

North-Central Integrated Land Use Plan

Draft Background Document

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Management



SERM

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1. INTRODUCTION

The North Central planning area (Figure 1) covers 3,452,000 hectares (ha), reaching to Wapawekka Hills in the southeast, Besnard Lake in the southwest, Key Lake Mine in the northwest and close to Wathaman Lake in the northeast. Lakes and rivers, including a section of the Churchill River, account for 37% of the total planning area. Lac La Ronge Provincial Park and the Wapawekka Hills Representative Area are located within the planning boundaries. The planning area offers numerous social, cultural, and economic opportunities and benefits, including fishing, hunting, trapping, gathering, recreation, tourism, ecotourism, Aboriginal traditional use, mining and timber harvesting.

The process to develop an Integrated Land Use Plan was started in April 1999, and involves the public in developing resource management goals, objectives and strategies. The planning process recognizes all resource values and includes all those who have an interest in the forest, in order to make consensus-based recommendations about how the land should be managed. The completed plan will allow sustainable use of forest land and resources for the benefit of current and future generations by balancing the need for economic, social and cultural opportunities with the need to maintain and enhance the health of forest land.

This document provides an overview of the planning process, and a summary of the land, resources, people, and the resource uses of the planning area, to assist in developing resource management strategies. The document is organized as follows:

- Section 1: Introduces the Document
- Section 2: Discusses Integrated Land Use Planning
- Section 3: Outlines the planning process
- Section 4: Gives a brief summary of the La Ronge Integrated Land Use Management Plan and its relationship to the North Central plan.
- Section 5: Describes the history of human settlement in the area.
- Section 6: Describes the population, including employment and education levels.
- Section 7: Describes the land, plants and animals, and natural disturbance patterns.
- Section 8: Outlines the resource uses associated with the land.
- Section 9: Discusses other considerations affecting the planning area.

Section 10: Provides a list of references used for each section.

2. WHAT IS INTEGRATED LAND USE PLANNING?

Integrated Land Use Planning is based on the principles of Integrated Resource Management (IRM). Planning decisions are made looking at the health of the whole ecosystem - soil, water, trees, animals and plants - to meet environmental, cultural, social and economic objectives. IRM allows for a broad range of interests. A key component of IRM is the opportunity for all interest groups and the general public to be involved in the planning process.

The Integrated Land Use Management Plan will provide guidelines for resource management, plan implementation and monitoring.

3. THE PLANNING PROCESS

The planning process describes how an Integrated Land Use Plan is prepared, completed and implemented. The process is used by SERM in its Integrated Forest Land Use Plans across the province.

Step One - Plan Initiation

In April 1999, SERM began to develop an Integrated Land Use Plan for the North-Central planning area. The core planning team consists of planners from Forest Ecosystems and Sustainable Lands Management Branches and the Shield Eco-Region. An inter-agency technical planning team will be formed from the various resource management branches of SERM and other government agencies. A steering committee of representatives of SERM, the Lac La Ronge Indian Band, and communities in the planning area, provides direction to the planning process.

Introductory public meetings were held in the spring of 2000, to inform the public about the planning process and invite people to participate in the planning process.

Step Two - Information Gathering

The core planning team gathered current information about the area and its resources, and assembled it in this Background Information Document. This document will be distributed to interest groups, community members, industries and local governments.

Step Three - Advisory Committee Meetings

Public advisory committees have been formed to ensure regional and local involvement in the planning process, while including broader provincial interests. The advisory committees will work with the planning teams to develop strategies for resource management in the area. Government resource management specialists and other people with specific expertise will be called upon to provide information and advice so that committee members are able to have informative discussions. Committee members will identify their interests and concerns, and will share information and expertise with other members.

The process takes commitment by all parties to discuss and develop potential solutions to resource issues. A public advisory committee of local interest groups and community members ensures that all interests will have input into the process, and allows for a broad and balanced range of solutions.

Step Four - Draft Plan Preparation

The draft plan will set resource use goals and objectives, and potential management and implementation strategies, including establishing land use management zones. Each zone will reflect different resource values, uses, and management needs. Land use strategies and guidelines will give further direction for activities in all management zones.

A second round of public meetings will be held to update the public on plan progress and seek further input.

Step Five - Draft Plan Review

The draft plan will be reviewed by the advisory committees, government, public and an independent scientific group.

Step Six - Plan Revision and Approval

The draft plan will be revised based on comments received during the review process. The plan will then be submitted to the Government for approval.

Step Seven - Plan Implementation

Implementation of the plan is the final step in the planning process. The plan will remain a flexible, working document, incorporating experiences and new information.

An overview of the entire process is summarized in Figure 2. The whole process is expected to take three to five years.

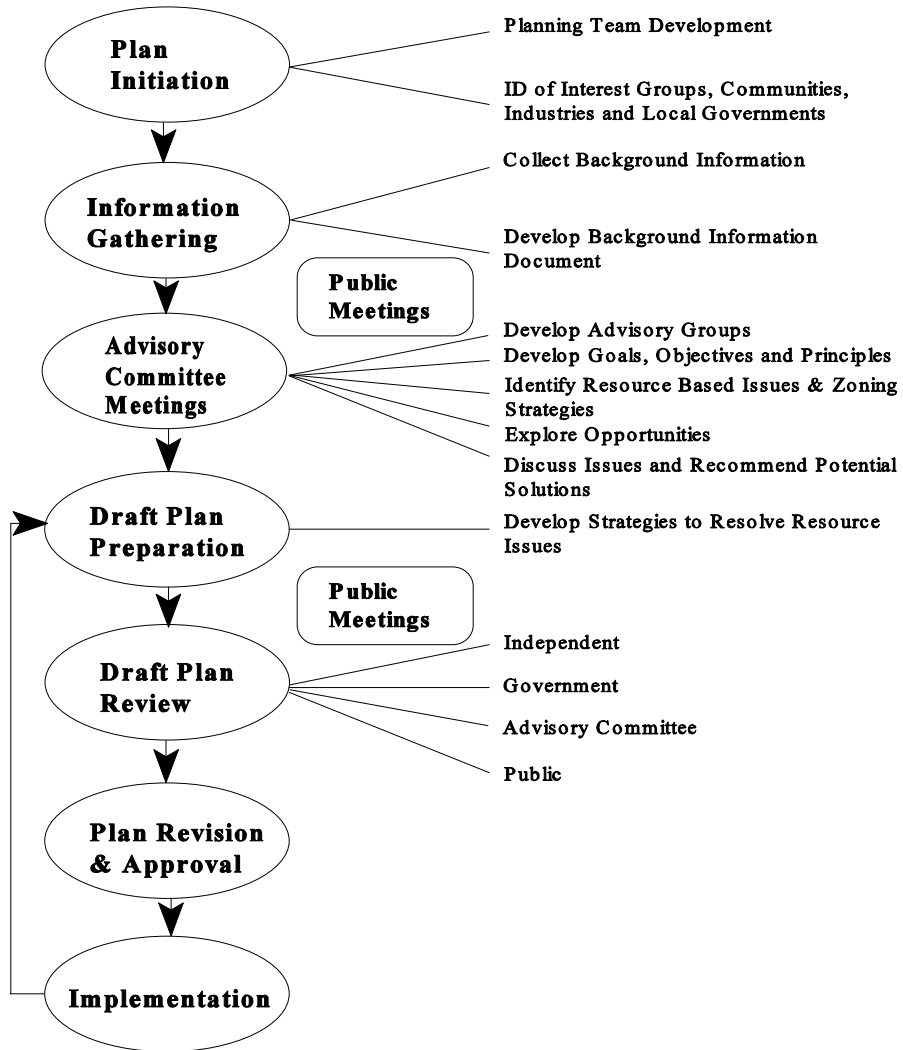


Figure 2. Overview of the Planning Process

4. THE LA RONGE INTEGRATED LAND USE MANAGEMENT PLAN

The North Central planning area includes lands from another, smaller planning area for which of the La Ronge Integrated Land Use Management Plan has been developed. That plan covers 66,700 ha along a 10 km wide corridor in the vicinity of La Ronge. The planning area includes the Northern Village of Air Ronge; the Northern Town of La Ronge; six reserves of the Lac La Ronge Indian Band - Lac La Ronge Reserve 156, Potato River 156A, Kitsaki 156B, Little Hills 158, Little Hills 158A, and Little Hills 158B; the Napatak Recreation Subdivision; privately developed subdivisions of Potato Lake and Eagle Point; and the Special Management Areas of Lamp Lake and Rabbit Creek.

Recommendations from the North Central plan that may affect the La Ronge planning area will incorporate recommendations from the La Ronge Integrated Land Use Management Plan.

Copies of the La Ronge Integrated Land Use Management Plan are available from SERM offices in La Ronge and Prince Albert.

5. HISTORY OF THE PLANNING AREA

Humans used the Churchill River as far back as 7,500 to 8,400 years ago; however, the earliest signs of habitation within the planning area dates from 4,000 to 5,000 years ago. These early inhabitants are thought to have migrated from the southern plains, as the climate was warming, and parkland and grassland boundaries were moving north as the boreal forest receded.

Approximately 3,000 years ago a cooling trend began, and the boreal forest boundary moved south. This appears to have coincided with migration of a Taltheilei culture from the north, nomadic hunters of barren ground caribou. The Taltheilei are thought to be ancestors of the Dene. They may have occupied the north half of the planning area as recently as 1,000 years ago, gradually moving north out of the planning area, as the climate warmed and the boreal forest receded once again. Currently, Dene people of the English River Band live west of the planning area. Their territorial range extended just east of the Foster Lakes until the establishment of Fur Conservation Blocks in 1946 reduced their eastern range.

Forest-adapted pottery making people, the Laurel culture, migrated from Ontario, Manitoba and Minnesota, reaching the area approximately 1,000 years ago. A later group (650 to 300 years ago), called the Selkirk culture may have come to inhabit much of the planning area. The relationship between these two cultures is not well understood, but it is thought that the Selkirk culture were ancestors of modern day Cree inhabitants.

Today, both “th” and “y” dialect-speaking Cree people live in the planning area. The “th” speakers have been centred around Stanley Mission, ranging west to Nipew Lake, north to the Walthaman area, east to Trade Lake, and south to Lac La Ronge. Other inhabitants in the Lac La Ronge area speak with the “y” dialect and are known as the Plains Cree. They may have migrated into the area during the fur trade era.

Aboriginal people found living in the Foster Lake and Foster River areas in 1782 were referred to as the “other people”. Around 1900 both Dene and Cree settled in an area at the mouth of the Foster River, in a community known as Fish River. By the 1960s, all residents had moved to Pinehouse and La Ronge.

Independent traders from Quebec established the first trading posts along the Saskatchewan River in the 1750s. They opened the first posts on the Churchill River system, at Sucker River, from 1779 to 1782. The Hudson Bay Company’s first northern post was built on Lac La Ronge in 1797, but was soon abandoned, with an attempt at re-establishment in 1819. Their competitor, the Northwest Company, founded seven additional posts along the Churchill River and Lac La Ronge from 1790 to 1821 and also a post at Lower Foster Lake in 1805. The two companies merged in 1821 under the HBC name. Thirteen additional posts were built by HBC along the Churchill River and Lac La Ronge, the last in 1929. Only one post was established north of the Churchill River, at Upper Foster Lake, in 1927 to 1929.

By the 1850s HBC had lost its monopoly on the fur trade. In the late 1880s every community in the north that had an HBC post had at least one competitor. These included Stobart and Company, Revillon Frères, and Lamson and Hubbard. By the 1920s most posts disappeared as trading became focused around Stanley Mission and La Ronge. These are now the two largest communities in the planning area. In 1987 HBC sold off its northern posts.

In 1847, James Settee, of the Anglican church, established a mission on the south side of Kenderdine Island, near Stanley Mission, across from the Hudson’s Bay Fort. In 1850 the mission was moved to the southwest end of Lac La Ronge, at the mouth of the Montreal River, before its final relocation to Stanley Mission. The Holy Trinity Church, built at Stanley Mission, under the supervision of Robert Hunt between 1854 and 1860, is the oldest standing building in Saskatchewan. In 1870 another church, St. John the Evangelist, was established at Little Hills, between Bigstone and Egg Lakes. The graveyard and remnants of houses are still visible. In 1906 an Anglican church, still in use, was built on the north shore of Lac La Ronge. Other religious denominations established other churches. A large residential school was built in La Ronge, soon after the Anglican church was constructed. Over time a mixture of Cree, Dene, Métis and immigrant Europeans moved from the Bigstone-Montreal River area to settle in what is now La Ronge.

Commercial activity in timber harvesting and fishing began in the 1920s, followed by a small gold-rush

in 1937. A strong fur trade existed in the 1930s, but plummeted in the 1980s due to a drop in demand for the product. Completion of the highway from the south to La Ronge in 1947 allowed the development of tourism, sports fishing, hunting, outfitting and mining. Gravel road construction north of La Ronge began in 1959, extending to Collins Bay by 1974 and to Points North Landing in 1981. The gravel road construction north of La Ronge reached Otter Rapids in 1961. Through the 1960s and 1970s three outfitting operations - one of which remains- established bases here, with the summer resort community becoming established as the Northern Hamlet of Missinipe. The tourism industry gained further strength with the paving of the road to La Ronge in 1976. An all-weather road to Stanley Mission was built that same year. The Northern Settlement of Brabant Lake was designated in 1980 under the Northern Municipalities Act, although the origin of the community dates back to the early 1900s as a service stop for the fur trade.

Most of the Indian Reserves in the area were transferred by Canada to the Lac La Ronge Indian Band in 1909 under the terms of an adhesion to Treaty 6. These reserves include Lac La Ronge (156), Potato River (156A), Kitsaki (156B), Sucker River (156C), Stanley (157, 157A), Old Fort (157B), Four Portages (157C), Fox Point (157D, 157E) and Little Hills (158, 158A, 158B). Further lands were later transferred by Canada to the Lac La Ronge Indian Band as settlement of outstanding treaty land entitlements. This led to the establishment of new reserves at Morin Lake (217) in 1968 and Grandmother's Bay (219) in 1970.

6. POPULATION CHARACTERISTICS

The 1996 census statistics (Table 1) indicated that 7,220 people live year-round in the planning area in communities, settlements or Indian reserves. Seventy-one per cent are of Aboriginal descent. Most of these are members of the Lac La Ronge Indian Band, but Dene and Métis people also inhabit the area. Fifty-seven percent of people of Aboriginal descent reside on five reserves (Figure 1) - Grandmother's Bay 219, Kitsaki 156B, Lac La Ronge 156, Sucker River 156C, Stanley 157 - and the Northern Settlement of Brabant Lake.

Other communities include the Northern Village of Air Ronge, the Northern Town of La Ronge, the Northern Hamlet of Missinipe, and the Northern Settlement of Stanley Mission. Fifty-two per cent of the people in these communities are Aboriginal. Eight other reserves in the planning area are inhabited seasonally by members of the Lac La Ronge Indian Band.

Table 1 gives details on employment and education levels for year-round residents of these communities.

Table 1: Population Statistics

Community	Overall Population			Employment (age 15-64)		Employment by sector (% of total employed, 1995)			Education (population aged 25+)			
	Total population (year-round)	Aboriginal Population	Total population age 15-64	% population employed	% population unemployed	% employed in service sector	% employed in resource-based industries, mainly mining	% employed in construction and manufacturing	% less than Grade 9	% with high school certificate or higher	% with trades or non-university certificate or diploma	% completed university
Air Ronge (Northern Village)	960	475	600	82	18	85	10	5	5	80	55	25
Brabant Lake (Northern Settlement) ^A	86	85	40	-	-	100	0	0	57	29	0	0
Grandmother's Bay 219 (Indian Reserve)	197	195	110	41	55	42	17	42	69	19	0	0
Kitsaki 156B (Indian Reserve)	559	550	335	30	70	62	25	12	47	41	31	0
La Ronge (Northern town)	2964	1530	1930	72	28	87	6	7	10	71	55	19
Lac La Ronge 156 (Indian Reserve)	945	905	505	34	66	70	19	12	39	31	17	4
Missinipe (Northern Hamlet) ^B	40	8	35	91	0	100	0	0	0	80	60	40
Stanley Mission (Northern Hamlet)	190	170	110	50	52	100	0	0	38	44	38	31
Stanley 157 (Indian Reserve)	992	990	525	36	64	75	17	9	49	34	22	4
Sucker River 156C (Indian Reserve)	216	215	135	30	73	70	0	30	62	24	19	0

Tabulated from Statistics Canada Profile of Canadian Communities (1996 Census data)

^Atoo few people in Brabant Lake to reflect reliable employment statistics. Employment statistics are omitted.

^Btoo few people in Missinipe to reflect reliable employment and education statistics. Statistics provided by the community.

7. LAND BASE DESCRIPTION

7.1 Forest Ecology

The Planning Area lies mostly within the Churchill River Upland Ecoregion (Figure 3). Smaller portions of the Mid-Boreal Upland and Lowland Ecoregions occur in the south.

7.1.1 Churchill River Upland Ecoregion

The portion of the Churchill River Upland Ecoregion within the planning area is dominated by the Foster Upland Landscape Area. Other Landscape Areas include Pinehouse Plain, Highrock Lake Plain, Macoun Lake Plain and Sisipuk Plain. Bedrock outcrops are frequent, except on the Highrock Lake and Macoun Lake Plain Landscape Areas. Soils are predominantly thin, sandy glacial tills. Thicker sandy glacial till, and glaciofluvial deposits occur in localized areas, while sandy glaciolacustrine plains are common only in the Highrock Lake Plain and Macoun Lake Plain Landscape Areas. Gravelly and sandy eskers are frequent in the north, while clay glaciolacustrine deposits are more prevalent in the south and southeast portions of the ecoregion. Numerous small, poorly drained swales and flats are found throughout. Rich fine textured alluvial deposits are found along the Churchill River, in the Pinehouse Plain Landscape Area.

Black spruce is the most common tree species, occurring on thicker glacial tills, ridges, clay glaciolacustrine plains, bogs and fens. Jack pine is also plentiful, found on dry sandy plains, glaciofluvial deposits, and on very thin soils over bedrock. Jack pine also grows in association with black spruce and white birch. Although most bogs and fens are treeless, tamarack and black spruce may occur. Pure white spruce, and white birch-white spruce mixed stands occur on alluvial deposits along the Churchill River. Mixed-wood stands prevail on glaciolacustrine and alluvial deposits, and on thicker soils in the southern part of the Foster Upland Landscape Area. Pure trembling aspen stands are found on south facing slopes, next to rivers. Trembling aspen-white birch-green alder hardwood stands are most common south of the Churchill River. Rich offshore marshes occur on lakes of the Churchill River.

7.1.2 Mid-Boreal Upland Ecoregion

The La Ronge Lowland Landscape Area occupies much of the Mid-Boreal Upland Ecoregion that falls within the planning area. Smaller sections of the La Plonge Plain and Wapawekka Upland Landscape Areas occur in the southwest and southeast respectively. The La Ronge Lowland is covered by level sandy glacial till, with poorly drained bogs and fens covering 40% of the area. The La Plonge Plain is occupied by a series of ridges and swales, with sandy glacial till on the hills and ridges, and organic soils in the depressions. The Wapawekka Upland is an undulating to hilly plain, with strongly dissected

escarpments. It is covered mainly with imperfectly and poorly drained, loam and clay loam textured glacial till, with lesser amounts of sandy glaciofluvial, and organic deposits.

Jack pine is the predominant species on the dry, sandy glacial tills. Black spruce-white spruce stands predominate on the fine textured tills of the Wapawekka Upland, with occasional jack pine-black spruce stands, and pure black spruce occurring on the ridges. Black spruce, with varying amounts of tamarack, occur in the wet peat-lands and fens. There are some mixed-wood stands along marshy streams and on steep escarpments.

7.1.3 Mid-Boreal Lowland Ecoregion

The Mossy River Plain is the only Mid-Boreal Lowland Landscape Area that occurs within the planning area, located in the very southeast corner. It consists of eroded, stony, sandy and gravelly glacial till and sandy glaciolacustrine materials, with 70% of the area occupied by organic soils.

Black spruce and jack pine are found on mineral soils, with jack pine predominating on drier rapidly drained sites. Some white spruce-trembling aspen stands are situated on well drained Luvisolic soils. Black spruce, with varying amounts of tamarack, grow in the bogs. Fens have sedges, tamarack, swamp birch and willows.

7.2 Impacts of Fire

Fire is the major agent of change influencing forest composition and structure, and is important for maintaining forest health and biodiversity. Natural fire occurrence in the boreal forest is characterized by very large, high intensity fires that occur on average every 50-100 years. Over the last 20 years, fires have burned 630,000 hectares in the planning area. The most damaging years were 1981 and 1995, accounting for over half of the 20-year total. Fires will continue to occur on forested landscapes regardless of the level of forest protection. Vigorous fire suppression may minimize fire size. However, as forests age, trees eventually weaken and die through insect and disease attack, increasing fire hazard and making larger fires inevitable.

7.3 Forest Insects and Diseases

7.3.1 Eastern Spruce Budworm

Over the last five years most white spruce and upland black spruce stands south of the Churchill River have been infested, in one or more years, by the Eastern Spruce budworm (Table 2). The current infestation could last 20 years before collapsing. Fire protection efforts that allowed the maintenance of large unbroken tracts of mature white spruce may have contributed to the epidemic.

The budworm eats new growth from spruce. Mature white spruce are killed after five to seven years of continuous defoliation, and younger host trees commonly last only three years. Stands growing under poor conditions, common throughout the planning area, may be more prone to mortality.

Some mortality has been observed in Lac La Ronge Provincial Park, and is slowly increasing. Much of the park was infected successively from 1997 to 2000. An infestation in the Wapawekka Hills Representative Area began in 1998, continuing into 2000. In 1999 and 2000, mortality was noted at Clam, Egg and Nemeiben Lakes.

Table 2: Area defoliated in one or more years by spruce budworm from 1995 to 1999, south of the Churchill River, in the North Central Land Use planning area.

Years of defoliation	Area (Hectares)
1	44189
2	154752
3	102145
4	29784
5	11154
6	235
Total	342259

7.3.2 Other Insects

The forest tent caterpillar can denude vast areas of trembling aspen and balsam poplar. Extensive areas south of the Churchill River were defoliated in 1999.

Jack pine budworm has been reported near Besnard Lake and may occur elsewhere. This insect can cause substantial damage to jack pine stands.

7.3.3 Dwarf Mistletoe

Dwarf mistletoe is a common parasite found throughout much of northern Saskatchewan, causing large volume loss of merchantable pine. It is identified by large witches' brooms and the stunted appearance of the trees. Jack pine on poor sites is most susceptible to this disease. Parasite seeds spread through the air, and can infect newly regenerated trees, if they are adjacent to heavily infested stands.

7.4 Geology

Precambrian igneous, sedimentary, and intrusive rocks of the Canadian Shield underlie most of the plan area. Younger Phanerozoic sedimentary rocks of the Western Canada Sedimentary Basin overlie these rocks along the southern margin of the area south of La Ronge.

The Precambrian rocks mainly consist of four north-northeasterly trending geologic domains, from the southeast to northwest the Glennie, La Ronge, Rottenstone, and Wollaston.

The Glennie Domain contains deformed elongate and arcuate belts of metamorphosed volcanic and sedimentary rocks within a predominantly granitoid terrain. Metavolcanic rocks with varied internal plutons and subordinate metasedimentary rocks form the core of the La Ronge Domain. This area is flanked to the northwest and southeast by large terrains of metasedimentary rocks. To the northeast and southwest lie highly metamorphosed complexes of mainly plutonic rocks. The Rottenstone Domain consists of two components, the Wathaman Batholith and a migmatite belt. The Wathaman Batholith is a very large pluton of intermediate to felsic composition. The migmatite belt consists of highly metamorphosed intermediate intrusive rocks and subordinate clastic sedimentary rocks. The Wollaston Domain mainly consists of metamorphosed clastic sedimentary rocks and remobilized granitoids. The Peter Lake Domain, which occupies a small portion of the northeastern plan area, comprises a plutonic complex ranging from ultramafic to granitic in composition. The Athabasca Basin, which occurs near the northern margin of the plan area, consists of younger Precambrian clastic sedimentary rocks that were deposited on the older basement rocks.

Phanerozoic sedimentary rocks overlie the Precambrian rocks southward from a northwesterly trending contact that runs through the lower portion of Lac La Ronge. The basal Cambrian Deadwood Formation consists of sandstone that was deposited on the Precambrian basement. Devonian carbonate rocks of the Meadow Lake and Winnipegosis formations overlie the Deadwood Formation. Sandstones and shales of the Cretaceous Mannville Group in turn rest on these formations. A thin veneer of Quaternary glacial deposits covers much of the region.

Precambrian-aged volcanic, sedimentary, and intrusive rocks underlie most of the planning area. Younger Phanerozoic-aged sedimentary rocks of the Western Canada Sedimentary Basin overlie these rocks along the southern margin of the area south of La Ronge.

7.5 Wildlife

7.5.1 Mammals

Moose and black bear are common in the area. Woodland caribou exist at low densities, mostly in the Churchill River Upland Ecoregion. Other species common to the area include wolf, marten, fisher, red fox, beaver, coyote, lynx, mink, muskrat, river otter, red squirrel, weasel and wolverine.

In May 2000, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) designated woodland caribou as threatened in the boreal forests of Canada, including Saskatchewan. SERM has prepared a status report for woodland caribou, which is under review by the scientific review committee responsible for designating its provincial status. Under the Saskatchewan Wildlife Act, a species listed as threatened will require that a provincial recovery plan be developed within two years. A detailed discussion of woodland caribou follows.

7.5.1.1 Woodland Caribou

In Saskatchewan, most woodland caribou are found on the Precambrian Shield (Athabasca Plain and Churchill River Upland Ecoregions). The historic range extended as far as the Boreal Transition Ecoregion and remnant populations exist today in discontinuous areas of habitat. Woodland caribou in the boreal forest exist at low densities because their survival strategy is partly based on being hard to find in large areas.

A number of factors have played a part in the reduction of woodland caribou populations. Forest harvesting and extensive road networks have isolated many herds. Some local populations have been eliminated by hunting as roads were built in new areas of the forest. Another effect of forest management is that caribou habitat has been fragmented into a patchwork of mature and early seral forests. The increase of early seral forests supports a greater food supply for white-tailed deer, moose and black bear populations. An increase in alternate prey may support greater densities of wolves and may result in higher levels of wolf predation on caribou. Similarly, higher black bear populations may result in more calf mortality.

Woodland caribou make extensive use of forested fen and bog complexes for most of the year. In winter, as snow becomes deeper, caribou may select areas with less snow, including upland jack pine sites with high lichen content. A single herd can require more than 40,000 ha of forested winter habitat.

7.5.2 Birds

The Churchill River Upland Ecoregion has 204 bird species. The Churchill River System, from Black Bear Island Lake to Otter Rapids, contains a high concentration of nesting bald eagles, as well as golden eagles and ospreys. Bald eagles are also found near lakes south of the Churchill River. Other resident birds include great horned owl, common raven, gray jay, spruce grouse, ruffed grouse, black-capped chickadee, red-breasted nuthatch, hairy and downy woodpeckers, and great gray owl. Birds that migrate into the area to breed include the Philadelphia vireo, red-tailed hawk, hermit thrush, and

fox sparrow. Waterfowl species include red-breasted merganser, common goldeneye, common loon, mallard and bufflehead.

The portion of the Mid Boreal Upland within the planning area may represent the northern range limit for several species. These include barred owl; black-throated green, black-and-white, chestnut-sided, Blackburnian, Connecticut and Canada warblers; and American goldfinch.

7.5.3 Amphibians and Reptiles

Amphibians and reptiles occurring in the planning area include Canadian toad, wood frog, boreal chorus frog, northern leopard frog and red-sided garter snake.

7.6 Fish

Eight native and four stocked game fish species, four forage species and 16 minnow species are found in the planning area. Native game fish species include Arctic grayling, burbot, Northern pike, lake trout, lake whitefish, sauger, walleye and yellow perch. Stocked game fish are brook trout, cutthroat trout, rainbow trout and splake. Important forage species are cisco, longnose sucker, shorthead redhorse and white sucker. Minnow species include blacknose shiner, brook stickleback, deepwater sculpin, emerald shiner, fathead minnow, Iowa darter, Johnny darter, lake chub, logperch, longnose dace, ninespine stickleback, pearl dace, slimy sculpin, spoonhead sculpin, spottail shiner and troutperch.

8. LAND USES AND RESOURCE VALUES

8.1 Forestry

Commercial forestry operations began in the 1920s, concentrating in the La Ronge area. Almost all commercial forestry operations have occurred south of the Churchill River. Of the 254,852 cubic meters harvested since 1990, 80% has been since 1995. Fire-killed and green softwood made up 86% of this volume. Harvesting for personal use accounted for 5% of the total volume in the 1990s.

Weyerhaeuser Canada has relinquished its timber allocations in the planning area, all of which were south of the Churchill River. Other past operators have included Clearwater Forest Products and Carrier Provincial Forest Products. The Zelensky Brothers - Kitsaki Management Limited Partnership is now the major operator in this area, and is working towards developing a long term Forest Management Agreement. In 1999- 2000 they were issued a forest products permit for 50,000 cubic meters of softwood. Effective April 1, 2000, allocations were granted to the following independent operators: Gary Varga of Chisum Log Homes and Lumbers Ltd.; Zelensky Forest Products; Lehner

Wood Preservers Ltd.; and Green Tree Fencing Supplies Ltd.

8.2 Mineral Resources and Mining

Minerals include oil and natural gas, metallic minerals, industrial minerals, coal, peat, oil shale, and helium and other gases. Activities in the planning area concentrate on mineral exploration and development.

There are 278 active mineral dispositions within the planning area in addition to 103 in the Exploration Zone of Lac La Ronge Provincial Park. There are two types of mineral dispositions, a mineral claim and a mineral lease. A mineral claim allows the claim holder the exclusive right to explore for minerals within the claim area. The claim holder has a guaranteed right to convert the claim to a lease assuming that all requirements are met. A mineral lease gives the holder the exclusive right to develop and produce from the lease area subject to lease fees and royalty payments.

Deposits arise from either Precambrian or Phanerozoic mineralization.

8.2.1 Precambrian Mineralization

8.2.1.1 Gold

Metavolcanic and metasedimentary rocks and varied internal plutons of the La Ronge Domain host numerous deposits of structurally-controlled gold mineralization. The deposits extend from the Sulphide-MacKay lakes area on a general northeast trend through Devil Lake to the McLennan-Star-Waddy lakes area. Past producing mines in this area include: Contact Lake, Star Lake, Jasper, James Zone, Komis, Rod, and Mallard Lake.

The Glennie Domain also hosts a number of gold deposits. The most significant is the currently producing Seabee Mine in the Laonil Lake area on the eastern margin of the plan area.

8.2.1.2 Nickel-Copper-Platinum Group Element

Mafic B ultramafic intrusions host nickel-copper-platinum group element mineralization in many locations in the plan area. In the La Ronge Domain significant deposits include: Howard Lake, Dunlop (Nemeiben Lake), Gochager, and Reef Lake. The past producing Rottenstone Mine occurs in the Rottenstone Domain. The Peter Lake Domain also has significant potential to host this deposit type.

8.2.1.3 Base Metals

A number of geologic environments within the plan area host base metal mineralization. The

metasedimentary belts of the La Ronge Domain host a number of significant copper-zinc-(lead-gold-silver) deposits that include: Elizabeth Lake, Borys Lake, Brabant Lake, and the past producing Anglo Rouyn Mine. The volcanic terrains also contain significant base metal mineralization.

The metamorphosed volcanic and sedimentary belts of the Glennie Domain host a number of copper-zinc base metal deposits. These include the Pitching Lake and SAD deposits within the plan area. The metasedimentary terrains of the Rottenstone Domain also contain several occurrences of base metal mineralization, the most notable being the Deception Lake zinc-lead prospect.

The Wollaston Domain metasedimentary rocks host two main types of base metal mineralization. These include copper-silver-(cobalt) deposits such as those in the Janice-Rafuse-Kaz lakes area, and zinc-lead-silver deposits such as those at Sito and Fable lakes.

8.2.1.4 Uranium

Uranium occurs in many geologic settings within the plan area. The most economically significant are structurally-controlled deposits within the Athabasca Basin sedimentary rocks and the underlying basement rocks such as the Key Lake Mine. Sedimentary hosted uranium such as at the Duddridge Lake deposit and shear-hosted uranium such as at the Burbidge Lake deposit are found in the Wollaston Domain. The Wollaston Domain also contains numerous locations of pegmatite-hosted uranium. The Narrow Zone and Pipewrench North are two notable deposits. The La Ronge and Glennie Domains also contain occurrences of this deposit type. A significant deposit is found at Jahala Lake.

8.2.1.5 Iron-Titanium

Iron and titanium mineralization are hosted by some mafic intrusions in the area. The most significant is the Triangle Lake deposit in the La Ronge Domain. Many of the large metasedimentary and metavolcanic terrains host magnetite facies iron formation. The most significant iron deposit occurs at Neale Lake in the Wollaston Domain.

8.2.1.6 Miscellaneous

The following commodities also occur in the area: molybdenum, talc, tantalum, niobium, rare earth elements, tourmaline, asbestos, chromium, fluorite, beryl, sapphire, feldspar, building stone, and marble.

8.2.2 Phanerozoic Mineralization

8.2.2.1 Lignite Coal

A large resource of Mannville Group hosted lignite coal is distributed around the southern part of Lac La Ronge and near the southern shore of Wapawekka Lake. Recent research has indicated that the coal may have a sub-Bituminous grade.

8.2.2.2 Silica Sand and Kaolin

The Mannville Group also contains extensive deposits of silica sand and kaolin, which may occur together. A silica sand and kaolin deposit occurs over a large area to the south of the above mentioned coal deposits. Smaller deposits are exposed by the Nipekamew River and on the south shore of Wapawekka Lake. Kaolin deposits exist over a large area to the southeast of Lac La Ronge and near the south shore of Wapawekka Lake.

8.2.2.3 Fuel Peat

Extensive areas that were evaluated in a regional study as having good to excellent potential for fuel peat occur across the southern part of the area overlying the Phanerozoic succession.

8.2.2.4 High-Purity Limestone

A high-purity limestone deposit occurs on the south shore of Lac La Ronge. The Lower Member of the Devonian Meadow Lake Formation is host to the limestone. Other areas of Devonian carbonate rocks subcrop are near the Phanerozoic margin, notably in the Egg Lake area.

8.2.2.5 Oil and Natural Gas

All of the formations in the area are known oil and/or natural gas producers in the southern part of the province. The Mannville Group is a prolific producer of natural gas. The Devonian formations and the Deadwood Formation produce oil. These formations may have some potential for oil and natural gas.

8.2.2.6 Kimberlite-Hosted Diamond

The Mannville Group may contain diamond-bearing kimberlite igneous rocks.

8.2.2.7 Lead-Zinc

Numerous drill holes have yielded geochemically anomalous concentrations of lead and zinc hosted by Devonian carbonate rocks. The most extensive mineralization has been found south of Lac La Ronge. Mineralization hosted by Precambrian rocks in the planning area includes gold, nickel-copper-platinum group element, copper-zinc-lead, uranium, and iron-titanium.

8.3 Wildlife Values

8.3.1 Hunting

Yearly licensed hunting harvests of moose and black bear account for less than 2% of provincial totals. Regulated hunting of woodland caribou has been closed since 1987 due to concerns about population decline in the species' southern range. Hunting is a Treaty Right under the constitution.

8.3.2 Trapping

From the 1930s to the early 1980s, trapping was a strong part of the northern economy. In order to ensure a stable supply of pelts, Northern Saskatchewan was divided into Northern Fur Conservation Blocks in 1948. The planning area includes all of the N7, N8, N9, N78 and N79 blocks, and portions of N5, N6, N35 and N65 (Figure 4).

Fur prices dropped in the 1980s as the demand for the product collapsed. An average pelt is now worth one third the value it had in the late 1970s. The worst decreases have been for cross fox, red fox, coyote and fisher. Marten, weasel and wolverine have been least affected. Fox trapping is now negligible. Harvests of most other species are less than 50% of the values of late 1970s, except for marten and otter. Marten harvest has increased almost 10 times since the late 1970s. Present otter harvests are close to that of the late 1970s, despite a substantial drop in value.

Many trappers are now forced to find other sources of income, trap seasonally or not trap at all. It is estimated only 15-20% of trappers live on the trap-line year round. A survey in Grandmother's Bay and Stanley Mission indicated that 78% of respondents trapped in the past compared to 42% who currently trap. An analysis of major Fur Conservation blocks in the area indicates 33% fewer people are trapping compared to the late 70s and early 80s.

8.4 Fish

8.4.1 Subsistence Fishing

Subsistence fishing is practised mainly by Treaty Indians, who fish by angling or using gillnets to obtain fish for food purposes. Subsistence fishing is a Treaty Right through the Constitution Act, 1867, and is given higher priority than sport fishing by non-natives, commercial fishing and outfitting. Subsistence fishermen are managed through gazetted gill net mesh size on each lake for conservation purposes.

8.4.2 Angling

Fifteen thousand licences were issued within the planning area in 1995. Another 2,500 anglers were not licensed. The Churchill River, Lac la Ronge, and Besnard, Nemeiben and Otter Lakes account for five of the province's 30 most heavily fished water bodies. A special endorsement is required to fish on Lac La Ronge. Approximately 4,700 endorsements are issued annually. Direct and associated revenues due to angling add \$20 million a year into the area economy.

Walleye and northern pike are the most commonly sought game fish. Other important species are perch, lake trout, whitefish, Arctic grayling and burbot. In addition to these native species, rainbow trout, brook trout, and cutthroat trout have been stocked in several waters.

To address concerns over fishing pressure and to help ensure fish populations remain healthy, angling limits have been reduced on 41 lakes in the planning area. In addition, spring closures have been put in place on Montreal and Potato Rivers, Potato Lake, Mercer Bay of Besnard Lake and Twin Falls of Mountain Lake.

8.4.3 Commercial Fishing

Commercial fishing began in Lac La Ronge around 1920. Major commercial fish species are whitefish, walleye and pike. Others include mullet, trout, perch, sturgeon and sauger. Commercial quotas were initially designed for whitefish. Game fish were non-targeted, and considered a by-catch until the 1960s and 1970s. Whitefish quotas are underutilised, as current netting techniques often lead to game fish quotas being reached before whitefish quotas are harvested, because game fish such as walleye fetch much higher prices.

Since 1996, 45 lakes within the planning area have been actively fished. Fishing is concentrated along the Churchill River system and within Sandfly and Bar Lakes. Other important sources are Wapawekka Lake, Nemeiben Lake, Big Sandy Lake, Egg Lake and Besnard Lake. Very little commercial fishing occurs north of the Churchill River system, possibly due to high freight costs, depressed fish prices, removal of subsidies and decline of fish stocks on some lakes.

Commercial fishing generates around \$180,000 annually within the planning area.

A large portion of fish caught in the planning area are processed and sold through the Freshwater Fish Marketing Corporation (FFMC), based in Manitoba. However, many fish (an average of 45% from 1997-200) are also processed and sold independently. Three commercial fishermen in La Ronge are licensed fish processors who process, package and market their own product. One of these operators also buys fish from other commercial fishermen.

A fish processing and freezing plant was built in La Ronge in 1944 and remained in operation until 1998. A new fish packing plant, run by FFMC, was built in Air Ronge in 1999 and is now in production.

8.5 Wild Mushrooms

Most wild mushroom picking occurs in the southern portion of the planning area in the Meeyomoot and Bear Rivers area. Morels, chanterelles and pine mushrooms are picked at different times. Vast quantities of morels may appear the first year after major forest fires.

One Saskatchewan company, Nature Berry, markets wild mushrooms on the world market. Other Saskatchewan buyers act as agents for outside companies.

Potential exists for increased mushroom harvesting. Forest management practices that enhance wild mushroom production are being examined with timber companies.

8.6 Wild Rice

Wild rice is a cereal that is non-native to Saskatchewan, but native to North-America. It was seeded for muskrat feed in Saskatchewan in the 1930s. Saskatchewan leads Canada in wild rice production, averaging 63% of the total over the last 10 years. Much of this is grown within the planning area, along the Churchill River and to the south. In the La Ronge and Pinehouse areas, 854,646 pounds of green wild rice were harvested in 1996; 274,846 in 1997; 1,400,783 in 1998 and 1,851,004 in 1999.

Wild rice harvesting provides supplemental income for six weeks of the year. La Ronge Wild Rice Corporation, a wild rice processing plant, employs 50 people in the community on a seasonal basis. Several First Nations bands are major shareholders through the Keewatin Co-op. Riese's Canadian Lake Wild Rice, of La Ronge, is one of the major marketers in Saskatchewan, with distribution across North America and Europe. All rice is grown organically, which may provide a market edge over lower cost American competition. A proposal is being developed to work toward blanket organic certification for the industry in Saskatchewan.

Four year permits are issued for wild rice establishment and harvesting. These can be extended into licences if the permit holder is still interested. An individual permit or licence can extend over several water bodies, and each water body may have many operators. The planning area has approximately 70 wild rice permits on 83 water bodies, covering 4,877 hectares, and 36 licences in 75 water bodies, over 46,888 hectares.

8.7 Traditional Aboriginal Use

Many First Nations and Métis people of the planning area follow traditional lifestyles, including hunting moose, deer, woodland caribou, and occasionally black bear, and using many parts of the animals for food and clothing. Hides are used for moccasins, gloves, mitts and decorative arts and crafts. Rawhide is used for snowshoe laces and other articles.

Forest products are used for personal use, sale and trade. White and black spruce trees are used for cabins and paddles; poplar for smoking meat and fish; birch for making smoke-ring racks, paddles, toboggans and snowshoes; and tamarack for snowshoes. Willows are collected and used for ceremonial or medicinal purposes or made into baskets and wreaths. Birch bark is made into baskets and decorative items. Herbs are collected for cooking and medicine.

Species used for subsistence fishing include sucker, whitefish, walleye and lake trout for smoke-drying, and northern pike and maria for boiling or roasting.

With the advent of the fur trade and modern economies in the last 200 years, traditional use provided economic benefits. Historically, the fur trade was the major source of revenue. The Fur Conservation block boundaries signify the territorial extent for traditional use. In a 1994-95 survey, for eight Fur Conservation Blocks - N5, N6, N7, N8, N9, N11, N78 and N79 - 597 out of 694 registered trappers were Band members. The remaining 97 were non-treaty trappers of either Métis or Caucasian descent.

A survey of Grandmother's Bay and Stanley Mission indicated that fewer people hunt and fish than in the past, but many still collect medicinal plants and even more gather berries.

The identification of 11 rock paintings, 47 burial sites and 24 pilgrimage sites provides evidence of past occupation by ancestors of current residents. The Lac La Ronge Indian Band maintains a map indicating current and past traditional activities such as domestic gardens, medicinal plant collection, trails and travel routes, fish spawning grounds, fishing areas, trappers' cabins, burial sites, birthplaces, rendezvous sites and pictograph locations.

8.8 Tourism

Tourism is "travel more than 80 kilometres for the purposes of business or pleasure." Northern tourism products include: parks, protected/managed areas, wilderness, and cultural attractions; events; animals, fish, birds and plant life that currently or have the potential to function as core travel generating resources; and services offered to tourists, such as outfitters, resorts, campgrounds, transportation, outdoor adventure operators, and other accommodations. Tourism has a large potential for growth in Northern Saskatchewan.

8.8.1 Outfitting

Fishing and hunting outfitters are spread across the planning area. The outfitting industry is one of the strongest generators of tourism from outside of the province as nearly half of visitors are from the United States and over half are from outside Saskatchewan. Currently \$80-100 million in Gross Domestic Product is generated yearly. Visitors to outfitting lodges stay about twice as long and spend three times the amount of money as an average tourist in Saskatchewan.

Fishing is the primary attraction, but 40% of outfitters also offer hunting. Some camps also offer canoeing, hiking, and other non-consumptive activities. Most locations are remote, with the northern region having one of the highest concentrations of fly-in fishing in the world.

One hundred eighty-four fish outfitting licences are issued in the Shield EcoRegion, of which 69 are in the planning area, covering 149 lakes or rivers. Several lakes or rivers have more than one licensee and many outfitters have allocations for more than one lake or river. Lac La Ronge Provincial Park, which is outside the planning area, has 37 outfitting licences for 20 different outfitters, some of whom also operate outside the park.

8.8.2 Ecotourism

Ecotourism is “respectful, environmentally responsible travel to relatively undisturbed and uncontaminated natural areas, with the objectives of studying, admiring and enjoying the scenery, wild plants and animals, and cultural features. It does not disrupt the wildlife or its habitat. It is nature centred, non-consumptive, and promotes conservation and economic benefits to local communities.” Tourism researchers around the world identify ecotourism as the largest growing tourism segment, tied to increased global concern over environmental and social issues. Northern Saskatchewan has some ecotourism potential. The Ecotourism in Saskatchewan Report identified Besnard Lake, with its high concentration of bald eagle populations, as a potential ecotourist destination. The Churchill River, in Lac La Ronge Provincial Park, was also identified, with caves, canoe routes, rapids, historical features and interesting scenic qualities. Currently, one ecotourism operator is located near McLennan Lake. Some outfitting camps may be interested in expansion into ecotourism.

8.9 Canoe Routes

Canoe routes are significant from an historical and cultural perspective, particularly the Churchill River system, and provide transportation to traditional and recreational users.

8.10 Highways

The highway infrastructure in the planning area includes:

- C Highways 2 and 165 south of La Ronge;
- C Highways 102, 905 and 915 north of La Ronge;
- C Highway 914 north of Pinehouse;
- C a section of Highway 910 south of Besnard Lake; and
- C a section of Highway 106 in the vicinity of Big Sandy Lake.

These highways total 560 km, of which 65 km are paved. In order to service this network, Saskatchewan Highways and Transportation has 48 gravel pits and 28 stockpile sites in the planning area. Maintenance equipment storage and operations sites are located at Walker Creek, just south of Missinipe, and at the junction of Highways 102 and 905.

The main highway corridor within the planning area, Highway 102 and 905, was constructed in the 1960s and 1970s. A partnership agreement is in place with mining companies to make improvements to the highways with funds provided from the companies' haul savings. Improvements have involved short sections of roadway within or close to the existing corridor.

Use of Highway 102 is expected to increase in the future due to mining and exploration, forestry, tourism and population growth, and the opening of the Athabasca seasonal road.

8.11 Water

Water is an integral part of the ecosystem, essential for the healthy functioning of all resources and vital for all aspects of resource use.

Water supply will be adequate in La Ronge and Missinipe for the next 20 years. Air Ronge and the Lac La Ronge Indian Band share a joint water and sewer system. An expansion for this system has been proposed that will provide adequate capacity for the next 20 years.

Brabant Lake gets its water from either Brabant Lake or the Waddy River. This surface water is very poor quality with bad colour, high turbidity, iron, manganese and trihalomethanes. A new water supply or a treatment plant is required. Houses in the community are currently equipped with cisterns, and a local supplier hauls water. The school is connected to a well.

The recreation subdivisions of Napatak and Wadin Bay both rely on private cisterns for water supply.

Sewage treatment capacity will be adequate over the next 20 years for Missinipe and the shared Air Ronge - Lac La Ronge Indian Band system. The La Ronge sewage treatment plant requires expansion to handle current loads. Currently, effluent discharges into McGibbon Bay. Concerns have been raised at the Lac La Ronge Co-Management Board meetings regarding the impact from the effluent on nutrient loads in McGibbon Bay.

Brabant Lake uses a combination of pump out holding tanks for houses and a sewage lagoon which is connected to the school. While the existing lagoon needs repair, it is adequately sized and appears to be functioning properly.

Water use and sewage disposal on reserve lands falls under the jurisdiction of the federal Department of Indian and Northern Affairs. Sucker River has water distribution to most houses but water treatment is not up to standard. They have a new sewage system. Grandmother's Bay may need a new water treatment plant. Their sewage lagoon will need to be expanded or relocated by 2006. Stanley Mission's water treatment plant was upgraded three or four years ago. They have a sewage lagoon but could use an additional storage cell for their secondary treatment.

8.12 Hydroelectricity

Eight sites within the land use planning area, including two in the Lac La Ronge Provincial Park, have hydroelectric development potential, ranging from 1.5 to 59 megawatts (MW). Because of the small size of these sites, none are likely to be developed by SaskPower in the near future.

Significant potential for hydroelectric development exists along a portion of the Churchill River, east of the planning area. However, water levels would need to be raised to an elevation of 338 metres which would affect the portion of the river in the planning area downstream of Nistowiak Lake. Although there are no current plans for this development, future economic conditions may make it desirable.

There are two potential 138 kilovolt (KV) transmission line projects for grid development in the planning area. One from Timber Cove to La Ronge will rebuild an existing line. The portion of this line between Timber Cove and Prince Albert was rebuilt in 2000. The other potential project is from Lindsay Lake, near Brabant Lake, to La Ronge.

If hydro development were to proceed on the lower Churchill River, transmission lines would be required that may cross the southeast portion of the planning area. Major new development in the north, for example a mine, might request service that could require transmission lines.

8.13 Energy

SaskEnergy brought natural gas to the communities of Montreal Lake and Timber Bay in the fall of 1999. Plans to extend the pipeline to La Ronge will depend on businesses and residents subscribing to gas service at a level that will make the project economically feasible. No plans exist to extend the natural gas system past La Ronge.

8.14 Historical Rivers

The Churchill River and the Wheeler/Geikie River system are considered significant due to a combination of unique or representative natural heritage and human history features and recreational opportunities.

A 487 km section of the Churchill River, from Ile-a-la-Crosse to Frog Portage on Trade Lake, was nominated for Canadian Heritage River System status in 1993. In March 1995, leaders of northern communities informed delegates at a Churchill River conference in Saskatoon that they would not support this designation. The leaders of the Federation of Saskatchewan Indian Nations (FSIN), Prince Albert Grand Council, Peter Ballantyne Cree Nation, Lac La Ronge Indian Band, English River First Nation, the Métis Nation of Saskatchewan, and northern communities stated that they did not feel they were equal partners in either the nomination or designation processes.

Although the Heritage River designation did not proceed, residents and interest groups recognize the need for some form of protection along the Churchill River.

8.15 Historic and Archaeological

There are 219 known historic and archaeological sites throughout the planning area. These include burial grounds, pictographs and artifact finds. Much of the area remains unexamined.

8.16 Parks

The two goals of the *Provincial Parks Act* are to protect representative or unique features or examples of Saskatchewan's natural and cultural heritage, and provide recreational and educational opportunities. To accomplish these goals, four classes of parks have been designated: Wilderness Parks, Natural Environment Parks, Recreation Parks and Historic Parks.

Lac La Ronge Provincial Park is classified as a Natural Environment Park. It is Saskatchewan's largest provincial park, at 336,197 hectares, and is the only Natural Environment Park within the Precambrian Shield. The goal of a Natural Environment Park is twofold: to protect representative and unique landscapes which display the variety of ecological characteristics and features found in Saskatchewan's natural regions; and to protect large tracts of land with a high potential for a wide variety of outdoor recreational and interpretive activities that require a natural setting. Lac La Ronge Provincial Park is reflective of common northern landscapes and offers rich heritage features found within the park such as the Holy Trinity Anglican church, pictographs, and evidence of the fur trade. Visitors also enjoy camping, fishing and other recreational opportunities.

The Lac La Ronge Provincial Park has a management strategy which will remain outside of the North Central planning process. However, there may be some joint discussion over any mutual concerns that may affect both the Park and the North Central planning area.

The Provincial Parks System Plan has identified three other areas within the planning area with potential for designation as Natural Environment Parks. These are located at Upper Haultain River, Foster Lakes and Wathaman Lake. Upper Haultain was recommended for immediate designation while Foster Lakes and Wathaman were recommended for future consideration.

Other Park Lands in the planning area include Recreation Sites and a Protected Area. Recreation Sites provide a variety of outdoor recreation opportunities and facilities, such as campgrounds, picnic grounds and lake access points. The planning area has six Recreation Sites - Big Sandy Lake, Besnard Lake, MacKay Lake, Devil Lake, Dickens Lake and McLennan Lake. Protected Areas are designated to protect archaeological and natural sites with unique or irreplaceable resources. The Protected Area is the Hickson-Maribelli Lake pictographs.

8.17 Representative Areas

SERM is developing a Representative Area Network (RAN). Representative areas act as benchmarks to compare the impact of management practices outside of the network, and preserve examples of biodiversity. If healthy ecosystems are properly maintained through management practices, representative areas will confirm this. Perhaps more important, if resource management practices are degrading ecosystems, representative areas will serve as an “early-warning” signal so that steps can be taken to correct actions and restore ecosystem health over the long term.

The goal of the RAN is to have areas in all ecoregions with some level of protection. Candidate areas are assessed based on their “enduring features” contained within them. Enduring features are combinations of rock, soil, watershed and land form patterns that are stable over long periods of time and are occupied by characteristic plant and animal communities. Using enduring features provides a flexible “starting point” to guide the size and placement of larger representative areas and helps to ensure that landscapes representative of features found in Saskatchewan are included in the Network. Other considerations are the level of human disturbance; size of the area; connections between sites to allow for movement of animals; absence of exotic or introduced species; presence of species at risk; and human values like culturally significant features and recreational wishes.

Representative areas strive for a balance between ecological, economic, cultural and recreational needs. SERM believes it is important to preserve the wilderness, but it is also important to be able to enjoy it. In some representative areas, human activities may be limited in order to ensure protection of species at risk or fragile features. In most representative areas, however, many uses like hunting, fishing, trapping or hiking can continue. Traditional aboriginal uses are unaffected by the representative area designation.

More intensive uses like commercial timber harvesting or mineral extraction are more disruptive. When selecting new representative areas, every effort will be made to identify sites where these activities are

not occurring. In addition, major road developments or water channelization projects are not desirable within a representative area.

Most of the planning area is part of the Churchill River Upland. This Ecoregion currently does not have adequate areas protected that are representative of natural processes. Currently, two large areas within the planning boundaries are being evaluated, along the Geikie River and in the Pink Lake area.

The Wapawekka Hills Representative Area was designated in 1998. It covers 67,715 hectares and is along the southeast portion of the planning boundary, within the Mid-boreal Upland Ecoregion (Figure 1).

8.18 Dispositions

There are 789 dispositions in the North Central planning area, in the form of leases, licences and permits administered by Sustainable Lands Management Branch of SERM. A disposition entitles the holder to occupy Crown Resource lands for the purposes identified.

Leases provide the tenant with the most secure tenure, with terms varying from one to twenty-one years. Licences apply to wild rice operations and are issued for ten year terms. Permits are associated with land use of a non-permanent nature, development intended to exist for a short term, and for wild rice during the first four years of operation.

8.18.1 Agriculture

Agricultural dispositions are used for agricultural activities, including cultivation and production of crops, dairying, raising poultry or livestock, and erecting buildings or structures used exclusively to enhance the agricultural operation. Nine dispositions lie within the southern portion of the planning area, six of which are within the developed areas of Rabbit Creek, Potato Lake and Lamp Lake.

8.18.2 Industrial and Commercial

Industrial, commercial and industrial dispositions are for land uses which provide services or products to the public for economic or material gain. The dispositions include outfitting camps, retail operations, golf courses, boat docks, privately operated campgrounds, exploration camps, and landfill/sewage sites. The planning area contains 137 dispositions. Three of these are situated in the Besnard Lake Recreation Site and the remainder are throughout the planning area.

8.18.3 Institutional

Four dispositions are situated in the southern portion of the planning area: a Bible camp, a Boy Scout

camp, a non-profit outdoor experience facility and a shooting range.

8.18.4 Provincial Government

Various government departments/agencies require land to provide services to the planning area. These services include boat launches, gravel stockpiles, storage compounds, enforcement patrol cabins, landfill/ sewage sites, communication towers, ski chalets and fire towers. All 19 dispositions are located in the southern portion of the planning area.

8.18.5 Municipal Government

The two municipal dispositions are a sewage lagoon for the Northern Hamlet of Missinipe and a landfill site for the town of La Ronge.

8.18.6 Sand and Gravel

Twenty-seven dispositions are mostly within the southern portion of the planning area. Three are held by the Town of La Ronge and one by the Northern Village of Air Ronge; the remaining are held by private operators.

8.18.7 Recreational and Residential

Recreational and residential dispositions provide authority to erect a cabin, residence, boat dock or storage facility. SERM policy limits the development of new residential opportunities to within developed subdivisions or municipal boundaries. Opportunities for remote recreational leases are limited to existing leases or Crown Resource land north of the 56th parallel. There are 354 recreational and residential dispositions throughout the planning area.

8.18.8 Traditional Resource Use

These dispositions provide authority to use Crown resource land for residential structures in conjunction with trapping or commercial fishing activities. Dispositions can be in the form of 10 year lease, or an annual permit.

Of the 137 dispositions, two lie within the Sandy Lake Recreation Reserve and four in the Besnard Lake Recreation Reserve; the remainder are throughout the planning area.

9. OTHER CONSIDERATIONS

9.1 Treaty Land Entitlements

Rupert's Land became part of Canada in 1869. In order to secure agriculture lands for settlers, the Canadian government began to sign treaties with Aboriginal groups. These treaties extinguished Aboriginal title to land in return for certain concessions and entitlement to reserve lands. Five treaties were signed between the federal government and 72 Saskatchewan Indian Bands. In many cases less land was set aside than was indicated in the treaties. In 1990 it was recognized that 27 bands still had land owing to them. A Framework Agreement was reached in 1992 between the federal and provincial governments and the Federation of Saskatchewan Indian Nations allowing lands owed to be converted to monetary equivalents. The money would then be used by the bands to purchase lands anywhere in the province, including municipal land. As a result of the Agreement, the Peter Ballantyne Cree Nation has three active claims in the planning area: one located at the junction of highway 102 and 105, north of Brabant Lake; a second in the vicinity of Brabant Lake extending northeast along highway 102; and a third adjoining Lac La Ronge Provincial Park at Wadin Bay.

The James Robert Band, at Lac La Ronge, adhered to Treaty Six in 1889. The Amos Charles band, at Stanley Mission, was not included within the boundaries of the treaty, despite considering themselves as one people with the James Robert Band. In 1910 these bands became separate to allow land entitlements to the Amos Charles Band. They later re-amalgamated in 1950 as the Lac La Ronge Indian Band. Treaty lands were surveyed and awarded based on population. The band did not receive its full entitlement until 1968. However, they later contested that they were owed more land, based on procedures to determine entitlements in other treaty settlements. A recent Saskatchewan Queen's bench decision indicates the band may be entitled to as much as 776,000 additional acres. Both Canada and the Saskatchewan governments have appealed the decision to the Saskatchewan Court of Appeal.

9.2 Climate Change

Climate change is primarily due to the release of carbon dioxide (CO₂) into the atmosphere above that which is returned into carbon as organic life forms and their byproducts. Primary contributions are from the burning of fossil fuels and deforestation. With continued increases in CO₂ levels, the prairie provinces are expected to have increases in temperature and decreases in soil moisture.

The conversion of CO₂ into carbon compounds is the basic component for vegetation growth. Therefore, plants and trees may actually increase in growth. This could be further accelerated due to increases in the growing season brought on by the milder temperatures. However, any increases in fires or insect outbreaks could offset potential climatic benefits. Droughts are expected to become more intense and frequent in the future. Recent projections indicate that the southeast half of the planning area may experience increases in fire frequency, whereas the northwest half will likely remain the same.

Drier and warmer conditions could also lead to more insect outbreaks such as spruce budworm and forest tent caterpillar. Insect survival and reproduction increases on drought stressed trees. Reductions in late spring frost will further aid insect survival. Other types of tree mortality may occur from increased frequency and intensity of thunderstorms, leading to greater damages from blowdown.

Boreal lakes and wetlands can be drastically affected by increased temperatures and associated droughts. Water sources into lakes could dry up in certain portions of the year, leading to reductions of nutrient and food supply for phytoplankton production, a primary producer in the food web. Higher water temperature would also have negative effects. Drying of wetlands could promote more peat fires.

Changing climatic conditions may cause direct stress or mortality to wildlife, and could indirectly affect their survival through alterations of habitat and food sources.

The role of the forests in the planning area in climate change is complex. Historically, fire has played a dominant role in shaping the forests. Before fire suppression, most forests did not survive past age fifty. Since the 1940s, fire fighting efforts have shifted the balance toward older forests with bigger trees and thicker forest floors, storing more carbon than a younger forest. This has positive implications toward climate change because it means less CO₂ in the air. However, these forests are now older, more diseased, prone to insect attack and may be under greater risk of fire. Large losses to fire would result in instant carbon loss, conversion to CO₂ and further contributions to climate change. Current forest harvesting has the potential to retain some of this carbon, as forest products, particularly lumber, are slow to decompose. If harvested areas are regenerated promptly, the net result could be carbon gain, rather than loss, with positive effects on climate change.

9.3 Forest Protection

Forest protection refers to plans and activities required to minimize the effects of wildfire, and insect and disease infestations.

9.3.1 Fire Management

Limited resources make it impossible for SERM to attack every fire. Protection efforts need to be concentrated on values and uses identified as most important.

In some situations allowing fire to burn larger areas may be beneficial, such as where insects and diseases have weakened the forests. Large areas of insect and disease infestation can be eliminated, restoring healthy ecosystems and improving certain wildlife habitat. By knowing when and where to allow these fires, the threat of more damaging and extensive fires in the future may be minimized.

Communities will always be at risk but can improve their fire prevention efforts by coordinating their initiatives with SERM. This will also require coordination with the federal Department of Indian and Northern Affairs, as they have fire protection jurisdiction on reserve lands. Communities can further minimize risk by creating “fire safe zones,” using less flammable building materials, installing sprinkler systems, and maintaining basic fire fighting equipment on site.

In 1999, a forest fire destroyed several houses in La Ronge. La Ronge has a fire department which also serves Air Ronge and the Lac La Ronge Indian Band. Currently, they are working on constructing a vegetation fuel break. Fire preparedness at Brabant Lake includes a fire pump for water delivery, a water truck, and a vegetation fuel break which is planned for future re-clearing. Sucker River has adequate water delivery to most houses in case of fire, and has a vegetation fuel break which requires maintenance. Grandmother’s Bay has adequate standby fire pumps and water mains, but needs a fire truck and proper fire fighting equipment plus a vegetation fuel break across the peninsula. Missinipe lacks fuel breaks but does have fire hydrants, a fire truck, fire equipment, standby crews and air attack capabilities. Stanley Mission has fire fighting equipment, a fire truck and standby crews but no fuel break.

9.3.2. Eastern Spruce Budworm Control

SERM’s spray program, using the biological control agent *Bacillus thuringiensis* var. *kurstaki* (BtK), appears to be successful in limiting defoliation on vacant crown land. The current strategy is to keep the greatest number of trees alive, until the budworm epidemic collapses. In 1998, 6,554 hectares were sprayed around Egg Lake, La Ronge, and just south of La Ronge. In 1999, approximately 1,800 hectares were sprayed in the Egg Lake area . In all cases no new defoliation occurred. No spraying occurred in 2000 or 2001.

9.4 Community Expansion

The Sucker River reserve is seeking additional lands to accommodate their growing population. Sucker River is bound by both the Provincial Park and a Peter Ballantyne Cree Nation Treaty Land Entitlement claim.

The Department of Municipal Affairs, Culture and Housing agreed in 2000 to allow the Northern Hamlet of Missinipe to expand its community to 181 hectares.

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