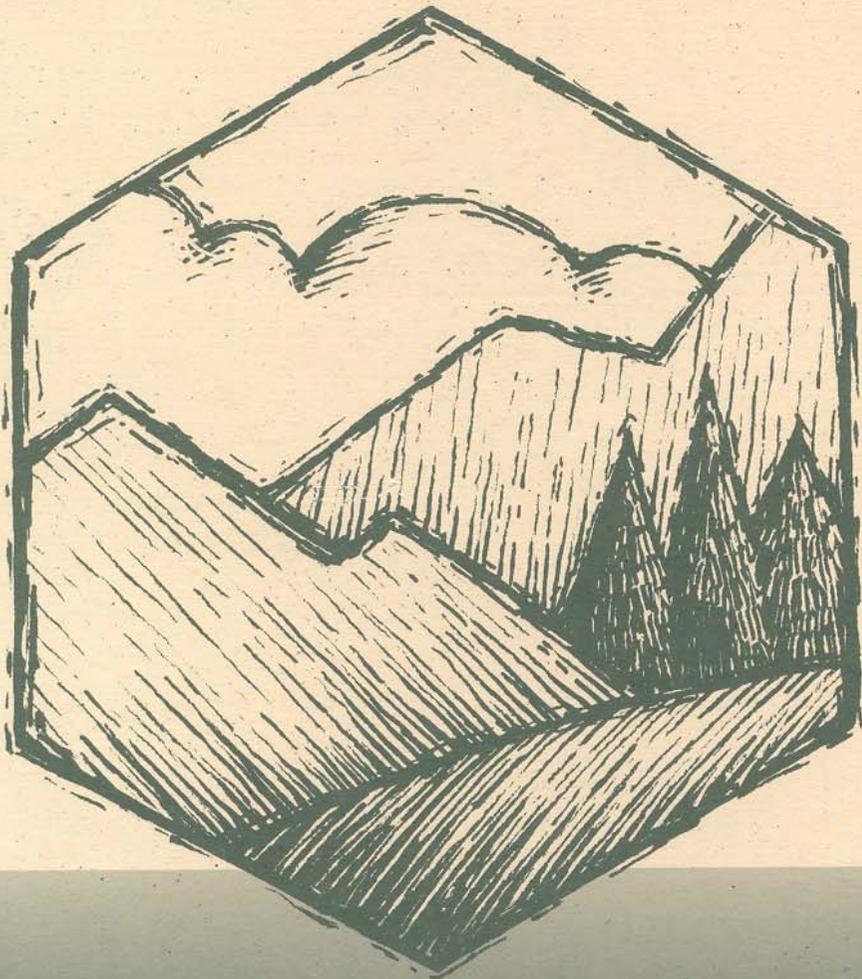


PLATEAU MOUNTAIN

ECOLOGICAL RESERVE

Management Plan



**PLATEAU MOUNTAIN
ECOLOGICAL RESERVE
MANAGEMENT PLAN**

January 2000

ALBERTA ENVIRONMENT

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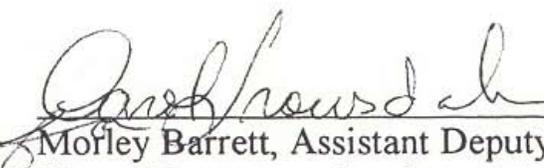
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1.0 SCOPE OF THE PLAN

The Plateau Mountain Ecological Reserve Management Plan provides the overall direction for the protection, management and operation of the reserve. It translates the provisions of the Wilderness Areas, Ecological Reserves and Natural Areas Act into specific guidelines that are consistent with the protection of ecological values of the reserve. The plan is a commitment by all involved agencies to the efficient and effective implementation of the management guidelines. More specifically the plan:

- assesses the biophysical resources and ecological values of the site
- identifies information gaps and scientific research needs
- reviews existing land uses
- identifies management issues
- develops management strategies to address identified issues
- establishes objectives for protection, heritage appreciation, outdoor recreation use and tourism promotion of the reserve
- develops management guidelines and strategies to fulfill these objectives
- outlines monitoring strategies to evaluate the effectiveness of management of the reserve
- sets the stage for preparation of annual capital and operating budgets and the administrative support required to implement the plan

2.0 SYSTEMS CONTEXT

2.1 Ecological Reserves in Alberta

2.1.1 Classification of Protected Areas

An international authority, the International Union for the Conservation of Nature and Natural Resources (IUCN), has recognized the need to provide a definitive list of protected area categories that can be used worldwide. IUCN and its Commission on National Parks and Protected Areas has developed ten categories of protected lands necessary to manage the wildland resources of any nation. These categories range from “scientific reserves” to “world heritage sites.” IUCN has also established three criteria which govern whether or not a protected area should be included in their list. One of these criterion is size. According to this criterion, only protected areas over 1,000 hectares (3.86 square miles) will be included.

Based on the IUCN classification scheme and their inclusion criteria, several of Alberta’s ecological reserves would fall under the “scientific reserve/strict nature reserve” category.

The ten IUCN categories are generally arranged in order of increasing human intervention. This approach aims to discourage the narrow view that protected areas are single purpose areas. Instead, it promotes the broader concept of varying degrees of conservation and use. No single category is more important than another. Each offers a different level and focus for protection which is a reflection of the differing conservation values associated with the site.

Alberta is faced with the challenge of reconciling recreation and preservation needs, as well as providing educational opportunities and meeting certain tourism demands. As part of the framework to address this challenge four broad program objectives have been articulated for the overall conservation-outdoor recreation system in the province. These are:

Protection: To preserve and protect in perpetuity a system of representative, special and outstanding natural landscapes and features as well as landscape-related prehistoric, historic and cultural resources of Alberta

Outdoor Recreation: To provide a variety of intensive and dispersed outdoor recreation opportunities and related facilities and services.

Heritage Appreciation: To provide opportunities to explore, understand and appreciate the natural, historical and cultural heritage of Alberta, and to enhance public awareness of our natural environment and our relationship to and dependence on it.

Tourism: To encourage residents and visitors to discover and enjoy the natural, historical and cultural resources of the province through a variety of recreation opportunities, facilities and accommodation services.

Protected areas in Alberta can be grouped into a number of classes depending on how they contribute towards the four systems objectives of protection, outdoor recreation, heritage appreciation and tourism. Based on the capability of the resources of an area to sustain use and on the sensitivity and significance of the species and ecosystems it protects, each individual site contributes to the four objectives in varying degrees.

Such a classification results in a spectrum of protected areas. These range from those that are highly protected, thus strongly contributing to the protection objective to those whose resources are less stringently protected and where outdoor recreation and tourism play a dominant role. Ecological reserves are considered to be the most highly protected class in Alberta and are, therefore, at the conservation end of the spectrum of protected areas in Alberta.

2.1.2 Systems Framework for Ecological Reserves

Within Alberta, physical landscapes and biological features tend to be regionally oriented, thereby providing an opportunity to divide the province into different units on the basis of ecological diversity. This can be described within a hierarchical framework. This framework has been in place since 1972 and was updated in 1992.

At the broadest level, there are six regions - Grassland, Parkland, Foothills, Boreal Forest, Rocky Mountain and Canadian Shield - each based on distinctive landscape patterns of vegetation, soils, landforms and, to a limited extent, wildlife. Each region is divided into sub-regions based on recurring landscape patterns relative to other parts of the same natural region. There are 20 sub-regions in the province. Twenty level I natural history themes have been identified, grouped into five theme groups. By cross referencing, 167 level I natural history themes have been identified

in the regions and sub-regions. These can be further broken down into level II and level III themes to give finer levels of resolution.

Alberta's network of protected areas is based on the ecological diversity of the province as described by the natural regions framework and the natural history themes. This systematic approach will guide protected area selection in a rational manner. To guide selection of sites and to monitor progress toward achieving the four broad system objectives, reasonable targets need to be established. The actual area of each level I theme can be determined and adequate representation of that theme can be calculated.

Level I theme calculations can be used as a yardstick to measure progress and for comparing sites under consideration for achieving level I targets. Theme calculations are easily kept up to date as sites are added.

The goal for the ecological reserves program is to protect, along with other similar designations, a system of representative and special landscapes and features, which encompass the full spectrum of the environmental diversity of Alberta. Two sub-classes of designation are used. These are Representative Ecological Reserves which contain examples of self-sustaining ecosystem types of a particular sub-region, and Special Ecological Reserves which contain unique or exceptional biological or geographical features or the opportunity to study the recovery of an ecosystem modified by man.

2.1.3 Legislative Framework

Ecological Reserves are an integral part of Alberta's overall conservation-outdoor recreation system. Established pursuant to the Wilderness Areas, Ecological Reserves and Natural Areas Act (1980), the Ecological Reserves Program is an interdepartmental endeavor.

Overall program coordination and legislative responsibility rests with the Minister of Environment. On-site management of individual reserves is assigned to the most appropriate field agency depending upon the reserve's proximity to field operations and the availability of local management expertise. In the Green Area, the lead management agency is typically Land and Forest Service; in the White Area, Public Lands Division is the lead agency. For reserves located in Special Areas, the Special Areas Board will play a major role in managing the site. In some situations, the management agency could be the Natural Resources Service - Parks, the Historical Resources Division of Alberta Culture and Multiculturalism or another agency as appropriate.

Under Section 3.1(1) of the Wilderness Areas, Ecological Reserves and Natural Areas Act, public land may be designated as an ecological reserve to preserve it for ecological purposes. Ecological reserves may include lands which:

- (a) are suitable for scientific research associated with the study of natural ecosystems,
- (b) are a representative example of a natural ecosystem in Alberta,
- (c) serve as an example of an ecosystem that has been modified by man and that offers an opportunity to study the recovery of the ecosystem from that modification,

- (d) contain rare or endangered native plants or animals that should be preserved,
- or
- (e) contain unique or rare examples of natural biological or physical features.

Under Section 5 of the Act, programs may be carried out with the approval of the Minister,

- (a) for the management and preservation of the animal and plant life and the environment of the ecological reserve,
- (b) for environmental research that does not involve any physical disturbance of the ecological reserve,
- (c) for the furtherance of public education and interpretation, and
- (d) generally, for the preservation and protection of the ecological reserve.

To further protect ecological reserves the WAERNA Act makes the provision for controlled buffer zones. Strip mines, quarrying, dams, diversions and other water resource undertakings are prohibited in controlled buffer zones.

2.1.4 The Role of Ecological Reserves

To more clearly articulate the role of ecological reserves in the overall protection/outdoor recreation system, ecological reserves are defined as “**areas selected as representative or special natural landscapes and features of the province, which are protected as examples of functioning ecosystems, as gene pools for research, and for education and heritage appreciation purposes.**” This overall purpose statement is further refined in terms of the four broad program objectives of Protection, Heritage Appreciation, Outdoor Recreation and Tourism. Specific to ecological reserves the objectives are defined as follows:

Protection: To protect a system of provincially significant representative and special natural ecosystems and features to ensure the perpetuation of genetic materials and natural ecological units.

Heritage Appreciation: To provide opportunities for unstructured individual exploration and appreciation of the natural resource heritage of Alberta to the extent that is compatible with protection of natural resource features. To provide opportunities for exploration and appreciation of natural environments through formal interpretation and education programs in certain ecological reserves to the extent that is compatible with the protection of natural resource features.

Outdoor Recreation: To provide opportunities for non-consumptive, nature-oriented recreational use where compatible with the protection objective.

Tourism: To provide ecologically-based opportunities for visitors where compatible with the protection objective.

The most important objective of ecological reserves is **protection**. Ecological reserves are legally established areas that protect our natural heritage, conserve biological resources and promote in-situ conservation of species and ecosystems over the long term.

Ecological reserves allow ecosystems to maintain their natural processes in a relatively undisturbed state; they **protect** and **maintain** essential life support systems.

Scientific research and the associated generation and dissemination of ecological knowledge is a primary use of ecological reserves. Reserves provide secure sites for both short and long term monitoring of environmental changes. They provide undisturbed sites for the study of the structure, function and changes of the natural environment. Increased knowledge and understanding of natural ecosystems will provide solutions to many practical resource management problems.

Ecological reserves also serve as **benchmarks** or ecological baseline control areas against which to measure the effectiveness of resource management practices throughout the province.

The maintenance of **genetic resources** for the benefit of present and future generations is an important component of the protection objective. Ecological reserves assist in ensuring the perpetuation of gene pools as an invaluable source of new genetic material. Unlike zoos, gene banks, botanic gardens and other off-site protection mechanisms, ecological reserves enable genetic resources to continue to evolve subject to naturally occurring environmental conditions. Genetic materials are of increasing scientific value for the development of new pharmaceutical, for new varieties and strains of agricultural and forestry products for pest control and other products upon which the worlds increasing population depend.

Ecological reserves contribute to **heritage appreciation**. Reserves provide environmental education opportunities for specialists, researchers, resource managers and the general public. They contribute to a heightened awareness and understanding of environmental matters. On-site visitation can contribute to the extent that use is compatible with the protection objective of the specific reserve. In the broader sense, ecological reserves contribute through scientific research, demonstration projects and the dissemination of information via the formal and informal education system through publications and the media.

Ecological reserves should make a significant contribution to improved **environmental knowledge** and understanding by Albertans. In this way ecological reserves will contribute to the achievement of provincial environmental quality objectives, better land use planning, more effective resource management and better over all environmental decisions.

Ecological reserves may provide limited opportunities for **outdoor recreation** and **environmentally oriented tourism** to the extent that they are compatible with the protection objective. As undisturbed natural landscapes they are an expression of beauty, inspiration and spiritual value. As sanctuaries they maintain the awe-inspiring myriad array of plants and animals in Alberta. They are an expression of our desire and need to respect the rights of other life forms to exist.

It is acknowledged that outdoor recreation, heritage appreciation and tourism are not priority objectives for ecological reserves. It is further acknowledged, however, that in many cases ecological reserves are extremely attractive for these purposes. Subsequent sections of this plan refine the management parameters necessary to ensure that outdoor recreation, heritage appreciation and tourism uses are compatible with the overall protection objective.

2.2 The Role of Plateau Mountain Ecological Reserve

2.2.1 *Location and Significance*

Plateau Mountain Ecological Reserve is located in the Livingstone Range of the Rocky Mountain Region in Kananaskis Country. The Rocky Mountain Region is the result of a major geological uplift along the western part of Alberta. It is the most rugged of all the Natural Regions in the province with elevations ranging from 2,100 metres to 3,700 metres with valley bottoms ranging from 1,200 to 1,500 metres in elevation.

The Rocky Mountain Region is composed of three major sub-regions - Montane, Sub-alpine and Alpine which are the result of macro and micro-climate variations caused by the differences in elevation. Two of these, the Alpine and Sub-alpine, are represented in the Plateau Mountain Ecological Reserve. All lands above treeline fall within the Alpine Sub-region which experiences the most severe climate and shortest growing season in Alberta. Low mean temperatures and poor soil development contribute to extensive rock outcroppings interspersed with highly variable aggregations of lichens, grasses, forbs and shrub species. The Sub-alpine Sub-region is located below the Alpine and consists primarily of lodgepole pine and spruce-fir forests within this reserve.

The flat plateau and cold climatic conditions of Plateau Mountain have resulted in landscape features more characteristic of Arctic areas. Rare, uncommon or disjunct populations of plants and animals greatly increase the scientific value of the area.

The 2,323 hectare Plateau Mountain Ecological Reserve was designated on December 12, 1991, to represent and protect the unique combination of alpine and sub-alpine natural features found on the mountain. These include rare periglacial landforms or “patterned ground” features, cave systems (particularly the ice cave), lichen, kobresia and other alpine plant communities and rare vascular plant species. In addition, the reserve protects a representative example of whitebark pine forest, sub-alpine spruce-fir forest, talus slopes and provides important habitat for a number of wildlife species including rocky mountain bighorn sheep, hoary marmot, white-tailed ptarmigan and water pipit.

3.0 OVERVIEW

3.1 Location and Regional Setting

The Plateau Mountain Ecological Reserve includes the land of the former Plateau Mountain Natural Area and is located 80 kilometres southwest of Calgary (See Map No. 1.). The reserve

includes the headwaters of Plateau Creek, Salter Creek, Pekisko Creek and tributaries of Wilkinson Creek, Dry Creek and Livingstone River. It also contains a small, unnamed lake on its eastern boundary.

3.2 Legal Status (Order-in-Council) and Area

The 2,323 hectare (5,740 acre) Plateau Mountain Ecological Reserve was established under the Wilderness Reserves and Natural Areas Act and was approved by the Cabinet December 12, 1991, by Order-in-Council #821/91 (see Appendix V). The complete legal description of the area is also provided in Appendix V.

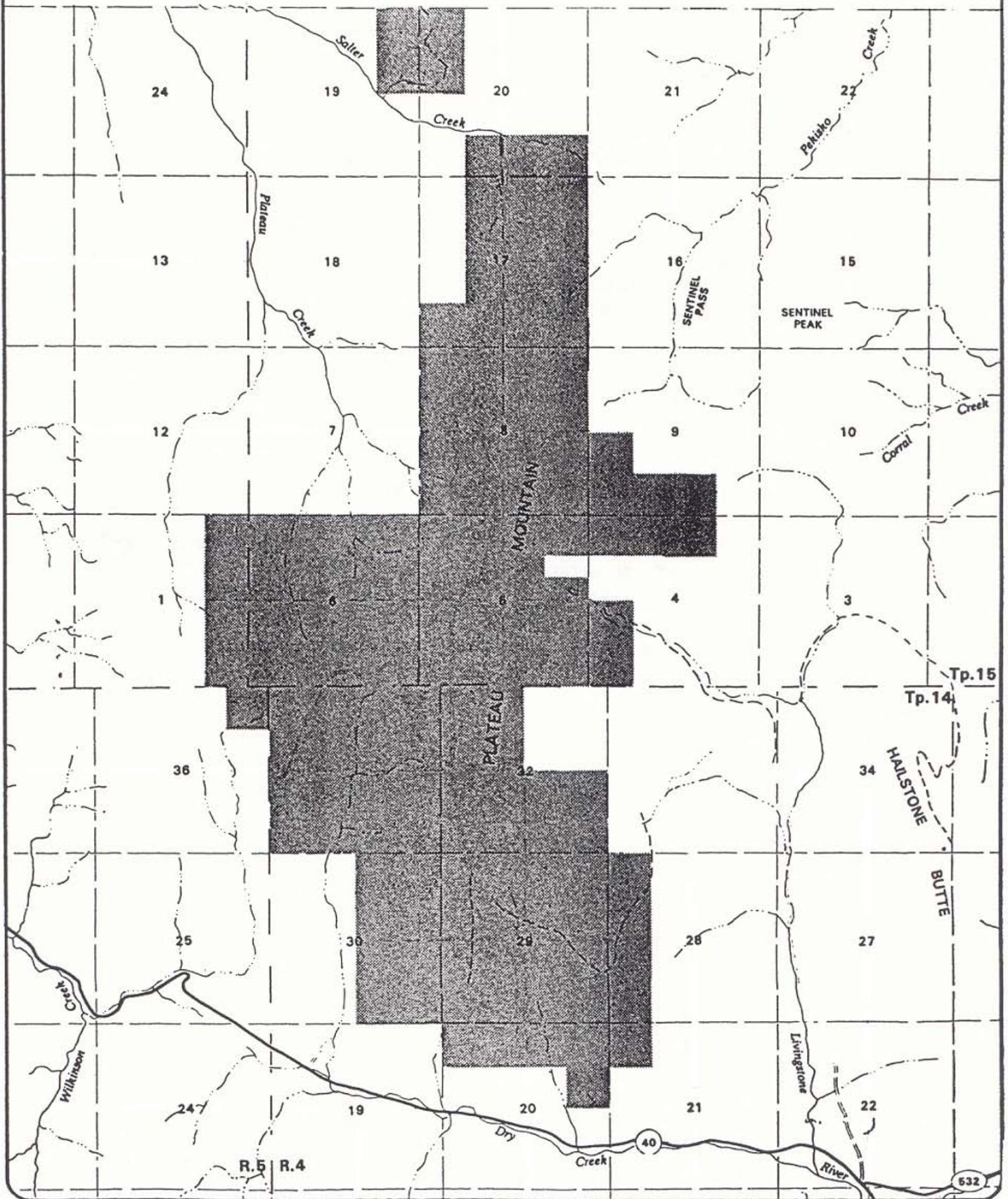
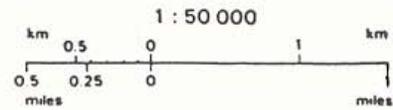
3.3 Boundary Definition and Justification

The reserve boundaries were approved by the Ministers of Forestry, Lands and Wildlife and Recreation and Parks following extensive review by the public, the Advisory Committee for Ecological Reserves, government staff, and Husky Oil. The general intent was to include the entire alpine plateau as well as the cliffs, two caves, talus slopes and subalpine forests. A small addition near the north end of the reserve contains mixed pine forest. The existing boundary uses legal lines rather than natural features or a given contour. This provides ease of description and consistency with surrounding land management. At this point, there are no known boundary issues

Map 1 PLATEAU MOUNTAIN ECOLOGICAL RESERVE

Tp. 14 and 15, R. 4 and 5 West of 5th Meridian

 Ecological Reserve { 5740 ac.
2323 ha.



3.4 History of Reserve Designation

The following is a chronological list of dates of significant events involved in the designation of the Plateau Mountain Ecological Reserve and its subsequent Management Plan.

- 1968 - 1971 - Plateau Mountain Ice Cave identified as a fragile and unique feature requiring protection.
- 1971 - Plateau Mountain Natural Area established around the ice cave by Order-in-Council #188/71
- April, 1980 - Plateau Mountain identified as a candidate ecological reserve on a preliminary list of possible sites.
- November 1984 - The Ecological Reserve Steering Committee submits a report proposing the designation of Plateau Mountain Ecological Reserve along with 13 other sites.
- 1985 - Natural Area established by Order-in-Council 146/85.
- 1988-89 - Advisory Committee on Wilderness Areas and Ecological Reserves recommends Plateau Mountain be established as an ecological reserve.
- December 12, 1991 - Order-in-Council #821/91 passed repealing the Plateau Mountain Natural Area designation and creating the Plateau Mountain Ecological Reserve designation.
- December 12, 1991 - Order-in-Council #822/91 passed transferring the measures or programs for the management and preservation of the animal and plant life and the environment of Plateau Mountain Ecological Reserve from the then Minister of Recreation and Parks to the Minister of Forestry, Lands and Wildlife (now both come under the authority of the Minister of Environment).

- November 3, 1992 - Draft Terms of Reference for Plateau Mountain Ecological Reserve Management Plan submitted to Ecological Reserves Steering Committee.
- March 4, 1993 - Terms of Reference for Plateau Mountain Ecological Reserve Management Plan approved.

3.5 Resources

3.5.1 *Geology & Landforms*

Plateau Mountain Ecological Reserve occupies the top of Plateau Mountain and the mountain flanks down to the streams in valleys on the north and south ends. The mountain plateau is a relatively flat area from one to two kilometres wide and about eight kilometres in maximum length. The plateau rises gradually from about 2,280 metres in the north to 2,519 metres at the summit near the south end of the plateau. The flanks of the mountain are steep cliffs with numerous block and talus slopes below them to the north, east and south sides. The west slope is gentler.

The reserve is in the Livingstone Range within the Front Ranges of the Rocky Mountains. The entire range is composed of sedimentary rocks that have been thrust up over younger rocks. The upper rocks of Plateau Mountain are limestones in an elongated upward or anticlinal structure

which contain two caves. There is a thin layer of hard quartz sandstone at the surface of the mountain summit. Some of the underlying siltstones can be seen in the valley to the west of the summit. The cirques at the edge of the plateau are glacial in origin, but it is generally believed the top of the mountain remained free of ice during the last glaciation.

The unusual flat surface of the mountain top, combined with the cold climatic conditions over many years, has resulted in a variety of landscape features more common in Arctic than alpine areas. These periglacial features include active and relic permafrost. This permafrost is present below the level of summer thaw (4.5 to 7 metres) to about 100 metres in depth. Other unique periglacial features include patterned ground in the form of sorted stone circles, polygons, nets, stripes and frost boils. A limestone cave containing numerous large crystals, sheets and pillars of ice is also present. The range and quality of periglacial features at Plateau Mountain are unmatched anywhere else in the province.

3.5.2 *Soils*

Soils have developed from the weathering of fine, frost-shattered fragments of sandstone bedrock. Most of the Reserve has some form of soil development. The presence of permafrost with its resultant churning of the surface materials has produced orthic and brunic turbic cryosols in the areas of lichen-sedge and sedge tundra. Shallow soil areas without permafrost contain regosols. On the forested slopes brunisols have developed. There are also some areas of chernozem soils in the valley bottoms and in grassland and shrub areas.

3.5.3 *Climate*

The reserve is in a humid continental climatic zone which experience cool summers and cold winters. It is in the rainshadow of the main ranges of the Rocky Mountains. A two-year study showed a mean annual precipitation of 15 centimetres, most arriving as snow. Areas above treeline tend to be blown clear of snow. Strong winds occur all year round and snow fell in every month of the study.

3.5.4 *Hydrology*

The low effective precipitation in the reserve contributes to the limited flow of surface water. There are intermittent streams flowing from all the cirques and several other locations along the mountain edge. They carry runoff in the spring with flows decreasing so that there is frequently no flow above ground in most places later in the season. There are permanent springs in the upper valley draining the very southwest of the reserve. There is a small pond in the cirque along the reserve's eastern boundary.

3.5.5 *Vegetation*

The reserve has two main vegetation types - alpine tundra on the plateau and sub-alpine forest on the mountainsides. There is a variety of vegetation types in the tundra, mostly low plants with substantial amounts of bare rock, much of which is coated with lichen (See Appendix IV.). At lower elevations there is a variety of forest vegetation types.

A vegetation study of the area identified 24 different vegetation types. These divide into 10 ecologically similar units (listed in descending order of approximate area.):

Bedrock and Talus vegetation which includes lichens, Spotted Saxifrage, Beardtongue, sage, Baffin Island Fescue, White Mountain Avens, Shrubby Cinquefoil, Alpine Forget-me-not and the rare Scribner's wheat grass.

Lichen-sedge tundra in the centre of the plateau is distinct and unusual and contains lichens, mosses, Fragrant Sedge and White Mountain Avens.

Kobresia Tundra vegetation includes Bog-sedge, Northern Awnless Brome, Yellow Hedysarum and Prairie Selaginella.

Shrub Tundra vegetation includes White Mountain Avens, Loco-weed, willow, Wandering Daisy and Alpine Goldenrod.

Sedge Tundra is found in two patches with sedge, Smooth-leaved Cinquefoil, Tufted Hair Grass, Wild Chives, Yarrow, Moss Gentian, Smooth Willow and Field Chickweed.

The Spruce-Fir Forest includes Engelmann Spruce, Sub-alpine Fir, old growth (200 to 300 year old) Lodgepole Pine and a small amount of Alpine Larch, the eastern limit of this species. The understory has a large composition of feather moss, Red Whortleberry, Heart-leaved Arnica and One-sided Wintergreen. Drier areas are dominated by Big Red-stem and Stair-step moss. Moister areas include blueberry, Mountain Heliotrope, Mountain Parsnip and Yellow Heather. One area also has Lesser Wintergreen.

The Spruce-Fir with Whitebark Pine area is found at higher elevations. It is also dominated by Engelmann Spruce and Sub-alpine Fir, but contains five per cent or more of Whitebark Pine. The understory is dominated by Blueberry, but Wandering Daisy and Mountain Heliotrope are also common. Drier sites are dominated by Canada Buffaloberry and Twinflower.

Meadows and Shrublands includes a small area around the cirque lake with Tufted Hargrass and Yellow Cress as well as fescue grasslands of seasonally dry creekside benches in the Livingstone Valley.

Pine Forest is dominated by Lodgepole Pine and is found mostly in the upper Livingstone Valley. Dominant understory is Canada Buffaloberry and Twinflower. A mixed pine forest dominated by Limber Pine, Whitebark Pine and Lodgepole Pine also exists above Salter Creek.

Scrub vegetation type occurs in small patches within other vegetation types. It includes patches of Low Juniper, Creeping Juniper and Bearberry.

There are seven plants in the Plateau Mountain Ecological Reserve that are found on Packer and Bradley's list of rare plants of Alberta. The major significance of vegetation found within and near the reserve is its diversity (some 500 species) and also that it is transitional between the Boreal pattern found north of the reserve and the Montane pattern found south of the reserve.

For a complete list of vascular plants, see Appendix III

3.5.6 Fauna

Birds in the Plateau Mountain Ecological Reserve vary greatly depending on the physical features of the area. A complete list of recorded birds is in Appendix I. Of the 68 recorded or expected species, 49 are summer residents, five are migrants, 22 are permanent residents and two are winter visitors. Species include rosy finches, horned larks, white-tailed ptarmigan, golden eagles, common ravens, spruce grouse, chickadees, varied thrush and american kestrels.

Mammals found in the reserve are typical of alpine and sub-alpine areas. Eleven species have been recorded including pika, hoary marmot, ground squirrels, chipmunks, pocket gopher, coyote, elk, mule deer and rocky mountain bighorn sheep. A listing of recorded mammals is set out in Appendix II.

3.5.7 Visual Landscape (Aesthetics)

No formal description or assessment of the scenic resources of Plateau Mountain Ecological Reserve has been conducted. The main scenic features include the extensive, nearly-flat alpine area which gives the initial impression of a grassland in the midst of the mountains. Outstanding views far to the east over the foothills and prairies as well as of surrounding mountains to the west north and south are notable. Along the edges of the reserve, steep rocky or forested slopes add visual diversity. The patterned ground, the extensive lichen growth and alpine flora are prime foreground elements while developed roads, two wellsites, a communication tower and other associated man-made structures are very noticeable to visitors.

Plateau Mountain also serves as a prominent landmark from various viewpoints because of its extensive flat top located along the eastern edge of the mountains.

3.5.8 Paleontology

January Cave has been investigated and some notable animal remains found from 32 animal species, the oldest of which date back more than 33,500 years before present. The oldest ones represent conditions from the period between the last two glacial ages. The Ecological Reserve is rated as a “probable” area for locating additional fossil material.

3.5.9 Archaeology

Very limited archaeological investigation has been done and the potential for finding significant remains within the Reserve appears to be generally low (due to limited deposition, harsh environment). The only known site of potential significance within the reserve is January Cave where some faunal remains have been found. As well, evidence associated with prehistoric wild sheep driving and hunting has been found. It is also likely that some of the alpine plant species may have been used by prehistoric people or more recently by local natives for medicinal or ceremonial purposes.

3.5.10 *Special Features Summary*

The Plateau Mountain Ecological Reserve has a number of representative examples of alpine and sub-alpine ecosystems, however the major significance of the site is the merit and number of special features.

The special physical features include the periglacial landforms, permafrost, felsenmeer (frost shattering), sorted stone features, patterned ground, hummocky ground and the ice cave. Other physical features include January Cave, cirque lake and limestone pavement. Special biological features include the Plateau Mountain refugium (area not glaciated) and disjunct distributions, rare plant species, rare and distinct insects, a major Bighorn sheep population, the highest elevational occurrence of pocket gophers in Western Canada and rare plant communities.

3.6 Land Uses

3.6.1 *Historical Land Use*

The Plateau Mountain Ecological Reserve is located within the Bow/Crow Forest (now called the Crowsnest Forest Area of the Prairie/Bow/Parkland Region) and land use has been managed since 1930 under legislation, policies and guidelines administered largely by the Land and Forest Service and the Natural Resource Service. Prior to the 1950's the main activities were hunting, trapping or wilderness travel. Since then, petroleum activity has occurred under the authority of the predecessors of the Alberta Energy and Utilities Board and the Land and Forest Service. Public vehicle access into the reserve was allowed until 1978 when Kananaskis Country Forest Land Use Zone restrictions became effective. Since then only authorized vehicle access has been permitted on a gated road.

3.6.2 *Dispositions*

Subsurface: The subsurface rights of the Plateau Mountain Ecological Reserve are largely leased by private companies, most related to petroleum and natural gas. One natural gas lease, two five year renewable term petroleum and natural gas licenses, and two five year renewable term petroleum and natural gas leases exist on the site. By agreement between Husky and the provincial government, the petroleum dispositions will remain in force until reserves are depleted. Present provincial policies prohibit coal development within Kananaskis Country. This is in addition to the prohibition of coal developments within ecological reserves.

Surface: Current surface dispositions within the ecological reserve include two well site leases and a licence of occupation for two well site access roads as well as a right of entry lease and a pipeline agreement. Husky Oil holds most of the dispositions in the area. Public Works Canada has a miscellaneous lease for a radio communications tower.

3.6.3 *Recreation*

Although recreational use of the area is not extensive, Plateau Mountain has traditionally been used for a variety of recreation activities including hiking, camping, horseback riding, hunting

and non-consumptive activities such as sightseeing, wildlife viewing and photography. Recreational use has not been extensive because of the severe climatic nature of the area and, more recently, the restricted vehicle access which required recreationists to access the area on foot, horseback or mountain bicycle. There are no designated trails within the reserve. The Salter Pass trail, formerly designated as a snowmobile trail passes through the north end of the reserve. It is not designated now but does see some riding and mountain bike activity. The ice cave was initially of some interest to cavers, but was sealed with a locked barrier when it was realized that the caving activity was detrimental to the fragile ice structures in the cave.

3.6.4 Surrounding Lands

The surrounding lands are managed as Forest Reserve by the Province of Alberta and, generally, should provide an effective buffer area. As well, the reserve is within the Kananaskis Country Forest Land Use Zone and the Cataract Creek Over Snow Vehicle Forest Land Use Zone. The former restricts off-road motorized access generally and the latter specifically restricts snow vehicle use to designated trails, none of which pass through the reserve. In addition to these access limitations, the remoteness and rugged terrain limit the volume, timing and types of visitors to the area.

3.6.5 Research

The main research activities on Plateau Mountain have included a variety of geological efforts, investigations into permafrost and ice cave features, climatic monitoring, slope processes, patterned ground analysis and vegetation analysis. Less extensive research has been conducted into plant distribution and ecology, insects, archaeology and palaeontology.

The accessibility by road of this attractive and unique area has stimulated considerable research to date but much more remains to be done in order to more fully understand, appreciate and properly manage it. The existence of disturbed and undisturbed areas in close proximity invites practical research into reclamation strategies and techniques in alpine areas. Coordination or promotion of research activities occurs only by the initiative of individual researchers. Research is guided by the “Research and Collection Policy for Ecological Reserves” (March 1993). Permits for all research will be issued by Land and Forest Service, Blairmore. Any permits for Ice cave research will be subject to the conditions listed in Appendix V or any additional ones deemed necessary by the department.

3.6.6 Environmental Education

In the past, the reserve has been visited by several school, university or professional groups each year for sight-seeing and education purposes. Natural history groups have also occasionally visited the reserve to observe its features. No formal program of environmental education or interpretation has been implemented by government for visitors to the area. No new education or interpretation programs or activities are proposed by government at this time.

Vehicle access into the reserve for educational purposes will continue to be permitted but restricted to existing gravel roads. Special permits may be issued for educational purposes by the

Blairmore office of Land and Forest Service. When there is no longer a need by Husky to maintain the access road within the reserve, a decision on retaining the road for educational, research or other purposes will be made.

3.7 Commercial Activity

3.7.1 *Natural Gas Operations*

Oil and gas exploration and production activities have occurred with the Ecological Reserve since the early 1950's. Currently, two producing gas wells and associated facilities exist within the reserve. Gas is carried by pipeline to the Coleman gas processing plant some 65 km to the south. Each well is equipped with a dehydrator, heater and flare stack, as well as a sweet gas fuel line. Husky has recently replaced flare pits with flare stacks. The wells are inspected daily by Husky. Periodically, the wells, their facilities and pipelines require servicing. Picker trucks, workover rigs, gravel trucks and other heavy and light duty vehicles may be required for these operations.

3.7.2 *Communications Facilities*

There is one radio communications tower within the reserve owned by Public Works Canada which is maintained twice yearly.

4.0 MANAGEMENT ISSUES

Management issues are defined here as those activities or trends which do not conform with the intent and objectives of the reserve. The following list and descriptions of issues has been compiled from various sources and are presented in no particular order. Section 6, Management Guidelines, makes recommendations to resolve these issues.

4.1 Minimize Impacts From Ongoing Natural Gas Operations

Important commitments regarding ongoing operations, reclamation and restrictions on further petroleum and natural gas exploration and development were made by Husky at the time of the establishment of the Plateau Mountain Ecological Reserve. In view of the ongoing operation of two gas wells and pipeline facilities, and need for high standards of Environment within the reserve, monitoring of existing facilities and procedures will continue. This should also include the communications facilities. The issue is how to manage the sour gas operations so as to minimize disturbance, ensure the continued integrity of the ecosystem and protection of the special features of the ecological reserve, while accelerating gas reserve depletion.

Ditch erosion, impact of vehicles on or near the pipeline, noise, safety of the public and wildlife near wellsites and visual impacts are examples of specific issues or concerns to be addressed.

4.2 Unauthorized Vehicle Use and Impacts

The access road to the two existing natural gas wells is gated to control access. Service vehicles are permitted to access the well sites and pipeline infrastructure for regular operation, work over and stimulation of the two wells and repair or replacement of the pipelines in a controlled and regulated manner. Few problems have occurred and obvious impacts are few. Monitoring of unauthorized vehicle use and off-road disturbances will continue. The existing gate locations will be maintained.

Motorized recreation is not permitted in the Reserve. Provision for ATV access has been requested for lands to the east and north of Plateau Mountain, but this is prohibited by Kananaskis Country Forest Lands Use Zone regulations.

4.3 Reclamation

Disturbances within the Plateau Mountain Ecological Reserve have resulted from exploration for and the development of natural gas reserves. There is an access road up to and across the plateau, two abandoned drill pads and two active well sites with associated pipelines and wellsite facility buildings. No major erosion problems have been identified. Monitoring will continue. Some removal of debris and regrading of a non-producing well-site occurred on the north end of Plateau Mountain in the mid to late 1980's. The disturbance is still visible as limited natural revegetation has occurred at this site. The disused access road to this well-site, by way of contrast, has not been reclaimed and has largely revegetated naturally. The two well-sites, roads and pipelines in active use will be subject to a detailed reclamation plan to be submitted by Husky. Guidelines and strategies are required that properly address the alpine setting and the ecological reserve management objectives. Similar strategies will be used to reclaim the communication tower site in due course.

4.4 Scientific Research

Scientific research is a primary purpose of an ecological reserve and will be encouraged in accordance with guidelines and conditions spelled out in the Research and Collections Policy for Ecological Reserves (March 1993). Written authorization must be obtained from Land and Forest Service to conduct research in this ecological reserve. The government will develop a list of research priorities that will benefit the management of this reserve and encourage research in these areas. All research will be conducted subject to guidelines and conditions designed to ensure reserve features are protected. The need for vehicle access must be demonstrated. Special guidelines and conditions for research access into the ice cave are contained in Appendix VI.

4.5 Heritage Appreciation and Environmental Education

No organized programs or materials relating to the reserve will be developed at this time. If there is demonstrated interest in having more organized interpretive or environmental education opportunities or resources available in the reserve, these may be considered provided they do not compromise the protection objectives of the reserve.

4.6 Promotion

Little promotion of the reserve has occurred for recreation or tourism purposes. Over use by recreationists is a concern and while most such use is restricted to the roadways, some off-road use has occurred and the number of weekend visitors has increased. The department will not promote the recreation or tourism opportunities of the reserve and will encourage the producers of guide books or other promotional materials on the reserve to reflect the management intent and objectives.

4.7 Public Safety

Public safety is a significant concern because most of the reserve is an exposed high mountain area. Poor visibility because of low cloud, precipitation and blowing snow is quite common. Very strong westerly winds are also common. Areas of rough ground and cliffs are present. The risk of persons becoming disoriented, injured or hypothermic are very real. As well, there is some risk of exposure to sour gas in close proximity to the operating gas facilities. Cautionary information to this effect will be provided at the trailhead. Natural Resources Service will continue to offer search and rescue assistance in the reserve as they do throughout the area.

4.8 Recreation

Plateau Mountain is very scenic and has a tradition of recreation use particularly as a result of road access and this use is expected to increase in the future. The levels and impacts associated with hiking, bicycling and horse riding use will be monitored.

4.9 Hunting

Hunting mainly for bighorn sheep and elk was a traditional recreational activity in the area prior to the establishment of the ecological reserve. By legislation, hunting is not permitted within ecological reserves unless it is clearly needed for management purposes.

4.10 Trapping

Portions of three traplines extend into the reserve. Section 8(1) of WAERNA legislation prohibits trapping within a reserve.

4.11 Grazing

Although cattle have potential access to the reserve, they rarely graze within it. Extensive cliffs, steep slopes and some existing fences control cattle use, but additional fencing may be required if grazing becomes a problem to the integrity of the reserve.

4.12 Pest/Weed Management

Pest or weed infestations are minimal. However, with ongoing petroleum activity and increased visitor use, the risk of infestation may increase. The use of chemicals is not acceptable under normal circumstances in an ecological reserve and ministerial approval must be obtained for

special exemptions. Other strategies such as hand pulling or mechanical methods should be used. Husky will be required to provide an up-to-date weed identification and management plan for their facilities. Any activities to control pests and weeds require approval of Land and Forest Service.

4.13 Relationship to Other Plans

When the Kananaskis Country Sub-regional Integrated Resource Plan (1986) is reviewed, it will be made consistent with the provisions of this management plan.

4.14 Boundary Issues

No boundary adjustments are proposed at this time.

5.0 VALUES, GOALS AND OBJECTIVES

5.1 Values

Value Statement: The Plateau Mountain Ecological Reserve provides representation of the Alpine and Sub-alpine Sub-regions of the Rocky Mountain Natural Region, but also is a unique geophysical area. It contains unique formations, rare and disjunct plants and animals and special features. The following are the major natural features of the Plateau Mountain Ecological Reserve:

- permafrost
- extensive areas of patterned ground and earth hummocks
- ice cave and January Cave
- cirque lake
- talus slopes
- orthic and brunic turbic cryosols
- alpine vegetation (grasses, shrublands, sedge meadows, lichens)
- forest types (lodgepole pine, spruce-fir, whitebark pine and scrub)
- rare plants

5.2 Goals

The following goals for Plateau Mountain Ecological Reserve provide broad direction for management of the reserve:

1. To provide a high degree of protection for its ecological diversity and unique natural features. This will be done whenever possible by hands-off, low-impact management strategies and techniques. More active approaches will only be used when circumstances dictate.
2. To encourage greater understanding of alpine and sub-alpine ecosystems and natural processes within the reserve through research and scientific monitoring. To encourage research in the area of disturbances and reclamation using appropriate techniques in an alpine setting.

5.3 Objectives

5.3.1 *Preservation Objectives*

The following are protection objectives from which management guidelines and strategies can be developed:

- to ensure protection of all features within the Plateau Mountain Ecological Reserve but especially those features listed in section 5.1 Values (above)
- to manage resources and landscapes using an ecosystem approach.
- to maximize opportunities for natural processes (e.g. vegetative succession) to occur within the reserve to aid in retaining natural ecological diversity.
- to encourage a variety of research activities but especially those which will assist with the protection of special features within the reserve.

5.3.2 *Heritage Appreciation Objectives*

While heritage appreciation is not a priority objective of ecological reserves, environmental education, interpretation and information and orientation could be considered if the individual reserve proves attractive for such purposes. Such activities should be considered only when they are compatible with overall protection objectives. The same is true of individual exploration, formal interpretation and appreciation. Heritage appreciation objectives for the Plateau Mountain Ecological Reserve are:

1. To maintain opportunities for individuals and groups to explore, understand and appreciate the unique area through personal interaction with the environment where the actions of the individual or group coincide with the protection objectives for the reserve.
2. To ensure adequate information is provided to educate the public about reserve features as well as acceptable and unacceptable activities within the reserve and their effect on the fragile environment of the area.

5.3.3 *Outdoor Recreation Objectives*

1. To accommodate non-motorized recreation to the extent that it does not compromise the protection objectives of the reserve.
2. To monitor the impacts of recreational use in the reserve and to recommend appropriate management changes where necessary.

5.3.4 *Tourism Objective*

1. To accommodate limited commercial eco-tourism activities within the reserve when the tour intentions are consistent with the protection objectives of the reserve.

6.0 MANAGEMENT GUIDELINES

Under Section 5(a) of the Wilderness Areas, Ecological Reserves and Natural Areas Act, the responsibility to carry out measures and programs for the management and preservation of the animal and plant life and the environment of Plateau Mountain Ecological Reserve was transferred to Land and Forest Service (Order-in-Council #822/91.). Land and Forest Service will be responsible for implementing the management plan.

6.1 Protection

In general, human-caused impacts on any of the features or resources within the reserve are to be minimized. Particular care will be given to protecting the main features of the reserve - the patterned ground, ice caves and alpine flora. More specific guidelines follow. See also Sections 8 and 9 for additional research guidelines.

6.1.1 Geologic and Geomorphic Resource Management

Measures to restrict further disturbance of patterned ground are required. Identified instability or erosion occurring in road ditches or along pipelines will be assessed and stabilized in an appropriate manner. Restricted access to the ice cave will be maintained. Ensure provisions of Husky Oil's Emergency Plan minimize the chance of a spill of material harmful to soils or organisms and ensure rapid and effective clean up while minimizing harm to the environment.

6.1.2 Atmospheric Monitoring

Selected weather and ground temperature monitoring has been ongoing for 18 years. The need for this monitoring to continue should be assessed and, if necessary, modified. Noise from natural gas or other facilities should be assessed as to its impact on wildlife and visitors, and all reasonable measures taken to lessen such impact. The existing operation and emergency plans should be consistent with current standards as defined by Energy and Utilities Board guidelines to help minimize the chances of a potentially harmful blow-out. However, the need to prevent damage to fragile alpine organisms within this reserve goes beyond normal criteria.

6.1.3 Aquatic Resource Management

Research on the small cirque lake along the east boundary will be encouraged to determine whether any unique or sensitive characteristics exist that would require special protection or other measures.

6.1.4 Vegetation Resource Management

The present wildfire policy in Alberta is to suppress all wildfire in the initial or early stages. To counterbalance this, prescribed fire can be used as a management tool to achieve objectives such as habitat improvement. Research on fire history in the area will be encouraged. This knowledge could then be used to aide Alberta Environment in determining the need for a prescribed burn plan for the reserve.

The existing municipal weed inventory should be updated and control guidelines will be revised to ensure chemical weed control is done in the reserve only as a last resort. Control of weed species will be consistent with the requirements of the “Weed Act” but also reflect the need to eradicate those weeds that pose a threat to the special features of the reserve. Steps will be taken to ensure that both new disturbances and reclamation activities minimize the chance for weeds to become established. Any reclamation activities must make use of certified native plant materials. Grazing near the reserve must be monitored to assess the need for additional fencing.

6.1.5 Faunal Resource Management

No hunting will be permitted within the ecological reserve unless animal health or habitat impacts become concerns. Monitoring of sheep and elk will continue within and around the reserve by Natural Resources Service to assess the status of these populations and determine whether changes are required for reserve management purposes or to address wildlife problems in nearby areas.

The portions of existing traplines falling within the reserve will be eliminated from these Fur Management Areas when the trapping rights are renewed.

6.1.6 Historic/Prehistoric Values Management

Careful monitoring of known archaeological and paleontological resources is required especially those of January Cave. Further assessment of the significance of January Cave and prehistoric sheep driving/hunting remains will be encouraged and coordinated by the staff at the Provincial Museum.

6.1.7 Visual Resource Management

An assessment will be made to determine all reasonable measures that can be taken to remove or reduce the visual impact of existing structures within the reserve. This will be coordinated by the department through the Crowsnest Forest Area Office and involve the natural gas and communication structure owners. Development of any future structures should be restricted to those absolutely necessary for maintenance or replacement of existing activities or approved interpretive or research activity. Any approved structures should blend well with the surroundings. Signs will be restricted to those at a trailhead outside the reserve boundary as well as small boundary markers where required.

6.1.8 Environmental and Ecological Monitoring

The desirability of monitoring weather and subsurface temperatures and the means by which monitoring by researchers can continue must be addressed. Land and Forest Services will continue to ensure that a suitable system for monitoring erosion in road ditches and the effectiveness of reclamation measures is established. Further, an adequate system for monitoring use levels and general impacts by visitors is required. As well, Husky Oil is to report any incidents with environmental consequences within the reserve to Land and Forest Service.

Routine monitoring of the boundary will be done jointly by Natural Resources Service and Land and Forest Service.

6.2 Uses of Natural and Historic Values

6.2.1 *Scientific Research and Collection*

Land and Forest Service will coordinate the preparation of a prioritized list of research desirable for proper management of the reserve. This could include topics such as permafrost, ice cave, patterned ground, vegetation inventory, ecological relations, reclamation of disturbed sites and effects of hunting on wildlife within the reserve. Applications for research and collections will be received by the Crowsnest Forest Area of Land and Forest Service and referred to Natural Resource Service staff for comments and special conditions using guidelines in the Research and Collection Policy. Land and Forest Service will issue permits for approved research.

6.2.2 *Heritage Appreciation*

Basic visitor information about the reserve will be provided on trailhead signs at the main access point and at Kananaskis Country information outlets.

No formal interpretive information or programs will be provided at this time. Monitoring of the level and impacts of visitor use will help to determine the need for any future designated interpretive trails or viewpoints.

On-site environmental education activities will be permitted but not promoted. Demand for learning resource materials will be monitored by all agencies and may be developed if warranted. Vehicle access for interpretive or educational purposes will require written permission from the Blairmore office of Land and Forest Service.

6.2.3 *Recreation*

A trailhead parking area will be established just outside the reserve boundary near the existing gate. Access to the reserve for visitors will be by foot, horse or bicycle only along the existing gated roadway. Access will be for day-use only. No new trails will be developed for recreation purposes unless monitoring shows the need to restrict impacts of visitor use. Monitoring of off-trail use in summer and winter will be required.

Husky will monitor visitor activity and report any unauthorized use of the road or off-road areas to Land and Forest Service. Periodic monitoring of visitor use and impacts will be carried out by government staff. Information about the reserve, its intent and features, rules of safe and low impact travel, and emergency contacts will be presented on a trailhead sign at the main entry point. A low-key directional road sign will be posted at the junction of SR940 and the main access road. Standard boundary signs will be posted where required. The above signs will be supplied, installed and maintained jointly by Land and Forest Service and Natural Resource Service. Basic visitor information about the reserve will be provided at nearby information outlets.

6.2.4 *Tourism*

Consistent with legislation, no tourism facility development will be permitted within the reserve. Applications for commercial eco-tourism visits will be referred by Land and Forest Service to Natural Resources Service for review. Approval for such use will require the provision of qualified guides, use of foot access only, advance bookings, and other conditions.

6.2.5 *Non-conforming Uses*

Guidelines for on-going gas and communications operations are to be reviewed regularly by LFS, NRS, Husky and Public Works Canada. No further petroleum and natural gas exploration and development will be permitted within the reserve. A reclamation plan based on the results of research will be prepared by Husky for the various disturbed areas within the reserve.

7.0 SURROUNDING LAND

7.1 Offsite Impacts

No direct offsite impacts are anticipated other than occasional, short term cattle use which will be monitored and addressed as necessary. The potential indirect impacts of activities proposed on nearby lands will be addressed through the referral process.

7.2 Proposed Buffer Zones/Boundary Adjustments

No buffer zones or boundary adjustments are proposed at present. Monitoring will continue.

8.0 RESEARCH AND COLLECTION

8.1 Scientific Research

Research activities related to obtaining a greater understanding of features and processes within the Reserve, will be encouraged so long as they are consistent with the policies and procedures outlined in the brochure “Research and Collection Activities in Ecological Reserves”, Alberta Environment. Applications for research involving access into the ice cave will also be considered in light of special policies and guidelines contained in Appendix VIII. Permits for ice cave or other research will be issued by the Blairmore Office of Land and Forest Service.

9.0 BASELINE STUDIES

9.1 Baseline Studies

The Provincial Museum of Alberta has offered to assist in gathering baseline information on plant and animal communities within the reserve. Completion or upgrading of the existing vegetation inventory with special attention to rare species is required. A detailed weed inventory is required from Husky on their dispositions. Long term climate and ground temperatures monitoring may continue to support reclamation plans and other research activities. An inventory and assessment of aquatic life in the cirque pond is required. A detailed inventory and assessment of patterned ground is required to assist in protection, monitoring and reclamation of disturbed areas. Baseline data is required for all faunal species.

10.0 PROGRAM SUPPORT

10.1 Regulations and Enforcement

No new regulations pursuant to the Wilderness Areas, Ecological Reserves and Natural Areas Act (WAERNA) are proposed at this time. Enforcement of the existing provisions of WAERNA will be undertaken by departmental staff including the Area Forest Ranger and NRS Conservation Officers. Observation by Husky or others of illegal or damaging activity will be reported to the Department's Blairmore office.

10.2 Volunteers

A volunteer program to monitor activities, act as local guides or perform other appropriate roles will be encouraged. Volunteers will report to the Blairmore office on at least an annual basis.

11.0 PLAN REVIEW AND AMENDMENT

An initial plan review will be conducted after the first year or when significant additional monitoring or research results are available. Ordinarily, a plan review would occur every 10 years thereafter. Land and Forest Service will be responsible for initiating the review. The Bow Region Board of Directors in consultation with the regional Environmental Resource Committee (ERC) and Kananaskis Country Interdepartmental Committee (KCIC) will approve such a review and any proposed changes. Stakeholders (e.g. Husky, local residents, grazing permittees) and the public at large will be consulted when significant changes are proposed.

12.0 "STATE-OF-THE-RESERVE" RECORDS

Land and Forest Service will maintain records relating to resource use and conditions, research activities, public visitation and activities for the reserve. A mailing list of interested individuals or groups will be established and maintained.

APPENDICES

- I. Birds of Plateau Mountain
- II. Mammals of Plateau Mountain
- III. Plants of Plateau Mountain
- IV. Order-In-Council and Legal Description
- V. Special Conditions for Ice Cave Research

Appendix I Birds of Plateau Mountain (recorded)

American Kestrel	McGillivray's Warbler
American Robin	Mountain Chickadee
Blue Grouse	Northern Flicker
Boreal Chickadee	Northern Harrier
Brewer's Sparrow	Northern Water Thrush
Calliope Hummingbird	Pine Siskin
Chipping Sparrow	Red Crossbill
Clark's Nutcracker	Red-breasted Nuthatch
Common Flicker	Red-tailed Hawk
Common Raven	Rosy Finch
Dark-eyed Junco	Ruby-crowned Kinglet
Dipper	Spruce Grouse
Dusky Flycatcher	Stellar's Jay
Fox Sparrow	Swainson's Thrush
Golden-crowned Kinglet	Three-toed Woodpecker
Golden Eagle	Townsend's Solitaire
Gray Jay	Varied Thrush
Grey-crowned Rosy Finch	Water Pipit
Great Horned Owl	Western Flycatcher
Hammond's Flycatcher	White-crowned Sparrow
Harlequin Duck	White-tailed Ptarmigan
Hermit Thrush	Willow Flycatcher
Horned Lark	Wilson's Warbler
Lazuli Bunting	Yellow Warbler
Lincoln's Sparrow	Yellow-rumped Warbler

Appendix II Mammals of Plateau Mountain (recorded)

Columbian Ground Squirrel	Pika
Elk	Pocket Gopher
Golden-mantled Ground Squirrel	Red Squirrel
Hoary Marmot	Rocky Mountain Bighorn Sheep
Mountain Coyote	Timberline Chipmunk
Mule Deer	Yellow Pine Chipmunk

Appendix II Plants of Plateau Mountain (recorded)

Alpine Arnica	Dandelion	Inland Blue Grass
Alpine Aster	Drummond's Anemone	Involucrate Honeysuckle
Alpine Bistort	Drummond's Cockle	Kentucky Blue Grass
Alpine Blue Grass	Drummond's Rock Cress	Kittentails
Alpine Bluebell	Drummond's Rush	Lance-leaved Paintbrush
Alpine Everlasting	Dwarf Birch	Lance-leaved Stonecrop
Alpine Forget-me not	Dwarf Bitter root	Large-flowered Daisy
Alpine Goldenrod	Dwarf Hawk's Beard	Late Yellow Locoweed
Alpine Hawkweed	Dwarf Sawwort	Lawless Arnica
Alpine Milk-vetch	Dwarf Scouring-rush	Leather-leaved Saxifrage
Alpine Speedwell	Early Blue Grass	Lesser Wintergreen
Alpine Timothy	Early Blue Violet	Lewis Wild Flax
American Vetch	Early Cinquefoil	Limber Pine
Arctic Aster	Elephant's-head	Little Club-moss
Arctic Blue Grass	Engelmann Spruce	Lodgepole Pine
Arctic Butterweed	Entire-leaved Groundsel	Long-stalked Stitchwort
Balsam Groundsel	False Dandelion	Low Bush-cranberry
Balsam Poplar	Felwort	Low Juniper
Barratt's Willow	Few-flowered Milk-vetch	Low Larkspur
Bearberry	Few-seeded Whitlow-grass	Low Northern Sedge
Blackening Sedge	Field Chickweed	Macoun's Campion
Blue Mountain-heather	Fireweed	Meadow Horsetail
Blueberry	Flame-colored Lousewort	Michaux's Sage
Bluebunch Fescue	Flat-leaved Willow	Moon Fern
Bog-Sedge		Moss Campion
Broad-glumed Wheat	Flixweed	Moss Gentian
Grass	Fragile Fern	Moss Gentian
Broad-leaved Fireweed	Fragrant Sedge	Mountain Arnica
Bronzebells	Franklin's Scorpionweed	Mountain Butterweed
Brook Ragwort	Fringed Grass-of-Parlassus	Mountain eliotrope
Brown-bracted	Golden Whitlow-grass	Mountain Parsnip
Mountain	Graceful Cinquefoil	Mountain Sage
Everlasting	Great-flowered Gaillardia	Mountain Sorrel
Bulblet Saxifrage	Greenish-flowered	Myrtle-leaved Willow
Bunchberry	Wintergreen	Narrow-leaved Arnica
Canada Blue Grass	Hairy wild Rye	Narrow-petaled Stonecrop
Canada Buffaloberry	Harebell	Nodding Cockle
Canby Blue Grass	Head-like Sedge	Nodding Onion
Compound Fleabane	Heart-leaved Alexanders	Nodding Trisetum
Cow Parsnip	Heart-leaved Arnica	Northern Awnless Brome
Creeping Beardtongue	Heart-leaved Buttercup	Northern Bedstraw
Creeping Juniper	Hoary Willow	Northern Buttercup
Crocus Anemone	Hooker's Oat Grass	Northern Gentian
Cut-leaved Anemone	Hooker's Thistle	Northern Hedysarum
	Indiall Milk-vetch	Northern Ragwort

Northern Valerian	Sheep Fescue	Thick-spike Sedge
Oblong-leaved Gentian	Shining Arnica	Three-flowered Avens
One-flowered	Shooting Star	(Torchflower)
Wintergreen	Short-capsuled Willow	Three-toothed Saxifrage
One-sided Wintergreen	Showy Aster	Timber Oat Grass
Parry's Sedge	Showy Everlasting	Timberline Blue Grass
Parry's Townsendia	Showy Jacob's-ladder	Timothy
Pasture Sedge	Showy Locoweed	Trembling Aspen
Payson's Sedge	Showy Sandwort	Tufted Hair Grass
Pink Wintergreen	Shrubby Cinquefoil	Tufted Saxifrage
Plains Wormwood	Silky Scorpionweed	Twinflower
Prairie Buttercup	Silver Rockcress	Variiegated Horsetail
Prairie Onion	Silvery Groundsel	Velvet-fruited Willow
Prairie Selaginella	Simple Bog-Sedge	Wandering Daisy
Prickly Rose	Skyline Blue Grass	Water Sedge
Purple Mountain	Slender Beardtongue	Wedge leaved Saxifrage
Saxifrage	Slender Wheat Grass	Western Lousewort
Purple Reed Grass	Small Grass-of-Parnassus	Western Meadow-Rue
Purple Rock Cress	Small Wood Anemone	Western Minniebush
Purple Virgin's-Bower	Small-flowered Wood-rush	White Mountain Avens
Pygmee Buttercup	Smooth Aster	White Mountain-heather
Pygmy Shieldwort	Smooth Camas	White Rose-bay
Pygmyflower	Smooth Willow	White Rush
Racemose Everlasting	Smooth-leaved Cinquefoil	White Spruce
Red Indian Paintbrush	Snow Buttercup	Whitebark Pine
Red Whortleberry	Snow Cinquefoil	Wild Chives
Red-stemmed	Snow Willow	Wild Gooseberry
Saxifrage	Spear-leaved Arnica	Wild Strawberry
Reflexed Locoweed	Spike Trisetum	Wire Rush
Rhomboid-leaved	Spiked Wood-rush	Wooly Everlasting
Saxifrage '	Spotted Saxifrage	Yarrow
Rock Brake	Star-flowered Solomon's-	Yellow Alpine Daisy
Rock Sedge	seal	Yellow Beardtongue
Rock Willow	Sticky Stenotus	Yellow Columbine
Rocky Mountain	Stone Sedge	Yellow Cress
Willowherb	Streambank Wheat Grass	Yellow Daisy
Rose-root	Subalpine Fir	Yellow Hedysarum
Ross's Sedge	Subalpine Larch	Yellow Mountain Avens
Rosy Everlasting	Swamp Gooseberry	Yellow Mountain- heather
Rough Fescue	Sweet Grass	Yellow Rattle
Rush-like Sedge	Tall Larkspur	
Saskatoon	Thick-leaved Whitlow-	
Scribner's Wheat Grass	grass	

Lichens and Bryophytes of Plateau Mountain

Lichens

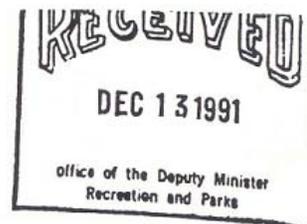
Acarosporaceae
Cladoniaceae
Lecanoraceae
Lecideaceae
Leprariaceae
Parmeliaceae
Peltigeraceae
Physciaceae
Stereocaulaceae
Teloschistaceae
Umbilicariaceae
Usneaceae
Verrucariaceae

Bryophytes

Amblystegiaceae
Aulacomniaceae
Batramiaceae
Brachytheciaceae
Bryaceae
Cleveaceae
Dicranaceae
Ditrichaceae
Encalyptaceae
Grimmiaceae
Hepaticae
Hylocomiaceae
Hypnaceae

Lophoziaceae
Marchantiaceae
Mniaceae
Musci
Orthotrichaceae
Polytrichaceae
Pottiaceae
Rhytidiaceae
Splachnaceae
Theliaceae
Timmiaceae

APPENDIX IV ORDER-IN-COUNCIL AND LEGAL DESCRIPTION



APPROVED AND ORDERED

A handwritten signature in cursive script that reads "Gordon Sawers".

LIEUTENANT GOVERNOR

O.C. 821/91

December 12, 1991

EDMONTON, ALBERTA

Upon the recommendation of the Honourable the Minister of Recreation and Parks, the Lieutenant Governor in Council, pursuant to sections 3.1 and 12.1 of the Wilderness Areas, Ecological Reserves and Natural Areas Act, makes the Plateau Mountain Ecological Reserve Regulation set out in the attached Appendix.

A handwritten signature in cursive script that reads "Don R. Kelly".
CHAIRMAN

APPENDIX

Wilderness Areas, Ecological Reserves and Natural Areas Act

PLATEAU MOUNTAIN ECOLOGICAL RESERVE REGULATION

1. The lands in the attached Schedule of Lands are hereby designated as an ecological reserve to be known as Plateau Mountain Ecological Reserve.
2. *The Natural Areas Designation Regulation (Alta. Reg. 47/85) is amended*
 - a) *by repealing section 1(c);*
 - b) *by repealing Schedule 3 of that Regulation.*

SCHEDULE OF LANDS

PLATEAU MOUNTAIN ECOLOGICAL RESERVE

FIRSTLY:

All those parcels or tracts of land, situate, lying and being in what would be if surveyed the fourteenth (14) township, the fourth (4) range, west of the fifth (5) meridian, in the Province of Alberta, Canada, and being composed of:

Sections twenty-nine (29) and thirty-one (31), legal subdivision nine (9) and the north half of the north half of section twenty (20), legal subdivision thirteen (13) of section twenty-one (21), the west half of the west half of section twenty-eight (28), the east half of section thirty (30) and the south half and north west quarter of section thirty-two (32) of the said township, containing one thousand three and six hundred fifty-six thousandths (1,003.656) hectares (2,480.00 acres), more or less.

SECONDLY:

All that parcel or tract of land, situate, lying and being in what would be if surveyed the fourteenth (14) township, the fifth (5) range, west of the fifth (5) meridian, in the Province of Alberta, Canada and being composed of:

Legal subdivision sixteen (16) of section thirty-six (36) of the said township, containing sixteen and one hundred eighty-eight thousandths (16.188) hectares (40.00 acres), more or less.

THIRDLY:

All those parcels or tracts of land, situate, lying and being in what would be if surveyed the fifteenth (15) township, the fourth (4) range, west of the fifth (5) meridian, in the Province of Alberta, Canada and being composed of:

Sections six (6) and eight (8), the west half of the south west quarter, the north half of the north west quarter and legal subdivision fifteen (15) of section four (4), the south half and north west quarter, legal subdivisions ten (10), fifteen (15) and sixteen (16) and the south half of legal subdivision nine (9) of section five (5), legal subdivisions two (2), three (3), four (4) and five (5) of section nine (9), the east half, the east half of the west half and legal subdivision four (4) of section seventeen (17), the east half of the north east quarter of section nineteen (19) and the west half of the north west quarter, the south half of the south east quarter and legal subdivision three (3) of section twenty (20) of the said township, containing one thousand two hundred thirty-eight and three hundred eighty-two thousandths (1,238.382) hectares (3,060.00 acres), more or less.

FOURTHLY:

All those parcels or tracts of land, situate, lying and being in what would be if surveyed the fifteenth (15) township, the fifth (5) range, west of fifth (5) meridian, in the Province of Alberta, Canada, and being composed of:

The east half of the east half of section one (1) of the said township, containing sixty-four and seven hundred fifty-two thousandths (64.752) hectares (160.00 acres), more or less.

The lands herein described contain two thousand three hundred twenty-two and nine hundred seventy-eight thousandths (2,322.978) hectares (5,740.00 acres), more or less.

APPENDIX V - SPECIAL CONDITIONS FOR PLATEAU MOUNTAIN ICE CAVE RESEARCH

The Plateau Mountain ice cave is a unique, rare and fragile feature which has been gated since 197-. Entry is restricted to approved researchers only after completing a research application and submitting it to the Crowsnest District Office of Land and Forest Service. The following special conditions will apply to any approved applications. Additional conditions may be added.

1. In all matters pertaining to cave access and use, the permit holder will abide by the conditions of the permit and instructions of the on-site ranger-in-charge. The permit holder is responsible for the conduct of all members of the party.
2. Approved permit holders are to notify the district ranger of each entry to the cave in advance.
3. Entry to the cave is limited to approximately one month intervals between June and September depending on snow conditions.
4. The entry party is limited to the permit holder, one named assistant and the ranger-in-charge.
5. "Cold-lighting" only is permitted within the cave. No heat emitting light sources such as flash bulbs, carbide lamps or gas lanterns are permitted.
6. Clothing worn by the entry party will include standard safety gear (e.g. Helmets, etc.) and be appropriate for winter conditions (including an insulated hood) so as to retain body heat and prevent warming of the cave.
7. The duration of each visit within the cave will not exceed one and a half hours, with no more than fifteen minutes spent in the innermost chambers, which contain the ice crystal plates.
8. Damage and disturbance of the Ice features in the cave will be minimized.
9. A report of the results and observations of each entry must be submitted within two weeks of the date of entry to the Crowsnest District Office. An assessment of the condition of the cave and any recommendations for management and protection of the cave must be included. Copies of any photographs taken inside the cave must also be included.

REFERENCES

Alberta Environment. 1993. Ecological Reserves Management Planning Manual, Alberta Environment, Edmonton.

Alberta Forestry, Lands and Wildlife. 1992. Alberta Guide to Big Game Hunting, Alberta Forestry, Lands and Wildlife, Edmonton.

Alberta Forestry, Lands and Wildlife. 1992. Alberta Guide to Sport Fishing, Alberta Forestry, Lands and Wildlife, Edmonton.

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Alberta Forestry, Lands and Wildlife. 1992. 1992 Special Licence and Authorization Draws, Alberta Forestry, Lands and Wildlife, Edmonton.

ERS Environmental Research. 1986. Biophysical Features and Land Use – Plateau Mountain, Alberta Recreation and Parks, Edmonton.

Hood, T & Gould, J. 1991. Management Guidelines Milk River Natural Area and Kennedy Coulee Ecological Reserve, Alberta Forestry, Lands and Wildlife, Edmonton.

Kananaskis Country. 1992. Plateau Mountain Ecological Reserve Management Plan Draft Terms of Reference, Kananaskis Country, Calgary.