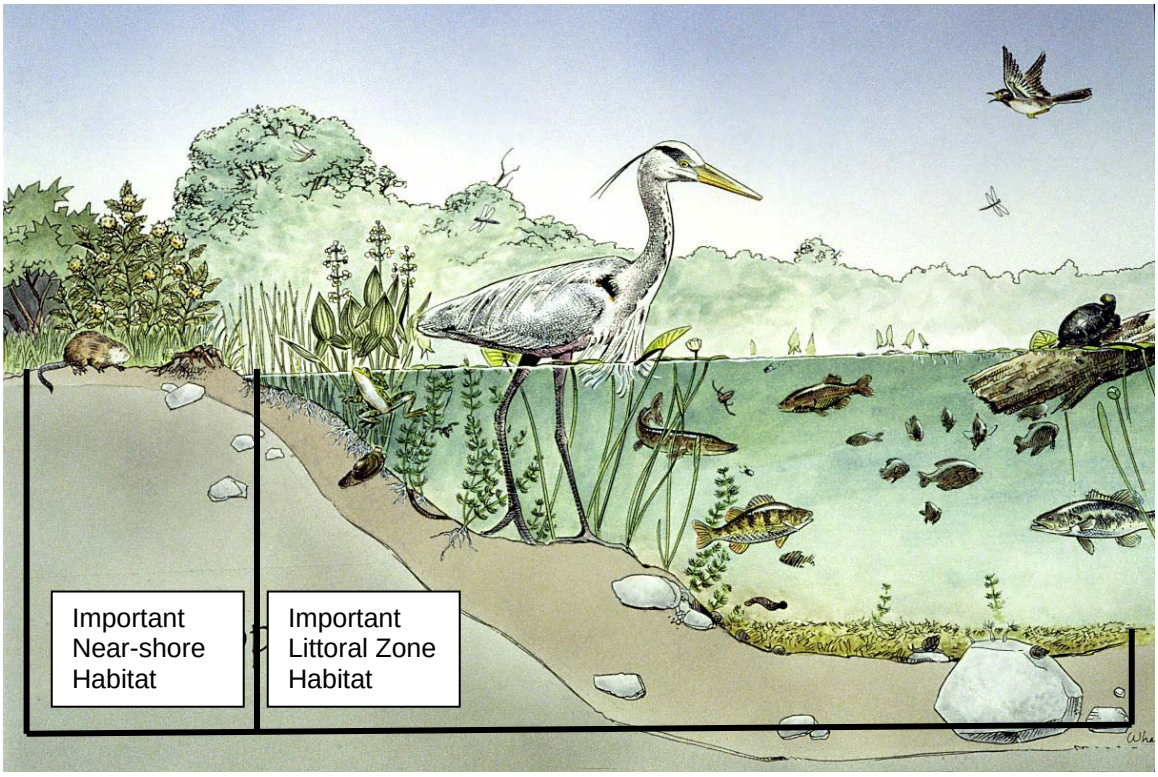

Figure 1. Location of important near-shore and littoral zone habitat.

A Sensitive Area Study was conducted September 26, 2005 on Big Roche-a-Cri Lake, Adams County. The designations were based on aquatic plant data collected during July 2004.
The study team included:
Scott Ironside, DNR Fish Biologist
Deborah Konkel, DNR, Aquatic Plant Specialist
Buzz Sorge, DNR Lakes Manager
Jim Keir, DNR Wildlife Biologist
Reesa Evans, Adams County Land Conservation

Big Roche-a-Cri Lake is a 205-acre impoundment with a maximum depth of 20 ft and an average depth of 9 ft. Big Roche-a-Cri Lake is a mesotrophic lake with good water quality and fair-to poor water clarity. Filamentous algae is common in the 0-1.5ft depth zone; thick films of planktonic algae is common throughout and abundant in the 0-10ft depth zone.

The aquatic plant community colonized more than three-quarters of the littoral zone to a maximum depth of 13 feet with the most abundant plant growth in the 0-5ft depth zone. The aquatic plant community is also characterized by below average quality, good species diversity and a high tolerance to disturbance, likely the result of past disturbance.

Ceratophyllum demersum is the dominant species within the plant community, especially in the 0-1.5ft depth zone. *Vallisneria americana* was sub-dominant, especially near the dam. The exotic species, Eurasian watermilfoil, ranks third in abundance (tied with *Elodea canadensis*), and was found at more than one-third of the sites. Eurasian watermilfoil exhibited a growth form of average density and was most abundant west of Highway 13 in the 5-10ft depth zone.

II. THE SENSITIVE AREAS

The reasons for selection of each sensitive area are important to the whole lake community, as this is what drives the selection process. Some selection criteria are the same for all selected sensitive areas in a lake and some reasons are unique to a site (Figure 2, Map).

All sensitive areas that were selected possess a natural buffer of terrestrial vegetation over a large portion of the site. All sensitive areas that were selected have the potential to be used for educational purposes and as visual and audible buffers from structures and roads.

Attributes Common to All the Sensitive Areas

Water Quality

The vegetation at all of the sites provides important water quality protections. Some attributes are common to all sensitive areas and some are unique to certain sites. The attributes that all sites have in common are:

- Biological buffers. The native plants at the site reduce the spreading of Eurasian watermilfoil into the sites and reduce the likelihood of other exotic plants invading the area.
- Physical buffer. The vegetation protects the shoreline against wave erosion.

Wildlife Habitat

All of the sensitive areas provide important wildlife habitat. Some values are unique to a sensitive area and some habitat values are shared by all the sensitive areas. All of the sites provide shelter, cover, nesting and feeding areas for song birds.

Fish Habitat

The entire suite of sensitive areas provide habitat for a lake-wide high-quality fishery. The sensitive areas provide habitat that is used by fish that move throughout the lake. The sensitive areas provide:

1) year-round nursery areas, feeding areas and protective cover for walleye and white sucker
2) spring spawning areas, year-round nursery areas, feeding areas and protective cover for northern pike, large-mouth bass, bluegill, pumpkinseed, yellow perch, black crappie and black bullhead.

Recommendations for the entire lake

1) Leave fallen trees and large branches in the water for large woody debris cover which provides excellent fish and wildlife habitat.
2) Winter drawdowns conducted only as needed to control Eurasian watermilfoil (once every 3-5 years).
3) Winter drawdowns timed to reduce impacts to reptiles and amphibians. Must be down by October 1.
4) Retain existing shoreline cover as much as possible. No more than 30' of cleared viewing corridor per property, not more than 1 viewing corridor per each 100ft of shoreline.

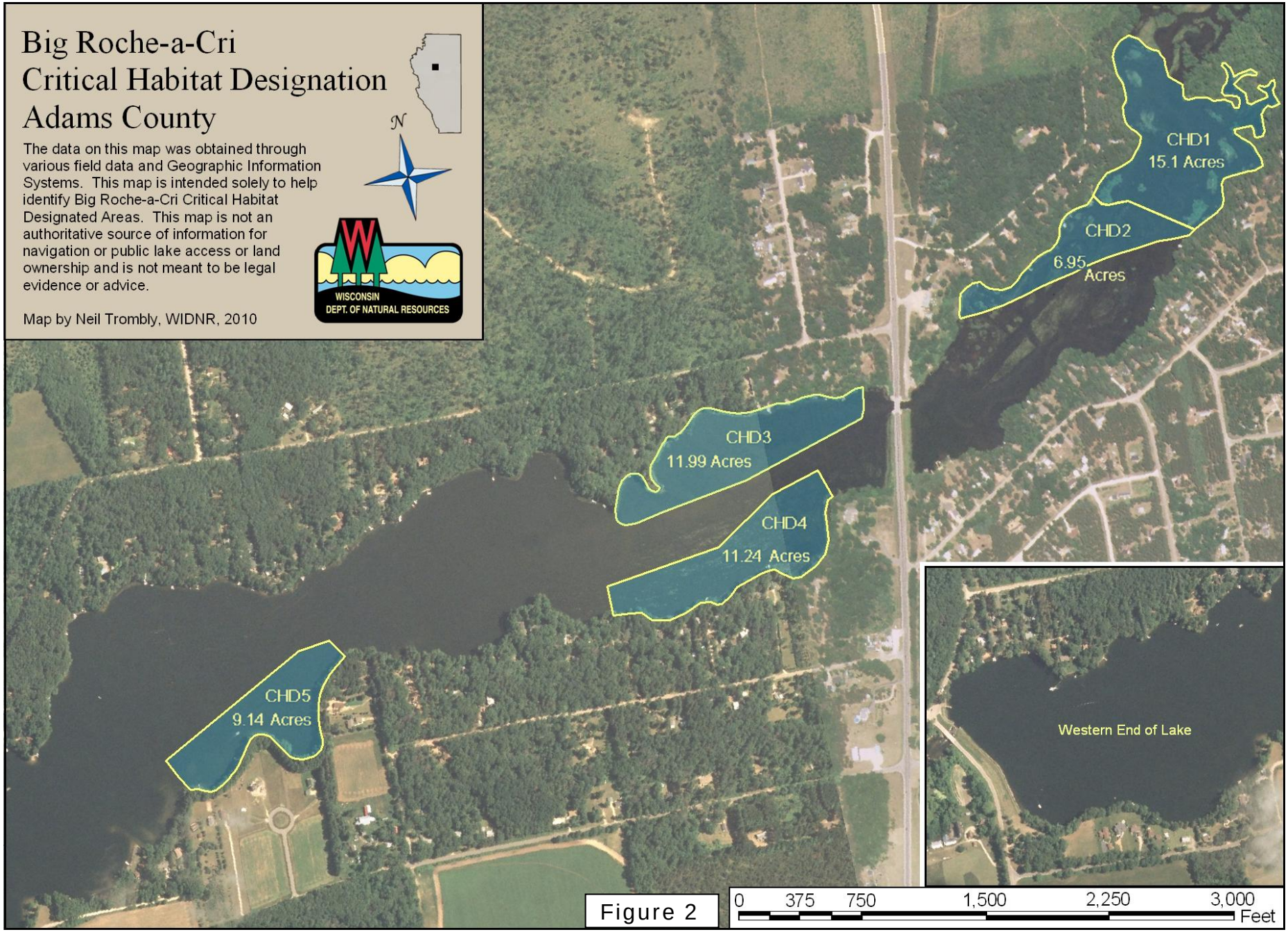
Big Roche-a-Cri
Critical Habitat Designation
Adams County
The data on this map was obtained through various field data and Geographic Information Systems. This map is intended solely to help identify Big Roche-a-Cri Critical Habitat Designated Areas. This map is not an authoritative source of information for navigation or public lake access or land ownership and is not meant to be legal evidence or advice.
Map by Neil Trombly, WIDNR, 2010
N
WISCONSIN
DEPT. OF NATURAL RESOURCES
CHD1
15.1 Acres
CHD2
6.95 Acres
CHD3
11.99 Acres
CHD4
11.24 Acres
CHD5
9.14 Acres
Western End of Lake
0 375 750 1,500 2,250 3,000
Feet

Figure 2

Figure 3. Sensitive Area 1; Shallow River Inlet. Upper (north shore), Middle (east view) , Lower (south shore island).

Sensitive Area Big Roche-a-Cri 1 – Shallow River Inlet

This site was selected for its high quality fish and wildlife habitat, diverse aquatic vegetation, undisturbed and unique terrestrial vegetation, its importance for protecting water quality and its natural scenic beauty.

This sensitive area includes 13 acres of the upper end of the impoundment, to the 2.5-foot depth contour (Figure 2). The site includes shallow marsh wetlands and shrub carr. Important near-shore terrestrial habitat, shoreline habitat and littoral zone habitat make up this site and is composed a mixture of mostly forest growth and shrub cover with some herbaceous cover (Figure 3).

The sediment is composed of sand and silt. Fallen trees and other large woody debris are common at the site for fish and wildlife habitat (Figure 3).

This site provides an area of natural scenic beauty for lake residents and visitors. It provides visible and audible buffers from noise, boat traffic and man-made structures.

Table 1. Wildlife Uses of Aquatic Plants at Sensitive Area 1; Shallow River Inlet - Big Roche-a-Cri Lake

Aquatic Plants	Fish	Water Fowl	Song and Shore Birds	Upland Game Birds	Muskrat	Beaver	Deer
Submergent Plants							
Ceratophyllum demersum	F,I*, C, S	F(Seeds*), I, C			F		
Elodea canadensis	C, F, I	F(Foliage) I					
Potamogeton amplifolius	F, I, S*,C	F*(Seeds)			F*	F	F
Potamogeton crispus	F, C, S	F(Seeds, Tubers)					
Potamogeton pectinatus	F, I, S*,C	F*			F*	F	F
Potamogeton zosteriformis	F, I, S*,C	F*(Seeds)			F*	F	F
Vallisneria americana	F*, C, I, S	F*, I	F		F		
Zosterella dubia	F, C, S	F(Seeds)					
Floating-leaf Plants							
Lemna minor	F	F*, I	F	F	F	F	
Nuphar variegata	F,C, I, S	F, I	F		F*	F	F*
Spirodela polyrhiza	F	F		F			
Emergent Plants							
Carex comosa	S	F(Seeds), C	F(Seeds)	F(Seeds)	F	F	F
Rumex spp.		F (Seeds)	F	F			F*
Typha latifolia	I, C, S	F(Entire), C	F(Seeds), C, Nest	Nest	F* C*Lodge	F	

F=Food, I= Shelters Invertbrates, a valuble food source C=Cover, S=Spawning
*=Valuable Resource in this category *Current knowledge as to plant use. Other plants may have uses that have not been determined.

The Plant Community:

This site supports 16 species of aquatic plants.

Plant species that colonize the biologically important edge between water and land are sedges, water dock, bulb-bearing hemlock and jewelweed.

Emergent vegetation, cattails and sedges protect the shoreline and provide important food sources and cover for fish and wildlife and fish spawning habitat.

Floating-leaf vegetation: yellow pond lilies and duckweeds dampen wave action and provide important fish cover and wildlife habitat.

A diverse submerged plant community provides many important habitat components for the fish and wildlife community (Table 1). Wild celery and water stargrass are present; common waterweed and coontail are abundant. The pondweed family, which is an important food source for waterfowl and fish and premier cover, is represented by abundant stands of flat-stem pondweed, commonly occurring sago pondweed and large-leaf pondweed present at this site.

The non-native curly-leaf pondweed is also present at this site.

SENSITIVE SPECIES

1) Bog bluegrass, a threatened species, has been found in the wetlands in this area.
2) The special concern species, pirate perch, has been found just upstream of this area.
3) Nesting bald eagles have been verified at this site as recently as 2002.

Wildlife Habitat

The important habitat features at this site are the emergent vegetation, floating-leaf vegetation, shoreline shrubs, snag trees, perch trees and fallen logs in the water. In addition to the habitat values found at all the sites, this site also provides:

1) Shelter, cover, denning and feeding areas for deer and raccoon
2) Shelter, cover, nesting and feeding areas for ducks, geese, eagles, frogs, toads, snakes and turtles
3) Shelter and cover for beaver and otter
4) Shelter, cover and feeding areas for mink
5) Shelter, cover and denning areas for muskrat
6) Nesting bald eagles have been verified at this site as recently as 2002.

Fish Habitat

Large woody cover from stumps and fallen trees in the water, emergent vegetation, floating-leaf vegetation and submergent vegetation provide important fish habitat. The diversity of habitat makes this site valuable for a diverse fish population.

Water Quality

In addition to the water quality benefits provided at all sites, the aquatic plant community at this site also:

1) provides a nutrient buffer – the vegetation absorbs nutrients that could otherwise fee algae blooms
2) provides sediment stabilization – by rooting in the sediments, the plants hold the sediments in place and reduce the turbidity caused by wind action and boat waves
3) Stream inlet – the addition of water from the stream would provide temperature fluctuations that increase diversity of animal and plant life.

Recommendations for Sensitive Area 1

1) This site provides excellent wildlife habitat and the quality of habitat needs to be maintained
2) Maintain snag and cavity trees along the shore.
3) Maintain current shoreline vegetation as a wildlife corridor and restore natural shoreline vegetations where cleared to increase wildlife corridor.
4) Winter drawdowns would impact this area and should be limited to once every 5 years for Eurasian watermilfoil control only and only as necessary. The drawdowns must be timed to be down by October 1 or they will not be allowed.
5) Designate slow-no-wake in this east basin.
6) Maintain and restore near-shore and shoreline vegetation for water quality protection.
7) Protect emergent vegetation, no removal of emergent vegetation.
8) No removal of submerged and floating-leaf aquatic vegetation.
9) Management of aquatic vegetation limited to exotic/invasive species.
10) Maintain current fish habitat. Do not remove fallen trees in the water along the shoreline.
11) Use no lawn chemicals or fertilizers.
12) Minimize removal of any shoreline vegetation. Allow removal of a maximum corridor width of 30 feet. Permits required for any vegetation removal.
13) No pier placement in this area. Piers would significantly degrade wildlife habitat
14) No permitting for shoreline erosion control (rip-rap or retaining walls) needed at this site.
15) No bank grading.
16) No permit approval for pea gravel beds or sand blankets, except for DNR fishery or wildlife approved projects.
17) Nor dredging or lake bed removal or modifications.
18) No boat ramp placement.
19) No recreational floating devices.

Figure 4. Sensitive Area 2; North Shore of East Basin, west to east.

Sensitive Area Big Roche-a-Cri 2 – North Shore of East Basin

This site was selected for the diverse aquatic vegetation and the shoreline and littoral zone vegetation, providing important for fish habitat, wildlife habitat, protecting water quality and providing natural scenic beauty.

This sensitive area is an 8-acre area in the upper end of the impoundment that encompasses approximately 1500 feet of shoreline, out to the maximum rooting depth of 2.5 feet (Figure 2). The site includes deep marsh wetlands and shrub carr wetlands. The sediment is organic muck and silt. The shoreline habitat includes wooded cover with an understory cover of shrub with some herbaceous wetlands and scattered home development in the area. Some homes have retained their buffer of natural vegetation and some have cleared the natural shoreline out (Figure 4).

Large woody cover that is an important structural component of fish and wildlife habitat appears to have been removed over time. It is conspicuously absent, although the area should support this cover.

This site provides an area of natural scenic beauty for lake residents and visitors. It provides visible and audible buffers from noise and boat traffic.

Table 2. Wildlife Uses of Aquatic Plants at Sensitive Area 2; North Shore East Basin - Big Roche-a-Cri Lake

Aquatic Plants	Fish	Water Fowl	Song and Shore Birds	Upland Game Birds	Muskrat	Beaver	Deer
Submergent Plants							
Ceratophyllum demersum	F,I*, C, S	F(Seeds*), I, C			F		
Elodea canadensis	C, F, I	F(Foliage) I					
Potamogeton amplifolius	F, I, S*,C	F*(Seeds)			F*	F	F
Potamogeton crispus	F, C, S	F(Seeds, Tubers)					
Potamogeton zosteriformis	F, I, S*,C	F*(Seeds)			F*	F	F
Vallisneria americana	F*, C, I, S	F*, I	F		F		
Zosterella dubia	F, C, S	F(Seeds)					
Floating-leaf Plants							
Lemna minor	F	F*, I	F	F	F	F	
Nuphar variegata	F,C, I, S	F, I	F		F*	F	F*
Spirodela polyrhiza	F	F		F			
Emergent Plants							
Carex comosa	S	F(Seeds), C	F(Seeds)	F(Seeds)	F	F	F
Rumex spp.		F (Seeds)	F	F			F*
Scirpus validus	F, C, I	F (Seeds)*, C	F(Seeds, Tubers), C	F (Seeds)	F	F	F
Typha latifolia	I, C, S	F(Entire), C	F(Seeds), C, Nest	Nest	F* (Entire), C*, Lodge	F	

F=Food, I= Shelters Invertbrates, a valuble food source C=Cover, S=Spawning
*=Valuable Resource in this category

The Plant Community:

The aquatic plant community at this site supports 19 species of plants.

Plant species that colonize the biologically important edge between water and land are willow shrubs, sedges, bulrush, water dock and bulb-bearing hemlock.

Emergent vegetation, cattails, sedges and bulrush, protect the shoreline and provide important food sources and cover for fish and wildlife and fish spawning habitat.

Floating-leaf plants, yellow pond lily and duckweeds provide cover and food sources.

A diverse submergent plant community provides a diverse habitat (Table 2). Water stargrass is present; wild celery is common at this site; coontail and common waterweed are abundant at this site. The pondweed family is likely the most important producer of habitat and is represented here by large-leaf pondweed and flat-stem pondweed.

The non-native species, curly-leaf pondweed, is present at this site.

Wildlife Habitat

The important habitat features at this site are the emergent vegetation, shoreline shrubs, snag trees, perch trees and fallen logs in the water. In addition to the habitat values found at all the sites, this site also provides:

1) Shelter, cover, denning and feeding areas for deer and raccoon
2) Shelter, cover, nesting and feeding areas for frogs, toads and turtles
3) Shelter, cover and feeding areas for mink

Fish Habitat

Large woody cover from stumps and fallen trees in the water, emergent vegetation, floating-leaf vegetation and submergent vegetation provide important fish habitat. The high diversity of habitat makes this site valuable for a diverse fish population.

Water Quality

In addition to the water quality benefits provided at all sites, the aquatic plant community at this site also:

1) Provides a nutrient buffer – the vegetation absorbs nutrients that could otherwise fee algae blooms
2) Provides sediment stabilization – by rooting in the sediments, the plants hold the sediments in place and reduce the turbidity caused by wind action and boat waves.

Recommendations for Sensitive Area 2

1) This site provides quality wildlife habitat and this habitat needs to be maintained
2) Maintain snag and cavity trees along the shore.
3) Maintain current shoreline vegetation as a wildlife corridor and restore natural shoreline vegetations where cleared to increase wildlife corridor.
4) Designate slow-no-wake in this east basin.
5) Winter drawdowns would impact this area and should be limited to once every 5 years for Eurasian watermilfoil control only and only as necessary. The drawdowns must be timed to be down by October 1 or they will not be allowed.
6) Maintain and restore near-shore vegetation for wildlife habitat and water quality protection.
7) Restore natural shoreline in areas that have more than 30' of cleared access and leave fallen trees in the water. Restore band and shoreline vegetation.
8) Maintain current fish habitat. Do not remove trees fallen in the water or other woody debris along the shoreline.
9) Protect emergent vegetation, removal only as necessary for access to lake.
10) Minimize removal of aquatic vegetation. Limit removal to navigational channels.
11) Permit required for removal of any emergent or submergent vegetation.
12) Aquatic plant control to focus on controlling Eurasian watermilfoil and restoring native vegetation.
13) Use no lawn chemicals or fertilizers.
14) Minimize removal of any shoreline vegetation. Allow removal of a maximum corridor width of 30 feet. Permits required for any vegetation removal.
15) Pier placement by permit only. Piers will be limited to one per riparian, geo-located of minimum size, constructed of light-penetrating pier material such as metal grating.
16) No permitting for shoreline erosion control needed such as rip-rap, retaining walls. Site has sufficient natural vegetation buffer.
17) No bank grading.
18) No permit approval for pea gravel beds or sand blankets, except for DNR fishery or wildlife approved projects.
19) Dredging limited to a single channel at this site.
20) No boat ramp placement.
21) No recreational floating devices.

Figure 5. Sensitive Area 3: North Shore, west to east.

Sensitive Area Big Roche-a-Cri 3 – North Shore

This sensitive area encompasses approximately 1500 feet along the northern shore, just west of the Highway 13 bridge, to a maximum rooting depth of 10 feet (Figure 2). It includes important shallow water habitat. The sediment is sand and silt. The shoreline at this sensitive area is composed mostly of a wooded cover with some shrub growth, herbaceous cover and shoreline development (Figure 5).

The Plant Community:

The aquatic plant community at this site supports 13 species of plants.

Floating-leaf plants are limited to three species of duckweeds that provide some seasonal cover and food sources.

The submergent plant community provides a diverse habitat (Table 3). Wild celery and coontail are dominant at this site; is present; wild celery is common at this site; common waterweed is abundant; water stargrass and bushy pondweed are at this site. The pondweed family is likely the most important producer of habitat and is represented here by large-leaf pondweed, clasping-leaf pondweed and commonly occurring colonies of flat-stem pondweed.

The non-native species, curly-leaf pondweed is present and Eurasian watermilfoil is abundant at this site.

Table 3. Wildlife Uses of Aquatic Plants at Sensitive Area 3; North Shore - Big Roche-a-Cri Lake

Aquatic Plants	Fish	Water Fowl	Song/Shore Birds	Upland Game Birds	Muskrat	Beaver	Deer
Submergent Plants							
Ceratophyllum demersum	F,I*, C, S	F(Seeds*), I, C			F		
Elodea canadensis	C, F, I	F(Foliage) I					
Myriophyllum spicatum	F, C						
Najas guadalupensis	F, C	F*(Seeds, Foliage)					
Potamogeton amplifolius	F, I, S*,C	F*(Seeds)			F*	F	F
Potamogeton crispus	F, C, S	F(Seeds, Tubers)					
Potamogeton richardsonii	F, I, S*,C	F*(All)			F*	F	F
Potamogeton zosteriformis	F, I, S*,C	F*(Seeds)			F*	F	F
Vallisneria americana	F*, C, I, S	F*, I	F		F		
Zosterella dubia	F, C, S	F(Seeds)					
Floating-leaf Plants							
Lemna minor	F	F*, I	F	F	F	F	
Spirodela polyrhiza	F	F		F			

F=Food, I= Shelters Invertbrates, a valuble food source C=Cover, S=Spawning

*=Valuable Resource in this category

*Current knowledge as to plant use. Other plants may have uses that have not been determined.

After Fassett, N. C. 1957. A Manual of Aquatic Plants. University of Wisconsin Press. Madison, WI

Nichols, S. A. 1991. Attributes of Wisconsin Lake Plants. Wisconsin Geological and Natural History Survey. Info. Circ. #73

Fish Habitat

The submergent vegetation provides important fish habitat. The diversity of plant species provide for a diverse fish population.

Water Quality

In addition to the water quality benefits provided at all sites, the aquatic plant community at this site also:

1) provides a nutrient buffer – the vegetation absorbs nutrients that could otherwise fee algae blooms
2) provides sediment stabilization – by rooting in the sediments, the plants hold the sediments in place and reduce the turbidity caused by wind action and boat waves

Recommendations for Sensitive Area 3

1) Shoreline suffers from erosion on the point. Stabilize the bank with native vegetation and restore native vegetation on eroded sites.
2) Maintain current areas of natural vegetation buffer for water quality protection.
3) Maintain any aquatic vegetation in an undisturbed condition for fish habitat and water quality protection.
4) Aquatic plant management to focus on control of exotic/invasive species and restoration of native species.
5) Do not remove fallen trees from the water, leave for wildlife and fish habitat.
6) Use no lawn chemicals or fertilizers on the land above this site.
7) Minimize removal of any shoreline. Allow removal of a maximum corridor width of 30 feet. Permits required for any vegetation removal.
8) No bank grading.
9) No permit approval for pea gravel beds or sand blankets, except for DNR fishery or wildlife approved projects.
10) Restrict location and dimensions of dredging or lake bed removal within the boundaries of this site.
11) Pier placement by permit only to minimize number of piers and their size and disturbance; require light-penetrating pier material such as metal grating.
12) No boat ramp placement.
13) Permit required for recreational floating devices.
14) There may be compliance issues with some boat houses on the shore,

Figure 6. Sensitive Area 4: South Shore, east to west.

Sensitive Area Big Roche-a-Cri 4 – South Shore

This sensitive area encompasses approximately 1100 feet of shoreline on the south shore, just west of the Highway 13 Bridge, to the maximum rooting depth of 6 feet (Figure 2). It supports important shallow water habitat. The sediment is a mixture of sand and silt. The shoreline at this sensitive area is composed mainly of wooded cover with some shrub growth, herbaceous plants and shoreline development (Figure 6). Large woody cover from fallen trees is present in the shallow water and provides important habitat for fish cover and wildlife resting areas.

The Plant Community:

The aquatic plant community is composed of 13 species at this site.

Emergent vegetation, cattail, protects the shoreline and provides important food sources and cover for fish and wildlife and fish spawning habitat.

Floating-leaf vegetation: yellow pond lilies and duckweeds dampen wave action and provide important fish cover and wildlife habitat.

A diverse submerged plant community provides many important habitat components for the fish and wildlife community (Table 4). Coontail is dominant at this site; wild celery is abundant; common waterweed is common at the site; water stargrass and bushy pondweed are present. The pondweed family, which is an important food source for waterfowl and fish and premier cover, is represented by flat-stem pondweed and clasping-leaf pondweed.

The non-native Eurasian watermilfoil is commonly occurring at this site.

Table 4. Wildlife Uses of Aquatic Plants at Sensitive Area 4; South Shore - Big Roche-a-Cri Lake

Aquatic Plants	Fish	Water Fowl	Song and Shore Birds	Upland Game Birds	Muskrat	Beaver	Deer
Submergent Plants							
Ceratophyllum demersum	F,I*, C, S	F(Seeds*), I, C			F		
Elodea canadensis	C, F, I	F(Foliage) I					
Myriophyllum spicatum	F, C						
Najas guadalupensis	F, C	F*(Seeds, Foliage)					
Potamogeton richardsonii	F, I, S*,C	F*(All)			F*	F	F
Potamogeton zosteriformis	F, I, S*,C	F*(Seeds)			F*	F	F
Vallisneria americana	F*, C, I, S	F*, I	F		F		
Zosterella dubia	F, C, S	F(Seeds)					
Floating-leaf Plants							
Lemna minor	F	F*, I	F	F	F	F	
Nuphar variegata	F,C, I, S	F, I	F		F*	F	F*
Spirodela polyrhiza	F	F		F			
Emergent Plants							
Typha latifolia	I, C, S	F(Entire), C	F(Seeds), C, Nest	Nest	F* (Entire), C*, Lodge	F	

F=Food, I= Shelters Invertbrates, a valuble food source C=Cover, S=Spawning

*=Valuable Resource in this category

*Current knowledge as to plant use. Other plants may have uses that have not been determined.

After Fassett, N. C. 1957. A Manual of Aquatic Plants. University of Wisconsin Press. Madison, WI

Nichols, S. A. 1991. Attributes of Wisconsin Lake Plants. Wisconsin Geological and Natural History Survey. Info. Circ. #73

Fish Habitat

Large woody cover from stumps and fallen trees in the water, emergent vegetation, floating-leaf vegetation and submergent vegetation provide important fish habitat. The high diversity of habitat makes this site valuable for a diverse fish population.

Water Quality

In addition to the water quality benefits provided at all sites, the aquatic plant community at this site also:

1) provides a nutrient buffer – the vegetation absorbs nutrients that could otherwise fee algae blooms

Recommendations for Sensitive Area 4

1) Maintain vegetation cover for water quality protection.
2) Restore a band of natural shoreline in areas that have more than 30' of cleared access. This buffer of natural vegetation will protect water quality and provide habitat.
3) Preserve vegetative buffers that currently exist and minimize removal of any shoreline vegetation. Allow removal of a maximum corridor width of 30 feet.
4) Use no lawn chemicals or fertilizers on the land above this site.
5) Maintain current fish habitat. Do not remove trees fallen in the water along the shore.
6) Protect emergent vegetation; there are only small areas of it at this site.
7) Permitting for shoreline erosion control to include restoration of native bank vegetation, favored over rip-rap and retaining walls.
8) No bank grading.
9) No permit approval for pea gravel beds or sand blankets, except for DNR fishery or wildlife approved projects.
10) Restrict dimension and location of dredging or lake bed removal within the boundaries of this sensitive area.
11) Pier placement by permit only. Permit I pier per riparian property of minimum size and constructed of light-penetrating pier material such as metal grating.
12) No boat ramp placement.
13) Permit required for recreational floating devices.

Figure 7. Sensitive Area 5: South Point, east to west.

Sensitive Area Big Roche-a-Cri 5 – South Point

This sensitive area includes approximately 1900 feet of shoreline on the south at the narrows area (Figure 2). It includes important near-shore terrestrial habitat and shallow water habitat. The sediment is sand. The shoreline at this sensitive area is composed mostly of wooded cover with a fair amount of shrub undercover and some housing development (Figure 7).

The Plant Community:

The aquatic plant community consists of 6 species at this sensitive area.

The submergent plant community provides many fish and wildlife benefits (Table 5). Wild celery and coontail are dominant at this site and common waterweed is common. The pondweed family is an important food source for fish and waterfowl and is represented at this site by clasping-leaf pondweed, flat-stem pondweed and commonly occurring beds of sago pondweed.

The non-native plant species occur at this site: curly-leaf pondweed is present and Eurasian watermilfoil is abundant.

Fish Habitat

Submergent vegetation provides fish habitat at this site.

Table 5. Wildlife Uses of Aquatic Plants at Sensitive Area 5; South Point - Big Roche-a-Cri Lake

Aquatic Plants	Fish	Water Fowl	Song and Shore Birds	Upland Game Birds	Muskrat	Beaver	Deer
Submergent Plants							
Ceratophyllum demersum	F,I*, C, S	F(Seeds*), I, C			F		
Elodea canadensis	C, F, I	F(Foliage) I					
Myriophyllum spicatum	F, C						
Potamogeton crispus	F, C, S	F(Seeds, Tubers)					
Potamogeton pectinatus	F, I, S*,C	F*			F*	F	F
Potamogeton richardsonii	F, I, S*,C	F*(All)			F*	F	F
Potamogeton zosteriformis	F, I, S*,C	F*(Seeds)			F*	F	F
Vallisneria americana	F*, C, I, S	F*, I	F		F		

F=Food, I= Shelters Invertbrates, a valuble food source C=Cover, S=Spawning
*=Valuable Resource in this category
*Current knowledge as to plant use. Other plants may have uses that have not been determined.
After Fassett, N. C. 1957. A Manual of Aquatic Plants. University of Wisconsin Press. Madison, WI
Nichols, S. A. 1991. Attributes of Wisconsin Lake Plants. Wisconsin Geological and Natural History Survey. Info. Circ. #73

Recommendations for Sensitive Area 5

1) Maintain shoreline vegetation cover for water quality protection. Minimize removal of any shoreline. Allow removal of a maximum corridor width of 30 feet riparian.
2) Restore a band of natural shoreline in areas that have more than 30' of cleared access.
3) Use no lawn chemicals or fertilizers on the land above this site.
4) Maintain current fish habitat. Do not remove trees fallen in the water along the shore.
5) Maintain the aquatic vegetation in an undisturbed condition for wildlife habitat, fish cover and as a buffer for water quality protection. Permits required for any vegetation removal and limited to navigational channels and exotic species control.
6) Aquatic plant control to focus on reducing exotic species and restoring native species.
7) No permitting for shoreline erosion control needed such as rip-rap, retaining walls.
8) No bank grading.
9) No permit approval for pea gravel beds or sand blankets, except for DNR fishery or wildlife approved projects.
10) No dredging or lake bed removal or modifications in this area.
11) Pier placement by permit only to minimize number of piers and their size and disturbance; require light-penetrating pier material such as metal grating.
12) No boat ramp placement.
13) Permit required for recreational floating devices.