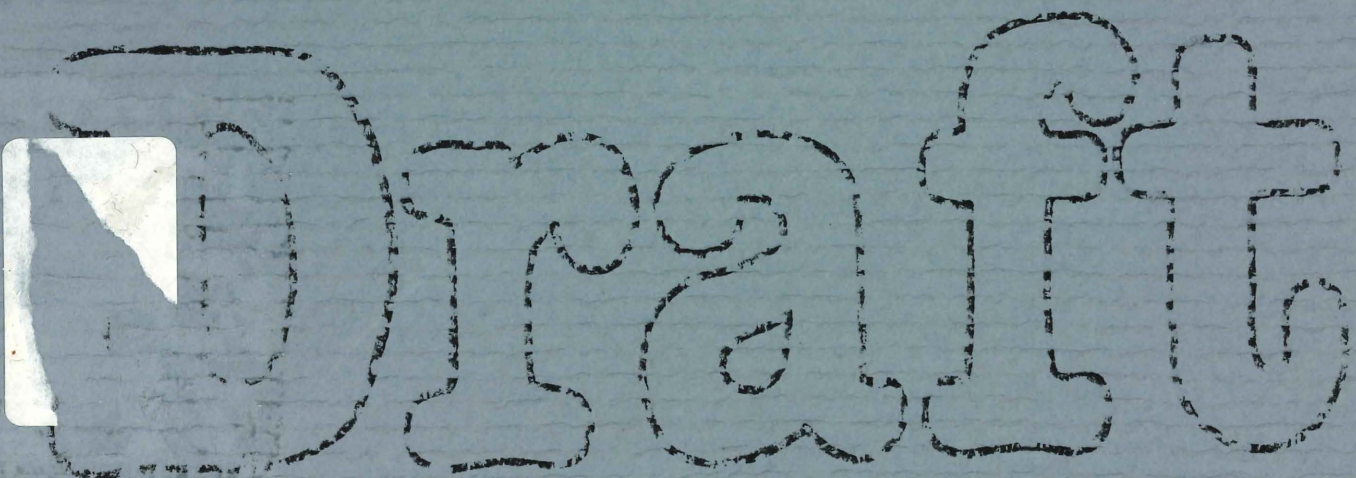


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Upper Sioux Agency  
State Park Management Plan

MAY 1983



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This draft management plan for Upper Sioux Agency State Park was completed by the Minnesota Department of Natural Resources, Office of Planning, Park Planning Section, May 1983. Funding for the planning process was provided by the Legislative Commission on Minnesota Resources.

Park Planners: Laurie Young and Carol Braun



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# INTRODUCTION





## SUMMARY

A recreational state park classification with a historic sub-unit is recommended for Upper Sioux Agency State Park. Alternative management options and cooperative agreements with local and county governments may be considered in the future.

The administration and developments proposed for this park "shall enhance and promote the use and enjoyment of the natural recreational resources of the area." The park's goal "shall be to provide a broad selection of outdoor recreation opportunities in a natural setting which may be used by large numbers of people." (ORA '75).

The Upper Sioux Agency State Park is located within the Upper Minnesota River Country Landscape Region.

The resource management proposals for this park are directed toward preserving and interpreting the natural and historic resources and reestablishing the natural setting of the agency times as it can best be determined. Management includes reestablishment, preservation, and perpetuation of the elements of the Landscape Region. Specifically the resource management recommendations include: maintaining grass cover in the old field areas; controlling noxious weeds; conversion of several old field areas to prairie; reestablishment of oak savanna along bluffs; reestablishment of upland prairie potholes and a flood plain wetland; develop and implement a prescribed burn program for the prairies; adopt a snag management policy; phase out food plots on recreational land and monitor the deer population; and development and implementation of a stream bank erosion plan. The park's ground water resources will be protected from contamination through the capping off of abandoned wells which are not designated for future use.

Historic resources located throughout the park will be interpreted through signage and periodic naturalist programs. All development sites must be approved by MHS prior to construction. All changes in the "historic areas" are required by law to be approved in writing by MHS prior to development.

Recreational development includes development of separate canoe, horserider, vehicular, and group campgrounds; relocation of the sliding hill; development of separate snowmobile and cross country ski trail systems; enhancement of the hiking trail system; development of a designated horse trail system; development of three interpretive trails in conjunction with new trails; construction of a new entrance road and contact station to provide a single entrance point to the park; and construction of a new service area near the new entrance.

When camping facilities are developed for this park, a major promotion program should be initiated to introduce these new facilities to the public.

Several parcels of low quality park land have been identified as possible lands to be traded for areas of high quality park land. If the park quality lands become available for trade or purchase the statutory boundary should be adjusted to accommodate these changes.

Additional staffing will be required in conjunction with the operations of the proposed new park developments, based on the amount of use the facilities receive.



## THE PLANNING PROCESS

In 1975 the Minnesota State Legislature passed the Outdoor Recreation Act (ORA). The intent of this legislation is to ensure, through long-range planning, the protection and perpetuation of Minnesota's outstanding resources. Also included in this legislation is the mandate to provide recreational facilities which are desired by the citizens of Minnesota but which do not compete with those provided by the private sector. The Park Planning Section of the DNR, Office of Planning was established to formulate long range resource management and recreation development plans for 82 state parks, recreation areas, and waysides.

The park planning process consists of six steps:

1. An inventory of natural resources, visitor use, and existing facilities is compiled. Specialists from other DNR divisions and sections assist in collecting pertinent data. At this point the first public workshop is held.
2. Alternatives for park management and development are developed. A second public workshop is held to review these alternatives and invite further public comment. These alternatives are then reviewed by the Park Planning staff and the DNR, Division of Parks and Recreation.
3. The recommendation for park classification is made, the park goal is developed, and the draft plan is written. This step culminates in the first interdepartmental review.
4. The draft plan is revised as the result of the interdepartmental review. The revised plan is made available to the public for a 30 day review period, in which the final public meeting is held.
5. The draft plan is revised according to information received from the public review. The plan is then sent to the Department of Energy, Planning and Development for a 60 day reviewal priod.
6. The plan is implemented by the DNR, Division of Parks and Recreation.

# REGIONAL ANALYSIS





## INTRODUCTION

In order to determine a park's potential role in perpetuating natural resources and fulfilling recreational needs, a regional analysis process is necessary. The analysis is designed to look at a given park's interrelationship with such factors as: accessibility, transportation, population distribution, economy, surrounding land use, and other nearby recreational facilities.

Recognition of a state park's interrelationship with these factors will help to ensure that park development will be planned to meet state park classification criteria, protect natural and historic resources, meet appropriate recreational demands, and avoid competition or facility duplication with other recreation providers.

## THE SURROUNDING AREA

### Accessibility

The accessibility of Upper Sioux Agency State Park in terms of time and distance, by the population it serves must be evaluated when recreational programs and developments are considered. Alternative methods of transportation need to be considered in light of the energy situation.

The increase in gasoline prices in recent years has affected recreation travel patterns. Many people who once traveled longer distances to recreate are now staying much closer to home.

The park is located 139 miles (222 km) west of the Twin Cities. Approximately one half of the state's population lives in the Twin Cities area. The communities of Willmar (pop. 14,167)<sup>2</sup> is 39 miles (62 km) northeast of the park and Marshall (pop. 11,900)<sup>1</sup> is 35 miles southwest of the park. Vehicular access to the park from these and other nearby population centers is excellent.

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<sup>1</sup>1980 preliminary census, Bureau of the Census.

<sup>2</sup>1976 estimate, Bureau of the Census.



Another potential result of higher gasoline prices is the increased use of alternative types of transportation. Public transportation is very limited in this area of the state. Direct bus service is not available from Willmar or Marshall to Granite Falls. Buses make daily stops at Granite Falls enroute both east and west between Ortonville and Minneapolis. Granite Falls is located 8 miles northwest of the park. Visitors using public transportation would require alternative transportation from Granite Falls to the park.

*It is possible that some people may travel to the park by bicycle.*

Bicycle touring has become a <sup>more</sup> popular activity statewide. The Minnesota Department of Transportation (DOT) has prepared a set of statewide Minnesota Bikeways maps as a guide to help bicyclists select routes. The biking condition of all paved roads in the state has been evaluated and coded for good, fair, poor, and unsatisfactory riding conditions. Additional information about the roads is also included on these maps. A review of several maps revealed that there is a network of good to fair bike routes existing in all directions from the park. Population centers which have good bicycle accessibility include Willmar, Marshall, and Granite Falls.

#### Population

Granite Falls, located 8 miles northwest of the park, has a population of 3,206 (1980 census advance counts). The residents of Granite Falls and surrounding area comprise a large number of summer day visitors and a majority of winter visitors to the park. Redwood Falls (pop. 5,202), Marshall (pop. 11,900), and Montevideo (pop. 5,762), located 36, 34, and 21 road miles from the park respectively, appear to also contribute to the day use of the park.

There are approximately 62,949 (1980 census) people living within a 25 miles radius of the park. People living within this area currently make up the majority of park users, particularly for day use activities. This is expected to change as the park is promoted.

#### Economy and Surrounding Land Use

The predominant land use in this area is agricultural. The Minnesota River valley and its tributaries have steep bluffs, bottom land forests, hardwood forest, native prairie, and a variety of wetlands. These valleys and bottom land areas, where possible, are being used for agricultural purposes. Most of the forested lands occur along the valleys. In Yellow Medicine, Renville,

and Chippewa counties 87 to 91 percent of the land is in agricultural production, 5 to 10 percent is pasture and open land and 1 to 2 percent is wooded.

The predominant land use surrounding the park is agricultural. A few residences are located along the western boundary.

Although agriculture is the primary economic base for this region, Granite Falls has several major enterprises which employ community residents. They include: manufacturing and product distribution companies, construction and building product companies, education, and medical and governmental services. The communities of Montevideo and Redwood Falls support a variety of agricultural and industrial firms. Manufactured products include: computer equipment, mobile homes, electronics and machinery. Food processing and packaging are the primary industries at Marshall. Southwest State University in Marshall is a major employer for that community.

#### Cooperative Land Management

Other units of government and quasi-public agencies often manage land adjacent to or within a state park's statutory boundary. Cooperation is an important aspect of inter-agency management. It ensures that all programs for enhancement or preservation are designed to be compatible with each other and that they maintain compatible goals and management techniques. Several DNR governmental service and protection agencies work with the DNR, Division of Parks and Recreation to provide specific resource management and protection services in state parks. In addition, non-DNR-agencies who provide recommendations for resource management are: the Soil Conservation Service, the Minnesota Department of Health, and the Minnesota Historical Society.

Minnesota Historical Society (MHS) manages the 19.3 acre Upper Sioux Agency Historic Site which is located entirely within the statutory boundary of the state park. The MHS has restored the brick structure of the first duplex to be built in Minnesota. They also located the foundations of five additional brick agency buildings and several cellars and cisterns.

The goal for this historic site is to interpret the agency as it was operated prior to the outbreak of the Dakota War of 1862. The historic site is

normally staffed and open to the public daily from May to Labor Day.

Admission to the historic site is free but, a state park sticker or daily park fee is required for motorized vehicle admission to the state park.

Several additional historic resources are located on land under the management of the Division of Parks and Recreation. Many of the Upper Sioux Agency wood frame building sites have been identified and require interpretation in coordination with the MHS.

The Minnesota River between Lac Qui Parle and the Franklin area has been designated as a component of the Minnesota Wild and Scenic River System<sup>in 1977</sup>. The portion of the Minnesota River from the Minnesota Falls dam, located 9 miles up river from the park, southeast to the Franklin area was designated "scenic."

Up river from the Minnesota Falls dam to the corporate limits of Montevideo the river is classified "recreational."

#### Recreational Facility Supply and Demand

In the planning of Upper Sioux Agency State Park, it is important to analyze the potential interrelationship of the park with other recreational facilities in the area. The inventory of and demand for recreational facilities near the park was taken from the Statewide Comprehensive Outdoor Recreation Plan 1979 (SCORP '79).

SCORP '79 is a four year study which identifies recreational patterns and activity preferences on state and regional levels. SCORP information was collected on the basis of economic development regions. There is a total of thirteen of these regions in the state. Upper Sioux Agency State Park is located in Region 6W and borders Region 6E. (See Economic Development Region Map, p 21.)

Upper Sioux Agency is one of six state parks located within the Minnesota River Valley. This valley has an unique combination of natural and historic resources which provide a wide variety of settings for recreational activities along its length.



The regional analysis process for this park was different than for other state parks. Because of the linear nature of the valley, the area which was inventoried and studied stretches 100 miles along the valley and 25 miles on each side of the river.

The proximity of facilities to major population centers plays an important role in the recreational use patterns. Ortonville and New Ulm are <sup>the</sup> two population centers which are located along the river <sup>approximately</sup> 60 miles <sup>from</sup> the park. These population centers are at either end of the area inventoried. This area is referred to as the study area throughout this section.

It is important to note that recreational facilities near a park may duplicate services. However, some people will consistently choose to frequent one area over another in the pursuit of a particular experience. For example, camping is a recreational activity which state parks accommodate. City and county parks in the vicinity of a state park may also have campsites, however, some people will consistently travel to a state park because of the type of supervision and experience it offers, namely, camping in a natural setting augmented by other recreational opportunities such as hiking, wildlife observation, and natural and historical interpretation. While camping facilities may be duplicated elsewhere, the total activity experience is not. Facilities, maintenance, and supervision are all factors <sup>considered</sup> in the selection of recreational facilities.

A variety of recreational facilities are located within 8 miles of Upper Sioux Agency. They include: a 550 acre Renville county park with free camping, picnicking, water access, trail and shelter facilities; a Yellow Medicine County Historical Museum and geologic site; a private golf course; a public boat access; a MN/DOT scenic overlook; the Wood Lake Historic Site, and several Granite Falls city parks including an outdoor swimming pool, playgrounds, athletic fields, picnic areas, tennis courts, campsites, trails, and a boat access.

The distance Minnesotans are willing to travel to recreate varies for each activity. The following mileage figures on an individual's willingness to travel to make use of a recreational facility came from information collected by the DNR in preparation of the State Comprehensive Outdoor Recreation Plan (SCORP '79).

## Willingness to Travel

Activity	Distance Non-metro Minnesotans Willing to Travel to Participate
Camping	76 miles
Picnicking	32 miles
Hiking	31 miles
Swimming	16 miles
Bicycling	14 miles
Horseback Riding	22 miles
Ski Touring	32 miles
Snowmobiling	43 miles
Golfing	13 miles
Visiting Historic Sites	20 miles

Metro region residents are willing to travel <sup>an average of</sup> 115 miles for camping facilities. Upper Sioux State Park is located 139 miles from the metropolitan area.

SCORP '79 has ranked the following recreational activities statewide and by regions according to Minnesotans' desire for more opportunities to do them.

### Preferred Recreational Activities Summer Activities

All Minnesotans	Region 6W	Regions 6E
1. Bicycling	1. Fishing	1. Camping
2. Camping	2. Camping	2. Fishing
3. Fishing	3. Swimming	3. Bicycling
4. Tennis	4. Bicycling	4. Swimming
5. Swimming	5. Hiking	5. Tennis
6. Hiking	6. Tennis	6. Hiking
7. Picnicking	7. Golfing	7. Picnicking
8. Boating	8. Baseball/Softball	8. Park facilities
9. Golfing	9. Horseback Riding	9. Boating
10. Park facilities	10. Picnicking	10. Golfing
11. Canoeing	11. Trail Biking	11. Horseback Riding
12. Horseback Riding	12. Water skiing	12. Visit historic sites

### Winter Activities

All Minnesotans	Region 6W	Region 6E
1. Hunting	1. Hunting	1. Snowmobiling
2. Ski touring	2. Snowmobiling	2. Hunting
3. Snowmobiling	3. Misc. Skiing*	3. Ski touring

\*Undetermined differentiation between downhill and cross-country.

The population data discussed on page 10 is for an approximate 25 mile radius of Upper Sioux Agency State Park. Excluding snowmobiling and camping, 25 miles is an average distance non-metro residents are willing to travel to participate in a recreational activity. The 62,949 Minnesotans residing within a 25 miles radius of the park are the source of the park's primary day users. Use of the park's facilities is highly dependent on the availability of comparable recreational facilities closer to the area's population centers. Comparable recreational facilities located beyond the 25 mile radius of the park can also attract potential users away from Upper Sioux Agency State Park. Residents of the major cities of Montevideo, Marshall, and Redwood Falls may also frequent other state parks which are located within 25 miles of them. This sharing of day use population between state parks and other local and county facilities occurs throughout the state.

People in both regions 6E and 6W expressed a strong desire to have more summer camping, fishing, swimming, and bicycling and winter hunting and snowmobiling opportunities. SCORP '79 indicates that, where possible, combinations of these opportunities would greatly enhance the experience of the user. (see Preferred Recreation Activities, p 14 .)

SCORP '79 also indicates when a high level of need has been expressed for a recreational activities, this reflects limited opportunities to participate in these activities within a region. It does not provide information on the number of residents who desire to participate in the activity. In Regions 6E and 6W residents expressed the greatest need for more winter trapping opportunities as well as winter hunting and snowmobiling and summer swimming, historic site visitation, hiking, and bicycling, in that order.

The following is an inventory of the supply of each facility type in the study area and brief discussion of the demand and need for that opportunity on a regional and statewide basis.

#### Picnicking

There are fifty-seven places to picnic within the study area. Thirty of these are city parks. These facilities are well dispersed throughout the study area. The following chart summarizes the type and number of facilities.



Type of Facility	Number of Picnic Grounds
City Parks	30
County Parks	7
MN/DOT rest areas	8
MHS Historic Sites	2
State Parks	5
Private	5
Total	57

Picnicking is a desired activity statewide. It is not perceived to be in short supply by regional residents. A variety of facility types exist within the study area. Most picnic grounds are located in conjunction with other recreational facilities. Some are located in city parks adjacent to athletic fields, some are located in natural settings on rivers or lakes, and some are very small facilities at wayside rests or historic sites. The existing picnic facilities at Upper Sioux are located in a natural setting and can accommodate large numbers of people. Both the Renville<sup>Co</sup> and Granite Falls<sup>city</sup> parks provide a similar picnic experience but combine it with different recreational opportunities.

### Trails

Upper Sioux Agency State Park has approximately 9 miles of trails.

These trails accommodate a variety of uses. The DNR manages <sup>Four</sup> ~~three~~ other state parks in the study area between New Ulm and Ortonville, <sup>which are</sup> Lac qui Parle, Fort Ridgely, and Flandrau. Each provides a variety of trail opportunities. Regionally, trail facilities are also available in county and municipal parks and at private resorts. The following trail facilities are available within the study area.

Type of Facility	All Trails	Hiking	Ski Touring	Snowmobiling	Horseback Riding	Interpretive
State Parks	38.2	35.2	15.5	21	x	x
County	123	20.5	70	110	x	
Municipal	11	9		6		
Private	.5					.5
Total	172.7	64.7	85.5	137	x	.5

x = mileage not available



SCORP '79 identifies a high desire and a moderate to high need for more snowmobiling trails. A moderate desire and need was identified for more winter ski touring, miscellaneous skiing, bicycling, and hiking facilities in regions 6E and 6W.

### Swimming

Lake and river swimming opportunities in the area are limited. Most of the rivers are unsuitable for swimming due to extreme fluctuations in water flow and periodic poor water quality. Several swimming pools are operated by cities throughout the study area. The city of Granite Falls maintains a large outdoor public pool near the center of town. The closest natural beach to the park is at Wood Lake 5 miles southeast. It is shallow and has high algae bloom mid - late summer. Ten natural beaches are located within the study area. Six of these are publicly owned. The following is a summary of the facilities in the study area.

<u>Type of Facility</u>	<u>Beach</u>	<u>Pool</u>
City	3	12
County	1	0
DNR Parks	2	0
Private	4	0
Total	10	12

A large number of good natural swimming facilities are not available within the study area. SCORP '79 identified swimming as the third most desired recreational activity for Region 6W and only fifth highest statewide. Residents of regions 6E and 6W expressed a very high level of need for providing more summer swimming opportunities. According to SCORP '79, 16 miles is the average distance non-metro Minnesotans are willing to travel to participate in a swimming opportunity, but this can be adjusted when the activity is combined with other desired recreational opportunities, or the facilities are limited within an area.

### Historic Sites

Twenty-two historic sites are located within the study area. These sites are managed by a variety of agencies including the Minnesota Historical Society and county historical societies. The historic sites include early settlement buildings, townsites, military forts, locations of military battles,

monuments, and missions. Several sites include interpretive facilities and are staffed. Two of these sites have picnic facilities. Several sites are located in close proximity to municipal and state parks which provide a variety of recreational opportunities for visitors.

#### Water Access

There are 38 designated public water access sites along the 179 miles of Minnesota River between Ortonville and New Ulm. An additional site is proposed at the Harkins General Store Historic Site, northwest of New Ulm. The 1979 SCORP data indicates that a total of 46 designated public water access sites for both rivers and lakes are located within the study area. This number is probably low due to recent developments in this program. The park has a designated water access site along the Minnesota River. Additional nearby access sites are located 4, 6, and 12 miles upstream from the park and one is also located 2 miles downstream in the Renville County Park.

#### Canoe Camping

Seven designated canoe campsites including Upper Sioux Agency State Park are located along the Minnesota River within the study area. The development goal of the Canoe and Boating Program along the Minnesota River includes providing suitable, designated camping sites approximately every 15 miles along the river. A Granite Falls city park, 12 miles upstream and a Renville county park, 2 miles downstream offer additional canoe campsites in this area. Two new sites are being developed by the DNR several miles downstream from the park.

#### Camping

There are 20 campgrounds within the study area of Upper Sioux. State parks provide 47 percent of the total number of campsites available in this area. The two largest of these state parks, Flandrau with 90 campsites and Lac Qui Parle with 56 campsites, are each located about 50 miles from Upper Sioux. Privately owned campgrounds account for only 17 percent of the total number of campsites available in the study area. The following is a summary of the number of campgrounds and campsites available.

<u>Type of Facility</u>	<u>Number of Campgrounds</u>	<u>Number of Campsites</u>
City Parks	8	114
County Parks	5 (update required)	24
State Parks	4	176
Private - Individual/Group (resorts, campground, church, scouts)	3	64
Total	20	378

The amount of camping opportunities provided by county park facilities is significantly under-rated. Camping at several of these county parks is not promoted and frequently a large single camping area is designated rather than individual campsites.

Camping is an increasingly popular outdoor activity in Minnesota. The SCORP '79, 10 year projections (1980 - 1990) indicate a 9.4 percent increase in camping occasions statewide. In 1980, SCORP identified a net export of 49,772 camping occasions from Region 6W. Camping and fishing were the most desired summer opportunities <sup>for residents</sup> in Region 6E and 6W.

The camping facilities at Upper Sioux Agency State Park have never been developed in a manner comparable to other state parks. As a result camping has not been publicized or promoted in any way on a statewide basis. A camping user pattern has not been established for this park, <sup>and</sup> camping facilities at the nearby county and city parks have both recently been expanded.

#### Group Camp

One private group camp is located within the study area. Bethel Bible Group Camp which has accommodations for 150 is located about 40 miles northwest of Upper Sioux near Lac Qui Parle State Park. All other designated public group camps are provided at state parks. Although, several of the county parks with their undesignated camping areas could accommodate group use, <sup>the</sup> facilities, maintenance, and supervision vary greatly between managing agencies.

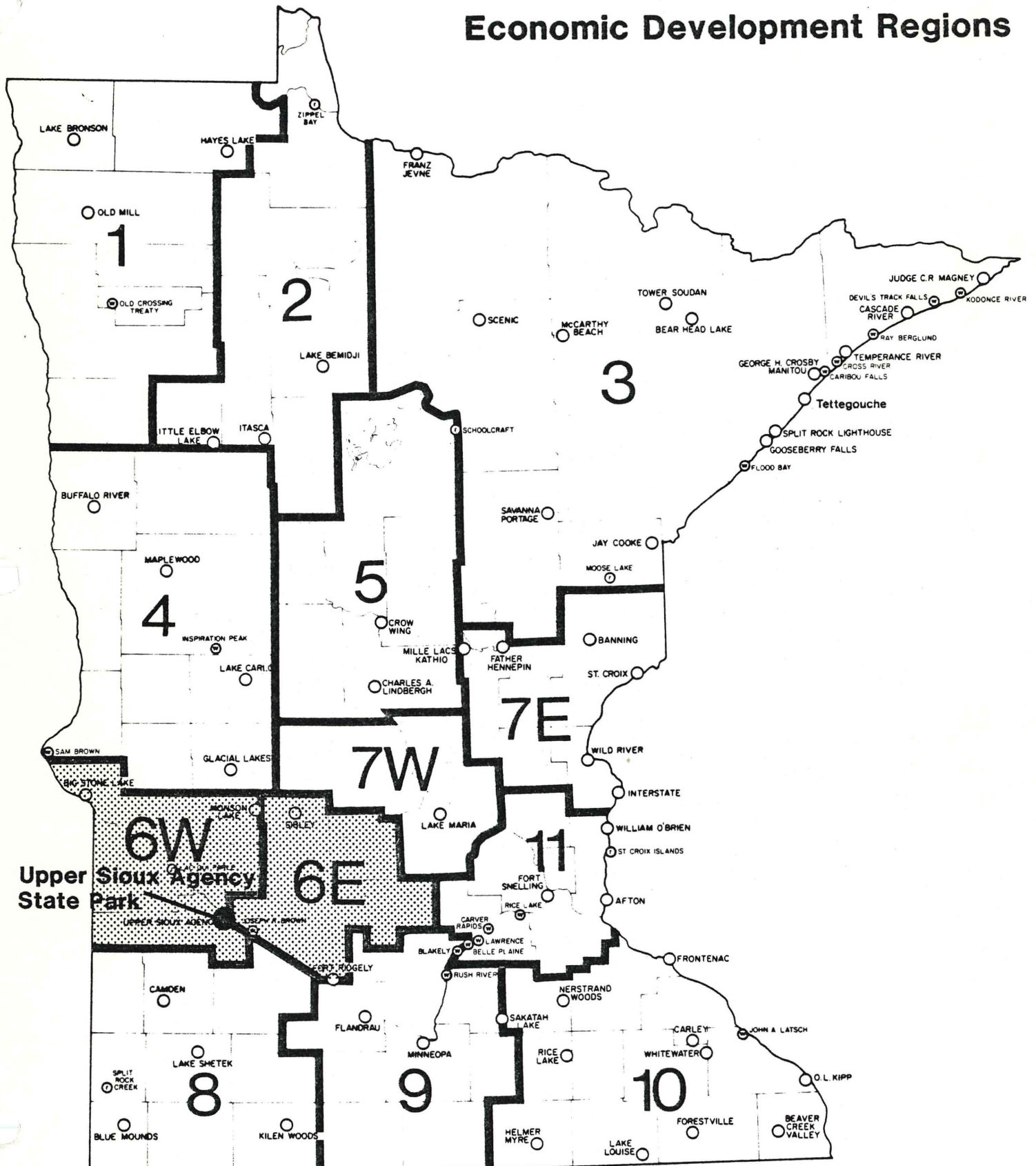


Group facilities available in the study area are listed below.

<u>Type of Facility</u>	<u>Group Camp Capacity</u>	<u>Type of Camp</u>	<u>Distance to Major Population Center</u>
Flandrau S.P.	145	Structured	In New Ulm
Flandrau S.P.	132	Primitive	In New Ulm
Fort Ridgely S.P.	50	Primitive	18 miles NW of New Ulm
Upper Sioux Agency S.P.	none designated		8 miles SE of Granite Falls
Lac qui Parle S.P.	50	Primitive	20 miles NW of Montevideo
Bethel Bible Group Camp	150	Structured	15 miles NW of Montevideo



# Economic Development Regions





# THE PARK USER





## INTRODUCTION

Upper Sioux Agency State Park has a variety of recreational opportunities which attract both day and overnight visitors. Currently this state park is primarily used and developed for day use activities.

The MHS Upper Sioux Agency Historic Site is located entirely within the statutory boundary of the state park. There were 4,289 historic site visitors in 1980 and 4,341 in 1981. This accounts for between 13 and 16 percent of the park's total annual attendance.

Educational groups from the surrounding schools frequent the park. Several schools sponsor outings to the park each year. They participate in both historic and natural studies in the park.

Special events are sponsored in the park by ~~the~~ Minnesota Historical Society, ~~the~~ Y.M. Co. extension office Conservation Days, and <sup>other</sup> area organizations.

Several groups such as, churches, sponsor summer picnics and winter sliding activities in the park.

A temporary campground facility was developed years ago. Although some use information has been collected about the campers, a dependable use pattern has not yet been established for the campground. This park has not been promoted for camping due to the underdeveloped nature of the camping facility.

## DAY USERS

In 1980 and 1981 day users accounted for approximately 92 and 96.2 percent, respectively, of the total visitation to Upper Sioux Agency State Park. Several key recreational activities such as historic interpretation, and sliding are heavily participated in. Other day use activities enjoyed by recreationalist are picnicking, hiking, fishing, and winter trail uses.

## Camper Profile

The park's campground facilities were installed as a temporary facility. They can minimally accommodate tent campers, camper-trailers, and <sup>small</sup> motor homes. The access road to the lower campground is of ~~inadequate~~ . . . <sup>small</sup> Toilets, fire rings, picnic tables, and parking spurs are available in this campground but water is not. A small area at the top of the bluff, east of the historic site

is also used as a temporary campground and group camp. This area has vault toilets, fire rings, and picnic tables, but no water or designated parking spurs available.

Camper registration cards are completed for each campsite which is used.

This card records camper name and address, number in party, length of stay, and dates the campsite was used. This information does not necessarily provide data on individual campers. Information gathered is on each group of campers who register for a campsite. In some cases, groups may include an entire family; in others, it may be a single individual.

Information on camping parties at Upper Sioux Agency State Park was drawn from these camper cards.

The DNR prepared a computerized random sampling of 132 and 150 camper registration cards for 1977 and 1979 respectively. The total number of camper registration cards, 270 in 1980, 247 in 1981, and 412 in 1982, were also analyzed. There was one recorded camping party in the park in 1978.

The following is a breakdown of the camper data analyzed for 1977, 1979, 1980 and 1981.

<u>Origin</u>	<u>Percent</u>	<u>Largest Out-of-state Percentages</u>
Minnesota	89	
Out-of-State	<u>11</u>	Iowa 5
	100 %	
Additional camper origin data		
25 mile radius of Park (including Granite Falls)	42	
Granite Falls	22	
Metro Region	9	
Marshall	6	

A comparison between the 1977 and 1979 data and the 1980 and 1981 data indicates there has been no major changes in these camper origin patterns.

A Camper Origin Map (p 23) was prepared to show the home residence of those

people sampled who camp at Upper Sioux Agency State Park. Eighty-one percent of all camping parties came from within this zone. Of these nine percent of the camping parties originated in the seven county metropolitan area.

#### Camping Season

The following summarizes by month and year the number of camping parties that stayed at Upper Sioux. These include vehicular, canoe, and group

camping occasions.

	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
April	5	5	2	1
May	30	71	73	131
June	66	45	40	65
July	94	73	40	104
August	43	62	22	48
September	43	11	68	60
October	<u>4</u>	<u>3</u>	<u>2</u>	<u>0</u>
	285	270	247	412

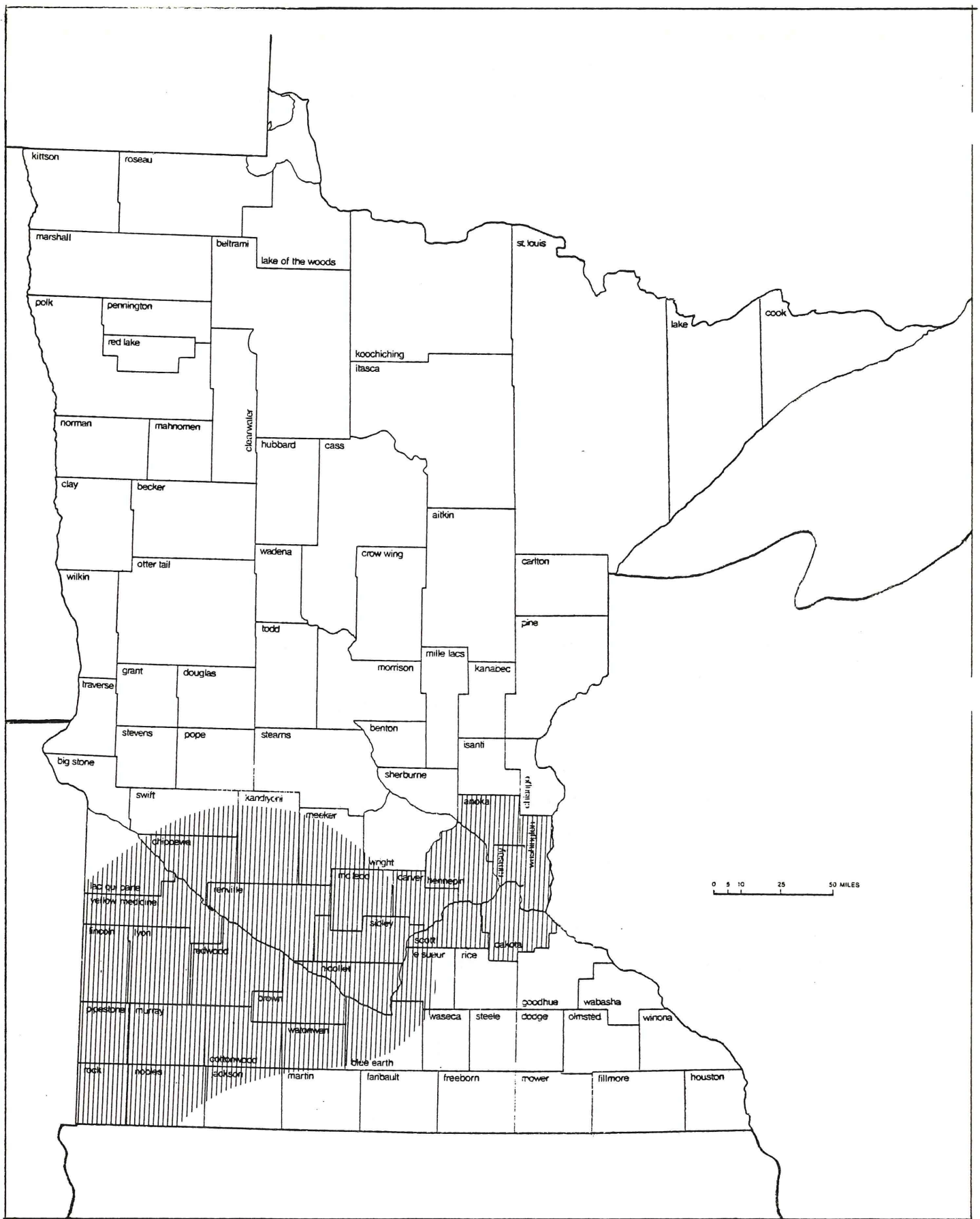
Since camping has not been promoted for this park it cannot be determined if this pattern will continue over a long period of time. These figures do demonstrate the current need for having additional staff on a seasonal basis to maintain facilities during periods of higher use.

Forty-nine percent of the 1980 and 1981 camping parties in Upper Sioux Agency State Park were made up of four or more people. High concentrations of large groups of people on campsites can cause a varying degree of soil compaction, soil erosion, and damage to or loss of vegetation. Soils and vegetation are key considerations for campground development. The following is a summary of the number of people in each camping party.

<u>Number in Camping Party</u>	<u>Percent of Total Camping Parties*</u>
1	3
2	35
3	13
4	19
5	10
6 or more	20
	<u>100</u>

\*data compiled from combined 1980 and 1981 figures only





# Upper Sioux Agency State Park Camper Origin

CLASSIFICATION



## THE STATE RECREATION SYSTEM

Minnesotans are fortunate to live in a state with such a wide variety of natural, scenic, and historic resources. To ensure public access and to prevent inappropriate development, the state has set aside lands which exemplify outstanding resources. It is the management goal for all state recreational lands, including state parks, to protect and perpetuate resources for use by the citizens of Minnesota.

There is a delicate balance which must be maintained when recreational facilities are provided for large numbers of people in areas of outstanding and often sensitive resources. Inappropriate development can result in irreparable damage to the resource. To help ensure this recreation/resource balance, the Minnesota State Legislature established, through the Outdoor Recreation Act of 1975 (ORA '75), a classification process whereby the outdoor recreation system shall be comprised of classified units. Each unit shall be authorized, established, and administered to accomplish the purpose and objectives of its classification. These units are: natural state park; recreational state park; state trail; state scientific and natural area; state wilderness area; state forest and state forest sub-area; state wildlife management area; state water access site; state wild, scenic, and recreational rivers; state historic site; and state rest area.

Through this classification system, the role for each recreational unit in the state system is identified. The two primary classifications for state parks are natural and recreational. These two, along with other classifications, are considered during the planning process. The most appropriate is recommended for the park. If a state park does not meet the established classification criteria, the DNR will consider the possibility of eliminating the park from the state recreation system.

## THE LANDSCAPE REGION SYSTEM

The landscape region system divides the state into 18 regions. These regions are differentiated according to the characteristic plant and animal life, landforms, and cultural patterns which existed before, during, and after European settlement. The landscape region system is a framework which provides information valuable in the planning of Minnesota's state parks.



Upper Sioux Agency State Park is located in the Upper Minnesota River Country Landscape Region (see the Landscape Region Map, p 33). It is a large region, covering broad areas on either side of the river from Mankato northwest to Ortonville on the Minnesota-South Dakota border. The region encompasses 7,828,000 acres or 14.6 percent of the state.

The area is relatively flat and covered by glacial till deposited 10,000 to 12,000 years ago during the Wisconsin glacial period. The most distinctive geological feature in the region is the Minnesota River. It flows through a valley cut by the earlier and much larger Glacial River Warren. Presettlement vegetation in the area consisted mostly of prairie with river bottom forests along the river banks. Upper Sioux contains a cross section of the presettlement vegetation types and exemplifies some features of the region. It is representative of the hillside prairies, river bluffs and ravines, and has potential to represent the upland prairies of the Upper Minnesota River Country Landscape Region. Large areas of the park have been disturbed by agricultural practices.

#### CLASSIFICATION PROCESS

The purpose of the classification process as stated in ORA '75 is to establish

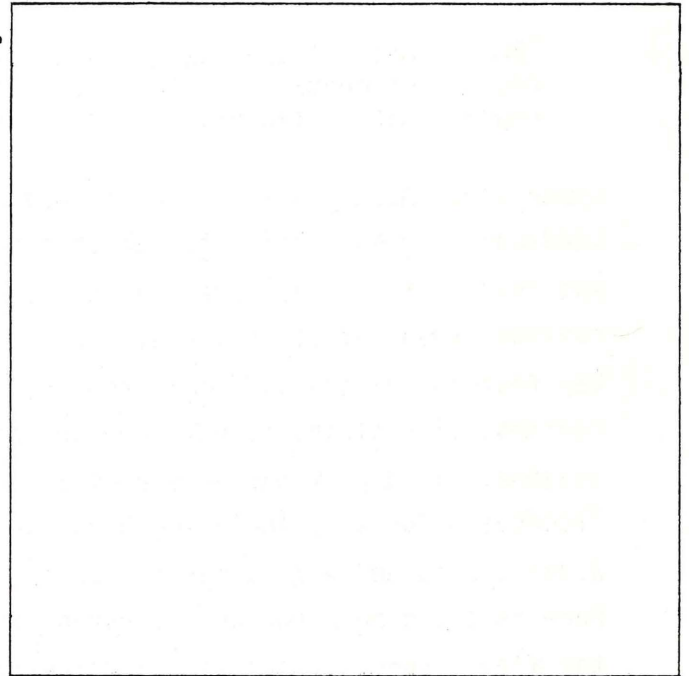
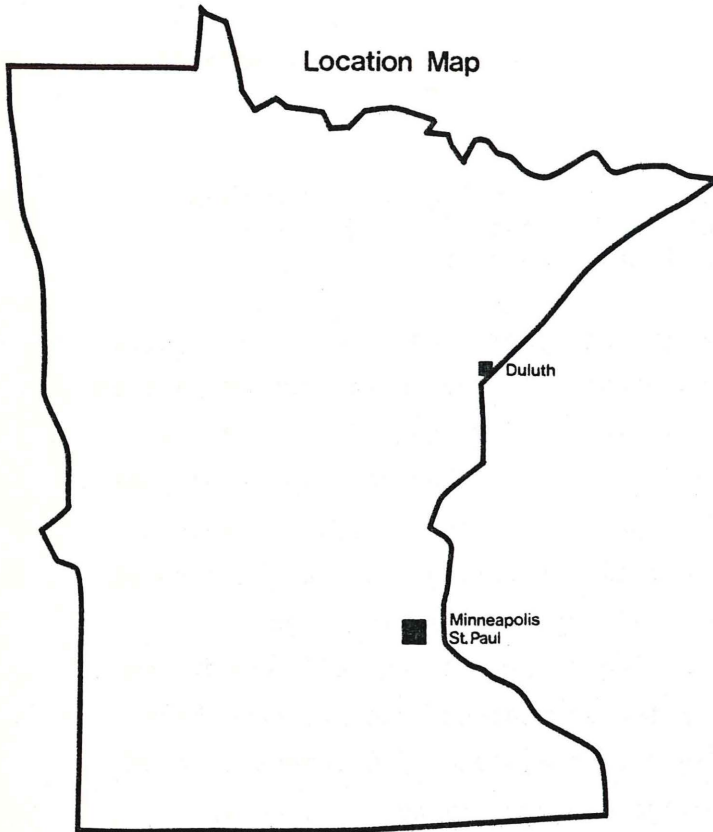
" an outdoor recreation system which will (1) preserve an accurate representation of Minnesota's natural and historic heritage for public understanding and enjoyment and (2) provide an adequate supply of scenic, accessible and usable lands and waters to accommodate the outdoor recreation needs of Minnesota's citizens."

In keeping with the legislative mandate of the Outdoor Recreation Act of 1975, policy has been formulated for all units in the state recreation system. Each unit is managed and developed according to the nature of its natural resources and their ability to tolerate visitor use. The classification alternatives considered for Upper Sioux Agency State Park were recreational state park, natural state park, wildlife management area, or state historic site.

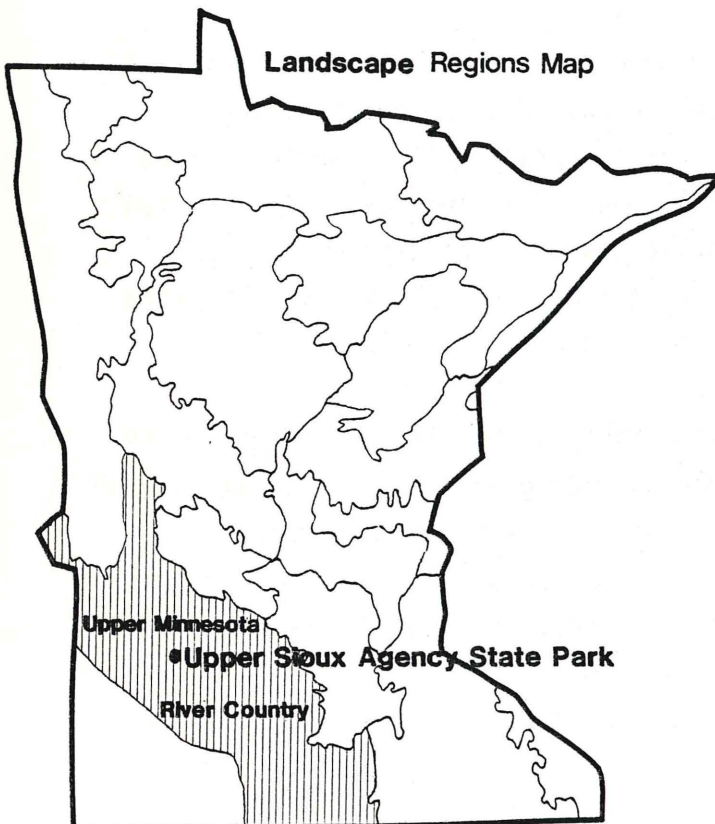
#### Natural State Park Alternative

The policy for all natural state parks, formulated by the Department of Natural Resources, includes the following goal:

**Location Map**



**Landscape Regions Map**



The Upper Minnesota River Country Landscape Region is relatively flat. It is covered by glacial till deposited 10,000 to 12,000 years ago during the Wisconsin Glacial Period. The Minnesota River flows through a valley cut by Glacial River Warren. Presettlement vegetation in this area was mostly prairie with river bottom forests along the river banks.

"Protect and perpetuate extensive areas of the state possessing those resources which illustrate and exemplify Minnesota's natural phenomena and to provide for the use, enjoyment, and understanding of such resources without impairment for the enjoyment and recreation of future generations."

The policy requires that all natural state parks meet, or have the potential to meet, the following criteria.

"Depict most of the major components characteristic of the landscape region, or contain a natural component(s) of statewide significance representing a feature of the presettlement Minnesota."

Upper Sioux Agency State Park is located in the Upper Minnesota River Country Landscape Region. Prior to European settlement this region was covered almost entirely by tall grass prairie with limited areas of wooded river bluffs and ravines, areas of oak savanna, and bottomland forest. The park typifies some key features of the landscape region, such as valley bluffs, several wooded ravines, floodplain, forest, and the potential for tall grass prairie and oak savanna. This park has good examples of hillside prairie bluffs and floodplain forest. The mixed hardwoods of the Minnesota and Yellow Medicine River bluffs and wooded ravines exemplify the vegetation that may have been here in the time prior to the establishment of the agency. Documentation of the area's vegetative cover (for the pre-agency time) is not available.

The openness of the upland landscape due to prairie fires is well documented in the agency records. Records indicate the use of brick for building material being selected as a result of frequent prairie fires and a limited supply of good construction lumber in the area. The landscape which existed (in the park) during the agency days included small agricultural fields, upland and hillside prairies, river bottom timber, and oak savanna. Details about the quality and extent of these areas was not available.

Upper Sioux Agency State Park has the long range potential to reestablish the character of the landscape as it appeared during agency days. The landform of the park is a fair representative of the Upper Minnesota River country Landscape Region. The agricultural land uses which occurred on the land within the park has significantly altered its natural state and vegetative cover. Through resource management over a very long period of time the reestablishment of the agency landscape may be realized. The reestablished



landscape would be a component of the historic site which is of statewide significance. The resource in itself is not of high enough quality to be significant statewide.

"Contain natural resources, sufficiently diverse and interesting to attract people from throughout the state."

Upper Sioux contains diverse and interesting natural resources which attract people primarily from the southwestern quarter of the state and from the metro region. This is apparent from the camper data. See Camper Origin, Map p 28. It does not contain the natural resources which have the potential to attract people from throughout the state, without being combined with the historic resources and recreational opportunities.

"Be sufficiently large to provide for the maintenance of ecosystems and the protection of other natural features which give an area its special qualities."

The present statutory boundary of the park is 1,280 acres in size. There are 1,066 acres currently in public ownership. The size of the park, and its relationship to the landforms, the limited potential for development on adjacent lands and nearby county park lands does ensure the protection of a large contiguous natural zone. This zone can ensure the preservation of several wildlife habitat types and plays a major roll in the protection of resources and wildlife habitats within the region.

Proper resource management of park lands will ensure the protection of regionally representative features which do give the park its special qualities.

"Be sufficiently large and durable so as to provide opportunities for enjoyment of their special natural qualities by significant numbers of people now and in the future."

The existing developments with the modifications proposed for them and proposed new developments are located in areas that can withstand the anticipated use. Specific areas of the park including major areas along the banks of the rivers and hillsides are sensitive to intensive recreational use. These areas include steep slopes, poor soils, wet areas, and the 50 and 100 year flood zone. Recreational development in these areas has either been



avoided, modified, or ~~can be~~ designed to accommodate these conditions. If properly developed, managed, and maintained, the park will provide a broad range of opportunities for recreation without adversely affecting the natural character of the park.

#### Recreational State Park Alternative

The policy for all recreational state parks, formulated by the Department of Natural Resources, includes the following goal to:

"Provide lands which offer a broad selection of outdoor recreational opportunities in a natural setting and which may be used by large numbers of people."

It is the objective of the Department of Natural Resources to ensure that proposed recreational state parks meet, or have the potential to meet, the following criteria.

"Possess natural resources, or artificial resources in a natural setting, with outstanding outdoor recreation potential."

The 1979 SCORP report identifies values which enhance the attractiveness of an area. Specifically, it identified the Minnesota and Mississippi valleys as being one of four primary scenic areas of the state. The park has variable terrain, sweeping overlooks, a mix of vegetative types, and attractive water features. These elements provide a highly attractive natural setting for recreational activities.

The existing recreational facilities can be greatly enhanced and expanded to provide additional recreational opportunities in a region of the state where the development of more fishing, camping, swimming, biking, and snowmobiling facilities are recommended (SCORP 1979). SCORP 1979 indicated that combinations of these opportunities would greatly enhance the experience of the user.

This park possesses high quality natural resources with outdoor recreational potential in a region of the state where expanded recreational opportunities are recommended.

"Provide outstanding outdoor recreational opportunities that will attract visitors from beyond the local area."

Upper Sioux contains diverse and interesting features which have attracted people from throughout the state. Primarily from the southwest quarter of the state and the metro region.

The park has not been publicized for camping opportunities on any state park or tourism literature. This is due to the insufficient development of the park's camping facilities. Despite this fact, the camper card samples indicated that 9 percent of the park's campers came from the metropolitan area. A total of 55 percent of the campers came from beyond a 25 mile (40 km) radius of the park.

The Minnesota River valley is a scenically attractive area of the state (SCORP 1979). The entire length of the valley from Fort Snelling to Lac Qui Parle State Park has a variety of scenic, natural, cultural, and historic areas of interest along its length. Upper Sioux Agency has outstanding historic and aesthetic values. These elements are attractive to people from throughout the state.

"Contain resources which permit intensive recreational use by large numbers of people and be of a size sufficient to provide for effective management and protection of the natural and/or artificial outdoor recreational resources, so that they will be available for both present and future generations."

Large areas of the park have moderate to gentle slopes, good soils for recreational development, and offer excellent opportunities for providing high quality recreational development. The park is sufficiently large to provide recreational facilities while providing management and protection of the natural and historic features of the park.

"Be located in areas where they effectively accommodate the outdoor recreational needs of the state population, provided that they complement but are not in place of recreational service normally offered by local units of government and the private sector."

The Minnesota River valley has been the focus of many recreational developments. In a 25 mile radius around Upper Sioux Agency, the state park and four city and county parks located along the river comprise the primary recreational areas for camping and natural environments. Although four of these facilities are clustered within 8 miles of Granite Falls, they are providing services to a much broader area of the state in which no comparable

recreation facilities are being provided, specifically the level agricultural uplands both north and south of the Minnesota River. Within the 25 mile radius around Upper Sioux, no private campgrounds or group camps are being operated for public use. Most communities in the area around the state park are providing intensive recreation facilities like ballfields, playgrounds and swimming pools. The natural environment parks in the area complement the community sport and playground facilities. In addition, the natural resource facilities serve a mixed variety of clientele and complement each other. There are two city parks in Granite Falls one of which provides a community campground within walking distance of the Minnesota River, a community golf course, the county historical society and the central business district. In the future, an undeveloped campground in another city park will provide seasonal camping in the floodplain. Both are supervised by the city police. Both have semi-natural settings but significantly smaller land areas than the state park.

Renville County has two parks in the area of Upper Sioux. Both have approximately 500 acres of natural land base. Each have picnic facilities, trails, several primitive campsites, and over a mile of river bank. Camping is allowed but not promoted for these parks. The primary purpose for these parks is resource preservation and day use. One of these parks is located within one mile of the state park by road and 1/4 mile by river. Connection of the state park to the county park by trails would greatly enhance the quality of experience that either could offer due to diversity and total trail miles. Supervision of the Renville County parks is very limited, especially after dark.

The resource quality of each of the areas' five natural environment parks is varied. The state park's resources are the most diverse and of the best quality. Resource management programs within the state park will result in the best local example of presettlement vegetation and vegetation present during agency times. Current conservation and wildlife management practices will also be demonstrated.

In addition, the state park offers a well-maintained, supervised facility which is augmented by interpretation of natural and historic resources. The current 1,066 acre state park including the 19.3 acre historic site, has the type and quality of recreation facilities and resources which are not duplicated within a 25 mile radius of the state park.



### State Historic Site Alternative

A state historic site shall be established to preserve, restore, and interpret buildings and other structures, locales, sites, antiquities, and related lands which aptly illustrate significant events, personalities, and features of the history and archaeology of the state or nation. No unit shall be authorized as a state historic site unless it substantially satisfies any of the five criteria from the ORA '75.

Portions of Upper Sioux Agency satisfies ~~three~~ of the five criteria for a state historic site. They are as follows:

"Is the site of or directly associated with a significant historical event."

The Upper Sioux Agency was established by the U.S. government in 1853 to teach the Dakota Indians the ways of the white man. From 1853 until 1862 the agency was operated as an educational and trading center for the Dakota Indians. The agency was one of several sites which were burned during the Dakota War of 1862.

"Embodies the distinctive characteristics of an architectural style or method of construction which represents a particular and significant historical period or the work of a master builder, designer, or architect."

The agency buildings (located in the historic site) demonstrate the use of brick in an area where it was a unique building material for the time period. The site also included the construction of the state's first known duplex.

*This is significant in consideration of the early architectural records.* Although very little is known about the architectural style or detail of the agency buildings, a great deal has been learned about their layout, uses and methods of construction.

"When the Minnesota Historical Society acquired the Upper Sioux Agency (historic) site in 1969, only one much altered employee duplex and part of the stable were still standing. Today one completely restored duplex and the exposed foundations of the other buildings stand on the bluff." (MHS publication, Upper Sioux Agency)

The MHS site contains distinctive characteristics of an architectural style and method of construction which represents a particular and significant historic period.



"Has yielded or is likely to yield historical or archaeological artifacts, records, or other original data or information."

Archaeological investigations have yielded information on pre-historic campsites, Yellow Medicine town site, location and use of buildings that comprised the Upper Sioux Agency, and several support buildings to the agency.

Additional research will likely yield further information on agency operations, agency life, and the pre-historic use of land within the park.

#### Wildlife Management Area Alternative

Portions of Upper Sioux Agency State Park satisfy all of the criteria for a wildlife management area. The policy for all wildlife management areas, formulated by the Department of Natural Resources requires that all wildlife management areas meet the following criteria.

"Includes lands or waters which contribute or have the potential to contribute, to the propagation and management of desired wildlife species."

The park has a diversity of habitats which support an abundance of wildlife, both game and non-game species. The park plays a key role in providing winter habitat for deer in the region. The wetland restoration projects will provide habitat for waterfowl, furbearers and shorebirds. Restoration of this type of habitat is important because the vast majority of wetlands in the area have been drained and used for agriculture. In addition, the park also provides habitat for song-birds, waterbirds, small mammals, reptiles and amphibians. It plays such an important role because the park is one of the only natural areas in the region. Only 1-2 percent of the land in Chippewa, Renville and Yellow Medicine counties is forested. This underscores the importance of the wooded bluffs and valleys in the park.

"Is accessible to the public for authorized uses."

Trunk Highway 67 divides the park in two and thus makes the area very accessible. Internal roads also provides access to various portions of the site.

"Is designated based upon consideration of all resource values, the needs of wildlife populations, habitat types, effective and cost-efficient management, the perpetuation of natural systems, and the need for wildlife-oriented recreational activities."

The most outstanding resources in the park are historical. MHS will <sup>continue to</sup> manage a site within the park. If some historical resources were located on land administered as a WMA, these resources would be preserved. There is a need for habitat preservation in this region because of the scarcity of natural areas. Wetland management is also a very important need for wildlife. The size of the area, present condition of the natural resources, accessibility by road, and present status of wildlife populations in the area will provide for effective and cost efficient management and the perpetuation of natural systems. There is a desire for more hunting opportunities as indicated in SCORP '79. Residents in Region 6W indicated hunting was the number one activity they desired more opportunities for and in 6E, it was the number two activity.

#### COOPERATIVE AGREEMENTS

Upper Sioux Agency State Park currently is a low use park. Future developments are expected to change the use of this park. The existing use and location of this park place it low in statewide priority for development, maintenance and operations funding. This park may be considered for closing if adequate funding is not available for total operations and maintenance of the state park system. For these reasons cooperative agreements with Yellow Medicine County and the city of Granite Falls <sup>assistance in</sup> for the maintenance of the state park should be reviewed.

Minimally, high seasonal or special use by local groups can be justification for local units of government participating in the operation and maintenance costs for the state park. Upper Sioux Agency has high winter use by local groups, primarily for sliding. Snow plowing of park roads is an area where Mn/DOT or the county could effectively assist in the maintenance of road and parking lots for winter use. If funds are available this service could be provided through an hourly fee contract with Mn/DOT or the county. Development of a cooperative agreement with Mn/DOT or the county for this service would require less maintenance equipment for the park and allow the park manager needed time to maintain facilities, groom winter trails and operate the contact station. If state funding does not include adequate monies to maintain the park facilities year-round, the county should be asked to assist with the maintenance of the park, especially winter maintenance.

A cooperative agreement may be considered to provide operations, repairs and



maintenance of the interpretive building. The future of the Upper Sioux Agency interpretive program will be directed toward active participation in the environment. The park's naturalist building provides an excellent education center for school groups and special programs. This building is currently receiving use by regional school groups. For state park purposes this building is not needed, therefore it is scheduled for removal when it requires major repairs. If the county, a local unit of government or educational organization are interested in providing operations, repairs and maintenance for this facility it could be negotiated through the DNR, Division of Parks and Recreation.

#### RECOMMENDED CLASSIFICATION

A recreational state park classification with a historic sub unit is recommended for Upper Sioux Agency State Park. Alternative management options may be considered in the future.

The recreational state park classification is recommended because the recreational opportunities combined with the historic elements of the park have statewide significance. Protection and interpretation of the historic resources is the key reason for the park's existence.

The MHS administers 19.3 acres of the historic agency site which is within the statutory boundary of the park. The DNR administers several acres which are not included in the MHS site but which have historic significance. The park acreage containing historic elements of the agency days and Dakota War of 1862 should be classified a historic sub unit within the state park. The long term goal for the designated historic sub unit would be to transfer it to the MHS for management and interpretation. (See Historical Resources Map, p<sup>99</sup>). This historic sub-unit should be protected and managed in a way which is compatible with the adjacent MHS site.

This park is not recommended as a natural state park because the resources are not the only or best examples within the state park system of the Upper Minnesota River Landscape Region. The park also does not have unique or highly outstanding natural resources which are of statewide significance, but it does have a good resource base which illustrates some of the primary elements of the landscape region.

If future use and development do not fulfill the goal of the recreational state park as outlined, the park's recreational areas may be transferred or costs shared through cooperative agreements with other management agencies. Future alternatives for management of the park include transfer of lands to MHS, DNR Wildlife Section and joint operation and maintenance of recreational and educational programs with regional, county and city agencies. Also, the park's recreational areas may be transferred to a regional or county agency.

#### Administration

The directive for administration of all recreational state parks is stated in the ORA '75:

"Recreational state parks shall be administered by the commissioner of natural resources in a manner which is consistent with the purposes of this subdivision primarily to provide as broad a selection of opportunities for outdoor recreation as is consistent with maintaining a pleasing natural environment. Scenic, historic, scientific, scarce, or disappearing resources within recreational state parks shall be recommended for classification as historic sites or scientific and natural areas pursuant to ORA '75. Physical development shall enhance and promote the use and enjoyment of the natural recreational resources of the area."

#### GOAL FOR THE PARK

The goal for Upper Sioux Agency State Park can be found in the purpose for all recreational state parks as stated in the ORA '75:

"A recreational state park shall be established to provide a broad selection of outdoor recreation opportunities in a natural setting which may be used by large numbers of people."





# PARK RESOURCES





## CLIMATE

Upper Sioux Agency State Park is located in an area that has a midcontinental climate. This type of climate is characterized by warm, moist summers and cold dry winters. The following chart illustrates average temperatures from Montevideo, the closest recording station to the park.

	<u>Temperatures °F</u> <u>Minimum</u> (Averages between 1931 - 1978)	<u>Maximum</u> (Averages between 1931 - 1978)	<u>Mean</u> (Averages between 1951 - 1980)
July	60.3	83.9	72.1
January	1.8	20.4	9.3
June, July, Aug.	58.0	81.3	69.9
Dec., Jan., Feb.	5.7	24.2	14.4

The annual precipitation averaged 25.58 inches between 1931 and 1980.

The average total monthly precipitation is as follows:

	<u>inches</u>		<u>inches</u>
April	2.20	August	3.52
May	3.24	September	2.47
June	4.33	October	1.62
July	2.95	November	1.24 (Kuehnast 1972)

This region of the state had a mean of approximately 95 days with 1 inch or greater of snow depth for the years 1959-1979. The median snow depth for this region of the state was less than 3 inches for December 31st, and less than 5 inches for January 31st and February 28th for the years 1959-1979. (Kuehnast 1982).

### Microclimate

A microclimate is a smaller, distinct climate within a larger climate area. There are several microclimates in the park resulting from the nature of the topography. There are different microclimates on the slopes depending on orientation. These differences are primarily caused by the amount of sun which reaches the ground surface, wind speed and vegetation. The most dramatic difference is between north and south facing slopes. Vegetation is the most visible indicator of these differences. An example is the north and south facing slopes of the Yellow Medicine. Prairie is located on the warm, dry, sunny south facing slopes. Hardwood forest is located along the shady,

cool, moist north facing slopes. Differences exist in the valleys compared with the uplands in terms of temperature, moisture, and winds.

Microclimates are important to consider in locating park developments. They are important to consider in the location of winter trails and sliding hill because of winds, retention of snow cover and drifting. They are important in the location of campgrounds because of air circulation.

## GEOLOGY

The park provides several scenic vistas of the Minnesota River Valley. The Minnesota River runs along the northern boundary of the park. The history of the formation of this valley could be interpreted in the park. The following discussion summarizes the geologic history of the valley.

Toward the end of the Ice Age, 12,000 to 13,000 years ago, the last advance of glacial ice had melted back to a location just north of where Ortonville is now situated. Here the edge held stationary for a time, depositing a broad ridge of till several miles wide, composed of small hills and depressions. This is now called Big Stone Moraine. The Glacial River Minnesota drained southeast from this glacier.

As glacial melting increased, meltwater accumulated behind the Big Stone Moraine, beginning the huge Glacial Lake Agassiz, one of the largest glacial lakes. As the lake level rose, it overflowed the moraine near Brown's Valley. Lake Agassiz drained southward for thousands of years, cutting the deep valley of Glacial River Warren, one of the largest glacial rivers in the midwest and predecessor of the Minnesota River. The volume of water that flowed in Glacial River Warren was tremendous. It quickly removed the loose surface glacial deposits and the underlying thin layers of sedimentary rock (shale, sandstone and conglomerates), exposing the more durable granitic rocks below. Numerous exposures of granitic rock still exist along the river valley between Brown's Valley and New Ulm.

The most southerly exposures of granite bedrock in Minnesota outcrop about a mile upstream of New Ulm, in a few small, red knobs. These outcrops are 900 feet above sea level. Only 20 miles away, at Mankato, this sharply tilted granite bed is 348 feet below sea level. About 15 miles upstream of New Ulm

the level valley floor is broken by knobs of Precambrian granites, gneisses, and related rocks.

As the glacier continued to retreat northward, lower outlets from Glacial Lake Agassiz opened to the northeast into Hudson Bay. With the large supply of water from Glacial Lake Agassiz eliminated, the river's size and velocity decreased and it no longer had the capacity to carry the large quantities of sediment supplied by its tributaries. Depost~~s~~ of sand, gravel, and mud accumulated in the riverbed and the stream began to meander across the valley floor. Sometimes whole stretches of the river were abandoned. If they were deep enough to retain water they became lakes or ponds; otherwise, they became dried-up meander scars. Periodic flooding covered the valley floor with rich deposits of silt and clay, giving trees and shrubs a firm foothold. As the climate continued to become drier, the river diminished until it reached its present size.

The erosion of Glacial River Warren during the last Ice Age has provided an excellent view of the early geologic history of southwestern Minnesota. The age of dominant rocks in the upper part of the valley, granite and gneiss, has been determined by various radiometric dating methods. Some have been found to be more than three billion years old, the oldest rocks known on this



continent. They are the eroded remnant or "roots" of the oldest mountains known in North America. These rocks in the Minnesota River valley are among the evidence of a sequence of geologic events that spans more than three billion years.

There are few valleys in the United States that have such a varied dramatic geological history as the Minnesota River.

Across the highway from the Yellow Medicine County Museum in the municipal park there are a few exposures of gneiss and of cretaceous shale. The museum has on display a large fossil clam which was found in that cretaceous formation. It also features fragments of rock formations which are the oldest in the world along the most recent rock formation in Minnesota.

Yellow Medicine River extends along the southern boundary of the park.. The Yellow Medicine River rises on the coteau in Lincoln County and it originates in three branches: the North Branch, Main Stem, and South Branch. The three join north of the Minnesota River.

Upper Sioux Agency State Park is located on a plateau of rolling glacial drift between the deep valleys of the Glacial River Warren and Yellow Medicine River, on the alluvial deposits of the Yellow Medicine River.

Portions taken from: Minnesota River Resource Analysis, Minnesota Department of Natural Resources, Wild and Scenic River's Program, 1979.

#### SOILS

The soils in the park were formed from glacial till, lacustrine deposits in Glacial Lake Benson (a shallow temporary glacial lake in eastern Yellow Medicine County) and from alluvium deposited by the Minnesota and Yellow Medicine rivers.

The Soils Suitability Chart on p 51 lists the soil found in the park (USDA, 1981). The chart also lists suitabilities for various types of development and their limitations for development. The limitations are meant to be guidelines rather than absolute criteria for location of development. Even when severe limitations are identified, site design and technology can overcome many of the restrictions.

Soil Type	Map Code	Slope	Recreational Development			Sanitary Facilities		Building Site Development		
			Picnic Areas	Camp Areas	Paths and Trails	Sewage Lagoons	Septic Tank Filter Field	Roads	Shallow Excavations	Recreation Buildings
Storden loam	31E	18-25	Severe • slope	Severe • slope	Moderate • slope	Severe • slope	Severe • slope	Severe • slope	Severe • slope	Severe • slope
Storden loam	31F	25-40	Severe • slope	Severe • slope	Severe • slope	Severe • slope	Severe • slope	Severe • slope	Severe • slope	Severe • slope
Calco silty clay loam occasionally flooded	85		Moderate • wetness	Severe • floods • wetness	Moderate • wetness	Severe • wetness • floods	Severe • wetness • floods	Severe • low strength • floods	Severe • wetness	Severe • floods • wetness
Terril loam	94B	2-6	Slight	Slight	Slight	Moderate • seepage • slope	Slight	Severe • low strength	Slight	Slight
Terril loam	94C	6-12	Moderate • slope	Moderate • slope	Slight	Severe • slope	Moderate • slope	Severe • low strength	Moderate • slope	Moderate • slope
Egeland loam	151A 141B	0-6	Slight	Slight	Slight	Severe • seepage	Slight	Slight	Severe • cutbanks	Slight
Ves loam	421B	1-4	Slight	Slight	Slight	Moderate • seepage • slope • excess humus	Slight	Moderate • low strength • frost action	Slight	Slight
Perella silty clay loam	434		Moderate • wetness	Severe • wetness	Moderate • wetness	Severe • wetness	Severe • wetness • percs slowly	Severe • low strength • wetness • percs slowly	Severe • wetness	Severe • wetness

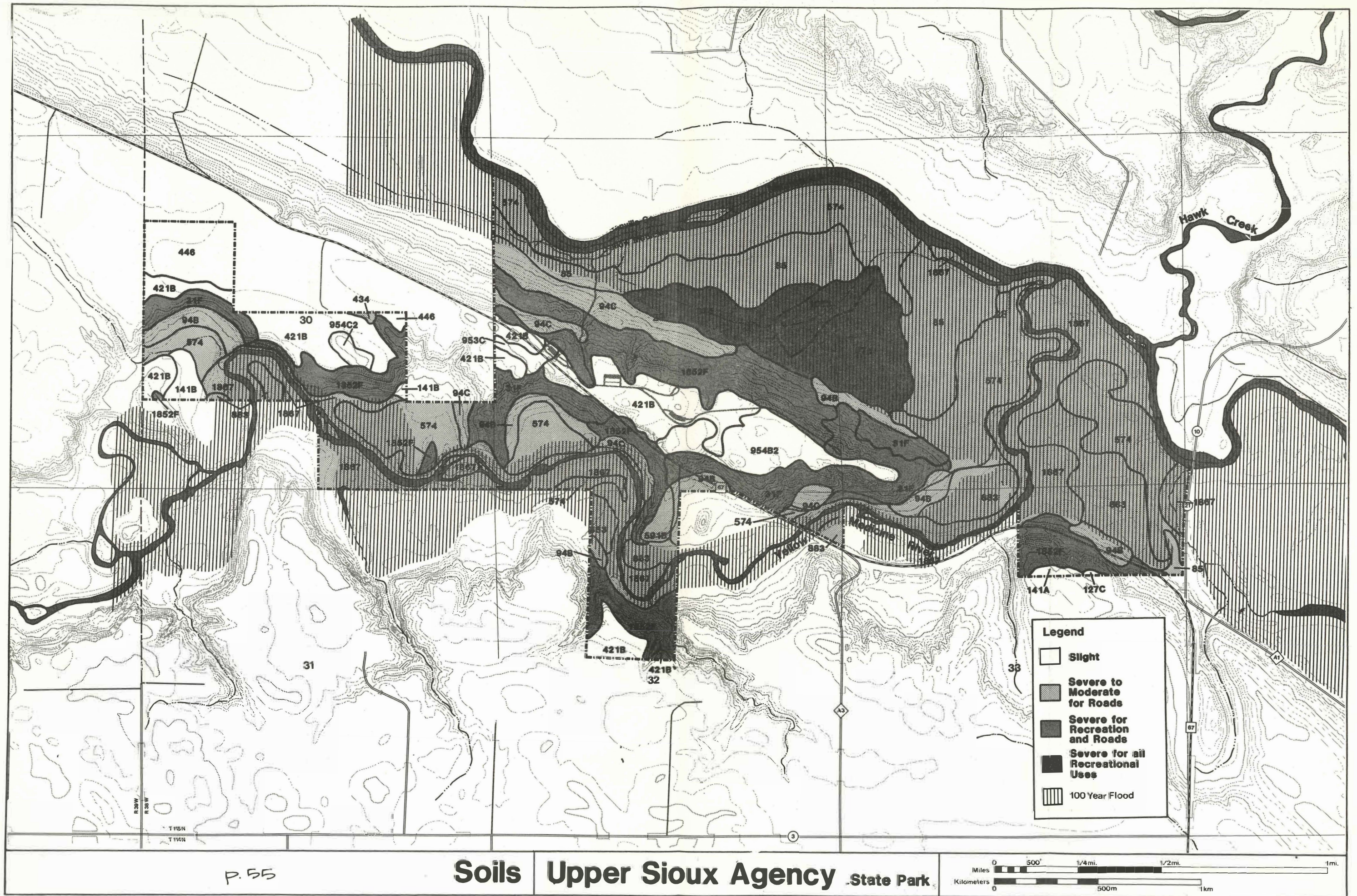
Soil Type	Map Code	Slope	Recreational Development			Sanitary Facilities		Building Site Development		
			Picnic Areas	Camp Areas	Paths and Trails	Sewage Lagoons	Septic Tank Filter Field	Roads	Shallow Excavations	Recreation Buildings
Normania clay loam	446	1-3	Slight	Slight	Slight	Severe • wetness	Severe • wetness	Severe • frost action	Moderate • wetness	Slight
DuPage loam occasionally flooded	574		Slight	Severe • floods	Slight	Severe • seepage • floods	Severe • floods	Severe • low strength • floods	Moderate • wetness • floods	Severe • floods
Storden-Ves	954C2	5-12	This complex consists of 35-75 percent storden soils and 25-50 percent ves soils. The soils are intermixed to the point that it is impossible to identify each soil separately. Refer to the individual descriptions below for further information.							
Storden		5-12	Moderate • slope	Moderate • slope	Slight	Severe • slope	Moderate • slope	Moderate • slope • frost action	Moderate • slope	Moderate • slope
Ves		5-12	Moderate • slope	Moderate • slope	Slight	Severe • slope	Moderate • slope	Moderate • low strength • slope • frost action	Moderate • slope	Moderate • slope
Aquolls and Aquents, ponded	1053		Undrained, closed depressions and ponds-unsuitable for all.							
Terril-Swanlake loams	1852F	18-70	This complex consists of 50 percent Terril soils and 50 percent Swanlake soils. The soils are intermixed to the point that it is impossible to identify each soil separately. Refer to the individual descriptions below for further information.							
Terril		18-70	Severe • slope	Severe • slope	Severe • slope	Severe • slope	Severe • slope	Severe • slope	Severe • slope	Severe • slope



Soil Type	Map Code	Slope	Recreational Development			Sanitary Facilities		Building Site Development		
			Picnic Areas	Camp Areas	Paths and Trails	Sewage Lagoons	Septic Tank Filter Field	Roads	Shallow Excavations	Recreation Buildings
Swanlake	1867	18-70	Severe • slope	Severe • slope	Severe • slope	Severe • slope	Severe • slope	Severe • slope	Severe • slope	Severe • slope
Zumbro - Calao complex			This complex consists of 60-80 percent Zumbro soils and 20-40 percent calco soils these soils are intermixed to the point that it is impossible to identify each soil separately. Refer to the individual descriptions below for further information.							
Zumbro			Moderate • floods	Severe • floods	Moderate • floods	Severe • floods	Severe • poor filter	Severe • floods	Severe • wetness	Severe • floods
Calco			Moderate • wetness	Severe • wetness • floods	Moderate • wetness	Severe • wetness • floods	Severe • wetness • floods	Severe • low strength • floods	Severe • wetness	Severe • floods • wetness
Nishaa silty clay, occasionally flooded	575	1-4	Severe • too clayey	Severe • floods • wetness • too clayey	Severe • too clayey	Severe • floods	Severe • floods • percs slowly	Severe • floods • low strength • Shrink swell	Severe • wetness	Severe • floods • wetness • shrink-swell
Doland silt	591B		Slight	Slight	Slight	Moderate • seepage • slope • excess humus	Moderate • percs slowly	Moderate • low strength • frost action	Slight	Slight
Zumbro - DuPage complex	883		This complex consists of 60-80 percent Zumbro sandy loam and 20-40 percent DuPage loam. The soils are intermixed to the point that it is impossible to identify each soil separately. Refer to the individual descriptions for further information.							

Soil Type	Map Code	Slope	Recreational Development			Sanitary Facilities		Building Site Development		
			Picnic Areas	Camp Areas	Paths and Trails	Sewage Lagoons	Septic Tank Filter Field	Roads	Shallow Excavations	Recreation Buildings
Zumbro			Slight	Severe floods	Slight	Severe • seepage • floods	Severe • floods • poor filter	Severe floods	Severe • cutbanks cave	Severe • floods
DuPage	574		See description on previous page.							
Ves-Storden	954B2	3-6	This complex consists of 50-75 percent Ves soils and 20-40 percent Storden soils. The soils are intermixed to the point it is impossible to identify each soil separately. Refer to the individual descriptions for further information.							
Storden		3-6	Slight	Slight	Slight	Moderate • seepage • slope	Slight	Moderate • frost action	Slight	Slight
Ves		3-6	See description on previous page.							
Arvilla-Storden Ves complex	953C	6-15	This complex consists of 45 percent Arvilla soils, 40 percent Storden and 40 percent Ves. The soils are intermixed to the point that it is impossible to identify each separately. Refer to the individual descriptions below for further information.							
Arvilla			Moderate • slope	Moderate • slope	Slight	Severe • seepage • slope	Severe • poor filter	Moderate • slope	Severe • cutbanks cave	Moderate • slope
Storden			Moderate • slope	Moderate • slope	Slight	Severe • slope	Moderate • slope	Moderate • slope • frost action	Moderate • slope	Moderate • slope
Ves			Moderate • slope	Moderate • slope	Slight	Severe • slope	Moderate • slope	Moderate • low strength • slope • frost action	Moderate • slope	Moderate • slope







### Recreational Development

The soils have been rated according to limitations that affect their suitability for camping areas, playgrounds, picnic areas, and paths and trails and roads. They are rated as having slight, moderate, or severe limitations.

It is important that a good cover of vegetation be established and maintained, but this is not a part of the recreation rating. A limitation of "slight" means that soil properties are generally favorable and limitations are so minor that they can be easily overcome. A "moderate" limitation can be overcome or modified by planning, design, or special maintenance. A "severe" limitation means that costly soil reclamation, special design, intense maintenance, or a combination of these is required.

Camp areas are used intensively by campers with tents and small camp trailers. The primary soil features affecting the use of soils for camping areas are: wetness, flood hazard, soil permeability, soil slope, surface texture, and the amount of gravel, stones, and rock outcrops. Ideally, a good camping area has good soil drainage, is nearly level or gently sloping, provides relatively good traction when wet, and has few pebbles, stones, or rock outcrops.

Picnic areas are attractive natural or landscaped tracts used primarily for preparing meals and eating outdoors. Features affecting the suitability of soils for picnic areas are wetness, flood hazard, slope, surface texture, and the amount of gravel, stones, and rock outcrops.

Paths and trails are used for local and cross-country travel by foot, skis, and snowmobile. Site design and layout should require little or no cutting and filling. The best soils are at least moderately well-drained, are firm when wet but not dusty when dry, are flooded not more than once during the season of use, have slopes of less than 15 percent, and have few or no rocks or stones on the surface.

### Sanitary Facilities

Septic tank absorption fields are subsurface systems of tile or perforated pipe that distribute effluent from a septic tank into the soil. The soil material from a depth of 18 inches to 6 feet is evaluated. The soil properties considered are those that affect both absorption of effluent



and construction and operation of the system. Properties that affect absorption are permeability, depth to water table or rock, and susceptibility to flooding. Slope is a soil property that affects layout and construction, soil erosion, lateral seepage, and downslope flow of effluent. Large rocks or boulders increase construction costs.

Sewage lagoons are shallow ponds constructed to hold sewage at a depth of two to five feet, long enough for bacteria to decompose the solids (biodegradation). A lagoon has a nearly level floor, and sides or embankments of compacted soil material. Properties that affect the pond floor are texture, permeability, organic matter, slope, depth to bedrock, and amount of stones.

#### Building Site Development

Dwellings are defined as not more than three stories high and are supported by foundation footings placed in undisturbed soil. The features that affect the rating of a soil for dwellings are those that relate to bearing capacity and those that relate to ease of excavation. Soil properties considered are wetness, susceptibility to flooding, density, plasticity, texture, shrink-swell potential, slope, depth to bedrock, and content of stones and rocks.

Local roads and streets are generally considered to have an all weather surface and are designed to carry low volume traffic. They are generally constructed with low cuts and fill from the material at hand. The soil ratings are based on soil properties, site features and observed performance of the soils. Soil and site features which affect the construction of the road are flooding, depth to the water table, depth to bedrock, slope and large stones. Soil strength, shrink-swell potential, frost action potential, and depth to a high water table affect the traffic supporting capacity.

Shallow excavations are those that require digging to a depth of less than six feet. Examples are excavations for pipelines, sewer lines, phone and power transmission lines, basements, open ditches, and cemeteries. Soil properties considered are workability, resistance to sloughing, slopes, rock outcrops or large stones, drainage, and flooding or high water table.

The Soils Suitability Map on p <sup>55</sup> generalizes the soil limitations and illustrates those areas of the park which are generally suitable for development and those which are not.

### Soil Management

#### Objectives:

To minimize soil loss through erosion

Action #1. Request that the district SCS staff, in cooperation with the regional resource coordinator, develop a stream bank erosion management plan for the park. (see Surface Water Management, Action #1, p <sup>84</sup>).

### VEGETATION

#### Existing Vegetation Inventory

Plant communities are delineated on a 1978 aerial photograph. See Vegetation Map, p <sup>63</sup>. A series of photos taken in 1938, 1950, 1955, 1961, and 1967 were used to assist in the delineation of each type. Color slides taken by the Agricultural Stabilization and Conservation Service (ASCS) in 1980 were also examined. The vegetative composition of these communities was field checked by DNR, Park Planning staff in May, 1982.

#### OF Old Field

These areas were at one time cultivated agricultural fields or fields which have been grazed or hayed. Each area has a different character. Species composition is defined by the soil moisture conditions of the site as well as how the area was managed after crops were no longer grown on the site. Some areas were seeded to grasses and in some areas, natural succession has occurred.

OF 1 This area was seeded in 1976 with a mixture of grasses. The seed mixture contained: orchard grass, sweet clover, red fescue and perennial rye grass.

OF 2 These areas were seeded in 1977. Switch grass and alfalfa dominate. Bluegrass, brome, and sweet clover are also found in these areas.

OF 3 This area was farmed until 1977. It has been left fallow since that time. Species found here include: giant ragweed, mullein, foxtail grass, burdock, Canadian thistle, yarrow, horsetweed, goldenrod, sheepsorrel, goosefoot, brome, bluegrass, and stinging nettle.

OF 4 This area was seeded in 1976. The results were marginally successful. Switch grass and patches of reed canary grass are found in scattered areas.

OF 5 This area was seeded in 1975 and the results were marginally successful. Switch grass and patches of reed canary grass are found in scattered areas.

OF 6 This area was seeded in 1978 with a seed mixture that contained the following species: sweet clover, Kentucky bluegrass, bird's foot trefoil, perennial rye grass, red clover, and timothy. There are patches of Canadian thistle in these areas.

OF 7 This area was seeded in 1973. Portions of the area have fairly good grass cover but in some places noxious weeds have become established.

OF 8 This area was seeded to alfalfa in 1971 or 1972.

OF 9 No management has occurred on these areas since they were farmed and natural succession is occurring.

OF 10 This area was seeded in 1976.

OF 11 History unknown.

#### A Wildlife Food Plot

These areas are currently wildlife food plots.

#### P Prairie

The prairie areas in the park consist of dry grassland vegetation most often occurring on steep, well drained slopes and ridges. The soil is generally calcareous and there are often scattered stones and boulders on or near the



surface. There is a wide range in the quality of prairie in this mapping unit. The vegetation ranges from areas dominated by native species to areas dominated by exotics such as brome and bluegrass.

The dominant native plants include little bluestem, side oats grama, blue grama, and pasque flower. Other characteristic native plant species include: leadplant, downy painted cup, silky aster, prairie onion, blue-eyed grass, narrow-leaved puccoon, false toadflax, and blazing star. Bluegrass and brome are dominant on the more disturbed sites. There are native prairie plants scattered throughout these areas.

Shrubs and trees have encroached onto the prairie in some areas. Sumac and buckbrush are the most abundant shrubs on these slopes. Wolfberry and red cedar are also common. Bluegrass is dominant under the shrubs. Examination of aerial photographs show that the number of shrubs in the prairie areas has increased over the last 50 years. All prairie areas observed in the park appear to have been grazed in the past and most have grazing terraces perpendicular to the slope of the hill. A list of the species observed in the prairie area is included in the MPD.

#### M-WM Marsh and Wet Meadow (Wetland Type II-III)\*

This low wet area is occasionally flooded by the Minnesota River. Giant reedgrass or cane and threesquare are the dominant plants in the wettest portions of this area. Reed canary grass is abundant in shallower level areas. There are patches of willows and cottonwood in this area. Scattered boxelder and green ash saplings occur frequently in the reed canary grass. These saplings are less than two inches in diameter and are heavily browsed. Other species which were observed here were Indian hemp, dock, milkweed, and cattails. Much of this area was cultivated in the past. It has been partially drained.

\* Type II - fresh meadows, waterlogged within a few inches

Type III- shallow fresh marsh, water depth up to 6 inches

#### HF Mixed Hardwood Forest

The dominant trees in this type include bur oak, basswood, American elm, and

green ash. The relative abundance of these species varies from site to site. Many of the elms are dead or dying due to the impact of Dutch elm disease resulting in shrubby openings. Some cutting may have occurred in the mid-1960s along the forested Minnesota River bluffs near the western boundary of the park. The hardwood forest type is found on the steep and very steep slopes in the park on moderately drained to well drained soils.

Flood plain forest species are intermixed in portions of this forest to the point that it is not possible to identify separate units. The presence of several older large bur oak with broad growth habits indicate that portions of this mixed hardwood forest would have been dry open oak forest at one time. The growth of many trees in this forest within the past 100 years has resulted in the mixed hardwood forest we see today.

The shrub-sapling layer ranges from continuous to sparse depending on the openness of the canopy and past land use history. Common species found in the shrub layer are prickly ash, hazel, elderberry, wolfberry, elm, and hackberry.

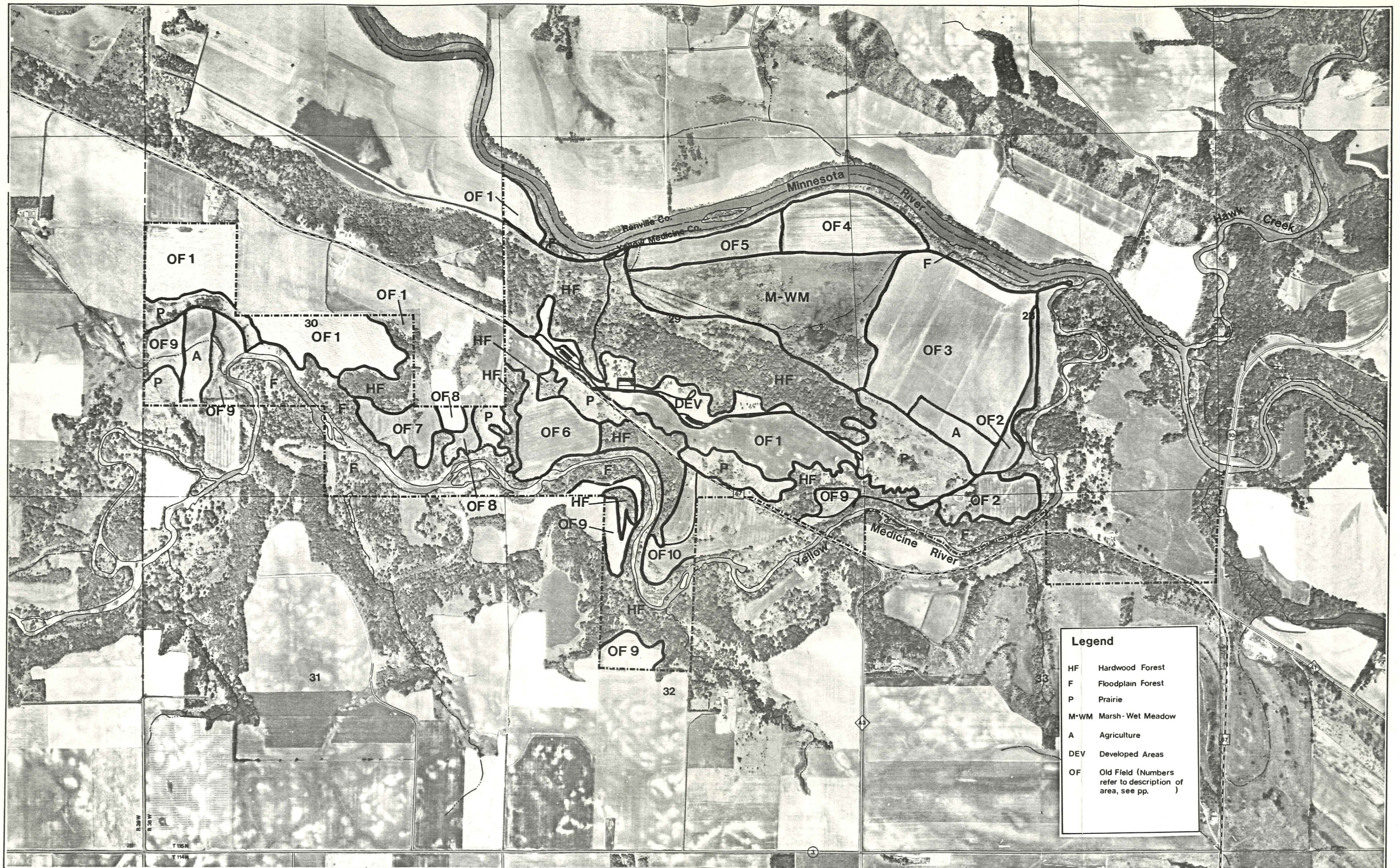
There are plants in the ground layer which are typical of the state's hardwood forests including bloodroot, dutchman's breeches, sweet cicely, wild ginger, and Virginia waterleaf. Other species observed in the groundlayer are blue phlox, bedstraw, Canada nettle and woodbine.

Some of the wooded areas in this type are younger, early successional stands. Boxelder and green ash (diameter of approximately 3") are the most common tree species. Other species are elm, hawthorne prickly ash, and honeysuckle.

#### F Floodplain Forest

This wooded vegetation type occurs on areas that are periodically flooded such as floodplains and old river channels. There is a large variation between stands in the sizes of the trees. These differences can be attributed to land use history and active river processes. The dominant tree species in the floodplain forest include green ash, cottonwood, and boxelder. Hackberry, silver maple and elm (mostly dead) also occur. Sandbar willow is common along the edges of these woods. The understory includes reed canary grass, bluegrass, jewelweed and nettle.

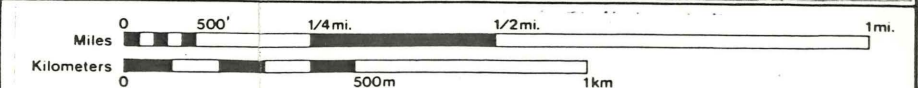




p. 63

**Vegetation**

**Upper Sioux Agency state Park.**





# Scientific Names of Plants Cited in the Text

<u>Common Name</u>	<u>Scientific Name</u>
Alfalfa	<u>Medicago sativa</u>
American elm	<u>Ulmus americana</u>
Basswood	<u>Tilia americana</u>
Bedstraw	<u>Galium</u> sp.
Bird's foot trefoil	<u>Lotus corniculatus</u>
Blazingstar	<u>Liatris</u> spp.
Bloodroot	<u>Sanguinaria canadensis</u>
Blue phlox	<u>Phlox divaricata</u>
Blue-eyed grass	
Bluegrass	<u>Poa</u> sp.
Box elder	<u>Acer negundo</u>
Brome grass	<u>Bromus inermis</u>
Bur oak	<u>Quercus macrocarpa</u>
Burdock	<u>Arctium</u> sp.
Canada nettle	<u>Urtica</u>
Candian thistle	<u>Cirsium arvense</u>
Cattails	<u>Typha</u> spp.
Cottonwood	<u>Populus deltoides</u>
Dock	<u>Rumex</u> sp.
Downy paint cup	
Dutchman's breeches	<u>Dicentra cucullaria</u>
Elderberry	<u>Sambucus</u> spp.
False toadflax	
Foxtail grass	<u>Setaria</u> sp.
Giant ragweed	<u>Ambrosia trifida</u>
Giant reed grass	<u>Arundo donax</u>
Goldenrod	<u>Solidago</u> spp.
Goosefoot	<u>Chenopodium</u> sp.
Green ash	<u>Fraxinus pennsylvanica</u> var. <u>subintegerrimas</u>
Hackberry	<u>Celtis occidentalis</u>
Hawthorne	<u>Crataegus</u> sp.
Hazel	<u>Corylus cf. americana</u>
Honeysuckle	<u>Lonicera</u> sp.
Horseweed	<u>Erigeron canadensis</u>
Indian hemp	<u>Apocynum cannabinum</u>
Jewelweed	<u>Impatiens</u> spp.
Kentucky bluegrass	<u>Poa pratensis</u>
Lead plant	<u>Amorpha canescens</u>
Little bluestem	<u>Andropogon scoparius</u>
Milkweed	<u>Asclepias syriaca</u>
Mullien	<u>Verbascum thapsus</u>
Narrow-leaved pucoon	<u>Lithospermum incisum</u>
Orchard grass	<u>Dactylis glomerata</u>
Pasque flower	<u>Anemone patens</u>
Perennial rye grass	<u>Lolium perenne</u>
Prairie onion	<u>Allium</u> sp.
Prickly ash	<u>Zanthoxylum americanum</u>
Red clover	<u>Trifolium pratense</u>
Red fescue	<u>Fescuta</u> spp.
Reed - canary grass	<u>Phalaris arundinaceae</u>
Sandbar willow	

Sheep sorrel  
Side oats grams  
Silky aster  
Silver maple  
Stinging nettle  
Sumac  
Sweet cicely  
Sweet clover  
Switch grass  
Threesquare  
Timothy  
Virginia waterleaf  
Wild ginger  
Willows  
Wolfberry  
Woodbine  
Yarrow

Rumex acetosella  
Bouteloua gracilis  
Aster sericius  
Acer saccharinum  
Urtica dioica  
Rhus spp.  
Osmorhiza longistylis  
Melilotus spp.  
Panicum virgatum  
Scirpus americanus  
Phleum pratense  
Hydrophyllum virginianum  
Asarum canadense  
Salix spp.  
Symphoricarpos cf. albus  
Parthenocissus quinquefolia  
Achillea millefolium

#### Objectives:

To establish and maintain a diverse cover of grasses in the old field areas on a short term basis

To eventually reestablish native prairie on some upland old field areas

To manage the prairie vegetation in the park

To control noxious weeds

To reestablish oak savanna

#### Vegetation Management

Action #1. Establish and maintain a cover of grasses in OF 3, OF 4, OF 5, OF 7, OF 8, OF 9, and OF 10.

Ideally, native grasses would be the most desirable to establish. However, it is not feasible to establish native grasses at this time because of the limited availability of seed sources within a close enough radius to be suitable for the park. The best alternative is to seed these areas with a suitable seed mixture of non-native grass species. This mixture should be semi-permanent so it can be easily eliminated and replaced in the future when a native seed source, staff, and funds become available. One mixture which has been used in other state parks and appears to work well includes alsike clover, timothy, alfalfa, perennial rye, and red clover. This mixture may be modified by the resource coordinator as further research and experience provide additional data. Aggressive species should be avoided as they will be hard to eliminate in the future.

Priorities for seeding are indicated by letters a-f on the Vegetation Management Map, p 71 .

In Management Area 1b, the natural regrowth of trees should be monitored and encouraged. Mowing and spraying to control noxious weeds should be conducted in a manner which would not eliminate natural regrowth of native trees. Supplemental plantings of native trees may be considered.

	1	2	3	4	5	TOTAL
COST	\$5,200	\$5,200	\$5,200			\$15,600

Action #2. Maintain the existing grass cover in the areas where it is in good condition and no future management is eminent.

These areas are currently in a grass cover and are in good condition. Management to maintain these areas in their current condition may be necessary in the future. It is unknown when such management may be necessary. Some reseedling of these areas may be required in the future. The seed mixture should be semi-permanent on these areas as well.

	1	2	3	4	5	TOTAL
COST			(Conditional		\$5,720)	

Action #3. Convert some of the old field areas to native prairie grasses in the future.

The original vegetation of these areas was most likely prairie. As seed sources, staff, and funding become available, reestablishment of prairie should occur. The area which should be first priority for restoration is <sup>near the historic site</sup> OF 1. This area would have greatest visibility to park users. The actual cost of this management program will be dependent upon each site and available seed source.

	1	2	3	4	5	TOTAL
COST	To be determined					ongoing

Action #4. Reestablish oak savanna in the areas along the ridge that were most likely oak savanna during agency days as currently evidenced by old open grown bur oaks.



Oak savanna consists of scattered oak and clumps of oak with prairie underneath. The two most likely restoration methods will be cutting of trees and shrubs and fall burning. A program of prescribed burning should be developed for these areas. Some interseeding and replanting will be necessary to reestablish the prairie species. This action is not as high priority as Action #1. If funds and staff are available, implementation of Action #4 could begin immediately if Action #1 has been funded.

	1	2	3	4	5	TOTAL
COST			\$10,000	\$10,000	\$10,000	ongoing

Action #5. Reestablish wetlands.

See Wildlife Action #1, p 76 for discussion.

Action #6. Plant proposed development areas with species of trees suitable for the site to enhance the recreational setting of the area.

The composition of the natural forest community should be replicated to whatever extent possible. For example, in the floodplain areas, species which are characteristic of the floodplain and can withstand occasional flooding should be planted. On the upland sites, species characteristic of uplands should be planted. The following list indicates species which could be considered.

#### Large Trees

Aspen	<u>Populus tremuloides</u>
Basswood	<u>Tilia americana</u>
Bitternut hickory	<u>Carya cordiformis</u>
Black cherry	<u>Prunus serotina</u>
Boxelder	<u>Acer negundo</u>
Bur oak	<u>Quercus macrocarpa</u>
Cottonwood	<u>Populus deltoides</u>
Green ash	<u>Fraxinus pennsylvanica</u>
Hackberry	<u>Celtis occidentalis</u>
Red oak	<u>Quercus borealis</u>
Silver maple	<u>Acer saccharinum</u> L.

#### Small Trees

Hawthorn	<u>Crataegus</u> sp.
Ironwood	<u>Ostrya virginiana</u>

## Shrubs

Blackberried elder	<u>Sambucus canadensis L.</u>
Bladdernut	<u>Staphylea trifolia L.</u>
Chokecherry	<u>Prunus virginiana</u>
Currant/gooseberry	<u>Ribes spp.</u>
Dogwood	<u>Cornus sp.</u>
Euonymus	<u>Euonymus spp.</u>
Hazel	<u>Corylus spp.</u>
Plum	<u>Prunus spp.</u>
Sumac	<u>Rhus spp.</u>

Several of the native trees are available commercially in the appropriate size (3" to 5" diameter) while others (bur oak, boxelder, ironwood) will have to be grown elsewhere until they reach transplant size. Trees less than 3" often receive damage by people when located in heavy use areas. Few, if any, native shrubs are readily available and will have to be grown in the park or elsewhere in the region for transplanting. Trees and shrubs should be used as privacy screens or to direct traffic.

	1	2	3	4	5	TOTAL
COST	See Proposed Development Section					

Action #7. Implement a program of prescribed burning on the prairie areas.

Fire plays a key role in the perpetuation of prairie vegetation. A burn through these areas will help control encroachment of woody species, release nutrients to the soil and stimulate the growth of native species, and help control non-native species.

The area labeled 7a on the Vegetation Management Map, p71 should be targeted for management first. Access to this area by park visitors is good. This area is close to the day use area and is a prime location to interpret prairie and prairie management. It is also the largest of the <sup>native</sup> prairie areas in the park.

	1	2	3	4	5	TOTAL
COST	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	ongoing

Action #8. Monitor the effectiveness of the prescribed burn program in controlling the encroachment of woody species and undesirable non-native species.

The long period of fire suppression has allowed woody encroachment to exceed natural conditions. Some species and/or areas may be difficult to convert back to prairie with fire alone. If the desired results are not achieved, the burn program should be supplemented by cutting or other techniques. Fire alone is not effective ~~in~~ in controlling sumac for example.

	1	2	3	4	5	TOTAL
COST				\$3,000	\$3,000	ongoing

Action #9. Control noxious weeds in the park.

Noxious weeds have been a problem in certain of the old field areas. Appropriate short term control measures will be taken. A variety of methods will be evaluated including use of herbicides and mowing. The Department of Natural Resources will work in cooperation with the county weed inspector to formulate the best control measures and implement them on an ongoing basis. Control methods may vary from site to site and year to year depending upon circumstances. Techniques used should take into account future management actions. Establishing a good cover of grasses in some of the Old Field areas (See Action #1) will help control noxious weeds. Once a good grass cover is established, the noxious weed problem should be greatly reduced.

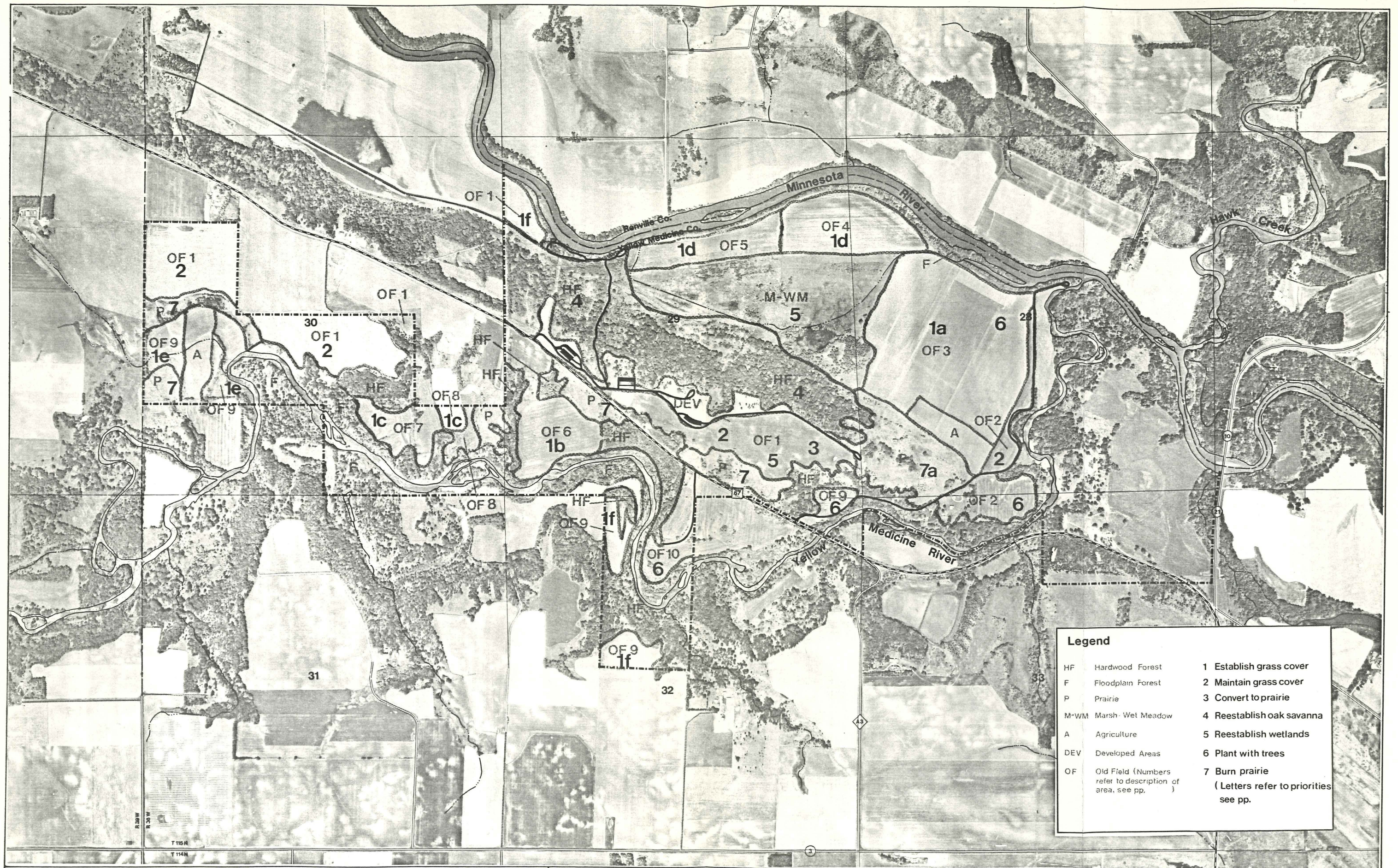
	1	2	3	4	5	TOTAL
COST	\$2,000	\$1,000	(Integrated into operational budget after phase 2)			

Action #10. Remove dead and dying trees only in the major recreational use areas and along trails.

Dutch elm disease has killed a large number of trees in the park. Where ~~dead trees~~ pose a hazard to park visitors they should be cut. The openings created in the canopy by dead trees has allowed new species to become established and has created changes in the composition of the plant communities. Hackberry, boxelder, and green ash are becoming established and will replace elms.

	1	2	3	4	5	TOTAL
COST	Included in the cost of other actions.					





**Legend**

HF	Hardwood Forest	1	Establish grass cover
F	Floodplain Forest	2	Maintain grass cover
P	Prairie	3	Convert to prairie
M-WM	Marsh- Wet Meadow	4	Reestablish oak savanna
A	Agriculture	5	Reestablish wetlands
DEV	Developed Areas	6	Plant with trees
OF	Old Field (Numbers refer to description of area, see pp.)	7	Burn prairie
			( Letters refer to priorities see pp.)



## Wildlife Inventory

An abundance and diversity of wildlife is found in Upper Sioux Agency State Park due to the variety of habitats including prairie, floodplain forest, hardwood forest, and old fields. The study Breeding Birds in Minnesota 1975-1979; Abundance, Distribution and Diversity completed by the DNR lists the following species are selected breeding birds which reach their highest level of relative abundance in Region 4W of Minnesota. This data is not park specific but refers to the study area Region 4W which includes the counties of Meeker, Kandiyohi, Chippewa, Swift, Big Stone, Lac qui Parle, Renville, Yellow Medicine, and Redwood.

### Species reaching their highest level of relative abundance in Region 4W of Minnesota

Great egret	Long-billed marsh wren
Gray partridge	Brown thrasher
Mourning dove	

Although these breeding species are abundant, there are numerous other species in the park to provide interesting birdwatching. The Minnesota River corridor is used for nesting, breeding, and resting during the migration of many birds. A variety of waterfowl can be observed including wood ducks, mallards, blue wing teal, and Canadian geese. Pelicans are interesting water birds which can be observed occasionally along the river in the park. Herons, bitterns and other shorebirds frequent the riverbanks. Bluebirds, goldfinches and other songbirds, hawks, and owls also provide interesting birdwatching.

The following list of species is from the Guide to the Nongame Mammals of Southwest Minnesota, Region 4W. The occurrence of the following nongame species of mammals has been documented in Region 4W.

Masked shrew	Thirteen-lined ground squirrel
Arctic shrew	Richardson's ground squirrel
**Northern water shrew	Franklin's ground squirrel
**Pygmy shrew	Eastern chipmunk
Short-tailed shrew	Southern flying squirrel
Eastern mole	**Northern flying squirrel
*Little brown bat	Red squirrel
***Keen's little brown bat	Plains pocket gopher
Silver-haired bat	*Plains pocket mouse
***Eastern pipistrelle	*Western harvest mouse

\*Big brown bat  
Red bat  
Hoary bat  
Short-tailed weasel  
Least weasel  
Long-tailed weasel  
\*Spotted skunk  
Striped skunk  
Coyote

Deer mouse  
White-footed mouse  
\*Northern grasshopper mouse  
Gapper's red-backed vole  
Meadow vole  
\*Prairie vole  
Meadow jumping mouse  
Woodchuck

\*Species which merit special consideration according to the Minnesota Natural Heritage Program.

\*\*Hypothetical Species - reports needed.

\*\*\*Both

The DNR, Natural Heritage Program identifies species which are exemplary unique, threatened, or endangered on a national or statewide basis. The program's aim is to identify these species' habitats before they are lost. An effort is needed to save these targeted species for their scientific, educational, and aesthetic values and for other practical uses which may be discovered in the future.

Game mammals which are likely to occur in the park are:

White-tailed deer  
Red fox  
Gray fox  
Mink  
Raccoon

Muskrat  
Beaver  
Gray squirrel  
Fox squirrel  
Cottontail rabbit

Deer are of special interest because of the potential management problems they cause and because of the interest of park visitors in viewing deer. The following discussion summarizes the current status of the deer population in Upper Sioux Agency State Park and the surrounding area.

The DNR, Section of Wildlife has divided the state into quota blocks based on the amount of available deer habitat. Air surveys are conducted each winter to monitor population changes. The current deer population in the quota block which includes Upper Sioux Agency State Park was at the target population in the winter of 1982. This quota block is 940 square miles. The crude density goal is set at 2 or 2.25 deer per square mile. This results in approximately 1950  $\pm$  400 deer in the quota block.



It is difficult to estimate the number of deer wintering in the park because they move between the park and other wintering areas nearby. The approximate wintering population densities are 18 deer per square mile in the river valley. This is approximately the same as in the park.

The following list of species is from the Guide to the Reptiles and Amphibians of Lower West Central Minnesota, Region 4W published by the DNR.

Common snapping turtle	Mudpuppy
Western painted turtle	Gray tiger salamander
Western spiny softshell	*Red backed salamander
Northern prairie skink	**Blue spotted salamander
*Five-lined (blue tailed) skink	Canadian (Dakota) toad
Red bellied snake	American toad
DeKays' snake	Great plains toad
Western plains garter snake	*Common (gray) tree frog
Eastern garter snake	Western chorus frog
Plains western hognose snake	Northern leopard frog
Bullsnake	Wood frog
Western fox snake	**Green frog
Eastern milk snake	**Mink frog
Western smooth green snake	

\*Species which merit special consideration according to the Minnesota Natural Heritage Program.

\*\*Hypothetical Species - reports needed.

The five lined (blue tailed) skink is of special interest. It is found in Minnesota only in Redwood, Yellow Medicine, and Renville counties. It is common in other states further south. Its occurrence is often associated with granite outcroppings. Its presence has not been documented in the park at this time.

#### Wildlife Management

##### Objectives:

To increase the diversity of wildlife and maximize the opportunities for park visitors to observe wildlife

To ensure the survival, in a natural state, of any element (species indicated by an asterisk in the preceding lists) identified by the DNR, Natural Heritage Program

To create and maintain waterfowl habitat by recreating the wetlands which were present before the land was drained and tilled for agriculture.

To manage deer, both the resident and winter populations, to minimize crop depredation on adjacent farmland and to minimize overbrowsing of vegetation in the park

One of the outstanding aspects of this park is that it provides wildlife habitat in an area of the state which is predominately agricultural. Only 1-2 percent of the land use in Yellow Medicine, Renville, and Chippewa counties is forested. The vast remainder of the land use is agriculture and grazing. The preservation of the land base in the park is very important in light of the valuable wildlife habitat the park provides.

Action #1. All drainage tiles and ditches not affecting private land should be located and plugged to restore original water levels.

Two areas have been identified where such restoration would provide valuable waterfowl habitat. See the areas labeled A and B on the Vegetation Management Map, p 71. The original condition of area A was most likely a large wetland. A ditch at the west end drains the wetland. The ditch should be plugged. A water level control device may be considered which would allow controlled flooding of this area. This reestablished wetland will be an attractive waterfowl breeding, feeding and resting area. Furbearers and shorebirds will also be attracted to this area.

Area B was a small prairie pothole. This pothole could be reclaimed by destroying the tile that drains it. This pothole will provide waterfowl habitat and potential nesting habitat for other birds.

The creation of waterfowl habitat is very desirable in this region where there is a limited amount of wetlands remaining. Much of this type of habitat was drained so the land could be used for agricultural purposes.

The area wildlife manager shall be consulted in the design and management of these two projects as well as any similar future projects.

	1	2	3	4	5	TOTAL
COST						

Action #2. Maintain the maximum abundance of dead standing and downed wood (snags).

The dead and dying elm trees and other species in the park are of great benefit to wildlife. The diversity and density of bird species in an area are directly related to the quality and quantity of snags. Birds use snags for a variety of purposes including: cavity nesting, drumming, roosting, hunting perches, loafing, and storing food caches. Insects found in snags are a source of food for some species.

It has been demonstrated that amphibians, reptiles, and mammals also use snags for habitat.

No dead standing or downed wood should be removed from the park unless it poses a safety hazard or is removed for development. Where possible, sound snags in high use areas should be trimmed for safety and left standing. This will increase the abundance and diversity of wildlife close to main park activities and increase the opportunities for park visitors to view wildlife.

	1	2	3	4	5	TOTAL
COST	No Cost					

Action #3. <sup>The long range goal should be to</sup> Phase out the food plots in the park and monitor the deer population.

DNR policy for recreational state park, III Resource Management; Specific Policy, #4 states.

"Agricultural food plots or other artificial feeding programs will be provided when there are no other reasonable alternatives for the protection of park resources, adjacent lands, and/or the perpetuation of a wildlife population. Where possible, wildlife will be observable in a pleasing natural setting."

Management of the deer population in state parks is often an issue of concern for a variety of reasons, namely: The park users' desire to view deer, crop depredation by deer on adjacent farmland and overbrowsing of park vegetation.



Currently the park plays a very important role in providing winter habitat for deer. The park encompasses portions of both the Yellow Medicine and Minnesota River valleys which, when combined with the Hawk Creek valley, provide a very large wintering habitat. The Hawk Creek valley extends north of the Minnesota River. Its confluence is located 1/2 mile downstream from the park. Renville County Park #1, 550 acres, located 1/2 mile to the northeast of Upper Sioux also provides winter habitat for wildlife in the vicinity of the park.

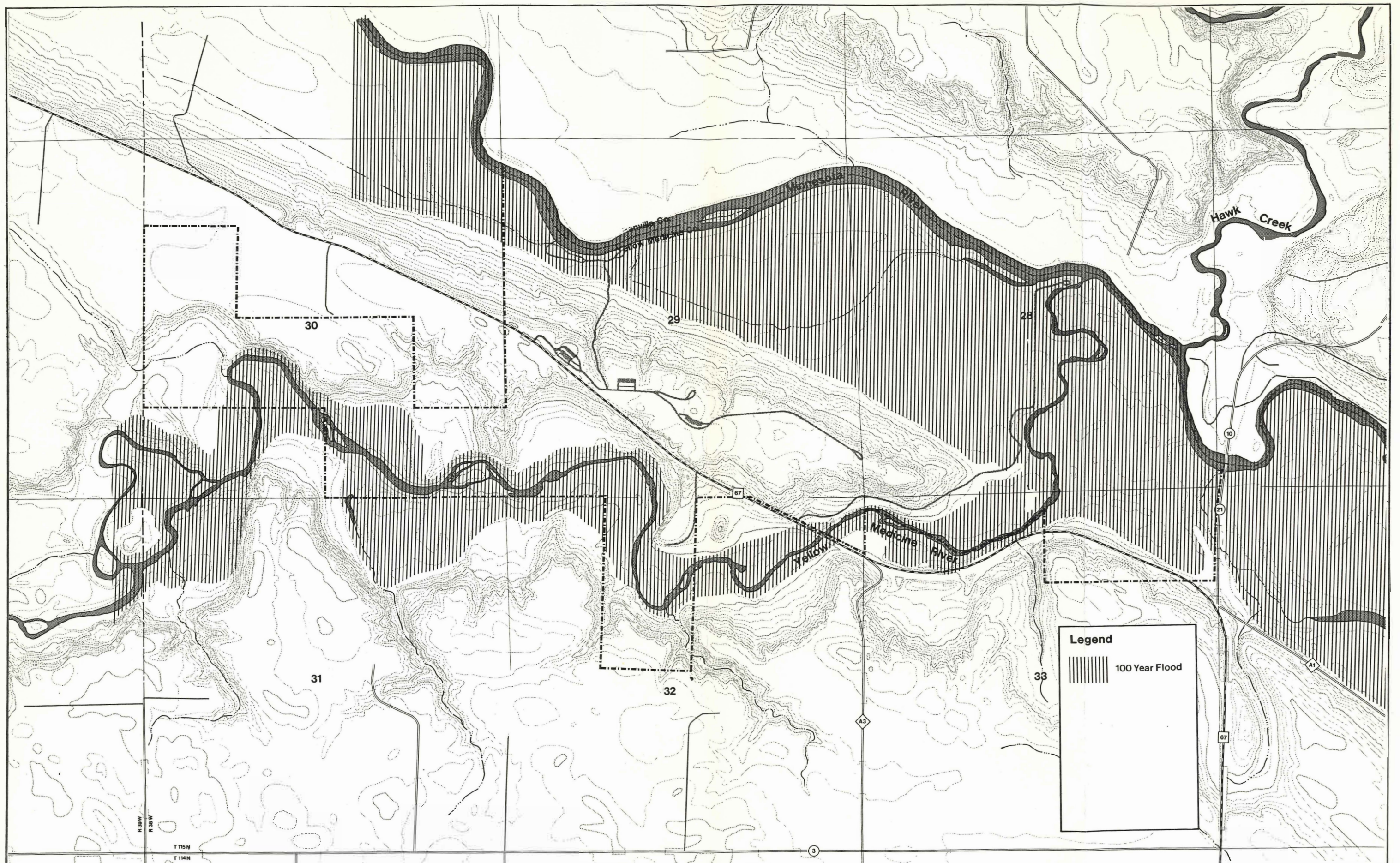
Overbrowsing of vegetation in the park could be a problem for two reasons. First deer affect species diversity in an area because they selectively eat preferred species. They may also affect form and vigor of a species because of the stress resulting from browsing. Crop depredation and overbrowsing of park vegetation are not apparent problems at this time. When overbrowsing of park vegetation prevents the vegetation management goals from being realized or crop depredation on adjacent farmland occurs, a deer management strategy should be developed. This strategy should be developed jointly by the area wildlife manager, area conservation officer, regional parks supervisor, regional resource coordinator, farmland wildlife research personnel, and the park manager. Food plots have not been proven effective for the large deer population which occurs in the park because they often attract more deer into the area artificially and are cleaned of food early in the winter season. Specific items which should be reviewed in the development of a strategy include hunting seasons in the park, modified hunting seasons in the surrounding area, supplemental feeding programs at selected locations, and deer exclosures for vegetation management.

	1	2	3	4	5	TOTAL
COST	No cost					

#### SURFACE WATER

The Minnesota and the Yellow Medicine rivers are the two most important water resources in the park. The Minnesota River is a gentle river which flows through a wide valley cut by the Glacial River Warren. The Minnesota River has an average gradient of 0.8 feet per mile and drains portions of three states: Iowa, South Dakota, and Minnesota. The entire watershed of 16,920 square miles is intensively farmed, with row crops predominating. The fertile valley floor is also intensively farmed, but has low areas which periodically flood and stay wet for extended periods of time.





P. 79

**Flood Zone**

**Upper Sioux Agency State Park**





In the past the Minnesota served as a vital highway for Indians, explorers, traders, and settlers. Today, canoeists and fishermen use the river for recreation. Canoeists using the river must portage around the dams near Granite Falls. Approximately 14 miles down river from Upper Sioux Agency, the river falls over a field of large boulders called Patterson's Rapids. These rapids are class I or easy class II at low and moderate water levels. The river has been designated a state wild, scenic, and recreational river.

Fishing is a primary recreational activity along the Minnesota River. Although carp and other rough fish predominate, many walleye, northern pike and smallmouth bass swim the deep pools below rapids, riffles, and dams on the upper Minnesota. See the Fisheries Section, p 81, for further discussion.

Swimming in the Minnesota River is not advisable. Water quality tests conducted by the State Board of Health show coliform bacteria counts in excess of state safety levels.

The Yellow Medicine River has a drainage basin of 665 square miles. This, in addition to 405 square miles of small tributary streams of the Minnesota River, combine to comprise the entire Yellow Medicine River Watershed Unit. Lakes in this watershed are relatively shallow and of limited quantity. The remaining lakes as well as the small pot holes and swamps in the watershed provide excellent wildlife habitat. Studies conducted for the U.S. Fish and Wildlife Service have indicated that in 19 western Minnesota counties the number of wetlands decreased by 40 percent during the ten year period between 1964 and 1974. This type of change has had considerable affect on the ecology of the area (Minn. P.C.A. Report to Congress, 1980).

Within the Yellow Medicine River watershed over 70 percent of the average annual precipitation occurs during the growing season. Over 90 percent of the precipitation in the watershed returns to the atmosphere as a result of evapotranspiration. The remainder returns to the groundwater system, or appears as surface runoff.

The Yellow Medicine River flows from the eastern edge of the Coteau des Prairie to its confluence at the Minnesota River. The headwaters of the Yellow Medicine are relatively clear as they flow through rapids and over gravel bars. The Yellow Medicine then flows gently across the lowland plains



over soft silty bottoms where it picks up suspended clays. The river in this lowland plain is highly channelized and flows primarily through agricultural lands. When the Yellow Medicine nears the Minnesota River, it drops eighty-five feet in the final ten miles before reaching the confluence. In this lower gorge, the stream bottom consists primarily of large rocks and boulders. The silt load which is retained from upstream heavily coats the rocks along this portion of the river.

Surface runoff is the major factor in stream flow for this area of the state. Water is stored in lakes, floodplain pot holes, and within outwash sand and gravel. It is discharged from these storage areas at a relatively constant rate correlating with annual discharge. Small drainage basins have little surface storage and therefore allow rapid surface runoff which results in relatively high peak flows of short duration. Larger basins with many lakes and swamps have a greater storage capacity which reduces the rate of runoff resulting in peak flows of lower magnitude and longer duration. These factors cause the Yellow Medicine to fluctuate more intensively than the Minnesota as a result of rains and spring snow melt.

The highest flows for the Yellow Medicine usually occur in late March as a result of spring snow melt. The greatest fluctuations in flow for the Yellow Medicine occur during the early summer months. The Minnesota fluctuates more intensely in the spring when the entire region has snow melt runoff and during times of widespread thunderstorms. The large storage capacity and overall size of the drainage area <sup>of the Minnesota</sup> typically reduces the effects of a localized storm. The minimal flows and smallest fluctuations in discharge for both rivers occur during the winter months. Flooding occurs on both rivers see Flood Zone Map, p79.

An automatic recording gauge is located on the Yellow Medicine River approximately 4 miles upstream from the park. This gauging station has recorded information from 1931-38 and 1940-65. The maximum recorded discharge at this station was 11,800 cfs. The minimum flow was no flow in 1959 due to several days of freeze up. Records indicate additional days of no flow occurred in the years 1931, 1933, and 1948.

#### Water Quality

The Minnesota Pollution Control Agency (PCA) has established criteria for the

classification of Minnesota rivers and has established standards for water quality and purity for each class. (See Minnesota Code of Agency Rules, P.C.A. 4.8015 and 4.8014 for specific information).

The Minnesota River between Granite Falls and Mankato has been classified a 2B and 3B river. The general goal of these classifications is to permit a sport or commercial fishery, allow a variety of recreational uses including swimming, and permit use of the water for general, light industrial purposes.

Turbidity is the river's most noticeable water quality feature. This is due in part to the colloidal clays present in the watershed. At periods of low flow in the winter months, the water reaches a maximum clarity of three feet or less. At normal to high flows the light penetration for the water may be as little as 6 to 12 inches.

The Minnesota River frequently exceeds PCA water quality standards for turbidity, residue total for nonfilterable suspended particles and fecal coliform. State resource management programs for the Minnesota River Watershed are directed at meeting the goals set by PCA.

The Yellow Medicine River has been classified a 2B river. The generalized goal of this classification permits a sport or commercial fishery and allows a variety of recreational uses including swimming.

The Yellow Medicine meets most PCA standards for limiting concentrations or ranges of substances. Specific standards which the river frequently exceeds are turbidity, residue total for nonfilterable-suspended particles, and fecal coliform.

The sub-standard water quality of the Yellow Medicine River is a result of agricultural runoff, increased drainage within the watershed, channelization of water courses, and to a lesser degree, natural processes and bank erosion. PCA records indicate that community sewage treatment systems do not contribute discharge which affects the water quality of the river in the area of the park.

#### Management

##### Objectives:

To restore natural drainage patterns within the park in areas where it does not negatively affect private landowners



To improve the water quality of the Yellow Medicine in the area of the park

To control stream bank erosion

Action #1. Request that the district SCS staff, in cooperation with the regional resource coordinator, develop and implement a stream bank erosion management plan for the park.

This should be a long range management plan which insures that all new development in the park and all high use areas are controlled in a manner which minimizes stream bank erosion. Stream bank stabilization programs include establishment of vegetation, modification of bank slope, rip-rap with rock along bank, and current deflection devices. Recommendations for stabilization of major cutbanks in the park <sup>except for safety</sup> should be recommended only as part of an overall erosion control management plan for the lower portion of the Yellow Medicine River. The area fisheries manager should be consulted to review all management plans to insure maximum enhancement of the stream's fishery. Use of federal monies available for erosion control should be evaluated for this park. The management plan should be reviewed by the Regional Park Supervisor, The Division of Parks and the area fisheries manager prior to implementation.

	1	2	3	4	5	TOTAL
COST	Conditional	\$10,000				\$10,000

Action #2. Reestablish wetlands within the park. (See Wildlife Section, Action #1, p 76.)

	1	2	3	4	5	TOTAL
COST						

#### Ground Water

Ground water in the Yellow Medicine River valley generally moves northeastward, ultimately discharging into the Minnesota River. The water table typically parallels the topography and on an average is probably less than 100 feet below the ground surface throughout the watershed.

Precambrian igneous and metamorphic rocks underlie the entire watershed. These Precambrian rocks yield water from weathered or fractured zones at their surface. This weathered surface is the deepest water-bearing zone in the area.

Cretaceous sandstone and shales overlie the Precambrian bedrock throughout approximately half of the watershed. In the area of the park the Cretaceous bedrock is probably continuous beneath the bluff area, but are mostly eroded away on the river flood plain. Cretaceous sandstone of sufficient thickness can locally supply adequate yields of ground water for domestic needs.

The Precambrian and Cretaceous bedrock is in turn overlain by quaternary glacial drift composed mostly of clay till and containing thin discontinuous deposits of sand and gravel (glacial outwash). This glacial drift forms the present topographic surface of the area.

Sand and gravel deposits (glacial outwash) buried at different depths in the glacial drift, are the most accessible and widely used aquifers of this watershed. The aquifers are generally thin and discontinuous, but provide adequate water supplies for most domestic uses.

In the area of the park, buried glacial outwash aquifers are most likely to be found where the glacial drift is thicker. Alluvium, outwash, and ice-contact deposits located along the Minnesota River will generally provide greater yields at shallower depths and Cretaceous rocks will yield softer water.

Ground water quality is dependent upon the aquifer from which the water is obtained and on the subsurface flow system. Ground water throughout the watershed varies in hardness but in most instances is generally very hard, with high concentrations of dissolved solids. In alluvium, surficial glacial outwash and ice-contact deposits the water varies from soft to hard. In buried glacial outwash, hard to very hard calcium sulfate type water occurs. Cretaceous aquifers generally have moderate to very hard sodium fluoride type water. Wells located in areas where groundwater movement occurs may have intermediate water qualities result from the mixing of the various ground water types. The geology of the park makes it possible to encounter a variety of ground-water types

Records indicate that in the area of the park along the Minnesota River bottom most glacial drift and alluvial water supplies are from wells commonly less than 40 feet in depth. In the bluffs adjacent to the Minnesota River bottom, wells can be from 40 to over 200 feet in depth.



The main park well in the MHS site located on the bluff adjacent to the Minnesota River, is 246 feet in depth with a static water level at 173 feet. The geology at the well site consists primarily of glacial till (clay and sandy clay) to 136 feet, from 136 feet to 235 feet is Cretaceous shale and from 235 feet to the bottom of the well is the Cretaceous sandstone aquifer which supplies water to the well.

Five additional wells are known to be located in the park. Several of these should be evaluated to determine the volume and quality of the water supply.

Three wells are located below the bluff in the east end of the park. Two of them provided moderate volumes of water when they were in operation. The well at the manager's residence has limited capacity for a water supply. It does not appear that the manager's residence water supply could provide supply for additional uses. The old home site in the southwest quarter of the park along the Yellow Medicine River had a well which provided moderate supplies of water when in operation.

#### Management

##### Objectives:

To provide an adequate supply of good quality drinking water for park use

To protect groundwater from contamination by park development

Action #1. Cap off all unused wells in the park.

All abandoned wells in the park which are not designated for future use should be capped off in accordance with the Minnesota Health Department specifications.

	1	2	3	4	5	TOTAL
COST	\$4,000				\$4,000	

Action #2. Verify through the Department of Health, Southwest District that park wells meet health standards.

	1	2	3	4	5	TOTAL
COST	No cost					

Action #3. Take corrective measures to prevent staining of fixtures and encrustation of well screens.

	1	2	3	4	5	TOTAL
COST	To be determined					

## FISHERIES

The Minnesota and Yellow Medicine rivers provide opportunities for fishing in the park. These rivers can be considered a good warm water fishery. There are over 60 species of fish whose occurrence has been documented in the Minnesota River and its tributaries. The DNR River Surveys Project conducted an electrofishing survey of the main stem of the Minnesota River in 1980. Electrofishing is a sampling technique used to temporarily immobilize fish within a small area by introducing an electric field into the water. Fish can then be netted, identified, weighed, measured, and returned to the water unharmed.

Following is a list of species which are likely to occur in the Minnesota and Yellow Medicine rivers based on the electrofishing survey of 1980 as well as earlier documentation.

Shovelnose sturgeon  
Smallmouth buffalo  
Largemouth buffalo  
Golden redhorse  
Shorthead redhorse  
Silver redhorse  
Greater redhorse  
White sucker  
Northern hog sucker  
Carp  
Golden shiner  
Creek chub  
Pearl dace  
Blacknose dace  
Northern redbelly dace  
Southern redbelly dace  
Hornyhead chub  
Speckled chub  
Silver chub  
Brassy minnow  
Stonecat  
Dogfish  
Walleye

Quillback  
Northern longnose gar  
Shortnose gar  
Goldeye  
Gizzard shad  
Northern pike  
River carpsucker  
Common shiner  
Emerald shiner  
Bigmouth shiner  
Sand shiner  
Spotfin shiner  
Mimic shiner  
River shiner  
Central weed shiner  
Rosyface shiner  
Flathead minnow  
Bluntnose minnow  
Stoneroller  
Black bullhead  
Channel catfish  
Flathead catfish  
Yellow perch



Blackside darter  
Eastern banded darter  
Rainbow darter  
Freshwater drum  
Largemouth bass  
Green sunfish  
White crappie  
Orangespot sunfish

Sauger  
Slenderhead darter  
Johnny darter  
Fantail darter  
Iowa darter  
White bass  
Smallmouth bass  
Brook stickleback

A species of special interest is the greater redhorse. The 1980 DNR fisheries survey of the Minnesota River recorded the presence of this species in scattered segments of river between Granite Falls and Redwood Falls. It can be considered a rare species in this state due to its limited distribution and abundance in Minnesota. This species is found in segments where the bottom is rock or gravel and the water is flowing fast.

Excluding minnows and other small fishes, an electrofishing catch from a large warmwater stream in Minnesota typically is 14-20 percent game fish.

Preliminary analysis of current survey work and past investigations demonstrates that the Minnesota River compares favorably where there is good habitat. In those portions of the river where habitat is poor (predominantly silt or sand substrate, unstable shorelines, very low water velocity, and lack of snags and other instream cover), the percentage of game fish is often considerably less.

Flathead catfish, channel catfish, walleye, and sauger are the species of primary interest to the angler. Catfishing is one of the most popular types of angling. Anglers in the park report good catches of *Largemouth Bass & northern pike*

When the Minnesota was surveyed for mollusca in 1947, 35 species were found to inhabit the river's drainage system. One of these, the Higgin's eye mussel has been on the endangered species list since 1976. This large mussel was at one time common in the Mississippi and other large midwestern rivers. Now threatened with extinction, it is believed to be restricted to limited areas of the Mississippi and St. Croix rivers. Its reduction in numbers is the result of erosion and other forms of water pollution, dam building, dredging, and quarry operations. A 1978 survey of the Minnesota River did not reveal the presence of the Higgin's eye mussel. Only 20 other mussel species were found in the river.

Little is known about fish spawning in the Minnesota River. Its periodically heavy silt load and extreme water level fluctuations adversely affect reproduction, feeding, and the general health of many fish species. The species most sought by anglers are those which have low tolerance for such conditions. The portions of the Minnesota River and its tributaries where fish have access to current swept rock and gravel substrate are very important. There is habitat of this type available in the Minnesota and Yellow Medicine river adjacent to the park. These areas provide spawning habitat, food organisms, and conditions important to certain life stages of many game and nongame fish species and a variety of other aquatic organisms. It is important that these areas be protected to ensure that the fishing resource is continued.

Changes in land use practices could do much to enhance the fisheries and overall quality of the <sup>Yellow Medicine and</sup> Minnesota Rivers in the vicinity of the park, as well as preserve valuable agricultural land. Techniques to retard excessive runoff would reduce sediment and associated pollutants in the streams and wetlands of the watersheds and would serve to reduce environmentally damaging extremes in stream flow.

The establishment and perpetuation of a strip of natural vegetation adjacent to the rivers has a positive impact on the fishery as well as on the water quality, wildlife, and scenic beauty of the river.

#### Management

##### Objectives:

To enhance the fishery of the Yellow Medicine and Minnesota rivers

An improvement in the water quality of the Yellow Medicine and Minnesota rivers would improve the fishery in the park. The scope of the water quality problem goes beyond the boundary of Upper Sioux Agency State Park and encompasses the entire watershed. If the water quality is to be improved, changes in land use practices must occur throughout the entire watershed.

There are <sup>some</sup> actions the DNR can take to improve the fishery in the park.

Action #1. Stabilize streambank erosion.



This will improve fish habitat by reducing the amount of sediment in the water and improving water quality and the quality of the stream bottom.

One particular area which needs immediate attention is the confluence of the Yellow Medicine and Minnesota rivers. The northwestern bank of the Yellow Medicine is eroding very rapidly. This erosion should be stabilized as soon as possible. One possible technique is to anchor snags to the bank *to channel the water away from the bank.*

There are other areas along the Yellow Medicine which need stabilization. Park personnel should work in conjunction with the area fisheries manager and the Soil Conservation Service to determine which areas should be stabilized and the appropriate method to be used (see Surface Water, Action #1, p 84).

Action #2. Remove enough snags from the confluence of the Yellow Medicine to allow the passage of canoes upstream.

The Minnesota and Yellow Medicine rivers are public waterways which can be enhanced for boating and canoeing. Removal of snags will provide canoe access from the Minnesota for fishing in the Yellow Medicine River. It will also allow canoe access from the proposed campground location to the Minnesota River. It should be stressed that the number of snags removed should be as few as possible because snags provide valuable fish habitat.

#### ARCHAEOLOGY / *History*

The Minnesota Historical Society (MHS) has recorded 57 archaeological sites along the Minnesota River Valley between Redwood Falls and Montivideo. The majority of these sites are pre-historic. Many are in the area of Granite Falls and east along the river bluffs. Records do not indicate any significant pre-historic sites in the park. Since the Minnesota River was a major travel route and hunting area for pre-historic cultures, it is not uncommon to find Indian artifacts along its bluffs. Some artifacts were found during historical research excavations by MHS which may indicate use of park bluffs for Indian camps prior to European settlement.

The MHS conducted extensive archaeological surveys and excavations at the Upper Sioux Agency site between 1968 and 1972. An archaeological survey in 1968 located six brick structures and several wood frame buildings. These archaeological excavations have provided good records of the agency buildings,

their size, use, and architectural structure. Only minor work has been done to locate and document the many archaeological historic sites in the area surrounding the agency (See Historical Resources Map p<sup>99</sup>).

## HISTORY

The Minnesota River is a large placid river that slowly winds through the rich, fertile farmland of southwest Minnesota. This river was once an essential highway for the Indians, explorers, traders, and settlers. One of the first explorers of the Minnesota River was Pierre Charles LeSueur in 1700. The French and English explorers named the river St. Pierre after Pierrerr Charles LeSueur. This name continued up until 1849 when a request was made to the president of the United States that the name of this river be changed to Minnesota. This was accomplished on June 19, 1852 by an act of Congress.

During the 1840s, the explorers, settlers, and land speculators had heard how fertile the land was and wanted the area to be opened up for white settlement. It was then that the U.S government started putting pressure on the Indians to sell some of their lands. In 1851, the tribes that were living along the upper Minnesota met at Traverse de Sioux, near the town of St. Peter, to discuss the possibility of signing a treaty. An agreement was reached in July and a treaty was signed that sold land to the government and created a reservation that would be known as the Upper Sioux Agency. In August, the tribes that lived along the lower Minnesota River also signed a treaty which sold land and created for them a reservation called the Lower Sioux Agency. The two treaties were very similiar in that they both persuaded the Dakotas to sell 24 million acres that extended into Minnesota, Iowa, and South Dakota. The Upper Dakota (Sioux) received a piece of land allocated for the reservation that was 10 miles wide on either side of the Minnesota River from Lake Traverse to the Yellow Medicine River and the lower Dakota (Sioux) received a similar strip of land which extended from the Yellow Medicine River to the Little Rock River.

The Upper Sioux Agency which was in existence between 1854 and 1862 was the headquarters for the administration of Indian affairs of the Sisseton and Wahpeton bands of the Dakota Sioux. These two bands were then residing on the upper reservation along the Minnesota River.



Construction of log buildings for the Yellow Medicine or Upper Sioux Agency was begun in the summer of 1854. This first settlement was located in the floodplain along the Yellow Medicine River. It was later moved to the bluff top site. The Upper Sioux Agency was established in hopes of teaching the Indians the "white man's" way of living. In 1855, work at the Upper Sioux Agency was performed under the direction of Andrew Robertson. He reported that 10 acres had been planted to potatoes, oats and corn and twenty more had been broken.

In 1857, Joseph R. Brown was appointed the agent for the reservation. In that same year Brown made the Upper Sioux Agency the headquarters for the entire reservation and continued to operate the Lower Agency as a minor administrative center. It was at the Upper Sioux Agency where the Indians were paid their annuities each year and where the trading took place.

Joseph R. Brown was a powerful and forceful individual. When he became the agent, he began to institute some specific reforms such as requiring the Dakota Indians to have their hair cut and not allowing them to wear their beads and body adornments. A conversion project of Brown was to turn the nomadic tribe into farmers. This proved to be unsuccessful.

Frame structures became more common when two saw and grist mills at the Upper Sioux Agency and one at the Lower Sioux Agency began producing lumber in late 1858. The exact locations of over 100 buildings built throughout the reservations were never found in the agency records.

The brick structures were erected after 1859 "...construction of the brick Agency Buildings was because of the shortage of timber along the river bottoms." (Brown to Cullen, written communication, September 10, 1859). These brick agency buildings were destroyed during the Dakota Uprising of 1862. Most were used less than three years.

Brown was replaced in 1861 by another political appointee, Thomas J. Galbraith. His insensitivity and arrogance caused continued hardship between the Dakota and the settlers.

By 1862 the tensions were approaching a breaking point. In the summer of 1862, the government annuity payments were late, food supplies were extremely

low and the crops were not producing. The Dakota had finally lost all patience.

On August 17, 1862, an incident occurred which triggered the series of events leading to the Dakota uprising of 1862. A band of four Dakota hunters, who were from the Lower Sioux Agency, attacked a small family farm in Meeker County, killing five white settlers. When these young Indians returned to camp they proceeded to tell their story to Chief Red Middle Voice. They then traveled during the night to meet with Chief Little Crow to hold a council.

In the beginning Little Crow was not in favor of war. When he realized that he could not talk the young braves out of war, he gave orders for an attack on the lower agency at dawn.

Very early on August 18, the news of the attack by the Dakotas reached the Upper Sioux Agency. In the afternoon, a council was held to decide whether or not the Upper Sioux tribes should join the Lower Sioux in warring against the settlers. There was a very heated discussion between the council members and no real decision was made. John Otherday who was the spokesman of the Upper Sioux was against the idea of a war. He warned the people in the agency of the possible attack. John Otherday gathered white agency residents into the brick warehouse and stood guard outside all night. On the night of the 18th, the Indians attacked and burned the Upper Sioux Agency trading stores. The next morning, Otherday successfully led the 62 white refugees from the warehouse across the Minnesota River to Cedar City in McLeod County.

Many famous battles were fought near the Minnesota River between August and October of 1862. The war was almost over by mid-September. The uprising resulted in the destruction and elimination of the Upper Sioux Agency and also led to the dispersement of the Dakota Indians from Minnesota. The uprising also contributed to many of the Indian wars of the 1870s and 1880s.

The Minnesota River has affected the commercial, industrial, and historical development of southwestern Minnesota. Much of Minnesota's early energy source and industry development has been dependent on the role played by the Minnesota River. As the railroads came into play, river travel was replaced.

Upper Sioux Agency State Park is founded on the historic remnants of the Indian Agency which saw the last days of the Dakota Sioux as a nation.



Upper Sioux Agency State Park was established in 1963. The park is located approximately 8 miles southeast of Granite Falls and is situated on a bluff overlooking both the Yellow Medicine and Minnesota rivers. The present statutory boundary contains 1,280 acres, 1,066 acres are in public ownership. There is still some private ownership of land within the park's statutory boundary.

Included within the park is the Upper Sioux Agency Historic Site where the Upper Sioux Agency was located. One original agency building, the employees' duplex, is still standing. This represents the construction of the first duplex in Minnesota, dating from 1860. This building has been restored to its original appearance.

During the summers of 1968 and 1969, some archaeological work was done on the MHS site. The exposed foundations of five brick structures were located, they are: a prison, a warehouse, a duplex, a manual labor school, and a bake house. (See Historic Resources Map, p<sup>99</sup>.) Also examined were the seven cellar depressions of wood frame houses, two root cellars, and five brick cisterns. Future plans are to continue archaeological excavation and interpretation of the site. MHS hopes to locate a blacksmith shop and <sup>more of</sup> the agency structures.

Architectural interpretation is hindered because of the lack of plans and photographs, but the combination of the archaeological evidence and the one building that is still standing suggests an unusual architectural design. According to the Minnesota Historical Society, no similar buildings appear to have existed anywhere else in Minnesota or the midwest.

Several additional historic sites are located on adjacent private land or state land managed for state park purposes, they are; an old school house, several mills, a brick kiln, a cemetery, a stage coach stop, and an abandoned town site. Little research has been done to document the actual location of these sites. (See Historical Resources Map, p<sup>99</sup>.) The historic significance of this area has been noted by its placement on the national register of historic places. Further research and development should be conducted to locate, protect, and interpret all of the historic resources of the park for the public.

## Management

### Objectives:

To preserve and protect all prehistoric and historic sites in the park

To interpret prehistoric and historic use of the park and surrounding area for park visitors

To encourage archaeological and historical research that will increase the existing knowledge of prehistoric and historic human activity in Minnesota

Action #1. Field check proposed development sites for the presence of prehistoric or historic remains before any work is begun.

The park development plans should be reviewed with the state archaeologist and State Historic Preservation Office in accordance with state and federal laws. Where remains are found, an assessment will be made to determine the size and importance of the site. Where archaeological or historic

{ State law requires that any changes which impinge upon or may possibly alter the historical areas be reviewed by the Minnesota Historical Society, and obtaining written permission from the Society prior to making change is mandatory.



sites may be endangered or encroached upon by construction or development activities, relocation of the development will be considered. The cost of these field checks will vary based upon recommendations from the state archeologist.

	1	2	3	4	5	TOTAL
COST	\$5,000					\$5,000

Action #2. Burial grounds in the park should be identified and marked where appropriate.

An early cemetery has been documented near the park. In addition, local citizens are concerned that there are Indian burial sites in the park. All burial sites are protected by the Minnesota 1980 Burial Act 307.08 which prohibit unauthorized excavation. The Inter-tribal Indian Affairs Board and the Granite Falls Area Dakota Indian Tribal Board must be contacted prior to marking of any Indian burial site, so that all work meets their approval and is performed in accordance with their standards.

The state archeologist must be consulted prior to doing any signage or work around a burial or archaeological site.

	1	2	3	4	5	TOTAL
COST	\$5,000					\$5,000

Action #3. Conduct research to document and locate all significant historic sites.

All historic sites related to the establishment and operations of the Upper Sioux Agency should be documented and field checked. This should be done in cooperation with the MHS. All locations should be marked and interpreted for the public. The Yellow Medicine town site should also be located and interpreted. All information collected should be made available to the regional naturalist and the MHS site manager. (For further discussion, see Interpretive Section, p119.)

	1	2	3	4	5	TOTAL
COST		\$15,000				\$15,000

The DNR, Division of Parks and Recreation should work with the MHS to establish and promote coordinated programs and to interpret historic and natural resources and resource management. These programs should include special events, scheduled naturalist programs and slide and film presentations. The goal of these programs should be to encourage the public awareness of the park's resources. The development of these programs will require a part-time naturalist staff position or direct programming from the regional naturalist and resource coordinator. Community assistance should be encouraged in the development of these programs. Special contracts may be considered for specific projects.

Action #5. Develop a permanent slide/tape program to be presented at the Historic Site in conjunction with the Historic Site presentation.

A cooperative agreement with the MHS should be reached to allow the showing of a park resource program in the historic site visitor center. This program should present to the public a time line of the park's resources and the changes which settlement has brought to them. It should be an educational tool which is designed for school groups as well as the general public. The slide/tape program should be coordinated with the naturalist trails and brochures which will be developed for the park. It should inform the visitors of the interpretive features and recreational facilities. [REDACTED]

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Action #6. Develop a historical agency setting to portray the style and quality of life during agency days.

This will require an additional literary search to document the setting of the agency. Along with the location of the building sites, the descriptions and typical layouts for the livestock areas, garden and field plots and roads should be documented. The life style and setting of the agency could be portrayed through the location of additional building foundations and planting of typical garden and field crops.

The on-site use of steel photo plates to interpret the people and their dress, and displays in the MHS historic site visitor center of agency artifacts may be used. This should be a self-guided tour of the agency site which portrays the agency and agency life. It can also be used as the setting for related historic programs. This should be a joint program between MHS and DNR. The community should be encourage to assist in the development of this program.

	1	2	3	4	5	TOTAL
COST		\$1,500	\$3,000	\$3,000		\$7,500







# PHYSICAL DEVELOPMENT AND RECREATION MANAGEMENT

## EXISTING DEVELOPMENT

### Lower Campground (Undesignated)

30 sites (semi-developed)

4 pit toilets

### Upper Campground (undesignated)

7 sites <sup>≡</sup>(Primitive)

2 pit toilets

### Upper Picnic Area

20 tables

7 fire rings

shelter building 20 x 50 ft.

3 water spigots

50 parking spaces

2 vault toilets (handicap accessible)

### Lower Picnic Area

3 tables

3 fire rings

1 pit toilet

7 parking spaces

### Water Access

concrete ramp in campground w/o designated parking

### Trails

9 miles snowmobile

9 miles hiking

### Sliding

single run, steep slope

### Interpretive Facilities

Building with flush toilets/manager's office/meeting room



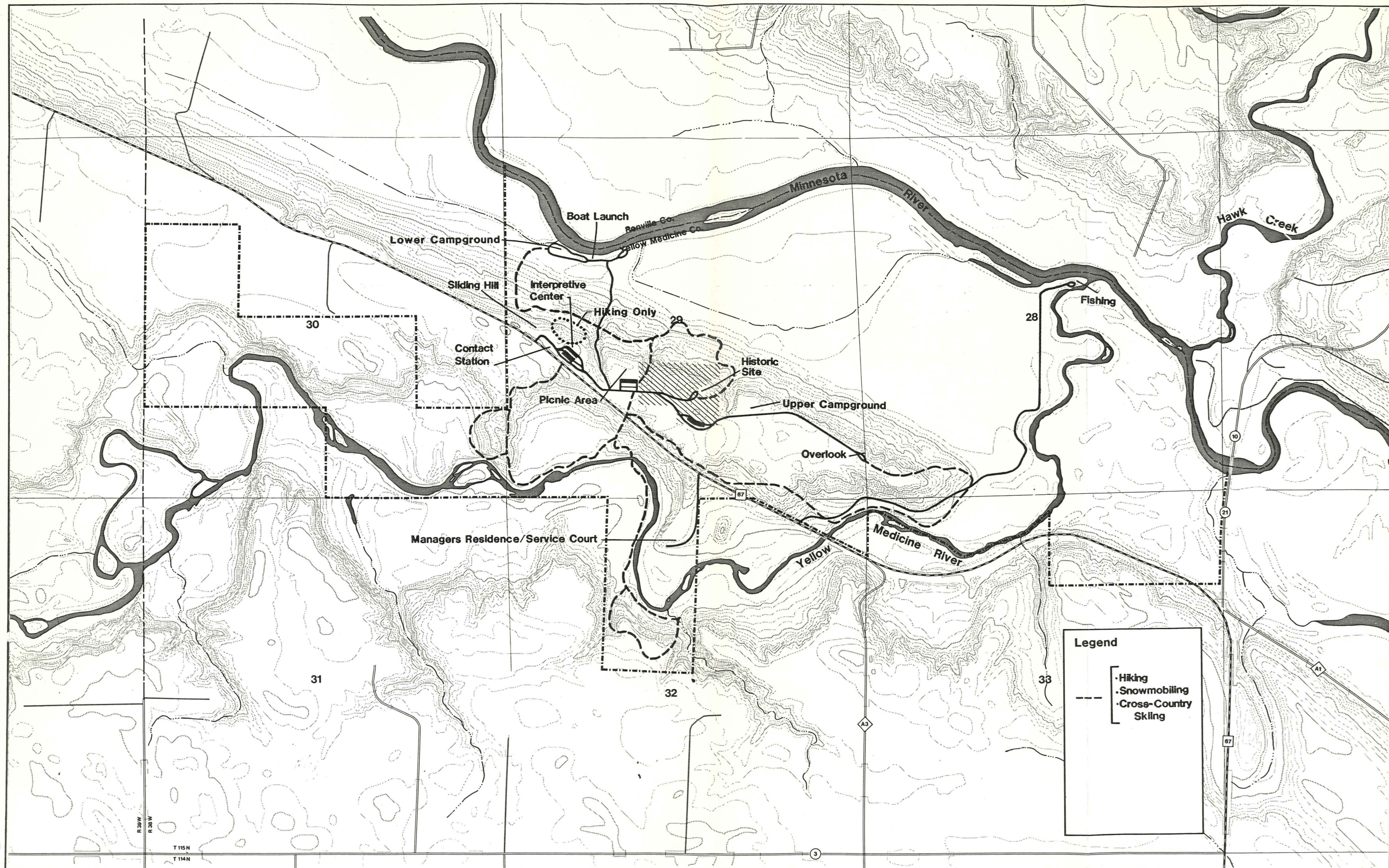
### Administrative Facilities

- contact station
- garage/storage building
- manager's residence
- manager's office in interpretive building

### Historic Site

- 19.3 acres MHS administered
- DNR park building 36 x 20 ft.







## RECREATION MANAGEMENT OBJECTIVES

### Objectives:

Park development should ensure the opportunity for the public to experience, study and enjoy the natural, and historical resources of the park in the most efficient manner of management and operations possible

To locate park development where it will have the least impact on sensitive natural or historical resources, will not detract from the enjoyment of other users, and will allow easy access to areas of high scenic or study value

To ensure physical accessibility and the opportunity to participate in programs by special populations (i.e., persons with physical disabilities, the elderly, and the very young)

### Camping

Camping is currently not promoted for the park. The existing facilities do not have adequate access or readily available drinking water. This area of the state has a shortage of good camping opportunities (SCORP 1979).

Vehicular camping opportunities of a quality different than the state park can provide are available nearby. Designated primitive youth group camps, horseman's group camps and canoe group camps are not available in this area.

### Objectives:

To provide a variety of user types with the opportunity to experience the park on a 24 hour a day basis

To provide a variety of group camping opportunities

To provide facilities which will enhance use of this park for camping

### Discussion

Extensive consideration and review was given to the location of the designated camping opportunities to be provided in this park. Several areas within the park were considered for campground locations (See Proposed Development Map, p115). Sites labeled A, C, and H were eliminated because of poor accessibility, poor supervision, frequent flooding potential, security, or impacts on other park uses.

The remaining sites were evaluated for their ability to satisfy the criteria for each type of camping opportunity proposed for the park. Criteria for

locating each camping opportunity is identified and the site alternatives discussed. The cost for development and long term maintenance is considered in addition to the evaluation of each site as to its capability of accommodating a particular kind of campground.

### Vehicular Camping

Several criteria were evaluated in determining suitable locations for a vehicular campground. The area must have suitable soils able to withstand the proposed use. The frequency and severity of flooding were considered. Access to the campground should be located out of the 100 year floodplain. The campground should be located in an area that does not negatively impact the outstanding cultural and natural resources of the park. A location that was near water, had good air circulation, and was aesthetically pleasing was desirable. A site that offered privacy, and was secure was important. The availability of <sup>Drinking</sup> water was an important consideration. The potential for expansion of the campground in the future is necessary to ensure the opportunity for growth. The proximity of the site to other park use areas was important to ensure easy access by campers.

Site locations D, E, G, and J were considered. Site J was considered optimum. Site E was eliminated because of the <sup>environmental</sup> problems and high cost of providing <sup>good</sup> road access. Site G was determined not suitable because it was not located near water and potential conflicts with day users would be created. Problems which would occur at site D included limited supervision, <sup>limited drinking water,</sup> and poor proximity to the historic site, hiking trails, and other opportunities in the park.

### Horse Rider Camping

This camping facility requires separation from other users to avoid undue disturbance of horses which could cause harm to horse or individuals. Accessibility is a concern in that the vehicles are heavy and are frequently pulling long trailers. Roads must be maintained in good condition and have moderate grades. All surfaces where horses are loaded and ridden should not be asphalted. This facility should provide easy riding and hiking access to the historic site. It should provide easy access to the horse trail system. Shade is required for tethering horses during the day. In conjunction with



this, tethering posts or fences must be provided to avoid damage to trees from tying of horses to them. Security is needed for this facility.

Site locations A, B, D, H, I, and J were considered. Sites B and J were optimum.

Site A did not provide adequate privacy, services or access to other park facilities.

Site D provided neither adequate shade nor good access to the historic site or horse trail system.

Site H was less suitable due to high visibility of the area from the park overlook, frequent flooding potential, and proximity to day use facilities. Site I was considered and determined to be too small of an area with moderate to poor soils, was located adjacent to an area of soils unsuitable for all trail uses, was too close to day use areas and was restricted by steep slopes.

Site J is located closer to the proposed day use and parking areas which afford less separation and security than Site B. Both sites J and B have available water which must be evaluated for capacity and quality. For Site B an existing access road and large potential camping area are located out of the 100 year flood plain of the Yellow Medicine River, the area is aesthetically pleasing, and soils have only slight limitations for picnicking, camping and trail uses.

Current problems which exist with Site B include the steep gradient of the access road, part of the access road is located on private (and, soils are moderate to severe for the development of new roads, but the existing road could be upgraded and public access into this portion of the park would result in an additional entrance to supervise.

An access easement, land acquisition or land exchange would be required to provide the public vehicular access to Site B. A reservation system and a park gate would be required to improve supervision and management of this site.

## Group Camping

Group campers are typically more boisterous and require designated areas for large group activities. This facility should be located away from the vehicular campground where visitors are frequently enjoying quiet, more passive recreation activities. Some level free play areas are desirable for organized games and activities. Access is frequently by bus which requires a good road, moderate grades, and adequate turnaround area near campsites. The group camp users normally want privacy and security, therefore should not be located near high use day areas of the park.

Good access to the historic sites and interpretive trails should be provided. Site locations D, E, and J were considered. Sites D and J was optimal. Site D allowed for limited supervision. Site E was not accessible by a bus and would require major road improvements to ensure safe egress in all weather conditions.

## Canoe Camping

This camping facility should be located along the Minnesota River to ensure access in all types of canoeable water conditions. It should provide privacy from other park users, security for equipment, access to the park's interpretive facilities, vehicular access for emergencies, maintenance and supply delivery.

Site locations E, F and H were considered. Site E was optimal. Site F was also considered good, but was less protected from flood waters, less accessible to park interpretive facilities, and required more development to provide an acceptable service drive and toilet facilities.

## Recommendations

Action #1. Provide five temporary primitive <sup>(vehicular)</sup> camping sites at Site G.

These sites should be used only until the new campground is developed. <sup>Parking spurs should not be developed.</sup> They should be identified on the state wide information handouts for state parks.



Action #2. Develop a vehicular campground at site J.

For justification of why this site was selected, see the Discussion section, p 108. Approximately 20 sites should be developed initially. Water and vault toilets should be provided to enhance use of the area. Planting of trees will be required (see vegetation Action #6, p 108 for species lists).

	1	2	3	4	5	TOTAL
COST	\$55,000					\$55,000

Action #3. Expand the number of sites and consider the addition of electricity in the vehicular campground if future use warrants.

If the campground is filled to capacity frequently and it appears the trend will continue in the future, increasing the number of sites can be justified. Installation of several electric sites should be reviewed for this park.

	1	2	3	4	5	TOTAL
COST	Conditional					

Action #4. Construct a sanitation building with showers and flush toilets if future use warrants.

This building should be designed to withstand floods or be located out of the 100 year flood zone.

	1	2	3	4	5	TOTAL
COST	Conditional	\$85,000				

Action #5. Develop a horseback rider campground at Site B.

For justification of why this site was selected, see the Discussion section, p 108. This area should include designated parking areas, picnic tables, fire rings, vault toilets, drinking water, and horse tieup facilities. Development of an access road is required. Trees should be planted to enhance the area. A horse watering facility is desirable.

	1	2	3	4	5	TOTAL
COST		\$9,000				\$9,000

Action #6. Develop a group camp at Site J.

For justification of why this site was selected, see the Discussion section, p 110 . Drinking water, vault toilets, picnic tables, fire rings and a council ring should be provided. Construct a shelter (see Sliding, Action #3, p 113 ). Some planting of this site is necessary to create a shady, pleasant camping environment.

	1	2	3	4	5	TOTAL
COST		\$9,000				\$9,000

Action #7. Modify the existing lower campground, Site I, to accommodate canoe camping and day use fishing.

Facilities which should be included are toilets, canoe access points and if possible, drinking water. The area is currently larger than need be so mowing should be limited to select portions of the site and natural succession should be allowed to proceed on the unmowed area. One large group area and several smaller individual campsites should be maintained. Where necessary shrubs should be planted to provide privacy screening between camp sites. This facility should be available to groups by reservation.

All

loading and unloading of canoes should be done at the proposed water access site. <sup>at the confluence of the Yellow Medicine River.</sup> Buses shall not be allowed down to the campground.

The east end of the existing campground should be screened and closed off from the canoe campsites. This area should be made available for day use by picnickers and fishermen. The area should retain the existing picnic tables, fire rings, and toilets. Parking should be modified <sup>to be further from the river banks and screened</sup> when use warrants. The access road should be improved to accommodate passenger vehicles only. All large vehicles, campers and trailers should be restricted from this road due to safety concerns. The road should be gated to accommodate closing during periods of poor road conditions.

	1	2	3	4	5	TOTAL
COST	\$2,000	\$2,500				\$5,500



## Sliding Hill

### Objective:

To provide a safe and diverse sliding opportunity in the park.

Action #1. Relocate the sliding hill from the present site to the end of the ridge in the east end of the park.

The proposed site is <sup>much larger</sup> more desirable for several reasons. This area provides more diverse sliding opportunities. There are both easier, shorter runs for small children and challenging runs for older children. The area is more open than the existing site and there are less obstacles. It is a safer sliding area. Snow fencing will be required at the upper portion of this hill to protect areas of fragil prairie and soil from erosion which would result from recreational use of these areas for sliding.

See this section Actions #2 and #3, and Roads, Action #3, p128 for discussion of related facilities.

	1	2	3	4	5	TOTAL
COST	No cost					

Action #2. Develop a gravel parking area with a 30 car capacity and an overflow grass area for 30 additional vehicles.

This area will provide parking for the sliding hill as well as other winter trail users. A level overflow parking area should also be provided adjacent to the designated gravel parking area. The overflow area should be plowed to insure adequate winter parking when needed. The gravel parking lot should be designed to accommodate horse trailer, and trail user parking along with overflow parking for the group camp and vehicular campground. This parking lot should be well separated from the camping area and screened. (See Roads Action #3, p. 128 for added discussion.)

	1	2	3	4	5	TOTAL
COST	\$11,000					\$11,000

Action #3. Provide a winter shelter building approximately 20'x25', and toilet facilities in the winter day use area.

The shelter building will provide a place for sledders and winter trail users

to warm up and eat a meal. This shelter should be simply designed, insulated and perhaps 3 sided and contain a fireplace, electricity, picnic tables, and winter trail information. Removable panels should be considered on the fourth side. This building should be located and designed to accommodate summer use from the group camp. Vault toilets<sup>only</sup> accessible from outside the building ~~it may~~ should be considered. Heating of this building during non use times should not be necessary. (see MPD for more information).

	1	2	3	4	5	TOTAL
COST	\$22,000					\$22,000

Action #4. Plant the existing sliding hill with large trees to discourage use.

This will encourage use of the new sliding hill location and discourage use of the existing site. Plantings should begin at the top and all mowing should be stopped. Species planted should include those found in the hardwood forest areas in the park including green ash, bur oak, and basswood.

	1	2	3	4	5	TOTAL
COST	\$6,000					\$6,000

### Picnicking

#### Objectives:

To provide a location where people can eat in the out-of-doors within close proximity to the major day use activities.

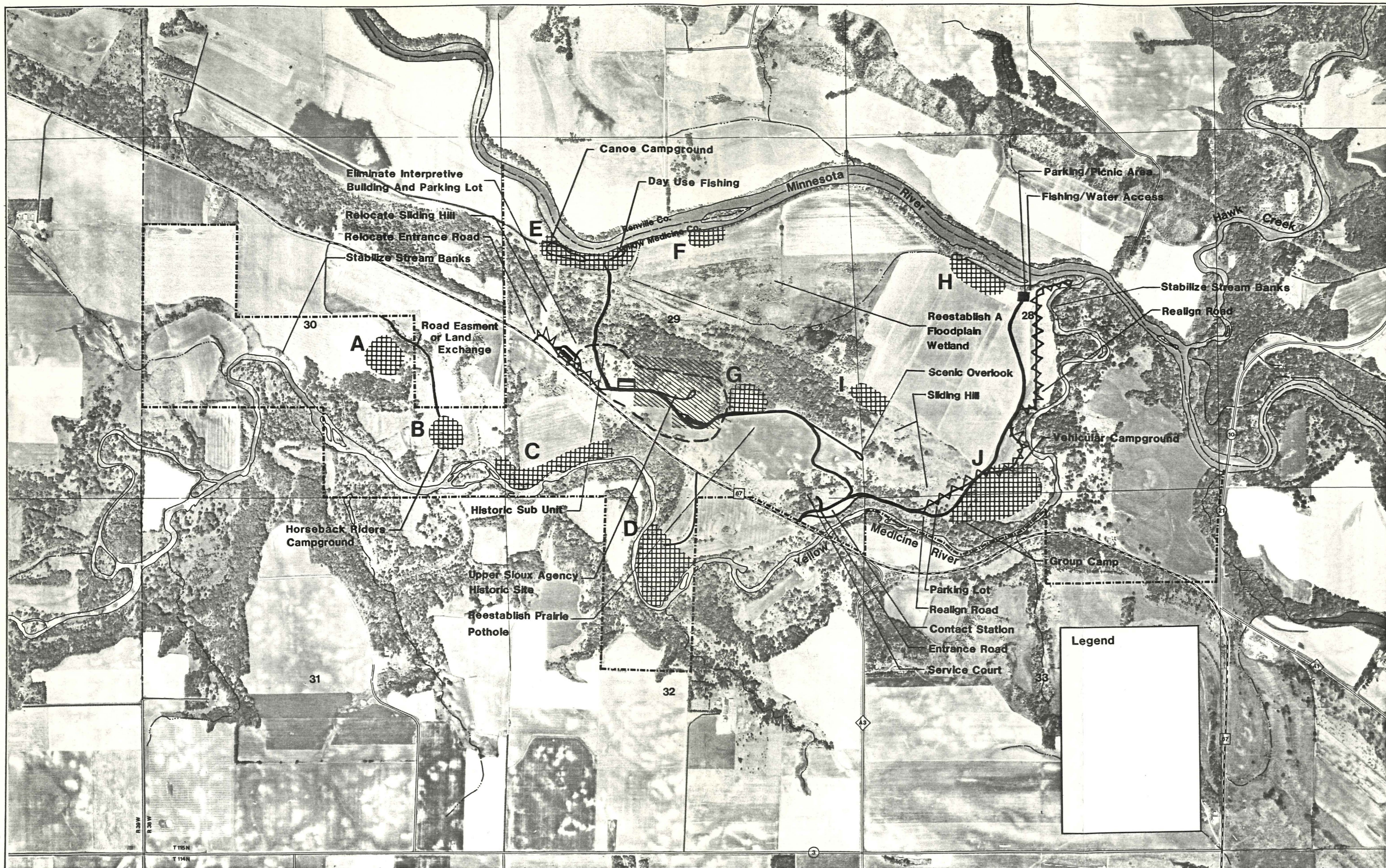
Action #1. Modify the parking lot at the existing picnic grounds.

The parking lot may require redesign and modifications to accommodate appropriate interpretation of this<sup>historic</sup> area. The Agency setting will be recreated to whatever extent possible. Historical interpretation will be the primary use of this site.

	1	2	3	4	5	TOTAL
COST	Conditional					

Action #2. Construct a sanitation building if future use warrants.







This facility will be used by both picnickers and historic site visitors. The building should be designed to be as visually unobtrusive as possible. The building should not be visible from the historic site. This is to ensure that the building will not intrude on the recreated agency setting.

	1	2	3	4	5	TOTAL
COST	Conditional				\$85,000	\$85,000

Action #3. Expand and improve the picnic area near the water access at the confluence of the Yellow Medicine and Minnesota rivers.

This area is currently used for day fishing. Expanding and improving this site is meant to encourage use of the area. The existing area will be expanded to the west and trees planted to create a shady, pleasant spot to picnic. Additional parking area for 5 cars, fire rings and picnic tables will be added.

	1	2	3	4	5	TOTAL
COST				\$3,500		\$3,500

#### Water Access

##### Objective:

To provide access to the Minnesota and Yellow Medicine rivers.

Action #1. Improve the access to the Minnesota River at the fishing area near the confluence of the Yellow Medicine and Minnesota rivers.

The immediate development of a carrydown site should be completed. This will facilitate access to the Yellow Medicine and Minnesota rivers by fishermen and canoeists. A concrete ramp should be <sup>developed</sup> ~~constructed~~ to allow use by all ages for all types of boats. A permit will be required from DNR, Division of Waters, to perform this work.

	1	2	3	4	5	TOTAL
COST			\$10,000			\$10,000



## VISITOR SERVICES/INTERPRETATION

### Visitor Orientation

A single contact point should be established to introduce the visitor to the park and park personnel. Information received at the contact point should include graphic displays, maps, and handout literature designed to provide necessary information for the visitor to understand and experience the park. Special programs, trail and historic site information will be provided along with park rules.

The visitor also pays entrance and camping fees at the contact point and can ask specific questions about the park and the surrounding area.

#### Objectives:

To provide information to orient and inform the park visitor about the park and its natural features

Action #1. Continue and improve information dissemination at the park.

Communicating information that park users need, including the location of all facilities and natural features in the park is a very important function of park management.

Graphic displays, maps and handout literature should be made available both inside and outside the contact station. This information should help to orient the visitor to the park as well as to the state park system and local area.

	1	2	3	4	5	TOTAL
COST		\$2,000			\$1,000	\$3,000 ongoing

Action #2. Promote the park statewide.

As facilities are completed or improved they should be included on statewide publication. Special efforts should be made to promote camping for this park when it becomes improved. Highway signs should be located on Hwy 23 and on 212 from west to direct visitors to the park.

	1	2	3	4	5	TOTAL
COST	Covered by department publications and Mn/DOT					

## Interpretive Programs

Interpretive programs are valuable educational tools. Increased resource sensitivity is necessary if our parks and other natural environments are to be understood and protected. Presently the interpretive program for Upper Sioux Agency State Park is receiving minimal attention. New displays are being prepared for the interpretive building and other programs are being started at this time. The previous interpretive trail is no longer marked and brochures have not been reprinted for it. The majority of users visit Upper Sioux during the summer months. Bus loads of students frequent the park for educational purposes and class picnics during May, June, September, and October. Several other youth, church, and seniors groups visit the park each summer.

a park naturalist conducted programs and hikes in the park during the summer months of 1974 to 1979. There was a good response from park users and programs were well attended.

MHS currently staffs their site on a seasonal basis and provide a program which interprets the Agency and the historical events associated with it. DNR programs could be developed to complement the historical and cultural programs of the MHS. The DNR programs should focus on natural resources and their management.

### Objectives:

To provide programs and facilities which will increase the park visitor's awareness, appreciation and understanding of the biological, cultural, and recreational features within Upper Sioux Agency State Park.

To provide programs and facilities which compliment and are coordinated with the Minnesota Historical Society and community education programs.

Action #1. Eliminate the interpretive building when major repairs are necessary.

The goal of the interpretive program is to provide visitors with the opportunity to see and experience the park and its resources. The future direction of this program will be to use overlooks, well developed interpretive trails, brochures, and signs to tell the story of the park. These facilities will be designed to be self guiding. A naturalist should not be provided in this park for full time summer programs.



The naturalist building is currently being very underutilized. After 1972, when the interpretive building was constructed, the MHS restored an agency duplex which is now staffed and houses an interpretive program for MHS. Coordination with MHS will allow use of their building for interpretation of the park's natural resources and resource management <sup>for small groups</sup> on a limited basis.

In the long run, the interpretive building is not a needed facility for interpreting the park. In the short run, the building should be maintained and utilized for naturalist displays, and as a winter warming facility.

When the interpretive building requires major repairs it should be removed from the park and appropriate programs transferred to the MHS building. Displays and murals housed in the building should be moved to the new contact station, transferred to other state parks or offered to the county historical society.

The building, parking area, and highway access could be leased or transferred to a county, local, or private group for recreational purposes. The lease would require approval by DNR, Division of Parks and Recreation. (See Classification, p 41 for additional discussion).

	1	2	3	4	5	TOTAL
COST	Operational Budget					

Action #2. Develop an interpretive booklet on the natural resources of the upper Minnesota River Country Landscape Region.

The general information in this booklet would be developed for use in several state parks along the Minnesota River. General sections in the booklet would include regional explanations of vegetation, prairies and wildflowers, geology, rivers, mammals, birds and reptiles. Key sections would be added for each park to focus on the specific resources and management programs in that park.

This booklet would be sold for a nominal fee to cover printing costs. It would be made available to educational institutions as an introduction to the park's resources and management programs.

This booklet should be updated as development and management programs are completed for the park.

	1	2	3	4	5	TOTAL
COST		\$4,000				\$4,000

Action #3. Develop three signed interpretive trails and several overlooks.

Interpretive trails should be self guiding loop trails approximately 1/4 mile long, and allow access by special populations wherever possible.

Key overlooks should be accessible by developed trails located short distances from parking lots to encourage access by all ages. More lengthy interpretive signage may be considered in these areas. In areas of steep slope and sensitive soils, vegetation or rails may be considered to direct use and protect resources. Each trail should have a theme as described below. Although all naturalist trails will be designed for hiking, the interpretive goals for the park should include signage on all types of trails at key points and overlooks.

Prairie - This trail would be located in the area of the historic site/picnic grounds and extend eastward to the proposed prairie pothole and the eastern end of the river bluff. This trail should include interpretation of vegetation present on the bluff top during agency days, waterfowl management and habitat, hillside prairie, prairie management, transition between woods and prairie, rivers, geology, wildlife, and historic sites.

This trail should be developed first.

	1	2	3	4	5	TOTAL
COST	\$1,000		\$500			\$1,500 ongoing

Yellow Medicine River - This trail would start near the day use area and cross under the highway at the existing box culvert. This trail should be designed to provide a longer hiking opportunity. An overlook with signs should be located along the trail before it descends into the Yellow Medicine River Valley. This trail should include interpretation of the historic sites along



this river, the river ecosystem, wildlife, floodplain forest, hillside prairies, water quality, and geology.

	1	2	3	4	5	TOTAL
COST		\$2,000			\$500	\$2,500 ongoing

Wetland - This trail would start in the proposed picnic ground, extend with steps where needed down the Minnesota River bluff and enter the restored natural floodplain wetland. In the wetland, a boardwalk may be constructed to extend into the wetland. This boardwalk should be simple and have minimal railings. It should be anchored adequately to withstand seasonal flooding with minimal damage. <sup>or easy to remove</sup> This trail should include interpretation of the river bluff forest, floodplain wetlands, wildlife, waterfowl habitat, floodplain prairie, the floods, Wild, Scenic and Recreational River Program, and history.

	1	2	3	4	5	TOTAL
COST			\$3,000		\$500	\$3,500 ongoing

Action #4. Develop an agency setting.

(See History Section Action #6, p 98 .)

Action #5. Develop a permanent slide tape program about the park resources.

(See History Section Action #5, p 97 .)

Action #6. Develop joint programs between MHS and park's interpretive staff.

(See History Section Action #4, p 97 .)

Action #7. Provide a part time shared naturalist staff person for this park.

(See Operations/Maintenance and Staffing Section Action #1, p 149.)

### Trails

The overall design philosophy for trails and specific alignment recommendations resulted from a review of the natural and physical features of the park and user information. Key features considered in the design were historical resources, scenic vistas, proximity to the rivers, variety of vegetative communities, wildlife habitat, topography, and soil conditions.

User information included SCORP data, observations from the park manager, and comments, letters, and petitions received from park users, trail groups, and interested public.

The design philosophy of the trail system is twofold. First, it is to provide access to the park's historical resources. Secondly and equally important is to provide outstanding regional trails opportunities.

A primary goal of the trail system is to provide access to and interpretation of the historical resources in the park. Although the greatest density of sites is located in the area administered by the Minnesota Historical Society, there are a number of sites scattered throughout the park which should be made accessible by trail. (See Historical Resources map, p 99 .) *where possible trails should be located on the old Agency roads*

The second goal of the trail system is to provide needed recreational trails experiences. SCORP has identified certain trail experiences as being in demand by people in this region and throughout the entire state. Because Upper Sioux Agency State Park is classified as a recreational state park, its proposed trail system was designed to provide a good trail opportunity which can contribute to meeting the expressed demand. This will be further discussed in the actions below.

Another goal of the trail system is to provide access to the park's natural resources and resource management programs. The park visitor will be encouraged to experience the variety of vegetative communities, and wildlife habitats the park has to offer.

#### Objectives:

To provide access<sup>to</sup> the park's outstanding cultural and historical resources with minimal impact on the resources and avoidance of sensitive areas

To provide scenic and challenging experiences for the park visitor.

Action #1. Develop a signed system of horseback riding trails. (See Proposed Trail map, p 129 .)

The development of a horseback riding trail system was recommended because it was determined there is demand and need



for them based on an analysis of available opportunities. Also, the park provides an outstanding resource for a horseback riding trail system and the natural resources can withstand the use, if proper trail design considerations are met.

Horseback riders from the surrounding area have been actively involved and supportive during the planning process for this park management plan. They expressed an interest in seeing horseback riding trails developed in the park through letters and at the first two public meetings. A petition requesting trail development, signed by over 200 horseback riders, was submitted at the second public meeting. A copy of these letters and the petition are available in the MPDs. There are currently few public horseback riding trails within close proximity to the park that provide sufficient mileage for a good trail riding experience. The terrain, scenic vistas, variety of vegetative types, and potential trail mileage have the potential to create a good horseback riding trail system within this park. The provision of a developed horseback riders' campground in the park and potential link to the Renville County park are complements to the horseback riding trail system which would create an outstanding opportunity in southwestern Minnesota.

The proper location and construction techniques used for the development of horse trails <sup>will be</sup> ~~are~~ directly reflected in the quality of the trail and amount of maintenance required.

The trailhead for day users wishing to trailer horses in should be at the winter sliding area parking lot. Access to this area will be supervised from the new contact station. Water should be available in this area and a specific area designated for unloading. From this point trails will be designed to provide access to many of the scenic overlooks and historic resources within the park. The steep slope, erodable bluffs, low strength soils and rivers will require special trail design considerations to prevent damage to resources due to erosion, siltation, and water pollution and to ensure trail safety and a pleasant trail experience for horse rider. Assistance from the local horse rider groups should be solicited to aid in the maintenance of these trails.

	1	2	3	4	5	TOTAL
COST	\$10,000					\$10,000

Action #2. Modify the existing snowmobile trails in the park. (See Proposed Trail map, p 129.)

The alignment proposed for the snowmobile trails is the same as that for the horseback riding trails. The proposed system was designed to accommodate the local riding patterns.

	1	2	3	4	5	TOTAL
COST	Included in cost above					

Action #3. Develop a signed system of cross country skiing trails in the park.

The development of a cross country ski trail system was recommended because there was demand for an alignment separate from the snowmobile trail. Use of the trail is expected to be predominately local.

	1	2	3	4	5	TOTAL
COST	\$5,000					\$5,000

Action #4. Upgrade the existing hiking trail system.

All trail alignments will be available for hiking. In addition two short interpretive hiking only trails will be developed. A spur from the picnic area into the restored wetland and

A short loop out onto the prairie will provide an opportunity for park visitors to see these communities and the resource management occurring there. Development of these two trails will be combined with the future interpretive program. (See Interpretive Programs, Action #3, p. 121.) Additional upgrading of existing trails will be required.

	1	2	3	4	5	TOTAL
COST		\$2,000				\$2,000

Action #5. Include the locations of the archaeologic and historic sites on the park handout maps.



This will encourage park users to explore the entire trail system and promote historical interpretation. The mapping and signing at all sites shall be reviewed with MHS and the state archaeologist to insure that all measures are taken to insure protection of the sites.

	1	2	3	4	5	TOTAL
COST	Operational Budget					

Action #6. Provide two crossings of the Yellow Medicine River.

Low water crossings may be suitable for horses. Temporary bridges are an alternative that may be considered for snowmobile use. Another alternative is permanent bridges. If a trail can be developed <sup>in the western end of the park</sup> in conjunction with the long term streambank stabilization project and located near the base of the northern riverbank <sup>additional</sup> crossings may not be necessary. Trails which require river crossings should not be developed until the Regional Trails and Waterways <sup>Coordinator</sup> has approved the river crossing method.

	1	2	3	4	5	TOTAL
COST	Conditional					

Action #7. Develop a trail link to the Renville County park.

This link would provide access to the trails and resources of an additional 550 acres. This link is particularly important to the horseback riders and snowmobilers because it would expand public trail opportunities and ensure a mileage potential that would create an outstanding recreational opportunity.

The <sup>road</sup> ditch is inadequate for <sup>horse</sup> riding and the speed of traffic is too great to ride on the shoulder of the road. The acquisition of lands, trail easements, or county grant-in-aid <sup>trails</sup> could be considered to provide this trail link.

	1	2	3	4	5	TOTAL
COST	To be determined					

## Roads and Parking

Several roads in the park are below standards for yearround or three season use. Most are substandard when wet due to low strength soils, standing water, steep slopes, and mud. Many of the roads will require regrading and surfacing with gravel or asphalt. Some roads are inadequate for use by large vehicles due to width, surface and steep slopes.

Prior to promoting a park statewide, good access to all facilities and reasonable road conditions must be insured.

Also in areas of overnight use, safety and egress must be insured for all weather conditions in cases of an emergency.

The park now has two major entrances. The goal in state parks is to provide a single entrance point to provide visitor orientation (See Visitor Orientation p 118), park supervision and security.

Removal of unnecessary roads and all intrusions in the historic agency site is supported by the MHS to insure preservation of the historic resource and opportunity to expand future interpretive programs.

### Objectives:

To provide adequate year-round access and parking for visitors

To upgrade vehicular circulation within the park

To establish a single control point for the park.

Action #1. Construct a new entrance road.

A new entrance road would provide a single entrance point to all of the park's major use facilities. This would improve information dissemination to the public and improve park supervision and security.

The selected location for the new road will provide improved access to all proposed facilities and reduce traffic in the area of the historic agency site. Initial road construction costs will be high and special design considerations will be required to reduce resource impacts. The proposed location of the road closely follows an old field road and does not disturb



any high quality native prairie. The road should be asphalted to the historic site to ensure good access by large vehicles, buses and cars during all months of use. It will not be necessary to plow this road during the winter.

Construction of this road will require the development of turnoff lanes on Trunk Highway 67. The entrance road should be designed to allow 4-5 vehicles to line up or park off the highway before reaching the contact station. A turnaround should be provided at the contact station.

	1	2	3	4	5	TOTAL
COST		\$125,000				\$125,000

## Action #2. Upgrade roads in the floodplain.

The road to the fishing area at the confluence of the Yellow Medicine and the road to the park manager's residence should be regraded and resurfaced with crushed gravel. Steep grades should be modified and low areas filled.

	1	2	3	4	5	TOTAL
COST	To be determined					

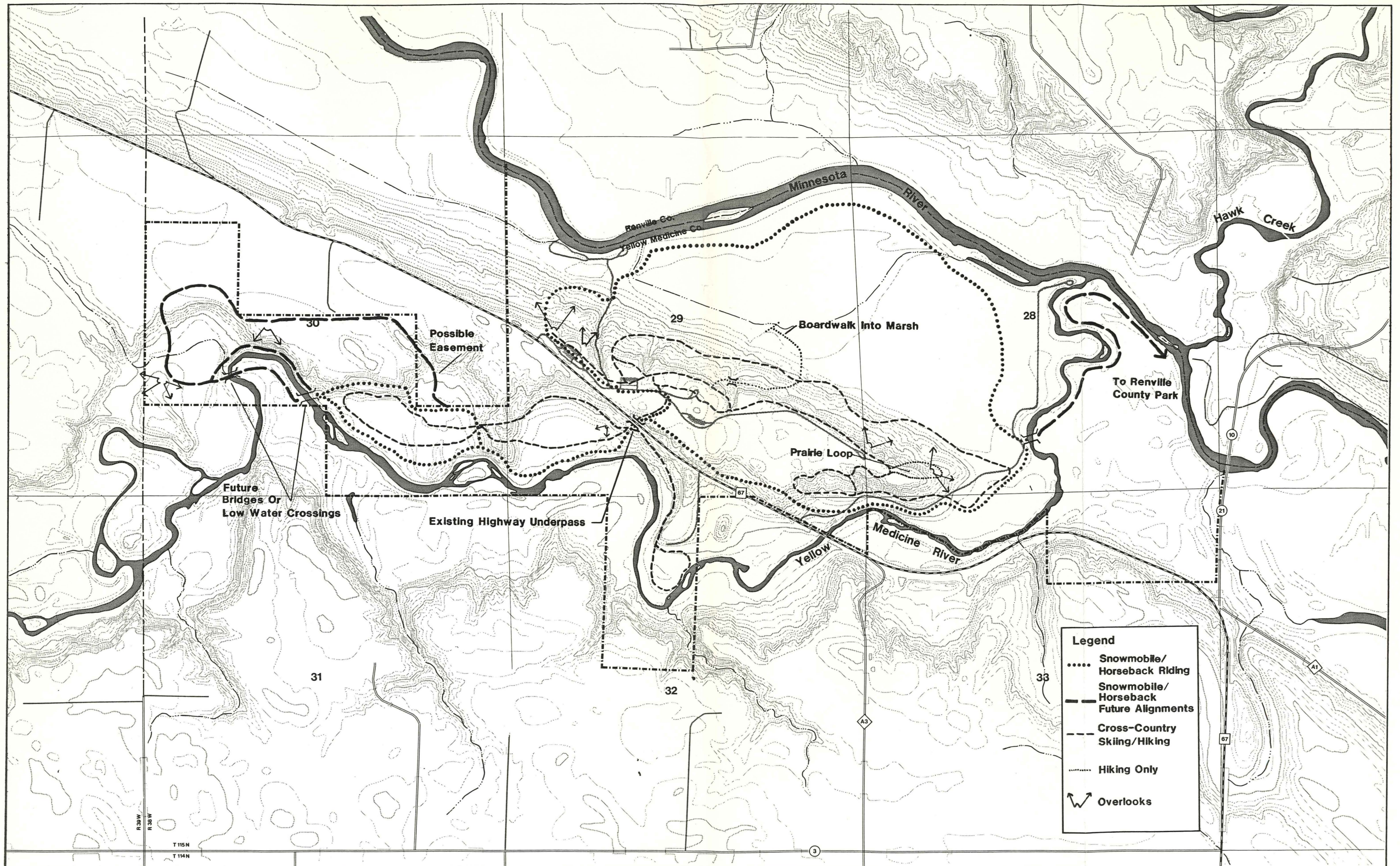
## Action #3. Develop a parking lot near the relocated sliding hill.

This parking lot shall service the winter day use activities of sliding, snowmobiling, and cross country skiing. This facility will require 30 parking spaces. Additional parking for 30 vehicles can be accommodated by plowing a level grassed parking area adjacent to the developed lot. The main lot should be gravel. It should be designed to accommodate vehicles with horse trailers in the summer. (See Trails, Action #1, p123 for additional discussion). This area will be the unloading and staging area for day use by horseback riders.

Planting parking islands with floodplain vegetation and use of curbing should be considered for this lot. Due to its use by horses, it should not be asphalted. Water and vault toilets should be provided in this area. (See Sliding Section Action #2, p113 for additional discussion).

	1	2	3	4	5	TOTAL
COST	(See Sliding, Action #2, p113 )					





**Legend**

- ..... Snowmobile/  
Horseback Riding
- Snowmobile/  
Horseback  
Future Alignments
- - - Cross-Country  
Skiing/Hiking
- . - . - Hiking Only
- W Overlooks



### Administrative Facilities

The existing administrative facilities are only minimally meeting the needs of this park. Several facilities are inadequate to provide protection and safe storage of park equipment and supplies.

#### Objectives:

To provide facilities which will ensure effective, efficient management of the park

To provide a suitable working area for the repair and maintenance of equipment

To alleviate current storage problems of equipment and supplies

Action #1. Construct a new contact station/park office.

The existing contact station is not functioning properly at all times because the park's staffing does not include a position to oversee the park entrance and provide public information. A combination contact station and park office would allow the manager to personally oversee the park entrance, provide visitor orientation, and register campers in conjunction with his office and park management duties. During periods of high use, a staff person can be assigned to register campers and provide visitor orientation. This facility should be located along the new entrance road and offer a clear view of the park's entrance. This facility would improve <sup>visitor</sup> contact with the park staff because all vehicles would pass this point upon entering the park.

This building should be winterized and include water and toilet for staff use. A clivus, composting toilet system should be considered for this park. This would allow non-heating of this building when not in use. Firewood and ice sale and storage should be included in the design of the building. *The existing contact station should be evaluated for relocation and remodeling.*

	1	2	3	4	5	TOTAL
COST				\$85,000		\$85,000

Action #2. Relocate the service area and construct a new storage building 40' x 60', half heated.

The new service court location should be near the contact station. It should be constructed in the level area northwest of the new entrance location.

This area should be designed to allow a turnaround for large vehicles, future expansion for smaller storage buildings, and below grade storage of gasoline.

This new location will allow more efficient management of the park staff from the park office.

Access should be designed so that the service road is located inside the park gate. Water and vault toilets should be provided in this area. The storage building should be half heated to provide adequate work space and storage of supplies. These facilities should be designed so that heat can be turned off during non-use periods. Special design considerations may be required to maintain a small non-freezing storage area. The current lack of adequate storage space forces the park manager to use makeshift storage or leave equipment outside. A security system should be considered for this building. Additional temporary storage should be considered until this new facility can be provided.

	1	2	3	4	5	TOTAL
COST		\$2,000			\$80,000	\$82,000

Action #3. Construct a gas/oil storage building.

A small block building should be constructed in the new service court for the purpose of storing gas, oil, and other flammable and toxic chemicals.

	1	2	3	4	5	TOTAL
COST					\$8,000	\$8,000

Action #4. Gas storage tanks should be located underground in the new service court.

	1	2	3	4	5	TOTAL
COST					\$5,000	\$5,000

Action #5. Bury electric lines.

Review with MHS and state archaeologist prior to excavation. All park and MHS utility lines should be buried. Lines running along the highway should be considered for burial also.

	1	2	3	4	5	TOTAL
COST	Cost to be determined					



Action #6. Remove building foundations and debris from the park.

Several old farmsteads are located in the park. They have been partially removed. All remaining debris should be removed. The wells should be protected as several may be used for new park developments.

	1	2	3	4	5	TOTAL
COST	\$8,000					\$8,000

#### Development Implementation

Since it is not economically feasible or desirable to complete all development at one time, a phasing program has been suggested. The estimated cost for each action has been placed in phases 1 through 5, of which all actions in Phase 1 should be completed before starting the Phase 2 projects. Three areas which require additional discussion are the sliding hill, entrance road, and campground development.

#### Sliding Hill

It has been determined that it is important to provide a continuous recreational opportunity for sliding. The development of a new sliding hill does require vegetation management, removal of trees at the bottom of proposed slopes, design and development of an improved access road, parking, and toilets and shelter. Good road access can be provided to the proposed sliding area by either building a road down the bluff within the park boundary or providing turn lanes on the highway at the new entrance point. The soils and native prairie located at the top of the bluff are very fragile and cannot withstand the pedestrian traffic associated with sliding. Therefore parking at the top of the bluff will not be considered<sup>as</sup> an alternative when developing the new sliding area. These facilities should be provided as soon as possible within the development framework. While these facilities are being developed, use of the existing sliding area shall be allowed.

Immediate modifications to the existing sliding hill should include no mowing of the lower half of the hill and hand planting of buck brush or other non-thorny shrubs on the crest of the second hill. These shrubs will hold additional snow and should stop sliders prior to going down the second hill.

public  
Improve awareness and enforce at all times a policy to allow <sup>use of</sup> only inner tubes and plastic mini sleds on the <sup>existing</sup> hill.

Closing of the existing hill and planting as per the Sliding Hill, Action #4, p 114 should be done when the proposed sliding hill is operable.

#### Entrance Road

The goal to maintain a single entrance for the park could be met through the construction of a road down the bluff to connect the existing park roads internally. This road could be gravel at the onset. It should be constructed in a manner and at the grades which will be required for the development of the new entrance road. This road should ultimately be asphalt.

The proposed entrance road will require the construction of highway turnoff lanes. Without these turnoff lanes the potential of rear end auto collisions would exist under slippery road conditions. Therefore, until the turn lanes are constructed, the existing entrance should be used.

#### Vehicular Campground

The steep grades and narrowness of the existing access road to the lower campground prevents this area from being upgraded for use and designation as a vehicular campground. The site of the proposed vehicular campground should be developed as soon as funding allows. No vehicular camping should be allowed in the existing lower campground. A small number of temporary vehicular campsites can be developed, see Camping, Action #1, p 110. The camping opportunities will be very limited until they can be developed in a manner in keeping with state park's standards. The same road considerations which applied to the relocation of the sliding hill apply to the proposed campground location at Site J.

#### Architectural Theme

The Upper Sioux Agency provides an architectural theme which should be enhanced throughout the park. Where appropriate, buildings and shelters should be of logs, frame, and brick construction to exemplify the



architecture of the historic agency period. New buildings will not be constructed where they might infringe on the visual setting of the Agency site. The design of new buildings recommended for construction in public use areas of this park should include efficient use of natural materials, energy conservation measures and have a low visual profile. Underground construction should be considered in areas to limit visual infringement, but would require that site and design be reviewed by the state archaeologist to ensure no damage would be done to the historic resources.

In the floodplain, special design considerations must be met. Where possible buildings should be located above the 100 year floodplain. Where this is not possible, low maintenance building materials must be a primary consideration. All new buildings in this park should be designed with durable materials for minimal maintenance.

# PARK BOUNDARY



## PARK BOUNDARY

### Ownership

Upper Sioux Agency State Park was established in 1963 when approximately 330 acres were acquired for park purposes. The present statutory boundary includes approximately 1,280 acres. Statutory boundaries are established by the legislature. The purpose of a statutory boundary is to designate an area which has outstanding natural and cultural resources which should be protected and managed for the enjoyment by the citizens of Minnesota. It is only from within this statutory boundary that the DNR can negotiate and buy land from willing sellers for park purposes. Of the total 1,280 acres, 1,066 acres are state owned and 214 acres, are in private ownership. Of the 1,066 acres, of state owned land, 19.3 acres are administered by the Minnesota Historical Society and 1,046.7 acres are administered by DNR.

### Boundary Modifications

During the park planning process, lands adjacent to the park and privately owned land within the statutory boundary are evaluated in terms of their suitability for park purposes. The results identify park quality lands that have resource value and recreation potential. Also lands which are necessary to ensure protection of the park's natural resources and recreation developments are included in the park quality lands. (See Boundary Map, p 143 for the location of park quality land).

Action #1. Acquire two parcels of park quality land, parcels A and B, (See Park Boundary Map, p 143), that are currently within the statutory boundary.

These two parcels of privately owned land within the statutory boundary are park quality and are recommended for acquisition. Parcel A is necessary to acquire for construction of the new entrance road. Parcel B has both resource value and recreation potential. Parcel B includes a segment of the Yellow Medicine River. Current grazing practices along this segment of river impact the river by encouraging stream bank erosion, reducing growth of shrubs and grasses along its banks, and affect water quality and modify fish habitat. These impacts could be reduced if this land became part of the park and was managed to reduce erosion and surface runoff and encourage vegetative growth. This reduced impact would have a positive effect on the fishery and water quality of the Yellow Medicine River at the confluence. This land is also

necessary for the future development of a trail between Upper Sioux Agency State Park and Renville County Park #1. The acquisition of this trail corridor is very important in the development of a horseback riding and snowmobile trail system that would provide users with sufficient trail mileage to create an outstanding trail opportunity for this region of the state.

Additional private land within the statutory boundary may be considered for acquisition along with parcel B. Parcel C is of low priority for acquisition. However, it combines with parcel B to form a complete ownership. Frequently landowners do not separate a parcel of land when a sale is considered. If Parcel C is for sale along with Parcel B, it may be considered for purchase. It is recommended that parcel C remain in the statutory boundary until parcel B is acquired. After parcel B is acquired, if no potential uses are identified for parcel C it may be deleted from the statutory boundary or if purchased transferred to wildlife or resold for agricultural purposes, whichever case applies.

Action #2. Acquire ownership or trail easement of Parcel D.

This parcel is needed as an important link in both the winter and summer trail system and access to the horseback riders' campground. Development of trails and roads in this portion of the park is constrained by terrain. Use of this parcel would provide a good trail access from the top of the bluff down to the Yellow Medicine valley. Acquisition by land exchange, easements, and fee title are all methods which should be explored. Acquisition of this parcel would require legislative action to relocate the statutory boundary.

Action #3. Delete parcel E from the statutory boundary.

This parcel is low park quality land. No recreation developments or resource values were identified for this parcel. It, therefore, can be eliminated from the statutory boundary. Note that, approximately 50 to 100 ft back from the riverbank shall remain in the statutory boundary for future acquisition or trail easement purposes.

Action #5. Consider parcels F, G, H, and I for potential land exchanges or transfer to the Division of Wildlife.



These parcels have been identified as being lower in park quality. They may be considered for land exchange in the acquisition of parcels A, B, D, and J. After parcels A, B, and D have been acquired, <sup>only remaining</sup> parcels F, H, and I could be transferred to the Division of Wildlife.

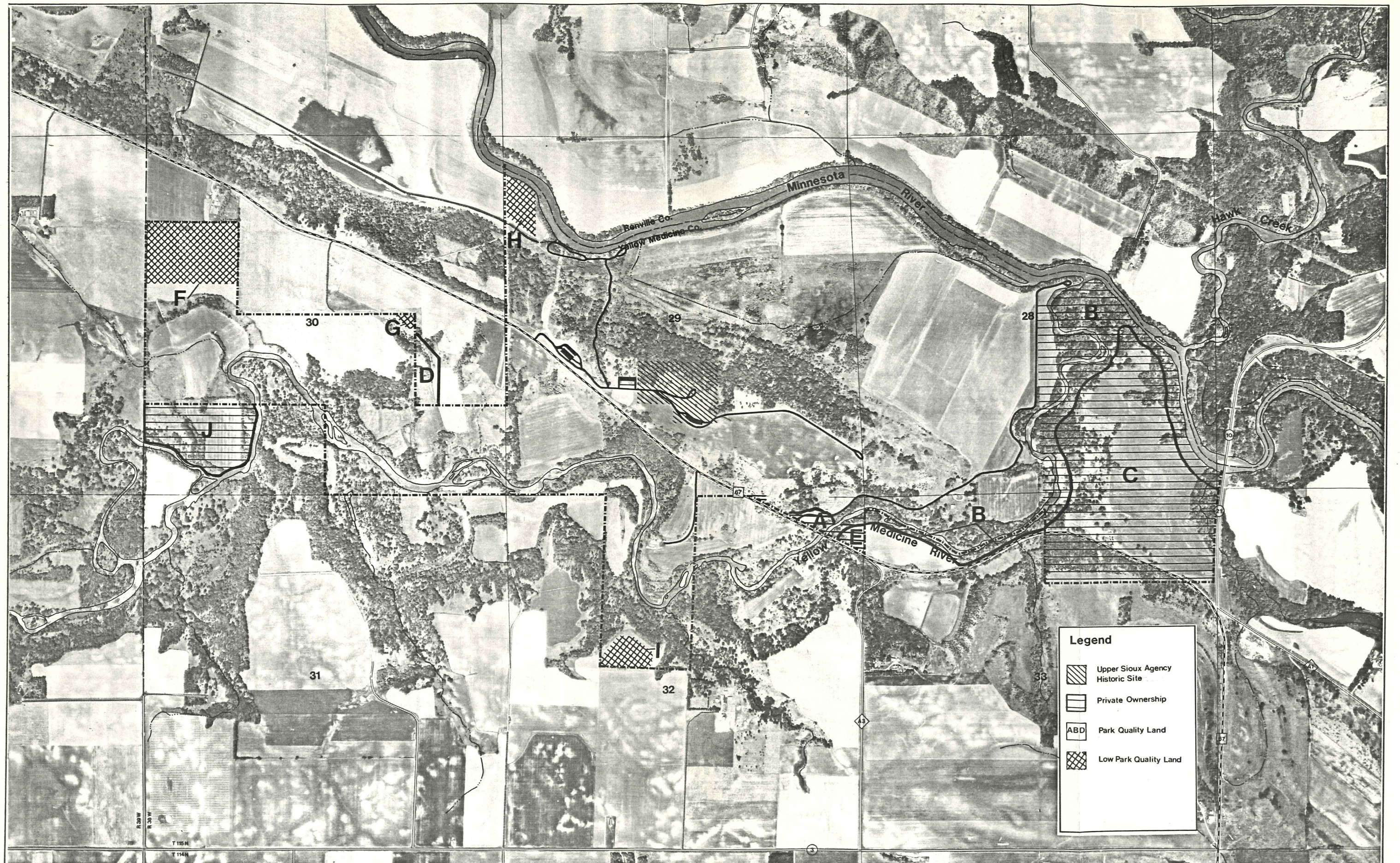
The Yellow Medicine River Valley and its adjacent wooded banks and bluffs are park quality lands. It is valuable wildlife habitat. The valley also has recreation potential in terms of trail development, canoeing, and other forms of dispersed recreation. It also constitutes a large natural area in a region that is predominately agricultural. Although this area is identified as park quality land, no recommendation to include it in the statutory boundary will be made at this time. There are <sup>two</sup> ~~three~~ reasons for this. The valley's resources are being protected by the current land practices and topography <sup>and</sup> Additional acreage is not needed for the recreational developments proposed in this plan.

Action #6. Consider parcel J for expansion of the statutory boundary and acquisition through land exchange.

This parcel is of moderate resource and recreational value. It contains some grazed prairie hillsides and some wooded ravines. Acquisition of this parcel would allow removal of agricultural fields from this portion of the park and restore the natural qualities of the Yellow Medicine River valley which will enhance recreational use.

	1	2	3	4	5	TOTAL
COST						

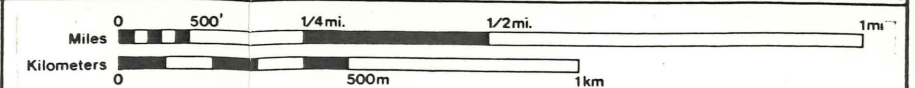




p.143

**Park Boundary**

**Upper Sioux Agency state Park**





# OPERATIONS AND STAFFING

## Maintenance and Operations

Maintenance is an essential responsibility of the DNR, Division of Parks and Recreation. It is a responsibility that often goes unnoticed by the park visitor in comparison with new developments. Yet, the park and the DNR are continually judged by the appearance of the park and its facilities.

The task of providing services to the public and security for park facilities and resources 24 hours a day, 12 months of the year is monumental. During the busy season, full-time operation is necessary 98 hours per week (8:00 a.m. to 10:00 p.m., seven days a week). During other seasons, there is only part-time operation 98 hours per week, however, maintenance, repair, and park security accounts for many extra work-hours. If these responsibilities are to be met, competent trained personnel are essential.

There are four basic aspects to maintenance and operations:

1. Maintaining resources
2. Maintaining facilities
3. Providing services to the park visitors
4. Enforcing rules and regulations which protect park visitors, resources, and facilities.

One of the major maintenance problems in recreation areas is the heavy impact of large numbers of people concentrated in specific locations. These areas include: campsites, trails, riverbanks, areas around buildings and scenic points of interest. Foot traffic affects the ground cover and frequently exposes tree roots to damage. The eventual results may be erosion, slides, disfigured sites, and even danger to the visitor. Regular maintenance programs with adequate personnel, supplies, and equipment reduce damages thereby avoiding major reconstruction expenditures.

## Staffing

A factor contributing to the current park operations problem statewide is the past reliance on federally funded work programs such as the Comprehensive Employment and Training Act (CETA) The Neighborhood Youth Corps (NYC), and Green Thumb. The low cost personnel provided by these programs makes it possible for parks to offer programs and services which would otherwise be impossible. However, these employees are hired on a short term basis, usually



eight to ten weeks and often do not have the training and experience necessary to provide needed services without constant supervision. To avoid these problems, funding should be made available to hire trained personnel for major public service and maintenance programs. Temporary assistance program employees should be hired for minor maintenance and special projects.

Community involvement and volunteer programs should be promoted for this park. The regional staff should encourage volunteers and coordinate programs for waterfowl habitat improvements, prairie management and trail construction. Additional volunteer programs can be promoted for the park and the Minnesota Historical Society.

Donations to the park of facilities and project related labor must be approved through the Division of Parks and REcreation, St. Paul Office to ensure that it meet the programing goals for the park and not duplicate any facilities or programs which have been funded through the state legislature.

The programs identified in this management plan are designed to enhance and promote greater use of the park. An increase in park use will require additional staff to provide the public with services, information, and to maintain the facilities and resources. Initially, the staffing for this park should include a part-time naturalist. (See Discussion Archaeology/Historical Action #4, p 97 ). This may be a shared position with another nearby state park. Also additional staff will also be required for the purpose of annual trail maintenance, specifically for horse trails and high use hiking trails.

The following staffing chart summarizes the existing staff and identifies the general needs for the future operations and maintenance based on the new developments and management proposed in this plan.

<u>Staffing Chart</u>				
<u>Existing (1982)</u>		<u>Total Staff Months</u>	<u>Future Needs</u>	<u>Total Staff Months</u>
1	Park Manager	12	1 Park Manager	12
1	Seasonal laborer	6	1 Seasonal technician	9
2-3	Governor's Youth	2	2 Seasonal park workers	10
2	Hourly laborers	5	1 Part time naturalist	2
			1 Hourly laborer	4

The park's staffing needs should be reviewed annually and compared with ongoing changes in park use. (Also see Cooperative Agreements, p 41 for additional discussion).

The development recommendations in this plan will require a significant amount of staff time from the regional trail coordinator, regional resource coordinator and regional naturalist. If additional park staff is hired to implement the development actions proposed in this plan, additional supervision may be required from the regional staff.

Action #1. Provide a part time shared naturalist with this park.

	1	2	3	4	5	TOTAL
COST	(See Archaeological/Historical Action #4, p 97)					



# COST AND PHASING SUMMARY

The following cost estimates were generated in December, 1982. These cost estimates are based on current prices and available information. As new information is made available and as new or modified programs are initiated, revised cost estimates will be prepared to more realistically represent costs at that time. This plan is intended to be implemented in ten years. The phases noted suggest the level of funding to be requested each biennium. But there is no guarantee that this amount of funding would be received from the legislature. Therefore, some change to these phases can be expected. The conditional column includes those actions which cannot be phased into the development schedule at this time. (See the individual actions in the text for justification.) Estimated costs are for individual projects. Costs for some projects may be reduced if they are done in conjunction with other projects.

Action	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Total	Conditional
RESOURCE MANAGEMENT							
<u>Soils</u>							
1 Develop a stream bank erosion management plan							
	(See Surface Water Action #1)						
<u>Vegetation</u>							
1 Establish and maintain a cover of grasses in OF 3, OF 4, OF 5, OF 7, OF 8, OF 9, and OF 10.							
	\$ 5,200	\$ 5,200	\$ 5,200			\$ 15,600	
2 Maintain the existing grass cover in the areas where it is in good condition and no future management is eminent.							
	(Conditional \$5,720)						
3 Convert some of the old field areas to native prairie grasses in the future.							
	To be determined						
4 Reestablish oak savanna in the areas along the ridge that were most likely oak savanna during agency days as currently evidenced by old open grown bur oaks.							
	10,000	\$ 10,000	\$ 10,000			30,000	(ongoing)



Action	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Total	Conditional
5 Reestablish wetlands.  (See Wildlife Action #1)							
6 Plant proposed development areas with species of trees suitable for the site to enhance the recreational setting of the area.  (See Proposed Development)							
7 Implement a program of prescribed burning on the prairie areas.	1,000	1,000	1,000	1,000	1,000	5,000 (ongoing)	
8 Monitor the effectiveness of the prescribed burn program in controlling the encroachment of woody species and undesirable non-native species.				3,000	3,000	6,000 (ongoing)	
9 Control noxious weeds in the park.	2,000	1,000				3,000	
10 Remove dead and dying trees only in the major recreational use areas and along trails.  Covered in Development							
<u>Wildlife</u>							
1 All drainage tiles and ditches not affecting private land should be located and plugged to restore original water levels.							
	To be determined						

Action	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Total	Conditional
2 Maintain the maximum abundance of dead standing and downed wood.	No cost						
3 Monitor the deer population in the park.	No cost						
<u>Surface Water</u>							
1 Request that the district SCS staff, in cooperation with the regional resource coordinator, develop and implement a stream bank erosion management plan for the park.							
2 Reestablish wetlands within the park.	(See Wildlife Action #1)						
<u>Ground Water</u>							
1 Cap off all unused wells in the park.	4,000					4,000	
2 Verify through the Department of Health, Southwest District that park wells meet health standards.	No cost						
3 Take corrective measures to prevent staining of fixtures, encrustation of well screens.	To be determined						
<u>Fisheries</u>							
1 Stabilize stream-bank erosion.	(See Surface Water Action #1)						



Action	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Total	Conditional
2 Remove enough snags from the confluence of the Yellow Medicine to allow the passage of canoes upstream.							

Covered under Park Operations

#### Archaeological and Historical Sites

1 Field check proposed development sites for the presence of pre-historic or historic remains before any work is begun. 5,000						5,000	
2 Burial grounds in the park should be identified and marked where appropriate.	5,000					5,000	
3 Conduct research to document and locate all significant historic sites.		15,000				15,000	
4 Develop joint programs between the MHS and the DNR.	6,000	6,000	6,000	6,000	6,000	30,000 (ongoing)	
5 Develop a permanent slide/tape program to be presented at the Historic Site in conjunction with the Historic Site presentation.			4,000			4,000	
6 Develop a historical agency setting to portray the style and quality of life during agency days.		1,500	3,000	3,000		7,500	

Action	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Total	Conditional
<u>RECREATION MANAGEMENT</u>							
<u>Camping</u>							
1 Develop a vehicular campground at site J.		55,000				55,000	
2 Expand the number of sites and provide electricity in the vehicular campground if future use warrants.		Conditional					
3 Construct a sanitation building with showers and flush toilets if future use warrants.			85,000			85,000	
4 Develop a horse-back rider campground at site I.			9,000			9,000	
5 Develop a group camp at site D.			9,000			9,000	
6 Modify the existing vehicular campground to accommodate canoe camping only.		2,000	2,500			5,500	
<u>Sliding</u>							
1 Relocate the sliding hill from the present site to the end of the ridge in the east end of the park.		No cost					
2 Develop a gravel parking area with a 50 car capacity.		11,000				11,000	
3 Provide a winter shelter building approx. 15'x20' and toilet facilities in the winter day use area.		22,000				22,000	



Action	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Total	Conditional
4 Plant the exist- ing sliding hill with large trees to discourage use.		6,000				6,000	
<u>Picnicking</u>							
1 Modify the parking lot in the exist- ing picnic grounds.		To be determined					
2 Construct a sanita- tion building with flush toilets.					85,000		\$ 85,000
3 Expand and improve the picnic area near the water access at the con- fluence of the Yellow Medicine and Minnesota rivers.				3,500		3,500	
<u>Water Activities</u>							
1 Improve the access to the Minnesota River at the fishing area near the confluence of the Yellow Medicine and Minnesota rivers.			10,000			10,000	
<u>Visitor Orientation</u>							
1 Continue and improve informa- tion dissemination at the park.		2,000			1,000	3,000 (ongoing)	
2 Promote the park statewide.		Covered by Department Publications					
<u>Interpretive Programs</u>							
1 Eliminate the inter- pretive building when major repairs are necessary.		Covered in Operational Budget					

Action	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Total	Conditional
2 Develop an interpretive booklet on the natural resources of the upper Minnesota River Country Landscape Region.		4,000				4,000	
3 Develop three signed interpretive trails and several overlooks.	1,000	2,000	3,500		1,000	7,500 (ongoing)	
4 Develop an agency setting.	(See History Action #6)						
5 Develop a permanent slide tape program about the park resources.	(See History Action #5)						
6 Develop joint programs between MHS and park's interpretive staff.	(See History Action #4)						
7 Provide a part time shared naturalist staff person for this park.	(See Operations and Staffing Action #1)						
<u>Trails</u>							
1 Develop a signed system of horse-back riding trails.		10,000				10,000	
2 Modify the existing snowmobile trails in the park.	(See Trails Action #1)						
3 Develop a signed system of cross country skiing trails in the park.		5,000				5,000	



Action	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Total	Conditional
4 Modify the existing hiking trail system.		2,000				2,000	
5 Include the locations of the archaeological and historic sites on the park handout maps.							
	Cost covered in Operational Budget						
6 Provide two crossings of the Yellow Medicine River in the eastern portion of the park.							
	Conditional						
7 Develop a trail link to the Renville County park.							
	To be determined						
<u>Roads and Parking</u>							
1 Construct a new entrance road.		125,000				125,000	
2 Upgrade roads in the floodplain.							
	To be determined						
3 Develop a parking lot near the relocated sliding hill.							
	(See Sliding Action #2)						
<u>Administrative Facilities</u>							
1 Construct a new contact station/park office.				85,000		85,000	
2 Relocate the service area and construct a new storage building 40'x60', half heated.		2,000			82,000		
3 Construct a gas/oil storage building.					8,000	8,000	

Action	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Total	Conditional
4 Gas storage tanks should be located underground in the service court.					5,000	5,000	

- 5 Bury electric lines.

To be determined

- 6 Remove building foundations and debris from the park.

8,000

8,000

#### PARK BOUNDARY

- 1 Acquire two parcels of park quality land, parcels A and B.

- 2 Acquire ownership or trail easement of Parcel D.

- 4 Delete parcel E from the statutory boundary.

- 5 Consider parcels F, G, H, and I for potential land exchanges or transfer to the Division of Wildlife.

#### OPERATIONS AND STAFFING

- 1 Provide a part time shared naturalist with this park.

(See Archaeological and Historical Sites Action #4)



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