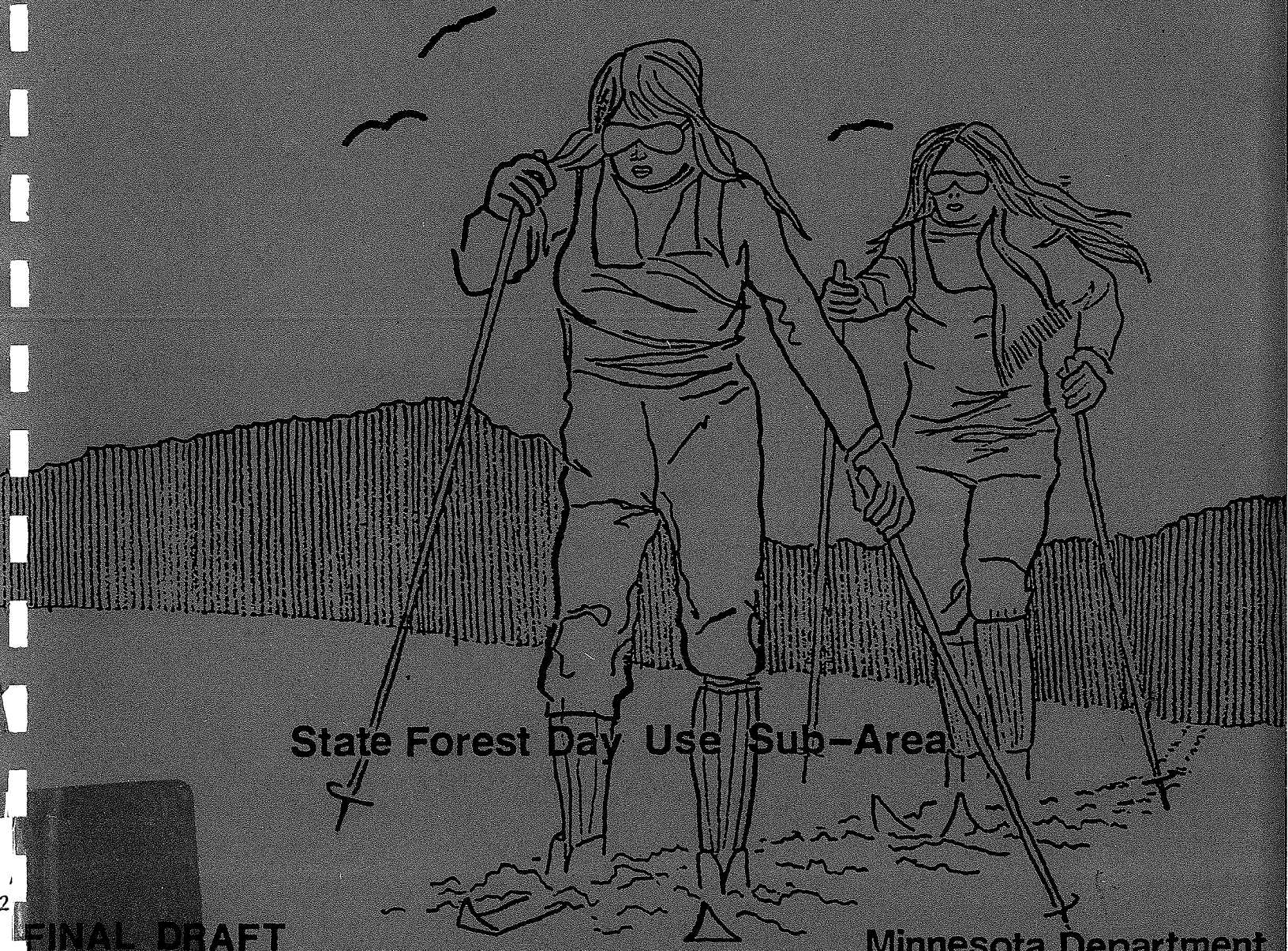




Spider Lake

ski touring and hiking trail



State Forest Day Use Sub-Area

FINAL DRAFT
August 1978

Minnesota Department
of Natural Resources

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FOREWORD

It is the purpose of this document to serve as both a management plan for the development and maintenance of the Spider Lake ski touring-hiking trail (day use sub-area), and as an environmental assessment of this action. The development and maintenance procedures described in this document will insure that the scenic, historic, scientific and recreational qualities of the trail are properly managed for the use and enjoyment of the citizens of Minnesota. The environmental impacts of this action have also been assessed to measure their effects on the environment. This assessment may be used in the event that the Department of Natural Resources - Division of Forestry decides to seek Land and Water Conservation Funding (LAWCON).

SUMMARY

The major sections of the document are: the Introduction, Description of the Proposed Action, Description of the Environment, and Environmental Impact of the Proposed Project.

The Introduction includes: an overview of pertinent legislation, the authority for state forest sub areas, and the goal and objectives for the state forest ski touring-hiking program. The DNR's overall goal is also revealed.

The Description of the Proposed Action reveals: the location of the project, the unit goal and objectives, existing and proposed development, maintenance, how the plan will be implemented, and whose recreational needs will be served.

The Description of the Environment is an inventory-analysis of the natural and socio-economic resources of the project area. This section attempts to "tie together" the interrelated resource factors that are vital in the planning of this unit.

The final section, the Environmental Impacts of the Proposed Project, deals with the possible affects that the proposed action may incur.

The Spider Lake ski touring-hiking management plan will be filed with and be available from Documents Section, Room 140 Centennial Building, St. Paul, Minnesota 55155.

Introduction to the Plan

Multiple Use Concept

It is the policy of the Department of Natural Resources, Division of Forestry, to protect, develop and administer the renewable resources of Minnesota's 56 State Forests so they are utilized in the combination of uses that will best meet the needs of Minnesota citizens. This requires harmonious and coordinated management of the forest resources to bring about their maximum productivity as well as providing other public benefits.

The primary management objective is to maintain a maximum sustained yield of various forest products while utilizing renewable forest resources to benefit the greatest number of people. Renewable forest resources that require management and protection include timber, wildlife, soil, and water. Management practices such as timber production and harvest, watershed protection, wildlife habitat maintenance, and recreational development are carried out on lands best suited for each use.

This multiple use approach to management is intended to provide equal opportunity for all citizens to enjoy and utilize our forest resource. This means that the forest is a shared resource that must be utilized by various user groups in harmony with each other.

With this multiple use concept in mind, the Legislature included state forests in Minnesota's Outdoor Recreation System. This system, created in 1975 by

the Outdoor Recreation Act (ORA), incorporated all state recreation lands into eleven different kinds of areas, each with its own classification. The 11 classifications are: Natural State Parks; Recreational State Parks; State Trails; Scientific and Natural Areas; State Wilderness Areas; State Forests; State Wildlife Management Areas; State Water Access Sites; State Wild, Scenic and Recreational Rivers; State Historic Sites; and State Rest Areas. Each member of the system is referred to as a "unit".

By passing the ORA, the Legislature revealed its awareness of a growing problem in Minnesota: The increasing number of people using state lands each year for more diverse forms of recreation. While some areas could withstand higher levels of use, other areas experienced overcrowding and conflicts between different recreational users.

To insure that the administration of each unit is managed in a manner that is consistent with the purposes for which the unit was authorized, it is required by the ORA that the managing agency prepare a master plan for each unit. The act states:

"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."

The following day use sub-area plan has been prepared by the DNR to fulfill the requirements of this act as it pertains to state forests. This day use sub-area plan will be incorporated into the overall state forest master plan when that plan is prepared.

This day use sub-area plan has been written prior to the state forest master plan so that monies from the Outdoor Recreation Bonding Bill can be utilized this year (Laws 1977, Chapter 421, Section 13, Subdivision 4).

Under the terms of this bill, the DNR has been allocated \$1,105,000:

"For betterment of public land and improvements needed for trails for skiing, hiking, and bicycling within state parks and recreation areas as listed and described in sections 85.012 and 85.013 and state Forests, as listed and described in section 89.021."

The Authority

The authority for establishment of these ski touring-hiking areas (day use sub-areas) was granted by Minnesota Statutes 86.01 (the Outdoor Recreation Act) subdivision 7 which states:

"Subd. 7. STATE FORESTS AND STATE FOREST SUB-AREAS: PURPOSE; RESOURCE AND SITE QUALIFICATIONS; ADMINISTRATION. (a) A state forest, as established by Minnesota Statutes, Section 89.021, shall be administered to accomplish the purposes set forth in that section, and a

state forest sub-area shall be established to permit development and management of specialized outdoor recreation at locations and in a manner consistent with the primary purpose of the forest.

(b) No unit shall be authorized as a state forest sub-area unless it is located within a state forest and contains suitable natural resources to accommodate any of the following uses:

(1) Day use areas. Areas which permit recreational use of the forest in its natural state, not requiring an overnight stay, including but not limited to picnicking, fishing, swimming, boat launching, hiking, interpretation, and nature observation.

(2) Campground. Provide minimum facilities to accommodate overnight camping.

(c) Outdoor recreation sub-areas located within state forests shall be administered by the commissioner of natural resources in a manner which is consistent with the purposes of this subdivision.

Goals and Objectives

The statutes and laws previously cited outline the legislation pertaining to state forest ski and hiking trail in regard to funding, planning and establishment. Along with this legislation, it is important to establish a goal for the overall State Forest Ski Touring and Hiking Program.

State Forest Ski Touring and Hiking Program Goal

The goal of the State Forest ski touring and hiking program is to provide Minnesotans with the highest possible variety of quality ski touring and hik-

ing trails. These ski touring and hiking trails shall be developed so that they may be enjoyed for years to come.

However, since state forest ski touring-hiking trails are only a part of the program, it is equally important to recognize the overall DNR ski touring-hiking program.

Overall Program Goal

The goal of the overall DNR Ski Touring and Hiking Program (which includes Natural and Recreational State Parks, Recreation Areas, and State Forests), is to provide Minnesotans with the finest ski touring and hiking trails in the nation.

Objectives for Overall State Forest Ski Touring-Hiking Program

- * To provide ski touring opportunities in state forests which are accessible to all citizens of Minnesota.
- * To improve the 64 miles of existing ski touring-hiking trails in state forests throughout Minnesota.
- * To develop 150 miles of new or additional ski touring-hiking trails where feasible in state forests throughout Minnesota.
- * To provide a variety of ski touring-hiking experiences in state forests taking advantage of scenic, topographic, historic, and recreational areas.

- * To provide complementary facilities along each state forest ski touring-hiking trail to insure the rest and comfort of the trail user.
- * To implement a system of signing design and specifications that is consistent along each state forest ski touring-hiking trail which promotes user enjoyment and safety.
- * To disseminate current, accurate literature of each state forest ski touring-hiking trail for public information and use.
- * To provide interpretation on the cultural, historic, and vegetative features along state forest ski touring-hiking trails.
- * To involve the governor's appointed ski touring task force and other concerned citizens in the planning and design of state forest ski touring-hiking trails.

Description of the Proposed Action

Purpose of the Action

The Spider Lake Ski Touring-Hiking Trail will be developed to provide a safe and enjoyable ski touring and hiking trail within the Foothills State Forest. The purpose of this action is to construct a quality area for local residents and the remainder of the citizens of Minnesota.

Location of the Project

The proposed ski touring and hiking trail is located in the Foothills State Forest 20 miles north of Motley, Minnesota and 14 miles west of Pine River, Minnesota (see figure 1). The county map in figure 1.5 shows the location of the trail within the Forest. Proposed development calls for 10-15 miles of ski touring-hiking trail and a rest area. The trail will be located on state and county lands and will be a cooperative effort between DNR - Forestry and Cass County.

Magnitude of the Project

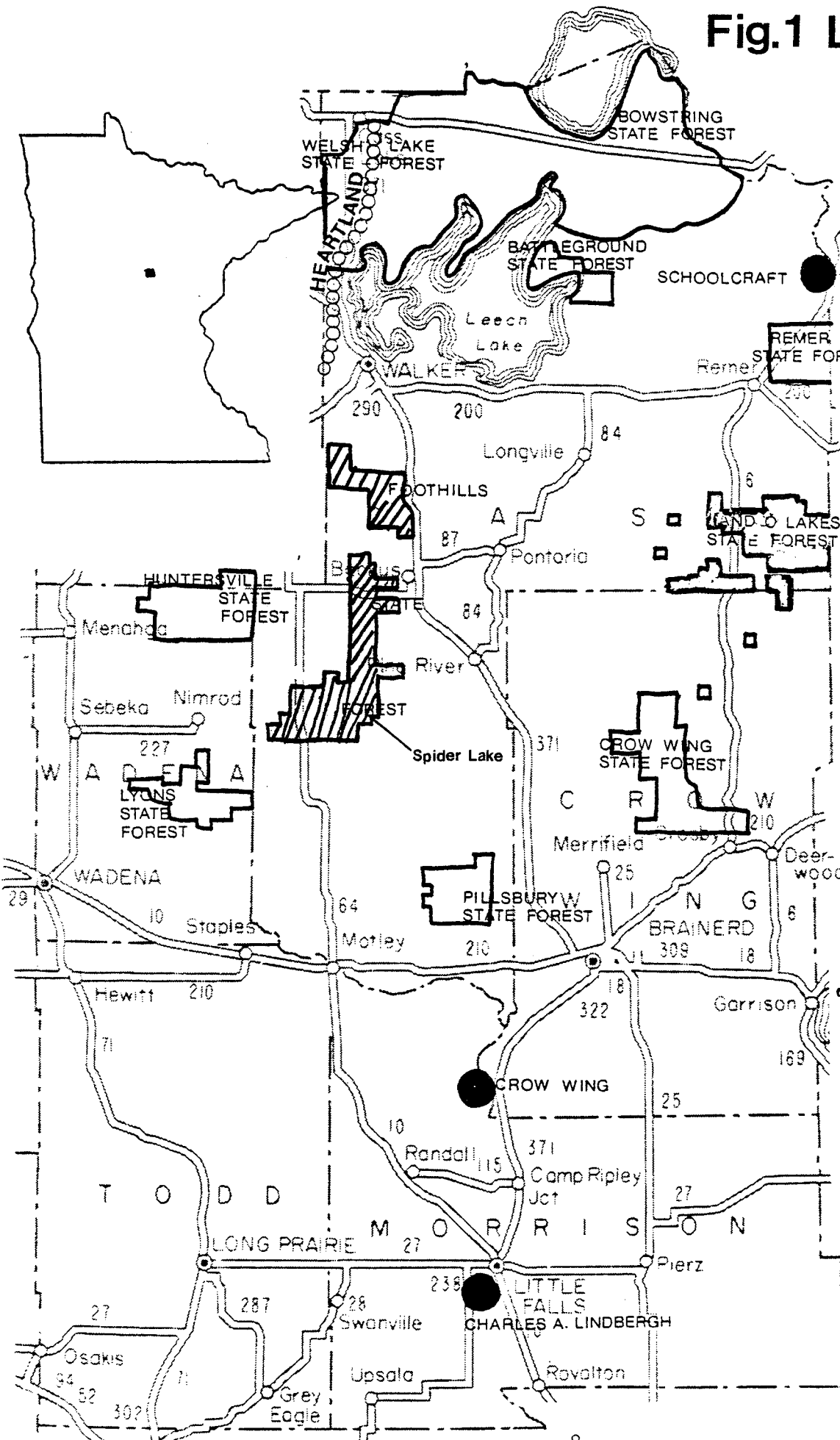
Goal Statement

It is the goal of the Department of Natural Resources to develop and maintain the Spider Lake Ski Touring-Hiking Trail for the highest trail experience possible.

Objectives

- * To properly develop and maintain this trail in a manner which will not inhibit other management activities.

Fig.1 LOCATION MAP



Region
5

- STATE FORESTS
- STATE PARKS
- CORRIDOR TRAIL

- Trunk Highway
- County Seat
- Population Cente

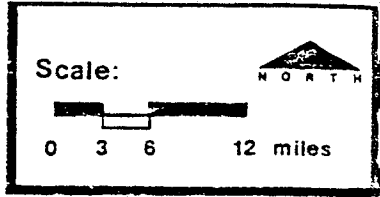
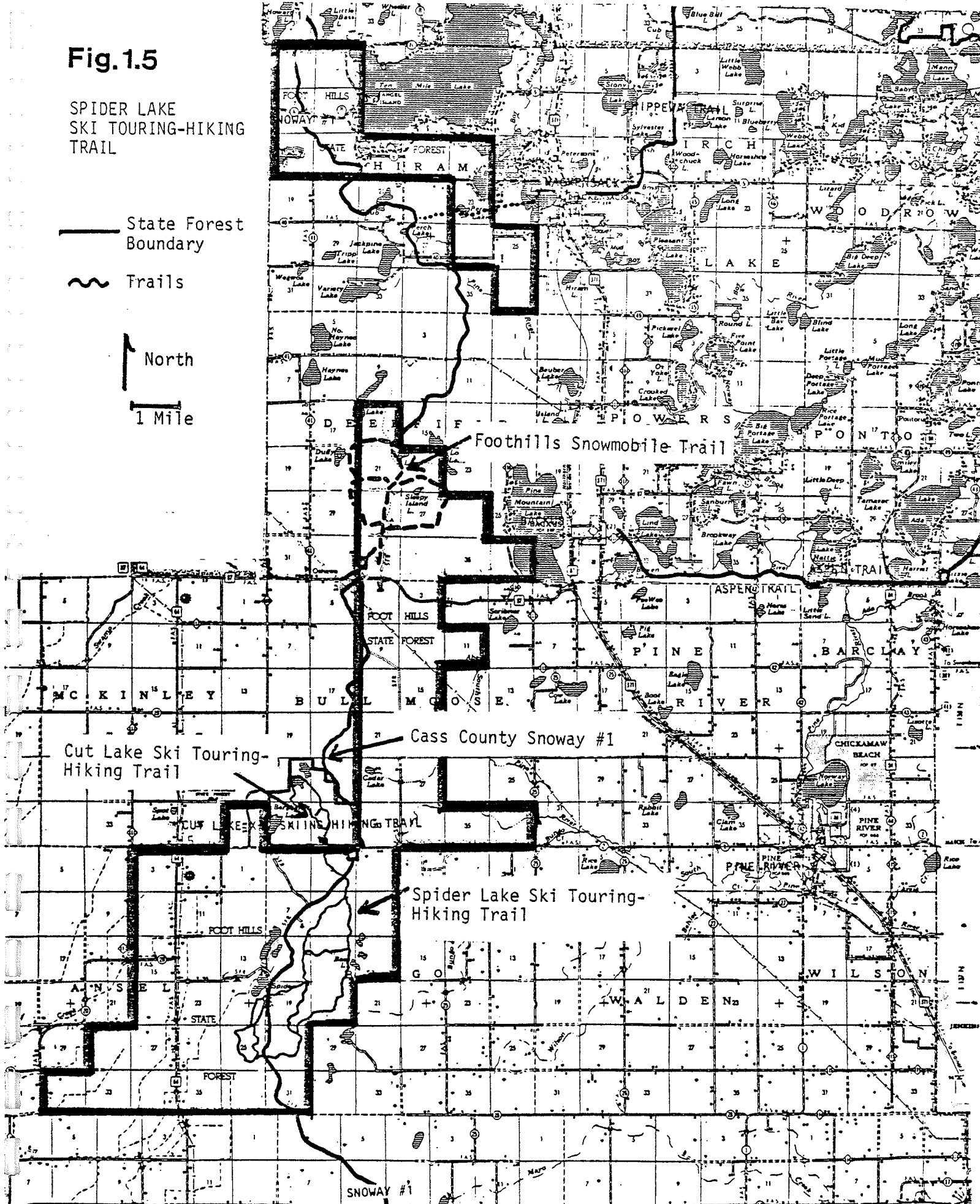
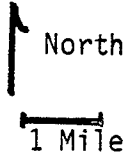


Fig.1.5

SPIDER LAKE
SKI TOURING-HIKING
TRAIL

— State Forest
Boundary

~ Trails



- * To complete development as outlined in this plan by the winter of 78-79. (i.e. 10-15 miles of new ski touring-hiking trail).
- * To establish this trail for recreational non-motorized use through formal designation as a state forest day use area for ski touring and hiking.¹
- * To develop and implement a maintenance program which will sustain the quality of the trail for the future.

Existing Development

Existing recreational development in the Foothills State Forest consists of fifteen miles of state forest snowmobile trail, Cass County Snoway 1 grant-in-aid snowmobile trail, and Cut Lake, a Cass County Ski Touring and Hiking area located north of Spider Lake (see figures 2 & 3).

A campground-picnic area is located on the north end of Spider Lake. This area has been developed and maintained by the Grange, a local farm organization.

Proposed Development

The following development activities are recommended for development of the Spider Lake Ski Touring-Hiking Trail:

Entrance Drive and Parking Lot

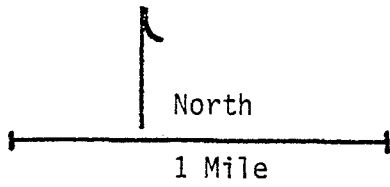
A parking area has already been developed by Cass County, near the proposed Spider Lake ski touring-hiking trail. This lot, located on Cass County high-

¹Motorized vehicles for administrative purposes and contract services will be allowed.





Fig. 2

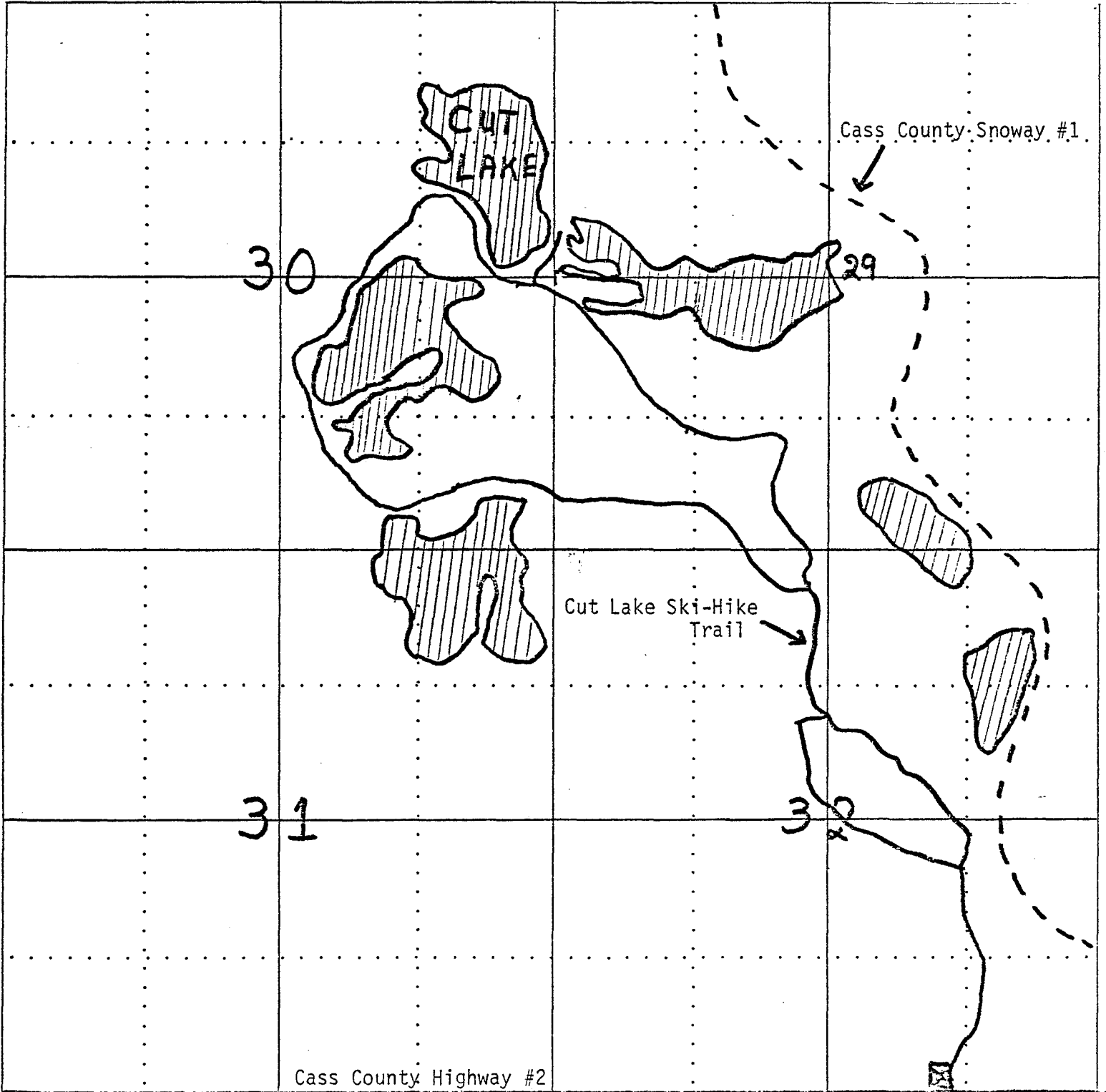
CASS COUNTY

CUT LAKE SKI TOURING-HIKING TRAIL



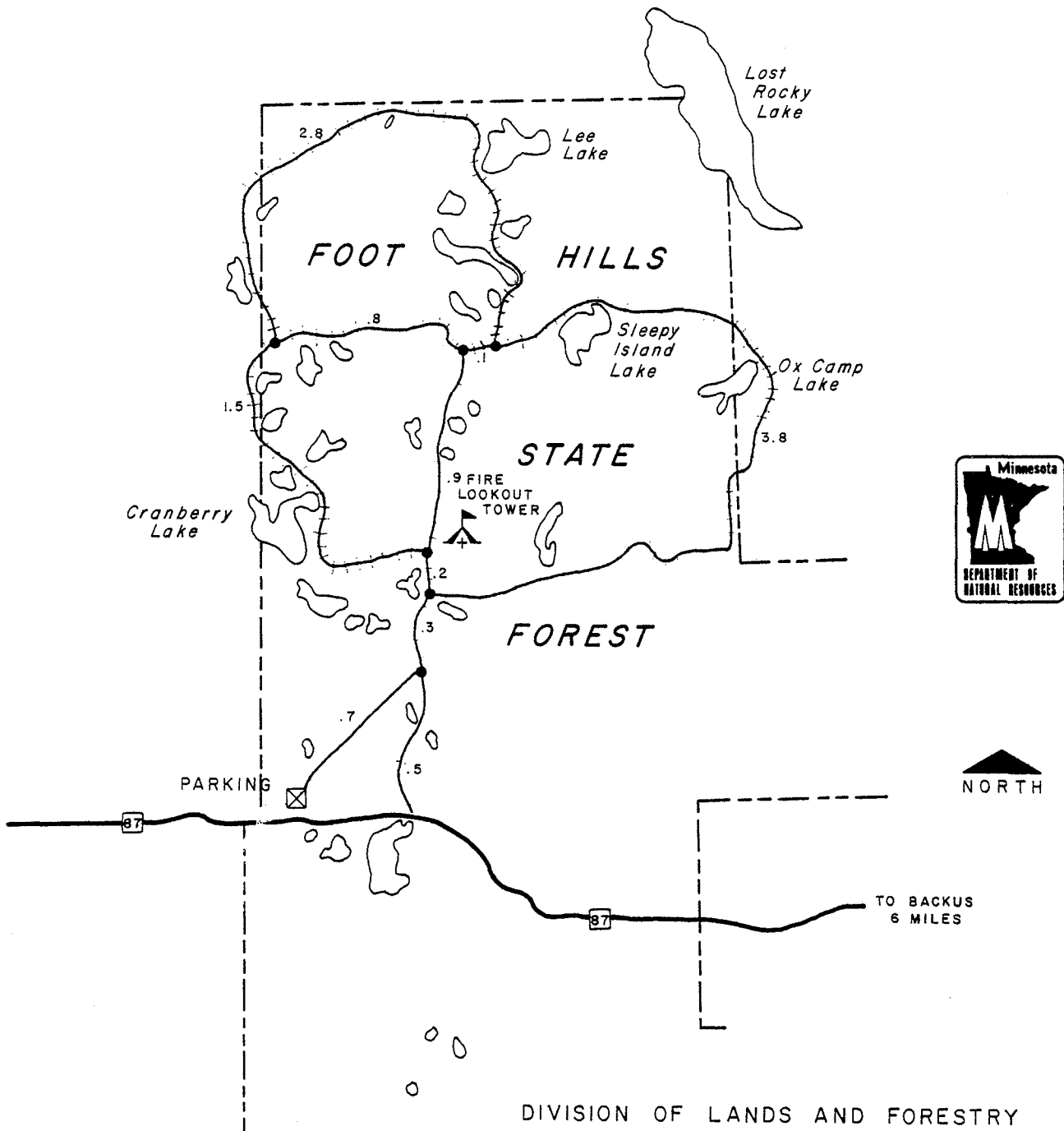
Legend

-  Ski- Hike Trail
-  Snowmobile Trail
-  Parking
-  Lakes



Foot Hills State Forest — Marked Snowmobile Trails

Fig. 3



DIVISION OF LANDS AND FORESTRY

FOR ADDITIONAL
INFORMATION CONTACT :

AREA FOREST SUPERVISOR
601 WEST 1ST STREET
PARK RAPIDS, MINN. 56470
PHONE : 218-732-4580

way 2, will be utilized by users of the Cut Lake and Spider Lake trails. By sharing facilities, maintenance and development costs can be minimized. If upgrading of the lot is necessary, state funds will be available for the construction of developments.

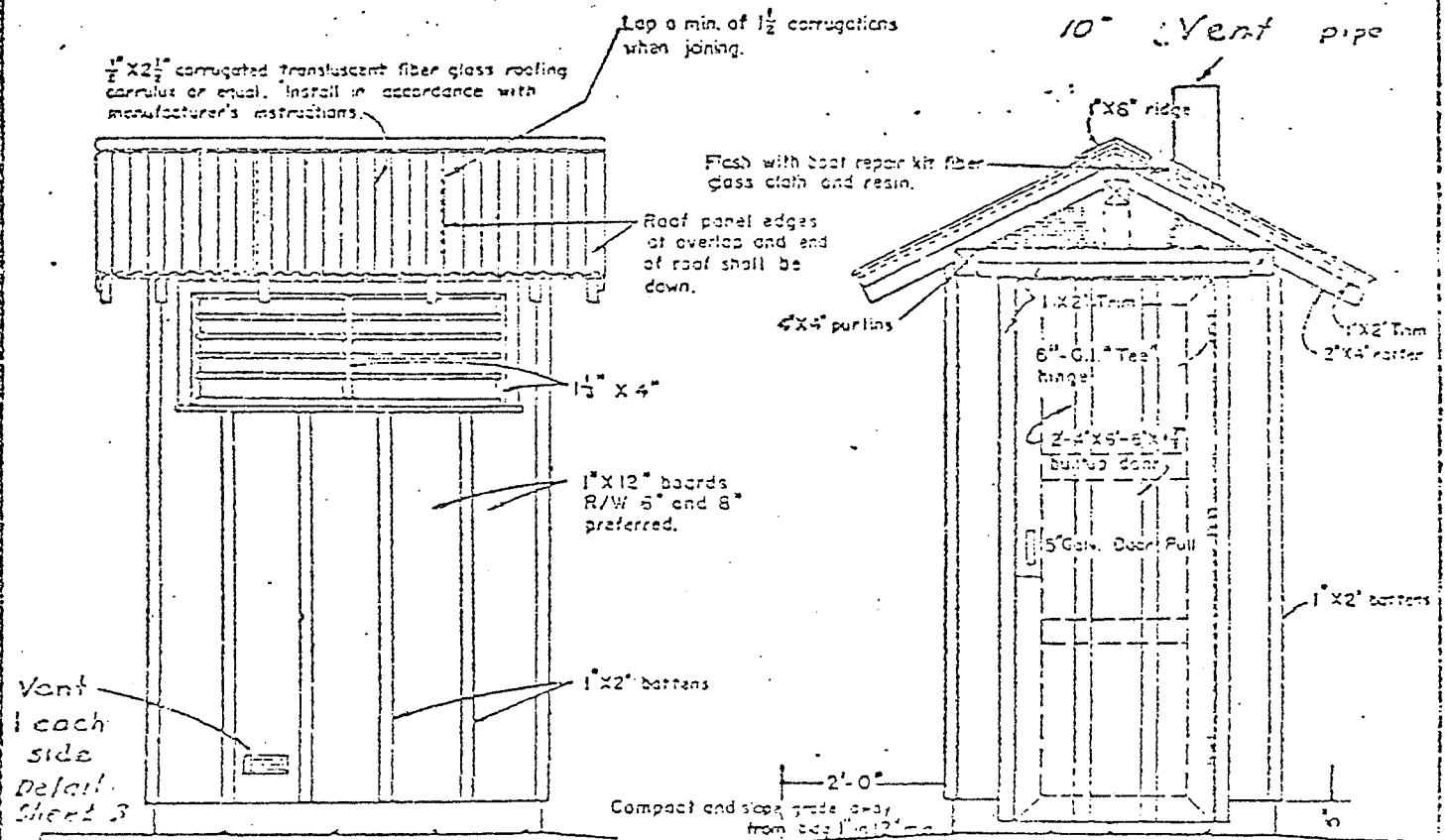
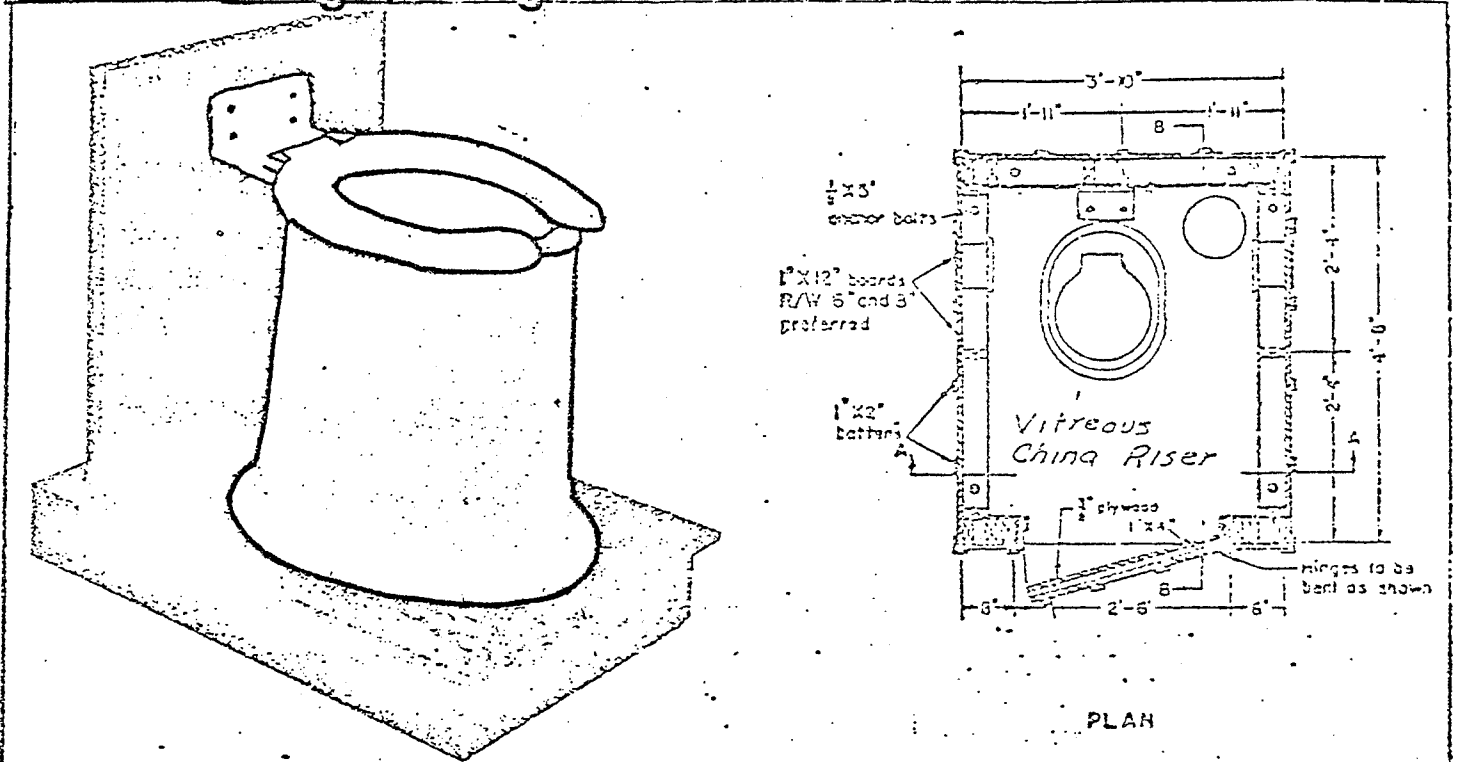
Wood routed signs will be placed on the main access road to direct users to the trailhead area. This sign should make note of the fact that the project is a DNR - Forestry and Cass County cooperative effort.

Trailhead Area

A wood routed trail sign showing the layout and length of the trail will be constructed near the trail entrance. An informational bulletin board for posting a printed trail map, emergency phone numbers, trail rules and regulations, and other pertinent information, will also be constructed here (see figure 13, page 26). One pit toilet has already been constructed near the parking area. If others are necessary with increased use, they should be constructed according to Bureau of Engineering standards (see figure 4).

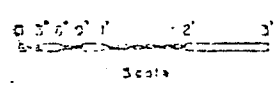
A registration board is optional but may be located near the trailhead sign to allow skiers to sign in and sign out. If properly used, this registration system could help to assure that no skiers will be left stranded in the area.

Fig. 4 Single Seat Pit Toilet



SIDE ELEVATION
(OPPOSITE SIDE SIMILAR)

FRONT ELEVATION



Trail Alignment

A preliminary alignment for the Spider Lake Trail, amounting to about 10-15 miles, has been laid out on a topographic map with preliminary loops identified. The trail will be routed to avoid conflicts with an existing deer concentration area in sections 23, 26, 35, and 36, T. 137 N., R. 32 W. The Spider Lake Trail will also provide access to the Cut Lake Trail, a Cass County ski touring project (see figure 5).





The regional trails coordinator, area and district foresters and possibly a member of a local ski club will inspect the preliminary route on the ground this summer and make recommendations for changes. The route will be flagged with plastic ribbon and any alterations in the right of way will be noted on the map. Drainage problems, bridge sights, and other problem areas will also be marked and noted. The trail alignment will retain a certain flexibility, in the event that it must be altered at some future date.

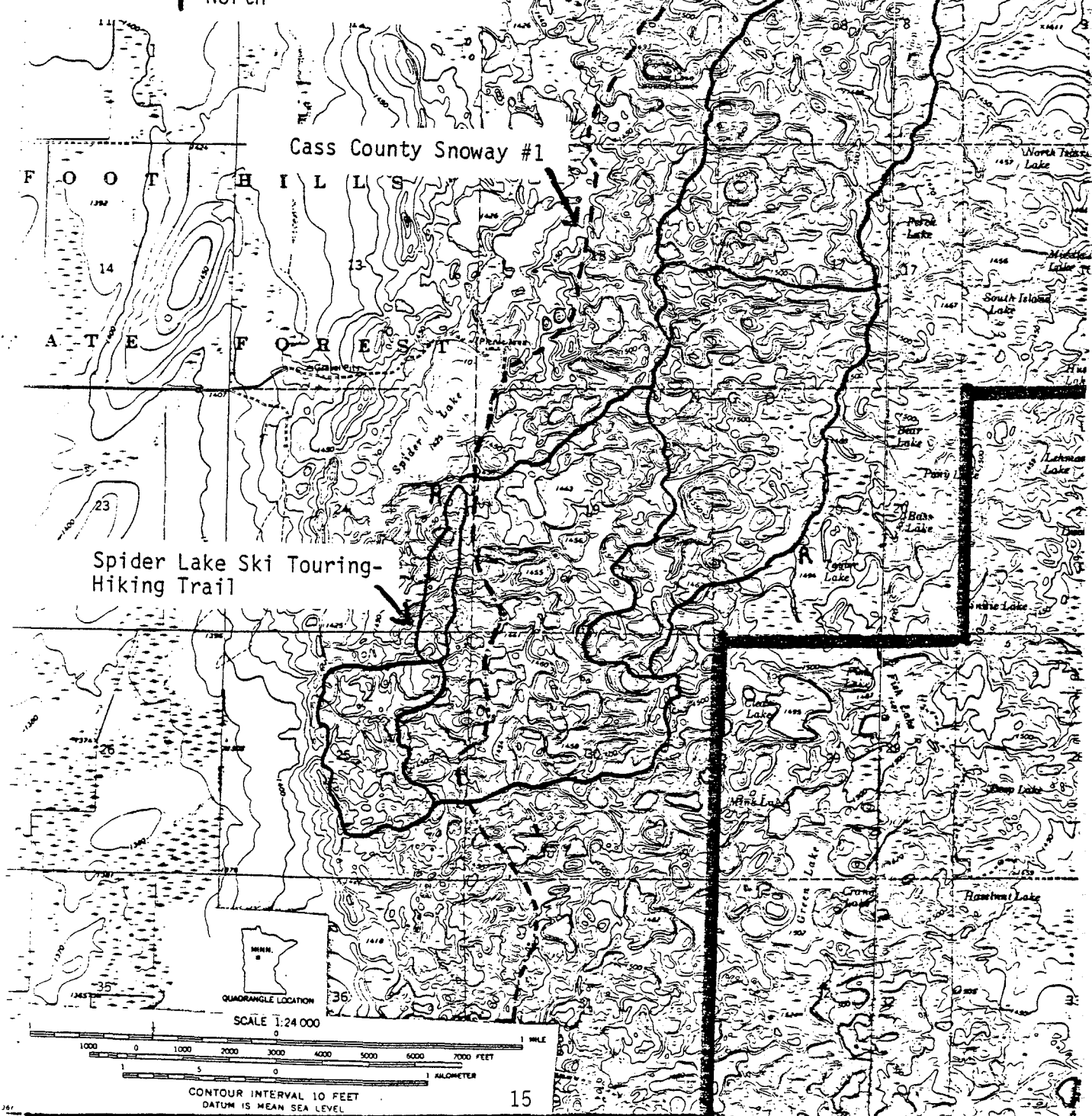
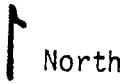
Trail Design

The right of way for the trail will vary from 8-12 feet depending on terrain and the difficulty of the trail. Overhead clearance will vary from 8-12 feet depending on expected snow depth. A one way system is recommended where feasible because this will eliminate problems that could occur in hilly areas (see design typical in figure 6, page 16).

Slopes of not more than 15% are recommended for the novice trail. Gradients from 25-40% can be utilized for the more advanced loops. Runouts at the bottom of steep hills will be cleared to allow skiers to slow down safely.

Fig. 5 SPIDER LAKE SKI TOURING-HIKING TRAIL

-  Parking
-  Ski-Hike Trail
-  Snowmobile Trail
-  State Forest Boundary



QUADRANGLE LOCATION

SCALE 1:24 000

1 000 0 1000 2000 3000 4000 5000 6000 7000 FEET

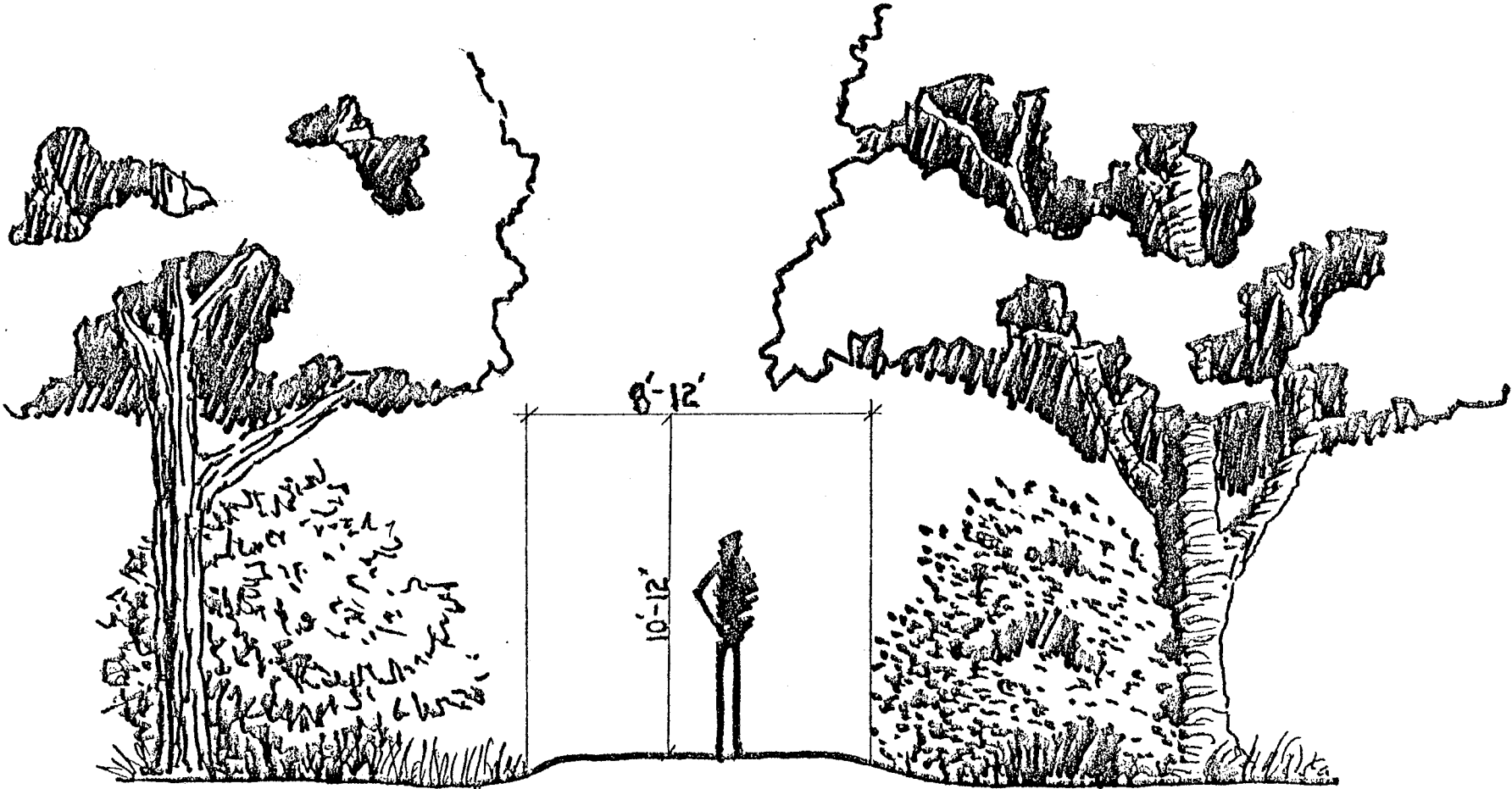
1 0 5 10 KILOMETER

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

15

Fig. 6
Ski Touring Trail Treadways

16



minimum clearances needed
for ski touring trails

width varies with terrain
height varies with snow depth

Slope and potential speed are the determining factors which dictate the length of a runout. A minimum width of 10-12 feet is required on hills to allow skiers to herringbone or sidestep up hills and to snowplow down hills.

Trail Construction

Trail construction will involve removal of all trees, brush and branches to the desired height and width of right of way. Trees should be cut at a height of 2-3 feet to allow a crawler tractor a chance to get good leverage for stump removal.

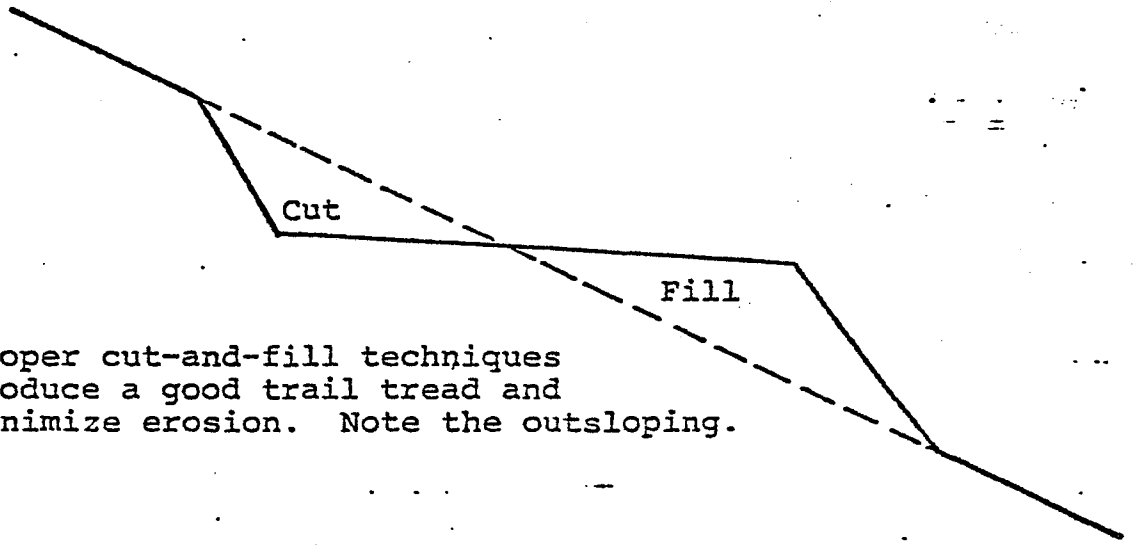
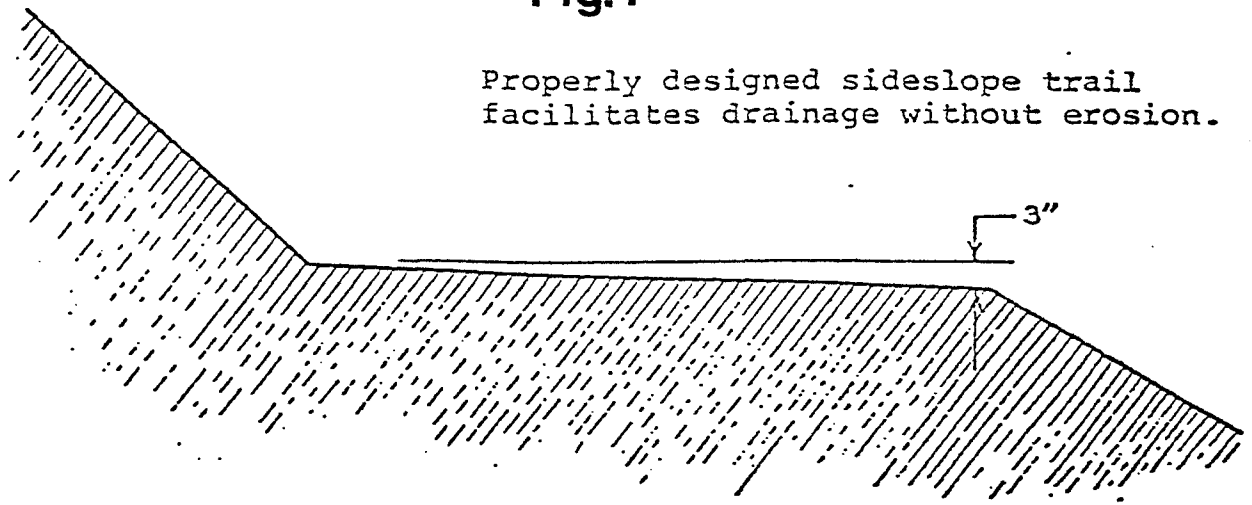
Trees and branches removed from the right of way should be piled or scattered away from the right of way. (Brush and stump piles can provide excellent small game habitat).

Stumps and rocks should be pushed into piles in designated areas which are inconspicuous from the trail. After clearing the trail, the treadway should be leveled with a slight pitch to allow for proper drainage. Cutting and filling techniques should be used on side slopes (see figure 7).

All areas where earth has been removed will be seeded with a wildlife or other seed mixture to prevent erosion. Wet areas along the trail will require corduroy and/or fill to allow for multi-season use. Where the treadway is elevated by these methods, culverts may be necessary to maintain natural drainage (see figure 8). Water bars or diversion structures may be necessary on steep slopes to direct water flow and prevent erosion (see figure 9).

Fig.7

Properly designed sideslope trail facilitates drainage without erosion.



Proper cut-and-fill techniques produce a good trail tread and minimize erosion. Note the outsloping.

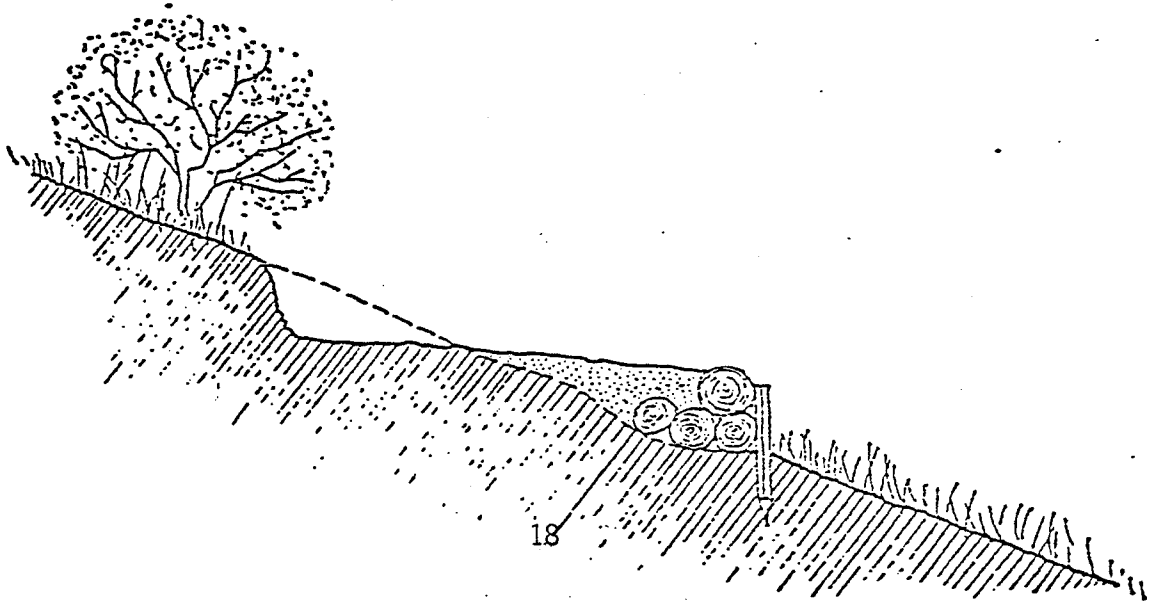
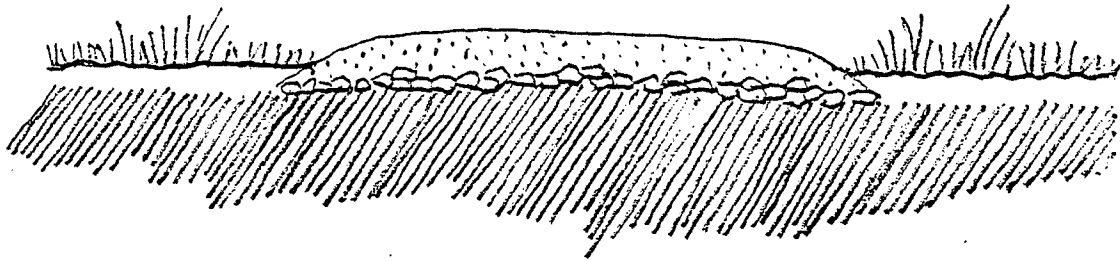
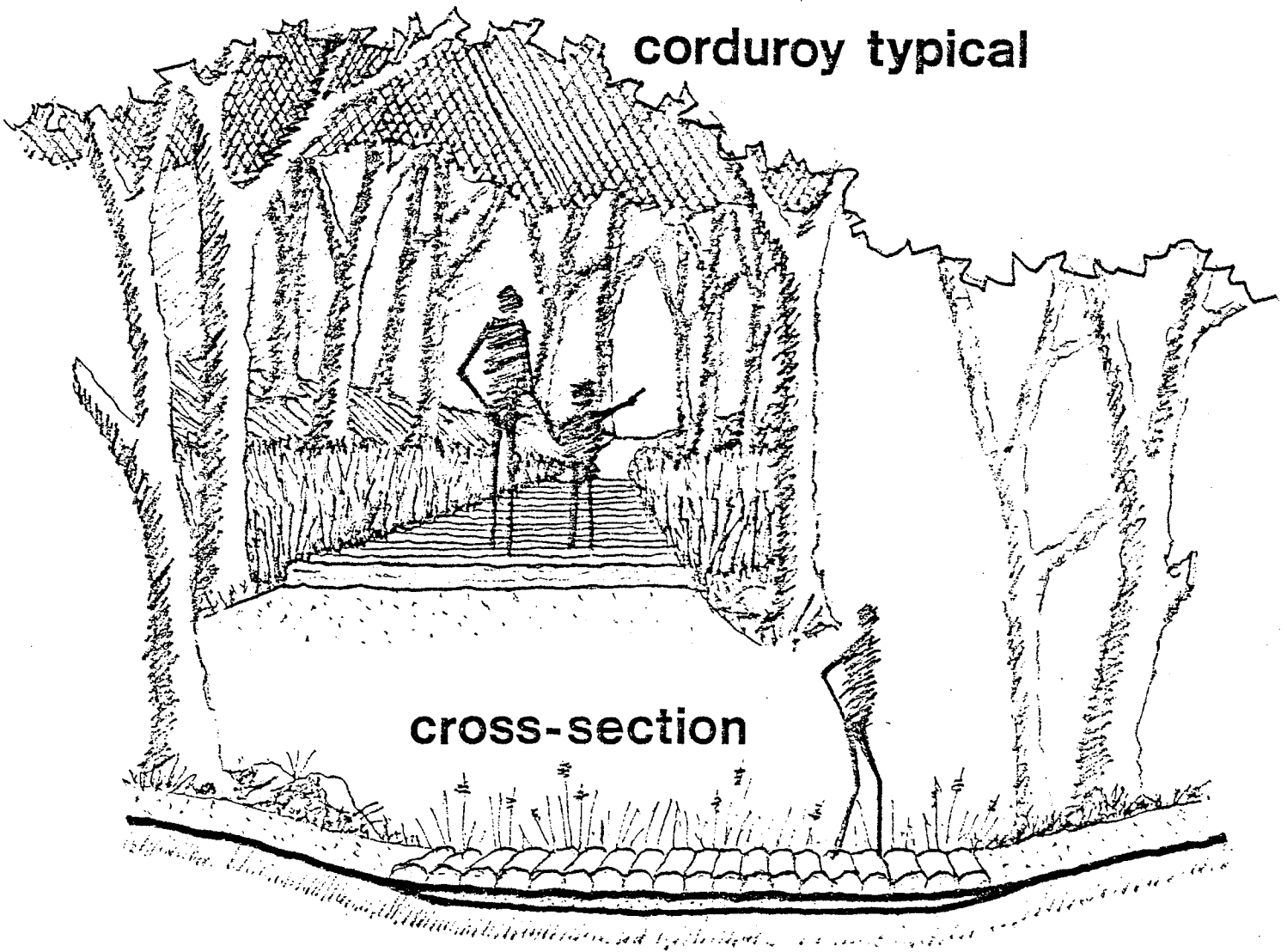


Fig. 8

elevated tread

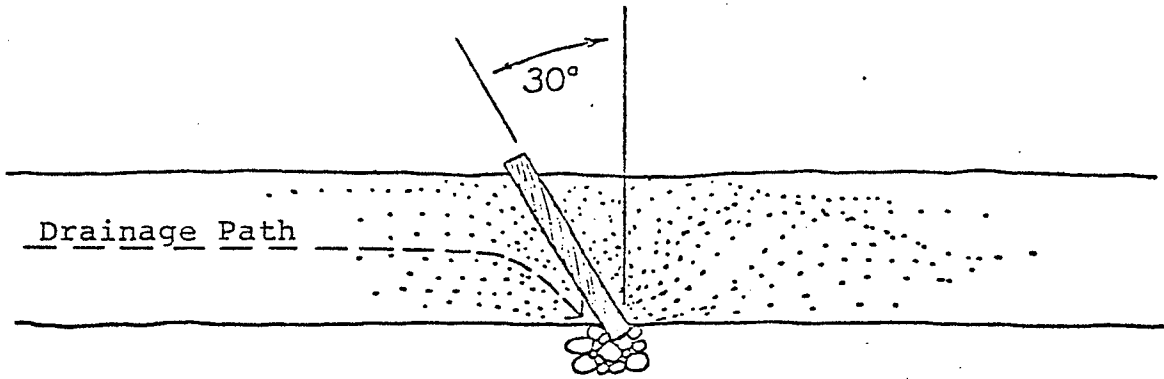


corduroy typical

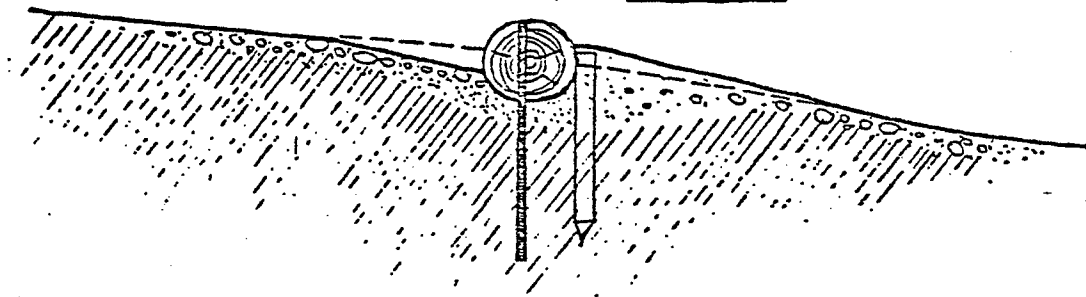


cross-section

Fig.9

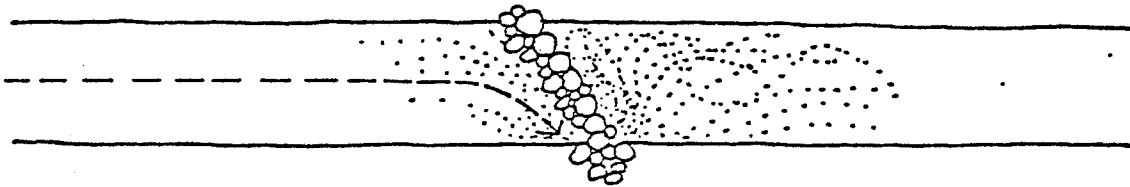


Landscape soil to top of water bar
on downhill side.



Water Bars

Note log is held in place by steel
pin and/or wooden stake. Below; stones
are used as a water bar.



Bridges

No bridge crossings have been identified at this time. Should a bridge crossing be found necessary after final field alignment, the following guidelines will apply:

Bridges will be constructed over any large free flowing stream or wet area. Bridge design will be according to Bureau of Engineering recommendations with help from the unit manager. Where possible, bridges should be made of natural materials which blend into the natural setting of the area. Permits for bridges, culverts, and corduroy will be required from the Division of Waters before any work can be started near streams or lakes (see figures 10 & 11).

Barriers

Natural or constructed barriers to prevent motorized vehicle entry will be utilized at trail entrances, road crossings, or other problem areas. Narrowing of the trail width in these areas is the most simple, economical way and should be utilized whenever possible. This method, however, is not feasible unless other suitable accesses can be found for grooming equipment.

If constructed barriers are deemed necessary, the unit manager should decide what type of barrier will suffice.

Rest Area

Two rest area sites have been identified for construction at this time (see

Fig.10

Natural Materials Bridge

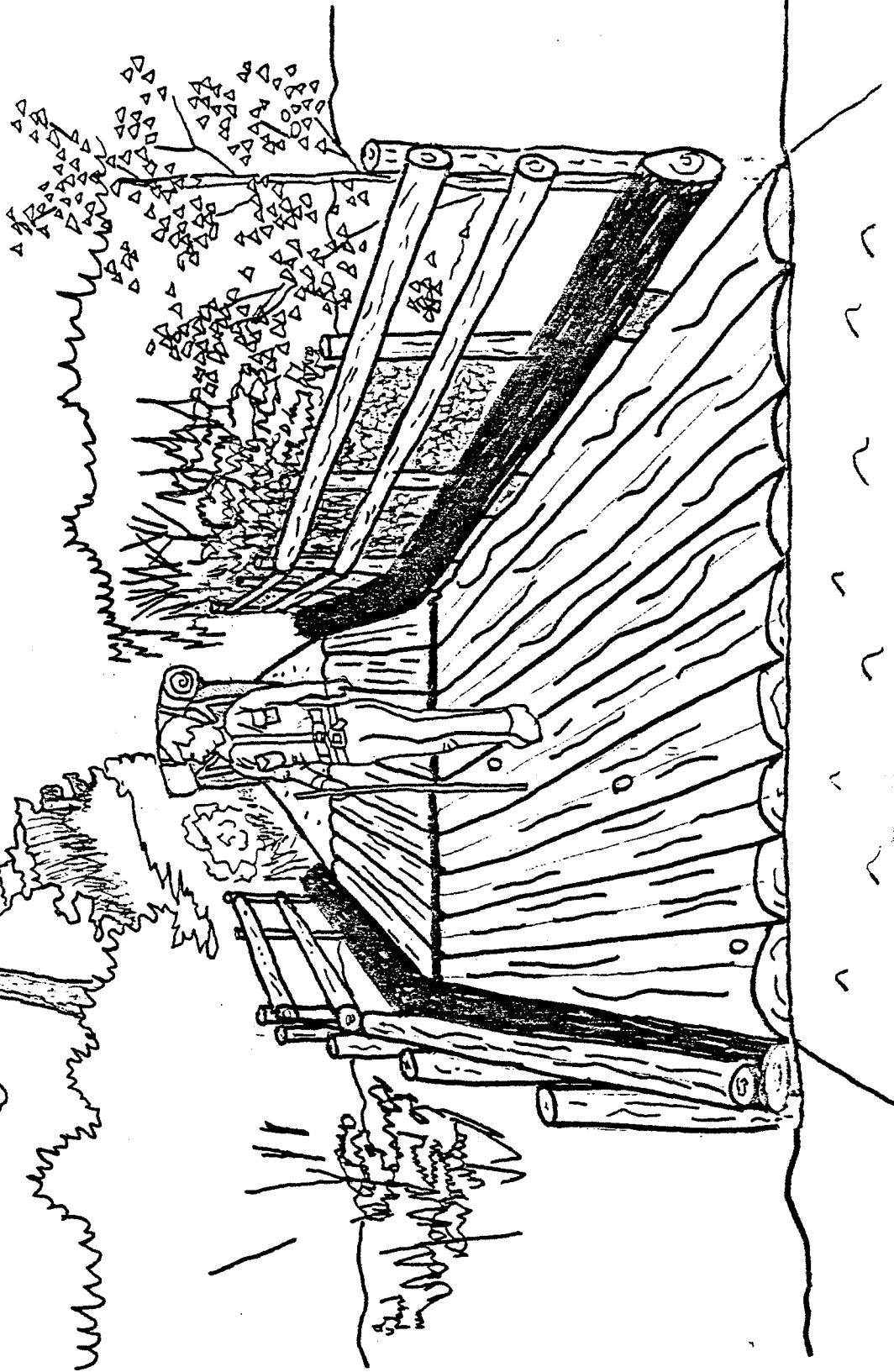
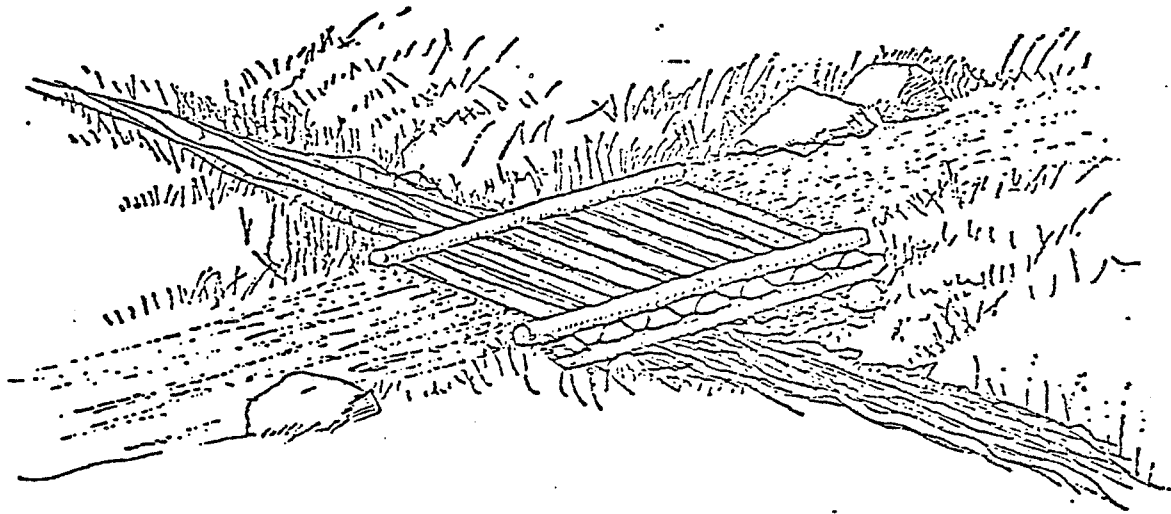


Fig.II Small Natural Material Bridge



This is a smaller natural materials bridge. It should be utilized over small stream crossings, drainage ditches and in some cases, over excessive wet lands.

map figure 5, page 15). They will include a trail shelter and fireplace or fire ring (see figure 12). Pit toilets may be added later if demand requires them.

Shelters will be constructed according to Bureau of Engineering standards and will be placed a short distance from the trail in a manner which will block the prevailing wind. Open spaces between logs should be properly filled with natural materials to stop wind flow. Bottoms of shelters should be banked to prevent wind from entering.

Simple log benches every 2-3 miles along the trail will provide users an additional chance to stop and enjoy the surroundings. These benches should be of the primitive type and located a short distance off the trail (see figure 12.5).

Signs

The trail signing system will conform to the State's Standard system when that system has been finalized. The purpose of this system is to provide information and direction for the trail user. Sufficient signs will be provided to transmit information, insure user safety and facilitate enforcement. Signs are located for maximum visibility and will be kept to the necessary minimum.

"You Are Here" signs will be placed at all trail junctions and trail difficulty markers will be placed at strategic locations. Warning, regulatory, and information signs will be placed where necessary (see figures 13 & 14).

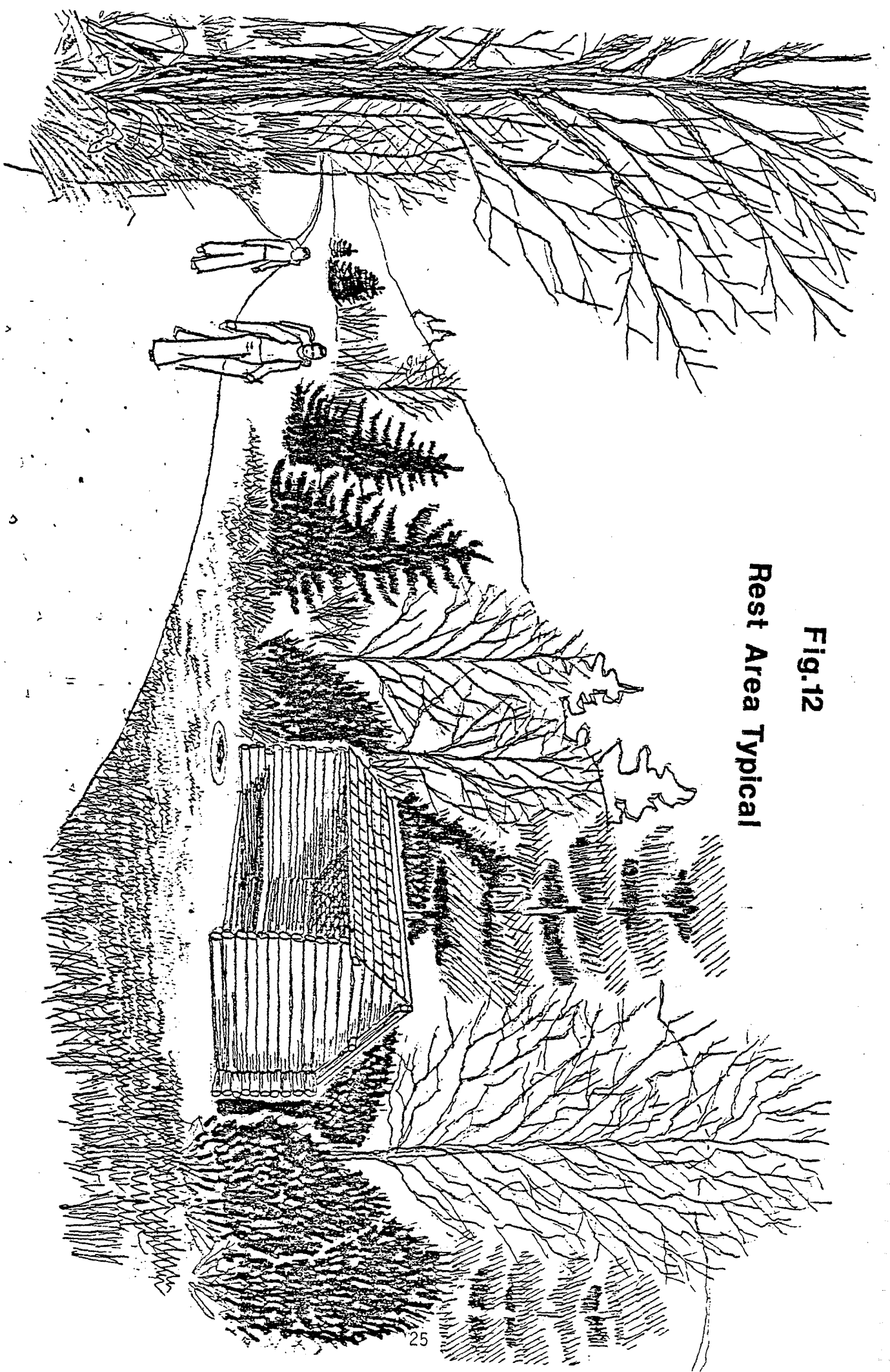


Fig.12

Rest Area Typical

Fig. 12

Simple Log Bench

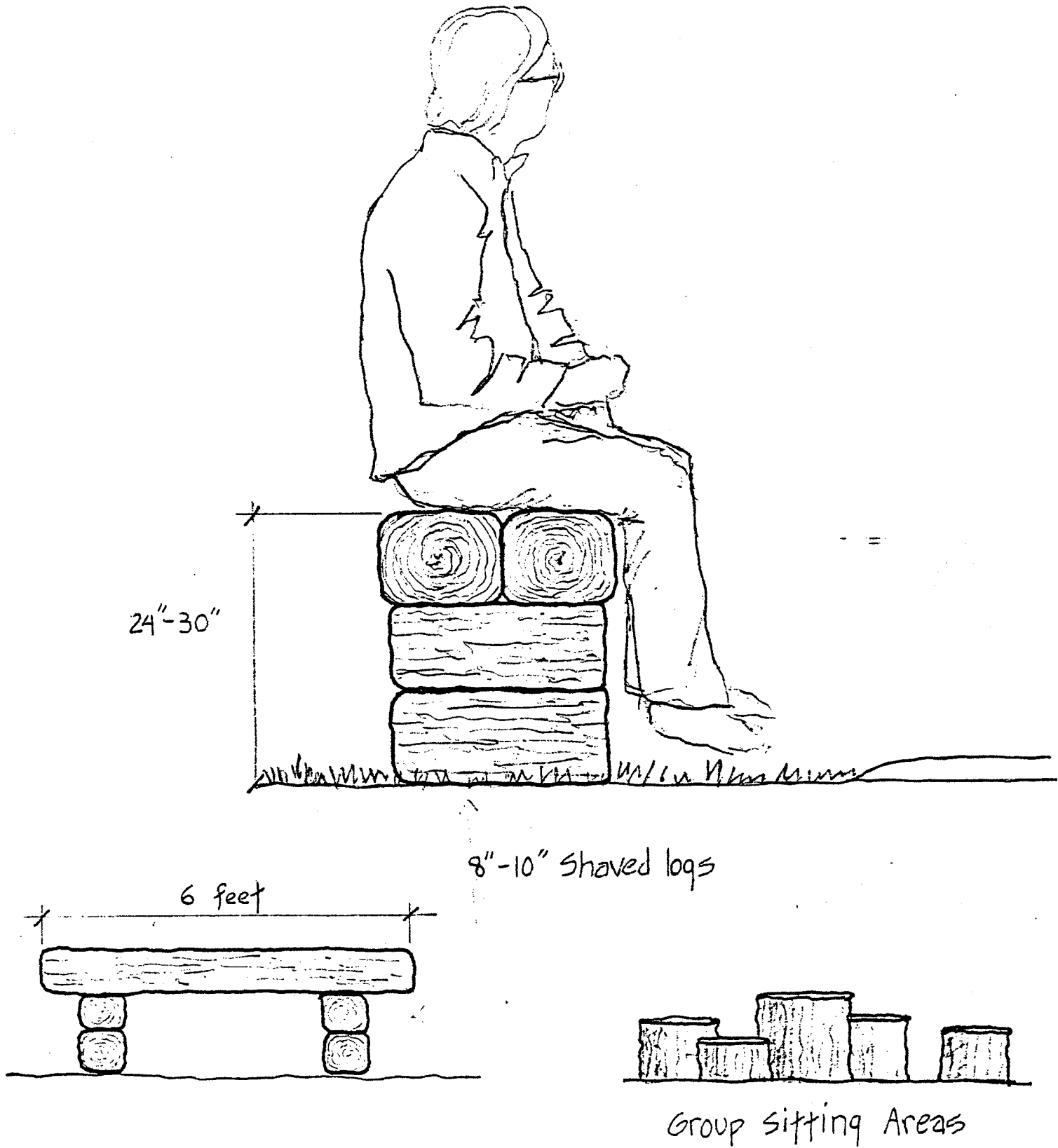
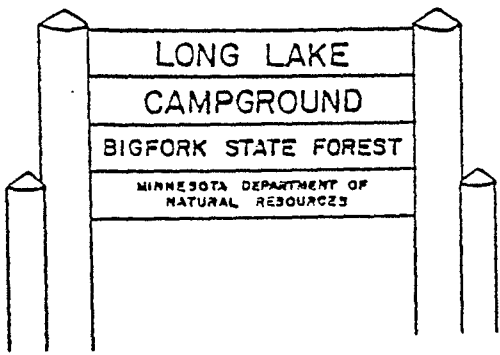
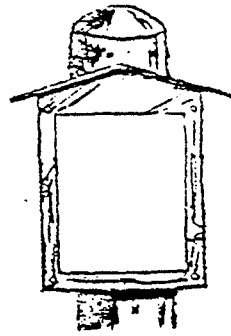


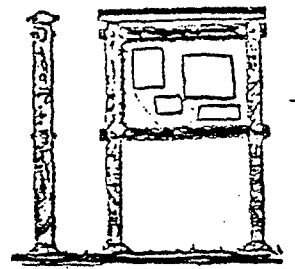
Fig.13 Sign Typicals



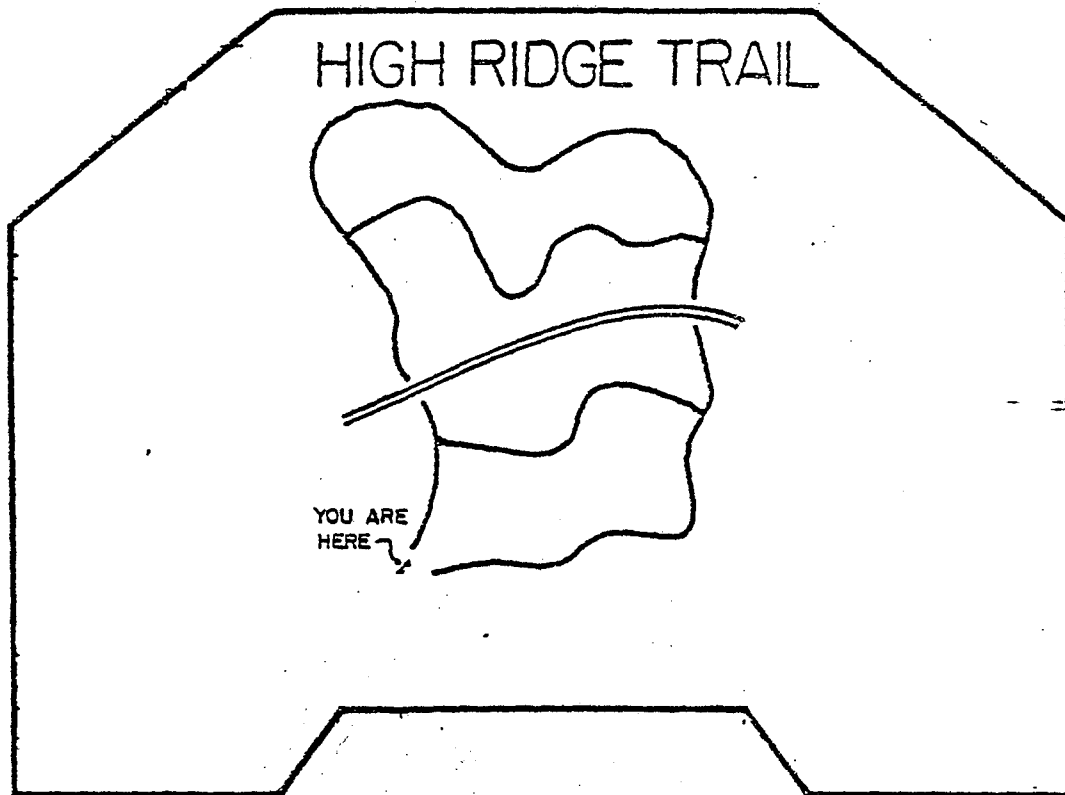
Entrance Sign



**"You are Here"
Sign**



**Information
Bulletin Board**



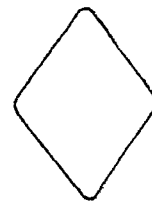
Trailhead Sign



Skier



Hiker

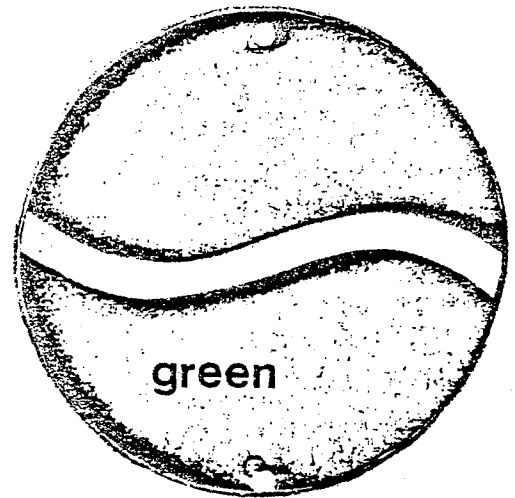


Blazer

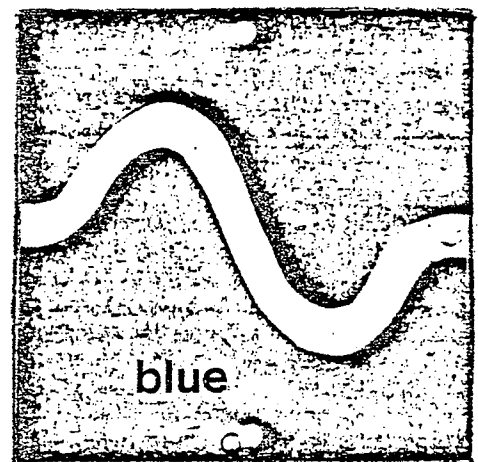
Fig. 14

Trail Difficulty Symbols

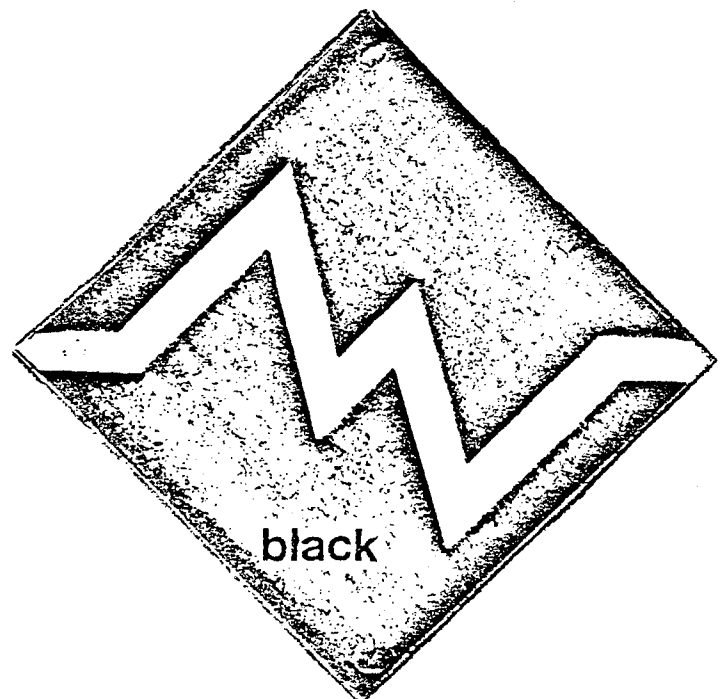
easy



more difficult



most difficult



Interpretive signs identifying tree species, management techniques, and special features of the area should also be erected.

Maps

A user map is extremely important and will be available from a box near the trailhead sign. They will also be available from DNR Forestry Offices, DNR Regional Offices and the Division of Parks & Recreation in St. Paul.

Maps will be used in conjunction with the signing system and will show a generalized location of the forest in relation to the state. The trail route with mileages and facility location will be shown on the front. Interpretive information about the history, development, and management of the area will be included on the back. The map should also make clear to users that the area has been developed in cooperation with Cass County.

The responsibility for map development and printing will be with the Division of Parks & Recreation. The Trail Project Planning Staff and Division of Forestry will have input as to their content and makeup.

Maintenance

Maintenance of a recreation area after development is the most important tool for sustaining its quality. Therefore, maintenance monies are essential if the Spider Lake Ski Touring-Hiking Trail is to remain a quality trail area.

At present, there are no funds earmarked for maintenance of ski touring and hiking areas developed through the bonding bill program.

Therefore, it is a recommendation of this plan that maintenance money be made available through legislation to insure the quality of the area.

Maintenance of the Spider Lake Area will require a year-around program. Routine maintenance will involve litter pick up, cleaning shelters and toilets, sign replacing, and clearing surface vegetation. Major maintenance will involve removal of windfalls, painting and repairing of structures, and controlling erosion.

Winter grooming of the ski treadway will be done on a contracted basis or by state employees using DNR equipment when available. Winter grooming will be set up on a flexible schedule to allow for periods of high and low use. If DNR equipment is necessary to groom the trail treadway because a contractor is not available, it is recommended that equipment be purchased for this purpose. Plowing of parking lots will also have to be contracted or done with DNR equipment. It is recommended that trail grooming and plowing of the parking area be set up in cooperation with Cass County so that maintenance costs and overlaps can be reduced.

Periodic inspections will be made throughout the year to evaluate maintenance problems and actions needed. Inspections may be made by the area or district forester or his designate, (i.e. maintenance foreman or the person in charge of trail grooming). The regional trails coordinator and appropriate St. Paul staff may also inspect the trail if necessary.

Steps Involved in the Planning Process

1. Project proposal is initiated by district forester and is submitted through the area and regional foresters (At this time, the proposal is evaluated for worthiness and the potential for public support).
2. After proven feasible and consistent with the state forest multi-use concept, the proposal is sent to St. Paul.
3. Proposal is then investigated by the Bureau of Planning and Research with the input of the regional trails coordinator, area and district foresters, and other involved divisions.
4. Area of study is defined and a preliminary plan is prepared based on this study. Regional trail coordinator, and the area and district foresters perform necessary "groundwork" and report information to the Trail Project Planning Staff. Input is also received from various levels of government, special interest groups and others.
5. Preliminary plan is sent out to DNR divisions involved for review.
6. Plan is revised subject to this input and printed for public hearing.
7. A public hearing is held in the local area of the unit.

8. Plan is revised again taking into account public, departmental, and other agency review.
9. Plan is submitted to State Planning Agency for review for consistency with the Outdoor Recreation Act of 1975.
10. Possible revision subject to State Planning Agency review.
11. Final Review by State Planning Agency.
12. Division of Forestry along with the regional trail coordinator implements the plan.

Note: Planning is an on-going process which does not stop after final State Planning Agency review. The management plan's built-in flexibility allows for site specific decision at the time of development. After development is completed, periodic re-evaluation of the management program is required for response to changing conditions.

Implementation

The structure of the Department of Natural Resources is such that the Bureau of Planning and Research - Trail Project Planning is responsible for writing the management plan and general implementation monitoring. Input is received from divisions within the department and from the public at information meetings. The plan is then re-written subject to this review and sub-

mitted to the State Planning Agency for final review.

The Division of Parks and Recreation has the responsibility for funding the project. They are also responsible for monitoring development and maintenance to insure that funds are spent in compliance with the bonding bill and master plan.

The Division of Forestry implements the plan, and along with regional staff is responsible for the development and maintenance of the trail area. The development and maintenance must be done in accordance with the management plan.

The regional trail coordinator will coordinate other managers' activities within the region. He will also coordinate design and layout of trails and facilities with the area and district forester. Actual construction and maintenance of the trails will be contracted and/or done by state crews under supervision of the area and district foresters and the regional trail coordinator.

Changes to the management plan must be cleared through the Bureau of Planning and Research - Trail Project Planning.

Estimated Cost of Development

Parking Lot and Access Road	\$2,000
Entrance Sign, Trailhead Sign and Bulletin Board	\$1,500

Treadway Construction (\$600 to \$1,000/mile)	\$10,000
Rest Areas	\$ 4,000
Signs and Maps	\$ 1,000
<hr/>	
Total	\$18,500

Maintenance Costs

Maintenance costs will be worked out by the district and area foresters and the regional trail coordinator. Included in these costs will be plowing, trail grooming, sign replacement and major and minor repairs. A rough estimate of maintenance costs is \$2,000/year.

Timing of the Project

Sixteen state forest ski touring and hiking areas have been identified as prime areas for development or improvement during 1978. The Spider Lake Ski Touring-Hiking Trail is one of these projects.

The proposed developments are scheduled to be constructed during the summer and fall of 1978 so that they will be ready for use in the winter of 78-79.

The area will be monitored continually by the district forester and other personnel to assess any problems that have occurred or to assess additional developments which may be necessary.

Future Potential Expansion

One area for expansion of the ski touring-hiking area was identified during plan formulation. This area is on the west side of Cass County Snoway #1 and has good potential for expansion. (See figure 5, page 15)

An additional ten miles of trail could be developed in this area. If this additional mileage is developed, facilities and treadway design will be similar to the original area. The area is state and county controlled land which would make expansion relatively easy.

All future recreational developments in the Foothills State Forest will be coordinated with the Spider Lake Management Plan and the State Forest Management Plan.

Recreational Needs to be Served

Ski touring and hiking are two activities that have experienced a tremendous growth in popularity in recent years. The 1974 Minnesota State Comprehensive Outdoor Recreation Plan (SCORP) identified ski touring and hiking as two of the fastest growing recreational activities in the state.

At that time it was estimated that the number of Minnesotans participating in hiking was 300,000 users and it was projected that over 100,000 Minnesotans would be participating in ski touring by 1975, SCORP also emphasized that these activities would continue to grow in popularity in the future.

The potential use area for the Spider Lake Solitude Area includes Economic Development Regions V, VII, and XI. The map in figure 15 shows the immediate day use area. This area is defined as the distance people would travel to use this unit without requiring overnight facilities. Most day use can be expected from Brainerd, Pine River, and other cities within an hour drive. Weekend users can be expected from regions 5, 7, and 11.

No figures are presently available for user demand by Region or State.

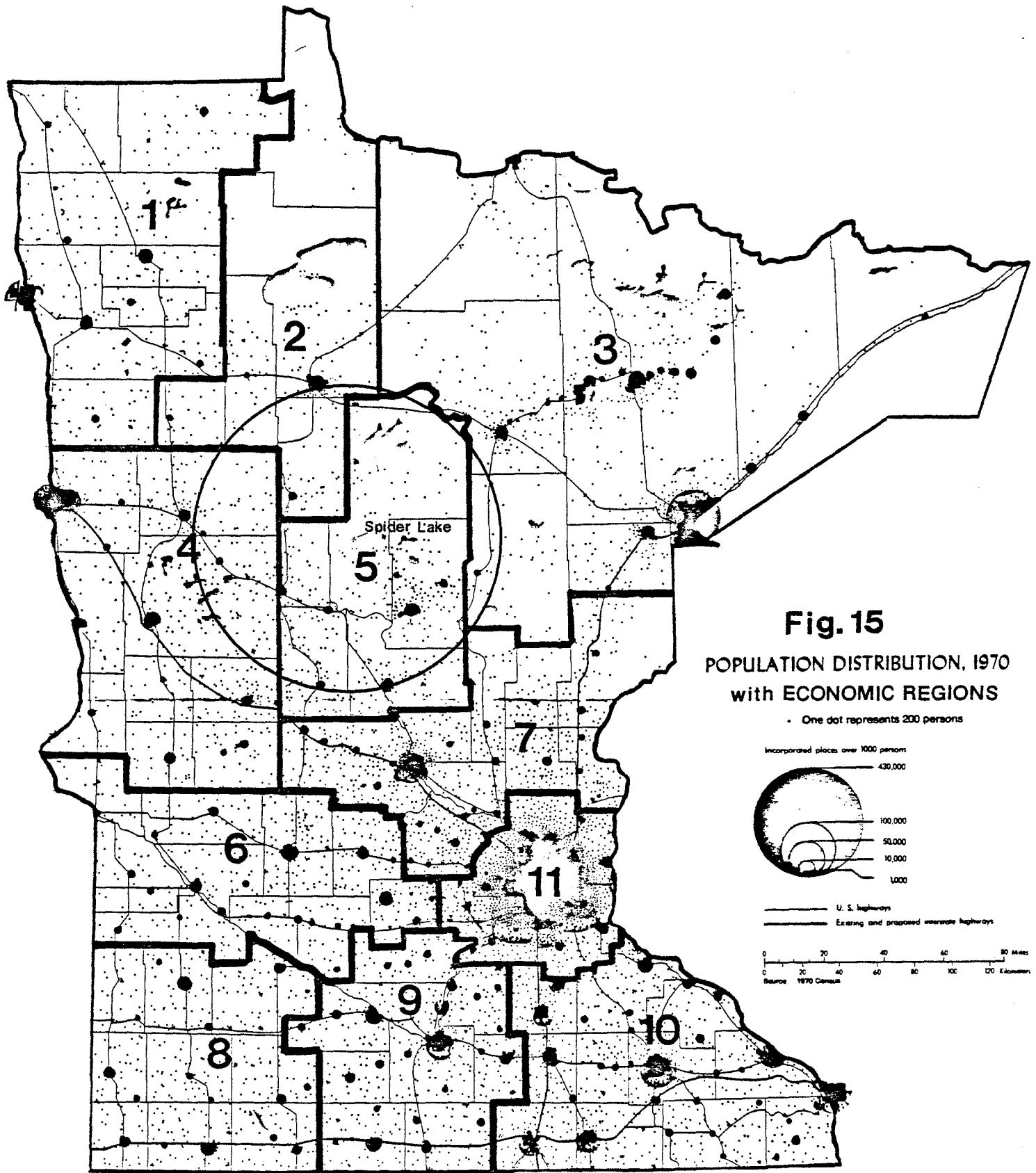
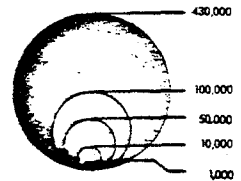


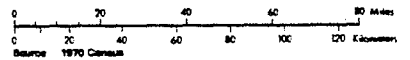
Fig. 15
POPULATION DISTRIBUTION, 1970
with ECONOMIC REGIONS

• One dot represents 200 persons

Incorporated places over 1000 persons:



— U. S. highways
 — Existing and proposed interstate highways



Source: 1970 Census

Description of the Environment

Topography

The topography of the area is very irregular with rolling steep hills mixed with numerous poorly drained areas. Most of the area is an upland plain covered by glacial deposits. Elevations range from 1328 feet in the swampy areas to 1468 feet in the morainal hills. Spider Lake, a medium sized lake (89 acres) and many small lakes in the area (10 acres) add to the scenic quality of the terrain.

Soils

Detailed soil survey information is not presently available for the Spider Lake Unit. Broad soil characteristics show that the area contains a sandy loam well to excessively drained in the rolling hilly areas, with a poorly drained sandy loam or peat in the depressional areas. Underlying materials are a sandy loam sand and gravel in the hilly areas with sandy loam or peat for substratum in the depressional areas.

Major soil series in the area is the Flak-Brainerd-Nokay series. These are light colored soils formed from a stoney noncalcareous sandy loam glacial till. Flak is well drained, Brainerd moderately well drained and Nokay is somewhat poorly drained. Major management problems with this series are stone removal, erosion control and drainage.

Climate

The climate in the area of the Spider Lake Trail is ideal for outdoor recreational

activities. Average annual number of days with snowcover of 1" or more is one hundred twenty days with normally 60-80 days with 6" or more. Average annual snowfall is 45-50 inches. Winter (December, January, February) normal temperature is 11⁰F. Mean maximum temperature for January is 18⁰ with mean minimum temperatures -4⁰.

Mean annual precipitation averages 26" with a summer (June, July, and August) normal temperature of 67⁰ for the area. Mean maximum temperature for July is 82⁰ with a mean minimum temperature of 58⁰.

Water Resources

Surface water resources in the Spider Lake Trail area consist of a great number of small to medium sized lakes. These natural lake basins are a very important resource in the area. As can be seen from the map in figure 5, page the trail is located adjacent to several of these lakes, which add to the scenic quality of the area.

Mineral Resources

No economic concentrations of minerals are known to occur within the trail area.

Vegetative Cover

As aspen-birch forest is the predominant cover type for the unit, (60% aspen, thirty percent birch, 10% bottomland hardwoods and mixed pines). Dominant species usually found in this cover type include quaking aspen, paper birch,

jack pine, spruce, and balsam fir.

Logging and fires in earlier years have had a major influence on the vegetation in this area.

Wildlife

The Spider Lake Trail area and adjacent woodlands contain a relative abundance of deer, grouse, mink, and beaver. Other animals present in the area include raccoons, porcupines, skunks, squirrels, rabbits, and brush wolves. Waterfowl and songbirds are also present in the area. Sighting of these animals from the trail is possible, but numbers will vary with the season.

Land and Timber Resources

The Foothills State Forest located in Cass County contains a gross land area of 45,125 acres. Of this gross land area, 17,556 acres are under the Division of Forestry control, 12,934 acres are under county control, with the remainder in other state or private ownership. State lands in the forest are not in contiguous ownership.

Management of the forest is divided between the Nimrod and Backus districts. The portion of the Foothills State Forest under forestry control in the Nimrod District consists of 2,836 acres. State ownership in the Backus District consists of 15,392 acres.

Of this 18,228 acres of state land in the Foothills State Forest, 12,526 acres are timber producing 3,356 acres are deforested², with the remaining acreage non-forested. Sixty-six percent of the timber producing acreage is an aspen-birch covertime, 10% is bottomland and northern hardwoods, 10% norway and white pine, with the remaining 14% made up of jack pine, black spruce, spruce-balsam, and tamarack covertypes.

Most of the timber producing acreage in the forest is in the reproduction and pole size class. Annual acreage recommended cut for the forest consists of 210 acres aspen-birch, eight acres bottomland and northern hardwoods, 14 acres of jack pine, eight acres norway and white pine and one acre of black spruce, spruce-balsam, and tamarack. (Most of the cut acreage is contained in the Backus District.)

Air and Water Quality

The area surrounding the Spider Lake Trail Area is undeveloped and low in population density. Industrial air pollution is not a problem in the area. Auto emissions are a minor source of local air pollution.

Surface water quality in the area is good and water pollution is not considered a problem.

No wells are being proposed for users in the area. Therefore, groundwater quality has not been studied at this time.

²Productive lands with potential for reforestation thru regeneration or planting.

Historical and Archaeological Resource

No historical or archaeological sites have been identified by the State Historical Society in the Spider Lake Trail area at this time. The area, however, has been studied and does have high potential for finding such sites. The Historical Society will review the management plan prior to development to decide whether future investigation in the area is necessary.

Transportation and Utilities

Access is provided to the area from the north-south direction via State Highway 64, which parallels the forest on the west, and State Highway 371 which parallels the forest to the east. Access to the area from the east-west direction is via Cass County 2 which intersects Highway 371 at Pine River, and intersects Highway 64, 14 miles west of Pine River. Access to the Spider Lake parking lot will be via Cass County #2 (see figure 1.5).

Socio-Economic Factors

The Minnesota State Planning Agency (SPA) population projections for Cass County and Economic Development Region 5 show a gradual increase in population for both county and region.

Population Projections

<u>Year</u>	<u>Cass County</u>	<u>Region 5</u>
1975	18,800	119,400
1980	19,400	122,500
1985	20,300	127,600
1990	21,200	131,800

<u>Year</u>	<u>Cass County</u>	<u>Region 5</u>
1995	22,500	136,200
2000	24,100	139,500

Four types of major employment for Cass County are: 1) Agriculture, Forestry and Fisheries (12.5% of the employed labor force); Construction (7.5%) Wholesale and Retail Trade (21.6%), and Government (6.9%).

Tourist travel expenditures are a major source of revenue for Cass County accounting for 56.5% of overall gross sales in the county in 1974.

Land Use and Development Trends

Cass County General Land Use (Forty Acre Parcels)			
Forested	-	25,399	Marsh - 1,334
Cultivated	-	1,017	Urban - 838
Pasture and Open	-	4,247	Extractive - 0
Water	-	5,993	Transportation - 4
		Total	- 38,832

1975 Pocket Data Book - State Planning Agency

Agricultural and forestry are the primary land uses surrounding the Foothills State Forest. All lands to be used for development of the Spider Lake Solitude area are in public ownership and under state or county forest management.

Current agricultural, commercial or industrial land uses within the county

do not affect the proposed solitude area. Timber harvesting is permitted in the area.

Facilities in Region V

Region V is a major vacation area both for Minnesotans and people from other states. This region contains three state parks, twelve state forests, part of a national forest, fifteen historic sites, a canoe and boating route and a corridor trail. There are 692 miles of snowmobile trails and 150 miles of ski touring trails presently available in the region.

Numerous resorts, motels, hotels and campgrounds can be found throughout the region. Many of these facilities are open year-around to accomodate the needs of most outdoor recreationists. Service facilities are also found throughout the region.

Facilities in the Forest

The Foothills State Forest is relatively undeveloped. State facilities include 15 miles of marked and groomed snowmobile trail. County facilities include Cass County Snoway 1, a grant in aid snowmobile trail, and the Cut Lake Ski Touring Area.

A campground-picnic area has been developed by the Grange on the north end of Spider Lake. Facilities include a picnic shelter, picnic tables and pit toilets. No state operated campgrounds have been developed in the forest.

Management Programs within the Forest

Management of the Foothills Forest is based on recommendations outlined in the Nimrod and Backus District Forest Management Plans. These plans are formulated for each forestry district throughout the state and are based on the state "Timber Management Guide" and other policy manuals. The management program is based on a ten year period, while necessary adjustments are made to fit local conditions.

The management program includes timber, wildlife, soils, water, and recreation. Management of these resources requires a coordinated program which brings about maximum productivity and protection as well as providing other public benefits such as recreation.

Development of the Spider Lake ski touring and hiking trail will be an integral part of this management program and will not inhibit other forest management practices.

Necessary adjustments will be made in the area to avoid conflicts between other management activities and the trail. Development of the ski touring and hiking trail, however, will not exclude use of administrative vehicles and/or contractors who have been assigned to do work in the area. It will also not exclude automobiles from roads which are normally plowed during the winter.

When timber harvest is recommended in the area, cutting and hauling will try to be scheduled between May 1 and November 1 to avoid conflicts between skiers and contractors. In some instances, such as when swamp conifer types are recommended for harvest, logging operations will have to be performed in the winter to take advantage of frozen ground conditions. In these instances, portions of the trail treadway may have to be closed or rerouted temporarily to permit timber harvest operations to be run efficiently.

Timber sale contracts will be adjusted to insure that trees are not felled blocking the treadway. Provisions will be written so that the trail treadway, if damaged, will be returned to its original condition. Provisions will also be written to insure that slash and other debris are scattered away from the trail.

It should be emphasized at this point that some forest trails will not always be permanent. As forests change in age, timber harvest will preclude established trail use in some areas. To adjust for these changing conditions, the trail will be rerouted into other areas in the forest. Thus, while trail use will be an established use in state forests, the trail location may not.

All management decisions concerning the area will be made in a manner that insures that the needs of other management activities and recreation are met with the least possible conflict.

Potential Concerns and Considerations

The Spider Lake Ski Touring-Hiking Trail as identified contains a variety of terrain, wildlife, water, and vegetation which will make it a very desirable area for ski touring. One condition of the area which may concern ski tourers is the location of Cass County Snoway #1 which passes through the area. This concern, however, will be minimized as much as possible through trail alignment. Signing and barriers will be utilized at all snowmobile-ski touring trail junctions to prevent conflicts between users.

Any visible timber management activities should be interpreted for the benefit of the recreationists. Signs could be utilized to inform the user of management practices which may otherwise be misunderstood. Education through interpretation will help promote better public understanding of timber management which can lead to successful integration of forest management and recreational programs.

Environmental Impact of the Proposed Project

Impact on the Physical and Biological Environment

Since the soils in the area are generally medium to fine textures, some soil compaction may occur in high use areas of the trail treadway. Overuse of such areas may also cause denudation of vegetation from these areas making soils more susceptible to erosion.

These effects will be minimized through the selection of dry soil types where possible, and by using corduroy and culverts where necessary to prevent compaction. Reseeding of the trail after upgrading should also help to minimize these problems.

The proposed action will not have a significant impact on surface or ground water resources. Some erosion will occur during construction and use. This however, will be minimized by route selection, retaining natural ground slope and using water bars and culverts where necessary. No sedimentation of lakes or streams is anticipated.

No impacts on mineral resources are expected.

Adverse impacts of the proposed action on vegetation will be its loss from the trail treadway, rest area and parking lot during construction. These impacts, however, will be offset by reseeded of the trail treadway and rest areas.

Wildlife will be disturbed during construction, maintenance and use of the trail. Trail construction may also result in more wildlife being harvested adjacent to the trail by hunters using the trail for access. These effects however, will be minimal and only result in concentrated disturbance rather than dispersed disturbance. Particularly sensitive areas such as deer yards will be avoided during alignment.

Wildlife will probably benefit from seeding of the trail treadway.

Increased use will cause some deterioration in air quality as a result of increased auto emissions on the access roads and parking area. Use of heavy equipment in development will have a temporary adverse impact on air quality.

Water quality should not be adversely affected by the proposal.

Impact on Historical and Archaeological Resources

No impact on these resources has been identified at this time. Further study by the Historical Society may reveal sites which must be avoided during development.

Impact on Transportation and Utilities

Expected increases in use of the area will have an insignificant impact on traffic volumes on the highway access routes to the area. Access to the area via the township and forest road should not be adversely affected.

No impact on utilities will occur.

Impact on Socio Economic Factors

Since all of the land is already in public ownership, no loss from local tax revenue will occur. Beneficial impacts on the local economy will be realized. This will result from increased tourist travel expenditures in the area.

Impacts on Land Use

Construction of the trail will not change the land use of the area. It will, however, limit use of the trail treadway to non-motorized recreation.

Impact on Management of the Forest

Normal forest management activities will only be slightly affected by the development and maintenance of this Trail Area. The Area and District Foresters, and the Regional Trails Coordinator will be impacted by development, maintenance, and enforcement made necessary by the non-motorized status of the trail. Trail shelters and other improvements that are subject to deterioration and vandalism will also add to this impact.

References

Climate

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2. "Minnesota Soil Atlas-Brainerd Sheet" University of Minnesota Agriculture Experiment Station, 1969.

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3. "Hydrologic Atlas of Minnesota" Minnesota Department of Natural Resources - Division of Waters, April 1959.

Vegetative Cover, Wildlife, Timber Resources and Management Programs

4. Nimrod District Management Plan - MN DNR - Division of Forestry, 1970.
5. Backus District Management Plan - MN DNR - Division of Forestry, 1967.

Soils

2. "Minnesota Soil Atlas-Brainerd Sheet", University of Minnesota Agriculture Experiment Station, 1969.
6. "Soils of Minnesota", H.F. Aruneman, University of Minnesota Agriculture Experiment Station, June 1963.

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7. Minnesota State Comprehensive Outdoor Recreation Plan - MN DNR - Bureau of Environmental Planning and Protection, 1974.

Development Specifications

8. "The Ski Touring Trail Planner", Timothy B. Knopp and Jack P. Maloney.
9. "Trail Construction Guidelines", Ontario Ministry of Natural Resources, 1976.

Population

10. SPA/CURA wall map series.
11. Population Projections 1970-2000, State Demographer State Planning Agency.

Socio Economic

12. Minnesota Socio-Economic Characteristics, State Planning Agency.
13. Minnesota Research Bulletin #06, Department of Economic Development, 1974.

Land Use

14. Pocket Data Book, 1975. State Planning Agency.
15. State of Minnesota Land Use map MLMIS 1969.

Draft Plan Review: Public Meeting

A public meeting was held on June 6, 1978 in Pine River, Minnesota concerning the Spider Lake Ski Touring and Hiking Trail. Approximately 35 citizens attended the meeting.

Endorsements of the project were received from the Pine River Chamber of Commerce, the Pine River Ski Touring Club and the local school district. Other citizens in the audience also spoke out in favor of the plan. No one spoke in opposition to the management plan.

Main concerns discussed were preventing snowmobiles from using the trail and grooming of the trail treadway. These concerns have been addressed in the plan.

The Cass County Forester stated that the county would have final approval of alignment on county lands. The DNR Foresters and regional trail coordinator will work with the county to finalize alignment.

Due to the overwhelming amount of public support, the DNR feels that this will be one of the most successful projects of the Governor's Accelerated Ski Touring program.