Prince Albert Model Forest:
Ecosystem Based Integrated Resource Management Plan

(June 16, 2000)

Integrated Resource Management Working Group Members

Tom Ballantyne	Canadian Institute of Forestry
Cliff Buettner	Prince Albert Grand Council
Kim Clark	Saskatchewan Environment and Resource Management
Andy Cook	Saskatchewan Environment and Resource Management
Chris Dunn	Saskatchewan Environment and Resource Management
Sharon Desjarlais	Prince Albert Model Forest
Hamilton Greenwood	Nature Saskatchewan
Ed Henderson	Montreal Lake Cree Nation
Duane Hiebert	Prince Albert Grand Council
Jack Keel	Saskatchewan Environment and Resource Management
David Lindenas	Weyerhaeuser Saskatchewan Timberlands
Dan MacIssac	Canadian Forest Service
Ott Naelapea	Prince Albert Model Forest
Todd Olexson	Saskatchewan Environment and Resource Management
John Snell	Prince Albert Nation Park
Larry Stanley	Saskatchewan Environment and Resource Management
Norm Stolle	Prince Albert National Park
John Thompson	Saskatchewan Environment and Resource Management
Torrance Tornquist	Saskatchewan Northern Affairs
Borden Wasyluk	Resort Village of Candle Lake
Jianjun Zhang	Prince Albert Model Forest

Dedication:

This plan is dedicated to the Prince Albert Model Forest partnership, and all the people who enable this relationship to occur each and every day. May we continue to learn, accomplish our goals and find friendship.

Acknowledgments:

We would like to acknowledge the hard work of the Integrated Resource Management working group, the individuals, groups and organizations that provided input into the plan, and everyone involved with this planning exercise.

Table of Contents

List of Concerns:

4.1 Communications and Knowledge Exchange:

4.2 Ecosystem Health:

4.3 Integrated Resource Management:

4.4 Local Level Indicators:

4.5 Values and Benefits:

List of Figures and Tables

Plan Summary

Chapter 3: Ecosystem Management Areas

Chapter 4: Ecosystem Management Strategies

Key: to Abbreviations Used in the Initiating Agencies/Working Group column

(in the Actions: tables throughout the Ecosystem Management Strategies section)

Abbreviation	Meaning
CAKE	Prince Albert Model Forest, Communications and Knowledge Exchange Working Group
CFS	Canadian Forest Service
CIF	Canadian Institute of Forestry
EH	Prince Albert Model Forest, Ecosystem Health Working Group
SEM	Saskatchewan Energy and Mines
FSIN	Federation of Saskatchewan Indian Nations
FVB	Prince Albert Model Forest, Forest Values and Benefits Working Group
IRM	Prince Albert Model Forest, Integrated Resource Management Working Group
LLI	Prince Albert Model Forest, Local Level Indicators Working Group
LLIB	Lac La Ronge Indian Band
MLCN	Montreal Lake Cree Nation
PAGC	Prince Albert Grand Council
PAMF	Prince Albert Model Forest and Staff
PANP	Prince Albert National Park (Parks Canada)
Partners	The 10 partners of the Prince Albert Model Forest
RVCL	Resort Village of Candle Lake
Sask Water	Saskatchewan Water Corporation
SERM	Saskatchewan Environment and Resource Management
Weyerhaeuser	Weyerhaeuser, Saskatchewan Timberlands, Prince Albert

Plan Summary

The Prince Albert Model Forest (PAMF) is a nonprofit partnership of industry, local communities, First Nations, Federal and Provincial resource management agencies who are committed to the sustainability of Saskatchewan's forests through research, education and integrated use of the forests resources. There are presently 10 partners in the PAMF:

- Canadian Forest Service
- Canadian Institute of Forestry
- Federation of Saskatchewan Indian Nations
- Lac La Ronge Indian Band
- Montreal Lake Cree Nation
- Parks Canada, Prince Albert National Park
- Prince Albert Grand Council
- Resort Village of Candle Lake
- Saskatchewan Environment and Resource Management
- Weyerhaeuser, Saskatchewan Timberlands, Prince Albert

The PAMF area is located in the Mid-Boreal Upland Ecoregion of the boreal forest approximately 70 km north of Prince Albert, Saskatchewan and covers approximately 366,000 ha. The resources of the PAMF area are used for a variety of activities such as recreation, forestry, traditional uses, and education. The model forest area embraces a wide range of forest resource uses and interests.

The PAMF partnership recognizes that effective long-term conservation and sustainable use of the forest will require a coordinated effort among various agencies and land users. Ecosystem based resource management planning should serve to integrate the goals and objectives of the responsible agencies and the public.

This plan is based on the principles of integrated resource management and ecosystem based management. This means decisions, across many different jurisdictions, will be based on the health and sustainability of the whole ecosystem. The plan will be supported by ecological, social and economic information so that decisions are based on a consideration of all uses and benefits, over the whole area. Further, it is recognized that input from the public must be included throughout the planning process.

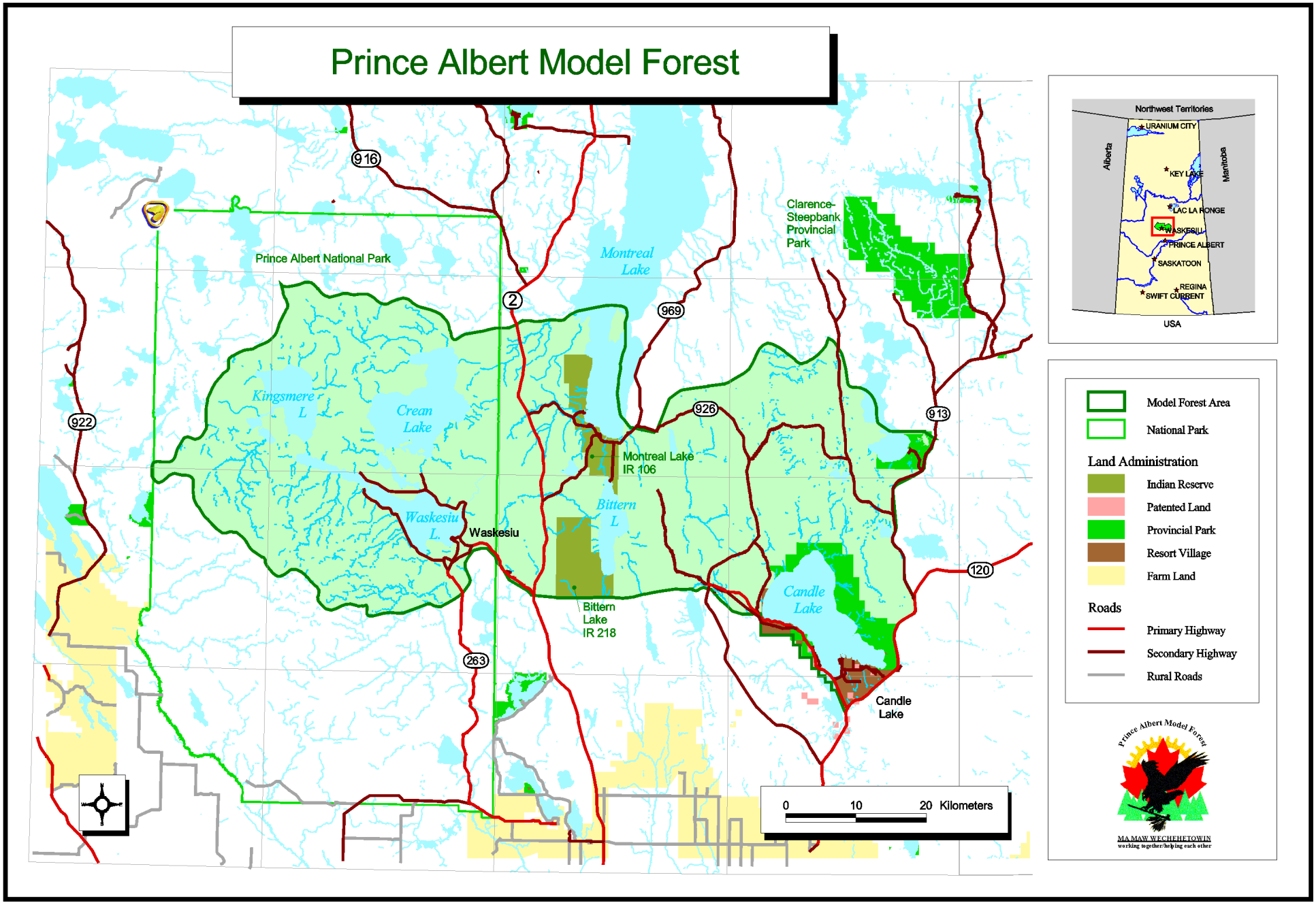

Figure 0-1: Prince Albert Model Forest (Source: Prince Albert Model Forest)

A number of different methods of public participation were used. The model forest partnership represents many of the land users and agencies with jurisdiction over the land. The Integrated Resource Management Working Group (the working group actively leading the planning process) of the Prince Albert Model Forest is open to participation from all the partners. The public was also asked for their input (e.g. concerns, possible solutions) so that it could be included in the plan. This was done using the methods available to the IRM working group, which included:

- pamphlets
- newsletters of the PAMF
- newsletters of other organizations
- public meetings
- direct invitation to participate
- posters
- radio interviews
- newspaper announcements
- newspaper articles

Complete documentation of the first round of the public consultation process is provided in the report, "Documentation of the Prince Albert Model Forest Integrated Resource Management Consultation Process: First Round of Public Consultations".

This document is the core of the Ecosystem Based, Integrated Resource Management Plan and covers:

1) the Principles, Goal and Objectives of the plan;
2) the Ecosystem Management Areas that guide activities on the land base;
3) the Ecosystem Management Strategies, that will help ensure that resources are used in the best possible manner, and resolve land use issues; and
4) an Implementation Strategy for this plan

Supporting documents, include:

a) Prince Albert Model Forest Draft Ecosystem Based, Integrated Resource Management Plan: Background
b) Prince Albert Model Forest Draft Ecosystem Based, Integrated Resource Management Plan: Documentation of Consultation Process

The Plan Principles:

The principles of the Prince Albert Model Forest Ecosystem Based, Integrated Resource Management Plan are based upon the values held by the model forest partners and the public. Principles are rules, that guide how an activity will be carried out. These principles have guided the development of the Prince Albert Model Forest Ecosystem Based, Integrated Resource Management Plan. The plan principles are:

- The rights, privileges and responsibilities of the partners and other users in the Prince Albert Model Forest area will be respected.
- All those who benefit from the resources of the Prince Albert Model Forest will:
    - have the opportunity to tell us what they want;
    - learn what we have learned, and;
    - know what is planned before finalization.
- Consider all values when making management decisions.
- Respect the interests of Aboriginal people, including existing Métis and Treaty rights.
- Use traditional, local and scientific knowledge to make management decisions.
- Promote the needs and wishes of the Prince Albert Model Forest partners, and the local residents and communities.
- Support land and resource uses that are environmentally, economically and socially sustainable.
- Protect the ecosystem's primary resources (e.g. air, land and water)
- Recognize and respect traditional land uses.
- Maintain the ecological integrity, health and sustainability of the area's ecosystems by ensuring:
    - negative effects from all uses are minimized;
    - native biological diversity is maintained at a natural level;
    - renewable resources are used in a sustainable fashion, and;
    - non-renewable resources are used in a responsible manner.

The Plan Goal is:

To manage all uses and resources of the Prince Albert Model Forest area on an integrated and ecosystem basis, to ensure ecological, economic and cultural benefits for present and future generations.

The Plan Objectives are to:

- apply the principles of Integrated and Ecosystem Based Management to land use and resource management activities in the Prince Albert Model Forest area.
- to provide a framework that integrates other plans covering the Prince Albert Model Forest area.
- develop clear land use guidelines that allow for controlled, orderly use and development.
- identify additional areas where planning, integration, study or research are needed.
- provide guidelines for public input into land and resource management decisions.
- provide mechanisms to minimize and resolve conflict among all users.
- establish procedures to monitor the implementation and effectiveness of the plan, and provide a process to ensure the plan is reviewed and revised on a regular basis, or when new circumstances or information are available.
- encourage sustainable use and benefits from all resources in the planning area.

Ecosystem Based Management

The Prince Albert Model Forest Ecosystem Based, Integrated Resource Management Plan is based upon the principles of ecosystem management. Ecosystem management can be defined as "the integrated management of ecological systems and human activities to maintain or enhance the integrity of an ecosystem, including ecosystem structure and function." (SERM 1999)

What this means is that in an ecosystem based plan, all human activities and uses of the land and resources must be considered, along with the health of the whole ecosystem. By adopting the principles of ecosystem based management, the Prince Albert Model Forest has found a means to plan for the sustainable use and development of the areas resources.

Ecosystems Management Areas:

Indicate areas where activities are managed for specific objectives or where activities may or may not take place. Zoning is done to ensure the health and sustainability of the ecosystem and minimize conflicts that can occur over resource use in the planning area. The zoning system also covers several jurisdictions and will allow the area to be managed on an ecosystem basis.

There are 4 Ecosystem Management Areas in the Prince Albert Model Forest zoning system:

1. **Ecosystems Protection Area** (e.g. parks): In this area, the greatest level of natural ecosystem process function (e.g. allowing natural fires to burn) and the most land use restriction occurs. This area includes the portion of the Prince Albert National Park (except Waskesiu), which lies within the Prince Albert Model Forest area, and Candle Lake

Provincial Park. These areas were designated to protect the ecosystems and resources within their boundaries. They play a role in the long-term ecosystem health of the region, and provide opportunities for people to learn about and enjoy natural ecosystems. Also, these areas are important to resource management activities, as they can act as benchmarks against other areas to assess the effects, if any, of development in other areas.

2. **Sensitive Ecosystems Area**: This zone identifies ecosystems or portions of ecosystems that are sensitive to disturbances or development. This area covers the riparian areas of the Prince Albert Model Forest area. Due to the sensitivity of these areas, often there are additional restrictions made to developments in these areas.

3. **Ecosystems Resource Management Area** (Prince Albert Model Forest area, not within the Ecosystems Protection Area, Sensitive Ecosystems Area or Community Ecosystems Area): In this area new and existing development and resource use can occur in an integrated and sustainable fashion.

4. **Community Development Ecosystems** (e.g. communities, reserve land) These are development zones with relatively high human populations and levels of use. Specific development concerns within each area are not dealt with in this plan. These areas will be managed in accordance to specific development plans, which are in place or being developed by the appropriate local jurisdictions. Note: Communities within the model forest area and Rural Municipalities whose boundaries extend into the area have development plans and zoning bylaws that affect and control the use and development of land. These plans will serve in conjunction with the model forest plan to provide land management in the area.

Ecosystems Management Strategies:

The plan identifies areas of concern and the strategies to deal with them. The methods used to deal with a concern are broken into two sections.

- Guidelines; and,
- Actions.

Guidelines are the rules set forth in this plan, that will guide an activity to address the concern. Actions identify areas where some work or action is required to address the concern.

The strategies are organized based on the following components of ecosystem based management:
- Communications and Knowledge Exchange
- Ecosystem Health

- Integrated Resource Management
- Local Level Indicators
- Values and Benefits

Implementation Strategies:

Are included as a guide to the activities that should be followed by the partners to begin implementing this plan. The plan must be monitored and evaluated on a set time frame to ensure that it is achieving its goals. The plan must also be monitored to allow for change so that it can continually guide management decisions in the best possible direction. The implementation strategies include:

- Monitoring and Evaluation Strategy
- Public Involvement Strategy
- Dispute Resolution Strategy

The plan will be assessed annually and a report produced. In 2001, a "State of the Prince Albert Model Forest" report will be compiled. Also in the same year (2001), the plan will undergo a major evaluation where significant changes will be made, or additional planning will take place, if required. After the first evaluation in 2001, the plan will undergo an evaluation every 5 years.

Chapter 1: The Planning Process

The Planning Process developed for the model forest has 6 broad steps:

1. **Plan Initiation**: Is the step where a decision to enter into a planning exercise is made and a planning team is formed. This step has been taken by the Integrated Resource Management Working Group of the Prince Albert Model Forest.

2. **Initiate Formal Public Involvement**: In this step, land users and individuals with an interest in the planning area are identified and invited to participate in the planning processes by identifying issues and suggesting possible solutions.

3. **Collecting, Sharing and Analyzing of Information**: Information will be collected by the planning team respecting both scientific and traditional knowledge. This information will be shared with the public and the partners of the Prince Albert Model Forest.

4. **Formulating and Approving a Plan**: In this step, a draft plan is compiled using the information gathered from the public, the partners and others. The plan is reviewed by the public and if accepted it will go to the Board of Directors of the Prince Albert Model Forest for approval.

5. **Plan Implementation**: The model forest has no legal authority over the lands designated as its area, therefore, the plan will be adopted and implemented by the various partners.

6. **Plan Monitoring**: The plan, following the principles of adaptive management, will accommodate changes, considering new circumstances, and knowledge. The plan will be monitored to ensure it is effective and that it remains up to date.

Chapter 2: Plan Principles, Goal and Objectives

The Plan Principles:

- The rights, privileges and responsibilities of the partners and other users in the Prince Albert Model Forest area will be respected.
- All those who benefit from the resources of the Prince Albert Model Forest will:
    - have the opportunity to tell us what they want;
    - learn what we have learned, and;
    - know what is planned before finalization.
- Consider all values when making management decisions.
- Respect the interests of Aboriginal people, including existing Métis and Treaty rights.
- Use traditional, local and scientific knowledge in the development of management decisions.
- Promote the needs and wishes of the Prince Albert Model Forest partners, and the local residents and communities.
- Support land and resource uses that are environmentally, economically, and socially sustainable.
- Protect the ecosystem's primary resources (e.g. air, land and water).
- Recognize and respect traditional land uses.
- Maintain the ecological integrity, health and sustainability of the area's ecosystems by ensuring:
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- develop clear land use guidelines that allow for controlled, orderly use and development.
- identify additional areas where planning, integration, study or research are needed.
- provide guidelines for public input into land and resource management decisions.
- provide mechanisms to minimize and resolve conflict among all users.
- establish procedures to monitor the implementation and effectiveness of the plan, and provide a process to ensure the plan is reviewed and revised on a regular basis, or when new circumstances or information are available.
- encourage sustainable use and benefits from all resources in the planning area.

Chapter 3 Ecosystems Management Areas:

Indicate areas where activities are managed for specific objectives or where activities may or may not take place. Zoning is done to ensure the health and sustainability of the ecosystem and to minimize conflicts that can occur over resource use in the planning area. The zoning system also covers several jurisdictions and will allow the area to be managed on an ecosystem basis.

The Prince Albert Model Forest Ecosystem Management System consists of 4 areas:

1. **Ecosystems Protection Area** (e.g. parks): In this area, the greatest level of natural ecosystem process function (e.g. allowing natural fires to burn) and the most land use restriction occurs. This area includes the portion of the Prince Albert National Park (except Waskesiu), which lies within the Prince Albert Model Forest area, and Candle Lake Provincial Park. These areas were designated to protect the ecosystems and resources within their boundaries. They play a role in the long-term ecosystem health of the region, and provide opportunities for people to learn about and enjoy natural ecosystems. Also, these areas are important to resource management activities, as they can act as benchmarks against other areas to assess the effects, if any, in areas where higher levels of development occur.

2. **Sensitive Ecosystems Area**: This area identifies ecosystems or portions of ecosystems sensitive to disturbances or developments. This zone could include areas such as riparian zones, steep slopes, lowlands, sensitive/critical fish and wildlife habitat, or other easily effected areas. Due to the sensitivity of these areas, often there are restrictions made to developments in these areas beyond those normally applied.

3. **Ecosystems Resource Management Area** (Prince Albert Model Forest area not in the Ecosystems Protection Area, Sensitive Ecosystems Area or Community Ecosystems Area): In this area new and existing development and resource use can occur in an integrated and sustainable fashion.

4. **Community Development Ecosystems** (e.g. communities, reserve land) These are development zones with relatively high human populations and levels of use. Specific development concerns within each area are not dealt with in this plan. These areas will be managed in accordance to development plans, which are in place or being developed by the appropriate local jurisdictions. Note: Communities within the model forest area and Rural Municipalities whose boundaries extend into the area have development plans and zoning bylaws that affect and control the use and development of land. These plans will serve in conjunction with the model forest plan to provide land management in the area.

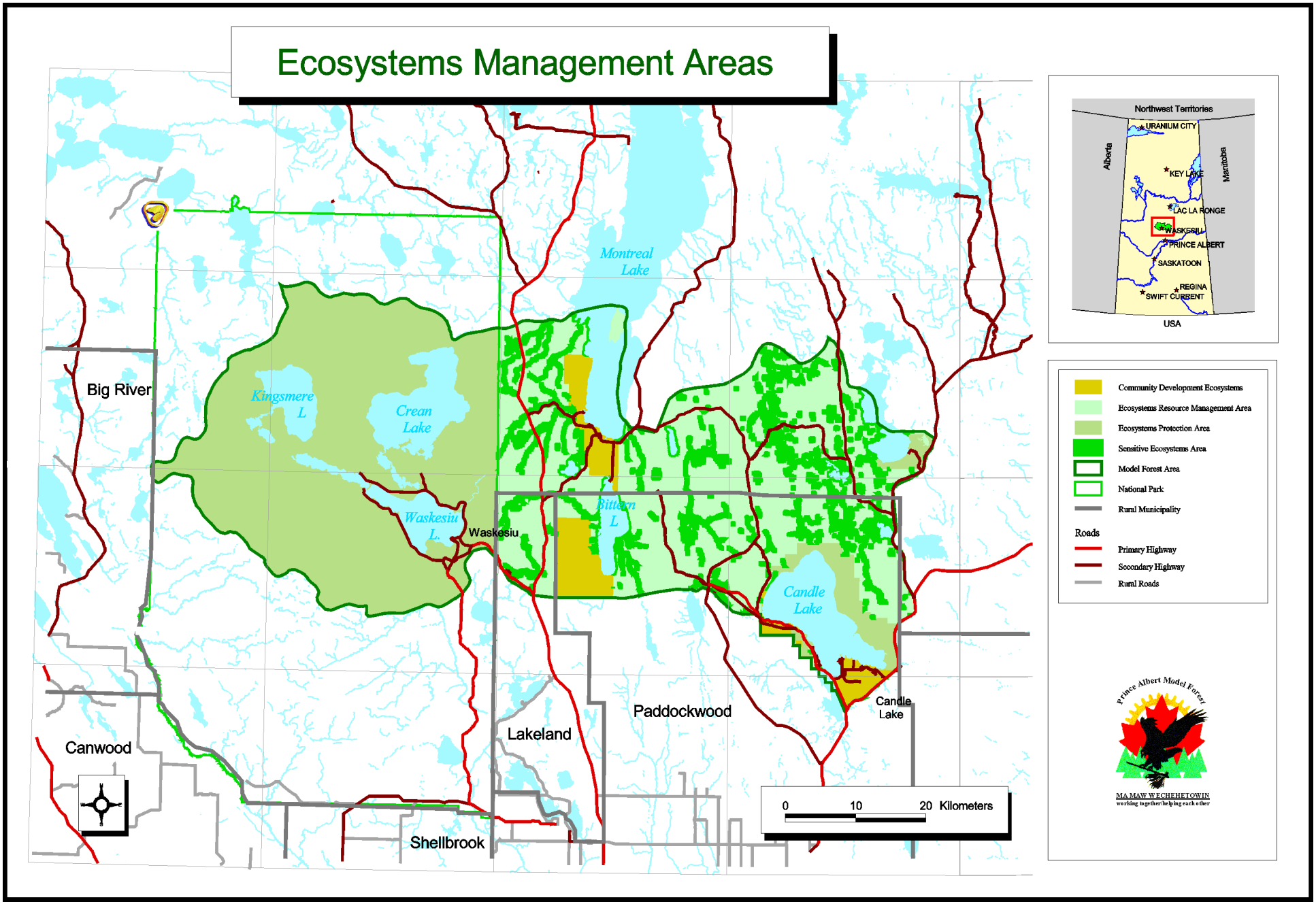

Figure 3-1: Ecosystems Management Areas (Source: Prince Albert Model Forest)

Table 3.1	Ecosystems Management Areas			
	Ecosystems Protection Area	**Sensitive Ecosystems Area**	**Ecosystems Resource Management Area**	**Community Development Ecosystems**
Land Uses	Prince Albert National Park; Candle Lake Provincial Park; Other areas designated under the Parks Act.;	Riparian Areas (as defined in Appendix III) not within the Ecosystems Protection Area or the Community Development Ecosystems	Prince Albert Model Forest area, not within the Ecosystems Protection Area, Sensitive Ecosystems Area or Community Ecosystems Area	The Resort Village of Candle Lake; Bittern Lake Indian Reserve; Community of Waskesiu; Montreal Lake Reserve;
Commercial Forestry	Not Permitted	Permitted	Permitted	These areas will be managed under the specific management plans developed for the area
Hunting	Not Permitted	Permitted	Permitted	"
Harvesting of Trees for Ecosystem Management	Permitted	Permitted	Permitted	"
Natural Process (i.e. Fire)	Permitted	Not Permitted	Not Permitted	"
Water Control Structures	Not Permitted	Permitted	Permitted	"
Housing, Commercial or Retail development	Not Permitted	Permitted	Permitted	"
Mineral Resource Exploration/ Development	Not Permitted	Permitted	Permitted	"

Note: This table represents generally whether a use is permitted or not within each of the Ecosystems Management Areas. For specific information on where uses are allowed, and the conditions placed upon use, see Chapter 4 Ecosystem Management Strategies.

Chapter 4 Ecosystems Management Strategies:

The Ecosystem Management Strategies section of the plan identifies areas of concern and how each is dealt with. The strategies are organized based on the components of ecosystem based management.

4.1 Communications and Knowledge Exchange

Communication and the exchanging of knowledge are fundamental processes for true integrated and ecosystem based management.

4.1.1 Concerns and Recommendations:

Concern 1: Shared Information on Resource Management

Providing information to resource managers, land owners and the general public is very important to the sustainable management of all resources and is fundamental to an ecosystem based approach to management. Without access to the best information, resource management will always be behind the current knowledge base. By sharing information amongst all the Prince Albert Model Forest partners and other land and resource users, management practices can be improved both within the model forest area and elsewhere. Another benefit to the sharing of information is minimizing the duplication of efforts between the model forest partners, as well as other groups.

Guidelines:

- The PAMF and partners should share appropriate information on resources with each other, and other applicable organizations for the economic, social and ecological/ environmental benefit of the area.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Develop a communications and knowledge exchange strategy for the model forest (including the individual partners) to help ensure that information is shared with the partnership, other land users and interested organizations and individuals. (How is the PAMF and its partners to communicate and exchange knowledge? What knowledge do we exchange, and how do we find out?)	***CAKE***	Complete April, 2000 distribute and begin implementing strategy
Provide descriptions of what information is available/used by the Prince Albert Model Forest	PAMF, ***CAKE***, ***CIF***	Ongoing (newsletters, web site, public events)
Provide GIS familiarization to the Prince Albert Model Forest partners and other organizations. To enable sharing of spatial databases.	***IRM***, CAKE	Implemented 1999 Ongoing, at least once a year
Develop data storage and management protocols so that information may be shared more easily between the partners.	***IRM***, Partners	Complete August, 2000 and proceed to implement

Concern 2: Public Input and Involvement (structure options)

Public involvement in resource management has been increasing in Saskatchewan, other provinces and countries. Multiple management mandates for the land base complicate an overall strategy of public input into resource management. Perhaps public involvement leads to some apprehension as well:

- apprehension of the unknown,
- apprehension over loss of, or sharing control, and
- apprehension of the preconceived.

These areas of concern need to be discussed when considering all forms of public involvement.

The current trend toward increased public involvement has come about for a number of reasons:

- enhanced effectiveness of land and resource management policies and programs;
- greater benefits can be achieved through cooperative efforts between the public and agencies/organizations responsible for resource management;
- growing demand for public involvement, and;
- to satisfy legal and policy requirements.

There are many ways to involve the public in land and resource management decision-making processes. Saskatchewan Environment and Resource Management (1995a) describes methods of public involvement in Appendix I.

Guidelines:

- Land and resource management plans should include the opportunity for meaningful consultation with interested and affected individuals, groups, organizations, and jurisdictions.
- Changes to current land and resource management practices in the Prince Albert Model Forest area should involve consultation.

Action:	**Initiating Agencies / Working Groups**	**Implementation Date**
Build a public involvement standard operating procedure for the PAMF, and the people/groups with an interest in the area. (See methods listed in Appendix I).	***CAKE***, Partners	January, 2001

Concern 3: Inclusion of other Interest Groups

The Prince Albert Model Forest partnership consists of 10 partners who have an interest in how the forest is managed. Other individuals, groups and agencies with an interest in the management of the forest in general, or the model forest area in particular, have expressed concerns that they do not see how they can participate in the model forest structure.

As a direct result of the this concern, from the first round of public consultation, the Integrated Resource Management working group held an open meeting and invitations were sent out to all known interested groups. (See public consultation document for a copy of the letter)

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Design an inclusive public consultation process that may be applicable for all resource management decisions in the PAMF area, building upon existing programs in use by the PAMF partnership.	***CAKE***	January, 2001

All working groups will assess the need for input by individuals and organizations outside of the model forest partnership.	***CAKE***, ***FVB***, ***EH***, ***LLI***, ***IRM***	IRM-FVB-Completed January, 1999 CAKE-April, 2000 LLI-EH-Completed involve researchers as needed

Concern 4: Continued/Increased Public Input

Public involvement is a necessary and desired component of integrated and ecosystem based resource management. The addition of traditional and local knowledge to science based information will allow better decisions to be made on the management of all resources and uses of the forest. All interested individuals and groups, First Nations, Métis, governments, residents and communities of the area should have the opportunity to be involved in resource management in the Prince Albert Model Forest area. To ensure traditional and local knowledge is included in the decision-making process, opportunities for the gathering and input of traditional and local knowledge need to be increased.

Guidelines:

- Major resource use allocations, developments, management plans, and decisions in the PAMF area require consultation with affected and/or interested groups or individuals, land and resource users, First Nations and Métis.
- Involve the many people and organizations that use and have an interest in the PAMF area in resource management decisions.
- Traditional knowledge should be used along with scientific information to make resource management decisions.
- Public involvement should continue after the development of the plan.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Develop an ongoing consultation strategy for the PAMF area, that seeks to include land users, interested groups, industry, Aboriginal people, and governments to provide input to the management of resources.	***CAKE***	January, 2001

Provide opportunities for the public to comment on or learn of the activities of the Prince Albert	***CAKE***, ***CIF***	Ongoing

4.2 Ecosystem Health

4.2.1 Concerns and Recommendations:

Concern 1: Sustainability of the Prince Albert Model Forest area as an Ecosystem

Sustainability is a principle of the plan. Many people receive benefits from the model forest area, that they depend upon for their livelihood, recreation and relaxation, cultural and spiritual health and identity. These benefits can only be maintained if the ecosystem itself remains in a healthy state and resources are allocated in a sustainable fashion.

Due to the complex relationships within and between ecosystems, it may be difficult to determine sustainable harvest levels for resources. The most current information must continue to be gathered and used to determine sustainable harvest levels. The long-term sustainability must always be considered.

Guidelines:

- Allocate/use resources at long-term sustainable levels.
- Encourage responsible, sustainable use of all resources.
- Resource use and users should comply with all environmental protection statutes, regulations and guidelines.
- Resource managers should follow the principles of adaptive management, to allow continued improvement and adaptation to changing values and information. Management practices should continually be the best possible for the area.

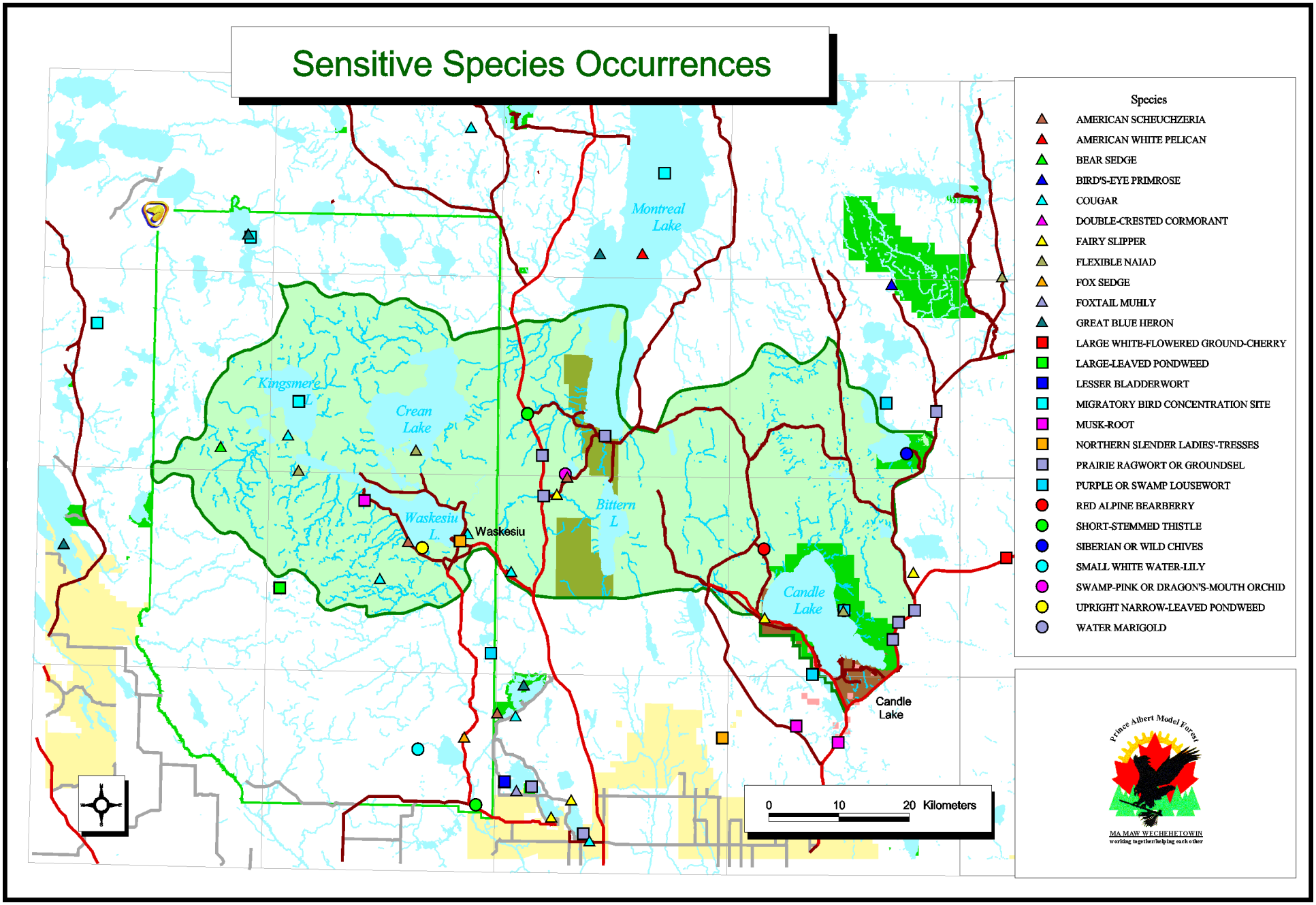

Figure 4-1: Sensitive Species Occurrences (Source: Saskatchewan Conservation Data Centre)

Concern 2: Protection of Rare and/or Endangered Plant and Wildlife Species

Rare and endangered species are sensitive to developments and uses.

Guidelines:

- All Prince Albert Model Forest partners should be attentive to the presence of endangered plant and wildlife species and report all sightings to the Saskatchewan Conservation Data Center.
- If rare or endangered species are found in the area, strategies to avoid or mitigate the impacts must be presented and approved by the jurisdiction in which the development is to occur, before any development action can occur.
- Continue to develop and implement management and recovery plans for endangered species.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Expand the current inventory of endangered species (Plant & Animal).	***SERM***, ***PANP***	SERM-establish web site 2000-2001 to allow capture and distribution of information PANP- as species are identified, they are added to list, 5 year review in 2003
Investigate and test methods that predict locations of rare and endangered species.	***IRM***	As Required
Develop/promote a rare and endangered species sighting process in the PAMF area and the province. All information collected should be shared with the Prince Albert Model Forest partners and the Saskatchewan Conservation Data Center.	***EH***, CAKE, SERM, PANP	SERM-establish web site 2000-2001 to allow capture and distribution of information
Develop a report on the current status of Woodland Caribou.	***SERM***	Complete 2000
Establish a woodland caribou management board to promote the long-term viability of woodland caribou.	***SERM***, Weyerhaeuser	Initiate Board 2001

Concern 3: Health of Riparian Areas

Riparian areas are sensitive to development and use. These areas are important habitat for many species. Activity in these areas can also affect the aquatic ecosystems. The current buffer system for riparian areas is arbitrary. It is not based on the management of riparian zones, it is based on management of the fishery.

Guidelines:

- Ensure that the health of aquatic and riparian ecosystems are considered during management planning.
- Use the best known management practices in riparian areas, until better information is available.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Develop and test standards to classify riparian zones.	EH, ***Weyerhaeuser***	Completed 1997
Evaluate various riparian area harvesting methods, and monitor their effects. The intent will be to assess current harvesting methods and/or develop new harvesting methods. Specific operating procedures for sustainable harvesting of stream side and riparian areas will be developed for use, within, and outside of, the model forest area.	Weyerhaeuser, ***EH***, SERM	Initiated 1999 Continue 2001

Concern 4: Resource Use and Development in Sensitive Areas

Resource use can have impacts upon the forest ecosystem. Some areas are more sensitive to resource use activities than others. Areas which are more sensitive (e.g. sensitive or critical habitat, historic and culturally significant areas) should be considered in the development and management planning process for resource uses.

Guidelines:

- Harvesting may be permitted in Ecosystems Protection Areas for the purpose of vegetation management to maintain the biological diversity of the area, if prescribed in the protected areas management plan.
- In areas which are deemed to be sensitive, not harvesting timber in these areas should be considered along with other options.

- New developments (subdivisions, resorts, trails, forestry, commercial/industrial buildings and operations, and mining) should pre-screen the development area for heritage resources and other development sensitive areas/sites based upon available information, field check potential impact sites, and take appropriate actions to protect locations that are sensitive.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
PAMF and partners to work cooperatively within the partnership, and with others, to identify and protect areas which are sensitive and require some form of protection.	***EH***, SERM, PANP, Partners	
In consultation with all land users, First Nations, Métis, scientists/researchers, interested groups and individuals, develop a set of guidelines, that identify timber harvesting and silvicultural objectives to address avoiding disturbance to rare and endangered species and ecosystems, critical habitat areas for fish and wildlife, wildlife travel routes, heritage/culturally significant areas, special use sites (e.g. medicinal plants), sacred sites, and other development sensitive areas.	***SERM***, Weyerhaeuser	With implementation of Weyerhaeuser Operating Guidelines - 2000
Develop and maintain, with input from all land users, Aboriginal people, scientists/researchers, interested groups and individuals, a comprehensive database of non-timber uses and resources.	SERM, ***FVB***, Weyerhaeuser, ***IRM***, Partners	Initiated 1998 Update December, 2000
Develop ecosystem based management plans for all protected areas (i.e. Candle Lake Provincial Park, Prince Albert National Park). These plans should consider the ecosystem relationships beyond the human made boundaries of the area, allow natural processes to function where possible, and conserve ecological integrity and biological diversity. The planning process should also include an acceptable public consultation process.	***SERM***, ***PANP***, EH	Candle Lake Provincial Park Vegetation Management Plan 2001; Park Management Strategy 2003 Prince Albert National Park Initiate February, 2000 Draft expected January, 2001

Concern 5: Research

The Prince Albert Model Forest Ecosystem Based, Integrated Resource Management Plan outlines a number of objectives and actions. It is believed that, based on the best available information at this time, these actions will help to ensure the sustainability of the many uses and conserve the resources for future generations. However, we must recognize that we can always improve upon the knowledge used to make resource management decisions. The plan also includes a section related to further research.

In the past, research has been difficult to plan due to the numerous individuals and organizations carrying out their work in isolation. The Prince Albert Model Forest, since the beginning in 1992, has been dedicated to bringing people and organizations together. This has provided an opportunity for the model forest partner organizations to work together to obtain better information from research, than any one partner could obtain acting alone.

Cooperation amongst the partners is becoming more important with regard to funding of research projects as well. In the current fiscal climate many organizations find themselves with decreasing budgets and increasing costs of their day to day operations. To carry out the work that is needed we have to look to innovative solutions. Working together with other individuals and agencies has many advantages and allows for a greater level of integration.

Some of the areas where research is required to improve ecosystem based management are identified by Saskatchewan Environment and Resource Management (1995b) in Appendix II.

Guidelines:

- Research activities should not adversely affect the health of the environment.
- All suitable data collected by the partners, or through activities sponsored by one or more of the partners, will be made available to the model forest partnership, other resource users, interested groups and individuals who may benefit from the information.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Link collaboratively with other research centers	***PAMF***	Ongoing
Develop an environmental research strategy, which outlines the areas that most need further research performed (and what has been done) to better manage the land. This strategy needs to be kept current and will require periodic review. The strategy should also outline guidelines for research to minimize any impact to the environment.	***EH***, Partners	

Provide a forum or mechanism for PAMF to disseminate information gained through research	***CAKE***, ***CIF***	Ongoing (newsletters, web site, public events) Complete Communication Knowledge Exchange Strategy April, 2000 distribute and begin implementing strategy

To make the best use of the resources held by all of the Prince Albert Model Forest partners, a strategic plan for the Prince Albert Model Forest area and partnership needs to be developed. This plan will:

- determine the priorities for research in different areas between the partners;
- determine how to best use the resources available to the partnership;
- determine which projects should be initiated immediately;
- set up a review process of the plan involving all partners of the model forest, the public, other business/industrial sectors, interested groups and individuals who wish to contribute;
- initiate a mechanism for reviewing all forest research on a regular basis, and;
- define a process for making research results available for public distribution.

This plan will organize research activities and involve/inform all of the partners.

Concern 6: Protection of the Water Resource

The lakes, rivers and streams of the area are highly valued by many resource users. Uses include, but are not limited to, drinking water, habitat for fish and recreation. Many of the lakes and rivers are valued simply for their natural beauty. The water resources of the area must be protected to maintain these values.

Guidelines:

- Ensure shoreline developments follow controls, that minimize the possibility of contamination and pollution of the water resource.

Actions:	Initiating Agencies / Working Groups	Implementation Date
Develop and maintain a water quality and quantity (of use) monitoring program to identify trends, develop indicators and baseline data, and to ensure the level of use is sustainable.	***SERM***, PANP, Sask Water	SERM-Initiate 2000-2001 PANP-Initiated indicator lakes being used. Focus on Kingsmere, Crean, Wassegam Lakes and Kingsmere and McLennan Rivers
Organize a workshop on watershed Management.	***IRM***	2001
Develop watershed management plans for the Prince Albert Model Forest (across all jurisdictions). Plans should include strategies for dealing with the potential for climate change.	***SERM***, ***PANP***	SERM-Initiate 2000-2001 PANP-Initiate February, 2000 expected draft January 2001

Concern 7: Protect Ecological Integrity

Ecological integrity refers to the structure and function of the ecosystem being unimpaired by human caused stress, where native species are present at viable population levels.

The protection of the ecological integrity is required to maintain all of the benefits of the Prince Albert Model Forest area. The maintenance of natural levels of ecological integrity is a principle of the Prince Albert Model Forest Ecosystem Based, Integrated Resource Management Plan.

Natural processes (e.g. fire) should be allowed to function naturally whenever possible within the Ecosystem Protection Areas. These areas were designated for the conservation and protection of natural ecosystems.

Guidelines:

- The PAMF area should be managed to maintain ecological integrity. This is especially important within protected areas, as they may be used as benchmarks to measure the rest of the area against.

- Within the Ecosystems Protection Area natural processes should be allowed to function (e.g. fire, restoring natural water regimes), wherever and whenever possible, to maintain the ecological integrity of the area.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Investigate, develop and test indicators to monitor ecological integrity in the PAMF area.	***LLI***	Develop list of indicators of sustainable forest management 1999-2000 Sample for baselines 2000-2001

Concern 8: Biodiversity

The conservation of natural levels of biodiversity is critical to maintaining the overall health of the Prince Albert Model Forest area. The maintenance of biodiversity is a principle of the plan.

Guidelines:

- All resource management/development plans, within the PAMF area, must consider the maintenance of natural levels of biological diversity and ecological integrity.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Investigate, develop and test indicators to monitor biological diversity in the PAMF area.	***LLI***	Develop list of indicators of sustainable forest management 1999-2000 Sample for baselines 2000-2001

Concern 9: Impacts on the Natural Environment

All land and resource uses may impact the land and ecosystems on which they occur. All land and resource uses should be managed to minimize and/or mitigate impacts.

Guidelines:

- All management planning should be adaptive, based upon an established monitoring program.
- Resource management and use decisions should be based upon the principles of integrated and ecosystem based management.
- All development and resource use plans should include a section(s) on the expected/possible impacts of the development/use and how they will be avoided/mitigated to minimize any impacts to the environment.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Develop a monitoring program to assess the impacts of all resource uses.	***LLI***	Develop list of indicators of sustainable forest management 1999-2000 Sample for baselines 2000-2001
Inform the public in reclamation activities to increase public awareness of responsible resource management.	***CAKE***, Partners	Complete public involvement standard operating procedure January, 2001 begin to implement
Research, develop and test methods of avoiding/mitigating resource use impacts in the region, and implement the best procedures to correct the problem.	***EH***	

Concern 10: Non-Native Species/Exotics

The encroachment of regionally non-native species and exotics can have a number of affects on the area:

- decreased ecological integrity and ecosystem health;
- decreased benefit from the area (e.g. aesthetics, economic, social), and;
- increased costs associated with control of non-native species.

Guidelines:

- Conserve natural vegetation.
- Prevent the encroachment of regionally non-native species that impact the ecosystem health of the area.
- Prevent the spread of regionally non-native species caused by human activities.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Identify regionally non-native species to the PAMF area.	SERM, ***PANP***, ***EH***	Preliminary Work completed January, 2000 Continue 2000
Monitor/study the spread and movement of exotic species in the PAMF area.	***EH***	Initiate 2000
Determine if existing exotic species have the potential to threaten the ecosystem integrity of the PAMF area, if they do, then determine how to control these species and reclaim the impacted area.	***EH***	Initiate 2000
Research existing and develop new methods of controlling exotic species. Test document and monitor these methods in the PAMF area for use in other areas.	***EH***, Partners	

Concern 11: Forest Fragmentation due to Forestry

Large developments in the forest can fragment natural forest landscapes. The disturbance of large areas of land can impact/fragment wildlife habitat. Fragmentation changes the natural structure of the forest and can negatively impact habitat of some species.

Guidelines:

- The FMA holder will, as best as possible, maintain natural landscape patterns with the appropriate degree of fragmentation and connectivity between stands.

Actions:	Initiating Agencies / Working Groups	Implementation Date
Research, develop and test harvesting patterns in the PAMF area to better understand how forestry operations can emulate natural disturbances.	***EH***, Weyerhaeuser	Workshop held February 1999, for the Weyerhaeuser Two-Forks Planning Area
Investigate, develop and test tools to monitor and assess landscape patterns and fragmentation (compared to natural disturbance) in order to assess current landscape patterns and suggest the practices and patterns that should be used.	***IRM***, Weyerhaeuser, SERM	Preliminary Research September 2000 Reevaluation in 1 year (January 2001)

Concern 12: Water Control Structures

Water control structures have been built in a number of locations throughout the Prince Albert Model Forest area. Most of the structures were intended to raise and stabilize water levels on lakes to increase access and the potential for recreation. Concerns have been raised on the impacts these water control structures may have on fish populations and aquatic ecosystems.

Guidelines:

- Do not allow any new water control structures in Ecosystems Protection Areas
- Any new water control structures outside of the Ecosystem Protection Areas must have a development plan, that assesses all impacts and develops strategies to avoid/mitigate all impacts.
- If a water control structure is found to significantly affect an aquatic ecosystem and its removal will not cause conflicts with other users, it should be removed.

Actions:	Initiating Agencies / Working Groups	Implementation Date
Inventory and assess the impacts (to the environment and users) of all water control structures impacting the PAMF area.	***SERM***, ***PANP***	SERM-Complete 2002 PANP-Kingsmere complete Basic summary completed for Crean & Waskesiu

Continue the process of restoring the Kingsmere River and Lake ecosystems, including the removal of the Kingsmere River dam, and taking action to restore the river's original natural characteristics.	***PANP***	Restoration Began 1996 1998 filling of diversion 1999 removal of dam
Monitor populations of both harvested and non-harvested fish species in those aquatic systems that can provide benchmark research on, and interpretations of the health of other aquatic systems in the regional ecosystems.	***PANP***	PANP 1997 Walleye and Northern Pike monitoring on Mud Creek 1999 Lake Trout monitoring
All steps of the process and the effects of removing the Kingsmere River Dam should be documented and the information shared to establish whether other water control structures in the area should be removed.	***PANP***, SERM	Spring 2000 baseline was established prior to dam removal

Concern 13: Conservation of Fish Resources

The Prince Albert Model Forest area, due to its close proximity to urban centers, local aesthetics and fish resources, is a destination area for many people. Within the area, many of the fish resources are fully allocated. Fish resources in some lakes are over allocated. Some users feel that game fish population in the area are declining.

Guidelines:

- Allocate the fishery at a sustainable level, based on biological information (e.g. fish populations).
- Allocate the fishery equitably amongst all of the users, commercial fishermen, itinerant anglers, outfitters and any other users.
- In lakes where the fish resource is over allocated, reduce the allocation to a sustainable level in consultation with the resource users.
- Do not allow any industrial, residential, or commercial development near critical fish spawning areas unless acceptable strategies to mitigate/avoid the impact of the development are found.
- Involve resource users, Aboriginal people, local communities, and interested groups and individuals in fisheries management decisions.

Actions:	Initiating Agencies / Working Groups	Implementation Date
Identify and review all fisheries harvest levels and populations to determine if the fishery is sustainable.	***SERM***, ***PANP***	Ongoing
Develop lake management plans for heavily used, over allocated, unique lakes, and others to manage the fishery in the best possible fashion. These management plans should include consultation with resource users, First Nations, Métis, interested groups and individuals.	***SERM***, ***PANP***	SERM-Ongoing Candle Lake 2003 Montreal/Bittern Lake - 2005 PANP-Aquatic Ecosystem Management Plan developed in 1989
Increase the inventory programs for fish resources and aquatic ecosystems, to improve knowledge of local habitats (e.g. critical spawning areas). This information should be included in databases that can be used to plan commercial and industrial operations and developments so sensitive areas are not impacted.	***SERM***, ***PANP***	Spawning run Inventories Montreal Lake 2000 Candle Lake 2000
Monitor all fish harvesting including angling, traditional subsistence use and other aquatic factors to indicate the health of the fishery and the aquatic ecosystem, and allow for timely management decisions.	***SERM***, ***PANP***	Harvest Monitoring Program Candle Lake 2000 Montreal Lake 2002

Concern 14: Conservation of Wildlife Resources

The wildlife species within the Prince Albert Model Forest area include moose, black bear, white-tailed deer, woodland caribou, elk, and muskrat. Some of the bird species found in the area are the barred owl, chimney swift, whip-poor-will, and black throated warbler.

Due to its close proximity to urban centers and relatively easy road access, the area receives high hunting pressure. Other resource uses in the area have and are building roads to access more of the area. Resource extraction activity can impact and impair wildlife habitat.

The south west corner of the Prince Albert National Park is the primary range to a free roaming herd of bison. The number of bison in the herd is and has been growing. These animals roam out of the national park boundaries (into private and Provincial Crown land) causing conflict and concern regarding their protection and management. Since the closing of the bison paddock there has been an increased demand for viewing opportunities and concern over proper management of these activities. The health of the bison herd and continuing to accumulate knowledge to be used in their management has also been discussed.

Wildlife population should be conserved and protected. Current information on wildlife needs to be improved to ensure their sustainability.

Guidelines:

- Support and encourage responsible wildlife habitat management and improvement on private land in the Prince Albert Model Forest area and surrounding region. To accomplish this, information and expertise in wildlife management should be shared with private land owners.
- Allocate wildlife resources based upon biological information (e.g. populations) to ensure the resource is used at sustainable levels.
- Do not allow intensive development or use in critical wildlife habitat areas, unless acceptable strategies to mitigate/avoid the impacts of the development are found.
- Provide improved on and off site viewing opportunities for visitors to learn about the wild plains bison herd in the park.
- Educate the surrounding land owners and the general public about the bison and the need to protect them.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Develop management options that promote the long-term viability of caribou. Strategies should be formulated in cooperation with all interested parties, land users, First Nations, and Métis.	***SERM***, ***PANP***, Weyerhaeuser	SERM-Ongoing Formalize consultation/development of management options after the caribou board is in place 2002 PANP-Research completed 1998 Monitoring March 2001
Gather/coordinate wildlife data held by the partners	***IRM***, Partners	August, 2000

Develop guidelines for harvesting and silvicultural operations to avoid disturbing rare species and ecosystems, critical habitat areas, wildlife travel routes, nesting sites, and other sensitive wildlife sites.	Weyerhaeuser, ***SERM***, EH	With approval of Weyerhaeuser 20-year Forest Management Plan and implementation of Operating Guidelines - 2000
Research, develop and test tools to assist in the inventory of wildlife species.	***IRM***	Identify Key species September, 2000 and reassess
Contribute to the genetic data bank at the University of Alberta by submitting animal tissues when available.	***SERM***, ***PANP***	SERM-ongoing, when available / requested PANP-Began 1996 for bison
Improve/develop inventories of critical habitat, bird communities, wildlife populations, and disease.	***SERM***, ***PANP***	Ecosite Classification Initiated 1999 Elk Habitat model 2003 Bison 2001 Mule Deer 2002
Develop a management agreement for the free roaming bison herd (include the park, provincial and private land where they may roam) in consultation with surrounding land owners and users. The agreement must address the protection and management of the bison, while considering conflicts with other users.	***PANP***, ***SERM***	Initiate 2000 Draft 2001 Complete 2001-2002
Develop a management strategy for baiting along the Prince Albert National Park Boundary	***PANP***, ***SERM***	
Develop a protocol for monitoring the park's free roaming bison population and encourage a population/habitat study.	***PANP***	Protocol developed 1995 carried out annually Study initiated 1996

Concern 15: Pollution

Pollution can have an impact upon many resources and the benefits people receive from them. All sources of pollution should be reduced to minimize or eliminate any impacts.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Investigate and identify all potential sources of pollution in the PAMF area or impacting the area.	***EH***, Partners	
Develop strategies to deal with pollution. The strategies should identify innovative procedures, that may be tested. The strategies should also identify areas which need further research.	***EH***, Partners	

Concern 16: Mineral Exploration and Mining (oil and gas, metallic and industrial minerals)

Saskatchewan Energy and Mines (SEM) regulates the disposition of Crown mineral rights for the province. This is done through the issuing of mineral claims for exploration and mineral leases for mining activities.

Potential conflict with other land users or priorities may restrict access to land for mineral exploration and mining activities. Limitations on exploration and mining activities will have negative impacts on the economic benefits received from the mineral industry.

Mineral exploration and mining may be in conflict with other land uses. If resolution to a disputed site cannot be reached, and existing mineral dispositions are voluntarily surrendered, the disposition holders must be adequately compensated. There is currently no legislative provision under the *Crown Minerals Act* for the expropriation of existing mineral dispositions.

Exploration and mining activities can impact the environment. The creation of roads for these uses increases access and fragments habitat. Increased access will allow a greater number of hunters into areas, while in the pursuit of game. Fragmentation of wildlife habitat can negatively impact some wildlife populations.

Guidelines:

- Oil, gas and mineral exploration is not permitted in the Ecosystems Protection Areas.
- If possible, existing access routes are to be used before new access routes are constructed.
- Avoid constructing access routes through sensitive areas (e.g. wildlife habitat, culturally significant areas) unless acceptable strategies to mitigate the impact can be developed.
- All mineral development proposals must include consultation with affected land users, and Aboriginal people.
- Consider both known and potential mineral resources when making land use decisions where mining and exploration activity is permitted.
- Maintain access to the land base for mineral exploration and development whenever possible.
- For any land use proposals that could restrict mineral exploration and development, the following course of action is required:
    - contact Saskatchewan Energy and Mines (SEM) to evaluate mineral potential. SEM has already identified existing mineral deposits and potential mineral resources by conducting a mineral assessment of the Prince Albert Model Forest area. Periodic updates of this assessment will be required, including input from the mining industry;
    - SEM will identify existing mineral dispositions (claims and leases) in the area from current mineral disposition maps, and;
    - using the information, negotiations among the various land users and those interested in using the land will resolve conflicts where possible. Options could include moving the site of the conflicting use to an area of lower mineral potential, or the land use proposal could be altered to address the concerns of the mineral interests.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Develop a compensation (to industry) process, involving the mineral industry and affected users.	SERM, ***SEM***	As Required

Concern 17: Hunting and Fishing Season Dates

The timing of hunting and fishing season dates controls when recreational hunters and anglers actively use the resources. Changing the times that fish and wildlife resources can be harvested by recreational activities can change the duration of use.

Guidelines:

- Establish season dates based on biological information (e.g. whenever harvesting of these resources has the least impact).

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Fish and wildlife biologists in consultation with local users need to review the hunting and fishing season dates for the PAMF area. Portions of the area receive high levels of use and may require changes to the season dates or closures of certain areas to maintain sustainable harvest levels in the area.	***SERM***, ***PANP***	SERM-Candle Lake Fish Board Initiated 1999; MLCN/SERM partnership (elk, fisheries etc.) PANP-implemented for Lake Trout spring 1999

Concern 18: Timber Harvest Planning and Distribution

Some areas within the Prince Albert Model Forest seem to have received a disproportionately high level of timber harvesting activity in the past. Concern has been expressed that greater timber harvest level intensities may increase the impacts on the area.

Guidelines:

- Harvest planning will consider the age, merchantability, condition, species distribution, forest defragmentation and other landscape objectives, fire, salvage requirements, social considerations, as well as, mill requirements.

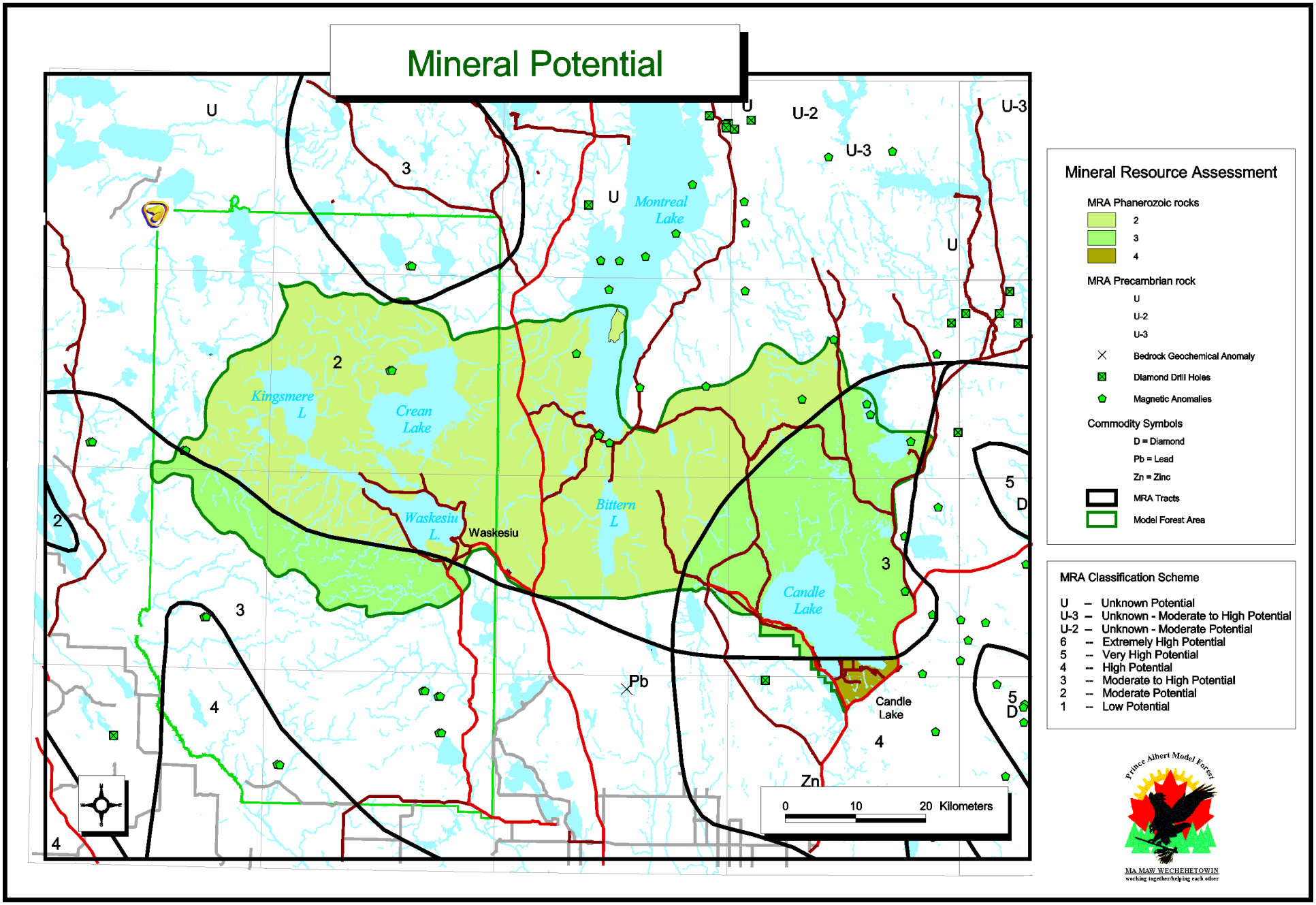

Figure 4-2: Mineral Potential (Source: Saskatchewan Energy and Mines)

Concern 19: Timber Harvesting Duration

Harvesting operations impact in the local area. Equipment noise and road traffic can disturb wildlife and other users of the area. The longer the duration of the harvesting operation, the greater potential for impacts to occur.

Guidelines:

- Forestry operators will plan operations to minimize the amount of time that harvesting is occurring in an area, while not significantly increasing the noise levels, whenever practical.
- Forestry operators, considering the impacts to wildlife and other users, should time harvesting operations to minimize impacts whenever practical.

Concern 20: Harvesting Methods (timber)

Timber harvesting produces immediate impacts on forest ecosystems beyond the obvious removal of vegetation. These impacts may include:

- increased soil erosion;
- soil compaction;
- alteration of micro-climates;
- forest fragmentation;
- disruption of nutrient cycling regimes, and;
- changes to the natural biodiversity.

Clear-cut logging, which is the most common method used to harvest trees in the boreal forest, has received the brunt of public criticism and concern as this method is seen as impacting large areas of land. Other harvesting methods may cause problems, such as increased forest fragmentation.

Guidelines:

- All methods of forest harvesting are to be considered as alternatives.
- Modify harvesting practices on a site specific basis to ensure that the best methods for the area are used.
- Forest harvesting operations should emulate natural disturbance regimes to the extent possible and desirable.
- Review new technology and research in timber harvesting and forest management on an ongoing basis and incorporate into forestry operations where appropriate.

Actions:	Initiating Agencies / Working Groups	Implementation Date
Investigate, develop and test new harvesting methods to minimize the impact of forestry operations on the environment and emulate natural disturbances. Methods used should have the least impact to the ecosystem while remaining economically viable.	***EH***, ***Weyerhaeuser***	Ongoing
Investigate, develop and test alternate harvesting methods for use on sensitive sites.	***EH***, Weyerhaeuser	Ongoing (with Riparian Area harvesting project initiated 1999, continue 2000-2001)
Evaluate methods of further increasing the efficiency in harvesting and sorting operations.	***Weyerhaeuser***	Ongoing

Concern 21: Need for Reforestation

In the past, not all harvested areas have regenerated. In addition, areas that burned may not have regenerated. Areas that are not covered by a new forest, several years after fire or harvest are known as "not satisfactorily restocked" (NSR), or backlog areas. This condition occurs most often in softwood stands, as they do not regenerate naturally as easily as hardwood stands.

The forest is very important to the people of the Prince Albert Model Forest area. Many benefits are derived from the forest and its use. Many of these benefits are diminished by NSR areas.

Guidelines:

- Where possible, use natural regeneration or natural assisted regeneration to return harvested sites to their pre-harvest species associations.
- Use planting to restore pre-harvest species associations where natural or natural assisted techniques will not accomplish this, or to reforest sites with selected growing stock.
- Herbicides research trials should be carried out to evaluate their effectiveness as a tool and the impact upon the ecosystem.
- Regenerate harvested areas within two growing seasons of the harvest.
- Use planting stock with appropriate genetic diversity.
- Use seedlings produced from wild seed sources within the general area in which they were collected or appropriately diverse seedlings produced from orchard seeds.

- Planting of non-native species will be restricted to possible small scale (<25 ha) research trials.
- Perform stand tending on appropriate sites throughout the FMA area to enhance wood supply, ensure success of planted seedlings and maintain natural species association distributions.
- Develop harvesting/silvicultural plans, prior to harvesting, to ensure the best methods are used.
- Maintain the overall species balance across the landscape.
- When defining NSR, all values should be considered (e.g. wildlife habitat).

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
In the PAMF area, evaluate, develop and test silviculture techniques, site preparation equipment and techniques which will improve both natural and planted renewal in the planning area and the province.	EH, ***Weyerhaeuser***, CFS	Ongoing
Evaluate the feasibility of using prescribed burn as a site preparation method.	***EH***, SERM	
Develop a standard or standards which defines NSR.	***SERM***, Weyerhaeuser	
Update the inventory of NSR and regenerated sites and prioritize areas for renewal if required.	SERM, ***Weyerhaeuser***	In conjunction with new forest inventory
If present, reduce any accumulated backlog of not satisfactorily restocked land (NSR).	***SERM***, ***Weyerhaeuser***	As Required

Concern 22: Fire

Fire is a natural and necessary process in the boreal forest ecosystem. The expanded use by, and values of the many people who receive benefits from, and live in, the forest have made fire detection and suppression necessary.

Burned forest areas are important to the ecosystem. They contribute to biodiversity and the health of the forest. Intensive fire suppression activities, fires started from human sources and timber harvesting have altered the natural fire cycle in the Prince Albert Model Forest area, and the region. Changes in land use (e.g. agriculture, human settlements) have altered the fire cycle by modifying the vegetation cover, species and use. Human induced climate change will also impact natural fire cycles.

New concepts in forest harvesting suggest that harvesting may be used to emulate fire to minimize the impact of the altered fire cycle. Harvesting practices may be used to control the amounts of fuel available and manipulate the forest fire intensity and rate at which it spreads.

For economic reasons, not every fire can be fought with the same intensity. For biological reasons, some areas must be left to burn. The forest is no longer viewed solely as a source of timber or fiber, but as part of an ecosystem with many uses and values. Until recently, fire suppression policies, both provincially and in the National Park, have not kept pace with changing values and current knowledge regarding the role of fire in the ecosystems. Currently, both the Province and the National Park are in the process of developing and implementing new fire management policies.

Guidelines:

- In the Ecosystems Protection Areas natural fires should be allowed to burn where feasible and areas of high value are not at risk.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Develop a fire management plan for the Prince Albert Model Forest area. This should be done involving the PAMF partnership, forest industry, local residents, land users, Métis, and First Nations. The plan will be integrated with existing plans/mandates of the various jurisdictions, and indicate areas of high and low priority for suppression activities.	***IRM***, SERM, PANP, Partners	Gather information for August, 2000 (e.g. human and wildlife values, fuel type)
Investigate, develop and test tools for predicting fire, assessing impacts of different control options and predicting/identifying priorities.	***IRM***	Reevaluate annually Beginning January, 2000

Concern 23: Forest Insect and Disease Management

Insects and diseases are part of the natural processes of the boreal forest ecosystem. Conflicts and concerns arise when these agents impact the human values of the forest ecosystem.

There is no perfect solution for the problems associated with, or caused by, insects and diseases. Harvesting infested areas to prevent spreading may further impact users and the ecosystem. Undesirable cutting patterns or large cutovers may result. Pesticides raise concern over environmental safety, impact to other non-target organisms and ecosystems, effectiveness of the treatments, and the high cost usually associated with them.

In the Prince Albert Model Forest area spruce budworm is presently the main insect concern of most users. Outbreaks of spruce budworm occur most often in mature forests consisting of white and black spruce and balsam fir. In severe infestations all new foliage, and some older needles, will be consumed for several years. This will, at the least, result in the trees losing their vigor, but may result in the total or partial fatality of the tree within 3 to 5 years.

Guidelines:

- Use the "best" integrated insect and disease control practices.
- Timber Harvesting may be allowed in Ecosystems Protection Areas to meet certain management objectives, such as the management of insects and diseases.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Research, develop and test tools to assist in modeling and predicting insect and disease risks and infestations. (Due to the current outbreak, particular attention should be focused on spruce budworm)	***IRM***, CFS, SERM	Initiated March, 1999 Project currently administered by SERM
Develop a monitoring program to assess insect and disease conditions in the forest.	***LLI***	
Assess the impact of different methods of control.	***EH***, ***SERM***, Weyerhaeuser, CFS	Ongoing for Spruce Budworm
Develop a research program to determine the role of insects and disease in the forest ecosystem.	***EH***, CFS, SERM	

Research, develop and test tools to assist in insect and disease control options. (Due to the current outbreak, particular attention should be focused on spruce budworm)	***IRM***	

Concern 24: Operating Ground Rules

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Operating guidelines to reflect approved Twenty-year Plan including requirements for implementation of sustainable, ecosystem-based management. After the operating guidelines are initially updated, the principles of adaptive management should be applied to continuously review and modify the guidelines as necessary.	***Weyerhaeuser***, IRM	Developed, reviewed and implemented in conjunction with 20-year Forest Management Plan and EMS.

Concern 25: Forestry Roads (access)

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Develop an access management strategy for the PAMF area, involving local users, Métis, First Nations, governments, industry, and communities.	***SERM, Weyerhaeuser***	

Concern 26: Forestry Roads (impacts - erosion)

The construction of roads can result in increased erosion, due to the removal of ground cover. Erosion can negatively impact aquatic ecosystems by increasing the sediment load. Erosion of the nutrient rich top soil from a site will make renewal more difficult.

A method of erosion prevention is re-vegetation of the disturbed area. Concerns have been raised about the impacts of using non-native species to re-vegetate areas.

Guidelines:

- Effective erosion control measures during all phases of road construction, operation and closure will be implemented and any erosion problems will be corrected immediately.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Develop and test a suitable and effective vegetation mix consisting of native and non-invasive plant species for erosion control.	***SERM*, *Weyerhaeuser, EH***	Developed, reviewed and implemented in conjunction with the 20-year Forest Management Plan

Concern 27: Forestry Roads (stream crossings)

Stream crossings and their construction can negatively impact aquatic ecosystems. Disturbing the stream bed and bank can result in increased erosion, adding sediment to the water. If stream crossings are located in sensitive areas (e.g. fish spawning areas) the crossing itself will impact the aquatic ecosystem.

Guidelines:

- All stream crossings will be designed and constructed in accordance with federal and provincial guidelines for fish habitat protection.
- Stream crossing locations are to be selected at points where they will have the lowest environmental impact.
- Select crossing type to minimize costs, while ensuring that environmental considerations are adequately addressed.
- Required maintenance or replacement will be carried out as soon as possible.
- Inspect all major stream crossings on maintained roads in the spring and fall to ensure they are operating properly and erosion is not occurring.
- Construct stream crossings using approved installation techniques.

Concern 28: Forestry Roads (culvert sizing; fish bearing streams)

Some stream crossing methods require the use of culverts. Culverts placed in fish bearing streams may impede the passage of fish.

Guidelines:

- Use culverts designed to accommodate fish passage and minimize impact to fish while considering predicted stream flows.
- Remove and replace any culvert(s) found to block fish passage, with larger or differently designed culverts or other crossing structures to allow unimpeded fish passage.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Test the usage of the fish species richness predictive model (and others) to identify streams likely to support game or commercial fish species, and install culverts designed to accommodate fish passage.	Weyerhaeuser, ***IRM***, SERM	Developed and initially tested by Weyerhaeuser

Concern 29: Forestry Roads (culvert sizing; non-fish bearing streams)

A culvert of improper size and/or design will not allow water to flow naturally downstream. Culvert size and design should accommodate the expected flows of the stream or river being crossed. Culverts that are not adequate in size or design will result in increased erosion impacting the aquatic ecosystem. In some cases improper culvert selection will result in the washing out of the crossing.

Guidelines:

- Culvert size will be based on predicted stream flows (e.g. for 20 year flood) and appropriate culvert sizing calculations to minimize any impacts to the ecosystem.

Concern 30: Forestry Roads (removal of stream crossing structures)

The removal of stream crossing structures can result in impacts to the environment similar to the construction of a stream crossing.

Guidelines:

- Stream crossing structures will be removed after they are no longer needed, in accordance with Shoreline Alteration Permit conditions.
- All erosion control guidelines, applied during installation of stream crossings, should be implemented during crossing removal.

Concern 31: Forestry Roads (location)

Guidelines:

- Choose road locations to minimize soil erosion and adverse effects on water courses, sensitive areas (e.g. critical terrestrial and aquatic habitat, culturally significant areas) and other resource users.
- New road development plans should involve consultation with local residents, land users, other jurisdictions and interested groups and individuals.
- Avoid unstable areas, water source areas, springs and seepages.

Concern 32: Forestry Roads (closures)

Guidelines:

- Close roads not needed for forestry operations using barriers such as earth, log or rock berms, excavations, culvert removal, gates and signs.
- Close forestry roads during hunting season if they allow access to sensitive wildlife habitat areas (if a game corridor reserve is not in place).
- Submit reclamation proposals for roads permanently out of use, as soon as roads that are no longer needed are identified.
- Ensure that all obligations on past road closures are met.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Identify roads that access, or allow access, to sensitive wildlife habitat.	***SERM***, Weyerhaeuser	Ongoing

Annually identify and reclaim roads that are no longer needed for forestry operations.	***Weyerhaeuser***, SERM, PANP	Done in conjunction with 5 year operating plans - 2000
Re-evaluate all old roads and their closure status during five year planning. Reuse old roads whenever possible to minimize access created.	***Weyerhaeuser***, SERM, PANP	Done in conjunction with 5 year operating plans - 2000

Concern 33: Grazing

Grazing is an important use of some forest land in other areas. Grazing can have an impact upon the forest ecosystem and other users of the area. Currently, in the PAMF area there are no grazing permits issued on Crown land.

Guidelines:

- If grazing is found to negatively impact the ecosystem health of the area, then do not allow any permits or leases to be issued.
- Grazing may occur if it is prescribed as a management action.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Assess the impacts to ecosystem health of grazing in the Prince Albert Model Forest area.	***SERM***	

Concern 34: Shoreline Management (docks, boat houses)

Guidelines:

- All new applications for shoreline dispositions must be reviewed by Saskatchewan Environment and Resource Management to ensure that the development does not adversely affect fish habitat.
- No new shoreline development in critical fish habitat areas (e.g. spawning grounds).
- Ensure the current permitting system is being followed and enforced.

Concern 35: Service Corridors (e.g. power lines)

Service corridors are linear developments designed to provide access for the installation, protection and maintenance of power lines, gas lines, telephone lines, and other linear service developments.

Service corridors increase access, affect local aesthetics and fragment ecosystems. Access increases the disturbance to wildlife. Clearing of trees and other vegetation along service corridor decreases the aesthetic value of the area. Fragmentation of the forest will negatively impact habitat availability for some wildlife species. Service corridors can cause conflict with other users.

Guidelines:

- New service corridors, or other linear developments, must follow existing routes where possible.
- Where new linear developments are planned, they must be reviewed by knowledgeable people (e.g. biologists, archaeologists, hydrologists, elders) and avoid disturbing critical or sensitive areas.
- The width of existing and new service corridors should be minimized wherever possible.

Concern 36: Fire Salvage

Harvesting of burn over areas impacts the ecosystem. There is concern, over the impacts harvesting burned areas has upon the ecosystem.

Within burn areas there are often patches of green trees, which remain unburned. It is currently difficult to identify areas of unburned forest and ensure that they are left where appropriate.

Saskatchewan Environment and Resource Management is currently in the process of developing a new fire salvage policy.

Guidelines:

- All fire salvage operations must be reviewed and approved by SERM.
- The planning and implementation of salvage operations shall be in accordance with the management operating guidelines defined for normal operating areas.

Actions:	Initiating Agencies / Working Groups	Implementation Date
Complete the development and implementation of a new, ecologically based fire salvage policy that identifies how green timber, within burns, will be identified and when green and burned timber should not harvested.	***SERM***	
Develop a research and monitoring program to identify the impacts of fire salvage operations.	***SERM***	

Concern 37: Forest Inventory

Guidelines:

- Databases and inventories that are built, should be compatible with the forest inventory (e.g. other forest products inventory and inventories of rare and endangered species).

Actions:	Initiating Agencies / Working Groups	Implementation Date
Develop a more detailed ecosystem based forest vegetation inventory, which can provide better information to assure sustainable levels are being allocated and harvested.	***SERM***, ***Weyerhaeuser***, PAMF, ***PANP***, ***LLIB***, ***MLCN***	SERM-Saskatchewan Vegetation Inventory System Initiated 1999 several years to further develop Weyerhaeuser-A new forest inventory initiated in 1999 Model forest area after 2003
Assist in and test the Provincial forest ecosite classification system so that it can be implemented throughout the forested regions of Saskatchewan.	***IRM***, PAMF	PAMF involved in testing for the mid boreal ecosite 1996

Develop an inventory of human land uses and developments in the forest.	***IRM***	Initiated 1998 Update December, 2000
Investigate, develop and test models and tools for predicting growth, biological future states, and cost-effective ecosite mapping.	***IRM***	Ongoing, investigation initiated 1998

4.3 Integrated Resource Management

4.3.1 Concerns and Recommendations:

Concern 1: Game Corridor Preserves

Roads are needed for the exploration and extraction of resources, to allow travel to and from communities, recreation, and other uses. Linear developments are long narrow clearings for industrial or infrastructure needs, such as power transmission lines. While these clearings are not intended to allow public access, they are often used as roads and trails.

One of the impacts of roads and other linear developments on wildlife resources is increased hunting pressure. This can result in lower populations of big game and other wildlife species in the area and may allow access to critical habitat areas. This increased level of hunting pressure may lead to non-sustainable harvesting in the area.

Guidelines:

- Place game corridor reserves on new access developments (any development which allows a road vehicle, or ATV to travel), identified by wildlife biologists as being sensitive until such time as an access management plan for the PAMF area is developed with input from wildlife biologists, and interested people/groups.

Concern 2: Candle Lake Game Preserve

Changing the status of an area, which is protected from hunting by a game preserve, has an affect on the wildlife population. The local residents of the Candle Lake area have an interest in the use and protection of all resources, including wildlife, and are concerned that the Candle Lake Game Preserve was decreased in size.

The Candle Lake Game Preserve was opened (area made smaller) after consultation with land users and local residents. No consensus was reached among all the groups involved.

Guidelines:

- All management actions require the opportunity for meaningful consultation with local residents, lands users, and interested parties and individuals.
- If a game preserve is intended to be non-permanent, identify the estimated time of its existence when it is designated.

Concern 3: Aesthetic Buffers (around resort lakes and recreational rivers)

The benefits received from tourism and recreation in the Prince Albert Model Forest area are very important. These benefits are tied to the aesthetics of the area. Forestry, mining, and other developments can impact the aesthetics of the area. Aesthetics of the area are also very important to the local residents and other users of the area.

Guidelines:

- Conduct visual impact assessments, using GIS technology, of visually prominent topographic features.
- Conduct timber harvesting in aesthetically sensitive areas on the basis of visually sensitive plans.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Identify recreation areas that may require aesthetically sensitive management.	Weyerhaeuser, ***SERM***	Initiate 2000

Concern 4: Buffer Zones (Roads)

The roads of the Prince Albert Model Forest area are traveled regularly each year by tourists, residents, and other land users. Some timber harvesting methods, such as clear-cutting, affect the aesthetic qualities of land along roadways.

Guidelines:

- Harvesting may occur in road buffers.
- Harvesting plans must consider the visual and aesthetic values of areas (including highland and crest line areas) visible from the main road corridors (Hwy. #s 264, 2, 265, and 120).
- Harvesting timber in road buffers should be delayed until the adjacent trees reach 3 meters in height.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Investigate, develop and test modified harvesting practices and ways of incorporating forest landscape design principles to manage aesthetics along roadways.	***Weyerhaeuser***, IRM, SERM	With approval of Weyerhaeuser 20-year Forest Management Plan and implementation of Operating Guidelines-2000
Identify roads needing/not needing special management because of aesthetic values	***SERM***, Weyerhaeuser	Initiate 2000

Concern 5: Buffer Zones (cabins)

A buffer zone of 90 meters has traditionally been applied to logging operations around cabins. Some cabin owners would like to see this forestry buffer increased in size, while others do not mind if it is smaller. Increasing the buffer zone will reduce available timber for the forest industry and reduce the benefits that others receive from the forest.

Guidelines:

- Forestry harvesting plans must consider the aesthetic and visual effects around cottage developments.
- Harvest planning processes must provide opportunities for consultation with all land users, including cabin owners.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Develop a consultation process which allows cabin owners the opportunity for consultation prior to harvesting activities.	***Weyerhaeuser***, SERM	Local Stakeholder Advisory Committee (LSAC) Process initiated 1995

Concern 6: Traditional Resource Use Cabins

On March 25th, 1999, the Supreme Court of Canada upheld the Treaty right to build cabins as part of the Treaty right to hunt (LexUM 1999). This decision was derived from charges laid in 1992, when trees were cut down and a cabin was built within the Meadow Lake Provincial Park. This decision was partially based on ancestral and traditional use of the area.

Guidelines:

- Treaty rights will be respected and upheld by all partners of the Prince Albert Model Forest.

Actions:	Initiating Agencies / Working Groups	Implementation Date
Initiate a process where agencies responsible for land management, First Nations and all impacted users, develop a management plan. The plan should outline the "rules" for First Nations cabins built incidental to the Treaty right. The PAMF Association Inc. may facilitate the discussions between SERM and First Nations in the Prince Albert Model Forest Area.	***SERM***, MLCN, LLIB, PAGC, FSIN	Initiate Discussions 2000

Concern 7: Recreational Cottages

The development of remote recreational cabins within the Prince Albert Model Forest area has raised a number of concerns:

1. more cabins may create additional roads in the forest.
2. cabin owners may claim ownership to the surrounding area, which may cause conflict with other users.
3. increased numbers of remote cabins will decrease the area available to hunt in due to Section 13 of *The Wildlife Act, 1998*, which prohibits hunting within 500 meters of a dwelling (Government of Saskatchewan 2000).
4. greater numbers of buildings, people and roads in the forest will decrease the wilderness value of the area.
5. buffers around cabins will decrease the amount of timber available for sustainable harvest, which will decrease economic benefits from the area.

Guidelines:

- No new recreational remote cabin dispositions will be issued in the planning area.
- Cabin development may take place, but only in areas where communities and local plans (e.g. Resort Village of Candle Lake, Waskesiu Community Plan, Rural Municipality of Lakeland, Rural Municipality of Paddockwood, Montreal Lake Development Study) have identified future cottage development.

Concern 8: Temporary Hunting Shelters

Currently, all structures on Crown land in the Prince Albert Model Forest area (with the exception of hunting cabins built under the Treaty right to hunt and fish) must have a legal permit or lease. Some people have set up structures in the forest without a disposition. Hunting shacks are often one of the main uses, which results in structures being built without a disposition.

Guidelines:

- Take appropriate enforcement action on structures in the forest that do not have a legal disposition.
- Temporary hunting shelters will be allowed from one week before hunting season to one week after hunting season closes.
- Temporary hunting shelters must be posted identifying the owner and contact information (e.g. telephone, address).
- No new access or roads may be created to transport or build temporary hunting shelters.

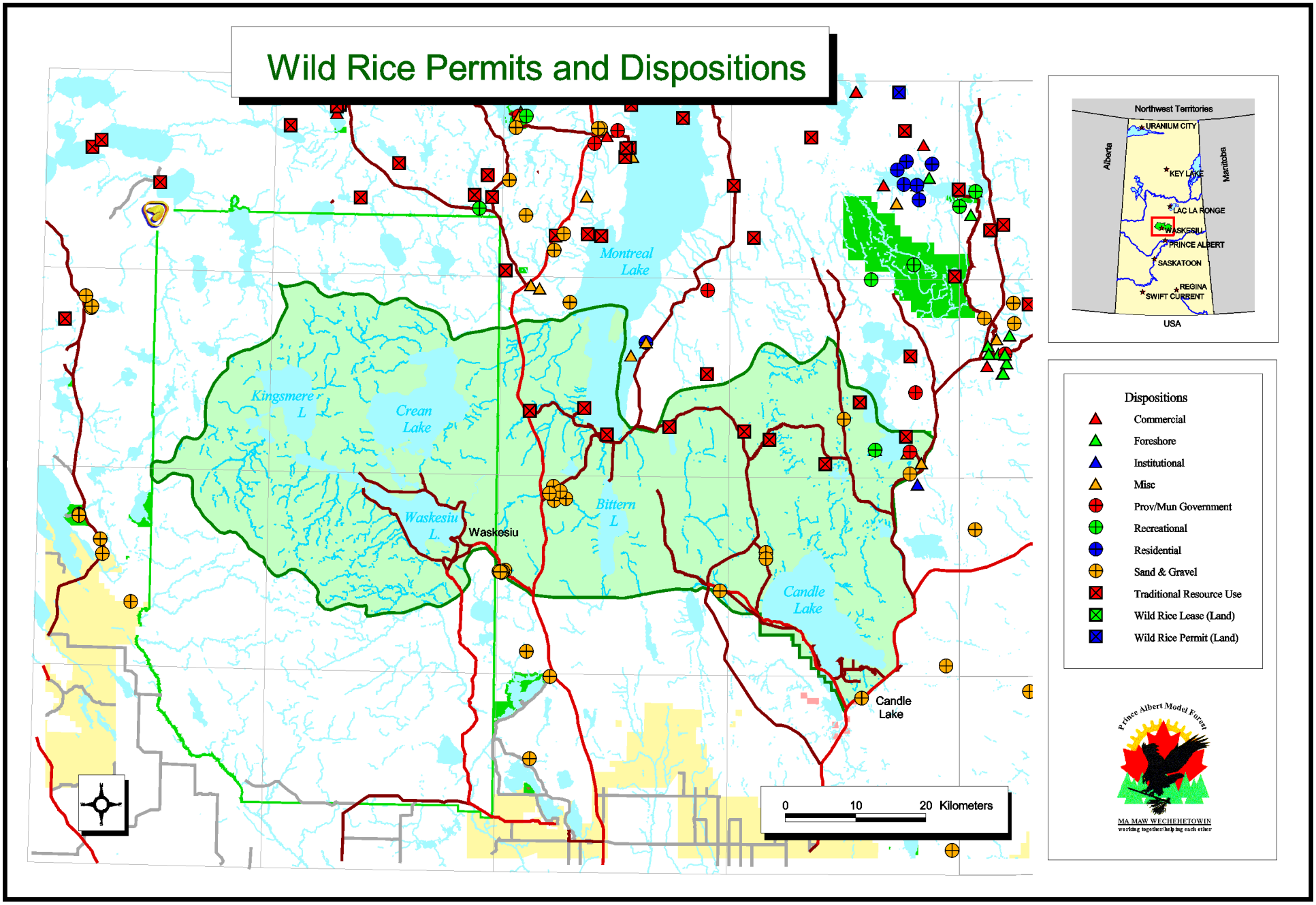

Figure 4-3: Wild Rice Permits and Dispositions (Source: Sustainable Land Management Branch, Saskatchewan Environment and Resource Management)

Concern 9: Development

All developments that occur in the Prince Albert Model Forest area can have a significant impact on the health of the ecosystems. Conflict with other users may occur as a result of development.

Guidelines:

- Future development may occur and should be encouraged in the Prince Albert Model Forest area within the guidelines and management areas set out in this plan, and other plans covering the Prince Albert Model Forest area.
- No further housing, commercial or retail developments should be allowed in the Ecosystems Protection Areas.
- Prior to starting development projects in the area, a preliminary archaeological scan (based on existing information) should be completed. If the preliminary scan reveals evidence of a significant heritage resource the development must be relocated or a strategy for avoiding impacts to the historic/cultural site must be developed and approved.
- All development proposals in the area should require a development plan, (which demonstrates that site conditions are favorable for development, assesses the impact(s) of the development upon the environment, the compatibility with other users/uses, and outlines the methods proposed to avoid or mitigate the environmental effects and conflicts). The development plan should include consultation with surrounding users, interested groups and individuals.
- Future subdivisions or developments will be considered based on impacts on fish and wildlife, capacity of the environment to sustain development, compatibility with other uses, and consultation with other users. Developments of all types must also comply with all development plans which cover the area where development is proposed.
- Avoid development in sensitive or critical areas (e.g. critical fish and wildlife habitat, near endangered species, sensitive erosion areas, culturally significant areas) unless acceptable strategies to mitigate the impact can be developed.
- All developments occurring in a jurisdiction (e.g. provincial crown land, federal crown land, resort village, rural municipality), near another jurisdiction should, consult with the neighboring jurisdictions.
- Limit shoreline development to minimize possible contamination (oil, gasoline, pesticides, and other chemicals).

Actions:	Initiating Agencies / Working Groups	Implementation Date
Assess potential future states of the environment with different levels of development.	***IRM***	

Concern 10: Development along the Major Highway Corridors (e.g. Highway 2)

Guidelines:

- Minimize access points along all major highways in the PAMF area.

Concern 11: Lakeshore Development

Riparian areas are sensitive to development. Development in these areas also affect the aquatic ecosystem.

Guidelines:

- Minimize shoreline developments to reduce the chances of contamination. Only allow developments that need to be located along the shoreline.

Concern 12: Sand and Gravel Quarries

Sand and gravel quarrying is an important benefit for the residents of the area. Sand and gravel is needed for development and the maintenance of roads. First Nations governments have not been treated the same as other governments. Rural Municipalities are exempt from paying Crown dues for gravel used within their jurisdictions. The Saskatchewan Department of Highways and Transportation has a first right of refusal on all new gravel dispositions. Existing controls on sand and gravel quarries do not ensure the maintenance of healthy ecosystems, aesthetics, minimal conflict with other users, and that sites are adequately reclaimed.

Guidelines:

- Provide First Nations with similar opportunities to extract gravel resources as Rural Municipalities and other local governments (i.e. exempt from rents and royalties to the Crown for gravel used within their jurisdictional boundaries).

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Develop new guidelines, for the allocation and development of sand and gravel resources (with involvement of the resource users, First Nations and land management agencies, and other government departments).	***SERM***	

Concern 13: Trails/Locations (hiking, ATV's (including snowmobiles), cross country skiing)

The trails have a number of impacts. Trails increase access and bring with them all impacts associated with increased access. By clearing corridors through the forest for trails, wildlife habitat can become increasingly fragmented and less able to support some types of wildlife. Noise from ATV's (including snowmobiles) disturbs wildlife in the immediate area of ATV use, and for up to 3 kilometers away.

The use of ATV's is a growing activity in the Prince Albert Model Forest area. ATV's travel on trails designed for their use, off trails throughout the area, and on roads and trails not designed for their use. ATV's can affect wildlife, vegetation, soils, and aquatic environments when crossing streams and rivers.

The use of snowmobiles compacts the snow, which:

- reduces small mammal habitat;
- inhibits tunneling;
- reduces the insulating value of the snow cover, allowing lower temperatures to penetrate within the compressed snow, and;
- increases the frost penetration in the ground (Saskatchewan Environment and Resource Management 1997).

The use of trails by different users can result in conflict (e.g. snowmobiling and cross country skiing).

Guidelines:

- New trail developments will require a comprehensive development plan, which includes consulting local jurisdictions, the public and local users, to ensure that conflicts are minimized. The development plan will be approved by the agency responsible for land management in the area where trail development is proposed.
- No new ATV trails will be allowed in the Ecosystems Protection Areas.
- New trail developments should maximize the distance to and avoid sensitive wildlife habitat, fisheries habitat and culturally significant areas.
- Trails should be designed so that road vehicles may not access them.
- When a new or existing trail travels near or through a sensitive area, the area should be posted with signs indicating that travel, off the trail, into these areas is not allowed and state the reasons why.
- New trail developments must use existing access routes (e.g. existing old roads, trails) whenever possible and environmentally desirable.
- Trail developers will be required to integrate their systems to increase efficiency and minimize duplication of service, as well as, improving the quality the users experience.
- Post signs on trail that indicate the allowed uses (e.g. snowmobiling, hiking, cross country skiing)
- Enforce allowed uses on trails to minimize conflicts and provide the user a safe environment.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Provide educational material to trail users (special effort should be made for ATV and snowmobile users as these machines have a greater potential to impact the environment).	***SERM***, ***PANP***	SERM-collect and distribute existing information PANP-Summer, 2001
Create an inventory of existing trail systems to assess the need for future development and to ensure that trail systems are integrated.	SERM, PANP, ***IRM***, Weyerhaeuser	March, 2001

Concern 14: Trespass

All structures built on Crown land in the Prince Albert Model Forest area (with the exception of hunting cabins built under the Treaty right to hunt and fish) must have a legal permit or lease. Some people have set up structures in the forest without a disposition. Structures built on private land require the permission of the land owner.

Guidelines:

- Take appropriate enforcement action to deal with structures in the forest that do not have a legal disposition.
- Work with resource users to indicate the advantages and rationale for obtaining permits.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Develop an educational program, that identifies the advantages of obtaining permits/leases for cabins, and the possible outcomes of unregulated development in the forest.	***SERM***	

Concern 15: Need for Effective Enforcement Programs

The "rules" regarding the use of resources need to be enforced to ensure that the ecosystem remains healthy. Conservation Officers (Provincial-Saskatchewan Environment and Resource Management) and Park Wardens (Federal-Prince Albert National Park) are effective and necessary for the enforcement of environment and resource use.

Guidelines:

- Enforcement of environmental laws, regulations and guidelines is very important to ensuring sustainable resource use. Enforcement people are very important instruments, for ensuring the "rules" are being followed.
- Employ adequate numbers of enforcement personal as resources permit.
- Provide adequate resources to enforcement personal.
- Encourage self regulation and development of auditing programs.

Actions:	Initiating Agencies / Working Groups	Implementation Date
Review the resources provided for law enforcement. The review must consider officer safety, agency mandate, and available resources. The review should also identify areas where resources are needed, and be made available to the public.	***PANP***, ***SERM***	SERM-Ongoing PANP-Law Enforcement Plan completed 1998 reviewed annually
Develop educational programs which emphasize self regulation.	***SERM***, ***PANP***, CAKE	SERM-Initiate 2000
Investigate methods and technology, that increase the effectiveness of environmental/resource conservation enforcement.	***SERM***, ***PANP***	Ongoing

Concern 16: Development of Statements of Biological Future States

Sustainable, ecosystem based management requires that the benefits from resource use are maintained or unimpaired for future generations. Development of tools to predict the possible future states of the land and resources is required.

Actions:	Initiating Agencies / Working Groups	Implementation Date
The PAMF will investigate and/or develop and test the ability to forecast future forest ecosystem conditions (e.g. climate change).	***CFS,*** IRM, SERM, PANP, Weyerhaeuser	

Concern 17: Forced Change from Traditional to Modern Lifestyles (opportunities for maintaining traditions)

Guidelines:

- Give status Indians, and northern Métis, who live a traditional lifestyle, priority in allocation of fish and game over commercial, recreational and other users.
- Include traditional pursuits and consultation with Aboriginal people in all resource management plans.
- Consult with Aboriginal people with respect to resource management matters that could impact them or their rights, and provide all material facts and information. To ensure that policies, programs, agreements or laws do not affect or impair Métis or Treaty rights or status.
- Ensure there are traditional areas available for traditional pursuits.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Document and map Aboriginal traditional areas.	***IRM***, LLIB, MLCN, PAGC, PAMF, SERM, PANP, FSIN	Initiate 2001

Concern 18: Bull Moose Operation Planning Area

This area was set aside by Weyerhaeuser at the request of the Prince Albert Model Forest for testing operational forestry procedures. This exercise was viewed as an excellent opportunity for all participants.

Guidelines:

- Encourage and participate in operational planning projects similar to the Bull Moose Operational Planning Area in the future.

Concern 19: Trapping

Other uses of the forest are sometimes in conflict with trapping. Forestry is the use which most often has an effect on trapping.

Guidelines:

- Resource use and development plans should include consultation with land users (including trappers) in the area.
- Recognize trapping as a land use in management plans.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Develop an inventory of human land uses and developments.	***IRM***, SERM, PANP	Initiated 1998 Update December, 2000

Concern 20: Need to Plan and Manage so that Recreational Activities and Industrial Activities are not in Conflict

Guidelines:

- Resource use and development plans have to include consultation with land users in the area, including recreational users and operators.
- Recognize recreational activities as a land use in all integrated management plans.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Develop an inventory of all human land uses and developments.	SERM, PANP, ***IRM***	Initiated 1998 Update December, 2000

Concern 21: Transportation of Timber

Guidelines:

- Transportation of timber will be done in a manner that complies with Saskatchewan Highways and Transportation guidelines regarding heavy loads.
- Timber transport will be planned for, and take into account, the road transportation network on which timber is hauled, to minimize the impact to the infrastructure.

Concern 22: Planning

To ensure that all uses and resources of the area are managed in the best possible fashion, ecosystem based planning is needed. Planning should include consultation. Plans should be adaptive to allow for change.

Guidelines:

- Resource management must be based on the principles of integrated and ecosystem based resource management, and consider all uses and values of the area.
- PAMF and its partner organizations will encourage and provide assistance and expertise to other partner organizations wishing to update, or not yet having formal plans and planning processes for the lands and resources that they administer.
- Resource management should be adaptive.
- All plans within the PAMF area should be reviewed on a regular basis to allow for change and ensure they are not outdated.

Concern 23: Decision-Making/Shared Jurisdiction

To manage the Prince Albert Model Forest area in an ecosystem based fashion the partners must work together to manage all of the area. Management decisions need to consider all relevant information based on science and traditional knowledge. All uses and values of the land must be acknowledged in the decision-making processes.

Guidelines:

- The PAMF partnership should work together to manage the area in a model, ecosystem based fashion. To do this, all land owners and land management agencies must work cooperatively.

- Land and resource management decisions in the PAMF should include input from the partners, other groups, organizations and individuals, that can contribute. Input that may be gathered for decision-making includes traditional knowledge, science/research-based information, technological information and hardware/software.
- The PAMF will encourage projects/initiatives, which include two or more PAMF partners or groups.

Concern 24: Forestry Practices should Implement the Principles of Sustainable and Integrated Resource Management

The forest resources of the Prince Albert Model Forest area need to be managed in a sustainable fashion to maintain the heath of the ecosystem. A decrease in the health of the ecosystem will negatively affect the benefits received from the area.

Guidelines:

- Forestry activities within the model forest area will be planned, based on the principles of sustainable and integrated resource management, to ensure that benefits of the forest are maintained for future generations.
- Resource management plans in the PAMF area will require consultation with land users, First Nations, Métis, interested groups and individuals as part of integrated and ecosystem based management.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Provide training to staff and harvesting contractors, in the region, on sustainable/ecosystem based management and the operating guidelines in the area.	***Weyerhaeuser***	Ongoing Revised 2000 with new Environmental Management System
Monitor forestry operations and other resource uses to ensure that they are sustainable.	***SERM***, LLI	Ongoing Ecosystem Monitoring Task Force initiated 1999-2000
PAMF will provide information on the sustainable use of forest lands located outside of the model forest area.	SERM, EH, ***CAKE***, CIF, ***PAMF***, Weyerhaeuser	Ongoing

Concern 25: Protection/Respect of Traditional Use Areas

Some areas within the forest have been used for hundreds of years by Aboriginal people for hunting, fishing, gathering, and other traditional uses. These areas are important to the Aboriginal way of life, and culture. Recognition and consideration should be given by all users of the forest to areas which are important traditional use areas.

Guidelines:

- Consult with Aboriginal people in the development of all resource development and land use plans.
- Include traditional uses in all integrated/ecosystem based management plans.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Provide training and development in cultural and heritage resource protection to all appropriate staff.	***Partners***	Weyerhaeuser-Implemented 1999
PAMF will report annually on use of public input in planning and decision-making.	***IRM***, CAKE, ***Partners***	Initiate January, 2002
Develop an inventory of traditional uses and culturally significant sites. The inventory should be compatible with those used by the partner organizations and other organizations outside the partnership.	CAKE, ***IRM***, SERM, Weyerhaeuser, PANP, MLCN, PAGC, LLIB	SERM-Existing inventory (annually acquire updated information) PANP-Culturally significant sites completed March 2000 Traditional Uses 2002
Research, develop and test models which predict culturally significant and traditional use areas.	***IRM***	Completed in Phase 1 initiated at PAMF used by Weyerhaeuser

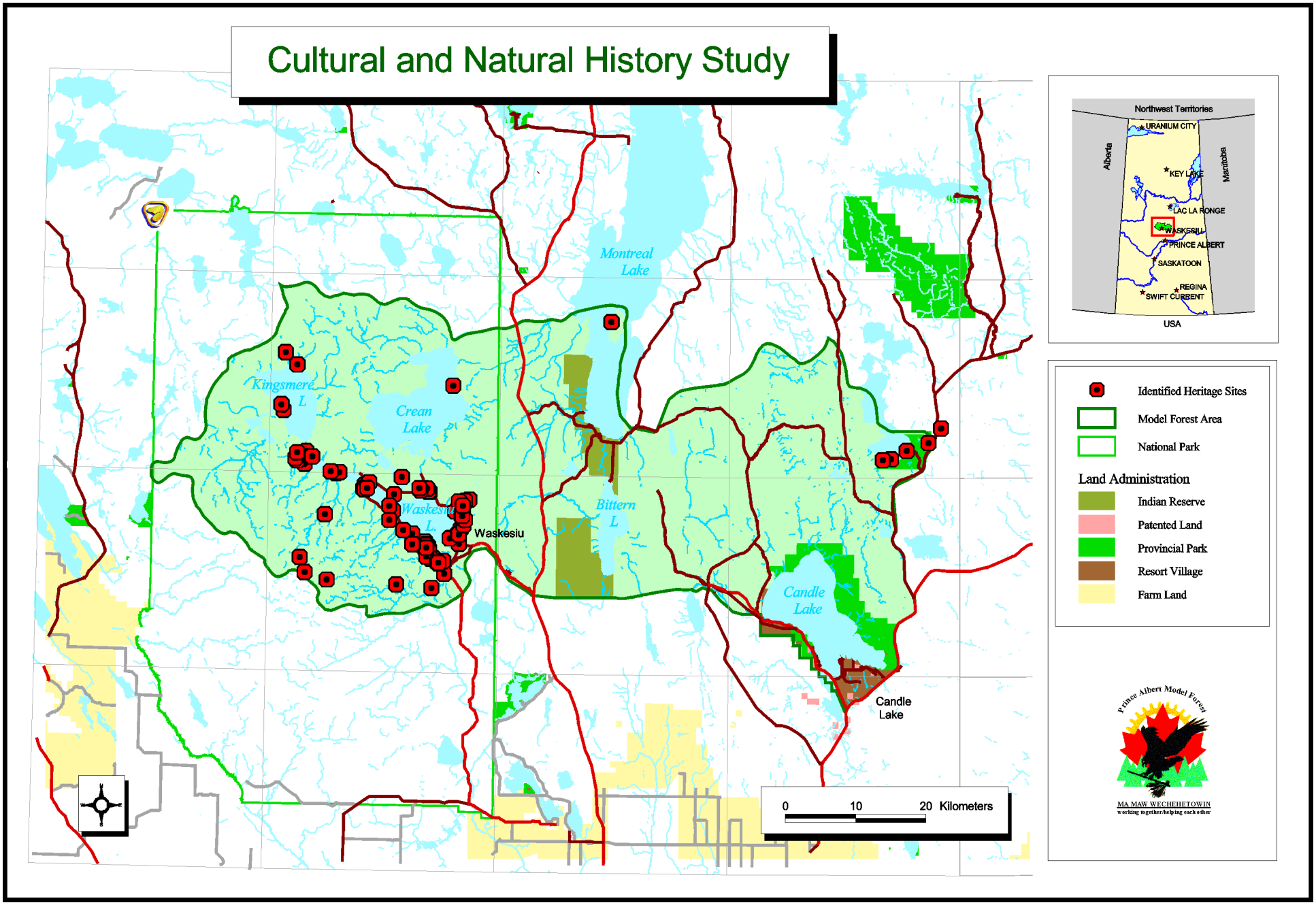

Figure 4-4: Cultural and Natural History Study (Source: Prince Albert Model Forest)

Concern 26: Access to Traditional Activities in Prince Albert National Park

Upon the establishment of Prince Albert National Park, all hunting, trapping and gathering was prohibited (Goode 1995). This affected Aboriginal people who had traditionally used the area. Aboriginal people who traditionally used this land are still affected and have an interest in how the national park is managed. Hunting, trapping and other uses are excluded from the national park area for conservation purposes. These areas are important to health of the regional ecosystem and play a role in the adaptive management process, where they may serve as examples of areas where intensive harvesting of resources has not occurred.

Guidelines:

- In the development of management plans for Prince Albert National Park consult with Aboriginal people and organizations, all other land users, interested groups, and individuals.

Concern 27: Treaty Land Entitlement (TLE)

Many of the users of the Prince Albert Model Forest area are interested in the Treaty Land Entitlement process and how this process may impact present use and allow for new uses in the future.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Develop an educational package/program to inform people of the TLE process (framework).	***FSIN***, SERM	

Concern 28: Disposition and Sale of Crown Land

The disposition and sale of Crown land may have an impact upon Treaty rights. When Crown land is sold and becomes privately owned, First Nations people are presently no longer legally entitled to access this land to pursue traditional activities as part of their Treaty right to hunt and fish unless given permission by the land owner. When Crown land dispositions are issued surrounding users of the land may be impacted. Conflict may occur between the existing uses and new dispositions. Treaty rights may also be impacted by the disposition of previously unoccupied Crown land.

Guidelines:

- Consult with affected land users and jurisdictions on the disposition of Crown land.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Investigate with the Prince Albert Model Forest partners concerns regarding Crown land sales in the model forest area.	***SERM***	

Concern 29: Road Development and Planning (forestry)

Forestry roads impact the environment and other users. The affects of roads include increased access to the area, fragmentation of the forest and direct impacts to the area on which the road is built.

Guidelines:

- Plan major roads 5 to 10 years in advance, all other roads 1 to 5 years ahead.
- Integrate medium-term road planning into 5 year plans.
- New roads and other linear developments should be routed along existing right of ways.
- Consult with the public and affected land users during the road planning process.

Concern 30: Protection of Treaty Rights

Respect of Treaty rights is fundamental in the Prince Albert Model Forest partnership and is a principle of the Prince Albert Model Forest Ecosystem, Based Integrated Resource Management Plan.

Guidelines:

- Treaty Rights will be respected by the PAMF and all of its partners.

4.4 Local Level Indicators

4.4.1 Concerns and Recommendations:

Concern 1: Criteria and Indicators

The Prince Albert Model Forest area must be monitored to ensure sustainability (economic, social/cultural and environmental). Monitoring is also required for adaptive management to be implemented. Uses of the forest (e.g. forestry) also need to be monitored, to better understand the impacts of use.

Guidelines:

- Report on the monitoring results frequently in a format that is available to the partners and the public.
- The monitoring program used in the Prince Albert Model Forest area should be compatible and transferable to other programs and areas.
- Databases used to store information need to be transferable and compatible with those used by the partners and other organizations.
- Use the results of monitoring programs for making adaptive changes to management plans.
- Monitoring program should include indicators, which may detect changes in the ecosystem health caused by climate change and long-range pollution.
- Ensure adequate field programs to sample and maintain the monitoring program.
- PAMF partnership to cooperate in the development of provincial standards for monitoring.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Develop indicators to monitor the economic benefits and economic sustainability of the PAMF area.	***LLI***	

To ensure sustainable use, develop a monitoring program using indicators to monitor the effects of all land and resource uses, including forestry operations, on the ecosystem health in the PAMF area and surrounding region.	***LLI***	Develop list of indicators of sustainable forest management 1999-2000 Sample for baselines 2000-2001
Work with and develop cooperative working relationships with other organizations, individuals and groups to enhance the monitoring of the PAMF area (i.e. volunteer monitoring).	***LLI***, PAMF, Partners	

Concern 2: Dealing with Change (adaptive management)

The Prince Albert Model Forest Ecosystem Based, Integrated Resource Management Plan requires a mechanism for dealing with change. All management plans need to be updated and use the best information available.

Guidelines:

- Use adaptive management (e.g. use information from the ecosystem monitoring program to identify management practices which need to be updated or changed)
- Plans will identify the time frames under which they will be reviewed and adapted.

4.5 Values and Benefits

4.5.1 Concerns and Recommendations:

Concern 1: Access to Resources

Benefits are received from the forest in many ways. Access to resources, by people of the area, and receiving benefits from the direct use of these resources are significant economic benefits in the Prince Albert Model Forest area.

Guidelines:

- Resources should be allocated in a sustainable and fair manner, so that economic benefits are received by local communities and residents.
- Contractors from the area/region should be given equal opportunities to access resources, contracts and other opportunities.

Concern 2: Training and Education Opportunities for Aboriginal people in Resource Management

Aboriginal people who reside in, and around, the Prince Albert Model Forest area have identified the need for training opportunities in forestry. Training will allow residents of the area to benefit from forestry operations.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
In cooperation with First Nations and Métis, investigate present and future professional and technical job needs within the forest industry.	***CAKE***, Partners	Weyerhaeuser-ongoing
Assist in providing, technical and management training programs.	***CAKE***, Partners	Weyerhaeuser-ongoing
Investigate and promote existing training opportunities for Aboriginal people in forestry and other potential areas of employment.	***CAKE***	

Concern 3: Sustainable Economic and Social Benefits

The benefits received from the use of forest resources in the Prince Albert Model Forest area are very important to local residents. Economic and social benefits to local residents and Aboriginal people need to be optimized, while ensuring all uses are sustainable. The creation of long-term benefits (e.g. employment) is important and should be encouraged in a sustainable fashion.

Guidelines:

- Use existing contractors, Aboriginal and northern community contractors whenever possible.
- Economic benefits to the local residents of the PAMF area should be maximized, while ensuring all resource use is sustainable.
- Whenever possible, and economically feasible, joint ventures and business partnerships with local and Aboriginal communities, groups and businesses should be pursued.
- Encourage research, development and testing of value added products and processing, new markets, other forest products, ecotourism, and other opportunities for increased sustainable economic benefits to the area.
- Prince Albert Model Forest and partners will provide support, information and direction to communities and industry to encourage economic development for the benefit of area residents.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Research diversification opportunities in the model forest area (e.g. other than traditional forestry).	***FVB***	

Concern 4: Tourism/Eco-tourism

Tourism is an important use of the Prince Albert Model Forest area. Opportunities for tourism development within the region should be increased. The natural ecosystems and aesthetic qualities of the area should be conserved, in certain areas, to ensure opportunities to continue present tourism operations and allow for the development of new operations.

Guidelines:

- Prince Albert Model Forest partners will include tourism and tourism development interests in the development of integrated land and resource management plans.
- Prince Albert Model Forest partners will pursue cooperative partnerships/working relationships within the partnership, and with other organizations/individuals in the development of sustainable tourism opportunities.
- Ensure that sustainable/integrated forest management occurs in the Prince Albert Model Forest area to protect healthy ecosystems and maintain satisfying outdoor experiences.
- New tourism/recreation developments will require a development plan that assesses the impacts to the environment, how the impacts will be avoided/mitigated and consultation with surrounding users and jurisdictions.
- New tourism operations must be sustainable and environmentally sound.
- Involve and work with existing regional tourism authority.

Actions:	**Initiating Partners / Working Groups**:	**Implementation Date**
Develop, with input from the partners, tourism operators, industry and other interested groups, guidelines to maintain the attractiveness of landscapes used for recreation.	***SERM***	Initiate 2000 Identify areas which are special or have a high potential for tourism
Assist in the analysis of opportunities for tourism (e.g. use a GIS to identify possible places for locating ecotourism activities)	***IRM***, Partners	As Required
Develop indicators of sustainable tourism/recreation and methods of measuring the economic benefits to the area.	***LLI***, Partners	
PAMF partnership will investigate diversification initiatives (including tourism) within the PAMF area.	***FVB***, Partners	

Concern 5: Other Forest Products (e.g. berries, moss, wild rice, mushrooms, and medicines)

Other forest products are being harvested at increasing levels within the boreal forest ecosystem. Very little information is known regarding the impact of this use, sustainable harvest levels, inventory information, and markets.

Guidelines:

- Allocate other forest products on a sustainable basis from biological information.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Develop an enforceable allocation system to ensure that a sustainable harvest level is being attained.	***SERM***	
Develop a permitting system for the PAMF area so that current harvest levels of other forest products is known.	***SERM***	Implemented 1999 with new *Forestry Act* and *Regulations*
Develop an inventory of other forest products. This inventory should be compatible with the provincial forest inventory and other partner databases.	***SERM***	
PAMF and partners investigate, develop and test technology to remotely identify and inventory other forest products.	***IRM***, ***SERM***	
Develop guidelines for sustainable harvest practices of other forest products, with input from users, scientists, Métis and First Nations.	***SERM***	
Conduct research into other forest products, sustainable harvest levels, uses and market development. Involve the PAMF partnership, land users, First Nations, researchers, universities, Métis, and all other interested groups and individuals.	***SERM***, ***FVB***	

Chapter 5: Implementation Strategies

In this chapter, strategies for ongoing plan implementation are set out. The plan must be monitored, reviewed and adapted to ensure that the plan goal is achieved and maintained. This plan, once approved, will be taken by each of the Prince Albert Model Forest partners and implemented, either individually, or through one of the working groups.

5.1 Plan Monitoring, Assessment and Evaluation:

The Prince Albert Model Forest Ecosystem Based, Integrated Resource Management Plan is a "living" document. The plan is based upon the principles of adaptive management. The plan implementation will be monitored, to help ensure that all Guidelines and Actions identified in the plan are carried out.

The health of the Prince Albert Model Forest area will be monitored, allowing the Guidelines and Actions identified in the plan to be tested. By testing the management actions, it is possible to see if they are having the desired results and helping to meet the plan goal.

The adaptive nature of the plan and process will ensure the plan is updated regularly.

Guidelines:

- Plan monitoring, assessment and review will include all Prince Albert Model Forest partners, local communities, Métis, First Nations, land and resource users, and the general public.
- Plan monitoring and evaluation will focus on:
    - Implementation progress of the plan recommendations by the partners;
    - Compliance with the plan recommendations, and;
    - Effectiveness of the plan recommendations in achieving plan objectives.
- The results of the plan monitoring and review will be used to change and adapt the plan and its recommendations.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Assign a person, or group of people, to over-see the implementation and monitoring of the plan.	***IRM***, Partners	2000

Conduct yearly assessments of the plan with continued public input. The findings of the assessments will be used to make modifications to the plan.	***IRM***, Partners	August/September, 2001
In the year 2001, prepare a "State of the Prince Albert Model Forest" report based on the findings of the previous years assessments. Release this report to the public in an open forum.	***IRM***	August/September, 2001
Prepare a major evaluation of the plan in 2001. Use the information gathered to make major revisions to the plan, if needed, to ensure the best management practices are being used to manage the Prince Albert Model Forest area in an ecosystem based manner. Present the results of the evaluation to the public.	***IRM***	August/September, 2001
After 2001, evaluate (major evaluations) the plan every 5 years.	***IRM***, Partners	August/September, 2006

5.2 Public Involvement:

Public involvement is an overriding principle of integrated, ecosystem based management. This requires a cooperative inclusive process. All interested individuals and groups, Métis, First Nations, land and resource users, and the general public should have the opportunity to be involved in identifying and solving problems, conflicts, making decisions and future planning. Opportunities for public input have been available throughout the development of the Prince Albert Model Forest Ecosystem Based, Integrated Resource Management Plan.

The input received during the planning process, identified the need for a public involvement process to continue after the plan is developed. A process is required to provide continued access to information, identify new conflicts and interests and provide the opportunity to be involved in future planning.

Guidelines:

- The Prince Albert Model Forest will provide continued opportunities for public participation in decision-making.
- The public involvement process will include a mechanism to ensure the public will receive a response to their input.
- All Prince Albert Model Forest partners should include opportunities for public involvement in their planning and management processes.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Hold regular public meetings/consultations to provide opportunities to raise concerns, answer questions and present plans.	***IRM***, ***CAKE***, CIF	August, September, 2001 (With the Plan Review)
Hold consultation with individual interests for specific concerns.	***IRM***, ***CAKE***	As Required

5.3 Dispute Resolution:

Mechanisms are needed to effectively deal with conflict when it arises in ecosystem and resource management. Conflict can be managed by:

- preventing conflict from occurring, and;
- by investigating, developing and implementing a conflict resolution process.

Guidelines:

- The Prince Albert Model Forest partners will continue to cooperate with each other and the users of the area, in developing management plans and decision-making, to minimize conflict.
- The Prince Albert Model Forest partners will coordinate decision-making to minimize conflicts.
- Provide continued and enhanced opportunities for public input into the decision-making process.
- Provide adequate information and user education in areas where there is the potential for conflict among users.

- Resolution should begin using a cooperative and collaborative problem solving process involving all affected and interested users.
- Conflict, which cannot be resolved, will be dealt with by the Prince Albert Model Forest Board of Directors and the partner organizations using public input.

Actions:	**Initiating Agencies / Working Groups**	**Implementation Date**
Investigate, develop and test conflict resolution methods.	***IRM***	March 31st, 2000 Gather conflict resolution information and prepare a list of external service providers

Appendix I

Saskatchewan Environment and Resource Management (1995a) describes below, some of the methods of public involvement that may be used in resource management:

Education: Is the use of information and instruction to accomplish the following: to enhance awareness and understanding of natural resource management and environmental protection; to encourage more responsible environmental stewardship, and; to encourage informed decision-making through better understanding of an issue, policy or program. Education as defined here, implies one way communication. Examples of educational activities include seminars, workshops, speakers, educational resource materials, and media awareness campaigns.

Information Exchange: Is the process through which an organization, agency, or government and the public use a variety of communication tools to gain an awareness of issues, policies and programs. The organization, agency, or government considers information received from the public in its decisions, however, the public does not expect to be involved in making decisions. Communication tools include letters, interviews, brochures, media releases, focus groups, open houses, public meetings, and person to person conversations, etc..

Consultation: Is a process of two-way communication between an organization, agency, or government and the public. Consultation strives to obtain public feedback or opinion to be used in a decision-making process. Participants can expect their advice to be considered, however, the organization, agency or government still makes the final decision. Consultation techniques can include: advisory committee/task force; call for briefs/submissions; focus groups; public hearing; workshops.

Partnerships: The term partnership is used in a non-legal sense (i.e. when an organization, agency or government forms a partnership, it is a co-operative or collaborative alliance rather than a legal relationship where liability is assumed). Activities that may occur within partnerships include: ongoing consultation; problem solving; program policy service or product development; and sponsorships or cost-shared programs or products. Partners in a partnership share some level of responsibility, planning and decision-making and also share ownership of the process and product. In addition, resources, expertise, energy, and risks are shared among the partners.

Co-Management: Is short for co-operative management and is the process through which there is increased public involvement in resource management, environmental protection, park management and operations. Co-management is not a private interest, majority rule, autocratic, win/lose process. The process is one in which all those with an interest (e.g. people who are affected by resource management decisions in the area) are involved - where decisions are made by consensus. Treaty rights, land claims, joint projects and partnerships are not co-management. Co-management is not the turning over of an organization's, agency's, or government's authority to a single interest. It is the sharing of responsibility for resource management by all interested parties who make recommendations to the organization, agency or government.

Delegation: Is the formal transfer of all, or parts of, the decision-making, administration and/or implementation of a program to another body, such as another level of government, land users or interest groups, steering committee, council, or authority. Delegation can take many forms. Full delegation is usually a complex structure with its own elected officials and executive staff, responsible for administration and programming. Delegation can also result in a simpler structure, a body that represents land users and makes decisions for the group as a whole.

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Appendix II

Saskatchewan Environment and Resource Management (1995b) has identified the following as some of the areas where research is required to improve ecosystem based management:

Forestry Diversity:

- Definition and measurement of forest diversity.
- Effects of cutting and other disturbances, succession after disturbances and affects on bird, mammal, and plant species communities.
- Differences between fire and logging effects on forest ecosystems.
- Methods for predicting stand and site types likely to contain rare species.
- Natural frequencies and patterns of fire by region and site.
- Role of landscape pattern (e.g. disturbance size and distribution, fragmentation by roads, connection by uncut corridors) in maintenance of disturbance-sensitive species.
- Use of riparian leave strips by terrestrial animals and plants.
- Management techniques for protected areas.
- Lesser-known components of biodiversity, such as non-vascular plants, fungi and invertebrates; their relationships with habitat and disturbance and management requirements for their conservation.

Soils and Nutrient Cycling:

- Baseline information on soil processes and nutrient cycling in natural stands with which managed stands can be compared.
- Effects of changes in soils and nutrient cycling on forest productivity.
- Amounts of soil compaction resulting from logging on various ecosites; results should indicate areas which require winter logging or specialized equipment.
- Amounts of soil erosion caused by clearcutting in relation to slope steepness and other site variables; recommended practices for protection of erodable sites in cutting plans.
- Effects of logging on thin soils over bedrock.
- Effects of silvicultural practices on soils.

Land/Water Processes:

- Baseline information on hydrological processes in forested regions of Saskatchewan.
- Effects of vegetation cover on groundwater.
- Hydrological effects of timber harvesting and road building.
- Interactions of timber harvesting and roads with aquatic ecosystems.
- Role and management of riparian zones.
- Effects of different timber harvesting methods in riparian areas and recommendations on the methods (if any) to be used based on the site.

- Effects of other uses (e.g. cottage development) on water quality.
- Use of watershed boundaries as ecological boundaries.
- Effects of water control structures within Saskatchewan's forested regions.

Pollution and Climate Change:

- Forest health in the vicinity of potential point sources of pollution, such as pulp mills and mine refineries.
- Using indicators such as lichens to measure pollution.
- Detection of climate change.
- Potential effects of climate change on Saskatchewan's forests.
- Effects of boreal forest growth, harvesting and product sinks on the carbon cycle.
- Methods of reducing carbon emissions.
- Potential adaption of forest resource management to climate change.
- Experimental plantations of tree species offering potential for adaption to climate change.

Depletion and Renewal:

- Forest Inventory Technology: remote sensing and interpretation, GIS (including automated cartography), sampling design and methodology.
- Growth and yield of managed and unmanaged stands.
- Methods of calculating allowable harvests of timber and non-timber resources.
- Methods of scheduling timber harvesting.
- Methods of mapping eco-sites.
- Alternatives to clearcutting for Saskatchewan forest types.
- Harvesting and silvicultural techniques with low impact on sensitive sites, such as riparian areas.
- Improvements in reforestation techniques for Saskatchewan sites.
- Genetic improvement of tree seedlings.
- Improvements of forest nursery practices.
- Use of controlled grazing for vegetation control in plantations.
- Detection and control of insects and diseases affecting Saskatchewan forests.
- Environmental impacts of insect and disease control.

Fire Management:

- Effects of varying fire intensity and soil disturbance on vegetation response.
- Comparison of effects of stand replacement fires with those of clearcutting.
- Decision support systems and fire growth models.
- Potential effects of global warming on the fire season.
- Contributions to global warming of carbon released by Saskatchewan forest fires.
- Long-term weather forecasting.
- Initial attack effectiveness studies.

- Improved fuel modeling.
- Uses of prescribed burning in silviculture.
- Effects of fire retardants on ecosystems.

Roads/Linear Developments:

- Optimization techniques for the design of road networks, including cost/benefit analysis.
- Techniques for restoring disturbed sites.
- Effect of roads and other linear development on wildlife and other components of the ecosystem.

Opportunities for Sustainable Use:

- Sustainable harvesting techniques and intensities of harvest for mushrooms, wild berries, mosses, lichens, and other non-timber resources.
- New products from Saskatchewan forests.
- Opportunities and constraints for ecotourism and heritage-based tourism in the forest regions, and feasibility of specific potential developments.

Integrated/Ecosystem Planning:

- Structures and processes for Integrated/Ecosystem Planning and decision-making.
- Analysis of the total value of all resources of the forest, including commercial and non-commercial use benefits as well as, option and existence benefits.
- Social aspects of Integrated/Ecosystem planning: interactions between humans and the forest ecosystem.
- Historical, archeological and cultural research to ensure sustainable use and protection.
- Traditional Aboriginal knowledge, from both written and oral sources.
- Effects of recreational use on the forest, and recommendations on where recreational use should be allowed, how much, and what type (e.g. trails, cabins etc.).

The above list illustrates the need resource managers have to more fully understand all of the components of the forest and the effects human uses have upon them.

Appendix III

Riparian Zone Classification Standard

The information contained in Appendix III was provided by Weyerhaeuser, and was modified from Volume IV: The Water (Golder Associates Ltd. 1997) of the Environmental Impact Statement on Weyerhaeuser Saskatchewan's Twenty-Year Forest Management Plan for the Prince Albert Model Forest Management Agreement area.

1.0 Delineation Guidelines

1.1 Basis for Delineation

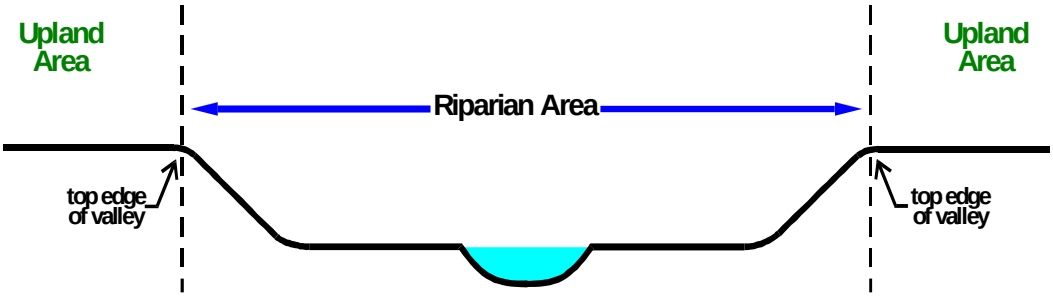
Forest land may be further designated as being in a Riparian Zone. The term riparian area refers to the area where water and land meet. It is the transitional area between a waterway and adjacent upland forest or wetlands. This "interface" represents a terrestrial ecosystem that is unique in the boreal forest from geomorphologic, soil, plant, and animal perspectives.

Riparian areas are typically associated with streams, or rivers, lakes and wetlands. In the past, riparian zones along streams and rivers have been of particular interest because of fisheries concerns regarding shading and sediment input. The terrestrial areas adjacent to non-flowing water bodies often exhibit characteristics similar to riparian areas adjacent to streams and, therefore, are included. However, terrestrial areas adjacent to ephemeral water are not considered riparian areas for the purposes of this inventory.

The connection between water, aspect and geomorphology is unclear. Riparian areas often, but not always, present a unique combination of water, slope, and aspect. Additionally, riparian areas can possess soils that are more productive than soils from the surrounding upland, due to increased moisture and nutrient regimes. This unique combination of physiographic characteristics is found in a relatively narrow area (e.g., the mean width of this unique zone was approximately 100 m for streams studied for the EIA) around water bodies. These physiographic characteristics provide the substrate for a plant community that is distinct when compared to the surrounding upland vegetation. This distinct plant community, in turn, provides habitat for a unique wildlife community.

For WFVI, the riparian zone widths are related to the physiographic characteristics of a given water body. For example, as shown in Figure D1, along streams where there is a defined valley, the top edge of the valley marks the limit of the riparian area.

Figure D1: Riparian Zone Width on Streams with Defined Valley



1.2 Riparian Zone Classes

As illustrated in Table D2, eight classes of riparian zone are allowed in WFVI, of which six may be assigned through the interpretation process, while the other two would be assigned through GIS overlay analyses.

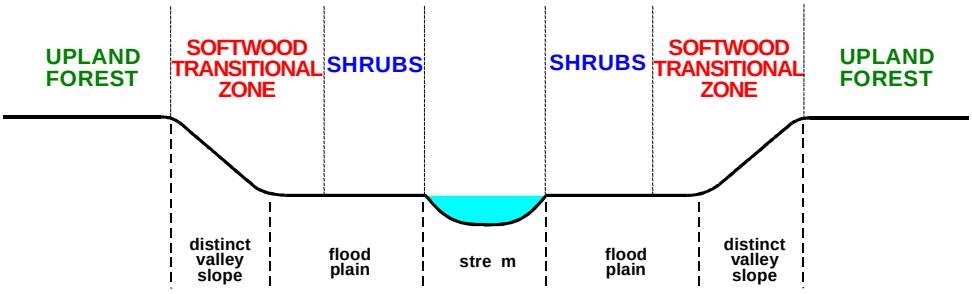
Table D2: Riparian Zone

Code	Class	Method Assigned	Description
R1	R1	Interpretation	Distinct Moist Stream Valley Riparian Zone
R2	R2	Interpretation	Distinct Dry Stream Valley Riparian Zone
R3	R3	Interpretation	Indistinct Stream Valley with Shrub/Herb Corridor Riparian Zone
R4	R4	GIS Analyses	Indistinct Stream Valley with no Shrub/Herb Corridor Riparian Zone
R5	R5	Interpretation	Distinct Moist Lake Valley Riparian Zone
R6	R6	Interpretation	Distinct Dry Lake Valley Riparian Zone
R7	R7	Interpretation	Indistinct Lake Valley with Shrub/Herb Corridor Riparian Zone
R8	R8	GIS Analyses	Indistinct Lake Valley with no Shrub/Herb Corridor Riparian Zone

1.2.1 Distinct Moist Valley Bottom Riparian Zone (Stream - R1, Lake R5)

Riparian Zones adjacent to streams can be defined according to the characteristics of the stream valley. Figure D3 illustrates a typical stream valley cross section for a distinct moist valley bottom. In this case the riparian zone lies between and includes the softwood transitional zone.

Figure D3: Cross Section Diagram of a Riparian Zone in a Distinct Valley with Moist Valley Bottom

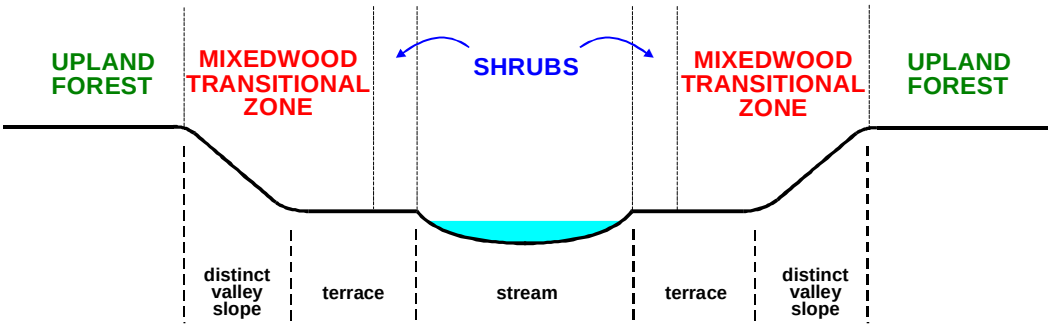


The vegetation of these riparian areas often consists of Graminoids (grasses) at streamside leading to an area of shrub growth. The dominant canopy cover present characterizes vegetation "areas" in this and the following riparian types. Since the shrub zone usually is moist, it promotes the growth of species such as willow and alder. At some point close to the base of the valley slope, tree species become the dominant upper canopy cover. A transition zone of forest that begins with species adapted to moist soil conditions (primarily softwoods such as black spruce or tamarack) often exists near the base of the slope. On the slope itself, as the soil conditions become slightly drier, tree species such as white spruce, black spruce, aspen, and jack pine may be present, either in single-species associations or as part of a band of mixedwood. White birch and balsam fir also may be present as part of this mixedwood band of forest.

1.2.2 Distinct Dry Valley Bottom Riparian Zone (Stream - R2, Lake R6)

Figure D4 illustrates a typical stream valley cross section for a distinct dry valley bottom. In this case the riparian zone lies between and includes the mixedwood transitional zone.

Figure D4: Cross Section Diagram of a Riparian Zone in a Distinct Valley with Dry Valley Bottom



The cross-sectional profiles of dry valley bottom riparian zones often are similar to moist valley bottom riparian zones except that the valley bottom (referred to as a terrace) of this type of stream is drier and may support forest growth adjacent to the stream edge.

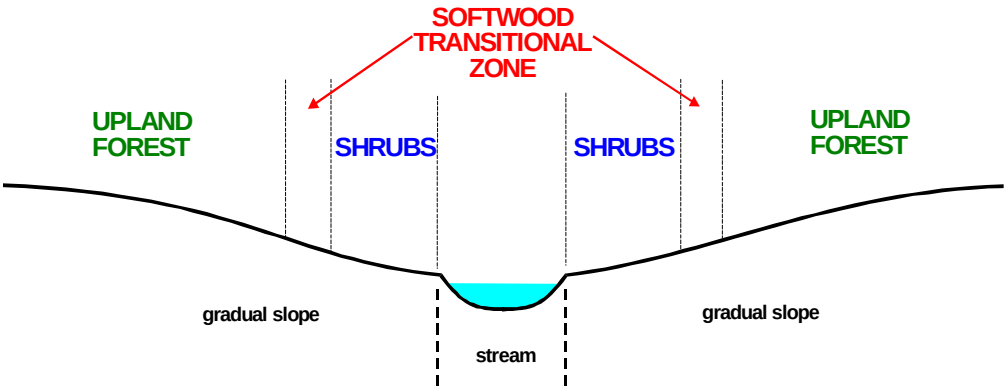
Consequently, these streams either have no shrub or graminoid zone, or they possess a very narrow strip of shrubs and/or Graminoids along the edge of the stream. If a narrow shrub zone exists, it accounts for a small percentage of the valley bottom. A zone of mixedwood forest extends from the stream edge to the upland. The zone of mixedwood often is comprised of large trees, such as white spruce. They are often large in the river valley because of a combination of greater soil productivity and fire protection afforded by the water. The drier valley bottom supports different shrub species, such as red-osier dogwood, than the previous stream type.

1.2.3 Indistinct Stream Valley with Shrubs Riparian Zones

Figure D5, page D4, illustrates a typical stream valley cross section for a riparian zone with indistinct stream valley and shrubs. In this case the riparian zone lies between and includes the transitional zone.

These streams do not possess a distinct valley because the slope leading to the upland increases gradually from the edge of the stream. The width of the floodplain is highly variable. The floodplain may be several hundred metres wide, often characterized by an equally broad band of shrubs such as bog birch, willow, and alder. Black spruce and tamarack will be found in slightly drier conditions towards the upland. In some cases, these streams have a narrow floodplain and associated shrub zone with the upland forest beginning relatively close (<50 m) to the edge of the stream. The lack of a distinct slope and valley tends to preclude these streams from having a mixedwood zone adjacent to the streams. Instead, even-aged, single tree species associations are usually found in conjunction with these streams.

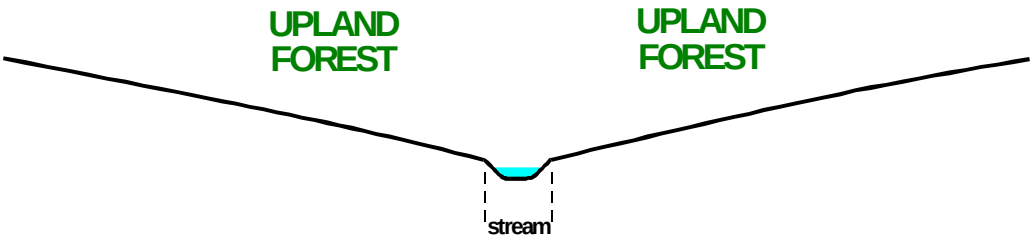
Figure D5: Cross Section Diagram of a Riparian Zone in an Indistinct Valley with Shrubs (Stream - R3, Lake R6)



1.2.4 Indistinct Stream Valley with No Shrubs Riparian Zone

Figure D6 illustrates a typical stream valley cross section with indistinct stream valley and no shrubs. In this case, physical features do not readily distinguish the riparian zone. ***Defining a riparian zone in these cases is out of scope of the WFVI***. Riparian zones, which may be designated for this situation, would be generated using buffering routines in the GIS database.

Figure D6: Cross Section Diagram of a Riparian Zone in an Indistinct Valley with No Shrubs (Stream - R4, Lake R8)



Glossary

Adaptive Management	Management practices that are monitored, evaluated and adjusted (as required), based on current knowledge and understanding.
Benchmark	Something that serves as a standard by which others may be measured.
Biological Diversity (Biodiversity)	The variety of different forms of life, including variety of genes, species, and ecosystems.
Clear Cutting	A method of harvesting timber in which all the trees are removed in a certain area of a forest, providing full sunlight.
Crown Land	Land under the tenure of the provincial or federal government.
Development	The carrying out of any building, engineering, mining or other operations in, on or over land/water or the making of any material change in the use or intensity of use of any building or land.
Eco-tourism/Eco-outfitting	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.
Ecological Integrity	The structure and function of the ecosystem are unimpaired by human caused stresses, the native species are present at viable population levels.

Ecosystem	an area of land or water, considered in relation to all of its components (soil, water, air, plants, animals, microbes) and the interactions among them. A forest stand is an ecosystem, if viewed as an interacting system of all these components, and not just as a group of trees.
Ecosystem Health	A natural balance of physical, chemical, and biological components that make up an ecosystem.
Exotic	Described a species not native to a given area, introduced from elsewhere.
Forest Management Agreement (FMA)	Agreement between the Province of Saskatchewan and a forest company to give the company long-term access to timber as well as management responsibilities on a specific area of land.
Geographic Information Systems (GIS)	A computer system used to store and analyze spatially referenced information.
Mitigation	To reduce the severity of or eliminate negative impacts resulting from a particular activity.
Planting	Establishing a forest stand by setting out seedlings, transplants, or cuttings.
Productive Forest Land	Land capable of producing merchantable stands of timber within a 'reasonable length of time'.
Riparian Area	An areas of vegetation found between aquatic (rivers, creeks, lakes, sloughs, potholes, hay meadows and springs) and terrestrial (upland) ecosystems.

Silviculture	The theory and practice of controlling the establishment, composition, growth, and quality of forest stands to achieve management objectives.
Site Preparation	Treatment (mechanical, chemical, fire or hand) the modifies the site to provide favorable conditions for natural or artificial regeneration).
Stand	A patch of forest which is fairly uniform in species composition and distribution of tree heights.
Sustainable Development	A general approach to combining economic development with environmental protection that ensures the ecological integrity of ecosystems.
Sustainable Management	Management to maintain and enhance the long-term ecological integrity of forest ecosystems, while providing economic, social, cultural and spiritual opportunities for the benefit of present and future generations.

(Source: Saskatchewan Environment and Resource Management 1998)

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