

A Management Plan for
Hayes Lake
State Park

December 1979

Prepared by the
Minnesota Department of Natural Resources



Credits

This plan was prepared for the citizens of the state of Minnesota under the aegis of the Outdoor Recreation Act of 1975 by a multi-disciplinary team of Department of Natural Resources employees.

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All cost estimates in this plan are based on 1976 dollars.

The appendices to this management plan are available upon request from:

Park Planning
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 Box 10E, Centennial Office Building
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Purpose of Plan

MANAGEMENT AND DEVELOPMENT PHILOSOPHY

Minnesota is blessed with an abundance of high quality resources and, even more importantly, with leaders who have the wisdom and foresight to protect these resources. As a result, Minnesota today has one of the finest state recreation systems in the country. The Department of Natural Resources, with the assistance of concerned lawmakers, conservation and recreation groups, and private citizens, intends to do its utmost to provide planning that will be responsive to the needs of this generation while protecting the birthright of the next.

The management and development philosophy for the Minnesota state park system consists of two major objectives. The first is the protection of the natural resources within the recreation system. Without this protection, a resource can be destroyed in an alarmingly short period of time. Thus, protection benefits not only future generations, but present-day users as well. The second objective is maximizing the recreation opportunities available to the user, both in terms of quality and variety. It is the DNR's position that every citizen should share in the beauty and recreational opportunities of Minnesota's natural resources as well as the responsibility for maintaining and preserving them.

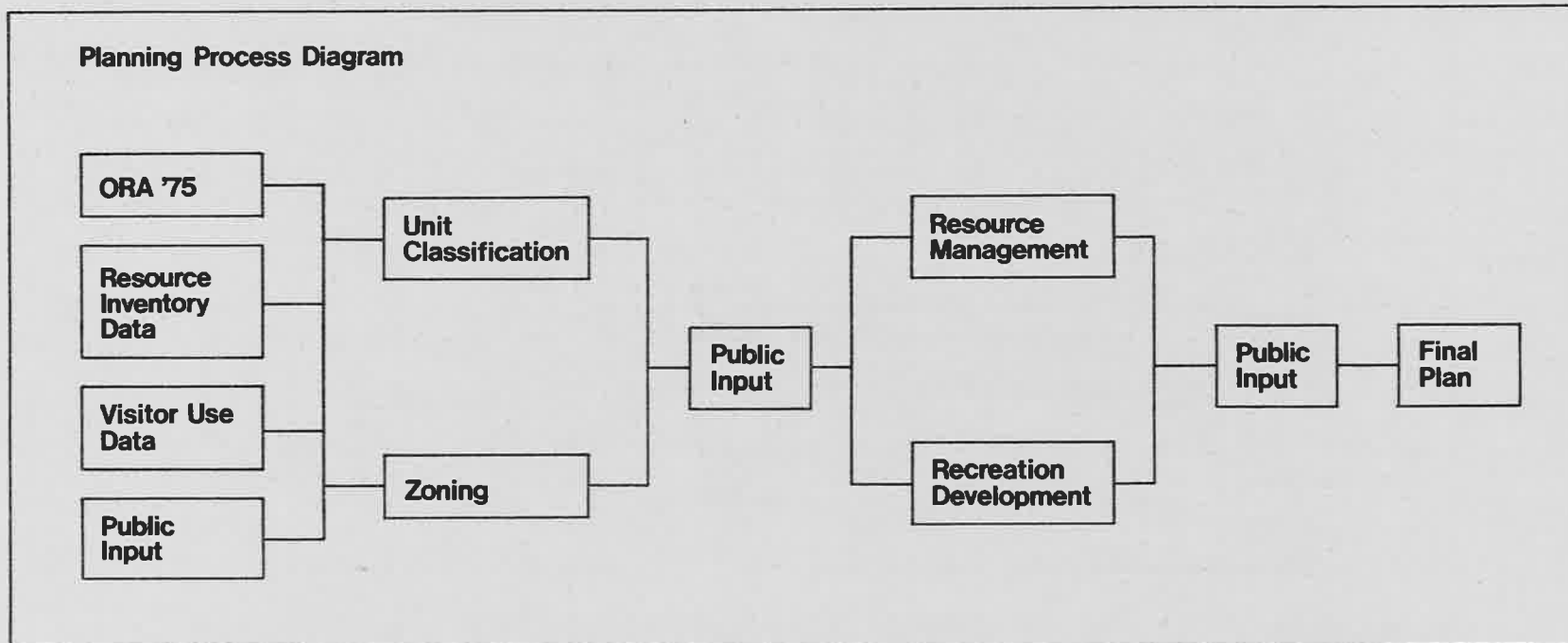
Obviously, there are going to be situations where use and preservation conflict. Every attempt will be made to reconcile these conflicts by the use of responsible management and development techniques. When this is not possible, however, the primary concern must be preservation of the resource. Allowing our resources to deteriorate would not only jeopardize high quality recreation for this generation but for future generations as well. To maintain a high quality recreational experience, it may be necessary to limit the number of people using a unit at a given time or to restrict certain activities within that unit. When this occurs, an attempt will be made to provide these activities at a nearby unit that has a higher tolerance to use.

In planning management and development of the various units, the DNR will consider probable future impacts which would affect each unit. In spite of this, unforeseen circumstances are bound to occur. Therefore, each plan should be reviewed periodically to see that it is still relevant in light of current conditions. While a plan can and should be modified if conditions change, nothing should be done that would be detrimental to the objectives set forth in this philosophy.

OUTDOOR RECREATION ACT REVIEW

The Outdoor Recreation Act of 1975 (ORA '75) was enacted by the Minnesota Legislature to "preserve an accurate representation of Minnesota's natural and historical heritage" and to "provide an adequate supply of scenic, accessible, and usable lands and waters to accommodate the outdoor recreation needs of Minnesota's citizens." In an effort to improve long-range planning for the state recreation system, the legislature has directed that management and development plans be prepared for each unit in the system.

ORA '75 also redefined certain recreation unit classifications. For example, the state park classification was divided into recreational state parks and natural state parks. As a part of the overall planning process, the classification of each unit will be reviewed to insure that it is consistent with the resources in that unit. These plans will be used as a guide for developing management policies and planning recreation facilities in each unit. The ORA '75 also states that after August 1, 1977, no development funding will be permitted for any unit until a management and development plan has been completed and reviewed for that unit. By authorizing this planning program, the legislature has taken a significant step toward building a state recreation system in which every Minnesotan can take great pride.



Summary of Plan

INTRODUCTION

This management plan will propose classification for the park, identify goals and objectives, address resource inventory and management, set forth a continuing development plan, and address park maintenance, operations, and land expansion for Hayes Lake State Park.

SETTING

Hayes Lake State Park is located in northwestern Minnesota, 22 miles southeast of Roseau on the Roseau River in an area which was once in the bed of glacial Lake Agassiz. The area is generally very flat. Variation in relief occurs only where streams and rivers have dissected the topography. The park is in a transition zone between the prairie on the west and boreal forest to the east. Presently, jack pine and aspen-birch are the dominant vegetation types.

Hayes Lake, created by an earthen dam, is a highly scenic impoundment with clear water and a variety of vegetational communities along its irregular shoreline. Visual diversity is provided by a balanced mixture of abandoned old fields, alder-willow brush communities, jack pine stands, and aspen-birch.

CLASSIFICATION

Hayes Lake State Park has been recommended for classification as a recreational state park.

GOAL

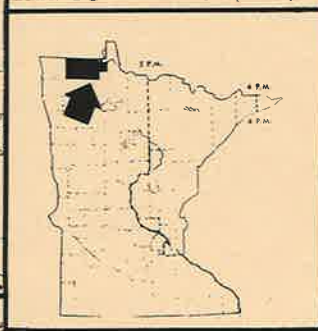
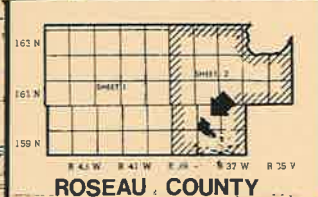
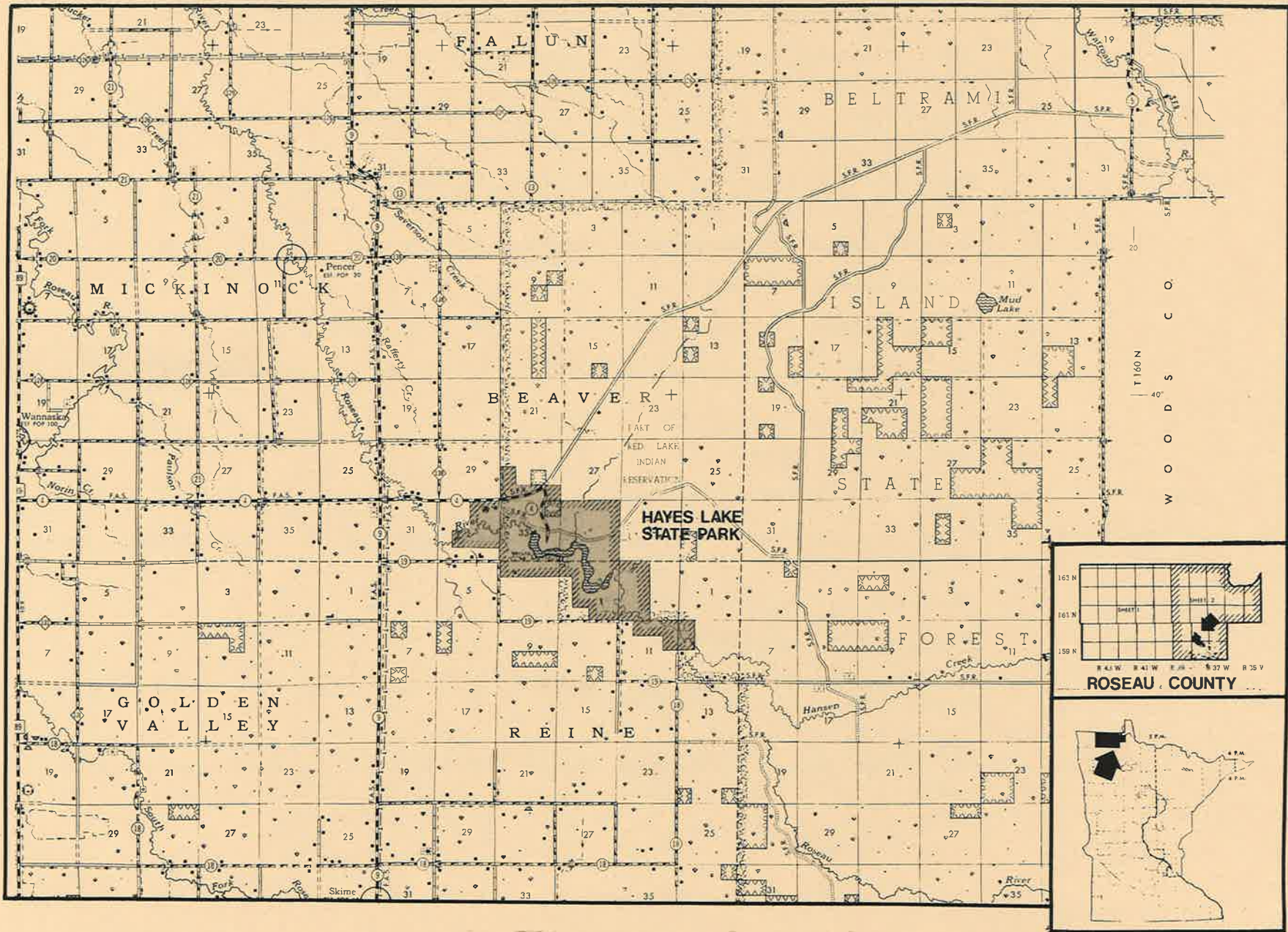
The management goal for Hayes Lake State Park is to provide water and forest oriented recreation for large numbers of people and to provide a recreational gateway to Beltrami Island State Forest.

OBJECTIVES:

To zone Hayes Lake State Park to ensure the protection of ecologically sensitive areas and the development of recreational activities which are compatible with the resources of the park

To improve the water quality of Hayes Lake

To protect the groundwater resources through the use of appropriate waste disposal systems



To stabilize fish habitat and maintain a game fish population in Hayes Lake

To ensure that soils limitations are identified and new facilities are designed to minimize impacts on soils

To perpetuate existing plant communities to provide an opportunity for a variety of recreational activities in a natural setting

To maintain wildlife populations consistent with existing vegetative communities and control nuisance animals in accordance with park management policies

To interpret local history in light of its statewide significance

To control access to the park

To provide information to park visitors which will facilitate their use of the park

To provide lake and forest-oriented camping opportunities in a localized area of the park

To provide boat access to the lake

To improve beach safety

To facilitate use of the existing picnic area

To develop trails which link significant areas of the park and connect to trails in the adjacent state forest

RESOURCE INVENTORY AND MANAGEMENT

Water Resources Management

There are no serious water quality problem in Hayes Lake because the upper watershed of the Roseau River is in the Beltrami Island State Forest.

Sedimentation rates will be monitored to effectively predict the longevity of the Hayes Lake impoundment. Some tree removal is required where the rising water levels in the lake have killed the trees.

Specific precautions are necessary in designing and locating sewage disposal systems to protect the quality of the groundwater.

Fisheries Management

The Hayes Lake fish population includes: suckers, bullheads, redhorse, and northern pike. Winter survival is limited because the decay of recently flooded vegetation in the lake basin reduces the oxygen supply.

A fisheries stocking program will begin once water quality has been stabilized. Survival and natural reproduction must be monitored to be certain that the fish management program is successful.

Soils Management

The soils of Hayes Lake State Park are generally sandy loams, sand, and loamy fine sands. Alluvial soils are found in the Roseau River floodplain. Proposed facilities will be designed to minimize any impact on the soil.

Vegetation Management

A total of 14 ecological communities occur in Hayes Lake State Park. The predominant communities include jack pine groves, pioneer hardwoods, alder-willow, and old fields.

Timber removal will be used to promote wildlife diversity. Controlled burns will be used in cut-over areas to encourage jack pine regrowth. Plantations will be thinned to improve growth.

Wildlife Management

Over 240 species of birds, mammals, reptiles, and amphibians inhabit Hayes Lake State Park. Noteworthy species include the timber wolf and common loon.

Management will be directed toward maintaining the ecological community and wildlife diversity consistent with existing habitats. Openings will be created and maintained to increase the wildlife visibility for park visitors.

RECREATION MANAGEMENT

Proposed Developments

Expand the existing 35-site semi-modern campground to a maximum of 80 sites, depending on demand.

Develop a new multi-use group and individual campground in stages to a maximum of 24 sites.

Develop walk-in campsites.

Build a new orientation center to house the contact station, park office, and orientation displays.

Enlarge the swimming beach and reduce its slope to make swimming safer.

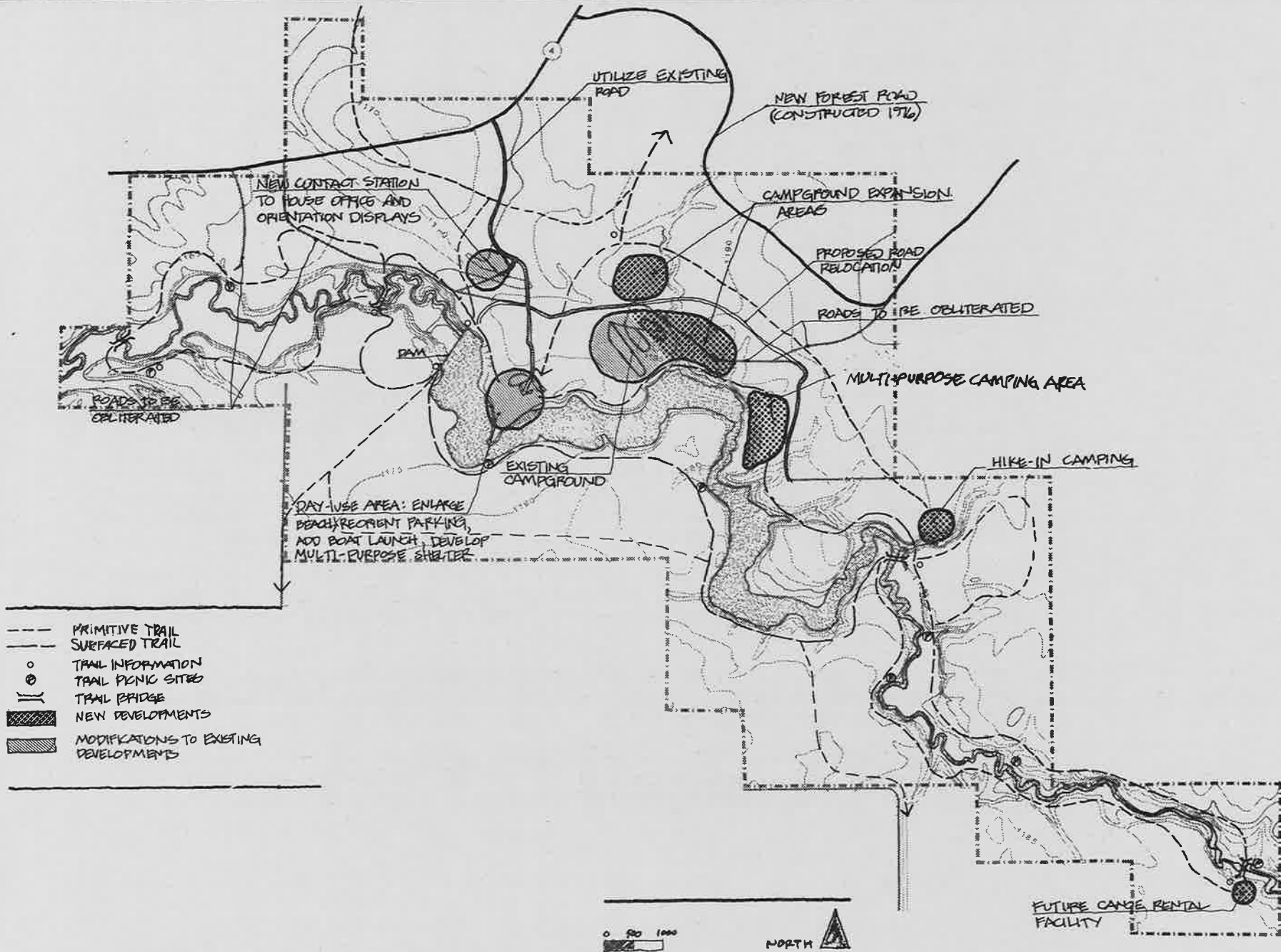
Realign the swimming beach parking lot closer to a north-south axis to improve visitor orientation.

Expand the trail system so that park visitors can more fully experience the various park environments.

Eliminate and revegetate unnecessary old roads.

BOUNDARY MODIFICATION

Nearly 90% of the total authorized statutory acreage of Hayes Lake State Park is either owned by the Division of Parks and Recreation (DNR) or is under a long-term lease. Private lands include property owned by 3 individual landowners and the Red Lake Tribe. All of these private parcels have river frontage. To protect the river from development and preserve the integrity of the park, these lands must be acquired. Two co-landowners have indicated a willingness to sell to the DNR. The other private landowners are presently unwilling sellers. The land owned by the Red Lake Tribe might be exchanged for other state land outside the statutory boundary of the park.



Unit Character

REGIONAL PERSPECTIVE

Hayes Lake State Park is located in northwestern Minnesota in Roseau County in an area which was once the bed of glacial Lake Agassiz. The park is 22 miles southeast of the city of Roseau on the Roseau River. Access is provided from Roseau on County State Aid Highway (CSAH) 4. Minnesota Trunk Highways (TH) 11 and TH 89 are the major roads serving the park area.

Located in a jack pine and aspen forest at the eastern edge of the Red River Valley, Hayes Lake State Park contains a beautiful artificial lake surrounded by largely flat land undulating shoreline, vegetation diversity, and relatively clear water give the lake a highly scenic quality.

Because the land is so flat, the different vegetational types in Hayes Lake State Park provide most of the spatial variety. The density of the dominant aspen and alder-willow, provides an enclosed landscape contrasted by open vistas of the old fields.

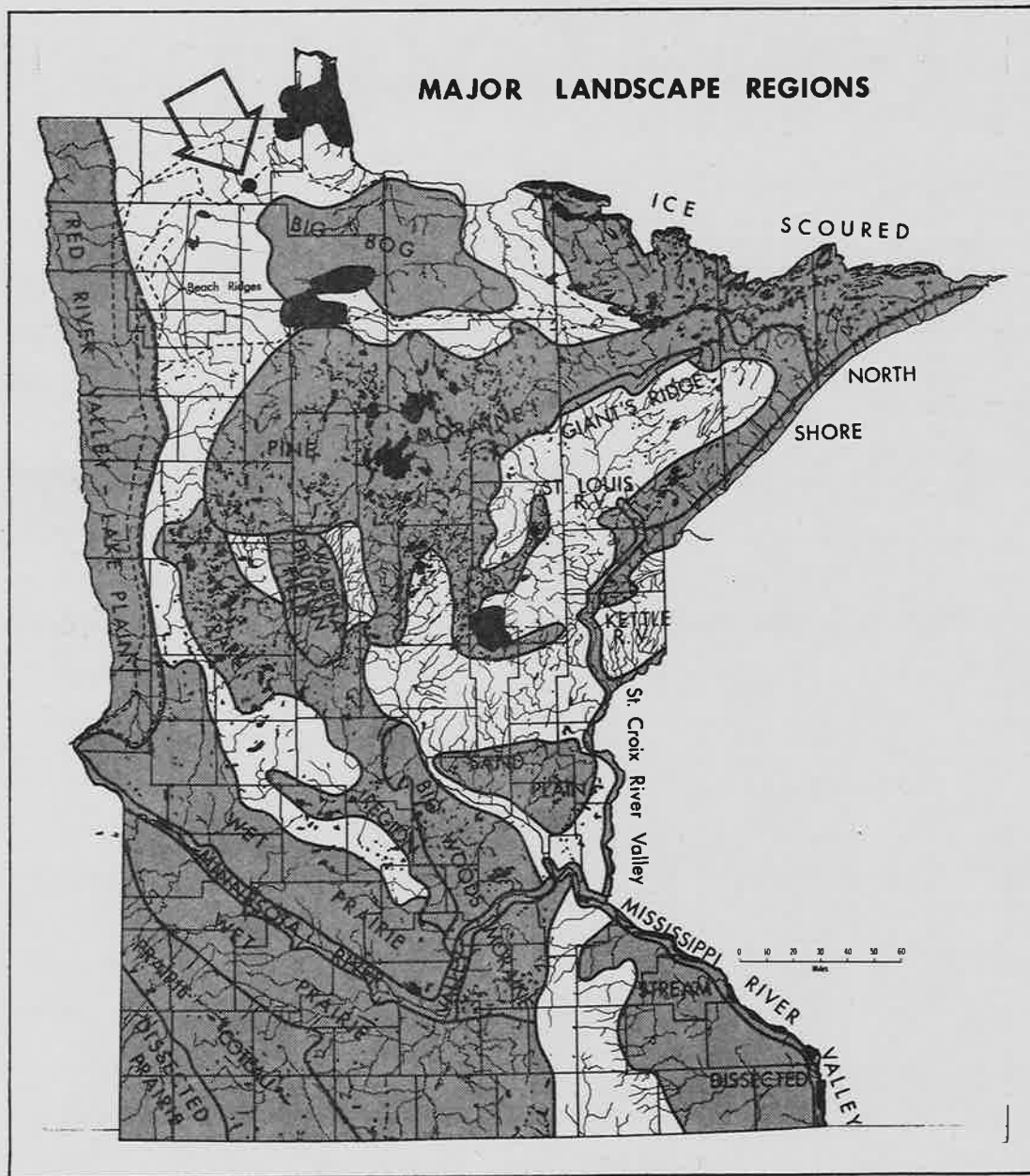
Two roads, CSAH 4 and the newly realigned River Forest Road, provide access to northern sections of the park. The old alignments of River Forest Road and several old logging roads remain intact.

The original vegetation in the region included black spruce in the bogs, jack pine, spruce, aspen-birch, and oak. The park is in a transitional area between the prairie lands to the west and the boreal forest to the east. Fire played an important role in maintaining the ecological transition zone between these two biomes. Consequently, a very complex vegetational mosaic existed following the last glacial period. The present vegetation in the area is the result of extensive fires which burned the area between 1900-1920. Presently, jack pine and aspen-birch are the dominant species.

Land use in Roseau, Lake of the Woods, and Marshall counties is 39% agricultural and 27% forested. Marshes and open water cover another 22%. Current population estimates for the 3 counties total 29,500. This figure represents a slight increase over the 1970 population of 28,700. The principle urban center of the region is Roseau.

The recreational potential of the area is good. Lake of the Woods, on the eastern edge of the region, attracts many fishermen during the spring and summer. State forests and wildlife management areas provide excellent opportunities for hunting deer, moose, waterfowl, and other game.

Data compiled by the Department of Economic Development indicate that Roseau and the adjacent Marshall and Lake of the Woods counties derived \$12,601,000 from tourist-related expenditures in 1974. This figure represents approximately 10% of the total gross sales in the counties.



Even though there are not many lakes in this region, with proper management it will continue to have prime recreational potential. The existing plant communities are generally mature or over-mature. Without management, these communities will be succeeded by brush, which would not be particularly attractive to park users.

Sources:

Project 80 Staff 1971. Minnesota resource potentials in state outdoor recreation. Department of Natural Resources, Bureau of Planning and State Planning Agency, Env. Planning Section.

Marchner, F. J. 1930. The original vegetation of Minnesota. North Central Experiment Station Map.

Minnesota State Planning Agency. 1975. Minnesota pocket data book. Development Planning Division.

State Planning Agency. 1975. The economic distribution of tourist travel expenditures in Minnesota by regions and counties.

Minn. DNR Division of Parks and Recreation Administrated Lands Atlas, by Section of Engineering, Oct. 75, Book No. 22

Brauer et. al. 1966. Hayes Lake State Park feasibility study. Brauer and Associates, Inc.: St. Paul.

OFF-SITE RELATIONSHIPS

Hayes Lake is visually insulated from the land areas beyond the statutory boundary by tree and brush cover around most of the perimeter of the park. Some open fields, however, do allow off-site views in the southeast and southwest corners of the park. The Beltrami Island State Forest, which borders the park on the north and east, buffers it from undesirable development.

The gravel road adjacent to a 3/4-mile stretch of the boundary of the park is a low-traffic road and is not expected to generate much noise.

ACCESS CORRIDORS

The major access to Hayes Lake is via CSAH 4, a paved road which enters the park from the west. This route brings visitors through farmland to the edge of the park, where they enter the forest approximately 1 mile from the entrance road.

Access is also possible from the east, via the Thompson-Bednar Forest Road. It is an occasionally winding, gravel extension of CSAH 4, running approximately 12 miles through Beltrami Island State Forest to the park.

CLIMATE

Hayes Lake State Park, in the northwest part of the state, has warm and pleasant summers and very cold winters. Some wind protection is afforded by the park's dense forest. It has one of the lowest precipitation levels in the state.

Temperature Variations

Mean January Maximum	12 ^o F
Mean January Minimum	-12 ^o F
Mean July Maximum	80 ^o F
Mean July Minimum	54 ^o F

Mean Average Extremes/Frequency

-0^oF 67 days/@year
+90^oF 8 days/@ year

Precipitation

Annual Total	22 in.
Annual Snowfall	42 in.

Sources:

Report by U.S. Department of Commerce, Weather Bureau., January 8, 1959 cited by Brauer and Associates, Hayes Lake State Park feasibility study, August 31, 1966.

Keuhnast, Earl L. 1972. Climates of the states. U.S. Department of Commerce, Climatography of the United States No. 60-21.

GEOLOGY

Glacial History

The landforms of Hayes Lake State Park were largely a result of the forces of glacial Lake Agassiz. This extremely large lake, covering much of Manitoba, Minnesota, and the Dakotas, was formed by glacial meltwater confined by glacial deposits and the glacier itself.

When the moraine was breached by the River Warren and the confining ice wall had melted, the lake drained leaving only the flat plain which now characterizes the terrain of the region.

Hayes Lake has a fair potential for metallic mineral occurrence. Possible minerals of economic value include: zinc, copper, lead, gold, and silver

Geologic reliability: fair

Source:

Memo from Meineke, David G., DNR Minerals Division, "Major Metals for the Mineral Potential of State Parks," January 27, 1976.

PARK HISTORY

The desirability of a state park in this area was first suggested by a 1938 long range park plan written by the Minnesota Division of State Parks and the National Park Service. A 1958 update recommended enlarging the state system from 135,000 acres to 200,000 acres to satisfy the needs criteria of the National Park Service and "Resources for the Future," a privately endowed organization.

The area first recommended was near the current Hayes Lake State Park on the Warroad River. This location was deemed to be a strategic recreational complement to Lake of the Woods, Zippel Bay State Recreation Area, Old Mill State Park, the proposed Great River Road, the potential National Park Service parkway on TH 11, the Red Lake Wildlife Management Area, and Beltrami Island State Forest.

The area was considered especially attractive because it contained both a large percentage of state owned land and an unpolluted stretch of river which originated in the Red Lake Bog.

A long time advocate of the park and lake was A. F. Hayes. Hayes' efforts resulted in the formation of a formal citizen organization in 1964 led by Elmer "Cap" Nelson. District Forester Ralph Thompson first brought the present site in the southern portion of Beltrami Island State Forest to the attention of all concerned. It was agreed that it is was a very feasible place to impound the river to form an artificial lake for recreational use.

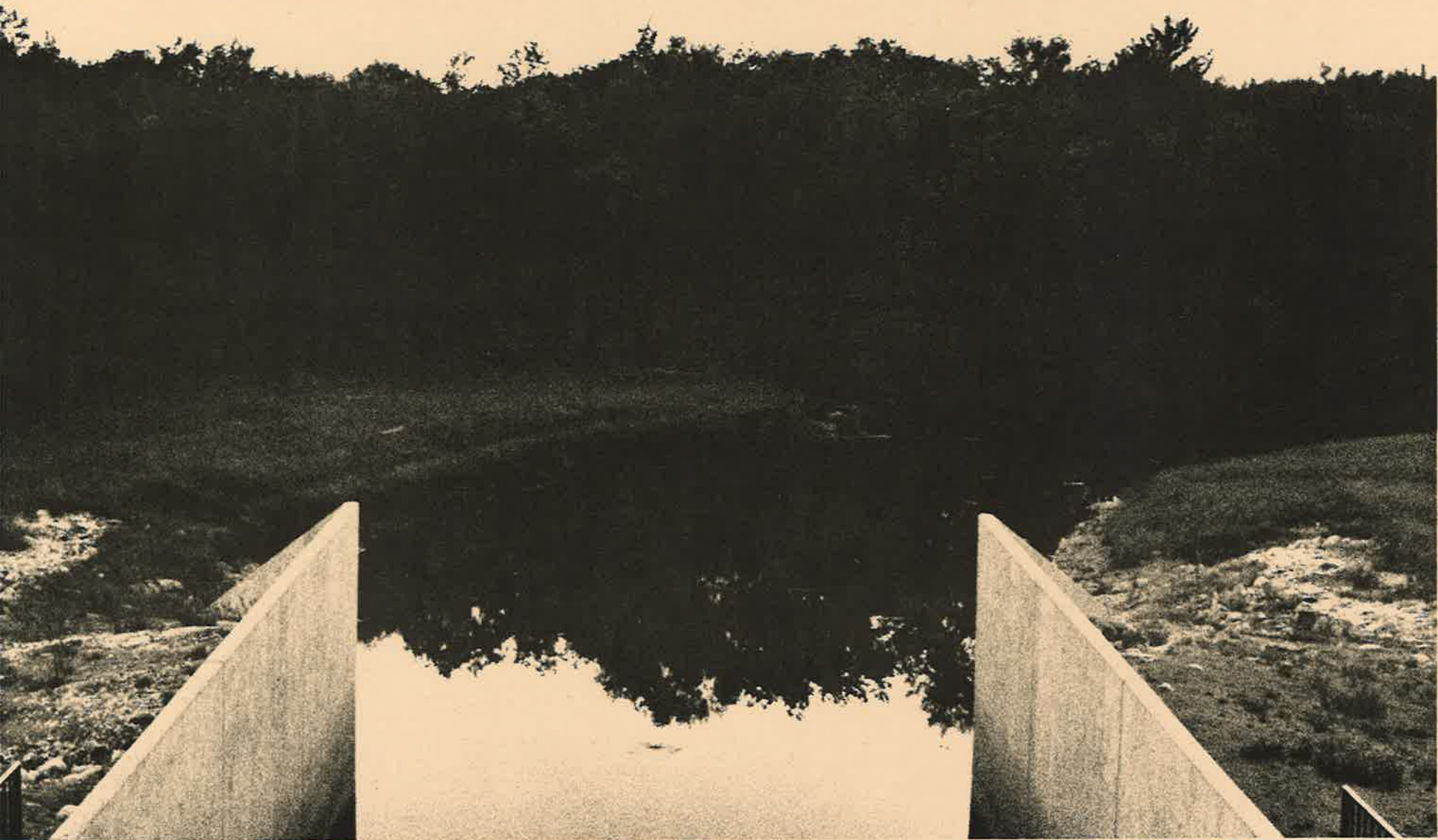
A combination of this local interest and a favorable evaluation of the area by the Department of Conservation, the forerunner of the present DNR, prompted the 1965 legislature to fund a detailed study by the firm of Brauer and Associates. The study recommended that the present site was the most suitable in the area considered, for a state park. The 1967 legislature subsequently passed legislation which formally created Hayes Lake State Park, named in honor of A.F. Hayes. Construction of the \$470,000 dam was authorized in the 1969-1971 biennium. Dedication took place in 1973. Development has continued to date.

During its short history, the park has attracted a variety of visitors. The scarcity of lakes in the area has focused considerable fishing and swimming activity on Hayes Lake along with camping and other recreational uses.

Sources:

Buckmand, C.B. 1973. Hayes Lake State Park dedication speech. Minnesota Department of Natural Resources.

Interview with John Martin, past Assistant Director of Division of Parks and Recreation, April, 1976.



Classification

INTRODUCTION

In accordance with the Outdoor Recreation Act of 1975 (ORA '75), the park planning staff has reviewed the classification of each park under study this biennium. After the park resource inventory was completed for each unit, the planning staff determined:

- A. Which of the eleven classifications from ORA '75 was most appropriate for the unit
- B. Whether sub-units should be considered to deal with special areas within the unit (scientific and natural areas or other sub-units authorized in ORA '75)
- C. Whether administration of the unit should be reassigned to other governmental bodies (other state agencies, county or local governments)

Each park has been recommended for classification according to its resources and as such will be managed and developed according to the nature of those resources and their ability to tolerate visitor use.

Objectives:

To establish a statewide recreation system that will meet the recreational needs of our society

To determine the most suitable management for a given park based on its natural resources and recreational potential

RECOMMENDED CLASSIFICATION

Hayes Lake has been recommended for classification as a recreational state park

ALTERNATIVES CONSIDERED

Natural State Park - Hayes Lake State Park did not fit the natural state park classification primarily because the main attraction of the park, the Hayes Lake impoundment, is not a natural feature.

Regional Park - The large size of this park precludes the possibility of local management. As a relatively new park, Hayes Lake has not established definite use/clientele patterns.

CRITERIA

The Outdoor Recreation Act of 1975 (ORA 75) requires that a unit substantially satisfy all of the following criteria to qualify as a recreational state park:

"Contains natural or artificial resources which provide outstanding outdoor recreational opportunities that will attract visitors from beyond the local area."

"Contains resources which permit intensive recreational use by large numbers of people."

"May be located in areas which have serious deficiencies in public outdoor recreational facilities."

DISCUSSION

The scenic lake created by the dam on the Roseau River combined with the wilderness character of the park provides an excellent setting for water-related recreational activities which are rare in this area of the state. Plant and animal life represent substantial interpretive potential. The park also serves as a gateway to the 670,000-acre Beltrami Island State Forest, providing the potential for extensive complementary trail networks for backpacking, skiing, snowshoeing, and snowmobiling.

The generally sandy soils pose some limitations to intensive recreational use, but the flat terrain minimizes erosion problems.

Although Hayes Lake is in an area of relatively low recreational facility deficiencies, State Comprehensive Outdoor Recreation Plan (SCORP) has identified some deficiencies which could be met with facilities in the park.

PARK GOAL

Hayes Lake will be managed as a recreational state park, consistent with ORA 1975, to provide for a variety of recreational opportunities in a pleasing, natural setting that can be used by large numbers of people. Recreational opportunities will capitalize on the lake, the wooded setting, and the adjacent state forest. The natural resources will be managed to restore and maintain the scenic wooded character of the environment.

Resource Management

INTRODUCTION

Optimal management of Minnesota's state park system requires a multi-disciplinary approach to each park's unique resource content. All determinations in this plan are based upon:

- an initial inventory of the park's soils, waters, vegetation, wildlife, fisheries, and historical/cultural sites
- a careful examination of the interdependence of these systems and their relationships to larger systems, within and outside of the park boundary
- a critical, site-specific zoning of all park areas according to natural and cultural resources values
- an assessment of the park's recreational potential consistent with its classification and zoning.

While this planning process has shed new light on both resources and potentials, it has often outlined and underscored the need for specific research in areas where pertinent data are now deficient.

ZONING

Introduction

Before the specific management of Hayes Lake State Park can be considered, a zoning concept must be established to evaluate the various management alternatives. General management strategies can then be determined and expressed by zoning the park for its prime management objectives.

Objectives:

To establish a zoning system which formally recognizes the various features of a park

To identify those areas suitable for specific uses and establish management requirements necessary to provide for recreational needs while protecting the park's resources

Management Zoning

A land classification system utilizing six major management zones was adopted which will permit effective, economical management of the park's resources, centralize legitimate park development and use, and protect delicate resources in the park.

Land Classification Zones

To aid in understanding the final zoning concept map, p. 28, the six potential zones have been defined with a description of their prime management objectives.

Ecological Protection Zone - The ecological protection zone includes areas having ecological communities which are either sensitive to certain uses, require special management or protection and/or have significant value for research. Areas having unique or endangered wildlife habitat or vegetative communities are included in this zone. Management will be directed toward perpetuating these ecological values. Development will be restricted to interpretive facilities or trails which do not disturb these values. All forms of access may be prohibited when necessary. In certain instances, small structures may be necessary to orient use and protect habitat.

Outstanding Natural Feature Zone - The outstanding natural feature zone includes areas which are geologically or biologically of statewide significance. These features are often the park's principal resource attractions and will be managed to provide visitor enjoyment without impairing resource quality. Development of restricted forms of recreational facilities may be necessary to allow for enjoyment and interpretation. All development must be compatible with the features of the site to protect its natural character. Resource management will be restricted to restoring the resources and perpetuating their natural characteristics.

Primitive Zone - The primitive zone includes extensive areas of land and water remote from high-density use areas and major developments within the park. Development will be restricted to hiking/skiing trails, primitive walk-in campsites, and appropriate interpretive facilities. Resource management will be directed toward restoring and perpetuating the natural environment and the aesthetic character of that environment.

General Environment Zone - This zone includes areas which, while they may be very scenic, contain no identified outstanding natural, historical, or cultural features. In addition, the resources in this zone must be able to tolerate moderate use. Properly managed, this zone will serve to unite the other zones into a cohesive unit.

Historical and Cultural Zone - The historical and cultural zone includes those sites which help to illustrate the historical and archaeological heritage of the area that would be preserved or restored. Activities should emphasize the interpretive values of the site. Recreational development will be restricted to activities hiking/skiing trails, small picnic areas, interpretive facilities, and parking. Activities and improvements should be limited to those which will not detrimentally affect the preservation and restoration of these sites and should be reviewed with the Minnesota Historical Society. All historical or cultural sites should be surrounded by sufficient natural buffers to minimize encroachment from other activities. Natural resource management activities should maintain and perpetuate historical and cultural values while insuring regeneration of native or historically compatible plant and animal species.

Development Zone - The development zone includes lands and waters where major park development and intensive use, both existing and proposed, has or will substantially alter the environment. This zone will be managed to provide and maintain the level of development necessary to serve the needs of relatively large numbers of visitors and park administration. Park roads extending beyond this zone may be included in appropriate natural or historic zones through which they pass. Resource management will be directed toward improving the recreation capabilities and characteristics of the environment. However, native vegetation should not be extensively replaced solely for aesthetic reasons.

Potential Zones

Zone 1 - Potential Ecological Protection Zone (map p. 24) There are several areas in the park which require protection from abusive uses. Included in this zone are several marshes, a conifer bog, some active beaver lodges, deer yards, an orchid bog, and a documented timber wolf use area. The floodplain of the Roseau River, which lies below the Hayes Lake dam, is also included in this zone because the bottomland plant community supports an abundance of diverse wildlife, in addition to being visually attractive. Marshes require special protection because the water-soaked soils are easily disturbed by excessive use and any disturbance is slow to repair itself. Deer yards require protection from disturbing influences such as snowmobiles because these activities alarm deer, causing them to move to less suitable shelter.

Zone 2 - Potential Outstanding Natural Feature Zone - None exist.

Zone 3 - Potential Primitive Zone (map p. 25) A primitive zone has been identified in the southeast corner of the park. This zone would serve as a transition between the Beltrami Island State Forest and Hayes Lake State Park. This zoning designation would ensure protection for various species of wildlife. Primitive campsites may be located in this zone.

Zone 4 - Potential General Environment Zone (No map) Areas in the park which do not meet the criteria of the other zones would be designated general environment zones. Recreational use generally compatible with the overall management philosophies of the park may be permitted. Snowmobile trails would be one of the permissible compatible uses.

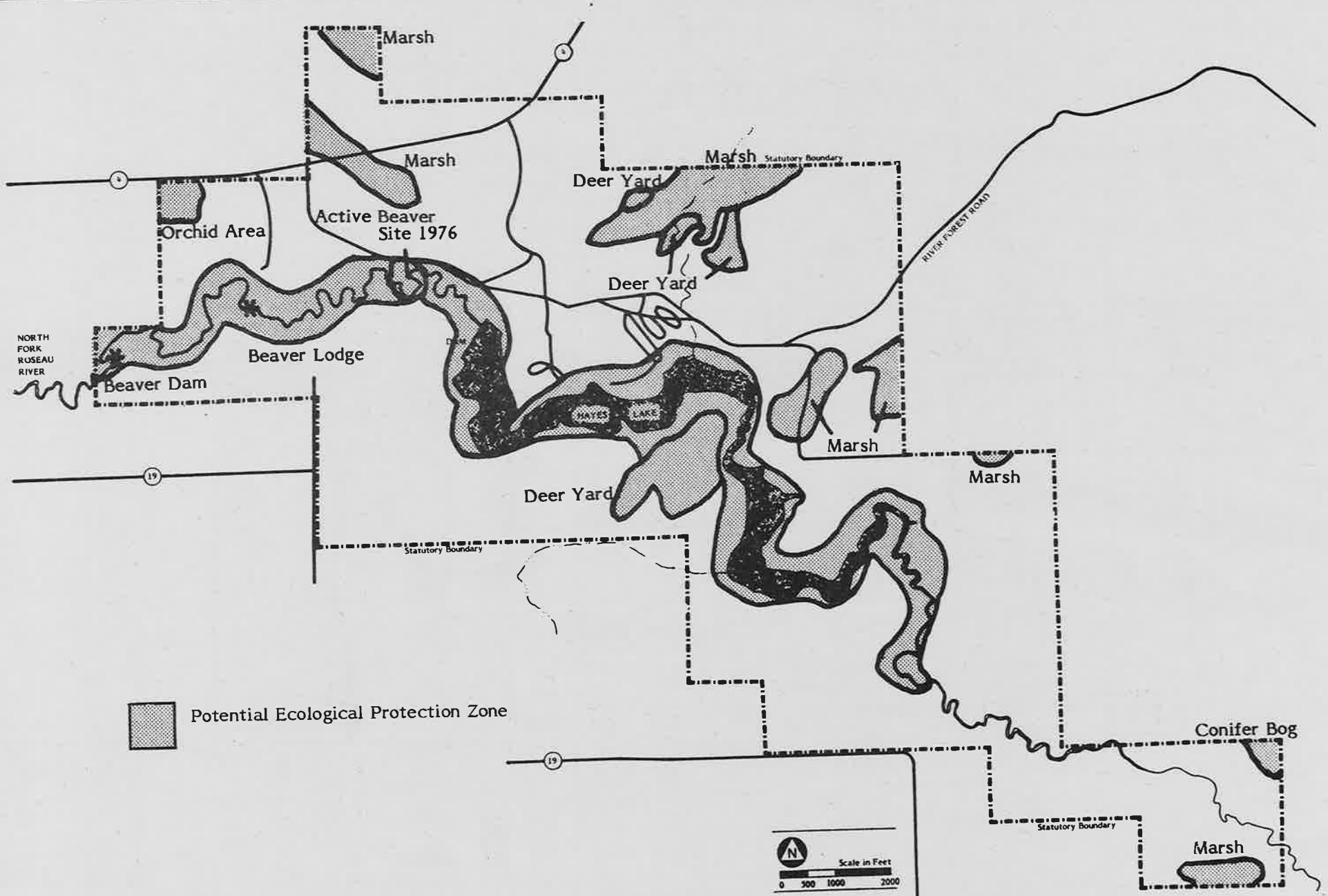
Zone 5 - Potential Cultural Zone (map p. 26) No sites of statewide historical significance have been identified in Hayes Lake State Park. However, there are several sites of local historical interest in the park. The majority of these are abandoned pioneer homesteads. One site is a small homestead burial area. One burial site has 2 graves enclosed by a chain link fence. The other burial site is that of a civil war veteran. This site is beneath a conifer tree a short distance from the river bank. Most of the physical evidence of the pioneer homesteads has been lost through the erosive processes of time.

Zone 6 - Potential Development Zone (map p. 27) Based on the suitability of the soils to support recreational development, there are several areas which have good development potential. Other areas have moderate to severe limitations which require special management considerations in the development process. The 4 areas selected for the development of recreational facilities were outside the area of highest soils suitability, because of the need to have the recreational facilities near Hayes Lake. The areas where the soils have only slight limitations to development are away from the lake and are in the area of the park farthest from the entrance road. An extensive road network to reach these locations is not justifiable. With properly designed facilities, the soils limitations can be overcome.

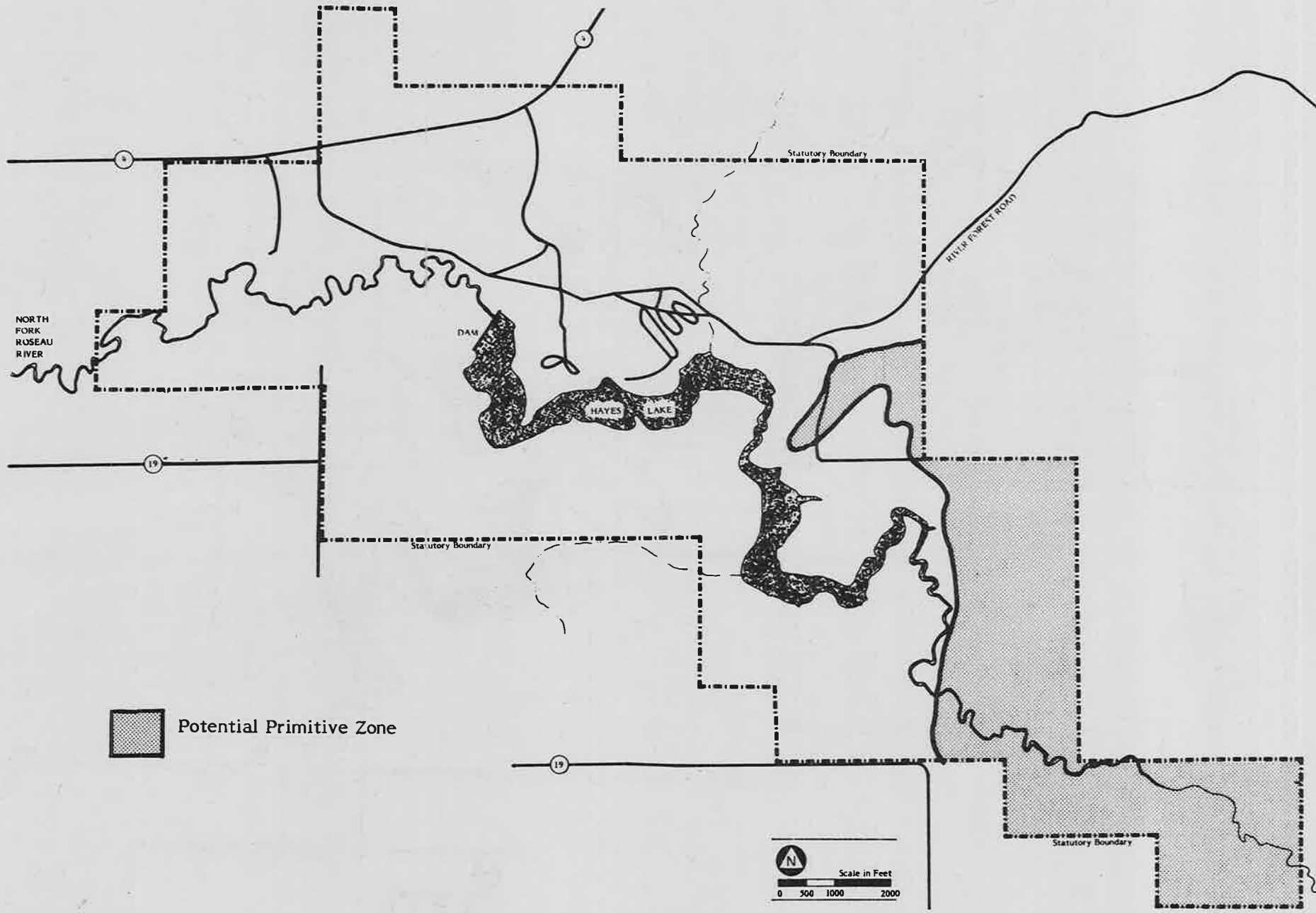
Established Zones

Final Zoning Map (p. 28) By overlaying all of the potential zones on a common base map, a composite zoning concept was established. Where individual zones overlapped, the more restrictive zone was chosen. This final zoning map will guide all recreation/resource management decisions. This will ensure that high quality resources are protected while providing appropriate recreational development for public use.

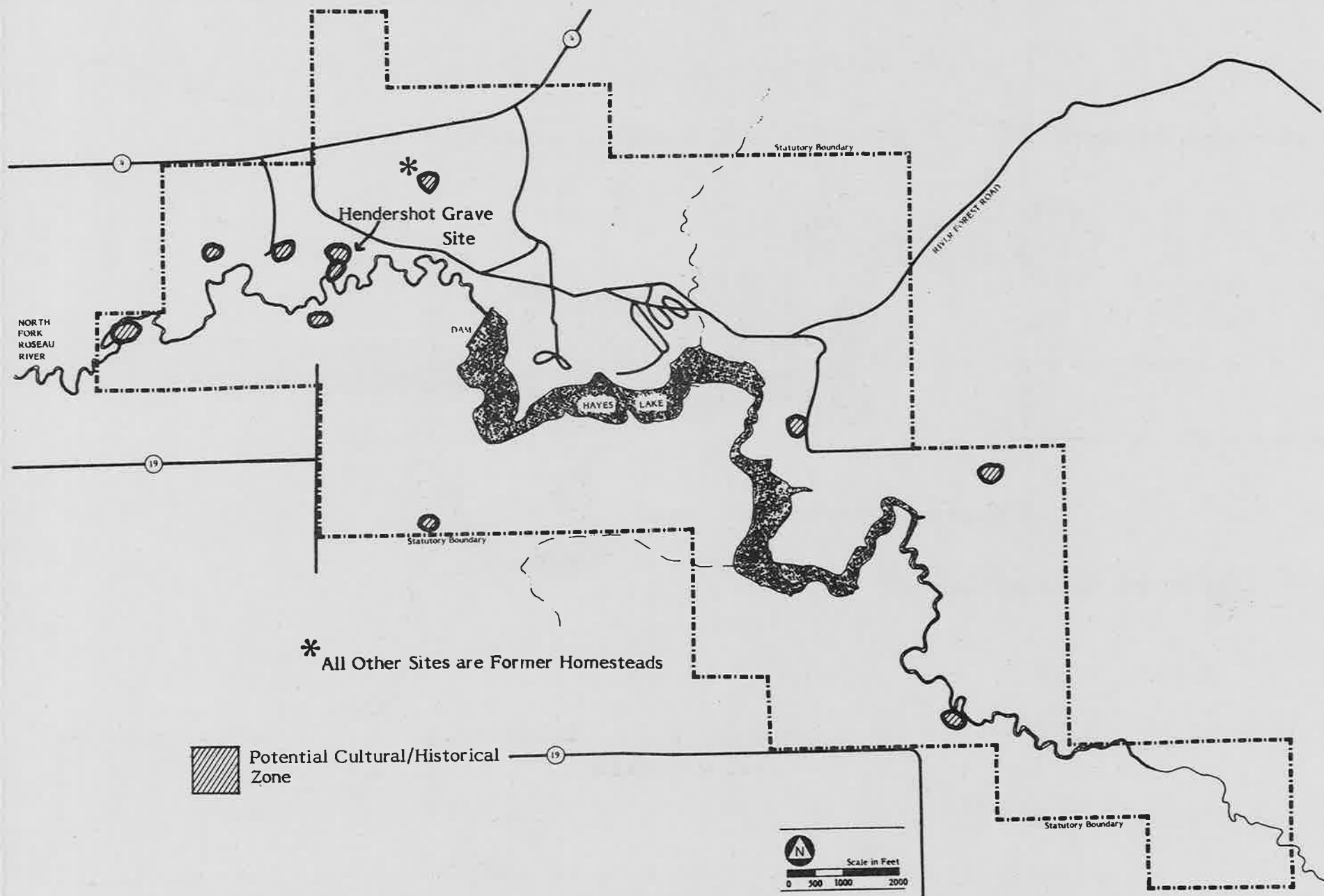
POTENTIAL ECOLOGICAL PROTECTION ZONE



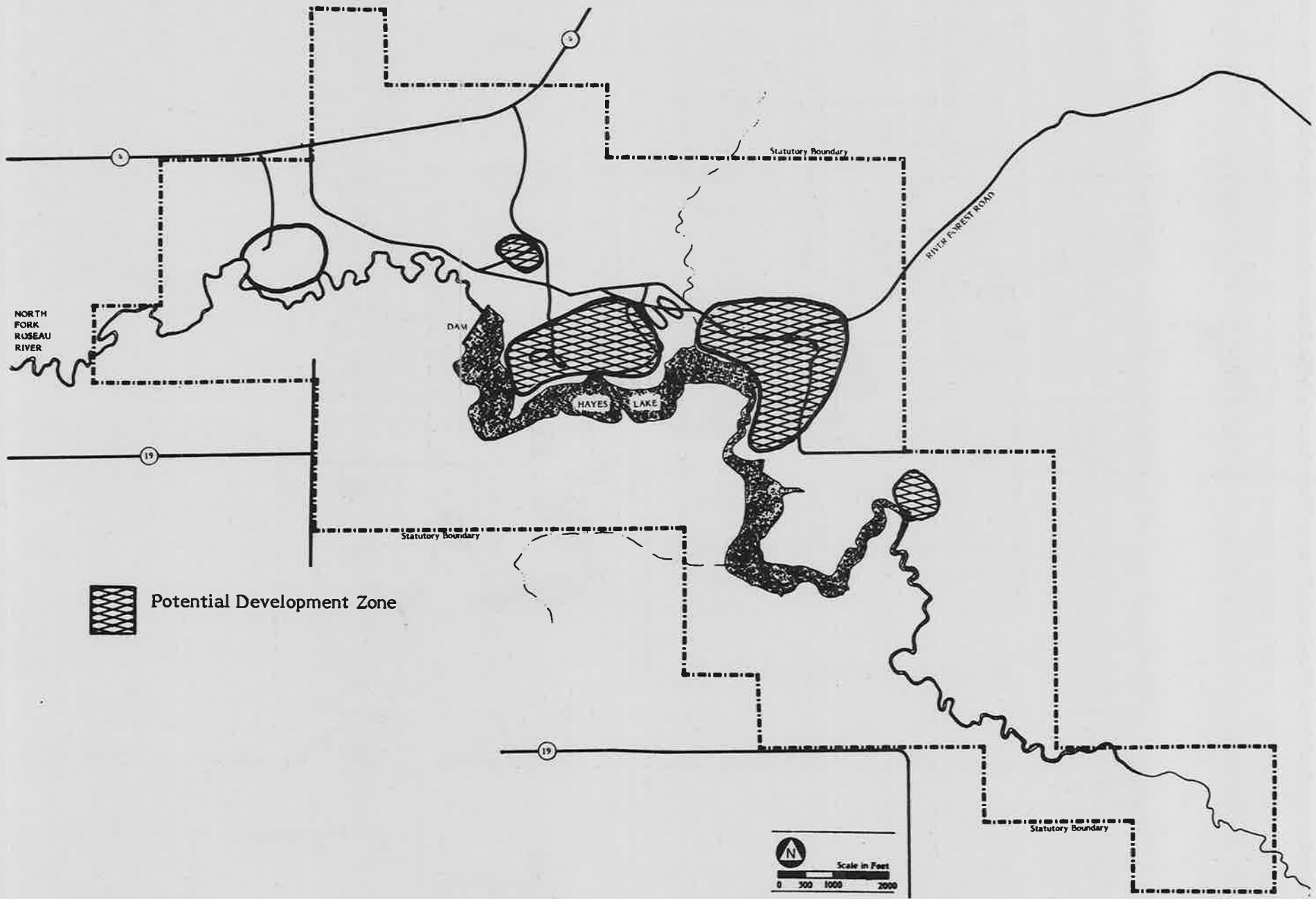
POTENTIAL PRIMITIVE ZONE

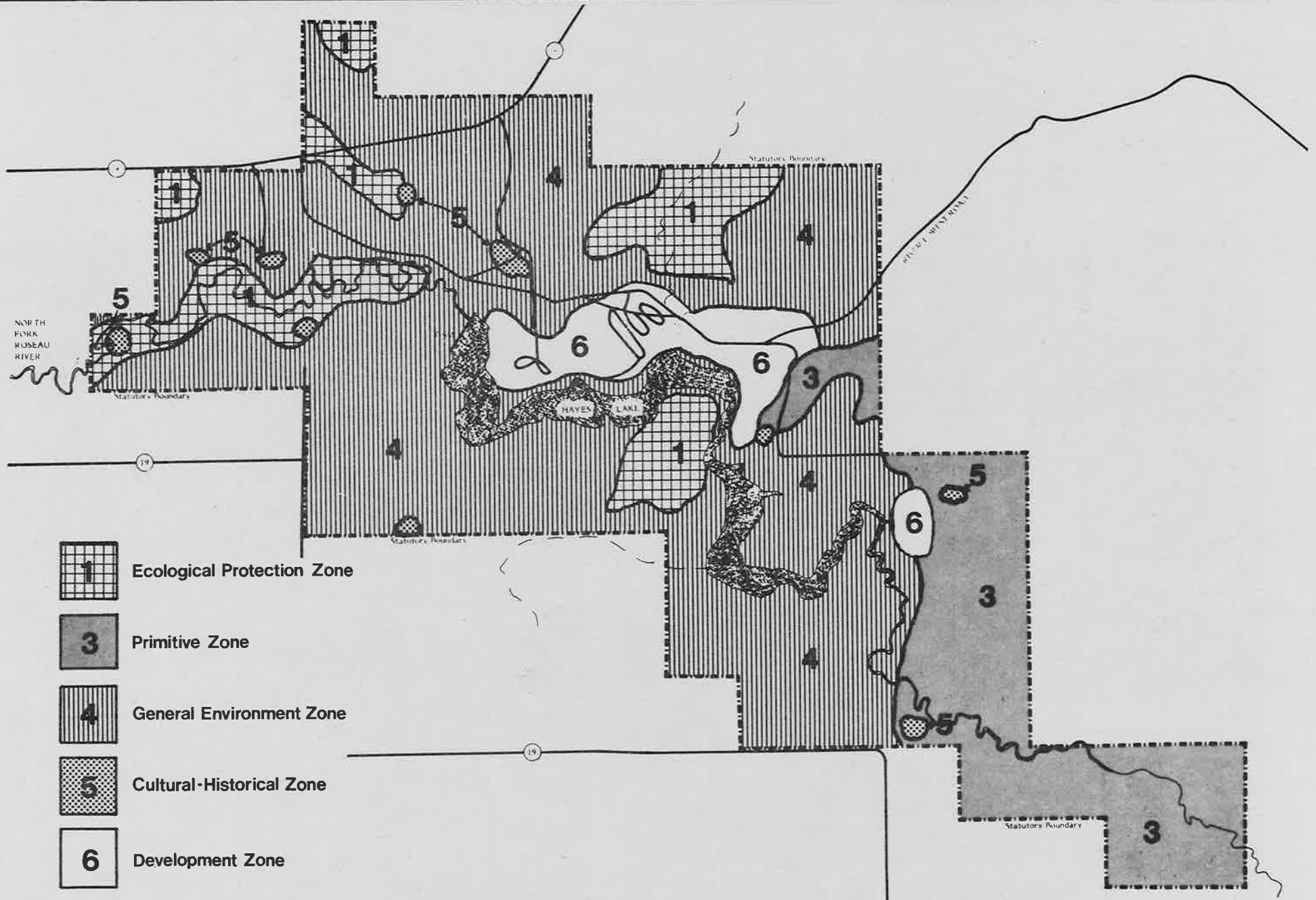


POTENTIAL CULTURAL ZONES



POTENTIAL DEVELOPMENT ZONE







WATER RESOURCES

Introduction

No single element plays a more important role in the total environment and its component life support systems than water. Besides nourishing vegetation and wildlife, water provides aesthetic and recreational experiences for park users.

There are 2 types of water resources: underground and surface. In general, underground water resources are managed to maintain a high quality groundwater supply. The following park policies will help ensure this end:

1. To purchase all lands within a park's statutory boundary to ensure control over uses which might contaminate groundwater and
2. To prevent groundwater contamination by ensuring that recreational uses and facilities comply with current health and pollution regulations.

Surface water management programs should include total watersheds, not just a particular lake or stream. Unfortunately, few parks encompass total watersheds, and the effects of park management on watersheds are minimal.

By statute, the DNR can control surface as well as shoreline use of any lake or stream which is totally within a park's statutory boundary and in state ownership. However, if one or more parcels along a shoreline are in private ownership, a common agreement must be reached by all the land owners before any management can be implemented.

Groundwater Inventory

Aquifers tend to be near the surface in the area of the park. There are additional aquifers in sand pockets below a hardpan layer through which water cannot percolate. None are of high capacity.

The following are the geological formations in the park area and the depth at which they occur:

- 0-35' - Lake deposits of laminated sands and clays (aquifer)
- 35'-55' - Hardpan and stiff blue clay (impermeable)
- 55'-150' - Heavy clay till possibly with sand pockets (potential aquifers)
- 150' - Weathered granite (bedrock)

Before the artificial lake was filled, the water table generally occurred at 10 feet below the surface. The new lake is thought to have raised this level somewhat. Two existing wells have static water levels of 9 feet.

Groundwater recharge areas include permeable soils in the lake. The lake theoretically recharges the upper level aquifer, constituting a potential pollution problem.

Well Data

Location	Depth	Static Water Level/ Water Table Level	Pumping Rate	Test Drawdown
Campground	78'	19'	13 gpm*	26'
Beach	166'	9'	17 gpm	5'
Headquarters	41'	9'	10 gpm	15'
*gallons per minute				

Source:

Memo from Morris T. Eng (DNR) to Don D. Davison (DNR). Well construction at Hayes Lake State Park.

Surface Water Inventory

Hayes Lake and the Roseau River are the water bodies in Hayes Lake State Park. The lake, a reservoir created by a dam on the Roseau River, is 187 acres in size and is usable for a variety of recreational activities. The Roseau River upstream from the lake is navigable by canoe for approximately 2 miles within the park boundaries. Water quality is fairly good, with some impurities resulting from the decay of flooded vegetation.

Roseau River Data

Location: T159N, R38W, S3 (inlet)

Width at inlet: 28 ft.

Depth at inlet: 4 ft.

Bottom type at inlet: Course gravel and rock

Flow Rate: 2 in. over outlet dam (7/16/74)

Direction of flow: West and northwest in park

Dams: Hayes Lake Dam

Navigability: By canoe for approximately 2 mi. within the park boundaries

Hayes Lake Data

Location: Roseau County T159N, R38W, S3/T160N R38W S 33,34

Surface area: 187 acres

Maximum depth: 28 ft. in channel near control

Water level fluctuation: + 2 ft.

Control Structures: Hayes Lake Dam, state owned, concrete weir-type dam completed in 1973

Inlets and Outlets: Roseau River T159N, R38W, S3 (inlet)

Navigability: Small boats or canoes

Percent lakeshore controlled by state: 100%

Shoreline Character: 15% rubble, 10% sand, 75% mud and eroded rocks

Water Quality:

Color: Brown and green (bog stain)

Clarity: 10.0 Secchi disc

Alkalinity: 122.5 parts per million (ppm) (7/19/74)

Impurities: Decaying wood

Dissolved Oxygen:

Surface: 5.4 ppm

10 ft. 5.3 ppm

15 ft. 0.5 ppm

Water temperatures:

Surface: 78°F

5 ft. 78°F

10 ft. 78°F

12 ft. 72°F

15 ft. 64°F

17 ft. 55°F

20 ft. 52°F

Source:

Latvala, Howard. 1976. Fisheries input - Hayes Lake State Park management plan. Division of Fisheries, DNR.

Management

Objectives:

To protect groundwater quality through the use of appropriate sewage disposal systems

To improve the water quality of Hayes Lake

The water table is generally close to the surface in the park. Location and design of sewage disposal systems must take this situation into consideration so that environmental impacts are limited. New technology sewage systems, such as oil carrier systems or composting toilets, may be required to protect the quality of the underground water resources.

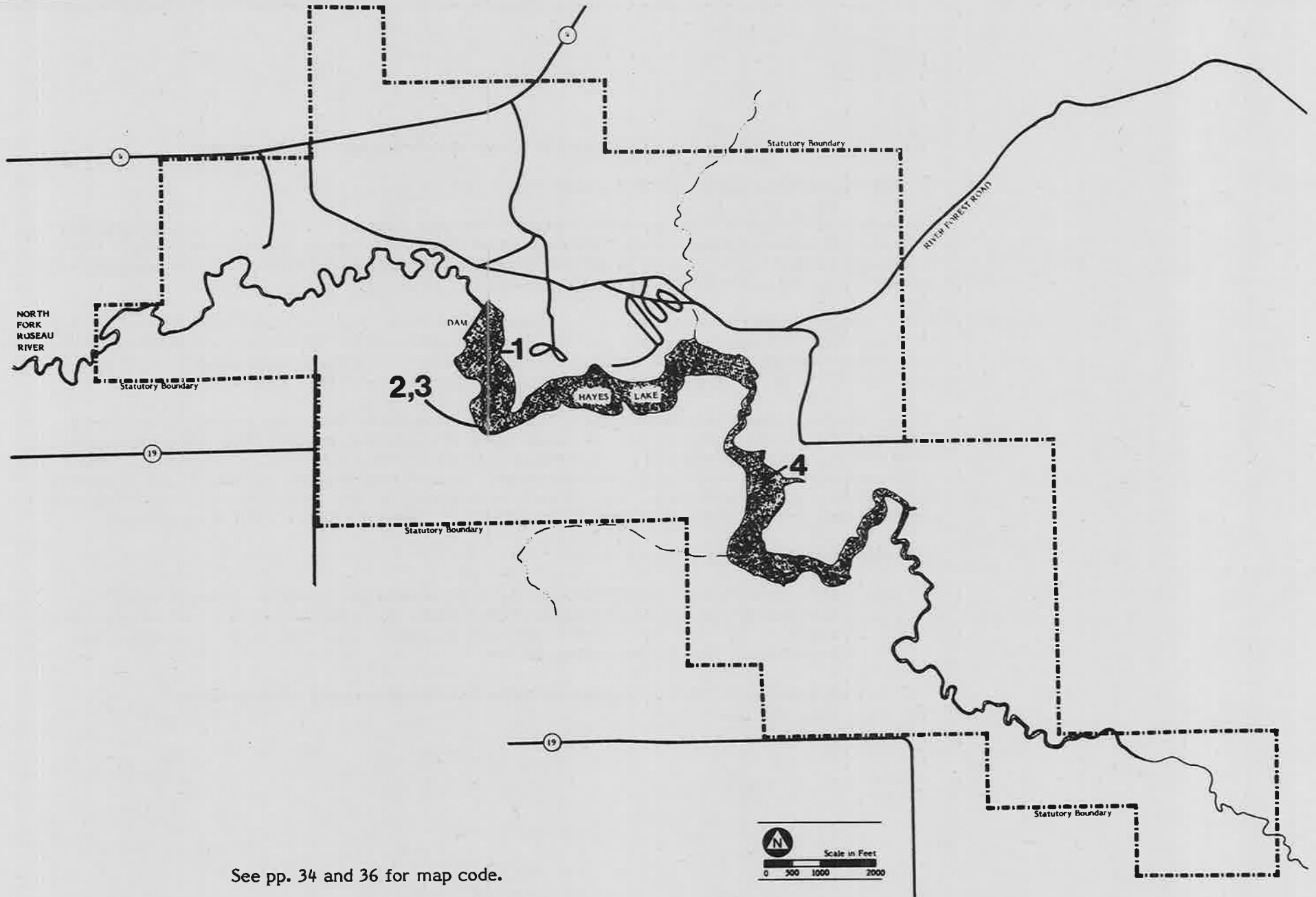
Water skiing, motor boating, and other space-consuming, water-oriented activities are not recommended. The lake is long and narrow and such uses could not be safely accommodated with other water-oriented recreational activities, such as canoeing and fishing. Also, because much of the park is primitive in character, it is undesirable to introduce outboard motor noise into the area.

Hayes Lake State Park is surrounded and influenced by diverse and sometimes potentially conflicting land uses. Since the water quality of Hayes Lake is dependent on activities occurring in the watershed upstream from the park, it is essential that any activities which might result in significant detrimental changes in water quality be discouraged. A particular problem common to all artificial impoundments is sedimentation. As sediment accumulates in the lake basin, fish reproduction declines. Since Hayes Lake is still a new impoundment, it has not yet begun to fill in significantly.

• Specific Recommendations

1. The sedimentation rate of the basin should be monitored. Transects should be established and measurements should be taken every 5 years. Detailed records will be kept and the longevity of the impoundment will be predicted after sufficient data have been accumulated. Top Priority. Cost: \$9,000.
2. A water level monitoring gauge should be installed and weekly readings taken. Cost: \$1,000.

WATER RESOURCE MANAGEMENT



See pp. 34 and 36 for map code.

3. Logs and other debris are still rising to the lake surface as a result of the lake basin land clearing operation. This floating debris should be cleaned out of the lake.
Cost: \$1,000.
4. There are several slightly submerged islands at the upper end of the lake where the trees have been killed by the rising water level. The water level of the lake should be dropped temporarily and the trees should be removed. Five to ten large trees which are sound should be left as perches for raptors and other birds.
Cost: \$3,500.

Water Resources Management Budget

Management Practice	Biennium					Total
	78-79	80-81	82-83	84-85	86-87	
Monitoring	\$ 4,000		\$ 3,000		\$ 3,000	\$ 10,000
Lake cleanup	3,500	\$ 1,000				4,500
Total	\$ 7,500	\$ 1,000	\$ 3,000		\$ 3,000	\$ 14,500

FISHERIES

Introduction

Fishing is one of the most popular year-round recreational activities in Minnesota. Each year more than 1.5 million Minnesotans and hundreds of thousands of out-of-state tourists fish the state's lakes and streams. With this tremendous pressure on fish population, efforts should be made to maintain or improve fisheries.

Inventory

Because Hayes Lake is a new, artificially impounded lake, it is still in the process of stabilization. Extensive decay of flooded vegetation and low oxygen content in winter limit the lake's sport fishery potential. However, aquatic vegetation which provides habitat for suckers, bullheads, northerns, and other indigenous river species has become established. Roseau River also supports a fish population and provides some spawning areas.

Emergent Aquatic Plants

Species and Abundance: Hardstem bulrush - common
 Wild rice - occasional
 Manna Grass - Occasional

Extent: Occupy 5% of lake surface

Location: Scattered along shoreline

Submerged and Floating Aquatic Plants

Species and Abundance: Canada waterweed - abundant
 Coontails - common
 Muskgrass - common
 Wild celery - occasional
 Yellow waterlilly - occasional
 Smartweed - rare

Extent: Occupy (approximately) 83% of lake basin

Location: Scattered in shallows to a maximum depth of 15 feet.

Indigenous Fish Populations

Species: White sucker
Northern redhorse
Brown bullhead
Northern pike
Silver shiner

Fish size: Maximum average for northern pike is about 2 pounds

Location: There are no known localized concentrations of fish in the lake and river. All species winter in the river.

Spawning areas: Northern pike spawn in the river. The river also has potential for walleye spawning.

Management

Objectives:

To stabilize fish habitat

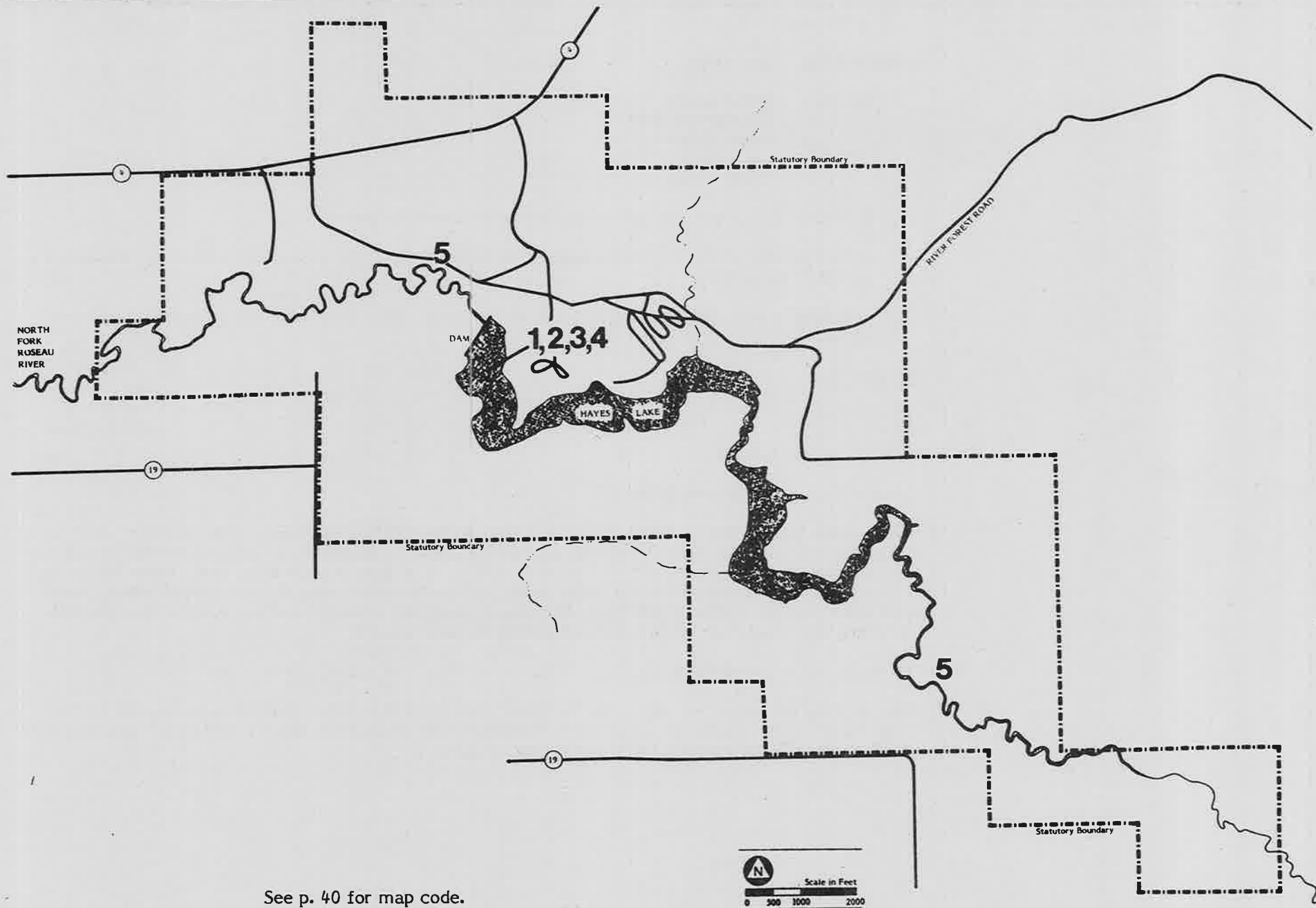
To maintain a gamefish population.

Hayes Lake State Park is relatively new to the state park system and is still in the process of attracting new visitors. Because of the park's recreational classification and because the artificial lake provides an opportunity for recreational fishing in a generally lakeless area, every effort is necessary to provide and maintain a viable gamefish population in Hayes Lake. Fisheries management techniques will be utilized to improve the natural conditions of Hayes Lake in order to provide self-sustaining fish population for recreational fishing for park visitors.

•Specific Recommendations

Snowmobiling will not be permitted on the frozen lake surface in order to prevent surface compaction of the snow layers. Compaction results in decreased light penetration and lowered oxygen production which compounds the poor wintering conditions for fish.

FISHERIES MANAGEMENT



See p. 40 for map code.

Channel catfish have been stocked in the past but they failed to survive, probably because of poor water quality. Therefore, a fisheries stocking program should be implemented only after the water quality has been stabilized. Survival and natural reproduction will be monitored. Any problems noted will be documented and steps taken to remedy the problems.

Fisheries Management

<u>Map Code p.39</u>	<u>Management Practice</u>	<u>Specific Recommendation</u>	<u>Estimated Cost</u>
1	Water quality monitoring	Seasonally monitor the water quality to determine when conditions have stabilized to a point where stocking is a viable possibility.	\$2,000 @ year
2	Species introduction	Walleye and panfish should be stocked as needed when water conditions have stabilized to an extent where propagation and survival is ensured.	\$2,000 @ year
3	Aeration	Install an aerator to improve oxygen levels in the lake to increase the winter fish survival rate. Aerators should be installed <u>only</u> if natural survival is inadequate to sustain fish population.	\$50,000 initially
4	Population monitoring	Annually monitor fish populations to determine survival and reproduction rates.	\$1,000 @ year
5	Passive management	No specific management practices are recommended for the Roseau River at this time. Subject to periodic review.	

Fisheries Management Budget

Management Practice	Biennium					Total
	78-79	80-81	82-83	84-85	86-87	
Monitoring	\$ 6,000	\$ 6,000	\$ 6,000	\$ 6,000	\$ 6,000	\$ 30,000
Stocking	4,000	4,000	4,000	4,000	4,000	20,000
Aeration	50,000					50,000
Total	\$ 60,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 100,000

SOILS

Introduction

Soil structure, type, and fertility play an important role in dictating what types of vegetation will be found in the park or which plant communities might logically be reintroduced to approximate original soil types. Soils data must also be considered when locating park roads, recreation buildings, intensive use areas (e.g., campgrounds and picnic areas), sewage lagoons, and septic tank filter fields. Consequently, the development of a park management plan depends heavily upon detailed soil surveys of a park. Through the use of such surveys, environmentally sound, resource management decisions can be made.

Inventory

The soils of Hayes Lake State Park are generally sandy loams, sand, and loamy fine sands. Alluvial soils are found in the Roseau River floodplain.

The major soil series in the park, Hiwood loamy fine sand, is found on level areas and is only slightly erodible when vegetated. When this vegetative cover is broken, it is subject to wind erosion.

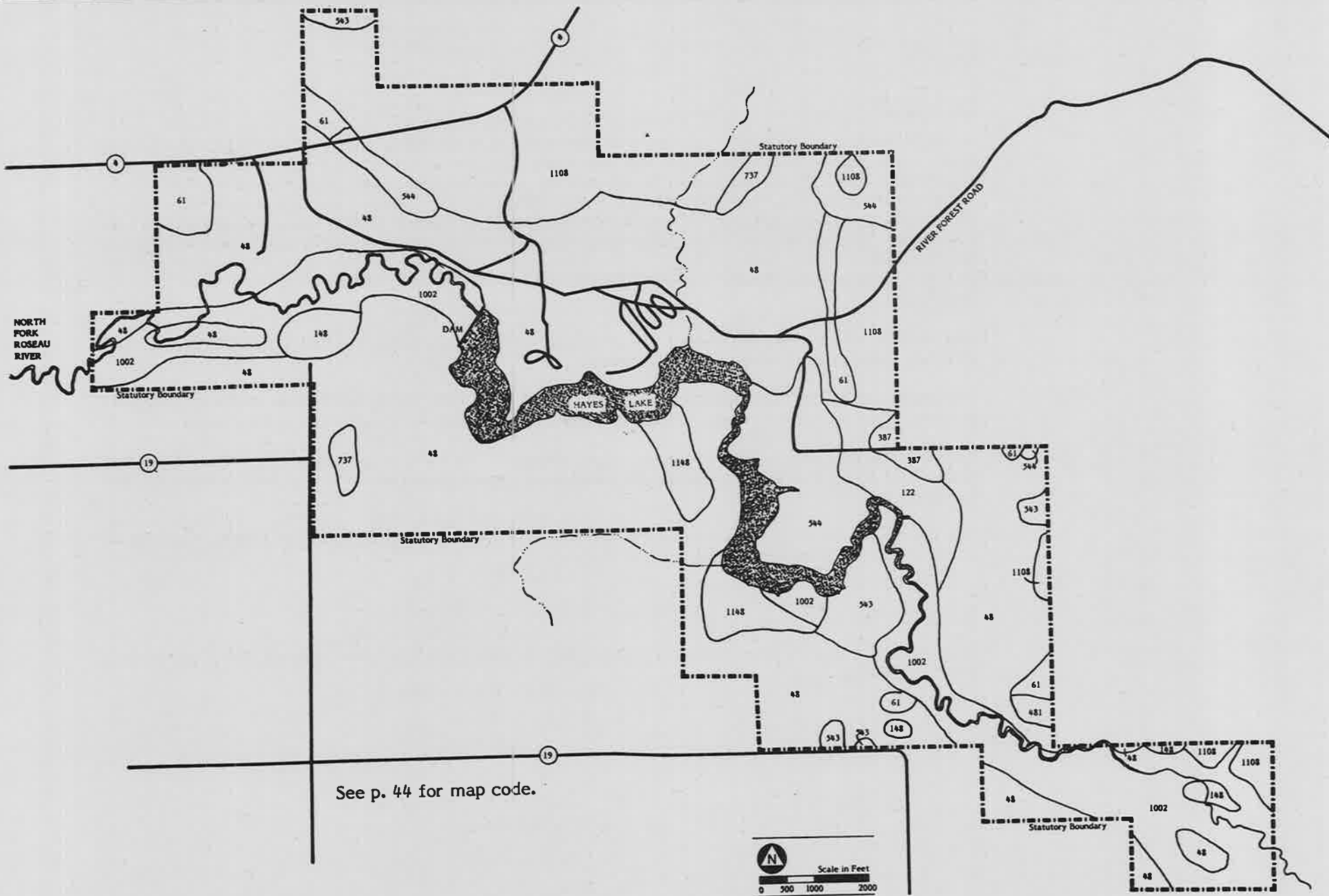
The soils suitable for park development are an unnamed fine sand (map code 1108) and the Poppleton loamy fine sand. The limiting factor for developing recreational uses on other soils is their surface texture.

The table on p. 44 lists the soils found in the park and the major characteristics of each. The map on p. 43 shows the locations of soil types in the park.

Source:

Arlo Habben, District Conservationist, 1976. Hayes Lake State Park Soils Report, Soil Conservation Service, Roseau.

SOILS



SOIL CHARACTERISTICS/SUITABILITY

Soil Type	Map Code	Slope	Permeability ^A	Erosion Hazard	Potential Frost Action	Intensive		Paths and Trails	Recreation Buildings ^B	Sewage Lagoons	Septic Tank Filter Fields
						Picnic Areas	Camp Areas				
Alluvial	1002	No Data	Variable	Slight	Mod-High	Mod-Sev ^{2,4}	Mod-Sev ^{2,4}	Slt-Mod ⁴	Severe ^{4,7}	Severe ^{4,6,7}	Severe ^{4,5,7}
Arveson	61	No Data	2.0-20.0	Sev (wind)	Moderate	Severe ⁹	Severe ⁹	Severe ⁹	Severe ^{7,9}	Severe ^{6,7}	Severe ^{6,7}
Rollis-Vallers	62, 387	No Data	0.2-0.6	No Data	High	Severe ^{2,7,9}	Severe ^{2,7,9}	Severe ^{2,7,9}	No Data	Slight ^{6,7}	Severe ^{6,7,9}
Kratka	481	0-6	0.6-20.0	Slight (wind)	Slt-Sev	Moderate ²	Moderate ²	Moderate ²	Mod ^{7,8}	Mod ^{6,7}	Moderate ⁷
Unnamed	1108	No Data	6.0+	Severe ² (wind)	Slight	Mod ^{1,2}	Mod ^{1,2}	Mod ^{1,2}	Slight ⁸	Severe ⁶	Slight ^{5,6}
Unnamed	1148	No Data	No Data	Slight (wind)	No Data	No Data	No Data	No Data	No Data	No Data	No Data
Poppleton	148	No Data	6.0-20.0	Slt-Mod (wind)	Low	Mod ^{2,9}	Mod ^{2,9}	Mod ⁹	Slt-Mod ^{7,9}	Severe ^{6,7}	Mod ^{5,7}
Cormont	737	No Data	6.0+	Slight	Severe	Severe ^{4,9}	Severe ^{4,9}	Severe ^{4,9}	Severe ^{6,7,8}	Severe ^{6,9}	Severe ^{4,9}
Markey	543	No Data	6.0-20.0	Slt-Mod (wind)	Low	Mod ^{2,9}	Mod ^{2,9}	Mod ⁹	Slt-Mod ^{7,9}	Sev ^{6,7,9}	Mod ^{5,7}
Hiwood	48	No Data	6.0-20.0	Slight	High	Severe ^{1,2}	Severe ^{1,2}	Severe ²	Slt-Mod ^{1,7}	Severe ^{6,7}	Mod ^{5,6,7}
Cathro	544	0-2	0.2-6.0	Mod (wind)	High	Severe ^{2,7,9}	Severe ^{2,7,9}	Severe ^{2,7,9}	Severe ^{2,7,9}	Severe ^{4,7,9}	Severe ^{4,7,9}
Taylor	122	No Data	.06-2.0	Slight ¹	Moderate	Mod-Sev ^{1,6}	Mod-Sev ^{1,6}	Slt-Mod ¹	Severe	Slight ¹	Severe ⁶

A	Permeability measured in inches per hour	1	Slope
B	Based on buildings without basements	2	Surface Texture
		3	Depth to Bedrock
		4	Flooding (Duration & Frequency)
		5	Pollution potential
		6	Permeability
		7	Water Table
		8	Frost Action
		9	Drainage
		10	Shrink-swell

Management

Objectives:

To locate recreational facilities on soils which can withstand the intended use

To minimize erosion

As stated in the Zoning Section, p. 22, the soils most suitable for recreational facility development are found in the most remote portions of the park. It is not a viable alternative to construct a road system extensive enough to access these areas. Since Hayes Lake is the primary focus for recreational activities in the park, development will be concentrated near the lake. It is imperative that site-specific surveys be carried out before construction is begun to determine precisely the soil limitations. These limitations must be compensated for in the design of the facility.

There are several general management guidelines which must be followed in the development of recreational facilities. Removal of large areas of groundcover should be avoided to minimize wind erosion. Trail alignments will avoid steep slopes and, where necessary, special construction will be implemented to avoid erosion. Camping and day-use facilities will be developed to avoid excessive concentration of activities in a given area, preventing soil compaction and damage to the vegetation.

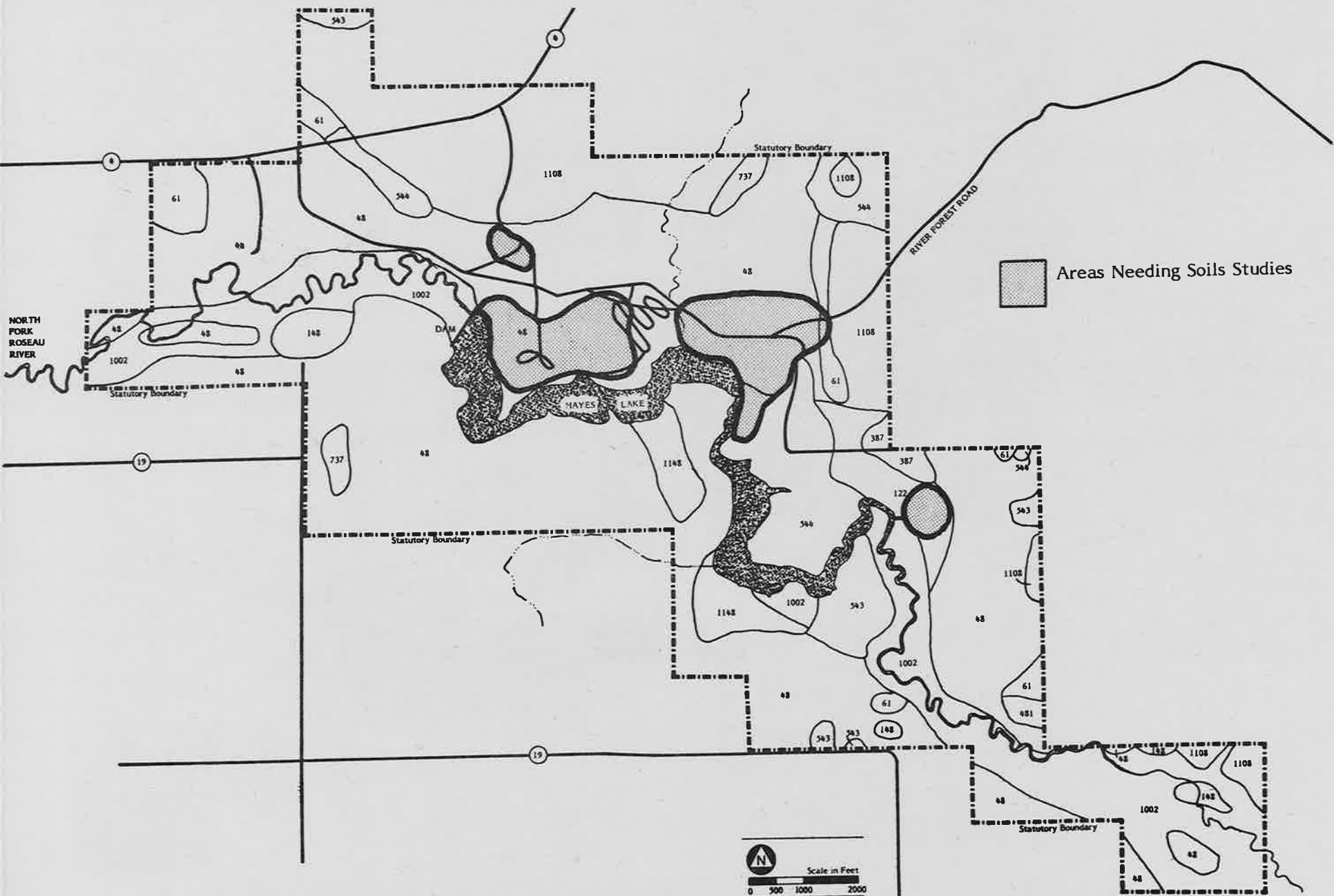
• Specific Recommendations

A detailed study of park soils should be undertaken. This study should include maps and data on permeability, depth to water table and hardpan, slope, and surface texture. Recommendations on alternative sewage disposal systems should also be included.

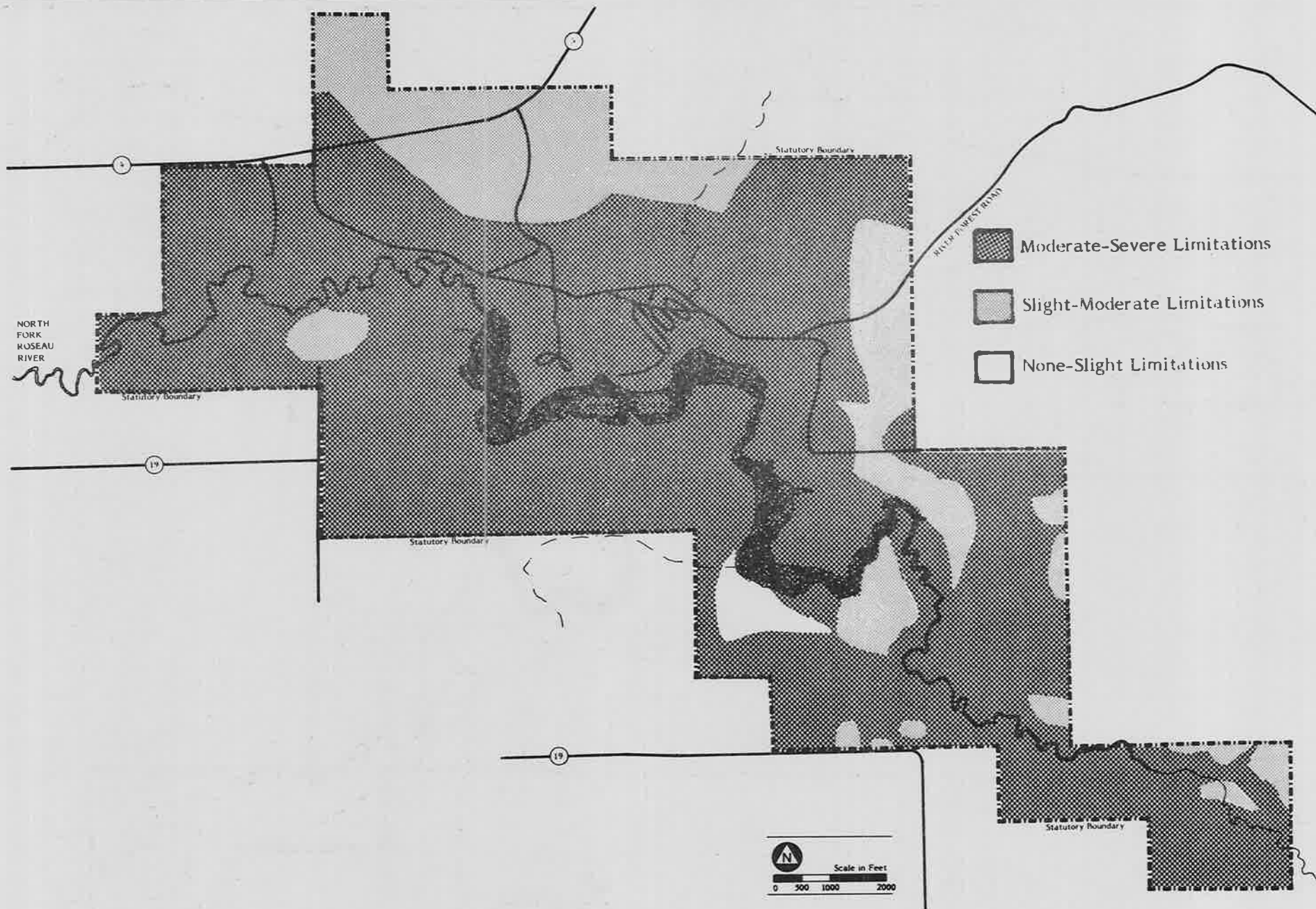
Cost: \$7,000

Soils Management Budget

Management Practice	Biennium					Total
	78-79	80-81	82-83	84-85	86-87	
Soil suitability study	\$ 7,000					\$ 7,000
Total	\$ 7,000					\$ 7,000



SOIL SUITABILITY



VEGETATION

Introduction

One of the most striking features of any park is its vegetation. To rapidly inventory the vegetation of the park, a system was devised which would not only categorize vegetation, but would also recognize species of wildlife normally associated with these plant communities. The system used to describe vegetation/wildlife associations is called the "ecological community system." In designing the system, several factors were considered. These factors include: existing land use patterns, soil wetness, plant species composition, physical appearance, and wildlife habitats commonly found in Minnesota. A process was also needed which would permit a relatively high degree of reliability using 9x9 inch stereoscopic aerial photograph pairs as the primary source of information. Detailed field work was not emphasized for this phase of the inventory because it would be too time consuming to do the larger units. The developed system generally satisfies the stated requirements. The various ecological communities identified in the inventory process are described in Appendix A. *

Original Vegetation

Since the park is located in a transitional area, the original vegetation was a mixture of prairie species typical of the Red River Valley to the west and the prairie, jack pine barrens, and bogs to the east. This transitional zone was dynamic area. The jack pine community would advance westward into the prairie when moisture and fire conditions permitted and then retreat eastward when dry weather and frequent fires favored the prairie grasses.

In 1910, a major fire swept through the region. The year was dry and considerable slash had been left by farmers clearing their land, creating conditions favorable for a large scale fire.

The origin of the jack pine and aspen stands now found in the park can be traced back to that year.

Existing Ecological Communities

The predominant ecological communities in the park include: jack pine groves, pioneer hardwoods, alder-willow, and old fields. Other communities include: upland brush, marsh, bottomlands, mixed hardwood-pine, conifer bogs, swamps, muskeg, banks, rock outcrops, lakes, and streams and rivers.

*See note in the Table of Contents, p. ii , on the availability of these appendices.

The various ecological communities are shown in the map, p. 54.

- Jack Pine

Jack pine communities generally predominate in the portion of the park north of the river. These communities undoubtedly resulted from the fire of 1910. Jack pine is an early successional species which favors fire. Intense heat associated with the fire opens the cones and prepares a nutrient-rich seed bed in which the new seedlings are able to thrive without competing with brush or other species.

Excluding any management except fire suppression, the jack pine will eventually mature and be replaced by shade tolerant species such as spruce.

Dominant Tree Species

Jack pine
Trembling aspen
White birch

Dominant Shrub Species

Beaked hazel

Dominant Ground Layer Species

Common bearberry
Strawberry
Low sweet blueberry

- Pioneer Hardwoods

Pioneer hardwood communities predominate south of the river. The age classes vary from saplings to overmature trees. Trembling aspen is generally the predominant species. It is quite likely that these communities also originated after the fire of 1910. Many old fields have succeeded to aspen. Pioneer hardwoods usually do not live beyond 100 years in northwestern Minnesota. With continued forest management by fire suppression, these communities may eventually become more open with a dense brush understory.

Dominant Tree Species

Trembling aspen
Paper birch

Dominant Shrub Species

American hazelnut
Beaked hazelnut
Nannyberry
Downy arrowwood
Highbush cranberry

Dominant Ground Layer Species

Red baneberry
Vetchling

•Alder-willow

Alder-willow communities are dominant on the wetter soils in the park. Generally low quality off-site aspen is also associated with the alder. Alder may replace conifer swamps which have been destroyed by fire.

Dominant Shrub Species

Alder

•Old Fields

These plant communities are former agricultural fields which have been abandoned because of poor soil fertility, climatic changes, or changes in agricultural economics. Grasses and herbs are the predominant cover although scattered trees and low-growing brush occur.

Eventually these fields will be invaded by jack pine, trembling aspen, or alder-willow. Old field communities are especially vulnerable to fire during the spring after snow melt and before green-up, and in the fall after the grasses have cured. Plant succession will favor the shade intolerant species such as jack pine, aspen, paper birch, alder, and willow.

Toxic Plants

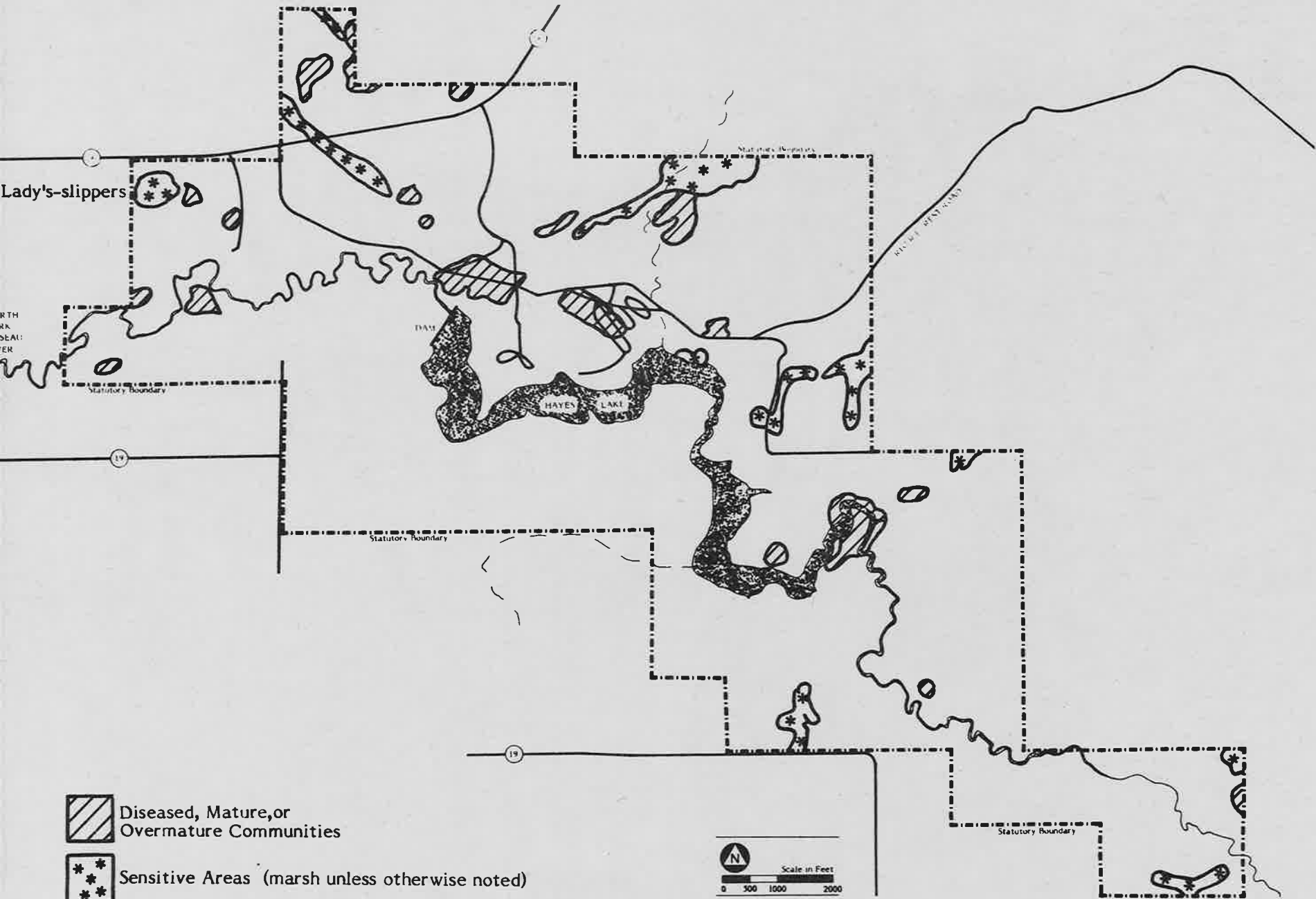
Poison ivy is found throughout the park on upland soils.


Diseased, Mature, or Overmature Stands

One stand of jack pine near the dam is badly diseased with red rot. This area is indicated on the map, p. 52.

Sensitivity to Intensive Use

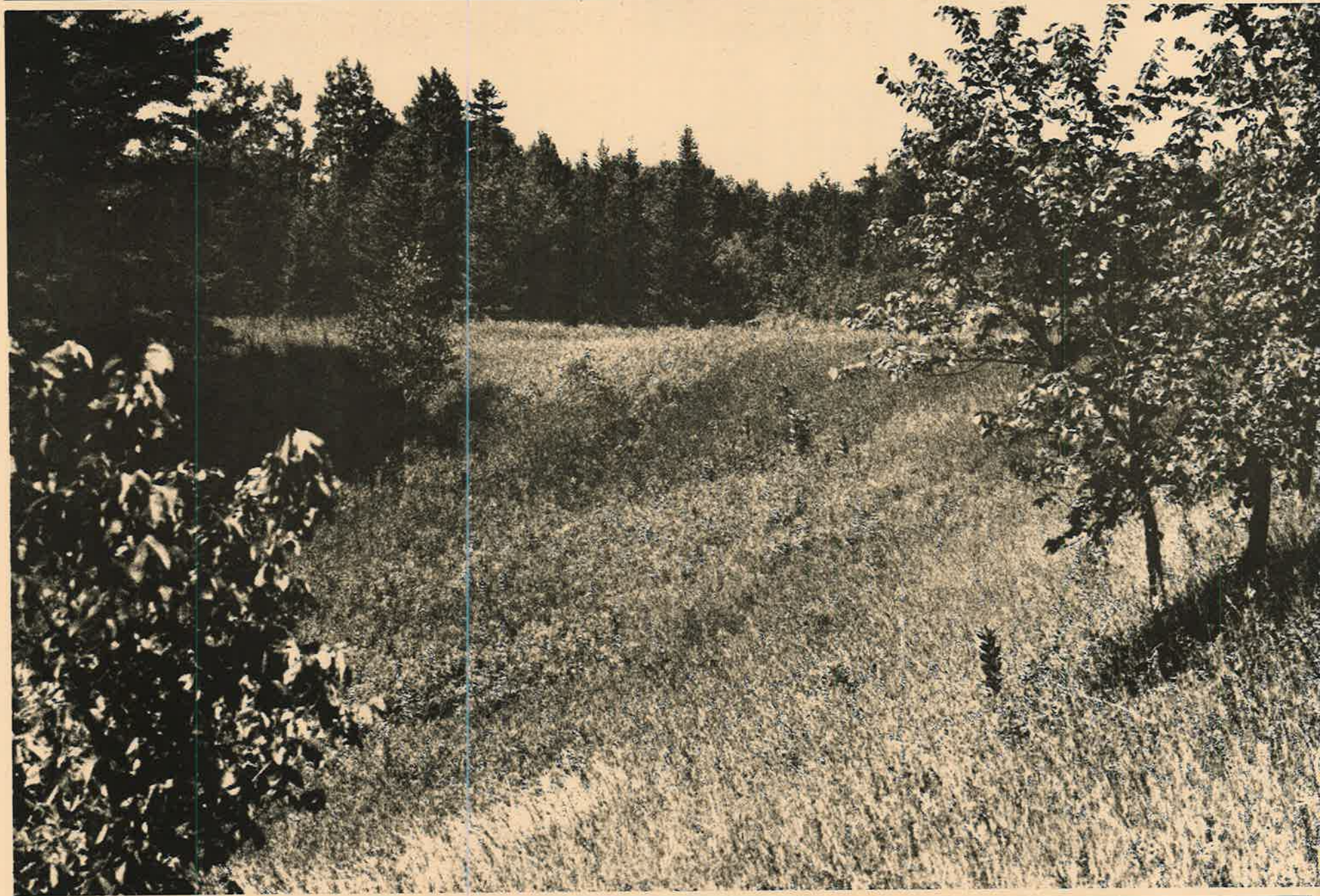
Marshes, muskegs, and rare or endangered communities or species are not capable of sustaining intensive use without protective measures. Sensitive areas are identified on the map, p. 52.

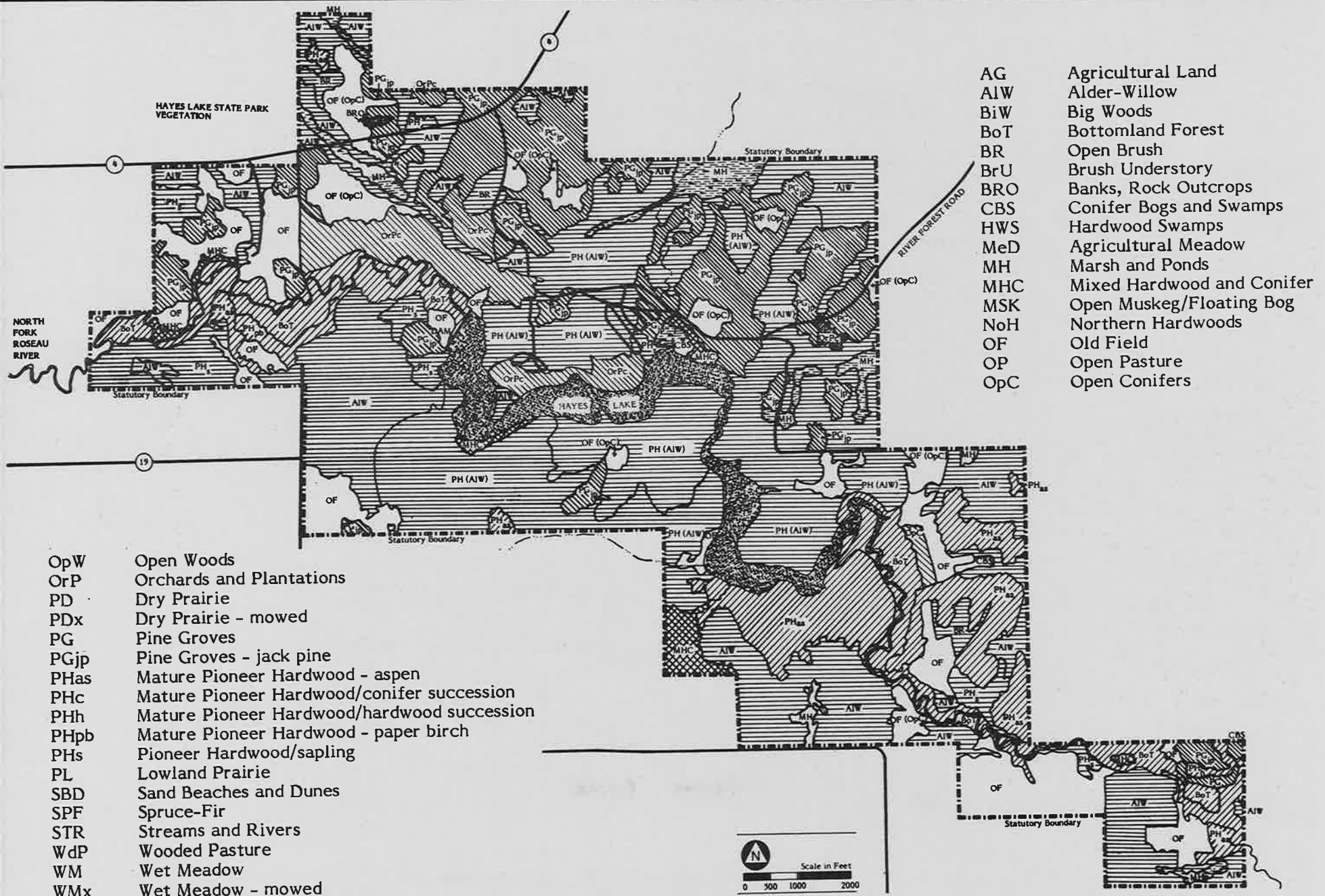


 Diseased, Mature, or Overmature Communities

 Sensitive Areas (marsh unless otherwise noted)







Overstory Size and Density Code

Density	Size				
	1	2	3	4	5
	Seedlings (0-1" dbh) Trees/Acres	Saplings (1"-5" dbh) Trees/Acres	Poles (5"-9" dbh) Trees/Acres	Small Saw Timber (9"-15" dbh) Trees/Acres	Large Saw Timber (15"+ dbh) Trees/Acres
0	*	*	0-30	0-19	9-5
1	0-500	0-250	31-90	11-40	6-20
2	500-1,000	251-500	91-150	41-60	21-30
3	1,001-2,000	501-1,000	151-210	61-80	31-45
4	2,001-5,000	1,001-2,500	211-270	81-100	46-60
5	5,001-10,000	2,501-5,000	271-330	101-130	61-75
6	10,000-20,000	5,001-10,000	331-390	131-150	76-90
7	20,001-30,000	10,001-15,000	391-450	151-180	91-105
8	**	**	451-510	181-200	**
9	**	**	511+	201+	**

* dbh - diameter/breast height
 ** Not a valid density code for these size classes

Succession Code

Letters in parentheses indicate which ecological community will most likely replace the existing one barring fire or wind damage.

Example: The above aspen-birch type with an understory northern hardwoods component would be described as PH_h36 (NoH)

Shrub Density Woody plant material usually greater than 4' tall.

- 0 None - Brush layer absent; may have been removed by artificial means.
- 1 Light - High visibility within stand even when leaves are out; no difficulty encountered in walking through stand.
- 2 Moderate - Some visual obstruction by small to large brush pockets; walking may be hindered to some degree by brush.
- 3 Heavy - Visual obstruction severe; visibility limited to less than 100'; walking is extremely difficult.

Ground Cover Density Herbaceous plant material usually less than 6' tall.

- 0 None - Litter layer absent; native ground cover absent or heavily disturbed by use.
- 1 Light - Litter layer readily visible; low growing plants widely scattered or in small clusters.
- 2 Moderate - Litter layer somewhat obscured by low growing plants; occasional extensive areas without plants may occur.
- 3 Heavy - Litter layer obscured by low growing plants.

Fire Susceptibility Ease with which the plant community can carry a fire during the normal seasonal fire period.

- 0 None - Fuel is sparse or absent.
- 1 Low - Adequate fuel to carry a fire is present in scattered patches.
- 2 Moderate - Fuel is present in sufficient amounts to carry a fire for some distance.
- 3 High - Large accumulations of fuel; potential for extensive, damaging fire is great.

Example: Aspen-birch stand with dense hazel and ground cover would be expressed as PH_h^{36}

Management

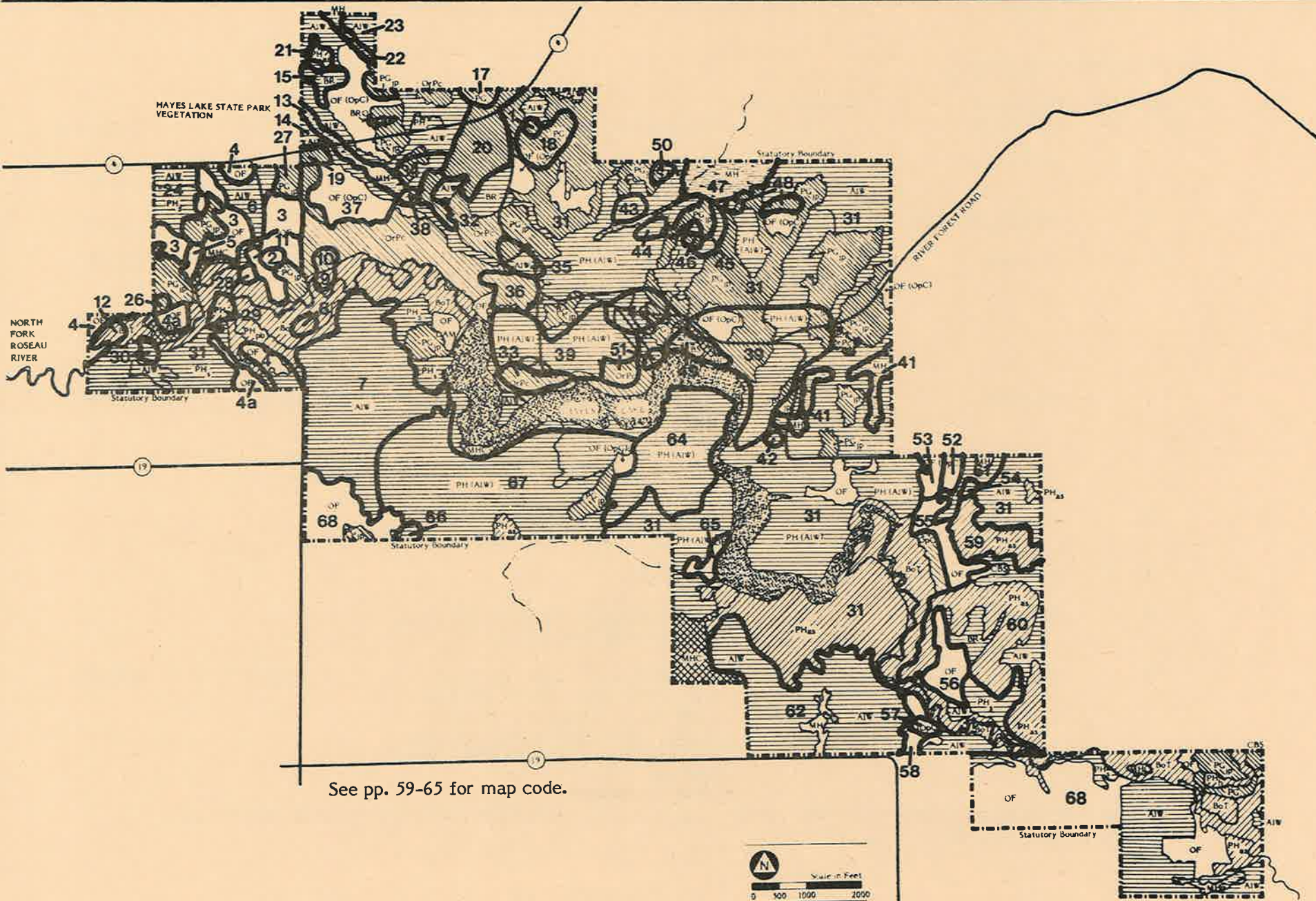
Objective:

To perpetuate existing plant communities to provide an opportunity for a variety of recreational opportunities in a natural setting

• Specific Recommendations

Vegetation management in Hayes Lake State Park will be directed towards maintaining the existing vegetational communities in the park. Various cutting and burning practices will be implemented to improve wildlife habitat. These burned areas will be interpreted to show how vegetation management changes plant communities, affects wildlife, and maintains ecological diversity of the park. The recreational experience of park users will be enhanced by exposure to a variety of plant communities as well as the increased abundance and diversity of wildlife.

The map on p. 58 shows the vegetation management units. Specific management recommendations for each unit are found in the following pages.



See pp. 59-65 for map code.

Specific Management Program

<u>Management Unit p. 58</u>	<u>Ecological Community</u>	<u>Management Practice</u>	<u>Specific Management</u>	<u>**Estimated Cost</u>	<u>Implement</u>
1	Old Field	Opening management	Maintain as grassy opening by Tordon treatment.	\$300 \$300	1980-81 1986-87
2	Historic Homestead	Monitor	Cut back encroaching vegetation.	Cultural/Historical Section	
3	Old Field	Opening management	Maintain by prescribed burning. Plant patches of legumes to attract wildlife and plant shrubs in a meandering fashion across the fields to provide wildlife travel lanes.	\$2,000	1982-83
4	Old Field	Brush removal	Remove the brush by hand and maintain the field as an opening. Plant scattered legume and brush plots. Screen roads with brush.	\$300	1982-83
4a	Old Field	Brush removal	Implement Unit 4 management recommendation upon acquisition.		
5	Historic Homestead	Monitor	See Unit 2.		
6	Alder-Willow	Passive management	Leave vegetation to screen the area to discourage deer shiners.		
7	Alder-Willow	Brush removal	Convert this unit back to a field with patches of pioneer hardwoods using fire or herbicide to remove brush. Plant legumes and criss-cross the area with strips of desirable brush species.	\$1,400	1980-81

**Any income to the state derived from timber harvesting goes directly to the general fund and cannot be used to defray vegetation management costs.

8	Historic Homestead	Monitor	See Unit 2.		
9	Hendershot Grave Sites	Monitor	See Unit 2.		
10	Historic Homestead	Monitor	See Unit 2.		
11	Old Field	Replant	Randomly plant jack pine.	\$2,000	1980-81
12	Historic Homestead	Monitor	See Unit 2.		
13	Marsh	Marsh management	Hand cut three 900 sq. ft., meandered openings. Pile cattails in mound to provide loafing areas. Put one opening adjacent to the road.	\$500 \$500	1980-81 1986-87
* 14	Alder-Willow	Timber removal, Replant	Cut 70-year-old jack pine. Burn and randomly plant to Norway pine.	\$350	1978-79
* 15	Jack Pine and Brush	Timber removal, Natural succession	Cut 75-year-old jack pine. Burn and allow natural succession to take place.	\$700	1978-79
16	Pine Grove	Timber removal, Replant	Immediately cut the stand because a large percentage is dead or over-mature. Burn and randomly plant jack pine.	\$500	1978-79
* 17	Pine Grove	Timber removal, Natural succession	Cut 65-year-old jack pine. Allow natural succession to occur.	\$200	1978-79
* 18	Pine Grove	Timber removal	This stand was hit by a storm in 1973. Cut and hand plant jack pine.	\$2,400	1982-83
* 19	Pine Grove	Timber removal, Replant	Same as Unit 18, but plant with Norway pine.	\$600	1982-83

*	20	Pine Grove	Timber removal, Replant	Cut in 10 years. Reserve buffer strip along road, burn if feasible, and seed to jack pine.	\$3,800	1986-87
	21	Pioneer Hardwoods-aspen	Timber removal, Natural succession	Clearcut. Leave 12 large (12+ dbh) trees lying on ground. Permit natural succession to occur.	\$800	1980-81
	22	Marsh	Passive management	Protect and maintain.		
	23	Various Communities	Passive management	Fire suppression.		
	24	Alder-Willow	Passive management	Protect the orchid bog from excessive use.		
	25	Pine Grove	Passive management	Fire suppression.		
	26	Pine Grove	Timber removal, Opening management	Cut the stand immediately because it has been wind thrown. Maintain as brushy opening.	\$100	1978-79
*	27	Pine Grove	Timber removal, Replant	Selectively cut, burn, and replant with jack pine.	\$1,500	1986-87
	28	Old Field	Opening management	See Unit 3.	\$200	1986-87
	29	Pioneer Hardwoods	Timber removal, Natural succession	Clearcut overmature aspen. Allow natural succession to take place. Leave 10 large (12"+ dbh) trees @ acre lying on the ground in a random pattern.	\$1,000	1986-87

30	Pioneer Hardwoods	Timber removal	Clearcut aspen. Burn the slash and allow natural succession to proceed. Leave 10 large (12"+ dbh) trees @ acre lying on the ground in a random pattern.	\$1,500	1986-87
31	Various Communities	Passive management	Fire suppression. Reevaluate in 10 years.		
32	Norway Pine Plantation	Timber removal	Thin the stand.	\$500	1986-87
* 33	Norway Pine Plantation	Timber removal	Commercially thin the stand.	\$1,500	1986-87
* 34	Pine Groves	Timber removal	Selectively cut overmature trees in small blocks. Burn slash. Then burn to remove brush understory. Replant to jack pine.	\$1,200	1980-81
35	Old Field	Opening management	Burn the entire area.	\$1,500	1980-81
* 36	Pine Grove	Timber removal, Replant	A sanitation cut is needed because the stand has a high incidence of red rot and is susceptible to windthrow. Burn and replant jack pine.	\$2,000	1978-79
37	Old Field	Opening management	Burn the entire area.	\$1,500	1980-81
38	Historic Homestead	Monitor	See Unit 2.		
39	Development Zone	Plant	Plant species capable of sustaining intensive use.	See Recreation Management Section	

*A detailed timber management report has been prepared by the Wannaska District Forester for Hayes Lake State Park. Some of the recommendations included in this management plan have been taken from that report. The specific locations of the areas to be managed are described on detailed maps filed in the Wannaska District Office and in the St. Paul Office of the Park Planning staff.

40	Alder-Willow	Timber removal, Replant	Cut and randomly hand plant jack and Norway pine.	\$2,000	1980-81
41	Marsh	Marsh management	Hand cut four 1,200 sq. ft. randomly shaped openings. Pile cut cattails to provide loafing mounds for waterfowl.	\$500	1986-87
42	Historic Homestead Site	Monitor	See Unit 2.		
43	Pine Grove	Passive management	Maintain as a deer yarding area.		
44	Pine Grove	Timber removal, Replant	Maintain as a deer yarding area. In 1982-83 clear cut less than 5 acres, burn, and seed to jack pine.	\$700	1982-83
* 45	Pine Grove	Timber removal	Clearcut, burn, and seed to jack pine.	\$750	1982-83
46	Pine Grove	Timber removal, Replant	This stand is overmature. Clearcut in 1-acre patches. Burn and seed to jack pine.	\$600 600 600 600	1980-81 1982-83 1984-85 1986-87
47	Marsh and Ponds	Passive management	Fire suppression.		
48	Pine Grove	Timber removal, Opening management	Make three 1-acre clearcuts, burn, and manage as permanent brush and grass openings. Leave 10 large jack pine scattered randomly in openings as perches and raptors.	\$1,350 4,000 4,000 4,000 4,000	1978-79 1980-81 1982-83 1984-85 1986-87
49	Conifer Bogs	Passive management	This area contains a sensitive plant community. At present, no management is necessary, however, the area should be monitored every 3 years.		

50	Old Field	Opening management	See Unit 3. Leave 10 large trees @ acre for raptor perches.	\$800	1980-81
* 51	Orchards and Plantations	Timber removal	Commercially thin as plantation develops to improve growth form and rate.	\$4,000	1980-81
52	Orchards and Plantations	Timber removal	Commercial thin Norway pine.	\$800	1978-79
53	Orchards and Plantations	Timber removal	Thin the Scotch and Norway pine.	\$1,000	1980-81
54	Historic Homestead	Monitor	See Unit 2.		
* 55	Orchards and Plantations	Timber removal	Commercially thin the stand to improve growth, form, and vigor.		
56	Orchards and Plantations	Timber removal	Thin the white spruce.	\$100	1980-81
57	Historic Homesteads	Monitor	See Unit 2.		
58	Orchards and Plantations	Timber removal	Commercially thin.	\$1,300	1982-83
59	Pioneer Hardwoods	Timber removal, Opening management, Natural succession	Clearcut three 2½ acre blocks in random patterns. Leave 12 large aspen @ acre lying randomly on the ground. Burn the slash and allow natural succession to proceed. Maintain existing openings.	\$1,300 \$1,300	1980-81 1984-85
60	Pioneer Hardwoods	Timber removal, Natural succession	See Unit 29.	\$1,000	1982-83

61	Marsh	Marsh management	Water is presently impounded by an old beaver dam. Remove the dam and construct a naturally appearing dike with a controlled outlet.	\$10,000	1986-87
62	Alder-Willow	Prescribed burn	Burn to remove older growth. Encourage pioneer hardwood succession. Maintain 1-2 acre openings.	\$1,000	1978-79
63	Pioneer	Prescribed burn	Burn to maintain eight 1/2 to 2 acre randomly scattered openings.	\$1,100	1978-79
64	Pioneer Hardwoods	Timber removal	Provide meandering access roads along existing road networks and minimize new haul roads. Create and maintain forest openings to be used as a landing. Cut, burn the slash, and allow natural regeneration.	\$2,000	1978-79
65	Old Field	Opening management	Burn to remove brush.	\$1,500	1982-83
66	Historic Homestead	Monitor	See Unit 2.		
67	Alder-Willow	Prescribed burn	Burn and allow pioneer hardwoods to regenerate. Maintain ten 2-acre openings.	\$1,800 \$1,800	1984-85 1986-87
68	Various Communities	Passive management	Fire suppression. Re-evaluate in 10 years.		

Vegetation Management Budget

Management Practice	Biennium					Total
	78-79	80-81	82-83	84-85	86-87	
Opening Management		\$ 4,100	\$ 3,500		\$ 500	\$ 8,100
Timber Harvest and/or Prescribed Burn/Replant	\$ 10,100	18,400	11,350	\$ 7,700	16,200	63,750
Marsh Management		500			11,000	11,500
Removal of brush		1,400	300			1,700
Total	\$ 10,100	\$ 24,400	\$ 15,150	\$ 7,700	\$ 27,700	\$ 85,050

WILDLIFE

Introduction

One of the most intriguing assets of any park is its resident wildlife. Many species are commonplace but unnoticeable because of their elusive or secretive behavior. For many visitors the mere awareness of the presence of wildlife is all that is needed to change a dull, uneventful walk through the brush into a challenging, refreshing stroll.

In order to provide such an experience for park users, detailed inventories of park wildlife are needed so that managers are better able to manage habitat to attract certain species to protect habitat which will ensure the continued presence of existing species.

The following wildlife inventory was based on checklists and reports submitted by local residents, birders, naturalists, area game managers, and park managers. The list is not all inclusive and will continue to be revised and updated as new data are reported. Therefore, additional detailed studies must be continued in those areas where management needs for wildlife have been identified.

Checklist

There are 174 species of birds which either reside in or near Hayes Lake State Park or migrate through the park. Forty-three different species of mammals and 25 species of reptiles and amphibians also occur in the park.

A checklist of species known to occur in or near the park is presented in the table on pp.74-78. The table indicates the species present, their relative abundance, and seasonal occurrence.

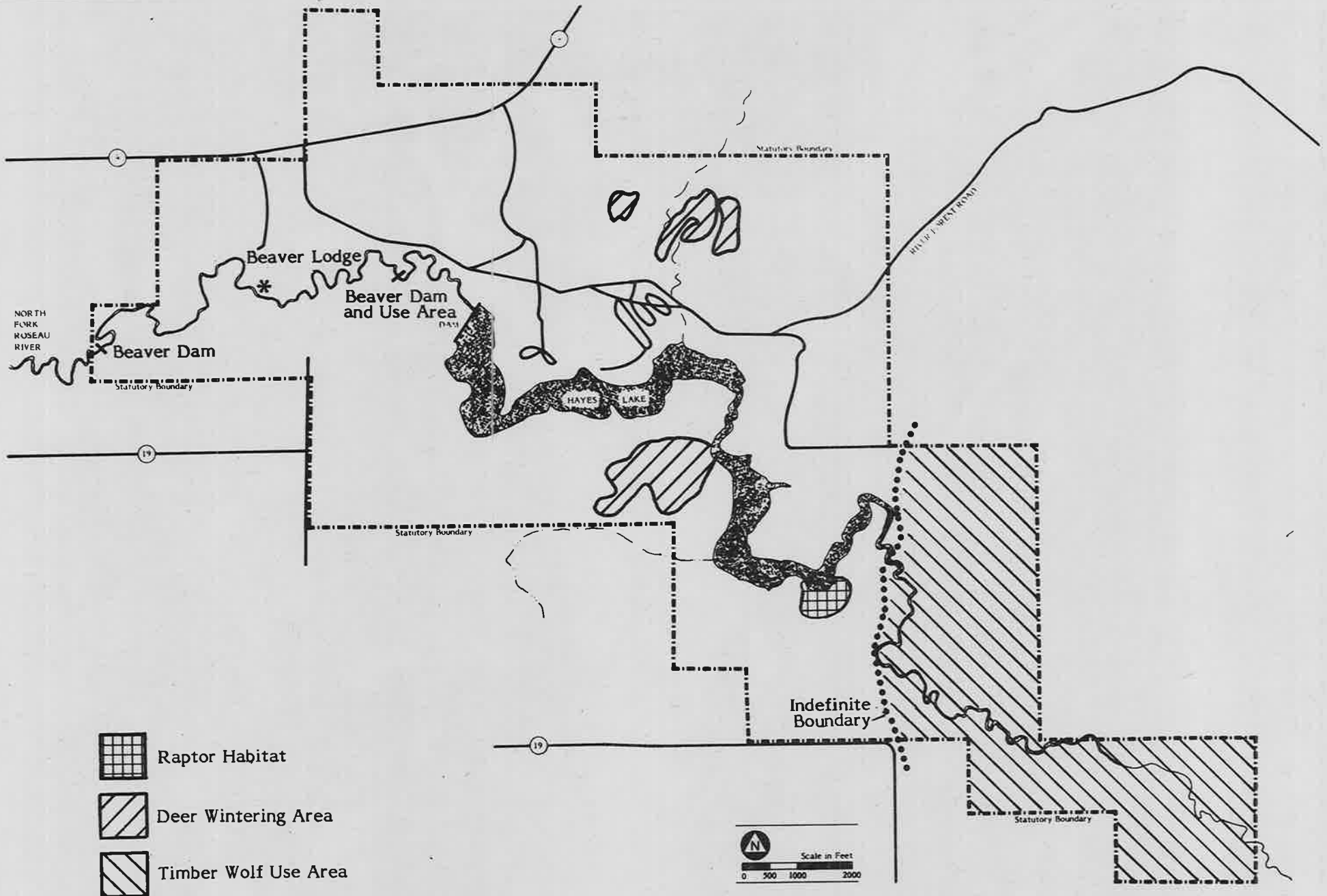
Certain wildlife species occurring in a park are especially noteworthy because special precautions are required in their management or protection, or because they have the potential to damage vegetation and property or harming park visitors. These wildlife species and the potential problems are discussed in the following paragraphs.

Endangered, Threatened, or Rare Species

Species included in this group are: those which are presently in danger of extinction in Minnesota within the immediate future; species which could become endangered in the foreseeable future in Minnesota, but not necessarily throughout their entire range; or species that once resided in Minnesota, but have disappeared or nearly so because of changes in land and water use patterns.



WILDLIFE



Birds

Migrants

Peregrin falcon
Sandhill crane

Mammals

Fisher
Timber wolf

Species of Special Interest

Species in this group include those which are uncommon or locally distributed in Minnesota and are not presently threatened or endangered, but which might become so; and those which presently are not having any difficulty, but should be closely watched because they have unusual or special values, are of special interest, or their habitat is especially vulnerable. Special management may be required.

Birds

Seasonal Residents

Common loon
Great egret
Osprey
Bald eagle
Marsh hawk
Cooper's hawk
Common tern
Pileated woodpecker

Migrants

Great blue heron
Franklin's gull

Mammals

Canada lynx
Bobcat

Reptiles and Amphibians

Common snapping turtle
Central newt
Red-back salamander

Troublesome Species

Troublesome species include those species of wildlife which, as individuals or populations, might become nuisances to either the natural resources of a park, park property, or park visitors.

Mammals

<u>Species</u>	<u>Potential Problems</u>
Bats	Disturb visitors.
Beaver	Overutilization of vegetation, flooding roadways.
Porcupine	Destruction of property. Raiding garbage cans, disturbing campers.
Raccoon	Raiding garbage cans.
White-tailed deer	Overbrowsing vegetation.
Moose	May threaten visitors during mating and calving seasons.

Sensitivity to Humans

Species listed in this group are those which are unusually sensitive to disturbance by human activity. Disturbance during one season or another may result in nest or den abandonment, decrease in territorial size, or shift in territorial movement. A disturbance might be detrimental to the survival of the species in a given area, or may have effects over a much larger area.

Birds

Bald eagle

Mammals

Timber wolf
Red fox

Coyote
Canada lynx
Bobcat

Management

Objectives:

To maintain the jack pine/aspen ecosystem and its characteristic wildlife population

To provide structural diversity, by modifying existing stands through a program of cutting and burning, so that species of wildlife which benefit from changes in community structure will thrive and reproduce

To implement programs to control nuisance species in accordance with park management policies

Management for wildlife will be accomplished by manipulating the species and structural diversity of the plant communities common to Hayes Lake State Park. By doing so, wildlife populations common to the existing communities will be favored and will reach the maximum density that the habitat can support.

Management for specific wildlife species is not practiced in state parks except in the case of rare or endangered species.

• Specific Recommendations

Timber Wolf - A timber wolf pack has been observed by using radio telemetry techniques in the southeastern portion of the park adjacent to the Beltrami Island State Forest (map, p. 69). The area is used infrequently by the pack, whose major territory lies farther east in the Beltrami Island State Forest. The area has been zoned primitive and will be managed in accordance with the regulations outlined for a primitive zone. Other management techniques may be needed in the future and appropriate technical personnel should be consulted as the need arises.

White-Tailed Deer - Winter yarding and use areas have been identified (map, p. 69). Yard use should be closely monitored and any signs of excessive browsing or starvation should be brought to the attention of the local wildlife specialist. Appropriate corrective measures, including animal harvest, should be implemented in accordance with approved rules and regulations.

Raptor Habitat - Several water-killed trees are located in Hayes Lake (map, p. 69). In order to remove these trees, the water level should be lowered and all but 5-10 should be cut, making sure the stumps are below the water level after it is restored. The remaining trees will be used for raptor perches and wood duck nesting.

Beaver - No specific management is recommended at this time. If certain park facilities are threatened by beaver activities, appropriate population reduction methods will be implemented.

Wildlife Definitions

Abundant - Trained observer may see several individuals in one day during the residency period of the species.

Common - Trained observer may see one or more individuals in a day.

Uncommon - Trained observer may see one individual in the course of a summer.

Rare - Species normally not observed by the trained observer.

Endangered - Listed in the federal register as a threatened or endangered species.

Unknown - Abundance of an individual species in a given park has not been determined.

Permanent Resident - Resident in the park area on a year-round basis.

Summer Resident - Only found in the park area during the summer months, presence may or may not indicate breeding activity.

Migrant - Normally found in the park area only during the spring or fall migratory season.

Winter Visitant - Normally found in the park area only during the winter months.

Uncertain - Seasonal occurrence status is not known for the species in the park area.

Seasonally Inactive - Species is seasonally inactive in the park area; may enter dormancy, hibernation, or aestivation.

BIRD CHECKLIST

FOUND IN PARK	SPECIES	RELATIVE ABUNDANCE							SEASONAL OCCURRENCE				
		ABUNDANT	COMMON	UNCOMMON	RARE	ENDANGERED	UNKNOWN	PERMANENT RESIDENT	SUMMER RESIDENT	MIGRANT	WINTER VISITANT	SEASONALLY INACTIVE	UNCERTAIN
●	Common Loon					●		●					
●	Red-throated Loon												
●	Red-necked Grebe					●		●					
●	Horned Grebe					●		●					
●	Eared Grebe			●					●				
●	Western Grebe												
●	Pied-billed Grebe					●		●					
●	White Pelican												
●	Double-crested Cormorant												
●	Great Blue Heron					●		●					
●	Green Heron					●		●					
●	Cattle Egret												
●	Great Egret					●		●					
	Black-crowned Night Heron												
	Yellow-crowned Night Heron												
	Least Bittern												
●	American Bittern					●		●					
●	Whistling Swan					●		●					
●	Canada Goose					●		●					
●	White-fronted Goose												
●	Snow Goose					●		●					
●	Mallard		●										
●	Black Duck					●		●					
●	Gadwall					●		●					
	Pintail												
●	Green-winged Teal					●		●					
●	Blue-winged Teal					●		●					
●	American Wigeon					●		●					
●	Northern Shoveler					●		●					
●	Wood Duck					●		●					
●	Redhead					●		●					
●	Ring-necked Duck					●		●					
	Canvasback												
	Greater Scaup												
	Lesser Scaup												
●	Common Goldeneye					●		●					
●	Bufflehead					●		●					
	Oldsquaw												
	Harlequin Duck												
	White-winged Scoter												
	Surf Scoter												
	Black Scoter												
	Ruddy Duck					●		●					
●	Hooded Merganser					●		●					
●	Common Merganser					●		●					
●	Red-breasted Merganser												
●	Turkey Vulture		●								●		
●	Goshawk					●		●					
●	Sharp-shinned Hawk					●		●					
●	Cooper's Hawk					●		●					
●	Red-tailed Hawk					●		●					

FOUND IN PARK	SPECIES	RELATIVE ABUNDANCE							SEASONAL OCCURRENCE				
		ABUNDANT	COMMON	UNCOMMON	RARE	ENDANGERED	UNKNOWN	PERMANENT RESIDENT	SUMMER RESIDENT	MIGRANT	WINTER VISITANT	SEASONALLY INACTIVE	UNCERTAIN
●	Red-shouldered Hawk					●		●					
●	Broad-winged Hawk							●		●			
●	Swainson's Hawk					●		●					
●	Rough-legged Hawk							●		●			
●	Ferruginous Hawk							●		●			
●	Golden Eagle							●		●			
●	Bald Eagle							●		●			
●	Marsh Hawk							●		●			
●	Osprey							●		●			
●	Peregrine Falcon					●	●			●			
	Merlin												
●	American Kestrel							●		●			
●	Spruce Grouse							●	●				
●	Ruffed Grouse							●	●				
	Greater Prairie Chicken												
●	Sharp-tailed Grouse							●	●				
	Bobwhite												
	Ring-necked Pheasant												
	Chukar												
	Gray Partridge												
●	Sandhill Crane					●				●			
	King Rail												
	Virginia Rail												
●	Sora							●		●			
	Yellow Rail												
	Common Gallinule												
●	American Coot							●		●			
	Semipalmated Plover												
●	Piping Plover							●		●			
●	Killdeer							●		●			
●	American Golden Plover							●		●			
●	Black-bellied Plover							●		●			
●	Ruddy Turnstone							●		●			
●	American Woodcock												
●	Common Snipe							●		●			
	Whimbrel												
	Upland Sandpiper												
●	Spotted Sandpiper							●		●			
●	Solitary Sandpiper							●		●			
●	Greater Yellowlegs							●		●			
●	Lesser Yellowlegs							●		●			
	Willet												
	Red Knot												
●	Pectoral Sandpiper							●		●			
	White-rumped Sandpiper												
●	Baird's Sandpiper							●		●			
●	Least Sandpiper							●		●			
	Dunlin												
●	Semipalmated Sandpiper							●		●			
	Western Sandpiper												
	Sanderling												

BIRD CHECKLIST

FOUND IN PARK	SPECIES	RELATIVE ABUNDANCE						SEASONAL OCCURRENCE					
		ABUNDANT	COMMON	UNCOMMON	RARE	ENDANGERED	UNKNOWN	PERMANENT RESIDENT	SUMMER RESIDENT	MIGRANT	WINTER VISITANT	SEASONALLY INACTIVE	UNCERTAIN
	Short-billed Dowitcher												
	Long-billed Dowitcher												
	Stilt Sandpiper												
	Buff-breasted Sandpiper												
●	Marbled Godwit			●									
	Hudsonian Godwit												
	American Avocet												
●	Wilson's Phalarope			●									
●	Northern Phalarope			●									
	Parasitic Jaeger												
	Glaucous Gull												
●	Herring Gull					●							
●	Ring-billed Gull					●							
●	Franklin's Gull					●							
	Bonaparte's Gull												
	Forster's Tern												
●	Common Tern					●							
	Caspian Tern												
●	Black Tern					●							
	Rock Dove												
●	Mourning Dove					●							
	Yellow-billed Cuckoo												
	Black-billed Cuckoo												
●	Screech Owl					●							
●	Great Horned Owl					●							
●	Snowy Owl					●							
●	Hawk-Owl					●							
	Burrowing Owl												
●	Barred Owl					●							
	Great Gray Owl												
	Long-eared Owl												
●	Short-eared Owl					●							
	Saw-whet Owl												
●	Whip-poor-will					●							
●	Common Nighthawk					●							
	Chimney Swift												
●	Ruby-throated Hummingbird					●							
●	Belted Kingfisher					●							
●	Common Flicker					●							
●	Pileated Woodpecker					●							
	Red-bellied Woodpecker												
●	Red-headed Woodpecker					●							
●	Yellow-bellied Sapsucker					●							
●	Hairy Woodpecker					●							
●	Downy Woodpecker					●							
●	Black-backed 3-toed Woodpecker					●							
	Northern 3-toed Woodpecker												
●	Eastern Kingbird					●							
	Western Kingbird												
●	Great Crested Flycatcher					●							
●	Eastern Phoebe					●							

FOUND IN PARK	SPECIES	RELATIVE ABUNDANCE						SEASONAL OCCURRENCE					
		ABUNDANT	COMMON	UNCOMMON	RARE	ENDANGERED	UNKNOWN	PERMANENT RESIDENT	SUMMER RESIDENT	MIGRANT	WINTER VISITANT	SEASONALLY INACTIVE	UNCERTAIN
●	Yellow-bellied Flycatcher												
	Acadian Flycatcher												
	Willow Flycatcher												
●	Alder Flycatcher					●							
●	Least Flycatcher					●							
●	Eastern Wood Pewee					●							
	Olive-sided Flycatcher												
●	Horned Lark					●							
●	Tree Swallow					●							
●	Bank Swallow					●							
●	Rough-winged Swallow					●							
●	Barn Swallow					●							
●	Cliff Swallow					●							
●	Purple Martin					●							
●	Gray Jay					●							
●	Blue Jay					●							
●	Black-billed Magpie					●							
●	Common Raven					●							
●	Common Crow					●							
●	Black-capped Chickadee					●							
	Boreal Chickadee												
	Tufted Titmouse												
●	White-breasted Nuthatch					●							
	Red-breasted Nuthatch												
	Brown Creeper												
●	House Wren					●							
●	Winter Wren					●							
●	Long-billed Marsh Wren					●							
●	Short-billed Marsh Wren					●							
	Mockingbird												
●	Gray Catbird					●							
●	Brown Thrasher					●							
●	American Robin					●							
	Varied Thrush												
	Wood Thrush												
●	Hermit Thrush					●							
	Swainson's Thrush												
●	Gray-cheeked Thrush					●							
●	Veery					●							
●	Eastern Bluebird					●							
	Blue-gray Gnatcatcher												
	Golden-crowned Kinglet												
	Ruby-crowned Kinglet												
	Water Pipit												
	Sprague's Pipit												
●	Bohemian Waxwing					●							
●	Cedar Waxwing					●							
●	Northern Shrike					●							
●	Loggerhead Shrike					●							
●	Starling					●							
	Bell's Vireo												

BIRD CHECKLIST

FOUND IN PARK	SPECIES	RELATIVE ABUNDANCE					SEASONAL OCCURRENCE					
		ABUNDANT	COMMON	UNCOMMON	RARE	ENDANGERED	PERMANENT RESIDENT	SUMMER RESIDENT	MIGRANT	WINTER VISITANT	SEASONALLY INACTIVE	UNCERTAIN
●	Yellow-throated Vireo					●	●					
	Solitary Vireo											
●	Red-eyed Vireo					●	●					
●	Philadelphia Vireo					●	●					
●	Warbling Vireo					●	●					
●	Black-and-white Warbler					●		●				
	Prothonotary Warbler											
	Golden-winged Warbler											
	Blue-winged Warbler											
	Tennessee Warbler											
	Orange-crowned Warbler											
●	Nashville Warbler					●		●				
●	Northern Parula							●				
●	Yellow Warbler					●		●				
	Magnolia Warbler											
	Cape May Warbler											
	Black-throated Blue Warbler											
	Yellow-rumped Warbler											
	Black-throated Green Warbler											
	Cerulean Warbler											
	Blackburnian Warbler											
	Chestnut-sided Warbler											
	Bay-breasted Warbler											
	Blackpoll Warbler											
●	Pine Warbler					●		●				
	Palm Warbler											
●	Ovenbird					●		●				
	Northern Waterthrush											
	Louisiana Waterthrush											
●	Connecticut Warbler					●		●				
●	Mourning Warbler					●		●				
●	Common Yellowthroat					●		●				
●	Wilson's Warbler					●		●				
●	Canada Warbler					●		●				
	American Redstart											
●	House Sparrow					●	●					
●	Bobolink					●		●				
	Eastern Meadowlark											
●	Western Meadowlark					●		●				
●	Yellow-headed Blackbird					●		●				
●	Red-winged Blackbird					●		●				
	Orchard Oriole											
●	Northern Oriole					●		●				
●	Rusty Blackbird					●		●				
●	Brewer's Blackbird					●		●				
●	Common Grackle					●		●				
●	Brown-headed Cowbird					●		●				
●	Scarlet Tanager					●		●				
	Cardinal											
●	Rose-breasted Grosbeak					●		●				
	Blue Grosbeak											

FOUND IN PARK	SPECIES	RELATIVE ABUNDANCE					SEASONAL OCCURRENCE					
		ABUNDANT	COMMON	UNCOMMON	RARE	ENDANGERED	PERMANENT RESIDENT	SUMMER RESIDENT	MIGRANT	WINTER VISITANT	SEASONALLY INACTIVE	UNCERTAIN
	Indigo Bunting											
	Dickcissel											
●	Evening Grosbeak					●	●					
●	Purple Finch					●		●				
●	Pine Grosbeak					●				●		
	Hoary Redpoll											
●	Common Redpoll					●				●		
	Pine Siskin											
●	American Goldfinch					●		●				
●	Red Crossbill					●				●		
	White-winged Crossbill											
	Rufous-sided Towhee											
	Lark Bunting											
●	Savannah Sparrow					●		●				
●	Grasshopper Sparrow					●		●				
	Henslow's Sparrow											
	Le Conte's Sparrow											
	Sharp-tailed Sparrow											
	Vesper Sparrow											
	Lark Sparrow											
●	Dark-eyed Junco					●		●				
●	Tree Sparrow					●		●		●		
●	Chipping Sparrow					●		●				
	Clay-colored Sparrow											
	Field Sparrow											
●	Harris' Sparrow					●		●				
●	White-crowned Sparrow					●		●		●		
●	White-throated Sparrow					●		●		●		
●	Fox Sparrow					●		●				
●	Lincoln's Sparrow					●		●				
●	Swamp Sparrow					●		●				
	Song Sparrow											
●	Lapland Longspur					●				●		
	Smith's Longspur											
	Chestnut-collared Longspur											
●	Snow Bunting					●				●		
●	Gyr Falcon					●				●		

CULTURAL/HISTORICAL RESOURCES

Introduction

The area around Hayes Lake and Wannaska was first settled in the late 1800's. A post office was established at Wannaska, 9 miles east of the present park, on February 1, 1894. Another post office was located at the townsite of Winner, 2 miles southeast of the park. The last storekeeper moved out of Winner in 1939. All that remains today is a cement silo surrounded by big bluestem prairie grass. Interesting historical anecdotes about this history-rich area have been assembled by G. Arnold Grefthen in "A Land of Howling Wolves".

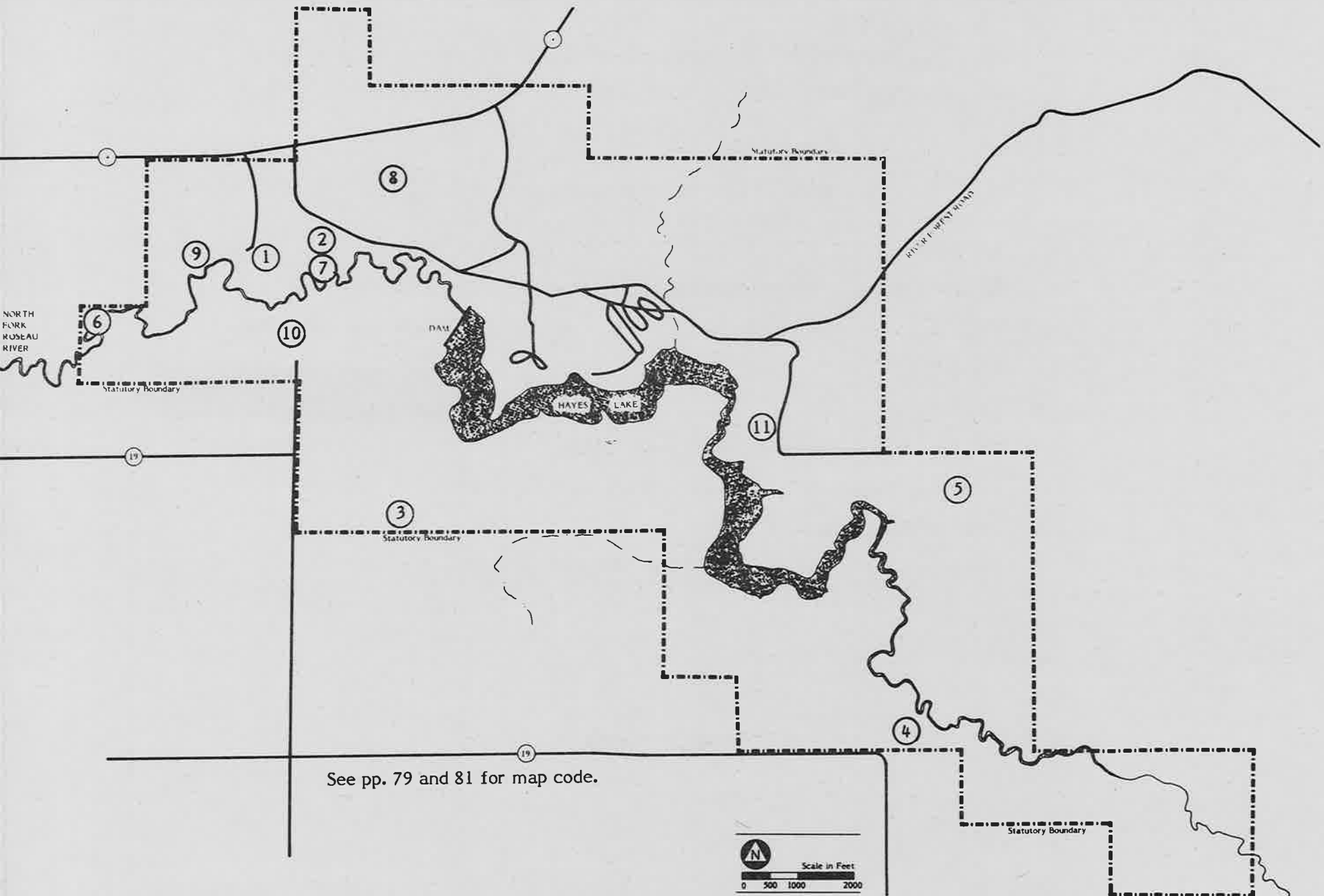
No sites of historic significance other than original homesteads are located in the park.

Map
Code
p. 80

Inventory

- 1 Homestead of Alva Hendershot - Homesteaded in the fall of 1910 after the disastrous fire of the same year. T160N, R38W, SE NE Sec. 32.
- 2 Graves of: George E. Hendershot - Born April 5, 1885 - Died October 23, 1927 - Brother of Alva; William H. Hendershot - Born May 17, 1885 - Died October 1, 1918 - Father of Alva; and J. D. Hendershot - Civil War veteran - grandfather of Alva.
- 3 Homestead of Lewis Smith.
- 4 Homestead of Fred and Augusta Simonson. Augusta Simonson, who was living alone while her husband was in the harvest fields of North Dakota, saved her family from the fire of 1910 by lowering herself and her children into a deep well and covering them with wet blankets, while the fire roared over their property.
- 5 Homestead of William Trach - Later owned by Elmer (Cap) Nelson.
- 6 Homestead of Lorentz Espe.
- 7 Homestead of George E. Hendershot.
- 8 Homestead of Herman Lehman.

HISTORICAL/ARCHAEOLOGICAL SITES



See pp. 79 and 81 for map code.



-
- 9 Homestead of A. W. Clark, sister of Mrs. Albert F. Hayes.
 - 10 Espe Homestead T160N, R38W, NW SW Sec. 33, Homestead of Peter Espe, son of Lorentz Espe.
 - 11 Walter Fuller Homestead.
 - 12 Church Sisters - 3 sites presently flooded by Hayes Lake.

Sources:

Minnesota Historical Society Field Services, Historical Sites and Archaeology Division, 1976.

Personal communication with Vern Carlson, Park Manager, Hayes Lake State Park. 1976.

Management

Objective:

To preserve sites of historical significance in the park

To interpret local history, as related to its statewide significance

• Specific Management

The grave sites in the park must be protected from vandalism. Therefore, their exact location will not be revealed. The local community will be involved in the preparation of information on interpretation of these sites. This information will be included in the interpretive prospectus (see p. 112).



Recreation Management

USER ANALYSIS

Introduction

Careful consideration must be given to future needs of the park user. Although a great deal of data exist concerning disparate elements of the subject, no comprehensive authoritative study on recreational tourism demand in Minnesota is currently available. Trends in travel patterns are discernible, but estimates of the time period over which this demand will develop and of its magnitude are only speculative at this time. Furthermore, published data largely document what people have done in the past. Only if it is assumed that these trends will continue can valid conclusions be drawn. Obviously, these data are not sensitive to any unpredictable technological changes or political events. For example, the oil embargo created an "energy crisis" overnight. This development and its implications have had a direct impact upon travel patterns.

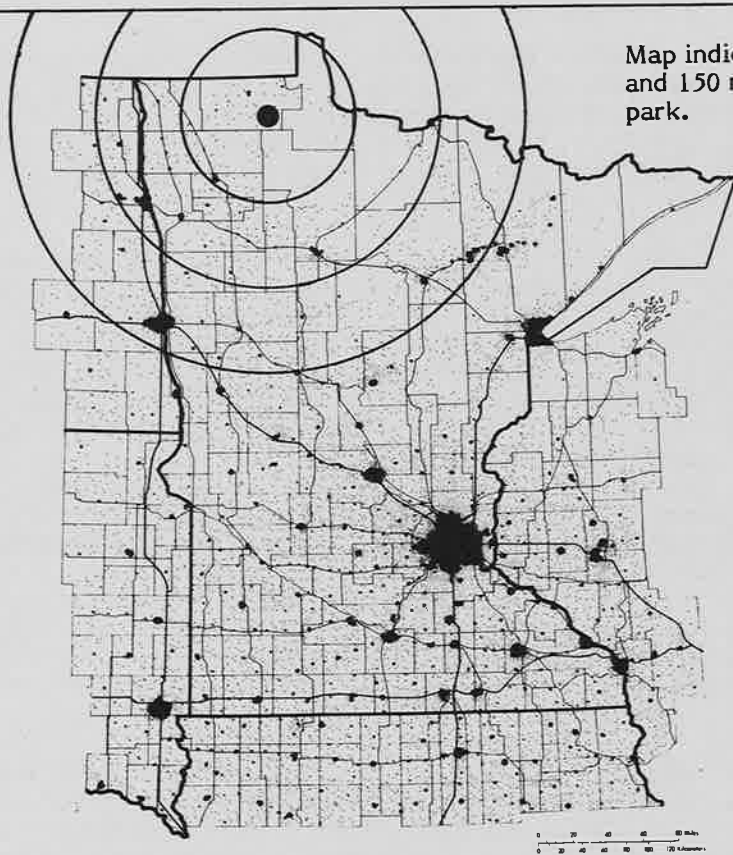
There are two basic aspects of recreational demand. The first involves measurement of the amount and kind of recreational opportunities/facilities currently demanded by the public (e.g., the size of the park or the number of campsites). The second aspect involves an estimate of latent demand for recreational opportunities/facilities which would exist if citizens were given ample opportunity and adequate conditions to participate in an activity (e.g., the number of handicapped campers that would have utilized campsites if the architectural barriers to their use had been removed).

In the planning for the use and development of state parks, an attempt has been made to anticipate the recreational needs of the public by providing increased recreational opportunities while protecting the park's natural resources.

Statewide Analysis

Minnesota's population in 1970 was 3,805,000. The Population Distribution Map (p. 84) indicates distribution of residents throughout the state in that year. Of course, the heaviest population concentration is in the Twin Cities and surrounding area. Other important urban centers include Duluth-Superior, Fargo-Moorhead, Rochester, St. Cloud, and Austin-Albert Lea.

Minnesota covers approximately 84,000 square miles, of which nearly 4,000 square miles is water. More than 12,000 lakes of ten acres or more in size are scattered across the landscape, thousands of miles of rivers and streams wind through the state, and approximately 19 million acres of land are forested. These waters and forests, coupled with seasonal changes and abundant wildlife, form a unique resource base providing outstanding recreational opportunities.



Tourism Regions Map

Proximity to Population Centers

<u>Center</u>	<u>Distance*</u>	<u>Travel Time</u>	<u>Approximate Population</u>
Roseau	22 miles	25 minutes	2,500
Roseau, Lake of the Woods, Beltrami, Marshall, and Kittson Counties	75 miles	90 minutes	66,000
Bemidji	125 miles	2½ hours	11,500
Grand Forks	110 miles	2¼ hours	60,000
Winnipeg	125 miles	2½ hours	246,000
Twin Cities	300 miles	6 hours	1,905,000

*Approximate Road Mileage

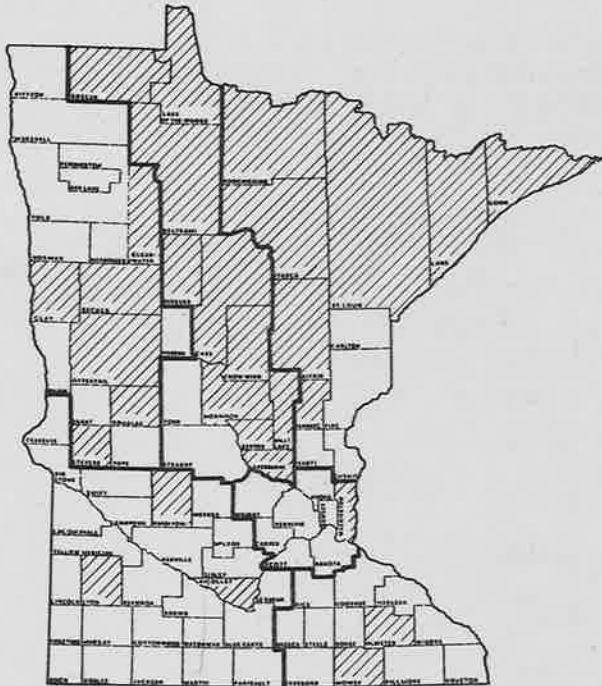
Not all of Minnesota is appreciated the same way. For instance, one person might prefer a forest experience over a prairie experience or vice versa. One thing is clear -- when a significant portion of the population identifies an area as a vacation destination, it is the result of a complex process of positive reinforcement between lodging facilities, natural resources, and other supporting businesses. It would appear that those areas offering the greatest diversity of opportunities receive the greatest use.

The Department of Economic Development (DED) has divided the state into six tourism regions--Arrowhead, Heartland, Metroland, Hiawathaland, Pioneerland, and Vikingland (see Tourism Regions Map, p. 84). The number of lodges and motels within a given area are an important indicator of its attractiveness. The rank order of the regions based upon total overnite lodging capacity is as follows: Metroland (399,719), Arrowhead (192,842), Hiawathaland (136,519), Pioneerland (129,374), Heartland (88,018), and Vikingland (74,752). When this capacity is compared on a per capita basis, their rank order changes dramatically--Arrowhead (50%), Hiawathaland (34%), Heartland (29%), Vikingland (26%), Pioneerland (25%), and finally Metroland (21%).

Another measure of regional attractiveness is tourist travel expenditures. Using sales and use as data, the DED has estimated that \$996,000,000 was spent within Minnesota in tourism-related activities in 1974. Although there are some exceptions (notably Olmsted and Mower counties), counties having in excess of \$10,000,000 of tourist-travel expenditures were located in the northern two-thirds of the state. Generally, this trend was strengthened by data showing that northern counties had expenditures, as a percent of county gross sales, above the state average. (See Tourism Travel Maps, p. 86.) Both measurements, lodging units per capita and tourist-travel expenditures, indicate heavy recreational use in the northern portion of the state.

A 1974 opinion survey of residents within the 10-county Twin City area conducted by the Minneapolis Star and Tribune showed that, for Twin City residents, the northern half of the Arrowhead region, which includes St. Louis, Itasca, Koochiching, Lake, and Cook counties, is the most popular vacation area in the state. Thirty-eight percent of those planning a vacation of a week or more and 39% of those planning a vacation of less than a week in the state said they planned to vacation in that area. Second in popularity was the southern Heartland region (Crow Wing, Mille Lacs, Sherburne, Benton, Stearns, Morrison, and Todd counties). Twenty-five percent of those planning both long and short vacations said they would vacation in southern Heartland.

TOURISM-TRAVEL MAP #1



Minnesota Counties with Tourism-Travel Expenditures as Percent of County Gross Sales Above State Average.

TOURISM-TRAVEL MAP #2



Minnesota Counties with Estimated Tourism-Travel Expenditures of \$10,000 and Over in 1974.

DEVELOPMENT

Introduction

Hayes Lake State Park will be developed to function as a part of a total recreation package. Zippel Bay State Recreation Area, on the shore of Lake of the Woods, and Beltrami Island State Forest are the other components of this package.

Use of Hayes Lake State Park has, in the recent past, been directed toward day use activities such as: swimming, fishing, picnicking, and hiking. Development of park facilities will continue in this direction and an interpretive program will be developed to complement these activities. The parks trail system will be linked to the trails in Beltrami State Forest. Camping facilities will continue to be developed as demand grows.

The timetable for the development of these facilities is tenuous at this time. Park user levels are relatively low (see Park Use Chart below). However, since this park was only established in 1972, use is expected to increase.

Park Use

	Day Use Only	Total Number of People Camping	Total	Average Number of Campsites Occupied per Weekend Day	Number of Campsites Available
1973	5,500	0	5,500	0	0
1974	31,529	802	32,331	6	20
1975	31,576	1,408	32,984	11	25
1976	28,721	1,619	30,340	12	30
1977	29,534	2,447	31,881	19	35

Existing Development

Hayes Lake facilities include: a campground with a modern sanitation building under construction, a primitive campground, one mile of paved entrance road, a partially completed picnic area, a small swimming beach, a ranger station, a small contact station, a mobile home near the contact station which serves as a temporary manager's residence (a new manager's residence is under construction), and a service center.

With the exception of the entrance road, the general character of the existing development is consistent with the natural setting. Campsites are fairly well screened from each other and are spaced 60 feet or more apart. The picnic area has been created by selectively clearing alder-willow brush on a point on the lakeshore. The trail between the campground, picnic area, and Hayes Lake dam meanders through pine plantations and aspen, with frequent views of the lake.

The park entrance road, built to county state aid highway (CSAH) standards, has wide, cleared ditches. Because of the lack of canopy of trees, the road does not give the visitor an introductory experience which is consistent with the character of the park.

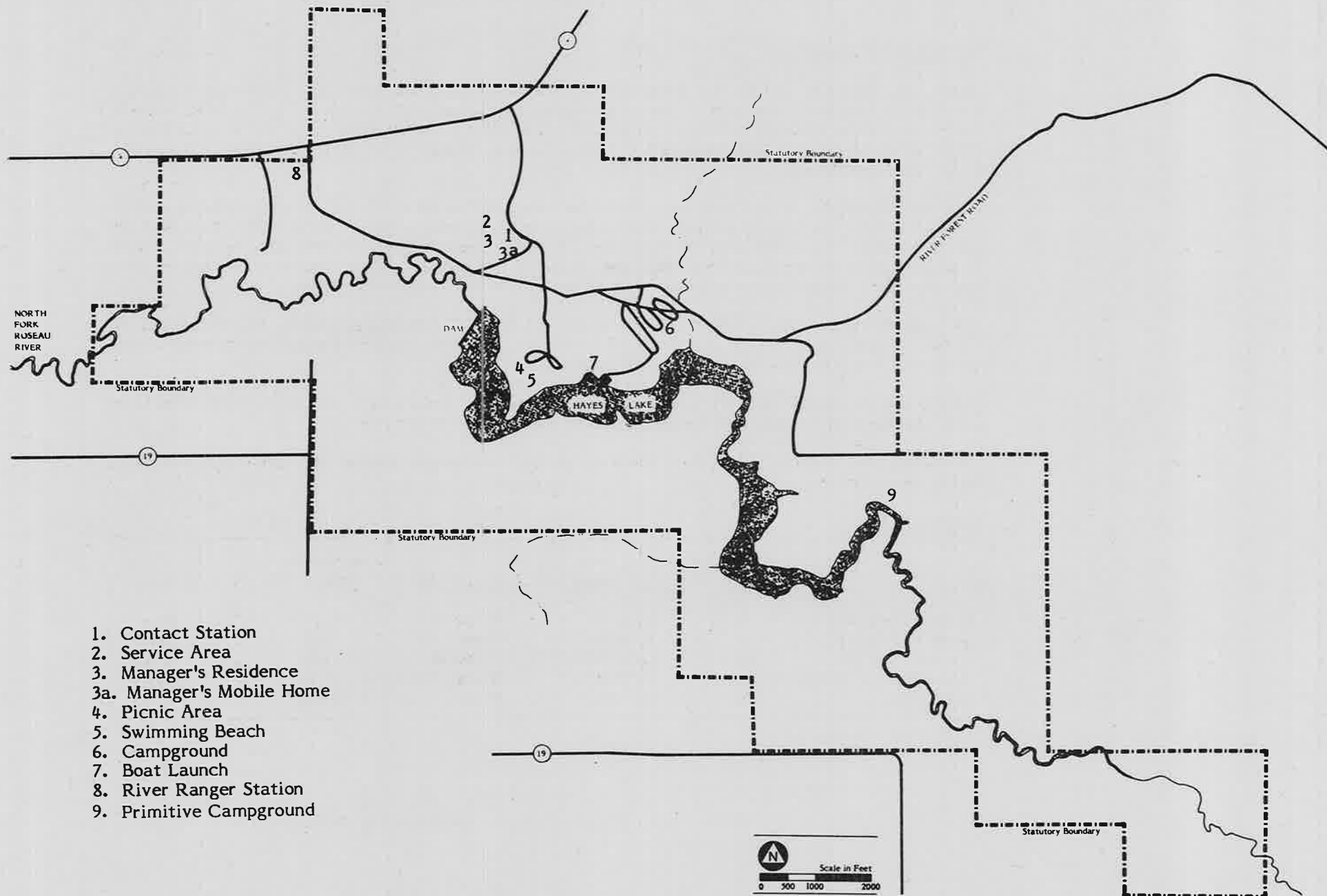
Despite the unnaturally geometric and barren appearance of the earthen dam which creates the lake, water rushing over the control structure attracts many people to the site.

An underground electric line enters the park at the river ranger station and serves the manager's residence and the dam.

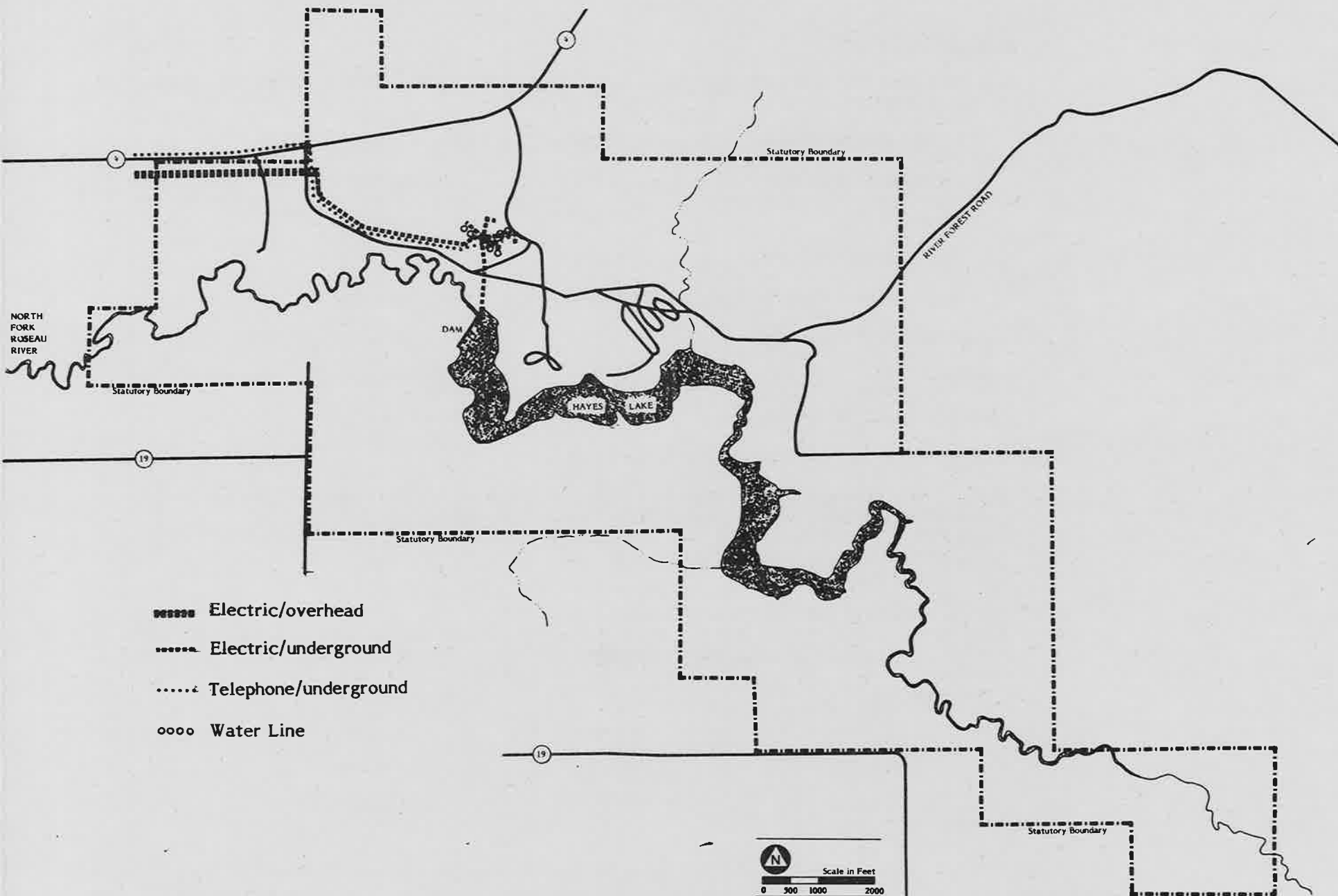
Building Inventory

<u>Use</u>	<u>Map Key</u>	<u>Dimensions</u>	<u>Construction</u>	<u>Construction Date</u>	<u>Condition</u>
Shop/Warehouse	(2)	30' x 50'	Plywood	1975 (?)	New
Shop/Warehouse	(2)	24' x 36'	Wood	1936	Fair
Contact Station	(1)	16' x 24'	Plywood	1968	Good
River Ranger Station	(8)	18' x 26'	Wood	1936	Fair
Residence	(3)	No Data	Wood	1975	New

EXISTING DEVELOPMENT



1. Contact Station
2. Service Area
3. Manager's Residence
- 3a. Manager's Mobile Home
4. Picnic Area
5. Swimming Beach
6. Campground
7. Boat Launch
8. River Ranger Station
9. Primitive Campground



Proposed Development

The development of recreational facilities in Hayes Lake State Park will be based on the following general guidelines.

Locate park development in accordance with the Zoning Section (see pp. 20 - 28).

Locate trails and day use areas closer to the prime park features. (Since all park lakeshore is in state ownership, it is possible to locate some long-use facilities (e.i. campsites) near the lakeshore.)

Accommodate both summer and winter users.

Make use of existing facilities in the development plan whenever possible.

● Visitor Contact and Orientation

Objectives:

To control access to the park.

To provide orientation information for park visitors

Action: Build a new contact station on the site of the present contact station. The new facility should include: a park office and interpretation/orientation displays.

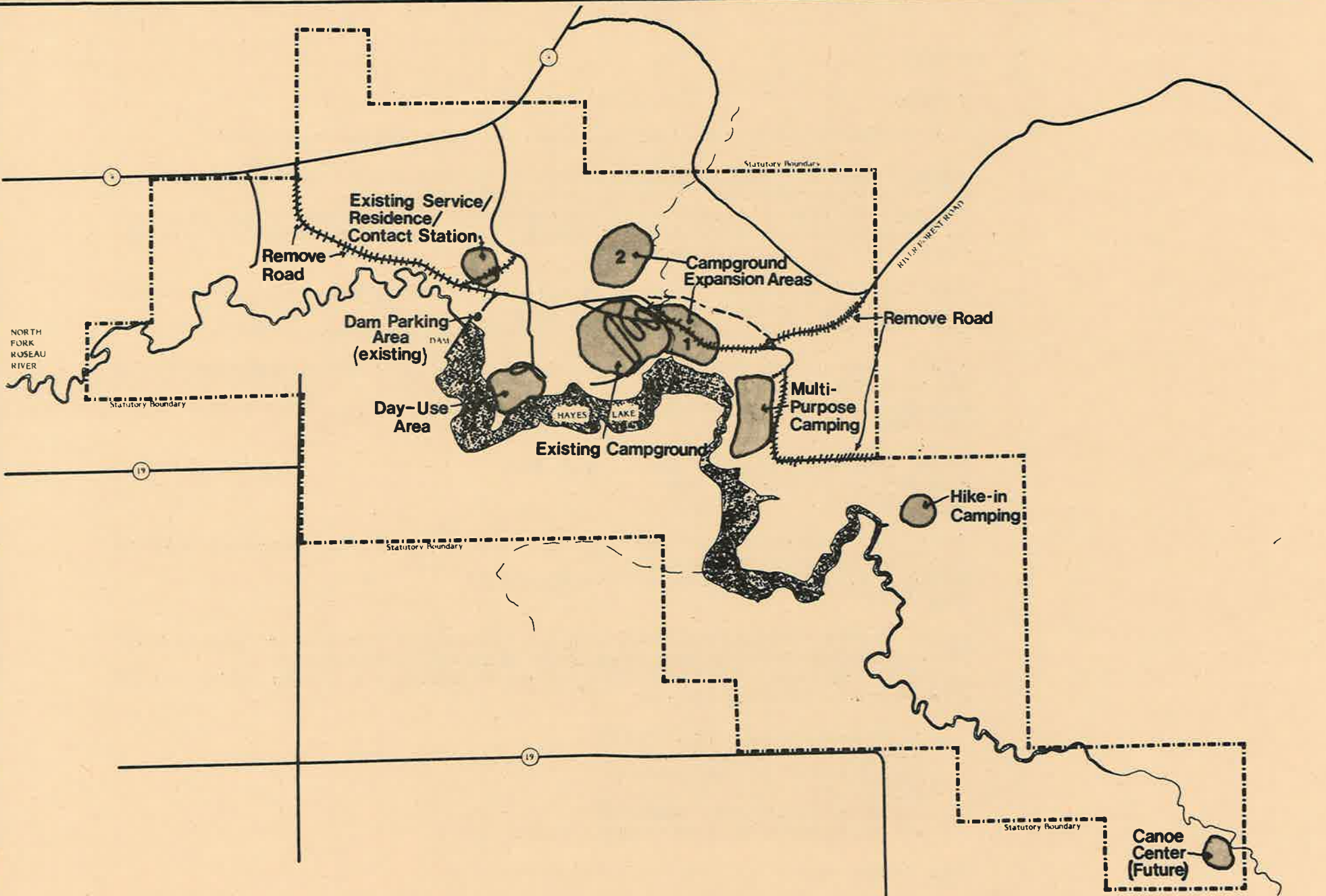
Rationale: It will facilitate control of park access, increase administrative efficiency, and provide orientation information to park visitors.

Cost: \$50,000

Action: Remove mobile home from the site.

Rationale: The mobile home is the property of the park manager and has been used as the manager's residence. When the new manager's residence (which is under construction) is completed, it should be removed.

Cost: None



- Camping

Objective:

To provide lake and forest-oriented camping opportunities in a centralized area of the park

Action: Expand the existing semi-modern campground by adding a loop to the east and, as demand increases, another to the north. The number of sites should not exceed 80.

Rationale: The existing campsites are of high quality and can handle current demand. But as park use increases, more sites must be developed. Expansion into the areas to the east and north will allow easy pedestrian access to the day-use area.

These additional loops should be constructed only after the multi-purpose campground (p. 92) has been completed and demand has exceeded the facilities.

Cost: This is beyond the 10 year scope of this plan and therefore is not included in the budget.

Action: Move the campground entrance road to the beginning of the westernmost loop. (See map, p. 92 .) Obliterate the old road.

Rationale: Will simplify circulation and aid park users orientation.

Cost: \$300

Action: Revegetate the borrow pit area along the lake.

Rationale: Will naturalize lakeshore.

Cost: \$500

Action: Develop approximately 10 hike-in campsites. (See map, p. 92 .) Provide parking for 10 cars near the multi-purpose campground.

Rationale: Will provide an alternative camping opportunity.

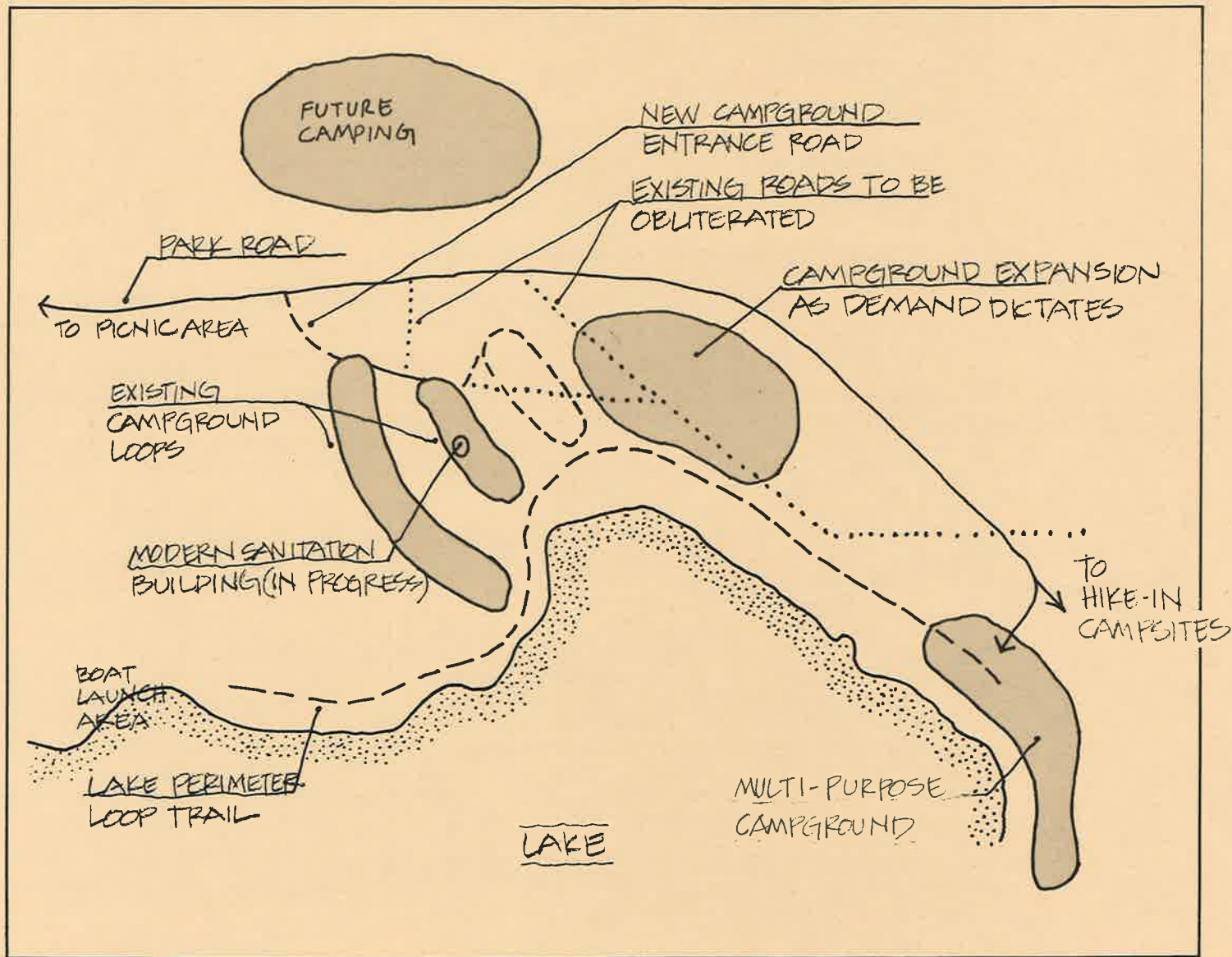
Cost: \$6,000

Action: Develop a multi-purpose campground, with self-contained vault toilet facilities, which can accommodate up to 24 tents or trailers. Reroute the access road (as per map, p. 92).

Rationale: This campground will be designed to provide flexible group camping facilities. It will accommodate the following group sizes:

12 groups of 1 -- 2 tents or trailers, or
6 groups of 3 -- 4 tents or trailers, or
3 groups of 5 -- 8 tents or trailers, or
2 groups of 9 -- 12 tents or trailers, or
1 group of 13 -- 24 tents or trailers, or
any combination of the above totaling 24 tents or trailers.

Cost: \$40,000



Note: If heavy use of this camping area develops, a small combination sanitation/shelter building may be added in the future.

- Day Use Area

Objective:

To facilitate use of the existing picnic area

To improve beach safety

To provide non-motorized boat access to the lake

The day use area, including the swimming beach, main picnic area, and small boat launching area, is intended to serve as the focus for summer park activities. The continuing development of this area involves the following:

Action: Expand the size of the beach and enlarge the swimming area by excavating and moving the shoreline approximately 100 feet north.

Rationale: The current size of the beach is too small to handle any significant increase in park attendance. Preliminary studies show this area to be suitable for developing a larger and safer beach.

Cost: \$15,000

Action: Develop a small-boat launching facility to the east of the picnic area.

Rationale: There is currently no facility in operation. It would serve the recreational needs of boaters and fishermen.

Cost: \$8,000

Action: Develop a canoe rental facility which will be run either by the park or in cooperation with private enterprise. This facility will be located as indicated on the map, p. 92. Canoes would be returned near the day use area. Transportation between the canoe rental facility and the day use area would be on existing roads.

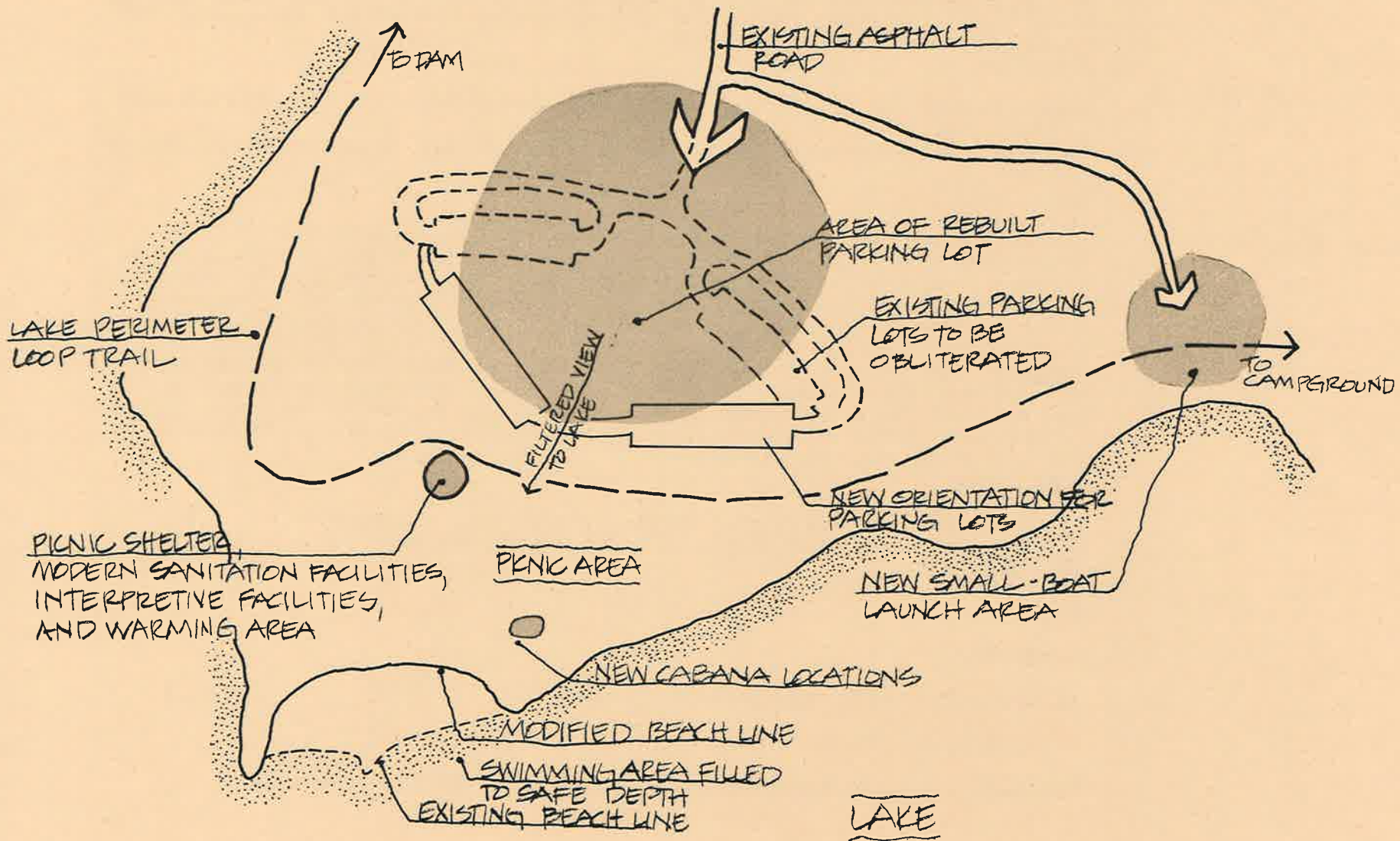
Rationale: This facility would allow park users to tour the park upstream by trail, and downstream by canoe.

Cost: No funds for this facility have been budgeted in this plan, however development should be kept open for future consideration.

Action: Move the beach cabanas away from the expanded beach area. Remove pit toilets.

Rationale: The expanded beach will encroach upon their existing locations and therefore, the cabanas will get in the way of beach activities.

Cost: \$500



Action: Post "no motors allowed" signs at the boat launch and enforce the restrictions.

Rationale: This action will help maintain the quiet park environment and will minimize use-conflicts on this relatively small lake. Also, this action is supported by local residents who attended public meetings concerning the management plans.

Cost: None

Action: Rebuild the parking lots in a more north-south orientation to provide views of the lake where possible.

Rationale: Providing views of the lake from the parking lots will facilitate orientation of park visitors.

Cost: \$10,000

Action: Develop a multiple purpose building in the day use area, containing the following facilities: a picnic shelter, toilets, orientation and interpretive displays, interpretive program presentation areas with audio-visual equipment, a rear projection screen, and a winter warming area. By constructing the building with movable wall panels, the building can be open-air for summer use and closed for winter heating. Any winter camping can be accommodated in the day-use parking lot and in designated portions of the picnic area.

Rationale: A picnic shelter is needed for use during inclement weather. Modern sanitation facilities will allow treatment of sewage to protect groundwater quality. The winter warming area could be used as a center for all winter trail activities. Utilizing one structure for interpretive displays, orientation information, and programs is not only economical, but centralizes the functions so that they are more easily available for park users.

Cost: \$85,000

Action: Continue developing the picnic area, leaving scattered areas of vegetation.

Rationale: Vegetation provides some degree of privacy for picnic sites.

Cost: \$1,500

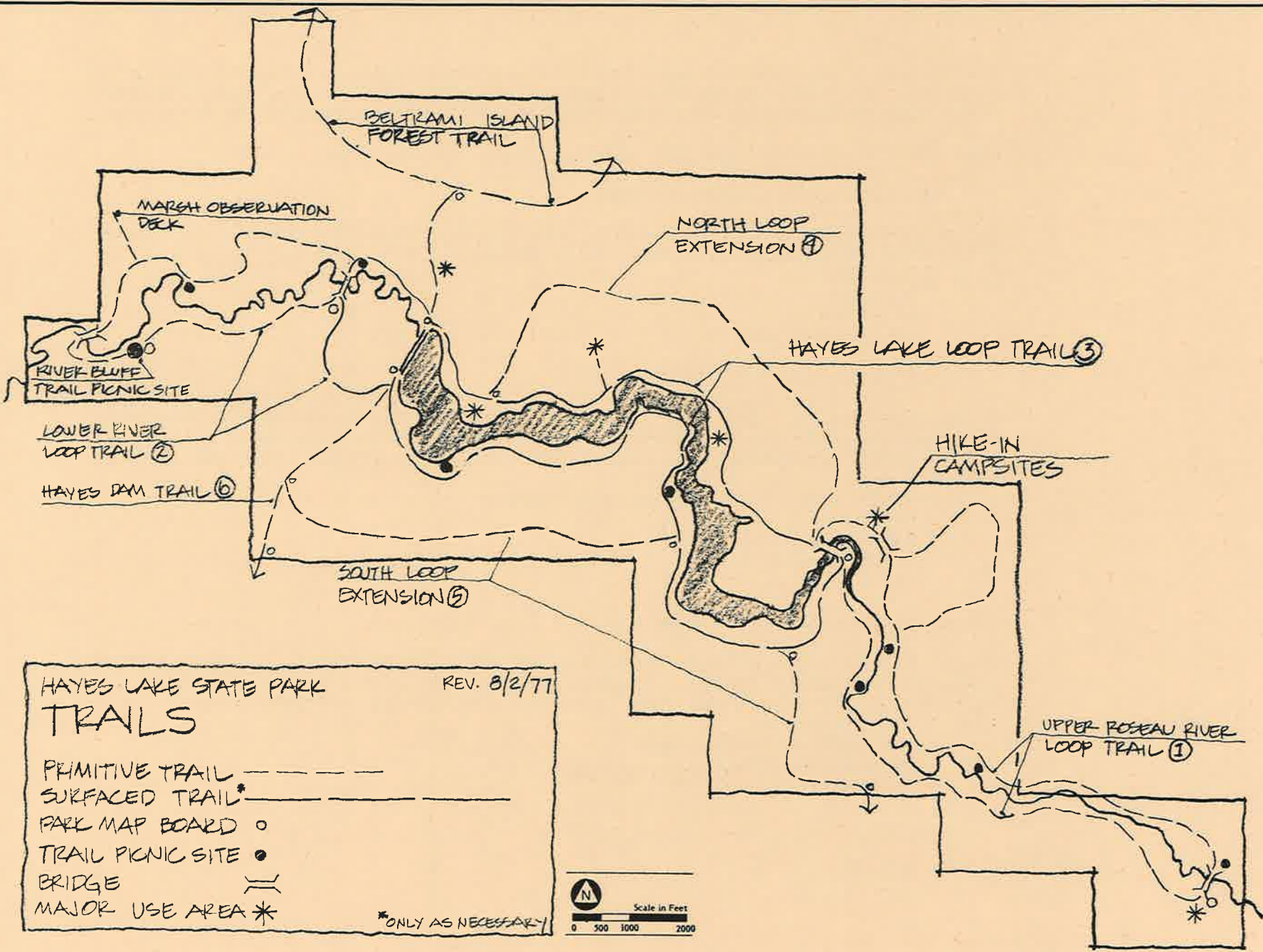
•Trails

Objectives:

To direct visitors through significant park environments

To provide access to features of interest

To connect Hayes Lake State Park trails with the trails of Beltrami Island State Forest

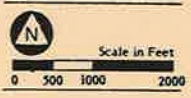


HAYES LAKE STATE PARK
TRAILS

REV. 8/2/77

- PRIMITIVE TRAIL -----
- SURFACED TRAIL * - - - - -
- PARK MAP BOARD ○
- TRAIL PICNIC SITE ●
- BRIDGE ≡
- MAJOR USE AREA *

* ONLY AS NECESSARY



The 17 miles of loop trails are equally divided between snowmobiling and cross-country skiing for winter use. They complement the 250 miles of snowmobile trail in the adjacent Beltrami Island State Forest. Approximately 5 miles of trail are to be developed for bicycling, as well as for wheelchairs.

Note: The number preceding each trail alignment refers to Trail Map, p. 98.

1 Upper Roseau River Loop Trail (5 miles)

Action: Develop a primitive hiking trail with 2 park orientation maps, an 8 foot-wide bridge designed in accordance with the architectural theme (see p. 101), and 4 picnic/rest sites along the river.

Cost: \$1,000 alignment
400 maps
3,000 bridge
1,800 picnic/rest sites

2 Lower Roseau River Loop Trail (3 + miles)

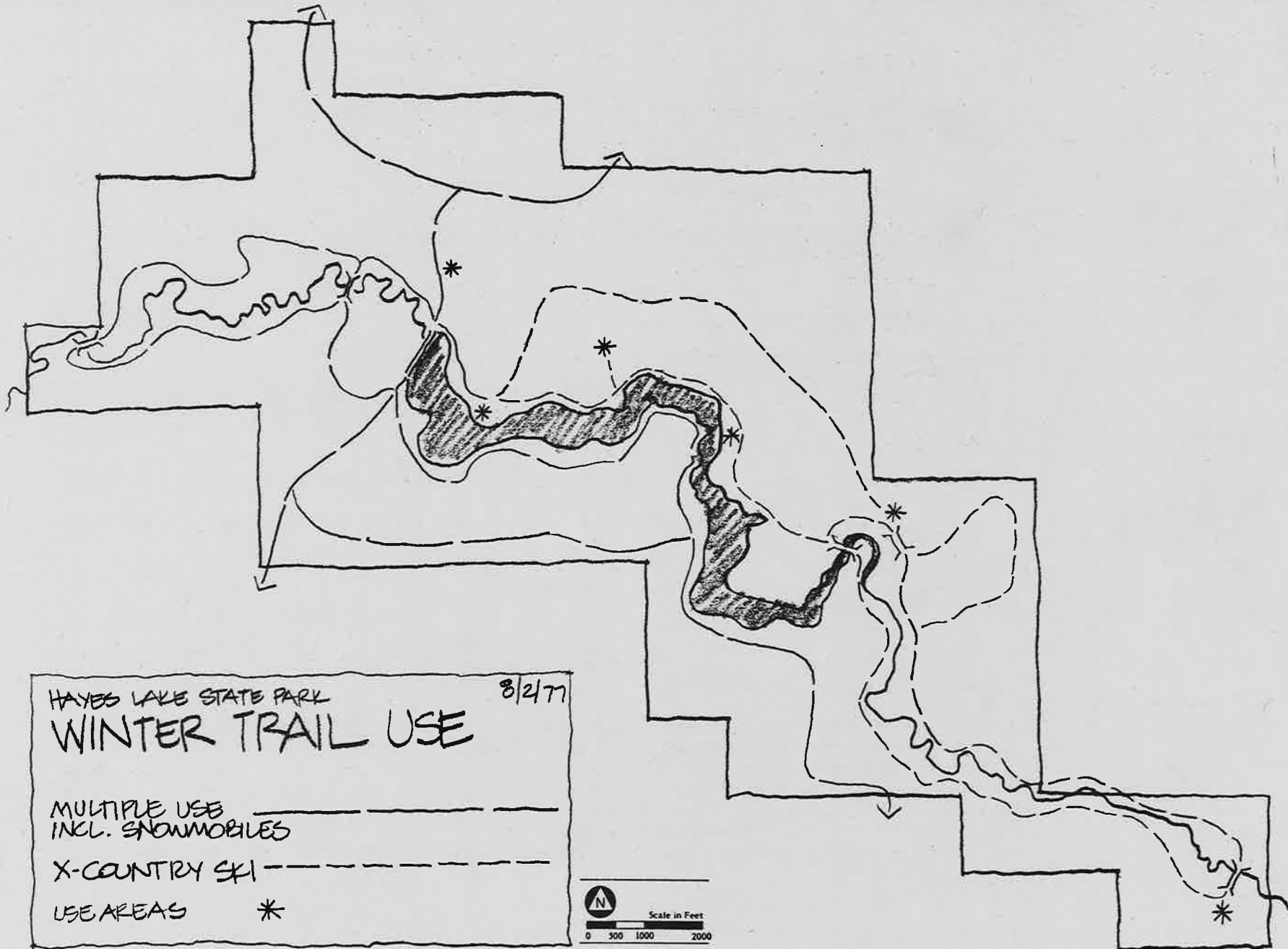
Action: Develop a trail approximately 3 miles long, approximately 1 mile of which is handicapped accessible. Facilities along the trail will include: two 8 foot-wide bridges (designed in accordance with the architectural theme), and observation deck at the orchid bog, 3 picnic/rest sites, and 2 park orientation maps.

Cost: \$4,000 alignment (\$2,500 handicapped accessible portion)
6,000 bridges
2,000 observation deck
1,200 picnic/rest sites
400 maps

3 Hayes Lake Loop Trail (4 + miles)

Action: Develop a trail, upgrading the existing portion between the dam and the campground to handicapped accessibility standards. Facilities along the trail will include: 2 bridges (designed in accordance with the architectural theme), 4 picnic/rest sites, and 2 park orientation maps.

Cost: \$4,000 alignment
6,800 (\$800 for a rivulet bridge)
1,600 picnic/rest sites
400 maps



4 North Loop Extension

Action: Develop a primitive hiking trail with one park orientation map.

Cost: \$500 alignment
400 map

5 South Loop Extension (2 miles)

Action: Develop a primitive hiking trail with 4 park orientation maps.

Cost: \$500 alignment
800 maps

6 Hayes Dam Trail (1 1/2 miles)

Action: Develop a primitive hiking trail with two park orientation maps.

Cost: \$400 alignment
400 map

•Roads

Action: Reorganize park roads according to the map, p. 92 . Obliterate and revegetate unnecessary portions of roads.

Rationale: Will facilitate traffic flow and visitor orientation and enhance the natural character of the park.

Cost: \$15,000

•Architectural Theme

An architectural theme is being established for each state park to ensure continuity between the different structures in the park. This theme should reflect the natural character of the area in the design and building materials used.

The architectural theme selected for Hayes Lake State Park is one of simple lines, reflecting the two dramatically different environments which come together in this area -- the low horizontal flat lines of the windswept Lake Agassiz plain and the vertical lines of the forest. Materials are to be predominantly wood, with an emphasis on heavy structural timbers and neutral stains that reflect the predominant colors found in the natural environment.

The Bureau of Engineering is responsible for determining the specific designs of the structures.

Recreation Management Budget

Management Practice	Biennium					Total
	78-79	80-81	82-83	84-85	86-87	
New Contact Station				\$ 50,000		\$ 50,000
Campground Expansion						
Move Entrance Road	\$ 300					300
Revegetate Borrow Pit	500					500
Hike-in Campsites/Parking				6,000		6,000
Multi-purpose Campground						
Campsites/Parking/Road						
Rerouting		\$ 8,000		10,000	\$ 22,000	40,000
Day Use Area						
Beach Renovation		15,000				15,000
Boat Launch				8,000		8,000
Move Beach Cabanas		500				500
Parking Lot Renovation	10,000					10,000
Picnic Shelter Sanitation						
Building			\$ 85,000			85,000
Picnic Area Development	500	1,000				1,500
Trails						
Upper Roseau River Loop Trail						
Alignment					1,000	1,000
Bridges					3,000	3,000
4 Picnic Sites					1,800	1,800
2 Orientation Maps					400	400
Lower Roseau River Loop Trail						
Alignment		4,000				4,000
2 Bridges		6,000				6,000
Observation Deck				2,000		2,000
3 Picnic Sites		1,200				1,200
2 Orientation Maps		400				400

Hayes Lake Loop Trail						
Alignment	4,000					4,000
Bridge for Loop	6,000					6,000
Rivulet Bridge					800	800
4 Picnic Sites		1,600				1,600
2 Orientaiton Maps	400					400
North Loop Extension						
Alignment		500				500
Orientaiton Maps		200				200
South Loop Extension						
Alignment		500				500
Orientaiton Maps		800				800
Hayes Dam Trail						
Alignment		400				400
Orientaiton Maps		400				400
Roads						
Eradicate Old Roads		5,000	5,000	5,000		15,000
TOTAL	\$ 21,700	\$ 45,500	\$ 90,000	\$ 81,000	\$ 29,000	\$ 267,200



Interpretive Program

INTRODUCTION

Interpretation is "an educational activity which aims to reveal meanings and relationships through the use of original objects, by first-hand experiences and by illustrative media, rather than simply to communicate factual information" (Freeman Tilden). In this light, the interpretive services program aims to foster in the public an understanding of park resources and management by:

1. Revealing the kinship of park visitors to the park environment and, by association, their even broader involvement within ecosystems.
2. Illuminating the historic and ongoing impacts of natural forces within the park and upon the people who use them.
3. Assisting park visitors in the discovery of meaningful and satisfying ways in which to enjoy their visits without intruding on the experiences of others or impairing the quality of the park environment.
4. Explaining the mission of the Department of Natural Resources' interdisciplinary park management practices and the importance of public participation and support in the operation of this agency.

Interpretive services will be developed in recognition of the following:

1. The park contains fragile life communities which can be perpetuated only through careful management.
2. People are a natural and necessary element in the park environment, free to enjoy the environment in non-destructive ways.
3. All natural resource units, and the public they serve, are tied to one another ecologically, economically, socially, and politically.

It is hoped that the people who recreate and learn in Hayes Lake State Park will, by experiencing the park and related interpretive services, gradually increase their environmental awareness.

INTERPRETIVE THEMES

Les Blacklock, the nationally famous photographer-naturalist who helped conduct the original feasibility study for the park, described it thus:

"The Hayes Lake site, just off the edge of a man-made grain-farm prairie, is mostly within the borders of the half-million acre Beltrami Island State Forest, and is connected by unbroken forest to some of the wildest lands in the contiguous 48 states. This wilderness offers the exciting possibility that a visitor may see a deer, bear, moose and even an elk, along with the smaller mammals and birds, quite common here, that would be considered rare at most state parks. And there's fine scenery. I went up there expecting to find sluggish black water oozing out of the big bog. Instead, a sparkling, clear stream gurgles and rolls in graceful curves through the bottom of a beautiful valley, making excellent photographic possibilities at nearly every bend. Hayes Lake should be a beauty, with a varied shoreline, steep here, gradual there, with lots of bays and points. Shoreline timber will be quite spectacular. Very large white spruce, balsam and jack pine, accented by some excellent white birch. Just east of the beach is an extensive white cedar swamp, and enough of it will be above the shoreline to introduce campers to a delightful hands-and-knees world that they could only know in such a bog."

Outstanding impressions related by visitors to Hayes Lake include frequent sightings of large furbearers including the endangered eastern timber wolf, the spectacular variety of wildflowers judged by Blacklock as "some of the most showy displays I've ever seen," and quiet canoeing in the pristine bays. These and other aspects of Hayes Lake's wilderness character can be enhanced through interpretation, incorporating the role people played in the creation of this unique resource.

Both the orientation and the interpretive programs will focus on the following themes:

The Lake and The Dam

Many of the visitors who come to Hayes Lake State Park find the dam an interesting place to picnic, fish, or enjoy the scenery. Visitor curiosity about the dam and the lake could be encouraged by a kiosk-type interpretive display, or a large sign, discussing the lake's history. Another good location for an interpretive message is the Grefthen Bay Overlook located in the campground. Naturalist programs may feature limnology studies and canoe tours of the lake and river.

The Wilderness

Hayes Lake lies at the edge of one of the most primitive areas left in the continental United States. The wilderness and beauty of Hayes Lake State Park could be highlighted through interpretive programs. These programs may feature a visitor center displaying a collage of natural images, with taped sounds of area wildlife. Outdoor activities will include guided hikes into moose habitat.

Homesteading History

The Hendershot Farm, the historic portages, and the old townsites of Winner and Norris Camp are all part of the historic heritage of Hayes Lake. The park interpretive program will focus on bringing these historic images to life, through a written compilation of park history and on-site interpretation of historic sites in the park. A multi-media program will also be implemented to interpret and display park history.

INTERPRETIVE FACILITIES

1. Action: Expand the function of the contact station so it will become a general visitor orientation point for the park. (See Visitor Contact and Orientation, p. 91 .) Include displays describing recreational facilities and opportunities, as well as natural and historical resources of the park.

Rationale: Many visitors will fully appreciate the varied facets of the park only if they are presented in an easily assimilated form. Audio-visual media are very cost-effective in that they are available on demand and at comparatively reasonable cost.

Displays will include the following:

- a. A descriptive topographic park model to represent landforms, vegetation types, points of interest, and all developments including trails and individual campsites \$ 8,000
- b. A large aerial perspective map of the park and of Beltrami Island State Forest which graphically describes landforms, vegetation types, points of interest, and all developments including trails and campsites \$ 2,500

-
- c. Brochures with reductions of the above map, text, charts describing wildlife associated with vegetation types, other descriptive material, and photographs. This brochure may be used for self-guided nature hikes. The map of the forest may be separate from this park brochure, but should be available in the same locations. This brochure should be distributed at the forest headquarters and the ranger station \$ 3,000
 - d. Photographs keyed to the map, illustrating highlights of the park, forest facilities, and features. The materials may be changed seasonally \$ 300
 - e. An automatic slide show, 3-4 minutes in length, illustrating both park and forest highlights, facilities, and features. The materials may be rotated seasonally \$ 1,000

Cost: Total orientation displays cost: \$14,800

- 2. Action: Develop 3 specialized orientation and educational in each of the following major areas: the picnic/beach area, the campground at Grefthen Bay Overlook, and the multi-purpose campground. These will include large aerial-view perspective maps of the park and forest, handout maps, and descriptive material on park facilities. Displays will be changed seasonally.

Rationale: Will provide orientation and interpretive material where large numbers of visitors can utilize it.

Cost: \$9,000 (\$3,000/display)

- 3. Action: Develop descriptive displays at key interpretive points as shown on the interpretive map, p. 111.

Rationale: On-site interpretive messages have a maximum impact when they answer questions that the casual visitor might have as points of interest are encountered along the park trails. These messages can also be effective in communicating warnings to visitor concerning the fragile nature of the various environments.

Cost: See the below table.

-
4. Action: Place aerial view descriptive park maps at key locations as shown on the trail map, p. 98 . Use a reduction of the map prepared for the contact station.

Rationale: These maps will aid in the orientation of park visitors.

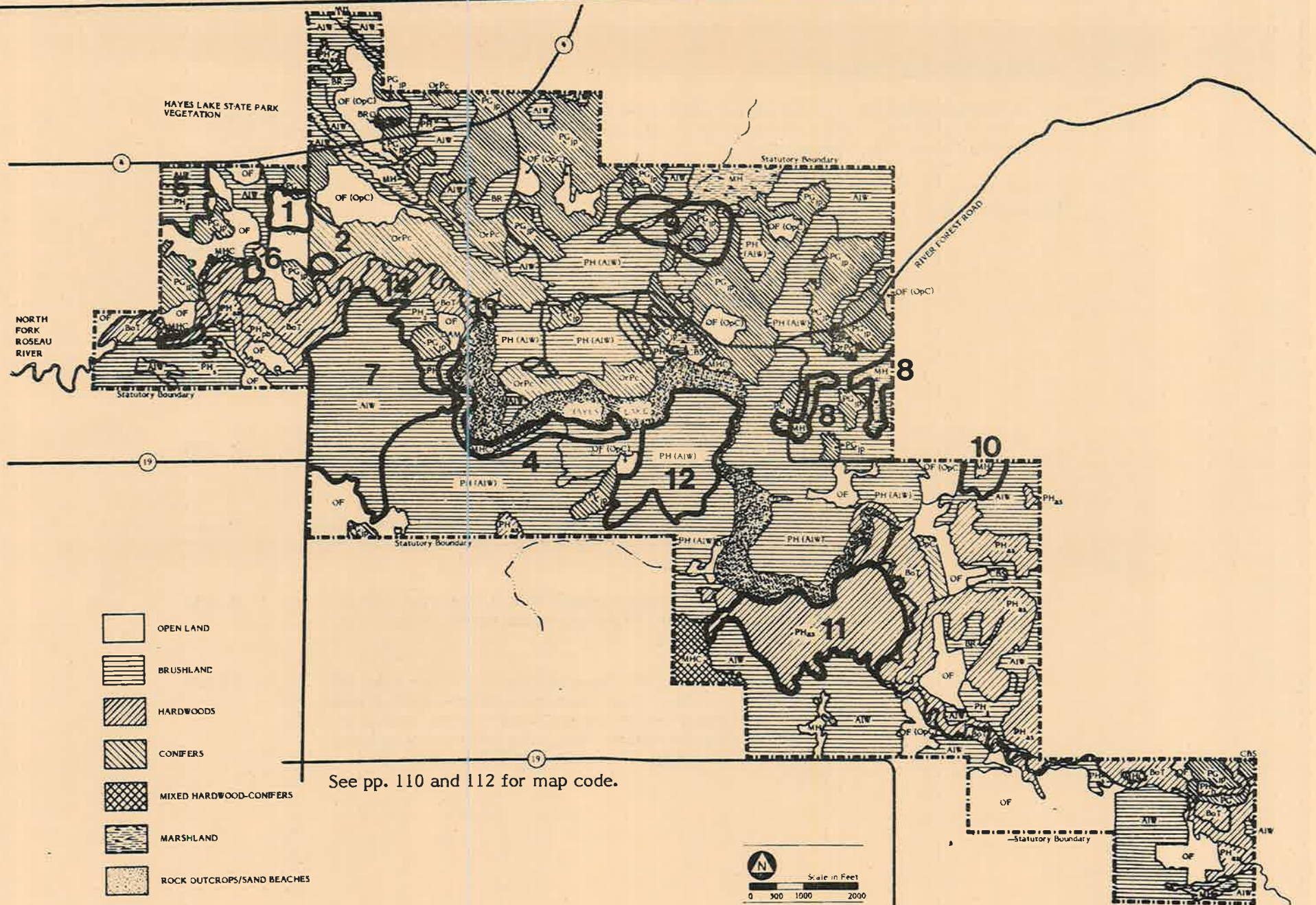
Cost: See the Trails Section.

On-site Interpretive Displays

The following on-site interpretive displays should be developed to communicate significant aspects of the park to visitors. Their information should be verified and, if necessary, modified in the Interpretive Prospectus. (See p. 112.)

<u>Interpretive Map Code, p.111</u>	<u>Action</u>	<u>Cost</u>
1	Maintain the opening. Provide a trail network around the opening. Strategically place portable, experimental observation blinds where wildlife is most readily observable.	\$1,000
2	Hendershot Grave Sites. Mark the site with an interpretive placard.	\$ 50
3	River Overlook (private property, 1976). The high bluff affords an excellent view of the river.	Pending acquisition
4	Beaver Cuttings - There is considerable beaver activity along the lakeshore. Provide an interpretive brochure on beaver life history.	\$ 500
5	Orchid Bog - Provide limited interpretive access by a guided tour. Protect the orchid area from excessive, unrestricted foot traffic.	None
6	River Overlook - There is a good view of the river and of the old beaver lodge. Provide a rustic bench and an interpretive placard.	\$ 150
7	Interpretive Area - Use this area to point out the value of prescribed burning in vegetation management and the value of interspersing grass, brush, and mature trees. Interpret the use of snags by raptors. Vary interpretation program or brochures seasonally. Construct 4 portable observation blinds.	\$3,500

INTERPRETIVE AREAS



See pp. 110 and 112 for map code.

8	Marsh - Place 100 wood duck houses around each marsh. Construct portable observation blinds in strategic locations at each marsh.	\$1,800
9	Deer Yard - Provide seasonal interpretation of the deer use area.	None
10	Marsh - Interpret the natural phenomena in the wetland created by the old beaver dam. Construct an observation blind in a favorable location.	\$ 800
11	Pioneer Hardwood Restoration - Interpret changes in the wildlife communities resulting from vegetation management. Show wildlife responses to structural diversity. Locate several ruffed grouse drumming logs.	\$ 500
12	Ruffed Grouse Management Demonstration Area - Interpret ruffed grouse habitat requirements met by providing aspen of various age classes. Locate several drumming logs. Place a permanent blind near a drumming site. Establish an interpretive trail network.	\$2,500
13	Drum Site - Interpret the history and character of the lake and dam.	\$1,000
14	Beaver Dam - Interpret beaver activity at the bridge.	\$ 500
Total Initial costs:		<u>\$12,300</u>

INTERPRETIVE PROSPECTUS

Detailed procedures for interpretive plan implementation with specifics on programs, displays, costs, and phasing will be prepared by the regional naturalist in consultation with the DNR Park Planning staff during the next biennium. The process may also include recommendations for further research in park ecology, oral history, and visitor use, as well as details on extended interpretive tours beyond the park boundaries.

Interpretive Program Budget

	Biennium					Total
	78-79	80-81	82-83	84-85	86-87	
Interpretive Displays						
Contact Station					\$ 8,000	\$ 8,000
Park Model						2,500
Aerial Map		\$ 2,500				3,000
Brochure			\$ 3,000			300
Photographs		300				1,000
Slide Show					1,000	
Use Area Displays			3,000	\$3,000	3,000	9,000
On-Site	\$ 2,890	2,354	2,352	2,352	2,352	12,300
Total	\$ 2,890	\$ 5,154	\$ 8,352	\$ 5,352	\$ 14,352	\$ 36,100

- Camping

Objective:

To provide lake and forest-oriented camping opportunities in a centralized area of the park

Action: Expand the existing semi-modern campground by adding a loop to the east and, as demand increases, another to the north. The number of sites should not exceed 80.

Rationale: The existing campsites are of high quality and can handle current demand. But as park use increases, more sites must be developed. Expansion into the areas to the east and north will allow easy pedestrian access to the day-use area.

These additional loops should be constructed only after the multi-purpose campground (p. 92) has been completed and demand has exceeded the facilities.

Cost: This is beyond the 10 year scope of this plan and therefore is not included in the budget.

Action: Move the campground entrance road to the beginning of the westernmost loop. (See map, p. 92 .) Obliterate the old road.

Rationale: Will simplify circulation and aid park users orientation.

Cost: \$300

Action: Revegetate the borrow pit area along the lake.

Rationale: Will naturalize lakeshore.

Cost: \$500

Action: Develop approximately 10 hike-in campsites. (See map, p. 92 .) Provide parking for 10 cars near the multi-purpose campground.

Rationale: Will provide an alternative camping opportunity.

Cost: \$6,000

Action: Develop a multi-purpose campground, with self-contained vault toilet facilities, which can accommodate up to 24 tents or trailers. Reroute the access road (as per map, p. 92).

Rationale: This campground will be designed to provide flexible group camping facilities. It will accommodate the following group sizes:

12 groups of 1 -- 2 tents or trailers, or
6 groups of 3 -- 4 tents or trailers, or
3 groups of 5 -- 8 tents or trailers, or
2 groups of 9 -- 12 tents or trailers, or
1 group of 13 -- 24 tents or trailers, or
any combination of the above totaling 24 tents or trailers.

Cost: \$40,000

Note: If heavy use of this camping area develops, a small combination sanitation/shelter building may be added in the future.

- Day Use Area

Objective:

To facilitate use of the existing picnic area

To improve beach safety

To provide non-motorized boat access to the lake

The day use area, including the swimming beach, main picnic area, and small boat launching area, is intended to serve as the focus for summer park activities. The continuing development of this area involves the following:

Action: Expand the size of the beach and enlarge the swimming area by excavating and moving the shoreline approximately 100 feet north.

Rationale: The current size of the beach is too small to handle any significant increase in park attendance. Preliminary studies show this area to be suitable for developing a larger and safer beach.

Cost: \$15,000

Action: Develop a small-boat launching facility to the east of the picnic area.

Rationale: There is currently no facility in operation. It would serve the recreational needs of boaters and fishermen.

Cost: \$8,000

Action: Develop a canoe rental facility which will be run either by the park or in cooperation with private enterprise. This facility will be located as indicated on the map, p. 92. Canoes would be returned near the day use area. Transportation between the canoe rental facility and the day use area would be on existing roads.

Rationale: This facility would allow park users to tour the park upstream by trail, and downstream by canoe.

Cost: No funds for this facility have been budgeted in this plan, however development should be kept open for future consideration.

Action: Move the beach cabanas away from the expanded beach area. Remove pit toilets.

Rationale: The expanded beach will encroach upon their existing locations and therefore, the cabanas will get in the way of beach activities.

Cost: \$500

Action: Post "no motors allowed" signs at the boat launch and enforce the restrictions.

Rationale: This action will help maintain the quiet park environment and will minimize use-conflicts on this relatively small lake. Also, this action is supported by local residents who attended public meetings concerning the management plans.

Cost: None

Action: Rebuild the parking lots in a more north-south orientation to provide views of the lake where possible.

Rationale: Providing views of the lake from the parking lots will facilitate orientation of park visitors.

Cost: \$10,000

Action: Develop a multiple purpose building in the day use area, containing the following facilities: a picnic shelter, toilets, orientation and interpretive displays, interpretive program presentation areas with audio-visual equipment, a rear projection screen, and a winter warming area. By constructing the building with movable wall panels, the building can be open-air for summer use and closed for winter heating. Any winter camping can be accommodated in the day-use parking lot and in designated portions of the picnic area.

Rationale: A picnic shelter is needed for use during inclement weather. Modern sanitation facilities will allow treatment of sewage to protect groundwater quality. The winter warming area could be used as a center for all winter trail activities. Utilizing one structure for interpretive displays, orientation information, and programs is not only economical, but centralizes the functions so that they are more easily available for park users.

Cost: \$85,000

Action: Continue developing the picnic area, leaving scattered areas of vegetation.

Rationale: Vegetation provides some degree of privacy for picnic sites.

Cost: \$1,500

•Trails

Objectives:

To direct visitors through significant park environments

To provide access to features of interest

To connect Hayes Lake State Park trails with the trails of Beltrami Island State Forest

The 17 miles of loop trails are equally divided between snowmobiling and cross-country skiing for winter use. They complement the 250 miles of snowmobile trail in the adjacent Beltrami Island State Forest. Approximately 5 miles of trail are to be developed for bicycling, as well as for wheelchairs.

Note: The number preceding each trail alignment refers to Trail Map, p. 98.

1 Upper Roseau River Loop Trail (5 miles)

Action: Develop a primitive hiking trail with 2 park orientation maps, an 8 foot-wide bridge designed in accordance with the architectural theme (see p. 101), and 4 picnic/rest sites along the river.

Cost: \$1,000 alignment
400 maps
3,000 bridge
1,800 picnic/rest sites

2 Lower Roseau River Loop Trail (3 + miles)

Action: Develop a trail approximately 3 miles long, approximately 1 mile of which is handicapped accessible. Facilities along the trail will include: two 8 foot-wide bridges (designed in accordance with the architectural theme), and observation deck at the orchid bog, 3 picnic/rest sites, and 2 park orientation maps.

Cost: \$4,000 alignment (\$2,500 handicapped accessible portion)
6,000 bridges
2,000 observation deck
1,200 picnic/rest sites
400 maps

3 Hayes Lake Loop Trail (4 + miles)

Action: Develop a trail, upgrading the existing portion between the dam and the campground to handicapped accessibility standards. Facilities along the trail will include: 2 bridges (designed in accordance with the architectural theme), 4 picnic/rest sites, and 2 park orientation maps.

Cost: \$4,000 alignment
6,800 (\$800 for a rivulet bridge)
1,600 picnic/rest sites
400 maps

4 North Loop Extension

Action: Develop a primitive hiking trail with one park orientation map.

Cost: \$500 alignment
400 map

5 South Loop Extension (2 miles)

Action: Develop a primitive hiking trail with 4 park orientation maps.

Cost: \$500 alignment
800 maps

6 Hayes Dam Trail (1 1/2 miles)

Action: Develop a primitive hiking trail with two park orientation maps.

Cost: \$400 alignment
400 map

•Roads

Action: Reorganize park roads according to the map, p. 92 . Obliterate and revegetate unnecessary portions of roads.

Rationale: Will facilitate traffic flow and visitor orientation and enhance the natural character of the park.

Cost: \$15,000

•Architectural Theme

An architectural theme is being established for each state park to ensure continuity between the different structures in the park. This theme should reflect the natural character of the area in the design and building materials used.

The architectural theme selected for Hayes Lake State Park is one of simple lines, reflecting the two dramatically different environments which come together in this area -- the low horizontal flat lines of the windswept Lake Agassiz plain and the vertical lines of the forest. Materials are to be predominantly wood, with an emphasis on heavy structural timbers and neutral stains that reflect the predominant colors found in the natural environment.

The Bureau of Engineering is responsible for determining the specific designs of the structures.

Hayes Lake Loop Trail						
Alignment	4,000					4,000
Bridge for Loop	6,000					6,000
Rivulet Bridge					800	800
4 Picnic Sites		1,600				1,600
2 Orientaiton Maps	400					400
North Loop Extension						
Alignment		500				500
Orientaiton Maps		200				200
South Loop Extension						
Alignment		500				500
Orientaiton Maps		800				800
Hayes Dam Trail						
Alignment		400				400
Orientaiton Maps		400				400
Roads						
Eradicate Old Roads		5,000	5,000	5,000		15,000
TOTAL	\$ 21,700	\$ 45,500	\$ 90,000	\$ 81,000	\$ 29,000	\$ 267,200

Interpretive Program

INTRODUCTION

Interpretation is "an educational activity which aims to reveal meanings and relationships through the use of original objects, by first-hand experiences and by illustrative media, rather than simply to communicate factual information" (Freeman Tilden). In this light, the interpretive services program aims to foster in the public an understanding of park resources and management by:

1. Revealing the kinship of park visitors to the park environment and, by association, their even broader involvement within ecosystems.
2. Illuminating the historic and ongoing impacts of natural forces within the park and upon the people who use them.
3. Assisting park visitors in the discovery of meaningful and satisfying ways in which to enjoy their visits without intruding on the experiences of others or impairing the quality of the park environment.
4. Explaining the mission of the Department of Natural Resources' interdisciplinary park management practices and the importance of public participation and support in the operation of this agency.

Interpretive services will be developed in recognition of the following:

1. The park contains fragile life communities which can be perpetuated only through careful management.
2. People are a natural and necessary element in the park environment, free to enjoy the environment in non-destructive ways.
3. All natural resource units, and the public they serve, are tied to one another ecologically, economically, socially, and politically.

It is hoped that the people who recreate and learn in Hayes Lake State Park will, by experiencing the park and related interpretive services, gradually increase their environmental awareness.

The Wilderness

Hayes Lake lies at the edge of one of the most primitive areas left in the continental United States. The wilderness and beauty of Hayes Lake State Park could be highlighted through interpretive programs. These programs may feature a visitor center displaying a collage of natural images, with taped sounds of area wildlife. Outdoor activities will include guided hikes into moose habitat.

Homesteading History

The Hendershot Farm, the historic portages, and the old townsites of Winner and Norris Camp are all part of the historic heritage of Hayes Lake. The park interpretive program will focus on bringing these historic images to life, through a written compilation of park history and on-site interpretation of historic sites in the park. A multi-media program will also be implemented to interpret and display park history.

INTERPRETIVE FACILITIES

1. Action: Expand the function of the contact station so it will become a general visitor orientation point for the park. (See Visitor Contact and Orientation, p. 91 .) Include displays describing recreational facilities and opportunities, as well as natural and historical resources of the park.

Rationale: Many visitors will fully appreciate the varied facets of the park only if they are presented in an easily assimilated form. Audio-visual media are very cost-effective in that they are available on demand and at comparatively reasonable cost.

Displays will include the following:

- a. A descriptive topographic park model to represent landforms, vegetation types, points of interest, and all developments including trails and individual campsites \$ 8,000
- b. A large aerial perspective map of the park and of Beltrami Island State Forest which graphically describes landforms, vegetation types, points of interest, and all developments including trails and campsites \$ 2,500

-
4. Action: Place aerial view descriptive park maps at key locations as shown on the trail map, p. 98 . Use a reduction of the map prepared for the contact station.

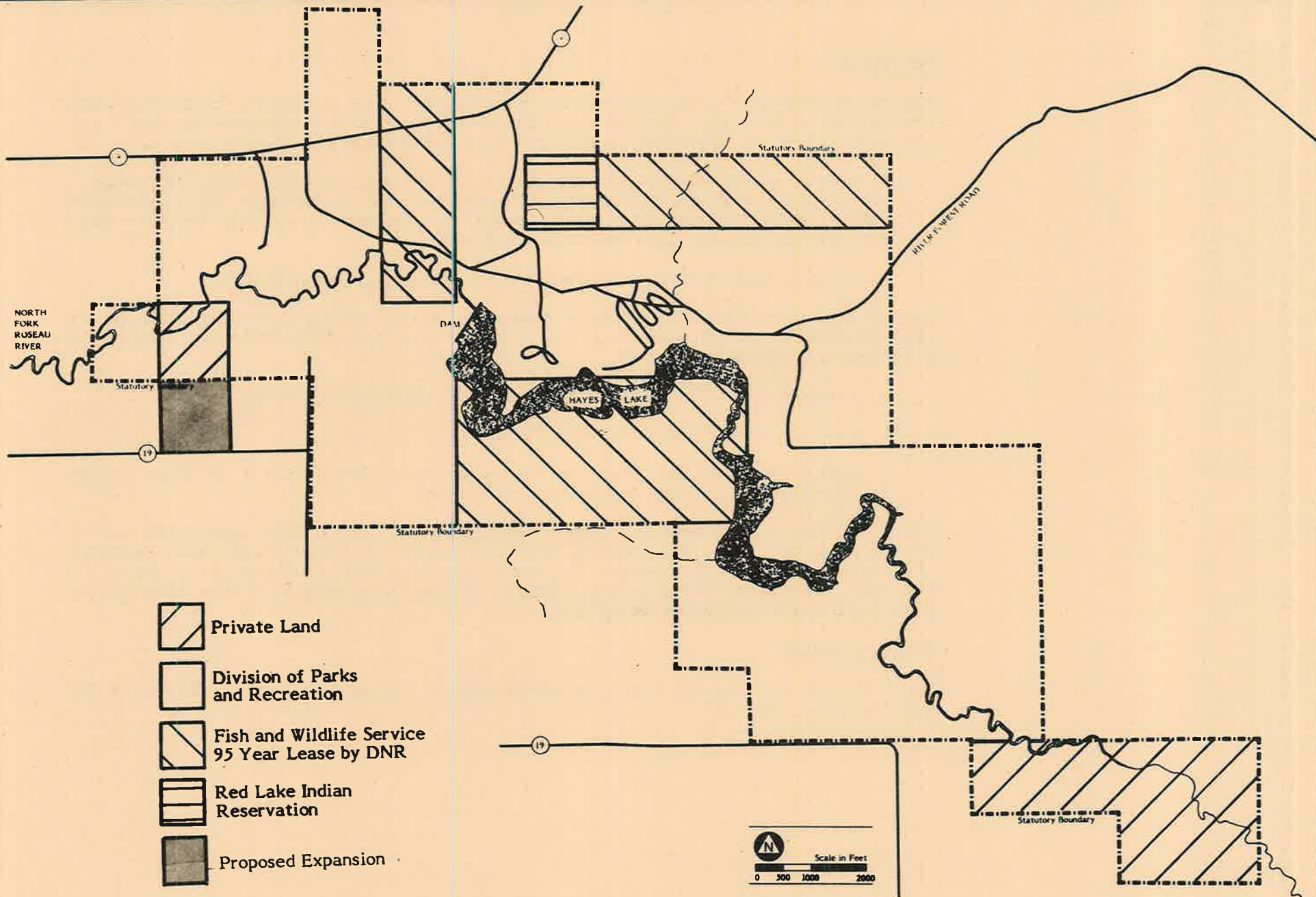
Rationale: These maps will aid in the orientation of park visitors.






Cost: See the Trails Section.

Interpretive Program Budget

	Biennium					Total
	78-79	80-81	82-83	84-85	86-87	
Interpretive Displays						
Contact Station					\$ 8,000	\$ 8,000
Park Model						2,500
Aerial Map		\$ 2,500				3,000
Brochure			\$ 3,000			300
Photographs		300				1,000
Slide Show					1,000	
Use Area Displays			3,000	\$3,000	3,000	9,000
On-Site	\$ 2,890	2,354	2,352	2,352	2,352	12,300
Total	\$ 2,890	\$ 5,154	\$ 8,352	\$ 5,352	\$ 14,352	\$ 36,100

BOUNDARY MODIFICATION/OWNERSHIP



-  Private Land
-  Division of Parks and Recreation
-  Fish and Wildlife Service 95 Year Lease by DNR
-  Red Lake Indian Reservation
-  Proposed Expansion



Boundary Modification

Introduction

Boundary adjustments must be considered in the management of any state park. The amount of land necessary to manage a park correctly must be determined and acquired before management can be efficiently carried out. There are two goals or policies that should be strived for in every park:

To study all present and future state parks to determine if they have sufficient acreage to preserve and perpetuate their natural resources and still provide areas for the necessary recreational facilities and activities. In the same light, however, only acreage that is necessary and would be reasonable to purchase should be included.

To control all land within the statutory boundary by fee title (direct ownership).

Because it would be fiscally and physically impossible to achieve these goals overnight, this plan will establish priorities that will work toward them. The following framework will be used in developing adjustment and acquisition priorities:

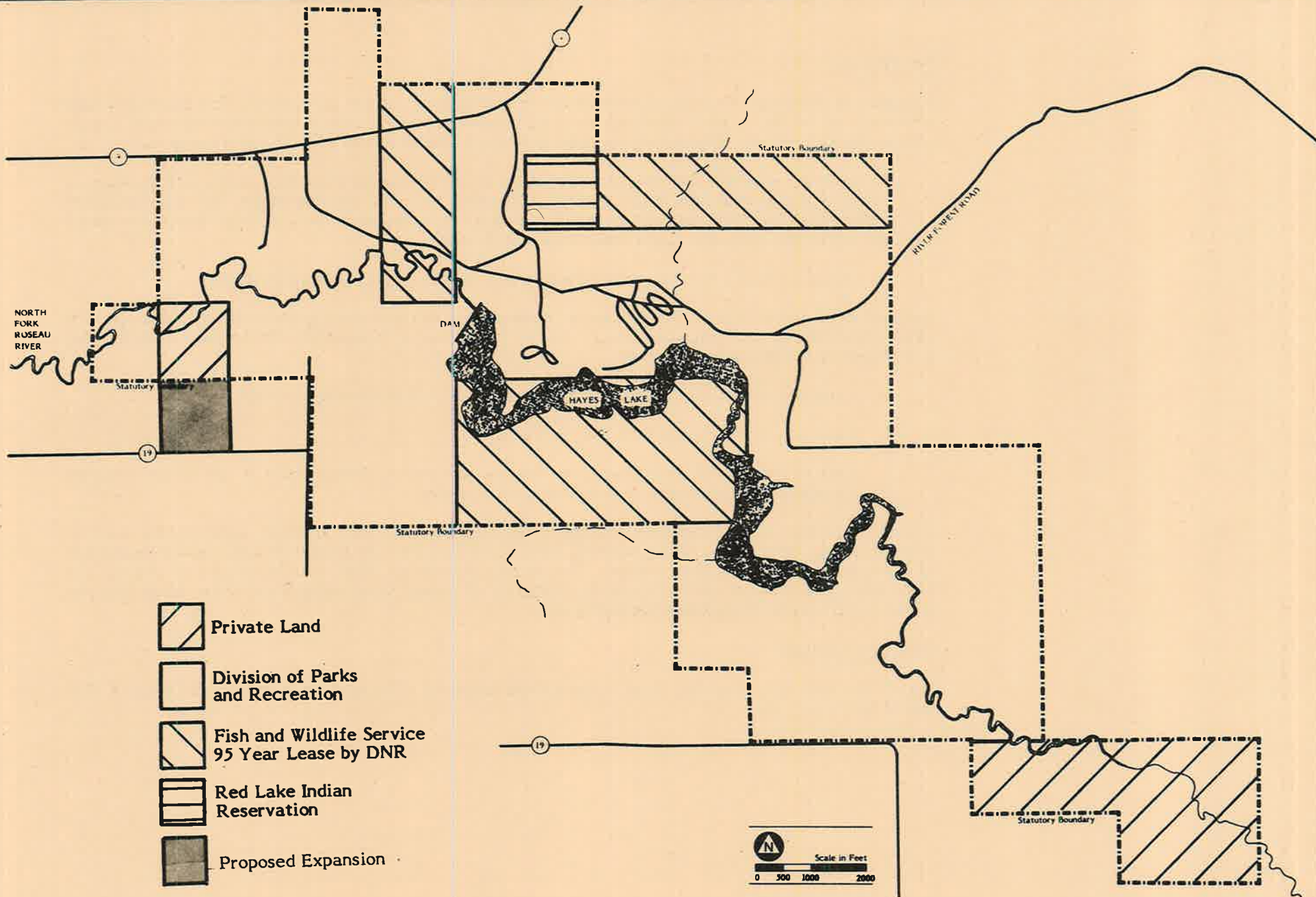
1. Land needed for preservation or perpetuation of park resources or values.
2. Land needed for development of facilities.
3. Unimproved buffer land needed to prevent threatened development or use which would be compatible with existing or potential park purposes.

Nearly 90 percent of the statutory acreage of Hayes Lake State Park is either owned by the state or is under a long term lease. The remaining lands to be acquired are owned by 3 individual landowners and the Red Lake Indian Reservation. The private parcels all have river frontage. To protect the river from development and preserve the integrity of Hayes Lake State Park, these lands must be protected from environmentally damaging uses.

Boundary Changes

A possible boundary expansion of 40 acres may be required. This acreage is located in T160N, R38W, Sw1/4 Se1/4 Sec. 32.

BOUNDARY MODIFICATION/OWNERSHIP



Negotiations with the owner of the above parcel have suggested that it may be necessary to buy the entire property (80 acres) in order to acquire the 40 acres in the present statutory boundary. The landowner may decide, however, to sell only 23 acres of prime river frontage, the area which DNR is primarily interested in acquiring. At the time this plan was prepared, negotiations and discussions with the landowner were continuing. Since the DNR cannot acquire lands outside of the statutory boundary, a boundary change is recommended only in the event that the owner insists on selling the entire holding. The DNR would then be in a position to buy this tract of land.

This parcel of land fronts the river, is particularly attractive, and is vulnerable to purchase for speculative purposes. It also limits access to a 40-acre parcel which is in state ownership. Without expansion authorization, this parcel might be lost and developed by land speculators.

Acquisition

The owners of a private parcel within the statutory boundary have indicated a willingness to sell their property to the DNR. The acquisition process has been initiated and a settlement is anticipated.

The third private landowner within the park boundary is presently an unwilling seller. These individuals should be kept informed regarding park affairs, so that if the occasion to sell ever arises, the DNR will have maintained a strong relationship with these owners and will be assured of notification of willingness sell.

The land owned by the Red Lake Indian Band might be exchanged for other state land which lies outside the statutory boundary of the park. The necessary procedures for resolving this matter should begin immediately and be pursued until a reasonable solution has been agreed upon. A long-term lease or easement may be a possibility. Whatever the ultimate solution might be, exploratory contacts should be initiated at this time.



Maintenance & Operations

STAFFING AND EQUIPMENT

Introduction

Maintenance is an essential, little noticed, and difficult to finance responsibility of the Parks and Recreation Division of the Department of Natural Resources. The basic obligation of the state is to maintain the landscape resources and state park facilities in a safe, sanitary, environmentally sound, and aesthetically pleasing condition. These facilities must be operated in a manner that provides maximum use and enjoyment at the least possible cost, consistent with state law. There are four basic aspects to maintenance and operations:

1. Maintenance of the landscape resources for the use and enjoyment of future generations
2. Maintenance of the recreation facilities that provide access to those resources
3. Provision of services to the park visitors for maximum enjoyment of facilities and resources
4. Enforcement of rules and regulations to protect the resources from abuse and to ensure enjoyment of the facilities by park visitors

To maintain the park properly and minimize costs, a trained staff, sufficient supplies, and proper equipment are needed.

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 operations are necessary 98 hours per week (8:00 to 10:00 p.m., seven days a week). The remaining hours are covered by a night patrol and the resident manager. During other seasons, only part-time operations are provided 98 hours per week, however, maintenance, repair, and park security accounts for many extra man-hours. If these responsibilities are to be met, competent trained personnel are necessary.

The work load analysis of park operating functions has been initiated to ascertain the personnel needs of each park based upon existing facilities and current operations. This study identifies the man-hours needed to perform each task required for adequate maintenance and operation. Initial results reveal:

1. an extreme shortage of adequate personnel,
2. that because of procedures necessary in hiring seasonal workers, high cost labor employees are used for jobs more appropriate for other job classifications, and
3. that a high percentage of work-hours are related to direct services to the public.

These factors limit the personnel available for proper maintenance. Because extensive development has occurred since the Natural Resources Act of 1963 was passed, the gap between maintenance and development has widened. Standards based on the work load study can be established to determine work-hour operating requirements for future facilities as they are proposed for development so that sufficient personnel and supplies can be provided. Facilities must be properly designed to meet the needs of the public, while being operational with the minimum amount of personnel and cost.

Another contributing factor to the current park operations problem is the heavy 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 make 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 8 to 10 weeks and often do not have the training and experience necessary to provide needed services without constant supervision in already understaffed parks. To avoid these problems, funding should be made available to hire trained personnel for major public service and maintenance programs. Temporary employees should only be hired for minor maintenance and special projects.

Enforcement of park rules and regulations is a vital element in the management of state parks. Currently, violations are referred to DNR enforcement officers for prosecution. Park personnel should have the technical training and tools needed to carry out this responsibility in a manner which will protect the resources from abuse, while educating the visitor about the importance of environmental protection.

One of the major maintenance problems of recreation areas is the extreme impact of large numbers of people concentrated in specific locations. These areas include: campsites, trails, lakeshores, river banks, areas around buildings, and scenic points of interest. This overuse affects the ground cover and frequently exposes tree roots to damage from foot traffic. The eventual result may be erosion, landslides, disfigured sites, and even danger to the visitors. Regular maintenance programs with adequate personnel, supplies, and equipment would reduce the damage and consequently prevent major reconstruction expenditures. It will also preserve the aesthetic character of the park by preventing unsightly scars or exposed areas.

The purpose of a maintenance and operations plan is to identify specific problems of each park, develop a solution for these problems, and specify management techniques which decrease the costs of operation. The plan should make specific recommendations for facilities which will serve the needs of visitors with a minimum of regimentation and provide for ease of maintenance and enforcement. It should also identify basic management duties, establish adequate staffing requirements, and identify supply and equipment needs.

Park Duties and Responsibilities

The park manager will administer the total park maintenance and operations programs and implement appropriate segments of the development program as funds are made available. The park manager will be directed by the park supervisor at DNR Regional Headquarters, Bemidji, Minnesota. The manager's job consists of the following: supervising park employees, providing law enforcement consistent with DNR policies, providing interpretation and conducting programs where necessary, maintaining public relations locally, recruiting employees, soliciting volunteers and other available work programs, and assisting in development, maintenance, and operations functions when possible. These responsibilities allow little time for actual participation in maintenance and operations programs during the busy season. Additional seasonal and part time employees, especially a seasonal assistant are necessary to fully implement this plan and provide adequate public service. A great deal of management time and effort will be directed toward facility development in the growing stages of this park.

Contact station personnel (park workers) provide initial public contact and information, permit sales, campground registration services, and the sale of firewood. Visitors require services for the 98 hours of weekly operating time, plus overnight security.

Swimming beach activity is the primary existing use of Hayes Lake and requires 2 lifeguards for 7 day-a-week beach protection.

Operation of the 30 site campground requires a great deal of time even though the use is small. Maintenance and services are necessary for 98 hours per week during June, July, and August and part time during spring and fall. Night patrol after 10:00 p.m. is intermittent as necessary for the security of campground visitors.

Maintenance personnel (laborers and park workers) provide building and groundskeeping services, night patrol after 10:00 p.m., and other semi-skilled labor for improvement and development projects. CETA and other work programs can provide valuable assistance if adequate supervisory personnel are available.

Operating Seasons

Summer

Memorial Day through Labor Day is the heaviest use period and requires 98 hour-a-week operations. Swimming is the primary use and camping, the secondary use. Hiking, fishing, and picnicking are the other important activities.

Spring and Fall

As in all parks, maintenance and construction are the prime activities during the spring and fall. Operations are only intermittent during the 98-hour week the park is open. Horseback riding may become an important fall activity.

Winter

Snowmobile trail use is the major activity with some cross-country skiing. These uses are primarily associated with the Beltrami Island State Forest, which provides extensive areas and trails adjacent to the park. Future development of a warming shelter would enhance these activities.

Maintenance and Operations Problems

1. Staffing

Currently, the permanent staff consists of 1 full time technician as manager, 1 seasonal park worker, and 3 part time laborers and CETA workers. This is not an adequate staff to meet maintenance and operations demands.

Recommendation: Make the following changes in the Hayes Lake State Park staff:

- a. Reallocate the technician position to the specialist class to meet the job description of a park manager.
- b. Convert labor funds to fund a 9 month seasonal assistant manager position to help in supervising and coordinating a 7-day park operation. This will ensure greater efficiency of maintenance programs as well as contribute toward improving public service. This seasonal position should be extended to full time when necessary to provide adequate services for winter users in both the park and the forest. This assistant would also help in maintaining trails in both the prairie and forest after the trail shelter is constructed.
- c. Add a 3 month naturalist position to develop and conduct interpretive displays and activities at the proposed interpretive/trail center.

-
- d. Add a 3 1/2 month park worker position to provide additional daily service and permit sales at the contact station, relieving the park manager and higher cost laborers for security and maintenance duties.
 - e. Add two 2 1/2 month lifeguard positions to ensure adequate protection on this small, heavily-used beach during warm weather.

2. Swimming Area

The beach is inadequate for the amount of use it receives.

Recommendation: The swimming area and beach should be expanded to accommodate more people. Two lifeguards are needed to furnish adequate beach protection 7 days a week.

3. Snowmobile Trail Maintenance

Future development of a trail center will provide access to the park and adjacent forest trail systems. As this use increases, additional grooming and maintenance will be needed.

Recommendation: Maintenance and winter grooming should be coordinated with the forest maintenance personnel. Personnel needs for these services will increase as the use increases.

4. Solid Waste Disposal

This service is currently accomplished by transporting waste by truck to the county landfill.

Recommendation: As the use increases, the volume will become such that either a compactor on a 1 ton truck or a contract for disposal with a local vendor will be necessary. The latter would free the park staff and equipment for other maintenance duties.

5. Equipment

Lack of proper equipment to match the job being done has been a major problem in parks in the past. This has resulted in higher cost of operations because of excessive labor requirements.

Recommendation: The equipment itemized in this section will provide the basic essentials to correct this problem and reduce the labor and operations costs considerably.

6. Road Maintenance

Grading is currently accomplished with a backblade (owned by the park manager) on the 1953 park tractor.

Recommendation: Purchase a new tractor with blade, loader, and mower to accomplish maintenance and improvement programs.

7. Snowplowing

This task is currently accomplished with the tractor loader in the headquarters area. When the trail shelter is constructed in the picnic area, a truck will be necessary for plowing the road and parking area.

Recommendation: Purchase four-wheel drive truck with a plow. Disposal of accumulated roadside snow could be contracted with the county.

Staffing Chart

The chart shows existing staff and the staff needed to adequately accomplish current operations and maintenance. The needs shown here are based upon a work load analysis which identifies present park functions and the work-hours necessary to accomplish functions.

	<u>Existing</u>		<u>Identified Needs for 1977</u>	
<u>Administrative Personnel:</u>				
Park Manager	12 mo. (technician)	\$ 11,120	12 mo. (specialist)	\$ 11,568
Assistant (Technician)			9 mo.	7,092
<u>Public Service Personnel:</u>				
1 Park Worker	6 mo.	3,660	6 mo.	3,990
1 Park Worker or Student Worker			3½ mo.	2,048
1 Naturalist			3 mo.	2,900
2 Lifeguards (2½ mo. ea.)			5 mo.	2,925
<u>Maintenance Personnel:</u>				
1 Laborer	7 mo.	5,500		
1 Laborer I	7 mo.	5,500	7 mo.	6,139
1 Park Worker (part-time)	2 mo.	1,285		
1 Park Worker or Student Worker		202	3 mo.	1,755
TOTAL		\$ 27,267		\$ 38,417

CETA and other programs should be used to supplement maintenance and cleanup functions and for public services in emergency situations only. Funds for student workers would provide additional personnel for maintenance and needed jobs for students.

Personnel Needs for Future Development

1. Construction of a campground sanitation building, additional trail development, and farmstead cleanup will create the need for additional maintenance personnel by 78-79:

Labor at an estimated cost of: \$ 6,000

2. Beach expansion, campsite development, and trail expansion will create the need for additional maintenance personnel by 1980:

Labor at an estimated cost of: \$ 5,000

3. Development of a picnic/trail shelter and increased park visitation by 1982 will create the need for:

a full time assistant at an estimated cost of: \$ 3,000

a 3 month park worker at an estimated cost of: 2,400

4. Construction of a new contact station, boat launch, and additional campsites by 1985 and an anticipated increase in park visitation will require:

labor at an estimated cost of: \$ 3,000

a 3 month park worker at an estimated cost of: 2,600

Total estimated additional operating personnel costs by 1987
for new facilities: \$ 22,000

Equipment

The equipment listed below, when replaced on a regularly scheduled basis, is considered sufficient for the current overall operations of this park, although the needs may change throughout the 10 year projection period. Heavy and specialized equipment not listed in the below chart should be obtained through the regional office. Equipment of the proper size and specifications must be selected on a park by park basis to match the conditions and job being accomplished. Appropriate up-to-date equipment will reduce the personnel needs, the cost of repairs on old equipment, and the cost of maintenance and improvement projects.

1978-1987 Projected Equipment Replacement Schedule

Unit	Existing	1978-79	1980-81	1982-83	1984-85	1986-87	Total
Sedan							
1/2 Ton	1956	\$ 4,400			\$ 5,800		\$ 10,200
3/4 Ton	1972	4,750			6,300		11,050
1 Ton			\$ 6,100				6,100
1 1/2 Ton							
4 x 4				\$ 6,500			6,500
Dump Truck							
Tractor	1953	10,000					10,000
Groomer							
Snowmobile		1,300		1,500		1,800	4,600
Small mowers		3,000	3,200	3,400	3,600	3,800	17,000
Other							
TOTAL		\$ 23,450	\$ 9,300	\$ 11,400	\$ 15,700	\$ 5,600	\$ 65,450

Future Replacement will be based upon the following general criteria:

Light maintenance and administrative vehicles: 5 years or 70,000 miles.

Heavy maintenance equipment: With the limited use received, this equipment could last a long time and be replaced on an individual item basis when necessary, or be exchanged through the region for other improved vehicles.

Small equipment: Mowers and chainsaws need regular replacement due to the constant use they receive. Other motorized equipment will be purchased and replaced as needed.

Other equipment: Interpretive items, furniture, fixtures, etc. will be purchased as needed.

Dump trucks: They are available from nearby forestry and wildlife stations.

MAINTENANCE AND OPERATIONS SUMMARY

The figures for the period 1980 through 1987 are projections intended only to illustrate the scope of the potential maintenance and operations costs for the development of new facilities and an estimated 10% salary inflation cost.

	Biennium				
	78-79	80-81	82-83	84-85	86-87
<u>PERSONNEL:</u>					
<u>Existing 76-77</u>	\$65,000				
<u>Actual Needs</u> (for current operations based on staffing chart)	\$ 77,000				
<u>*Personnel Costs</u> (from previous biennium)		\$ 91,300	\$ 105,900	\$ 122,400	\$ 140,800
<u>**Additional Personnel Needs</u> (To operate new facilities)	6,000 (1)	5,000 (2)	5,400 (3)	5,600 (4)	
Subtotal	83,000	96,300	111,300	128,000	140,800
*10% Salary Inflation	8,300	9,600	11,100	12,800	14,100
*TOTAL BIENNIAL PERSONNEL COSTS	91,300	105,900	122,400	140,800	154,900
<u>*SUPPLIES Administrative</u> Overhead and Expenses (20% of Personnel Costs)	18,250	21,200	24,400	28,200	31,000
<u>EQUIPMENT (from</u> Equipment Schedule)	23,450	9,300	11,400	15,700	5,600
TOTAL PROJECTED BIENNIAL MAINTENANCE AND OPERATIONS COSTS	\$ 133,000	\$ 136,400	\$ 158,200	\$ 184,700	\$ 191,500
ANNUAL COST BREAKDOWN	\$ 66,500	\$ 68,200	\$ 79,100	\$ 92,350	\$ 95,750
TOTAL 10 YEAR COST PROJECTION:		\$803,800			

*Rounded figures

**See page 125

Total Management and Development Budget

Management Practice	78-79	80-81	82-83	84-85	86-87	Total
Water Resources	\$ 7,500	\$ 1,000	\$ 3,000		\$ 3,000	\$ 14,500
Fisheries	60,000	10,000	10,000	\$ 10,000	10,000	100,000
Soils	7,000					7,000
Vegetation	10,100	24,400	15,150	7,700	27,700	85,050
Recreation	21,700	45,500	90,000	81,000	29,000	267,200
Interpretation	2,890	5,154	8,352	5,352	14,352	36,100
Maintenance and Operations	133,000	136,400	158,200	184,700	191,500	803,800
Contingencies	6,000	6,000	7,000	8,000	9,000	36,000
TOTAL	\$ 248,190	\$ 228,454	\$ 291,702	\$ 296,752	\$ 284,552	\$1,349,650

OVERALL AUTHORITIES

DIVISION OF PARKS AND RECREATION

General

Once the management plan has been completed and approved, it will become the responsibility of the director of Parks and Recreation (hereafter referred to as the director) to insure proper implementation of the concepts established in the plan. As such, the director will act as the coordinator and liaison between the planning staff, regional staff, local officials, and the general public to insure that the plan is kept current, remains on schedule, and becomes a reality.

In order to insure the accomplishment of this cooperative planning and implementation effort, the following responsibilities have been established and must be followed.

Specific Requirements

The director and staff will:

1. Coordinate and administer field operations as delegated by the assistant commissioner of operations
2. Develop and administer all programs necessary to accomplish plan goals and objectives. Programs include those necessary to implement management plans and to maintain and operate parks and other programs assigned to the division. Specific program responsibilities at this time are: acquisition, development, resource management, maintenance and service operations, interpretive services, and accessibility
3. Prepare policies, guidelines, procedures, and standards necessary to implement programs established in the plan (e.g., responsibilities relating to contracts and force account project,)
4. In coordination with DNR legislative liaison, prepare legislation necessary to provide program funding, boundary changes, and operational authorities
5. Review and approve all detailed plans, specifications, and project proposals prepared by the BOE or field staff. Coordinate on-site field staking and site layouts with BOE and regional staff
6. Coordinate divisional administrative functions with other DNR administrative offices
7. Work with DNR's federal grant specialists in order to obtain maximum federal funding (e.g., LAWCON) for all division programs

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8. Recommend modifications and provide information necessary to update the management plan. All modifications to the concepts established in the approved plan will be processed through the Office of Planning and Research. The director will submit requests for modifications in writing, stating justification for change and what impact the change would have on the overall management plan. If comments and rationale for opposing a proposed change are not received within 25 working days, agreement is implied. In the event that significant change in the direction of the plan is proposed (e.g., altering goals and/or objectives of the plan) it will be necessary to follow the same procedures established in developing the original plan. If the director and the Office of Planning and Research cannot come to an agreement on the requested change, the director will then submit the request to the commissioner's Planning and Environmental Review Board (PERB) which will formulate the final recommendation to be submitted to the commissioner's Executive Council
 9. Assign responsibilities and funding for implementation of the development program to BOE for contracts and to the regional staff for force account projects. In addition, the director shall coordinate the implementation of resource management programs
 10. Make recommendations which will expedite the park planning process and evaluate progress toward the achievement of goals and objectives stated in the plan
 11. Forward BOE requisitions and field project proposals to the Office of Planning and Research so that the progress of implementation can be monitored

REGIONAL OFFICE

General

The regional administrator and staff will supervise the physical implementation programs for the approved plans as established by the division.

Specific Requirements

1. The regional administrator will assign qualified staff to help implement this management plan. The district forester, wildlife managers, and other specialists should be consulted on specific aspects of the resource management of the plan.
2. The regional park supervisor will supervise and direct the park manager to insure that the management plan is implemented correctly.
3. The regional park supervisor will regularly field inspect all development in the park.
4. The regional park supervisor will submit written reports as necessary to keep the regional administrator and the director informed on the progress of development and any problems encountered.

5. The regional park supervisor will submit information to facilitate plan updates and changes. The regional park supervisor will submit his recommendations for change in writing to the regional administrator and the director. The recommendations should include rationale and an analysis of the impact the requested change will have on the management plan.
6. The regional park supervisor will submit project proposals to the regional administrator and the director for review and approval. The director and staff will review all project proposals verifying compliance with the intent of the plan and its schedule.

The region may implement approved project proposals once detailed specifications have been prepared and funding has been provided.

PARK MANAGER

General

It will be the responsibility of the park manager, under the direct supervision of the regional park supervisor, to coordinate the physical implementation of assigned sections of the management plan. The manager will inform the regional supervisor concerning the progress of the implementation through project proposals and written progress reports.

Specific Requirements

The park manager will:

1. Seek the assistance of the regional park supervisor in the resolution of any major implementation problems
2. Consult the regional park supervisor if there is uncertainty, concern, or opposition to recommended management of a specific item within the plan
3. Assist and give direction to field personnel assigned to the implementation of specific sections of this management plan
4. Maintain records on the development of specific items in this plan to insure continuity and reference for future updating and revision
5. Work with the regional park supervisor in initiating project proposals to be submitted to the director for review and approval
6. Submit to the regional park supervisor information to aid in the updating and revision of the plan

OFFICE OF PLANNING AND RESEARCH

General

The Office of Planning and Research will monitor and evaluate implementation of the management plan and make revisions to the plan as necessary.

Specific Requirements

The Office of Planning and Research will:

1. Review all BOE requisitions and project proposals to evaluate the proposed actions for consistency with the approved plan. Comments, suggestions, or corrections will be submitted to the director
2. Process all modifications to the approved management plan (see Parks and Recreation section)
3. Provide additional information and justification for specific recommendations within the plan when requested by the division
4. Maintain contact with the public, local officials, legislators, and DNR staff regarding the updating of the plan

PROCEDURES

DEVELOPMENT

The development procedure for the Division of Parks and Recreation can be broken down into two categories: (1) contract, and (2) force account.

Contract

Director initiates project by preparing a program, which complies with the management plan.

Director distributes copies of preliminary program and drawings to the planning section and regional staff for review.

Director requests BOE to prepare detail drawings and specifications in accordance with approved program.

BOE prepares detailed drawings and specifications and submits them to the director.

Director approves drawings and specifications, insuring compliance with management plan objectives and goals, and re-submits them to the BOE.

BOE processes contract documents through the Department of Administration, Division of Procurement for bidding and contract award procedures.

BOE provides direction to the contractor and establishes site location and field staking.

BOE supervises construction and approves completed work according to contract documents.

Force Account

Director initiates project by preparing the program, complying with the management plan.

Director distributes copies of preliminary program and drawings to the planning section and regional staff for review.

Director assigns funds to regional administrator.

Regional administrator directs regional park supervisor and necessary staff to implement program.

Regional park supervisor may:

Request that the BOE prepare detailed drawings and specifications for review by the director

Assign the park manager to complete the project with field personnel

Assign park manager, in cooperation with the regional staff, to let bids to local contractors

Supervision over the project will be the responsibility of regional, divisional, or BOE staff, depending on the complexity of the specific project.

Director and staff monitor the progress, funding, and necessary coordination between other state agencies and funding sources.

Regional park supervisor will certify to the division that the project has been completed as planned.

Director and staff will monitor the progress of the development program.

RESOURCE MANAGEMENT

The resource management program for the Division of Parks and Recreation is also broken down into contract and force account categories.

Contract

Director initiates a project by preparing the program, in compliance with management plan.

Director distributes copies of preliminary program and drawings to the planning section and regional staff for review.

Director approves project and initiates bidding process through the Department of Administration.

Director supervises and monitors the program.

Force Account

Director initiates project by preparing the program, in compliance with the management plan.

Director distributes copies of preliminary program and drawings to the planning section and regional staff for review.

Director assigns funds to regional administrator.

Regional administrator directs regional park supervisor and necessary resource management staff to implement program.

Regional park supervisor and resource staff prepare detailed resource implementation program.

Detailed resource management program is submitted to the director for approval.

Consultant or contractor, in coordination with divisional and regional staff, completes the project.

Director approves the completed project.

Once approved, the regional park supervisor and resource managers may:

Assign the park manager and field personnel to implement program

Prepare contracts to be let to local contractors or consultants to implement program

Regional staff supervises project.

Director and staff monitor the progress of the resource management program.

Regional park supervisor certifies to the division that the project has been completed as planned.

MAINTENANCE AND OPERATIONS

The Division of Parks and Recreation will provide the regional staff with necessary direction to maintain and operate state parks as a statewide system. The director will establish rules and regulations pursuant to the ORA '75 for administering state parks. In addition, training courses and manuals will be prepared by the division on park operations, maintenance, enforcement, signing, and construction standards. If necessary, special operational orders will be prepared by the commissioner for specific problem areas. The following illustrates the general operation and maintenance procedures:

Director in cooperation with the assistant commissioner of operations, will establish policies, guidelines, and statewide procedures for maintenance and operations of all state park facilities.

The regional park supervisors, directed by the regional administrator, will follow policies, guidelines, and statewide procedures, of the Division of Parks and Recreation as well as commissioner's orders.

The regional park supervisor will provide the necessary supervision and direction to the park managers to insure that park maintenance and operation policies, guidelines, and procedures are followed.

It will be the responsibility of the park manager, under the supervision of the regional park supervisor, to maintain and operate all park facilities.

The director and staff will inspect and review operations of state parks on a regular basis to insure that statewide procedures are being implemented and followed correctly.