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Management Plan for Tower Soudan State Park

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This document is a summary of the Tower Soudan State Park management plan. All recommendations, both resource management and physical development, are included here. The detailed inventory data and specific instructions for implementation of resource management and facility development have been compiled into a comprehensive management plan with technical appendices. These documents are on file in the:

Office of Planning Department of Natural Resources Box 10E Centennial Office Building St. Paul, Minnesota 55155

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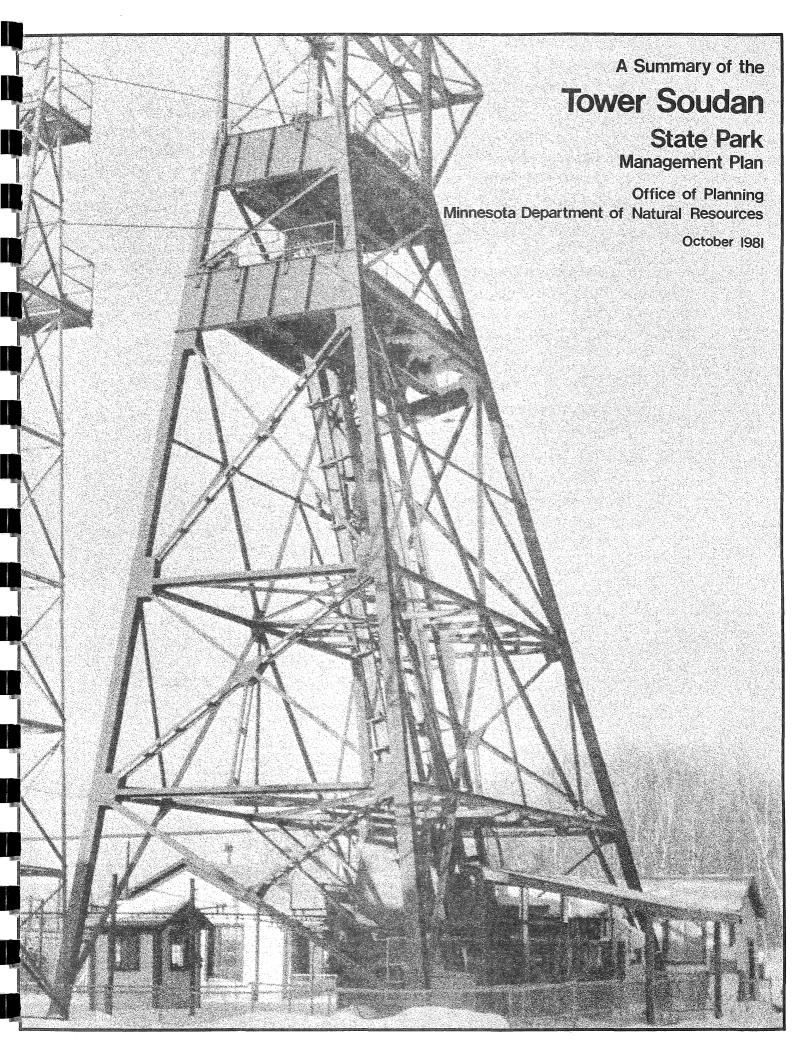


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Introduction

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AN OVERVIEW OF TOWER SOUDAN STATE PARK

Establishment of Tower Soudan State Park came about through a generous gift of United States Steel Corporation (US Steel). The Minnesota Department of Natural Resources (DNR) was contacted by them in the early 1960s to discuss the possibility of making the soon to be abandoned Soudan Mine into a state park. The legislature agreed and established the park in 1963.

The statutory boundary included 2,900 acres (1,174 hectares). (A statutory boundary is established by the legislature. It identifies land which has outstanding recreational and resource value. The DNR has authority to acquire land only from within this boundary from willing sellers for park purposes). The DNR, Division of Parks and Recreation currently owns 1,030 acres (417 hectares). Most of this acreage was given by US Steel in two gifts - one in 1963 and one in 1965.

Tower Soudan State Park is located on a rugged ridge in northern St. Louis County on the south shore of Lake Vermillion, north of the communities of Soudan and Tower. These namesake communities are the nearest population centers. Tower's population was 669 in 1970. Soudan is slightly smaller. The park is about midway between the larger population centers of Ely (5,219) to the east and Virginia (12,450) to the west. Trunk highway 1/169 (TH 1/169) provide access to the park from the east (Ely and the North Shore), west, and south. Intertate 35 (I-35) and TH 53 provide access from the south. TH 53 and 1/169 provide access from the north.

Tower Soudan State Park offers a unique combination of recreational opportunities, including picnicking, hiking, snow-mobiling, and the only underground mine tour in the country. The park also contains a small picnic area and hiking and snowmobile trails. Within the statutory boundary are 158 small lakeshore lots, leased by individuals from the state. There are boathouses on 149 of these lots.

The park supports scenic stands of white and Norway pine mixed with some balsam, aspen, and birch on the uplands. The low-lands are dominated by white cedar interspersed with balsam,

tamarack, black spruce, ash, and muskeg.

The park is bordered on the north by Lake Vermillion and the east by forested land owned by steel companies. The eastern part of the southern boundary borders the community of Soudan, the remainder is forested and open mining company land, part of which is being farmed. The western boundary is bordered by McKinley Park (a Breitung Township park) and residential development. Near the west and south side of the park is a municipal park and a landing strip. The two nearby parks have both camping and day use facilities.

The interrelationship of Tower Soudan State Park to other recreational facilities and population centers in the area was analyzed to assess the demand for particular recreational opportunities and to determine how the park should function in fulfilling this demand. The recommendations for development of the park were based on this analysis. A complete discussion of the regional analysis of the area surrounding the park is included in the comprehensive management plan.

The landscape region system divides the state into 18 regions (see map, p 8). These regions are differentiated according to the characteristic plant and animal life, landforms, and cultural patterns which existed before, during, and after European settlement. This system is a framework which provides information valuable in planning Minnesota's state parks.

THE PLANNING PROCESS

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

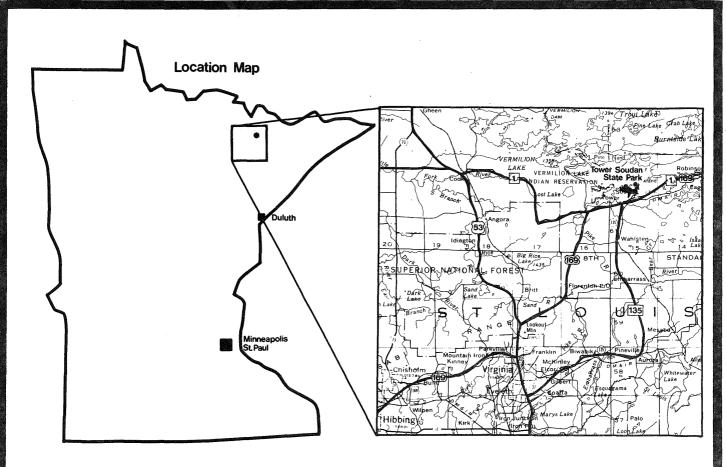
The park planning process consists of six steps:

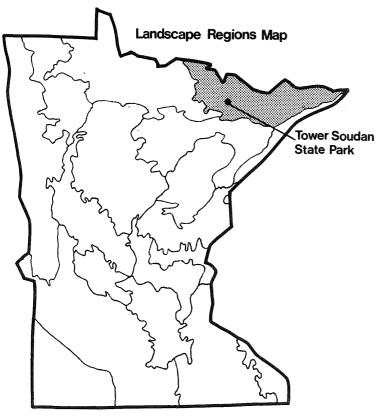
- 1. An inventory of natural resources, visitor use, and existing facilities is compiled. Specialists from other DNR divisions and sections assist in collecting pertinent data. At this point the first public workshop is held.
- 2. Alternatives for park management and development are developed. A second public workshop may be held to review these alternatives and invite further public comment. These alternatives are then reviewed by the Park Planning staff and the DNR, Division of Parks and Recreation.
- 3. The recommendation for park classification is made, the park goal is developed, and the draft plan is written. This step culminates in the first interdepartmental review.
- 4. The draft plan is revised as the result of the interdepartmental review. The revised plan is made available to the public for a 30 day review period, after which the final public meeting is held.
- 5. The draft plan is revised according to information received from the public review. The plan is then sent to the Department of Energy, Planning, and Development for a 60 day reviewal period. (This plan was approved June, 1981.)
- 6. The plan is implemented by the DNR, Division of Parks and Recreation.

SUMMARY OF MANAGEMENT AND DEVELOPMENT PROPOSALS

Major proposals of this plan are:

- Thin pine stands and maintain grassy openings for wildlife.
- Provide nesting structures for woodducks.
- Conduct archaeological surveys.
- Develop a new park entrance road off TH 1/169 from the east.
- Relocate the contact station on the new entrance road.
- Construct a new parking lot north of the service area.
- Relocate the picnic area.
- Rehabilitate the entire mine tour operation.
- Rehabilitate and expand the trail system to provide for hiking, snowmobiling, and ski touring.
- Provide an alignment, trail shelter, and parking area for the Taconite Trail.
- Rehabilitate the service area.
- Improve and broaden the park's interpretive program.
- Revise the statutory boundary by removing 1,620 acres (655.6 hectares) and adding 20 acres (8.1 hectares).





Border Lakes Landscape The ice-Region occupies the scoured area of the state, from eastern Cook County to western St. Louis County. Soil is generally shallow and bedrock outcrops are common on hilltops and upper slopes. Intervening basins are filled with clear, cold rock-rimmed lakes with numerous streams spilling from one lake basin to another. Most of the area is forested with pine, spruce, and aspen-birch in various stages of ecological succession. The complex vegetational pattern is the result of and dependent on fire.

Classification

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CLASSIFICATION

There is a delicate balance which must be maintained when recreational facilities are provided for large numbers of people in areas of outstanding and often sensitive resources. Inappropriate development can result in irreparable damage to the resource. To help ensure this recreation/resource balance, the Minnesota State Legislature established, through the Outdoor Recreation Act of 1975 (ORA), a classification process whereby each unit in the state recreation system can be identified as one (or more) component in the system. components are: natural state park; recreational state park: state trail; state scientific and natural area; state wilderness area; state forest and state forest sub-area; state wildlife management area; state water access site; state wild, scenic, and recreational rivers; state historic site; and state rest area. Included in this legislation are general criteria for classifying, planning, and managing each of these components.

Criteria for a Recreational State Park Designation

DNR policy identifies four criteria based on ORA which a park must substantially meet to qualify for classification as a recreational state park. Tower Soudan State Park meets these criteria.

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

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

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

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

Criteria for a Historic Site Secondary Unit Designation

"A unit of the outdoor recreation system may be authorized wholly or partially within the boundaries of another unit when the authorization is consistent with the purpose and objectives of the respective units..."

The park's mine and attendant facilities substantially satisfy the following ORA criteria for a historic site and are consistent with the purpose and objectives of a recreational state park.

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

"Is associated with persons whose lives and accomplishments are historically unique or important; or

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

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

"Is a geographical feature of outstanding significance and includes, by way of example, the highest point in the state, the continental divide, and the source of the Mississippi River."

Criteria for a State Trail Secondary Unit Designation

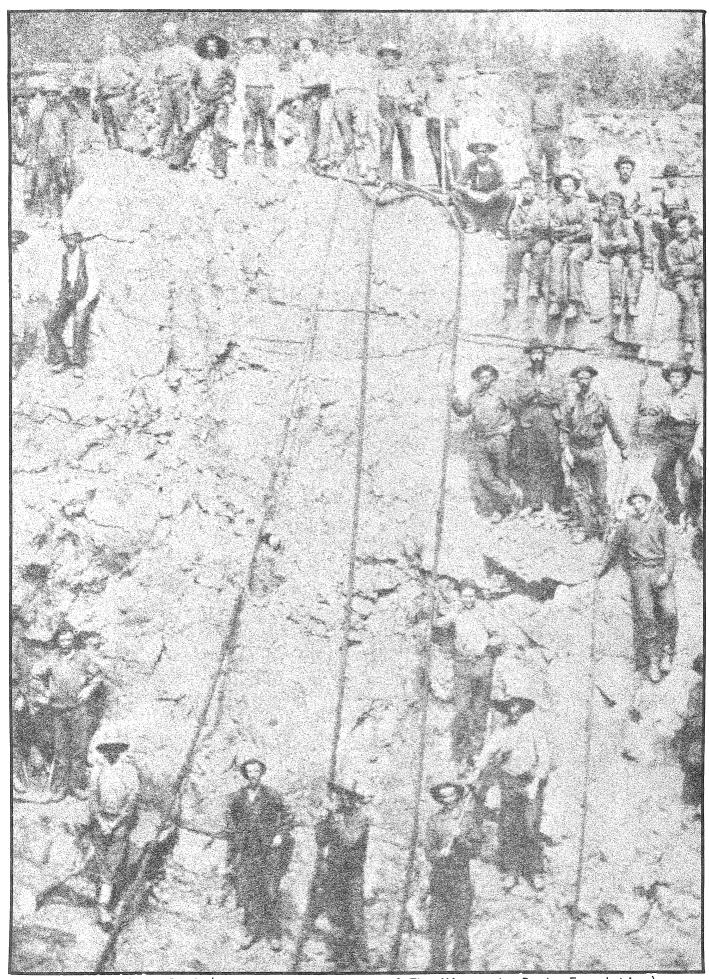
A suitable corridor for a segment of the Taconite Trail within the park substanially meets the following DNR State Trail Policy criteria and is consistent with the purpose and objectives of a recreational state park.

"Trails shall have significant cultural, historical, recreational, or scenic attributes or connect or have the potential to connect units of the outdoor recreation system, the national trail system, or other recreational trails.

"Trail location shall take into consideration public needs.

"Trails shall utilize, to the greatest possible extent, public lands and rights-of-way.

"Trail rights-of-way should be acquired for long term use."



Miners about 1890 (photograph, courtesy of The Minnesota Parks Foundation).

Criteria for a Scientific and Natural Area Secondary Unit Designation

There is small rock outcrop on top of Soudan Hill which fulfills the following DNR Scientific and Natural Area Policy criteria and is consistent with the purpose and objectives of a recreational state park.

"Areas shall feature elements of natural diversity of exceptional scientific and educational value.

"Areas shall be large enough to preserve their inherent natural values and permit effective research or educational functions."

Because Tower Soudan State Park substantially fulfills all of the above criteria, it is recommended that the park be classified as a recreational state park. Also within the park, there are three areas which are recommended for classification as secondary units - a historic site, a state trail, and a public use scientific and natural area.

The Secondary Unit Map on p 33 delineates the three recommended secondary units in Tower Soudan State Park.

GOAL

The goal for Tower Soudan State Park is to provide a unique, high quality, historically-oriented interpretive experience augmented by recreational trail opportunities and potential water-based recreational activities. Resource management will be directed toward improving the scenic quality of the vegetation and wildlife viewing opportunities.

Park Resources

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RESOURCE MANAGEMENT OBJECTIVES

To utilize resource management techniques that will harmonize with the park's natural systems

To improve diversity and perpetuate renewable resources

To identify, interpret, and protect the park's historic resources

PARK RESOURCES

Geology/Topography. The park is underlain by two bedrock formations: an iron bearing metamorphic formation and a metamorphosed sedimentary rock formation. Their orgins date back over 2.7 billion years.

The area was extensively mined, however substantial deposits remain. It is probable that deposit of other minerals such as nickel, lead, gold, silver, and zinc are also present. The state of Minnesota holds mineral rights in the park.

There is a rock outcrop on top of Soudan Hill which has world-wide significance because it documents many aspects of geologic history. It has been recommended for designation as a public use scientific and natural area.

<u>Soils</u>. A detailed soil survey is in progress in St. Louis County. The most extensive soil in the park is a shallow loam over bedrock. It is generally unsuitable for development. In fact, most soils in the park are unsuitable for development. Since park use has been concentrated on the mine area, negative impact on park soils has not been a problem. There is some minor trail erosion. (See Proposed Development, Trails p 24 for management recommendations.)

<u>Vegetation</u>. Pre-European settlement vegetation was probably similar to what is found in the park today. The lowlands are primarily conifer bogs and swamps consisting of spruce, tamarack, cedar, and balsam. The uplands consist of mixed hardwoods and pine communities in the east and an aspenbirch-conifer community in the west. The latter was probably

logged to clear for digging the mine pits and to build the shaft and mining towns.

Much of the vegetation in the park requires no management (untoned areas on map, p 35) because of good condition, sensitive terrain, or inaccessible location.

In all cases, management will follow some overall directives, namely: avoid raptor nesting sites, provide grassy openings near trails to enhance wildlife observation, follow natural contours to minimize the visual impact of any timber removal, and implement management actions during low tourism months. Vegetation management in the park will consist largely of thinning pine stands, regenerating various vegetational types, and maintaining grassy openings for wildlife (see map, p 35). The costs of each action are phased over a ten year time frame. Two costs (based on 1980 dollars) are listed for each action. The first is DNR administrative costs for setting up and inspecting projects done by a low bidder from the private sector. The second cost is that incurred when the projects are done by park laborers or contracted crews.

				Phases				
Act	tion	1	2	3	4	5	Total	
1.	Thin pine stands.	\$ 200 1,500	\$ 1,000 7,500					
2.	Regenerate type.	300 10,000	450 11,750	650 12,150	300 12,150	350 8,150	2,050 54,200	
3.	Maintain openings.	4,120 9,580	2,735 6,835	3,405 11,025	1,210 5,910	2,645 2,645	14,115 35,995	
	Total	\$ 4,620 21,080	\$ 3,385 20.085	\$ 4,255 24,675	\$ 1,710 19,560	\$ 3,195 12,295	\$17,165 97,695	

<u>Wildlife</u>. Wildlife populations in the park have not been inventoried. Based on the area wildlife manager's observations, it is thought that 113 bird, 37 mammal, and 15 reptile and amphibian species inhabit or regularly visit the park area.

The Minnesota Natural Heritage Program lists three species as threatened or rare (wolf, bald eagle, and pine marten) and worthy of special protection.

All the recommended vegetation management actions will benefit wildlife. In addition to this, nesting habitat for woodducks is recommended at a total cost of \$1,500. It is further recommended that a monitoring program be established to ensure appropriate management and avoid over population.

Groundwater. Park water is obtained from the Breitung Township municipal system. This system consists of three wells located between Tower and Soudan with a pressure tank in the park. Water is adequate in both quality and quanity and requires no management at this time.

The park's sewage system consists of two Imhoff tanks and drain fields. Both systems are adequate and pose no threat to park water supplies.

<u>Surface Water and Fisheries</u>. The park is located on the south shore of Lake Vermillion. Only a small portion of this lake lies within the statutory boundary. Management for water quality and fisheries is adequate and no actions are necessary at this time.

<u>History and Archaeology</u>. Evidence of human habitation dating back to the copper era (4000 BC) has been found in the park. An archaeological survey budgeted at \$4,000 should be conducted on a contractual basis with a qualified consultant.

The history of the area is rich and varied, ranging from logging to a "gold rush" to iron ore mining which removed 15.5 million tons of ore from the Soudan Mine alone.

Funding for an interpretive program which features the archaeology and history of the area is included in Proposed Development, Visitor Services, p 25.

SPECIALIZED MANAGEMENT AREAS

Tower Soudan will have two areas of specialized management the mine area and the boathouse area along Stuntz Bay. The mine area will be managed for intensive use by large numbers of people and vehicles. The boathouse area has been a focal point planning process. There are 158 leased throughout the lakeshore lots along Stuntz Bay. On these lots are: 149 boathouses, a boat ramp, and two seaplane tie-down areas. The leases were included in the deed given to the people of Minnesota by US Steel. The expiration dates for the leases range from 1985 to 2015. Only the lots are under lease from the DNR, the boathouses are owned by the lessees. The leases will not be extended beyond the year 2015. If any of the existing or future lessees wish to discontinue a lease or let it expire before this date, the lease will be cancelled. A new lease will not be issued for that particular lot. Any current lease that expires prior to 2015 may be renewed up to this The DNR, by policy, must charge a fee for the renewed leases. By law, the DNR can establish leases for a maximum period of 10 years. All terms of the lease will be strictly enforced and the DNR will closely monitor the activities of the lessees to ensure that no resource damage occurs. degradation of the water resources is discovered, leases can be cancelled.

Physical Development and Recreation Management

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EXISTING DEVELOPMENT

Existing development in the park is centralized around the mine. It consists of several open pits and several underground shafts. The deepest, most extensive shaft mine and its structures are open for public tours. The structures include the engine house, dry house, headframe and lander's shed, crusher house, trestle, mine rescue station, drill shop, and the remains of the power plant. The dry house is now the visitor center, with facilities for mine tour ticket sales and an employee locker room.

One quarter mile (.4 km) east of the shaft is the manager's residence/shop complex. This complex consists of the residence, miner's pay office, a large machine/carpentry shop building, a four stall garage, a warehouse, a core storage shed, a fire shed, and the Breitung Township water storage/pump building.

The only other park development is trails.

	Miles	Kilometers
Hiking only	.3	.5
Snowmobile	7	1.6
Snowmobile/Hiking	5.6	9
Multi-use	1.5	2.4

Non-park facilities within the statutory boundary include a township road and the 158 leased lakeshore lots on Stuntz Bay. There can be no park development on Stuntz Bay until these leases expire.

RECREATION MANAGEMENT OBJECTIVES

To preserve the historic integrity of the Tower Soudan mine and give park visitors the opportunity to safely tour the mine facilities

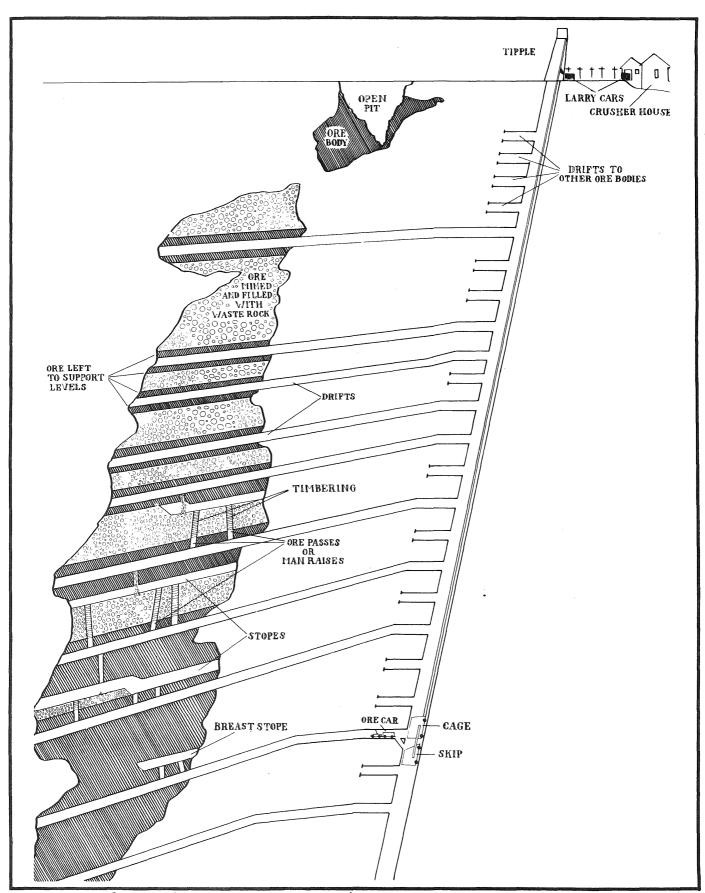
To provide a broad selection of outdoor activities consistent with maintaining a pleasing natural environment

To provide only those facilities necessary for appropriate use and enjoyment of the resources

Ac	tion	1	2	3	44	55	Total	Conditional
	PROPOSED DEVELOPMENT Roads and Parking							
1 2 3 4	parking lot. Realign sharp curve. Provide temporary	\$ 5,000 5,000	5,000				\$ 5,000 5,000 5,000	
	winter trail parking.		lo develo	oment co	st			
	Construct new entrance road. Construct new parking							\$105,000
7	lot north of service area. Remove existing							30,000
	parking lot and re- landscape.							5,000
	Picnicking							
1	Develop picnic sites near the parking lot. Develop picnic sites near large, rehabilitated	10,000					10,000	
	open pit.							5,000
	Trails							
7	Construct thru-park segment of the Taconite Trail.	Funded by	DNR. Tra	ils and N	Vaterwavs			
2	Rehabilitate and construct snow-mobile/hiking	v	•		v			
3	trail system. Rehabilitate and construct new ski	2,500	2,500	2,500			7,500	
4	touring/hiking trail system. Rehabilitate and	5,000	15,000	15,000			35,000	
5	construct hiking only trail system. Construct small	1,000		4,000			5,000	
	adirondack trail shelter with toilet.	5,000					5,000	

3,200 \$ 3,000
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5,000
7,000

^{*}The restoration of the mine structures may be eligible for 50 percent federal funding, however full funding is requested here as a contingency.



Schematic illustration of the Soudan Mine (courtesy of The Minnesota Parks Foundation).

Park
Boundary

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EXISTING BOUNDARY

Tower Soudan State Park includes approximately 2,900 acres (1,174 hectares) in Sections 21, 22, 27, 28, 29, and 33 of T62N R15W. (See Current Statutory Boundary Map, p 41.) The DNR, Divison of Parks and Recreation owns 1,030 acres (417 hectares). (See Current State Ownership Map, p 41.) The balance is owned by US Steel, Breitung Township, and numerous private landowners. Many of the private landowners are within the community of Soudan which is transected by the statutory boundary.

Numerous islands in Lake Vermillion which are within the boundary have cabins or seasonal homes. Other large areas within the existing boundary are not park quality lands. The lower part of Section 27 is part of the community of Soudan. Section 33 is criss-crossed by roads and railroad lines. Section 29 contains part of a municipal airstrip and a residential subdivison. The NW 1/4 of the NE 1/4 of Section 29 is a township park. These areas should be deleted from the statutory boundary.

BOUNDARY DELETIONS (A on map, p 43).

T62N R15W Section 21

- a Gov't. Lots 1-5/Seven Sisters Islands
- b Gov't. Lot 6/Ely Island (only a tip)
- c Gov't. Lot 11/Long Island (western part)
- d That portion of the W 1/2 SW 1/4 lying west of Swedetown Bay

Section 22

- e Gov't. Lot 2/Satterfield Island
- f Gov't. Lot 3/Sarkela Island
- g Gov't. Lot 4/Seven Sisters Island (part of one)
- h Gov't. Lot 5/Long Island (eastern part)
- i Gov't. Lot 6/Soderberg Island

Section 27

- j All lands lying south of the DM&IR right-of-way (RoW) in the S 1/2 SW 1/4
- k All lands lying south of TH 1/169 in the SE 1/4 SE 1/4 SE 1/4
- 1 The SW 1/4 SE 1/4 SE 1/4
- m The SW 1/4 SE 1/4

Section 28

n - All lands lying south of McKinley Park Road, except the SW 1/4 SE 1/4 SE 1/4

Section 29

o - All of the section (see Land Transfer below).

Section 33

p - All lands except the former DM&IR RoW in the NE 1/4 NE 1/4 (see Deeds Book, p 249).

Statutory boundary legislation should include a provision which states that if any of the current owners of Long Island or any islands south of it let their lands go forfeit or want to sell or give their land to the people of Minnesota, the transaction may take place and these lands shall automatically be reinstated into the statutory boundary.

BOUNDARY EXPANSION (B on map, p 43)

T62N R15W Section 26

SW 1/4 SW 1/4 SW 1/4 north of TH 1/169 - for development of new entrance road.

LAND TRANSFER (C on map, p 43)

T62N R15W Section 29

NE 1/4 NE 1/4 - to Breitung Township for addition to McKinley Park.

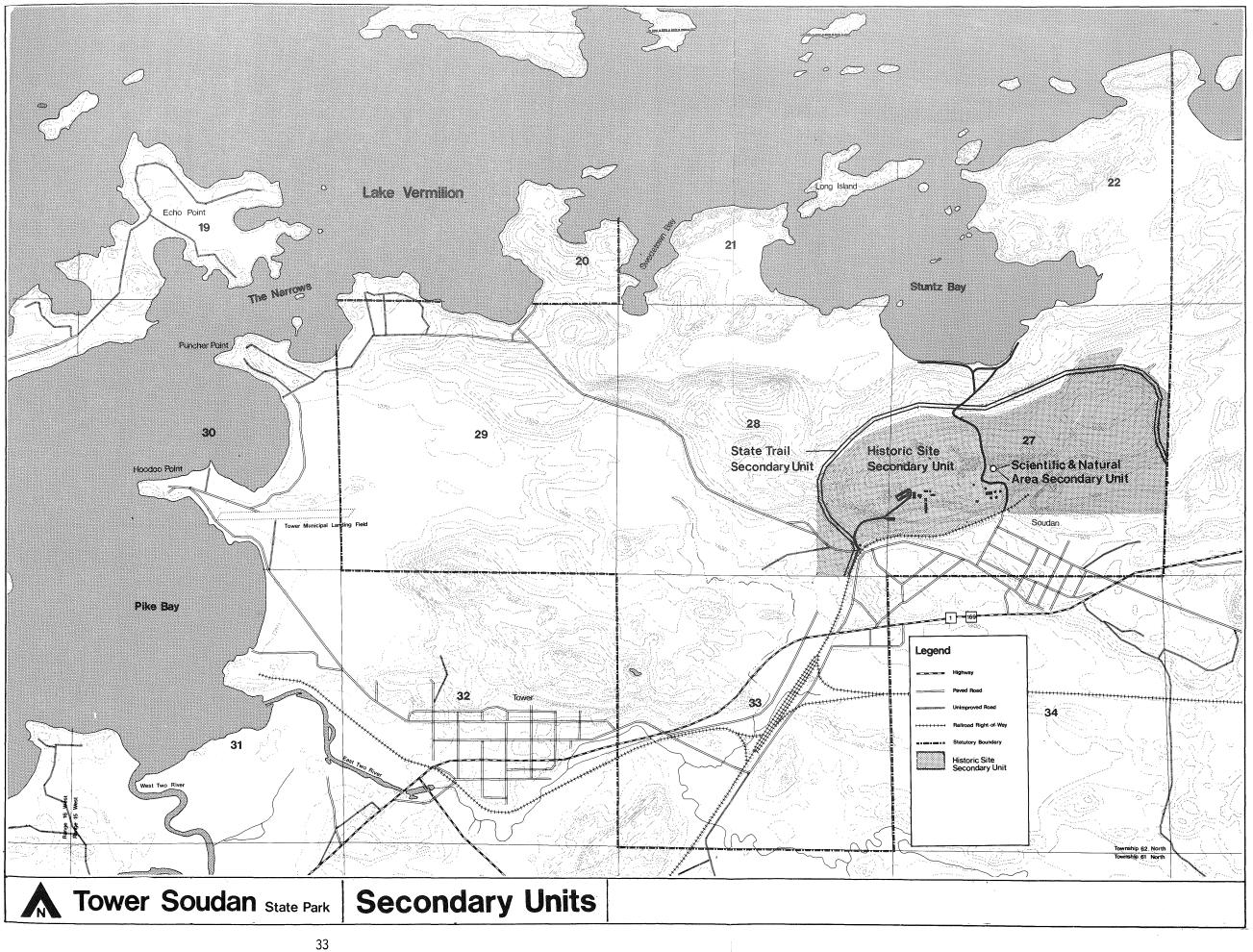
LAND ACQUISITION (D on map, p 43)

Acquire remaining lands within the adjusted statutory boundary which are not administered by the DNR, Division of Parks and Recreation.

Three large parcels owned by US Steel are not available for purchase, but US Steel may be willing to trade them for equivalent public lands. Another parcel is the old DM&IR RoW. It is owned by the railroad company and contains a snowmobile trail which ties into park trails at each end. Since the trail is a segment of the state park trail system, it is groomed with state park equipment. This parcel should be acquired to gain total control of the trail.

Maps

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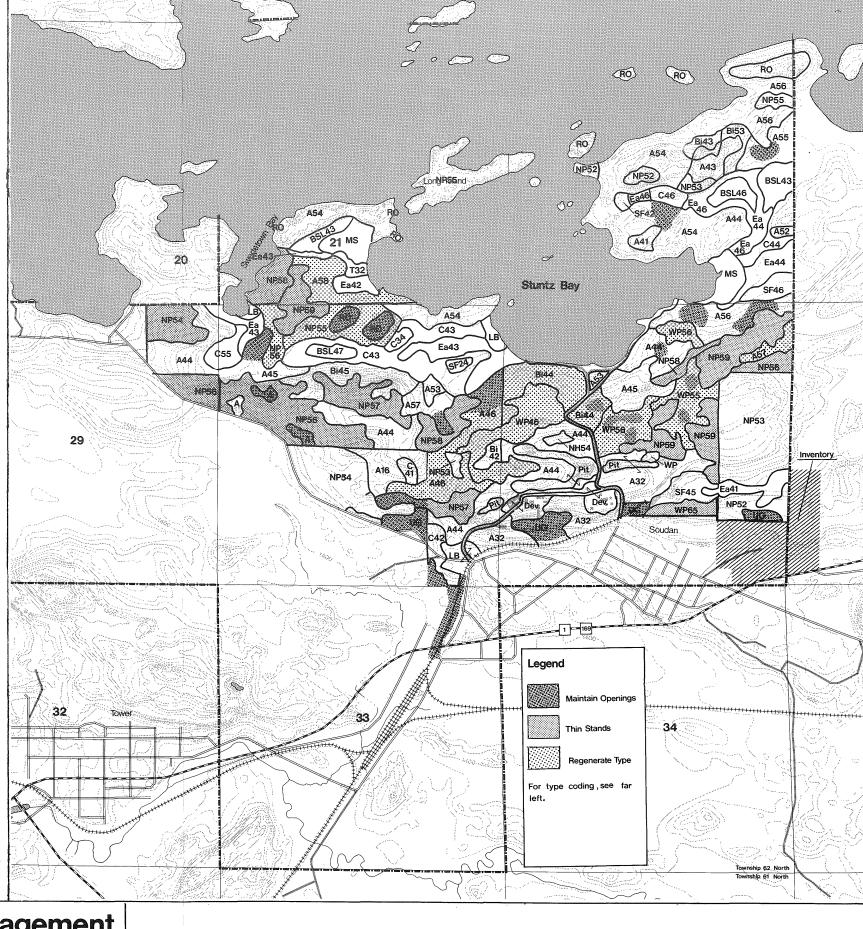
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Type Size NP 5 3 Density

Туре A Aspen Bi Birch C Cedar BSL Black Spruce Lowland Ea Ash NP Norway Pine WP White Pine Spruce Tamarack MS Muskeg LB Lowland Brush UG Upland Grass RO Rock Outcrop Pit Open Pit Dev Developed Area

Size	DBH (Diameter at Breast Height)
0 1 2 3 4 5	Not applicable for the type 0 to 1 inches 1+ to 3 inches 3+ to 5 inches 5+ to 9 inches 9+ to 15 inches 15+ inches

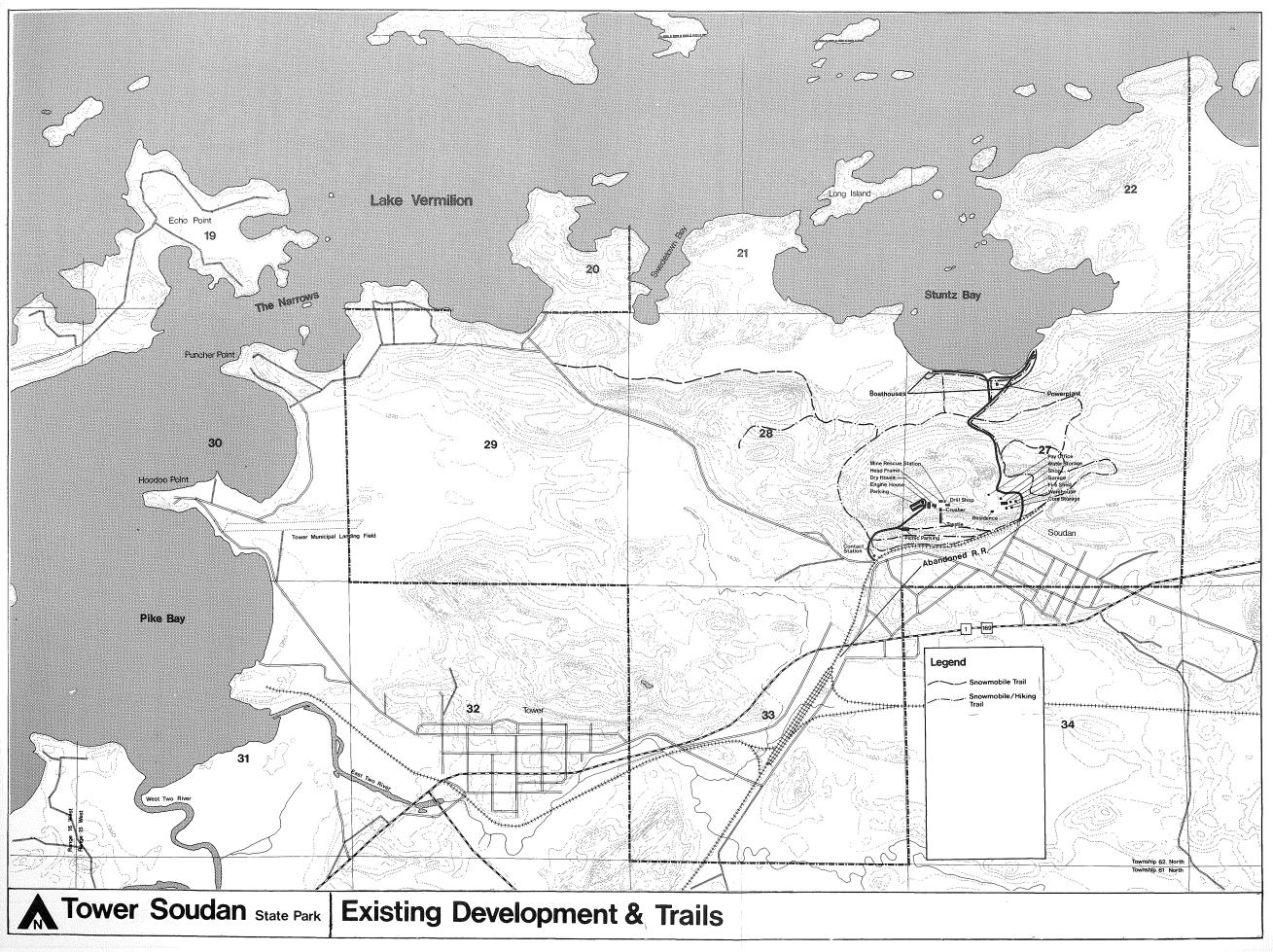
Densit	<u>Y</u> Seedlings 0-1" Trees/ Acre	Saplings 1-5" Trees/ Acre	Poles 5-9" Trees/ Acre	Small Timber 9-15 Trees/ Acre	Large Timber 15" Trees/ Acre
	1	2	3	4	5
0 1 2 3 4 5 6 7	* 0-500 501-1,000 1,001-2,000 2,001-5,000 5,001-10,000 10,001-20,000 20,001-30,000 30,001-40,000	* 0-250 251-500 501-1,000 1,001-2,500 2,501-5,000 5,001-10,000 10,001-15,000 15,001-20,000	0-30 31-90 91-150 151-210 211-270 271-330 331-390 391-450 451-510	0-10 11-40 41-60 61-80 81-100 101-130 131-150 151-180 181-200	0-5 6-20 21-30 31-45 46-60 61-75 76-90 91-105 106-120
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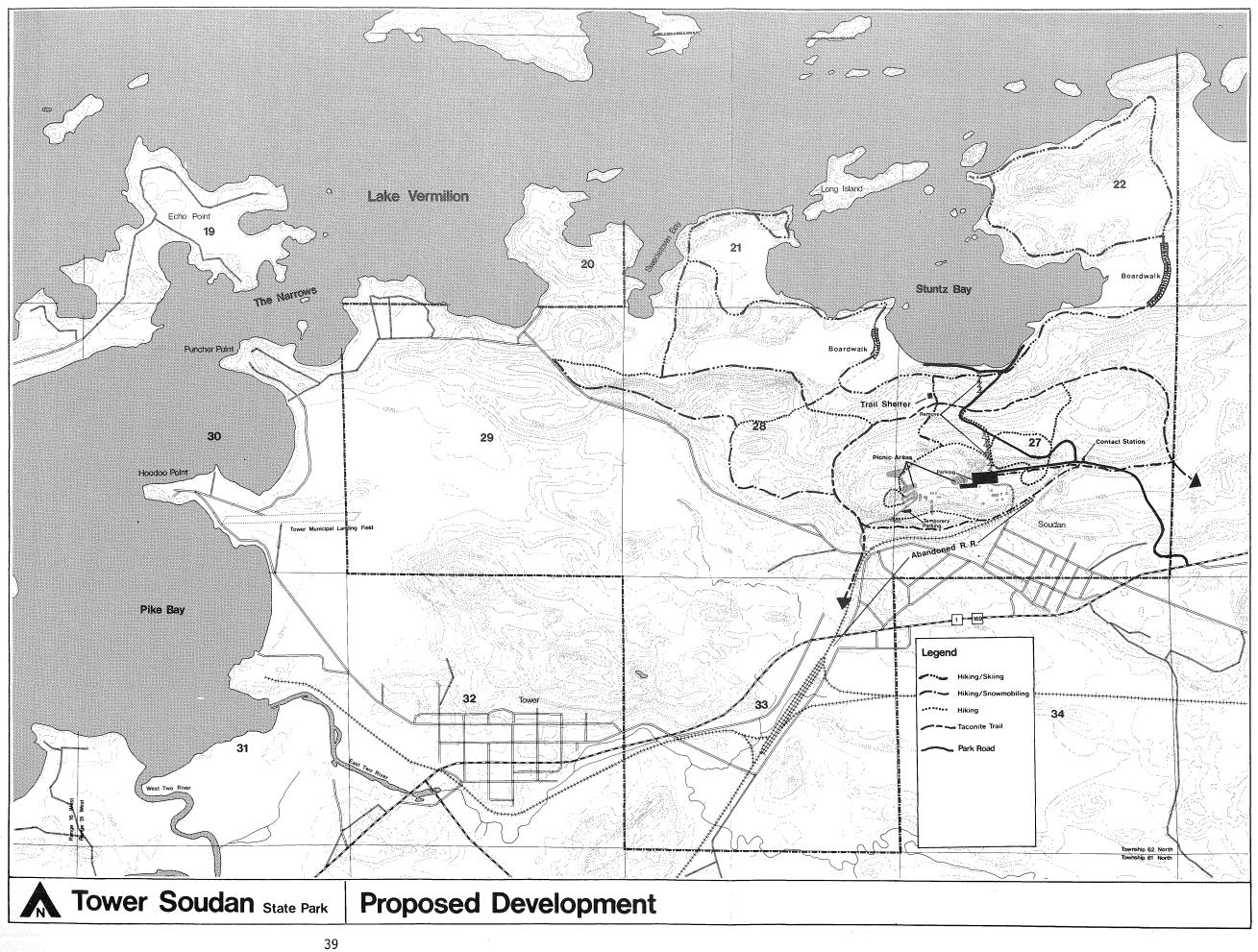


Tower Soudan State Park

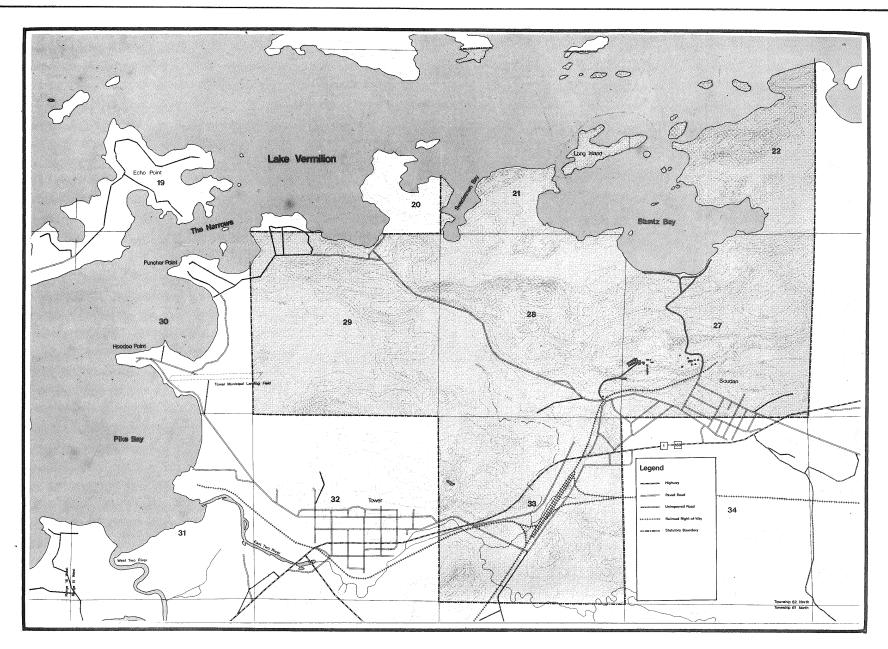
Vegetation Management



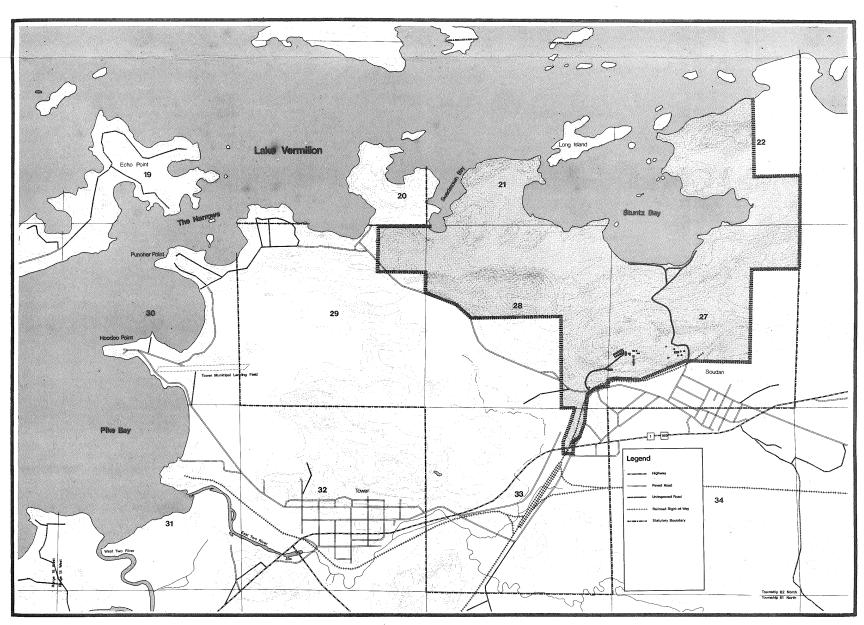
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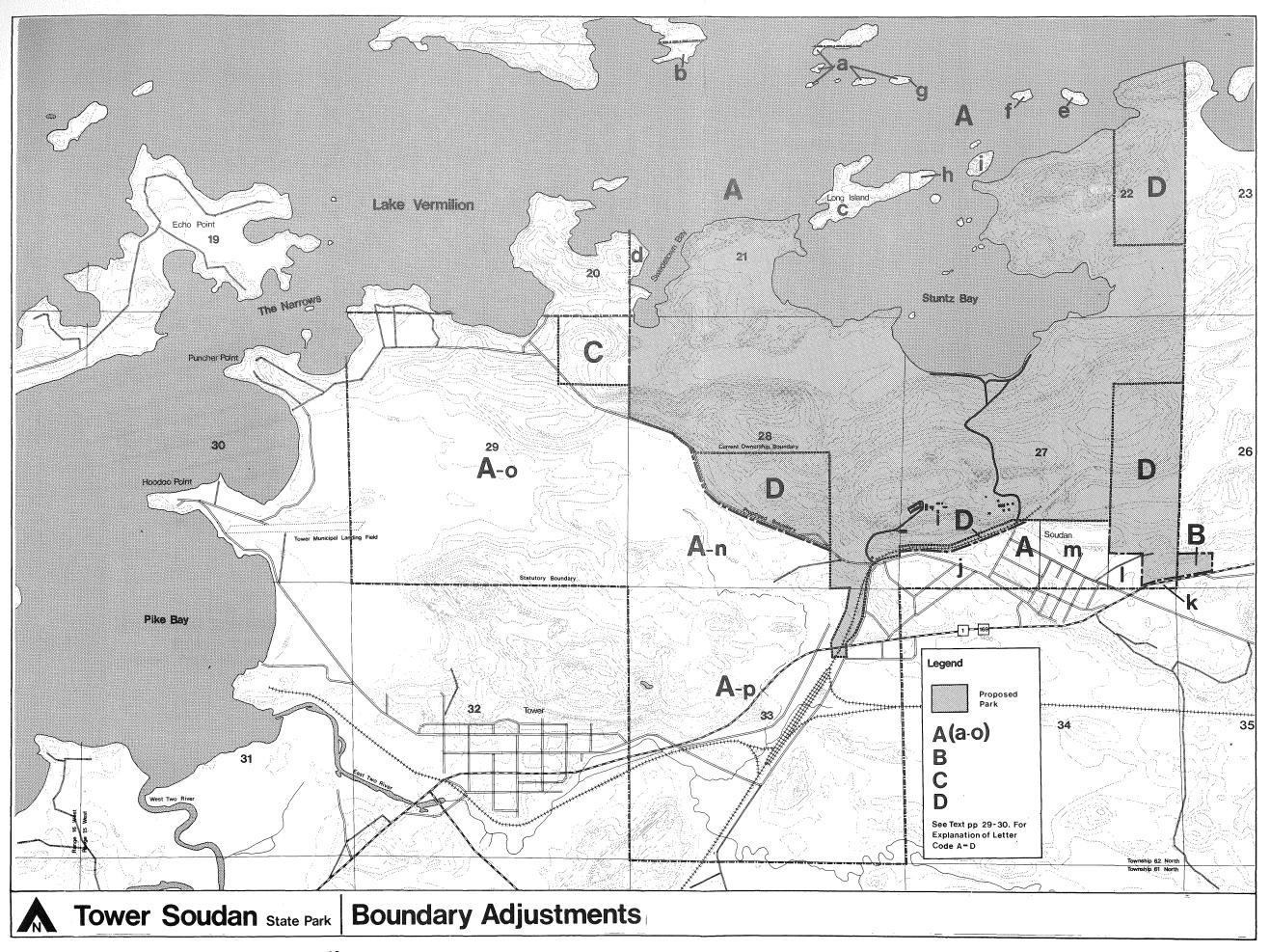


Current Statutory Boundary



Current State Ownership

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