

Frontenac State Park Management Plan



**Minnesota Department of Natural Resources
Division of Parks and Recreation**

November 2008



**Department of Natural Resources Approval
of Management Plan for Frontenac State Park**

Minnesota Statutes 86A.09, Subdivision 1, requires that a master plan be prepared for units of Minnesota's Outdoor Recreation System, including state parks and state recreation areas. The Laws of Minnesota for 1957 established Interstate State Park as part of Minnesota's Outdoor Recreation System (MS 85.012, Subd. 21).

The Minnesota Department of Natural Resources worked in partnership with Minnesota citizens and an interdisciplinary resource team to develop a management plan for Interstate State Park.

The management plan was approved by the Division of Parks and Recreation management team, and was approved through the DNR Regional Interdisciplinary Review Service (RIRS) during July 2008.

Handwritten signature of Mark Holsten in black ink.

Handwritten date "11-18-08" in black ink.

Mark Holsten, Commissioner
Minnesota Department of Natural Resources

Date

FRONTENAC STATE PARK MANAGEMENT PLAN



State of Minnesota Department of Natural Resources Division of Parks and Recreation

This management plan has been prepared as required by 2003 Minnesota Laws Chapter 86A.09 Subdivision 1.

For more information on this management plan please contact any of the following project participants from the Division of Parks and Recreation:

Harry Roberts, Park Manager Brent Anderson, Assistant Manager	Frontenac State Park 29223 County 28 Boulevard Frontenac, MN 55026
Joel Stedman, Regional Manager	DNR Parks and Recreation 1200 Warner Road St. Paul, MN 55106
Aaron Wunrow, Regional Park Operations Supervisor	DNR Parks and Recreation 2300 Silver Creek Road NE Rochester, MN 55906
Courtland Nelson, Division Director Pat Arndt, Planning, Public Affairs and IT Manager Michele Hanson, Senior Planner Jade Templin, Principal Planner	DNR Parks and Recreation 500 Lafayette Road St. Paul, MN 55155-4039

The development of this plan was greatly assisted by the members of the Frontenac State Park Citizen Advisory Committee, who donated many hours of their time to help analyze and discuss current park issues, and make management recommendations.

For more information on this management plan please contact the DNR Division of Parks and Recreation at (651) 259-5600.

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TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
INTRODUCTION	3
Legislative History	3
Role of Frontenac State Park in the Minnesota State Park System	4
Mission and Vision Statements	4
Planning Process	5
REGIONAL ANALYSIS	7
Regional Landscape Description	7
Regional Population Analysis	8
Changes in Population Diversity	8
Impacts of an Aging Population on Recreation	9
Trends in Outdoor Recreation Participation	9
Regional Land Use	10
Regional Recreation and Tourism Opportunities	11
Trail Opportunities	11
Overnight Use	12
State Forest Recreation Areas	12
Visitor Use Patterns	12
Revenue Generation and Economic Impact	13
NATURAL AND CULTURAL RESOURCES	18
Climate	18
Geology and Topography	19
Soils	20
Vegetation	21
Hydrology	23
Surface Water	23
Groundwater	24
Fisheries	24
Wildlife	24
Endangered, Threatened and Special Concern Species	25
Cultural and Archaeological Resources	26
Natural and Cultural Resources Recommendations	27
INTERPRETIVE SERVICES	36
Statewide Interpretive Plan	36
Interpretive Services Program at Frontenac State Park	36
Goals and Objectives	36
Primary Themes	37
Current Interpretive Services	37
Interpretive Services Recommendations	38
RECREATIONAL USE AND VISITOR SERVICES	40
Access	40
Existing Recreational Resources and Facilities	40
Recreational Use and Visitor Services Recommendations	42
PROPOSED DEVELOPMENT	48
PARK BOUNDARY	50
Land and Water Conservation Fund	50

Current Park Statutory Boundary	50
Park Statutory Boundary Change Discussion	50
Proposed Park Statutory Boundary Additions and Deletions	51
Park Boundary Recommendations	52
SIGNIFICANT AREAS MAPPING	56
PARK OPERATIONS	59
Staffing Level and Operational Issues	59
Enforcement	59
Additional Staffing Needs	59
Park Operations Recommendations	60
PLAN MODIFICATION PROCESS	61
Plan Amendments	61
Plan Revision	62
BIBLIOGRAPHY	63
APPENDIX A: PLAN RECOMMENDATIONS	65

LIST OF TABLES

Table 1. Population Estimates & Projections for Counties Surrounding Frontenac State Park	9
Table 2. Comparison of Population Aged 60 Years and Older	10
Table 3. Miles of Designated Trail Opportunities within 50 Miles of Frontenac State Park	11
Table 4. Camping opportunities within 50-mile radius of Frontenac State Park	12
Table 5. Park Attendance 1997 to 2006	13
Table 6. Economic Impact of Visitors to Frontenac State Park, 2006	13
Table 7. Average Rainfall Amounts for Frontenac State Park	19
Table 8. Average Snowfall Amounts for Frontenac State Park	19
Table 9. Temperature Ranges for Frontenac State Park	19
Table 10. Rare Species of Frontenac State Park	26

LIST OF FIGURES

Figure 1. Aerial Photo	15
Figure 2. ECS Subsections	16
Figure 3. 50 Mile Radius for Recreation Opportunities	17
Figure 4. Contour Elevations	30
Figure 5. Bedrock and Quaternary Geology	31
Figure 6. Pre-settlement Vegetation	32
Figure 7. Land Cover	33
Figure 8. Desired Future Conditions	34
Figure 9. Cultural and Archaeological Features	35
Figure 10. Summer Recreational Resources	46
Figure 11. Winter Recreational Resources	47
Figure 12: Land Ownership	54
Figure 13: Proposed Boundary Adjustments	55
Figure 14: Significant Areas Map	58

EXECUTIVE SUMMARY

This plan documents the work of a 12-month planning process and sets the general direction for the management of Frontenac State Park for the next 20 years. Input from the community and state park users was solicited during open house events, from visitor comment cards and surveys and during the public comment period on the draft plan. A Citizens Advisory Committee and a Technical Advisory Team also provided input focused on recommended actions management for the management of natural and cultural resources and recreation. It is the responsibility of the DNR Division of Parks and Recreation to determine the appropriate priorities and actions needed to implement these recommendations. Specific management and operational details may change over time as new information becomes available or technologies or budgets change.

The following is a summary of the major recommendations for the park management plan. A complete list of recommendations can be found within each section of the plan and a comprehensive list of all recommendations is included in Appendix A.

Natural Resource Management Recommendations

- Maintain or improve or restore the quality of native plant communities or plant community reconstructions.
- Preserve & perpetuate populations of endangered, threatened or special concern species and any other rare plant species, which are discovered in the future.
- Preserve or restore populations of vertebrate and invertebrate wildlife that are known to currently use the park. Focus on state-listed or rare species when appropriate.
- Restore populations of vertebrate and invertebrate wildlife that are known to have historically existed in the park where feasible.
- Manage the park so it continues to be a premier migration stopover site for migratory birds.
- Survey and monitor park for existence of documented species on a 10-year cycle or on an appropriate cycle to document and evaluate effectiveness of resource management strategies. Record discovery of new species and incorporate into monitoring cycles.

Cultural Resource Management Recommendations

- Protect and preserve all cultural resources within the state park.
- Evaluate impacts of current and future development on cultural resources.
- Pursue partnerships with Native American communities, agencies, institutions, special interest groups, volunteers and local communities to develop site and resource management practices that perpetuate and interpret cultural and historical sites.

Interpretive Services Recommendations

- Place a seasonal park naturalist at Frontenac State Park for the warm weather season when sustainable funding is available
- Continue to provide a wide variety of interpretive programming focusing on park themes including seasonal variety of recreational opportunities.
- Pursue partnerships with other agencies, institutions, special interest groups, volunteers and local communities to deliver additional interpretive services and developing research opportunities.
- Develop a park education program that teaches outdoor skills such as: fishing, hunting, birding, tree and wildflower identification, nature photography, astronomy and star gazing, painting and drawing nature, poetry, story telling and writing, song writing and music.

- Develop a volunteer program that trains and engages citizens to work on resource management activities such as invasive/alien species management, wildlife or native plant community monitoring, restoration and reconstruction and lead interpretive programs about these efforts.

Recreational Use and Visitor Services Recommendations

- Protect and enhance the quality of the experience for campers who have varying expectations.
 - Remove appropriate number of sites within current campground to provide opportunity for re-vegetation between sites to increase privacy buffer between sites and retire exhausted areas.
 - Develop an additional loop of sites adjacent the existing campground, including sites to accommodate group/family style camping.
 - Consider possibility of adding an area with full amenities for RV camping.
 - Upgrade electric services and other amenities in campgrounds and at campsites as appropriate.
 - Review locations within the park to explore feasibility of adding an appropriate number of remote sites.
 - Upgrade the group camp area and reroute access road away from campground loop to improve camper experiences.
 - Add camper cabins where resources and the visual quality of the park will not be negatively impacted.
 - Develop additional opportunities to provide interpretation as well as active play for young campers/visitors.
 - Minimize conflicts between park users.
- Protect viewsheds from main park road to preserve visual appeal and rustic character of park.
- Explore opportunities to increase use of picnic area without diminishing experience for those using area for quiet contemplation.
- Provide visitors with varying interests and physical capabilities with a variety of trail opportunities to explore the park and learn about its natural and cultural resources.
- Provide a contact station/park office facility that meets needs and interests of visitors and better accommodates park operation needs of park staff.
- Rehabilitate or reconstruct segments of the three vertical bluff face trails.

Park Boundary Recommendations

The Citizens Advisory Committee and the Technical Advisory Team developed a set of criteria to guide consideration of boundary changes. The criteria include: acquiring additional river frontage, protecting the river bluffs and their associated habitat and hydrology; buffering the park from impacts of future development; provide additional protection of significant native plant communities; protect view sheds that enhance the park experience and make connections to significant plant communities that extend beyond current boundary to protect habitat and wildlife corridors.

- Continue to acquire parcels within Frontenac State Park statutory boundary.
- Add lands as described in the plan to the park statutory boundary to protect and restore park resources, provide recreation and interpretive opportunities, and clarify park boundaries.
- Delete lands as described in the plan from the park statutory boundary that are developed or offer minimal resource protection or recreation opportunities.
- Work with surrounding landowners to inform them of conservation measures they can implement on their property especially if they have significant natural resources on their land or have the potential to impact view sheds.
- Work with special interest groups and local and county units of government to develop education and stewardship opportunities to be implemented by surrounding land owners and park neighbors on their property to buffer and protect and enhance significant natural resources and important view sheds.

INTRODUCTION

Frontenac State Park is a 2,899 acre park on the Mississippi River with a spectacular vista of Lake Pepin. The park is located in Goodhue County approximately 10 miles southeast of Red Wing off of US Highway 61 and five miles northwest of Lake City.

As early as 1935 there was interest in establishing Frontenac State Park. Over the next quarter of a century, park enthusiasts met with local opposition resulting in a lack of political will to establish a park. In 1954, the Frontenac State Park Association carefully cultivated political support and solicited contributions to purchase land to offer as a match to the legislature. The park was officially designated in 1957.

Frontenac State Park was founded on the premise of preserving the natural features of the area as a wildlife and bird sanctuary and was classified as a “natural state park” in 1979. The park has been managed over the past 28 years with the goal of preserving the park’s natural resources and continues to support a rich diversity of plant and animal species. Recreational development has been kept to a minimum. The park is located within the Blufflands landscape. The Minnesota Comprehensive Wildlife Conservation Strategy lists 156 species of greatest conservation concern within the Blufflands landscape. One hundred and three of those species have been observed within Frontenac State Park.



Frontenac State Park and the surrounding area also have a rich cultural history dating back to the inhabitation by the Hopewellian culture over 2,400 years ago, through European exploration and settlement, to when the town of Old Frontenac was a summer resort for steamboat passengers.

Frontenac State Park continues to be a birdwatcher’s paradise, located within the Mississippi River migratory flyway. The park offers visitors an exciting diversity of sights and sounds in all seasons. Over 260 species of resident and migrating birds have been observed within the park. The diverse habitat of the park includes blufflands, limestone outcrops, prairie, upland hardwood forests, floodplain forests, mud flat and beach cobble, streams and wetlands.

Camping and hiking are favorite summer recreational activities within the park. Anglers are provided with a backdrop of the scenic bluffs along the shores of Lake Pepin where the diverse habitats of the Mississippi hold pike, walleye, and bass. In the winter, visitors also enjoy camping, snowshoeing, snow sliding, snowmobiling and cross-country skiing.

Frontenac State Park is one of several state parks along both sides of the Mississippi River within the Blufflands landscape. Minnesota state parks include John A. Latsch State Park (1,654 acres) and Great River Bluffs (3,067 acres) in Winona County. Parks on the Wisconsin side include; Merrick State Park (320 acres) in Buffalo County and Perrot State Park (1,270 acres) in Trempealeau County and Wyalusing State Park (2,628 acres) and Nelson Dewey State Park (756 acres) in Grant County.

Legislative History

Minnesota State Statutes Chapter 85.012 established the Minnesota Department of Natural Resources Division of Park and Recreation and authorized existing park units. Subdivision 21 refers to Frontenac State Park beginning with its establishment in 1957.

Additions to the state park statutory boundary were authorized by statute in 1961, 1965, 1969, 1971 and 2006. An addition and deletion to the park statutory boundary was enacted in 1986.

Role of Frontenac State Park in the Minnesota State Park System

Each state park plays a unique role in fulfilling the Division of Parks and Recreation's mission as each unit has a unique set of natural resources, recreational opportunities and facilities. Visitors to Frontenac State Park have the opportunity to see and explore the rich biological diversity of the Mississippi River blufflands and the histories of the people who have visited and inhabited this landscape before them.

The Mississippi River and Lake Pepin are the result of the geologic forces of deposition and erosion over millions of years. Humans have also shaped the park in many ways. Native peoples used fire to manage the native plant communities, construction of a trading post attracted new residents who used the area for recreation and the land for agricultural purposes. Resources such as quarried bedrock were also harvested within the park. Park staff continue to shape the park with resource management practices intended to preserve and restore the blufflands landscapes and native plant communities. The park continues to provide visitors with the opportunity to learn how both natural and cultural influences have shaped the park in the past and into the future.

The park provides visitors with exceptional bird and wildlife watching opportunities. More bird species have been observed at Frontenac State Park than at any other state park in Minnesota. The park also offers camping, hiking, skiing, sliding, snowmobiling and other recreational opportunities. The park's close proximity to the Minneapolis-St. Paul area means it offers day use opportunities as well as a convenient location for introducing new users to the state park system.

Recreational facilities at the park include:

- A visitor contact station with a small Nature Store.
- Semi-modern campground with 58 sites (19 with electrical hookups), shower facilities, 1 primitive group campground and 6 primitive cart-in campsites.
- Picnic grounds with 40 tables and a panoramic view of Lake Pepin, small open gazebo and a picnic shelter with electricity, seasonal restrooms and a wood burning stove. The picnic shelter serves as one of two warming shelters in winter.
- Snowshoeing is allowed anywhere off of groomed ski trails.
- Sliding hill with nearby warming house.

There is a total of 13 miles of trail within Frontenac State Park providing visitors with a variety of trail experiences. All 13 miles are open to summer trail uses:

- 13 miles are open for hiking.
- 1.5 miles of the 13 miles are self guided interpretive trails.
- 1 mile of the 13 miles is a paved, accessible trail appropriate for biking and in-line skating as well as hiking.

Of the 13 miles of trail, 11.2 miles are open for winter trail uses:

- 5.7 miles for cross country skiing (groomed for Nordic cross country skiing).
- 5.5 miles for snowmobile use.

Mission and Vision Statements

The following mission and vision statements provide a perspective on the role of the Department of Natural Resources, the Division of Parks and Recreation and finally the role that Frontenac State Park will fulfil within the park system for the next 20 years.

Minnesota Department of Natural Resources Mission

The mission of the Minnesota Department of Natural Resources is to work with citizens to conserve and manage the state's natural resources, to provide outdoor recreation opportunities, and to provide for commercial uses of natural resources in a way that creates a sustainable quality of life.

Division of Parks and Recreation Mission

We will work with people to provide a state park system, which preserves and manages Minnesota's natural, scenic and cultural resources for present and future generations while providing appropriate recreational and educational opportunities.

Frontenac State Park Mission

Protect, restore and enhance the diverse landscapes, natural and cultural resources and recreational opportunities found within the park for the use, education and enjoyment of present and future generations.

Frontenac State Park Vision

Over the next 20 years Frontenac State Park will protect, enhance, restore and manage the natural and cultural resources that serve to exemplify the blufflands landscapes of the Mississippi River valley while providing appropriate educational and recreational opportunities for visitors to experience the natural and cultural history of the park.

We will continue to work with the community and the people of Minnesota to ensure that Frontenac State Park is managed to meet the needs of current and future generations, guided by the following principles:

- Manage and enhance the park's natural, cultural and scenic resources.
- Preserve and perpetuate populations of listed or special status plant and animal species and any additional species of concern identified in the future.
- Continue to actively seek and adopt innovative, effective and efficient management practices.
- Develop partnerships and cooperative strategies for enhancing resource management, educational opportunities and tourism in the Mississippi River Valley.
- Preserve and enhance the significant viewsheds within the park while protecting the park's natural and cultural resources.
- Preserve and enhance the opportunity for park visitors to experience wildness, quiet and solitude.
- Provide access to park resources and opportunities for people of varying abilities.
- Provide varied, unique, rewarding and diverse educational opportunities to ensure that visitors will understand, value and enjoy the diversity of landscapes, natural features, cultural heritage and recreational opportunities found in the park.
- Develop educational and interpretive programs to create a sense of stewardship among park visitors.
- Continue to provide high quality park experiences for campers and all park visitors.

Planning Process

The Frontenac State Park Planning process began in the spring of 2006. Two planning teams were established to provide input into the process:

Frontenac Citizens Advisory Committee (CAC):

The Citizen Advisory Committee provided public input throughout the planning process. This group was made up of representatives from recreational groups, neighboring communities, local governments, neighbors and other stakeholder groups. The members represent a variety of perspectives and interests that are intended to serve as a representation of the diversity of park visitors and supporters. The committee met monthly during the summer and fall of 2006 to analyze and provide input on management issues related to natural and cultural resources, interpretive programming, recreational needs and the park boundary. Throughout the planning process

participation in meetings was open to the public and membership of the CAC was dynamic. Collectively the committee provided a valuable perspective for parks staff as they developed the management goals, objectives, and strategies for the future use and management of this park over the next 20 years. Organizations that participated in the Citizen Advisory Committee included:

- | | |
|---|---------------------------------------|
| Frontenac State Park Association | Hiawatha Valley Partnership |
| Frontenac Heritage Preservation Commission | Lake City Council |
| Friends of Town Hall (Frontenac) | Florence Township |
| Frontenac Sportsman's Club | Minnesota Trail Riders Association |
| Order of the Ursuline Sisters - Villa Maria | Minnesota Horse Council |
| Mississippi Valley Partners | U.S. Congressman John Kline's Office |
| Lake City Tourism Bureau | Parks and Trails Council of Minnesota |
| Lake City Chamber of Commerce | Watchable Wildlife, Inc. |
| Hok-Si-La Park | Local residents and citizens at large |

Citizen Advisory Committee Meetings

- | | |
|--------------------|---|
| July 20, 2006 | Introduction and Regional Analysis |
| August 17, 2006 | Natural and Cultural Resource management issues |
| September 14, 2006 | Recreation Resource Issues |
| October 19, 2006 | Interpretive Issues |
| November 9, 2006 | Park Boundaries |

Public Meetings

- | | |
|-------------------|--|
| June 14, 2006 | Open Forum – Official kick-off of Planning Process |
| August 8, 2006 | Park Manager's Evening Chat with Campers |
| November 30, 2006 | Landowners and Neighbors Meeting |
| March 17, 2008 | Open House – Public Review Period |

Technical Advisory Team:

In addition to the citizen committee, a team of resource professionals met to assist in gathering data and technical expertise during the planning process for the management plan. The team provided an important opportunity to develop and analyze the management recommendations for natural resources, interpretive programming and recreational facilities over the next twenty years. The team included representatives from each of the MDNR Divisions in the Southern Region.

Technical Advisory Team Meetings

- September 14, 2006
- October 30, 2006

The management plan for Frontenac State Park is the result of the combined efforts of these two planning teams as well as the information gathered at the public open forums. This draft was made available for a 30-day public review in March 2008. During the public review period, a public open house was held to provide citizens with the opportunity to review the plan and have questions answered and concerns addressed.

Following the public review, comments were taken into consideration and the draft management plan was revised, and then submitted for Minnesota Department of Natural Resources staff review. The Frontenac State Park Management Plan was approved by the Commissioner of Natural Resources on November 18, 2008.

A copy of the completed management plan and a planning process file which documents the planning effort are available at Frontenac State Park as well as at the MDNR Central Region Headquarters in St. Paul and the Minnesota Department of Natural Resources Central Office in St. Paul. The plan is also available also available on Minnesota Department Natural Resources Division of Parks and Recreation website.

REGIONAL ANALYSIS

This section of the plan describes both the ecological and socioeconomic regions in which Frontenac State Park resides and the primary relationships between the park and these regions. The ecological region is discussed in terms of the Minnesota Ecological Classifications System (ECS). The socioeconomic region is described in terms of a regional population analysis and a description of regional recreation and tourism opportunities. Throughout this chapter, the plan will reference a 50-mile radius from the park. This distance was chosen to represent an area roughly within a one-hour drive of the park. Because Frontenac State Park is within an hour drive from portions of the Minneapolis-St. Paul metropolitan area, this section also includes discussion of demographic trends for the Minneapolis-St. Paul Metropolitan Area. (See Figure 1. Aerial Photo).

Regional Landscape Description

Minnesota's Ecological Classification System is part of a national classification system that separates and describes units of different landscapes. The approach stresses the interrelationships and resulting interactions among components of the ecosystem including climate, geology, geomorphology, parent materials, soil, vegetation, hydrology and historical land use. The ECS is a management tool that: (1) describes the extent and content of various ecosystems; (2) improves resource managers' abilities to predict how landscapes will change over time; (3) improves a managers' ability to manage all natural resources on a sustainable basis and (4) allows managers to communicate more effectively with one another.

Subsections are ECS units defined by the glacial deposition processes, surface bedrock formations, local climate, topographic relief and the distribution of plants, especially trees. Frontenac State Park is part of the Blufflands Subsection. (See Figure 2. ECS Subsections).

The Blufflands Subsection is located in southeastern Minnesota. The topography is largely shaped by sedimentary bedrock formations and the results of glaciations that eroded and deposited rock debris and the distribution of wind blown soils.

The landscapes of Frontenac State Park are dominated by the Mississippi River and are characterized by bluff prairies, steep bluffs, rock outcrops and deeply dissected stream valleys, often 400 to 500 feet deep. Numerous groundwater-fed streams can be found within the blufflands subsection. There are two groundwater-fed streams within the Frontenac State Park, Pleasant Valley Creek and Wells Creek. It must be noted that there are few lakes within the blufflands subsection but there is one naturally impounded water body of approximately 40 acres located at the eastern end of Frontenac State Park. Pleasant Valley Lakelet, known locally as Frontenac Pond, formed by heavy sediment laden floodwaters of Wells Creek in the early 1950s. The deposition of sediments built a dike partially blocking Pleasant Valley Creek.

Rich hardwood forests covered the slopes of the Mississippi River valley and floodplain forests grow along the smaller streams and backwaters. Historically, tallgrass prairie and bur oak savanna were major vegetation types on ridge tops and dry upper slopes. Red oak, white oak, shagbark hickory, maple and basswood grew on moist slopes, and red oak-basswood-black walnut forests grew in protected valleys. Prairie was restricted primarily to the broader ridge tops, where fires could carry, but also occurred on steep slopes with south or southwest aspect.

Agriculture, both row crops and pastures, replaced much of the former savanna and prairie areas and is currently the most prominent land use in this subsection. Forestry is also an important land use and outdoor recreational opportunities abound.

Protection and restoration of the health of oak savanna, prairie, bluff communities, shoreline and stream and river systems is an important conservation objective for the blufflands subsection according to Minnesota's Comprehensive Wildlife Conservation Strategy. The Comprehensive Wildlife Conservation Strategy (CWCS) is the Minnesota Department of Natural Resources' action plan for protecting Minnesota wildlife. The Species of Greatest Conservation Need identifies species whose populations are identified as being rare, declining, or vulnerable. Within the Blufflands subsection, 156 Species of Greatest Conservation Need are known or predicted to occur, which is the most of any subsections in Minnesota.

One hundred and three species of wildlife found at Frontenac State Park are on the list of Species of Greatest Conservation Concern (SGCC). These species include butterflies such as the Regal Fritillary birds like the Henslow's Sparrow and reptiles like the Timber Rattlesnake. A total of 261 bird species have been observed at Frontenac, more than any other Minnesota state park.

Frontenac State Park encompasses 2,899 acres within the park boundary. Approximately 649 acres of the total acreage within the park's statutory boundary remain in private ownership. Just six percent, or 172 acres, of the total park acreage is classified as developed (campgrounds, roads and trails) or under agricultural use areas. Agriculture or old fields classifications account for 1,326 acres. The remaining 1,353 acres within the park, or 51%, are classified as native plant communities. The Minnesota County Biological Survey recognized 261 of the 1,353 acres of native plant communities in the park as being of outstanding, high or moderate biological significance.

Other conservation concerns include the protection of groundwater quality and quantity as well as the reduction of soil erosion. Groundwater often has high amounts of nitrates and phosphates and surface waters are impacted by sedimentation. These pollutants are mainly the result of agricultural and development activities.

Regional Population Analysis

Frontenac State Park is located within Goodhue County, approximately 65 miles from the heart of the Twin Cities Metropolitan Area. The park draws a majority of its visitors from the Twin Cities. Population growth in the metropolitan area and along the US Highway 52 and US Highway 61 corridors create a regional corridor for growth and will likely increase pressure on the park's resources, facilities and staff as more people look for places to recreate.

Minnesota continues to be one of the fastest growing states in the Midwest. According to the 2000 U.S. Census Bureau, between 1970 and 2000 the state's population increased by 29.3%. The Twin Cities Metropolitan Area is expected to contribute 68 % of the state's total growth by 2030. The Metropolitan Area grew 40.9% from 1970 to 2000 and is projected to grow another 32% by 2030.

Changes in Population Diversity

Minnesota's population will become more diverse over the next 20+ years. In 2000, 9% of Minnesotans identified themselves as non-white. By 2030, that segment is projected to be 16%. The most significant changes in diversity are expected to occur within the seven county metropolitan area and surrounding counties. The diversity change projections for nearby Rochester, the 3rd largest city in Minnesota, mimic those of the Twin Cities. Similar projections for diversity change are anticipated within Goodhue and surrounding counties. The proximity of Frontenac State Park to the metropolitan area and Rochester means it will be important for the Division of Parks and Recreation to anticipate how state parks can attract and serve the needs of various racial and ethnic populations. It will be especially important for Frontenac State Park to identify barriers that impede local underserved populations from visiting the park and implement strategies to attract visitors and find ways to meet their educational and recreational interests.

Table 1. Population Estimates & Projections for Counties Surrounding Frontenac State Park

County	2000	2005	% Change 2000-2005	2030 (Projected)	% Change 2000-2030
Dakota	355,904	383,592	7.8%	501,020	41%
Goodhue	44,164	45,585	3.3%	52,890	65%
Olmsted	124,277	132,720	8.8%	170,530	37%
Wabasha	21,610	22,200	2.7%	69,540	69%
Twin Cities Metro Area (7 Counties)	2,868,847	3,073,800	7.0%	3,784,100	32%
Minnesota	4,919,479	5,174,743	5.2%	6,306,130	28%
Buffalo, WI	13,804	14,057	1.2%	14,951	6%
Dodge, WI	85,897	88,103	2.2%	98,215	11%
Pierce, WI	36,804	39,102	6.2%	45,850	20%
St Croix, WI	63,155	77,144	22.2%	106,026	46%
Wisconsin	5,363,675	5,536,201	3.3%	6,415,923	15%

An important group within the general area of the park is the Prairie Island Indian Community. Prairie Island Indian Community is a Mdewakanton Dakota Indian reservation located in and around the city of Red Wing. Established in 1889, much of the original reservation land was lost following construction of Lock and Dam No. 3 along the river by the United States Army Corps of Engineers. Today, the main reservation lies within the city of Red Wing, with off-reservation trust lands in Red Wing and Welch Township in northern Goodhue County as well as in Ravenna Township in eastern Dakota County. The reservation had 199 residents as of the 2000 census, including its trust lands.

Impacts of an Aging Population on Recreation

Recreational activities change dramatically throughout an individual's life cycle. Changes are due not only to changes in an individual's physical abilities, but also social, economic, and other factors as. Minnesota will experience a growth in residents 60 years and older. Older adults may take on new recreational interests especially after their children have grown or when they retire. Demographic changes will affect levels of participation in various recreational activities. "Baby Boomers" are approaching retirement age, but as compared with previous generations these individuals are generally more active. Most park and recreational facilities will undoubtedly undergo adjustments to accommodate an older recreational market.

Trends in Outdoor Recreation Participation

Projections made for a ten year period (2004-2014) show participation in outdoor activities declining across many types of activities. The percent of the population participating in activities such as "viewing, identifying or photographing birds or wildlife is projected to decline by 22%. Fishing, hunting, biking and skiing are all expected to decline between 18 to 50%. A trend that is especially important for the DNR Division of Parks and Recreation and Frontenac State Park is that the percent of population participating in camping is anticipated to increase by almost 16%. It is also important to note that the areas of the state projected to have the most growth will likely result in greater demands for recreational opportunities. With the proximity of Frontenac State Park to the metropolitan area and the potential for increasing interest in camping it can be anticipated that there will be a demand for increased camping capacity and other recreational facilities at the park during the next 20 years.

The DNR Division of Parks and Recreation will also be taking a system wide approach in determining how demands for future camping interests and recreational needs will be met at Frontenac State Park.

Table 2. Comparison of Population Aged 60 Years and Older

Counties	2000 Total Population	2000 Total Population aged 60+	2030 Total Population	2030 Total Population aged 60+	% Change 2000-2030
Dakota	355,904	36,709 (10%)	501,020	113,510 (23%)	209%
Goodhue	44,164	8,039 (19%)	52,890	16,820 (32%)	109%
Olmsted	124,277	17,960 (15%)	170,530	42,430 (25%)	136%
Wabasha	21,610	4,325 (20%)	69,540	8,090 (31%)	87%
Twin Cities Metro Area (7 County)	3,463,360	467,725 (14%)	3,784,100	1,088,200 (24%)	132%
Minnesota	4,919,479	772,278 (16%)	6,3268,0500	1,628,400 (26%)	110%
Buffalo, WI	13,804	2,948 (21%)	14,951	4,821 (32%)	63%
Dodge, WI	85,897	15,467 (18%)	98215	26,049 (26%)	62%
Pierce, WI	36,804	4,773 (13%)	45850	12,123 (26%)	154%
St Croix, WI	63,155	8,222 (13%)	106,026	23,321 (22%)	183%
Wisconsin	5,363,715	907,570 (17%)	6,415,923	1,695,820 (26%)	83%

Regional Land Use

The attractiveness of the landscape, the proximity to the metropolitan area and the current expansion of transportation routes make Goodhue County a very desirable place to live. US Highway 52 and US Highway 61 are growth corridors in the county. The townships and cities along those routes are experiencing significant development pressures. Many communities have taken a proactive approach to land use planning to ensure that the natural resources that contribute to their quality of life are preserved for the future.

Goodhue County is a rural county located in southeastern Minnesota. It is bounded by Dakota County on the north, Wabasha County on the southeast, Dodge and Olmsted Counties on the south, and Rice County on the west. Goodhue County's eastern border is formed by Lake Pepin (Mississippi River) with the State of Wisconsin directly across the river. The largest communities in the county are Red Wing, Cannon Falls, Zumbrota and a portion of Lake City.

Goodhue County Land Use is managed through its Comprehensive Plan and related ordinances. The County Comprehensive Plan was updated in 2004. The plan identified the need for careful land use planning and development in areas with sensitive habitat and natural resources such as; the Decorah edge, bluffslands, rare, threatened and endangered natural resource sites, wetlands, streams, etc. Agriculture continues to be the largest use of land in Goodhue County but rural residential and urban developments are steadily consuming natural resources and agricultural land. Regulating development is important to preserve, protect or enhance the county's remaining habitat, natural and cultural resources and biodiversity.

Within Goodhue County, there are nine wildlife management areas with approximately 6,958 acres, 11 scientific and natural areas covering 1,171 acres and state forest lands totaling 5,658 acres. Frontenac

State Park includes 2,899 acres within the park statutory boundary, of which 649 acres remain in private ownership.

Regional Recreation and Tourism Opportunities

Numerous recreational and tourism opportunities can be found in the Mississippi River Valley and area around Frontenac State Park. There are nine state parks or state recreation areas in Minnesota within 50 miles of the park: John A. Latsch, Carley, Afton, Rice Lake, Nerstrand Big Woods, Whitewater, Fort Snelling, Minnesota Valley State Recreation Area and St. Croix Islands State Recreation Area. Additionally, there are four state parks along the Mississippi River in Wisconsin: Willow River, Kinnickinnic, Merrick and Trempealeau. The Richard J. Dorer State Forest encompasses most of the blufflands landscape along the Mississippi River in southeastern Minnesota. Miles of trails are woven through the area and include: Cannon Valley Trail, Douglas State Trail, Pioneer State Trail, as well as many county and municipal trails. Trails in Wisconsin include Red Cedar, Chippewa River, Buffalo River and the Great River Trail. There are also numerous county and municipal parks in both states along the Mississippi River corridor. (See Figure 3. 50 Mile Radius for Recreation Opportunities).

The Great River Road is a designated Scenic Byway that follows the Mississippi River from Itasca to New Orleans. The byway winds through stunning scenery within the blufflands subsection, featuring the wooded bluffs that overlook the wide, winding waters of the Mississippi. This portion of the Mississippi River is also home to some of the best bird watching in Minnesota. Numerous public water accesses for boaters also provide recreational and fishing opportunities along the Mississippi River. Other scenic drives in the area include the Apple Blossom Scenic Drive and the Historic Bluff Country Scenic Byway

Trail Opportunities

There are a variety of trail opportunities available within 50 miles of the park. Table 3 provides a conservative estimate of total trail miles within the area.

Table 3. Miles of Designated Trail Opportunities within 50 Miles of Frontenac State Park

Managing Agency	Hiking	Equestrian	Cross Country Ski	Biking	Biking (off road)	Snowmobile
Minnesota						
State Parks	81	5	39	11		12
Trails & Waterways	120	64	117	120		100
Forestry	15	34	15			38
County (Goodhue)	20			20		400
Other County/Local						300
MN Totals	216	103	189	131		850
Wisconsin						
State Parks	21		3		3	
Trails	223	41	223	223		200
WI Totals	244	41	226	223	3	200
Total Miles	480	144	415	374	3	1050

Overnight Use

There are many camping opportunities within a 50-mile radius of Frontenac State Park. Table 4 provides an estimate for the number of private and public campgrounds and styles of campsites available.

State Forest Recreation Areas

Frontenac State Park also manages the campgrounds and day use areas within the Kruger Forest Management Unit and Zumbro Bottoms Forest Management Unit of the Richard J. Dorer Memorial Hardwood State Forest. Kruger Forest includes trails for hiking, horseback riding, cross county skiing, snowshoeing, and snowmobiling. The unit also includes a .6 mile paved trail for hiking, wheelchair use, and ski touring. The campground includes 19 drive-in sites, including 1 accessible site. The Zumbro Bottoms includes horse riding trails, three horse campgrounds with a total of 47 sites (with room for an addition 150 units in an overflow area), 3 canoe campsites, 5 picnic sites and one picnic shelter.

Table 4. Camping opportunities within 50-mile radius of Frontenac State Park

Managing Agency	Campgrounds	Total Sites	RV only	Walk-in/Cart-in/Canoe-in	Group Camps	Horse Camping	Camper Cabins
Minnesota							
State Parks/Rec. Areas	8	306		64	5		
State Forests	4	145		2		79	
Counties	1	57	35	22			
Municipal	2	92	51	41			
Private	29	2,348	1,132	122		20	48
MN total	44	2,948	1,218	253	5	99	48
Wisconsin							
State Parks	5	258		32	3		
Counties	2	55					
Municipal	1	12					
Private	6	8					9
WI total	14	333		32	3		9
U.S. Army Corp of Engineers - Wisconsin	1	45	35	7			
Total	58	3,326	1,253	292	8	198	57

Visitor Use Patterns

An estimated 88,029 people visited Frontenac State Park in 2006 with 13,600 people staying overnight. Most park visits occur during the summer months but the fall colors also attract visitors well into October. Visitation to Frontenac State Park has been generally stable over the last decade. Overnight visitation has also been stable with the camping facilities at or near capacity on weekends much of the spring, summer and fall. Although the park has relatively high visitation, opportunities still exist to increase visitation, especially during weekdays.

Table 5. Park Attendance 1997 to 2006

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Total Attendance	103,100	113,391	106,947	107,718	95,524	90,972	99,975	96,766	98,033	88,029
Overnight Attendance	14,381	14,664	13,953	16,210	13,879	14,320	15,829	14,953	15,558	13,600

Revenue Generation and Economic Impact

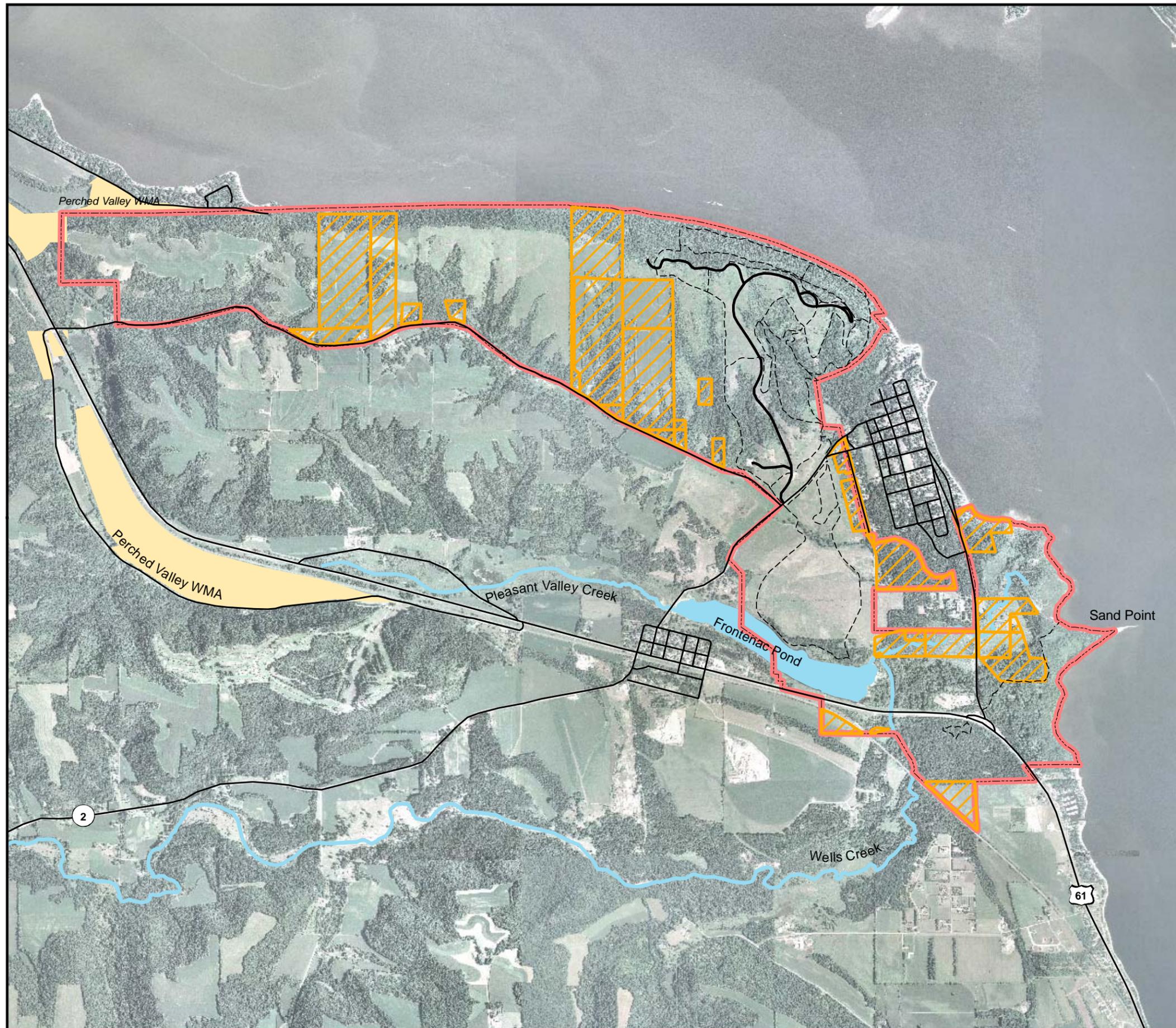
Frontenac State Park generated \$179,895 in revenue during 2006 from visitor use and activities at the park. Revenue collected includes: park annual and daily permits, camping, concessions, rentals, firewood, ice and nature store sales.

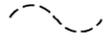
Frontenac State Park has a positive impact on the local economy. The DNR Division of Parks and Recreation surveys of park visitors determined that day visitors spend on average \$24.11 per person and overnight visitors spend \$21.29 per person per day. The expenses include groceries, gasoline, and other items bought expressly for the trip as well as money spent at restaurants, shops and for non-state park lodging during the trip. The spending estimates do not include payments to government agencies such as; the state park permits, camping reservation fees, fishing licenses, etc.

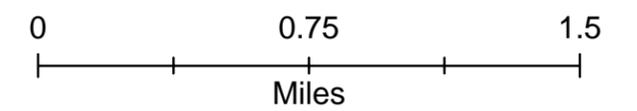
Table 6. Economic Impact of Visitors to Frontenac State Park, 2006

	2006 Attendance	Average Spending/Day	Subtotals
Day	88,029	\$24.11	\$2,122,379.10
Overnight	13,600	\$21.29	\$289,544.00
Total Economic Impact			\$2,411,923.10

**Figure 1. Aerial Photo
Frontenac State Park**

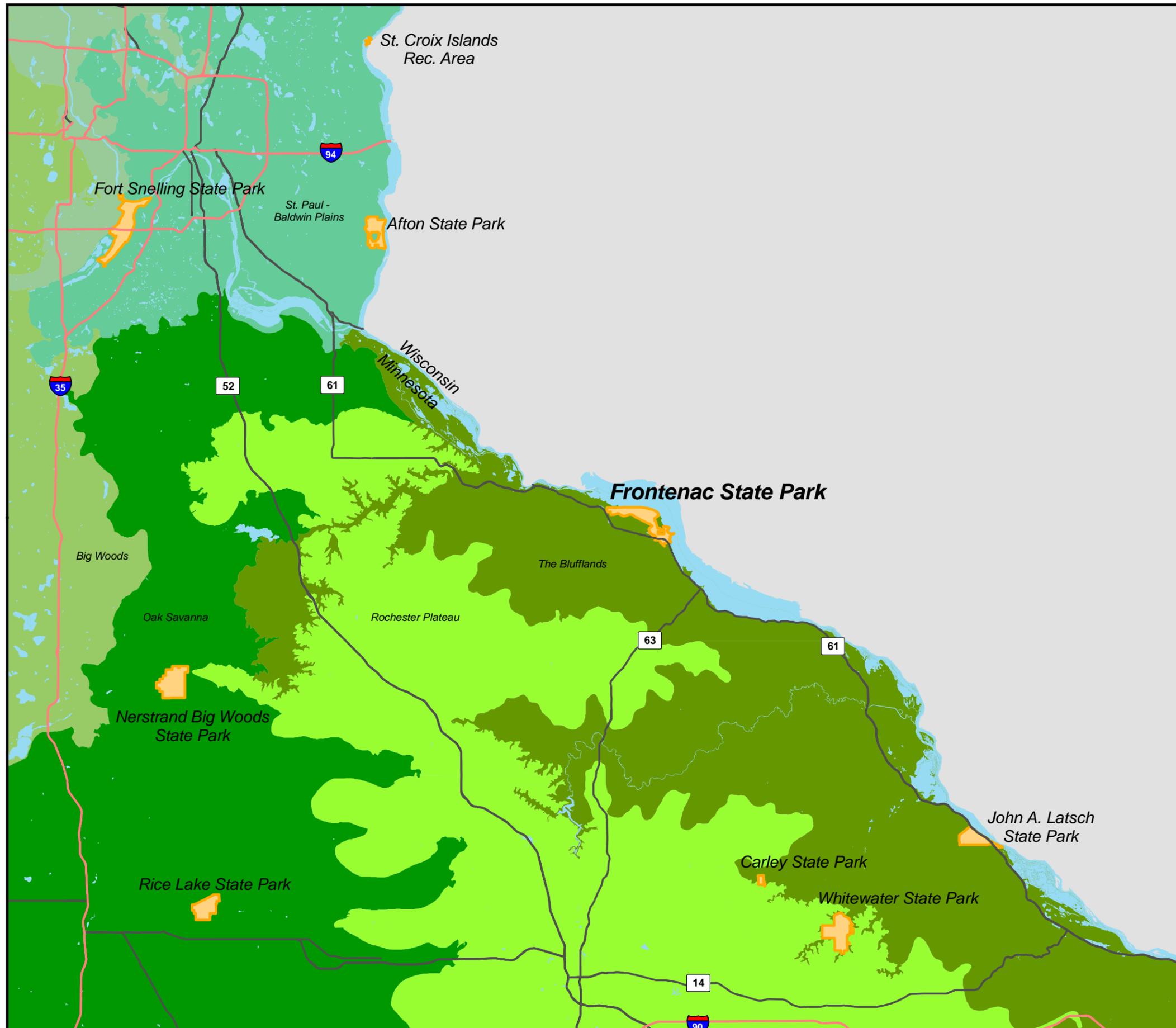


-  State Park Boundary
-  Privately Owned Parcels
-  Hiking Trails
-  Park Roads
-  MN DOT Roads



MN Department of Natural Resources
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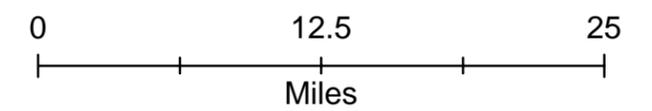
Figure 2. ECS Subsections
Frontenac State Park



Ecological Subsections of Minnesota

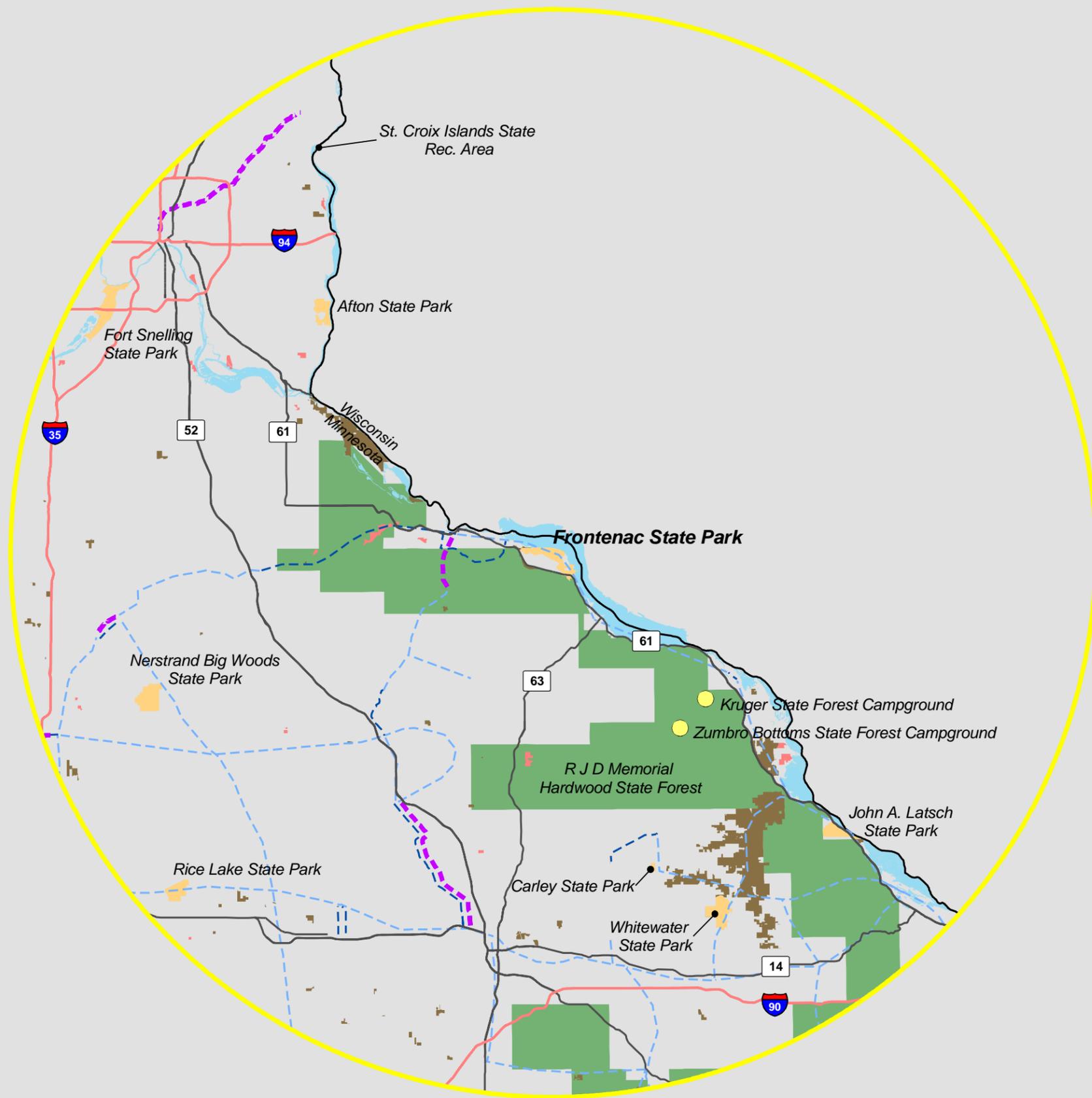
-  Anoka Sand Plain
-  Big Woods
-  St. Paul-Baldwin Plains
-  Oak Savanna
-  Rochester Plateau
-  The Blufflands

-  Minnesota State Parks
-  MN DOT Interstate Highways
-  MN DOT Highways

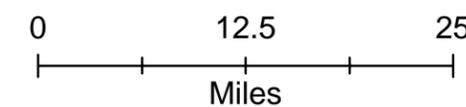
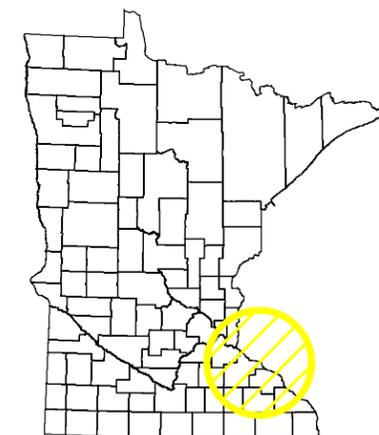


MN Department of Natural Resources
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**Figure 3. 50 Mile Radius
for Recreation Opportunities
Frontenac State Park**



-  Minnesota State Parks
-  State Forest Recreation Areas
-  Minnesota State Forests
-  Scientific and Natural Areas
-  Wildlife Management Areas
-  State Trails System
-  Regional Trails System - Existing
-  Regional Trails System - Proposed
-  MN DOT Interstate Highway
-  MN DOT Highway



MN Department of Natural Resources
Division of Parks and Recreation

NATURAL AND CULTURAL RESOURCES

Frontenac State Park staff has been actively working to protect, manage and restore the health and quality of the natural resources within the park.

The following information provides an overview of the current status of Frontenac State Park's natural and cultural resources, the desired future conditions for the park and the management recommendations to be used as a guide for protection and restoration during the next 20 years.

The DNR Division of Parks and Recreation Resource Management Program has the following resource management goals:

- Protect and perpetuate natural and cultural resources within the state park system.
- Minimize damage to the natural and cultural resources of the state park system while providing appropriate recreational and educational activities.
- Restore natural communities and ecosystems in the state park system.
- Promote understanding and awareness of the natural and cultural resources within the state park system and their management and protection.
- Participate in landscape-level planning activities relative to the protection of the natural and cultural resources of the state park system.

The resource management program goals are derived from the state statutes that guide the development and operations of Minnesota's State Parks:

State parks shall be administered by the commissioner of natural resources in a manner, which is consistent with the purposes of this subdivision to preserve, perpetuate, and interpret natural features that existed in the area of the park prior to settlement and other significant natural, scenic, scientific, or historic features that are present. Management shall seek to maintain a balance among the plant and animal life of the park and to reestablish desirable plants and animals that were formerly indigenous to the park area but are now missing. Programs to interpret the natural features of the park shall be provided. Outdoor recreation activities to utilize the natural features of the park that can be accommodated without material disturbance of the natural features of the park or the introduction of undue artificiality into the natural scene may be permitted. Park use shall be primarily for aesthetic, cultural, and educational purposes, and shall not be designed to accommodate all forms or unlimited volumes of recreational use. Physical development shall be limited to those facilities necessary to complement the natural features and the values being preserved.

Minnesota Statute 86A05. subd 2c

Climate

The bluffs landscapes along the Mississippi River are influenced by continental weather patterns with warm summers and winters generally cold enough to support a snow cover throughout the season. Bluffs landscapes are located in the area of Minnesota where precipitation approximately equals evapotranspiration, which has an important influence on the types of plant communities that have developed. This area marks the western range limit of many forest species and the eastern limit of several prairie species.

During May through September, approximately two-thirds of the annual precipitation occurs. The average annual precipitation for Frontenac State Park is 30 inches with the annual snowfall being 37 inches. The annual mean temperature is 45.1 degrees Fahrenheit.

Table 7. Average Rainfall Amounts for Frontenac State Park

Goodhue	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Annual
Precipitation (inches)	.81	.64	1.71	2.73	3.49	4.03	4.25	3.97	3.48	2.17	1.81	0.86	29.95

Table 8. Average Snowfall Amounts for Frontenac State Park

Goodhue	JAN	FEB	MAR	APR	OCT	NOV	DEC	Annual
Snow (inches)	10.5	6.1	6.5	1.7	0.1	4.5	7.6	37.0

Table 9. Temperature Ranges for Frontenac State Park

Goodhue County	High Mean °F	Low Mean °F	1-Day Max °F	1-Day Min °F
	Annual	48.3	39.9	103
Winter	25.3	11.9	66	-36
Spring	49.1	39.5	93	-8
Summer	72.3	64.7	103	39
Fall	51.2	42.9	92	-10

Reported at the 216822 Red Wing Dam 3, MN. Midwest

Geology and Topography

The Minnesota Ecological Classification System (ECS) classifies the landscape along the Mississippi River in southeastern Minnesota as the Blufflands subsection. Frontenac State Park is located within the Blufflands subsection. The characteristic pattern of rugged bluff prairies, steep bluffs, and dissected stream valleys, and floodplain following the Mississippi River make the Blufflands subsection quite different from the rest of the state. (See Figure 4. Contour Elevations).

Frontenac State Park's present landscape was initiated by the discharge of Glacial River Warren during the last glacial period. The erosive force of the Glacial River Warren cut deeply into the sedimentary rock layers, leaving behind islands. Two of those islands now form the bluff that is located within Frontenac State Park and the bluff directly south of the park. The sedimentary rock of the two bluffs are much older than the ice age valley of the Mississippi. The rock was deposited under ancient seas that covered this area over 450 million years ago. Remains of shellfish that lived in these waters during the Ordovician and Cambrian eras became fossilized as the layers slowly turned to stone. (See Figure 5. Bedrock and Quaternary Geology).

The waning stages of the glacial lakes contributed massive amounts of sediment to the river valley and as the discharge dwindled the valley became choked with silt, sand and gravel. The present Mississippi River carved its way through those sediments.

The steep slopes (35% and greater), typical of Frontenac State Park and the Blufflands subsection, can be very unstable and dangerous when vegetation is removed or if developments infringe on these areas. Pressures from some dwellings can cause instability to the toe or bottom of the bluff and cause slumping. The bluffs are highly valued for their beauty, scenic views and wildlife habitat and should be preserved and protected whenever possible.

Much of the landscape in the Blufflands subsection is underlain by karstified bedrock. In areas of karst, rapid transport of surface flow to the ground water is likely occurring. The soluble limestone bedrock is gradually eroded away and can create fissures, sinkholes, underground streams and caves. There is only one known sinkhole found within the statutory boundary of Frontenac State Park.

There are few lakes within the Blufflands subsection. The formation of Lake Pepin was caused by the backup of water behind the sedimentary deposits of the Chippewa River Delta on the Wisconsin side of the Mississippi River. Lake Pepin has a surface area of about 25,000 acres and an average depth of 18 feet. Pleasant Valley Lakelet, known locally as Frontenac Pond, is a 40 acre water body at the east end of the park. It was formed in the same way as Lake Pepin when flood events on Wells Creek created a berm across the mouth of Pleasant Valley Creek. Wells Creek continues to carry its sediment load all the way to the Mississippi River. When Wells Creek reaches the slow-moving current of the Mississippi River, the creek drops its sediment load, creating another delta. One of the most prominent features of the delta is a sand spit named Sand Point that juts perpendicularly out into Lake Pepin. Sand Point has historically served as an important habitat for migrating shorebirds and terns.

Soils

Quaternary geology provides a picture of where surficial materials were deposited during the advance and following the retreat of the last glaciations at Frontenac State Park. The surficial deposits formed the parent material for soil formation. The types of soils that developed as well as the locations within the landscape played an important role in the types of plant communities that cover Frontenac State Park. The last glaciations left four types of deposits:

- **Weathered rock over bedrock.** The broad ridge tops were covered by loess soils. Deposits came from a mix of glacial till, loess and eroding bedrock and formed thin soils. The park also has several areas of the exposed bedrock such as In-Yan-Teopa, a giant rock on the edge of the bluff.
- **Alluvium** is found within the valley between the two bluffs. The alluvium was deposited by Glacial River Warren and is typically made up of a variety of materials, including fine particles of silt and clay and larger particles of sand and gravel. Alluvial soils were also deposited along the floodplains and within old channels of the Mississippi River. The alluvial soils can be either droughty or saturated and are susceptible to wind erosion and gullying from runoff when exposed. Along the alluvial deposits of the streams and Mississippi River, narrow escarpments or benches made up of sand and gravel from the deposits of the glacial outwash remain today. Wells Creek flows through the alluvial soils, cuts into the sand terrace, and continues to deposit sandy sediments forming an ever-shifting delta.
- **Colluvium** is material that builds up at the bottom of bluff slopes from erosion of the materials from the slope above. Colluvium is often interfingering with the alluvium.
- **River terraces** were formed as the flow of Glacial River Warren receded. The terraces are flat platforms of land made from fluvial material dumped by the river as it created earlier floodplains. The terrace deposits are broadly horizontal layers of gravel, sand and finer sediments. The terraced area within Frontenac State Park forms a perched valley where there is often a high water table. The Perched Valley Wildlife Management area just to the west of the park sits within

the terraces and contains a calcareous fen. Calcareous fens are the rarest wetland plant community in Minnesota and Wisconsin. These wet, seepage sites have an internal flow of groundwater rich in calcium and magnesium bicarbonates and sometimes calcium and magnesium sulfates as well. Only a select group of calcium-tolerant plants, referred to as calciphiles, can tolerate these conditions.

Vegetation

Pre-settlement Vegetation

The original vegetation of Goodhue County consisted of vast prairies, oak savannas, deciduous forests and emergent marshes. As of the early 1990's, only about 7% of those natural communities still existed in the county. That 7% is mainly located in areas where farming practices could not be implemented (too wet, steep slopes, etc.). Almost all the prairie land was converted into cropland or pasture.

Frontenac State Park was once covered with oak openings, a mix of prairie, savanna and a mosaic of woodlands. Prairies occupied the flat, fire-prone plateaus and the sandy valley bottoms in the southeast section of the park. Dry prairies were present at the tops of southwest-facing bluffs within the park. Mesic forests were prevalent on north and east facing slopes, especially along the Mississippi River. The forests were typically dominated by oak on the upper slopes, with basswood and then sugar maple increasing downslope. The ravines and north facing slopes were sufficiently protected from fire for woody vegetation to develop and persist. The alluvial bottomlands of the broad Mississippi River valley and the Wells Creek drainage area supported a floodplain forest of silver maple and willow, and terrace forests of silver maple, elm, green ash, hackberry, cottonwood, basswood, and swamp white oak. River shore communities were present on the sand bars and shorelines. Steep rock walls and rocky colluvium provided habitat for development of cliff and talus communities. (See Figure 6. Pre-settlement Vegetation).

Present Vegetation and Land Use

The present vegetation at Frontenac State Park is a product of various factors including slope, aspect, hydrology, disturbance regime, and land use history. Native plant communities of varying condition cover 51% (1,353 acres) of the park. Developed areas (private in-holdings, campgrounds, trails and administrative areas) total 172 acres or 6% of the land base. The remaining 1,326 acres (46%) is classified as old-field, prairie or savanna reconstruction and leased agricultural land.

A survey by Minnesota County Biological Survey ranked approximately 261 acres of the park as of high biodiversity importance. Those outstanding plant communities are present due in part to their location within the landscape where the topography or hydrology protected them from human impacts or are present as a result of significant restoration and management activities.

Currently Frontenac State Park staff is in the process of restoring the native plant communities. The native plant communities in the park are important because they serve as a representation of rare and threatened plant communities and habitat in the Bluffland subsection. Prairies cover the bluff tops and the broad dry terraces in the southeast section of the park. A large floodplain forest along with open water and a reed canary grass/cattail marsh occupy the wetland area. Deciduous forests grow on the shallow and erodable soils of the dissected ravines and along the north and east facing slopes of the Mississippi River valley. The ravines and valley slopes have protected the woodlands from the fires that historically swept across the park's upland landscapes. (See Figure 7. Land Cover).

The following native plant communities have been identified in the park:

FDS38 – Southern Dry-Mesic Oak Hickory Woodland

Deciduous woodland on steep, exposed south to west facing bluffs often adjacent to bedrock bluff prairies.

FFs59a – Silver Maple – Green Ash – Cottonwood Terrace Forest

Deciduous forests on silty or sandy alluvium on level, occasionally flooded sites along medium to large rivers. The community is characterized by American elm, silver maple, box elder and green ash with occasional cottonwood and hackberry.

FFs68a – Silver Maple – (Virginia Creeper) Floodplain Forest

Deciduous riparian forest on sandy/silty alluvium located on low, annually flooded sites along large rivers. The community is characterized by evidence of flooding such as piles of debris, ice scars on trees or freshly deposited silt and sand.

MHs37 – Southern Dry – Mesic Oak Forest

Hardwood forests occurring most often on thin, wind-deposited silt on crests and upper slopes of bedrock bluffs and less often on hummocky stagnation moraines in calcareous, partially sorted drift.

MHs38 – Southern Mesic Oak – Basswood Forest

Hardwood or, occasionally, hardwood-conifer forests. The community is present on wind-deposited silt on bedrock bluffs, on calcareous till on rolling plains and rarely, on weakly calcareous till on stagnation moraines.

MHs38c – Red Oak – Sugar Maple – Basswood – (Bitternut Hickory) Forest

Hardwood forests on steep, mostly north-facing slopes on thin silt over bedrock and also on till plains with hummocky topography.

RVx32a – Willow Sandbar Shrubland (River)

Sparsely vegetated herbaceous plant communities on higher zones of river sandbars.

UPs13b – Dry Sand – Gravel Prairie (Southern)

Graminoid-dominated, forb rich herbaceous communities on coarse-textured, usually gravelly soils on gentle or occasionally steep slopes on outwash and ice-contact deposits.

UPs13c - Dry Bedrock Bluff Prairie (Southern)

Graminoid-dominated, forb-rich herbaceous communities on thin soils over dolomite and sandstone bedrock on steep, usually south or west facing slopes.

UPs14a – Dry Barrens Oak Savanna (Southern)

Sparsely treed graminoid-dominated communities on wind-reworked sands and other deep sands. Dune forms are typically evident, with small local blowouts present and there is little or no soil formation.

Natural Disturbance

Natural disturbances such as fire, storms and flooding play an integral role in shaping and maintaining the vegetative patterns and natural community health. Historically, fire was one of the most important disturbance regimes for the park's upland prairie and oak-dominated communities. Over the past 25 years, Frontenac Park staff has reintroduced fire into the park. Prescribed burns have contributed to the significant progress that has been made in restoring prairie, savanna and woodland plant communities and for controlling invasive species in the park. (See Figure 8. Desired Future Conditions).

Flooding is an important disturbance process for terrace and floodplain forests at Frontenac State Park. These natural communities are adapted to annual or periodic flooding and are tolerant of saturated soils, inundation, and frequent erosion and deposition of sediments. Historically wide fluctuations in water levels on the Mississippi River and Lake Pepin also maintained sand/gravel and mudflat habitats that were beneficial for shorebirds. Changes in hydrology on the Mississippi River associated with the lock and dam system have changed the disturbance regime that formed the floodplain and terrace forests present at Frontenac State Park. Land use within the Wells Creek

watershed has changed dramatically in the past 150 years leading to increased soil erosion and deposition within the Wells Creek delta. These landscape changes have made the Wells Creek delta a very dynamic system. Water quality issues, flooding of infrastructure, sedimentation, loss of floodplain forest, invasive species problems (reed canary grass and purple loosestrife) and wildlife habitat degradation are all concerns for this changing system.

Hydrology

Poor erosion control from agricultural practices during the late 1800s through the 1930s caused sediment loads from Wells Creek tributaries that had been stored in floodplain, deltas and hillsides to be mobilized and transported causing the stream channel to become more unstable and erode further. In the upper reach of Wells Creek the cumulative impacts of erosion have left the stream channel over-widened to the point that it rarely overflows its banks during flood events. Improvements in erosion control practices since the 1930s have greatly reduced the common rill and gully erosion problems, but the stream continues to adjust its banks as it works to reach a state of equilibrium. Sediments continue to aggrade within the lower sections of Wells Creek while the upper valley releases more of its large store of glacial sediments.

Water levels on Pleasant Valley Lake (Frontenac Pond) have had large fluctuations. Its hydrology is largely influenced by the outlet of Wells Creek. Pre-settlement data recorded the lake as having open water but at other times it has also functioned as a shallow marsh. The sediment load in Wells Creek blocked off flow from Pleasant Valley Creek, causing the water level in Pleasant Valley Lake to rise to a point where the lake supports fishing both in summer and winter.

Wells Creek has migrated great distances back and forth across the lower valley. The sediments carried by the creek have contributed to the growth of the Wells Creek delta on Lake Pepin. The delta grew between 1974 and 1989 at a rate approximately 10 times faster than any previous time period. After the floods of 1965 a section of Wells Creek was channelized and a levee was built to prevent overtopping of floodwaters on Highway 61. Channelization has further increased the sediment carrying capacity of the stream and the levee prohibits the stream from depositing those sediments across the floodplain.

Surface Water

Frontenac State Park is within the Mississippi River Watershed and Wells Creek Watershed. Wells Creek is the major source of surface water within the park. Wells Creek Watershed drains approximately 50,000 acres. Surface water features within Frontenac State Park include Lake Pepin (25,060 acres), Pleasant Valley Lakelet (locally known as Frontenac Pond), Wells Creek and Pleasant Valley Creek as well as wetland basins, seeps, and springs along the bluff and the Mississippi River.

Wetlands

Numerous wet meadows, ephemeral ponds and shallow wetlands exist throughout the park. Because of the disruption of the flooding disturbance cycle, the floodplain forest and terrace forests are being degraded and replaced by the invasion of monotypic reed canary grass. To provide an opportunity to maintain and restore the health of those resources in the park, a watershed approach to stabilizing the Wells Creek system must be developed. Wetlands help to protect surface water quality and provide important habitat for many species in the park, including several of the rare and sensitive plant and animal species of concern.

Lake Pepin (Mississippi River)

Lake Pepin was originally formed when the sediments from the Chippewa River in Wisconsin restricted the flow of the Mississippi River. The depth of Lake Pepin had been steadily decreasing over the years due to the load of sediment from upstream sources, namely the Minnesota River Valley. The Minnesota Department of Natural Resources Mississippi Team, with representation from

all DNR Divisions, continues its work in developing an understanding of the implications these changes have for plants and wildlife within the lake. The Team also continues to seek solutions for eliminating or greatly reducing the sediment loading to the lake.

Groundwater

Southeastern Minnesota is characterized by Karst topography that is extremely susceptible to groundwater pollution. The process of infiltrating rainwater slowly dissolving limestone bedrock and the resulting landforms are called karst. Karst is characterized by caves, sinkholes, and streams, and is mainly formed on limestone. Within the park there is only one karst feature, a sinkhole, identifiable at the surface. Limestone and sandstone bedrock underlie the park and its aquifer serves as a drinking water source. There are 3 wells in the park that continue to provide an adequate water supply to meet current and presumably future visitor and resource management needs.

Groundwater provides 100% of Goodhue County's drinking water, and virtually all the water for commercial, industrial, and irrigation needs of the county. The County recognizes that sustainable groundwater levels are vital for maintaining the quality and quantity of water in many wetlands, and streams.

Groundwater resources are protected and conserved through the assistance and enforcement actions of governmental agencies, such as Minnesota Department of Natural Resources – Division of Waters, the Minnesota Pollution Control Agency and the Minnesota Department of Health.

Fisheries

Pleasant Valley Lakelet (locally known as Frontenac Pond) is located within Florence Township and on the edge of Frontenac State Park. The lakelet has low fishing pressure during the open water season and moderate pressure or the ice-fishing season.

The DNR Division of Fisheries and Wildlife manages Pleasant Valley Lakelet by conducting occasional surveys. Large mouth bass, white and black crappies, carp; green sunfish, bluegills and northern pike are the most abundant species. The average size of pan fish sampled during the survey was between 5-8 inches in length. Northern pike provide a bonus fishery with a few fish caught over 20 inches in length.

A large-scale fish survey on Lake Pepin was conducted in October of 1999. Multiple strong year classes of walleye, sauger, and smallmouth bass occurred during the mid to late 1990s and resulted in excellent abundance of those species. White bass classes have remained relatively low in comparison to the abundance documented by fish surveys conducted during the 1980s. The presence of Eurasian water millfoil and Zebra mussels were confirmed in the lake in 1990. Mussels were surveyed in the early 1990s and again in 2003. No significant changes were reported, with strong populations and little evidence of Zebra mussels. However, spot checks near the park in 2007 found large infestations of Zebra mussels.

Wildlife

The diverse native plant communities at Frontenac State Park provide habitat for a variety of wildlife species. Habitats range from dry cliff and bluff prairies to dry mesic forests on the slopes to finally open and forested wetland communities on the floodplain. The current list of species found at Frontenac State Park includes: 22 species of mammals, 25 species of reptiles and amphibians, 41 species of butterflies, over 250 species of moths, 73 species of fish (including Lake Pepin species), and 261 species of birds. Small mammals have never been surveyed in the park and reptile/amphibian searches have been somewhat incidental. More intense surveys are needed for these taxa as well as other invertebrate species. Lepidopteran surveys are ongoing and will likely add additional species to this list. A two-day

reptile and amphibian survey was completed in the summer of 2007. Of the 156 species of greatest conservation need in the Blufflands Subsection, 103 have been documented at Frontenac State Park.

Several species of wildlife that were present historically have vanished from the park due to extinction, changes in vegetation, and encroachment and fragmentation of habitat. Passenger pigeons, bison, elk, sharp-tailed grouse and the Carolina parakeet are examples of wildlife that once lived in the park. Several species now documented in the park that were not present prior to European settlement include Ring neck pheasant, house finch, Northern cardinal, and Northern bobwhite. These species were either introduced or have expanded their ranges.

Endangered, Threatened, and Special Concern Species

Twenty-seven species have been documented in the park, which are state or federally listed or are considered regionally uncommon by taxon experts (See Table 10).

In addition to the species above, there are at least a half-dozen other state-listed bird species, such as common moorhen (*Gallinula chloropus*) and sandhill crane (*Grus canadensis*), which have been observed at the park during migration. A few of these have been known to summer in the park. A total of 261 bird species have been observed at Frontenac, more than any other state park in the system.

Several species or groups of species from this list are associated with important native plant communities in the park. These plant communities and habitats deserve special management practices.

Important Native Plant Communities and Associated Species:

- 1) *Dry bluff prairies* – These communities serve as important reservoirs for dry plant species, snakes that use the associated rock outcrops for dens and thermoregulation, and a diverse assemblage of lepidopteran and invertebrate species.
- 2) *Wells Creek floodplain and delta habitats* – The Mississippi River corridor is an important flyway for many migratory birds and the habitat complex formed by Wells Creek is an ideal stopover location. The mudflats and cobble shoreline formed by the delta of Wells Creek is critical resting and feeding habitat for shorebirds and terns. The floodplain forest has been described as “dripping with warblers” during migration peaks. This area is also important for turtles, amphibians, and fresh water mussels.
- 3) *Mesic forests* – Rare species such as Goldie’s fern, American ginseng, squirrel-corn (*Dicentra Canadensis*) and many other plants are found in Frontenac State Park’s mesic forests. These areas are also important for both migratory and breeding bird species.
- 4) *Prairie and savanna restorations* – At least 3 species of 27 rare species noted in Table 10 utilize the large prairie restorations at the park. Henslow’s sparrow, regal fritillary, and eastern fox snake all use this habitat for nesting or foraging.

Table 10. Rare Species of Frontenac State Park*

Common Name	Scientific Name	Status
American Ginseng	<i>Panax quinquefolius</i>	MN_SC
Bald Eagle	<i>Haliaeetus leucocephalus</i>	FED_TMN_SC
Goldie's Fern	<i>Dryopteris goldiana</i>	MN_SC
Blue Sucker	<i>Cycleptus elongatus</i>	MN_SC
Hill's Thistle	<i>Cirsium hillii</i>	MN_SC
Cerulean Warbler	<i>Dendroica cerulea</i>	MN_SC
Kitten-tails	<i>Besseyia bullii</i>	MN_T
Eastern Fox Snake	<i>Elaphe vulpina</i>	MN Tracked Only
Ovate-leaved Skullcap	<i>Scutellaria ovata</i>	MN_T
Eastern Racer	<i>Coluber constrictor</i>	MN_SC
Squirrel-corn	<i>Dicentra canadensis</i>	MN_SC
Gopher Snake	<i>Pituophis catenifer</i>	MN_SC
Sterile Sedge	<i>Carex sterilis</i>	MN_T
Henslow's Sparrow	<i>Ammodramus henslowii</i>	MN-E
Valerian	<i>Valeriana edulis ssp. ciliata</i>	MN_T
Lake Sturgeon	<i>Acipenser fulvescens</i>	MN_SC
Black Sandshell	<i>Ligumia recta</i>	MN_SC
Paddlefish	<i>Polyodon spathula</i>	MN_T
Spike	<i>Elliptio dilatata</i>	MN_SC
Peregrine Falcon	<i>Falco peregrinus</i>	MN_T
Washboard	<i>Megalonaias nervosa</i>	MN_SC
Shovelnose Sturgeon	<i>Scaphirhynchus platyrhynchus</i>	MN Tracked Only
Regal Fritillary	<i>Speyeria idalia</i>	MN_T
Skipjack Herring	<i>Alosa chrysochloris</i>	MN_SC
Leonard's Skipper	<i>Hesperia leonardus</i>	MN_SC
Timber Rattlesnake	<i>Crotalus horridus</i>	MN_T
Acadian Flycatcher	<i>Empidonax virescens</i>	MN_SC

*MN_E = Minnesota Endangered, MN_T = Minnesota Threatened, MN_SC = Minnesota Special Concern, FED_T = Federally Threatened.

Cultural and Archaeological Resources

Frontenac State Park contains a significant number of archaeological and cultural resource features. There are seventeen known cultural resource sites within the current state park (See Figure XX: Cultural and Archaeological Features). These sites include 7 pre-contact American Indian sites and 2 sites with pre-contact and post-contact materials. The composition of these sites range from scattered recovered artifacts to long-term habitation sites and cemetery sites. A number of the habitation sites were occupied over a long period of time by successive American Indian traditions. The cemetery sites consist of multiple mounds or groups of mounds. (See Figure 9. Cultural and Archaeological Resources).

The park also includes several sites related to early Euro-American settlement of the area, including building depressions, foundations of a gristmill, and a clamming site on Sand Point.

Several of the sites within the park are known only from historic records. Additional fieldwork is needed to more accurately locate and survey these sites.

The number and range of cultural resource sites illustrates the long human presence and habitation of the land in and around Frontenac State Park. Evidence from the various archaeological and historic sites date from the American Indian Paleo-Indian and Archaic Traditions to the early settlement by Euro-Americans, and up to the present day.

Multiple archaeological and cultural resource sites are also known to exist nearby outside of the park. Several of the sites outside the park identified by past surveys have been or are suspected to have been destroyed, primarily by road construction projects. Given the nature of landscape and multitude of sites already identified in the area, other archaeological and cultural resource sites are likely to exist within the park.

Hiking trails are adjacent to or cross through several of the identified cultural resource sites within the park. Park staff monitor these areas to assess any visitor use impacts to the cultural features at these sites.

Natural and Cultural Resources Recommendations

Overall Goal

Protect and enhance Frontenac's native plant communities, rare plants, wildlife, significant geologic features, water resources and cultural resources.

Inventory & Monitoring

Recommendations:

- Conduct surveys for reptiles, amphibians, selected invertebrates and mammals in the park.
- Monitor Henslow's sparrow use of prairie reconstructions and make management modifications as appropriate.
- Periodically monitor native plant communities (particularly high quality areas) to insure that they are not being invaded by terrestrial invasive plants or otherwise degraded.
- Determine if listed species documented over a decade ago are still present and update "last-observation" field in attribute table.
- Monitor mound sites for damage due to visitor use.
- Using historic air photos and other documents determine the historic & current size of Sand Point and assess the potential for preserving this historic stopover site for migrating birds.
- Map locations of terrestrial invasive plant infestations in the park.
- Work with the Prairie Island Indian Community, Minnesota Indian Affairs Council and Office of the State Archaeologist to determine appropriate management of the American Indian cemetery sites within the park.

Managing Native Plant Communities, Rare Plants and Other Vegetation

Objectives:

- Maintain or improve the quality of native plant communities and plant community reconstructions.
- Reconstruct native plant communities on all undeveloped areas of the park.
- Preserve & perpetuate populations of endangered, threatened or special concern species and any other rare plant species that may be discovered in the future.

Recommendations:

- Develop native plant community reconstruction plans using the most successful and cost effective techniques available. Re-construct old fields as 'oak openings' and other community types as appropriate.
- Survey and monitor park for existence of documented species on a 10-year cycle or on an appropriate cycle to document and evaluate effectiveness of resource management strategies. Record discovery of new species and incorporate into monitoring cycles.

- In coordination with other Minnesota Department of Natural Resources Divisions, agencies, and local units of government, evaluate and implement strategies and techniques to preserve the Sand Point area and Wells Creek delta as migratory habitat for shorebirds and terns to the extent possible.
- Continue using best management practices to manage native plant communities and other habitat types.
 - Dry bedrock bluff prairies and sand prairies – Continue to use prescribed fire as a tool to manage these community types. Consider the impacts to prairie dependent invertebrates and others species. Use girdling, cutting or other best management practices to enhance the distribution and quality of these sites
 - Dry oak woodlands – Continue invasive species control efforts and the appropriate use of fire along with other best management practices to improve the quality of these communities.
 - Old fields – Maintain old fields with mowing, prescribed fire, or other best management practices until native plant communities can be reconstructed.
 - Prairie/savanna reconstructions – Use timed mowing, spot treatments, prescribed fire and other best management practices to maintain and enhance the reconstructions.
 - Agricultural lease cropland – Retire leases and reconstruct native plant communities.
 - Mesic forests – Continue control efforts on buckthorn and exotic honeysuckles.
 - Wells Creek delta – Work with and support initiatives that reduce sediment load and increase water quality within the watershed. To the extent possible, preserve mud flat and sand beach/cobble communities for shorebird and tern habitat. Restore floodplain forest communities in areas dominated by reed canary grass through best management practices, as feasible.
- Use best management practices to effectively manage populations of invasive species. Priority for control efforts will be given to species that pose the most threat to rare native species or communities. Current efforts at Frontenac are focused on eight species:
 - Buckthorn (*Rhamnus cathartica*)
 - Reed canary grass (*Phalaris arundinacea*)
 - Exotic bush honeysuckles (*Lonicera* spp.)
 - Canada thistle (*Cirsium canadense*)
 - Wild parsnip (*Pastinaca sativa*)
 - Queen Anne's lace (*Daucus carota*)
 - Purple Loosestrife (*Lythrum salicaria*)
 - Amur Maple (*Acer ginnala*)
- Consult with the Area and Mississippi River Hydrologists to discuss management techniques to stabilize/improve the Wells Creek Delta and wetland complex.
- Partner with the Wells Creek Partnership to seek riparian improvements on Wells Creek upstream from the park which would decrease the flooding, move the stream bed back to a state of equilibrium and decrease the amount of sedimentation at the mouth.

Managing Wildlife

Objectives:

- Preserve or enhance populations of vertebrate and invertebrate wildlife that are known to currently use the park. Focus on state-listed or rare species when appropriate.
- Restore populations of vertebrate and invertebrate wildlife that are known to have historically existed in the park where feasible.
- Complete inventories of reptiles, amphibians, mammals and selected invertebrates (freshwater mussels, butterflies & moths)
- Manage populations of white-tailed deer to prevent negative impacts to native vegetation and tree regeneration.

Recommendations:

- Protect or enhance habitat to sustain native species present and enhance reintroduction success of listed or rare species.
- Use most effective best management techniques of the time, to manage the negative impacts of nuisance species populations on native vegetation.
- Survey and monitor park for existence of documented species on a 10-year or other appropriate cycle to document and evaluate effectiveness of resource management strategies. Record discovery of new species and incorporate into monitoring cycles.
- In coordination with other MDNR Divisions, agencies, and local units of government, evaluate and implement strategies to preserve habitat at Sand Point.
- Manage the park so it continues to be a premier stopover site for migratory birds.
- Monitor nuisance or exotic species to ensure they do not cause negative impacts to native species or plant communities.
- Annually assess need for deer herd reduction within the park. Plan and conduct deer hunts as required to protect native vegetation.
- Prepare & submit a State Wildlife Grant for Timber Rattlesnake re-introduction in the west end of the park.
- Minimize human impacts in rattlesnake reintroduction areas through actions such as use of signs and patrols.
- Assess potential impacts of prescribed fire on Lepidoptera and species such as eastern racer (*Coluber constrictor*). Adjust burn units if needed so locations of susceptible species are not all burned in same year.
- Manage prairie reconstructions utilized by Henslow's sparrow with long burn intervals to favor litter accumulation and residual vegetation where appropriate.

Managing Cultural Resources:

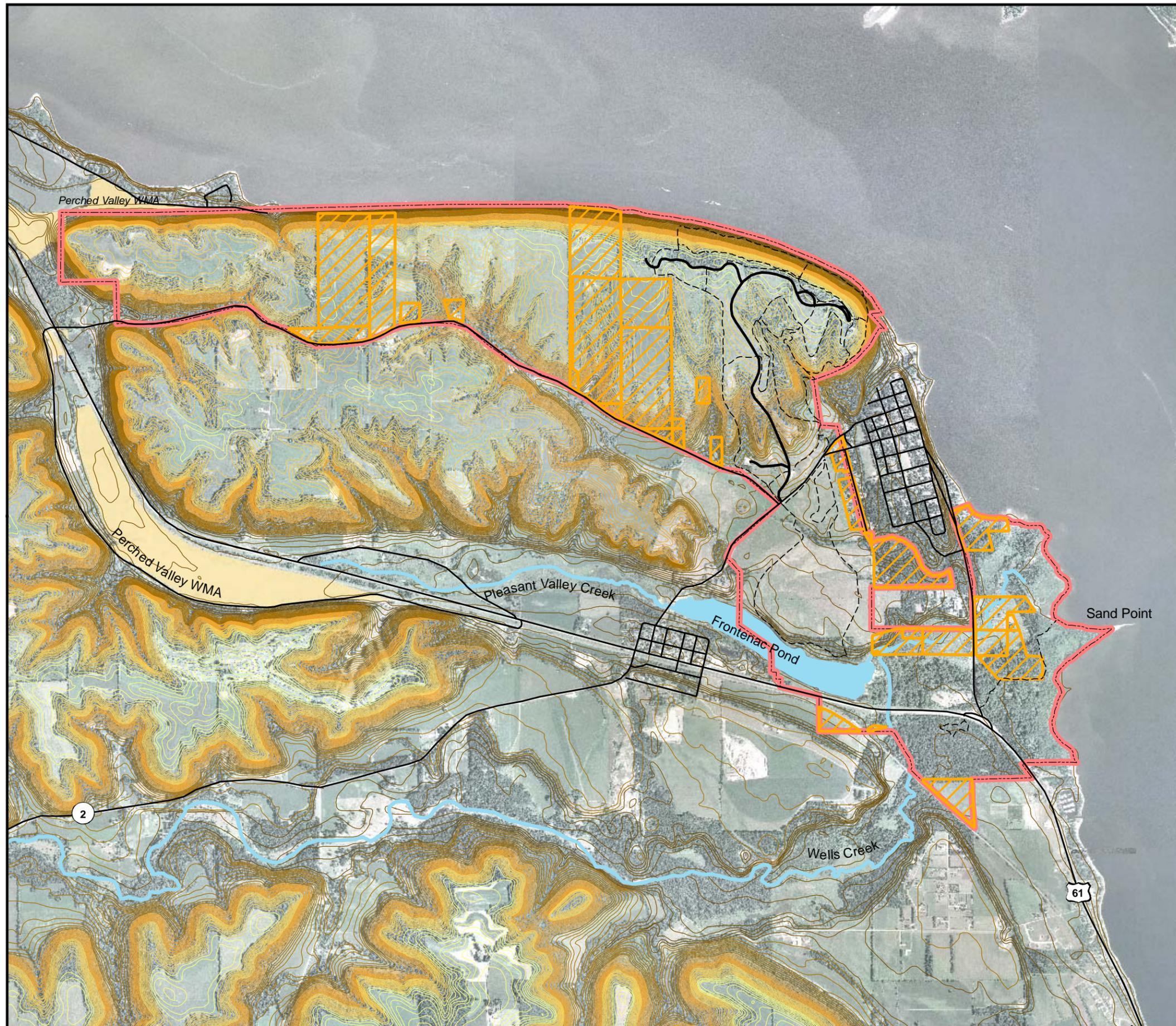
Objective:

- Protect all known cultural resources
- Locate trails and other development so as not to impact cultural resources.
- In those cases where impacts cannot be avoided, conduct mitigation so as to preserve the artifacts and information.

Recommendations:

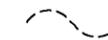
- Conduct resource assessments to prevent or mitigate impacts on cultural resources of new facility development, facility rehabilitation, trail development, or other projects.
- Evaluate impacts of visitor use on cultural resources.
- Work with the Prairie Island Indian Community to identify possible cultural resource sites within the park.
- Pursue partnerships with other agencies, institutions, special interest groups, volunteers and local communities to develop site and resource management practices that perpetuate cultural and historical sites.
- Work with the Prairie Island Indian Community, Minnesota Indian Affairs Council and Office of the State Archaeologist to determine appropriate management of the American Indian cemetery sites and other American Indian sites within the park.
- Use most effective best management techniques of the time, to manage natural resources surrounding cultural sites so that both natural and cultural resources are protected or enhanced.
- Reroute portions of the loop trail near the American Indian cemetery site to provide greater separation from and prevent impacts to the site. Involve the Prairie Island Indian Community, Minnesota Indian Affairs Council and Office of the State Archaeologist during the relocation planning.
- Monitor the cultural resource sites in the Sand Point area and take appropriate protective management actions if resources are being lost or impacted by visitor use.
- Conduct site restoration at the gristmill site.

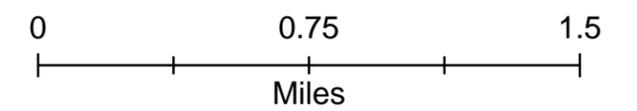
**Figure 4. Contour Elevations
Frontenac State Park**



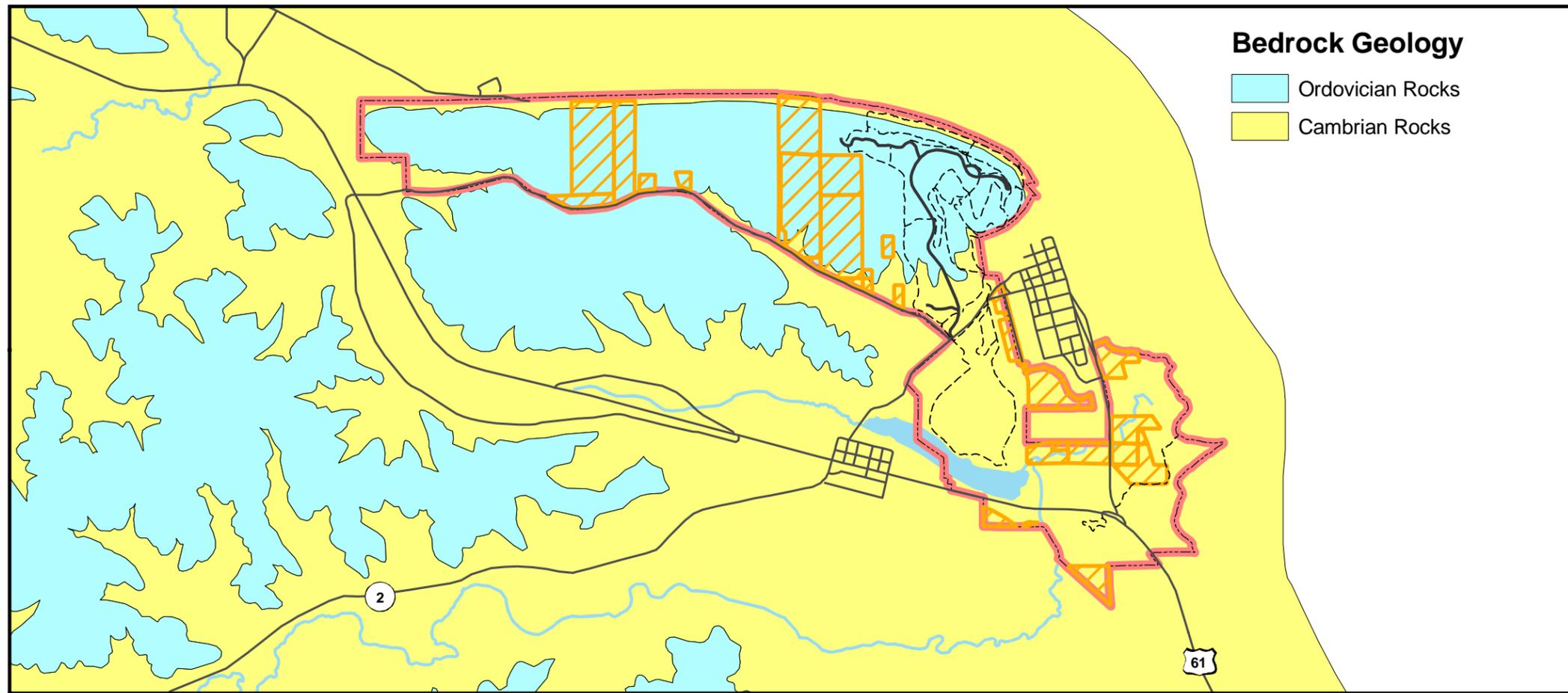
Elevation Above Sea Level (Feet):
(10 Foot Contour Interval)

-  670 - 770
-  771 - 870
-  871 - 970
-  971 - 1070
-  1071 - 1160

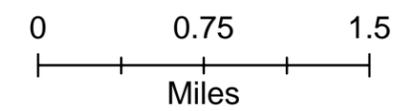
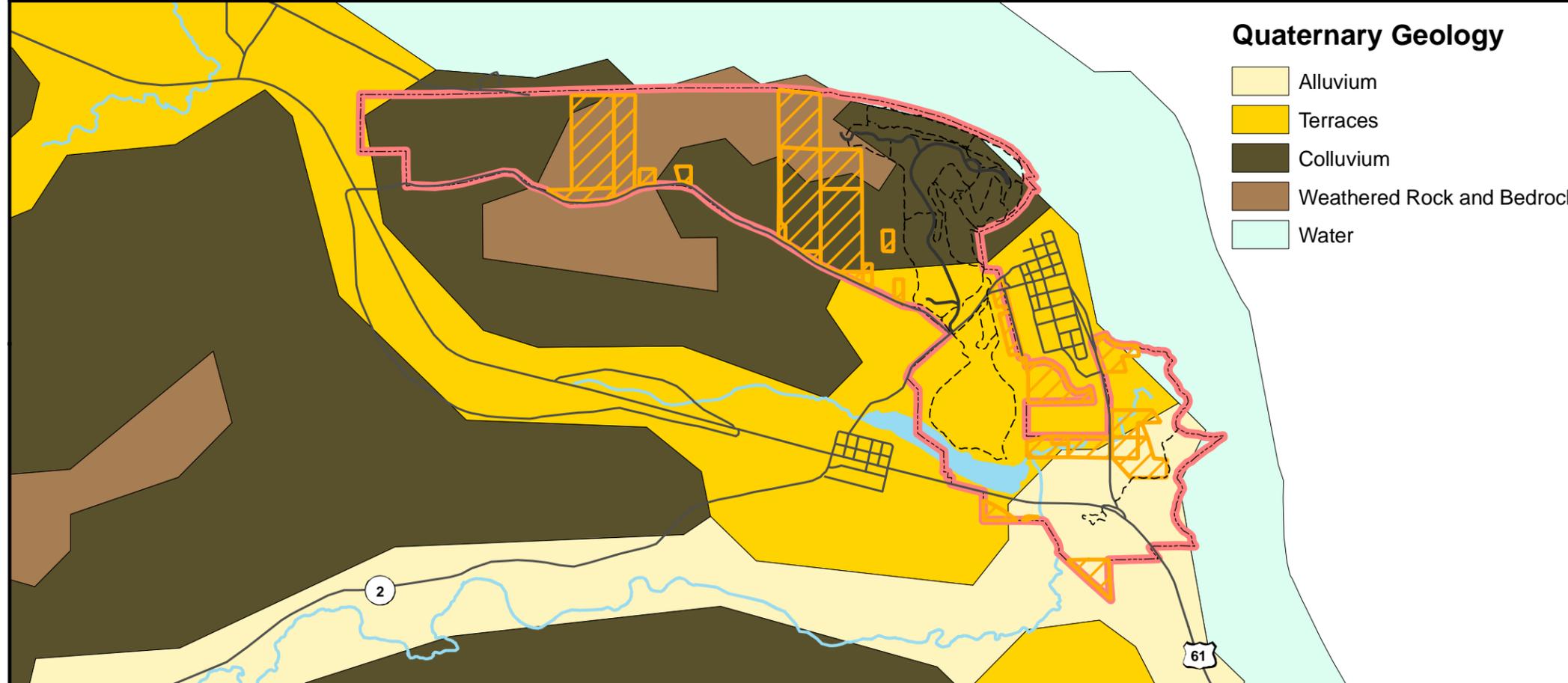
-  State Park Boundary
-  Privately Owned Parcels
-  Hiking Trails
-  Park Roads
-  MN DOT Roads



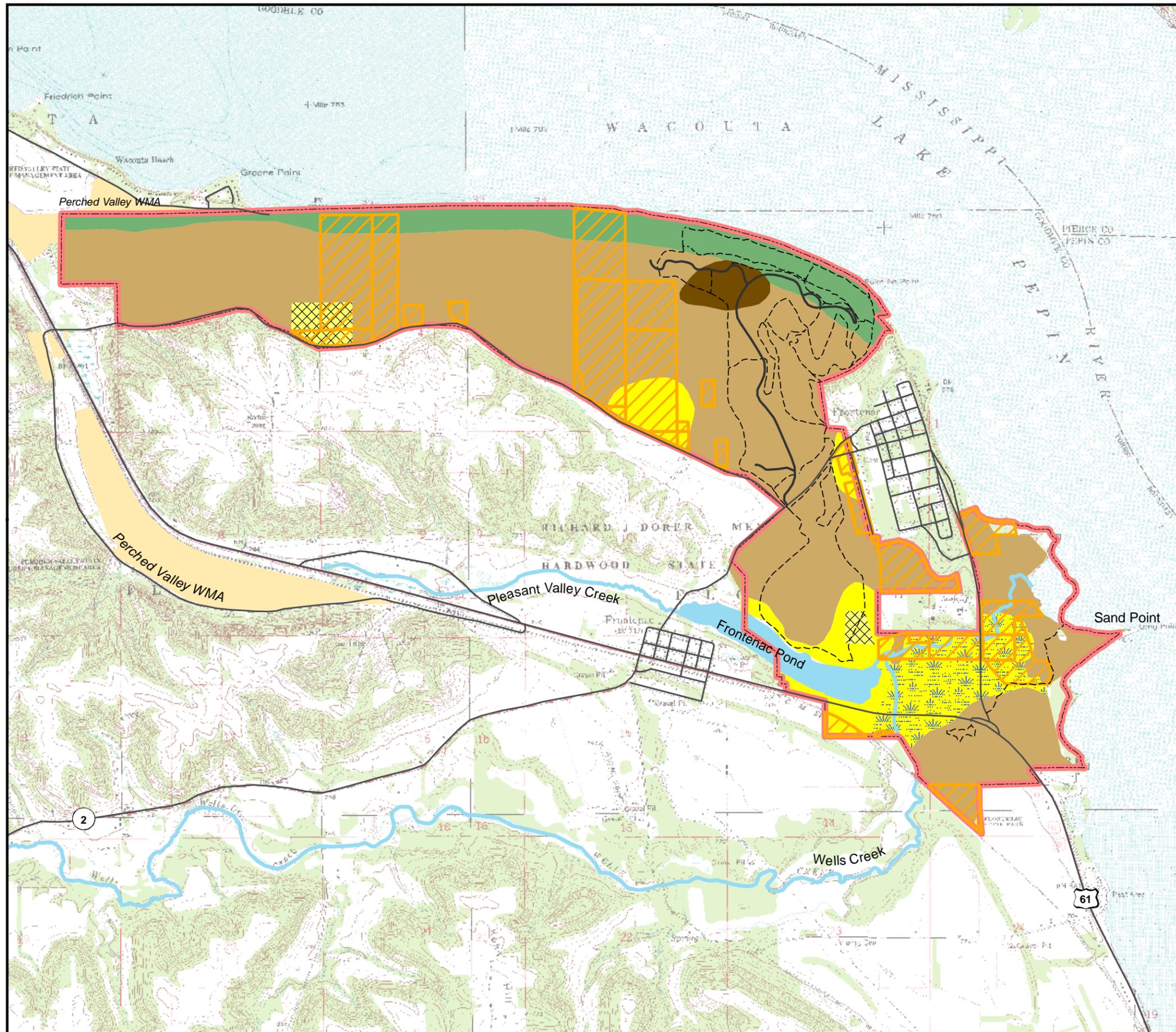
**Figure 5. Bedrock and Quaternary Geology
Frontenac State Park**



- State Park Boundary
- Privately Owned Parcels
- Hiking Trails
- Park Roads
- MN DOT Roads



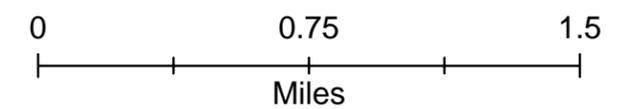
**Figure 6. Pre-settlement
Vegetation
Frontenac State Park**



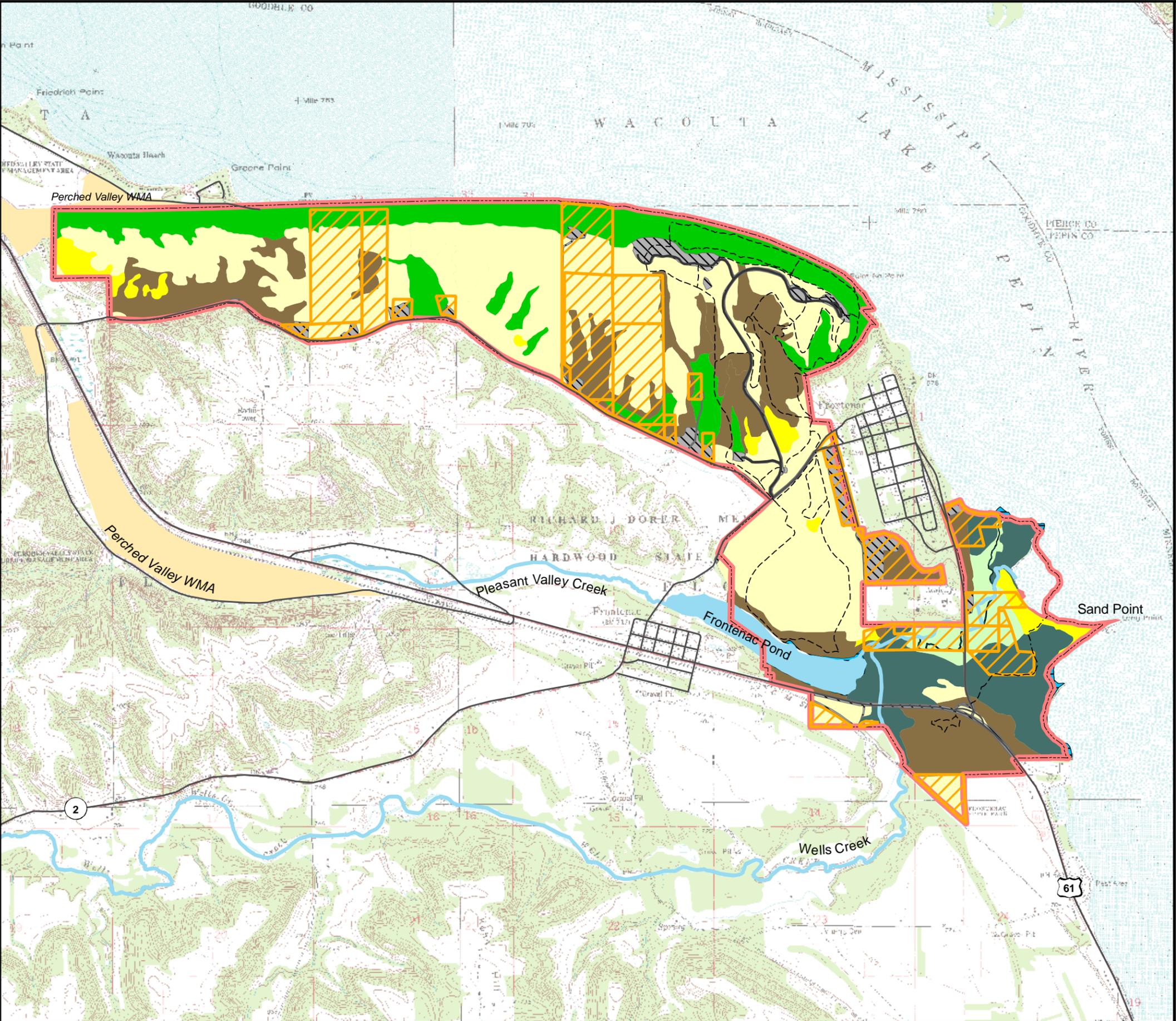
Pre-settlement Vegetation:

-  Field
-  Prairie
-  Wet Prairie
-  Oak Opening
-  Oak Thicket
-  Mixed Mesic Forest

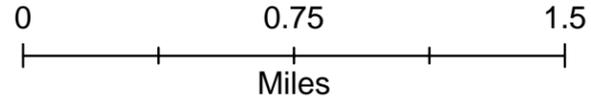
-  State Park Boundary
-  Privately Owned Parcels
-  Hiking Trails
-  Park Roads
-  MN DOT Roads



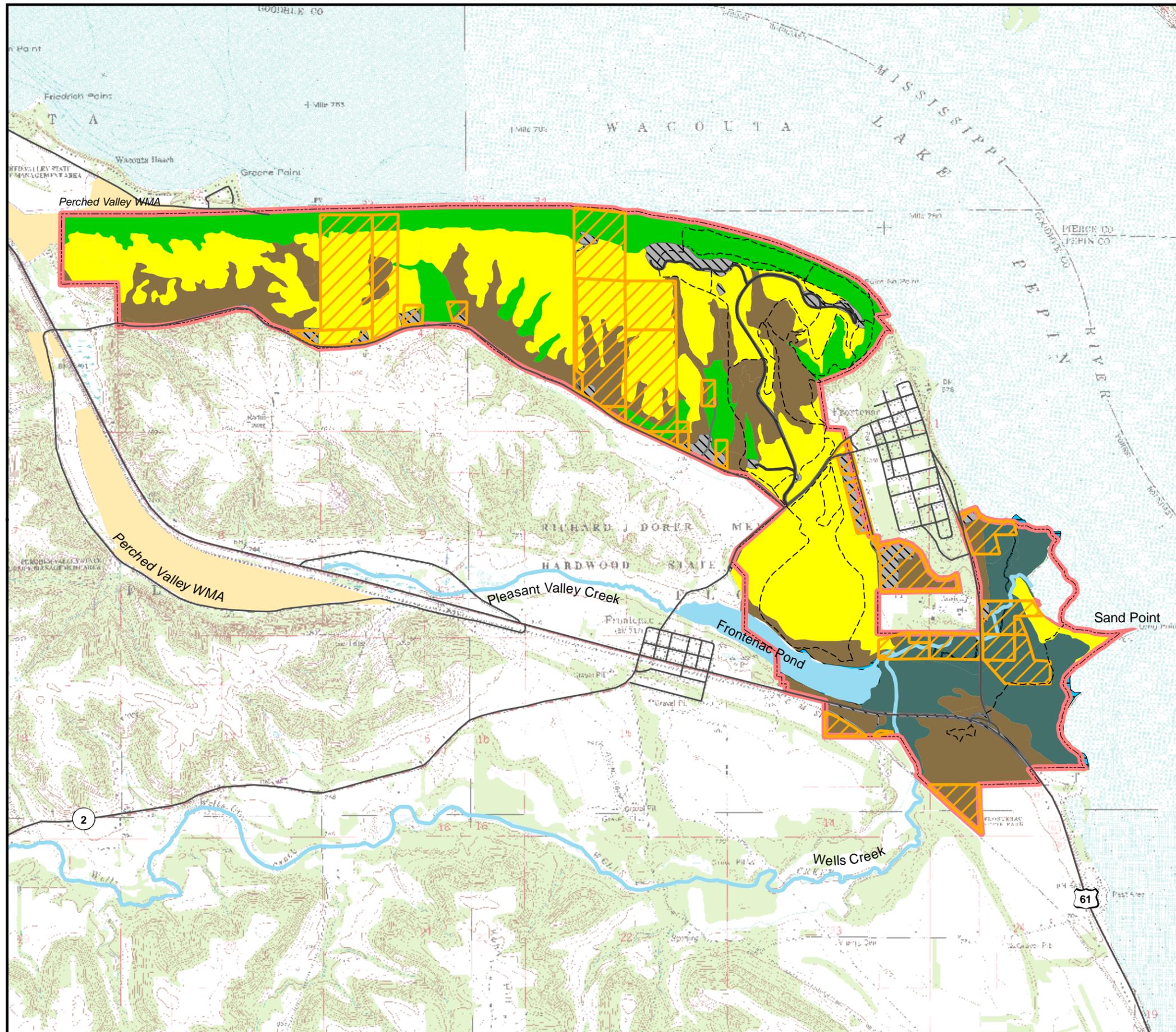
**Figure 7. Land Cover
Frontenac State Park**



- System-Level Land Cover Types**
- Fire-Dependent Woodland
 - Floodplain Forest
 - Mesic Hardwood Forest
 - River Shore
 - Upland Prairie
 - Wet Meadow/Carr
 - Non-Natural (old fields, etc.)
 - Developed (park-related or private)
- Other Features:**
- State Park Boundary
 - Privately Owned Parcels
 - Hiking Trails
 - Park Roads
 - MN DOT Roads



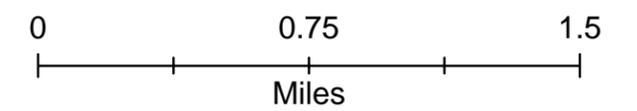
**Figure 8. Desired Future Conditions
Frontenac State Park**



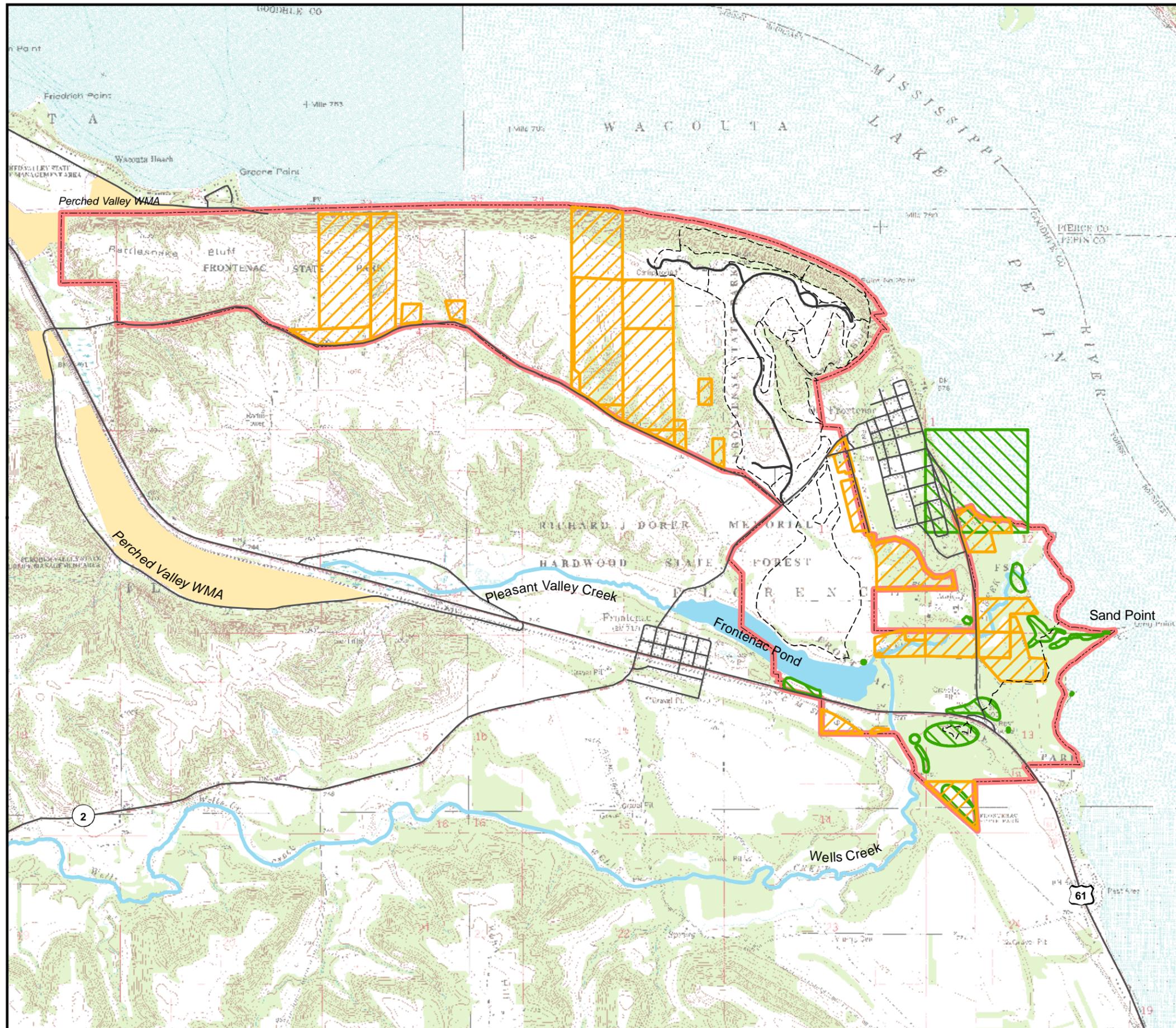
System-Level Land Cover Types

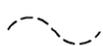
-  Fire-Dependent Woodland
-  Floodplain Forest
-  Mesic Hardwood Forest
-  River Shore
-  Upland Prairie
-  Developed (park-related or private)

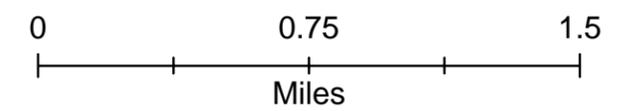
-  State Park Boundary
-  Privately Owned Parcels
-  Hiking Trails
-  Park Roads
-  MN DOT Roads



**Figure 9. Cultural and Archaeological Features
Frontenac State Park**



-  Cultural or Archaeological Features
-  State Park Boundary
-  Privately Owned Parcels
-  Hiking Trails
-  Park Roads
-  MN DOT Roads



INTERPRETIVE SERVICES

Minnesota State Park's Interpretive Services provide hands-on, resource-based interpretation for all state park clientele in order to help establish a sense of stewardship for the state's natural and cultural resources. Interpretive services provided in state parks are recognized as environmental education opportunities for all park visitors.

Statewide Interpretive Plan

The [Minnesota State Park System Interpretive Services Plan](#) identifies Frontenac State Park as a Group 3 park (in a rating of 1- 5) based upon its resource quality and visitation. Interpretive services for Group 3 parks are described as:

- Group 3: Resource significance is medium to high and visitor use is high but with seasonal peaks. Merits programming 4 to 7 days a week during peak season. Merits a seasonal visitor center; in-door displays and exhibits; audio-visual programming; self-guiding trails, wayside exhibits.

Specifically for Frontenac State Park, the Statewide Interpretive Plan recommends a seasonal park naturalist, seasonal naturalist programming, and development of a visitor center with naturalist office space.

Interpretive Services Program at Frontenac State Park

The interpretive program serves park visitors with a variety of services, such as exhibits brochures and programming with park specific, resource based education. Recreational offerings like hiking, snowshoeing or skiing may also serve as modes of fun, educational exploration. By blending natural and cultural history and facilitating hands-on outdoor experiences, the interpretive program helps park visitors to increase their understanding of park resources and develop a sense of stewardship for the park.

The planning process for interpretive services identifies interpretive themes for each park based on the natural, cultural, and recreational resources. The process defines the purpose for interpretation in each park, identifies strategies for interpreting the themes and provides recommendations for interpretive staffing levels.

Goal and Objectives

Goal:

Visitors to Frontenac State Park will learn about and come to appreciate the forces that formed the park's landscapes, how the plant communities are influenced by both humans and natural phenomenon, how humans have impacted the park and the river valley, the recreational opportunities offered throughout the seasons and the variety of wildlife viewing opportunities found in the park.

Objectives:

- Interpretive programs will focus on the park's primary interpretive themes.
- Visitors will have opportunities to learn about the park's native plant and wildlife communities.
- Visitors will have opportunities to learn about the park's long human presence and impact.
- Visitors will have opportunities to learn seasonal outdoor recreation skills that encourage lifelong healthy lifestyles.
- Visitors will have opportunities to learn seasonal nature observation skills.

- Visitors/volunteers will have opportunities to learn about and work on selected resource management activities.
- Visitors will receive tips and reminders to recreate in a safe and respectful manner.
- Programs and services will be offered that will attract new visitors, youth and visitors from minority groups as well as current visitors.

Primary Themes

Overall theme:

- Frontenac State Park provides opportunities for visitors to learn about and recreate in the bluffs landscape of the Mississippi River valley.

Mississippi River:

- The Mississippi River is influenced by human activities throughout its watershed.
- How do changes in the Mississippi River's watershed affect its flow and life?
- The Mississippi River is a corridor of life and transportation for both people and nature.

Natural communities and wildlife:

- The Mississippi River and Lake Pepin we see today are the result of the geologic forces of deposition and erosion over millions of years.
- How have glacial activities shaped the landscape?
- How have the natural communities changed since the end of the Ice Age?
- How did fire shape pre-European settlement vegetation in Frontenac State Park?
- The Mississippi River valley is the center of a great North American bird migration corridor.
- Invasive plant species degrade Frontenac's native communities.
- How is the park restoring and reconstructing natural communities in the park?
- Prescribed fire is a tool used to manage and restore the park's natural communities.
- Frontenac State Park is habitat for many rare and sensitive native plants.
- What steps is the park taking to protect the park's natural communities?
- What affect will climate change have on the park and the Mississippi River valley?

Human presence and impact in the river valley:

- Evidence of early people that lived and hunted in the area since the end of the great ice age is abundant.
- How did Europeans influence the people and natural resources of the valley?
- What attracted French fur posts to Lake Pepin?
- How have we changed the Mississippi River and Lake Pepin?
- Why was Frontenac State Park established?

Outdoor recreation and nature skills:

- Frontenac State Park provides some of the best bird and wildlife watching in the area.
- Frontenac State Park's native plant communities offer great photo opportunities.
- Frontenac State Park's trails provide great opportunities for hiking, cross-country skiing, snowmobiling and snowshoeing in the area.
- Frontenac State Park provides great opportunities for observing wildlife, enjoying scenic viewsheds, and for experiencing solitude.
- What trails would you recommend to explore and enjoy the park?

Current Interpretive Services

Frontenac State Park contains 1.5 miles of self-guided interpretive trails, several kiosks and other interpretive signs and displays throughout the park.

Naturalist-led Programs and Activities:

- The current campground host (during May) is an avid and accomplished birder who leads birding walks upon request during that month.
- A volunteer leads nature hikes, mostly on Saturdays, from May through October.
- A seasonal Interpretive Naturalist was assigned to the park between 1993 to June 2002. Programs were conducted from late April to early October, mainly on weekends, featuring the major stories and themes of the park. Budget reprioritizations resulted in the loss of the seasonal naturalist position at Frontenac State Park and other parks elsewhere in the state park system.

Non-personal Interpretive Services:

- Short-term changeable exhibits on topics such as stars, animal tracks and signs, recycling and birding are located in the kiosk by the picnic grounds and overlook parking lot.
- Indian legends concerning the geologic formation called In Yan Teopa Rock are told in an interpretive sign located on a deck overlooking the rock.
- A “Minnesota Biomes” interpretive panel and a “Frontenac State Park Windows to Minnesota” interpretive panel are located in an information and interpretive kiosk located by the park’s office and main entrance.
- An interpretive sign memorializing John H. Hauschild, an early supporter of the establishment of Frontenac State Park, is located at the main Lake Pepin overlook in the picnic grounds.
- A large “Welcome to Frontenac State Park” interpretive sign, featuring the Bell Museum Sand Point diorama, tells the story of why and how Sand Point attracts birds. This panel is on one side of a two-sided kiosk that is located at the parking lot for Sand Point off of U.S. Highway 61.
- The “Sand Point Story” interpretive sign tells the story of Wells Creek and the dynamic processes that continually shape Sand Point. This large graphic panel is on one side of a large two sided kiosk located at the Sand Point trailhead.
- The “Sand Point Trail” interpretive panel tells the story of Native American habitation, bird life and the habitat value of Sand Point. This large hand-painted graphic panel is on the opposite side of the kiosk with “The Sand Point Story” interpretive sign. This kiosk is located at the Sand Point trailhead.
- The Sand Point self-guided interpretive trail has four small signs along the Sand Point Trail that interpret the wildlife on Sand Point.
- The Bluff Trail Self-guided Interpretive Trail has ten small signs along the Bluff Trail that interpret the park’s plants, history, wildlife and quarries found along the trail.
- The story of French Trading posts on Lake Pepin is told on a Minnesota Historical Society cast metal plaque located in a cut stone monument built by the National Youth Administration in 1940 at the Sand Point parking lot.
- A series of half-page sized interpretive leaflets cover topics from Lake Pepin, local geology, poison ivy, plant identification, bird migration, bluffside trail, Bald eagles, bird watching, purple loosestrife and prairie are available at the park office.
- A bird species checklist of those birds that can be sighted at the park.

Interpretive Services Recommendations

Short term:

- Assemble and make available for use several park “Birding Kits.”
- Update and replace the Bluff Trail Self-guided Interpretive Trail signs as part of the Bluff Trail improvement project.
- Develop a Mississippi River/Frontenac geology interpretive sign for the overlook plaza.
- Develop interpretive signs for the Sand Point Trailhead kiosk. Topics will include human habitation of the area, the gristmill foundations, and floodplain forest ecology.
- Develop an information/interpretive panel that describes and recommends park trails for hiking and observing wildlife and scenery.
- Develop a series of interpretive signs that tell the resource management stories at specific sites within the park such as: prescribed burns, prairie reconstruction, savanna restoration and management, wildlife species re-introductions, and invasive/exotic species management.

- Develop a wildflower checklist and Wildflower Identification Kit.
- Develop a number of Kids Nature Explorer Kits specifically for Frontenac State Park.

Long Term:

The following long term recommendations could be implemented with the current staff resources at the park and region –

- Develop “first stop for park visitors” orientation, information, and interpretative exhibits of the park and area that are incorporated within the park office, particularly when the park office is expanded or replaced with a new visitor center complex.
- Develop a volunteer program that trains and engages citizens to work on resource management activities such as invasive/alien species management, wildlife or native plant community monitoring, restoration and reconstruction and lead interpretive programs about these efforts.
- Pursue partnerships with other DNR Divisions, agencies, institutions, special interest groups, volunteers and local communities to deliver additional interpretive services and develop research opportunities.
- Promote appropriate programs and initiatives from other Minnesota Department of Natural Resource Divisions.

The following long term recommendations could be implemented with the addition of a seasonal park naturalist at Frontenac State Park, as recommended in the Division of Parks and Recreation's Statewide Interpretive Plan –

- Develop and coordinate a guest presenter program schedule for the warm and cool weather seasons based on the park's major themes.
- Develop a park outdoor recreation program emphasizing recreational activities such as how-to cross-country ski, bicycle, hike, and snowshoe.
- Develop a park education program that teaches outdoor skills such as: fishing, hunting, birding, tree and wildflower identification, nature photography, astronomy and star gazing, painting and drawing nature, poetry, story telling and writing, song writing and music.
- Charge a fee for selected “value added” interpretive and recreation programs.
- Coordinate interpretive programs with the Upper Mississippi River National Wildlife and Fish Refuge through shared themes and messages.
- Pursue partnerships with local schools and universities to promote Frontenac State Park as an outdoor classroom and foster development of further interpretive programming.
- Partner with National Audubon Society and other birding groups to promote Frontenac State Park as a prime birding location.

RECREATIONAL USE AND VISITOR SERVICES

Providing a spectrum of recreational opportunities is fundamental to the mission of the DNR Division of Parks and Recreation. The park planning process provides the opportunity to find out what types of recreation people have an interest in and then evaluate whether those options fit appropriately within the park's resource management strategies and compliment verses duplicate what is available within the surrounding region.

Access

State and local governments may not discriminate on the basis of disability (Americans With Disabilities Act of 1990 a28 CRF Part 36). Access must be provided to park services, programs and activities. All services, when viewed in their entirety, must be usable by individuals with disabilities. This includes facilities such as parking, pedestrian access routes, restrooms, drinking water and recreation facilities. Pedestrian access routes are a continuous unobstructed path that connects accessible elements within a picnic area, camping area, or designated trailhead, such as the paths connecting parking spaces to a picnic or camp unit, a picnic unit to a toilet building, or connecting accessible picnic tables to other accessible elements.

The Americans With Disabilities Act (ADA) provides guidance for accommodating the natural environment's variable character when providing accessibility. The Americans with Disabilities Act delineated modifications and exceptions can be applied when necessary to maintain the integrity of an outdoor recreation setting, accommodating such elements as hydrology, terrain, surface characteristics and vegetation. Information regarding accessibility will be available through the use of brochures and on the DNR website (www.dnr.state.mn.us) to guide visitor expectations.

Existing Recreational Resources and Facilities

Day Use:

Contact Station/Park Office

This building serves as a contact station for visitors entering the park and registering for camping. It also includes a small Nature Store where visitors have the opportunity to purchase a limited number of educational and gift items as well as firewood and ice. A public restroom and a pay telephone are also provided. (Cell phone service is not reliable within the park). Water is available, year round, outside the building. An outdoor self-registration station and kiosk with maps and information to orient visitors to the park are located outside the building. The building also provides park staff office space and storage. (See Figure 10. Summer Recreational Resources and Figure 11. Winter Recreational Resources).

Picnic/Overlook Area

A large picnic area overlooking Lake Pepin includes 40 picnic tables and an enclosed handicap accessible picnic shelter with electric service and seasonally available modern restrooms with running water. A small gazebo is located at the overlook and a 1 mile paved trail follows the bluff top from the picnic shelter to the campground. The picnic shelter has a wood stove and serves as a warming house during the winter. A vault toilet is available next to the shelter when water has been shut off for the season. Handicap accessible facilities available include the picnic shelter, a picnic table at the gazebo, and water spigot at the picnic shelter.

Winter Trail Center

A warming house near the park office provides skiers and visitors who use the snow sliding hill an opportunity to warm up as well as an orientation to the park trails. A modern restroom in the park office is available when the office is open.

Open Space for Active Recreation

A small play area and open field for un-structured play is located next to the campground.

Amphitheatre

An amphitheatre is located directly across the campground road from the second campground loop. This area is used for interpretive programs and occasionally for special events such as weddings or other family activities.

Access to the Mississippi River

There is no access to the Mississippi River for boating or swimming within Frontenac State Park. There are several private and public launch sites available nearby including municipal landings in the City of Red Wing and Lake City, as well as in Maiden Rock in Wisconsin. The park campground has adequate auxiliary parking space available for parking boat trailers.

Trails

There is a total of 13 miles of trail within Frontenac State Park providing visitors with a variety of trail experiences. All 13 miles are open to summer trail uses:

- 13 miles are open for hiking.
- 1.5 miles of the 13 miles are self guided interpretive trails.
- 1 mile of the 13 miles is a paved, accessible trail appropriate for biking and in-line skating as well as hiking.

Of the 13 miles of trail, 11.2 miles are open for winter trail uses:

- 5.7 miles for cross country skiing (groomed for Nordic cross country skiing).
- 5.5 miles for snowmobile use.

Snowshoeing is allowed anywhere off of groomed ski trails. The bluff face hiking trails are not open for winter use.

Overnight Use:

Semi-modern Campground

The campground has 58 sites, 19 with electricity. Each campsite has typical state park amenities including a picnic table, fire ring and parking spur. A sanitation building with showers and an RV sanitation station are open seasonally.

Group Camp

The group camp accommodates up to 35 people. Facilities include running water (May thru October), picnic tables, fire rings, two shelters and two vault toilets. This is a popular site and is often reserved by the same visitors year after year. The group camp is open for three-season use, until first plowable snow and then remains closed until after spring thaw.

Hike-in/Cart-in Campsites

There are 6 all-season hike-in campsites with a small cart provided for each site. The sites are very popular with visitors who are looking for a quiet and more remote or rustic camping experience. The campsites are located about 1/3 mile from the parking area. A vault toilet is located in the campsite area. The sites are open for three-season use, until the access trail is groomed for cross-country skiing

Recreational Use and Visitor Services Recommendations

Overall Goals:

- Provide outdoor recreational activities that feature the parks resources, which can be accommodated without negatively impacting the natural or cultural resources or detracting from the views, which preserve the sense of place.
- Incorporate strategies developed as a result of the 2007 Visitor Survey and the marketing programs to increase visitor use of Frontenac State Park.
- Increase outreach to minority groups to broaden the range of visitors to the park.

Day Use Goals:

- Increase day use of Frontenac State Park.
- Continue to develop partnerships and outreach opportunities with other organizations to promote visitation to Frontenac State Park.
- Provide facilities for visitor use that meet Americans with Disabilities Act standards.

Overnight Use Goals:

- Provide up-to-date amenities while maintaining the rustic character of the campground.
- Enhance the quality of the visitor experience.
- Provide an adequate number of campsites and facilities that meet Americans with Disabilities Act standards.

Day Use Recommendations:

Natural Play Areas

Objectives:

- Provide park visitors with natural play areas.
- Continue to respond to changes in recreational trends by evaluating opportunities that are an appropriate for the park.

Recommendations:

- Develop opportunities that provide for interpretation as well as active recreation for park visitors.
- Consider providing natural play areas at campground and picnic area if appropriate for either location.
- Develop an interpretive trail loop that also includes active recreation opportunities. This type of trail would serve to enhance a healthy lifestyle and educate visitors about the park and its resources.
- Develop natural play areas according to the Division of Parks and Recreation system-wide guidelines.
- Maintain open areas for unstructured recreational opportunities.

Picnic/Scenic Overlook Area

Objectives:

- Explore opportunities to increase use of area without diminishing experience for those using area for quiet contemplation.
- Maintain viewsheds of Lake Pepin, river valley landscapes and native plant community restoration sites.

Recommendations:

- Reorganize and expand the picnic area to create areas to accommodate larger groups and families, as well as more private areas for small picnic groups and other contemplative uses. Techniques will include planting screening vegetation to separate areas and creating new smaller areas on the edge of the picnic area. Preserving views of Lake Pepin from all areas will be a high priority for the redesign.

- Upgrade restroom facilities at the picnic shelter, including upgraded handicapped accessible facilities.
- Rehabilitate and pave the picnic area parking lots and include appropriate drainage controls.

Trails

Objectives:

- Provide visitors with varying interests and physical capabilities a variety of trail opportunities to explore the park and learn about its natural and cultural resources.
- Maintain existing trails in safe and sustainable condition.
- Add additional trails opportunities.

Recommendations:

- Evaluate new trail uses as they are proposed to determine compatibility with existing trail uses, anticipated popularity and impact on park resources. Adopt new uses that have little or no impact on existing trail resources, particularly those that will bring new users to the park.
- Participate in planning for regional pedestrian, bike, and equestrian trail systems. Determine what types of trail connections to a regional system are appropriate for the park.
- Contact landowners within the park boundary to discuss possible hiking and skiing trail easements to connect the large separated parcels with the main body of the park.
- Avoid multiple park entrances that would require additional monitoring by park staff.
- Investigate opportunities to better connect upland areas of the park with Sand Point and Wells Creek using strategies such as boardwalks and floating walkways.
- Create a naming system for trails and develop signage that provides information including trail length and difficulty level.
- Incorporate interpretive/activity stations at locations along trails nearest picnic areas and campgrounds to provide additional learning and active play opportunities.
- Identify and address existing and potential resource impact issues along trails.
- Add benches along trails where appropriate.
- Rehabilitate the two existing Adirondack shelters and move the one overlooking the park office back from the ridge edge so it is not visible as visitors enter the park.
- Develop additional Adirondack shelters as new trail opportunities arise connecting the separated parcels with the main body of the park.
- Rehabilitate or reconstruct major segments of the three vertical bluff face trails.
- Extend the Sand Point Trail to create a loop along Lake Pepin, returning to the trailhead parking area.
- Develop a hiking/snowshoe trail loop connecting with the Native American Cemetery Trail.

Contact Station/Park Office

Objective:

- Provide a facility that meets the needs and interests of visitors and provides a productive work environment and adequate storage space to accomplish administrative, supervisory and public contact needs of staff.

Recommendations:

- Replace the current park office/contact station with a larger building to serve as a park office, contact station, and visitor center.
- Ensure facility is located where it will best serve park visitors and meet park staff needs.
- Provide space that will accommodate additional visitor services such as: interpretive displays, a larger nature store including convenience merchandise, visitor orientation and registration area, classroom/meeting space, trailhead and warming house.
- Design new facility to blend with landscape.

Water Access

Objective:

- Consider providing access to the Pleasant Valley lakelet for fishing and canoeing.

Recommendations:

- Work with Minnesota Department of Transportation to address issues related to the informal access to Pleasant Valley lakelet from Highway 61 right-of-way as part of the proposed Hwy 61 reconstruction. The informal access, an abandoned driveway to a former residence now within the park, is unsafe because of the steep slope and poor sightlines for entering/exiting onto Highway 61.
- Develop alternatives for providing access to the Pleasant Valley Lakelet for canoeing, boating and remote camping experiences.

Hunting

Objective:

- Manage populations of white-tailed deer to prevent negative impacts to native vegetation and tree regeneration.

Recommendation:

- Annually assess need for deer herd reduction within the park. Plan and conduct deer hunts as required to protect native vegetation.

Overnight Use Recommendations:

Semi-modern Campground

Objectives:

- Address aesthetic and safety issue of group camp access road passing through last loop of campground.
- Protect view sheds from main park road (County Road 2) to preserve visual appeal and rustic character of park.
- Provide a new accessible sanitation building.
- Update water systems.
- Develop capacity to accommodate numbers of visitors and styles of camping.
- Upgrade campground amenities such as electric service to meet the needs of campers.

Recommendations:

- Enhance camping experience by implementing a variety of techniques including: reducing the numbers of sites within the existing campground and retiring degraded areas, re-vegetating buffers between sites to provide more privacy, add sites in new areas to accommodate group/family style camping, providing separate areas for tent and RV camping, and allow easier access for larger camping units.
- Add an additional loop of campsites adjacent the existing campground. Current demand for camping at the park supports adding campsites, particularly those with electric service. The number of sites should be sufficient to replace those removed from the existing four loops for an initial total of approximately 80 sites. Sites should be developed to provide cul-de-sacs and pull through spurs.
- Upgrade electric service in portions of the campground to meet demands from park visitors.
- Reroute access to group camp to increase safety and enhance the camping experience.
- Develop and immediately implement a plan to plant vegetative screening in areas identified as being suitable for the addition of a new camping loop to ensure preservation of view sheds that are likely to be impacted by future expansion of camping facilities. In addition, if future expansion occurs, carefully investigate sight lines to minimize impacts to visual integrity of the park.
- Upgrade access to drinking water to meet Americans with Disabilities Act standards.
- Replace sanitation building to meet the capacity of the remodeled campground and to provide accessible facilities.
- Complete upgrade of water supply system through 3rd and 4th loops of the campground and to the group camp.

- Relocate the existing amphitheater if required for the campground expansion and sanitation building replacement.
- Monitor the capacity and function of the existing wastewater treatment system and upgrade as necessary.

Group Camp

Objective:

- Redevelop existing area to meet accessibility requirements and to meet demands for this style of camping.

Recommendations:

- Create two group campsites out of the one existing group camp.
- Add additional vault toilets, water fountains, tables, fire rings and walkways that meet Americans with Disabilities Act requirements and health code standards for added capacity.
- Increase parking capacity to accommodate use of new separate group camps – capacity for approximately 30 to 40 people at each site.

Remote Campsites

Objective:

- Meet increased demand and provide a variety of opportunities for this style of camping.

Recommendation:

- Add a limited number of remote camping opportunities with cart-in/hike-in/ski-in/canoe-in access in areas where resources will not be negatively impacted. Areas to be considered include the north side of the Pleasant Valley Lakelet and the western portions of the park (following acquisitions to link the disconnected parcels).

Camper Cabins

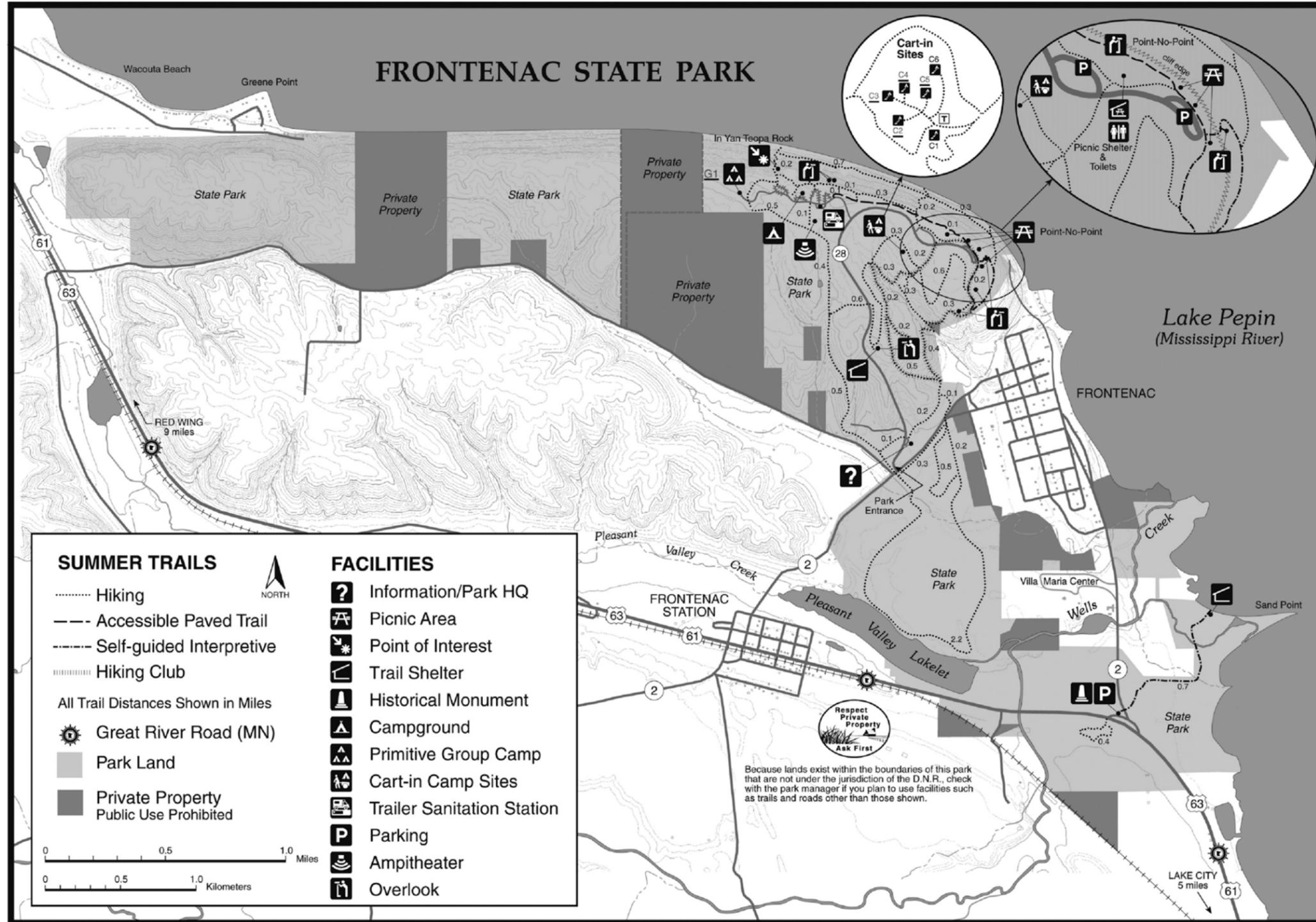
Objectives:

- Provide a variety of camping styles and experiences for park visitors.
- Provide camping experience for visitors that do not have access to or desire to own camping equipment.

Recommendations:

- Add camper cabins in areas where sanitation facilities currently exist and where resources and the visual quality of the park will not be negatively impacted.

Figure 10. Summer Recreational Resources Frontenac State Park

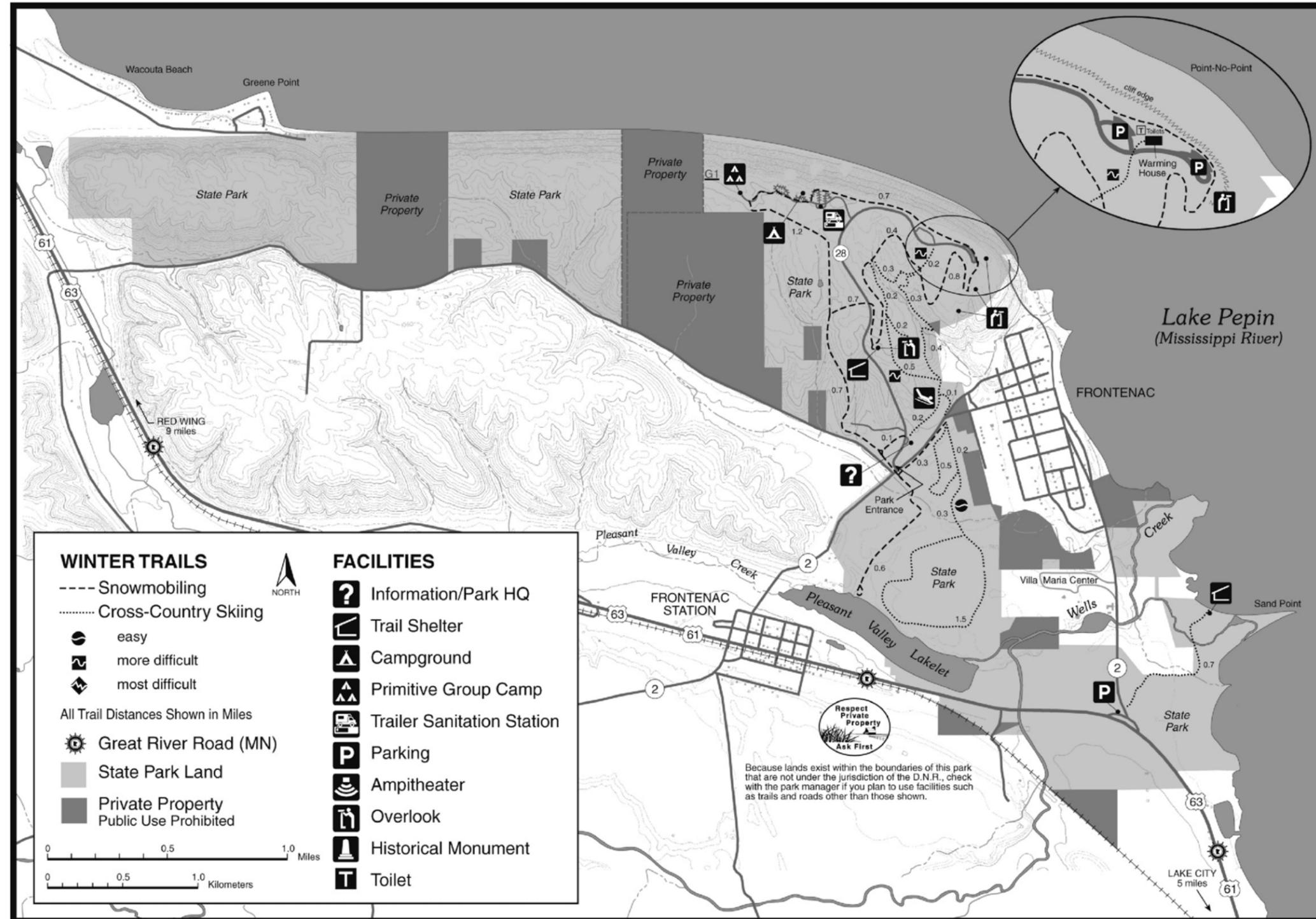


Note:

The figure illustrates summer trails and facilities. Summer trail uses include hiking, biking and in-line skating. The bluff face hiking trails are open for summer use.



**Figure 11. Winter
Recreational Resources
Frontenac State Park**



Note:

The figure illustrates winter trails and facilities. Winter trail uses include snowmobiling and cross-country skiing. Snowshoeing is allowed anywhere in the park off of groomed ski trails. The bluff face hiking trails are not open for winter use.



PROPOSED DEVELOPMENT

This section collects the recommendations from all the chapters of the management plan that involve capital development projects, for example, facility or infrastructure improvements. Other projects not listed below may be initiated that are consistent with the goals of the management plan and are necessary for implementing the recommendations therein.

The Division of Parks and Recreation will follow the Minnesota Sustainable Building Guidelines (MSBG) for the design and construction of new facilities at Frontenac State Park. Sustainable design is a means to reduce energy expenditures, enhance the health, well-being and productivity of the building occupants, and improve the quality of the natural environment. All new state buildings funded with state bond money since 2004 are required to follow MSBG guidelines. Among the requirements set out in the guidelines:

- Exceed the energy code in effect in January 2004 by at least 30 percent
- Achieve lower possible lifetime cost for new buildings
- Encourage continual energy conservation improvements in new buildings
- Ensure good indoor air quality
- Create and maintain a healthy environment
- Facilitate productivity improvements
- Specify ways to reduce material costs
- Consider the long-term operating costs of the building including the use of renewable energy sources and distributed electric energy generation that uses a renewable source of natural gas or a fuel that is as clean or cleaner than natural gas.

The Division will also consider the design, placement, and operation of outdoor lighting on facilities and in use areas to reduce light pollution and preserve night sky viewing opportunities, while providing adequate light for visitor orientation and safety.

Proposed Development Projects

Picnic Area

- Upgrade picnic shelter restrooms and water access.
- Rehabilitate and pave the picnic area parking lots and include appropriate drainage controls.

Campground and Group Camps

- Redesign the existing campground with the following objectives: reduce the numbers of sites within the existing campground and retiring degraded areas, re-vegetate buffers between sites to provide more privacy, add sites in new areas to accommodate group/family style camping, provide separate areas for tent and RV camping, and allow easier access for larger camping units.
- Add an additional camping loop to provide opportunity for separation between existing campsites and with facilities to accommodate large camping vehicles.
- Complete upgrade of water supply system through 3rd and 4th loops of the campground and to the group camp.
- Replace sanitation building to meet capacity of campground and to provide accessible facilities. This building will also serve as a storm shelter for campers.
- Relocate the existing amphitheater if required as part of the campground expansion and sanitation building replacement.
- Upgrade electric service and in portions of the campground to meet demands from park visitors.
- Redevelop the group camp to provide additional capacity and handicap accessibility.

Trails

- Rehabilitate or reconstruct major segments of the three vertical Bluff Face trails.
- Develop trails in the western areas of the park when connections between the separate parcels and the main body of the park become available via easement or property acquisition.

Other

- Camper cabins - add appropriate number of cabins in areas that will not impact natural or cultural resources.
- Remote camping – add a number of cart-in/hike-in/ski-in/canoe-in access in areas where resources will not be negatively impacted. Areas to be considered include the north side of the Pleasant Valley Lakelet and the western portions of the park (following acquisitions to link the disconnected parcels).
- Adirondack shelters - add new, relocate and upgrade existing structures
- Contact Station/Park Office - provide new structure that meets the needs of park visitors and park staff. The new facility should serve a visitor center function for the park, including “first stop for park visitors” orientation, interpretative exhibits and other information about the park, and general information about the immediate area.

PARK BOUNDARY

The Minnesota State Legislature establishes state park boundaries. A legal park boundary defined in Minnesota Statutes provides staff, citizens and policy makers with a common understanding of which lands are appropriate for inclusion in the park. It is the policy of the DNR Division of Parks and Recreation to include within a statutory boundary only those lands where the landowner has agreed to inclusion. The DNR is then authorized to negotiate with willing sellers for acquisition of lands contained within that statutory boundary. Being within a statutory park boundary does not affect the landowner's use of their property. They retain full ownership and rights to the land until they sell their land to the state or another private owner.

As a part of the planning process, the Citizen Advisory Committee reviews the existing state park land base, and considers what boundary alterations should be considered to ensure that natural and cultural resources are protected, and recreational and educational opportunities consistent with the park's mission can be provided. The DNR Division of Parks and Recreation reviews those suggestions and at such time as a boundary modification is recommended the Division contacts the affected landowners and ask for their documented support. Local units of government are also contacted at that time.

Land and Water Conservation Fund

Funds from the Land and Water Conservation Fund (LWCF) have been used to acquire land or construct recreational facilities in this park. LWCF grants have contributed to outdoor recreation throughout the US since 1966. By using these funds, the state has agreed to maintain recreational facilities in a manner that promotes safe use and invites public use, and to retain the land in this park solely for outdoor recreation and related support facilities. If the DNR decides that it is essential that lands that were part of a LWCF project be used for another purpose, it may be possible to replace those lands with other lands that have at least the same fair market value and provide equivalent recreational opportunities. This conversion can only be done with the approval of the National Park Service (NPS) Regional Director (pursuant to Section 6(f)(3) of the L&WCF Act and 36 CFR Part 59). Conversions are coordinated through the Minnesota State Liaison Officer to the NPS. The NPS Regional Director has authority to approve or disapprove conversion requests and/or to reject proposed property substitutions. The Minnesota State Liaison Officer who administers the LWCF program should review all actions that would cause a significant change of use or park boundary change.

Current Park Statutory Boundary

Frontenac State Park includes 2,898.97 acres within its park statutory boundary. Of that acreage, 2,225.95 acres are administered by the DNR. The remaining 673.02 acres within the boundary is under other public or private ownership: MnDOT - 6.6 acres, Goodhue County - 3.0 acres, Florence Township - 13.85 acres, and private owners - 649.57 acres. (See Figure 12. Land Ownership).

Park Statutory Boundary Change Discussion

The Citizens Advisory Committee (CAC) and Technical Advisory Team (TAT) considered the opportunities for boundary adjustments at Frontenac State Park. Committee and team members were very interested in preserving and buffering natural resources, wildlife habitat, and view sheds to preserve the sense of wildness within the park from the potential impacts of future development. The CAC and TAT used the DNR Division of Parks and Recreation criteria for evaluating boundary changes as a guide and further developed a specific list of criteria for Frontenac State Park. Use of the following criteria will

ensure that the park's natural resources, wildlife habitat, and interpretive and recreational opportunities are protected or enhanced.

Criteria for considering additions of land to state park include:

- Buffer key areas adjacent to the park.
- Preserves important view sheds to protect sense of place within the park.
- Protects or provides opportunities to enhance significant habitat, natural resources and cultural sites such as the bluffs, Sand Point and Wells Creek and its associated wetland complex.

Division staff, the CAC and TAT also reviewed the private parcels within the current statutory boundary to determine if some should be removed.

Criteria defined for removal of land to park include:

- Parcel contains developed home sites
- Parcel has minimal recreational use value
- Parcel has minimal resource quality or restoration potential

Proposed Park Statutory Boundary Additions and Deletions

Proposed Additions

Seven parcels with four owners totaling 112.97 acres were identified as additions to the park statutory boundary. Three parcels (one owner) including 34.47 acres are located on the eastern side of the park, adjacent to Frontenac. The parcels include the wooded slopes between the community of Frontenac and the trails and other park facilities at the top of the bluff. Including these parcels will help buffer park facilities from further development and provide enhanced access to the bluff line trails for maintenance activities and public use. Four parcels (three owners) including 78.5 acres are located on the western side of the park, along U.S. Highway 61 and Hill Avenue. Including these parcels will protect high quality resource areas, buffer the more undeveloped western end of the park from future development, and create an easily identifiable boundary. (See Figure 13. Proposed Boundary Adjustments).

During the 2008 Legislative session, portions of the proposed addition were added to the park statutory boundary: 34.47 acres on the eastern side of the park and 39 acres on the western side of the park. (See Figure 13. Proposed Boundary Adjustments). The remaining 39.5 acres proposed to be added on the western side of the park will need to be included in the park statutory boundary during a future legislative session.

One other possible addition to the park statutory boundary is the inclusion of all or a portion of the Perched Valley Wildlife Management Area. The Division of Parks and Recreation and Division of Fish and Wildlife have discussed the possibility of transferring the lands to be included in the state park. The WMA currently does not allow hunting. At the time this plan was written, a decision on the transfer had not been made.

Proposed Deletions

A total of 50.96 acres were identified as deletions from the park statutory boundary. Eighteen parcels totaling 34.11 acres are located along the western side of Frontenac. Nearly all of the parcels are small lots developed for residential use. There is no significant resource or recreational value to retaining them with the park statutory boundary. The remaining deletions are 3 acres owned by Goodhue County and 13.85 acres owned by Florence Township to the southwest of Frontenac.

During the 2008 Legislative session, all of the proposed deletions identified in the management plan were removed from the park statutory boundary.

Park Boundary Recommendations

The park provides open space, natural and cultural resource protection and recreational opportunities for local residents and visitors from all over the world. The park is also an important part of the Mississippi River migratory flyway providing important conservation of resources at a national level.

Overall Goal:

As the area around the park continues to develop, preserving the surrounding natural areas, wildlife habitat and view sheds will serve an important role in preserving and protecting Frontenac State Park.

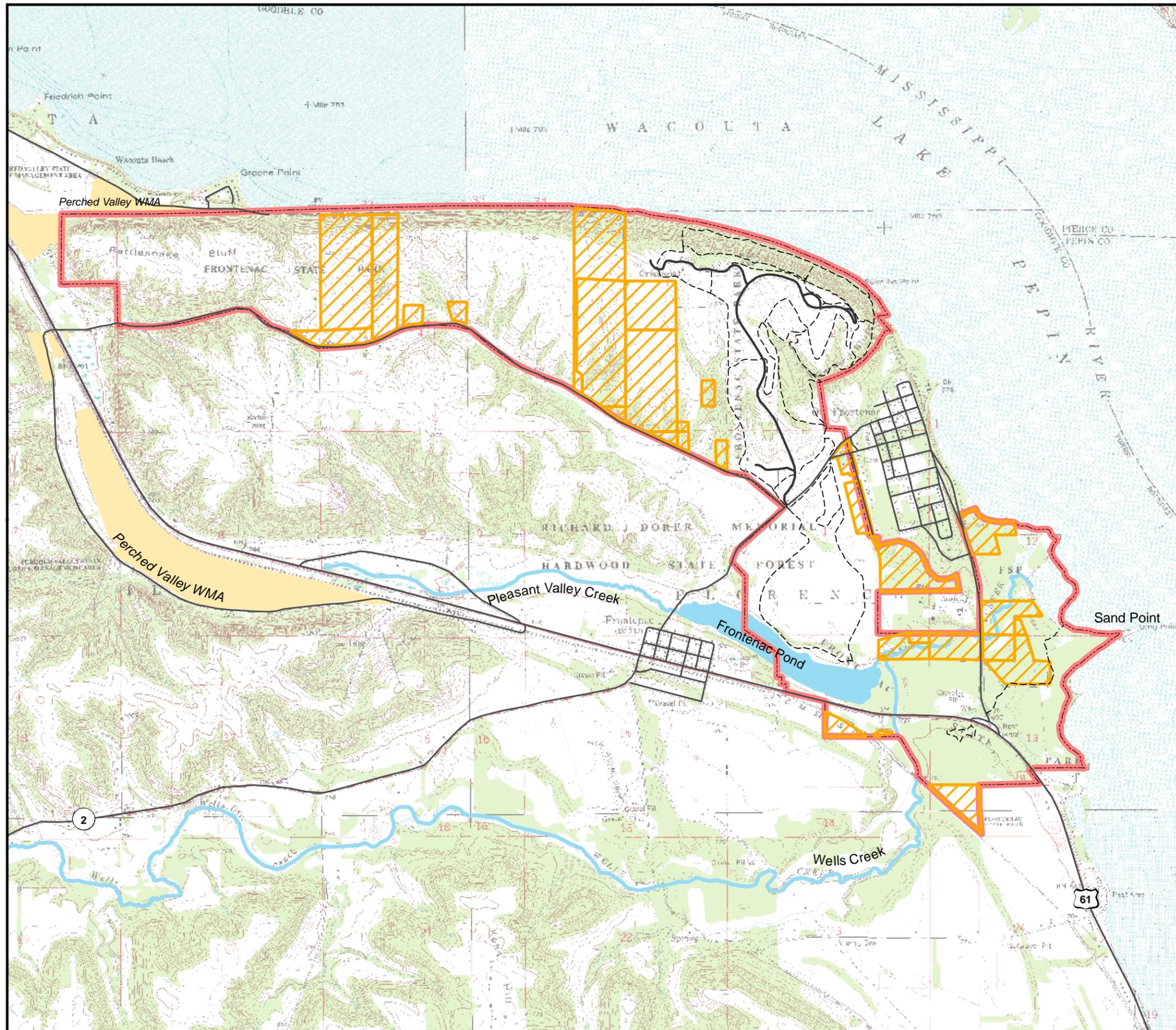
Objectives:

- Maintain a land base that protects sensitive resources and provides high quality recreational experiences.
- Minimize land base fragmentation that adversely impacts resource management and recreation development.
- Support the use of a range of conservation tools in cooperation with neighboring communities, other government agencies, special interest groups, and private property ownership to pursue park goals and objectives.

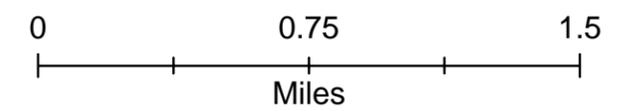
Recommendations:

- Continue to pursue acquisition of private lands within the current park statutory boundary that support the Division of Parks and Recreation's mission to protect and perpetuate the diverse natural, scenic, and cultural resources of the landscapes within the Mississippi valley for low impact use, education and enjoyment of park visitors.
- Pursue statutory boundary additions and acquisition of parcels described in this plan with the support of the property owner.
- Evaluate other adjacent parcels against the established boundary change criteria if those parcels become available.
- Propose parcels for deletion from the park statutory boundary described in this plan and other parcels that are highly developed or of no resource or recreation value to the state park.
- Work with local units of government and conservation groups to consider a range of conservation tools that can be used to protect lands adjacent to the park from non-compatible development.
- Work with surrounding landowners to inform them of conservation measures they can implement on their property especially if they have significant natural resources on their land or have the potential to impact view sheds.
- Work with special interest groups and local and county units of government to develop education and stewardship opportunities to be implemented by surrounding land owners on their property to buffer, protect and enhance significant natural resources and important view sheds.
- Provide local units of government the opportunity to review statutory boundary proposals.
- Continue discussions with the DNR Division of Fish and Wildlife to determine if it is appropriate to transfer all or portions of the Perched Valley Wildlife Management Area (WMA) to the Division of Parks and Recreation for inclusion in the state park.

**Figure 12. Land Ownership
Frontenac State Park**



-  State Park Boundary
-  Privately Owned Parcels
-  Hiking Trails
-  Park Roads
-  MN DOT Roads



MN Department of Natural Resources
Division of Parks and Recreation

SIGNIFICANT AREAS MAPPING

Significant Areas Mapping (SAM) is an integrated approach by which the natural and cultural resources in a park are first identified in terms of their significance and then assessed in terms of their capability to provide opportunities for visitor experiences.

The SAM process has two parts - assessing present conditions and assessing future conditions. In each part there are three steps - identifying significant natural and cultural resources, identifying levels of visitor use and experience, and overlaying the first two steps to assess opportunities and conflicts related to park resources and park visitors. Future conditions are those anticipated at the end of the twenty-year lifetime of the management plan. Visitor use and experience is defined on a park-specific scale of low, moderate, and high use based on the number and density of visitors using the area.

The purpose of the SAM process is to help identify areas for improvement in the way the DNR Division of Parks and Recreation manages how resources and people interact in the parks. It will aid the Division in addressing existing problems as well as in planning to avoid new ones. It also can help point out how the Division can take better advantage of the places where the interaction between people and the resources are positive - through interpretation and education.

With input from the public, the SAM process can lead to a discussion of how to resolve conflicts between resource protection and visitor use - possibly by relocating (or modifying) visitor use, or by monitoring resource impact and defining impact management strategies. Appropriate strategies for managing impacts can be determined using the SAM analysis along with the park's mission as guides. Specific management strategies may include:

- *site management* (facility design, site hardening, site closure, vegetation barriers, etc.)
- *rationing and allocation* (reservations, queuing, pricing)
- *regulation* (the number of people, the location or timing of visitors, visitor behavior)
- *deterrence and enforcement* (signs, sanctions)
- *visitor education* (interpretation that promotes appropriate behavior or provides information regarding use conditions)

Recommendations for addressing opportunities and concerns identified during the significant areas process are included in the related sections of the management plan.

Existing Conditions and Experiences

Significant Natural and Cultural Resources

Frontenac State Park hosts a number of rare and natural features, several areas of native plant communities, as well as cultural and archaeological resource sites. Several areas in the park are also being actively restored as native communities. (See Figure 14. Significant Areas Map).

Current Visitor Use Levels and Experience

Park use is the heaviest in the campground and picnic areas, and the nearby trails along the bluff. The majority of visitors to the park are concentrated in this area. Other areas of moderate park visitation are the trail to Sand Point and Frontenac Pond. Visitation to the rest of the park is low or none because of the lack of facilities and access.

Identifying Opportunities and Concerns

Opportunities identified during the planning process include interpretive signage improvements along the Sand Point and Bluff Edge trails, and boardwalk extension along the Sand Point trail to protect wetland and floodplain forest complexes while improving visitor access by minimizing trail closures

from flooding. Prairie and woodland restoration and management areas near park trails are also identified as sites for interpretation of resource management activities.

Future Conditions and Experiences

Significant Natural and Cultural Resources

Resource management activities during the 20-year lifespan of the management plan will result in restoration of prairie and other natural communities in old fields and other disturbed areas. Other management activities such as the possible reintroduction of Timber Rattlesnakes will also enhance the resource base of the park.

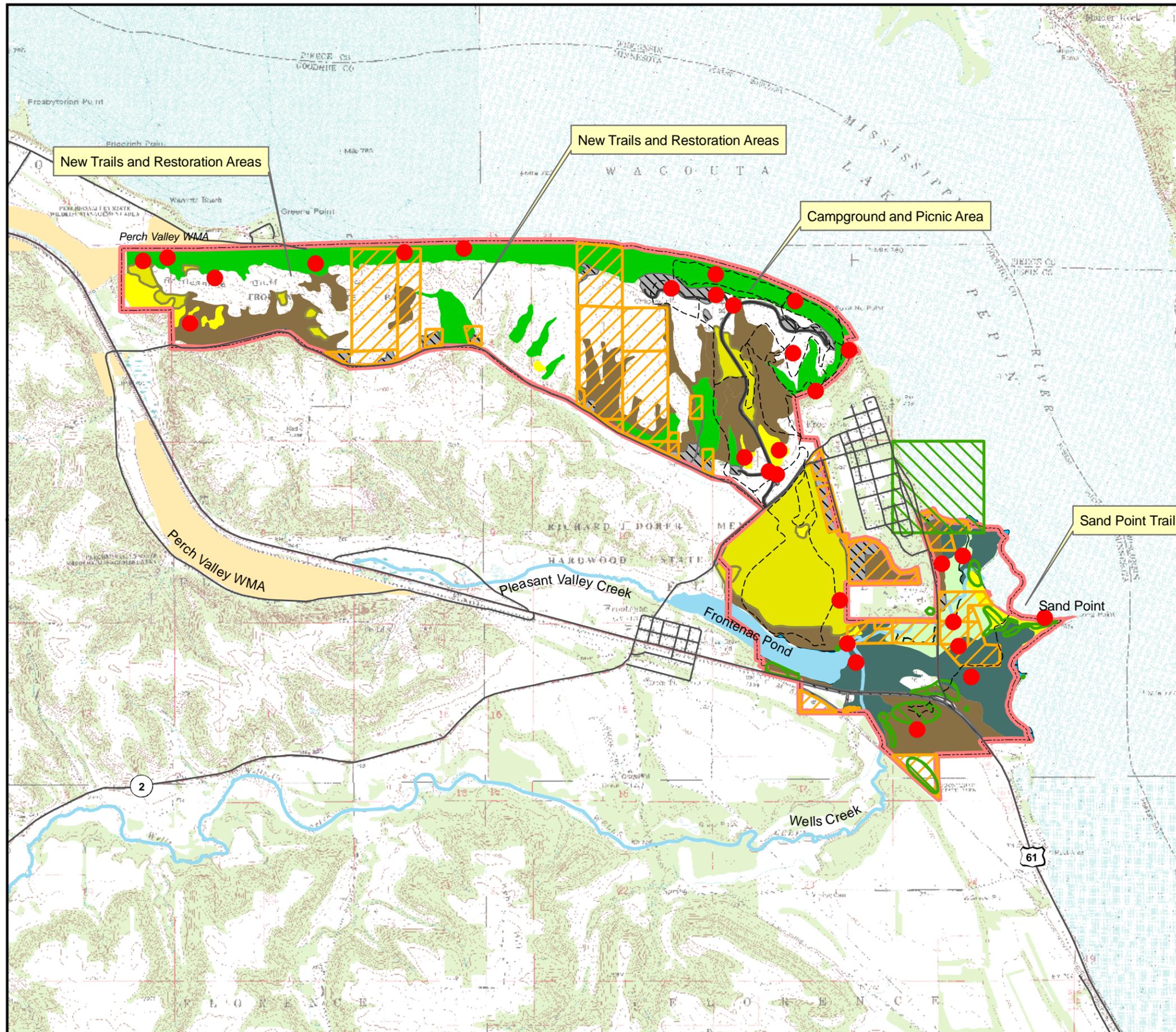
Current Visitor Use Levels and Experience

The park campgrounds, picnic areas and nearby trails along the bluff will remain the heaviest used areas of the park. Likewise, the Sand Point and Frontenac Pond will continue to have moderate use but likely increased visits because of facility additions and improvements such as improved non-motorized boat access on Frontenac Pond and additional boardwalk along the Sand Point trail. The western portions of the park may also experience increase visitation as private parcels are acquired and new trails are built to connect the previously disjointed sections of the park.

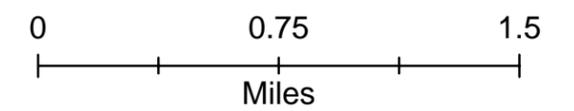
Identifying Opportunities and Concerns

Several future opportunities and concerns were identified will result from the implementation of the management plan. The additional natural community restorations will present new interpretive opportunities. Increased use on the improved Sand Point trail means the Division will monitor the impacts of additional people on the migrating and nesting bird populations that use the area. The Division will also minimize visitor impacts to natural community and rattlesnake restoration areas as new trails are developed in the western portions of the park. Interpretive signage will be one component used to educate visitors and minimize impacts to resources in the area.

Figure 14. Significant Areas Map
Frontenac State Park



- State Park Native Plant Communities
- Fire-Dependent Forest/Woodland
 - Floodplain Forest
 - Mesic Hardwood Forest
 - River Shore
 - Upland Prairie
 - Wet Meadow/Carr
-
- Rare and Natural Features
 - Prairie or Savanna Reconstruction
 - Cultural or Archaeological Features
 - Privately Owned Parcels
 - Developed (park-related or private)
-
- State Park Boundary
 - Hiking Trails
 - Park Roads
 - MN DOT Roads



PARK OPERATIONS

Staffing Level and Operational Issues

Current staffing at Frontenac State Park includes:

- Park Manager (full-time)
- Assistant Park Manager (full-time)
- Building and Grounds Worker (part-time unlimited 77%)
- Parks Worker (part-time seasonal, April – October, 90%)
- 3 Building and Grounds Workers, (part-time seasonal, 90%, 70%, 50%)
- 2 Natural Resource Workers or Interns (part-time seasonal, May – October, 60%)
- 3 to 5 Green View Workers

These staff are responsible for the operations and maintenance activities at Frontenac State Park as well as two State Forest recreation units – Kruger and Zumbro Bottoms.

Kruger State Forest Recreation Area

Kruger State Forest recreation area consists of a 19 site, primitive campground, a day use area with two open shelters and a barbeque grill, and a one mile, paved trail for the physically challenged.

Zumbro Bottoms State Forest Recreation Area

Zumbro Bottoms State Forest recreation area consists of 3 campgrounds used primarily by equestrian campers. West campground is the largest with 26 designated sites and overflow areas that handle up to 150 more units. This unit has a large open shelter, 2 wells and 5 single vault toilets. It has one designated handicap campsite and a handicapped rider mount. The central campground has about 15 sites with room for another 15+ +/- for busy weekends. The campground has an open shelter, a well, and 2 vault toilets. The north campground has 6 sites, a well and a vault toilet.

Although it is used primarily by equestrians, Zumbro Bottoms is open to other campers. The recreation unit is used by hunters in the spring and fall and on two weekends per year a motorcycle club conducts a major event at the site under a special use permit.

The combination of remote locations and type of use creates more and different challenges for management at the forest recreation units. For example, emergency services are called into Zumbro Bottoms at least twice a season. Rescues are complicated by the rough terrain and lack of cell phone coverage in the campgrounds.

Enforcement

Law enforcement within the park will comply with the guidelines in the Minnesota Department of Natural Resource Enforcement Manual (March 2001) and Minnesota State Park Rules (2000). The park manager and assistant managers have limited enforcement authority within the Frontenac State Park boundary. They may call on other law enforcement agencies including DNR Conservation Officers and the Goodhue County Sheriff's Office. The DNR Division of Parks and Recreation with continue to work with local authorities to assure effective law enforcement in the park.

Additional Staffing Needs

Several staffing needs were identified during the management plan process to address operational responsibilities and visitor demands:

- Restore a seasonal naturalist position at the park. It should be a seasonal position April-October at minimum 80% time (See also Interpretive Services).
- Add a part-time seasonal Buildings and Grounds Worker (April – October 50%) with primary responsibilities at the State Forest recreation areas.
- Add an Office and Administrative Specialist (part time, seasonal).
- Increase the part-time seasonal Buildings and Grounds Worker from 70% to 80%.
- Increase the part-time unlimited Buildings and Grounds Worker to full-time, based on the additional responsibilities for facility additions outlined in this plan.

The addition of these staff would result in Interpretive Services improvements for park visitors as well as enhanced maintenance and operations activities at the park and the State Forest recreation areas.

Park Operations Recommendations

- Continue to participate in local chambers of commerce and regional tourism associations.
- Place a seasonal park naturalist at Frontenac State Park for the warm weather season when sustainable funding for interpretation is available, as outlined in the Division of Parks and Recreation's Statewide Interpretive Plan (See also Interpretive Services).
- Add an additional 50% part-time seasonal Buildings and Grounds Worker with responsibilities for the State Forest recreation areas.
- Add a seasonal, part-time seasonal Office and Administrative Specialist position.
- Increase the seasonal, part-time Buildings and Grounds Worker from 70% to 80%.
- Increase the part-time unlimited Buildings and Grounds Worker to full-time, based on the additional responsibilities for facility additions outlined in this plan.
- Replace the current park office/contact station with a larger building to serve as a park office, contact station, and visitor center (See also Recreational Use and Visitor Services).

PLAN MODIFICATION PROCESS

DNR Division of Parks and Recreation's management plans document a partnership-based planning process, and the recommended actions resulting from that process. These comprehensive plans recognize that all aspects of park management are interrelated, and that management recommendations should also be interrelated.

Over time, however, conditions change that effect some of the plan recommendations or even an entire plan. Plans need to acknowledge changing conditions, and be flexible enough to allow for modifications as needed.

There are two scales or types of plan modifications: plan revisions and plan amendments. Minor plan revisions concern less controversial issues and can generally be made within the DNR Division of Parks and Recreation as plan modifications. Larger issues that represent changes in management direction or involve other portions of the Department or other state agencies are addressed as plan amendments. The DNR Division of Parks and Recreation Planning Manager will make the decision of whether a plan amendment or plan revision is appropriate.

To maintain consistency between plans and processes, all revisions and amendments will be coordinated through the DNR Division of Parks and Recreation planning section. Requests for planning assistance should be directed to the DNR Division of Parks and Recreation Planning Manager in the Central Office, St. Paul.

Plan Amendments

Plan Amendment Criteria

The criteria outlined below will be used to determine whether the proposed change warrants a plan amendment:

The proposed change:

- Alters the mission, vision, goals, specific management objectives, or proposed development plans outlined in the plan;
- Is controversial between elected officials and boards, park user groups, the public, adjacent landowners, other DNR divisions or state agencies; or
- Directly affects other state agencies (e.g., Minnesota Historical Society).

Plan Amendment Process

The plan amendment process has a series of steps.

1. Review the proposed change at the state park and regional level. Determine which stakeholders potentially have a major concern and how those concerns should be addressed. If the major concerns are within the DNR Division of Parks and Recreation, the issue should be resolved within the Division, with input from the public. The proposed change is then reviewed with the DNR Division of Parks and Recreation Management Team
2. If the proposed change involves other DNR Divisions, the issue should be resolved by staff and approved by the affected Division Directors. This may require one or two area/regional integrated resource management team meetings. The proposed change will be reviewed through the DNR Regional Interdisciplinary Review Service (RIRS).
3. If the proposed change issue involves other state agencies, the issue should be resolved by staff and approved by the DNR Division of Parks and Recreation Management Team - with input from the public - and reviewed by RIRS.

4. If the proposed change is potentially controversial among elected boards, park user groups, adjacent landowners or the public, an open house will be held that is advertised in the local and regional area.
5. All plan amendments should be coordinated, documented, and distributed by the DNR Division of Parks and Recreation planning staff.

Plan Revisions

If a plan change is recommended that does not meet the amendment criteria above, and generally follows the intent of the management plan, the Department has the discretion to modify the plan without a major planning process.

Revisions related to Physical Development Constraints and Resource Protection

Detailed engineering and design work may not allow the development to be completed exactly as it is outlined in the plan. A relatively minor modification, such as moving a proposed building site to accommodate various physical concerns, is common. Plans should outline a general direction and document the general "areas" for development rather than specific locations. For the most part, plans are conceptual, not detail-oriented. Prior to development, proposed development sites are examined for the presence of protected Minnesota Natural Heritage Program elements and historical/archeological artifacts. If any are found, the planned project may have to be revised to accommodate the protection of these resources.

Program Revisions

The resource management and interpretive services plan sections should be updated periodically as needed. The DNR Division of Parks and Recreation's Resource Management and Interpretive staff will determine when an update is needed, and coordinate the revision with the Division planning section. Program sections should be rewritten in a format consistent with the plan as originally approved by the Department. To retain consistency, DNR Division of Parks and Recreation planning section will be involved in the revision review, editing and distribution.

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Knudsen, Beth, (1994) *Wells Creek Watershed: Geology and Hydrology Informational Paper*. Division of Ecological Services, MNDNR, St. Paul, MN.

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Minnesota Department of Natural Resources. 2005. *Field Guide to the Native Plant Communities Of Minnesota – The Eastern Broadleaf Forest Province*. Ecological Land Classification Program, Minnesota County Biological Survey, and Natural Heritage and Nongame Research Program, MNDNR St. Paul, MN.

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Minnesota Department of Natural Resources. 2006. *Tomorrow's Habitat for the Wild and Rare: An Action Plan for Minnesota Wildlife*, Comprehensive Wildlife Conservation Strategy. Division of Ecological Services, MNDNR St. Paul, MN.

Quinn, Ed. 2005. *Preventing the Spread of Terrestrial Exotic Species on DNR Managed Lands: Best Management Practices (Site Level Guidelines) to Control the Spread of Noxious Weeds Draft # 4*. Division of Parks and Recreation, MNDNR St. Paul, MN

Quinn, Ed and Cleveland, Mark. 2007. *Frontenac State Park Summary of Natural & Cultural Resource Information, Draft*. Division of Parks and Recreation, MNDNR St. Paul, MN.

Wisconsin Department of Administration. 2004. *Final Population Projections for Wisconsin Counties by Age and Sex: 2000-2030*. Demographics Services Center, Wisconsin Department of Administration, Madison, WI.

Additional on-line sources of information used in this plan are listed below.

Explore Minnesota – Minnesota Office of Tourism
<http://www.exploreminnesota.com/home.aspx>

Minnesota Department of Natural Resources – Minnesota County Biological Survey
<http://www.dnr.state.mn.us/eco/mcbs/index.html>

Minnesota Department of Natural Resources – Ecological Classification System
<http://www.dnr.state.mn.us/ecs/index.html>

Minnesota Department of Natural Resources – Natural Heritage Information System
<http://www.dnr.state.mn.us/eco/nhnrp/nhis.html>

National Climatic Data Center and Illinois State Water Survey - Midwestern Regional Climate Center
http://mcc.sws.uiuc.edu/climate_midwest/mwclimate_data_summaries.htm#

NOAA Satellite and Information Service – National Climatic Data Center, U.S. Department of Commerce
http://cdo.ncdc.noaa.gov/climatenormals/clim60/states/Clim_MN_01.pdf

Wisconsin Department of Natural Resources
<http://dnr.wi.gov/>

APPENDIX A – PLAN RECOMMENDATIONS

Natural and Cultural Resources Recommendations

Inventory & Monitoring

Recommendations:

- Conduct surveys for reptiles, amphibians, selected invertebrates and mammals in the park.
- Monitor Henslow's sparrow use of prairie reconstructions and make management modifications as appropriate.
- Periodically monitor native plant communities (particularly high quality areas) to insure that they are not being invaded by terrestrial invasive plants or otherwise degraded.
- Determine if listed species documented over a decade ago are still present and update "last-observation" field in attribute table.
- Monitor mound sites for damage due to visitor use.
- Using historic air photos and other documents, determine the historic & current size of Sand Point and assess the potential for preserving this historic stop-over site for migrating birds.
- Map locations of terrestrial invasive plant infestations in the park.
- Work with the Prairie Island Indian Community, Minnesota Indian Affairs Council and Office of the State Archaeologist to determine appropriate management of the American Indian cemetery sites within the park.

Managing Native Plant Communities, Rare Plants and Other Vegetation

Recommendations:

- Develop native plant community reconstruction plans using the most successful and cost effective techniques available. Re-construct old fields as 'oak openings' and other community types as appropriate.
- Survey and monitor park for existence of documented species on a 10-year cycle or on an appropriate cycle to document and evaluate effectiveness of resource management strategies. Record discovery of new species and incorporate into monitoring cycles.
- In coordination with other Minnesota Department of Natural Resources Divisions, agencies, and local units of government, evaluate and implement strategies and techniques to preserve the Sand Point area and Wells Creek delta as migratory habitat for shorebirds and terns to the extent possible.
- Continue using best management practices to manage native plant communities and other habitat types.
 - Dry bedrock bluff prairies and sand prairies – Continue to use prescribed fire as a tool to manage these community types. Consider the impacts to prairie dependent invertebrates and others species. Use girdling, cutting or other best management practices to enhance the distribution and quality of these sites
 - Dry oak woodlands – Continue invasive species control efforts and the appropriate use of fire along with other best management practices to improve the quality of these communities.
 - Old fields – Maintain old fields with mowing, prescribed fire, or other best management practices until native plant communities can be reconstructed.
 - Prairie/savanna reconstructions – Use timed mowing, spot treatments, prescribed fire and other best management practices to maintain and enhance the reconstructions.
 - Agricultural lease cropland – Retire leases and reconstruct native plant communities.
 - Mesic forests – Continue control efforts on buckthorn and exotic honeysuckles.

- Wells Creek delta – Work with and support initiatives that reduce sediment load and increase water quality within the watershed. To the extent possible, preserve mud flat and sand beach/cobble communities for shorebird and tern habitat. Restore floodplain forest communities in areas dominated by reed canary grass through best management practices, as feasible.
- Use best management practices to effectively manage populations of invasives species. Priority for control efforts will be given to species that pose the most threat to rare native species or communities. Current efforts at Frontenac are focused on eight species:
 - Buckthorn (*Rhamnus cathartica*)
 - Reed canary grass (*Phalaris arundinacea*)
 - Exotic bush honeysuckles (*Lonicera* spp.)
 - Canada thistle (*Cirsium canadense*)
 - Wild parsnip (*Pastinaca sativa*)
 - Queen Anne's lace (*Daucus carota*)
 - Purple Loosestrife (*Lythrum salicaria*)
 - Amur Maple (*Acer ginnala*)
- Consult with the Area and Mississippi River Hydrologists to discuss management techniques to stabilize/improve the Wells Creek Delta and wetland complex.
- Partner with the Wells Creek Partnership to seek riparian improvements on Wells Creek upstream from the park which would decrease the flooding, move the stream bed back to a state of equilibrium and decrease the amount of sedimentation at the mouth.

Managing Wildlife

Recommendations:

- Protect or enhance habitat to sustain native species present and enhance reintroduction success of listed or rare species.
- Use most effective best management techniques of the time, to manage the negative impacts of nuisance species populations on native vegetation.
- Survey and monitor park for existence of documented species on a 10-year or other appropriate cycle to document and evaluate effectiveness of resource management strategies. Record discovery of new species and incorporate into monitoring cycles.
- In coordination with other MDNR Divisions, agencies, and local units of government, evaluate and implement strategies to preserve habitat at Sand Point.
- Manage the park so it continues to be a premier stop-over site for migratory birds.
- Monitor nuisance or exotic species to ensure they do not cause negative impacts to native species or plant communities.
- Annually assess need for deer herd reduction within the park. Plan and conduct deer hunts as required to protect native vegetation.
- Prepare & submit a State Wildlife Grant for Timber Rattlesnake re-introduction in the west end of the park.
- Minimize human impacts in rattlesnake reintroduction areas through actions such as use of signs and patrols.
- Assess potential impacts of prescribed fire on Lepidoptera and species such as eastern racer (*Coluber constrictor*). Adjust burn units if needed so locations of susceptible species are not all burned in same year.
- Manage prairie reconstructions utilized by Henslow's sparrow with long burn intervals to favor litter accumulation and residual vegetation where appropriate.

Managing Cultural Resources:

Recommendations:

- Conduct resource assessments to prevent or mitigate impacts on cultural resources of new facility development, facility rehabilitation, trail development, or other projects.
- Evaluate impacts of visitor use on cultural resources.

- Work with the Prairie Island Indian Community to identify possible cultural resource sites within the park.
- Pursue partnerships with other agencies, institutions, special interest groups, volunteers and local communities to develop site and resource management practices that perpetuate cultural and historical sites.
- Work with the Prairie Island Indian Community, Minnesota Indian Affairs Council and Office of the State Archaeologist to determine appropriate management of the American Indian cemetery sites and other American Indian sites within the park.
- Use most effective best management techniques of the time, to manage natural resources surrounding cultural sites so that both natural and cultural resources are protected or enhanced.
- Reroute portions of the loop trail near the American Indian cemetery site to provide greater separation from and prevent impacts to the site. Involve the Prairie Island Indian Community, Minnesota Indian Affairs Council and Office of the State Archaeologist during the relocation planning.
- Monitor the cultural resource sites in the Sand Point area and take appropriate protective management actions if resources are being lost or impacted by visitor use.
- Conduct site restoration at the grist mill site.

Interpretive Services Recommendations

Short term:

- Assemble and make available for use several park “Birding Kits.”
- Update and replace the Bluff Trail Self-guided Interpretive Trail signs as part of the Bluff Trail improvement project.
- Develop a Mississippi River/Frontenac geology interpretive sign for the overlook plaza.
- Develop interpretive signs for the Sand Point Trailhead kiosk. Topics will include human habitation of the area, the gristmill foundations, and floodplain forest ecology.
- Develop an information/interpretive panel that describes and recommends park trails for hiking and observing wildlife and scenery.
- Develop a series of interpretive signs that tell the resource management stories at specific sites within the park such as: prescribed burns, prairie reconstruction, savanna restoration and management, wildlife species re-introductions, and invasive/exotic species management.
- Develop a wildflower checklist and Wildflower Identification Kit.
- Develop a number of Kids Nature Explorer Kits specifically for Frontenac State Park.

Long Term:

The following long term recommendations could be implemented with the current staff resources at the park and region –

- Develop “first stop for park visitors” orientation, information, and interpretative exhibits of the park and area that are incorporated within the park office, particularly when the park office is expanded or replaced with a new visitor center complex.
- Develop a volunteer program that trains and engages citizens to work on resource management activities such as invasive/alien species management, wildlife or native plant community monitoring, restoration and reconstruction and lead interpretive programs about these efforts.
- Pursue partnerships with other DNR Divisions, agencies, institutions, special interest groups, volunteers and local communities to deliver additional interpretive services and develop research opportunities.
- Promote appropriate programs and initiatives from other Minnesota Department of Natural Resource Divisions.

The following long term recommendations could be implemented with the addition of a seasonal park naturalist at Frontenac State Park, as recommended in the Division of Parks and Recreation's Statewide Interpretive Plan –

- Develop and coordinate a guest presenter program schedule for the warm and cool weather seasons based on the park's major themes.
- Develop a park outdoor recreation program emphasizing recreational activities such as how-to cross-country ski, bicycle, hike, and snowshoe.
- Develop a park education program that teaches outdoor skills such as: fishing, hunting, birding, tree and wildflower identification, nature photography, astronomy and star gazing, painting and drawing nature, poetry, story telling and writing, song writing and music.
- Charge a fee for selected "value added" interpretive and recreation programs.
- Coordinate interpretive programs with the Upper Mississippi River National Wildlife and Fish Refuge through shared themes and messages.
- Pursue partnerships with local schools and universities to promote Frontenac State Park as an outdoor classroom and foster development of further interpretive programming.
- Partner with National Audubon Society and other birding groups to promote Frontenac State Park as a prime birding location.

Recreational Use and Visitor Services Recommendations

Day Use Recommendations:

Natural Play Areas

- Develop opportunities that provide for interpretation as well as active recreation for park visitors.
- Consider providing natural play areas at campground and picnic area if appropriate for either location.
- Develop an interpretive trail loop that also includes active recreation opportunities. This type of trail would serve to enhance a healthy lifestyle and educate visitors about the park and its resources.
- Develop natural play areas according to the Division of Parks and Recreation system-wide guidelines.
- Maintain open areas for unstructured recreational opportunities.

Picnic/Scenic Overlook Area

- Reorganize and expand the picnic area to create areas to accommodate larger groups and families, as well as more private areas for small picnic groups and other contemplative uses. Techniques will include planting screening vegetation to separate areas and creating new smaller areas on the edge of the picnic area. Preserving views of Lake Pepin from all areas will be a high priority for the redesign.
- Upgrade restroom facilities at the picnic shelter, including upgraded handicapped accessible facilities.
- Rehabilitate and pave the picnic area parking lots and include appropriate drainage controls.

Trails

- Evaluate new trail uses as they are proposed to determine compatibility with existing trail uses, anticipated popularity and impact on park resources. Adopt new uses that have little or no impact on existing trail resources, particularly those that will bring new users to the park.
- Participate in planning for regional pedestrian, bike, and equestrian trail systems. Determine what types of trail connections to a regional system are appropriate for the park.
- Contact landowners within the park boundary to discuss possible hiking and skiing trail easements to connect the large separated parcels with the main body of the park.
- Avoid multiple park entrances that would require additional monitoring by park staff.
- Investigate opportunities to better connect upland areas of the park with Sand Point and Wells Creek using strategies such as boardwalks and floating walkways.
- Create a naming system for trails and develop signage that provides information including trail length and difficulty level.

- Incorporate interpretive/activity stations at locations along trails nearest picnic areas and campgrounds to provide additional learning and active play opportunities.
- Identify and address existing and potential resource impact issues along trails.
- Add benches along trails where appropriate.
- Rehabilitate the two existing Adirondack shelters and move the one overlooking the park office back from the ridge edge so it is not visible as visitors enter the park.
- Develop additional Adirondack shelters as new trail opportunities arise connecting the separated parcels with the main body of the park.
- Rehabilitate or reconstruct major segments of the three vertical bluff face trails.
- Extend the Sand Point Trail to create a loop along Lake Pepin, returning to the trailhead parking area.
- Develop a hiking/snowshoe trail loop connecting with the Native American Cemetery Trail.

Contact Station/Park Office

- Replace the current park office/contact station with a larger building to serve as a park office, contact station, and visitor center.
- Ensure facility is located where it will best serve park visitors and meet park staff needs.
- Provide space that will accommodate additional visitor services such as: interpretive displays, a larger nature store including convenience merchandise, visitor orientation and registration area, classroom/meeting space, trailhead and warming house.
- Design new facility to blend with landscape.

Water Access

- Work with Minnesota Department of Transportation to address issues related to the informal access to Pleasant Valley lakelet from Highway 61 right-of-way as part of the proposed Hwy 61 reconstruction. The informal access, an abandoned driveway to a former residence now within the park, is unsafe because of the steep slope and poor sightlines for entering/exiting onto Highway 61.
- Develop alternatives for providing access to the Pleasant Valley Lakelet for canoeing, boating and remote camping experiences.

Hunting

- Annually assess need for deer herd reduction within the park. Plan and conduct deer hunts as required to protect native vegetation.

Overnight Use Recommendations:

Semi-modern Campground

- Enhance camping experience by implementing a variety of techniques including: reducing the numbers of sites within the existing campground and retiring degraded areas, re-vegetating buffers between sites to provide more privacy, add sites in new areas to accommodate group/family style camping, providing separate areas for tent and RV camping, and allow easier access for larger camping units.
- Add an additional loop of campsites adjacent the existing campground. Current demand for camping at the park supports adding campsites, particularly those with electric service. The number of sites should be sufficient to replace those removed from the existing four loops for an initial total of approximately 80 sites. Sites should be developed to provide cul-de-sacs and pull through spurs.
- Upgrade electric service in portions of the campground to meet demands from park visitors.
- Reroute access to group camp to increase safety and enhance the camping experience.
- Develop and immediately implement a plan to plant vegetative screening in areas identified as being suitable for the addition of a new camping loop to ensure preservation of view sheds that are likely to be impacted by future expansion of camping facilities. In addition, if future expansion occurs, carefully investigate sight lines to minimize impacts to visual integrity of the park.
- Upgrade access to drinking water to meet Americans with Disabilities Act standards.

- Replace sanitation building to meet the capacity of the remodeled campground and to provide accessible facilities.
- Complete upgrade of water supply system through 3rd and 4th loops of the campground and to the group camp.
- Relocate the existing amphitheater if required for the campground expansion and sanitation building replacement.
- Monitor the capacity and function of the existing wastewater treatment system and upgrade as necessary.

Group Camp

- Create two group campsites out of the one existing group camp.
- Add additional vault toilets, water fountains, tables, fire rings and walkways that meet Americans with Disabilities Act requirements and health code standards for added capacity.
- Increase parking capacity to accommodate use of new separate group camps – capacity for approximately 30 to 40 people at each site.

Remote Campsites

- Add a limited number of remote camping opportunities with cart-in/hike-in/ski-in/canoe-in access in areas where resources will not be negatively impacted. Areas to be considered include the north side of the Pleasant Valley Lakelet and the western portions of the park (following acquisitions to link the disconnected parcels).

Camper Cabins

- Add camper cabins in areas where sanitation facilities currently exist and where resources and the visual quality of the park will not be negatively impacted.

Park Boundary Recommendations

- Continue to pursue acquisition of private lands within the current park statutory boundary that support the Division of Parks and Recreation’s mission to protect and perpetuate the diverse natural, scenic, and cultural resources of the landscapes within the Mississippi valley for low impact use, education and enjoyment of park visitors.
- Pursue statutory boundary additions and acquisition of parcels described in this plan with the support of the property owner.
- Evaluate other adjacent parcels against the established boundary change criteria if those parcels become available.
- Propose parcels for deletion from the park statutory boundary described in this plan and other parcels that are highly developed or of no resource or recreation value to the state park.
- Work with local units of government and conservation groups to consider a range of conservation tools that can be used to protect lands adjacent to the park from non-compatible development.
- Work with surrounding landowners to inform them of conservation measures they can implement on their property especially if they have significant natural resources on their land or have the potential to impact view sheds.
- Work with special interest groups and local and county units of government to develop education and stewardship opportunities to be implemented by surrounding land owners on their property to buffer, protect and enhance significant natural resources and important view sheds.
- Provide local units of government the opportunity to review statutory boundary proposals.
- Continue discussions with the DNR Division of Fish and Wildlife to determine if it is appropriate to transfer all or portions of the Perched Valley Wildlife Management Area (WMA) to the Division of Parks and Recreation for inclusion in the state park.

Park Operations Recommendations

- Continue to participate in local chambers of commerce and regional tourism associations.
- Place a seasonal park naturalist at Frontenac State Park for the warm weather season when sustainable funding for interpretation is available, as outlined in the Division of Parks and Recreation's Statewide Interpretive Plan (See also Interpretive Services).
- Add an additional 50% part-time seasonal Buildings and Grounds Worker with responsibilities for the State Forest recreation areas.
- Add a seasonal, part-time seasonal Office and Administrative Specialist position.
- Increase the seasonal, part-time Buildings and Grounds Worker from 70% to 80%.
- Increase the part-time unlimited Buildings and Grounds Worker to full-time, based on the additional responsibilities for facility additions outlined in this plan.
- Replace the current park office/contact station with a larger building to serve as a park office, contact station, and visitor center (See also Recreational Use and Visitor Services).