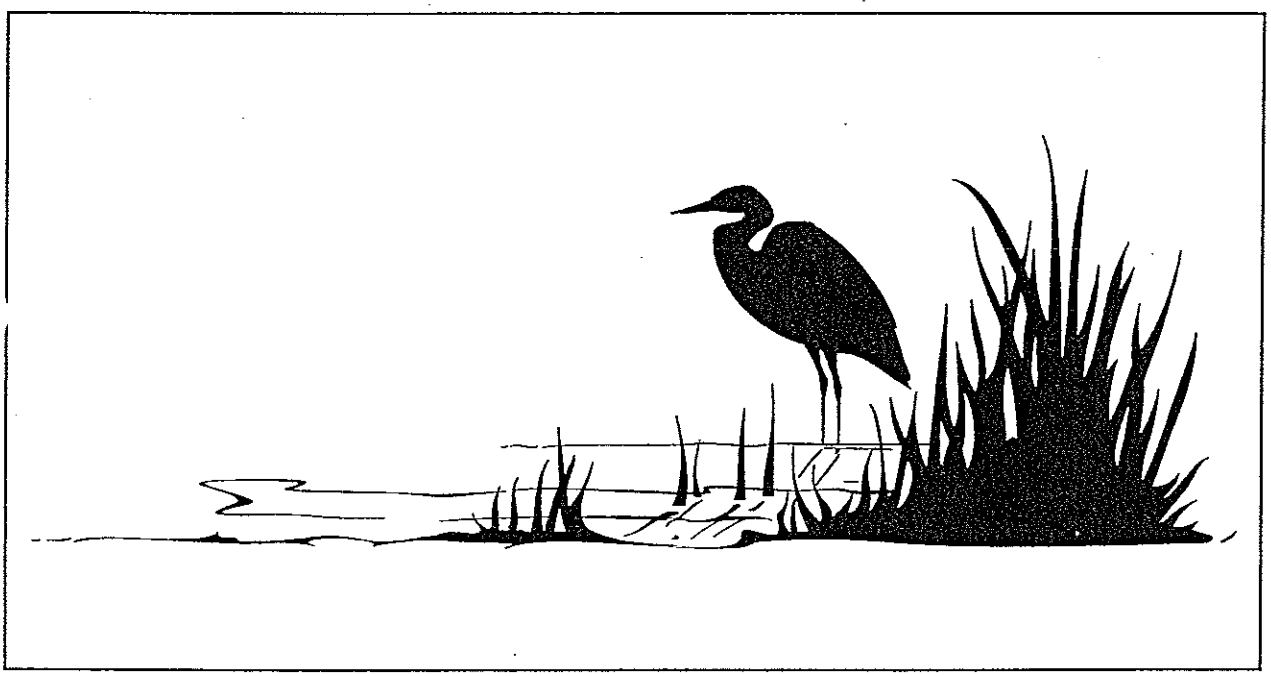
SILVER LAKE SENSITIVE AREA SURVEY REPORT AND MANAGEMENT GUIDELINES



This document is to be used with its companion document "Guidelines for protecting, maintaining, and understanding lake sensitive areas"

SILVER LAKE SENSITIVE AREA SURVEY REPORT AND MANAGEMENT GUIDELINES

James M. Cahow
Water Resources Biologist
DNR, Northern Region, Spooner

Richard R. Cornelius
Fisheries Biologist
DNR, Northern Region, Barron

CONTENTS

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Tommy G. Thompson, Governor
George E. Meyer, Secretary
William H. Smith, District Director

Northwest District Headquarters
810 W Maple, PO Box 309
Spooner, WI 54801-0309
TELEPHONE 715-635-2101
FAX 715-635-4105
TDD 715-635-4001

A BRIEF SUMMARY OF SILVER LAKE, BARRON COUNTY, SENSITIVE AREAS AND MANAGEMENT GUIDELINES

The following is a brief summary of the Silver Lake sensitive area sites and the management guidelines. A detailed description of Silver Lake's sensitive areas can be found in the attached "Integrated Sensitive Area Assessment". Also, the attached "Guidelines For Protecting, Maintaining, and Understanding Sensistive Areas" provides management guidelines for the sensitive areas. It is hoped that these two attached documents will be used as guidance when dealing with the valuable resource that is Silver Lake.

I. The following sensitive areas contain aquatic plant communities which provide important fish and wildlife habitat: B, C, D, J, K, N, and Q (see attached map). Management guidelines for these sites are:

1. Prohibit chemical treatment of aquatic plants.

2. Mechanical harvesting should be discouraged and limited to a small navigation channel, if necessary.

3. Prohibit littoral zone alterations covered by Wisconsin Statutes Chapter 30, unless there is clear evidence that such alterations would benefit the lake's ecosystem.

4. Leave large woody debris, logs, trees, and stumps, in the littoral zone to provide habitat for fish and aquatic organisms.

5. Leave an adequate shoreline buffer of unmowed natural vegetative cover. When restoring the shoreline vegetative buffer use only the species that occur naturally at the site i.e. do not plant a wildflower garden in place of the shoreline species that should exist at the site. Prairie species are also inappropriate where woodland shoreline plants should exist. A list of the native plant species that should be used for shoreline buffer restoration can be found in the full sensitive area report.

6. Prevent erosion, especially at construction sites.

7. Strictly enforce zoning ordinances.

8. Eliminate nutrient inputs to the lake caused by lawn fertilizers, failing septic systems, and other sources.

9. There are additional guidelines specifically for site D. Prohibit motorized boat traffic in the shallow bay. The shoreline surrounding the bay should be zoned conservancy.

II. The following sensitive areas provide gravel and coarse rock rubble habitat which are important for walleye spawning and other important components of this aquatic ecosystem: A, E, F, G, H, I, L, M, N, O, P, and Q (see attached map). The management guidelines for gravel and coarse rock habitat sensistive areas are, with the exception of guideline number 9, basically similar to the guidelines for the aquatic plant community sensitive areas. The emphasis may be somewhat different in that:

1. It is critically important that no alteration of the gravel and coarse rock substrate occur at these sites, unless such alterations would improve walleye spawning. Such alterations are regulated by Chapter 30, Wisconsin Statutes.

2. Erosion control on or near shorelines is especially important adjacent to walleye spawning areas to prevent siltation of spawning habitat.

3. Chemical treatment of aquatic should be prohibited. **Mechanical removal of aquatic plants should be discouraged in aquatic plant sensitive areas.** However, no removal of aquatic plants should be done unless necessary.

It should be noted that the recommendations made in these sensitive area management guidelines could be beneficially applied to the entire lake, but are especially important in protecting the designated sensitive areas.

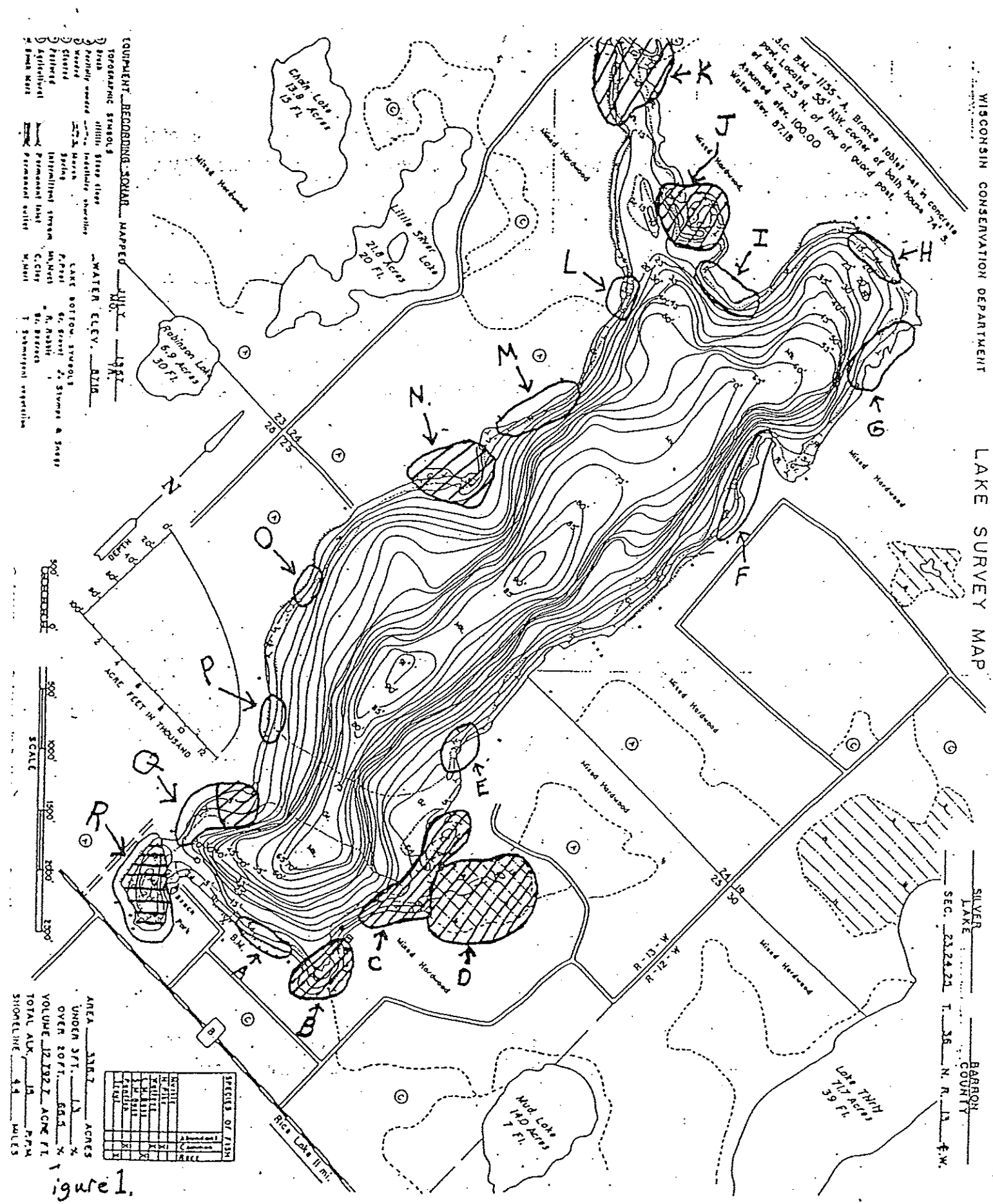


Figure 1.

- Rock Rubble Walleye Spawning Habitat
- Aquatic Plants designated for Protection
- Restoration of Aquatic Plants

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Tommy G. Thompson, Governor
George E. Meyer, Secretary
William H. Smith, District Director

Northwest District Headquarters
810 W Maple, PO Box 309
Spooner, WI 54801-0309
TELEPHONE 715-635-2101
FAX 715-635-4105
TDD 715-635-4001

LAKE MANAGEMENT

INTEGRATED SENSITIVE AREA ASSESSMENT REPORT

LAKE:Silver Lake COUNTY:Barron

DATE OF SURVEY: 14 August 1997 NUMBER OF SENSITIVE AREAS:18

SITE EVALUATORS: DNR Fisheries Biologist: Rick Cornelius
DNR Water Resources Biologist: Jim Cahow
DNR Wildlife Biologist: Kevin Morgan
DNR Water Regulations and Zoning Specialist: Ed Slaminski
DNR Fisheries Technician: Gary Lund

Introduction

This sensitive area lake survey is an integrated approach to resource management providing lake associations, individual property owners, zoning officials, boards of adjustment, and other interested groups or individuals with specific management recommendations that can be used to improve and protect the overall health of the Silver Lake ecosystem. Some of these recommendations will provide guidance as to what should be maintained or protected to insure future health of the lake ecosystem, while also acknowledging special and exceptional resource areas; other recommendations will focus on what should be restored or fixed to insure the different functional attributes of the ecosystem are all properly functioning together to insure full ecosystem health and biotic integrity. Readers of this document should refer to the accompanying companion document **"Guidelines for protecting, maintaining, and understanding lake sensitive areas"** which provides specific recommendations on how to protect the identified sensitive areas, while also helping the reader better understand why they are important to a healthy lake ecosystem.

This sensitive area survey was conducted on Silver Lake which lies in the Northwestern corner of Barron County, Wisconsin approximately 5 miles northeast of the village of Cumberland. Silver Lake is approximately 337 acres in

size with a maximum depth of 91'. Silver Lake is a high quality lake with very good water clarity and has been a part of Northern Regions ambient lakes monitoring for the last 10 years resulting in an extensive water chemistry data base. Summer Secchi depths routinely ranged from 3 to 5 meters. Summer "chlorophyll a" concentrations averaged around 3 ug/L with phosphorus concentrations routinely less than 10 ug/L. This data would support classifying Silver Lake as an oligotrophic system highly desirable from the stand point of bodily contact recreation, water quality, and clarity.

With such a high quality resource special efforts should be taken to insure that runoff entering Silver Lake does not contain unnecessarily high concentrations of nutrients and sediments which could result in algae problems that could impact water clarity and quality or bury important habitat.

The in-shore and near-shore areas should be the focus of most of the management efforts. Efforts should be taken to prevent the loss of any additional aquatic plants because of the relative low abundance available to provide important fish and wildlife habitat. For this reason chemical treatment of aquatic plant communities should not be allowed in accordance with Wisconsin Administrative Rule NR 107 which clearly defines aquatic plant sensitive areas. The recommendations from the integrated team of DNR biologists and water regulations and zoning are that mechanical treatment and removal of aquatic plants should also be strongly discouraged on Silver Lake.

A table listing the aquatic plant species found and their common names is provided at the end of this report. Figures and additional information are also provided for the listed species to help interested parties become better informed about the unique features of Silver Lake's plant community. This list is not an all inclusive list but represents the dominant species found. If shoreline species in the aquatic terrestrial transition zone were added to this list it would be substantially larger.

Vegetation on much of the shoreline is composed of natural plant cover consisting of all three of the layers that should be present in any healthy lake shoreline buffer (trees, shrubs, and herbaceous ground cover). Efforts should be made to educate residents about the importance of retaining the existing natural plant cover in shoreline areas while encouraging the restoration of those areas that have been

previously converted to lot wide mowed lawns to the waters edge. A table of the native plant species that should be used for restoration of the lake shoreline buffer can be found at the end of this report. The plants are broken into the three layers that should be restored to have an effective buffer (trees, shrubs, and herbaceous ground cover). Readers of this document are strongly encouraged to refer to the more in-depth companion document (**"Guidelines for protecting, maintaining, and understanding lake sensitive areas"**) which provides specific recommendations on how to protect the identified sensitive areas, while also helping the reader better understand why they are important to a healthy lake ecosystem.

Sensitive areas were assigned a letter designation beginning with A and continuing sequentially in a counter clockwise direction from the boat landing in the southwest corner (Figure 1). Sensitive areas fell into two different basic categories, aquatic plant communities providing important fish and wildlife habitat (sensitive areas: B, C, D, J, and K) and coarse rock rubble (sensitive areas: A, E, F, G, H, I, L, M, N, O, P, and Q) which provide important walleye spawning habitat.

SPECIFIC LOCATION AND RESOURCE VALUE OF INDIVIDUAL SITES

RESOURCE VALUE OF SITE A

Sensitive area A (Figure 1) is located in the southern end of the lake to the east of the public access 500-1000' and consists of rock rubble which is important for walleye spawning. Management efforts to protect this coarse substrate area should focus on maintaining an adequate shoreline buffer and using aggressive erosion control measures to insure the substrate does not become embedded with sediments from runoff. Readers of this document should refer to the more in-depth companion document (**"Guidelines for protecting, maintaining, and understanding lake sensitive areas"**) which provides specific recommendations on how to protect the identified sensitive areas, while also helping the reader better understand why they are important to a healthy lake ecosystem.

Figure 2.

□ - Rock Rubble Walleye Spawning Habitat

▨ - Aquatic Plants designated for Protection

▤ - Restoration of Aquatic Plants

RESOURCE VALUE OF SITE B

Sensitive area B (Figure 1) is a small bay in the southeast corner consisting of an aquatic plant community that is relatively sparse and patchy yet provides important habitat for fish. The dominant plant species is large leaf pond weed ***(Potamogeton amplifolius)*** or cabbage as it is often referred to by fishermen. Other dominant species that occur in this area include: bulrushes ***(Scirpus*** sp.), Flat stem pondweed ***(Potamogeton zosteriformis)***, and bushy pondweed ***(Najas*** sp.). Management efforts to protect the aquatic plant community in this area should follow the general recommendations previously laid out for protecting aquatic plant communities. Readers of this document should refer to the more in-depth companion document (**"Guidelines for protecting, maintaining, and understanding lake sensitive areas"**) which provides specific recommendations on how to protect the identified sensitive areas, while also helping the reader better understand why they are important to a healthy lake ecosystem.

RESOURCE VALUE OF SITE C

Sensitive area C (Figure 1) includes a portion of undeveloped shoreline extending into a bay created by a narrow peninsula of land. The bay itself has a rich diversity of aquatic plants providing some of the most desirable habitat for young of the year gamefish as well as other important components of the aquatic food chain. The dominant plant species found here include: Large leaf pondweed (***Potamogeton amplifolius***), bulrushes ***(Scirpus*** sp.), Flat stem pondweed (***Potamogeton zosteriformis)***, and bushy pondweed (***Najas*** sp.), common waterweed (***Elodea canadensis)***, water shield (***Brasenia schreberi***), sedges (***Carex*** spp.), water smartweed (***Polygonum amphibium)***, White waterlily (***Nymphaea tuberosa***), and bladderwort (***Utricularia*** sp.).

Management efforts to protect the aquatic plant community in this area should follow the general recommendations found in the accompanying companion document.

RESOURCE VALUE OF SITE D

Sensitive area D (Figure 1) is an extensive shallow water bay with wetland fringes that abuts up to the main lake area in sensitive area C connected by a narrow

channel. This channel has inadequate depth to allow motorized boat traffic without the traffic (wakes and propwash) creating a problem by stirring up the thick layer of fine silt and organics. For this reason, boat traffic should be restricted to non-motorized shallow water craft with the channel being clearly marked with appropriate signs. This backwater area provides important northern pike (***Esox lucius***)spawning habitat area. The extensive wetland buffer in this area also provides protection of water quality while providing a variety of important habitats for other fish and wildlife. For this reason this area should be protected by zoning with a conservancy designation. Because of the high value and importance of this habitat the Silver Lake lake association should consider purchasing the surrounding shoreline properties to insure that future development does not result in the loss of the shoreline buffer that protects this highly sensitive area.

The dominant plant species found here include: *Large leaf pondweed* ***(Potamogeton amplifolius)***, bulrushes (***Scirpus*** sp.), Flat stem pondweed ***(Potamogeton zosteriformis)***, and bushy pondweed ***(Najas*** sp.), common waterweed (***Elodea canadensis)***, water shield (***Brasenia schreberi)***, sedges (***Carex*** spp.), water smartweed (***Polygonum amphibium)***, White waterlily (***Nymphaea tuberosa)***, the great bladderwort (***Utricularia vulgaris)***, and a smaller bladderwort (***Utricularia*** sp.).

Management efforts to protect the aquatic plant community in this area should follow the general recommendations found in the accompanying companion document.

RESOURCE VALUE OF SITE E

Sensitive area E was identified in a 1973 survey as being a coarse substrate area important for walleye spawning. Management efforts to protect the rock rubble walleye spawning habitat in this area should follow the general recommendations found in the accompanying companion document.

RESOURCE VALUE OF SITE F

Sensitive area F (Figure 1) is located in the northeast corner of the lake and is a coarse substrate area important for walleye spawning. Management efforts to

protect the rock rubble walleye spawning habitat in this area should follow the general recommendations found in the accompanying companion document.

RESOURCE VALUE OF SITE G

Sensitive area G (Figure 1) is located on the east side of the bay located in the northeast corner of the lake. Large boulders and cobble (6"-30" diameters) come off from multiple points of the shoreline and provide important spawning substrate for walleyes. Bulrushes also compliment this area providing additional habitat. Management efforts to protect the rock rubble walleye spawning habitat in this area should follow the general recommendations found in the accompanying companion document.

RESOURCE VALUE OF SITE H

Sensitive area H (Figure 1) is located at the north end of the bay in the northeast corner of the lake and is a coarse substrate area important for walleye spawning. Management efforts to protect the rock rubble walleye spawning habitat in this area should follow the general recommendations found in the accompanying companion document.

RESOURCE VALUE OF SITE I

Sensitive area I (Figure 1) is a broad peninsula located in the north end of the lake separating the two main northern bays. The important functional attribute of sensitive area I is the coarse substrate important for walleye spawning. Management efforts to protect the rock rubble walleye spawning habitat in this area should follow the general recommendations found in the accompanying companion document.

RESOURCE VALUE OF SITE J

Sensitive area J (Figure 1) is located within the northwest bay of the lake on it's northeast side and is created in part by an irregular peninsula that extends out into the lake several hundred feet. This bay has a diversity of desirable aquatic plant species providing important fish habitat for young of the year and other important components of the aquatic food chain. The peninsula itself is periodically isolated

from the rest of the lakeshore depending on water levels and provides important nesting habitat for shoreline waterfowl and songbirds as well as other wildlife. The dominant plant species found here include: *Large leaf pondweed* ***(Potamogeton amplifolius)***, bulrushes (***Scirpus*** sp.), Flat stem pondweed (***Potamogeton zosteriformis)***, and bushy pondweed (***Najas*** sp.), common waterweed (***Elodea canadensis)***, sedges (***Carex*** spp.), water smartweed (***Polygonum amphibium)***, White waterlily (***Nymphaea tuberosa)***, three-way sedge (***Dulichium arundinaceum)***, and pipewort (***Eriocaulon aquaticum)***.

Management efforts to protect the aquatic plant community in this area should follow the general recommendations found in the accompanying companion document.

RESOURCE VALUE OF SITE K

Sensitive area K (Figure 1) is the northern most portion of the northwest bay and provides important habitat that is somewhat limited to only two other small areas in the lake (Sensitive area J and C). The extent of aquatic vegetation in this bay provides the bulk of this important habitat for the rest of the lake. The dominant plant species found here include: *Large leaf pondweed* ***(Potamogeton amplifolius)***, bulrushes (***Scirpus*** sp.), Flat stem pondweed (***Potamogeton zosteriformis)***, and bushy pondweed ***Najas*** sp.), common waterweed (***Elodea canadensis)***, sedges (***Carex*** spp.), water smartweed (***Polygonum amphibium)***, and White waterlily (***Nymphaea tuberosa)***.

Management efforts to protect the aquatic plant community in this area should follow the general recommendations found in the accompanying companion document.

RESOURCE VALUE OF SITE L

Sensitive area L (Figure 1) is located at the north end of the west shoreline and is a coarse substrate area important for walleye spawning. Management efforts to protect the rock rubble walleye spawning habitat in this area should follow the general recommendations found in the accompanying companion document.

RESOURCE VALUE OF SITE M

Sensitive area M (Figure 1) is located on the west shore of the lake and is a coarse substrate area important for walleye spawning. Management efforts to protect the rock rubble walleye spawning habitat in this area should follow the general recommendations found in the accompanying companion document.

RESOURCE VALUE OF SITE N

Sensitive area N (Figure 1) is a point approximately midway north to south on the west shore. This point provides important habitat for fish in that it has a desirable component of bulrushes (*Scirpus* sp.) which provide spawning habitat for northern pike as well as other important habitat functions for centrarchids (bass, bluegills, and crappies). The bulrushes are an important component to this site and should be protected from excess disturbance. Management efforts to protect the aquatic plant community in this area should follow the general recommendations found in the accompanying companion document.

RESOURCE VALUE OF SITE O

Sensitive area O (Figure 1) is located on the west shore of the lake and is a coarse substrate area important for walleye spawning. Management efforts to protect the rock rubble walleye spawning habitat in this area should follow the general recommendations found in the accompanying companion document.

RESOURCE VALUE OF SITE P

Sensitive area P (Figure 1) is located on the southwest shore of the lake and is a coarse substrate area important for walleye spawning. Management efforts to protect the rock rubble walleye spawning habitat in this area should follow the general recommendations found in the accompanying companion document.

RESOURCE VALUE OF SITE Q

Sensitive area Q (Figure 1) is located in the southwest corner of the lake and has several separate habitat components that need to be separately identified and addressed. Part of the unique character to this site is the point bar associated with

a shallow flat supporting a bulrush bed providing cover and spawning habitat. Management efforts to protect the aquatic plant community in this area should follow the general recommendations found in the accompanying companion document.

A little further south of the point exists a coarse substrate area important for walleye spawning. Management efforts to protect the rock rubble walleye spawning habitat in this area should follow the general recommendations found in the accompanying companion document.

RESOURCE VALUE OF SITE R

Sensitive area R (Figure 1) is the bay located in the south west corner of the lake in front of the public boat launch at Grant Park. The habitat present appears to have been degraded by past development. Aquatic vegetation has been reduced to levels that it provides little value for fish and other aquatic species while also no longer providing the important function of shoreline stabilization. Recommended actions would be to minimize future clearing and disturbance of all aquatic vegetation in hopes that they may eventually re-establish. No chemical treatments should be approved in this area and mechanical harvesting is really unnecessary and should be strongly discouraged. Restoration of shoreline buffers in areas that have been converted to mowed lawns to the waters edge should be encouraged. Trees should be allowed to fall into the lake and provide important habitat. Landowners should begin long term planning to insure replacement trees are growing at the waters edge to replace those that fell in and have begun breaking down.