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**A MASTER PLAN FOR THE
NORTH SHORE TRAIL**

August 1981

**Minnesota Department of Natural Resources
Trails and Waterways Unit**

ST. LOUIS

LAKE

COOK

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STATE OF MINNESOTA

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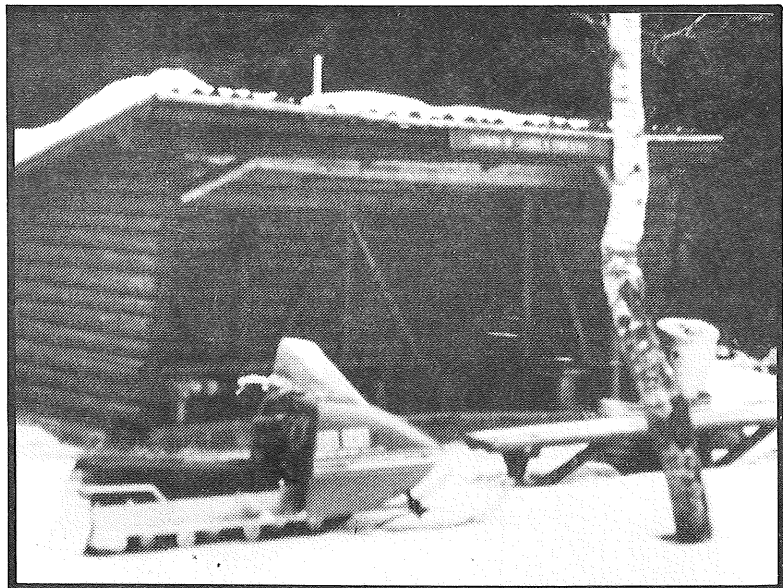
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INTRODUCTION



This master plan was prepared by the Minnesota Department of Natural Resources (DNR), Trails & Waterways Unit, to fulfill the requirements of the Minnesota Outdoor Recreation Act (Minnesota Statutes Sections 86A.01 through 86A.11). The law requires the DNR to prepare a master plan for the North Shore State Trail to insure that the administration of the trail is provided "in a manner that is consistent with the purposes for which the unit was authorized."

To develop this plan, the DNR considered a wide range of physical, biological, social, economic, psychological, and political questions. The pages which follow describe the background of the trail, the trail environment, the DNR goal and guidelines for the trail, the development and management techniques to be used, the means by which the proposed actions will be implemented, and the procedures which will be used to evaluate and modify the plan.

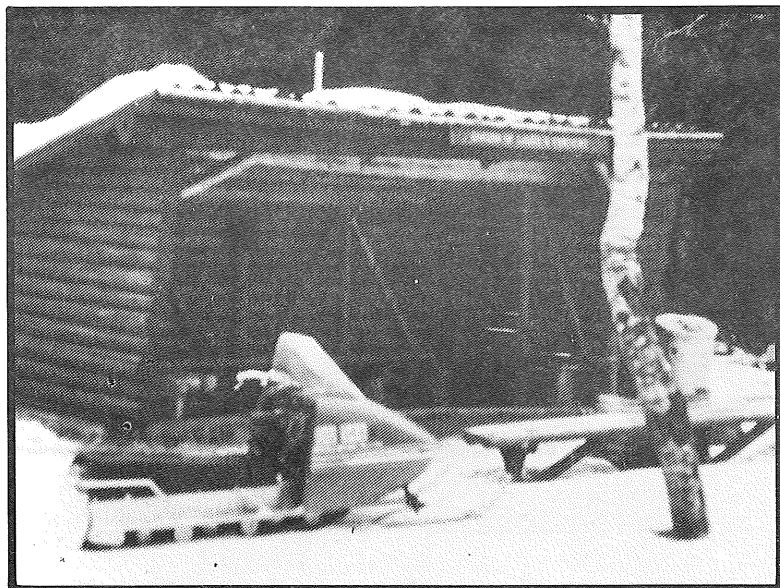
Although the plan has now been completed, the actions outlined are subject to revision. Changes in the user needs, public needs and in the trail environment will require appropriate changes in the plan. Thus the plan must retain flexibility. In addition, the DNR will update the plan in ten years (1989) to address changes which have occurred.

Many hours were spent by numerous individuals in the preparation of the Master Plan for the North Shore State Trail. The DNR wishes to express its gratitude to all those citizens and public servants who contributed to the development of this document. Special thanks go to the United States Forest Service (USFS) for their cooperation in the development of the North Shore State Trail Plan. The DNR hopes the cooperative spirit that has been evidenced in the preparation of the plan will continue into the future, guaranteeing a first-rate trail.



scratchboard wildlife by Dan Metz

SUMMARY



The North Shore State Trail was authorized as a multi-use trail by the Minnesota legislature in 1975. The trail will originate at Martin Road in Duluth and, when completed, will continue northeastward for approximately 200 miles to the Canadian border (see Figure 1). It will largely be located on public land and will connect seven state parks, one state wayside, four state forests, one national forest, two state trails and one long-distance federal hiking trail. The width of the trail right-of-way will vary from 20-100 feet, depending upon individual agreements with the landowners. Two segments of the trail, totaling about fifty-nine miles, have been completed or partially completed: fifty miles of the trail, from Normanna Road to Finland, were partially developed in 1970-71, while nine miles of the trail, from Pike to Monker Lakes, were completed in 1977.

The North Shore State Trail is being developed primarily for snowmobiling, hiking, backpacking and horseback riding. Ski touring, dog sleds and logging equipment may use the trail, but the DNR will not encourage these uses. However, future use may dictate a reassessment of this policy for ski touring and dog sledding.

The purpose of this plan is to: 1) fulfill the requirements of the Outdoor Recreation Act (ORA); and 2) establish and document an effective, orderly action program for the North Shore State Trail. This action program will insure that the scenic, historic, natural and recreational qualities of the trail are properly managed for the use and enjoyment of the citizens of Minnesota.

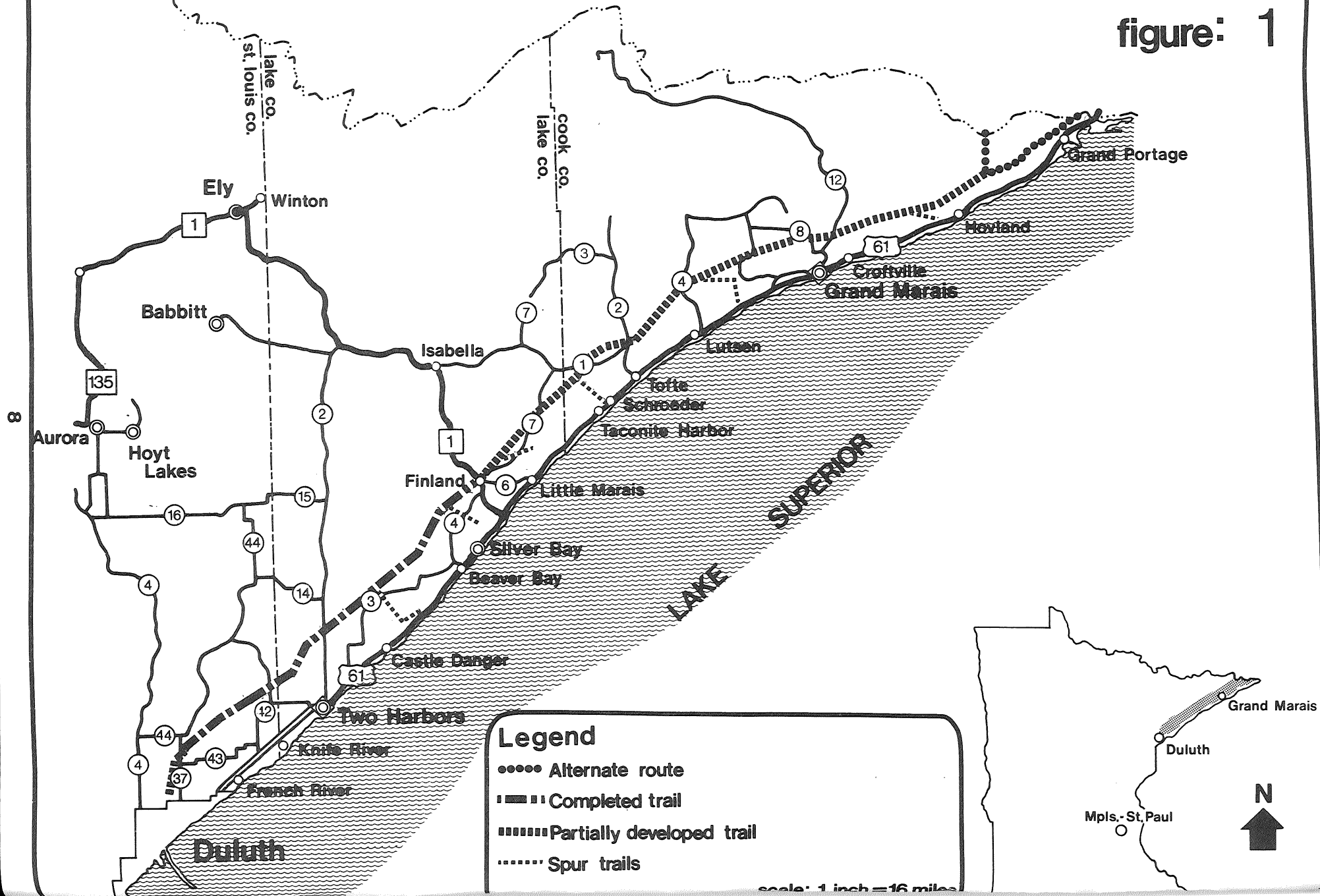
The goal of the DNR for the state trail is to:

Provide a quality recreational and educational experience in an aesthetically pleasing setting so existing and future generations can enjoy a part of Minnesota's unique natural, cultural and historic resources.

The DNR has proposed a series of actions to achieve this goal. The

LOCATION OF THE NORTH SHORE STATE TRAIL

figure: 1



trail will be completed in three phases. With the possible exception of the Alger Grade, each phase will be completed, including the treadways, bridges, spur trails, waysides and ancillary structures, before work begins on the next phase. The first phase will be to complete the southern ninety-seven miles of the trail, from Duluth to Cross River Road. The Alger Grade is located in this segment and must be upgraded. An agreement is being sought with Lake County to alleviate the development, use and maintenance concerns on this segment of the trail. The second phase of development will be to complete the trail from Cross River Road to Pike Lake Road, a distance of fifty-two miles. Phase three will be to complete the trail from Monker Lake to the Canadian border, approximately forty-four miles.¹ However, extension of the trail beyond Judge C. R. Magney State Park will depend on whether an agreement can be reached to cross the Grand Portage Indian Reservation. If an agreement cannot be worked out, then the state trail will either end at the state park, or a hiking-only trail will be developed to connect with the Border Route trail.

A fourth phase of development may occur if the DNR determines that it is feasible, and if use warrants it, to extend to U.S. Forest Service Superior Hiking Trail north and/or south along the lake bluffs. This extension, if it occurs, will be a long-range development and will not occur until the main treadway has been completed.

Several structures will be built on the state trail. Approximately sixty-seven bridges (including at least nine major bridges), seven major parking areas (three parking areas have been built), seventeen waysides and seventeen shelters (five shelters have been built but must be repaired or updated) are planned for the main trail between Duluth and the Canadian border.

Several actions will be taken along the entire trail. Vegetation will be planted along the trail to screen the trail and prevent erosion.

¹ Nine miles of the trail, from Pike Lake to Monker Lake, have been completed and need no developments.

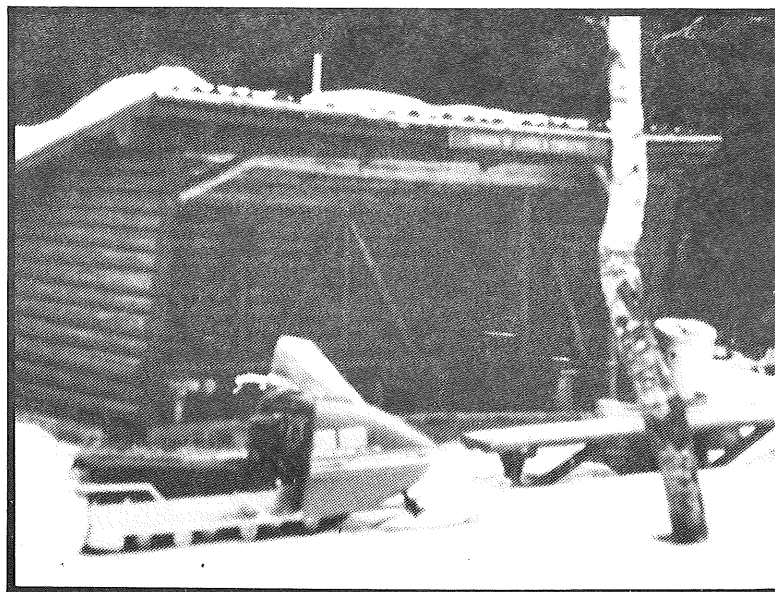
Other artificial erosion control techniques will be used on the trail if necessary, including the construction of alternative hiking treadways around wet spots. Signs will be placed along the trail to provide information to users. An interpretive program will also be implemented for users. Various maintenance actions, including litter pickup, winter grooming, facility upkeep and treadway stabilization, are planned to keep the trail in good condition.

Implementation of the actions outlined in this plan will depend on the availability of funds and personnel, and the close cooperation of other agencies with the DNR. The total cost of developing the trail is estimated (in 1979 dollars) at \$1,516,700.¹ The DNR will also require additional personnel and equipment to maintain the trail. Funds will be requested to hire a permanent Natural Resources Specialist I, Trail Manager, and a seasonal laborer to manage the trail. The DNR will need to work closely with the U.S. Forest Service, the Minnesota Department of Transportation, the State Planning Agency, St. Louis, Lake and Cook counties, local township and municipalities near the trail, and other organizations to provide a quality experience for trail users and to minimize the negative impacts of the trail.

The DNR will be closely monitoring the trail environment and users to identify unforeseen changes and problems which occur. The plan will be evaluated periodically to determine what actions need to be changed, added, or deleted. Public input will be sought through surveys and meetings to aid in these evaluations. In ten years (1989) the plan will be thoroughly reviewed and updated.

¹ This total assumes several conditions; see page 108.

**TRAIL LEGISLATIVE AND
ADMINISTRATIVE HISTORY**



History of State Trails

Trails were the first land transportation routes. Early trails consisted of animal and Indian trails. Explorers, voyaguers, adventurers and pioneers used these trails as they travelled across the country. The Grand Portage Trail was one of the first great trails in Minnesota. The Grand Portage Trail and other trails aided in colonial expansion from the Atlantic to the Pacific Oceans.

Trails have recently been considered to be of more value than just for transportation. Increasing amounts of leisure time, higher disposable income, greater mobility and a growing environmental awareness have increased the recreational value of trails.

Minnesota's first designated recreational trail came about after the development of the first state park in 1889 (Camp Release). However, the formal beginnings of Minnesota's trail system did not occur until the late 1960's. Rapid growth in the popularity of the snowmobile during this period created a need to provide trails and, some times, to regulate use. Legislation was enacted to require snowmobilers to pay registration fees for trail development. In 1967, the Department of Natural Resources (DNR), Division of Parks and Recreation, was assigned the responsibility of promoting, developing and managing recreational facilities for snowmobile users (Minnesota Statutes 1967, Section 84.83, Subdivision 2).

Up until 1969, DNR trails were developed only in state parks and forests. However, in 1969, the Minnesota legislature authorized the DNR to "establish, develop, maintain and operate recreation areas" (Minnesota Statutes 1969, Section 85.015, Subdivision 1). From 1971 to 1975 thirteen trails were authorized by the legislature, including the North Shore State Trail. These trails now form the backbone of the state recreational trail system (see Appendix A).

In 1973, the legislature provided the means for a statewide recreational trail system through passage of trail legislation, appropriation of

trail development and maintenance funds, and authorization of a temporary DNR trail staff. A grants-in-aid program was also initiated to complement the state trail system.

Grants-in-aid trails are developed through the cooperative efforts of the DNR, local units of government, trail user groups, and landowners. The DNR awards trail assistance grants to local units of government for the development and maintenance of these trails. The DNR recommends that grants-in-aid trails and local trails provide the necessary connections between service areas and the North Shore State Trail.

In 1975, the legislature passed another statute which affected the DNR trail program: the Outdoor Recreation Act (ORA) (Minnesota Statutes 1976, Sections 86A.01 through 86A.11). This act established an outdoor recreation system comprised of eleven components or "units" managed by the State. State trails are one unit in this system. The ORA required state trail master plans and set forth criteria which must be met in order for a trail to be classified as a state trail (see Appendix B). The act also stated that:

No construction of new facilities or other development of an authorized unit, other than repairs and maintenance, shall commence until the managing agency has prepared and submitted to the State Planning Agency and the State Planning Agency has reviewed, pursuant to this section, a master plan for administration of the unit in conformity with this section. This requirement shall not apply to an existing unit until August 1, 1977 (Minnesota Statutes 1976, Section 86A.09, Subdivision 1).

(This plan has been reviewed by the State Planning Agency, thus fulfilling this requirement.)

The Trails & Waterways Unit, created by departmental reorganization in 1979, is presently responsible for the planning and development of all DNR trails. The goal of the DNR trail program is to conserve, protect, and wisely use Minnesota's resources so that existing and future generations may enjoy a variety of recreational trail experiences.

Trail Authorization

The North Shore State Trail was authorized as part of the Arrowhead Region Trails by the Minnesota Legislature in 1975 (Minnesota Statutes 1975, 85.105, Subdivision 13(a)(2)). The sections of the statute pertaining to the North Shore Trail read as follows:

Subd. 13. Arrowhead Region Trails, in Cook, Lake St. Louis, Koochiching and Itasca Counties.

(a)(2) The North Shore Trail shall originate in Duluth in St. Louis County and extend northeasterly to Two Harbors in Lake County, thence northeasterly to Grand Marais in Cook County, thence northeasterly to the international boundary in the vicinity of the north shore of Lake Superior, and there terminate;

(b) The trails shall be developed primarily for riding and hiking.

(c) In addition to the authority granted in subdivision 1, lands and interests in land for the Arrowhead Region Trails may be acquired by eminent domain. Before acquiring any land or interest in land by eminent domain, the commissioner of administration shall obtain the approval of the governor. The governor shall consult with the legislative advisory committee before granting his approval. Recommendations of the legislative advisory committee shall be advisory only. Failure or refusal of the committee to make a recommendation shall be deemed a negative recommendation.

Trail Classification

The Outdoor Recreation Act established several criteria for areas to be classified as state trails (see Appendix B). It is the DNR's finding that the North Shore State Trail substantially satisfies these criteria. The trail qualifies because it:

1(i) "Travels along a route which connects areas or points of natural, scientific and historic interest;"

The trail links together many sites of historic and natural interest.

Thirty-four significant sites have been identified on or near the trail (see pages 33-40).

1(ii) "Travels through an area which possesses outstanding scenic beauty;"

Most peoples' definition of "outstanding scenic beauty" would be satisfied by the North-Shore area. The region's forests, lakes, streams, wetlands, and rugged terrain are heralded as one of the state's premier attractions. Indeed, the North Shore area has been labeled as one of the most scenic in North America.

1(v) "Travels between units of the state outdoor recreation system or the national trail system;"

The North Shore State Trail will connect six state parks (Gooseberry Falls, Split Rock Lighthouse, Tettegouche, George Crosby Manitou, Cascade River, and J.R. Magney), one state wayside (Cross River) and four state forests (Cloquet Valley, Finland, Pat Bayle and Grand Portage). The U.S. Forest Service is also developing a long distance hiking trail along the bluff line of Lake Superior. This trail will be connected in three locations to the North Shore State Trail.

2) "Utilizes, to the greatest extent possible consistent with the purposes of this subdivision, public lands, rights-of-way and the like;"

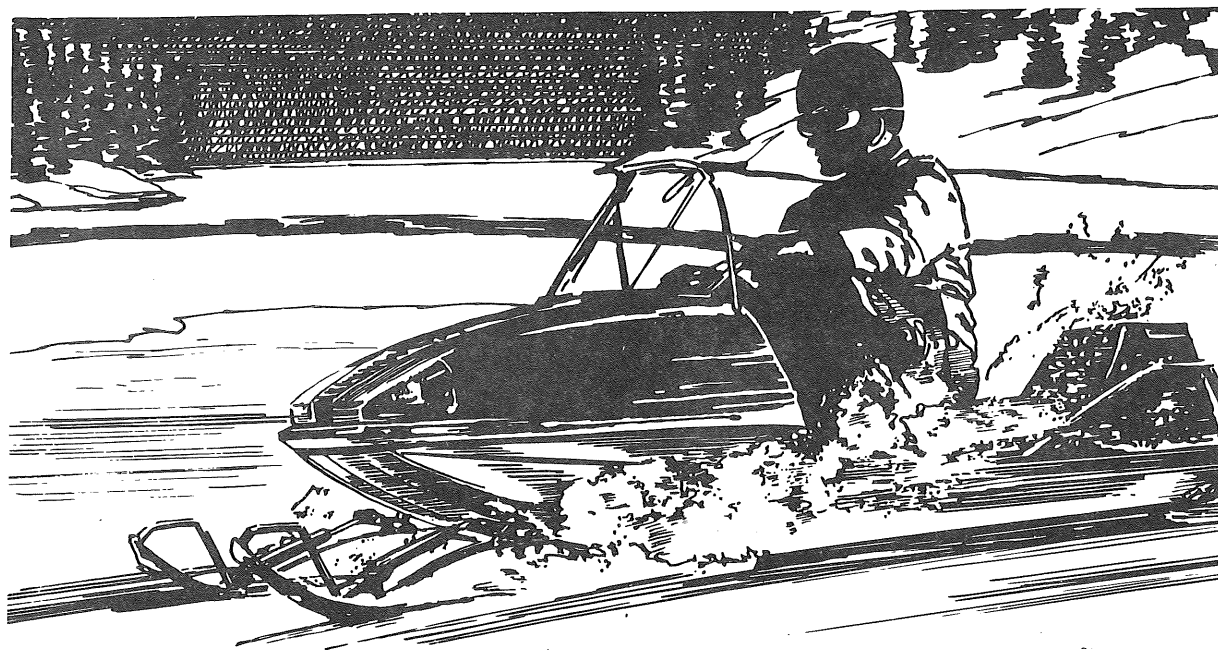
The North Shore State Trail will be built almost entirely on public land. Only a few parcels of private land need to be acquired for the right-of-way.

3) "Provides maximum potential for the appreciation, conservation and enjoyment of significant scenic, historical, natural, or cultural qualities of the areas through which the trail may pass;"

This criterion is satisfied because the trail right-of-way will enable users to gain access to many of the region's significant scenic, natural and historic sites. An interpretive program, waysides, brochures and signs will also help provide the maximum potential to appreciate, conserve and enjoy the areas of interest.

4) "Takes into consideration predicted public demand and future use."

Public demand and future trail use are very difficult to predict. However, the North Shore State Trail routes does take into consideration predicted public demand and future use. The trail can provide recreational opportunities for one of the state's largest cities, Duluth. Public demand for the trail is supported by the passage of legislation authorizing the trail in 1975, and by the comments expressed by the public at meetings in 1978 and 1979 to consider this plan. The completed portion of the trail is presently being used by snowmobilers and occasional hikers. There is no apparent reason why this support will not continue in the future. Indeed, with future trail development and improvements, with an active promotion program, and with an increasing population on the North Shore, future use should increase. Public demand and use will also be monitored to consider what future actions to take on the trail (e.g., developing a second treadway for cross-country skiers).



DESCRIPTION OF THE ENVIRONMENT



NATURAL RESOURCE PERSPECTIVE

Climate

The North Shore's climate is characterized by short, cool summers and long, severe winters. Lake Superior influences the climate, tending to extend the spring and fall seasons, and increases precipitation. Near the shore the lake moderates the temperatures. The growing season is short: 180 days. The average summer temperature ranges from 58-64 degrees Fahrenheit. In the winter sixty to seventy inches of snow usually falls with more than 140 days of snow cover. Weather can change very quickly on the North Shore: storms occur frequently and give little warning since their approach is obscured by the hilly terrain.

Table 1 summarizes temperature and precipitation data for two points along the North Shore.

Water

Rivers, creeks and lakes permeate the North-Shore region. More than five percent of the land surface is comprised of water. Twenty-three rivers and more than twenty-six creeks are crossed by the trail.¹ The rivers and streams are generally short and parallel one another on their southeasterly route to Lake Superior. Many rivers have steep gradients and numerous waterfalls in their lower reaches near Lake Superior. Rivers with rock-basin lakes as headwaters maintain a relatively stable flow through the summer. On the other hand, smaller intermittent streams may dry up in the summer without precipitation. All the rivers and streams swell during the spring snowmelt, increasing their volumes tenfold.

¹ The rivers, from south to north, are; Lester, French, Sucker, Knife, Stewart, Silver, Encampment, Gooseberry, Split Rock, Beaver, Baptism, Manitou, Caribou, Two Island, Cross, Temperance, Onion, Poplar, Cascade, Devils Track, Brule, Reservation, and the Pigeon rivers. The creeks are: McCarthy, Dago, Mink, Stoney, Skunk, Bud, Kit, Thirtynine, Hockamin, Egge, Schoolhouse, Amenda, Stumble, Heartbreak, Cedar, Blind Temperance, Sixmile, Mistletoe, Durfee, Cliff, Kimball, Stone, Kadunce, Mons, Irish, Swamp, and tributaries of the Reservation River.

TABLE 1. Climatological Statistics

Temperature (⁰F):

<u>Normals (for 1941-1970)</u>	<u>Duluth</u>	<u>Grand Marais</u>
January Normal	8.5	11.6
April Normal	38.6	38.3
July Normal	65.6	61.7
October Normal	45.3	44.9
Annual Normal	38.6	38.8

January Means and Extremes¹

Average Maximum	17.6	21.8
Average Minimum	- 0.6	3.9
Average	8.5	12.4
Absolute High	52.0	48.0
Absolute Low	-39.0	-34.0

July Means and Extremes¹

Average Maximum	76.4	69.7
Average Minimum	54.7	49.9
Average	65.6	59.8
High	97.0	95.0
Low	36.0	28.0

Precipitation

Mean Rainfall for July	3.71"	3.52"
Annual Mean of Precipitation	38.36"	26.65"
Annual Average Snowfall	77.60"	56.30"
Average Maximum Depth	42.00"	38.00"

Average Number of Days with Snow:

Cover of 1" or more	-	141 days
Cover of 3" or more	-	127 days

Source: Minnesota Climatological Survey

¹ Temperature data for Duluth cover the years 1941-1970; for Grand Marais the data cover the years 1931-1978.

Most of the lakes in the North-Shore region are small to medium size rock-basin lakes that reach depths of 100 feet. Four lakes are located along the state trail: Cramer, Barker, Christine and Pike.

The North Shore State Trail area has the highest rate of runoff in the state: approximately ten inches per year. This high rate of runoff is attributed to ample precipitation, low temperatures, and the low storage capacity of the crystalline bedrock and existing soils. The runoff and the scarcity of developments in the region help sustain the North Shore's high water quality.

Topography

The topography of the North-Shore region is very diverse, ranging from flat lake plains to the rugged "Sawtooth Mountains." Minnesota's lowest (602 feet above sea level) and highest (2,307 feet) points are both in the Lake Superior Watershed. Volcanic action and glacial, water and wind erosion are largely responsible for the rugged hills found along parts of the North Shore. Most of the region's rugged relief, however, is concentrated along the Cook County, and parts of the Lake-County shoreline.

Flat to rolling uplands are found behind (north) the ridges that parallel the lakeshore. The undulating topography consists of glacial debris and rock outcrops dotted with many rock-basin lakes and swamps. The North Shore State Trail is primarily located in this undulating landscape.

Soils

The soils of the North Shore region are generally relatively young, infertile, shallow and stoney. They are primarily derived from glacial till with pockets of reddish clay deposited by glacial Lake Duluth. However, cool climatic conditions, and volcanic parent material, and glacial scouring have all hindered soil development in the area. In many of the more rugged locations, igneous bedrock outcroppings are present.

Three major soil associations are found along the state trail: the Ontonagon Rock Outcrops, Ahmeek Rock Outcrops, and the Rough Rock Outcrop Area (see Figure 2).¹

The Ontonagon Rock Outcrop is found in the rolling to hilly area bordering Lake Superior. The state trail passes through this soil association north of Duluth, and skirts the edge of the association all the way along the North Shore. The rock outcrops are mostly basic igneous rocks. The light colored Ontonagon soils are formed from weakly calcareous red lacustrine clays.

The North Shore State Trail is primarily located on the Ahmeek Rock Outcrops soil association. This association is found inland from the Ontonagon Rock Outcrop soils, in rolling to hilly areas. The Ahmeek soils are dark colored, and are formed from a reddish-brown, non-calcareous, sandy, stony, glacial till. Rock outcrops of basic igneous rocks are common.

The Rough Rock Outcrop Area is found along the international border. The northern tip of the state trail traverses this association. The area has a hilly, choppy topography. Some Ahmeek soils are present, but the area is primarily very stony and rocky. Many bedrock outcrops are present here.

Vegetation

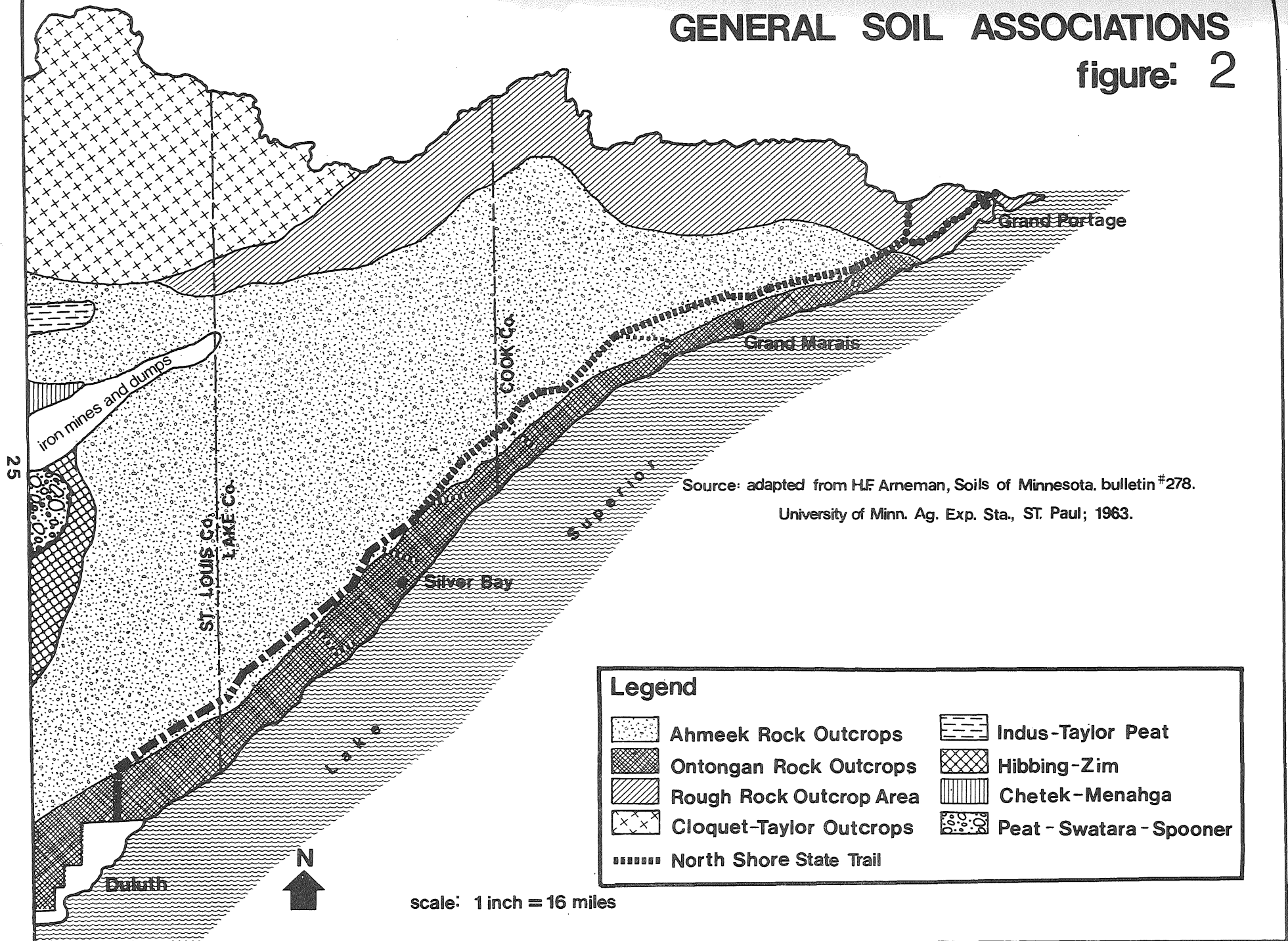
White and red pine and aspen-birch (conifer) plant communities were the two most abundant communities in the North-Shore region prior to European settlement (see Figure 3). Old-growth stands of red and white pine were once abundant in the southwest part of the region. Many stands had a history of repeated surface fires.

The aspen-birch (conifer) community was a fire-successional forest type. It was--and still is--common along most of the state trail. The

¹The following information is taken from H. F. Arneman, Soils of Minnesota, Extension Bulletin 278 (University of Minnesota, St. Paul: 1963)

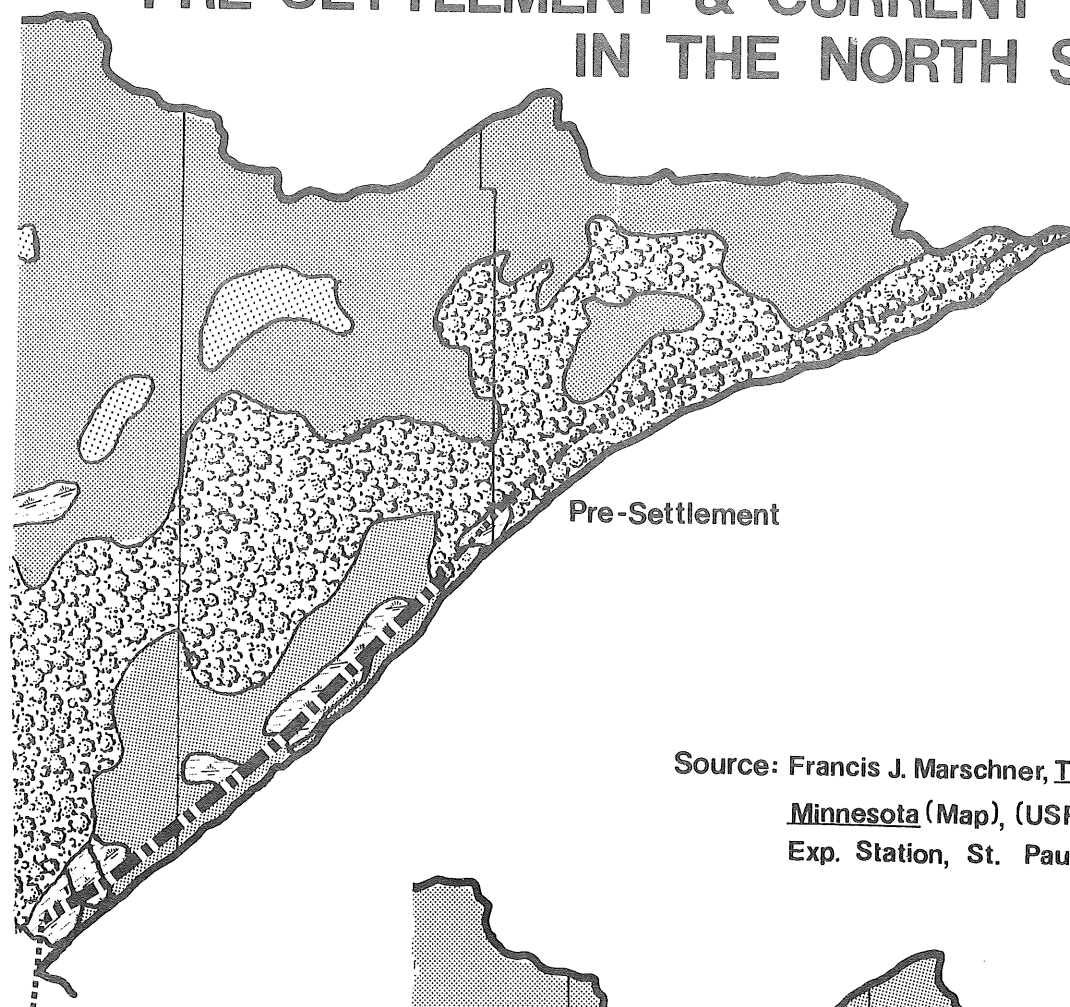
GENERAL SOIL ASSOCIATIONS

figure: 2



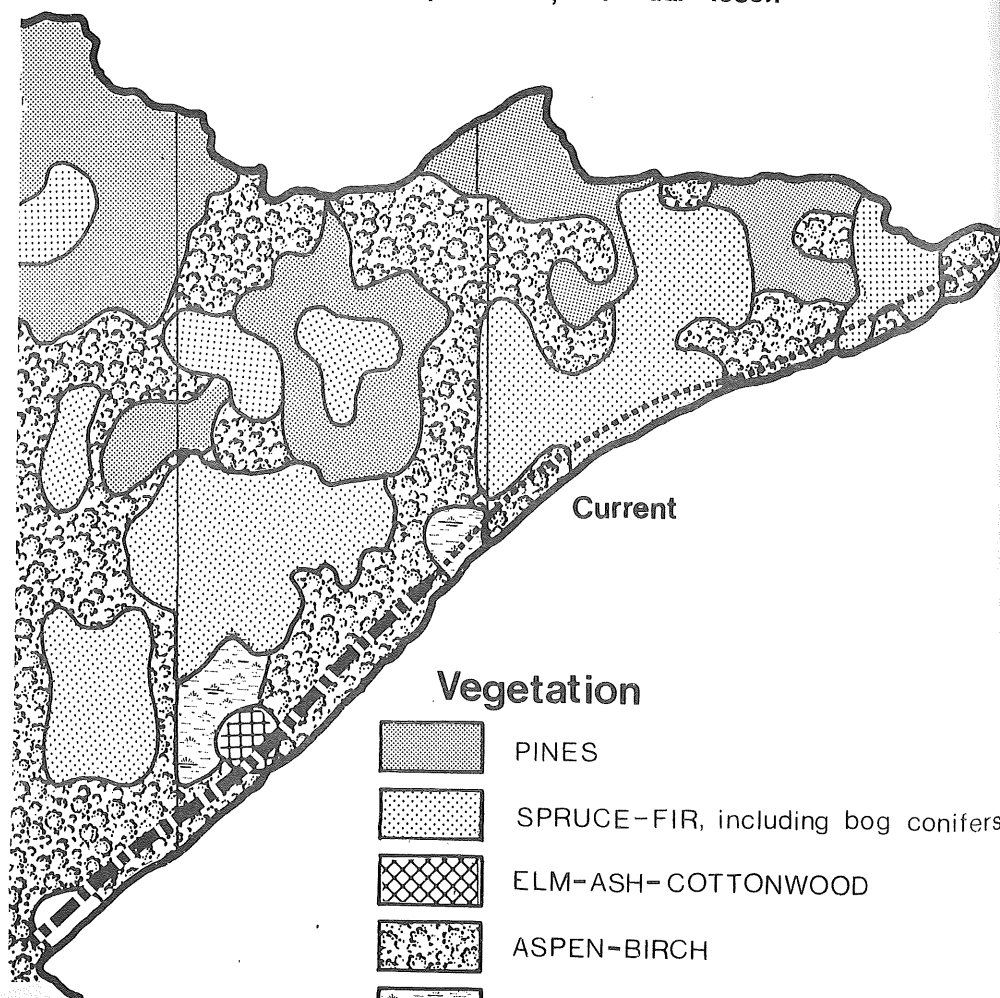
PRE-SETTLEMENT & CURRENT VEGETATION IN THE NORTH SHORE AREA

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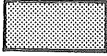







Source: Francis J. Marschner, The Original Vegetation of Minnesota (Map), (USFS, North Central Forest Exp. Station, St. Paul: 1930).

Source: Minnesota State Planning Agency, Atlas of Resources and Settlement (St. Paul: 1968).



Vegetation

-  PINES
-  SPRUCE-FIR, including bog conifers
-  ELM-ASH-COTTONWOOD
-  ASPEN-BIRCH
-  MAPLE-BIRCH
-  NON-FORESTED
(less than 10% of land area tree cover)



1 inch = 32 miles

community was dominated by quaking aspen, bigtooth aspen and paper birch, but significant conifer elements were also present. The conifers were either codominants (notably the pines and white spruce) or common in the understory (usually balsam fir, spruce or northern white cedar). Most of the fires that created the stands occurred a century or less before the North Shore was surveyed.

Two other forest communities were less extensive but still common prior to European settlement: mixed hardwood and pine, and coniferous bogs and swamps. According to Marschner's map, the mixed hardwood and pine community could be found where the southwest end of the trail is now located. This community was a transitional vegetative type between the big woods and white pine communities. It occurred where white pine stands intermingled with sugar maple, red maple, basswood, red oak, bur oak, elm, black ash, yellow birch, paper birch, and aspen.

Coniferous bogs and swamps were scattered throughout the region. The cool, wet climate, igneous bedrock, glacial-scoured topography, and lake-and-stream filling processes resulted in the formation of these communities. Most of the bogs and swamps have acid groundwater, and peat--at least in the upper layers of the soil. Black spruce, tamarack, bog birch, and sphagnum mosses were the dominant plant species. Less acid peats also supported northern white cedar, balsam fir, paper birch and speckled alder. Some areas were nearly treeless (fens) and were dominated by sedges.

All of the above historical forest communities along the North Shore State Trail have been altered in the past one-hundred years by land clearing, logging, tree planting, urbanization, fires, and fire exclusion. Figure 3 shows the present plant communities in the area. The state trail is located in hardwood and coniferous forests, some cutover areas, and red-pin plantations. Red maple, black and white

spruce, northern white cedar, balsam fir, red pine, paper birch, and aspen are the major tree species. Forest succession following most disturbances today is usually toward balsam or poplar (aspen). Most of the white and red pine stands in the region were cut in Minnesota's early lumber era (1870-1930). Today, only isolated, even-aged, relic stands of pines remain. Only 4 percent of the Lake Superior Watershed is forested with white, red and jack pine.¹

Thirty-one percent of the Lake Superior Watershed consists of spruce-fir cover. Fire suppression has permitted many conifer bogs and swamps to succeed toward more mature stands of black spruce, tamarack, and northern white cedar.

As a result of fire suppression and logging, the aspen-birch (conifer) community is the most widely distributed community in the region. Fifty-four percent of the Lake Superior Watershed consists of an aspen-and-birch cover type. Prominent tree species include: paper birch, big-toothed aspen, quaking aspen, and balsam poplar. Red and white pine, white spruce and balsam fir are also present.

Scattered throughout the watershed are areas of maple-birch forest. Six percent of the watershed consists of this cover type.

Several understory plant species are particularly common in the North Shore region. Alder and dogwood are the most common understory shrub species on wet soils. Hazel is abundant in open aspen-birch woods. Thimbleberry is noticeably more abundant than any other forest floor cover on the North Shore. This species forms a dense cover which inhibits most competition. Raspberry, mountain maple, elderberry, blueberry, winterberry and leatherleaf are also common in the area.

¹ The statistics on the Lake Superior Watershed are taken from the Minnesota State Planning Agency, North Shore Data Atlas. Minnesota Coastal Zone (St. Paul: 1977)

Fisheries

The North Shore State Trail area contains some of the better trout-fishing lakes and streams in Minnesota. Brook trout, brown trout and rainbow trout are all present in the streams. Many other popular game-fish species are present in the lakes, including walleye pike, northern pike, smallmouth bass, and largemouth bass.

Birds

Most of the more than 200 species of birds found in northeastern Minnesota can be seen at one time or another in the North Shore area. Some common birds which are permanent residents here include bluejays, ravens, crows, woodpeckers, and chickadees. Common migratory birds include several species of warblers, blackbirds, grosbeaks, finches, and sparrows. Ducks, mergansers, geese and other waterfowl are present. The common loon, pigeon hawk, great blue heron, bald eagle, osprey, and double-crested cormorant are all birds of special interest which can occasionally be seen or heard along the trail.

Mammals

Some fifty species of mammals may be found in the trail area. However, the wildlife habitat along the North Shore State Trail is generally only poor to fair because the area primarily supports mature second-growth forest. This forest does not provide adequate food or cover for many species. Moose and white tail deer inhabit the woods, although deer populations are presently extremely low. Other mammals which may reside in the vicinity of the trail include black bear, timber wolf, wolverine, pine martin, fisher, coyote, red fox, bobcat, lynx, mink, otter, raccoon, and two species of weasels.

HISTORICAL PERSPECTIVE

Trail Area History¹

The history of the North Shore area is not well known prior to European settlement. The rocky country and thin soils have not preserved many artifacts. When Europeans first came to Lake Superior in the mid-1600's, the North Shore was sparsely populated with American Indians. From the late 1600's to 1854 the Ojibwa controlled the region.

The French explorers Pierre Esprit Radisson and Medard Chouart, Sier des Groseilliers, opened the North Shore of Lake Superior to European trade in 1659-1660. Their journey, and the furs they brought back, resulted in an influx of many French-Canadian merchants and British fur-traders. For a century and a half, these traders hunted and trapped the area's wildlife. Many North Shore locations were named by the French traders: Grand Portage, Grand Marais, Brule River, and Baptism River. Grand Portage, at the north end of the North Shore, and the St. Louis River, at the southern end, were two of the major entryways for fur traders into Minnesota. Indeed, the Grand Portage Trail was one of Minnesota's first major trails.

Except for a few seasonal fur posts and the outpost at Grand Portage, however, the North Shore was largely unexplored territory. Most travellers kept to the south shore of Lake Superior because of the ruggedness of the North Shore.

Beginning in the 1840's, prospectors began searching the area for copper, silver and iron ores. When the Ojibwa ceded control of the North Shore in 1854, people rushed in to prospect for copper. Tent cities sprang up near the mouths of many rivers and bays. During the 1860's and 1870's, prospectors combed the North Shore, but the copper ores were too lean for mining.

¹ Much of the following information is taken from R. Newell Searle, State Parks of the North Shore. Minn. State Park Heritage Series #3 (Minnesota Parks Foundation: 1979).

The loggers followed the prospectors. The Weiland Brothers of Beaver Bay were the first loggers on the North Shore. They built a sawmill in 1856. In the late 1880's, extensive logging operations commenced in the region. Logging companies moved up the North Shore year by year, cutting virgin pine, spruce and tamarack. Forest fires often followed logging. The severity, frequency and size of the fires added to the impact of the logging. In twenty years, between 1892 and 1912, loggers and forest fires dramatically changed the forests and landscape of the North Shore.

The forestry industry opened up the region to development. A network of roads, railroads and logging camps were built throughout the area. The present state trail primarily utilizes the same system of pathways. The Alger grade is one such pathway utilized by the state trail. Around the turn of the century, Alger-Smith and Company, one of the largest logging companies, built a logging railroad parallel to the North Shore with many tributary spur lines. The North Shore State Trail was built on this grade for some fifteen miles.

At about the same time loggers began extensive operations in the area, commercial fishing was also expanding. During the 1880's, fishermen settled at the mouths of the Split Rock, Two Island, Cross and Cascade Rivers, and at Grand Marais. Tofte and Hoveland were settled by Norwegian fishermen. At first catches were large, but overfishing and parasitic lamprey eels rapidly depleted the resource. The fishing industry, in turn, declines, although commercial fishing still continues today.

When the lumber companies left the North Shore in the 1920's, many of the settlements and railroads were abandoned. A few relics of the logging era are still visible along the state trail (see pages 33-39).

The decline of the logging industry and the abandonment of the railroads also affected the homestead farmers. Many Finish farmers, who had been lured to the area by the State, lost their major markets, main

transportation, and the supplementary incomes earned while working for the logging companies during the winter. During the 1930's and 1940's, the county, state and federal governments acquired thousands of acres of tax-forfeited and abandoned lands. These lands were added to state forests and the Superior National Forest.

In the 1950's, heavy industry returned to the North Shore with the development of the taconite industry. The North Shore State Trail passes, or is located, near mining, railroads and other processing facilities (e.g., Reserve Mining Company) which are used by the taconite industry.

Tourists first started coming to the North Shore to fish in the late 1800's. With the completion of U.S. Highway 61, in 1925, and the advent of automobiles, increasing numbers of tourists came to camp, fish, hunt, canoe, and spend their vacations at lakeshore hotels and resorts. Today, tourism is the main industry of many of the North - Shore communities.

The first government attempt to acquire and conserve North Shore lands began in 1902, when the federal government set aside almost 500,000 acres as a forest reserve. More acres were added to the reservation in 1905 and 1908. In 1909, these lands were designated the Superior National Forest. During the 1920's and 1930's, the Superior National Forest was enlarged to its present size of nearly three million acres. The State also acquired forest lands during this time, and established the Finland and Grand Portage State Forests in 1933.

Beginning in the 1920's, land was acquired to establish state parks on the North Shore. Gooseberry Falls was the first state park established there. Six other parks have been developed along the shore in the past sixty years (in addition to state waysides). Tettegouche is the most recent park, created in 1979.

The first steps toward establishment of the North Shore State Trail began in the late 1960's when the DNR cut a fifty-mile trail between Duluth and Finland. In 1975 the legislature authorized the state trail.

Sities of Historic and Natural Significance

The North Shore State Trail traverses, or passes near many sites of special interest (See Figure 4). Thirty-four sites were singled out as significant historic and natural areas.¹

0. Lake Superior

1. Knife River

The Ojibway called it "Moomani-Zibi" because of sharp stones found in its beds and banks. Knife River was the site of several unsuccessful copper-mining attempts from 1854 to 1929. Logging replaced mining during the 1880's, but the big operations did not begin until 1898, when the Alger-Smith & Co. of Michigan established Knife River as the terminus of its railroad. The railroad, running northeast into Lake and Cook counties, consisted of some 99 miles, with branches, shops, and docking facilities. The settlement of Knife River continued to thrive as a lumbering center until 1919. At that time, the Alger-Smith Company sold all its interests, and everything was completely gone by 1923.

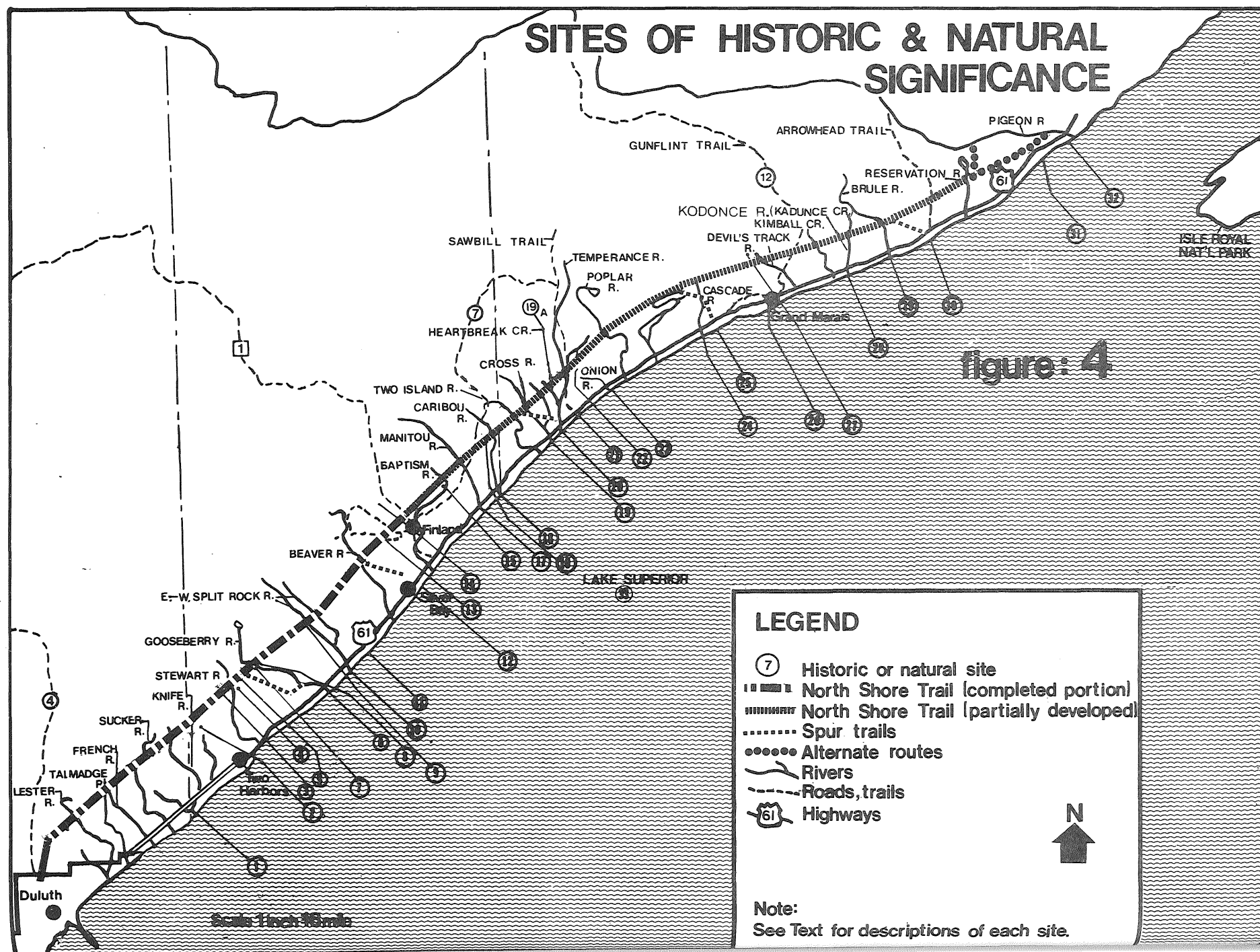
2. Westover

Remains still exist of the Westover station and the settlement that once served the Duluth & Northern Minnesota (D & NM) Railroad (commonly known as the Alger-Smith Line). Not far from the station the original D & NM line can be seen on the east side of the road (Lindahl).²

¹ This is not a complete listing of significant sites which occur along the trail--there are probably other such sites. The above sites were identified by books, reports and articles. The references cited in the text are listed in the bibliography in Appendix F.

² References are cited in Appendix F.

SITES OF HISTORIC & NATURAL SIGNIFICANCE



3. Howlett

A great amount of fill and a high trestle were required here where the Alger-Smith crosses the Stewart River. The remains of a logging camp stand on top of the west bank of the river, north of where the trestle once stood (Lindhahl).

4. Alger-Smith Transfer

This small yard of about three or four tracks allowed the Duluth & Northern Minnesota Railroad to transfer cars to the Duluth & Iron Range main line. At times the yards are referred to as "the crossover" (Lindhahl).

5. Alger

Railroad station and junction for the Alger-Smith Railroad. The Duluth & Iron Range passenger trains would stop on the trestle over the Alger grade and receive Duluth & Northern Minnesota passengers going to Two Harbors. Section House No. 2 was built next to the station and a motor-car shed was located on the opposite side of the tracks (Lindhahl).

6. Gooseberry Falls State Park

The Indian name for this area was "Shab-on-un-i-kan-i-zibi" - (the place of gooseberries river). Gooseberry Falls State Park contains several very scenic waterfalls, a spectacular gorge which the Gooseberry River cut through felsite lava beds, and a magnificent stretch of lakeshore (Fritzen).

7. London Crossing

The Duluth & Northern Minnesota Railroad crossed Lake County Highway 3 at this point. In the early 1900's, Highway 3 was the main road between Two Harbors and Beaver Bay. One corner of the depot located at this crossing was used as a U.S. Post Office until the railroad was abandoned in 1923. Two logging camps also operated within half a mile of this site during the 1900's (Lindhahl).

8. Bud Creek

The Alger-Smith Railroad connected here with the Nestor Railroad, another logging railroad based at the mouth of the Gooseberry River. The Nestor Railroad ran from 1900 until 1909, and was in operation in the winter only (Lindahl).

9. North Branch Junction

A small yard was built at the beginning of the Greenwood Lake branch. Section house No. 4, a blacksmith shop, a water tank, and pumphouse (the concrete footings for the water tank are still present), a long trestle across the west branch of the Split Rock River, a wye for turning trains around, and several other railroad buildings were located here (Lindahl).

10. Split Rock River

Split Rock River was named for the bluffs just east of the river's mouth. In the 1890's, logs were rafted from the lower part of the valley to the sawmill at Duluth.

11. Split Rock Lighthouse

Formerly the highest lighthouse in service in the U.S., Split Rock Lighthouse is now a state park and historical monument.

12. Palisade Head

This 348-foot-high felsite lava formation extends easterly along the North Shore for 40 miles. Indians in canoes once tried to shoot arrows to the top of the cliff.

13. Hefflinger Trail

Named derived from the only homesteader along this trail.

14. Finland

A railroad village in Crystal Bay Township named for the native country of many of its settlers (Lindahl).

15. Maple

This site was developed as an Alger-Smith Railroad spur station. The main branch of the Alger-Smith line met several spurs, all heading north to the logging camps at this spot. An old school was located not far from the site of Maple.

16. Cramer

Developed as a transfer point for the Alger-Smith Logging Railroad. All south-bound lumber was transferred to a different train at this point to complete the journey south. Cramer was a rest point for train passengers. The town housed a hotel, general store, water supply tower and a few residential homes.

17. Manitou River

This is the only river that falls directly into Lake Superior, and features a rock archway and mammoth cave. Crosby-Manitou State Park includes most of the valley from U.S. Highway #61 to the Old North Shore Road.

18. Caribou River

Caribou were abundant in the forests here less than 100 years ago. A trail along the river leads to the falls, about a mile into the state wayside.

19. Cross River

The Indians called this river "Tchibaiatigo," (Wood of the Soul or Spirit River). The river's English name derived from a cross erected in gratitude by a missionary priest, Father Baraga, for landing safely in a storm at this point in 1846. In 1896, the Schroeder Lumber Company began operations here. From 1904 to 1906, nearly 1000 people lived in a logging camp at the mouth of the river. The Old North Shore Road ended here at Schroeder Village (Fritzen; Searle).

20. Heartbreak Creek

Named in connection with Heartbreak Hill. Early loggers would always experience extreme difficulty in getting their logs up the hill. Even today, with modern equipment, loggers occasionally have trouble.

21. Temperance River

This river, unlike most North Shore rivers, has no gravel barrier or bar at its entrance to Lake Superior. Thus, the river was named "No Bar" or "Temperance River." Five waterfalls are visible at one point along this river (Fritzen).

22. Tofte (townsite)

The town formerly was an important boat landing and commercial fishing and logging settlement. Carlton Peak, to the west, is the highest peak on Minnesota's North Shore (927 feet above lake level). The Sawbill Trail begins here.

23. Honeymoon Trail

Received its name from a federal forester who spent his honeymoon in the lookout tower overlooking this area.

24. Onion River

Named for the many wild onions that grow along the bank (Fritzen).

25. Cascade River

Named for the series of waterfalls above U.S. Highway 61 (Fritzen).

26. Thomsonsite Beach or Good Harbor Bay

At the cut in U.S. Highway 61, there is a geological formation of sandstone overlaid with a lava flow. Thomsonsite, a semi-precious stone found at only two points in the United States, occurs on the lakeshore (Fritzen).

27. Grand Marais (townsite)

The Ojibway named the area's bay "Kitchi-Bitobig," (great pond), but the French name it bears means "great marsh." Grand Marais was the site of an Ojibway village and burial grounds. An early mission was developed here. In 1834 the American Fur Co. had a trading post on the site. Later on, the town was an important lumber, log, and pulpwood shipping point, and commercial fishing center. The first school in Cook County was located here. The town is also the starting point of the Gunflint Trail, which extends sixty miles to the Canadian border.

28. Alger-Smith Camp

The site of one of the largest Alger-Smith logging camps.

29. Kadunce Creek (Kondonce River)

A trout stream sometimes known as "Diarrhea Creek," due to chemicals in the water. In the days of large-scale logging, the Red Cliff Lumber Co. operated here. Logs were rafted to the sawmill at Duluth.

30. Brule or Arrowhead River

A scenic-river gorge in the Judge C. R. Magney State Park.

31. Hovland (townsite)

Logs and pulpwood were rafted from here (on Lake Superior) until recent times.

32. Grand Portage National Monument

The Indians named this area "Kitchi Onigum," (Grand Portage). This portage was used by the Indians to travel to the border lakes long before Europeans arrived. A nine-mile portage extends westward, from Lake Superior to the Pigeon River, to avoid several big waterfalls and rapids. The first white settlement in Minnesota was established here, by LaVerendrye, in 1731. From that date to 1803, Grand Portage was one of the most important centers for the North-American fur trade. French-Canadian voyageurs, and British

fur traders and explorers started here on their way to Fort Charlotte and the wilderness of northern Minnesota and Canada. The town was the headquarters for the Northwest, XYZ, and American Fur Companies as well as various independent traders. American Fur also had a commercial-fishing station here. In 1803, however, the trail and stockade were abandoned when the British traders established a new all-Canadian route, beginning at Thunder Bay. In 1838, an Indian mission was established on this spot. A reconstruction of the Northwest Company Fort today commemorates the history of this area (Searle).

33. Pigeon River

The United States-Canadian International Boundary and port of entry are above the abandoned Indian settlement and mission at the mouth of the river. The ghost town of Parkersville is located below the falls of the Pigeon River. This town thrived from 1856 to 1874 (Fritzen).

SOCIOECONOMIC PERSPECTIVE

Land Use

Over 95 percent of the land in the vicinity of the North Shore State Trail is classified as forested or forest-related (e.g., cutover areas).¹ The remaining land is used for recreation, residences (seasonal and second homes), mining, and scattered industry such as sawmills, logging facilities, and gravel pits. Most of the land in the Lake Superior Watershed is public land--over 70% of the area is in public ownership. The largest landowner is the Federal government (42% of the land), followed by private owners (28%), the State (15%), and counties and tax-forfeited lands (15%). The North Shore State Trail is almost entirely on public lands.

Most of the residential, commercial and industrial developments in the North Shore region are confined to existing roadways, particularly U.S. Highway 61. Seasonal dwellings, however, are scattered throughout the area. Seventeen communities or settlements are located within ten miles of the trail. Table 2 lists ten of the larger towns and some of their characteristics.²

Most of the commercial developments, such as department stores, grocery stores, and offices, are found in the major urban centers of Duluth, Two Harbors, Silver Bay and Grand Marais. Many of the commercial businesses in both rural and urban areas supply goods and services to tourists.

The two major industrial sites along the coast, outside of Duluth, are the Reserve Mining Company taconite plant at Silver Bay and the taconite loading centers at Two Harbors and Taconite Harbor.

¹The following land use information is primarily taken from the Minnesota State Planning Agency, North Shore Data Atlas (St. Paul: 1977).

²Refer to Figure 1 for the location of each community. The settlements of French River, Knife River, Castle Danger, Little Marais, Taconite Harbor, Schroeder, and Croftville are not included in Table 2.

TABLE 2. COMMUNITIES¹

Name	Population (1970)	Main Economic Base	Distance From Minneapolis- St. Paul	Distance to Trail (miles) ²
Duluth	100,578	Canned and frozen products Machinery and metal industries Shipping Center	147	0.00
Two Harbors	4,437	Wood processing Primary metal processing	168	6.75
Beaver Bay	362	Tourism	199	4.50
Silver Bay	3,504	Taconite industry	202	3.75
Finland	---	Tourism	210	1.00
Tofte	---	Tourism	237	4.25
Lutsen	---	Tourism	246	3.75
Grand Marais	1,301	Tourism	257	4.00
Hovland	---	Tourism	264	4.00
Grand Portage	---	Tourism	300	0.00

¹ Refer to Figure 1 (page 5) for the location of each community

² Distance from city limits to trail corridor;

Accessibility

The North Shore State Trail is located in one of the more inaccessible and sparsely populated parts of Minnesota. Trail accessibility varies considerably. Access to the state trail will be very convenient for the citizens of Duluth since the trailhead is located close to the city's limits. The seventeen small communities along the North Shore will also have easy access to the trail. Several other population centers are located within a two hour drive of the trail, including Grand Rapids, Hibbing, Virginia and Ely (see Figure 5). However, Twin Cities residents will have to drive more than two hours to reach the trail. Trail accessibility will consequently be more limited for Twin Cities residents.

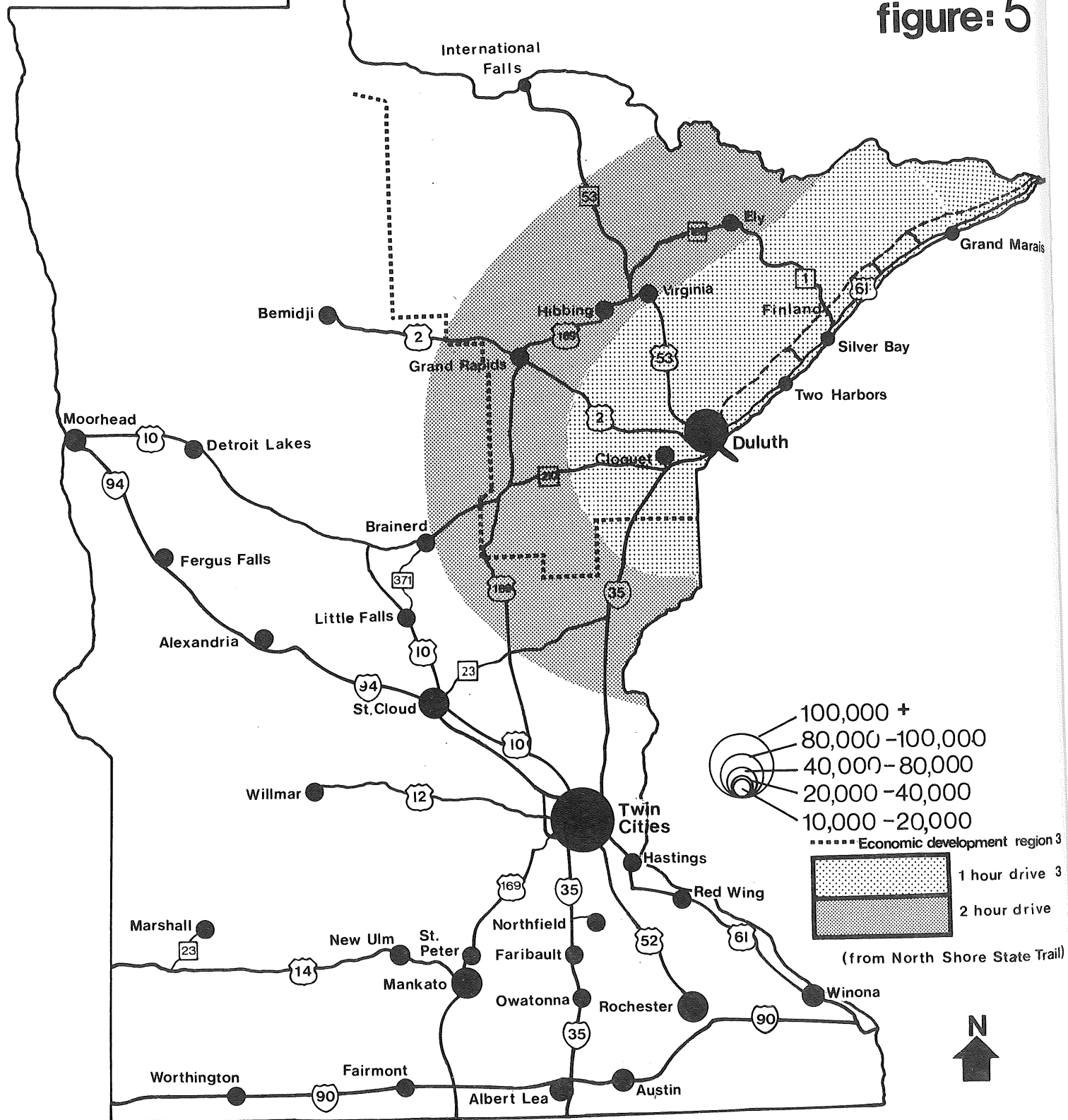
Several roads provide access to the state trail. U.S. Highway 61 parallels the entire North Shore State Trail, and connects all the trail access roads. Most users will initially take this highway to link up with the trail access roads. State Trunk Highway 1 intersects the trail near Finland, providing year-round access for people coming from the northwest. Six county roads between Duluth and Judge C.R. Magney State Park will provide direct access to the trail. Approximately ten other township and Forest Service roads also cross the trail between Duluth and Judge J.R. Magney State Park, although some of these roads may not be plowed in the winter. At least three more roads could be used to gain access to the trail between Grand Portage State Forest and the Canadian border.

In addition to the above roads, users can gain access to the trail through several parks and waysides along U.S. Highway 61 (see below).

Automobiles will be the primary means used to get to the trail. Mass transit is limited in the area. However, daily bus service is available along U.S. Highway 61, connecting all the North Shore communities.

Accessibility of Minnesota's Population Centers

figure: 5



Relationship to Other Recreational Areas

The North Shore area is one of Minnesota's premier recreation areas. Ten municipal parks, seven state parks, six state waysides, four state forests, the Superior National Forest, and Grand Portage National Monument are either crossed by the trail or are in close proximity to the trail (see Table 3). Most of these sites are scattered along U.S. Highway 61. Many trails are located within these sites. A seventy-to-eighty-mile hiking trail, the Sawtooth Hiking Trail, is being built by the U.S. Forest Service. The Grand Marais to International Falls State Trail will intersect the North Shore State Trail near Grand Marais. Another state trail, the Minnesota-Wisconsin Boundary Trail, will have its trailhead in Duluth, near the trailhead for the North Shore State Trail. Also, many grants-in-aid (GIA) snowmobile and ski touring trails are scattered along the North Shore.

In addition to the public recreation sites, numerous private recreational and support facilities are close to the state trail. There are many private ski touring, hiking and snowmobiling trails on the North Shore. Private resorts, cabins, campgrounds, motels and a downhill ski area are scattered mainly along U.S. Highway 61. Service areas, providing gas, food, entertainment, and first aid are also present along the coast.

Population Projections

Population projections are an important factor to consider in determining future recreational use of trails. Table 4 shows the 1970 census data and population projections for the counties which the trail crosses--Economic Development Region 3 (Aitkin, Carlton, Cook, Itasca, Koochiching, Lake and St. Louis counties; see Figure 5)--and the state. The three counties and the region populations are expected to remain relatively stable. However, the number of households in Region 3 is projected to increase from 103,000 in 1970 to 124,000 in 1990. Persons per household are expected to decline from 3.11 in 1970 to 2.61 in 1990, and then

TABLE 3. RECREATIONAL SITES NEAR THE NORTH SHORE STATE TRAIL

<u>Unit</u>	<u>North Shore Counties</u>
FEDERAL	
*Superior National Forest (campgrounds, picnic areas, boat landings)	St. Louis, Lake, Cook
*Superior Hiking Trail	Lake, Cook
Grand Portage National Historic Site	Cook
STATE PARKS	
*Gooseberry Falls State Park	Lake
*Split Rock Lighthouse State Park	Lake
Tettegouche State Park	Lake
*George Crosby Manitou State Park	Lake
Temperance River State Park	Cook
*Cascade River State Park	Cook
*Judge C.R. Magney State Park	Cook
STATE WAYSIDES	
Caribou Falls Wayside	Lake
Flood Bay Wayside	Lake
*Cross River Wayside	Cook
Ray Berglund Wayside	Cook
Devils Track Wayside	Cook
Kodonce River Wayside	Cook
STATE FORESTS	
*Cloquet Valley State Forest	Lake
*Finland State Forest	Lake
*Pat Bayle State Forest	Cook
*Grand Portage State Forest	Cook
STATE TRAILS	
Minnesota-Wisconsin Boundary Trail	St. Louis
*International Falls to Grand Marais Trail	St. Louis, Lake, Cook

*crossed or will be directly tied to the North Shore State Trail

TABLE 3. (Continued)

<u>Unit</u>	<u>North Shore Counties</u>
MUNICIPAL PARKS	
Colbyville, Lakeview and Lester River Forest Park	St. Louis (Duluth)
Hartley Track Forest Park	St. Louis (Duluth)
Janette Pollay Park	St. Louis (Duluth)
Amity Park	St. Louis (Duluth)
Lester Park	St. Louis (Duluth)
Kitchi Gammi Park	St. Louis (Duluth)
Lake View Park	Lake (Two Harbors)
Tom Owens/Paul Van Hoven Park	Lake (Two Harbors)
Mariner Mountain Park	Lake (Silver Bay)
Grand Marais Recreational Area	Cook (Grand Marais)

stabilize. The region's population is also expected to grow older, with more retired individuals and experienced workers in the 35-64 age bracket. School age populations (5-17 years of age), college age, and new workers (20-24 years of age) are projected to either remain stable or decline.¹

TABLE 4. POPULATION PROJECTIONS

<u>County</u>	<u>1970</u>	<u>1975</u>	<u>1980</u>	<u>1985</u>	<u>2000</u>
Cook	3,400	3,500	3,500	3,500	3,700
Lake	13,400	13,500	13,700	14,000	13,900
St. Louis	220,700	218,700	217,100	216,400	210,000
Region 3	329,600	331,100	330,300	332,300	325,400
State	3,805,000	3,923,000	4,076,800	4,252,200	4,652,800

Potential Use

The 1978 Comprehensive Outdoor Recreation Survey of trail users estimated there were 921,800 snowmobilers and 500,000 ski tourers in Minnesota. In 1976 (most current non-winter use figures) there were 350,000 hikers, 300,000 small game hunters, 67,000 horse enthusiasts, and 60,000 backpackers and snowshoers.

The North Shore State Trail will undoubtedly help to satisfy some of the demands of users throughout the state, but it will probably be used primarily by residents living in the region. Table 5 estimates the number of snowmobilers, horseback riders and hikers in Economic Development Region 3, and the number of users in the three counties crossed by the state trail. Current snowmobile registrations provide

¹ All of these projections, including the figures in Table 4, are taken from the Minnesota State Planning Agency Office of the State Demographer, Minnesota Population Projections: 1970-2000 (St. Paul: 1975).

another source of data on snowmobilers within the three counties crossed by the trail. In 1979 there were 830 snowmobilers registered in Cook County, 2,336 in Lake County, and 21,001 in St. Louis County.¹

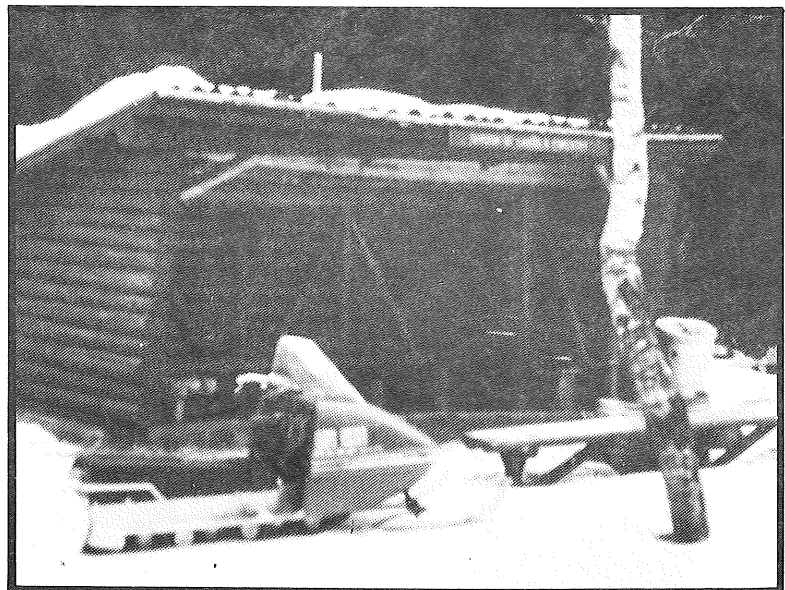
TABLE 5. USER ESTIMATES

<u>Activity</u>	<u>Region 3</u>	<u>St. Louis</u>	<u>Lake</u>	<u>Cook</u>
Snowmobiling	115,900	76,555	4,752	1,229
Horseback Riding	6,606	4,360	271	70
Hiking	9,909	6,540	406	105

Source: the figures are based on 1976 estimated population data from the U.S. Department of Commerce, Current Population Reports-Population Estimates and Projections (#762, 1979; p.25), and data compiled for the Minnesota State Comprehensive Outdoor Recreation Plan (SCORP).

¹ Snowmobile registration data are from the Licensing Bureau of the DNR's Division of Fish & Wildlife. Each snowmobile registration must be renewed every thirty-six months.

PUBLIC INPUT

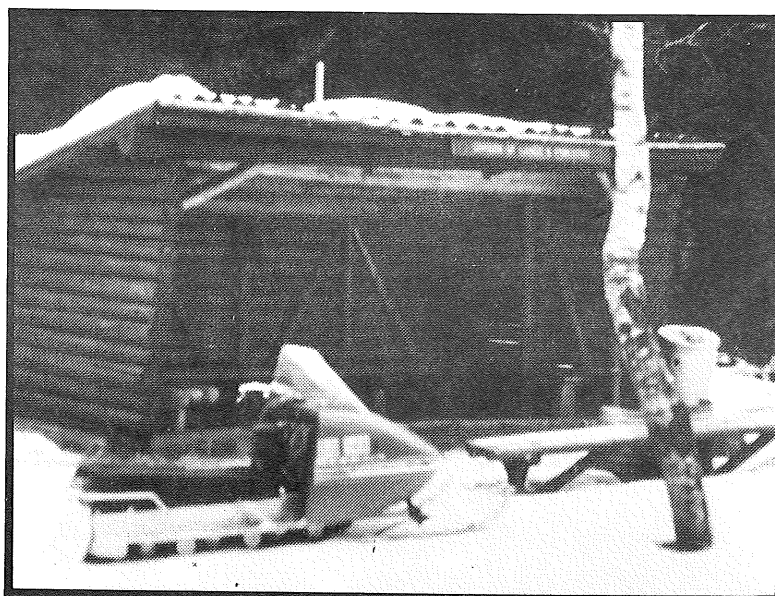


Two sets of public meetings were held at different stages in the planning process at Duluth (25 September 1978 and 6 March 1979), Silver Bay (26 September 1978 and 7 March 1979), and Grand Marais (27 September 1978 and 8 March 1979). These meetings were held to inform the public about the DNR's trail planning efforts, and to provide an opportunity for interested citizens to voice their opinions on the trail and the plan.

Although the individuals attending these meetings generally supported the trail and the DNR's planning efforts, several concerns were raised. These concerns included: trail maintenance, especially snowmobile grooming; using corduroy for wet areas; acquisition of necessary private land between Martin Road and Normanna Road; the number of signs and posts per mile; keeping dirt bikes off the trail; allowing incompatible uses (snowmobiles and skiers) on the same trail; the use of barricades, gates and control structures; the spacing of shelters; stocking of firewood at the shelters; whether there would be enough development money available to complete the trail; who is liable for injury on the trail; the cost of building bridges; and when trail development would begin. At one meeting (Duluth, 3/6) it was recommended that the state trail be connected to Two Harbors. At another meeting (Grand Marais, 3/8) off-road vehicle (ORV) enthusiasts expressed interest in opening the northern part of the trail for motorized vehicles if the trail does not get any hiking or backpacking use in future years. Dog sled enthusiasts also expressed interest in using the trail. Their concern was to maintain a ten foot wide treadway to insure enough room for passing and oncoming traffic.

All of the above points were examined and analyzed by the DNR. The following plan addresses most of the concerns voiced at the meetings, and incorporates many of the suggestions and recommendations.

THE PLAN



TRAIL GOAL AND GUIDELINES

The DNR will strive to achieve the following goal for the North Shore State Trail:

To provide a quality recreational and educational experience in an aesthetically pleasing setting, so existing and future generations can enjoy a part of Minnesota's unique natural, cultural, and historic resources.

Several guidelines, based on the above goal, were used to develop the North Shore State Trail plan. All of the actions proposed in this plan should take these guidelines into account, as should all actions which are proposed in the future:

- * The trail should promote alternative transportation methods by providing users with a pleasing and varied natural setting.
- * The trail should contribute to the restoration and perpetuation of the natural and historic resources in the area.
- * Resource damage, user conflicts, and user-landowner conflicts should be minimized along the trail corridor.
- * Existing grades and structural facilities should be utilized whenever possible.
- * Use of other public and private recreation facilities that relate to the trail should be encouraged.
- * The use of recreational motor vehicles, except snowmobiles, shall be prohibited on the trail.
- * The user's appreciation and knowledge of the trail and its resources should be enriched.
- * User safety should be promoted.

- * Law enforcement on the trail should be promoted.
- * Public awareness of the trail should be promoted.
- * The DNR should be flexible and responsible to user demands.
- * Trail resources and users should be monitored.
- * The public, landowners, and users' opinions should be solicited on all aspects of planning, operating and maintaining the trail.

TRAIL SUITABILITY

Two segments of the North Shore State Trail, totaling about fifty-nine miles, have been partially developed. Fifty miles of the trail, from Normanna Road (twelve miles northeast of Duluth) to Finland, were partially developed by the Division of Forestry in 1970 and 1971. About nine miles of the trail were completed from Pike Lake to Monker Lake by the then Trails Section of the Division of Parks and Recreation in 1977 (see Figures 6 and 8 on pages 64, 68). Most of the developed treadway was built on abandoned railroad or highway grades. The Pike Lake to Monker Lake segment is in good condition. However, the Normanna Road to Finland segment is in very poor condition in spots, particularly along the Alger Grade. Some of these spots are difficult for hikers and impossible for horseback riders.

In general, none of the Normanna Road to Finland segment (fifty miles) is suitable for families with young children.¹ In the spring the trail is very wet. No hikers should try to walk on the trail until the spring floods have ceased. In addition, there are four areas which are wet (i.e., standing water which must be crossed) throughout the spring, summer and fall (see Figures 6-8 , page 64-68):

- the area one-quarter mile on either side of Ross Creek;
- the area one mile west of the Fox Farm Road for about one-half mile;
- the area around Kit Creek for about one-quarter mile;
- 200 yards either side of the west branch of Fortythree Creek.

The DNR does not recommend these areas for hiking. However, use will not be restricted. The purpose of the above recommendations is to aid users in determining if a trail segment(s) is appropriate for their needs, desires, and skills. In the future the DNR plans to upgrade this entire fifty-mile segment and make it suitable for most hikers and horseback riders (see pages 105-108).

¹ These recommendations are based on the expertise of the local DNR manager.

LAND ACQUISITION

To date, as was previously noted, two segments of the North Shore State Trail, totaling fifty-nine miles, have been acquired and partially developed. A 20-100 foot wide corridor approximately 143 miles long is needed to complete the state trail from Duluth to the Canadian border. Although most of the proposed trail alignment is on public land, there are a number of private parcels the DNR needs to acquire. The majority of these parcels are scattered through the southern half of the trail.

The DNR will employ a variety of techniques to acquire private lands for the trail right-of-way (ROW) including: fee-title acquisition, easements (perpetual and term), permits, land exchange, donation, cooperative agreements, and leases. Also, it should be noted that eminent-domain authority was granted to the DNR for this trail (Laws of Minnesota 1974, Section 85.015, Subdivision 13).

Several guidelines will be followed by the DNR for all land acquisitions along the state trail:

- * The width of the ROW will vary from a minimum of 20 feet to a maximum of 100 feet depending upon the agreements with individual landowners.
- * Public land will be considered first for the ROW. Private land will be considered only for the ROW when necessary.
- * Land owned by small, individual, private landowners should not be considered for trail support facilities.
- * Land owned by governmental agencies or private companies (e.g., timber companies) which is adjacent to the trail ROW may be acquired for support facilities if necessary.
- * Condemnation will be used only as a last resort for trail ROW, after all other alternatives have been exhausted. If condemnation is required on any parcel, no more than a twenty foot ROW will

be acquired. This authority will not be used for parking lots or other support facilities.

* County tax-forfeited lands will be acquired through easements. Payments will be made available for use of these lands.

* The use of federal lands will be secured for the state trail ROW through a cooperative agreement. This agreement should be specific regarding uses, maintenance, gates, facilities and control structures.

Priorities

Three series of high-priority acquisitions should be completed as quickly as possible. These acquisitions are all necessary to complete the southern half of the main trail right-of-way (ROW). They are (in order of importance):

- 1) Appraise and negotiate the necessary ROW on the Martin Road to the Normanna Road parking lot segment.
- 2) Secure easements on all applicable county tax-forfeit lands in St. Louis County.
- 3) Secure the required easements for all county tax-forfeit parcels and/or roads used or crossed in Lake County.

Once the above high-priority acquisitions have been completed, the DNR will acquire, or assist other organizations to acquire, other parcels of land for spurs off the main trail, for support facilities, and for the northern half of the trail. The following acquisitions are listed in decreasing order of priority:

- 1) Appraise and negotiate the necessary ROW over the private land between Finland and Cramer.
- 2) Secure additional acreage, when necessary, for support facilities.
- 3) Acquire necessary easements and agreements to link the state trail to the state parks and wayside shown in Figures 1, 6-10 (pages 8, 64-72).

- 4) Acquire lands to tie the U.S. Forest Service Superior Hiking Trail, as it is completed, to the state trail.
- 5) Work with local units of government and local organizations and clubs to provide connections to service areas for gas, food and lodging.
- 6) Continue negotiations for an easement or cooperative agreement over any Indian reservation lands used or crossed by the trail.

In the past the Grand Portage Indian Reservation has not been receptive to the state trail passing through the reservation. If negotiations continue to fail, then the DNR will consider either 1) ending the trail at Judge C.R. Magney State Park, or 2) acquiring land for a hiking-only trail to connect with the Border Route Trail.

In the long term, after the main treadway has been completed and all of the above acquisitions have been achieved, additional acquisitions for the state trail may be sought. In particular, a separate treadway for hikers may be developed along the North Shore bluffs (see page 108).

CORRIDOR DEVELOPMENT

Development of the North Shore State Trail will involve constructing the treadway, bridges, parking areas, spur trails, support facilities, upgrading of already developed trail segments, and encouraging the development of local trails to connect service areas to the state trail. The trail corridor will be developed in segments (see below). With the possible exception of the Alger Grade, each segment will be completed, including the treadway, bridges, support facilities, and spur trails, before work commences on the next segment. The priorities for developing each segment are noted below and in the implementation chapter. (pages 103-114).

Trail Alignment

The state trail, when completed, will connect Duluth to the Canadian border. Figures 6-10 show the proposed trail alignment, including the two segments which have already been partially developed.

The trail alignment is divided into eight segments. Each segment should be useable for fire access and other administrative and management needs, as well as for recreational uses. The eight segments are:

- 1) Duluth city limits to Normanna Road (12 miles)¹
- 2) Normanna Road to Finland (50 miles)²
- 3) Finland to Cross River Road (35 miles)
- 4) Cross River Road to Honeymoon Trail by Christine Lake (40 miles)
- 5) Honeymoon Trail to Pike Lake Road (12 miles)
- 6) Pike Lake Road to Monker Lake (9 miles)²
- 7) Monker Lake to Judge C.R. Magney State Park (14 miles)
- 8) Judge Magney State Park to the International Boundary (30 miles)

The priorities for developing the trail segments are noted in Table 6 on page 106. In brief, the southern half of the trail alignment (segments 1-3) will be completed first, followed by segments 4, 5, and 7. The

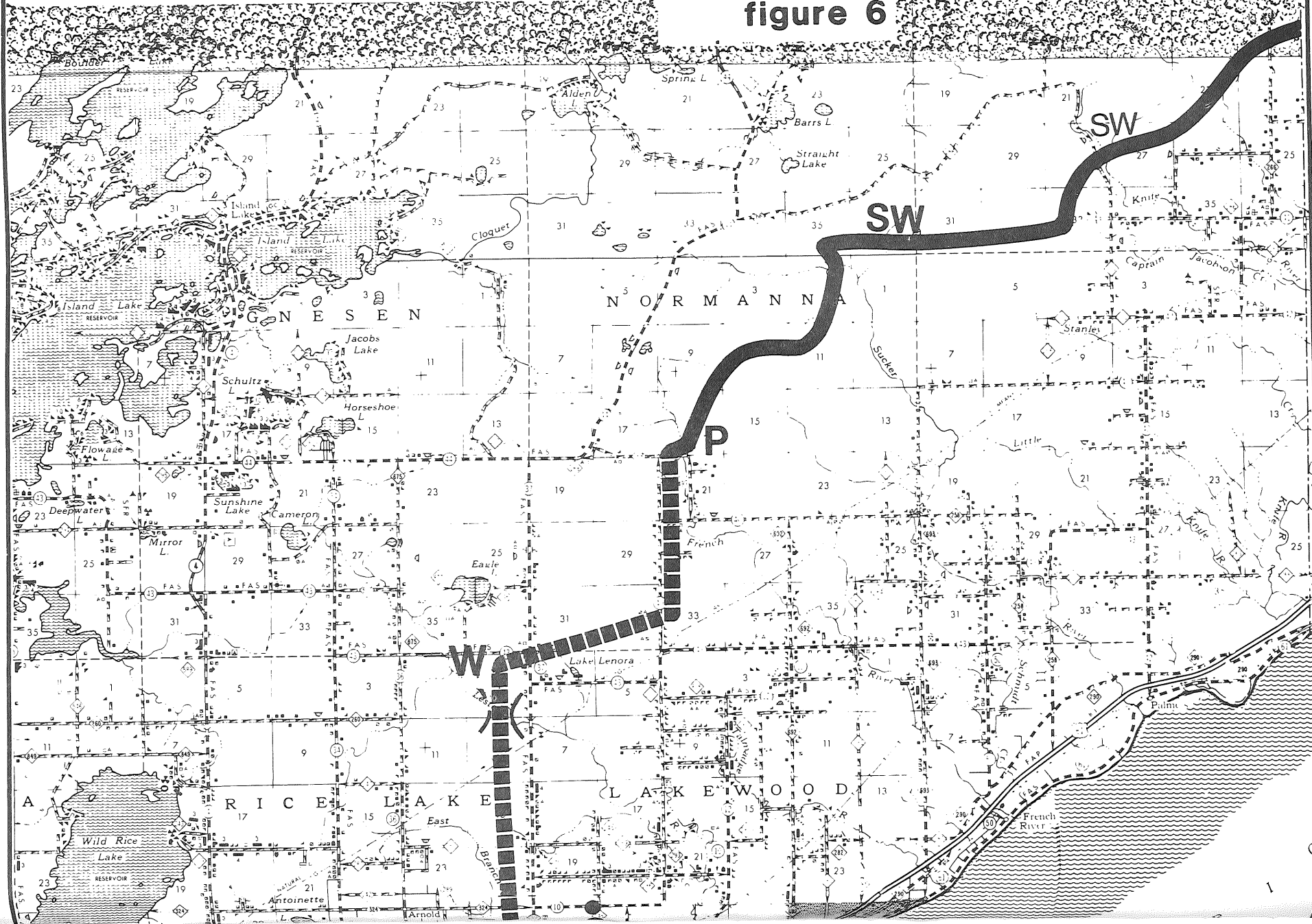
¹ Mileages cited are approximate.

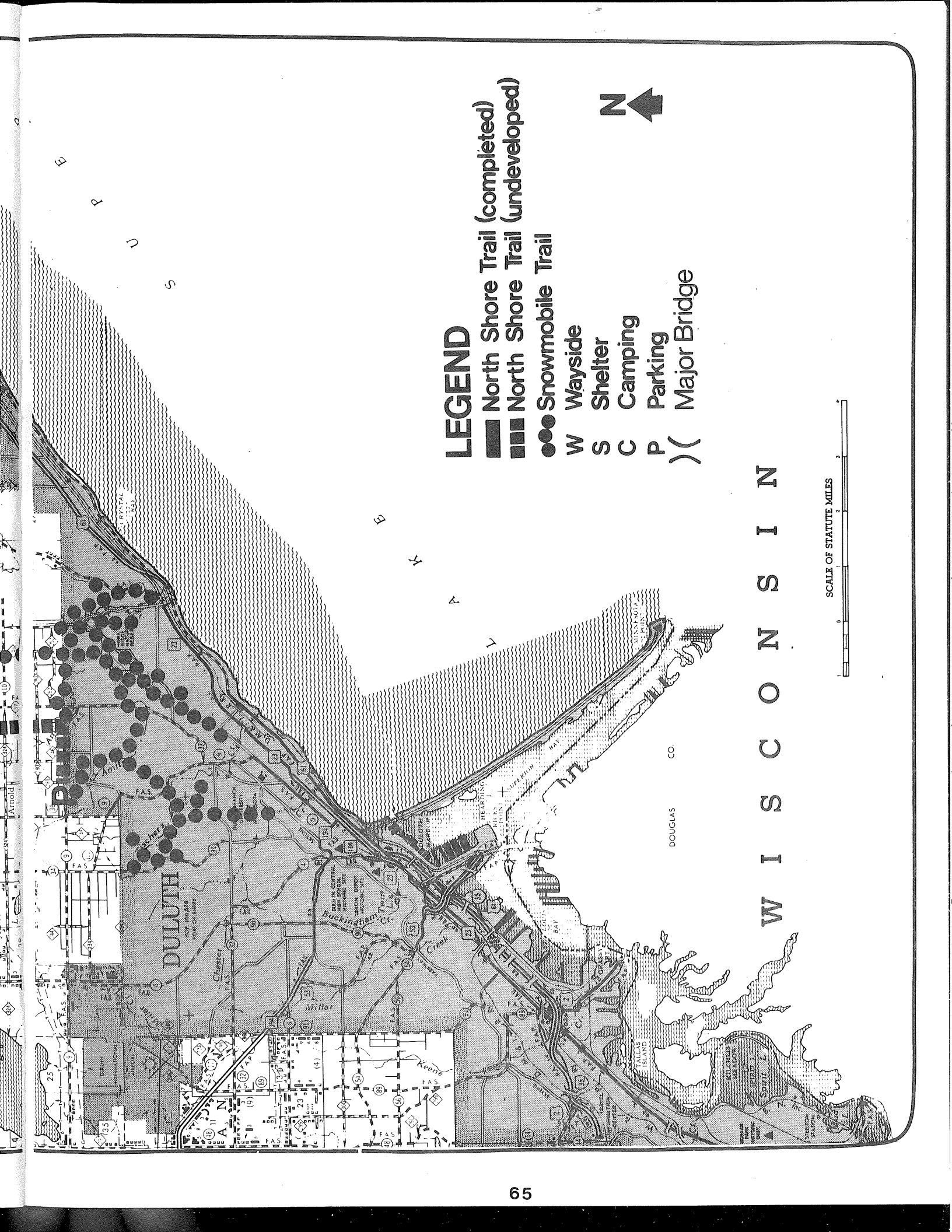
² This segment has been partially developed or completed.

LEGISLATIVE REFERENCE LIBRARY
STATE OF MINNESOTA

NORTH SHORE TRAIL ALIGNMENT

figure 6



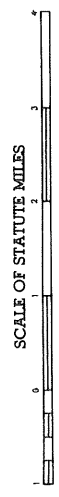


LEGEND

- North Shore Trail (completed)
- North Shore Trail (undeveloped)
- Snowmobile Trail
- W Wayside
- S Shelter
- C Camping
- P Parking
-)(Major Bridge

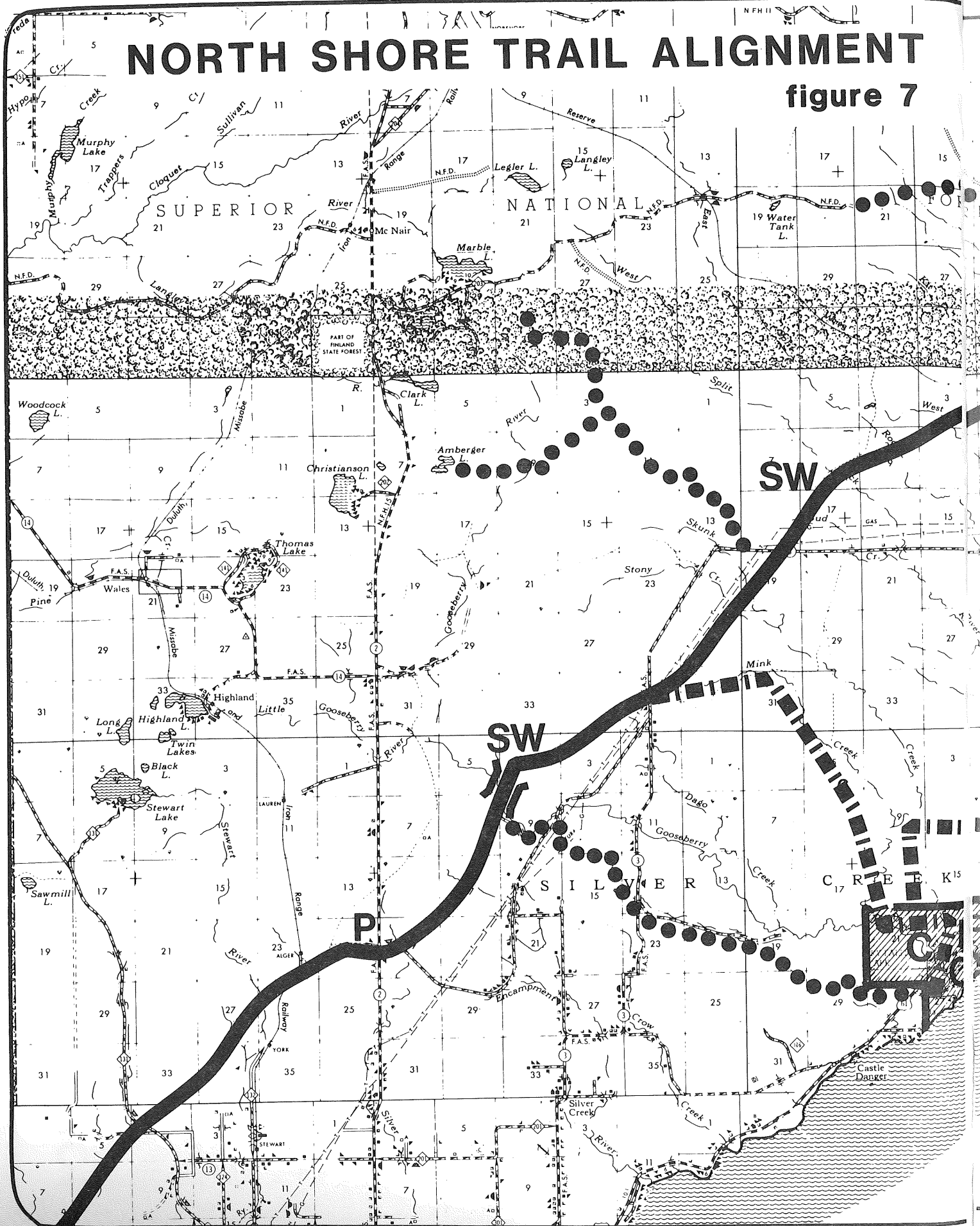


W I S C O N S I N



NORTH SHORE TRAIL ALIGNMENT

figure 7



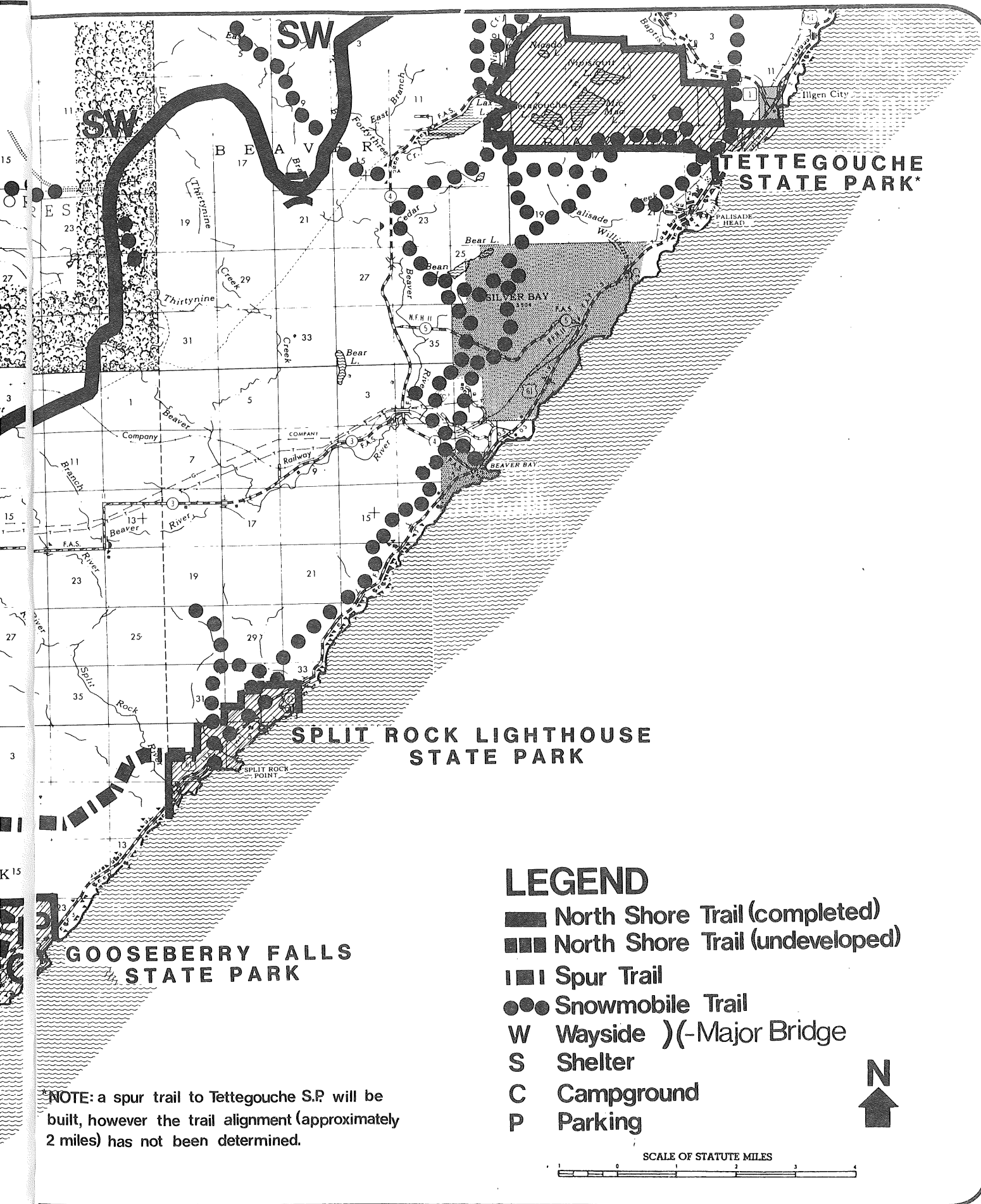
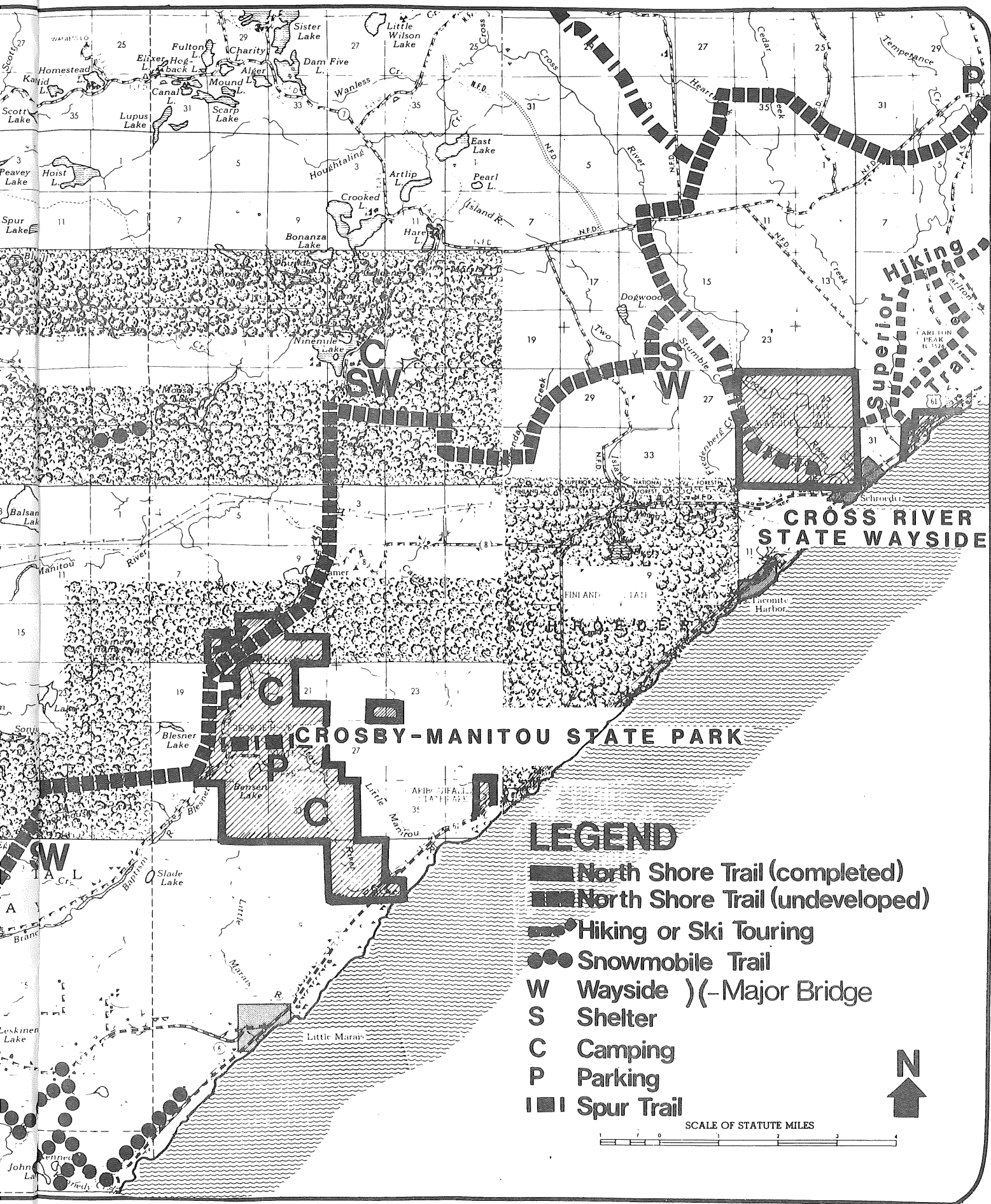


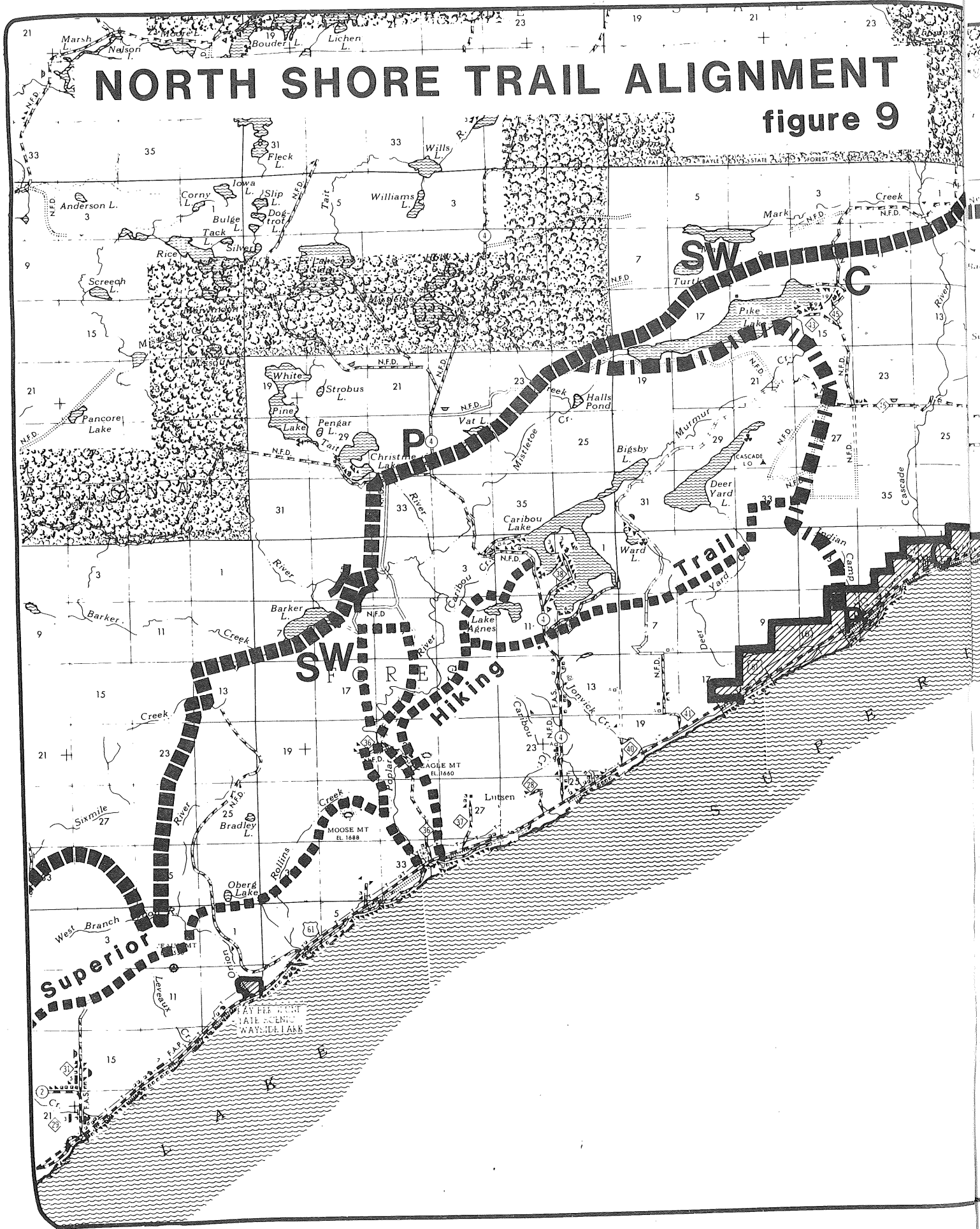
figure 8

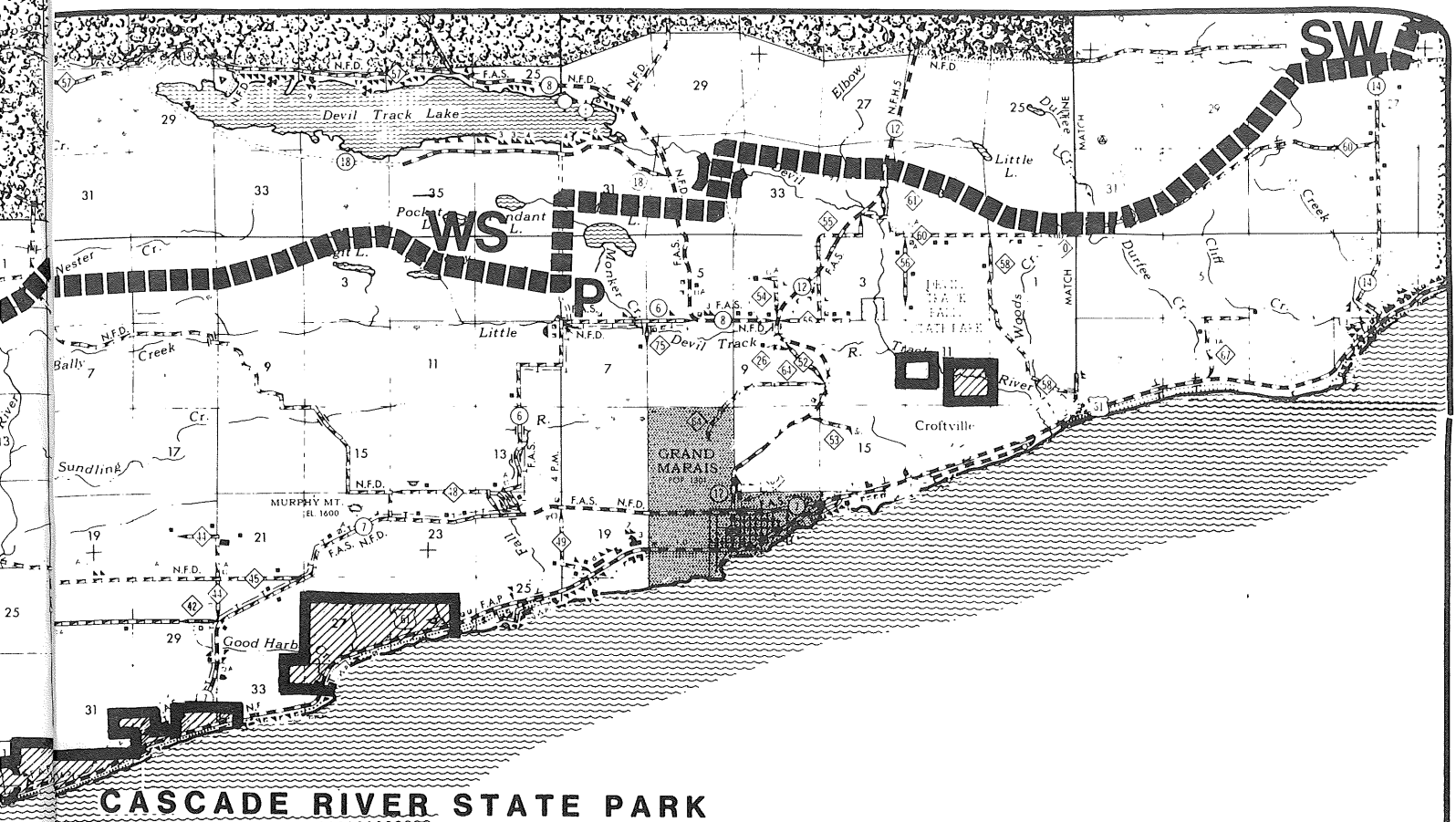




NORTH SHORE TRAIL ALIGNMENT

figure 9





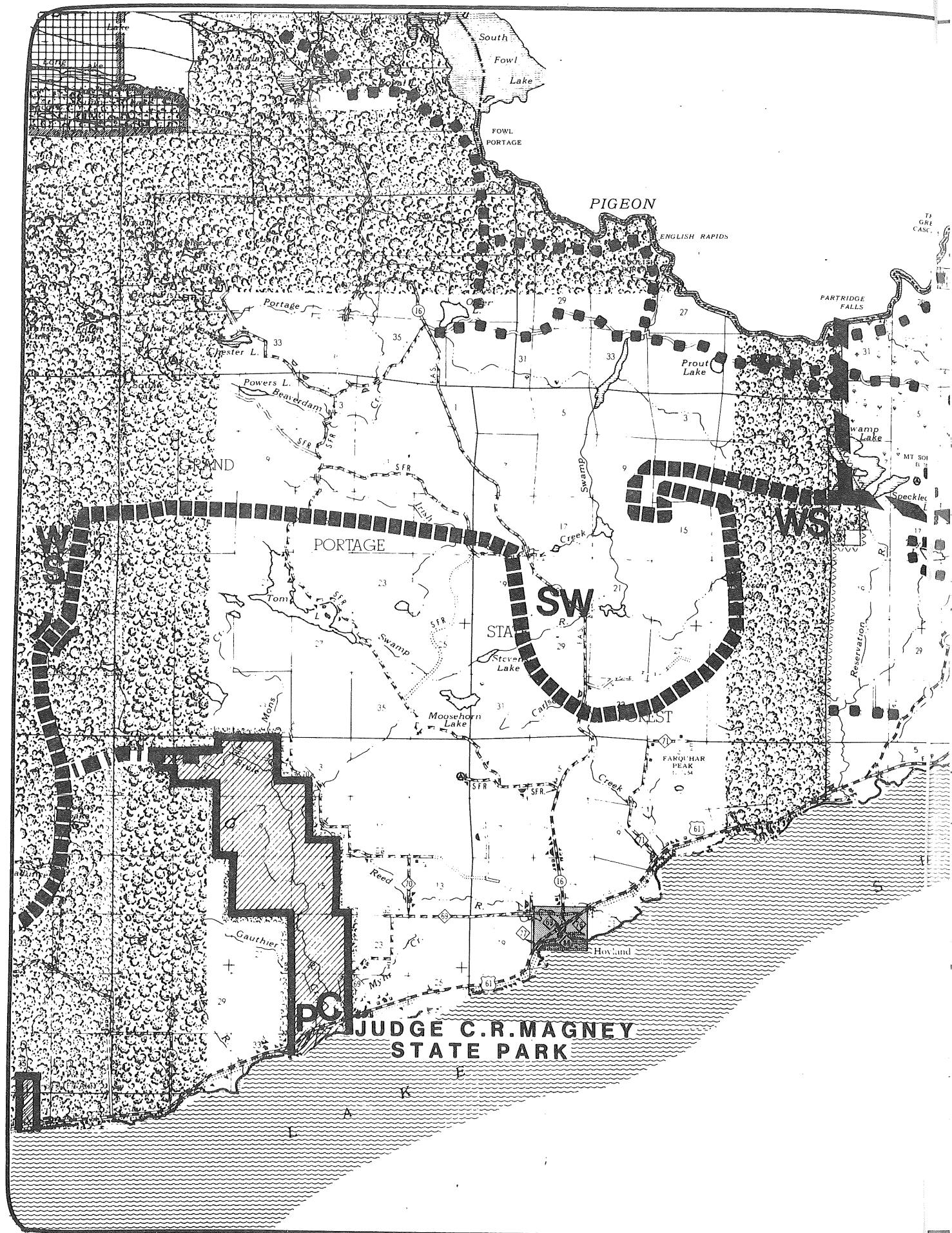
LEGEND

- ■ ■ North Shore Trail (undeveloped)
- ■ — Spur Trail
- ... Hiking Trail (← Major Bridge)
- W Wayside
- S Shelter
- C Campground
- P Parking



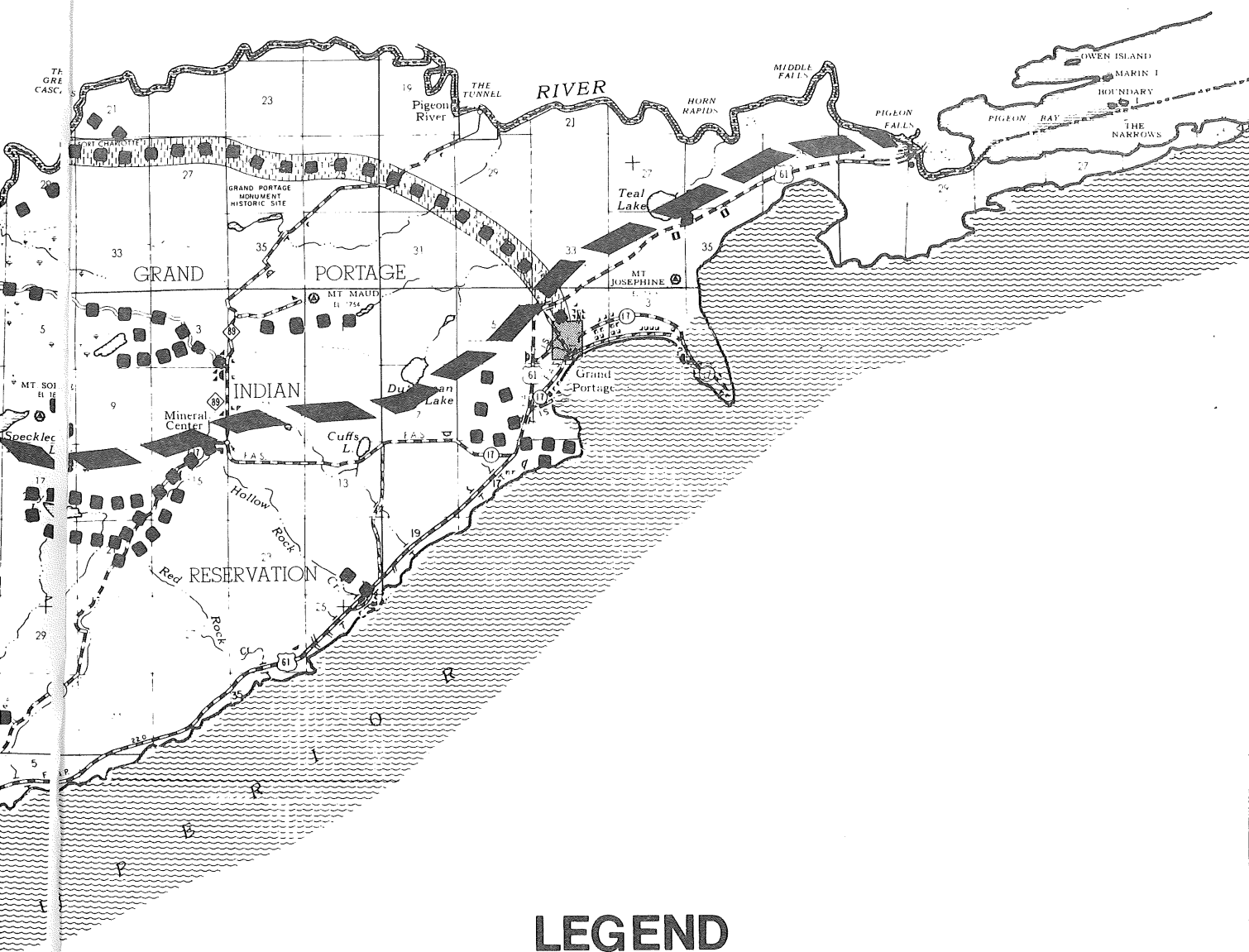
SCALE OF STATUTE MILES





NORTH SHORE TRAIL ALIGNMENT

figure 10

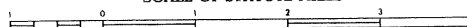


LEGEND

- North Shore Trail (undeveloped)
- ▲▲ Alternative Trail Alignment
- Hiking Trail
- | ■ ← Spur Trail
- W Wayside) (← Major Bridge
- S Shelter
- C Campground
- P Parking



SCALE OF STATUTE MILES



last segment to be developed will be the last thirty miles to the Canadian border.

Two segments of the trail alignment, from Normanna Road to Finland, and the segment from Judge C. R. Magney State Park to the Canadian border, have not been finalized. These segments have special problems. The Normanna Road to Finland segment, and the Alger Grade in particular, needs major upgrading work in some areas to bring it up to state trail standards. The state trail follows approximately fifteen miles of the Alger Grade designated as a county road. Therefore, logging trucks and off-road vehicles (ORVs) are using this segment of the trail. These vehicles have caused some maintenance problems here. The DNR will work with Lake County to mitigate these problems. The acquisition (easement) agreements which the DNR will negotiate with the county will address actions to resolve the maintenance problems.

Several possibilities exist for the Alger Grade. The most desirable option, from the DNR's viewpoint, would be to develop the trail on the grade--snowmobilers, hikers and horseback riders would all be able to use the grade. The grade could still be used as a logging access, but the grade would have to be maintained in a condition suitable for trail recreation (e.g., the grade would be adequately signed, some snow would be left on the grade for snowmobiles, and logging equipment would not be parked on the grade). Alternatively, a snowmobile trail could be developed parallel to the grade. Within the right-of-way the snowmobilers would use the new treadway, while hikers and horseback riders would use the grade in the summer. Neither of these options, however, address the major problem of restricting motorcycles, four-wheel drives, and other ORVs from using the grade in the summer. The DNR and Lake County will therefore have to reach an agreement on controlling summer use.

The details concerning the development, use, management, and maintenance of the Alger Grade will depend on the outcome of negotiations between the DNR and the county. In the meantime, no bridges, parking areas, or

other facilities will be built on this segment until the easements have been acquired and the alignment has been finalized.

The Judge C. R. Magney State Park to Canada segment has also not been finalized. As the acquisition section noted, the DNR has been unable to reach an agreement to cross the Grand Portage Indian Reservation. If negotiations continue to fail, the DNR will consider two alternatives to crossing the reservation (see Figure 10). One alternative would be to establish a hiking-only trail from Judge C. R. Magney State Park to the Border Route Trail. The other alternative is to simply end the trail at the state park.

Connections to State Parks and Waysides

Figure 4 shows six spurs branching off the main trail and connecting: Gooseberry Falls State Park and Split Rock Lighthouse State Park; Tettegouche State Park; Cross River State Wayside; Cascade River State Park; and Judge C. R. Magney State Park. These spurs will use existing trail alignments if possible. When they are completed, the spurs will make it possible for trail users to come down to the coast and utilize the park recreational facilities. The spurs can also be used in case of emergency, to get help.

Although this plan calls for six spur trails, the construction of these trails will depend on the park plans. The DNR Division of Parks and Recreation must consider and approve each of the trail spurs before they can be built. If the park staff agrees to the spurs, then the Trails and Waterways Unit will work with the park personnel to plan and develop each spur.

Connections to Service Areas

Both the DNR North Shore Recreation Study and the people who attended the state trail public meetings indicated a need to connect the state trail to service areas. This need appeared limited to snowmobile interests and focused on food, gasoline and beverage stops. The DNR

will encourage local units of government, clubs, and other organizations to provide the necessary connections to these private facilities. Funds from the snowmobile assistance program (grants-in-aid) can be used for this purpose. Many of these grants-in-aid trails already exist (see figures 6, 7, 8). The greatest need at present is to connect the state trail to Two Harbors and to Tofte.

The state trail will also be linked to the Duluth trail system. This linkage will enable people to utilize the city's large trail system. It also will provide a means for users to gain access to the Minnesota-Wisconsin Boundary Trail and the Twin Cities.

Additional Hiking Trails

The North Shore State Trail passes through many swamps and other wet areas. These wet areas are often not suitable for hikers and horseback riders. In many cases it may be possible to upgrade the trail using fill, culverts or corduroy. However, these techniques may not always be feasible, and may be very expensive to use frequently for long segments. An alternative solution is to build a second treadway for backpackers, hikers and horseback riders around the wet spots. The DNR will consider this option as the need arises. The hiking treadway will be built in accordance with the U.S. Forest Service Handbook 7709.12, Supplement 3.

Many backpackers and hikers desire long-distance trails in scenic, rugged, wild country, where they can experience solitude and adventure. The North Shore is an ideal location for such a trail. Although the state trail is being built to accommodate hikers, the location of the trail is not ideal from the hiker's perspective: the trail generally is behind the lake bluffs and in many places is in mature second growth forest and wet swamps. The trail is also much wider than necessary for hiking and lacks loops. Thus hikers will probably not use the North Shore State Trail in large numbers. Instead, they will probably hike on the U.S. Forest Service's Superior Hiking Trail.

Two hiking-only offshoots of the North Shore State Trail will connect with the Forest Service Trail at Barker Lake and Cascade River State Park. (see Figure 9)¹ However, it may be possible to extend the hiking trail north of Cascade River State Park and/or south of Cross River Wayside. Therefore, if it is determined that use justifies the extension(s), the DNR will investigate possible alignments along the lake bluffs which could be developed for hikers. The DNR has begun consulting with the Forest Service about this possibility, but no action will be taken until the main treadway has been completed. Future revisions of this plan will address this topic more substantively.

Trail Construction Guidelines

Several guidelines will be followed in the preparation and construction of the trail corridor:

- * The treadway will consist of a ten foot (minimum) to fourteen foot(maximum) wide firm surface of grass-covered soil or gravel fill.
- * An additional two-foot shoulder should be cleared on each side of the treadway. Additional clearing may be done if required for the purpose of maintaining proper cut and fill slopes.
- * The treadway will be cleared of all trees, brush, stumps, rocks and roots. All debris should be pushed away from the trail so as not to be visible or create a safety hazard (see the slash pile typical in Appendix E). Debris should be hauled away in those areas of the trail where the right-of-way is too narrow to pile the slash accordingly.
- * Excavating work will be kept to a minimum. Special care should be taken to eliminate unnecessary bulldozing work, especially on parts of the old abandoned railroad grades

¹ The Baker Lake spur will be a loop trail

that will be incorporated into the trail. The purpose of this guideline is to minimize erosion and drainage problems.

- * In areas where the trail passes over large rocks or boulders the trail should be constructed by leveling low spots with fill rather than cutting the location with heavy equipment.
- * Rocks and soil disturbed during construction will be used where possible in the trail construction. Excesses will be wasted at agreed upon waste areas and seeded to grass.
- * The trail shall cross contours at right angles where possible. The trail shall avoid side slopes where possible. Approaches to slopes shall be straight and at least as long as the slope.
- * Sustained grades will not exceed twenty percent.
- * Where the alignment follows stream courses, lake shores or ponds, a suitable distance should be maintained between the water and the trail to protect the water resource. The width of the buffer strip should be determined by the amount of vegetation and the slopes and trail grades involved.
- * The trail's minimum turning radius shall be fifty feet; one hundred feet where possible. Turns within turning radius less than one hundred feet will be properly signed.
- * The trail, with snow cover, will have an overhead clearance of ten feet.
- * The trail's horizontal sight distance shall be a minimum of fifty feet.

* All roads and streams will be crossed at right angles. The minimum sighting distance for varying road-class intersections are as follows:

State and Federal Highways	-	800 feet minimum sight distance
County Roads	-	800 feet minimum sight distance
Local and Forest Service Roads	-	400 feet minimum sight distance.

* Scenic lookouts will be limited to natural vistas.

The actual construction of the trail will be done by DNR crews and by local contractors. However, it is the responsibility of the DNR Trails & Waterways Unit to determine which construction method to use on each section of the trail.

Bridges and Culverts

The North Shore State Trail crosses forty-nine streams and rivers (some more than once) and many wet areas over its length. Some of these crossings are fordable and don't require special site preparation. These crossings must, however, meet the requirements for Non-Permit Water Crossings listed in Appendix D. If it proves necessary to build a bridge or culvert, the structure should be able to support all maintenance vehicles and equipment, as well as snowmobilers and hikers. However, the structures should, under no circumstances, restrict the natural flow of the watercourses. Permits will be required for all bridges and may be required for culverts. All necessary stream crossing permits will be secured from the DNR Division of Waters before construction begins.

Approximately sixty-two bridges will be needed on the state trail, including nine major bridges on the Lester, Gooseberry, Beaver, Poplar, Baptism, Manitou, 9-Mile (Creek), Devils Track and Brule Rivers. Bridges may not have to be built across the Manitou River and 9-Mile

Creek, however, if the county highway bridges can be used. The DNR is currently attempting to negotiate an agreement with Lake County to use these highway bridges.

All bridges should be high enough to not obstruct canoeists on applicable rivers, be at least six feet in width, have side railings, and be able to support a minimum weight load of five tons. In the Superior National Forest, bridges should be able to support a weight load of ten tons, unless the U.S. Forest Service approves an exemption.¹

Three types of crossings will be necessary for the state trail:

- 1) Major bridges will be constructed on the rivers noted above. These bridges will have large spans (50-100 feet), and will be built to withstand periodic flooding.
- 2) Minor bridges will be used on rivers spanning less than fifty feet. These bridges should be built with wood; for spans over twenty feet, the wood should be treated with a preservative. For crossings less than twenty feet, on-site materials may be used. If pre-fabricated bridges prove economically more feasible in certain instances, they may be substituted for wooden structures.
- 3) Culverts may be used on those streams and intermittent creeks that do not need a bridge. Permits may be required.

Storage/Maintenance Structures

Gooseberry Falls State Park presently provides the necessary storage and maintenance facilities for equipment on the southern end of the trail. However, a storage/maintenance structure should also be available at the northern end of the trail. One of the state facilities at Judge C.R. Magney State Park, Cascade River State Park, or the DNR

¹ Plans for bridges to be built in the Superior National Forest should be approved by the U.S. Forest Service prior to construction. The Forest Service will perform final inspection upon completion of construction.

forestry facility at Hoveland may serve this purpose. If, however, space is not available at these facilities, then the DNR may rent a 20' x 40' structure at a location to be determined.

User Facilities

The North Shore State Trail will have parking areas, waysides and shelters spaced along its length. These facilities will serve several purposes: they will insure the safety, rest and comfort of the users; provide access to the trail; and help preserve and interpret the trail's resources.

The exact locations of many of these facilities have not been determined. In selecting the most feasible sites for development, input from federal, state, county and local agencies will be sought.¹ Also, there have been no recent detailed soil surveys along the state trail. Soil suitability studies should be conducted before future facilities are developed. The soil surveys and agency input should minimize soil erosion and compaction, and prevent groundwater contamination from these facilities. Finally, no structure should be erected that is incompatible with the "natural beauty" of the area.

Parking Lots

Parking lots should be located in areas where access is readily available. They should be large enough to support anticipated use. State, county and township roads leading to the parking lots should be capable of handling the anticipated traffic volume safely.

Two types of parking lots are planned for the state trail: major parking areas which can handle all users, and minor parking areas for hikers. Six major parking areas are planned between Duluth and C.R. Magney State Park.² Figures 6-10 show the approximate locations of these parking areas.

¹ The location and design of all these facilities must be approved by the U.S. Forest Service if the facilities are built in the Superior National Forest.

² At least one additional parking site will be built on the Canadian boundary if the trail is built that far.

The major parking areas will be spaced at 15-25 mile intervals along the trail, depending on accessibility of public roads and availability of land. These major lots will be able to accommodate cars and trucks with trailers. A loading/unloading ramp and tie area for horses will be provided. This should satisfy snowmobilers' needs in the winter and horseback riders' needs the rest of the year. The size of each lot and the type of surfacing will depend on the DNR's assessment of expected use and soil conditions. Proper signing and marking of the lot will confine vehicles to the parking area. The major parking areas will also include a trash receptacle and a pit toilet. A vault-type toilet may be required at parking lots on federal land, depending on soil conditions. All parking lots and toilets shall be built in accordance with DNR Bureau of Engineering specifications.

Three major parking lots have already been built along the existing portion of the state trail between Duluth and Finland (see Figures 6-8). The first lot is located 2.5 miles east of the intersection of Normanna and Jean Duluth roads. The next parking lot is located 8.5 miles north of Two Harbors on County State Aid Highway 2. The third parking area is located two miles west of Finland on County Road 701.

Minor parking areas will be provided every five to ten miles in areas judged adequate for hiking. In special areas (e.g., the Alger Grade), the parking areas will be provided as the trail is upgraded. The minor parking areas will simply consist of a widening of the trail right-of-way sufficient enough to provide parking for three to four cars. They will be mowed and marked with posts and signs. Development costs for these areas will be minimal, particularly since no extra land acquisition should be needed. The minor parking areas will not be maintained in the winter months.

In addition to the parking lots being built specifically for the trail, users may eventually be able to park in six state parks with connector trails to the state trail (see Figures 7-10). Use of these parking

facilities, however, is contingent on the Division of Parks and Recreation approval and the construction of the connecting spur trails.

Trail Waysides

Fourteen trail waysides are planned along the North Shore State Trail between Duluth and Judge C.R. Magney State Park.¹ These waysides will be spaced at a maximum distance of ten to twelve miles (see Figures 6-10).² The waysides will be located near water as rules and regulations permit. They will not be located close to roads and parking lots.

Each wayside will have a camping area (the size of which depends on expected use, soil conditions and availability of land), an adirondack-type shelter with a heat reflectorized fire ring, and interpretive materials if appropriate. The initial camping area will consist of no more than a cleared area large enough for one or two tents and a single pit toilet. The shelters are being provided primarily for snowmobilers to use in case of an emergency. The waysides will have signs, brochures or other materials and structures to interpret natural, historic, or scenic points of interest near the trail. Eventually, some of the waysides could be developed to look like the typical shown in Appendix E (page 132).

Five shelters already exist along the trail. They are located at the Sucker River, Knife River, Gooseberry River, Beaver River and the East Branch of the Split Rock River.

Gates

The DNR North Shore Recreation Study and the people who attended the state trail public meetings both cited the problem of not being able

¹ At least three more waysides are planned beyond Judge C.R. Magney State Park and are shown in Figure 10. These waysides will be built if the trail is extended beyond the state park.

² The locations of the waysides in Figures 6-10 have been determined to within one quarter mile.

to effectively control access to the trail. Considering the length of the trail and the number of road crossings, complete access control may never be possible. The key to controlling the type of users and vehicles rests with adequate enforcement (see pages 100-101).

Trail gates can also prevent unauthorized access to or from the trail, although they are not as effective as a vigilant, active enforcement program. Gates may be erected at the intersections of heavily travelled lands to keep motorized vehicle traffic off the trail during snow-free months. Eight locations will have gates, although more gates may be built in the future. The eight locations are:

NWNW, Section 29, T.59N, R.5W
SWNE, Section 9, T.59N, R.5W
SENE, Section 3, T.59N, R.5W
SESW, Section 36, T.60N, R.5W
SENE, Section 33, T.60N, R.4W
NENW, Section 33, T.61N, R.3W
NWSW, Section 27, T.61N, R.3W

If trespass problems are documented, gates will be built adjacent to the trail and across side roads, trails (other than spur trails), and paths to deter trail users from wandering off the trail onto private lands. All of the gates across the state trail will be opened when snow and ice conditions are safe for snowmobiling. Gates across paths and trails leading to private land may remain closed, but the decision is up to the private landowner.

Public input regarding gates indicated that these structures should be as simple and inexpensive as possible. The gates could be a post-and-pipe variety that would be locked and chained open and closed. The DNR supports the idea that efforts to keep particular groups off the trail should be accomplished through better enforcement of the trail and not larger and more elaborate gates and control structures.

Signs

The state trail will follow all state and federal sign regulations pertaining to the trail and its use. All signs will be in accordance with the specifications and regulations set forth in the 6 February 1980 DNR sign manual and the U.S. Forest Service Handbook 7109.11, Section 52.

Several different types of signs will be erected on the state trail.

The DNR will:

- * Use mile markers to show distances between facilities, service areas, waysides and parking areas;
- * Provide free maps at all parking areas, state parks, and manned highway rest areas and information centers;
- * Construct "YOU ARE HERE" map signs at regular intervals along the trail and at major crossings with roads and other maintained trails;
- * Construct informational and interpretive signs at major parking areas to show all pertinent trail information, including all other nearby trails and points of interest.

The DNR will also work with the municipal, county and state highway departments to insure that trail users will have adequate direction through proper signing, to get from the major road systems to the trail.

TRAIL USE

Recreational Use

Based on legislative mandates, the preferences expressed by local residents and trail users, the need for trails as indicated by state-wide DNR data, environmental considerations, and DNR professional opinions, the North Shore State Trail is being developed primarily for snowmobiling and hiking. Backpacking, horseback riding, and hunting will also be permitted on the trail. Bicycling, ski touring and dog sledding will not be encouraged on the trail. The trail will not have a hard surface for bicycling--the cost of surfacing and the landscape makes this prohibitive. Ski tourers and dog sleds could use the trail, but safety considerations make these activities hazardous. Thus, the DNR will not encourage either of these uses--ski tourers and dog sleds will be on the trail at their own risk. If future use warrants it, however, the DNR will reassess the general use of the trail for ski touring and/or dog sledding. The DNR will then consider the possibility of building a separate parallel treadway. Also, for special events (e.g., races) dog sleds and/or ski tourers will be able to use the trail if a permit is obtained from the DNR Commissioner.

It is the DNR's policy that state trails should be physically accessible to all users, whenever this is possible without undue alternation of the landscape.¹ In the case of the North Shore State Trail, the DNR concluded that the cost of surfacing the trail, the hilly, wet landscape, and the linear nature of the trail (with relatively few access points) make it virtually impossible for the entire trail to be handicapped accessible. However, the state parks which the trail connects will probably provide trails which the handicapped and disabled can use. Also, if sufficient demand is expressed, the DNR will consider making segments of the state trail accessible to the handicapped and disabled.

The use of recreational motor vehicles on this trail, except for snowmobiles, is prohibited. Minnesota Regulation NR 20 prohibits off-

¹ See the DNR's workbook, Access for All.

road vehicles (ORVs) on the trail.¹ Furthermore, the number of abandoned roads and trails presently open for ORVs appears to be adequate for these users.

Hunting

Trail rules and regulations state that hunting will be allowed within most of the state trail right-of-way. Minnesota Regulation NR 20(g)(1) states that:

No firearm or bow and arrow shall be discharged within the trail at any time, except for the purpose of lawful hunting during the period from September 15th to March 30th only. No rifle, shotgun with slug, or bow and arrow shall be discharged upon, over or across the trail treadway at any time.

However, the North Shore State Trail will not be completely open to sport hunting. Local ordinances prohibit the discharge of firearms in cities like Duluth. Hunting is also forbidden in the state parks which are connected to the state trail. Finally, there are a couple spots where residences are too close to the trail to permit shooting. In these cases the 1979 "Trespass Law," Minnesota Statutes 100.273, Subdivision 5, would apply:

Subdivision 5. No person shall take any wild animal with a firearm without the written permission of the owner or occupant of the premises on any private agricultural land not his own or any public right-of-way within 500 feet of any stockage or corral containing livestock, nor shall any person take any wild animal with a firearm within 200 feet of any building occupied by a human being on any land other than agricultural land without the oral permission of the owner or occupant of the premises, or within 500 feet of any burning area.

¹ However, there is a problem here in that one part of the trail alignment, the Alger Grade, is designated as a public road. Licensed motor vehicles, such as motorcycles and four-wheel-drive vehicles, cannot be prohibited from public roads. The DNR is working to resolve this problem.

Logging

The North Shore State Trail passes primarily through forested land. Many of these forests are devoted to timber production. Although the state trail is designed for recreational use, the DNR recognizes that special considerations should be given to use of this trail for timber management purposes. Commissioner's Order #7 therefore suspends the NR 20 trail rules and regulations on the North Shore State Trail to allow for this activity.

It is not the DNR's intention to encourage use of any part of the trail for logging equipment. However, in the spirit of cooperation for this area, if the forest unit manager determines other access alternatives are economically unfeasible, use of the treadway as a logging road may be permitted under the following conditions:

- 1) The agency or landowner wishing to use the trail in the sale of forest products must have permission through the forest unit manager.
- 2) The agency owning the timber prior to its sale to a logger is responsible for seeing that the main trail treadway is restored to its original conditions.
- 3) All landing or loading operations be handled off the main treadway. No equipment should be parked or stored along main treadway.
- 4) The forest unit manager must advise the DNR, Trails and Waterways Unit, at least 30 days in advance, of the location and extent of all logging activities planned in the area of the trail.
- 5) Warning signs will be placed along affected areas of the trail cautioning trail users of the presence of logging equipment and vehicles. The signs will be made available

by the DNR. However, the initial and continued placement of the signs on the trail during the actual logging operations will be the loggers' responsibility.

- 6) If the forest unit manager determines that logging equipment would be detrimental to the trail (e.g., areas with fragile soils), the manager may limit logging to a specific time of the year (such as winter when the ground is frozen).
- 7) Interpretive signing will be carried out on the trail in those areas that have been logged. This will be the responsibility of the DNR.

As explained in #6 above, it may be necessary to restrict logging operations to certain times of the year. That determination will be made by the controlling agency's forester responsible for the management of the land. All conditions relative to the logger should be put into the logging sales contract.

RESOURCE MANAGEMENT

Soils

Soil resources should be carefully managed to maintain adequate ground cover, and to prevent or minimize soil erosion, ground compaction, and ground water contamination. The soils in an area may limit the extent or location of development along the trail. Therefore, a detailed soil survey should be conducted before any major facilities, such as pit toilets, shelters, and parking areas, are developed.

In areas where erosion is a problem, or likely to become a problem, natural erosion-control techniques, such as restoration and maintenance of adequate ground cover, should be considered first. Where natural erosion control techniques are not feasible, the following techniques should be used:

Rip-Rap: Involves placing assorted size rocks or boulders on a steep slope to stabilize the bank. The rocks slow erosion, enabling vegetation to establish a rooting system. The rocks used will consist mainly of those disturbed during trail construction. These areas may be seeded if deemed necessary.

Water Bars: Involves the use of smaller logs (DBH of 4"-6") to direct and slow down water runoff. Special care should be taken so as not to impede movement of summer and winter maintenance vehicles.

Retaining Walls: Involves using a structure consisting of larger logs or railroad ties to support a steep slope or bank.

Corduroy: Involves laying logs or railroad ties either side by side or lengthwise along the trail corridor. In most cases where corduroy is used to route hikers across wet areas,

lengthwise placement of large cedar or tamarack logs laid end to end in sets of two is sufficient. This material should be available at or near most problem areas.

Culverts: Culverts will be used to insure proper channeling of trail-related drainage systems. For example, those low areas on the trail that are consistently wet from year to year will require a culvert (or series of culverts) and additional fill. This type of water-control facility has been used successfully on existing sections of the North Shore State Trail.

It is hoped, however, that these artificial control structures will be used sparingly, since they detract from the natural qualities of the area.

Vegetation

The re-establishment of vegetation and selective tree cutting will be the two primary management actions taken on the state trail. The re-establishment of vegetation will be necessary in areas of soil disturbance. The exposed soils of the treadway will be planted with a wildlife seed mixture, possibly consisting of red fescue perennial rye grass, red top clover, kentucky bluegrass and dutch white clover.

All other areas of the trail right-of-way that have been disturbed or altered during construction will be left alone to let the forest revegetate on its own. Special care should be taken to keep these temporarily sensitive areas from eroding until the new vegetation becomes established.

Coniferous shrubs and trees, such as pine, spruce and cedar, should be planted along the trail in spots to screen buildings, roads and other developments. Vegetation can also be planted to keep users in the right-of-way, to help retain adequate snow cover, and to enhance the

user experience. Trees and shrubs can be obtained from the DNR Division of Forestry, and should be used to reduce development costs.

Selective tree cutting will also be required on the trail. All trees which pose a hazard to trail users will be removed. Furthermore, standing dead trees which pose a potential hazard along the trail will be removed--these dead trees can blow down and obstruct the trail.

Water

Several actions will be taken to prevent water pollution. The erosion control methods outlined above should help prevent pollution of surrounding surface and ground-water resources. Stream crossings and drainage facilities will be designed to maintain the water quality of lakes and streams. The trail interpretive program will help educate visitors and prevent water pollution. Finally, the DNR will monitor developments on and adjacent to the trail to insure that they are built and maintained in accordance with federal, state and county regulations.

Wildlife

Proper vegetative management should have a positive effect on many species of wildlife. In particular, the wildlife seed mixture planted on the treadway should attract seed eaters and browsers. Brushpiles created by the removal of vegetation should remain in the right-of-way to help sustain a variety of species.

INTERPRETATION

Theme

Knowledge of an area's human and natural history adds interest, color and character to the recreational experience. There are many significant historic and natural sites along the North Shore State Trail. The list of sites on pages 27-34 could all be interpreted. Based on these sites, the historical theme of the trail will be divided into two parts. The interpretive program for the southern half of the trail, from Duluth to Cross River, will focus on the history of the railroads crossed by the trail. The program for the northern half of the trail will focus on fur trapping, lumbering, voyageur and Indian history. Both historical themes should be integrated with the North Shore's natural resources and scenic points--the area history should be used to bring the lakes, streams, geology, forest communities and other interpretive features into perspective for the trail user.

The list of sites on pages 27-34 is not a complete inventory of all the significant sites which occur along the trail. Therefore, the Trails and Waterways Unit staff should work closely with the regional naturalist to identify and interpret other significant sites, such as extraordinary land forms, waterfalls, rapids, scenic forests, logging camps and mills, beaver dams, Indian cultural sites, and abandoned towns and mines.

In addition to educating visitors about the natural and historic environment, the interpretive program should educate trail users about the management of the trail, conflicts which occur, and problems which individuals can help to eliminate (e.g., litter, trespassing). Users should be kept aware that the North Shore State Trail is their trail, and their help is essential in managing and maintaining the trail.

Methods

At least three different methods can be used to develop the trail theme for the user: (1) interpretive signing; (2) self-guiding brochures; and (3) guided tours by a DNR naturalist. Resources which are easily

destroyed or damaged, however, should not be interpreted--bringing these fragile resources to the attention of users may invite damage.

Signs are valuable interpretive tools because they identify for the user the immediate site of interest. Since this is a multiple-use trail, signs and sign placement should be designed to serve users who are travelling at different speeds. Information panels located at waysides and parking areas could help to supplement the interpretive program also.

A self-guiding method of interpretation should include site-specific trail maps with descriptions of the cultural or natural significance of each interpretive site. An illustrated brochure could serve as the standard trail guide, covering in detail the highlights of each trail segment. These brochures could be distributed to trail user groups, schools, tourist information centers, area chambers of commerce, community information centers, youth centers, and churches. Brochures should also be available at major access points and waysides.

Guided tours by DNR naturalists could be conducted on the trail, but only on the basis of demand. Schools could benefit greatly from this method of interpretation by using the trail right-of-way as an outdoor classroom.

The DNR Bureau of Information and Education can also help promote and interpret the state trail. Periodic news releases and features distributed through the local media will help to increase public awareness of the trail and what it has to offer.

The state park staff and the state trail staff should work together to develop and provide complementary interpretive programs. The park and trail interpretive programs should be related in such a way that they present only a subtle transition for the user of both facilities.

MAINTENANCE

The quality of the North Shore State Trail will largely depend on the maintenance it receives. Indeed, trail maintenance is just as important as trail acquisition and development. It includes such activities as treadway stabilization, winter grooming, facility upkeep, sign replacement, fencing mowing and weed control. Many of the actions listed in the resource management section (soils, vegetation, water and wildlife management) will also have to be undertaken on a regular basis. However, the effects of a good maintenance program are not limited to the physical and biological features of the trail:

- 1) Good maintenance is an effective way of helping advertise and promote the trail as a state recreational unit (word-of-mouth advertising is best);
- 2) The psychological effect of good maintenance can be an effective deterrent to vandalism, litter and encroachment;
- 3) Good maintenance can create positive public relations between the adjacent landowner and the Department of Natural Resources; and
- 4) Good maintenance can help make enforcement of the trail more efficient. Local clubs and interest groups will take pride in "their" trail and will be more apt to assist in the protection of this recreational facility.

Thus, an effective trail maintenance program is essential if the DNR is to achieve its goal for the North Shore State Trail.

Treadway

Regeneration of vegetation on the treadway will necessitate mowing along most of the trail. Mowing the trail once each July, with a tractor-pulled four-to-six-foot-wide flail mower, should suffice.

Brushing will also be done as required to provide safe, unrestricted travel by hikers, horseback riders, and snowmobilers. No heavy equipment, however, shall be used for the light brushing required.

Erosion control is a must along the trail. Checks for erosion should be made monthly during other regular maintenance activities on the trail. While it is hoped that most soil disruptions can be controlled by effective vegetative management control techniques, some artificial erosion control methods may be required (see pages 77-78). In some areas, equestrian overuse may dictate closing sections of the trail. Similarly, overuse of camping areas may necessitate closing or relocating camping sites.

Wet areas and areas with unstable soils need to be inspected regularly, preferably once in the spring and once in the summer. In wet areas, where a drier separate treadway for hikers and horseback riders is not built, it may be necessary to maintain corduroy. The corduroy need not be elaborate, but will still need additional logs from time to time. This corduroy should be installed in the spring, as soon as possible after the high waters recede.

Beaver dams will be a problem in certain areas of the trail. These dams will have to be removed by blasting. Local contractors will generally be hired to do the blasting. Contracts between the DNR and private firms or individuals will be in accordance with all pertinent federal, state and county rules and regulations, and must be approved in writing by the local DNR conservation officer. If a local contractor is not employed, the conservation officer will be responsible for blasting the dam. Funding for this type of work should be included in all future maintenance requests.

Weed Control

Since there is a minimal amount of agricultural land near the state trail, weeds should not be a problem. Initial treadway construction

procedures include a twelve-to-fourteen-foot-wide corridor in which all vegetation is removed. The exposed soil is then seeded to a perennial wildlife mixture (see page 71). Therefore, regular mowing should suffice to control weeds on the trail.

Winter Grooming

Proper grooming during the winter is crucial on the North Shore State Trail. Grooming will be limited to the main trail and spur trails into the state parks. Trails to private service areas will not be groomed by the DNR; local groups or clubs should groom these trails. Grooming should generally commence after a minimum of six inches of snow covers the treadway, and as needed thereafter. Semi-weekly grooming during the peak use months is recommended.

The equipment necessary to adequately groom the trail will vary with trail conditions. For instance, the ideal grooming equipment for an abandoned highway or railroad right-of-way may be less than adequate in those areas with steep hills and sharp turns. If state equipment is determined to be inadequate for any significant segment of trail, a private contract shall be secured to groom the trail more effectively.

Grooming will be the responsibility of the DNR Trails & Waterways Unit, and will be done by local contractors and/or DNR personnel. If state equipment is used, a back-up local contract should be secured to cover those times when mechanical breakdowns occur or use levels warrant extra grooming. These back-up contracts should insure proper grooming on a continuous basis.

Bridges

The DNR expects that some of the bridges will need to be put back in place each spring after high water. It is the responsibility of the DNR to repair or replace all structures which cross water on the trail. All water crossings must be inspected once in the fall before heavy snowfall and once in the spring after spring runoff.

User Facility Upkeep

Toilets, fire rings, shelters and camping sites will all need periodic attention. Toilets will need to be cleaned, repaired, replaced and relocated from time to time. Periodic emptying of vault toilets will also be required.

Brush cutting or mowing in and around camping areas and shelters should be done once during the summer.

The DNR will not provide firewood at the shelters. However, local clubs and organizations can provide firewood during the winter.

Refuse

Litter along the trail right-of-way will be removed by state maintenance crews or by refuse collectors contracted by the state. Litter receptacles should be placed at all major parking areas. Garbage and litter removal should be done in the spring and fall in all areas accessible to maintenance vehicles, and year-round at the major parking areas. If summer maintenance vehicles cannot gain access to certain segments of the trail, then refuse should be removed in the winter, possibly as the trail is being groomed.

Fencing

Fencing should not be a major development or maintenance problem, given the trail's present alignment. However, a land use agreement negotiated between the DNR and the University of Minnesota calls for a fence on the University's research lands (Section 25, T.51N, R.14W). The DNR will erect and maintain a six foot woven wire fence in this area.

If fencing problems do arise in the future, the DNR may absorb up to one-half the cost of building and maintaining the fence(s). The DNR and adjacent landowners must, however, sign an agreement which describes their duties and responsibilities for the construction and maintenance of the fence(s). If the fence(s) is needed to protect the property of the state and/or trail users, the DNR will construct

its share of the fence and act under Minnesota Statutes 344 to require the adjacent property owner to construct their share of the fence(s).

Signs and Publicity

Maintaining a good system of direction, information, regulatory, and boundary signs is important for users to safely enjoy the trail. All of the trail's signs will be inspected once in the spring, once in the fall, and continuously during grooming months. Sign repair or replacement should be completed at the time of inspection. This will require the groomer-operator to carry signing supplies on the groomer.

Publicity and dissemination of information through the use of maps and brochures is also important for trail management and for users to appreciate the trail. Free maps and brochures will be provided at all of the trail parking areas, at all state parks, manned highway rest areas, and information centers along the North Shore, at the DNR forestry offices in Duluth, Two Harbors, Finland, Grand Marais, and Hoveland, and at the Superior National Forest offices in Duluth, Two Harbors, Grand Marais, and Tofte. Funding for updating, reprinting, and distributing information on the state trail should be included in the annual maintenance requests for the trail.

ENFORCEMENT

An effective enforcement program is necessary for citizens to have a safe and enjoyable trail experience. Thus, enforcement will play a major role in all phases of trail management. To establish safe use of trails, a common sense approach will be used in enforcing trail rules and regulations.

The State of Minnesota has specific rules and regulations which govern the use of state recreational trails (Minnesota Regulation NR 20). These rules and regulations will be posted conspicuously at accesses, waysides and at other necessary locations on the trail. Trail brochures and meetings with trail user groups will also help inform users of the regulations.

Enforcement of regulation NR 20 is the responsibility of the DNR conservation officers in cooperation with local law enforcement agencies. The sheriff's office in each county along the trail will be asked to aid in control of trail use. Funds are available from the DNR Enforcement Division to assist local enforcement agencies in equipping themselves for trail patrol. Adjacent landowners and trail users are encouraged to report violations to either the local DNR conservation officer or sheriff.

The following law enforcement methods can be used to supplement the actions of conservation officers:

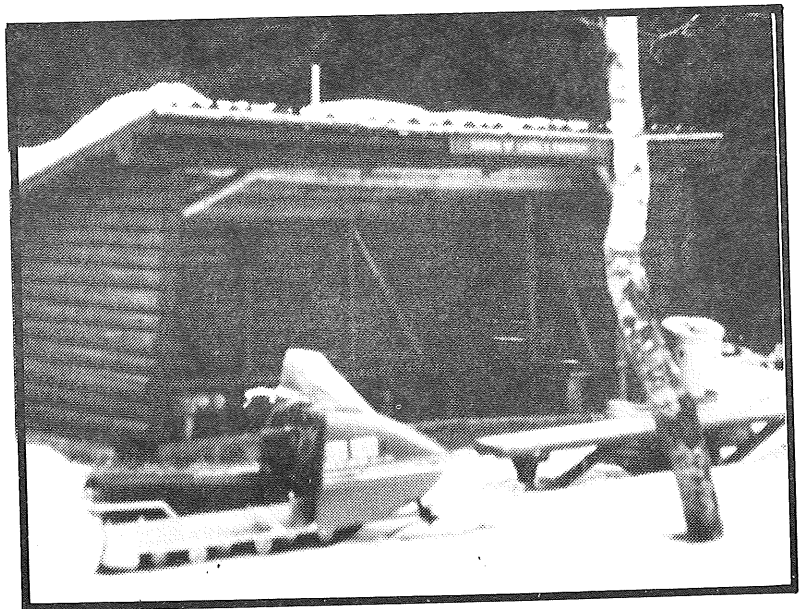
- 1) Minnesota Statutes 1973, Chapter 64B, authorizes payment of grants-in-aid money to local units of government to assist in the enforcement of laws pertaining to snowmobile use. County boards in several counties have already applied for such assistance.
- 2) Minnesota Statutes 1976, Chapter 84, Section 84.029, authorizes each DNR employee "while engaged in his

employment in connection with such recreational areas,
has and possesses the authority and power of a peace
officer when so designated by the commissioner."

Classroom training through the DNR Enforcement Division or Bureau of
Criminal Apprehension is suggested to acquaint employees with
appropriate methods and actions of peace officers.

- 3) DNR Interim Operational Order #21 gives DNR employees, while
engaged in their employment, the authority to write
infractions of the rules and regulations on Conservation
Officer Form #145. Such a report is admissible in court
as court evidence. Employees doing this must witness the
violation and are advised to understand the constitutional
rights of individuals.

IMPLEMENTATION



Implementation of the proposed actions in this plan will depend upon the availability of funds and personnel (which in turn depends upon the support of the public and trail users), and upon the coordination of many governmental units' activities. These factors will determine the extent of development, management, and maintenance the trail receives in any given year.

DNR Personnel Requirements

The North Shore State Trail will run for approximately two hundred miles when completed. The maintenance, interpretation, resource management, and other tasks on such a long trail necessitates the hiring of additional staff. Therefore, a Natural Resources (NR) Specialist I, Trail Manager, should be assigned to the state trail. The primary duties of this position will be to regulate trail use and to maintain the trail (see below). It is imperative that the trail manager also have an assistant during the winter months. A nine-month seasonal laborer should be assigned under the trail manager. Both the trail manager and seasonal laborer should, if possible, work out of Gooseberry State Park.

Estimated Costs

Tables 6 and 7 list the estimated costs of developing and maintaining the North Shore State Trail. Development costs are listed in phases, according to priority, while maintenance costs are listed by fiscal year. The total cost of developing the state trail is estimated at \$1,516,700.¹ Three major costs are included under this total cost: treadway development, bridges, and support facilities.

The treadway development costs in Table 6 include tree and brush removal, bulldozing of stumps, leveling of the treadway, seeding of clover and tree pruning. The estimated cost of these activities is expected to total \$703,000.²

¹ The following figures are in 1979 dollars. The total development cost figure assumes that the DNR will have to build all of the bridges on the trail, and that the trail is extended across the Grand Portage Indian Reservation to the Canadian border. The total does not include the cost of building bridges on the spur trails, or the cost of extending the U.S. Forest Service's North Shore Hiking Trail beyond Cross River State Wayside and/or Cascade River State Park.

² Again assuming that the trail is built to the Canadian border.

TABLE 6. NORTH SHORE STATE TRAIL DEVELOPMENT COSTS⁺

Treadway Construction	Bridges	Signs and Posts	Major Parking Areas	Waysides	Shelters
<u>PHASE 1</u>					
Martin Road (Duluth) to Normanna Road 12 miles \$30,000	6 crossings including one major bridge on the Lester River \$85,000	\$ 1,200	1@ \$5,000	1@ \$2,000	1@ \$2,000
Upgrade trail from Normanna Road to Finland 50 miles \$25,000	27 crossings including two major bridges on the Gooseberry and Beaver Rivers \$240,000	\$ 5,000		6@ \$12,000	Update 5 shelters (@ \$500/ea.) and one new shelter \$4,500
Finland to Cross River Road 35 miles \$140,000	11 crossings including three major bridges on the Baptism and Manitou rivers and Nine-Mile Creek \$160,000 [#]	\$ 3,500		3@ \$ 6,000	3@ \$ 6,000
Spur trails to Gooseberry Falls, Split Rock Light- house, Tettegouche, and George Crosby Manitou state parks 14 miles \$35,000	*	\$ 1,400			
Subtotals:					
\$230,000	\$485,000*	\$11,100	\$ 5,000	\$20,000	\$12,500
<u>PHASE 2</u>					
Cross River Road to Honeymoon Trail 40 miles \$208,000	7 crossings including one major bridge on the Poplar River \$75,000	\$ 4,000	1@ \$ 5,000	1@ \$ 2,000	1@ \$ 2,000

+ Figures are in 1979 dollars. Mileages cited are approximate.

This figure assumes the DNR will have to build bridges on the Manitou River and Nine-Mile Creek. If the two county highway bridges can be utilized, this cost will be substantially reduced.

* No estimates have been made on the number of bridges, or costs, for the spur trails. However, most of the spur trails will have a couple minor bridges; the spur to Gooseberry State Park will have one major bridge on the Skunk Creek, while the spur to Split Rock State Park may have a couple major bridges.

TABLE 6. (continued)

Treadway Construction	Bridges	Signs and Posts	Major Parking Areas	Waysides	Shelters
Honeymoon Trail to Pike Lake Road 12 miles \$48,000	2 crossings \$10,000	\$ 1,200		1@ \$ 2,000	1@ \$ 2,000
Pike Lake Road to Monker Lake 9 miles (Completed)	---	\$ 900	1@ \$ 5,000	1@ \$ 2,000	1@ \$ 2,000
Spur trails to Cross River Wayside and Cascade River State Park 18 miles \$25,000	*	\$ 1,000			
Two connections from Barker Lake & Cascade River State Park to the U.S. Forest Service Superior Hiking Trail 6 miles \$18,000	+	\$ 600			
Subtotals:					
\$299,000	\$85,000 ⁺	\$ 7,700	\$10,000	\$ 6,000	\$ 6,000

PHASE 3

Monker Lake to Judge C.R. Magney State Park 14 miles \$54,000	Monker Lake to the Canadian border: 14 crossings including major bridges on the Devils Track and Brule Rivers \$140,000*	\$ 1,400		1 @ \$2,000	1 @ \$2,000
Judge C.R. Magney State Park to the Canadian border 30 miles \$120,000**		\$ 3,000**	1@ \$ 5,000**	3@ \$ 6,000**	3@ \$ 6,000**

* No estimates have been made on the number of bridges, or costs, for the spur trails. However, most of the spur trails will have a couple minor bridges; the spur to Gooseberry State Park will have one major bridge on the Skunk Creek, while the spur to Split Rock State Park may have a couple major bridges.

+ No estimates have been made on the number of bridges, or costs, for the spur trails. However, most of the spur trails will require a couple of minor bridges.

** These costs are assuming the state trail is extended across the Grand Portage Indian Reservation to the Canadian border. If the trail is not extended across the Reservation, then either the trail will end at Judge C.R. Magney State Park, or a hiking only trail will be developed to connect Judge C.R. Magney State Park with the Border Route Trail. The above costs will then be substantially modified.

TABLE 6. (continued)

Treadway Construction	Bridges	Signs and Posts	Major Parking Areas	Waysides	Shelters
Subtotals:					
\$174,000**	\$140,000**	\$ 4,400**	\$ 5,000**	\$ 8,000**	\$ 8,000**

PHASE 4

Extend the Superior Hiking Trail north of Cascade River State Park
and/or south of Cross River State Wayside.#

Total
Development
Cost for
Phases 1-3:

\$703,000**	\$710,000**+	\$23,200**	\$20,000**	\$34,000**	\$26,500**
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GRAND TOTAL DEVELOPMENT COST (PHASES 1-3): \$ 1,516,700**

** These costs are assuming the state trail is extended across the Grand Portage Indian Reservation to the Canadian border. If the trail is not extended across the Reservation, then either the trail will end at Judge C.R. Magney State Park, or a hiking only trail will be developed to connect Judge C.R. Magney State Park with the Border Route Trail. The above costs will then be substantially modified.

The development costs for Phase 4 (treadway construction, bridges, etc.) have not been determined by the DNR. If Phase 4 is implemented, work will not begin on the trail until at least 1989. Future revisions of this plan will consider this development phase more thoroughly.

+ No estimates have been made on the number of bridges, or costs, for the spur trails. However, most of the spur trails will require a couple of minor bridges.

Bridges will be one of the major costs of the state trail. Stream crossings will be accomplished either by an engineered or natural bridge, or culvert.

Approximately sixty-two crossings will be required on the main treadway, if the entire trail is built, at a cost of about \$710,000. Additional bridges, and funds, will be needed on the spur trails. Various types of signs and posts will be erected on the trail. The total estimated cost is \$23,200.

The support facilities include the waysides, parking areas and shelters. The estimated cost of these facilities is \$80,500.

The maintenance costs in Table 7 are self-explanatory.¹ If it becomes necessary to rent space for a maintenance/storage facility, then the maintenance cost will increase by roughly \$2,400 per year. No request for large grooming equipment is included in the table. Presently a Bombardier SV 301 and a tractable drag are assigned to the North Shore State Trail. This equipment should be capable of grooming the trail for at least another four to five years. At some future time it may become necessary to purchase another groomer and drag. It is imperative that at least one groomer and drag be assigned to the trail, and functioning, at all times.

Resource 2000² funds will be requested to pay for the above development costs, while DNR general funds will be requested for personnel, equipment and maintenance costs. Resource 2000 and general funds will both be requested to pay for resource management activities.

DNR Trails and Waterways Unit and Regional Staff Responsibilities

The DNR Trails and Waterways Unit and the regional staff are primarily responsible for the planning and operation of the state trail. The overall responsibilities and duties for the existing regional and St. Paul staff (as of 2/80) are listed in Table 8. These guidelines will change if additional trail staff can be hired--some of the duties and

¹The maintenance costs in Table 7 are expected to be relatively constant for the ten-year planning period (except for inflation).

²A Minnesota state bonding program designed for the acquisition of lands administered by the Minnesota DNR.

TABLE 7. TRAIL MAINTENANCE COSTS*

	<u>1980</u>	<u>1981</u>	<u>1982</u>	→	<u>1989</u>
<u>Personnel</u>					
Trail Manager (NR Spec. 1; 12 mo.)	\$16,000	\$16,000	\$16,000	→	\$16,000
Trail Laborer (Seasonal; 9 mo.)	\$	\$10,000	\$10,000	→	\$10,000
<u>Equipment</u>					
1 ton 4-wheel drive pick-up with 5th wheel and plow	\$15,000				\$15,000
Handtools for development and maintenance	\$ 2,000				\$ 2,000
Snowmobiles (2)	\$ 4,000				\$ 4,000
1 small groomer/year-round maintenance vehicle	\$10,000				
1 8-ton winch	\$ 2,000				
Radio unit for groomer and truck plus receiver	\$ 5,000				
<u>Other Costs</u>					
Brochures and maps	\$ 5,000	\$ 5,000	\$ 5,000	→	\$ 5,000
Signs and Posts Replacement (15%/year)	\$ 1,000	\$ 2,000	\$ 2,000	→	\$ 2,000
<hr/>					
TOTAL	\$60,000 ⁺	\$33,000 ⁺	\$33,000 ⁺	...	\$51,000 ⁺

* Figures are in 1979 dollars

+ These totals do not include adjustments for inflation, rental space for a storage/maintenance structure (if required on the north end of the trail), or annual maintenance costs required for grooming, brushing, beaver dam removal, facility upkeep and repair. Approximately \$250/mile/year should be allocated for the annual maintenance costs, although winter grooming will vary considerably with local conditions.

TABLE 8. TRAILS AND WATERWAYS AND REGIONAL STAFF
DUTIES AND RESPONSIBILITIES

D E V E L O P M E N T

<u>Regional Staff</u>	<u>Saint Paul (Operations)</u>
1. Review master plan	1. Ensure compliance with master plan
2. Originate project proposals	2. Review project proposals
3. Originate budget request	3. Review and approve budget request
4. Prepare engineering request	4. Review and process engineering request
5. Initiate equipment request	5. Review and process equipment request
6. Initiate all requisitions	6. Process requisitions
7. Submit work schedule	7. Review and approve work schedule
8. Prepare constructs for development work	8. Process approved contracts
9. Inspect trails development	9. Monitor trail development
10. Hire laborers and foremen	10. Review labor budget
11. Submit recommendations for development manual	11. Review and print manual
12. Submit any changes or recommendations on trail maps	12. Complete changes for map
13. Submit monthly report on accomplishments	13. Review accomplishments
14. Plan and attend public trail meetings	14. Monitor certain meetings
15. Initiate request for Master Plan modification	
	<u>Saint Paul (Planning)</u>
	15. Review and process all changes to Master Plan
	16. Monitor development to improve planning process.

M A I N T E N A N C E

<u>Regional Staff</u>	<u>Saint Paul (Operations)</u>
1. Prepare project proposals and budgets	1. Review proposals and allocate funds
2. Hire local laborers	2. Review labor budget
3. Initiate bids for maintenance	3. Review bids for maintenance
4. Inspect maintenance job	4. Monitor maintenance jobs
	<u>Saint Paul (Planning)</u>
	5. Monitor maintenance to improve planning process.

T R A I L A C Q U I S I T I O N

<u>Regional Staff</u>	<u>Saint Paul (Operations)</u>
1. Originate project proposals	1. Establish trail acquisition priorities
2. Prepare fact sheets	2. Review and number parcels
3. Prepare lease forms	3. Review and coordinate with land unit
4. Assist land appraisers and negotiators when requested	4. Review with legal staff
5. Assist in engineering surveys	5. Review all changes made in land alignments
6. Prepare changes in map when needed	6. Finalize maps and submit for printing
7. Submit monthly report	7. Review monthly reports
8. Attend public meetings on acquisition	8. Monitor acquisition meetings
	<u>Saint Paul (Planning)</u>
	9. Hold public hearings on land acquisition for completed plans

responsibilities listed under the regional staff will be transferred to the trail manager. Specifically, the trail manager will:

1. Seek the assistance of the regional trails coordinator in the resolution of any major implementation problems.
2. Consult the regional trails coordinator if uncertain, concerned, or opposed to the 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 master plan.
4. Maintain records on the development of specific items in this plan to assure future continuity and to provide reference for updating and revisions.
5. Coordinate with the regional trails coordinator in initiating project proposals to be submitted to the Trails and Waterways Unit for review and approval.
6. Submit to the regional trails coordinator information to aid in updating the plan, and recommendations to revise the plan.

Coordination

Although the Trails and Waterways Unit and the regional staff will have the primary responsibility for the state trail, many other governmental units will be involved, in varying degrees, in implementing the trail plan. The Trails and Waterways Unit and regional staff will need to work with several other divisions, bureaus, and sections in the DNR. Since the trail connects with seven state parks and one state wayside, the coordination between park and trail staff is particularly important. The parks provide a convenient access to the trail and also serve as destinations for trail users. Park and trail facilities and programs should complement each other. Park and trail personnel should work together to consider and/or plan: trail interpretive programs; snow-mobiles and horseback riding in the parks; use of park facilities (e.g., parking, camping, park trails, space for trail staff); maintenance and enforcement on those trail segments which enter the parks.

Several other DNR divisions, bureaus, and sections are also involved in planning and operating the trail. The Enforcement Division will be enforcing state laws, rules and regulations applicable to the trail. The Bureau of Engineering will be involved in developing specifications for the trail and its facilities, and in building the trail. The Bureau of Information and Education can assist in promoting the trail. The Land Bureau is concerned with the acquisitions necessary for the trail. Permits will have to be obtained from the Division of Waters to build bridges and possibly culverts. The Forestry Division may provide trees to plant on the trail. The Fish and Wildlife Division, the Office of Planning and Research, the Scientific and Natural Areas Section, and the National Heritage Program may also be occasionally involved with the implementation of the trail plan.

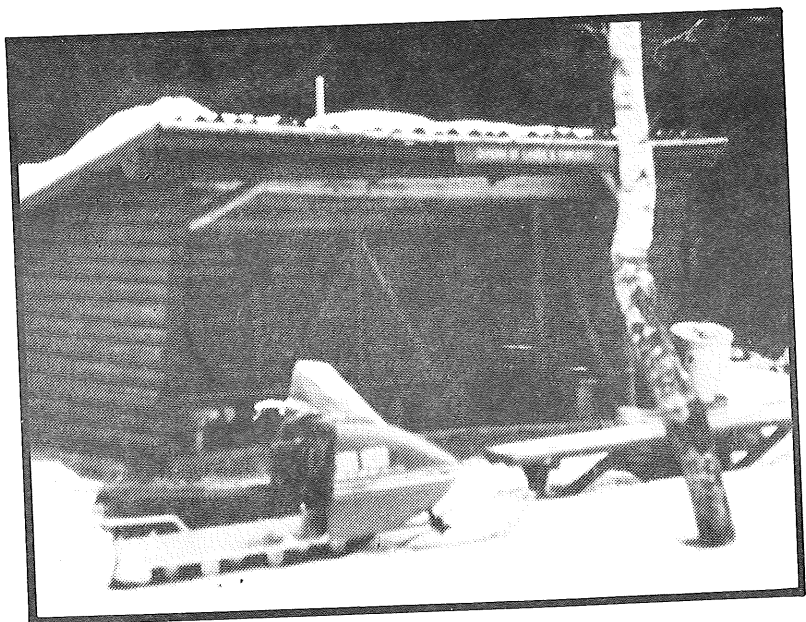
The DNR will need to coordinate its actions with the Minnesota Historical Society, Minnesota Department of Transportation (Mn/DOT) and State Planning Agency (SPA). The historical society will be involved with historical sites which occur along the trail. For instance, the agency could conduct a survey to determine if any archaeological sites exist here. DNR and Mn/DOT personnel should work together to insure that signs are posted on the state highways to direct users to the trail. Also, if the U.S. Highway 61 alignment is changed, the DNR will have to work with Mn/DOT to determine how the trail will be affected. Under the provisions of the Outdoor Recreation Act, the State Planning Agency must review and approve this plan before it can be implemented. The agency may also be involved with modifying the plan (see page 122).

At the federal level the DNR will be working closely with the U.S. Forest Service (USFS). Since the North Shore State Trail passes through a long strip of the Superior National Forest, the DNR and the USFS have signed a cooperative agreement covering the design, location, construction, management and maintenance of the trail and its support facilities (see Appendix C). This cooperative agreement will be revised as the need arises. The DNR and the USFS will develop a work

plan annually which specifies trail maintenance and construction responsibilities for each agency. The DNR will also work with the USFS to connect the Superior Hiking Trail to the state trail, and possibly to extend the federal trail.

At the local level the DNR will work with the counties (St. Louis, Lake and Cook), townships and municipalities which the trail traverses. The DNR will need to coordinate enforcement activities with the local law enforcement agencies. Local governmental units will be encouraged to publicize the trail. The DNR will work with local highway departments to insure that the county, township and municipal roads which cross the trail are adequately signed. The DNR and Lake County will need to come to an agreement on the development, use, and maintenance of the Alger Grade right-of-way, if that segment is to adequately meet the needs of trail users. The DNR will also seek an agreement with Lake County to use the county highway bridges over the Manitou River and Nine-Mile Creek. Finally, the DNR will need to work with all of the local governmental units to resolve problems which arise as a consequence of the trail.

EVALUATION



The preceding pages have described the actions which are presently considered necessary to guide the future development and management direction of the North Shore State Trail. However, trail conditions, user populations, technology, landowners, land uses, and other management considerations change with time--often in unforeseen ways. Also, problems may need to be addressed in the implementation of the plan. It is therefore important to periodically review and evaluate the plan. The evaluation will enable managers, legislators, users and other interested parties to determine how effectively and efficiently the trail is being managed. The evaluation will address such questions as whether use needs are being met, and whether the Superior Hiking Trail should be extended. Based on the results of the evaluations, changes in the plan's goal, guidelines, and actions may be instituted.

Public Input

Public input is an important part of evaluation. Indeed, the public is constantly evaluating the trail and its managers. The users and adjacent landowners are particularly important evaluators. These groups are the two most interested in the trail. The evaluation these groups give the trail will largely determine whether or not the trail is used.

To enable users and landowners to voice their frustrations, problems, insights, and general comments, periodic meetings should be held--perhaps once per year. Comment cards and surveys can also be used to solicit comments for evaluation purposes. By encouraging citizens to voice their concerns, the DNR is acknowledging the importance of continuing citizen input in the management of the trail.

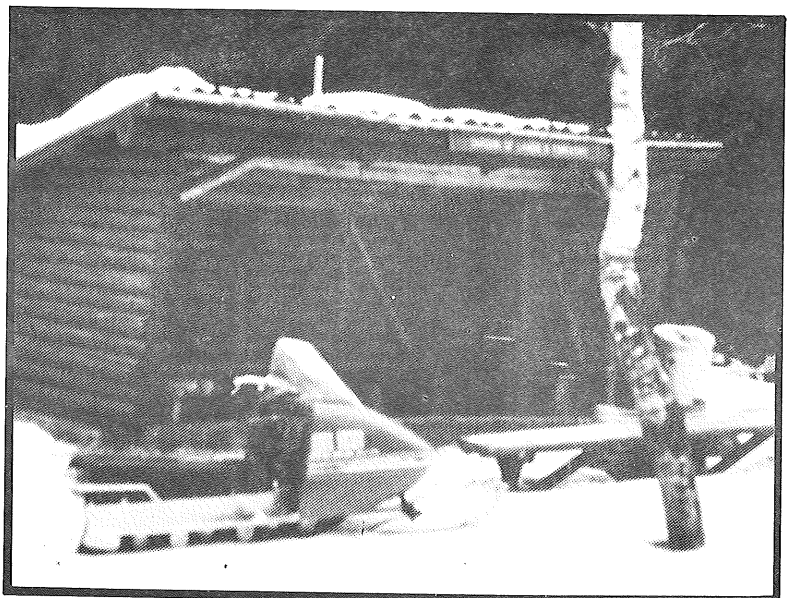
Provisions for Modifications

Managers, users, landowners, and other interested parties will eventually propose changes in the trail plan. Proposed changes must be sent to the Trails and Waterways Unit in St. Paul. These proposals will be reviewed by both the trail operations and planning sections. When agreement is reached, the trail planning section will draft the changes

for the Special Assistant to the Commissioner assigned to the Trails and Waterways Unit.

The entire plan should be thoroughly reviewed and updated every ten years by the Trails and Waterways Unit Planning Section. Public comments, DNR staff recommendations, and trail studies should all be utilized in these reviews. If major changes are proposed for the trail, such as changes in the trail goal or actions which will significantly affect the trail alignment or management, then the same procedures used to develop the plan should be followed: public meetings, in-house DNR review, and State Planning Agency review should all be sought.

APPENDIX



A. DNR STATE TRAILS

<u>Trail</u>	<u>Authorization</u>
Minnesota Valley	1969
Casey Jones	1971
Countryview	1971
Douglas	1971
Glacial Lakes	1971
Root River	1971
Sakatah Singing Hills	1971
Luce Line	1973
Minnesota-Wisconsin Boundary Trail	1973
Heartland	1974
Taconite	1974
Grand Marais to International Falls	1975
North Shore	1975

B. THE MINNESOTA OUTDOOR RECREATION ACT OF 1975
(selected portions)

Minnesota Statutes 86A.09 OUTDOOR RECREATION SYSTEM

86A.09. DEVELOPMENT AND ESTABLISHMENT OF UNITS. Subdivision 1. Master plan required. No construction of new facilities or other development of an authorized unit, other than repairs and maintenance, shall commence until the managing agency has prepared and submitted to the state planning agency and the state planning agency has reviewed, pursuant to this section, a master plan for administration of the unit in conformity with this section. This requirement shall not apply to an existing unit until August 1, 1977. No master plan is required for wildlife management areas that do not have resident managers, for water access sites, or for rest areas.

Subd. 2. Master plan; preparation and content. The managing agency shall supervise preparation of the master plan and shall utilize the professional staffs of any agency of the state when the expertise of the staff of such agency is necessary to adequately prepare the master plan; the master plan shall present the information in a format and detail that is appropriate to the size and complexity of the authorized unit. When the master plan has been completed the managing agency shall announce to the public in a manner reasonably designed to inform interested persons that the master plan is available for public review and in the case of any major unit shall hold at least one public hearing on the plan in the vicinity of the unit. The managing agency shall make the master plan available for review and comment by the public and other state agencies for at least 30 days following the announcement and before submitting the master plan to the state planning agency. Copies of the plan shall be provided to members of the outdoor recreation advisory council and to any other person on request.

Subd. 3. Master plan; review and approval. All master plans required by this section shall be submitted to the state planning agency for review pursuant to this subdivision. The state planning agency shall review the master plan to determine whether the plan: (a) provides for administration of the unit in a manner that is consistent with the purposes for which the unit was authorized and with the principals governing the administration of the unit, as specified in section 86A.05 and the statutes relating to each type of unit; (b) recognizes values and resources within the unit that are primarily the responsibility of another managing agency to protect or develop, and provides for their protection or development either through a cooperative agreement with other managing agency or through designation of the appropriate area as a secondary unit. In reviewing any master plan, the state planning agency shall consult with other state agencies. Within 60 days after receiving the master plan, the state planning agency shall notify the managing agency that the plan has been reviewed and forward its recommendations for any changes it might suggest. The managing agency shall review the recommendations and notify the state planning agency of the disposition made of them. Failure to comment on a master plan within the time specified shall be considered approval of the plan by the state planning agency. If the director of the state planning agency feels that the master plan still fails significantly to comply with this subdivision, he may request review of the master plan by the governor. In that event review shall be deemed completed until after the master plan has been approved by the governor or 60 days have elapsed without action by the governor to approve or reject the plan, whichever occurs first.

Subd. 4. Development. Construction of necessary facilities and other development of the unit shall commence as soon as practicable after review of the master plan by the state planning agency, and the governor if requested, and shall be carried out in conformity with the master plan.

Subd. 5. Establishment. When, in the opinion of the managing agency, acquisition and development of the unit are sufficiently complete to permit operation and administration of the unit in substantial conformity with the master plan as approved, the managing agency shall declare the unit established and ready for use.

(1975 c 353 s 9)

B. Continued

Minnesota Statutes 86A.05, Subdivision 4 CRITERIA

Subd. 4. State trail; purpose; resource and site qualifications; administration; designation.

(A) A state trail shall be established to provide a recreational travel route which connects units of the outdoor recreation system or the national trail system, provides access to or passage through other areas which have significant scenic, historic, scientific, or recreational qualities or reestablishes or permits travel along an historically prominent travel route or which provides commuter transportation.

(B) No unit shall be authorized as a state trail unless its proposed location substantially satisfies the following criteria:

(1) Permits travel in an appropriate manner along a route which provides at least one of the following recreational opportunities:

(i) travel along a route which connects areas or points of natural, scientific, cultural, and historic interest;

(ii) travel through an area which possesses outstanding scenic beauty;

(iii) travel over a route designed to enhance and utilize the unique qualities of a particular manner of travel in harmony with the natural environment;

(iv) travel along a route which is historically significant as a route of migration, commerce, or communication;

(v) travel between units of the state outdoor recreation system or the national trail system; and

(2) Utilizes, to the greatest extent possible consistent with the purposes of this subdivision, public lands, rights-of-way, and the like; and

(3) Provides maximum potential for the appreciation, conservation, and enjoyment of significant scenic, historical, natural, or cultural qualities of the areas through which the trail may pass; and

(4) Takes into consideration predicted public demand and future use.

(C) State Trails shall be administered by the commissioners of transportation or natural resources as specified by law in a manner which is consistent with the purposes of this subdivision. State trails established by the commissioner of natural resources shall be managed to provide a travel route through an area with a minimum disturbance of the natural environment and recognizing other multiple land use activities. Trail markers shall be limited to those providing safety information and interpretation.

(D) Facilities for the rest and comfort of trail users shall be provided primarily within units of the outdoor recreation system through which the trail passes. When additional facilities are required to insure the rest and comfort of the traveler, the managing agency may develop such facilities along the trail and shall designate the facilities as trail waysides. In addition to the foregoing purpose, trail waysides shall be developed for the preservation and interpretation of the trail's natural, historic, or scenic values, and may include facilities for primitive camping, picnicking, sanitation, and parking for access to the trail.

C. COOPERATIVE AGREEMENT

between

STATE OF MINNESOTA

DEPARTMENT OF NATURAL RESOURCES

and

SUPERIOR NATIONAL FOREST, U.S.D.A.

THIS COOPERATIVE AGREEMENT, made and entered into by and between the State of Minnesota, Department of Natural Resources, hereinafter referred to as the State and the Forest Service, U.S. Department of Agriculture, hereinafter referred to as the Forest Service, under the provisions of the Act of June 12, 1960, (16 U.S.C. 530) and under the provisions of Minnesota Statutes, Sections 84.025, Subdivision 7, 84.029 and 471.59.

WITNESSETH:

WHEREAS, the State desires to develop and maintain a State multipurpose recreational trail corridor system within the Superior National Forest to a mutually agreed standard, and,

WHEREAS, the Forest Service within the Superior National Forest desires to develop corridor trails on United States owned lands and State owned lands to a mutually agreed standard, and

WHEREAS, it is to the mutual benefit of both parties to this agreement to locate, clear and construct a State multi-purpose recreation trail corridor system along specified routes on United States owned land and State owned land for use by the public.

NOW, THEREFORE, in consideration of the above premises, the parties hereto agree as follows:

A. The State shall:

1. In the performance of work, the State agrees to comply with the provisions shown in Section 1, Equal Opportunity, of Part B - Labor Standards Provisions, which is attached and made a part of this agreement. For the purpose of this agreement "contractor" means "State"; "contracting officer" and "contracting agency" means "Forest Service".

* NOTE: This cooperative agreement is being revised on an annual basis (See Point 8). Copies of the revisions will be on file at the U.S. Forest Service Superior National Forest Headquarters, (Duluth), the DNR Region II Headquarters (Grand Rapids), and the DNR Trails and Waterways Unit Central Office (St. Paul).

Appendix C (continued)

2. By accepting this agreement the State hereby agrees to comply with Title VI of the Civil Rights Act of 1964 and all requirements imposed by or pursuant to the regulation of the United States Department of Agriculture (7 CFR, Part 15) issued pursuant to that Act, and hereby assures that in the operation and performance of this agreement to take immediately any measures necessary to effectuate this requirement. If any real property or structure thereon is provided or improved with the aid of Federal financial assistance extended to the State by the United States Department of Agriculture, this assurance shall obligate the State or in the case of any transfer of such property, any transferee, for the period during which the Federal financial assistance is extended or for another purpose involving the provision of similar services or benefits. If any personal property is so provided, this assurance shall obligate the State for the period during which he retains ownership or possession of the property. In all other cases, this assurance shall obligate the State for the period during which the Federal financial assistance is extended to him by this agreement. This agreement is given in consideration of the Federal financial assistance extended in this agreement to the State by the United States Department of Agriculture. The State recognizes and agrees that such Federal financial assistance will be extended in reliance on the representations and agreements made in this assurance. The State further agrees that the United States, in addition to any other rights and remedies provided by this assurance, the Civil Rights Act of 1964, or the regulations issued thereunder, shall have the right to enforce this agreement by suit for specific performance or by any other available remedy under the laws of the United States or the State in which the breach of violation occurs.

3. Determine independently the amount of State funds to be spent on the trail system.

Nothing contained in this agreement shall require the State to expend State funds on the trail system in the absence of an appropriation by the State Legislature.

4. Take necessary precautions for prevention of fires and cleanup all State work areas to the satisfaction of the Forest Service.
5. Promote the public use and recognition of the trail in the National Forest.
6. Prepare an Environmental Analysis Report (EAR) for Forest Service review for the proposed trail system. Changes recommended by the Forest Service will be incorporated into the final EAR.

Appendix C (continued)

B. The Forest Service shall:

1. Determine independently the amount of Federal funds to be spent on the trail system.

Nothing in this agreement shall be construed as obligating the Forest Service to expend, or as involving the United States in any obligation for future payment of money, in excess of appropriations authorized by law.

2. The Forest Service will review the State EAR and forward the State any recommended revisions.

C. It is mutually agreed and understood by and between the said parties that:

1. The on-the-ground trail location shall be approved by both the Forest Service and the State and shall consist of a 100 foot right-of-way corridor.
2. As the on-the-ground trail location is determined, the description and necessary maps shall be attached to this agreement. After the on-the-ground trail location is determined, a map shall be prepared to show the right-of-way of the trail. Said right-of-way shall be dedicated for trail purposes for public use subject to the terms and conditions of this agreement.
3. Forest Service and State multiple-use activities shall be permitted within the 100 foot corridor. Each agency shall notify each other of planned multiple-use activities in the trail corridor.
4. Upon mutual agreement of both agencies, trail corridor shall be rerouted to avoid multiple-use conflicts.
5. Motor vehicles shall be prohibited except snowmobiles and those motor vehicles used for administrative uses by either agency.
6. Trail construction shall be guided by the following specifications.

a. Design

- (1) Minimum tread surface of 10 feet and a maximum of 14 feet. Average tread surface of approximately 12 feet.
- (2) An additional two feet shall be cleared outside trail surface. Additional clearing is authorized if required for the purpose of maintaining proper cut and fill slopes.

Appendix C (continued)

- (3) Minimum turning radius is 50 feet.
 - (4) A height of 10 feet above trail shall be cleared.
 - (5) Sustained grades and slopes shall be a maximum of 20%.
 - (6) All signs on National Forest land shall conform to the sign standards contained in Forest Service Handbook 7109.11, section 52.
- b. Trail vertical and horizontal sight distance shall be a minimum of 50 feet. Snowbanks at road crossings shall be cut back to provide adequate visibility in both directions on both sides. Snowbanks shall be kept low at trail crossing points to permit easy exit from and entrance onto the trail. Warning signs shall be installed on trails at both trail and road crossings at sufficient distance to properly warn users.
 - c. Trails shall cross contours at right angles where possible. Routing trails along side slopes shall be avoided. Approaches to slopes shall be straight and at least as long as the slope.
 - d. Snowmobile trails shall not be routed over lakes, streams or other bodies of water. If stream crossings are necessary, bridges at least six feet in width shall be provided. Plans for new bridges and major reconstruction shall be prepared by a licensed engineer. Bridge designs shall have mutual approval of the State and Forest Service prior to construction. Railings or other appropriate markers shall be required. The Forest Service will perform final inspection upon completion of construction.
 - e. The location and design of other facilities along trails, such as parking lots, toilets, etc., shall be mutually agreed upon before construction begins.
- 7. Trail maintenance and maintenance of other trail facilities shall include but not be limited to removal of hazardous materials, trash removal, servicing of toilets, grooming and removing snow from parking lots.

Appendix C (continued)

8. The State and Forest Service shall mutually formulate an annual plan on or before May 1, stating specific trail maintenance and construction responsibilities of each party for the coming year. This annual plan shall be in writing and will become a part of this agreement.
9. This agreement in no way restricts the Forest Service or the State from cooperating with or receiving cooperation from other public and private agencies, organizations and individuals or from accepting contributions and gifts for the development, administration and operation of the trail facilities.
10. All improvements constructed in whole or in part on National Forest land shall be and will remain the property of the United States. Likewise, all improvements constructed in whole or in part on State land shall be and will remain the property of the State of Minnesota.
11. The Forest Service will reimburse the State for trail construction on National Forest land upon receipt of an itemized billing for reimbursable expenditures as indicated below. Such billing shall be made no more often than quarterly, but at least as of September 30 annually, to be received no later than October 30. Reimbursable trail construction and Forest Service obligation will be determined through the annual planning process described in Clause 8 above.
12. Reimbursable expenditures are those costs incurred for trail construction work by the State at the request of the Forest Service in accordance with the annual plan. The following elements shall be included:
 - a. Salaries and wages, including employer's share of Federal Insurance Contributions Act, retirement and insurance of all persons assigned to work on the project.
 - b. Travel and per diem expenses of all employees engaged in the construction and direct supervision of the project.
 - c. Rental charges for equipment either owned or under contract and used on each project at equitable rates.
 - d. All other direct expenditures incident to the construction of each particular trail.

Appendix C (continued)

13. To comply with Public Law 91-190, the National Environmental Policy Program activities covered by this agreement toward managing and enhancing the environment for the widest range of beneficial uses without its degradation or risk to health or safety or other undesirable consequences. The State further agrees to assist the Forest Service in the preparation of environmental statements as required by section 102(2)(c) of PL 91-190 for all major Federal actions taken under this agreement which might significantly affect the quality of the human environment or be highly controversial in regard to unresolved conflicts concerning the use of resources.
14. Permission to camp, and to perform work in National Forest lands, under terms of this agreement, does not in any way convey to the State, their officials, or any person or persons working with the State in the performance of said work, employee status that would extend to them the benefits of the Federal Employees Compensation Act, as amended.
15. No member of, or Delegate to, Congress or Resident Commissioner shall be admitted to any share or part of this agreement, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this agreement if made with a corporation for its general benefit.
16. This agreement may be revised as necessary, by mutual consent of both parties, by the issuance of a written amendment, signed and dated by both parties.
17. Either party may terminate this agreement by providing 60 days written notice. Unless terminated by written notice, this agreement will remain in force indefinitely.
18. The rules and regulations of the Minnesota Department of Natural Resources and of the Forest Service shall govern the use of the trails.
19. This agreement shall be effective upon execution by both parties hereto.

Appendix C (continued)

IN WITNESS WHEREOF, the parties hereto have executed this agreement as of the last date written below.

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

By

Title

Date

U. S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE - SUPERIOR NATIONAL FOREST

By

Title

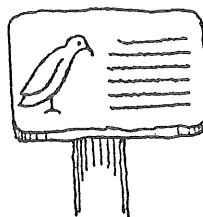
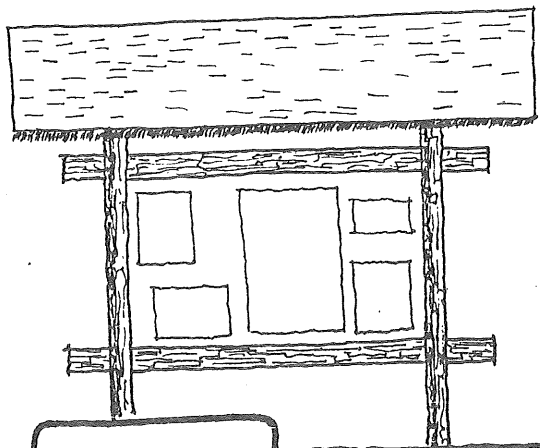
Date

D. RESTRICTIONS FOR NON-PERMIT WATER CROSSINGS

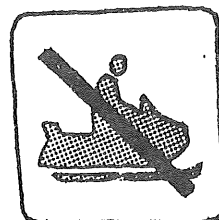
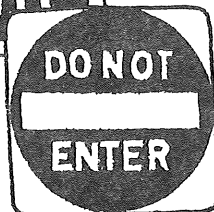
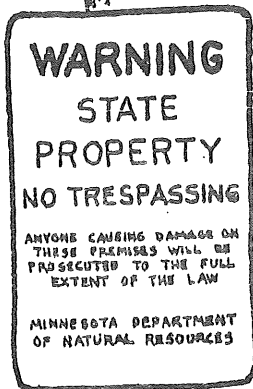
- Low Water Ford Crossing - No special site preparation necessary
- Normal summer flow does not exceed 2'
 - Normal low flow is not restricted or reduced
 - Crossing conforms to natural stream channel
 - Original stream bank no higher than 4'
 - Construction only of gravel, natural rock, concrete, steel-matting or other durable, inorganic material less than 1' thick
 - Graded finished slope no steeper than 5:1
 - Graded banks must be seeded or mulched
 - Not allowed in officially designated trout stream or federal wild, scenic or recreational river
- Temporary Bridges - Stream bank can support bridge without pilings, foundations, culverts, excavation, or other special site preparations
- Nothing placed in the bed of the stream
 - Capable of removal for maintenance and flood damage prevention
 - Bridge firmly anchored at one end
 - Can swing away during flooding
 - Minimum 3' clearance between lowest portion of bridge and normal summer stream flow

E.

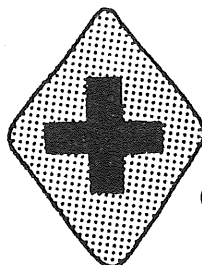
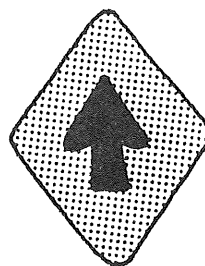
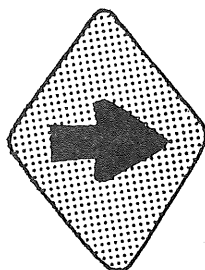
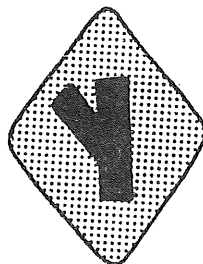
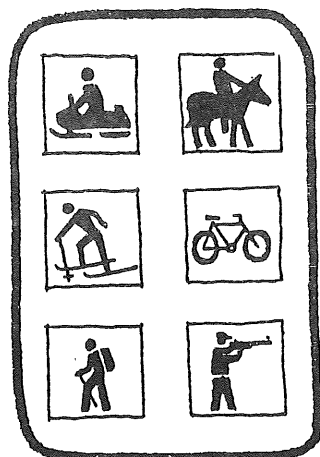
Sign Typicalals



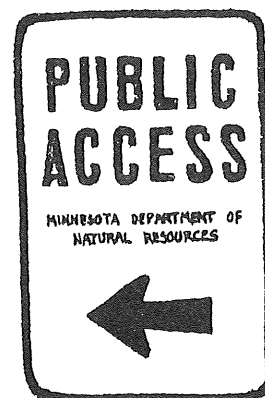
informational



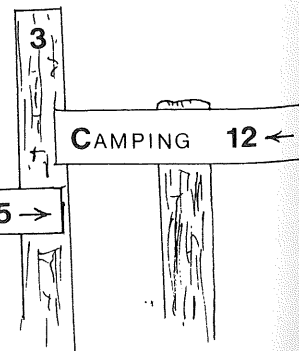
regulatory



directional



boundary



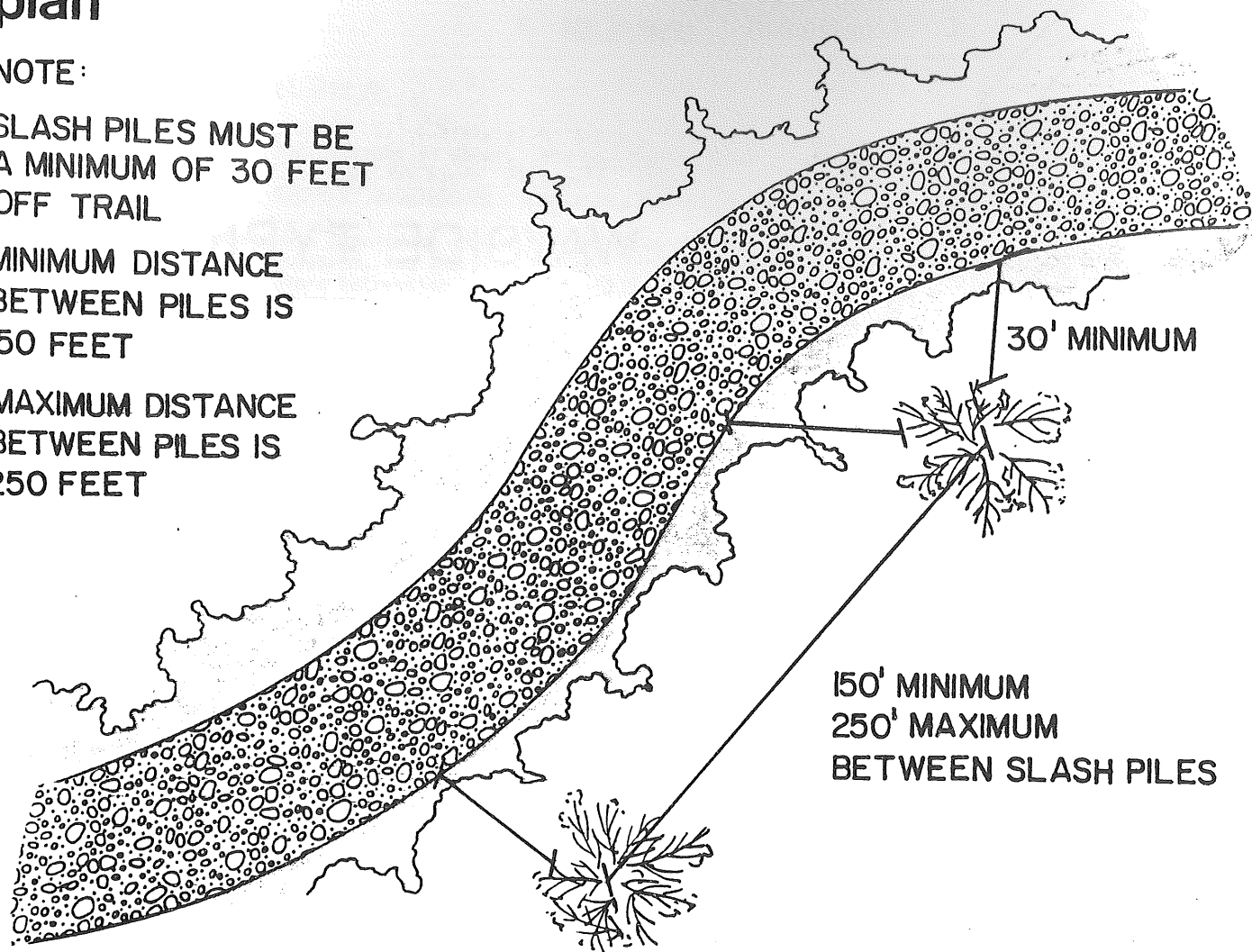
plan

NOTE:

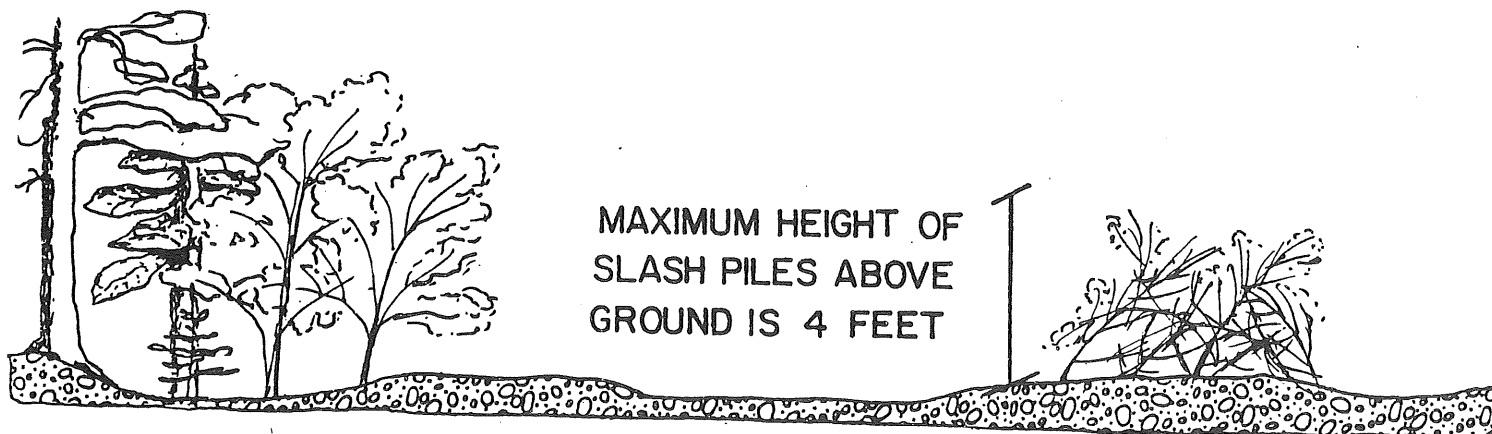
SLASH PILES MUST BE
A MINIMUM OF 30 FEET
OFF TRAIL

MINIMUM DISTANCE
BETWEEN PILES IS
150 FEET

MAXIMUM DISTANCE
BETWEEN PILES IS
250 FEET



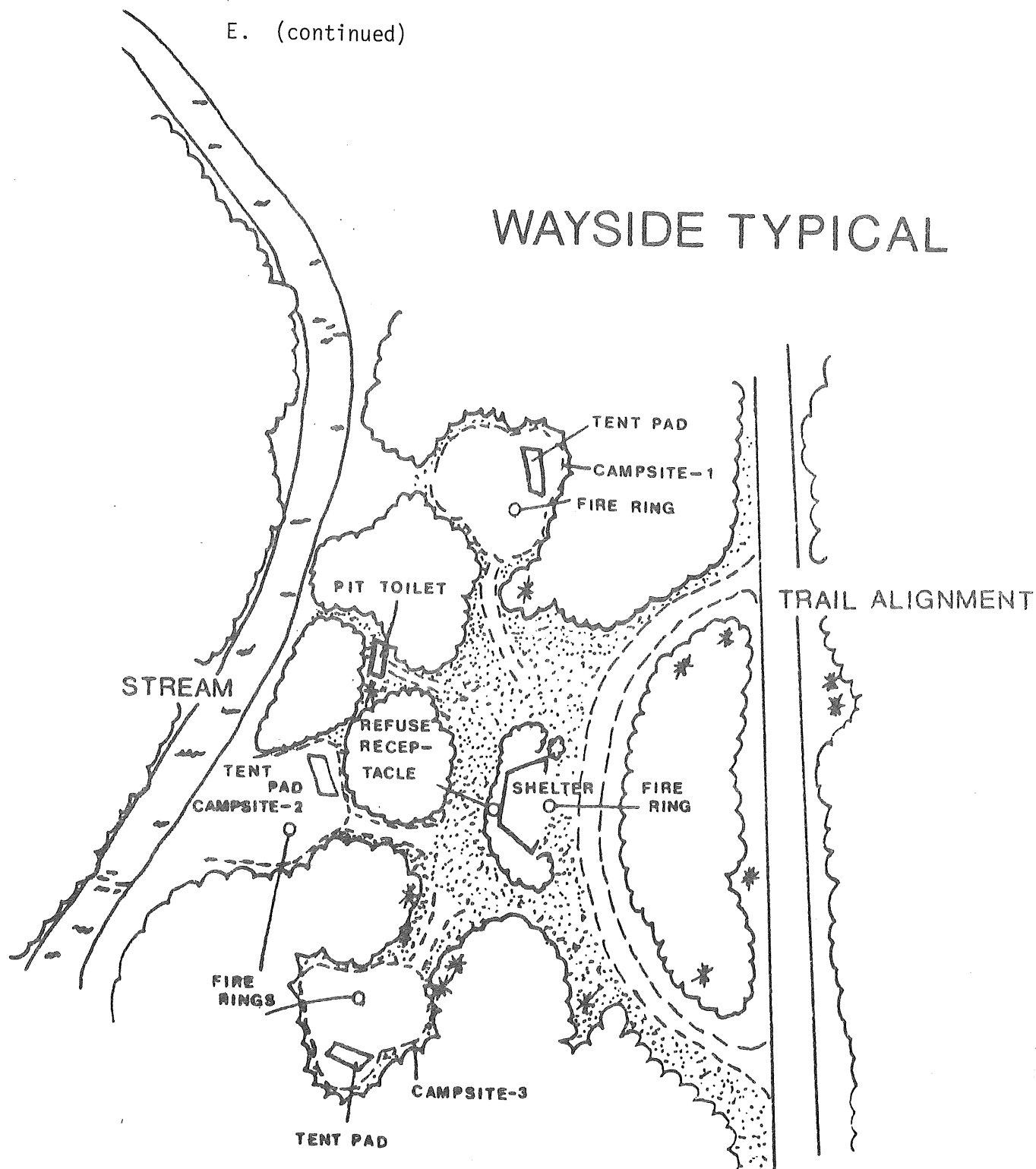
section



slash pile typical

E. (continued)

WAYSIDE TYPICAL



Note:

The wayside shown here is a highly developed facility. Most of the trail's waysides will not be this highly developed. Highly developed waysides will be built as demand and resources warrant.

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