

**CHRISTINA LAKE
MANAGEMENT PLAN**

- FINAL DRAFT -

**1991
July**

EXECUTIVE SUMMARY

Development of a management plan for Christina Lake was initiated in 1988, in response to a perceived increase in the variety and amount of resource use and development pressures on the lake and its shorelands. A biophysical inventory and land use evaluation of the Christina Lake shoreland area was completed in the fall of 1988.

The planning team comprised representation from Improvement District #18 (N) and Alberta Forestry, Lands and Wildlife, including the Alberta Forest Service, Fish and Wildlife Division, Public Lands Division and the Northeast Regional Resource Coordinator. Consultative planning services were provided by Alberta Municipal Affairs, Alberta Environment, Alberta Tourism, Alberta Energy, Alberta Recreation and Parks, Alberta Culture and Multiculturalism, and Alberta Transportation.

This document consists of five sections. Section 1 outlines the relationship between the Christina Lake Management Plan and the municipal planning responsibilities of Improvement District #18(N). The development strategy proposed for the planning area is detailed in Section 2. Sections 3 and 4 provide the guidelines which will ensure appropriate protection for the planning area, while Section 5 describes the processes for implementation, review and amendment of the lake management plan.

In developing this lake management plan, an assessment was made of the capabilities, opportunities for, and desirability of public and private recreational use of Christina Lake. This assessment was based on environmental, social, economic and land use requirements and constraints, providing a framework for evaluating the most appropriate level of development which the lake can sustain, in balance with public

needs and strict environmental protection measures.

Public involvement, particularly from a local perspective, played a significant role in this plan's development. Opportunities for public input were provided through the direct participation of Improvement District #18 (N) on the planning team, as well as through three Open House/Panel Session public meetings held in Conklin and Fort McMurray, Alberta. Further public opinions and ideas were received through answered questionnaires and written submissions.

The resultant plan details a limited development strategy which will meet both existing and currently foreseeable demands for recreational opportunities at Christina Lake. This plan places strong emphasis on retention of the natural, wilderness character of much of the planning area. Extractive resource industries will be constrained where there is potential for significant negative impact on recreational opportunities.

Outside of the Hamlet of Conklin and existing developments, the only new recreational activities and developments that will be permitted in the planning area will be of an extensive, rather than intensive, nature. Expansion of the commercial campground to a total of 150 units, and the eventual infilling of the remaining 52 vacant lots in Conklin, will result in an increased level of activity on and around Christina Lake.

The Christina Lake Management Plan endeavors to allow for increased recreational use and limited industrial development of the area so that the major values of the lake and backshore remain unimpaired for wildland recreational opportunities into the future.

LAKE HISTORY

Christina Lake and the river originating from it were named to honor Christine Gordon, a Scotswoman, who was the first white woman to make a permanent home in Fort McMurray. Miss Gordon was a fur trader operating in competition with the Hudson Bay Company. A friend of the Indians and highly respected in the community, she died in the mid 1940's. (Holmgren, E.J. and P.M. Holmgren. 1976. Over 2000 place names of Alberta. 3rd edition. Western Producer Prairie Books, Saskatoon, Saskatchewan.)

The original settlement of Conklin was located on the extreme north western end of Christina Lake, adjacent to the outlet to the Jackfish River. With the advent of the Northern Alberta Railways the Hamlet of Conklin was relocated to its present position alongside the railway tracks.

The period 1940 to 1960 encompassed the fur farming era during which Christina Lake was an important centre for the local fur industry. Several mink farms were operated close to the outlet to the Jackfish River, and another was established on the major east - west oriented peninsula located in the eastern section of the lake. Mink pelts were transferred to the rail siding by canoe and dog sled team.

During the same period Christina Lake experienced heavy commercial fishing. A fish processing plant constructed at the outlet to the Jackfish River is no longer in existence.

TABLE OF CONTENTS

	Page
1. INTRODUCTION	1
1.1 Improvement District #18 (N)	1
2. DEVELOPMENT STRATEGY	3
2.1 Selected Development Alternative	3
2.2 Detailed Strategy	4
3. RESOURCE MANAGEMENT	7
3.1 Timber	7
3.2 Fire Control	8
3.3 Mineral Resources	9
3.4 Water and Watershed	12
3.5 Recreation and Tourism Development	13
3.6 Historic and Cultural Resources	16
3.7 Fisheries	17
3.8 Wildlife	20
3.9 Infrastructure and Access	22
4. RECREATION DEVELOPMENT GUIDELINES	24
4.1 Sale of Public Land	24
4.2 Roads, Services and Other Essential Infrastructure ...	25
4.3 Commercial - Retail Sales	26
4.4 Environmental Protection and Conservation	26
4.5 Shoreline Recreation Developments	27
4.6 Steps in Applying for a Recreation Development	28

5. PLAN IMPLEMENTATION, REVIEW AND AMENDMENT	30
5.1 Implementation	30
5.2 Review	30
5.3 Amendment	31

LIST OF ILLUSTRATIONS

Table	Page
1. Possible Uses for Extensive Recreation Development Zone and Resource Protection Zones	5

Figure	Page
1. Regional Location of the Christina Lake Planning Area	viii
2. Christina Lake Planning Area	ix
3. Recreation Development and Resource Protection Zones	6

R.20 R.19 R.18 R.17 R.16 R.15 R.14 R.13 R.12 R.11 R.10 R.9 R.8 R.7 R.6 R.5 R.4 R.3

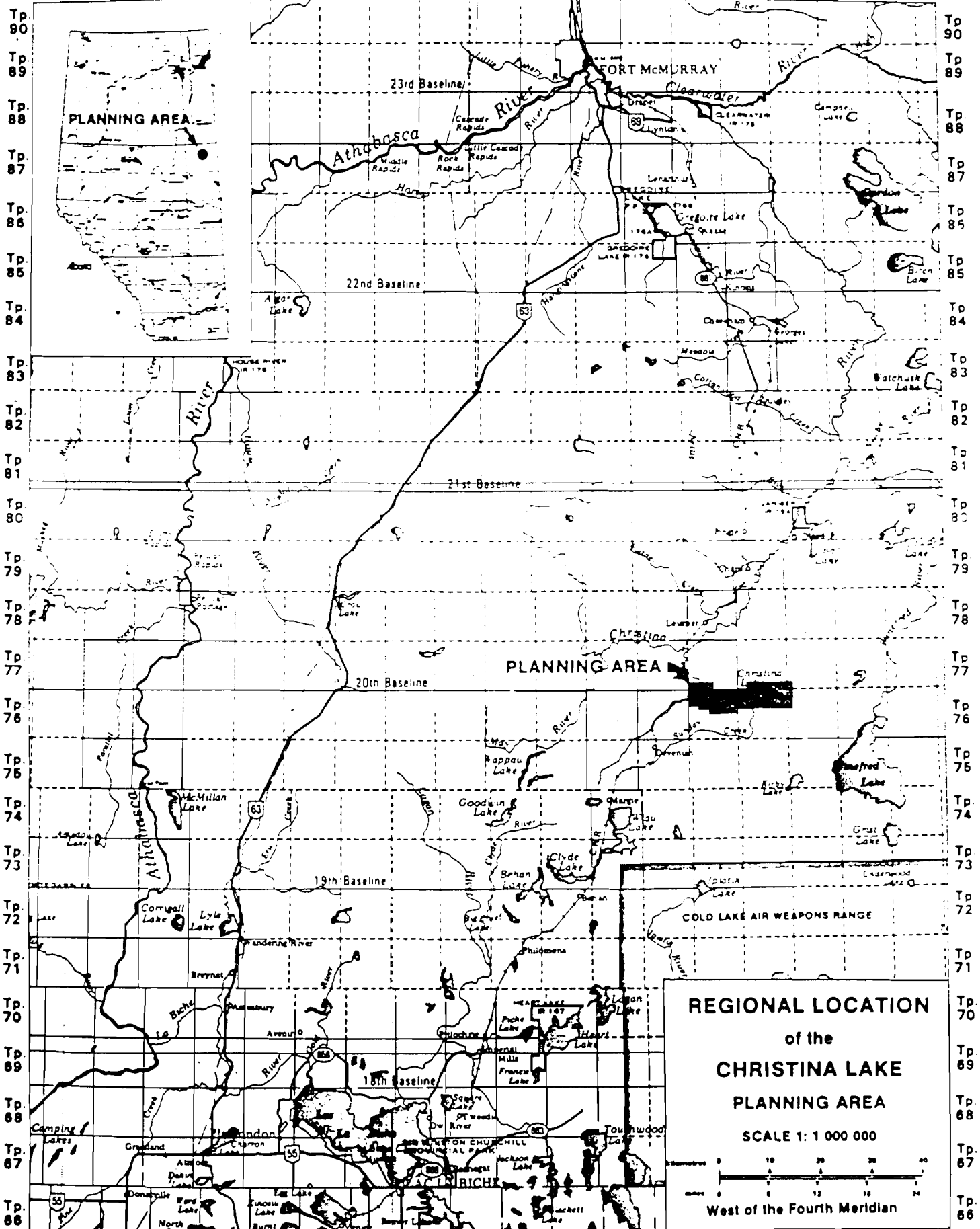


Figure 1: Regional Location of the Christina Lake Planning Area.

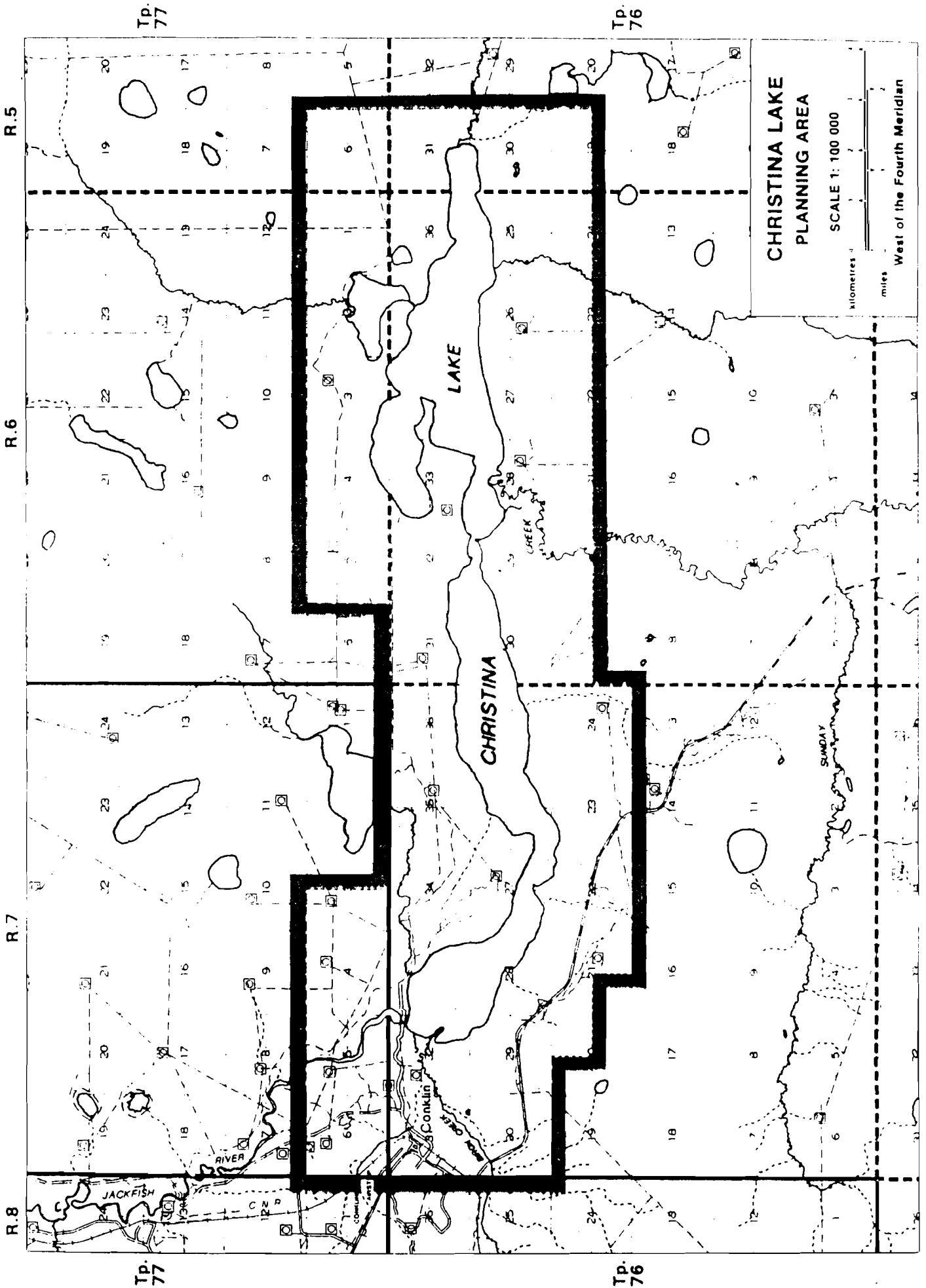


Figure 2: Christina Lake Planning Area.

1. INTRODUCTION

Christina Lake has become a popular recreational resource serving the needs of both the local community and regional populations alike. It is situated approximately 130 kilometres northeast of Lac La Biche and 170 kilometres south of Fort McMurray in east-central Alberta.

Over the years, Christina Lake has experienced a variety of development and land use pressures due to its recreational, resource and community development values. The result has been the establishment of a viable and growing Hamlet of Conklin, a successful commercial lodge operation, several resource-extraction and processing industries, and the regular use of the lake for commercial fishing, sport fishing and other forms of recreation. The lake is also a special resource to local residents who value the need for preservation of the lake due to its cultural significance, and for provision of essential products such as food, water, and other means of traditional livelihood.

Coupled with the local significance of Christina Lake is an interest by residents of other communities in the region who seek opportunities for more intensive forms of recreational use of Christina Lake such as cottaging.

1.1 Improvement District #18(N)

Christina Lake is within the municipal jurisdiction of Improvement District #18(N) which, pursuant to the Planning Act, exercises control over land use and development on all patented land and all private developments on public land. The Improvement District utilizes

its Land Use Order, a wide ranging document covering the entire Improvement District, and a series of detailed area structure plans, to implement its planning responsibilities.

Currently the area around Christina Lake is within the Rural District (A2) of the Improvement District Land Use Order. This district has an extensive list of discretionary uses which provide little guidance for the detailed planning of a sensitive lake environment. Although there is no area structure plan for the Christina Lake area, there is one for the Hamlet of Conklin.

Upon completion and final approval of the Christina Lake Management Plan (Alberta Forestry, Lands and Wildlife) the Improvement District may schedule the preparation of an area structure plan for Christina Lake. The area structure plan will introduce elements and policies of particular interest to a local municipality. The intention is to supplement and not to contradict the policies contained in the lake management plan.

Until an area structure plan is in place Improvement District #18(N) will continue to use the Land Use Order for the issuance of development permits, and will have the lake management plan as resource information on the advisability of discretionary uses.

2. DEVELOPMENT STRATEGY

2.1 Selected Development Alternative

The planning team selected a limited development strategy based on the Status Quo Alternative detailed in the Alternatives Document (see Background Document #3). This decision was made for the following reasons:

1. The public review of the Alternatives Document indicated both strong opposition in Conklin to increased lakeshore recreational developments, and a general lack of interest from Fort McMurray towards recreational developments, in the Christina Lake planning area.
2. In addition, there are currently 52 vacant residential lots as well as other expansion opportunities available for development within the Hamlet of Conklin at the western end of the lake, plus an additional 50 campground units already approved for expansion at Christina Lake Lodge and Campground on the northwestern shore. It is the opinion of the planning team that these existing expansion opportunities as outlined will handle demand for the foreseeable future.
3. Roads, power and other municipal services required to support further development within the Hamlet are already in place. Improvement District #18(N) may consider permitting further subdivision outside of the Hamlet for country residential, cottaging, or backcountry lodge type developments, at such time as demand exceeds available development opportunities within the

Hamlet boundaries.

2.2 Detailed Strategy

1. Developments Within Hamlet Boundaries

Intensive developments such as country residential and cottaging may be permitted within the boundaries of the Hamlet of Conklin. Improvement District #18 (N) may prepare an area structure plan, based on the Christina Lake Management Plan, for the Hamlet of Conklin in the near future. The area structure plan will establish future development standards and planning guidelines for the Hamlet.

Refer to Figure 3 "Recreation Development and Resource Protection Zones", page 6, for definition of the boundaries of the Hamlet of Conklin and major dispositions within the planning area.

2. Developments Outside Hamlet Boundaries

Extensive recreational developments only will be permitted within the Christina Lake planning area, outside of the Hamlet boundaries. Existing developments on dispositions outside of the Hamlet boundaries are excluded from this guideline.

Table 1 "Possible Uses for Extensive Recreation Development Zone and Resource Protection Zones", page 5, details the types of developments and activities which will be permitted.

It should be noted by proponents of extensive recreational developments that although public access is not restricted on roads held under Licence of Occupation (LOC), access to service a minor commercial operation, as defined in Table 1, page 5, must be by agreement with the LOC holder.

TABLE 1

POSSIBLE USES FOR EXTENSIVE RECREATION DEVELOPMENT ZONE AND RESOURCE PROTECTION ZONES

Use Type	Extensive Recreation Development Zone (see Note #1)	Resource Protection Zones	
	Zone 1	Lakeshore/Streamside Buffer	Fish/Wildlife Habitat Buffer
		Zone 2	Zone 3
Possible	<ul style="list-style-type: none"> - day use/public recreation areas under disposition (see Note #3) - walking trails under disposition - random/rustic camping - minor commercial recreation operations under disposition (see Note #2) - horse trails/staging areas under disposition - snowmobile and ATV trails/staging areas under disposition - cross-country ski trails/staging areas under disposition - other extensive recreation activities and uses considered appropriate by Alberta Forestry, Lands and Wildlife, and Improvement District #18(N); e.g., hunting, fishing, nature observation, etc. - trapping - mineral exploration and development activities 	<ul style="list-style-type: none"> - day use/public recreation areas under disposition (see Note #3) - walking trails under disposition - random/rustic camping - minor commercial recreation operations under disposition (see Note #2) - horse trails/staging areas under disposition - snowmobile and ATV trails/staging areas under disposition - cross-country ski trails/staging areas under disposition - other extensive recreation activities and uses considered appropriate by Alberta Forestry, Lands and Wildlife, and Improvement District #18(N); e.g., hunting, fishing, nature observation, etc. - boat launches - trapping 	<ul style="list-style-type: none"> - walking trails under disposition - random/rustic camping - cross-country ski trails/staging areas under disposition - other extensive recreation activities and uses considered appropriate by Alberta Forestry, Lands and Wildlife, and Improvement District #18(N); e.g., hunting, fishing, nature observation, etc. - trapping - mineral exploration and development activities (winter only)

Note #1 "Extensive recreational use" means a recreation development in the rural area where the prime reason for the location is to take advantage of natural physical features, to provide for non-facility oriented recreational activities. Without restricting the generality of the foregoing this shall include hunting, trail riding, snowmobiling, hiking, cross-country skiing, rustic (random) camping and similar uses.

Note #2 Minor commercial recreation operations which provide for extensive recreation opportunities and show a need to be located at or near the associated amenities, but which do not require additional infrastructure. Examples of minor commercial operations are commercial trail ride base camps, cross-country ski warm-up shelters, etc.

Note #3 A "disposition" is the means by which any entitlement to, or any other right in respect of, public land is given by the Alberta government to any person under the Public Lands Act. It includes sale, lease, licence, permit, contract, agreement, etc., but does not include a grant.

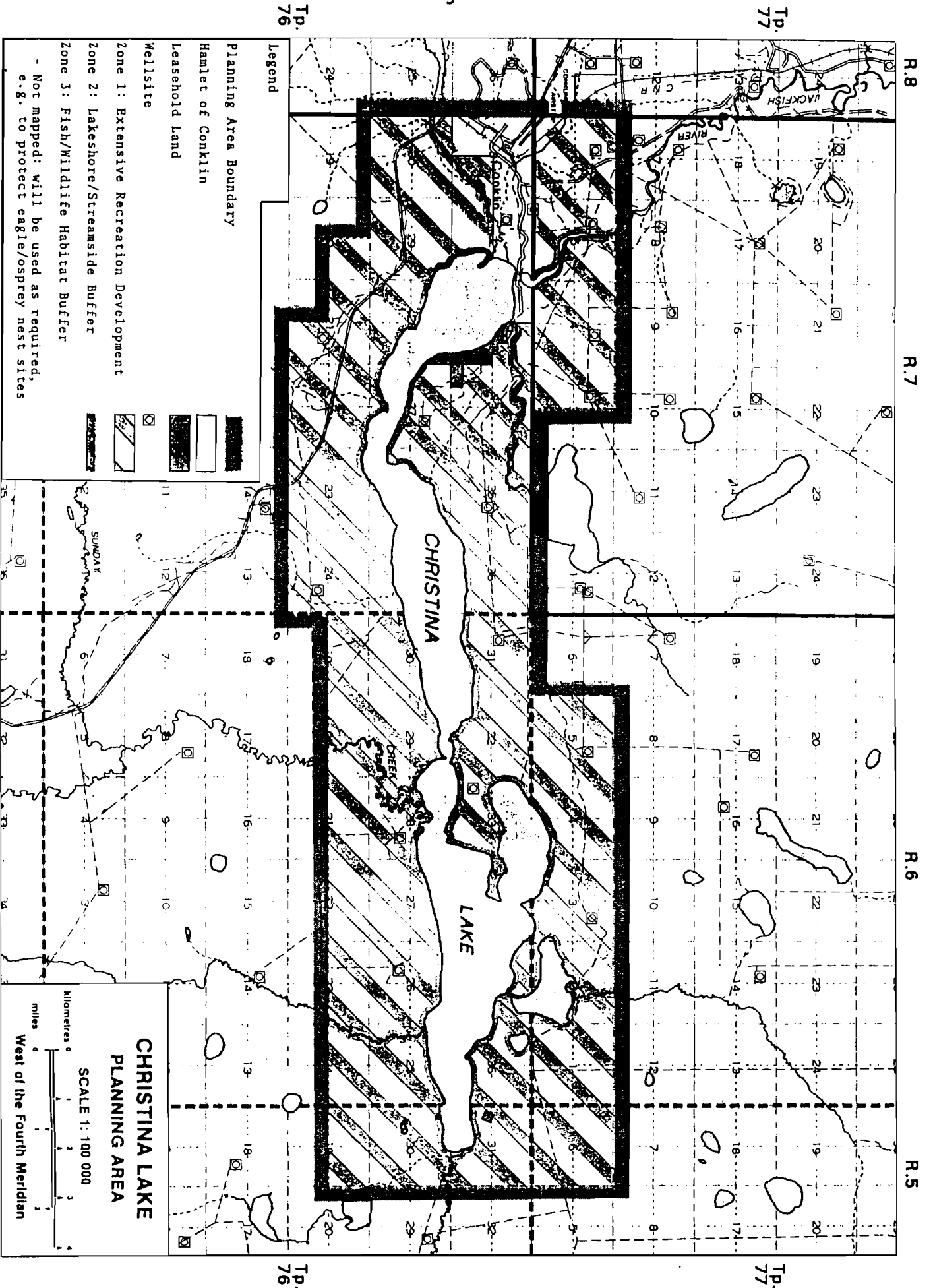


Figure 3: Recreation Development and Resource Protection Zones.

3. RESOURCE MANAGEMENT

Within the Christina Lake planning area there are industries which depend on local resources such as timber and minerals. In addition, there is a growing recreation industry relying on the water, fisheries, and wildlife resources of the area.

The purpose of this section is to provide clear objectives to ensure that resource development and harvesting activities are conducted in a manner compatible with the high recreational value of the area. Guidelines have been set to help manage the resource activity in order to protect the recreational and historic values of the area as well as specific wildlife habitat.

3.1 Timber

Resource Synopsis

The timber stands in the planning area are scattered and interspersed with large tracts of organic soil types, which do not produce merchantable timber. There are, however, small stands of conifers, mixed wood and pure aspen on the higher lands. All timber is included in the proposed Alberta-Pacific Forest Management Agreement.

Resource Management Objectives

1. To ensure that timber harvesting and associated activities are carried out in a manner compatible with the high recreational and conservation values of the area.

Resource Management Guidelines

1. Harvesting programs and other forest management activities will be modified as necessary outside a 100 metre buffer around the lake using landscape logging techniques in order to recognize important recreation areas and fish and wildlife habitat. Timber removal within 100 metres of the lakeshore will be restricted to selective cutting for salvage/sanitation and habitat enhancement.
2. Development of new access routes will be restricted. Any new access trails will have short lines-of-sight and minimal clearing. Debris from trail clearing will be spread over the trail and flattened after removal of timber is completed.
3. No mill sites will be allowed in the area.
4. Logging will be restricted to winter only, except for development-related timber salvage.
5. The design of timber removal patterns shall take into account the present and future needs for trails and other features for hiking, cross-country skiing and other non-lake surface activity.

3.2 Fire Control

Synopsis

Christina Lake is part of a large area within the Lac La Biche Forest that experiences a higher-than-average number of lightning storms. The area is also prone to man-caused fires through public and industrial use.

During the summer months, the Alberta Forest Service maintains surveillance in the area through the use of three fire towers. During high-risk periods the area is patrolled by an initial-attack crew at

Leismer Base, located 16 kilometres west of Conklin.

Management Objectives

1. To develop a fire protection plan for the area which addresses the potential fire risks associated with urban developments in a rural setting.

Management Guidelines

1. The Alberta Forest Service will continue to utilize and improve its current fire detection, prevention, pre-suppression, suppression, post-fire reclamation, and prescribed burning equipment and techniques in order to minimize the occurrence and impact of uncontrolled fires.
2. Areas of high fire hazard (e.g., due to surrounding vegetation type) will be defined and future recreation facility developments will be located away from such sites.
3. All major recreation facility developments (e.g., cottage subdivisions, wilderness lodges and campgrounds) will require a fire protection plan. Preparation of the fire protection plan will be the responsibility of the developer to a format provided by the Alberta Forest Service.

3.3 Mineral Resources

Resource Synopsis

There are important mineral resources within the planning area, particularly natural gas which is currently being extracted. The plan falls within a portion of the Athabasca Oil Sands area and has some oil sands potential. Industry interest in oil sands is indicated by the four oil sands agreements covering most of the planning area.

Two natural gas fields, the Hardy and the Leismer, cover the entire area. There are fourteen oil and gas dispositions covering all of this area and most have proven reserves of natural gas. The area has been extensively explored, with twenty-seven wells in total. There are currently ten producing gas wells while two gas wells are capped. Industry activity here can be expected to continue for some time.

Resource Management Objectives

1. To ensure that petroleum, natural gas and oil sands exploration and development is carried out in an environmentally sensitive manner and is integrated with other uses.

Resource Management Guidelines

Exploration

1. Geophysical exploration may be allowed on the surface of the lake or within 100 metres of the high water mark around the lake provided that non-destructive techniques such as air guns from boats or hand-laying of geophones are employed. Clearing or construction of lines will not be permitted.
2. Proponents of minerals exploration under Guideline #1 must demonstrate that their operations will not negatively impact the attributes that make the lake and its surrounding land valuable as a recreational resource. These attributes include the beach, water, fisheries, wildlife, recreational facilities, and aesthetics (such as sight, sound, and smell) of the lake.
3. Proponents of geophysical exploration from the water's surface, or of evaluation drilling within 100 metres of the established high water mark, should hold public meetings to inform local residents of the nature and extent of their exploration opera-

tions prior to approval of these activities by Alberta Forestry, Lands & Wildlife.

4. Seismic lines may not be constructed closer than 100 metres from recreation facilities. Non-destructive techniques, such as hand laying of geophones, may be considered.

Development

1. No permanent mineral resource facilities will be constructed or operated on the surface of the lake, from a natural or man-made island, or from any other man-made structure located within the high water mark of the lake.
2. No permanent mineral resource facilities, including individual wells, will be constructed and operated within 300 metres of the high water mark of the lake. A lesser distance, to a minimum of 100 metres, may be permitted provided that the proponent demonstrates that their operations will not negatively impact the attributes making the lake and its surrounding land valuable as a recreational resource. The attributes affected include the beach, water, fisheries, wildlife, recreational facilities and aesthetics (sight, sound, and smell) of the lake.
3. Where minerals and recreation development capabilities overlap, minerals development will be allowed to proceed provided that immediate recreation development plans do not exist and that recreation capabilities will not be permanently foregone.
4. Minerals development proposals are to be discussed with both Alberta Forestry, Lands and Wildlife and Improvement District #18(N). This is to determine how to best integrate the construction of infrastructure so that it minimizes the impact on key recreational land, yet optimizes the benefit for future recreational developments. Structural developments resulting

from these proposals will require appropriate permits from Improvement District #18 (N).

3.4 Water and Watershed

Resource Synopsis

Christina Lake has a surface area of 21.3 square kilometres and is 32 metres at its deepest point, with summer surface temperatures reaching 19°C. The lake has 6 permanent inlets and 1 permanent outlet. The Jackfish River, the major outlet for the lake, flows north into the Christina River, then the Clearwater and eventually into the Athabasca River.

There are no year-round meteorological stations in the area. However, local fire towers have recorded an average of 307 mm of precipitation from May to August. Edmonton International Airport recorded an average of 289 mm for the same period.

Christina Lake is the major source of domestic water for residents of the Hamlet of Conklin. Fifty-six residential units currently depend on the lake as their sole source of domestic water.

Resource Management Objectives

1. To minimize the impact of recreational development on the present quality of the water in Christina lake.

Resource Management Guidelines

1. All developments (except low impact developments such as beaches, boat launches, docks and walking trails) will be set back from the lake or streams about 100 metres. Actual setbacks will be determined on a site and development specific basis. Recreational facilities that must be located at the shoreline will be

designed to accommodate the historic range of water levels of the lake. Since recording by Alberta Environment Survey Branch began in November 1985, water levels have varied from 28.40 metres to 29.54 metres. Because the elevation of the lake has not been surveyed, the water levels refer to an assumed bench mark rather than geodetic elevation. Developments will be designed to minimize any potentially negative impacts on the lake. Roads, parking lots and sewage disposal facilities will be located and designed to prevent both storm water run-off and sewage effluent from entering the lake.

2. Lake water quality will be regularly monitored to ensure its continued suitability for domestic use. Alternative sources of domestic water for the Hamlet of Conklin should be investigated.

3.5 Recreation and Tourism Development

Resource Synopsis

Christina Lake and its beach environs are an increasingly popular recreation resource for both local and regionally based day use and overnight visitors. Fishing, hunting, swimming, boating and passive relaxation in a lake environment are the main recreation attractions of the area.

The present recreation development on Christina Lake consists of the Christina Lake Lodge and Campground and the Wassasi Municipal Day Use Area. The lodge, in operation for 20 years, has been a drive-in lodge for 4 years. The campground is the only area on the lake with a boat launch.

The Hamlet of Conklin has a general store which sells groceries and fuel. Plans have been developed to construct another fuel station, repair shop, cafe and motel near the hamlet. Other facilities exist in the hamlet that at present only provide services for the oil industry.

Resource Management Objectives

1. To evaluate the capacity and capability for recreational and tourism development on Christina Lake in an integrated land use context.
2. To identify fisheries and wildlife opportunities and constraints in order to determine the level of optimum use of Christina Lake.
3. To meet present and future demands by identifying commercial and public recreation and tourism development opportunities based on resource capability, current and future recreation activity patterns, and socio-economic conditions.

Resource Management Guidelines

1. Provision will be made for expansion of existing commercial and public recreation facilities to levels that are within the calculated use capacity of Christina Lake and its shorelands.
2. Proposals for commercial recreation and tourism development on public land will be reviewed through the Commercial Tourism and Recreation Leasing (CTRL) process which is administered by Alberta Tourism and Alberta Forestry, Lands and Wildlife.
3. Commercial recreation and tourism developments will be evaluated in relation to appropriate environmental and conservation standards. Environmental impacts will be minimized through development standards and land use regulations.
4. All commercial retail developments shall be encouraged to locate within the Hamlet of Conklin. Improvement District #18(N), through its land use program, may make commercial land available for the establishment of such developments.

5. All proposed commercial recreation and tourism developments shall be subject to referral to the local planning and development authorities. This will ensure that the residents of Conklin are advised of the development.
6. Proposals for the development of commercial recreation and tourism-related facilities must demonstrate project feasibility and financial capability before developments are approved. Alberta Tourism will provide the private and public sectors with information and counseling assistance in decision making related to recreation and tourism development opportunities on and around Christina Lake.
7. Random recreation will continue as a legitimate use within the planning area, subject to the maintenance of environmental quality.
8. The first priority for prime recreation resources (for example, beach areas) shall be public use.
9. Development of recreation/tourism facilities or services by provincial government or municipal agencies may occur in response to an identified demand, subject to the guidelines established by the Christina Lake Management Plan, budgets and other relevant factors.
10. The appropriate mechanisms (e.g., Forest Land Use Zones, reservations, buffers, municipal and environmental reserves) will be applied to protect environmentally sensitive areas having recreation and/or tourism capability.
11. A comprehensive set of guidelines for potential recreation and tourism development at the lake is provided in Section 4 "Recreation Development Guidelines", page 24.

3.6 Historic and Cultural Resources

Archaeological Resource Synopsis

The historic resource base of the Christina Lake planning area is largely unknown. Although no sites have been identified within the boundaries of the planning area, observations from elsewhere in the province suggest that evidence of prehistoric occupation is likely to occur in proximity to drainage systems such as Christina Lake, Jackfish River and Birch and Sunday Creeks. In addition, local promontories and well-drained terrain around the lake and the margins of rivers and streams are accorded greater potential for the discovery of prehistoric and historic settlement than low-lying muskeg terrain.

In recognition of these analogous site settings the potential presence of significant historic resources can be predicted around the margins of the planning area, drainage features, and particularly, Christina Lake.

Historic Period Resource Synopsis

There are no known historic sites identified in the Historic Sites Service Inventory within the planning area. However, the area has not been systematically inventoried and the potential for the presence of historic sites within the planning area is considered to be high as early settlement structures have been recorded in adjacent areas.

Resource Management Objectives

1. To identify, protect and preserve historic resources (archaeological, paleontological, historic period and natural), as defined in the Historical Resources Act, from impacts related to future resource developments.

2. To manage historic resources sites for scientific, educational and interpretive purposes.

Resource Management Guidelines

1. Resource uses in the planning area involving land surface disturbance may require Historical Resources Impact Assessments prior to development as outlined under Section 33(2) of the Historical Resources Act.
2. The Archaeological Survey of Alberta, Resource Management Section, will participate in the land use referral process to review any proposed developments (a) within 400 metres of the lake margin, and (b) within 100 metres of the river and other stream courses.
3. Historic resources sites considered to be of provincial significance will be protected and preserved for future generations.

3.7 Fisheries

Resource Synopsis

Christina Lake is relatively deep, with a small surface area and littoral zone. As a result of this, production of sport fish is rather limited and the system supporting these fish species is delicate. Virtually all of the shoreline habitat must be considered important for spawning, nursery, feeding and hiding habitat for both sport and forage fish.

The lake contains yellow perch, northern pike, white suckers, walleye, lake whitefish, tullibee, and a number of forage and other fish species. Pike and walleye are the main sport fish species in the lake. These species, as well as grayling, are found downstream from the lake

in the Jackfish River. The lake has a history of high quality sport fishing. Large fish and a relatively large catch-per-angler-hour have occurred when the fishing pressure has been relatively low. It is provincial policy that the sport fishery will have priority should a conflict occur with commercial fishing on the lake. Commercial fishing for whitefish occurred up to 1982, and resumed between 1987 and 1989. Usually one domestic fishing license per year is issued on the lake.

The fishery and fish populations at this lake have not been investigated in detail. However, the current sport fish harvest (particularly of walleye) is near or slightly beyond the lake's long term maximum sustainable yield. This is indicated by a comparison of various lake characteristics and fishing activities in Christina Lake and in similar northern lakes. Without changes in the present regulations (e.g., size limits, season closures), increased access and/or increased fishing pressure will result in a poorer quality fishery, and eventual elimination of some of the fish species. Increases in public access, development activities and angling pressure have seriously reduced the once significant grayling fishery in the Jackfish River. A recent change to a substantial size limit for grayling should allow that population of fish to rebuild.

Under the lake management plan significant management guidelines developed for the conservation of the fisheries resource will be implemented. As the lake becomes a recreation destination area and developments put further pressure on its fish habitat, protection of the lake, shoreline, inlet and outlet streams will become even more important.

Resource Management Objectives

1. To maintain existing fish populations and fishery production at their current levels and, if possible, to enhance them.
2. To maintain and if possible increase the total quantity and quality of fish habitat.

Resource Management Guidelines

1. The sport fish populations, lake environment, and fishery harvest will be monitored by Fish and Wildlife Division.
2. As a means of managing the harvest, more restrictive regulations will be investigated so that the quality of the fishery is not further diminished by additional fishing pressures on the lake. The goals will be to increase angler success in terms of catch--per-angler-hour and average fish size. To implement this guideline, appropriate regulations will be sought prior to the 1992 season.
3. Negative impacts on fisheries resources from development activities within the planning area shall be prevented or minimized.
4. A distance of 100 metres from the lake shore and edges of associated watercourses shall be used as a development setback guideline. Any developments proposed within 100 metres distance of the lake or associated watercourses will be subject to close evaluation by Fish and Wildlife Division in terms of potential environmental impacts. Proponents must be prepared to address in detail the environmental concerns arising from such developments.

Actual development setbacks from the lakeshore or associated watercourses will be assessed by Fish and Wildlife Division on a site and development specific basis.

5. Development of natural beaches for public use areas may be considered. However, to ensure protection of the fisheries habitat, strict guidelines and conditions will be identified and enforced on any proposal. (See Section 4 "Recreation Development Guidelines", page 24).

6. Clearing and removal of emergent and submergent vegetation will require approval by Alberta Forestry, Lands and Wildlife. Hand or mechanical means (not herbicides) shall be employed as directed.
7. Fisheries habitat enhancement potential will be investigated by Fish and Wildlife Division.

3.8 Wildlife

Resource Synopsis

Overall, Christina Lake is rated as a "fair" waterfowl production lake (source: Fish and Wildlife Division). Four areas are significant for waterbirds: Sawbone Bay, Jackfish River outlet, and the marsh and delta of Sunday Creek. The lake and lakeside habitat offer a variety of opportunities for wildlife viewing.

Christina Lake is typical of boreal lakes in that water-associated birds are relatively few in number and low in diversity. Some 29 species of water-associated birds including a number of sandpiper species have been observed to use the lake as a feeding or staging area. A variety of raptor-bird species including bald eagles and ospreys are also known to use the planning area.

The southwest portion of the planning area is rated as Class 2 (good) moose habitat. The remainder of the planning area is rated Class 3 (fair) for moose (source: Fish and Wildlife Division Classification). Caribou are found throughout the planning area. Along the lake shore, numerous beaver lodges can be found and river otters are also present. The planning area encompasses parts of four registered trapping areas but has not experienced heavy hunting pressures.

At present, most of the shoreline is difficult to access by land.

Intrusions are relatively rare and impact on fish and wildlife habitat has been minimal.

Resource Management Objectives

1. To minimize wildlife nuisances resulting from development.
2. To maintain, and where possible to enhance, the diversity, abundance, and distribution of wildlife resources for domestic, recreational and commercial benefits.

Resource Management Guidelines

1. Whenever possible within the planning area, the Alberta Forest Service and Fish and Wildlife Division will retain wildlife habitat through the referral and planning processes.
2. Hunting and trapping will continue with appropriate regulations.
3. Public access and facilities should be concentrated in specific nodal areas to minimize habitat loss and disturbance.
4. Destruction of large reed beds will be prohibited.
5. Developments will not be permitted within 400 metres of known eagle and osprey nests.
6. Conflicts between people and wildlife will be minimized through appropriate planning and regulation of activities such as garbage disposal and fish cleaning areas.
7. The mitigation of losses of wildlife habitat caused by development will be the responsibility of the developer.

8. Snag retention will be implemented where possible for cavity nesting wildlife.

3.9 Infrastructure and Access

Synopsis

Public access to those areas of Christina Lake having potential for recreation and tourism development is very limited. The existing roads providing access to the lake are held privately under Licences of Occupation. Any development beyond these limited areas will require additional road construction.

Access to the west and south ends of the lake requires traffic to pass through the Hamlet of Conklin. This has raised concerns from the residents about dust and safety.

Management Objectives

1. To ensure adequate public access to Christina Lake.
2. To minimize the effect of increased traffic on the Hamlet of Conklin.

Management Guidelines

1. The coordination and shared use of infrastructure routes (e.g., roads, pipelines, seismic lines) between resource developers will be encouraged through the referral and planning processes.
2. Location of all infrastructure routes and corridors will be based on the most environmentally and economically efficient option and reviewed by all concerned referral agencies.
3. Subject to consultation with Improvement District #18(N), transi-

tion from commercial road operation and maintenance to public road operation and maintenance should occur if the commercial road receives a significant amount of public use and fits into the long term multi-purpose road system development plan.

4. All lake oriented intensive recreation development proposals will require the developer to provide public access to the lake.
5. Construction of all roads associated with new developments will be the responsibility of the developer.
6. All proposed road developments must conform to the standards of the local road authority and must be approved by the authority prior to development.

4. RECREATION DEVELOPMENT GUIDELINES

The purpose of these guidelines is to ensure that potential recreational developments at Christina Lake conform to minimum standards acceptable to local and provincial government agencies, and that such developments are consistent in terms of protecting the natural environment and enhancing public recreational opportunities. These guidelines do not preclude Improvement District #18(N) or Alberta Forestry, Lands and Wildlife from adding further guidelines to specific development applications, as required through the normal application review and approval process. Prospective developers and government officials should use these guidelines when preparing development proposals and reviewing applications for public land disposition. All municipal planning regulations will apply to the review and approval of development proposals.

4.1 Sale of Public Land

Alberta Forestry, Lands and Wildlife generally does not approve the sale of public land in the Green Area. However, where a developer demonstrates that sale of public land is necessary for the viability of the proposal, Alberta Forestry, Lands and Wildlife may consider sale subject to the proponent satisfying the following conditions:

1. Proven financial capability to undertake the proposed development based on the submission of a financial/operating plan and other necessary information required by Alberta Forestry, Lands and Wildlife to make a thorough evaluation.

2. Where Alberta Forestry, Lands and Wildlife approves in principle the sale of public land, a lease with option to purchase shall be the standard form of disposition considered for public land sales. This form of disposition shall be subject to all standard requirements as specified by Alberta Forestry, Lands and Wildlife including approval from Improvement District #18(N) for sale, and sell-back agreements.
3. Requests by the developer for public land appraisals shall not be entertained unless the standard lease with option to purchase process has been followed and Alberta Forestry, Lands and Wildlife has agreed in principle to sell the land to the proponent.
4. Sale of public land for lake front lots shall not be permitted.
5. Sale of public land will not be considered where there is a high public recreational value on the land.
6. Sale of public land within 100 metres of the lake shore shall not be permitted.

4.2 Roads, Services and Other Essential Infrastructure

1. The developer shall indicate in his application what roads, power, and other services are required to sustain the proposed development.
2. If use of industrial roads is proposed as the method of access, a road use agreement with the road owner shall be obtained by the developer and submitted along with the application.
3. The developer shall be responsible to provide all essential access and other services to the satisfaction of Alberta Forestry, Lands and Wildlife and Improvement District #18(N) and the local road authority.

4. Roads and approaches must be of an all-weather condition and must meet the standards of the local road authority.
5. Where road development is proposed on public land, appropriate dispositions (i.e., License of Occupation) must be obtained from Alberta Forestry, Lands and Wildlife.
6. Garbage and sewage must be disposed of in a manner acceptable to Alberta Forestry, Lands and Wildlife, the local health unit and Improvement District #18(N).
7. Private domestic water lines directly into Christina Lake will not be permitted.

4.3 Commercial - Retail Sales

1. Only minor commercial sales developments shall be permitted in the planning area. These shall be limited to uses associated with recreational developments such as boat rentals, campground and marina supplies and may include confectionery stores of a maximum floor area of 500 square feet.
2. All such developments shall be approved at the discretion of Improvement District #18(N).

4.4 Environmental Protection and Conservation

1. A distance of 100 metres from the lake shore and edges of associated watercourses shall be used as a development setback guideline. Any developments proposed within 100 metres distance of the lake or associated watercourses will be subject to close evaluation by Alberta Forestry, Lands and Wildlife in terms of potential environmental and public access impacts. Proponents

must be prepared to address in detail the environmental and public access concerns arising from such developments.

Actual development setbacks from the lake shore or associated watercourses will be assessed by Alberta Forestry, Lands and Wildlife on a site and development specific basis.

2. Development of permanent buildings shall be prohibited in the following areas:

- areas identified as subject to periodic flooding including those areas within the 1:100 year flood plain

- areas in which development will have significant impacts on fisheries or wildlife habitat.

3. Where significant environmental and public access impacts are anticipated due to the proposed development, Alberta Forestry, Lands and Wildlife will require the proponent to submit adequate information regarding how such impacts will be mitigated or eliminated to the department's satisfaction.

4. Removal of aquatic vegetation from the Christina Lake shoreline requires prior written approval from Alberta Forestry, Lands and Wildlife in order to determine and mitigate any impacts on critical fisheries habitat.

4.5 Shoreline Recreation Developments

1. Recreational developments situated within 100 metres of the shoreline may be permitted subject to:

- all developments providing access to the general public
- all necessary measures are taken to mitigate environmental or lake surface conflicts, to the satisfaction of Alberta Forestry, Lands and Wildlife.

2. Appropriate developments may include community-type boat launches, docking facilities, day use areas, swimming areas, interpretive areas, and shoreline enhancement-stabilization projects.
3. Any of the above-mentioned developments will require prior written approval from Alberta Forestry, Lands and Wildlife in the form of a License of Occupation or other appropriate disposition. Any unauthorized developments or structures shall be removed in accordance with departmental policies and as per the Public Lands Act.
4. Any shoreline developments also require authorization from Water Rights Branch, Alberta Environment, and a Development Permit from Improvement District #18(N).
5. Shoreline developments shall utilize only those shorelands necessary to accommodate the proposed development.

4.6 Steps in Applying for a Recreation Development

1. Applications for development on public land must be made to Alberta Forestry, Lands and Wildlife. Applications for commercial recreation and tourism development will be reviewed through the Commercial Tourism and Recreation Leasing (CTRL) process which is administered by Alberta Tourism and Alberta Forestry, Lands and Wildlife. Improvement District #18(N) is involved in this review process.
2. Where Improvement District #18(N) requires an amendment to the land use zoning to accommodate the development, the developer shall be responsible to make the necessary applications to complete this process to the satisfaction of the authority.

3. The proponent shall be responsible to acquire a Development Permit from Improvement District #18(N) and enter into any other agreement required by the authority.
4. For information and assistance concerning the detailed requirements for commercial recreation and tourism development applications, the proponent should contact:

Manager, Facility Planning Unit
Destination Planning Branch
Planning Division
Alberta Tourism
5th Floor, City Centre
10155 - 102 Street
EDMONTON, Alberta T5J 4L6
(403) 427-2501

Director,
Renewable Resources Branch
Forest Industry Development
Division
Alberta Forestry, Lands and
Wildlife
930, 9942 - 108 Street
EDMONTON, Alberta T5K 2J5
(403) 422-7011

5. PLAN IMPLEMENTATION, REVIEW AND AMENDMENT

5.1 Implementation

Alberta Forestry, Lands and Wildlife will be the prime agency in the implementation of this lake management plan. However, several other government agencies and Improvement District #18(N) are involved in the referral and approval of recreation developments, resource exploration and development applications.

The plan area will be placed under a protective notation held by the Alberta Forest Service. The notation will refer to the lake management plan for specific direction in approving applications.

5.2 Review

A water quality monitoring program is recommended for the lake. This information will be used to review the plan's land use and development policies to ensure that lake water quality is not unduly affected by increased development activity.

Fish and Wildlife Division will monitor the lake environment, sport fish populations and commercial fisheries harvest.

Any recreational surveys on the lake should include measurement of parameters used in calculating carrying capacity in order to verify and refine the assumptions used in this plan. The first revision of this management plan should include this improved data.

The limited development strategy, based on environmental data and

local input, will meet both existing and currently foreseeable demands for recreational opportunities at Christina Lake. The biophysical inventory associated with the Christina Lake Management Plan has established that the lake and its surrounding lands have the capability to support additional levels of recreational facility development beyond the limited development strategy recommended, with increasing impacts, however, to the physical resources of the lake.

Future revision of this strategy may be necessary if recreational demand and development pressures increase to a level beyond that which is provided for. Alberta Forestry, Lands and Wildlife, and Improvement District #18(N) will monitor demand pressures in the planning area. The Northeast Regional Resource Management Committee will review the Christina Lake Management Plan annually as part of this monitoring process.

On a periodic basis (approximately every five years), an overall assessment of the plan will be conducted by the Northeast Regional Resource Management Committee. If the plan is found to be no longer current, a major plan review will occur.

5.3 Amendment

Changes to the planning area boundary, resource management objectives and guidelines, recreation development and resource protection zoning, the activity/zone matrix and recreation development guidelines that would result in significant changes to the allowed resource uses or priorities, will require major amendments to the Christina Lake Management Plan. An amendment to the plan may be required as a result of an annual review or major plan review, government requests or a request from an individual, group or organization outside the government.

Proposed amendments to the Christina Lake Management Plan from outside the government should be made by formal application to the

Assistant Deputy Minister of the Alberta Forest Service, Alberta Forestry, Lands and Wildlife. Opportunities for public review of significant amendments to the Christina Lake Management Plan will be provided before changes are approved by the government.

CHRISTINA LAKE

MANAGEMENT PLAN

- BACKGROUND DOCUMENTS -

1991
July

BACKGROUND DOCUMENTS

	Page
1. TERMS OF REFERENCE	
- Purpose; Planning Area; Planning Team	1
- Objectives	2
- Issues	4
- Data Needs; Planning Schedule	5
- Public Review of Terms of Reference	6
2. RATIONALE FOR THE 100 METRE SETBACK GUIDELINE	
- Precedent	1
- Protection of Shoreline Aquatic Vegetation	1
- Ensuring Public Access to the Lake Shore	2
- Water Quality	2
- Aesthetics	2
- Protection of Wildlife Habitat	3
3. ALTERNATIVES DOCUMENT FOR THE CHRISTINA LAKE MANAGEMENT PLAN	
- Carrying Capacity	1
- Development Alternatives	3
- Development Scenarios	3
- Public Review of Development Alternatives	7
- Zoning for Recreation Development and Resource Protection .	9
- Table 1: Development Concepts	2
- Table 2: Possible Uses for Recreation Development and Resource Protection Zones	12

1. TERMS OF REFERENCE

CHRISTINA LAKE MANAGEMENT PLAN

PURPOSE

A management plan has been requested for Christina Lake to determine the suitability of commercial recreation and cottaging based on resource capability, current and future use patterns, and socio-economic needs. This will ensure orderly and planned development around the lake.

TERMS OF REFERENCE

Planning Area

The entire shoreline, lake and immediate back shore in:
Twp. 76-07-W4M; NE20, Sec. 21 to 36
Twp. 76-06-W4M; N1/2-19, 20, 21, 22, 23, 24, All Sec. 25 to 36
Twp. 77-07-W4M; E1/2-3, Sec. 4 to 6
Twp. 77-06-W4M; Sec. 1 to 5
Twp. 76-05-W4M; N1/2-19, Sec. 30, and Sec. 31
Twp. 77-05-W4M; Sec. 6
but excluding the hamlet of Conklin.

Planning Team

- Planning Team will consist of representation from:
- Alberta Forest Service - Daniel Slaght, Land Use Officer, Lac La Biche
 - Fish and Wildlife - Wayne Nelson, Habitat Biologist, St. Paul

- Public Lands - Dom Ruggieri, Planner, Land Management and Development, Edmonton
- Improvement District 18N - Marcel Ulliac, Land Programs Officer, Ft. McMurray
- Regional Coordinator Northeast Region - Morley Christie, St. Paul

Consulting members will consist of representatives from:

- Alberta Recreation and Parks - Oswald Fereia, Planner, Edmonton
- Alberta Transportation - Ray Bouchard, Development Control Officer, Lac La Biche
- Alberta Environment - Walter Harris, Planner, Edmonton
- Alberta Energy - Mary Penny, Planner, Edmonton
- Alberta Forest Service (Athabasca Forest) - Herb Walker, Land Use Officer, Ft. McMurray
- Alberta Forest Service - (PHQ Recreation Section) - Sharon Robertson, Recreation Planner, Edmonton
- Alberta Municipal Affairs, Planning Branch - Wayne Jackson, Planner, Edmonton

Objectives

1. To maintain the existing fish populations and fishery production at least at their current levels, and to enhance them if possible.
2. To maintain and if possible increase the total quantity and quality of fish habitat.
3. To identify commercial recreation and tourism opportunities to meet present and future demands based on resources capability, current and future use patterns, and socioeconomic needs.
4. To minimize wildlife nuisances resulting from development.
5. To evaluate the capacity/capability for development on Christina Lake in an integrated use context.

6. To evaluate the need for development on Christina Lake.
7. To take into consideration Land use order No. 2 for Hamlet of Conklin.
8. To identify the economic opportunities for the Hamlet of Conklin associated with development within the Planning Area.
9. To maintain and where possible to enhance the diversity, abundance and distribution of wildlife resources for domestic, recreational and commercial benefits.
10. To ensure adequate public access to Christina Lake.
11. To ensure that oil and gas development is carried out in an environmentally sensitive manner and integrated with other uses.
12. To ensure timber harvesting and associated activities are carried out in a manner compatible with the high recreational values in the area.
13. To develop a fire control plan that considers urban infringement and development.
14. To maintain the present quality of the water in Christina Lake.
15. To identify and protect historical and cultural resources on the lake.
16. To identify and attempt to resolve conflicts between various land uses and user groups in the study area.

Issues

1. Current fish production is incapable of supplying enough fish stock to meet present and future demand.
2. Present recreation sites are receiving over-use on long weekends.
3. There are no conflicts between recreational, industrial, and other uses on the lake.
4. There are increasing demands for municipal services.
5. Current disposition holders and residents are concerned about impact of future development.
6. There is a concern of creating an over-supply of lots where there is already a surplus in the Hamlet of Conklin and planning area.
7. There presently may be recreational lots available in the area (i.e., Lac La Biche, North Buck Lake, Gregoire Lake, etc.).
8. There is a decreasing amount of wildlife habitat due to development.
9. There may be increases in wildlife nuisances due to development.
10. Increasing demand for consumptive and non-consumptive use of wildlife, fisheries, water, and timber resources pose threats to attractions in this area.
11. Increased development may create additional problems for the caribou population and its habitat.
12. There is increasing demand for oil and gas development.

13. There is shortage of known sand and gravel resources in the general area.
14. There may be an increased number of uncontrolled fires from within and outside the area.

Data Needs

- Biophysical Inventory & Analysis (soils, topography, vegetation, ground water, etc.)
- Contour map - 1:15 000
- Soil/beach classification
- Phase III vegetation map
- Current land use map
- Current land use policies and plans
- Estimates of current fish and wildlife populations and harvest
- Inventory of historical and cultural sites and resources
- Ground water assessment
- Water quality assessment

Planning Schedule

July, 1988- Terms of Reference - first draft to be distributed to RRMC members for review/approval

September, 1988- Public Meeting (Conklin)

September, 1988- Data Collection/Analysis

November, 1988- Draft Plan Review

December, 1988- Public Meeting (Conklin, Ft. McMurray)

January, 1989 - Final Draft as per Deputy Minister's memo request plan being completed by January 31, 1989.

Public Review of Terms of Reference

An Open House for public review of the Terms of Reference document for the Christina Lake Management Plan was held in Conklin on September 28, 1988. Approximately 40 people from Conklin and the Fort McMurray area attended.

Three submissions were received at the Open House, all of which were opposed to further development of the lake and its environs for recreational purposes. The major submission, signed by 24 Conklin residents, opposed further development on the grounds of potential for increased water pollution; soil erosion; aesthetic pollution (sight, sound and smell); and loss of wildlife habitat.

2. RATIONALE FOR THE 100 METRE
SETBACK GUIDELINE

RATIONALE FOR THE 100 METRE SETBACK GUIDELINE

1. Precedent

A 100 metre shoreline buffer is becoming a standard feature in recent lake planning efforts. This was implemented in the Improvement District #16 Area Structure Plan for Sturgeon Lake. On a number of other lakes a 100 metre shoreline buffer has been implemented in the last ten years: Long Lake, North Buck Lake and others. If the buffer on Christina Lake was reduced it could have negative implications for lakes where this principle is already accepted. Viable backshore recreation developments occur on lakes which require a 100 metre shoreline buffer.

On lakes such as Lac St. Anne, Pigeon Lake, Gull Lake and Sturgeon Lake where an insignificant buffer or no buffer was implemented problems with lakeshore land use have evolved. Cottagers eventually "assumed" ownership of the narrow buffer regardless of the actual public ownership. No effort was made to preserve the public use area along the lake front to the lot lines. Consequently, cottagers established barricades such as fences and retaining walls along the lot line to the lake edge. This prevents the public from using public land.

2. Protection of Shoreline Aquatic Vegetation

Christina Lake is noted for its high quality northern pike and walleye sport fisheries, a feature which has attracted local residents and regional tourists to the lake for a number of years.

However, the current sports fish harvest is close to the lake's long term sustainable yield. In order to maintain a viable sports fishery it is essential to maintain as much of the critical habitat for walleye and perch (walleye prey) as possible. Walleye and perch habitat consists of the emergent and submergent shoreline aquatic vegetation. As the lake becomes increasingly popular as a recreation destination area and developments put further pressure on its fish habitat, protection of the lake shoreline, inlet and outlet streams becomes more important.

3. Ensuring Public Access to the Lake Shore

A major management objective of this plan, in line with provincial policy, is to maintain public access to Christina Lake. One means of meeting this objective is by reserving the shoreline area around the lake for public use. Public in this case is interpreted as people who must not gain access to a beach or lake shore development indirectly by paying a fee to stay at a commercial operation. This prime recreation resource is reserved for all people.

4. Water Quality

Development guidelines are necessary to ensure the water quality of Christina Lake is maintained. An adequate buffer is required to ensure water quality is not degraded due to unforeseen sewage disposal problems. In addition, siltation of spawning areas must be minimized by prohibiting adhoc shoreline development.

5. Aesthetics

Christina Lake is known for its wilderness recreation experience. It is important that this feature be maintained by the use of adequate guidelines for resource and recreation development.

6. Protection of Wildlife Habitat

The shoreline area of Christina Lake provides important wildlife habitat. Due to the presence of water, cover and food in close proximity this habitat is used more heavily than would be expected on the basis of area alone. Such sites provide for use by semiaquatic mammals, numerous species of birds and a variety of terrestrial mammals, amphibians and reptiles. A relatively undisturbed buffer will help to maintain potential nesting and feeding sites as well as a travel corridor for movement of animals around the lake.

3. ALTERNATIVES DOCUMENT
FOR THE
CHRISTINA LAKE
MANAGEMENT PLAN

- A document for public review to aid in determining the future of
Christina Lake -

1. CARRYING CAPACITY

The amount of recreational development that may occur on land around the lake is in part limited by the capacity of the lake to support boating. For safety and logistical reasons there is a maximum number of boats that the lake may carry at any one time. This carrying capacity (based on guidelines developed by the Ontario Ministry of Natural Resources) takes into account the net usable area of the lake. The shallow parts of the lake (water depth less than 2 metres) are assumed not usable for most boating purposes. Assumptions in deriving the allowable carrying capacity are as follows:

- each boat needs at least 4 hectares (10 acres) of usable water surface.
- each cottage, campground unit or unit in a commercial lodge will have 1 boat, on average, for its use.
- at the heaviest use periods, 75% of the boats located at the lake will actually be on the lake. (i.e. of 4 boats - 3 will be on the lake with only 1 on shore).

The results of the calculations are as follows:

Total Allowable Units = 600
Subtract - Total Current Allocation = 360
Allowable New Units = 240 units

An additional 240 units added to the present 360 units can be developed on the lake. The calculations are detailed in the following table, Table 1 "Development Concepts".

**Table 1
DEVELOPMENT CONCEPTS**

1. Assumptions
 - a) 1 boat/4 hectares
 - b) 1 boat/unit
 - c) "Unit" = camp stall (day/overnight)
lodge unit
cabin
current residential lots (Conklin)
 - d) maximum boat density represents 75% of peak use at any given time
 - e) all lots in Conklin are developed, therefore each lot represents one boat
 - f) Fred Thom's campground and lodge operation is used to capacity

2. Lake Surface Area

2,110 total hectares	
subtract	<u>310 unusable hectares</u>
	1,800 Total Net Usable Lake Surface (hectares)

3. Total Boats/Lake Surface

= 1,800 ha @ 4 ha/boat unit = $\frac{1,800}{4}$ = 450 boats

4. Peak Use Percentage

= 450 boats @ 75% of peak use = $\frac{450}{.75}$ = 600 boats

5. Currently Allotted Units (Boats)
 - a) Christina Lake Lodge/ - 150 campground units (incl. 100 existing Camping and 50 approved for expansion) plus 34 lodge units
 - b) REC 850019- 16 I.D. Recreational Sites
 - c) MLL 860087- 2 MLL residences
 - d) Hamlet Residential -157 Conklin lots (incl. 52 surplus vacant)
Total-359± = 360 current units (incl. 257 existing and filled)

6. Net Allowable Units

Total Allowable Units	
Subtract - Total Current	= 600
Net Allowable Units Allocation	= <u>360</u>
	= 240 units

7. Development Alternatives
 - a) No Additional Development (Status Quo*)
 - b) Moderate Allowable Development (75%) = 90 units
 - c) Maximum Allowable Development (100%) = 240 units

*Except for allowable expansion of existing REC, MLL and Hamlet of Conklin.

2. DEVELOPMENT ALTERNATIVES

Several businesses currently operating in the Hamlet of Conklin cater to both the oil and gas, and tourist industries. These businesses include oilfield services such as camp catering, labor crews and road construction, and tourist facilities such as a general store, fishing lodge, private campground and day use area. In addition development of a new motel, cafe, gas station and minor repair shop is proceeding just outside the Hamlet. These facilities will serve the general-public.

Three development scenarios have been developed for the planning area based on the boat carrying capacity of the lake. These alternatives range from the present developments and commitments (Status Quo) to the maximum allowable development.

In addition, a system of zoning for recreation development and resource protection has been adopted for the planning area. These zones dictate the type and intensity of development that may occur in an area. Each zone has a list of "Possible Uses" to assist authorities in assessing applications for development.

2.1 Development Scenarios

Three development scenarios have been developed to give a general idea of the effects to be expected from various levels of development. The levels of development range from the present development and commitment (Status Quo) to the maximum allowable development. A list of pros and cons for each scenario is presented. These alternatives are based on the boat carrying capacity of the lake (see Table 1 "Development

Concepts", page 2), and are constrained by the 1989 fishing regulations.

2.1.1 Status Quo

The status quo includes the commitment to the expansion of existing dispositions, as well as the infilling of the 52 vacant lots in the Hamlet of Conklin (360 units).

Effects

PRO

- within calculated carrying capacity of lake surface
- minimizes potential for increase environmental impacts such as water pollution, soil erosion, aesthetic pollution (sight, sound and smell), loss of wildlife habitat (concerns of Conklin residents)
- no additional infrastructure required
- limits future development to only those areas under current disposition or private occupation in order to minimize impacts and development pressures

CON

- potential detrimental lake impacts on fisheries and associated habitat including loss of some environmental impacts such as sport species due to the following factors:
 - o decreased water quality
 - o increased fishing pressure
 - o increased habitat disturbance by boating activities and shore line developments

2.1.2 Moderate Allowable Development

Moderate allowable development is considered to be status quo with the addition of 90 units. Development of the 52 vacant lots in the Hamlet of Conklin, to a level acceptable to Improvement District #18(N), will be required before further country residential or cottage developments will be permitted in the planning area.

Effects

PRO

- within calculated carrying capacity of lake surface
- additional developments beyond present commitments would result in only moderate pressures on public land base
- provides additional public recreational development opportunities
- some opportunities for local employment and economic benefits

CON

- moderate potential for lake increased environmental impacts such as water pollution, soil erosion, aesthetic pollution (sight, sound and smell), loss of wildlife habitat (concerns of Conklin residents)
- moderate increase in demand for road and other infrastructure development
- potential detrimental impacts on fisheries and related habitat including loss of some sport species due to the following factors:
 - o decreased water quality
 - o increased fishing pressure
 - o increased habitat disturbance by boating activities and shore-line developments

2.1.3 Maximum Allowable Development

Maximum allowable development is considered to be status quo with the addition of 240 units. Development of the 52 vacant lots in the Hamlet of Conklin, to a level acceptable to Improvement District #18(N), will be required before further country residential or cottage developments will be permitted in the planning area.

Effects

PRO

- within calculated carrying capacity of lake surface
- greatest range of public recreational development opportunities
- greater opportunities for local employment and economic benefits

CON

- greatest potential for lake increased environmental impacts such as water pollution, soil erosion, aesthetic pollution (sight, sound and smell), loss of wildlife habitat (concerns of Conklin residents)
- major increase in demand for road and other infrastructure development
- depreciated recreation experiences due to potential problems such as overcrowding
- potential detrimental impacts on fisheries and related habitat including loss of some sport species due to the following factors:
 - o decreased water quality
 - o increased fishing pressure
 - o increased habitat disturbance by boating activities and shoreline developments

2.2 Public Review of Development Alternatives

2.2.1 Open Houses

Two Open Houses were held on September 12, 1989 for public review of the Alternatives Document for the Christina Lake Management Plan. The first Open House was held in Conklin, the second in Fort McMurray.

The Open Houses were organized by Improvement District #18 (N), with participation by the Alberta Forest Service, Fish and Wildlife Division, the Northeast Regional Resource Co-ordinator and Alberta Municipal Affairs. Attendance was 42 people at the Conklin Open House, while only 5 people attended in Fort McMurray. A questionnaire was distributed at both Open Houses.

2.2.2 Summary of Questionnaire Responses

<u>Development Alternative</u>	<u>Responses in Favour - by Place of Residence</u>		
	<u>Conklin</u>	<u>Fort McMurray</u>	<u>Other</u>
<u>Status Quo</u>	68 (includes 66 on petition)	1	--
<u>Moderate Allowable Development</u>	1	--	2
<u>Maximum Allowable Development</u>	1	3	--
<u>Others</u>	1	2	1
<u>Total Responses Received:</u>	80		

2.2.3 Summary of Public Review

The residents of Conklin are generally strongly opposed to further development of recreational opportunities in the Christina Lake planning area. A petition bearing 66 signatures was presented to the planning team at the Open House by Conklin residents. This petition "rejected" the Alternatives Document and indicated that only those developments which utilized existing vacant allotments within the Hamlet boundaries would be acceptable to the community.

The intent of the petition was deemed by the planning team to be equivalent to that of the Status Quo Development Alternative detailed in the Alternatives Document.

The poor attendance at the Fort McMurray Open House was viewed by the planning team as evidence of a general lack of interest by that community towards recreational developments at Christina Lake.

3. ZONING FOR RECREATION DEVELOPMENT AND RESOURCE PROTECTION

A system of zoning for recreation development and resource protection was adopted (see attached 1:15,000 scale map). Three zones are designated in which recreation development may occur, i.e., Zones A, B, and C. Zone A generally contains the best lands for development (as identified by the Ecological Land Classification) with Zone C containing land with the least capability to support recreation development. Recreation development may occur in any of the three zones, however the prospective developer must be aware that to develop in Zones B and C special consideration must be given to overcome the limiting factors which exist in these areas. It is expected that developments will be more costly in these zones as a result.

Zones D and E are designated as resource protection zones for certain natural resources and features of the lake. Zone F is designated as a development buffer around current and future developments.

For each zone a list of "Possible uses" has been developed to assist the approval authorities to assess applications for development of recreation facilities. "Possible Uses" are those developments that may be considered appropriate within the context of the zone, and are listed in Table 2 "Possible Uses for Recreation Development and Resource Protection Zones" on page 12.

Zone A

The lands included in this zone are the most favorable areas to support development of recreation facilities. Limitations to development are only moderate and are due primarily to poor soil drainage and

steep slopes. Development proposals must address the particular concerns that arise because of development limitations.

Zone B

These lands generally have severe limitations for development of recreation facilities, due to very poor soil drainage. Recreation facilities can be developed on these sites, but there may be requirements for major modifications to the soil, special designs or intensive maintenance. These improvements may be difficult and costly. Development proposals must address the particular concerns that arise because of development limitations.

Zone C

The lands included in this zone are identified as having very severe limitations to development of recreation facilities, primarily because of extremely poor soil drainage, and are best suited to extensive recreational uses. The soil in these areas may not be suitable for development purposes and special techniques or measures may be required if development is pursued.

Zone D

This zone is identified as a buffer area around the lake shore and along the inlet and outlet streams to the lake. A distance of 100 metres from the lake shore and edges of watercourses (as identified on Phase 3, 1:15,000 scale, forest cover type maps) is used as a development setback guideline. Any developments proposed within 100 metres distance of the lake or associated watercourses will be subject to close evaluation by Alberta Forestry, Lands and Wildlife in terms of potential environmental and public access impacts. Proponents must be prepared to address in detail the environmental and public access concerns arising from such developments.

Actual development setbacks from the lake shore or associated watercourses will be assessed by Alberta Forestry, Lands and Wildlife on a site and development specific basis.

Rationale for the 100 metre setback guideline is provided in Background Document # 2.

Zone E

The areas within this zone are set aside as buffer areas around critical fish and wildlife habitat, and as areas of influence around potential historic and cultural sites on the lake. Eagle and osprey nests will have a 400 metre no-development buffer around them. Recreational developments within the sphere of influence may be restricted to activities of a very low impact nature, such as hiking trails. Resource development activities will operate under strict guidelines. All applications to develop facilities in this zone will be referred to the appropriate agencies for review.

Zone F

A buffer of 200 metres consisting of natural vegetation will be maintained between current recreational developments and any new development. This is to retain as much of the natural wilderness spirit as possible.

TABLE 2
POSSIBLE USES FOR RECREATION DEVELOPMENT AND RESOURCE PROTECTION ZONES

Use Type	Recreation Development Zones			Resource Protection Zones		
	A	B	C	D	E	F
Possible	<ul style="list-style-type: none"> - day use/public recreation area - walking trails - auto access campground - cottage subdivision - back country lodge - country residential - institutional camps - minor commercial operations. - horse trails - snowmobile and A.T.V. trails - commercial trail ride base camps - x-country ski trails - mineral exploration extraction and development activities - other uses considered suitable - trapping - extensive recreation - intensive recreation 	<ul style="list-style-type: none"> - day use/public recreation area - walking trails - backcountry campground - back country lodge - horse trails - snowmobile trails - x-country ski trails - mineral exploration extraction and development activities - other uses considered suitable - trapping - extensive recreation - intensive recreation 	<ul style="list-style-type: none"> - all uses are extensive in nature e.g., trails such as hiking, x-country and nature observation. - mineral exploration extraction and development activities - trapping 	<ul style="list-style-type: none"> - only the following are allowed with strict conditions of operation applied: - day use facilities - light commercial operations only where in conjunction with developments beyond the 100 m buffer - boat launches - extensive recreation activities - trapping 	<ul style="list-style-type: none"> - recreation activities of a very extensive nature only, e.g., trails, nature observation and random camping - mineral exploration extraction and development activities (winter only) - trapping 	<ul style="list-style-type: none"> - recreation activities of a very extensive nature only, e.g., trails, nature observation - mineral exploration extraction and development activities - trapping