

Lake Mohawksin Restoration Plan

Sara Park, Tomahawk WI

Natural shorelines offer many benefits to the habitat and diversity of wildlife and fish that use the shore and near shore area. Keeping your shoreline natural helps maintain the healthy transition between the water and the land.



Land Records & Regulations
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Antigo, WI 54409



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Planning & Zoning Division
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Lake Mohawksin Restoration Plan / Demo Site

Sara Park, City of Tomahawk

Site Address: 900 W. Somo Ave

Prepared: February 19th by Tyler Betry

Background

Vegetated buffers offer many benefits to our lake and river ecosystems. Some of these benefits are erosion control, improvement to water quality, and providing fish/wildlife habitat. Lake Mohawksin is classified as a low sensitivity waterway and many people use this lake to fish and recreate. We would like to preserve this lake so that the public can enjoy the fishing and scenic beauty this lake provides. Through Lincoln and Langlade County's Lake Protection Grant, we are interested in restoring a vegetative buffer along the east side of the boat landing located within Sara Park. This project would serve as a "Demo Site" where the public can visit to educate themselves on the benefits of a shoreland buffer.

Lincoln County does not have a demo site where the public can visit to see a shoreland buffer restoration. A goal of the Shoreland Protection Specialist is to find a public lake within Lincoln County where a buffer can be restored. Lake Mohawksin is a prime location for a demo site for several reasons. The first reason is that it is located in a central area and there is ample parking for visitors. Another reason is that the area where we would like to restore is City owned land. The final and most obvious reason is that the shoreland buffer is deficient between the public parking lot and the volleyball courts.



Aerial Overview of Restoration Area

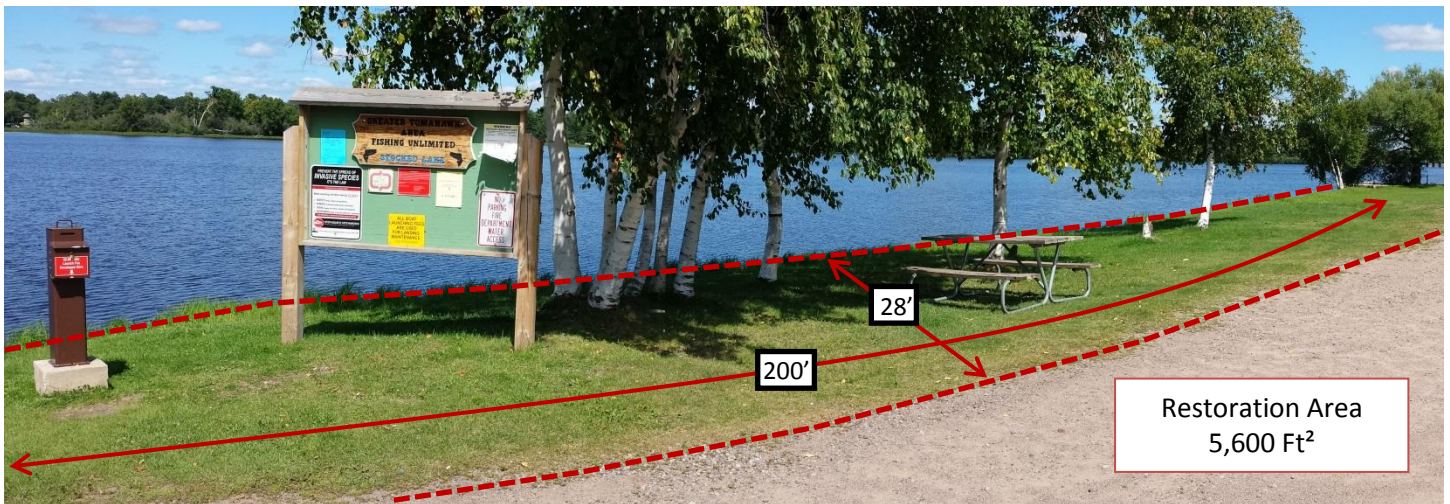


Lake Mohawksin has a lot of shoreline frontage within the City of Tomahawk but we are interested in restoring an area next to a boat landing within Sara Park (highlighted in red above). The square footage that was calculated for this area is approximately 16,800 square feet. We are open to restoring all of it or even section it out into smaller pieces. The final layout and size of the restoration can be altered when we get closer to installing the buffer. Note that for this preliminary plan the estimated cost and plant densities are based on this entire area. Also different areas have been taken into account of where we will not restore. The parking lot that is being expanded to the east and the area to the south where vendors set up their booths during boating shows will remain as is.

The small section between the lake and the parking lot already has several white birch within it but could use some additional native vegetation. This small section will also contain a path that would continue west and enter the larger restoration area. Along this path we would place educational signs talking about the benefit of having a natural shoreline and also planting native plants. Since the proposed parking lot is going to slope into the buffer we would like to create a rain garden that could retain the runoff before it goes into the lake. We would plant native vegetation that are acclimated to wetter conditions and efficient at mitigating pollutants that runoff from the parking lot.

Turf grass is the dominant vegetation and much of the tree layer and understory vegetation has been removed over time. A good vegetated buffer is made up of three parts. An over story that consists of trees and their canopy, a lower story that consists of shrubs and other intermediate plants, and then a ground story that consists of native ground cover plugs. For this restoration we would like to install all three layers to signify a healthy buffer.

Restoration Area #1



We are breaking down the restoration into two manageable sites. The first site is located to the north in between the parking lot and the lake is approximately **5,600 Ft² (28' x 200')**. Since this area is long and narrow we are thinking about installing a pathway that would run through this restoration area and into the final/larger restoration area. Along the path we can have educational signs talking about certain plants or the benefits of having native vegetation along lakes and rivers. We would have to remove the grass and seed with native grass/wild flowers. Erosion control techniques will be applied for this area while it is being worked on.

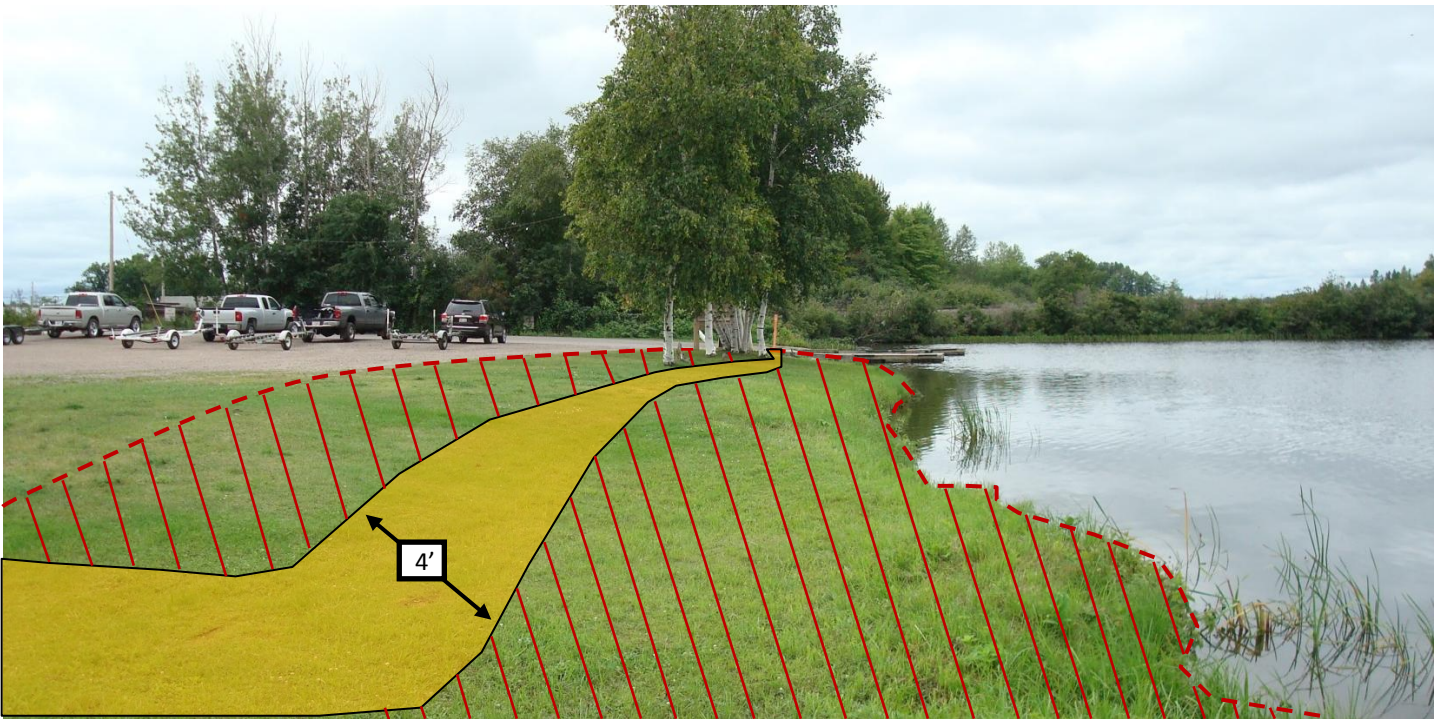
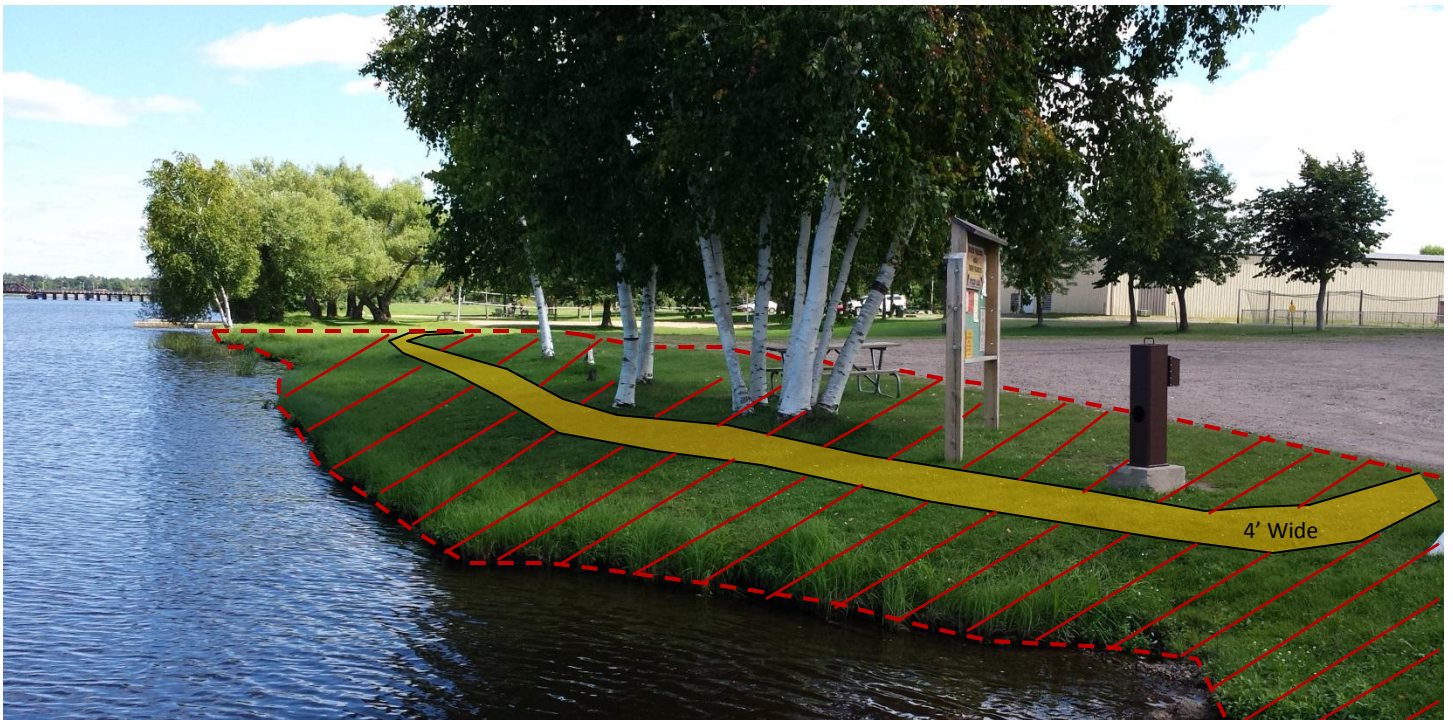
The grass that is present has a shallow root system which doesn't provide much erosion control or benefits to the lake ecosystem. It is also very competitive which can impact the success of the restoration plantings. We recommend using a sod cutter to remove the grass, however there are multiple methods available for removing the grass layer. For this area we would either use a sod cutter or machinery that is provided by the city to remove that grass so we could begin planting as soon as we are ready. We can obtain the trees and shrubs in bare root form, which is less expensive and easier to plant during the spring months.

To follow the plant densities set by Lincoln County (which is one tree and two shrubs every 100 ft²) we would have to plant 36 trees and 96 shrubs.

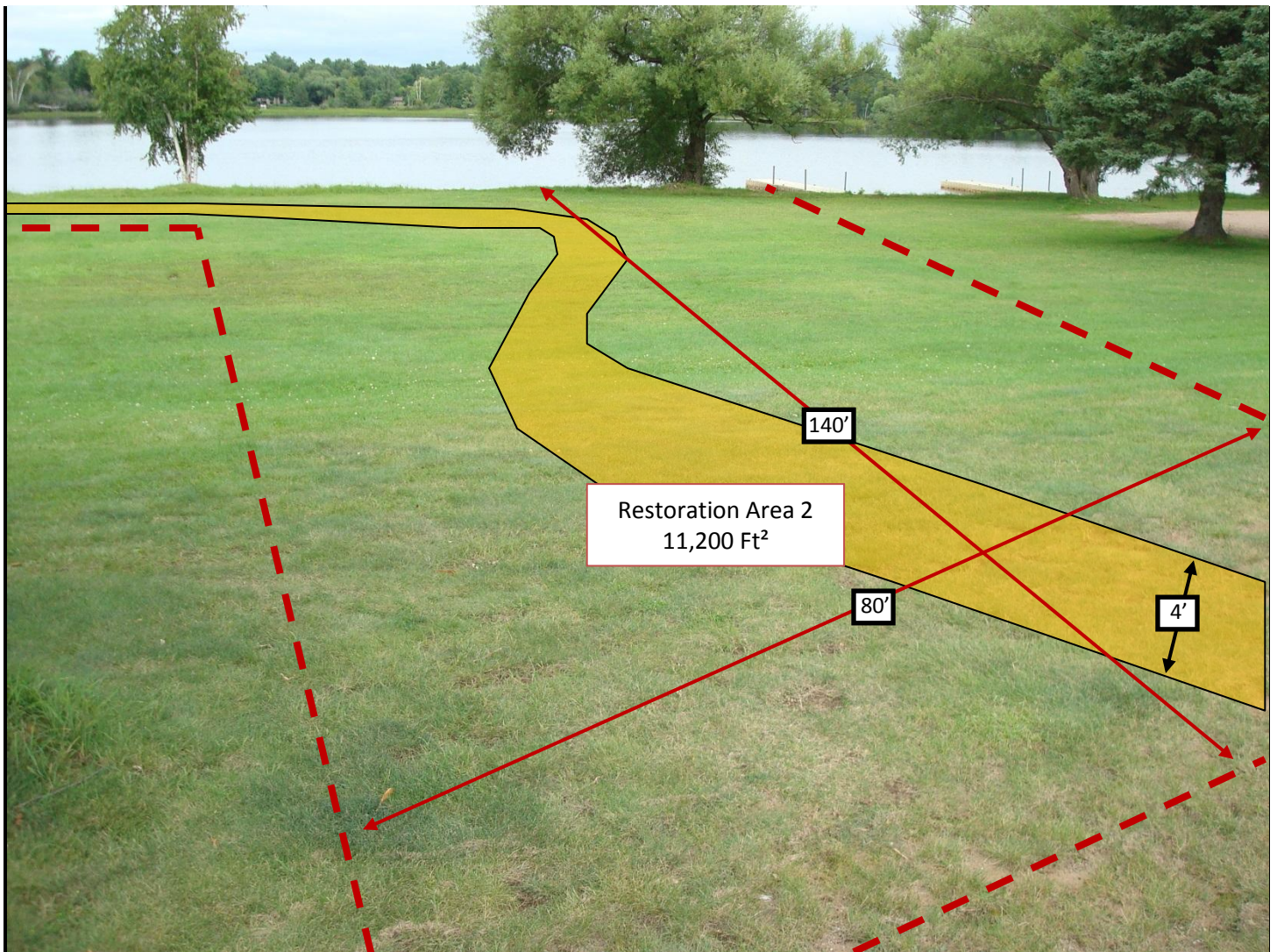
The number of plants takes into account the pathway and also the existing birch trees within this restoration area. We do not have to establish that many plants but it is just a benchmark set as high as possible. The number of plants will be used to estimate a final plant cost at the end of the plan. Since we are this number of plants is set as high as possible the estimated cost will be figured to be higher than what is expected.

Note: The measurements and locations of the paths/restoration areas are subject to change. The paths can be moved or reduced and the same goes for the restoration area.

Different Angles of Restoration Area #1 (with path)



Restoration Area 2



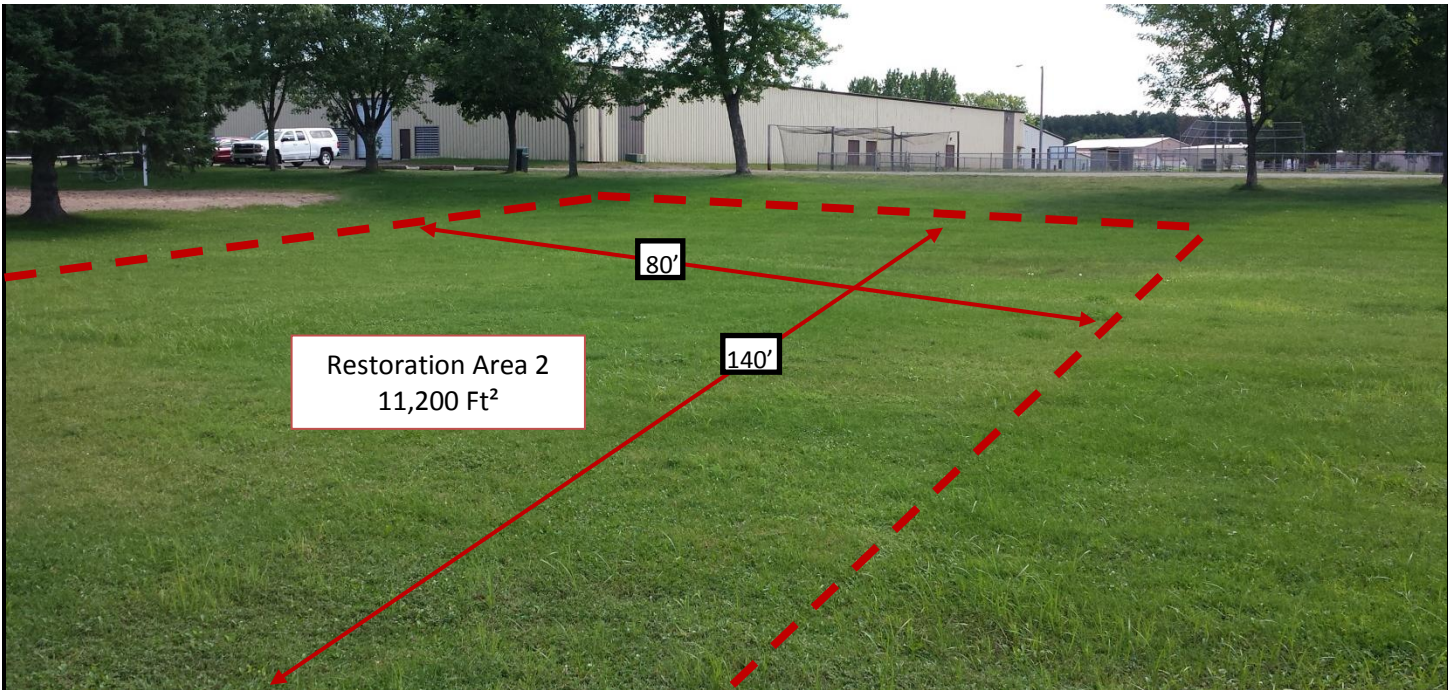
Restoration Area 2 is located between the parking lot expansion and the volleyball courts to the east. This second restoration site is approximately **11,200 Ft² (80' x 140')**. This will be a large restoration with many native plants and a pathway for the public to walk through. We will like to create a rain garden to the west of the restoration to collect runoff from the new parking lot. The entire restoration area extends from the Ordinary High Water Mark 140 feet to the area where vendors locate their booths during boating shows and other events (approximately 30 feet from the road).

To follow the plant densities set by Lincoln County (which is one tree and two shrubs every 100 ft²) we would have to plant 102 trees and 206 shrubs.

Again... the recommended number of plants is set as high as possible for this area so that we can calculate an estimated cost for restoration. The plants densities are subjected to change and will be reduced greatly (especially the trees) when we start preparing for the restoration. Since machinery will be on site for expanding the boat landing parking lot. We hope that we can utilize the machinery so that we can remove the grass and also mend the soil. It would save the cost of renting a sod cutter and it would be faster.

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Restoration Area 2 (different angle)

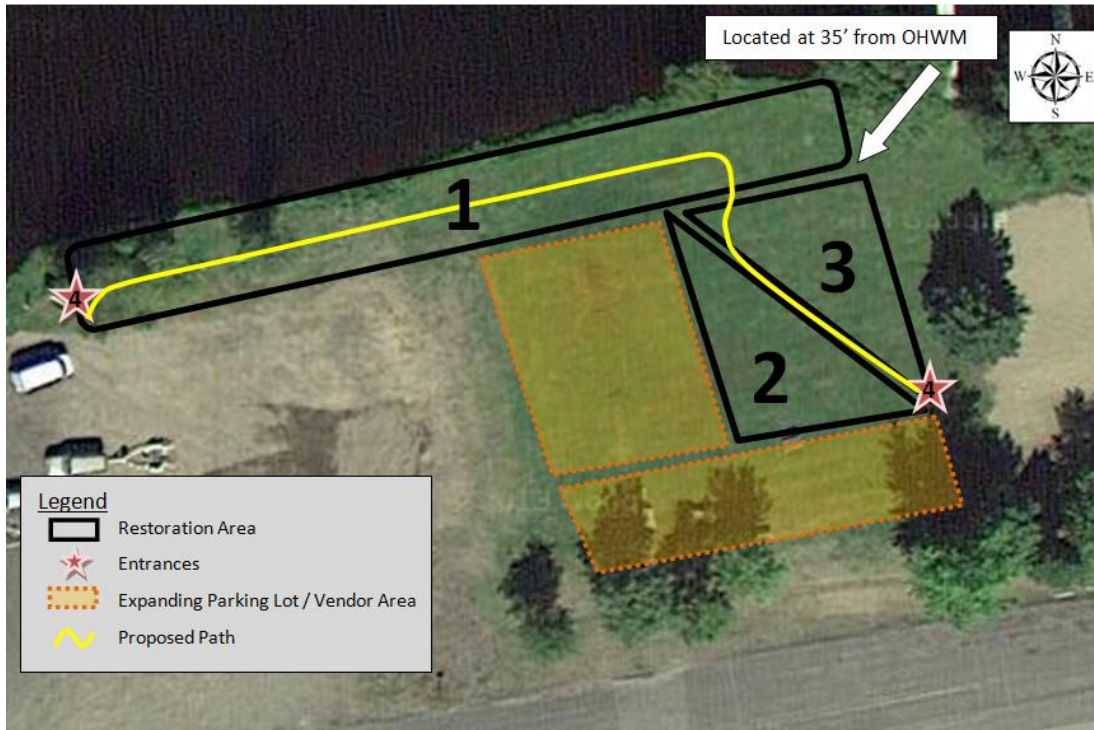


Restoration Area 2 with path (different angle)



Areas of Interest

A better way to accomplish this restoration is to break it down into smaller pieces or “zones” and tackle each zone individually based on our desired outcome. Dissecting the restoration into easy to handle portions will make the planning process a little simpler rather than trying to accomplish the entire restoration at once. The diagram below outlines the different zones and a description of each zone follows.



1. Natural Zone - This zone will be seeded and will consist of a lot of native plants that will not need much attention. Hardy trees/shrubs/groundcovers will consist within this area which would resemble a native undisturbed site. This area will start from the OHWM (ordinary high water mark) and extend 35' from the water's edge and also follow Lincoln County's planting density standards (one tree, two shrubs per 100ft²). Because of the boating show held at SARA Park every summer we will plant this area sparsely during spring of 2015 so that our plants will not be damaged. As fall 2015 arrives we will be able to finish with the require plantings.

2. Hydric Zone - This area would be close to the parking lot and would consist of native plants that are well acclimated to wetter zones and are good filters for runoff (almost like a rain garden). Strom water is diverted to this area as well so we will have to take into account how much water will be running off into this area.

3. Manicured Zone - This zone will be filled with more showy bushes/trees and less ground covers and will have more of a landscaped feel but will still meet Lincoln County's plant density standards. The main idea for this site is to show the public that you can have a well manicured restoration while also meeting County regulations.

4. Path Entrances - Almost like the manicured zone; the areas around the entrances that lead into the restoration will contain very showy and colorful shrubs/flowers. This is so that it will attract people to enter and walk through the restoration. There will be educational bulletins and possible a bench or two by these areas as well.

Before and After Pictures of Other Sites



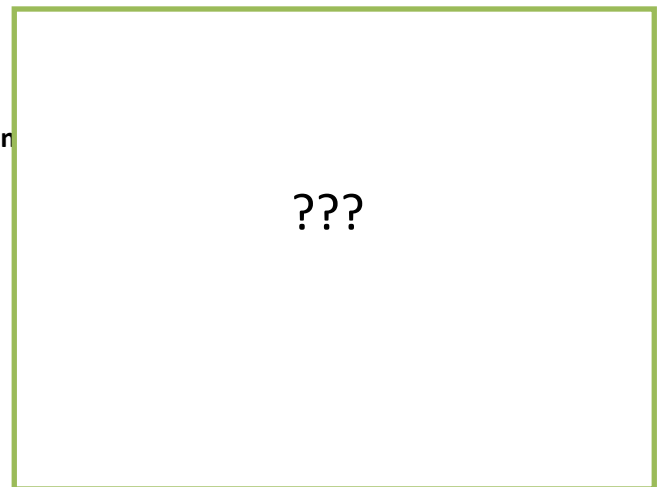
**Otter
Lake**
Langlade
County



**Post
Lake
Dam**
Langlade
County



**Mohawksin
Lake**
Lincoln
County



Native Plant List for SARA Park

Lincoln County Shoreland Buffer Demonstration Site

💧 = Plants to be included in near shore. These species may also be used elsewhere if conditions are right.

BOLD= Plants to be showcased in more manicured showy garden area (see plan).

Native Shrub Species

Wild Rose-*Rosa blanda*

Shrubby Cinquefoil- *Potentilla fruticosa*

Pagoda Dogwood-*Cornus alternifolia*

💧 Red Osier Dogwood-*Cornus stolonifera*

Low-Bush Blueberry –*Vaccinium angustifolium*

Allegheny Serviceberry-*Amelanchier laevis*

Downy Serviceberry- *Amelanchier arborea*

Snowberry-*Symphoricarpos alba*

Gray Dogwood- *Cornus racemosa*

Bush Honeysuckle- *Diervilla lonicera*

Blackberry or Raspberry -

Ninebark-*Physocarpus opulifolius*

Wild Plum-*Prunus* spp.

Native Trees

Red Oak-*Quercus rubra*

American Mountain Ash-*Sorbus americana*

Red Maple-*Acer rubrum*

Sugar Maple-*Acer saccharum*

Pin Cherry-*Prunus pennsylvanica*

Crabapple- *Malus sylvestris*

Ironwood- *Ostrya virginiana*

Yellow Birch-*Betula alleghaniensis*

White Birch-*Betula papyrifera*

Poplar/Aspen- *Populus tremuloides*

💧 **High Bush Cranberry-*Viburnum trilobum***

💧 Winterberry-*Ilex verticillata*

💧 Silky Dogwood- *Cornus amomum*

💧 Swamp Rose- *Rosa palustris*

Mapleleaf Viburnum- *Viburnum acerfolium*

Beaked or American Hazelnut-*Corylus* spp.

Nannyberry-*Viburnum lentago*

Sweet Fern- *Comptonia peregrina*

Red or Black Elderberry *Sambucus* spp.

Black Chokeberry- *Aronia melanocarpa*

New Jersey Tea- *Ceanothus americanus*

White Pine-*Pinus strobus*

Red Pine- *Pinus resinosa*

White Spruce-*Picea glauca*

Balsam Fir-*Abies balsamea*

💧 Tamarack-*Larix laricina*

💧 Swamp White Oak-*Quercus bicolor*

💧 Silver Maple-*Acer saccharinum*

💧 **River Birch- *Betula nigra***

💧 Black Willow-*Salix nigra*

Native Groundcovers & Wildflowers

Butterflyweed- *Asclepias tuberosa*

Red Beebalm or Bergamont - *Monarda* spp. (depends on what Hanson's has available)

Lance Leaved Coreopsis- *Coreopsis lanceolata*

Culvers root- *Veronicastrum virginicum*

Blazingstar- *Liatris* spp. (depends on Hanson's selection)

Beardstongue- *Penstemon grandiflorus*

Rough Sunflower- *Helianthus hirsutus*

Downy Phlox- *Phlox pilosa*

Showy Goldenrod- *Solidago speciosa*

Purple Coneflower – *Echinacea purpurea*

Sky Blue or Smooth Aster-*Aster* spp.

Black Eyed Susan-*Rudbeckia hirta*

Partridge Berry – *Mitchella repens*

Wintergreen - *Gaultheria procumbens*

Star flower- *Trientalis borealis*

Bunchberry dogwood- *Cornus Canadensis*

Large-leaf aster- *Aster macrophyllus*

Canada Mayflower- *Maianthemum canadense*

Blue Bead Lily- *Clintonia borealis*

Wild Sarsaparilla- *Aralia nudicaulis*

Wild Ginger- *Asarum canadense*

Bracken Fern- *Pteridium aquilinum*

Cup Plant- *Silphium perfoliatum*

Wild Strawberry- *Fragaria virginiana*

New England Aster- *Aster novae angliae*

◆ Swamp Milkweed – *Asclepias incarnata*

◆ Joe-Pye Weed- *Eupatorium maculatum*

◆ Boneset – *Eupatorium perfoliatum*

◆ Turtlehead- *Chelone glabra*

◆ Fireweed- *Epilobium angustifolium*