

# Big Marine Park Reserve

## MASTER PLAN



# Big Marine Park Reserve Master Plan

## ACKNOWLEDGEMENTS

## EXECUTIVE SUMMARY

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## Bibliography

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# Executive Summary

## INTRODUCTION

This document provides a master plan update for Big Marine Park Reserve. This update builds upon the previous master plan by working with the established park reserve boundary, conforming to Metropolitan Council policies, and giving priority to preserving the natural resource features which make the park reserve unique. This master plan update will continue to guide future development within the park reserve and assist with developing a phased plan for implementation. Planning efforts focus on balancing multiple park programming desires with the needs of preserving the native landscape and sensitive habitat areas.

## SETTING, HISTORY, AND TRENDS

Metropolitan Council planners identified the land area within Big Marine Park Reserve as a premier, high quality land resource soon after the regional park system was created in 1974. As of December 2009, the County has acquired 657 acres of the total 1,892 acres in the park reserve boundary since the original master plan was adopted in 1988.

Washington County is the fifth highest populated county in the state and is projected to continue in this classification through 2030. With population and development increasing, Big Marine Park Reserve will become a destination for surrounding communities and continue to be an important resource for protecting and preserving natural resources for future generations of park users.

Along with public input, population forecasting, park visitor trends, and nature-based outdoor recreation activities and programming were evaluated for Big Marine Park Reserve. Review and analysis of park amenities currently provided within the County park system as well as at nearby Regional and State Park facilities were also evaluated for development of this master plan. The overall programming goal for Big Marine Park Reserve is to serve the local and regional population while complementing park programming and activities found within the existing County Park system.

## PUBLIC PROCESS

Soliciting public input was an important component of the master planning process for integrating existing park development with new planned facilities, and investigating new potential programming opportunities. Program criteria were developed and refined through the involvement and input of Washington County Staff, a Technical Advisory Committee (TAC), and the greater community through a series of public open house meetings.

## EXISTING CONDITIONS INVENTORY

Phase I improvements for the park reserve were completed in 2008. Site improvements included the development of a new park access drive, parking lot facilities, an updated boat landing and parking area, walking and biking trails, a sand beach area, and informal picnic and play areas. Building improvements included the addition of a new welcome center, restroom and beach building, and a lake overlook picnic shelter. All site and building improvements were implemented to minimize impacts on surrounding natural resource amenities and sustainable design practices were used for treating storm water runoff and directing it away from wetlands and surface water. Durable, low maintenance building materials were also used for the construction of building facilities.

Big Marine Park Reserve is also comprised of diverse natural systems including woodlands, prairies, wetlands, and open surface water areas. Ecological restoration, natural resource preservation, land stewardship, and maintaining water quality are all important priorities for the park and their integration with new park development.

## **NATURAL RESOURCES STEWARDSHIP AND WATER RESOURCES MANAGEMENT**

As land is acquired within the park boundary, it is recommended that a comprehensive, long-term approach to natural resources restoration and management be implemented for the park reserve. This will ensure visitors have the opportunity to interact with a wide variety of ecological communities and landscapes including viewing of rare plant and animal species. Preservation of these large tracts of contiguous habitat are important and have been carefully integrated with park development and programming.

The establishment of the Park Reserve also provides a substantial ecological buffer around a significant portion of Big Marine Lake, which is described in the Watershed Management Plan as an exceptionally clean lake, despite slightly elevated phosphorous levels. Best Management Practices (BMPs) implemented throughout the Park Reserve will ensure water quality standards can be maintained for the lake.

## **DEVELOPMENT MASTER PLAN**

The updated development master plan builds upon the initial vision cast for Big Marine to preserve and protect the abundance and diversity of natural resource amenities while making the park reserve more usable and accessible to park users. Enhancing the visual and physical connections to Big Marine Lake is also a main objective of the master plan.

The development program for the park includes the following facilities and amenities:

- Internal park trail system with both hard and soft surface trails to meet the needs of a variety of trail user groups for both summer and winter use activities
- Centralized trailhead and parking lot facility
- Group and primitive camping areas
- Modern campground facility for RV and tent user groups
- Large group picnic facility
- Special use facility for youth group activities
- Maintenance facility

## **IMPLEMENTATION, OPERATIONS, & MANAGEMENT PLAN**

The implementation of park improvements will primarily rely on the County's ability to acquire land within the park boundary, and securing funding sources to both purchase land and construct park improvements. Additional considerations for managing the parks natural resources and providing operations and maintenance services will also play a role in determining overall funding needs. The time frame for implementing these improvements will be long term and involve many phases of construction to realize all improvements identified for the park reserve.

It is important to recognize that this updated master plan will continue to evolve as a planning document and will be further refined as property acquisition is realized and site improvements are implemented in the park. Additional input from all stakeholders should continue to be solicited as more detailed plans evolve during the planning and design process.



# Chapter 1: Introduction and Planning Framework

## OVERVIEW



VIEW LOOKING NORTH FROM CSAH 4

This document provides a master plan update for Big Marine Park Reserve. The update builds upon the previous master plan by working with the established park reserve boundary, conforming to Metropolitan Council policies, and giving priority to preserving the natural resource features which make the park reserve unique. Planning efforts focus on balancing multiple park programming desires with the needs of preserving the native landscape and sensitive habitat areas.

Public input was an important component of the master plan update process for integrating existing park development with new planned facilities, and investigating new potential program areas. Program criteria were developed through the involvement and input of Washington County Staff, a Technical Advisory Committee (TAC), the Park and Open Space Commission, County Board, and the greater community through a series of public open house meetings.

## RELATIONSHIP WITH PREVIOUS MASTER PLAN

The initial “Big Marine/Maple Island Park Reserve Master Plan” was adopted by the Washington County Board of Commissioners in March 1988. Official map ordinance No. 68 was approved by the Board in August 1988, designating the land area for future public use as authorized by Minnesota State Statutes. (See appendix B) In the original master plan, a land use/justification study was completed to identify parcels that warranted acquisition based on an analysis of circulation, landform, vegetation, soils, wildlife habitat, water bodies/wetlands, archeology, land use and existing development in a 10,000 plus acre study area. (See Figure 1-1) The initial plan established a park reserve boundary that would allow the reserve to conform to the Metropolitan 80/20 policy and conform to other park reserve criteria. The established park boundary is still considered valid today. Additional expansion plans were not considered as a part of this master plan update.

This master plan update builds on the previous master plan by:

- Updating site improvements within the current park reserve boundary.
- Preserving contiguous habitat corridors for upland/wetland wildlife habitat, mature oak forests, and potential aquifer recharge areas.
- Establishing native landscape buffers along the park perimeter.
- Limiting vehicular public access to the park from adjacent roadways.
- Including bike/pedestrian, equestrian, and cross-country ski trail use.
- Introducing mountain bike trails, an archery trail target shooting loop, and a variety of different campground facilities.

## PLANNING FRAMEWORK AND PURPOSE

### PLANNING FRAMEWORK AND REGIONAL PARK SYSTEM GUIDELINES

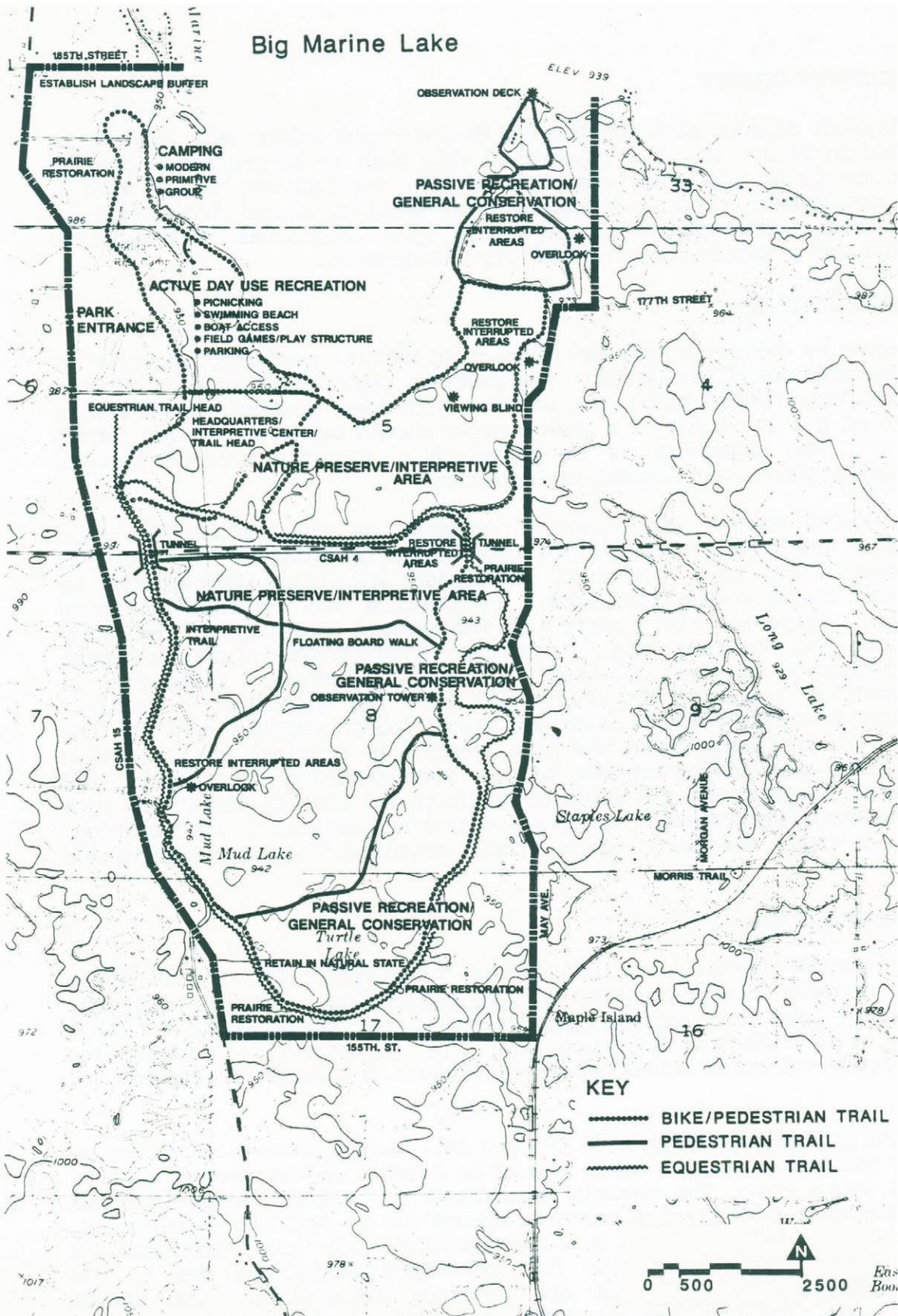
In the regional park system, park reserves contain a diversity of unique natural resources to the Twin Cities Metropolitan Area and have adequate space to protect, preserve and manage these high quality natural resources while still providing compatible outdoor activities.

The 2030 Regional Parks Policy Plan states regional park reserves must meet the following criteria:

- Be 1,000 acres in size with a desirable size of 2,000 acres or more to encompass the resource envisioned for preservation.
- Conform to the 80/20 Policy “to establish and maintain an uncompromised sense of nature and protect high quality natural resources, at least 80 percent of each park reserve should be managed as wild lands that protect the ecological function of the native landscape. This would permit up to 20 percent of a park reserve to be developed for compatible recreational activities.” (Metropolitan Council 2030 plan)
- Conform to Metropolitan Council policies, and be compatible with adjacent and affected governmental units. The plan must meet statutory requirements, including policies for siting and acquisition, finance, recreation activities and facilities, planning, and system protection.

The current Big Marine Reserve park boundary conforms to the Metropolitan Council 80/20 policy. Once fully acquired, the park reserve will be near 1,892 acres in size and the maximum developed area will not surpass 384 acres.

FIGURE 1-1: 1988 BIG MARINE PARK RESERVE MASTER PLAN



## PLANNING PURPOSE AND ASSUMPTIONS

Master planning efforts for incorporating recreational amenities focused on:

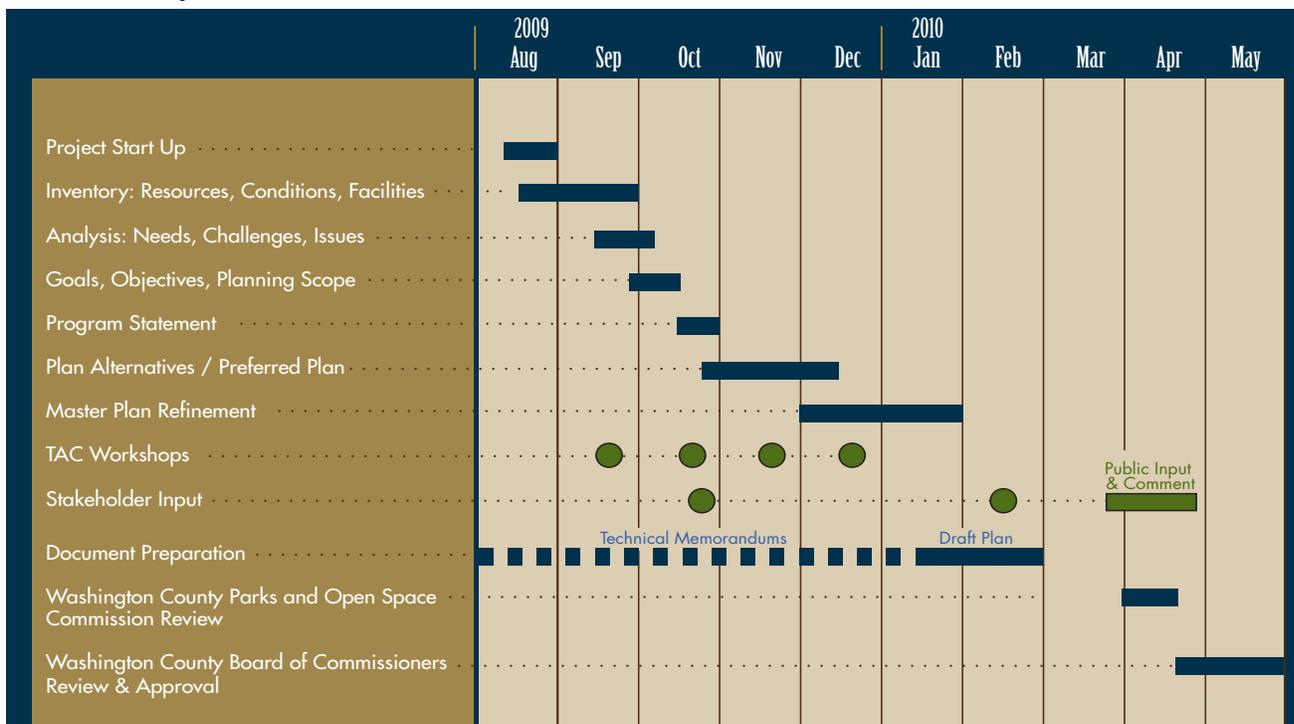
- Locating active use areas in low-quality or already disturbed land areas.
- Balancing multiple active and passive programming with the needs of the native landscape and existing habitat ecologies.
- Locating park amenities in response to existing and future land uses located around the perimeter of the park.
- Integrating Phase I park improvements with new proposed park amenities.
- Planning assumptions established by Washington County include:
  - The existing park boundary is still valid and should not be re-evaluated for expansion.
  - The Veterans Camp property will remain a separate entity from Big Marine Park Reserve.
  - Land parcels will continue to be acquired compliant with the vision for the park reserve.

## THE PLANNING PROCESS

Soliciting feedback and input from all stakeholders was an important component of the master plan process. The key steps and timeline associated for completing the planning process are outlined in Table 1-1 and were as follows:

- Complete site inventory for existing site resources, conditions, and facilities
- Identify needs, challenges, issues and opportunities for development of the park reserve
- Develop planning goals and objectives, and park development program
- Develop master plan concept alternatives
- Refine concept alternatives in to preferred master plan
- Prepare master plan document
- Seek plan approval from Washington County Parks and Open Space Commission, Washington County Board of Commissioners, and Metropolitan Council

TABLE 1-1: PROJECT SCHEDULE



# Chapter 2: Setting, History, and Trends

## OVERVIEW



VIEW LOOKING EAST FROM MANNING AVENUE

Metropolitan Council planners identified the land area within Big Marine Park Reserve as a premier, high quality land resource soon after the regional park system was created in 1974. As of December 2009, the County has acquired 657 acres of the total 1,892 acres within the park reserve boundary. In 2008, the Phase I development opened to the public providing improved boat landing access to Big Marine Lake, a swimming beach, a large playground, picnic facilities, and trail system. This master plan update will act as a guide for future development and phasing for parcel prioritization.

Washington County is the fifth highest populated county in the state and is projected to maintain this position through 2030. As population and development increase, Big Marine Park Reserve will increasingly be a recreational destination for surrounding communities and continue to be an important natural resource area to preserve for future generations.

Population forecasting, park visitor needs, recreational trends, and public input were taken in to consideration when creating an updated development program for Big Marine Park Reserve. Review and analysis of existing amenities provided within the County park system, as well as at nearby Regional and State Park facilities were also evaluated for development of this master plan. The overall programming goal for Big Marine Park Reserve is to serve the needs of the local and regional population while providing park programming and activities which compliment the existing County Park system.

## RELATIONSHIP WITHIN THE WASHINGTON COUNTY PARKS SYSTEM

The Washington County Park Vision Statement states:

*“The Washington County Park and Open Space System adds value to all peoples’ lives and contributes to the well being of local and regional communities by providing public enjoyment and education; and maintaining and restoring high quality natural areas. By virtue of its large size, high quality facilities and dispersed locations, the County Parks and Open Space System preserves and showcases the County’s heritage and provides a place for users to find quietude, green space, clean water and a place to recreate.” (Wash. Co. 2030 Plan p. 5-1)*

As the park vision statement indicates, Washington County is home to numerous significant natural resources and is comprised of regional, county and state parks (See Figure 2-1). The Washington County Park System currently includes four regional parks, two park reserves, including Big Marine Park Reserve, and one county park. Washington County is also home to William O’Brien State Park, Afton State Park, and a portion of the Gateway State Trail. Additional natural resources, with national significance, include the St. Croix National Scenic Riverway and the Mississippi National River and Recreation Area.

Big Marine Park Reserve is located in northern Washington County on Manning Trail just north of 170th Street in May Township. Its geographic distribution helps put the Metropolitan Regional Park Framework in balance with existing and forecasted development and will help alleviate heavy usage of other park areas in Washington County such as Square Lake County Park. (Washington Co. 2030 Plan p.5-20) (See Table 2-1)

FIGURE 2-1: WASHINGTON COUNTY PARK SYSTEM PLAN

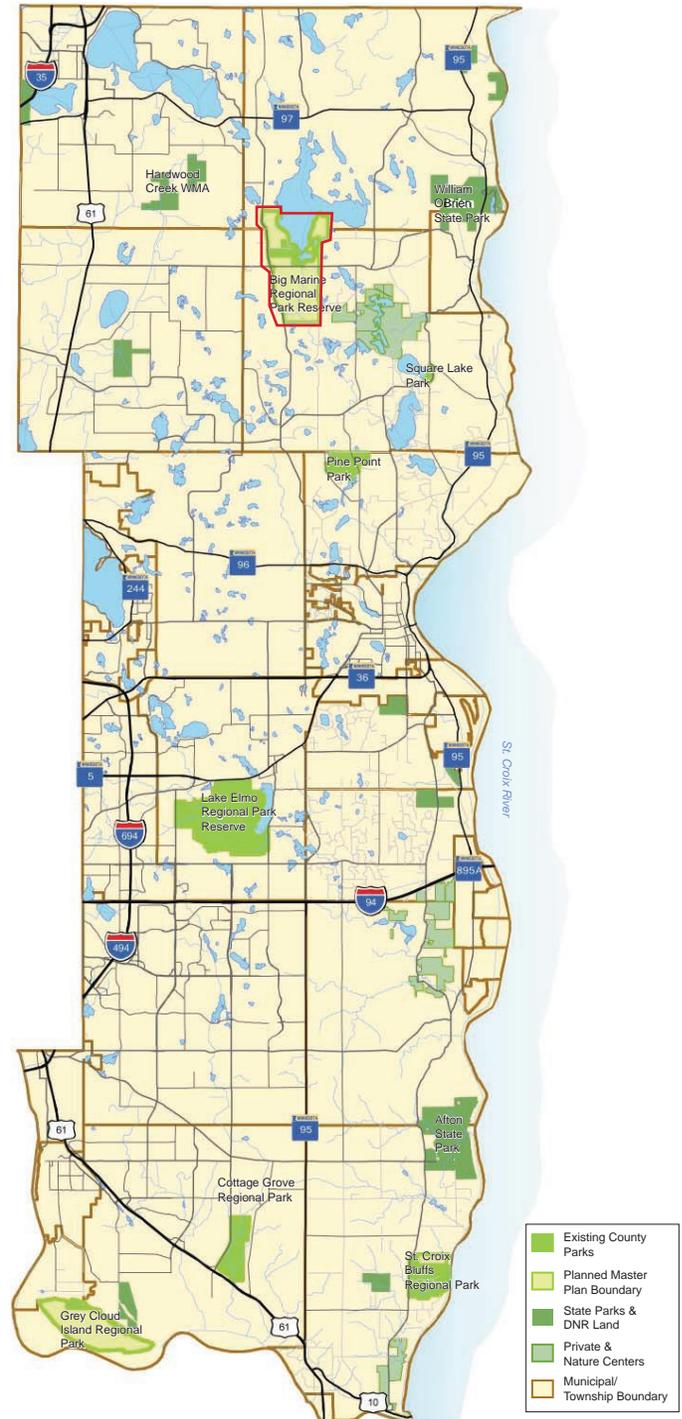


TABLE 2-1: WASHINGTON COUNTY PARK INVENTORY

	Big Marine Regional Park Reserve	Square Lake Park	Pine Point Regional Park	Lake Elmo Regional Park Reserve	Cottage Grove Ravine Regional Park	Grey Cloud Island Regional Park	Point Douglas County Park	St. Croix Bluffs Regional Park
<b>Facilities/Activities</b>								
Boat Launch	X	X		X				X
Fishing Pier	X	X		X	X		X	X
Swimming	X	X		X			X	X
Camping				X				X
Picnicking	X	X		X	X		X	X
Field Games				X				X
Play Equipment	X			X	X			X
Natural Areas	X		X	X	X	X		X
Unique Biological/Geological	X	X		X	X	X		X
Historical			X	X		X	X	X
Toilets	X	X	X	X	X		X	X
<b>Trails</b>								
Hiking	X		X	X	X		X	X
Biking			X	X	X			X
Cross-Country Skiing	X		X	X	X			X
Equestrian			X	X				
In-line Skating			X	X	X			

Big Marine Park Reserve will add value to the Washington County Parks System as a “park reserve” with its primary purpose to preserve and protect its natural features as a long term community resource. Developing this park reserve will provide the following natural resource benefits:

- Provide public access to Big Marine Lake, the 5th largest lake in the metropolitan region and an outstanding surface water resource (Wash. Co. 2030 Plan p. 5-20).
- Preserve and protect major wetland recharge areas and endangered species habitat.
- Preserve the St. Croix Moraine landscape type, which is distinguished by its characteristic rolling hills and wetland depressions.

Its unique natural features will also provide for high-quality recreational experiences such as:

- Providing public access to Big Marine Lake. With many of the other large lakes in the county being ringed with permanent residential development, substantial public water front access is a rare and priceless resource for the region.
- Increasing opportunities for fishing and boating.
- Creating an ideal setting for trail systems and providing interpretive experiences.

The location of Big Marine Park Reserve has also been integrated with surrounding proposed regional trail corridors which provide access to other surrounding County and State park facilities, natural resource areas, and regional trail corridors.

## HISTORICAL LAND USE AND SETTLEMENT

Many of the early land uses within and around Big Marine Park Reserve consisted of agricultural fields and pasture areas which were established by Swedish immigrants in the mid nineteenth century. Swedish immigrants were also attracted to this area because of the availability of jobs in the logging industry which was occurring on the Upper St. Croix River. This opportunity allowed for year round work for maintaining their farms during the summer months and working in the logging industry during the winter months. Prior to their settlement to the area, both Ojibwe and Dakota tribes occupied the area and were primarily involved in game hunting and fur trading.

In the early part of the 20th century, many cabin summer retreats were built on Big Marine Lake and within the boundary of the park reserve which also included some year round residents. In the early 1930's, gangster John Dillinger reportedly stayed at a cabin just east of the park reserve boundary near the intersection of Norell Avenue and 182nd Street. Other cabin development within the park included a small resort facility which occupied the location of the current boat landing facility, and various single family homes which were located within the current picnic and beach areas of the park. A majority of the seasonal cabin and trailer sites that currently exist within the park reserve are located on Big Marine Lake along Margo Avenue on the northeast corner of the park.

## HISTORICAL LAND ACQUISITION

Soon after the regional park system was created in 1974, Metropolitan Council planners recommended the general area for Big Marine Park Reserve to be included as part of the regional park and open space system. The majority of the land recommended was composed of privately owned parcels of land. Master planning efforts began after providing justification for land acquisition. A land-use planning study identified parcels that were most valuable in natural resources and recommended them for acquisition for the future park reserve. The master plan and the park boundary were approved in 1988.



Early Washington County Settlement. Source: MN Historical Society



Between 2006 and 2007, site plans were developed and an extensive clean-up process was completed.



In 2008, Phase I development of the park opened for public use.

FIGURE 2-2: EXISTING BIG MARINE PARK RESERVE PROPERTY OWNERSHIP



Between 1988-2000 various properties were purchased throughout the park. Between 2000 and 2004 the Veteran's Camp was removed from the park boundary to become a permanent inholding within the park. A lakefront resort was also acquired by the County to provide public lake access to the southwest bay of Big Marine Lake.

Currently, the park has acquired 657 acres of the total 1,892 acres contained within the park reserve boundary. (See Figure 2-2) This master plan update will guide future planning and development, phasing, and prioritizing the acquisition of remaining private land within the park boundary.

In 2005 the County acquired enough contiguous land for park development. Between 2006 and 2007, site plans were developed for the southwest bay area (See Figure 2-3) and an extensive clean-up process was completed so park development could proceed. The resort and many other single-family homes were either relocated or demolished. Failed septic systems were also removed and existing wells were capped. In 2008, Phase I development of the park opened for public use.

FIGURE 2-3: BIG MARINE PHASE I IMPROVEMENT SITE PLAN



Beach Facility Entrance



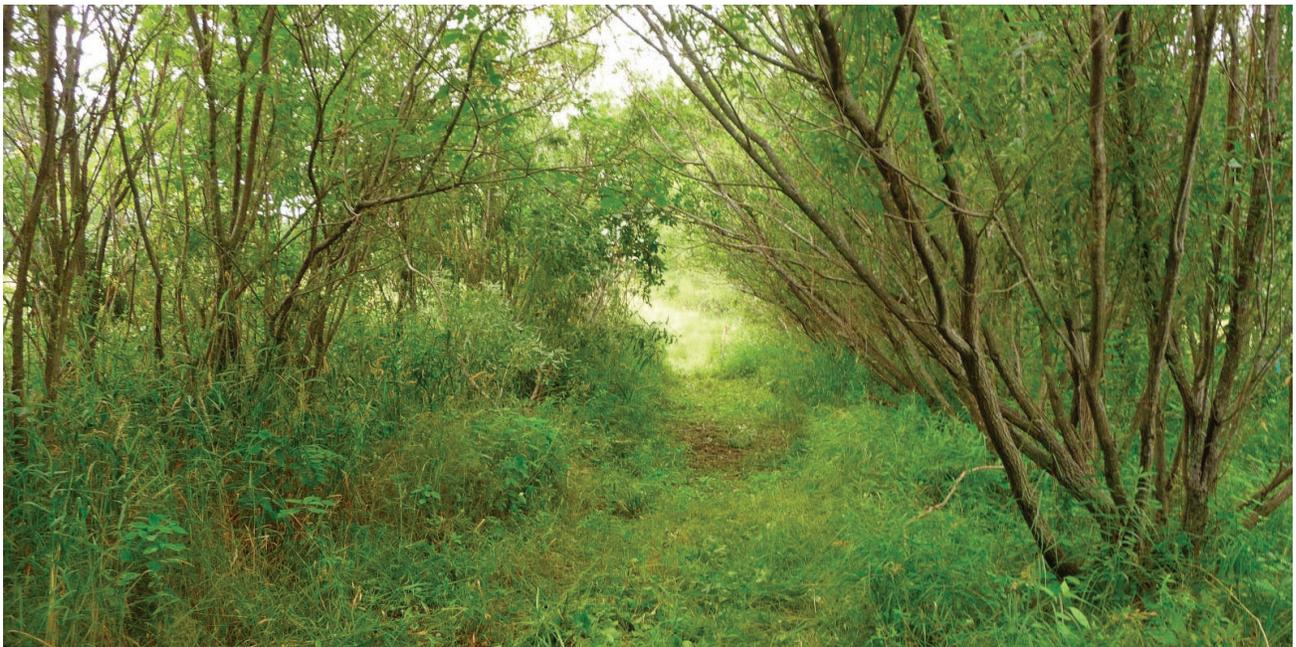
Parking Lot Stormwater Treatment Basin

## LAND ACQUISITION POLICIES

Washington County's current policy position on land acquisition is on a "willing seller" basis. The projected timing and sequencing of acquiring property within the park (or "residential in holdings") will determine when site improvements will ultimately be funded and implemented. Some consideration may be given to establishing interim uses for property currently owned by the County within the park. "Highest priority acquisition and development is planned for areas that would provide opportunities to restore or better manage the natural resource base and reduce fragmentation of county ownership." (Wash. Co. 2030 Plan)

The priority rating for acquiring park and park reserve lands identified in the Metropolitan Council approved master plans is as follows:

1. Lands available for purchase now that would be lost to the regional parks system if timely action is not taken and which meet criteria 2 or 3 below.
2. Lands essential to protect the natural resources that define a park or park reserve and make usable to the public as planned.
3. Lands that are essential for the park or park reserve to reach its full regional natural resource based outdoor recreation service potential as defined in the Council's regional parks system plan and the park unit's master plan. (Met Council 2030 Plan p. 9)
4. Also, because of the strong public attraction to water resources, acquisition of any additional public water frontage within the regional parks stem should be give a very high priority. (Met Council)



View looking east along existing Lomond Trail Roadway right-of-way along south end of Big Marine Lake

# POPULATION FORECASTING/PARK AND RECREATION TRENDS

## POPULATION TRENDS AND FORECASTING

The Metropolitan Area is growing rapidly. Growth has increased by nearly 800,000 in the last 30 years and by 2030, the Metropolitan Council forecasts the region to increase by 966,000 people. (See Table 2-2)

TABLE 2-2: METROPOLITAN AREA GROWTH 1970 – 2030

	1970	2000	2030	1970-2000 Increase	2000-2030 Projected Increase
Households	573634	1021454	1492000	448000	471000
Population	1874612	2642056	3608000	767000	966000
Jobs	779000	1563245	2126000	784000	563000

Source: Metropolitan Council 2030 Framework

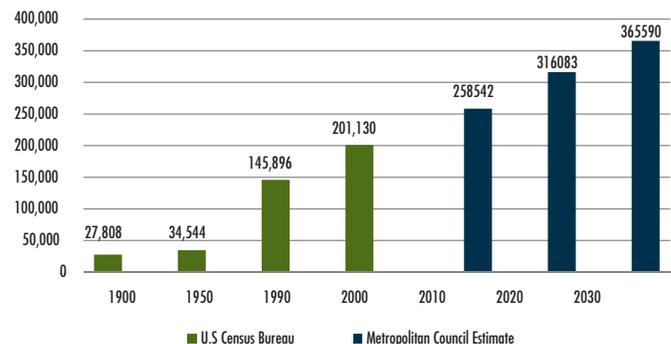
Because of the large number of Baby Boomers in the region, the population will continue to age. The Metropolitan Council forecasts that “between 2000 and 2030, the population under the age of 55 is expected to increase by 19 percent while the number ages 55 and over is expected to grow by 111 percent.” (Met Council 2030 Plan ch. 1 p. 2) This trend needs to be taken in consideration in terms of park planning as age is a factor on recreation trends.

Washington County has the fifth largest population base in the state and is projected to continue in this role through 2030. Communities along interstate corridors such as Woodbury and Cottage Grove, have seen the most rapid growth in the past decade. With the 2030 Regional Framework Plan those trends will continue and communities in the west of the county, along the I-35 corridor, will also see rapid growth. The Metropolitan Council forecasts the western communities of Forest Lake and Hugo to see an 80% increase in growth. (See Table 2-3)

TABLE 2-3: WASHINGTON COUNTY AREA GROWTH 1970 – 2030

	U.S Census Bureau	Metropolitan Council Estimate
1900	27808	
1950	34544	
1990	145896	
2000	201130	
2010		258542
2020		316083
2030		365590

Source: Washington County 2030 Comprehensive Plan



With population and development increasing in the county, Big Marine Park Reserve will become a destination for the surrounding communities and continue to be an important resource to protect and preserve natural resources for future generations. As the park reserve continues to grow in size it will most likely see more use as it starts to accommodate a wider cross section of user groups within the growing community.

## BIG MARINE PARK RESERVE VISIT TRENDS

In 2008, the Metropolitan Council conducted a visitation estimate for all parks in the regional system. Results were tabulated for Washington County Parks including Big Marine Park Reserve. Based on these findings, Big Marine Park Reserve saw a total of 58,000 visits since its opening on June 7th, 2008. The summer and fall seasons saw close to the same amount of visits at 26,000. There were 4,700 visits in the winter.

Ninety-seven percent of visitors traveled to the park in an automobile. Only three percent of visitors biked and no one walked or took the bus. As the regional trail connections improve in this area, the numbers of bicyclists visiting will likely increase. In the future, transit alternatives should be considered to connect community centers to the park reserve during peak months to provide easier access for less-mobile visitors. (See Table 2-4)

Sixty-three percent of the park visits were comprised of visitors ages 25 to 44. The primary activity was playground use followed by swimming, picnicking, walking/hiking, and boating. (See Table 2-5)

As the park continues to expand and provide new recreational opportunities it will continue to draw a large number of visitors year round. It is clear from these numbers that the Phase I developments (playground, swimming beach, etc.) are attracting younger families to the park. User diversity will improve as the county continues to grow, the park continues to develop, and transportation options to the park become available.

TABLE 2-4: TRANSPORTATION TO PARKS

Washington County Parks	Walking, Ran, or In-line Skates	Bicycle	Drove or Rode in Auto, Truck, RV, or Van	Metro Transit Bus or LRT	Charter Bus	Other
Agencywide	15%	29%	56%			1%
Cottage Grove Ravine	7%	23%	70%			
Lake Elmo Park Reserve	2%	1%	97%			
St. Croix Bluffs			100%			
Square Lake			100%			
Hardwood Creek Regional Trail	27%	52%	19%			2%
Big Marine		3%	97%			
Pine Point	11%	31%	58%			

Source: Metropolitan Council Regional Parks and Trails Survey 2008

TABLE 2-5: PRIMARY PARK ACTIVITIES

Washington County Parks	Walking, Hiking	Biking	Swimming	Picnic	Jogging, Running	Playground Use	Sunbathing	In-line Skating	Relaxing	Boating*	Camping	Fishing	Dog Walking	Commuting	Other
Agencywide	18%	37%	13%	4%	3%	6%	1%	4%	2%	4%	4%	4%	5%	1%	2%
Cottage Grove Ravine	23%	27%		7%		23%		3%	10%			27%	3%		
Lake Elmo Park Reserve	27%	2%	32%	10%	1%	11%		1%	3%	4%	11%	4%	3%		5%
St. Croix Bluffs	2%	2%	2%			8%			13%	40%	12%	29%	2%		6%
Square Lake	6%		69%				3%		3%	6%		9%			3%
Hardwood Creek Regional Trail	21%	63%			6%			6%	1%				8%	1%	
Big Marine	13%	3%	33%	20%		50%	3%		3%	7%		3%	3%		
Pine Point	23%	63%						9%					3%		2%

Source: Metropolitan Council Regional Parks and Trails Survey 2008

Notes: Calculations include multiple responses

May not equal 100 percent due to rounding

\*Boating also includes sailing, canoeing, kayaking, rowing, and jet skiing

## TOP OUTDOOR RECREATION TRENDS

The 2005 USDA Recreation Statistics update for Western and Mid-Western Metropolitan Residents, ranked Minneapolis/St. Paul in the top four most active cities for nature-based outdoor activities. The results were based on participation for users 16 years and older. The activities with the highest participation rates in the Metropolitan area in comparison to other cities were:

- Warm water fishing
- Canoeing
- Big and small game hunting
- Cross-country skiing

In 2004 the Minnesota Department of Natural Resources conducted a survey and study from data collected from Minnesotans ages 20 and older. Several trends were identified including top activities by annual participation rates and distance to recreational opportunities. Overall top activities in the seven-county metro region are listed in Table 2-6 and are led by:

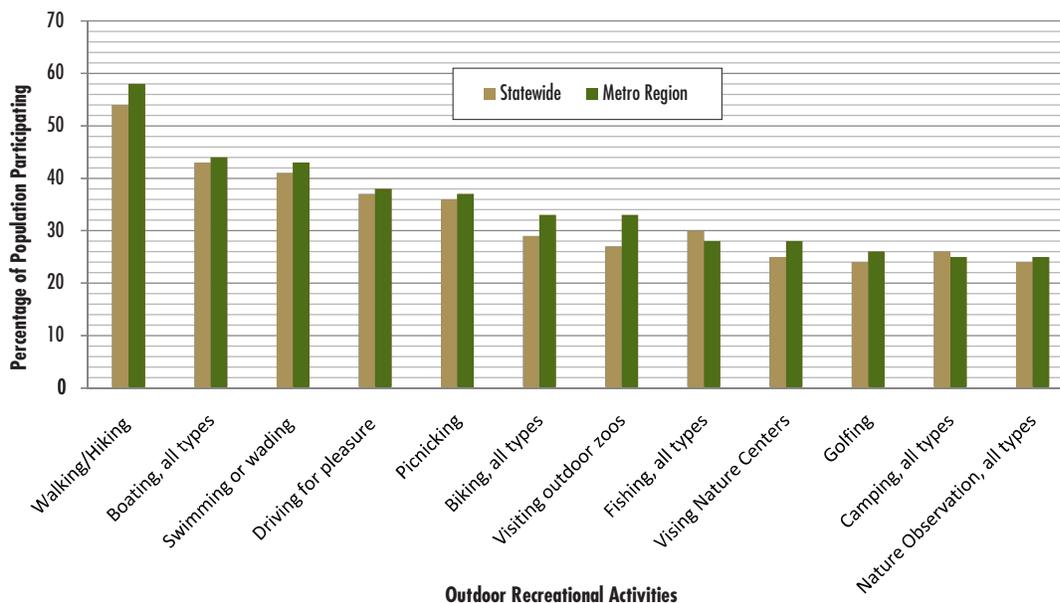
- Walking/hiking
- Boating, all types
- Swimming, all types

Statewide, Fishing and Camping ranked slightly higher than in the Metro area alone.

Near-home recreation vs. away-home recreation can be compared in Table 2-5. Near-home recreation (within ½ hour of home) is led by walking/hiking and away-home recreation (over ½ hour of home) is led by all types of fishing activities. In general, opportunities for near-home activities are provided by the private sector and more-local levels of government and opportunities for away-from-home activities are provided by the private sector, state or federal government. (MnDNR p. 61)

According to the 2008 Metropolitan Council Parks and Trails Survey, primary activity in the Washington County Parks system was biking followed by hiking and walking. This survey is included in Appendix C.

TABLE 2-6: NEAR-HOME VS. AWAY-HOME RECREATION



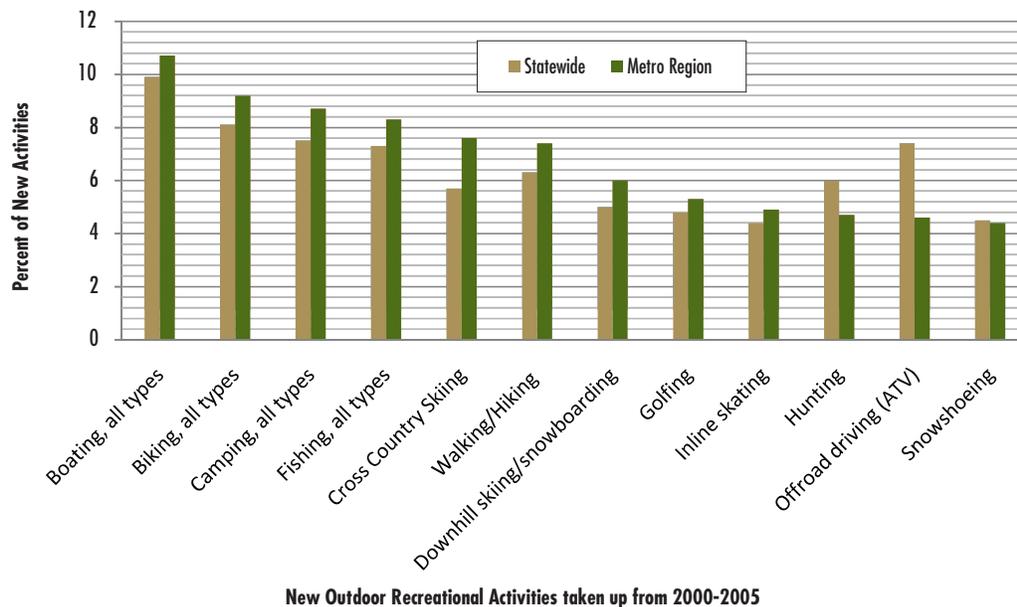
Source: DNR SCORP 2008-2012, 2004 Minnesota Outdoor Recreation Participation Study

## OTHER RECREATIONAL TRENDS

### New Activity Growth 2000-2005

Table 2-7 compares new activities state-wide and in the Metro Region within the 2000-2005 time period. Boating (other than fishing) and biking (all types) have the highest percentage of participation. Of note, several snow-related activities (skiing, snowshoeing) show up in the top ten of this list for the Metro Region when they had very low percentages in existing trends. One possibility for this trend gap, is that several winters preceding the survey had poor snow conditions leading to pent-up demand which may have helped position these activities in their rank for new activity growth. (MnDNR p.69)

TABLE 2-7: NEW OUTDOOR RECREATIONAL ACTIVITIES



Source: DNR SCORP 2008-2012, 2004 Minnesota Outdoor Recreation Participation Study

### Equestrian Use:

In the National USDA survey, horseback riding on trails was ranked as medium to high participation within the metropolitan area. Statewide trends show 5% of the population participates in horseback riding with only 4% within the Metropolitan area. The Metropolitan Council survey does not list equestrian use as an activity option. Given this gap in data it is important to get feedback from the local community about the wants and needs for an equestrian trail and if including this trail will help balance the regional system and complement the County system.

### Mountain Biking:

Mountain biking is a growing popular activity in the region, although there are limited sources to this trend. Three Rivers Park District has been researching and evaluating this trend through staff counts and surveys. Their findings show a total of 18,278 mountain biking visits to the Three Rivers Park District in 2009. The Outdoor Foundation Recreation Participation Report in 2009 shows that there was an increase in users for children ages 6-17, although there was a decrease in mountain biking between the ages of 18-24. Given these numbers, it is recommended that mountain biking be based on the local need and desire. A future mountain bike trail would need to be a unique destination to draw in bikers from the core metro area.

### Geocaching:

Geocaching is a relatively new trend and nature-based activity that teaches orienteering and team work field skills. This type of activity attracts both youth and adult user groups and is typically allowed in park reserves as long as certain guidelines are met for not impacting natural resource areas.

### Minnesota recreation trends

Given National, State, and Regional trends, water-based recreation is a big attraction for outdoor activities throughout Minnesota. Winter activities are also very important to Minnesotans as well, although the data might not reinforce this assumption. User participation cannot be a substitute for public outreach and stakeholder input. Trend data along with public input were evaluated for determining recreational programming opportunities for Big Marine Park Reserve.

### **OTHER TRENDS AFFECTING RECREATION**

The Federal Centers for Disease Control estimates that in 2006 20-24 percent of Minnesota adults were obese. Obesity is a key predictor for many future health problems, including diabetes. Lack of adequate exercise – partially resulting from inadequate outdoor recreation facilities or opportunities – is often cited as a contributor to obesity. Many young people are not getting enough exercise and face future health risks as a result.

The study identifies that outdoor recreation can be a part of a solution to this problem. The economic health of the state relies on continued use and enjoyment of our outdoor recreation resources. Availability of a wide range of outdoor recreation opportunities is one of the factors most often cited as contributing to the state's perceived high quality of life. Participation in outdoor recreation may correspond to a greater interest in and support for measures to protect land, facilities and resources necessary to ensure those same activities are available for future generations.

# Chapter 3: Public Process and Findings

## OVERVIEW



All stakeholders involved in development of this master plan were given the opportunity to provide comment and feedback during the design process. Technical Advisory Committee meetings, Public open houses as well as meetings with the Parks and Open Space Commission allowed for the exchange of ideas and information for refining the development of the final master plan document.

In order to engage all agency stakeholders in the master planning process, a Technical Advisory Committee was formed to gather input and feedback throughout the planning process. Representatives from the following agencies were represented on the TAC:

- City of Forest Lake
- City of Hugo
- City of Scandia
- May Township
- Washington County Parks and Open Space Commission
- Carnelian-Marine Watershed District

A kick off meeting was held on September 15, 2009 to gather input and feedback for the establishment of a development program for the park. A site tour of the park reserve was conducted with the TAC on October 7, 2009 to gain a better understanding of existing site conditions and identifying issues and opportunities for new park development. Alternative concepts for the layout and location of new park amenities were presented to the TAC on October 27, 2009 for their review and feedback and a final concept plan was presented for approval on December 17, 2009.

### **OPEN HOUSE MEETING COMMENT AND FEEDBACK**

In addition to meetings with the Technical Advisory Committee (TAC), updates were provided to the Park and Open Space Commission during development of the master plan document. Two open house meetings were also held with the general public to gather input and feedback on development of the master plan. Programming alternatives and their locations within the park were presented for review and comment and subsequently refined into a preferred master plan concept.

The first public open house was held on October 21, 2009. Existing park site inventory and analysis information was presented as well as park programming activities being considered for the park. Several preliminary layout concepts for park activity areas were also prepared and displayed for comment and feedback. Some of the feedback from this preliminary meeting contained the following comments:

- Locate all new vehicular entrances to the park reserve along Manning Avenue to minimize the potential for increased traffic along May Avenue.
- Incorporate equestrian loop trail system south of CSAH 4.
- Do not locate modern campground facility on northwest corner of the park along Manning Avenue because of noise and traffic impacts on residential neighborhood north of 185th Street.
- Incorporate a mountain bike trail system somewhere in park.
- Locate active use recreational amenities away from sensitive natural resource areas.

A second public open house was held on February 24, 2009. Information boards provided a comprehensive display outlining the planning and development history of the park reserve, the design process used to locate recreational amenities, and final recommendations for the updated master plan. Additional feedback and comment was received by the general public and refined in to the final master plan document. Some of the feedback from this meeting contained the following comments:

- Preferred location for the equestrian trailhead on 165th Street along May Avenue.
- Preferred location of the modern campground facility on the northeast corner of the park which minimizes impact on adjacent residents.
- Concern about noise and light pollution generated by group camping facilities located near 165th Street entry along May Avenue.
- Provide an adequate vegetation buffer between special use facility on northwest corner of the park and residential neighborhood north of 185th Street.
- Support for the diversity of hard and soft surface trail types proposed south of CSAH 4.

All open house exhibits were also posted on the County web site for public review and comment, and draft copies of the master plan document were made available for review at the local County library.

See Appendix C for a list of all recorded meeting comments.

# Chapter 4: Existing Conditions Inventory

## OVERVIEW



VIEW LOOKING WEST FROM BIG MARINE LAKE

As land is acquired within the park boundary, it is recommended that a comprehensive, long-term approach to natural resources restoration and management be implemented for the park reserve. The following section provides an overview of current park development, historical and existing conditions of natural resources and ecological systems within Big Marine Park Reserve and the surrounding adjacent landscapes.

## CURRENT PARK DEVELOPMENT

Phase I improvements for the park reserve were completed in 2008. Site improvements included the development of a new park access drive, parking lot facilities, an updated boat landing and parking area, walking and biking trails, a sand beach area, and informal picnic and playground areas. Building improvements included the addition of a new welcome center, restroom and beach building, and a lake overlook picnic shelter. All site and building improvements were implemented to minimize impacts on surrounding natural resource amenities and sustainable design practices were used for treating storm water runoff and directing it away from wetlands and surface water. Durable, low maintenance building materials were also used for the construction of building facilities.

## EXISTING NATURAL RESOURCES AND ECOLOGICAL SYSTEMS

Big Marine Park Reserve is comprised of diverse natural systems. Ecological restoration and management, natural resources preservation, land stewardship, and water resources management are important priorities for this park. This section provides an overview of the natural resources and ecological systems contained within the park reserve, the following data has been analyzed to develop broadbased ecological stewardship priorities.

### SURFICIAL GEOLOGY:

The Big Marine Park Reserve represents one of the finest remnants of unique glacially-formed geology. The undulating gravelly formations present in roughly the northern half of the Park, a signature of the St. Croix Moraine Complex, were deposited as the Superior Lobe of the Wisconsinan Glaciation advanced and retreated approximately 20,000 years ago. Big Marine Lake formed during this period of glacial retreat as a giant ice block which was buried in sediment. As the ice block melted the sediment blanket collapsed to form the lake as we now know it. The southern portion of the Park is more poorly drained and with finer, more calcareous loamy soils, a fingerprint of the Grantsburg Sublobe of the Des Moines Lobe which retreated approximately 10,000 years ago.

### SOILS:

Soil profiles provide clues as to characteristics of plant communities that once grew on them. The Natural Resource Conservation Service (NRCS) Soil Survey for Washington County reveals much about the pre-European settlement vegetation once present within the park reserve as well as guidance on managing target plant communities.

At a generalized scale County soil mapping units can be grouped into larger categories with relationships to past vegetation associations and plant communities. For purposes of this Master Plan, and as depicted in Table 4-1, soil mapping within the Park is divided into 4 major categories, described as follows:

At a more refined scale potential forest and prairie restoration areas can be subdivided into more specific plant  
**TABLE 4-1: SOIL MAPPING**

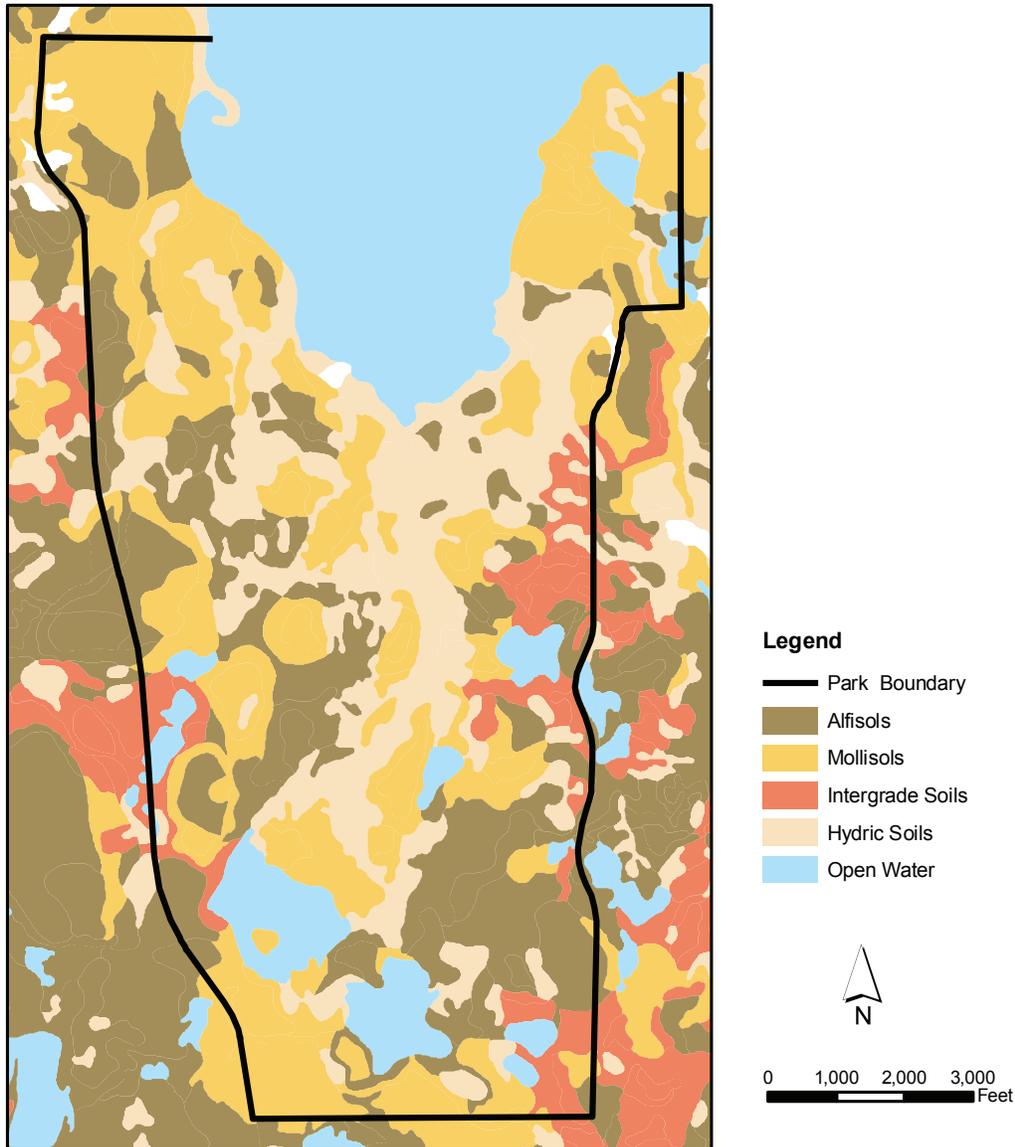
Summary of Soil Mapping and Relevance to Natural Resource Management	
Soils	Plant Communities
Forest Soils (Soil Order: Alfisols)	Oak Forest (central) Mesic Subtype in drier Alfisols, Maple-Basswood Forest in more moist or less fire-prone areas, Floodplain Forest in low-lying areas.
Prairie Soils (Soil Order: Mollisols)	Mid-height Prairie in the most well or excessively-drained Mollisols, Tallgrass Prairie in areas lower on the landscape or with slightly more moist soils.
Savanna Soils (Intergrade Soils)	Areas mapped as Mollic Alfisols or similar likely formed under Savanna conditions, perhaps more forest-like during wet climatic cycles and more prairie-like during dry fire-prone climatic periods.
Hydric Soils (Various Soil Orders)	Hydric soils present outside of the boundaries of existing wetlands indicate the past presence of wetlands prior to drainage.

Source: NRCS Soils Data

communities based on several characteristics such as landscape position along a toposequence (i.e. shoulder of slope, toe of slope), degree of slope, aspect, and potential exposure to wildfire. Note that the one remnant of Maple-Basswood forest inventoried by the MCBS in the Park is located along the fire-protected eastern shore of Mud Lake. Landscape clues such as this can help to guide future restorations of similar plant communities. Similarly, prairie restoration areas would be subdivided into those areas that are subjected to hot and dry conditions suitable for short to mid-height native prairie on down to areas lower on the landscape and with more soil moisture suitable for tallgrass prairie.

It should be noted that soil mapping is not an absolute indicator of past vegetation nor is it necessarily a determinant of target plant communities. During long periods of fire suppression, e.g. since European settlement, areas that were once prairie or savanna tend to succeed to a climax forested community regardless of soil type present. Because of fire suppression, several high quality remnants of Oak Forest (central) Mesic Subtype inventoried by the Minnesota County Biological Survey (MCBS) within the Park are partly on Mollisols (prairie soils) and partly on Alfisols (forest soils).

FIGURE 4-1: SOIL TYPE

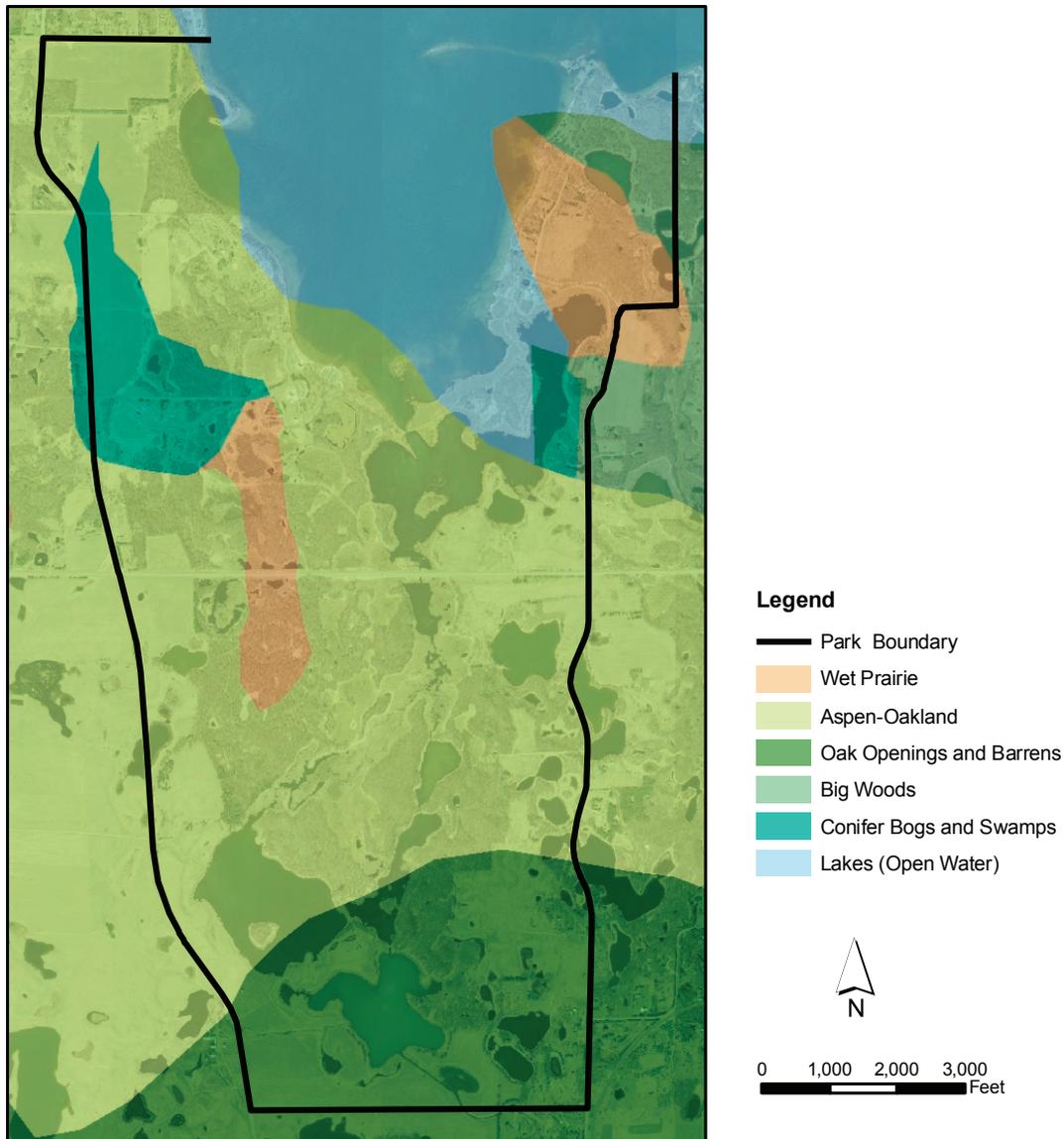


Source: NRCS Soils, SSURGO Database

## HISTORICAL VEGETATION ASSOCIATIONS

According to vegetation data at the time of European settlement circa 1850 of Minnesota (Marschner, 1974), the vegetation of the Big Marine Park Reserve and surrounding landscape was comprised of aspen-oak dominated forests and woodlands, oak openings and barrens, mixed hardwood / pine forests, big woods (maple, basswood, oak) forests with inclusions of conifer bogs and swamps, wet prairies, and open water lakes (Figure 4-2). These pre-settlement plant communities that were located in the Big Marine Park Reserve boundary are further described as follows:

FIGURE 4-2: PRE-SETTLEMENT VEGETATION



Source: 2009 FSA Color Aerial, DNR Pre-settlement Vegetation Data

### Aspen-Oak

Aspen-Oak Lands are deciduous forests and woodlands dominated by quaking aspen, red oak, white oak, and burr oak. These forests and woodlands tend to have closed to partially closed canopies and are more mesic plant communities than Oak Openings and Barrens (which tend to be drier and more open, fire dependent systems).

### Oak Openings and Barrens

Oak Openings and Barrens are grassland, savanna, and woodland systems dominated by dry, mesic, and wet prairie grasses and forbs, with open grown oaks co-dominant. These systems tend to occur on drier, well drained soils types, and have frequent disturbance from fire in a natural landscape.

### Mixed Hardwood and Pine Forests

Mixed Hardwood and Pine Forests are mixed deciduous / coniferous forests that occur on rolling glacial moraine in northern Washington County. These forests are closed canopy comprised primarily by oak, maple, basswood, and pine species. These forests tend to be cool mesic forest systems with infrequent fire and natural disturbance.

### Big Woods Hardwood Forests

Big Woods Hardwood Forests are mesic deciduous forests that are dominated by sugar maple, basswood, oaks, and other mesic deciduous hardwood species. These mesic forest types are closed canopy, and occur on glacial till and in ravines along rivers in Washington County. Big Woods Hardwood Forests are not frequently disturbed by fire or other natural disturbances.

### Conifer Bogs and Swamps

Conifer Bogs and Swamps are lowland coniferous systems occurring in isolated depressional basins in northern Washington County. These systems are most commonly dominated by tamarack, but may also have white cedar and black spruce, as well as dense shrub layers dominated by alder and bog birch. These wetland communities often form on sedge peat that accumulates over thousands of years.

### Wet Prairies

Wet Prairies are herbaceous wetland systems dominated by mesic to wet prairie grasses and forbs. These native herbaceous wetland plant communities were historically maintained by frequent fire in the landscape. Wet Prairies support a very diverse array of native grasses, sedges, and wildflowers.

### Open Water

Open Water Lakes mapped in the area include the larger lakes of northern Washington County, including Big Marine Lake and Forest Lake. Such lakes provide important water resources, breeding habitat, and fisheries for native animals and plants within the Big Marine Park Reserve and adjacent landscapes.

## SURFACE WATERS AND WETLANDS

### SURFACE WATERS

Several lakes including Big Marine Lake, Mud Lake, Turtle Lake, and several unnamed smaller lakes are present within Big Marine Park Reserve. Big Marine Lake has no surface water inlet and the outlet wier is located at the south end of the Lake. Surface water levels on Big Marine Lake and other smaller lakes have fluctuated dramatically over the past 150 years. Ground water seepage, largely derived from precipitation trends, is a major hydrologic contributor to lake levels. Surface water flows from the south end of Big Marine Lake through a water level control structure to Mud Lake, Turtle Lake and exits Turtle Lake via a channelized ditch on the southeast end of the park.

Big Marine Lake is described as having good water quality; however, because of atmospheric deposition of Mercury, the Lake is on the MPCA 303d list of impaired waters. Phosphorus levels are relatively low and secchi disk clarity are quite good. Mud Lake, just south of Big Marine Lake is on the 303d List of Impaired Waters for excess nutrients. Lakes within the Park Reserve provide great opportunities for passive and consumptive recreation including fishing, canoeing, and wildlife viewing.

### WETLANDS

The Big Marine Park Reserve is endowed with many diverse wetland types. Rich fen, wet prairie, sedge meadow, emergent marsh, aquatic bed, alder swamp, and forested wetlands are situated between upland and lacustrine systems within the Park Reserve. The landscape position of these wetlands in relation to lakes within the Park enhances their function as sediment and nutrient filters as well as a means of replenishing hydrology to adjacent lakes.. Wetlands within the Park Reserve provide important habitat for wildlife used for nesting, foraging, loafing, and traveling corridors throughout the Park and beyond. Several wetlands within the Park Reserve have been inventoried by the Minnesota County Biological Survey (MCBS) for their unusually high floristic diversity. These inventoried wetland remnants such as rich fen, wet prairie, and alder swamp are precious jewels and reminiscent of pre-European settlement plant communities. Several of these inventoried wetland communities harbor rare plant species such as the tubercled rein-orchid (*Platanthera herbiola var. flava*), lance-leaved violet (*Viola lanceolata*), and the halberd-leaved tearthumb (*Polygonum arifolium*).



View of Big Marine Lake backwater complex on south end of lake

## LAND COVER CLASSIFICATION CATEGORIES

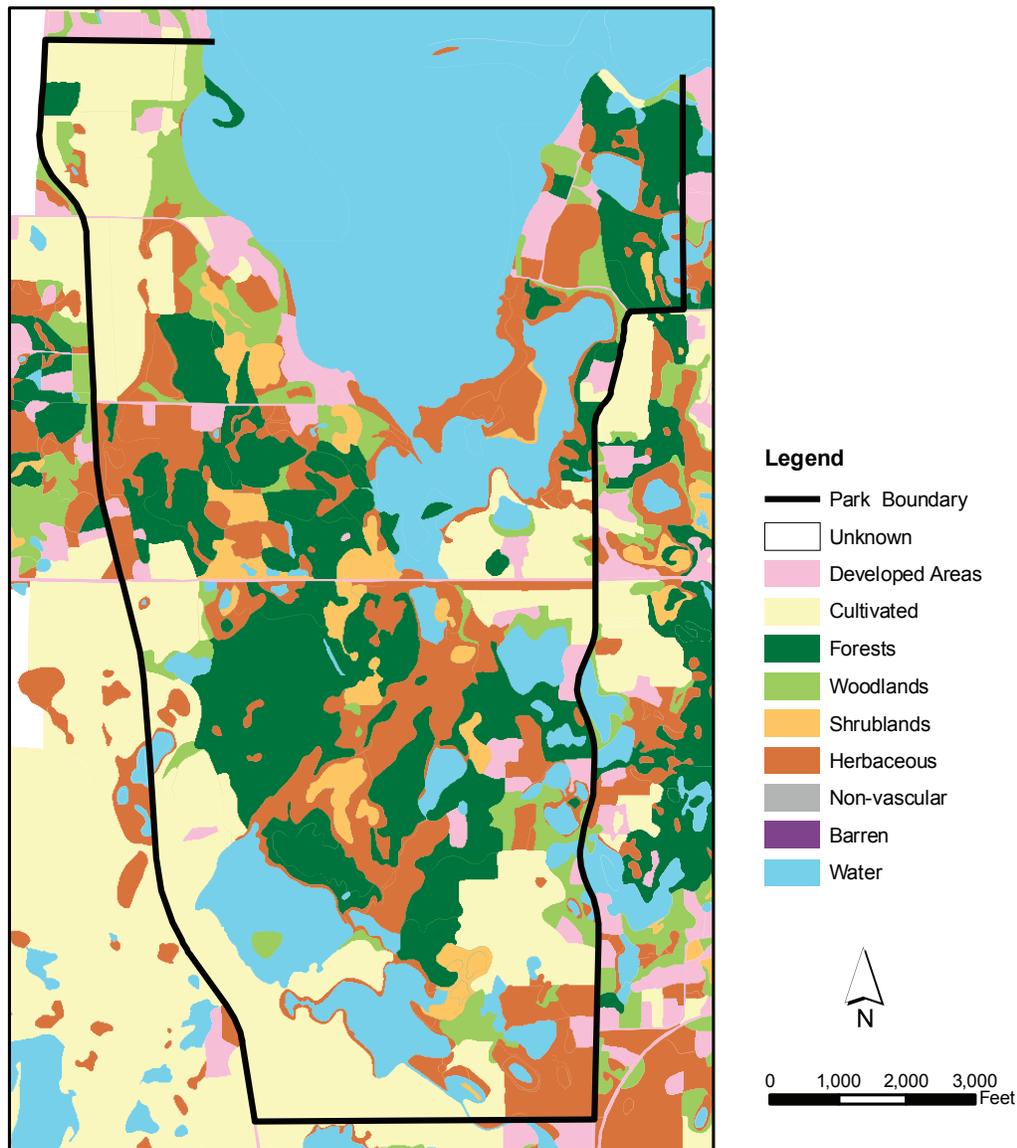
Based on 2007 Minnesota Land Cover Classification System (MLCCS) data, Big Marine Park Reserve’s master plan area is comprised of seventy (70) unique land cover types. For the purposes of large scale analysis and master planning, these land cover types can be grouped into the following land cover categories: developed land, agricultural land, natural communities, and open water cover types. (See Figure 4-3) The percentage of these land cover types for Big Marine Park Reserve can be seen in Table 4-2.

TABLE 4-2: LAND COVER

Land Cover Type	Acres	Percent
Agricultural or Pasture Land	475	26%
Developed Land	132	7%
Natural Communities	660	37%
Open Water Systems	533	30%
<b>Total</b>	<b>1,800</b>	<b>100%</b>

Source: SRF Compiled from DNR MLCCS Data

FIGURE 4-3: LAND COVER



Source: DNR MLCCS Landcover Data

## MINNESOTA COUNTY BIOLOGICAL SURVEY-INVENTORIED PLANT COMMUNITIES

Plant community remnants inventoried by the Minnesota County Biological Survey (MCBS) represent windows into the landscape of our pre-European settlement past. Some indicators of modern human disturbance may be evident in these remnants; however, they retain a characteristic structure and plant assemblage that clearly identifies them as important extant examples of our natural heritage. Modern disturbances may include grazing, erosion, logging, suppressed fire regime, and limited development. Often ecological disturbance is inferred from the presence of disturbance-tolerant or disturbance-adapted vegetation. The following provides a description of the remnants of high ecological quality inventoried within Big Marine Park Reserve and specific management concerns.

### OAK FOREST (CENTRAL) MESIC SUBTYPE

Washington County has had a long agricultural history. Few forests were spared the deleterious effects of cattle grazing. In plant communities where grazing has been an important disturbance, constituent plant assemblages may be divided into ‘grazing increasers’ and ‘grazing decreaseers’. Grazing increasers are those plants that cattle tend to avoid, often thorny species such as raspberries and blackberries (*Rubus spp.*), prickly ash (*Xanthoxylem americanum*), multiflora rose (*Rosa multiflora*) or plant species that flourish in localized early successional habitat such as along disturbed cattle paths. Grazing increasers might be native or non-native plant species; however, grazing enhances their prevalence beyond what would be found in an undisturbed state. Grazing decreaseers are those plants that cattle tend to favor while foraging.

Fire suppression for the past 150 years has encouraged a uniform tree age structure in remnants of the Oak Forest (Central) Mesic Subtype. Further, shrub density has increased beyond what would be found in forests subjected to a more natural burn regime. Increased shrub density and a more closed tree canopy result in shading and poor tree recruitment. Acorns or other tree fruits typically have enough nutrients to sustain them if germination occurs quickly; however, with limited light gaps in the canopy, germination might be delayed beyond seed viability.

### MAPLE-BASSWOOD FOREST

Past ecological damage to remnants of Maple-Basswood forest include selective logging and grazing. Typically Maple – Basswood forests are adapted to a slightly more moist hydrologic regime as compared to the drier Oak Forest (Central) Mesic Subtype. As such, natural fires on Maple – Basswood forests occurred considerably less frequently than on the drier Oak Forest.

Selective logging is evident in Maple – Basswood Forest as an abundance of multiple-trunked basswoods and relatively uniform tree age structure. Over-grazing tends to encourage the growth of thorny shrub species similar to grazing effects in Oak Forest.

### SHRUB SWAMPS/ ALDER SWAMPS

Agricultural ditching and drainage and infestations of invasive plant species are the major threats to extant remnants of Shrub Swamps and Alder Swamps. The organic soils (mucks and peats) that typically underlie Shrub Swamps decompose and volatilize after prolonged drainage. Reed canary grass (*Phalaris arundinacea*) readily invades Shrub Swamps/ Alder Swamps especially in a partially drained condition.

### RICH FEN (MINNESOTA'S TRANSITIONAL SECTION)

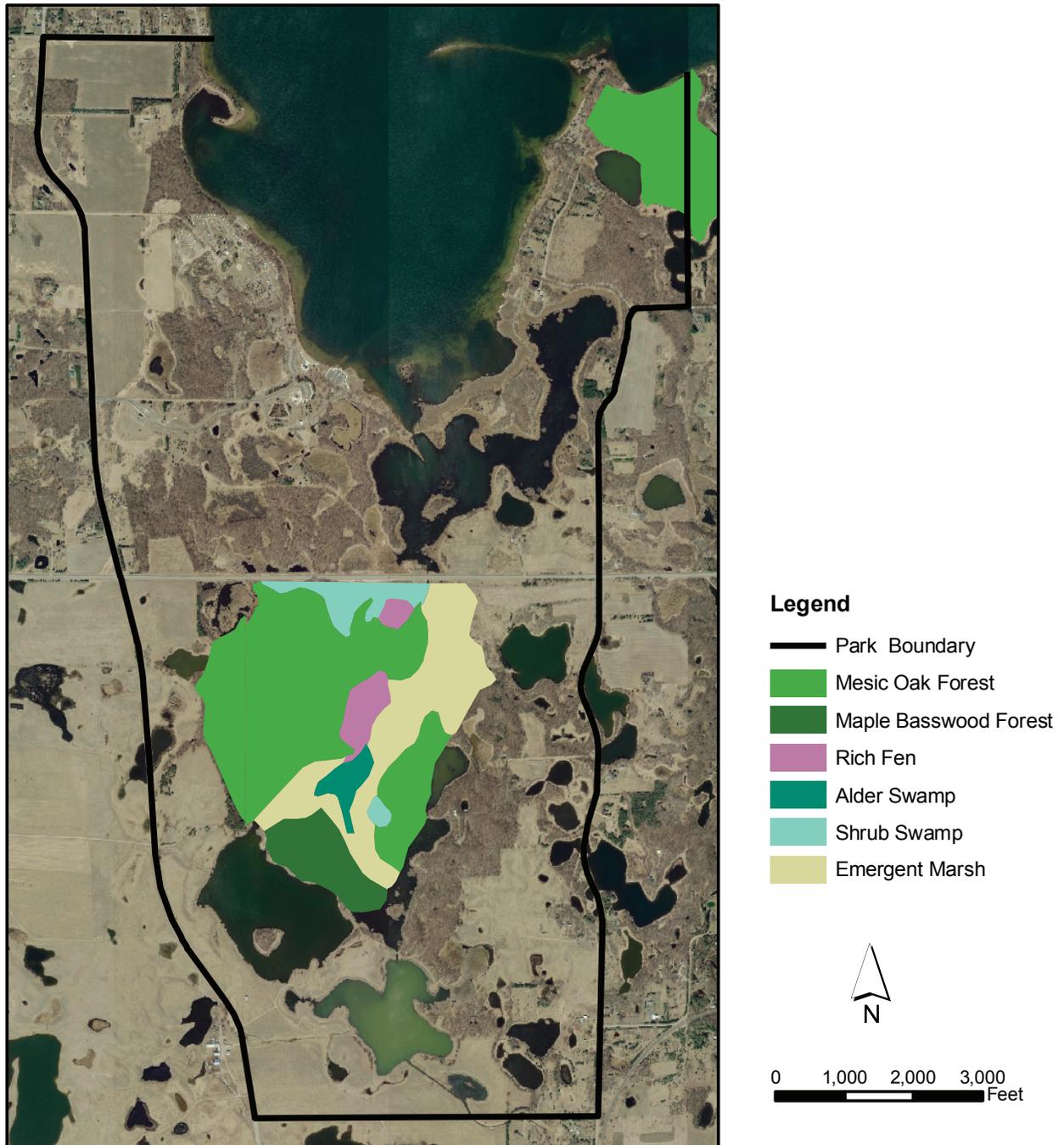
Rich fens are threatened by ditching and drainage and infestations of invasive plant species such as reed canary grass (*Phalaris arundinacea*). In a drained state the organic soils that underlie rich fens tend to decompose, slowly evaporate and disappear. Rich fens are ground water-fed and provide a unique ground water chemistry

that support an assemblage of plants adapted for these conditions. As such, rich fens are adversely impacted by diversions of ground water.

### WET PRAIRIE

Wet prairies typically have a more seasonal hydrologic regime than other wetland types with more permanent wet conditions. As such, wet prairies are particularly susceptible to agricultural drainage or conversion to pasture and consequent invasion by exotic plant species

FIGURE 4-4 MINNESOTA COUNTY BIOLOGICAL SURVEY



Source: DNR MCBS Native Plant Communities Data

## IMPORTANT PLANTS AND WILDLIFE

To protect rare species requires protection of their habitat. Important plants inventoried at Big Marine Park Reserve include the halberd-leaved tearthumb (*Polygonum arifolium*), the lance-leaved violet (*Viola lanceolata*), and the tubercled rein-orchid (*Platanthera flava* var. *herbiola*). Important wildlife observed within the Reserve include Blanding’s turtle (*Emydoidea blandingii*), and the red-shouldered hawk (*Buteo lineatus*), and sandhill crane (*Grus canadensis*). Table 4-3 summarizes the state and federal listed status of these species and their habitat requirements.

TABLE 4-3

Summary of Important Plant and Wildlife Species at the Park Reserve

Plant Species		
	Listed Status	Habitat Requirements
Halberd-leaved tear thumb	Not listed or of Special Concern	Shallow marshes, wet meadows, wet prairies
Lance-leaved violet	State Threatened	Most seasonally wet herbaceous plant communities such as wet meadows, wet prairies, rich fen.
Tubercled rein-orchid	State Endangered	Most seasonally wet herbaceous plant communities such as wet meadows, wet prairies, rich fen.
Wildlife Species		
Blanding’s Turtle	State Threatened	An abundance of wetland or riparian habitat in close proximity for sandy upland nesting habitat.
Red-Shouldered Hawk	Special Concern	Large contiguous stands of mature hardwood forest.
Sandhill Crane	Not listed or of Special Concern	Dependant on large mosaics of shallow herbaceous wetland interspersed with upland grassland or agricultural land.

Source: Critical Connections Ecological Services

Wetland habitat as described in Table 5-1, harbors rare plant species which require maintenance of a natural hydrologic function to control invasive plant species. Prolonged or diminished hydrological input often results from mismanagement of stormwater as it is conveyed from impervious surfaces in to drainageway, surface water, and wetland areas. A natural wetland subjected to a high degree of hydrologic bounce will succeed to a non-diverse plant community comprised solely of species that can withstand such rigorous conditions. Similarly, unchecked infestation of invasive plant species, e.g. reed canary grass and narrow-leaved cattail, will lead to a near monoculture at the expense of native plant species, especially the rare ones.



Blanding’s Turtle

# Chapter 5: Natural Resources Stewardship and Water Resources Management

## OVERVIEW



BIG MARINE LAKE SHORELINE BUFFER AREA

Big Marine Park Reserve will provide visitors with an opportunity to interact with a wide variety of ecological communities and landscapes including viewing of rare plant and animal species. Preservation of these large tracts of contiguous habitat, are important and need to be carefully integrated with park development and programming.

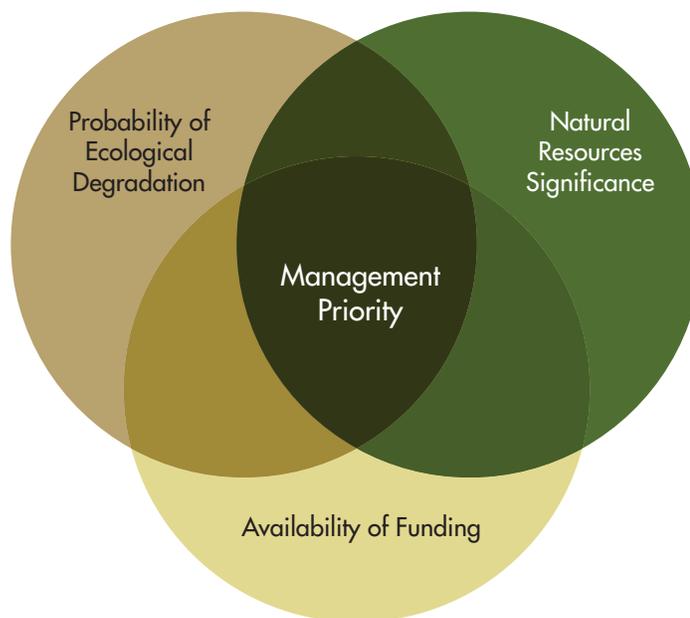
The Park Reserve will also provide an ecological buffer around a significant portion of Big Marine Lake, which is described in the Watershed Management Plan (2009) as an exceptionally clean lake, despite slightly elevated summer phosphorus levels. Best Management Practices (BMPs) implemented throughout the Park Reserve can strategically intercept and contain phosphorus to maintain clean water quality in the Lake.

## NATURAL RESOURCES – ECOLOGICAL STEWARDSHIP VISION

The long-range ecological stewardship vision of Big Marine Park Reserve should be viewed on two scales; establishing an interconnected habitat within the park boundary as well as providing a wildlife habitat corridor on a regional scale. Regional ecological restoration challenges within the Park Reserve must be prioritized with respect to three factors;

- **Significance of the plant community resource.** Plant communities may be considered significant for several reasons - perhaps for their constituent high floristic diversity or perhaps for the necessary habitat they provide for a wildlife species. An assemblage of plant communities may also be considered significant if it provides for varied habitat needs of species such as Blanding's turtle (*Emydoidea blandingii*). Plant communities within the Park Reserve that have been inventoried by the MCBS should be considered as high priorities for management activities. These communities are windows into our rich past. Other areas, perhaps recently row-cropped, may now represent only very early successional forbland and non-native grassland. As such – major management activities on these severely disturbed plant communities might appropriately be delayed. It should be noted that such ecologically disturbed or early successional plant communities may have a high probability of invasive plant infestations. If uncontrolled, such infestations will spread rapidly - eventually into the plant communities with high natural quality.
- **Probability of ecological degradation.** Immediate ecological degradation may occur as a result of erosional processes, nearby infestations of invasive plant species, or inappropriate human use. Slower more long-term degradation may occur as a result of an inappropriate burn regime, either too frequent or with excessive inter-burn periods. Careful mapping of infestations of invasive plants can help to prioritize weed control efforts by demonstrating how imminent their spread is in relation to high quality plant communities.
- **Funding.** Identifying funding sources for managing natural resource areas should be a priority for the park reserve. A comprehensive strategy should also be developed for restoring degraded natural resource areas within the park.

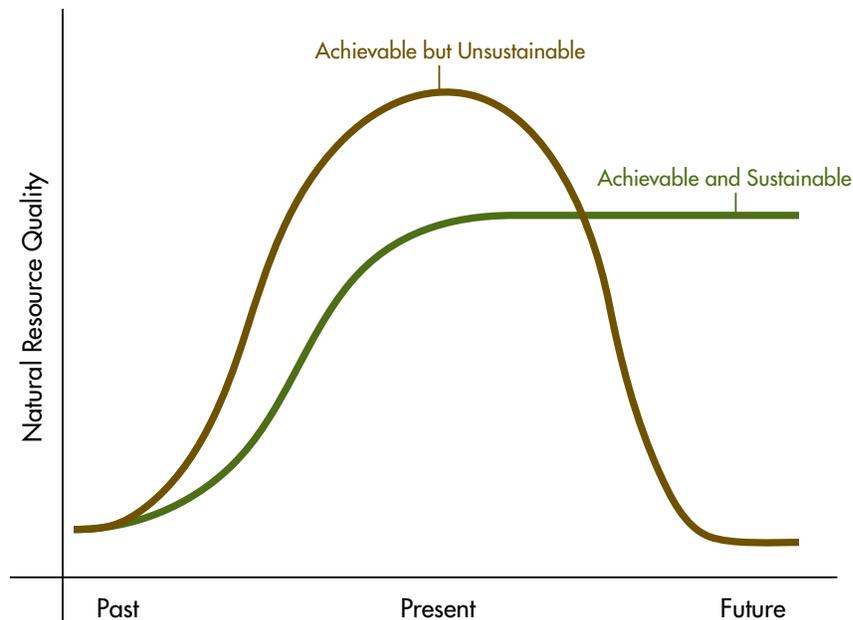
FIGURE 5-1: STRATEGY FOR NATURAL RESOURCE MANAGEMENT PRIORITIZATION



## ACHIEVABILITY AND SUSTAINABILITY OF ECOLOGICAL STEWARDSHIP PROGRAMS

With an abundance of funding, time, and natural resource management, a high quality pristine plant community can be achieved. However, natural resource managers rarely have the luxury of unlimited funding sustained over a very long time horizon. Thus, what might be achieved in the short run may not be sustainable from a funding perspective in the long run. To truly maintain in perpetuity a plant community as pristine or representative of pre-European conditions would require fastidious weed control and a burn regime that staffing limitations simply could not support. Given the reality of fluctuating management funding – it will be the most realistic choice to restore a plant community toward an endpoint that is sustainable.

FIGURE 5-2: ACHIEVABILITY AND SUSTAINABILITY OF NATURAL RESOURCE MANAGEMENT



Source: SRF

### Ecological Perspective

Review of soils mapping, pre-settlement vegetation maps, e.g. Marschner's work based on notes from the original land survey, and familiarity with the lay of the land will provide direction to plant community restoration. Such analysis will help the natural resource manager to determine how proposed plant communities will fit on the restored landscape. Mapped and field-verified deep deposits of peat might suggest that a groundwater fed wetland once was present. Mapped and field-verified dry mollisols (prairie soils) might indicate that the area was once occupied by short to mid-height prairie. Mapped well-drained Alfisols (forest soils) might indicate that mesic oak forest was once present. Restorations that are not in harmony with appropriate substrates and factors such as slope and aspect will have a higher likelihood of failure and will require greater expenditure to maintain.

### Economic Perspective

Natural resource management activities on the Park Reserve must continually circulate throughout management units. Care must be taken to minimize, cost-effectively, potential ecological damage on a particular management unit given that some years may pass before major restoration occurs there. For example, maintaining a cover crop on an area slated for prairie restoration years away might be a cost-effective way to minimize the potential for invasive plant infestations. Using readily available woody debris to minimize rill or gully erosion might be a cost-effective way to minimize damage until funding becomes available to implement a more permanent solution.

# NATURAL RESOURCES – ECOLOGICAL STEWARDSHIP PLAN

## PLANT COMMUNITY REFERENCE CONTINUUM

Plant communities can be categorized along a continuum of ecological disturbance. The Natural Heritage plant community grading system is one method widely used in Minnesota. This system assigns a “Grade A” to plant communities that show near pristine pre-European settlement characteristics. On the other end of the disturbance continuum are those plant communities assigned a “Grade D” or less in which disturbance is so severe that the specific plant community might barely be recognizable.

Plant communities that are inventoried by the Minnesota County Biological Survey (MCBS) typically show minimal ecological disturbance and are assigned Grades A or B. Also, the Minnesota DNR Scientific and Natural Areas (SNA) has acquired some of the finest examples of native plant communities. MCBS-inventoried and SNA-acquired plant communities in close proximity to Big Marine Park Reserve provide examples of native communities at the high end of the ecological quality continuum.

Comparison of plant species assemblage of pristine versus disturbed plant communities helps to formulate a management plan for the subject plant communities within Big Marine Park Reserve. The pristine state may not be achievable ecologically or economically; however, tailored management such as weed control, burns, and planting can help move the floristic quality toward the high end of the continuum. The tables that follow compare characteristics of high quality and low quality plant communities and give specific examples of inventoried or acquired parcels near the Park Reserve.

TABLE 5-1: VEGETATION CHARACTERISTICS & MANAGEMENT CONSIDERATIONS

**Oak Forest (Central) Mesic Subtype Disturbance Continuum**

High Quality Characteristics		
<b>General Structure</b> <ul style="list-style-type: none"> <li>Varied age structure</li> <li>Several large canopy trees</li> <li>Typically narrow tree crowns indicative of high tree density throughout remnant history</li> <li>5%-50% shrub cover</li> </ul>	<b>Indicator Species</b> <ul style="list-style-type: none"> <li>Mix of red oak, white oak, pin oak, basswood</li> <li>Sub-dominants of bur oak, and several other canopy species</li> <li>Good herbaceous diversity though no characteristic herb species.</li> <li>Minimal invasive species in herbaceous and shrub strata.</li> </ul>	<b>Nearby Examples (Acquired Scientific and Natural Areas and Other Notable Remnants)</b> <ul style="list-style-type: none"> <li>Boot Lake SNA (Anoka County)</li> </ul>
Low Quality Characteristics		
<b>General Structure</b> <ul style="list-style-type: none"> <li>Evidence of selective logging, scattered large stumps</li> <li>Uniform tree age structure and low seedling recruitment</li> <li>Evidence of grazing and soil compaction</li> </ul>	<b>Indicator Species</b> <ul style="list-style-type: none"> <li>Increased predominance of disturbance adapted tree species such as box elder and green ash</li> <li>Abundance of raspberries, multiflora rose, prickly ash, European buckthorn, green briar, tartarian honeysuckle in the shrub stratum</li> <li>Abundance of garlic mustard, creeping charlie, and motherwort in the herbaceous stratum.</li> </ul>	
Protection and Management Considerations		
<b>Causes of Change</b> <ul style="list-style-type: none"> <li>Logging</li> <li>Livestock grazing</li> <li>Lack of post-settlement burn regime</li> </ul>	<b>Restorative Capacity</b> <ul style="list-style-type: none"> <li>Often highly restorable</li> </ul>	<b>Protection Strategy</b> <ul style="list-style-type: none"> <li>Conduct selective invasive weed control</li> <li>Manage with appropriate burn regime</li> <li>Encourage oak recruitment through planting and herbivory control</li> </ul>

Source: SRF

TABLE 5-1 :VEGETATION CHARACTERISTICS & MANAGEMENT CONSIDERATIONS (CONTINUED)

**Sand-Gravel Oak Savanna**

High Quality Characteristics		
<p>General Structure</p> <ul style="list-style-type: none"> <li>• Common in St. Croix Moraine</li> <li>• Potential stunted, gnarled, open-grown bur oaks and northern pin oaks on droughty soils</li> <li>• Potential groves of oaks in somewhat moist ravines</li> </ul>	<p>Indicator Species</p> <ul style="list-style-type: none"> <li>• Bur oak, pin oak, false solomon's seal, kitchen tails (rare)</li> <li>• Rich assemblage of prairie herbaceous species</li> </ul>	<p>Nearby Examples (Acquired Scientific and Natural Areas and Other Notable Remnants)</p> <ul style="list-style-type: none"> <li>• St. Croix Savanna SNA</li> </ul>
Low Quality Characteristics		
<p>General Structure</p> <ul style="list-style-type: none"> <li>• Some open grown oaks may remain. Prairie understory mostly converted to pasture grasses</li> </ul>	<p>Indicator Species</p> <ul style="list-style-type: none"> <li>• Kentucky Bluegrass, smooth brome, and fescue species</li> </ul>	
Protection and Management Considerations		
<p>Causes of Change</p> <ul style="list-style-type: none"> <li>• Agriculture conversion to pasture</li> </ul>	<p>Restorative Capacity</p> <ul style="list-style-type: none"> <li>• Potentially highly restorable</li> <li>• Erosion can be an issue on course, steep soils</li> </ul>	<p>Protection Strategy</p> <ul style="list-style-type: none"> <li>• Mark preservation open grown oaks</li> <li>• Remove brushy growth</li> <li>• Restore Prairie vegetation - seed drills</li> <li>• Plant additional</li> </ul>

**Maple – Basswood Forest Disturbance Continuum**

High Quality Characteristics		
<p>General Structure</p> <ul style="list-style-type: none"> <li>• Varied age structure of tree canopy</li> <li>• Highly shaded environment</li> <li>• Fertile loam substrate</li> <li>• Sparse evidence of selective logging</li> </ul>	<p>Indicator Species</p> <ul style="list-style-type: none"> <li>• Sugar maple, basswood, American elm are dominant tree stratum species</li> <li>• Shrub and sapling strata are dominated by hazelnut, pagoda dogwood, ironwood, and good sugar maple recruitment.</li> <li>• Rich assemblage of spring ephemerals in the herbaceous stratum is indicative of high quality.</li> </ul>	<p>Nearby Examples (Acquired Scientific and Natural Areas and Other High Quality Remnants)</p> <ul style="list-style-type: none"> <li>• Falls Creek Scientific and Natural Area (SNA), Northern Washington County</li> <li>• Brown's Creek (Stillwater, MN)</li> </ul>
Low Quality Characteristics		
<p>General Structure</p> <ul style="list-style-type: none"> <li>• Uniform age structure</li> <li>• Evidence of selective logging; scattered large stumps</li> <li>• Evidence of grazing, soil compaction</li> <li>• Abundant light gaps</li> </ul>	<p>Indicator Species</p> <ul style="list-style-type: none"> <li>• Abundance of disturbance adapted tree species (box elder, green ash)</li> <li>• Shrub/ sapling strata dominated by tartarian honeysuckle, European buckthorn, prickly ash</li> <li>• Low diversity or lack of spring ephemerals</li> <li>• Abundance of creeping charlie, enchanters nightshade (<i>Circaea lutetiana</i>), and garlic mustard in the herb stratum.</li> </ul>	
Protection and Management Considerations		
<p>Causes of Change</p> <ul style="list-style-type: none"> <li>• Logging</li> <li>• Livestock grazing</li> <li>• Invasion of exotic plant species</li> </ul>	<p>Restorative Capacity</p> <ul style="list-style-type: none"> <li>• Often highly restorable</li> </ul>	<p>Protection Strategy</p> <ul style="list-style-type: none"> <li>• Conduct selective invasive weed control</li> <li>• Fire used sparingly; not a fire dependent plant community</li> <li>• Encourage seedling recruitment through planting and herbivory control</li> </ul>

Source: SRF

TABLE 5-1 :VEGETATION CHARACTERISTICS & MANAGEMENT CONSIDERATIONS (CONTINUED)

**Shrub Swamp/ Alder Swamp Disturbance Continuum**

<b>High Quality Characteristics</b>		
<p>General Structure</p> <ul style="list-style-type: none"> <li>Substrates are low-lying deep deposits of organic mucks and peats</li> <li>&gt;50% shrub “canopy” of speckled alder</li> <li>Intact wetland hydrology</li> </ul>	<p>Indicator Species</p> <ul style="list-style-type: none"> <li>Speckled alder comprises &gt;50% of the shrub stratum, sub-dominant shrubs of red-osier dogwood, and others</li> <li>Scattered black ash, tamarack, red maple trees</li> <li>Dominants in herbaceous stratum are tussock sedge, lakebank sedge, bluejoint grass. Notable lack of invasives such as reed canary grass</li> </ul>	<p>Nearby Examples (Acquired Scientific and Natural Areas and Other Notable Remnants)</p> <ul style="list-style-type: none"> <li>Lyndon Cedarglade Park</li> <li>Spectacle Lake Wildlife Management Area</li> </ul>
<b>Low Quality Characteristics</b>		
<p>General Structure</p> <ul style="list-style-type: none"> <li>Exposed shrub and tree roots indicative of organic soil drainage</li> <li>Evidence of infestations of invasive shrubs and herbaceous plants</li> </ul>	<p>Indicator Species</p> <ul style="list-style-type: none"> <li>Shrub stratum dominated by invasives such as European buckthorn, glossy buckthorn, or alder buckthorn.</li> <li>Herbaceous stratum dominated by reed canary grass or narrow-leaved cattail, hummocks of Carex stricta may still be evident.</li> </ul>	
<b>Protection and Management Considerations</b>		
<p>Causes of Change</p> <ul style="list-style-type: none"> <li>Hydrologic modification</li> <li>Infestation with exotic plant species</li> </ul>	<p>Restorative Capacity</p> <ul style="list-style-type: none"> <li>Difficult to restore; fire during dry phase can destroy underlying peat and cause infestation of narrow-leaved cattail.</li> </ul>	<p>Protection Strategy</p> <ul style="list-style-type: none"> <li>Restore natural hydrology through ditch plugging</li> <li>Spot spray with appropriate herbicide only if known rare plant species will not be affected.</li> </ul>

**Rich Fen (Minnesota’s Transitional Section) Disturbance Continuum**

<b>High Quality Characteristics</b>		
<p>General Structure</p> <ul style="list-style-type: none"> <li>Developed on thick low-lying peat deposits</li> <li>Intact wetland hydrology</li> <li>Mostly an herbaceous stratum with sparse shrubs such as bog birch and steeple-bush</li> </ul>	<p>Indicator Species</p> <ul style="list-style-type: none"> <li>Three-way sedge, Small’s spikerush, several other native sedges, grasses, and forbs</li> </ul>	<p>Nearby Examples (Acquired Scientific and Natural Areas and Other Notable Remnants)</p> <ul style="list-style-type: none"> <li>Boot Lake SNA</li> <li>Carlos Avery Wildlife management Area: Wyoming Dunes</li> </ul>
<b>Low Quality Characteristics</b>		
<p>General Structure</p> <ul style="list-style-type: none"> <li>Evidence of hydrologic modification; excessive input or evidence of drainage</li> <li>Shrub species more evident</li> </ul>	<p>Indicator Species</p> <ul style="list-style-type: none"> <li>Reed canary grass and narrow-leaved cattail is dominant</li> <li>Few native sedges, grasses, and forbs present</li> </ul>	
<b>Protection and Management Considerations</b>		
<p>Causes of Change</p> <ul style="list-style-type: none"> <li>Hydrologic modification</li> <li>Infestation with exotic plant species</li> </ul>	<p>Restorative Capacity</p> <ul style="list-style-type: none"> <li>Difficult to restore; fire during dry phase can destroy underlying peat and cause infestation of narrow-leaved cattail.</li> </ul>	<p>Protection Strategy</p> <ul style="list-style-type: none"> <li>Restore natural hydrology through ditch plugging</li> <li>Spot spray with appropriate herbicide only if known rare plant species will not be affected.</li> </ul>

Source: SRF

**Wet Prairie Disturbance Continuum**

<b>High Quality Characteristics</b>		
<p>General Structure</p> <ul style="list-style-type: none"> <li>Richly diverse herbaceous stratum dominated by native hydrophytes including sedges, grasses, and forbs</li> <li>Shrubs, if present, are native hydrophytes</li> <li>Intact wetland hydrology</li> </ul>	<p>Indicator Species</p> <ul style="list-style-type: none"> <li>Great blazing star (<i>Liatris pycnostachya</i>), mountain mint (<i>Pycnanthemum virginianum</i>) and many other native herbaceous hydrophytes including grasses, sedges, and forbs)</li> <li>Notable lack of reed canary grass</li> </ul>	<p>Nearby Examples (Acquired Scientific and Natural Areas and Other Notable Remnants)</p> <ul style="list-style-type: none"> <li>Carlos Avery Wildlife Management Area; Twin Lakes, Zodiac Street, and Pool 16.</li> <li>Maplewood Nature Center; Jim's Prairie.</li> </ul>
<b>Low Quality Characteristics</b>		
<p>General Structure</p> <ul style="list-style-type: none"> <li>Low herbaceous diversity</li> <li>Over dense shrub stratum</li> <li>Evidence of hydrologic modification; excessive inputs or starved hydrology</li> </ul>	<p>Indicator Species</p> <ul style="list-style-type: none"> <li>Abundance of reed canary grass or narrow-leaved cattail</li> <li>Few native herbaceous hydrophytes</li> </ul>	
<b>Protection and Management Considerations</b>		
<p>Causes of Change</p> <ul style="list-style-type: none"> <li>Hydrologic modification</li> <li>Infestation with exotic plant species</li> </ul>	<p>Restorative Capacity</p> <ul style="list-style-type: none"> <li>Difficult to restore; fire during dry phase can destroy underlying peat and cause infestation of narrow-leaved cattail.</li> </ul>	<p>Protection Strategy</p> <ul style="list-style-type: none"> <li>Restore natural hydrology through ditch plugging</li> <li>Spot spray with appropriate herbicide only if known rare plant species will not be affected.</li> </ul>

## TARGET PLANT COMMUNITIES

The Natural Resource Management Plan for the Park refers to areas of plant community preservation, restoration, and expansion. Preservation Areas in Figure 5-3 are derived from polygons mapped by the Minnesota County Biological Survey (MCBS). Restoration areas for forested remnants are derived from the Minnesota Land Cover Classification System (MLCCS). Restoration areas for target prairies and savannas are based on the Washington County Soil Survey; mapped Mollisols for prairies and Intergrade soils (Mollic Alfisols) for savannas. Expansion areas depicted refer specifically to soils mapped as Alfisols but now occupied by non-forest plant communities.

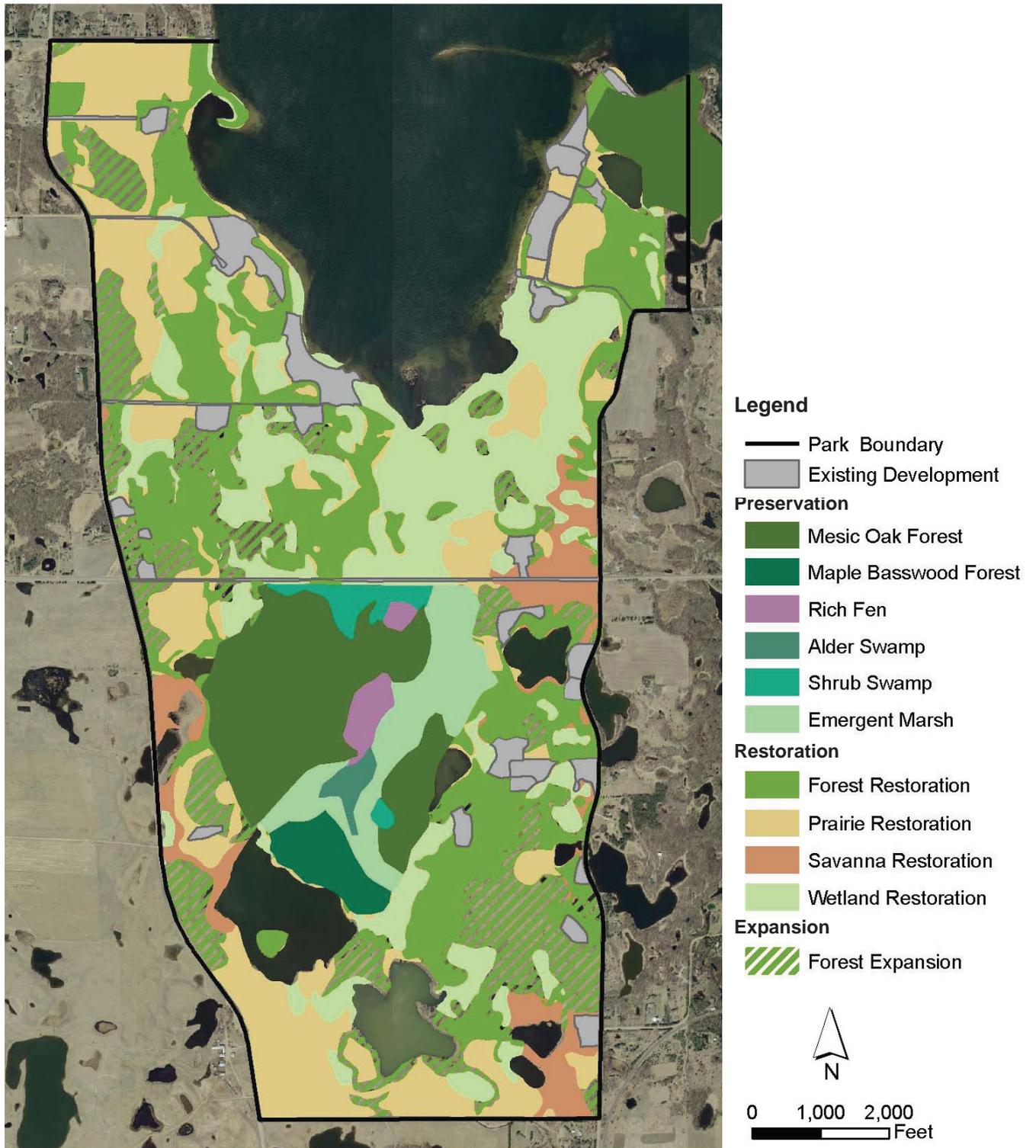
**Preservation Areas.** Preservation areas refers to plant communities with a notably diverse plant assemblage inventoried by the Minnesota County Biological Survey (MCBS). These plant communities are mostly located to the north and east of Mud Lake in the south central portion of the Park and also in the extreme northeastern corner of the Park. MCBS-inventoried plant communities include Oak (Central) forest - Mesic Subtype, Alder/Shrub Swamp, Rich Fen, Maple-Basswood Forest, and Emergent Marsh. Management activities on Preservation Areas will include invasive weed control to maintain a high degree of floristic quality.

**Restoration Areas.** Restoration areas are plant community remnants that have not been inventoried by MCBS but they are still recognizable as degraded remnants of a particular plant community. An example would be degraded mesic oak forest. Removal of undesirable or invasive tree, shrub, or herbaceous species, a burn regime, and augmentation with native oak forest species would move the floristic quality of the remnant toward that of its “Preservation Area” counterpart. For areas targeted to become prairie or savanna within the Park, we adhere to the term “restoration area” despite recent land use as row cropping, pasture, or old field. Review of soil mapping and pre-settlement vegetation maps would reveal that prairie or savanna likely occupied these restoration areas prior to European settlement. Wetland Restoration Areas would be those areas where wetland floristic quality could be improved with invasive species management or where wetland size could be expanded by reversing past drainage efforts.

**Expansion Areas.** In the forest community context “Expansion Areas” are those remnants that were once occupied by forest as revealed by soil mapping (i.e. underlain by Alfisols) and pre-settlement vegetation maps but are now occupied by early successional old field. As the floristic quality of “Restoration Areas” improves over time, acorns and other seeds collected from them can be used to push their perimeters into “Expansion Areas” at a rate that would be economically sustainable, perhaps a few acres per year. Within the Park “Expansion Areas” is not a term that is applicable to prairie and savanna because currently there are no such extant plant communities.

**Existing and Proposed Development Areas.** There are approximately 132 acres of land within the park boundary classified as being impacted by existing or proposed development. These areas includes both existing and proposed park development as well as existing private development within the park boundary. Private development areas acquired by the County will be assessed on an individual basis and a determination made for the most appropriate type of natural resource restoration effort needed for these areas.

FIGURE 5-3: NATURAL RESOURCES MANAGEMENT PLAN



Source: 2009 FSA Color Aerial, DNR Data Compiled by SRF

## MOBILIZING STEWARDSHIP GROUPS

Stewardship groups can be mobilized cost-effectively to assist with management activities at Big Marine Park Reserve. Some management activities such as herbicide treatments, controlled burning, and aquatic weed harvesting (i.e. Eurasian watermilfoil) will require trained staff. Some invasive species removal, hand planting, placement of herbivory exclusion fences, native seed collection, or litter pick-up can be accomplished by stewardship groups. Entities such as Minnesota Conservation Corps (MCC), (i.e., <http://www.conservationcorps.org/>), local school groups, Great River Greening, the State and county-funded “Sentenced-to-Serve” program, Scouting groups, 4H groups, company-organized “green” groups, and Park-based volunteer lists can all play an important role in managing the built and natural environment within the Park. Volunteer groups will require supervision and planning to focus their efforts.

## OVERVIEW OF STEWARDSHIP TECHNIQUES

A variety of proven techniques can be used to improve the floristic quality of plant communities. Among these tools are controlled fire, weed control (chemical and hand picking), planting, and herbivory exclusion. Table 5-2 shows proven herbicide application techniques (sometimes in combination with burn regimes) for several key invasive plant species that either already are established at the Park Reserve or have a high likelihood of becoming established there.

Controlled burns often have a beneficial effect on the floristic quality of fire dependent plant communities such as upland prairies and mesic oak forest. A burn regime that emulates a natural burn frequency of these plant communities can be effective in reducing unwanted woody shrubs such as Eastern red-cedar (*Juniperus virginianas*), aspen (*Populus spp.*), and prickly ash (*Xanthozylem americanum*). Prescribed burning on upland prairies can also help to encourage warm season grasses such as little bluestem (*Schizachyrium scoparium*) and big bluestem (*Andropogon gerardii*) allowing them a competitive advantage over non-native cool season grasses such as smooth brome (*Bromus inermis*).

Controlled burns must be timed seasonally, and coordinated with chemical herbicide applications, in order to provide the maximum benefit. If not done thoughtfully, controlled burns can have the undesired effect of encouraging the growth of undesirable plant species. Some plant communities are not well adapted to frequent or hot fires such as the maple – basswood forest, forest type. Such plant communities typically became naturally established where they were somewhat protected by natural firebreaks such as ravines, streams, or lakes. Fire can be deleterious in peaty wetland plant communities - fire during drawdown can destroy the peat and encourage invasion by a monoculture of narrow-leaved cattail.

While fire can be beneficial to some fire-adapted plant communities, it can be disastrous to some wildlife if not thoughtfully planned. Nesting times of various wildlife species should be taken into account prior to undertaking a controlled fire. Only a small portion of a given plant community should be burned at one time. This allows wildlife small scattered standing unburned habitat in which to seek refuge.

TABLE 5-2

## Summary of Key Invasive Plant Species and Effective Control Techniques

Species	Technique	Notes and References
Reed canary grass	<ul style="list-style-type: none"> <li>• Glyphosate spray in late fall</li> <li>• Burn in early spring</li> <li>• Allow new shoots to emerge after burning,</li> <li>• Additional application of Glyphosate in mid to late spring</li> </ul>	Jacobson (2006); Vegetation Management Techniques
Leafy spurge	<ul style="list-style-type: none"> <li>• Tordon 21k application (spot spray or ATV mounted boom sprayer.)</li> <li>• Fire followed by herbicide is effective (don't use just fire – may stimulate growth)</li> <li>• Do not mow large infestations</li> </ul>	Biesboer and Koukkari (1990)
Smooth brome	<ul style="list-style-type: none"> <li>• Burn when tillers are elongating. Will reduce smooth brome infestation.</li> </ul>	Willson (1990) Willson and Stuebendieck (2000)
Canada thistle	<ul style="list-style-type: none"> <li>• Three (3) consecutive annual late spring burns is most effective</li> <li>• No early spring burns – may increase thistle density</li> </ul>	Evans (1984) Hutchinson (1992) Sather (1984) Smith (1985)
European buckthorn	<ul style="list-style-type: none"> <li>• Burn in early spring and fall if the subject plant community is fire adapted</li> <li>• Cut saplings and small trees after first hard frost</li> <li>• Apply oil-based 25% Triclopyr diluted in diesel fuel to freshly cut stumps</li> </ul>	Wisconsin Department of Natural Resources (1997)
Glossy buckthorn	<ul style="list-style-type: none"> <li>• Burn in early spring and fall if the subject plant community is fire adapted</li> <li>• Cut saplings and small trees after first hard frost</li> <li>• Apply oil-based 25% Triclopyr diluted in diesel fuel to freshly cut stumps</li> </ul>	Wisconsin Department of Natural Resources (1997)
Prickly ash	<ul style="list-style-type: none"> <li>• Burn in early spring and fall if the subject plant community is fire adapted</li> <li>• Cut saplings and small trees after first hard frost</li> <li>• Apply Garlon to freshly cut stumps</li> </ul>	Belwin Conservancy (2007)
Tartarian honeysuckle	<ul style="list-style-type: none"> <li>• Burn in early spring and fall if the subject plant community is fire adapted</li> <li>• Cut saplings and small trees after first hard frost</li> <li>• Apply oil-based 25% Triclopyr diluted in diesel fuel to freshly cut stumps</li> </ul>	Wisconsin Department of Natural Resources (1997)
Burdock	<ul style="list-style-type: none"> <li>• Spot spray Roundup to basal rosettes or mature plants.</li> </ul>	Whitson, T., et al. 1991. Weeds of the West.
Garlic mustard	<ul style="list-style-type: none"> <li>• Burn in early spring or fall for 3-5 years annually</li> <li>• Apply 1-2% Triclopyr herbicide in late fall or early spring</li> </ul>	Wisconsin Department of Natural Resources (1997)
Spotted knapweed	<ul style="list-style-type: none"> <li>• Repeated spring burns</li> <li>• Herbicides formulated for composites</li> </ul>	Mauer (1985) Watson and Renney (1974)
Purple loosestrife	<ul style="list-style-type: none"> <li>• Handpicking and removal using volunteer groups</li> <li>• Limited spot spraying with aquatic-approved herbicides</li> <li>• Take care that rare wetland plants are not herbicided</li> </ul>	

## WEED CONTROL

Weed control can be accomplished with hand picking, herbicide application, bio controls, or mechanical harvesting in the case of Eurasian water milfoil (*Myriophyllum spicatum*), present in Big Marine Lake. When planning for the use of herbicide application, natural resource managers should take into account known locations of rare plant species; inappropriate herbicide use could destroy them.

## HERBICIDE APPLICATION

Herbicide application must be tailored for each invasive species and plant community that is to be treated. Some herbicides are approved for aquatic use, some are not, some require an application license, and some do not. Herbicides might be applied with an ATV or truck-mounted boom sprayer for large areas of broadcast spraying, or with backpack sprayers for more localized infestations. Some herbicides are intended to be aerosolized with a sprayer, and some are intended to be “painted” on woody stumps with a brush or rag. Extreme care must be taken when applying herbicides close to known occurrences of rare plants.

## HAND WEED PICKING

Hand-picking in wet areas can work well for deep tap rooted invasives such as purple loosestrife (*Lythrum salicaria*). Care must be taken to transport the stems to a place where they can be dried and burned to ensure that they cannot re-establish. Hand picking is ineffective for weak-stemmed invasive plant species. Youth groups, educated in how to identify purple loosestrife and with proper supervision, can be an effective means of reducing the abundance of this invasive species.

## PLANTING

Appropriate planting techniques varies depending on the plant community to be restored. Hand planting seedlings or seeds is typically used for forested communities. Tractor or ATV-pulled seed drills might be used for large-scale prairie restorations. Washington County lies mostly in the Eastern Broad-leafed Forest Ecological Province, Minnesota and Northeast Iowa Morainal Ecological Section, and the St. Paul - Baldwin Plains Ecological Sub-section. Seed mixes used for restoration in the Park should be formulated to thrive within this ecological region. All seed mixes should be certified weed-free. Techniques and appropriate seed mixes are summarized below.

## PRAIRIE RESTORATION

Once invasive exotic plant species have been thoroughly controlled, prairie planting can begin. Seed mixes used by the Minnesota Board of Soil and Water Resources (BWSR) have proven to be effective if applied to appropriate site conditions and locations. Selection of appropriate native prairie seed mixes should take into consideration the following:

- **Available soil moisture.** Dry gravelly hilltops slated for prairie restoration would be ideal conditions for BWSR Seed Mix 35-221 “Dry Prairie General”, i.e. short to mid-height prairie vegetation. Areas slightly lower on the landscape but upslope from wetlands might be ideal for BWSR seed mix 25-241 “Mesic Prairie General”, i.e. tallgrass prairie vegetation. Both of these seed mixes derive from an ecological region in the State suitable for Washington County.

**Aesthetics.** Native prairie seed mixes will have a component of native grasses and native forbs, i.e. more brightly colored “flowers”. The russet fall colors of native bunchgrasses such as big bluestem (*Andropogon gerardi*), little bluestem (*Schizachyrium scoparium*) complement the brightly colored forbs - some blooming early in summer and some in early fall. In key restoration areas such as Park entrances or other areas highly visible to visitors, seed mixes can be augmented with additional brightly colored native prairie forbs. While such an explosion of colors may not normally be found in native plant communities, such a planting can enthuse visitors about native plants.

- **Motorist/ Recreational Trail Sight Lines.** Native tallgrass prairie vegetation can attain a height of 7 feet and, if planted close to Park roadsides and recreational trails, can create a visual barrier and limit sight distance. If unsafe sight lines are an issue concerning road and trail configurations within the Park, planted short to mid-height native prairie will increase sight distance.

## FOREST RESTORATION

The first phase of forest restoration is identification and marking of native trees that should remain intact and those disturbance-tolerant or non-native trees that should be removed. Professional loggers should be employed for tree removal. Typical tree species to be removed include box elder (*Acer negundo*), aspen (*Populus spp.*), European buckthorn (*Rhamnus cathartica*). The stumps of cut trees should be sprayed or painted with an appropriate herbicide to prevent sapling re-growth. Removed woody biomass can be transported to several local biomass-fueled power plants. Trees that should remain, if in healthy condition, are bur oak (*Quercus macrocarpa*), white oak (*Q. alba*), red oak (*Q. rubra*), and scattered birch (*Betula papyrifera*). Trees to remain intact should have a diverse age class including young, sub-mature, and mature.

Non-native, invasive shrubs such as European buckthorn, glossy buckthorn, and tartarian honeysuckle should be cut with pruners near the soil surface and stump-sprayed or painted with an appropriate herbicide. Woody biomass can be shredded and transported to a biomass burning power plant. Herbaceous invasives should be spot sprayed with herbicide.

Acorns should be collected from existing oak forest within the Park. Typically, only 1% of acorns produced each year escape herbivory to naturally germinate into seedlings. Thus, acorn collection can greatly increase the rate of successful seedling recruitment. This a great activity for volunteer groups. Acorns should be collected from living healthy trees and placed in breathable fabric or paper bags. Acorns should be separated based on species and placed in a large bucket of water to determine seed viability; those that float are not likely to germinate and should be disposed of - those that sink should be kept. Viable acorns should be planted in a nursery setting, perhaps established at the Park, then installed within appropriate management units in the Park after they have germinated. Planting density recommendations for oak seedlings vary from roughly 5 feet apart to 30 feet apart. Once oak seedlings are planted they must be protected from herbivory; several methods have been effective such as tubex tubing or ¼” metal grid hardware cloth. Seedling plantings should focus on areas in the forest that have good light penetration through the canopy.

### **SAVANNA RESTORATION**

Savanna restoration should begin by identifying those areas mapped with intergrade soils (e.g. Mollic Alfisols or Alfic Mollisols). If some of these areas are already occupied by high quality plant communities, then these plant communities should be preserved. Large oaks in good health should be identified and preserved - with appropriate management, they might once again attain the open grown crowns that characterize the savanna aesthetic. Undesirable tree, shrub, and herbaceous species should be removed as described in “Forest Restoration”. Native prairie should be planted first and allowed to stabilize for several years before scattered oak seedlings are planted within the prairie. Seedlings should be protected from herbivory as described above.

### **WETLAND RESTORATION**

Hydric soils situated upslope of wetland areas may provide good opportunities for wetland restoration. Typically wetland restoration would involve invasive species management and re-establishment of wetland hydrology to drained areas. Wetland hydrology might be re-established through simple methods such as ditch plugging or tile line demolition.

### **MAINTAINING WATER QUALITY**

Native vegetation buffers should continue to be established on all open water shorelines to minimize the potential for erosion and prevent contaminated runoff from draining directly in to surface water areas. Efforts should also be made towards working with private lakefront property owners within the park to establish shoreline buffers where needed and treating contaminated storm water runoff before it enters drainage ways and surface water areas.



# Chapter 6: Development Master Plan

## OVERVIEW



VIEW OF BEACH FACILITY ON BIG MARINE LAKE

The updated development master plan builds upon the initial vision cast for Big Marine Park Reserve to preserve and protect the abundance and diversity of natural resource amenities while making the park reserve more usable and accessible to park users. Enhancing the visual and physical connections to Big Marine Lake is also a main objective of the master plan. The public participation process allowed for recreational user groups, property owners internal and external to the park boundary, and elected officials to assist in guiding the parks future development and realize programming opportunities.

It is important to recognize that this updated master plan will continue to evolve as a planning document and will be further refined as property acquisition is realized and site improvements are implemented within the park. Additional input from all stakeholders should continue to be solicited as more detailed plans evolve during the planning and implementation process.

## MASTER PLAN CONTEXT

The overriding design challenge of Big Marine Park Reserve lies in protecting the quality and connectivity of its many valuable open water, wetland, and vegetation natural resource amenities. This also extends to the protection of land and water based wildlife habitat areas which can be easily impacted by park amenities and programming.

Within the overall park boundary, there is also a sizable portion of land that has been impacted by agricultural and pasture use which provides the opportunity to locate more active use recreational amenities and trail circulation. The park boundary south of CSAH 4 also has a large centralized wetland and surface water complex which should remain undisturbed to protect its hydrologic function and flow to Big Marine Lake and its outflow south of 155th Street. The outside perimeter edges of the park impacted by agricultural use also offer the opportunity for restoring prairie and woodland areas to enhance buffering to adjacent roadways.

The park boundary north of CSAH 4 also has significant natural use areas which include a sizeable backwater area as part of Big Marine Lake and an adjacent wetland complex which provides quality habitat for waterfowl and other aquatic wildlife. The surrounding periphery of the park north of CSAH 4 also offers opportunities for restoring additional prairie and woodland areas to provide a more intimate experience for park visitors.

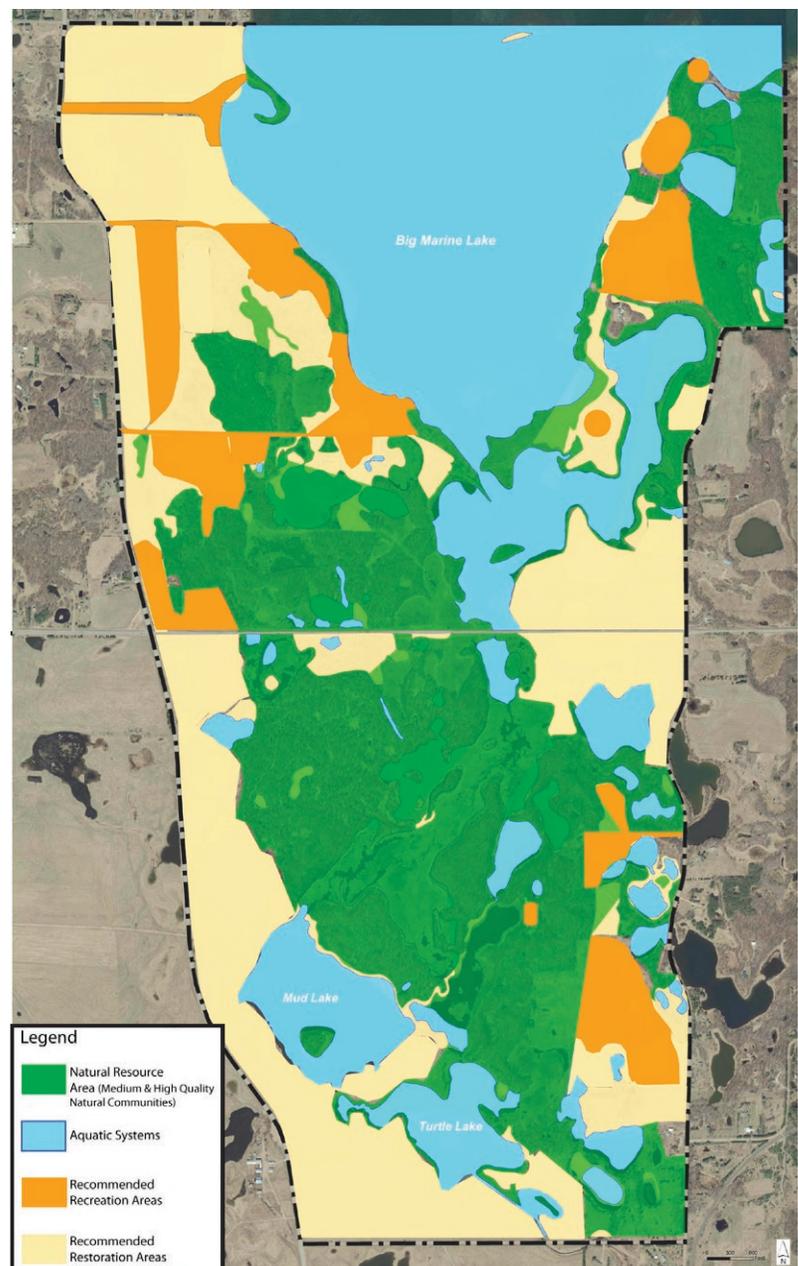
## RECOMMENDED USE AREAS

Based on the Natural Resources Management Plan, recommended recreational use areas were identified for the park which contained the lowest quality natural resource areas or were already disturbed by current or prior agricultural use. Disturbed areas are also identified for restoration to native vegetation which will enhance buffering around the perimeter boundaries of the park. (See Figure 6-1) Broader planning objectives for the park include:

- Maintaining a cohesive connection between all medium and high quality natural resource amenities and minimizing park development and programming in these areas.
- Primarily locating only low impact hiking and interpretive trails in medium to high quality natural resource areas to maintain controlled access to these areas.
- Locating most higher impact hard surface paving and equestrian trails, modern campground facilities and picnic areas in lower quality natural resource areas or on the perimeter of medium and high quality natural resource areas.

As a general planning principle guiding the development of this master plan, higher use active recreation areas have been located north of CSAH 4 where they can be easily accessed from the main entrance drive in to the park and minimize the need for additional roadway circulation. Lower impact recreational activities and amenities have been located south of CSAH 4 where more emphasis has been placed on the protection and interpretation of natural resource amenities and development of low impact trail systems around the perimeter of the park.

FIGURE 6-1: RECOMMENDED USE AREAS



## PARK ACCESS

The main vehicular access to Big Marine Park Reserve is currently located along the west central boundary of the park along Manning Avenue just north of CSAH 4. This main entrance road provides access to all amenities currently developed within the park including the beach, picnic and playground area, and boat landing facility. The master plan identifies several new roadway access locations to be created for the park to serve new programming activity areas.

### Campground Roadway Access

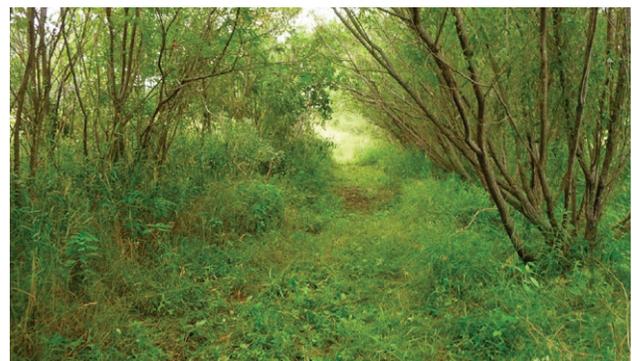
One of the challenges presented by the location of the modern campground is establishing a roadway connection to this area of the park. While a paved trail connection to the campground is proposed to follow the existing Lomond Trail road bed, two options came forward for vehicle connection between the campground and other park facilities. These options include the use of the existing Lomond Trail (County Road); and the use of existing township and county roads. Both have advantages and disadvantages.

- **Lomond Trail** – this road was developed as a Township road in the early 1900s and was transferred to Washington County 2008. This road had a gravel base, was graded regularly, and had appropriate bridges, etc. However, the road currently has maintenance needs due to lack of vehicle use and upkeep; and parts of the road now have wetland characteristics. With the condition of the roadway today, significant improvements will need to be made to bring the road back to a usable state for vehicles. These improvements will require environmental permits from various organizations, may involve wetland mitigation, and could be challenging and expensive to build. While these issues do exist; an upgrade of the road would provide a safe, direct connection to the campground; would reduce the capital and staffing needs necessary with a separate campground entrance (the park would retain one main entrance); and it would keep park use off of busy County and Township roads.
- **Township / County Roads** – the utilization of Township and County roads to accommodate vehicle traffic between park facilities was suggested to keep vehicle traffic further away from the lake. Using existing gravel and paved roads would reduce wetland impacts, potential mitigation costs, and may reduce costs for road construction. However, developing a primary entrance at 177th Street and May Avenue may result in additional capital and operating costs related to access control (campground office/staff), anticipated improvement needs of May Avenue north of County State Aid Highway (CSAH) 4 (170th Street) and construction of turn lanes on CSAH 4 and CSAH 15 (Manning Avenue) to maintain mobility and improve safety. Both CSAH 4 and CSAH 15 are identified as “A Minor Arterial” roadways. Their primary function is to provide a high level of mobility for cars and trucks between regional destinations. Using this type of roadway for vehicles to travel between the campground and other park facilities raises several traffic flow and safety issues that will also need to be considered.

Both of these options remain in the plan as construction techniques, costs, safety issues, and permit requirements at the time of development may help determine which option is chosen. Lomond Trail will not be upgraded to a trail or road until enough land is acquired to develop park facilities north of 177th Street.



May Avenue and 177th Street



Existing Lomond Trail road right of way easement

### Secondary Roadway Entrances

Two new secondary roadway accesses are proposed for the park. An entrance at 165th Street and May Avenue provides access to the group camping facility on the east side of the park. This gated entrance will see only periodic use when organized group camping events are held in the park reserve.

Another secondary entrance to the park is proposed along Manning Avenue between 180th and 185th Street at an existing abandoned farmstead driveway. This entrance provides access to the special use facility which will also see periodic use when special youth and adult group events are held at the park.

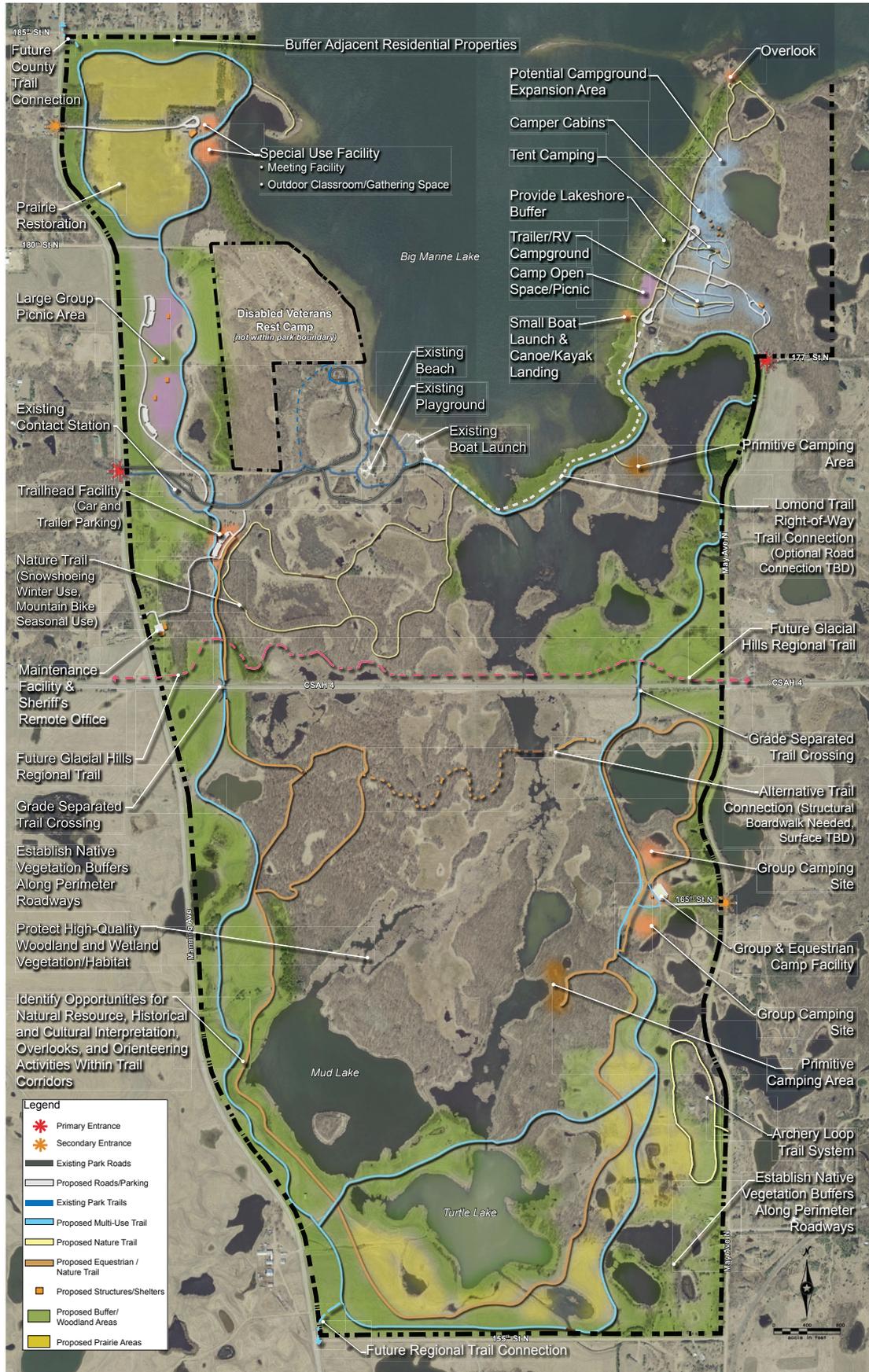


Manning Avenue driveway park access between 180th street and 185th street



May Avenue and 165th Street park entry

FIGURE 6-2: PREFERRED CONCEPT



## TRAIL SYSTEMS

A wide variety of trail systems are proposed throughout the park to meet the needs of different user groups for both summer and winter recreational use. (See Figure 6-2) Both hard surface paved trails as well as soft surface turf trails are proposed with the main network of trails located south of CSAH 4. All trail corridors are aligned to minimize grading impacts on surrounding topography and avoid sensitive natural resource areas. Trail corridors are also designed to allow users to experience a wide variety of landscape types found throughout the park reserve. The following types of trail systems are proposed to be implemented within the park.

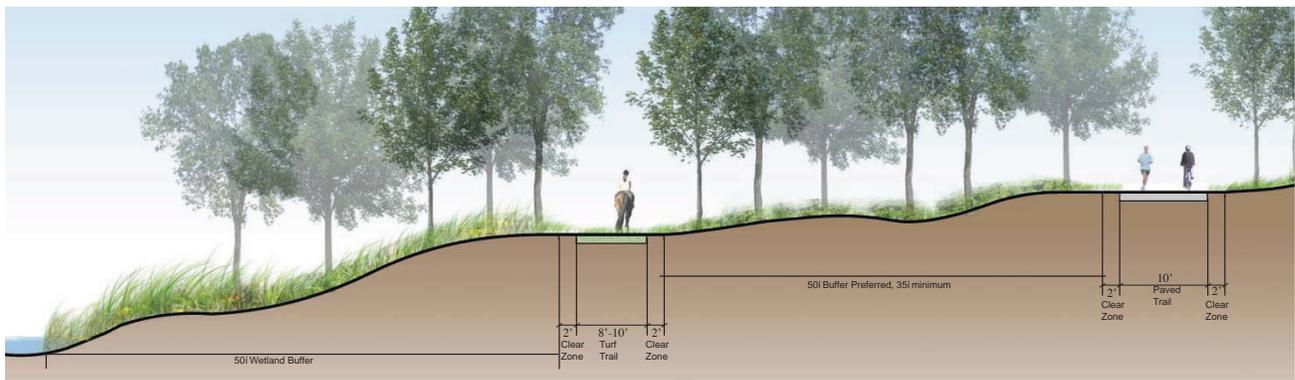
### SOFT SURFACE TRAILS

There are approximately ten miles of soft surface trails planned within the park reserve to serve the needs of various trail user groups. The following soft trail systems are proposed to be implemented within the park:

#### Equestrian Trails

Approximately five miles of trail system have been dedicated towards equestrian use which has a high user demand in northern Washington County. Mowed turf trails are proposed to be maintained at 8-10 feet wide and narrower in some locations to avoid sensitive natural resource areas and provide a more intimate trail experience for users. A variety of trail gradients and alignments are encountered along this trail system to challenge riders and provide interaction with a variety of open meadow and woodland areas. (See Figure 6-3)

FIGURE 6-3: TRAIL CROSS SECTION



#### Hiking Trails

The remaining soft surface trails are classified as nature hiking trails and are proposed to be maintained at 3-5 feet wide to provide an intimate trail experience for users. These trails also interact with some of the more sensitive natural resources areas within the park and provide exposure to a wide variety of landscape types to create interpretive and educational programming opportunities. Open view shed overlooks and boardwalks are located throughout the trail system for viewing wildlife and various woodland, prairie, and wetland areas within the park.

FIGURE 6-4: TRAIL CROSS SECTION

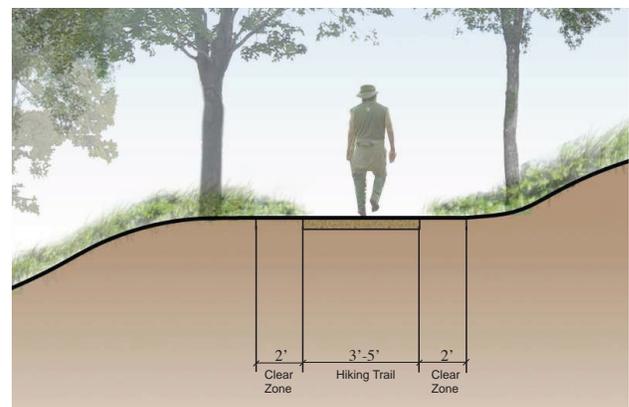
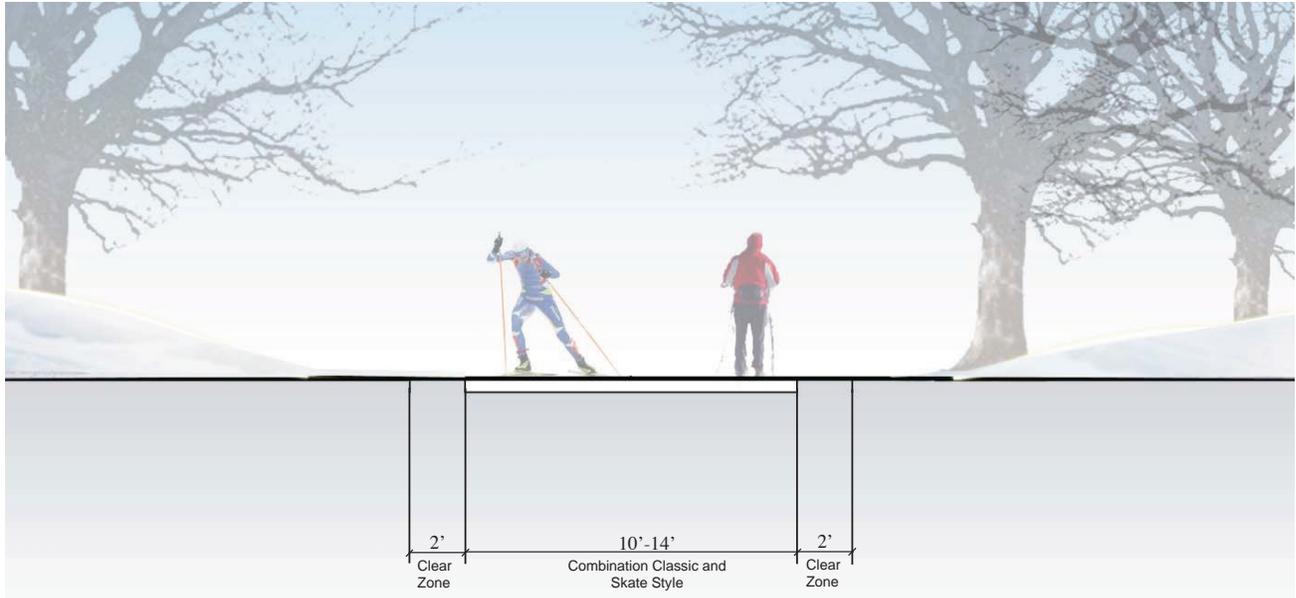


FIGURE 6-5: SKI TRAIL CROSS SECTION



### Mountain Bike Trails

Consideration has also been given to dedicating a portion of the hiking trail system for mountain bike use which could be designated as a seasonal (late summer to early fall) use to help prevent degradation of the trail system and conflicts with hikers. The demand for mountain bike trail facilities continues to grow and when designed properly have minimal impacts on natural areas. The most suitable area identified for mountain biking is located on the trail system east of the proposed trail head north of CSAH 4 where more diverse topography can be found to meet the needs of a variety of different mountain bike skill levels.

### Winter Trail Use

Winter recreational use of the soft surface hiking and equestrian trails also provides the opportunity for the development of cross country ski and snowshoe trails within the park. Both classic and skate skiing techniques can be accommodated within a 12 foot wide trail system for one way circulation (See Figure 6-5) along the equestrian trail network and snowshoe trails can easily be accommodated along the proposed hiking trail system.



Single Track Mountain Bike Trail

### Archery Trail

Another separated loop trail system accessed from a separate entrance on the east side of the park provides a target shooting trail course for archery users with stations set up at varying distances to simulate a more realistic hunting experience. Various types of hunting game figure targets could also be installed to provide more diversity in the size of shooting targets. Generous woodland and wetland buffers separate this special use trail from other trail systems and user groups.



### HARD SURFACE TRAILS

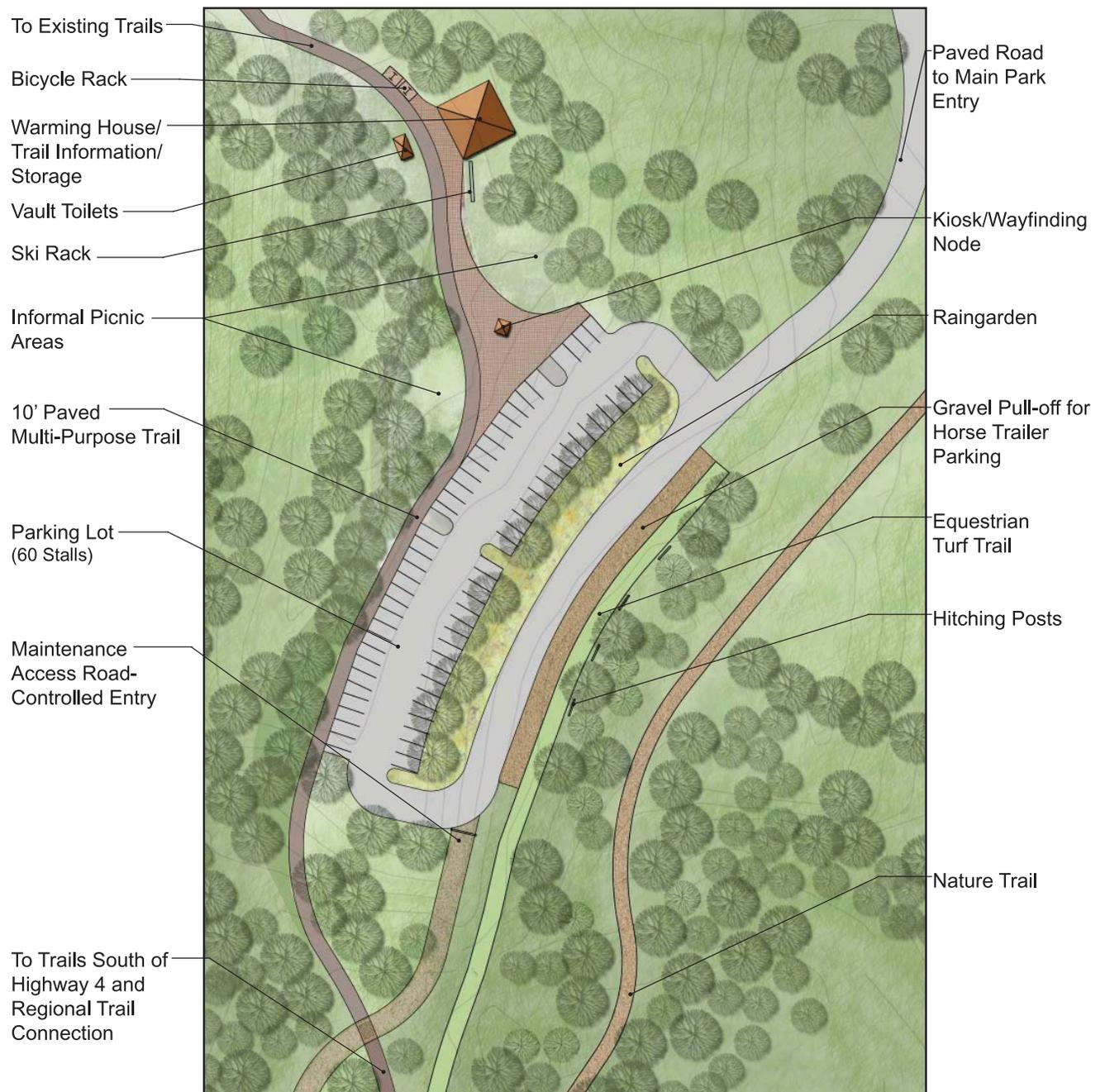
There are approximately ten miles of hard surface bituminous trails planned which primarily encircle the outside perimeter of the park boundary and connect to all active use areas within the park. Larger and smaller loop trails are provided to serve the needs of different age groups and abilities. All hard surface trails are proposed to be 10 feet wide and are aligned and graded to meet AASHTO and Mn/DOT trail design standards for accessibility and providing safe use for walkers, bikers, in-line skaters and strollers. (See figure 6-3) Some segments of hard surface trail may be reduced to 8 feet in width in areas where lower volumes of pedestrian traffic are present along feeder trails which provide access to the main trail loop system or in areas where sensitive natural resources or steep slopes need to be avoided to establish a trail connection through the park.



## TRAILHEAD FACILITIES

In order to provide convenient access to all trail systems, a trailhead facility has been identified for the park. The main trailhead facility is accessed from the park entrance road south of the contact station which also provides a roadway connection to the proposed maintenance facility location on the southwest corner of the park. Trail access to both the soft surface hiking trails and hard surface paved loop trail system are provided at this location. The trailhead facility provides parking for 15-30 vehicles, restroom and picnic facilities, and wayfinding signage to orient visitors to the park and surrounding trail circulation system. This trailhead also contains a warming house building facility to accommodate cross country skiers and snowshoe trail users during the winter season. This building could also function as a future bike, ski and snowshoe rental facility to further encourage trail use. (See Figure 6-7)

FIGURE 6-7: MAIN TRAILHEAD FACILITY





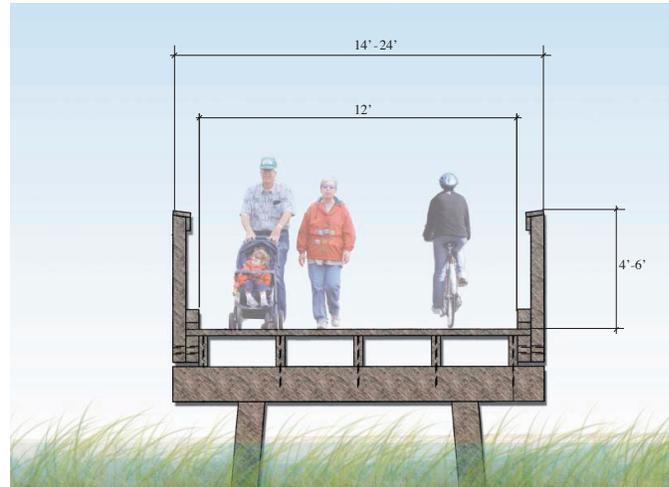
## BRIDGES, BOARDWALKS AND GRADE SEPARATED CROSSINGS

In order to establish trail connections through some areas of the park, bridge as well as floating and structured boardwalk crossings will be needed to cross open waterways or wetland areas. In some situations, these crossings may need to be designed to accommodate pedestrian, equestrian, and bicycle user groups and will require wider crossing widths and structural reinforcement. (See Figure 6-9) Bridges and boardwalks along trail corridors have also been aligned to minimize crossing lengths and reduce overall impacts on wetland areas. Two pedestrian underpasses along CSAH 4 provide uninterrupted trail use connecting the park's north and south side trail systems to the main trailhead facility and to other active use areas within the park.

## OVERLOOKS

There are also many high points and view sheds throughout the park reserve that offer well suited locations for scenic overlooks of natural resources and for viewing wildlife habitat. Installation of bench seating and viewing blinds should be considered to meet the needs of park users who enjoy observing and photographing wildlife within the park reserve.

FIGURE 6-9: BOARDWALK CROSS-SECTION



Boardwalk Crossing

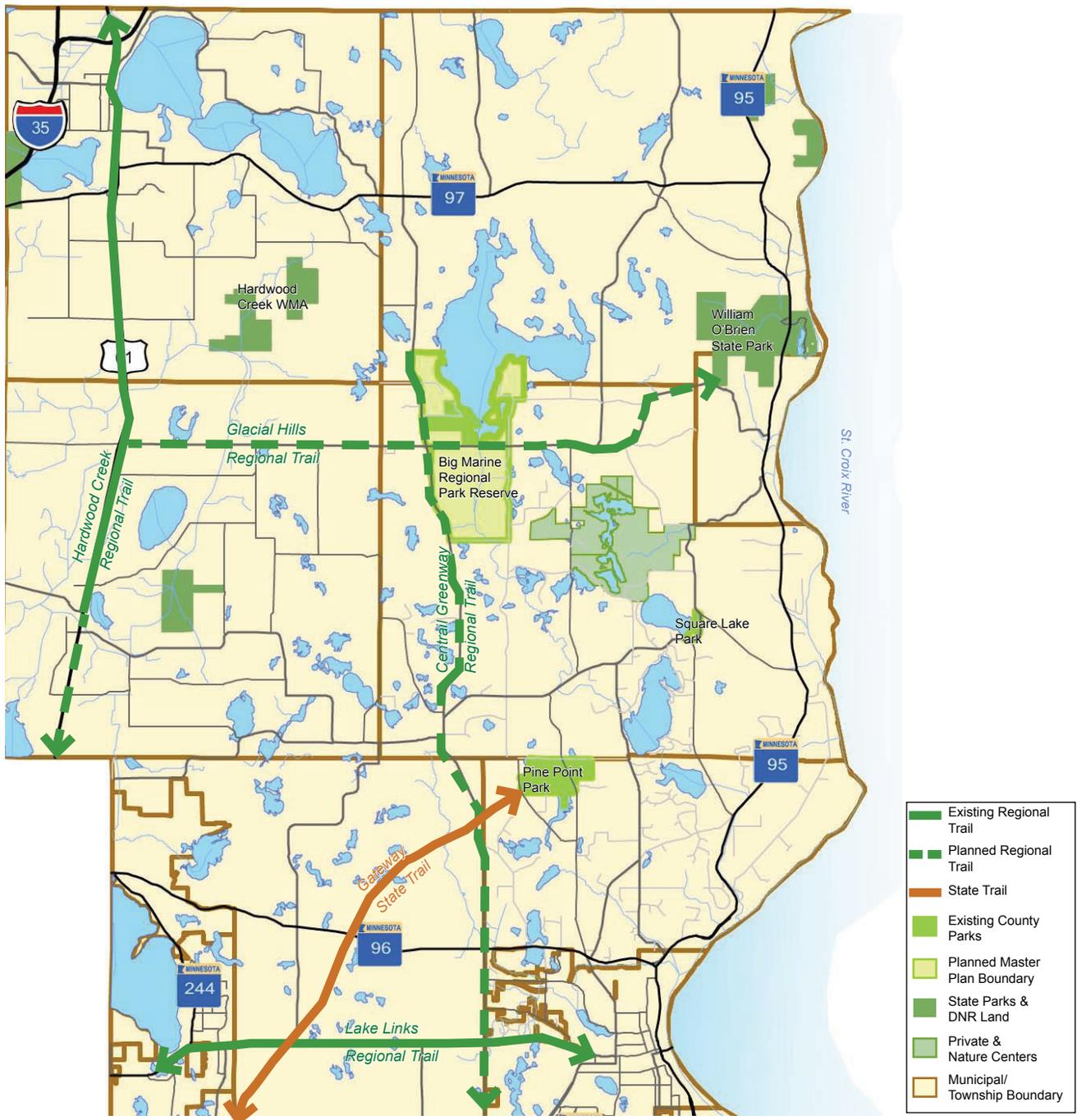


Example of Grade Separated Crossing

## REGIONAL TRAIL CONNECTIONS

The internal paved loop trail system within Big Marine will provide direct access to future regional trail corridors identified along Manning Avenue (Central Greenway Regional Trail) and along CSAH 4 (Glacial Hills Regional Trail). The Central Greenway Regional Trail will also provide a connection to the State Gateway Trail via CSAH 15. The Glacial Hills Regional Trail is proposed along the north side of CSAH 4 and will connect to the Hardwood Creek Trail to the west and William O'Brien State Park and the St. Croix River Valley to the east. Regional trail connections to the park trail system are identified along Manning Avenue at the intersections of 185th Street and CSAH 4. (See Figure 6-10)

FIGURE 6-10: REGIONAL TRAIL SYSTEM



# CAMPGROUNDS

The introduction of campground facilities at Big Marine Park Reserve provides the opportunity to create a high quality campground experience for a variety of different camp user groups. The demand for camping facilities remains high in the metro area, especially for RV and large trailer sites. Big Marine Lake also provides an additional recreational amenity that will increase user demand for campground use at the park reserve.

FIGURE 6-11: MODERN CAMPGROUND



## MODERN CAMPGROUND FACILITY

Since there is currently a high user group demand for large trailer and RV campground facilities, the establishment of a modern campground facility was determined to be a high priority for the updated master plan. Several areas were studied for locating a new campground facility with a preferred location determined on the northeast corner of the park. This location offers close proximity to Big Marine Lake, buffering from surrounding roadways, and a convenient trail connection to the existing beach and playground



RV Camping

areas along the existing Lomond Trail right of way alignment. (See Figure 6-11) Additional amenities proposed for the campground include the installation of camper cabins for novice campers and families, separated RV and tent camp areas, a restroom and shower building, fishing pier, and a small boat launch area which will allow boaters to launch from the campground without having to drive to the boat landing on the southwest corner of the lake. Informal open lawn areas and a small playground facility are also accommodated along the campground lakeshore. Natural vegetation buffers are incorporated between individual campsites to provide privacy and capture storm water runoff from designated drainage ways. Future campsite expansion can be accommodated north and south of the tent and RV camp loops. A soft surface trail provides access to a lake overlook north of the campground and to the hard surface trail system south of the campground. Consideration should also be given to maintaining access to a small area of the campground for winter camping use which has become a more popular activity in recent years.

## GROUP CAMPING

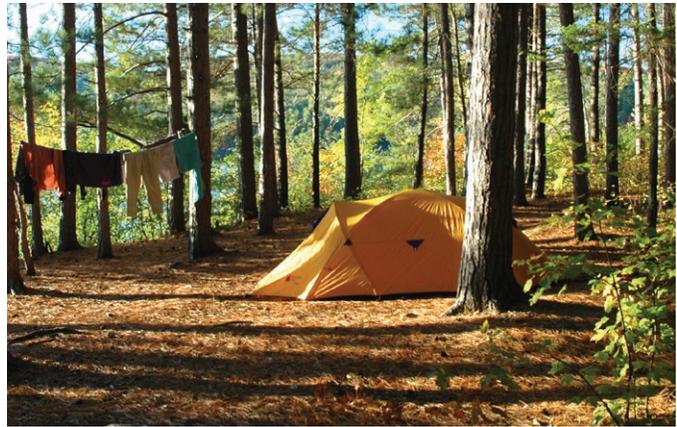
A specialized group camping primarily serving the needs of youth groups has been located on the east side of the park and accessed from the existing 165th Street access along May Avenue. This access to the park is also identified as an equestrian group camping area and will accommodate both vehicular and trailer parking. Two group camping sites are situated in close proximity to the parking area for walk in and equestrian camping use. (See Figure 6-8)



Existing Conditions of Proposed Modern Campsite

## PRIMITIVE CAMPING

In addition to the modern and group camping areas, two primitive camping area locations are identified to function as hike-in sites and offer a more remote camping experience. One location is accessed from the modern campground facility along the lakefront trail leading to the beach area. This location offers close proximity to Big Marine Lake, and more isolation from the other active use areas in the park. The second primitive site is accessed from the group camping area on the east side of the park and is located along a spur trail connected to the equestrian trail system.



## PICNIC FACILITIES

Informal and small group picnic areas are currently located adjacent to Big Marine Lake near the play and beach areas. A new large group picnic area is proposed to be located near the main entrance to the park along Manning Avenue. This picnic facility will serve larger organized gatherings of 100 or more people and will also contain picnic pavilions, restroom facilities, and centrally located parking areas. (See Figure 6-12) The parks internal trails will circulate around the perimeter of the large group picnic area to connect with other active use areas within the park. Enhanced vegetation buffers are proposed along Manning Avenue to create a more intimate park picnic setting for visitors. The existing park entrance drive provides vehicle access to the parking lots serving the large group picnic areas.

## SPECIAL USE FACILITY

A special use facility is proposed on the northwest corner of the park. This facility will allow for flexible programming but cater primarily to the needs of youth groups and offer outdoor classroom learning and gathering areas. A building facility includes provisions for meeting room space, restrooms, storage, and a small food preparation and dining area. Trail extensions also allow visitors to gain access to the adjacent land peninsula which extends out in to Big Marine Lake and an overlook pier on the lakeshore. The adjacent paved trail system also links this facility to other active use areas within the park. (See Figure 6-13)

## UNIVERSAL DESIGN AND SPECIAL NEEDS

The implementation of barrier-free design principles should be integrated wherever possible to meet the special needs of park visitors utilizing site and building amenities proposed for the park. All hard surface trails and paving areas should strive to meet ADA design requirements and offer access to most if not all recreational amenities and activities. Some limitations may be present for making all trail systems and primitive and group camping areas accessible because of their remote location, proximity to existing steep terrain or unsuitable surfacing for accommodating wheel chair use. Consideration should be given to providing alternative forms of transportation including motorized vehicles for allowing special needs user groups to access some of these more remote areas of the park reserve.

FIGURE 6-12 LARGE GROUP PICNIC AREA

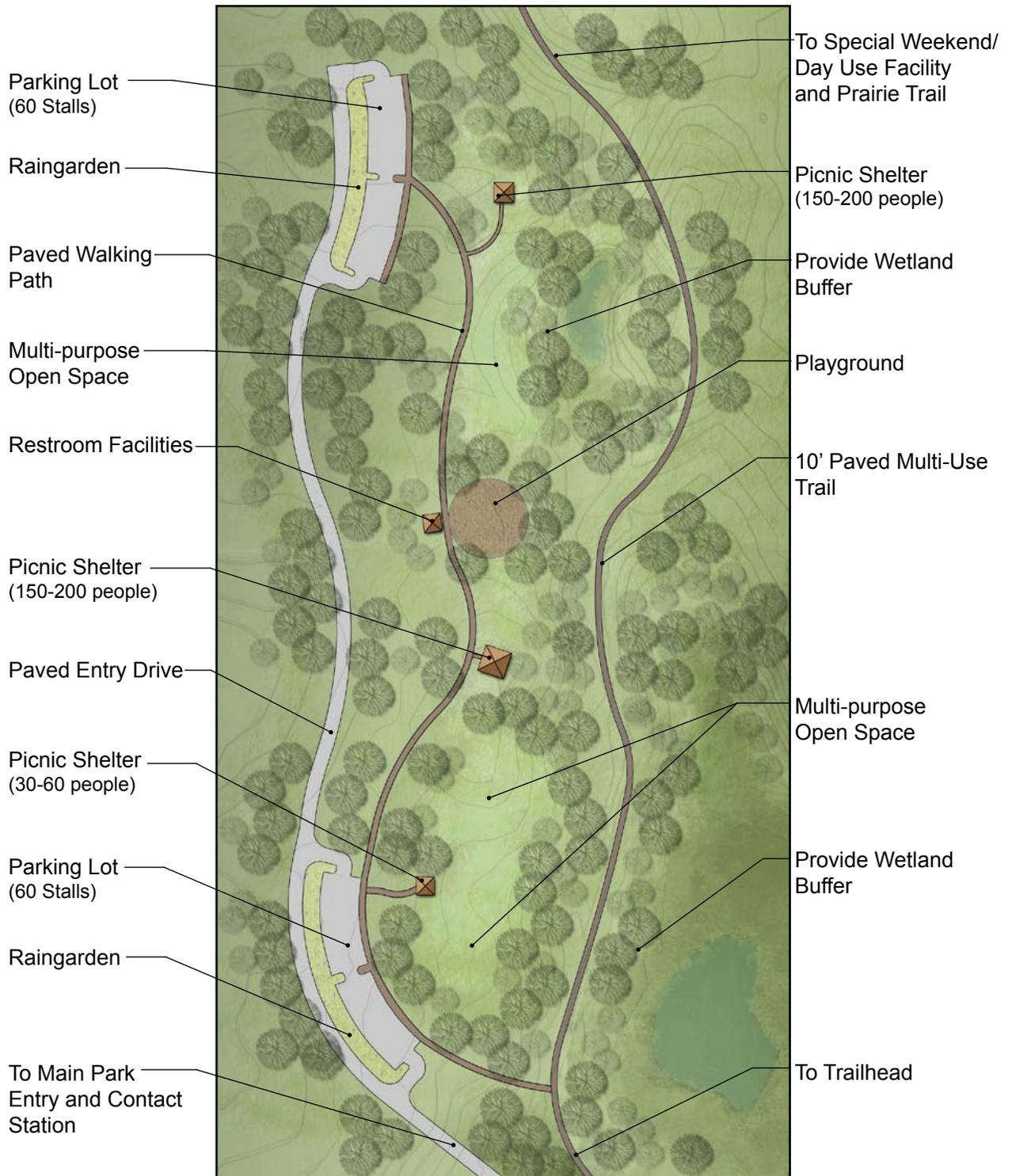


FIGURE 6-13: SPECIAL USE FACILITY



## INTERPRETATION AND WAYFINDING SIGNAGE

The wide variety of natural resource amenities offers many opportunities for interpretation and education along trail corridors throughout the park reserve. A uniform signage theme should be developed throughout the park for orientating visitors to facility locations, trail circulation, and understanding the rules and regulations for park use. The design and implementation of signage should be integrated with wayfinding signage to create an attractive and unobtrusive appearance throughout the park.



Interpretative Signage



Wayfinding Signage

## OTHER RECREATIONAL AMENITIES AND ACTIVITIES

### FISHING

Good water quality and an abundance of natural shoreline make Big Marine Lake a popular destination for fishing. It has one of the best largemouth bass fishing lakes in the east metro area and northern pike and bluegill are abundant as well as smaller concentrations of walleye. Shoreline fishing can be challenging from within the park because of the shallow water depths along the shoreline, but longer extended piers can improve opportunities for shoreline fishing. Winter ice fishing is not as popular on Big Marine Lake as most anglers have to travel long distances from boat landing facilities to reach their preferred fishing locations.

### BOATING

Although a larger percentage of boating activities occurring on Big Marine Lake are related to fishing, the lake offers plenty of water area to accommodate recreational activities like water skiing, tubing, and personal watercraft use which may be desired by campground user groups. Efforts should be made to allow boaters to have convenient access to the campground and beach area to increase accessibility to and from the lake. The lake also offers recreational opportunities for canoe and kayak user groups, especially within the back water area of Big Marine Lake southeast of the existing boat landing facility.



Canoe and Kayak Boat Launch

## MAINTENANCE BUILDING/SHERIFF'S REMOTE OFFICE

In order to serve the operations and maintenance needs of new park programming, a location for a new park maintenance facility has been established within the park reserve. This facility may also serve as a remote station for the County Sheriff's Office. A location is identified near the northeast intersection of Manning Avenue and CSAH 4, which is centrally located to existing and proposed park amenities. (See Figure 6-14) A screened outdoor storage area is also located adjacent to the maintenance facility, and an emergency sirens located here to provide early weather warning protection for campground users and surrounding communities. The maintenance facility also provides direct access to the parks internal roadway and trail circulation.

FIGURE 6-14: MAINTENANCE FACILITY





# Chapter 7: Implementation, Operations, & Management Plan

## OVERVIEW



SHORELINE BUFFER ADJACENT TO BIG MARINE BEACH

The implementation of park improvements identified in this master plan will primarily rely on the County's ability to acquire land within the park boundary, and securing funding sources needed to both purchase land and construct park improvements. Additional considerations for managing the park's natural resources and providing operations and maintenance services will also play a role in determining overall funding needs. The time frame for implementing these improvements will be long term and involve many phases of construction to realize all improvements identified for the park reserve. The following provides an overview of the total potential investment needed to implement and operate all components of the master plan. This section also considers Washington County's approach to operations and management and how those resources are currently being allocated at Big Marine Park Reserve.

### SITE DEVELOPMENT PROGRAM COST PROJECTIONS

The estimates generated below provide an overview of costs associated with each program area and related amenities identified within the park master plan. These estimates are considered preliminary and will need further refinement as funding sources are realized. Other factors impacting estimates include the future economic bidding climate and unknown existing site conditions which may impact total construction costs. These estimates are based on 2010 bidding data and should be increased by 10% every year to account for inflation in order to project construction costs in future years.

These estimates have also been used to develop a long term phasing and implementation plan which will assist with balancing funding needs over an extended period of time. The following costs have been estimated for each identified park amenity:

TABLE 7-1: SITE DEVELOPMENT PROGRAM COST PROJECTION

Implementation Cost Projections	Unit	Cost
<b>Modern Campground</b>		
Removals, Clearing And Grubbing		\$40,000.00
Grading/Storm Water Improvements		\$125,000.00
Entrance Drive, Parking Lot And Turn-Around	9276 Sy	\$185,000.00
Park Entrance Sign		\$25,000.00
Contact Station		\$175,000.00
Dump Station		\$15,000.00
Well And Septic		\$35,000.00
Trailer/Rv Campsites (35)		\$122,500.00
Car/Tent Campsites (42)		\$84,000.00
Vault Toilets		\$10,000.00
Restroom/Shower Facilities		\$500,000.00
8 foot Wide Nature Trail	5612 Lf	\$40,000.00
Overlook		\$15,000.00
Camper Cabins (7)		\$140,000.00
Picnic Shelter		\$50,000.00
Play Area		\$75,000.00
Dock		\$25,000.00
Canoe/Kayak Launch		\$12,000.00
Restoration And Buffers	5 Acres	\$35,000.00
<b>Total</b>		<b>\$1,858,500.00*</b>
<b>Group Camping Area</b>		
Removals, Clearing And Grubbing		\$15,000.00
Grading/Storm Water Improvements		\$45,000.00
Secondary Park Entrance Sign		\$15,000.00
Aggregate Entrance Drive/Parking Lot	4889 Sy	\$40,000.00
Vault Toilets		\$10,000.00
Kiosk		\$15,000.00
Furnishings And Signage		\$8,000.00
Restoration And Buffers	4.5 Acres	\$20,000.00
<b>Total</b>		<b>\$168,000.00*</b>
<b>Primitive Camping</b>		
Clearing And Grubbing		\$3,000.00
6 foot Wide Soft Surface Trail		\$9,000.00
Furnishings		\$10,000.00
Restoration And Buffers		\$3,500.00
<b>Total</b>		<b>\$25,500.00*</b>
<b>Paved Trail Loop System</b>		
Clearing And Grubbing		\$20,000.00
10 foot Wide Bituminous Trail	49767 Lf	\$1,100,000.00
Trailside Amenities And Signage		\$30,000.00
Boardwalks		\$46,000.00
Restoration And Buffers		
<b>Total</b>		<b>\$1,196,000.00*</b>
<b>Pedestrian Underpass(es)</b>		
East Underpass		\$250,000.00
West Underpass		\$250,000.00
<b>Total</b>		<b>\$500,000.00*</b>
<b>Hiking Only Trail Loop</b>		
Clearing And Grubbing		\$12,000.00
6 foot Wide Soft Surface Trail	9536 Lf	\$68,000.00
Trailside Amenities And Signage		\$5,000.00
Boardwalk	280 Lf	\$80,000.00
<b>Total</b>		<b>\$165,000.00*</b>

\* Based on 2010 Estimates. Source: SRF

TABLE 7-1: SITE DEVELOPMENT PROGRAM COST PROJECTION (CONTINUED)

Archery Trail Loop	Unit	Cost
Clearing And Grubbing		\$5,000.00
6 foot Wide Soft Surface Trail	4090 Lf	\$30,000.00
Restoration And Buffers	.5 Acres	\$3,000.00
Targets And Signage		\$5,000.00
<b>Total</b>		<b>\$43,000.00*</b>
Equestrian/Hiking Trail Loop		
Clearing And Grubbing		\$20,000.00
10 foot Wide Soft Surface Trail	4.9 Miles	\$235,000.00
Restoration And Buffers	3 Acres	\$10,500.00
<b>Total</b>		<b>\$265,500.00*</b>
Special Use Facility		
Removals, Clearing And Grubbing		
Grading		\$40,000.00
Entrance Drive, Parking Lot And Turn-Around		\$120,000.00
Retreat Facility		\$400,000.00
Well And Septic		\$35,000.00
Outdoor Gathering Patio		\$80,000.00
Demonstration Gardens		\$12,000.00
Outdoor Classroom		\$35,000.00
Overlook/Fishing Pier		\$10,000.00
Nature Trail		\$15,000.00
Restoration And Buffers	4 Acres	\$14,000.00
<b>Total</b>		<b>\$761,000.00*</b>
Large Group Picnic Area		
Removals, Clearing And Grubbing		\$10,000.00
Grading		\$70,000.00
Entrance Drive/Parking Lots	13200 Sy	\$265,000.00
Bituminous Trails	1710 Sy	\$35,000.00
Hilltop Shelter		\$150,000.00
Picnic Shelter		\$75,000.00
Play Area		\$75,000.00
Restroom Facility		\$200,000.00
Well		\$20,000.00
Connection To Existing Septic		\$15,000.00
Restoration/Wetland Buffer	20 Acres	\$70,000.00
<b>Total</b>		<b>\$985,000.00*</b>

\* Based on 2010 Estimates. Source: SRF

TABLE 7-1: SITE DEVELOPMENT PROGRAM COST PROJECTION (CONTINUED)

<b>Trailhead Facility And Parking Area</b>	<b>Unit</b>	<b>Cost</b>
Removals, Clearing And Grubbing		\$10,000.00
Grading		\$35,000.00
Trail/Walk Connections	1030 Sy	\$21,000.00
Entrance Drive/Parking Lot	4637 Sy	\$95,000.00
Warming House		\$250,000.00
Furnishings		\$3,500.00
Kiosk		\$15,000.00
Vault Toilets		\$10,000.00
Equestrian Staging Facilities		\$8,000.00
<b>Total</b>		<b>\$447,500.00</b>
<b>Maintenance Facility</b>		
Removals, Clearing And Grubbing		\$10,000.00
Grading		\$30,000.00
Entrance Drive/Parking Lot/Concrete Walk		\$25,500.00
Gated Storage Yard		\$34,000.00
Office Building/Sheriffs' Remote Office		\$300,000.00
Well And Septic		\$35,000.00
Workshop/Heated Storage	1375 sf @ \$75/sf	\$105,000.00
Cold Storage Building	1375 sf@ \$60/sf	\$85,000.00
Aggregate Access Road To Trailhead		\$12,000.00
Restoration/Buffers	3 Acres	\$10,000.00
<b>Total</b>		<b>\$646,500.00</b>
Subtotal		\$7,061,500.00
Contingency, Design, And Administration (25%)		\$1,765,375.00
<b>Grand Total</b>		<b>\$8,826,875.00</b>
<b>Acquisition Of Land Within Park Boundary</b>		
Acquisition Of Land North Of CSAH 4		\$11,150,300.00
Acquisition Of Land South Of CSAH 4		\$10,161,100.00
<b>Total</b>		<b>\$21,311,400.00</b>
<b>Overall Total (Acquisition And Development)</b>		<b>\$29,538,275.00</b>

\* Based on 2010 Estimates. Source: SRF

## NATURAL RESOURCE MANAGEMENT COST PROJECTIONS

The level of effort needed for the restoration and management of natural systems within the park will require additional field work to more accurately assess the quality of the natural resource amenities and their management needs. Based on the known overall quality of the natural resources within the park reserve, adequate funding should be secured to ensure restoration and management techniques are implemented in conjunction with park site improvements. The following generalized cover types, approximate acreage, and a range of costs have been assigned for both the restoration and annual maintenance of these natural resource restoration areas:

TABLE 7-2: NATURAL RESOURCE RESTORATION ESTIMATES

Cover Type	Acres	Cost per acre	Total Cost
Forest Communities	350	\$1,500 – 2,000	\$525,000- \$700,000
Upland Prairie	375	\$2,000 - 2,500	\$750,000 - \$937,500
Wetland Systems	300	\$1,500 – 2,000	\$450,000 - \$600,000
Savanna	100	\$1,500 – 3,000	\$150,000 - \$300,000
Total Area	1,125 acres		\$1,875,000 - \$2,537,500

\* Based on 2010 Estimates. Source: SRF

TABLE 7-3 NATURAL RESOURCE MAINTENANCE ESTIMATES

Cover Type	Acres	Cost per acre	Total Cost
Forest Communities	350	\$1,500 – 2,000	\$70,000 - \$105,000
Upland Prairie	375	\$2,000 - 2,500	\$37,500 - \$75,000
Wetland Systems	300	\$1,500 – 2,000	\$60,000 - \$90,000
Savanna	100	\$1,500 – 3,000	\$25,000 - \$35,000
Total Area	1,125 acres		\$192,500 - \$305,000

\* Based on 2010 Estimates. Source: SRF

Costs associated with the restoration and maintenance of these natural resource areas will vary based on their initial quality, the presence of invasive plant material, the quality of existing soil conditions, and variable climate factors which may contribute to improving or degrading the quality of these natural resource areas over time.

## **HIGH QUALITY NATURAL RESOURCE PRESERVATION AREAS**

In addition to the natural resource areas to be restored within the park, there are many high quality natural resource areas to be protected within the park boundary. These include:

- Maple Basswood Forest (30 acres)
- Rich Fen (16 acres)
- Alder Swamp (9 acres)
- Shrub Swamp (20 acres)
- Mesic Oak Forest (205 acres)
- Emergent Marsh (80 acres)
- Total Area (360 acres)

The high quality of all of these natural resource areas has been documented in the field and should remain protected and buffered from park development impacts. Financial resources should be dedicated as necessary towards monitoring and maintaining the quality of these pristine natural resource areas within the park reserve.

## **NATURAL RESOURCE EXPANSION AREAS**

The presence of existing pasture and croplands throughout the park offers the opportunity to convert these areas back to pre settlement vegetation associations if suitable soils are present to support reestablishment. The southeast corner of the park offers an opportunity to convert 180 acres of existing pasture to woodland forest which originally occupied this area of the park reserve. Expansion of natural resource areas within the park is a long term recommendation and should be addressed after restoration of existing natural resource areas is completed.

## PROPERTY ACQUISITION

The County currently owns approximately 657 (37%) of the 1,892 acres within the park boundary. The current approach for acquiring additional land is by willing seller when criteria and priorities are met by the County for purchase. There are currently twenty four parcels north of CSAH 4 and twenty five parcels south of CSAH 4 remaining to be purchased within the park boundary. The total assessed market value of these parcels is \$21,311,400. A priority system has been established for the acquisition of these parcels with an emphasis on acquiring land north of CSAH 4 which can be integrated with existing park access and development. The following priority rating system has been established for acquiring remaining land parcels within the park reserve:

### A. Priority Parcels – Have all of the following:

- Located immediately adjacent to public water or county park land
- Contain high quality woodland or wetland natural resource
- Situated in close proximity to already acquired county park land (3-4 parcels away)
- No existing significant structures (over \$130,000 assessed value)
- County Staff will contact land owners on an annual basis

### B. Priority Parcels – Have the following:

- Contain natural resource water, wetland, or woodland feature and is a park inholding within acquired parcels
- Situated in close proximity to already acquired county park land (3-4 parcels away)
- County Staff will contact land owners on a bi-annual basis

### C. Priority Parcels – Have one or more of the following:

- Contains public water frontage, woodlands, or wetlands
- Within close proximity to already acquired park land (3-4 parcels away)
- Parcel has potential for loss to further development if not purchased when it is available for sale
- County Staff will discuss purchase if contacted by the owner. Acquisition will also be reviewed with County Board if further study is recommended.

### D. Priority Parcels – Have one or more of the following:

- No or low quality water frontage, or natural resource amenities
- Limited connection to other County land and/or has limited potential for development in the near future

County Staff will do a cursory review of these properties to determine if other factors are present to raise the parcel's acquisition priority.

Over time there may be some variation in how parcels are prioritized for acquisition based on available funding, timing of other land acquisitions, and circumstances which may raise or lower the priority for acquiring certain land parcels. Protecting and preserving the high quality natural resource areas within the park will remain a priority for the acquisition of all private land holdings.

## IMPLEMENTATION STRATEGIES, PRIORITIES, AND PHASING PLAN

Future capital improvements will be financed through a variety of funding sources including the County tax levy, Metropolitan Council Regional Park Grants, Legacy Amendment Funding, DNR grants and other various funding sources.

The following table lists identified site improvements and establishes priority and rationale for their implementation. These priorities are not associated with any specific time frames for implementation and will need to respond to the timing of land acquisition and funding availability. These priorities are also subject to change in future years and may require phased implementation within each site improvement area.

Based on a general priority for acquiring land north of CSAH 4 to continue to build upon existing park development, the following preliminary phasing plan has been identified for implementing site improvements within the park:

TABLE 7-4: PRELIMINARY PHASING PLAN FOR SITE IMPROVMENTS

North Side of CSAH 4		
Site Improvement	Cost	Comment
Maintenance Facility	\$646,500	Establishes infrastructure needed to operate and maintain all existing and future park amenities
Hiking Only Trail Loop	\$165,000	Provides connection to existing hard surface trail system and establishes trail access to natural resource areas
Large Group Picnic Are	\$985,000	Establishes high demand use area which complements and enhances existing park facilities
Modern Campground	\$1,858,500	Increases overall use of park and generates additional revenues for supporting operations and maintenance of park reserve
Special Use Facility	\$761,000	Increases programming opportunities and attracts organized user groups to park
Trailhead Facility and Parking Are	\$447,500	Establishes centralized facility to support year round use of trail system throughout the park
<b>TOTAL COSTS</b>	<b>\$4,863,500</b>	
South Side of CSAH 4		
Site Improvement	Cost	Comment
Pedestrian Underpasses	\$500,000	Provide safe pedestrian crossing of CSAH 4 and establish connection with expanded trail system network
Paved Loop Trail System	\$1,196,000	Establishes trail system which provides connections to all park amenities and serves a wide variety of user groups
Equestrian/Hiking Trail Loop	\$265,500	Complements existing hard surface trail system and accommodates additional trail user groups.
Group Camping Area	\$168,000	Provides camping amenity to accommodate organized youth groups
Primitive Camping Area	\$25,500	Provides low impact and intimate camping experience compatible with sensitive natural resource area.
Archery Trail Loop	\$43,000	Offers low impact recreational amenity to attract additional user group to park reserve
<b>TOTAL COSTS</b>	<b>\$2,198,000</b>	

Source: SRF

## MAINTENANCE AND OPERATIONS

The Washington County Parks Division is charged with the management and operation of the County's park and trail system. This includes Big Marine Park Reserve as defined under this master plan. The Washington County Board of Commissioners established policies and goals for maintaining the parks and trails system through an annual budgeting process for capital and operating funds for parks. The Parks and Open Space Commission, appointed by the County Board of Commissioners, serves as an advisory committee advocate for enhancing the park and trail systems within the County. The specific responsibilities include:

- Review proposals and make recommendations concerning park and trail acquisition and development
- Review and make recommendations concerning recreation programming, fees for facility use and park use policies
- Recommend enhancing natural resources in County Parks and regional trail corridors
- Provide input into the County Park Policy Plan and Park Master Plans for park development site planning
- Perform fact finding tasks as directed by the County Board

The development of more amenities at Big Marine Park Reserve will require additional staffing and expenditures to meet its maintenance and operational needs. The park currently is staffed with two full time employees and eleven seasonal employees overseeing maintenance, lifeguard and attendant duties at the park. Total yearly labor costs in 2009 were approximately \$136,500 with an additional \$88,000 in operational costs.

Revenues for the park are primarily generated from vehicle permit fees, concession sales, and picnic shelter rental fees. The future introduction of large group picnic areas, campground facilities, and a special use facility will all contribute towards increasing attendance and providing additional revenues for the park. Visitation to the park will also increase when a comprehensive trail system is developed to serve the needs of various trail user groups. Before developing any of these new facilities, it will be important to secure additional staffing and funding to ensure they can be planned and accommodated within the County's yearly operations and maintenance budget.

## ORDINANCES

Washington County has adopted Ordinance No. 174 which establishes rules and regulations for park use and management under its jurisdiction. The ordinance incorporates Minnesota statutes that address regulations for:

- Public Use
- General Conduct
- General Parkland Operation
- Protection of Property, Structures and Natural Resources
- Recreational Activities
- Motorized Vehicles, Traffic and Parking

A copy of the ordinance is available for review through Washington County.

## ENFORCEMENT AND SAFETY

The Washington County Sheriff's office provides patrolling and security for the park as well as responds to emergencies and criminal complaints. The master plan identifies a remote Sheriff's office to be located at the proposed maintenance facility. This location allows for convenient access to Manning Avenue and CSAH 4 for responding to County area emergencies as well as accessing all areas of the park reserve.

## OUTREACH AND MARKETING

Promotion of the County's park and trail systems has been approached in several different ways to increase awareness and visitation to these facilities. Since Big Marine Park Reserve is a relatively new park facility, additional efforts have been made to promote the new facilities available in the park which has increased attendance figures since the park opened in 2008.

The County has also used their web page to inform citizens about programming and activities available within the park system and posting updates on planning efforts being undertaken for future park and trail improvement projects. Public comment and feedback can also be exchanged utilizing the County's email system.

Other initiatives for providing information and updates on utilizing the County's park and trail systems include providing displays at the County Fair and County Service Centers, publishing articles in the County Commissioners quarterly newsletter, publishing advertisements in local community and metropolitan area newspapers, and postings on the County Park's web page.

# Bibliography

Barton-Aschman Associates, Inc., “Big Marine/ Maple Island Park Reserve Master Plan,” Washington County Public Works and Division of Parks, Washington County, MN, March 1998.

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Kelly, Tim. “2004 Outdoor Recreation Participation Survey of Minnesotans”, Office of Management and Budget Services, Minnesota Department of Natural Resources, 2004.

Metropolitan Council, “Annual Use Estimate of Metropolitan Regional Parks System for 2008,” Metropolitan Council, Publication no. 78-09-043, June 2009.

Metropolitan Council, “2030 Regional Parks Policy Plan,” Metropolitan Council, Publication No. 78-06-053, June 29, 2005, Amended June 28, 2006.

Linda Picone, Ed. “Adapting to Change, Minnesota’s State Comprehensive Outdoor Recreation Plan 2008-2012,” Minnesota Department of Natural Resources, 2008.

Washington County Parks, “Big Marine Regional Park Reserve Presentation”, Park and Natural Resources Section Meeting, Minnesota Recreation and Parks Association, June 2009.

Washington County Department of Administration, “2030 Comprehensive Plan: A Policy Guide to 2030,” Washington County, MN, Spring 2009.



# Appendix A

BOARD OF COMMISSIONERS  
WASHINGTON COUNTY, MINNESOTA

RESOLUTION NO. 2010-116

DATE August 3, 2010 DEPARTMENT Public Works, Parks Division  
MOTION BY COMMISSIONER Hegberg SECONDED BY COMMISSIONER Peterson

**BIG MARINE PARK RESERVE MASTER PLAN AMENDMENT**

**WHEREAS**, the existing Big Marine Park Reserve Master Plan was completed in 1988, and

**WHEREAS**, the Washington County Parks and Open Space Commission reviewed the existing Big Marine Park Reserve Master Plan and recommended the plan be updated and amended to address changes since 1988 and to develop a vision for future park development; and

**WHEREAS**, on August 4, 2009, the Washington County Board of Commissioners authorized retaining a consultant to lead the park planning process; and

**WHEREAS**, the master planning process has included two public meetings and four technical advisory committee (TAC) meetings with representatives from May Township, City of Scandia, City of Hugo, City of Forest Lake and Carnelian Marine Watershed District; and

**WHEREAS**, the draft plan was also presented at Washington County Park and Open Space Commission meetings and at a Washington County Board of Commissioners workshop; and

**WHEREAS**, the Washington County Board of Commissioners conducted a public hearing on August 3, 2010 to review and receive comment on the Big Marine Park Reserve Master Plan Amendment; and

**WHEREAS**, a master plan review has been completed through a public process that meets Metropolitan Council requirements for public input; and

**NOW, THEREFORE, BE IT RESOLVED** that the Washington County Board of Commissioners approves the Big Marine Park Reserve Master Plan Amendment; and

**BE IT FURTHER RESOLVED** that the Big Marine Park Reserve Master Plan Amendment be forwarded to the Metropolitan Council for review and approval without further action by the County Board.

ATTEST:   
COUNTY ADMINISTRATOR  
  
CHAIRPERSON, COUNTY BOARD

	YES	NO
HEGBERG	<u>X</u>	<u>      </u>
KRIESEL	<u>X</u>	<u>      </u>
PETERSON	<u>X</u>	<u>      </u>
PULKRABEK	<u>X</u>	<u>      </u>
WEIK	<u>X</u>	<u>      </u>

# Appendix B

# Washington County, Minnesota Ordinances

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## Ordinance No. 68

### Official Map Ordinance

### An Ordinance Setting Up a Process to Allow the Board of Commissioners of Washington County to Officially Designate Areas Needed for Future Public Use as Authorized by Minnesota Statute 394.21 to 394.37.

Date Approved: 08/23/1988

Date Published: 09/01/1988

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The Board of Commissioners of Washington County ordains:

#### **Section 1: Purpose.**

Land that is needed for future street and highway purposes and as sites for other necessary public facilities including public facilities such as parks, playgrounds, schools and other public buildings, civic centers, and travel service facilities is frequently diverted to non-public which could have been located on other lands without hardship or inconvenience to the owners. When this happens, public uses of land may be denied or may be obtained only at prohibitive costs or at the expense of dislocating the owners and occupants of the land. Identification on an official map of land needed for future public uses, permits both the public and private property owners to adjust their building plans equitably and conveniently before investments are made which will make such adjustments difficult to accomplish. It is the purpose of this ordinance to establish a uniform procedure for the proper use of official maps as authorized by Minnesota Statutes §394.21 to §394.37.

**Section 2: Official Map Defined.**

"Official Map" as used in this ordinance means a map adopted in accordance with this ordinance showing existing county roads and county state aid highways, proposed future county roads and highways, the area needed for widening of existing county roads and highways, and existing future state trunk highway right-of-ways. An official map may also show the location of existing public lands and facilities and other land needed for future public purposes, including public facilities such as parks, playgrounds, schools and other public buildings, civic centers and travel service facilities.

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**Section 3: Initiation of Proceedings.**

Proceedings for adoption, amendment or repeal of an official map or any part thereof may be initiated by (1) a recommendation of the Planning Commission or (2) action by the County Board on its own initiative, recommendations of an advisory commission or the request of an outside governmental body.

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**Section 4: Sketch Maps and Reports.**

Every proposal or request for an official map or its amendment or repeal however initiated, shall be accompanied by a sketch map or plat showing the lands proposed to be included and the public purpose to be served. The County Board may request a report of the Planning Commission as to the feasibility of any construction involved.

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**Section 5: Reference to Planning Commission.**

Except when proceedings have been initiated by recommendations of Planning Commission, every proposed official map or change in a map shall be referred to the Planning Commission for advice and recommendations thereon and such recommendations shall be submitted to the County Board within 60 days after reference to the Planning Commission along with the report of the commission on the effect of the proposal on the comprehensive plan of the County. If no recommendation is received by the County Board from the Planning Commission within 60 days after reference of the proposal to the Commission by the County Board, the County Board may take such action as it may deem proper upon the proposal without further action by the Planning Commission.

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**Section 6:**

**Subdivision 1 - Notice**

Upon receiving the recommendations of the Planning Commission or after 60 days from the submission of the proposal to the Planning Commission without a recommendation from the Planning Commission, the County Board may call a public hearing on the proposal. A notice of time, place and purpose of the hearing and a description of the property to be included in the official map shall be published in the official newspaper once,

at least 10 days prior to the date of the hearing. At least 10 days prior to the hearing, a copy of the notice shall be mailed to each landowner situated within or abutting the area shown on the official map. In addition, at least 10 days prior to the hearing, a copy of the notice shall be sent to the governing bodies of all towns and municipalities located within the county and the owners of record within one-half (1/2) mile of the affected property. For purposes of this notice, the owner shall be determined by the records of the County Auditor and the notice shall be addressed to the last known address as shown by the Auditor's record. Failure to serve any such notice shall not invalidate the proceedings.

**Subdivision 2 -**

At the time and place specified in the notice, the County Board shall hear evidence and arguments concerning the proposal. The hearing may be continued from time to time not to exceed 60 days without further notice. A final vote on the proposal shall be taken by the County Board within such 60 day period.

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**Section 7: Preparation and Filing of Maps.**

The official map or maps shall be prepared in sufficient detail to permit the establishment of future acquisition lines on the ground. In unplatted areas, a centerline survey shall be made prior to the preparation of the final draft of the official map. The accuracy of the future acquisition line shown on the official map shall be attested to by a registered land surveyor. After enactment of any ordinance adopting an official map or amending or repealing a previous official map ordinance, a certified copy of the official map or section to which the ordinance relates together with an attached copy of the ordinance shall be filed with the County Auditor who shall file a certified copy thereof with the County Recorder for record. In addition, one copy of the official map or section to which the ordinance relates, together with an attached copy of the ordinance shall be furnished to the town clerk of each affected town.

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**Section 8: Effect.**

After an official map has been adopted and filed, the issuance of building permits shall be subject to the provisions of this ordinance. The building official shall deny every application for a permit to construct a new building or structure or expand an existing building or structure within any area designated on the official map. Whenever any street or highway is widened or improved or any new street is opened or any interest in land for other public purposes is acquired by the county, the county is not required in such proceedings to pay for any building or structure placed without a permit or in violation of conditions of a permit within the limits of area identified on the official map for public purposes. The adoption of an official map does not give the county and right, title or interest in areas identified for public purposes thereon, but the adoption of the map does authorize the county to acquire such interest without paying compensation for buildings or structures erected in such area without a permit or in violations of the conditions of a permit.

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**Section 9: Appeals.**

Whenever a building permit is denied pursuant to this ordinance, the owner may appeal to the Washington County Board of Adjustment & Appeals pursuant to Section 503.01 (3) of the Washington County Zoning Ordinance.

**Section 10:**

Any person violating any provision of this ordinance is guilty of a misdemeanor and upon conviction thereof, shall be subject to a fine of not more than \$700 or a term not to exceed 90 days or both, plus in either case, the costs of prosecution. Each day that a violation is permitted to exist constitutes a separate offense.

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**Section 11: Effective Date.**

This Ordinance shall be and is hereby declared to be in full force and effect from and after its passage and publication according to law.

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Passed by the Board of Commissioners of Washington County, Minnesota this 23rd day of August , 1988.  
Sally Evert, Chairman  
Board of County Commissioners

Attest:  
Charles Swanson  
County Administrator

Approved as to form and legality:  
H. R. Turrentine  
Assistant County Attorney

Ordinance prepared by the Washington County Planning Department.

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# Appendix C

**MEMORANDUM**

**TO:** John Elholm, Parks Director, Washington County  
 Peter Mott, Parks Manager, Washington County

**FROM:** Ken Grieshaber, SRF Consulting Group

**DATE:** August 2, 2010

**SUBJECT:** BIG MARINE MASTER PLAN PUBLIC COMMENT AND FEEDBACK

The following written comments and feedback were submitted by attendees at the public open house meetings held on October 21, 2009 and February 24, 2010. Also included are all email comments submitted through the County web site or sent directly to Washington County staff during the master plan development process.

October 21, 2009 Public Open House Comment

Name / Address	Date	Comments
Anita Olson 17205 May Ave. N. Marine, MN 55049	10-21-09	Like Concept A with equestrian south of Co. 4 – also maintenance facilities south of 15 & 4. Also like equestrian entrance on 155. Really like the native vegetation buffer. Question – How could someone build a residence off of 177 <sup>th</sup> in the proposed park after 1988?
Donna Anderson 17980 Margo Marine, MN 55047	10-21-09	Meeting should have had open discussion. Another 20 years should not be needed. You already have over 30 years. <ul style="list-style-type: none"> <li>- Keep storage shed off corner/prime property, TUCK BACK</li> <li>- N-S movement not critical</li> <li>- Have Q's A at front end</li> <li>- What about paving May Avenue? What is plan?</li> <li>- Prefer campground north of 4.</li> <li>- Horses, x-ski, walkers ok – no motors</li> <li>- If May Ave N of 4 a CR take over 177<sup>th</sup>.</li> <li>- Don't lock south bay w/bridge</li> <li>- Make sure any Archery Range designed to NFAA Standards NAA (Olympic)</li> </ul>

Jody Rooney 12548 Keller Ave N Hugo, MN 55038	10-21-01	Please check on clearance height for horse trails – 10ft is generally minimal. Bridge height 12 rails on bridges – Please check on Highway trail standard or American trail association. Arch Historic Phase 1
Randy Ferrin 23290 Quentin Scandia, MN 55073	10-21-09	Keep horses & mountain bikes out of sensitive areas and separate all trail users. No Co-use of winter trails, consider lighted x-c trail loop. Actually, consider banning both horses and mountain bikes. Keep it as natural as possible.
Harlan Olson 17205 May Ave. N. Marine, MN 55047	10-21-09	Concept A is most appealing and practical to me.
John & Cindy Niemann 16341 May Ave. N. Marine, MN 55047	10-21-09	Please no snowmobiles. Would like to see entrance sited for 165 <sup>th</sup> Street moved to Westside of park. Make it somewhere on Manning. Residents on May like to go for walks and like it quite there. Don't want high volumes of traffic on May.
Joan Navratil 1415 Skiles Ln. Arden Hills, MN 55112	10-21-09	Would like to see equestrian trails developed on existing park land. To acquire other land may take many years – if even possible!
Ben Lemler 4448 221 <sup>st</sup> St. N. Forest Lake, MN 55025	10-21-09	Mainly interested in the development of mountain bike trails in the park.
James M. Wyatt 18657 Lamar Marine, MN 55047	10-21-09	Why don't you get these maps up on line so we can interact online instead of inconvenient meetings and publish the public comments. I prefer Concept A No modern RV camping near 185 <sup>th</sup> .
Dawn Lenler 22492 Evergreen Cr. Forest Lake, MN 55025	10-21-09	Interested in Mountain Biking trails.
Sue Wilcox 18631 Lamar Ave. Marine, MN 55047	Unknown	No campsites by 185 <sup>th</sup> St.
Pat Duvall 18657 Lamar Marine, MN 55047	10-21-09	I would like concept A. I do not want any camp ground anywhere near 185 <sup>th</sup> .
George Sheanstad 10914 185 <sup>th</sup> St. Marine, MN 55047	10-21-09	I live on 185 <sup>th</sup> St. and as of now you aren't going to put camp sites on the field south of 185 <sup>th</sup> . That would be wonderful if you don't. It would be a terrible eye sore.
Dan Cartier 18370 Norell Ave. N. Scandia, MN 55073	10-21-09	Please keep me informed of the next meeting date & time.  Questions....on Vet's Camp please call me.
Tim Gardner 771 N 5 <sup>th</sup> St. Bayport, MN 55003	10-21-09	Star Trail has about 200 miles of trails in Washington County and trails in Lake Elmo & Ravine Parks and would like add trails in the new Big Marine Park.
Jyneen Thatcher 12999 Keller Ave. N. Hugo, MN 55038	10-2-09	Consider water based trail system, eg...kayak in south backwaters. Prohibit equestrian use in winter

		<p>Mountain bike trails (not)as in C. Ok in B.  Equestrian only in south portion (grazed durable land)  Avoid budging across water routes  Keep maintenance fairly away from 4 &amp; 15 – too prominent  Lighted ski/walking trails  Winter warming facility  Dog off leash area?  Buffer doesn't need to be woods. Emphasize installation of native plant communities to support the existing high quality systems.  Create wildlife viewing areas/blinds.  Interpretive signs &amp; solar powered seasonal shelters  Campground needs to be close to the lake &amp; other primary uses.</p>
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February 24, 2010 Public Open House Comment

Name / Address	Date	Comments
Bob Jaqua 23161 Hilo Ave. N. Forest Lake, MN 55025	2-24-10	<p>Replace top soil in swimming (water) area with sand.  Redevelop plans to provide for campsites in immediate future.  We love the opportunities by finally having a park in No. Wash. Co.</p>
Jyneen Thatcher 12999 Keller Ave. N. Hugo, MN 55038	2-24-10	<p>Keep kayak launch off peninsula – respect high qual veg.  Use caution on developing horse trails – avoid ecological fragile areas.  Nature trail &amp; mtn bike use not compatible.  Keep ropes course out of woods.  Biathalon course near gun club site?  Kayak route through south bays.</p>
Marg Florke 15777 May Ave. N. May Township, MN 55047	2-24-10	<p>I was concerned where equestrian trail head / parking and ramping areas were going to be. Looks good. I was concerned if it would be fenced all around. I hear that it would not be. I am a horse owner and live next to park boundry.</p>
Janice Lehman 16090 Morgan Ave. N. Marine on St Croix, MN 55047	2-24-10	<p>Would love more riding trails but understand if land does not accommodate. Equestrian trailhead is in good location. No fences please. Pine Point has none &amp; it works well.</p>
DeWayne Hollister 19085 Manning Trl. N. Marine, MN 55047	2-24-10	<p>Snow mobile trail to close to our home on Manning everything else looks good for the park.</p>
Betty Hollister 19085 Manning Trl. N. Marine, MN 55047	2-24-10	<p>I think it's wonderful. Only don't like snowmobile trail going on Manning past our home to much speed. Gas fumes are bad. Our driveway always have problems getting stuck trying to get on Manning.</p>
Brent Reibel	2-24-10	<p>The walking path through my property is not right.</p>
Renee Arcand 15677 May Ave.	2-24-10	<p>From the standpoint of a camper, the campground is in excellent location now. From the standpoint of where we</p>

Marine, MN 55047		live, the campground will not have much impact on us. Hope you will get a plan in place to plant native vegetation buffers around all the edges.
Susan Kyle 10988 185 <sup>th</sup> St.N. Marine, MN 55047	2-24-10	Concern of rope structure or noisy recreation. I live on northern tip of pk. Maybe have not tar but natural path on the peninsula by Edstroms. Maybe vegetation for the prairie by 185 <sup>th</sup> that will keep sound down.
Renee Arcand 15677 May Ave. Marine, MN 55047	2-24-10	Hope to have a lot of paved & unpaved bike trails south of 4!! And bike trails off road, not along Co Rd 4, with trees & pond vistas & birds.....
Michael Nagle 18884 Layton Ave. N. Marine on St Croix, MN 55047	2-24-10	Park land is to big cut open land to 50% or less. Taxes for my home on Big Marine have escalated way out of control. Put some form of entertainment on the lake like a restaurant or a casino to raise revenue to support all the regional parks in Washington Cty.
John & Cindy Niemann 16341 May Ave. N. Marine, MN 55047	2-24-10	We have lived near (1/10 mile) the 165 <sup>th</sup> proposed group campground for 30 years and have enjoyed the peace and quiet. We are extremely concerned about the increased traffic volume noise and dust on a gravel road, as well as a parking lot with possible street lights, we spend a lot of time outdoors and there are no lights visible from our property at night to interfere with star gazing. I think we all know it is very difficult to control noise that would be coming from a campground, cars headlights, starting, doors slamming, people yelling, 24/7. A beach closes at dark but a campground can be all night. We like to have our window open spring-summer-fall and think the camping noise would be a real problem.
Gail Adams 6348 Langer Ln. Lino Lakes, MN 55038	2-24-10	I own a house on Big Marine. I was pleased to see on this public update that the campgrounds/RV areas proposed have been moved from the west shore of lake to east side. Thank you for responding in this way to residents concerns.

### **Email Comments Received about Big Marine Park Reserve Master Plan**

*Sent October 8, 2009*

Dear Mr. Mott:

We will not be able to attend the Big Marine Park Reserve Planning Meeting, but would like to make a comment for your consideration as you envision the future of this wonderful resource.

We and our three young children are homestead residents on the east bay of Big Marine Lake. We purchase park passes for both our vehicles and spend a great deal of time at the park's picnic area, playground, and beach.

We and other lake residents really appreciate our ability to visit the park via boat. When the park first opened, we consulted with park management on where we should dock our boat, and if we should purchase an additional pass in exchange for this privilege. At the time, we were told that we did not need to purchase an additional pass, and could dock our boat on the opposite side of the boat landing dock. We have followed this direction, but have noticed that signs have cropped up toward the end of the season indicating that this is no longer allowed.

We would like to encourage the planning commission to consider the needs of Big Marine Lake residents and develop a public dock or marina at Big Marine Park Reserve. Thank you.

Nan and Tony DeGonda  
13100 182nd Street North  
Marine on St Croix, MN 55047

Sent October 19, 2009

Mr. Mott:

I would like to comment regarding the upcoming meeting to decide which type of camping to create at Big Marine Park Reserve. I will not be able to attend Wednesday's meeting.

My extended family went camping at Lake Elmo Park this past summer and stayed at one of the "primitive" sites. We had a wonderful time and it was a great way to expose young children to wilderness-style camping. We plan on taking them to the BWCA next year. The only issue with the Lake Elmo sites is that they are far away from the lakeshore. It would have been great to be able to walk to the lake use a canoe or boat. Having the sites near both the lake and a canoe/boat launch would give people a better opportunity to use the water resources.

I hope you consider primitive camping sites near Big Marine Lake in you plans.

Thank you,

Ross Dahlin

Sent October 20, 2009

Hi Peter,

Feedback for your public meeting scheduled for Wednesday, 10-21 in Forest Lake.

Could you kindly provision for snowmobiles in Big Marine Park? It seems that as soon as the County takes over an area, the first thing to be announced are 'No Snowmobile " Signs. This was witnessed at Cottage Grove Ravine, Lake Elmo and most recently at Big Marine.

Planning for the Twin Cities cross country skiers is great as well as the exotic and expensive playground equipment at Big Marine. What about the Washington County Snowmobilers? <I think that you will find a high population of snowmobilers in Washington County.>

As a bare minimum, there should be an access trail to Big Marine Lake from County 4 and/or County 15 but with extensive acreage available, trails could be established. Speed limits and County patrols could control the perceived excesses just as they patrol for the park permits and occupant safety in the summer months.

I had written to Mike Polehna about this over a year ago and he replied that it was likely not considered by the planning commission. Let's serve as many citizens as possible with this wonderful asset. With the price of fuel and the general depressed economy, more people will probably stay closer to home and use this public funded resource.

May I hear back from you?

Thank you,

Daniel A. Ebert

Sent October 20, 2009

We need more horse trails!!! Big Marine would be awesome for this.

Thanks!

Pam H

Sent October 21, 2009

Dear Peter,

I am unable to attend the meeting tonight, but I am an avid bicyclist and would encourage you to consider the possibility of single track mountain biking trails within Big Marine Park Reserve. You probably know there are not too many areas in northern Washington County having off road bike trails. I think you would find a strong interest. I know a few years back there was a proposal for trails at Pine Point Park which was eventually defeated.

Please let me know if you think this is something which would be considered.

I will try to attend future meetings

Thank you,

Timm Reifschneider  
Rosenbauer  
5181 260th Street  
P.O. Box 549  
Wyoming, MN 55092 USA

Sent October 22, 2009

Hello Peter,

I missed the meeting on Wednesday night, Oct 21st. We like the park and look forward to watching it evolve. I live just north of the park on Mayberry Trail. We would really like to see horse trails in the park. If you could provide horse camping, that would be nice too. Are horse trails in the plan for Big Marine? Also, the swim beach is very shallow and it's very difficult to swim. Are there any plans to create a deeper swim beach?  
Thanks,

Karen Pessek  
Software Engineer  
Andersen Corp

Sent October 23, 2009

Hi,

I was unable to attend this week's meeting. Can you give me an update on the planned park horse trails?

Thanks.

Mary Ellen Couture

Regional Marketing Director - Minneapolis & Denver  
5910 Rice Creek Parkway  
Suite 400  
Shoreview, MN 55126

Sent October 23, 2009

Pete,

I was unable to attend the meeting concerning Big Marine Park Preserve. I would use the park more often if there were horse trails to ride on. I've taken my granddaughter there to use the wonderful playground and picnic area.

Connie Burke

Sent October 23, 2009

Mr. Mott

I was unable to attend the meeting concerning Big Marine Park last night. I live within 5 miles of this park and understand there are different projects being discussed as to what the public is interested in. I, myself am interested in seeing the equestrian part of the project going forward. There are very few places in this area where you can trailride. Case in point, Pine Point is a very small place to be able to ride now that the Gateway trail at Manning is closed while they are working on putting up a bridge over Manning. That project is gratefully appreciated by all that use it; not to mention the motorists for the safety that it will bring.

I am part of the volunteer Washington County Mt. Patrol so I ride my horse at least 5 days a week; because there are so few places to trailride. I ride quite a bit on the sides and ditches of the roads as an alternative to riding in an arena all the time.

There are a lot of horse people within a short distance of Big Marine Park that would utilize it. I am but one small voice on this matter and I have encouraged others to email you on this subject.

Thank you for your time.

Respectfully,

Patti Leko

Sent October 24, 2009

I was glad I got a chance to chat with you after the planning meeting Friday night. I am a long time camper of 60 years, a former Scoutmaster of 25 years and a resident within the reserve of 32 years. My wife is handicapped so we are very familiar with the challenges to handicap campers. The Scandia Boy Scout troop use to camp on John Edstrom's property before he sold to the park. Our family also camped on John's property back in the 50's and 60's. I would like to offer a couple suggestions for the park plan.

1. Limit the number of entrances to the park. More than one will require more employees and a result in much less security. A limited access entrance for group activities would not be too bad.
2. There should be a smaller FAMILY campground near the play ground and beach. Families would prefer not to use their vehicle to transport their kids to these facilities. It would reduce traffic within the park. It would also help handicap campers to make better use of the facilities. It is really sad to see handicap children not being able to use

facilities because of limited mobility. The campground could be located just south of the boat launch (Valentines old property) and gear it primarily to tents and fold down campers.

3. I would suggest making the west underpass under county road 4 big enough for RVs. Then in a later phase build a larger RV campground near the current Kelly Farm Hunt Club. This would require all campers to enter through the main gate. During the slow season and or mid week the south campground could be closed unless needed for additional campers.

4. Oscar Johnson lived here while Isaac Staples still owned Kelly Farm. He said Staples use to have a small steam driven boat that he would take from the farm to the summer house at the Vets camp. I would like to see the water way between Big Marine and the small lakes restored for use by canoes. The big lake is often to dangerous for canoeing.

5. If canoes could be used in the southern water areas, then the south east location might be a good spot for a group camp. Other wise I would recommend Edstrom's property, Which would make it easier for the ranger to monitor activity.

6. When the park reserve was established in the 70's we were told a number of times that no part of the park would be developed that would infringe on the privacy of the remaining in holding properties. I don't remember seeing this stated in the existing park plan. A statement to this effect should be included in the new park plan.

Please feel free to request additional comments.

Larry and Donna Anderson  
17980 Margo Ave  
Marine, MN 55047

Sent October 27, 2009

Hello Peter,

My name is Dan Stroeing, I live at 12277 155TH St. (155Th at May Ave.) I did not make the meeting that was last Wednesday 10/21/09, and was wondering if you could answer some questions for me on the park.

At this time who owns and controls the property bordering from 155th on the south to 170th on the north, Manning on the west to May Ave. on the east.

There have been conflicting reports that the County owns it, and also that Kelly Land and Cattle own it? If Kelly owns it how come all the current maps indicate that it is County owned? If the County owns it how come Kelly has got control of it for all their different uses? What are the future plans for this track of land? If you could please e-mail me on these questions.

Thank you,

Dan Stroeing

Sent October 27, 2009

I've heard that horse trails are planned for the new Big Marine Park. That would be wonderful since O'Brien State Park in the same area does not allow horses. It would be another reason to bring people in from out of the area.  
Thanks!

Lynn Glocker

Sent January 5, 2010

Hello Peter,

My business partner Steve Beckman informed me that you had discussed the possibility for a disc golf course to be added in the plan for Big Marine Park.

This sounds like a great idea. It has been my feeling that a disc golf course in the Washington County Park system has been long overdue.

Please let me know if there is anything I can do to help the project happen. My business, Par 72 Disc Golf, is the upper Midwest leader in course design. We have installed more than 20 courses in the last 5 years, as well as the lead consultant/designers for the Three Rivers Park District, Anoka County Parks, Carver County Parks and many other smaller city parks.

Steve had mentioned that attending the next meeting would be beneficial, I hope to meet you face to face as we will be there.

Thanks in advance,

Tim Gill  
President  
[www.par72discgolf.com](http://www.par72discgolf.com)

P.s. I hope you have had a chance to watch the 3 minute course design dvd that we sent you, that will help you understand exactly what we do.

Sent February 21, 2010

Re: Public comment opportunity March 24 relative to Big Marine Park Reserve

Dear Mr. Mott,

I enjoy biking, and one of the problems I face as a Hugo resident is not being able to get eastward on my bike without encountering some pretty hazardous stretches of road.

I am quite excited about the county's ongoing project at Big Marine Park Reserve, and since I live in Hugo, it's almost in my back yard. However, there is no way to get there safely on bike trails from downtown Hugo.

Does the county plan to include bike trails within the park, and a way for bicyclists to get there from Hugo besides the shoulder of County Road 4? County Road 8 and 7 are in deplorable condition and certainly are not safe for bicyclists.

I certainly would be in favor of enhancing the bicycle connections from downtown Hugo to points east, especially in conjunction with improved access to Big Marine Park Reserve, if it is within the purview of the county's park planning process (and budget) to do so.

Thank you.

Deb Barnes  
6491 132nd Street North  
HUGO, MN 55110-6034

Sent February 27, 2010

Thanks for making this information available.

I am disappointed to see that the plan still calls for 2 primary entry points. I find it difficult to believe during off peak and tight financial times that you would staff both. Is the dotted white line a possible road that would eliminate the May Ave entry?

I still think that you should make better use of the Kelly Farm Hunt Club area. When I was camping with kids I always looked for campgrounds that were easy walking distance to the swimming beach. If you put the campground on the east side maybe you should consider a second swimming beach.

Larry Anderson

Sent February 27, 2010

COMMENTS ON BIG MARINE LAKE PARK RESERVE MASTER PLAN, AS PRESENTED AT THE  
FEBRUARY 24, 2010, PUBLIC MEETING/OPEN HOUSE

I would like to suggest and encourage changes to the proposed plans for RV and Tent Camping, and to the proposed uses of the park in both the northeast (Margo Ave.) area and northwest (above Vets' Camp) area. These areas are adjacent to the lakeshore.

For the northeast area, I propose to reduce the camping area to the south one-third of the current proposal, and to restrict the use to "tents only". The RV camping area should be moved to the northwest area, above the Vets' Camp.

There are several reasons for these suggested changes to the Master Plan.

RV campers and "tent" campers have conflicting desires and characteristics. RV campers are more active and more likely to be families with children. Tent campers are more likely to desire a quieter and natural experience, and likely to find the commotion of RV campers to be distracting from their desired experiences.

RV camping is similar to the activities occurring at the Vets' Camp. It makes sense to cluster similar uses. Though there is a need for a small buffer between the park and the Vets' Camp, the noise from the RV campers will be similar to the Vets' Camp's own noises and unlikely to prompt complaints from the Vets' Camp users. Conversely, the active RV campers are less likely to be concerned with noise from the Vets' Camp or from County Road 15's traffic.

As property is acquired, the northeast (Margo Ave.) area is a great opportunity for shoreline restoration and preservation. The return of this shore to an "undeveloped" state, will provide an exciting "viewshed" to the developed areas of the park, and from the lake surface. It is important to preserve this "viewshed".

County Park Staff value all the natural areas of the park, but most park visitors will focus on the lake itself, as a recreational resource. They will take the most convenient and direct routes to the lake. It is important to design the park facilities to funnel users to particular places on the lakeshore, and to keep them away from repeated use of other sensitive areas of the lakeshore.

The current RV/Tent camping proposal in the northeast area creates 'linear' user areas that run parallel to the lakeshore. Campers taking a direct route to the lake, will create many lakeshore access points that cause erosion and other over-use issues to the lakeshore areas. Creation of a smaller "tent only" camp area, that is near the current South Public Access, will allow for design plans that will funnel most campers to this developed access point and protect other lakeshore areas from over-use. Hiking trails through the northeast area will provide a better experience, as hikers can "get away" from the developed camping area rather quickly. They will experience the "wild" view.

The RV campers in the northwest area, also, will need access to the lake. This access should be designed to focus users to the old Edstrom beach location.

In general, the concept of well designed lake access points should satisfy the users' desires to get to the lake, and still protect the greater undeveloped lakeshore.

The separation of RV and Tent campers provides another benefit. The old Lemond Road will require less improvement, as it will not need to accommodate large recreational vehicles.

Thank you for the opportunity to comment. I hope my ideas are helpful to creating an updated Master Plan.

Sincerely,

Jeffrey L. Peterson  
12628 – 182nd St N.  
Marine, MN 55047