Designation of Sensitive Areas
in
Cedar Lake, St. Croix County

Wisconsin Department of Natural Resources
Eau Claire, WI

Sensitive Area Designation
Cedar Lake, St. Croix County

I. INTRODUCTION
Designation of sensitive areas within lakes provide a holistic approach to the protection of critical habitat within a lake that are most important for preserving the very character and qualities of the lake that initially attracted development on the lake. These sites are those sensitive and fragile areas that support the wildlife, fish and aquatic 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. The sensitive area designation will provide a framework for management decisions that impact the ecosystem of the lake.

A Sensitive Area Study was conducted September 11, 2002 on Cedar Lake, St. Croix County. The study team included:
Kris Belling, DNR Wildlife Biologist
Marty Engel, DNR Fish Biologist
Jack Hayes, Cedar Lake District
Deborah Konkel, DNR, Aquatic Plant Specialist
Eunice Post, DNR Water Regulation Specialist
Buzz Sorge, DNR Lakes Manager

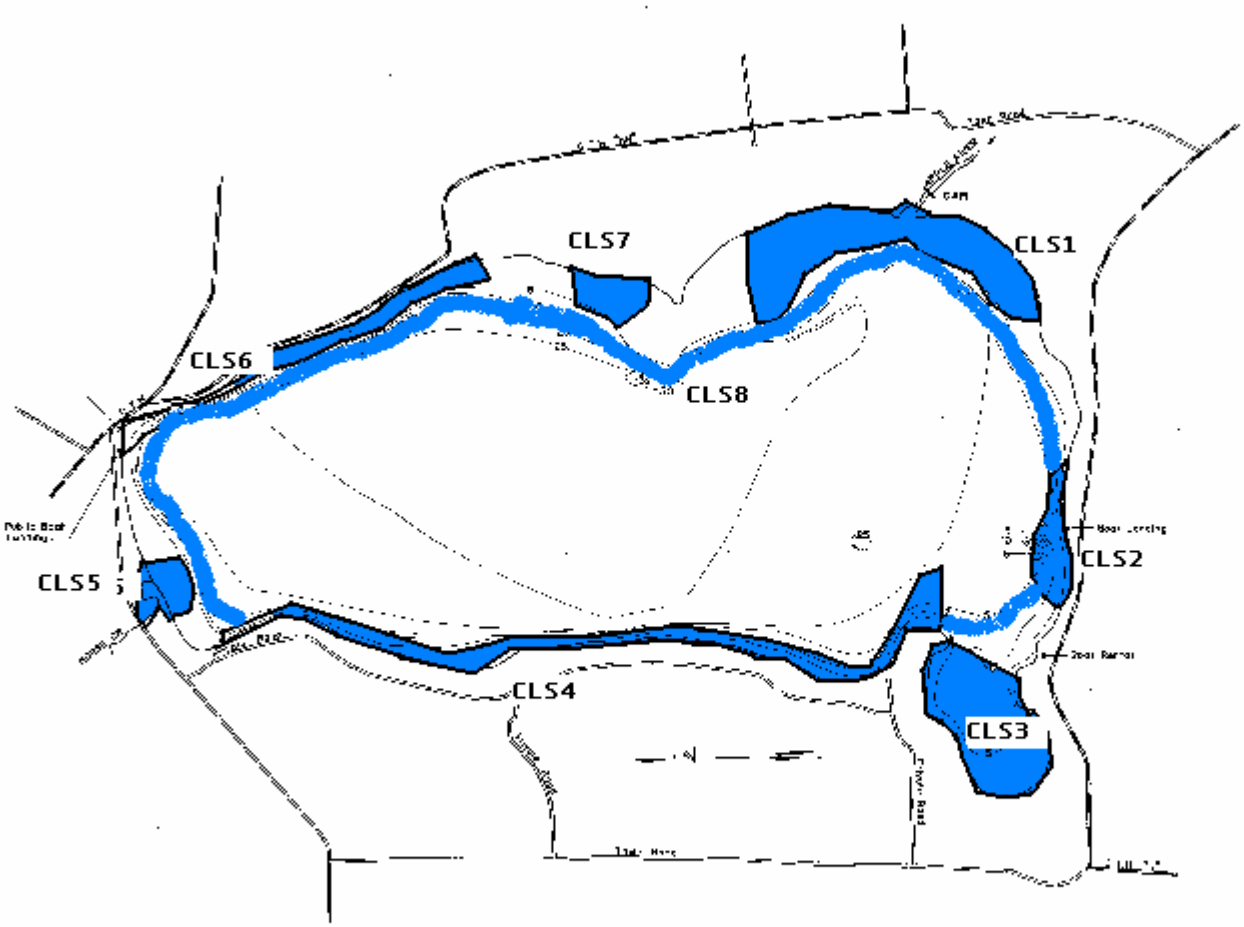
Cedar Lake is an 1100-acre lake with a maximum depth of 32 ft.

II. THE SENSITIVE AREAS
It is important to preserve an adequate number of sensitive areas to insure that there is sufficient water quality protection and habitat for wildlife, fish and aquatic life.

All of the sensitive areas that were selected have the potential to be used for educational purposes. Preserving the native aquatic plant communities in their undisturbed condition at all of the proposed sensitive areas is important to preserve littoral zone habitat. Littoral zone is the shallow area ringing the lake where most of the aquatic plant beds occur.

Whole Lake Recommendations
1) Implement all possible strategies to improve water clarity and restrict nutrient enrichment. This is likely a major factor that is limiting aquatic plant growth.
2) The population of carp are another major factor that is limiting emergent and submergent plant growth in Cedar Lake. No practical long-term or short-term control methods have been found at this time, but it is recommended that if a future solution is found, it be implemented.
3) No permitting for bank grading at the sensitive area sites. Bank grading would destroy the natural vegetation that protects against erosion and maintains water quality.

4) No permitting of seawalls or retaining walls. This construction would also destroy natural vegetation.
5) No permitting of dredging at the sites. Dredging would remove the aquatic vegetation and gravel spawning beds.
6) Carefully review the proposed placement of any boat ramps at sensitive sites.
7) Restrict the location and dimensions of recreational floating devices.



Sensitive Area CLS1 – Historic Bulrush Site

This sensitive area extends along 2000 feet of shoreline and out to the 5-foot contour line. The site supports important near-shore terrestrial and shoreline habitat. The sediment is gravel, sand and silt.

The area provides visual and sound buffers and a unique area of outstanding natural beauty for lake residents and visitors.

This area was selected because of
1) the high quality aquatic and terrestrial plant community it supports;
2) its value for wildlife habitat;
3) its importance for maintaining water quality;
4) its natural scenic beauty,
5) its natural shoreline and riparian buffer.

The shoreline has some development but is mostly shrubs, woods and wetland habitat. The wetland contains marshes and shrub wetlands. There is some fallen woody cover present in the shallow zone for habitat.

The Plant Community:

Reed canary grass, sedges, bulrush, cattails, panicled aster, late goldenrod, water hemlock, willows and dogwood colonize the shoreline.

Limited colonies of American bulrush, soft-stem bulrush and cattails emerge from the shallow water.

Coontail, wild celery, slender naiad, horned pondweed, muskgrass and 3 species of pondweed (leafy, slender and long-leaf pondweeds) colonize the underwater habitat.

Needle spikerush forms areas of turf-like growth.

Filamentous algae occurs at the site.

Water Quality

Maintaining the integrity of this sensitive area is important for protecting the water quality of Cedar Lake.
1) The submerged and floating-leaf vegetation provide protection against shoreline erosion.
2) The submergent vegetation is protecting the lake bottom from resuspension of the sediments by boat traffic and wind action, thus maintaining clarity.
3) The healthy native plant community reduces the likelihood of invasion of exotic species.
4) Riparian buffer of natural vegetation infiltrates run-off and prevents shoreline erosion.

Fish Habitat

Maintaining the aquatic vegetation and restoring the emergent vegetation in this area is very important to the fish community. The scattered submergent vegetation and a restored bulrush bed would provide a diversity of habitat and feeding opportunities for the fish community.
This area provides nursery and feeding areas for yellow perch.

Wildlife Habitat

The emergent vegetation, shoreline shrubs, perch trees and snag trees are the habitat components that provide

1) cover, nesting and feeding areas for upland wildlife like deer, beaver, otter, muskrat, mink, raccoons, skunks, loons, ducks, songbirds, eagles, frogs, toads, salamanders, turtles and snakes;

Recommendations

1) Restore the bulrush beds that had been important overwater nesting habitat for some birds and prime habitat for a variety of fish.
2) Protect the limited amount of emergent vegetation that occur at the site for habitat, water quality protection and erosion control
3) Protect the bulrush beds by preventing snowmobile traffic on the site.
4) Study impact of water levels on the bulrush beds.
5) Protect this large tract of undeveloped shoreline from development.
6) Leave fallen trees along shoreline.
7) Designate as a no-wake area
8) Designate a no-snowmobile area
9) Maintain the aquatic vegetation in an undisturbed condition for wildlife habitat, fish cover and as a nutrient buffer for water quality protection.
10) Maintain shoreline vegetation, shrubs and snag trees to provide wildlife habitat, wildlife corridors, prevent erosion and protect water quality. Any future development must maintain natural buffers
11) Minimize removal of any shoreline or aquatic vegetation.
12) Minimize authorization for pea gravel beds, sand blankets or other fish improvement structures.
13) Restrict and size and placement of piers.

Sensitive Area CLS2 – South Shore Site

This sensitive area extends along 500 feet of shore and out to the 11-foot contour line. The sediment is comprised of gravel, sand and silt.

On the undeveloped portion, the area provides a small area of natural beauty for lake residents and visitors and a partial visual and sound buffer.

This area was selected because of
1) the aquatic and terrestrial plant community it supports on a part of the site;
2) its value for walleye spawning.

The shoreline is half developed and half wooded. A small amount of fallen woody cover is present in the shallow zone on the undeveloped half.

The Plant Community:

Coontail, common waterweed, wild celery, northern watermilfoil, horned pondweed, slender naiad and 2 species of pondweed (leafy and small pondweeds) colonize the underwater habitat.

Filamentous algae occurs at the site.

One exotic species, curly-leaf pondweed is found at the site but is not causing a nuisance.

Water Quality

Maintaining the integrity of this sensitive area is important for protecting the water quality of Cedar Lake.
1) The wooded shoreline on a portion of the site is protecting the shoreline from erosion and the lake from nutrient inputs that could support algae growth.
2) The submergent vegetation is protecting the lake bottom from resuspension of the sediments by boat traffic and wind action, thus maintaining clarity.
3) The healthy native plant community reduces the likelihood of invasion of exotic species

Fish Habitat

Maintaining aquatic plants is critical for habitat for the aquatic life community.
1) The gravel and rubble substrate provides the important spawning site.
2) This area supports significant numbers of walleye as a spawning site, nursery area, feeding site and cover.

Water Regulation and Zoning

Zoning compliance issues at the site may be the lack of a vegetation buffer

Recommendations

1) Do not remove fallen trees from the shoreline.
2) Do not alter the littoral zone.
3) Establish and protect emergent vegetation.
4) Manage curly-leaf pondweed only if it becomes invasive.
5) Maintain shoreline vegetation on the portion with a natural shoreline and to protect water quality and habitat. Create a buffer of natural shoreline and bank vegetation on the disturbed portion to protect water quality and prevent erosion.
6) Minimize removal of any shoreline or aquatic vegetation.
7) Apply no lawn chemicals or fertilizers to the shoreline properties.
8) Minimize authorization of pea gravel beds and sand blankets.
9) Restrict and limit pier placement.

Sensitive Area CLS3 – Southwest Bay

This sensitive area includes the entire, approximately, 11-acre bay, averaging 5-feet in depth and supports important shoreline habitat and near-shore terrestrial habitat. The sediment is gravel, sand, organic muck and silt.

The area provides visual and sound buffers and an area of unique outstanding natural beauty for lake residents and visitors.

This area was selected because of

1) the high quality aquatic and terrestrial plant community it supports;
2) its value for fish, wildlife and aquatic life habitat;
3) its importance for maintaining water quality;
4) its natural scenic beauty.

The shoreline is 40% wooded and 50% emergent herbaceous and shrub wetlands with a small amount of development at the mouth of the bay. The wetlands are made of shallow marshes and conifer swamp. Large woody cover is common in the shallow zone for habitat.

The Plant Community:

Spike-rush, sedges, burreed, cattails and jewelweed colonize the shoreline.
Bur-reeds and cattails emerge from the shallow water.
White water lily, lesser duckweed and greater duckweed float on the surface.
Common waterweed, coontail, wild celery, slender naiad and 2 species of pondweed (leafy and sago pondweeds) colonize the underwater habitat.
Filamentous algae occurs at the site.
One exotic species, curly-leaf pondweed is found at the site.

Water Quality

Maintaining the integrity of this sensitive area is important for protecting the water quality of Cedar Lake.

1) The emergent wetland vegetation is preventing shoreline erosion.
2) The submergent vegetation is protecting the lake bottom from resuspension by waves.
3) The healthy native plant community reduces the likelihood of invasion of exotic species.

Fish Habitat

Maintaining and enhancing the aquatic vegetation in this area is very important to fish and aquatic life in the lake. The mosaic of fallen woody material, emergent vegetation, submergent, emergent vegetation and open areas provides a diversity of habitat and feeding opportunities for the fish community.

This site provides

1) spawning sites, nursery areas and feeding areas for northern pike, musky and largemouth bass.
2) spawning sites, nursery areas, feeding areas and cover for bluegill, crappie and perch.
3) feeding sites for walleye.

Wildlife Habitat

The variety of emergent vegetation, shrubs on shore, standing trees, snag trees, fallen logs and submergent vegetation provides cover and shelter, nesting and feeding areas for upland wildlife such as deer, mink, ducks, songbirds, frogs, toads, salamanders, turtles and snakes;

Recommendations

1) Protect the bay and its undeveloped shoreline from development..
2) Maintain the aquatic vegetation in an undisturbed condition for wildlife habitat, fish cover and as a nutrient buffer for water quality protection. Minimize removal of any emergent shoreline or aquatic vegetation, limiting removal to navigation issues only.
3) Protect the emergent vegetation as an erosion buffer.
4) Do not remove fallen trees from the shoreline.
5) Maintain shoreline and terrestrial vegetation and snag trees to provide wildlife habitat and wildlife corridor, prevent erosion and protect water quality.
6) Manage curly-leaf pondweed only if it becomes invasive.
7) Minimize authorization of pea gravel beds and sand blankets.
8) Limit size and placement of piers.

Sensitive Area CLS4 – West Shore Spawning Beds

This sensitive area extends along 4500 feet of shoreline and out to the 11-foot contour line. The sediment is comprised of gravel, rubble, sand and silt.

This area was selected because of
1) the aquatic plant community it supports
2) its value for fish spawning as the premier walleye spawning site on the lake.

The shoreline is almost entirely developed with small areas of tall herbaceous vegetation and small stands of shrubs or woodland. Large woody cover is present on a limited basis in the shallow zone for habitat.

The Plant Community:

Greater duckweed float on the surface.

Coontail, common waterweed, wild celery, northern watermilfoil, horned pondweed, slender naiad and 4 species of pondweed (sago, long-leaf, clasping-leaf and leafy pondweeds) are found in many scattered beds on shallow sand bars that extend into the lake.

Filamentous algae occurs at the site.

One exotic species, curly-leaf pondweed was found.

Water Quality

Maintaining the integrity of this sensitive area is important for protecting the water quality of Cedar Lake. The submergent vegetation is protecting the lake bottom from resuspension of the sand sediments by boat traffic and wind action, thus maintaining clarity.

Fish Habitat

Maintaining the aquatic vegetation in this area is very important to the fish community. The rubble and gravel substrate and scattered submergent vegetation provides the spawning base and habitat for the fish community.

This area provides
1) The premier walleye spawning site in the lake. This has been documented by fish studies dating back to the 1940's. The site also functions as a walleye nursery areas, feeding site and cover;
2) nursery areas, feeding and cover for northern pike, white bass and large-mouth bass;
3) spawning sites and nursery areas for perch

Water Regulation and Zoning

Zoning compliance issues at the site may be:
1) lack of vegetation buffers
2) boat houses that do not comply with zoning requirements

Recommendations

1) Do not alter the littoral zone. Maintain the aquatic vegetation in an undisturbed condition for wildlife habitat, fish cover and as a nutrient buffer for water quality protection.
2) Protect and establish emergent vegetation as an erosion buffer.
3) Allow trees to fall into the lake for woody cover.
4) Protect and maintain the gravel/rubble substrate used as spawning beds. Do not place sand blankets or other material over the spawning beds.
4) Manage curly-leaf pondweed only if it becomes invasive.
5) Restore shoreline buffer, including shrubs and natural vegetation to provide habitat and wildlife corridors, prevent erosion and protect water quality.
6) Minimize removal of any shoreline or aquatic vegetation.
7) Use construction site erosion control practices if there is any construction or re-construction on the shore to protect water quality and gravel beds.
8) Riparian property owners should use lawn and home best management practices. This should include diverting direct run-off, restore buffer zones and eliminate fertilizer use.
9) Shorten and reduce piers as reasonable use is being violated.

Sensitive Area CLS5 – Horse Creek Inlet

This sensitive area extends along 600 feet of shoreline, up Horse Creek about 300 ft to the road bridge and out to the 6-foot contour line.

This area was selected because of its
1) value as a fish spawning site
2) value for waterfowl habitat
3) the aquatic plant beds it supports

The shoreline is mostly developed and supports very limited areas of tall vegetation.

The Plant Community:

Wild celery, slender naiad, water stargrass and 3 species of pondweed (sago, long-leaf and clasping-leaf pondweeds) colonize the underwater habitat.

Filamentous algae occurs at the site.

Water Quality

Maintaining any existing vegetation is important for protecting the water quality in Cedar Lake.
1) The healthy native plant community reduces the likelihood of invasion of exotic species.
2) The submergent vegetation is protecting the lake bottom from resuspension of the sand sediments by boat traffic and wind action, thus maintaining clarity.
3) The addition of water from the stream provides differing temperature regimes that increase biodiversity.

Fish Habitat

Maintaining the vegetation in this area is very important to the fish and aquatic life community. The rubble substrate and submerged vegetation are the important components of habitat at this site.
1) the rock at the upstream bridge provides a significant spawning area for walleye,
2) spawning sites for white bass;
3) nursery areas for northern pike, bluegill, perch, white bass and minnows;

Wildlife Habitat

The submergent vegetation at this site provide a feeding area for ducks and herons.

Water Regulation and Zoning

Zoning compliance issues at the site may be:
1) the size and number of docks at the shoreline properties.
2) lack of vegetation buffers.
3) boat houses that do not comply with zoning requirements.

Recommendations

1) Restore natural shoreline, creating a buffer of shoreline vegetation to protect water quality and prevent erosion

2) Riparian property owners should use lawn and home best management practices. This should include diverting direct run-off, restore buffer zones and eliminate fertilizer use.
3) Stabilize any eroding banks along the stream.
4) Do not remove fallen trees along the shoreline.
5) Maintain the submergent vegetation for habitat.
6) Minimize removal of any shoreline or aquatic vegetation.
7) Establish and protect emergent vegetation.
8) Protect the rock substrate used for spawning.
9) Restrict size and placement of piers.
10) Allow no placement of gravel beds, sand blankets or other fill.

Sensitive Area CLS6 – East Shore Gravel Beds

This sensitive area extends along 2000 feet of shoreline and out to the 6-foot contour line. The site supports important shoreline habitat. The sediment is comprised of gravel and sand.

The area provides visual and sound buffers and an area of natural beauty.

This area was selected because of
1) the riparian plant community;
2) its value for fish habitat;
3) its natural scenic beauty.

The shoreline has a steep bank that is partially wooded with some shrub stand and some areas of tall vegetation. A narrow road runs along the top of the bank and developed properties are on the other side of the road with scattered clearings and docks for the properties. The wetlands contain emergent herbaceous wetlands and shrub wetlands. Some large woody cover is present in the shallow zone for habitat

The Plant Community:

Large trees, shrubs and tall vegetation colonize the steep shoreline.

Coontail, wild celery, horned pondweed, water stargrass, slender naiad and 2 species of pondweed (leafy and flat-stem pondweeds) colonize the underwater.

Filamentous algae occurs at the site.

One exotic species, curly-leaf pondweed is found at the site.

Water Quality

Maintaining the integrity of this sensitive area is important for protecting the water quality of Cedar Lake. The shoreline vegetation is filtering water that enters the lake and protecting the shoreline from erosion.

Fish Habitat

Maintaining the aquatic vegetation in this area is very important to the fish community. The north end of the site provides an important nursery area for walleye.

Wildlife Habitat

The shrubs and trees on the shoreline provide
1) cover, nesting and feeding areas for songbirds
2) shelter and cover for mink, raccoons, frogs, toads and salamanders
3) feeding areas for eagles
4) travel corridor for small and medium-sized wildlife

Recommendation

1) Do not alter the littoral zone. Maintain the aquatic vegetation in an undisturbed condition for fish cover and as a nutrient buffer and erosion control for water quality protection.
2) Require best management practices for construction site erosion control and stromwater management for any new development, redevelopment or other earth moving projects.
3) Do not remove fallen trees from the shoreline.
4) Manage curly-leaf pondweed only if it becomes invasive
5) Maintain shoreline vegetation, shrubs and trees to provide wildlife habitat and travel corridors, beauty, prevent erosion and protect water quality.
6) Minimize removal of any shoreline or aquatic vegetation.
7) No permit approval for pea gravel beds, sand blankets or filling.

Sensitive Area CLS7 – Deep Hole Site

This sensitive area extends along 300 feet of shoreline and out to the 7-foot contour line. The site supports important near-shore terrestrial habitat and shoreline habitat. The substrate is comprised of silt and sand.

The area provides visual and sound buffers and a small area of natural beauty for lake residents and visitors.

This area was selected because of

1) the aquatic, wetland and terrestrial plant community it supports;
2) its value for wildlife habitat;
3) its importance for maintaining water quality;
4) the scenic beauty .

The shore is an undeveloped site of trees, shrubs and tall vegetation bordered by development on either side. Wetland made of marsh and shrub carr occur on the site. 90% of the shoreline is an extensive tamarack bog mat and the remainder is native woodland. Some fallen woody cover is available in the shallow zone for habitat.

The Plant Community:

Reed canary grass, sedges, bulrush, cattails, panicled aster, late goldenrod, water hemlock, willows and dogwood colonize the shoreline.

Common waterweed, coontail, wild celery, northern watermilfoil, horned pondweed, slender naiad and small pondweed grow under the water surface.

Filamentous algae occurs at the site.

Water Quality

Maintaining the integrity of this sensitive area is important for protecting the water quality of Cedar Lake. The wetlands are filtering water that enters the lake and preventing shoreline erosion.

Fish Habitat

Maintaining the aquatic vegetation in this area is very important to the fish community. The fallen woody material and overhanging vegetation on half the site and the gravel substrate are the important components of habitat at the site.

This area provides:

1) Spawning sites, nursery areas, feeding and cover for young-of-the-year perch and minnows;
2) feeding sites for musky;

Wildlife Habitat

The wetland, snag trees, roosting trees and shrubs on shore provide

1) Shelter and cover, nesting and feeding areas for upland wildlife such as deer and upland birds, ducks, songbirds, frogs, toads, salamanders and snakes;
2) a potential nesting area for eagles.

Water Regulation and Zoning

Zoning compliance issues at the site may be:

1) removal of the vegetation buffers during construction.
2) possible wetland fills during construction.

Recommendations

1) Maintain the aquatic vegetation in an undisturbed condition for wildlife, fish and aquatic life habitat and as a nutrient buffer for water quality protection.
2) Restore shoreline vegetation at newly developed site
3) Riparian property owners should use lawn and home best management practices. This should include diverting direct run-off, restore buffer zones and eliminate fertilizer use.
4) Riparian property owners should use lawn and home best management practices. This should include diverting direct run-off, restore buffer zones and eliminate fertilizer use.
5) Protect and establish the emergent vegetation as an erosion buffer.
6) Investigate restoring bulrushes on the nearby point.
7) Do not remove fallen trees at the shoreline.
8) Restore natural shoreline at the adjoining developed sites for wildlife corridors
9) Maintain shoreline vegetation provide wildlife habitat, prevent erosion and protect water quality.
10) Do not permit wetland fill on the property.
11) Minimize removal of any shoreline or aquatic vegetation.
12) Minimize authorization of pea gravel beds, sand blankets or other filling.
13) Restrict and limit pier placement.

CLS8 - Breakzone

The break zone is the 8-12 foot depth contour around the entire lake. The break zone is an important area that supports aquatic plants for fish cover, feeding and loafing areas. The substrate in this site is composed of mixtures of silt, sand, gravel and rock.

The site was selected because of:

1) the aquatic plant community
2) its value for fish habitat

The Plant Community:

Coontail, common waterweed, wild celery, slender naiad, northern watermilfoil, water stargrass, white water lily and 3 species of pondweed (curly-leaf, flat-stem and slender) colonize the breakzone.

Fish Habitat

Maintaining the aquatic vegetation in this area is very important to the fish community. The submergent vegetation provide a diversity of habitat and feeding opportunities for the fish community. The 8-12 foot breakline provides important feeding sites, loafing area and cover for walleye, northern pike, musky, white bass and perch.

Recommendations

1) Maintain the aquatic vegetation in an undisturbed condition for fish cover and habitat.
2) Minimize removal of any aquatic vegetation.
3) Minimize authorization for pea gravel beds, sand blankets or other fish improvement structures.
4) Manage curly-leaf pondweed only if it becomes invasive