

Beyond Prairie Potholes

**A Draft Policy For Managing
Alberta's Peatlands and
Non-settled Area Wetlands**

for discussion purposes

Alberta

WATER RESOURCES
COMMISSION

The Alberta Water Resources Commission, in cooperation with an interdepartmental steering committee, has prepared a draft policy for the management of all provincial peatlands and slough/marsh wetlands in the Non-settled Area. The departments represented on the committee included: Agriculture, Food and Rural Development; Environmental Protection; Municipal Affairs; and Transportation and Utilities. The policy is a draft, intended to be a starting point for public discussion. The Commission would like to hear your views on wetland management in the Non-settled Area and peatland management throughout the province. Public comments and suggestions will be considered when the final policy is prepared.

This draft policy document, *Beyond Prairie Potholes*, provides some background about wetlands, their functions, and value to Albertans. It presents a goal for wetland management, as well as strategies to achieve this goal. We hope it will stimulate discussion about peatlands and Non-settled Area wetlands, and how this important resource should be managed.

Several opportunities exist for public review of the draft policy. This document, containing the draft policy, has been widely circulated. Written or verbal comments on the document would be appreciated. A comment form is included with this report for your convenience. Public meetings will be held in the fall of 1993 and all interested groups and individuals are invited to participate. A background report, containing the information used to develop this draft policy is available on request. For further information, to place your name on our mailing list, to receive further copies of this draft policy, or to talk about the wetland policy, please contact:

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Wetland Management in the Settled Area of Alberta: An Interim Policy has also been released. This policy was the result of public consultation on Settled Area wetlands conducted in 1990 and extensive interdepartmental consultation. Copies of the interim policy are available from the Alberta Water Resources Commission. The results of the current public consultation process on provincial peatlands and Non-settled Area slough/marsh wetlands will be combined with the interim policy for wetlands in the Settled Area to develop a comprehensive policy that addresses all wetland types throughout the province.

Introduction

Wetlands are complex ecosystems found across our province. Different wetland types include slough/marsh wetlands and peatlands. A peatland is a wetland where peat (partially decomposed organic material) has accumulated. Wetlands play a vital role in surface water hydrology, such as flood control, and in groundwater recharge or discharge. Wetlands help maintain water quality by filtering out sediment or nutrients from surface runoff. They provide habitat for certain wildlife and plant species, and may be used as sites for trapping or hunting. Recreational, educational, or economic activities also occur in and around wetlands. Peat may be extracted for horticultural purposes.

What is a Wetland Policy and What is it Designed to Do?

The purpose of a wetland policy for the province is to indicate the government's intentions about wetland management. A wetland policy will provide the framework within which individual decisions are made concerning wetlands. For example, a policy of wetland conservation or "wise use" would allow some wetlands



Different vegetation types, including black and white spruce, are present in wetlands. (L. Allen)

to be altered through development to provide economic benefits, while ensuring that the environmental impacts were minimized. A provincial policy, applied consistently, would ensure that all departments with mandates affecting wetlands would be making decisions aimed at meeting the same objectives.

Didn't We Already Talk About Wetland Management in Alberta?

In 1990, the government initiated public discussion about wetland management. The research material and public discussion focused on slough/marsh wetlands in the Settled Area of the province (Figure 1). Those wetlands have been subjected to extensive development pressures that have resulted in a critical loss of wetlands. Issues and comments raised by the public were incorporated into *Wetland Management in the Settled Area of Alberta: An Interim Policy*.

We are still talking about wetlands, but our focus now is on two areas not addressed in the first round of consultation: peatlands located anywhere in the province, and slough/marsh wetlands located in the Non-settled Area.

What (And Where) is the Non-settled Area?

The Non-settled Area, commonly referred to as the "Green Area" is shown in Figure 1. It consists of public land originally set aside for commercial and industrial uses, such as forestry and mining, where settlement generally would not be allowed. The Non-settled Area covers 53 percent of the province. The Government of Alberta manages the public land for the benefit of Albertans. Individuals or companies may be allowed to lease land for specific purposes, such as peat moss harvesting, but the land is not available for purchase.

Why Didn't We Address all Wetlands in the Province at One Time?

The issues concerning slough/marsh wetlands in the Settled Area were complex and largely distinct from those concerning peatlands. The need to address wetland loss was much more urgent in the Settled Area. Furthermore, the information base for peatlands and slough/marsh wetlands in the Non-settled Area in



Figure 1. The Settled and Non-settled Areas of Alberta
 (Source: Alberta Forestry, Lands and Wildlife)

general was not as complete as in the Settled Area. For those reasons, it was felt that the two areas should be addressed separately.

How are the Settled and Non-settled Area Processes Connected?

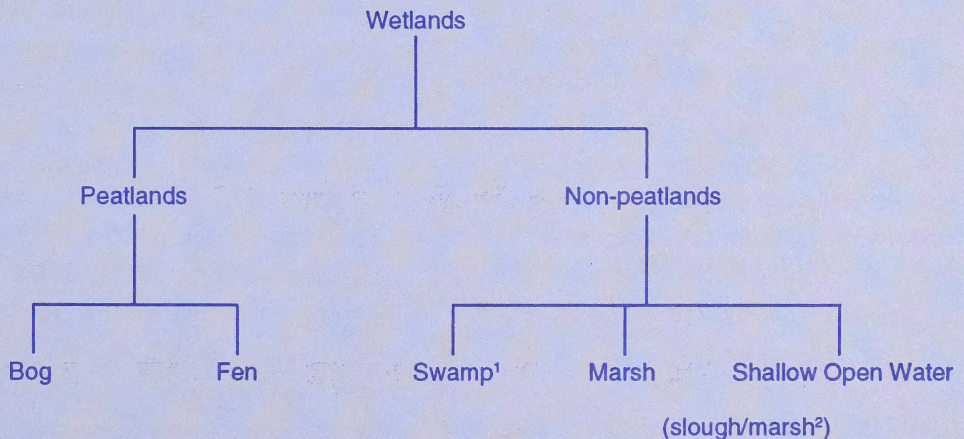
Many of the policy statements that came out of the Settled Area wetland policy process addressed wetland management in general. For example, the overall goal for wetland management developed for the Settled Area was meant to be applied to the entire province. Statements about issues such as research or education could also apply throughout the province, although the specific details would vary depending on the wetland type and location. Where applicable, policy statements for this policy were drawn from the Settled Area interim policy. Statements specific to the issues in the Non-settled Area were added as needed. The current draft policy review will be combined with the interim policy for the Settled Area to allow the government to produce

a comprehensive wetland management policy for the entire province.

What are Wetlands?

A wetland is defined as an area where the land is saturated by water long enough to promote conditions of poorly-drained soils, water-loving vegetation, and biological processes suited to wet areas. The type and extent of wetlands are determined by a complex interaction of climate, land features, surface and groundwater flow, vegetation, and soils. Wetlands are classified in Canada into 5 major classes: bogs, fens, marshes (or sloughs), shallow open water (less than 2 metres deep) and swamps (Figure 2). For the purposes of this policy, bogs and fens are grouped together and called **peatlands**. The term **slough/marsh wetlands** is used to include marshes and adjacent shallow open water wetlands. Definitions of individual wetland types are presented in Figure 3.

Figure 2. Wetland Classification



Notes:

¹ a swamp may be classified as peatland, depending on location, peat accumulation, and local conditions

² slough/marsh, as used in Alberta, refers to wetlands including marsh and some component of shallow open water

Figure 3: Wetland Definitions

Peatlands, which include both bogs and fens, are the most common type of wetlands in the Non-settled Area of Alberta. Peatlands are characterized by the accumulation of peat and by relatively stable water tables. Open water may or may not be visible.

A **bog** receives most of its water from rainfall; therefore it is low in nutrients. The water in a bog is very acidic, often with a pH less than 4. Vegetation consists primarily of Sphagnum mosses and some trees able to tolerate the acidic water and low nutrient levels. The groundwater table is located at or near the ground surface.

A **fen** receives most of its water supply from the groundwater; therefore the water contains more nutrients and less acid than in bogs, with the pH ranging from 4 to 8. The groundwater table is located at or above the ground surface.

To a casual observer, a bog may look like a forest with a poor growth of black spruce or tamarack trees and dominated by moss. Fens may look like open fields of sedges or grasses, or may have a dense cover of black spruce and tamarack trees. However, closer examination may reveal that the peatlands are extremely wet, the soil is composed of organic material, and plants tolerant of wet conditions are present.

A **marsh** is an area that is periodically inundated by standing or slow-moving water. The root zone is flooded for most of the growing season. The water is rich in nutrients. Marshes are characterized by emergent vegetation such as reeds, rushes, or

sedges. In Alberta, marshes are often referred to as sloughs. Slough/marsh wetlands may incorporate adjacent shallow open water wetlands, described below. Slough/marsh wetlands do not occupy as much area as bogs and fens in the Non-settled Area of Alberta, but they play a critical role in waterfowl production in the province.

Shallow open water is a class that encompasses the transition zone between lakes and marshes, describing areas of predominantly open water less than 2 metres deep. These wetlands, also known as ponds, are temporarily or permanently flooded during most of the growing season. Often shallow open water wetlands are included in the definition of a slough/marsh.

Swamps are areas that are flooded at least seasonally by standing or slow-moving water. The vegetation consists of a dense cover of deciduous or coniferous trees and shrubs. Swamps are not common in Alberta. They are generally confined to the transition zone between bogs and fens and upland forests, where deciduous or coniferous trees may be affected by seasonal flooding.

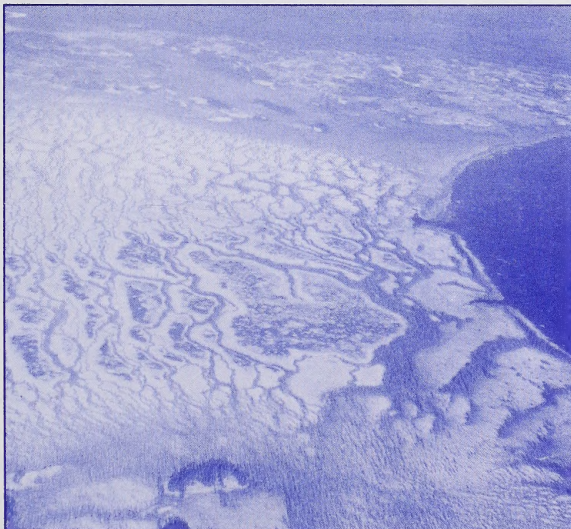
It must be remembered that the distinctions between different wetland classes are gradual, not abrupt, and that wetland complexes may consist of several types of wetlands within one area. This is particularly true in the Non-settled Area of Alberta. Often distinctions between wetland types, particularly bogs and fens, cannot be made by visual examination only. An understanding of the water source and water chemistry may be necessary to make the distinction.

Aren't We Talking About Muskeg?

The term muskeg has been used informally in Alberta to describe northern wetland areas covered with a variety of vegetation, including mosses, sedges, and variable tree cover. The term muskeg has not been precisely defined, and it will not be used in this report. Instead, **peatland** will be used to describe any wetland where peat has accumulated to a thickness of at least 40 centimetres (16 inches). So peatlands are a type of wetland that have been commonly referred to as muskeg. Most peatlands are complexes of bogs, fens, and occasionally swamps. Peat does not accumulate to significant thicknesses in slough/marsh or shallow open water wetlands, so they are not considered to be peatlands.

What is Peat?

Peat is a type of soil composed almost entirely of organic matter from the partial decomposition of plants growing in wet conditions. Peat may consist of sedges, rushes, grasses, or mosses, in varying stages of decomposition. Peat accumulates in bogs and fens, which are referred to collectively as peatlands. Peat accumulates slowly, at rates of a few centimeters (inches) per century. People are most familiar with "peat moss" which is peat composed primarily of mosses. Peat moss is partially dried and harvested for use in gardens.



Patterned peatlands are extensive landscape features in northern Alberta. (P. Lee)

How Extensive are Peatlands and Slough/Marsh Wetlands?

Wetlands are an important part of Alberta's landscape, forming over 20 percent of the province's land base. They cover approximately 13.7 million hectares or 137,000 square kilometres of wetlands (33.8 million acres or almost 53,000 square miles). If all the wetlands were located adjacent to each other, they would cover an area extending west from the border with Saskatchewan to Highway 2 and north from the border with Montana to just south of Edmonton. Only in Manitoba and Ontario do wetlands occupy a greater proportion of the provincial landscape.

Peatlands (bogs and fens) are the dominant types of wetlands in Alberta. Peatlands comprise almost 93 percent (12.7 million hectares) of Alberta's wetlands (National Wetlands Working Group 1988: 5). Specific inventory data are not available to determine how many of the 12.7 million hectares of peatlands are located in the Settled Area; however, most are located in the Non-settled Area. Slough/marsh wetlands occur throughout Alberta, but they are more common in the southern part of the province. Still, only an estimated 7 percent of Alberta's wetlands consist of slough/marsh wetlands.



Marshes provide good habitat for wildlife, including this egret. (L. Allen)

Are Wetlands, Especially Peatlands, of any Value to Albertans?

Some key ecological functions provided by Alberta's peatlands and other wetlands in the Non-settled Area include:

- a role in surface water hydrology, including flood control, and groundwater recharge or discharge;
- influence on water quality;
- wildlife habitat; and,
- storage and cycling of energy and chemicals including carbon in peatlands.

In addition, wetlands provide a variety of social and economic benefits to Albertans, including areas for:

- horticultural or fuel peat harvesting;
- agriculture including grazing, forage production, and cropping on peat soils;
- tourism and recreation, including bird watching or hiking;
- research for studies of numerous water-related, biological, and biochemical issues, including the history of climate change; and,
- trapping and hunting.

What is Unique About Managing These Wetlands?

Peatland management and management of slough/marsh wetlands in the Non-settled Area of Alberta present different policy problems than those of the Settled Area. First, most wetland resources are publicly owned, and are managed by the government for the benefit of all Albertans. Second, wetlands are not isolated features on the landscape; they cover extensive areas and may comprise almost 100 percent of the landscape in some regions of northern Alberta. Most wetlands are found in complexes that may consist of several different wetland types and may cover thousands of hectares. Third, peatlands are the most common wetlands in the Non-settled Area. Fourth, the information base about peatlands and slough/marsh wetlands in the Non-settled Area is limited, and many functions and roles of Non-settled Area wetlands and peatlands are not well understood. Finally, development pressures on the wetlands in the Non-settled Area are relatively recent.

What are the Issues Concerning Peatlands and Other Non-settled Area Slough/Marsh Wetlands?

Developments that can have an impact on wetlands include vegetation clearing, agricultural practices, timber harvesting, drainage, peat harvesting, cultivation, or construction of roads, well sites, or recreational facilities. Various activities are currently having an impact on wetlands in Alberta, and others have the potential to impact Alberta wetlands in the future. The following issues and concerns were identified by government agencies and other groups contacted during the preparation of this report; some issues were identified by participants in the public review of the draft Settled Area wetlands policy.

1. No policy is currently in place to guide resource management decisions concerning provincial peatlands or slough/marsh wetlands in the Non-settled Area. As most of the land is publicly owned, management strategies that focus on provincial government activities and responsibilities are required.
2. The demand for horticultural peat deposits is reaching the limit of available supply in the Settled Area. Searches for new peat deposits are taking companies into the Non-settled Area. In addition, preliminary interest has been expressed in the use of peat as an energy source and for industrial absorbents. Currently the government does not have sufficient information about the province's peat resources to fully evaluate the suitability of proposed sites for various uses.
3. Increasing activity in the Non-settled Area, including oil and gas development, and road and utility construction, may be affecting the wetland resources to an extent that has not been evaluated and in ways that are not fully understood.
4. Some peatlands located on private land in the Settled Area have been converted to agricultural use through techniques such as drainage, vegetation clearing, and soil treatments including deep plowing or removal of all peat. In some areas, removed peat soils have been burned. These activities may have significant impacts on the hydrology in the watershed, and will result in habitat loss. Because the

land is privately owned, the government does not have direct controls over peatland conversion to agricultural use.

5. Timber harvesting is occurring at locations throughout Alberta's Non-settled Area. This area is covered extensively by peatlands, some of which may contain timber suitable for harvest. The potential for successful reforestation on peatlands is not known. The impacts of forestry activity on wetland hydrology are not well understood. Harvesting may be creating a need for drainage to enhance reforestation on wet areas; the impacts of this on the hydrology of an area have not been determined.
6. Peatland drainage has been used in other countries such as Finland to improve timber yields on wet soils including peatlands. This procedure is being used experimentally in Alberta to determine its suitability to our climate, peatlands, and forestry practices. No commercial forestry drainage operations are currently underway. However, some estimates indicate that over 4 million hectares of Alberta peatlands might be physically suitable for peatland drainage. The impacts of drainage on Alberta's peatlands and water quality and quantity have not been fully evaluated, although some research is ongoing.



Wetlands may be impacted by oil and gas development. (G. Bergstrom)

7. In the past, some land designated as "non-settled" or "green" area has been converted to "settled" or "white" area. When this happens, the land ownership changes to leasehold or private ownership and land use changes to agricultural uses, including cattle grazing or cropping. Future conversions are possible, and could be accelerated if there were an increased demand for agricultural land or if changes in the land suitability were created by factors such as climate warming. Once land is converted to private ownership and agricultural uses, the government loses some flexibility in managing wetland resources on the transferred land.
8. The possible expansion of oil sands mining in the Fort McMurray area has the potential to disturb large areas of wetlands. The timing of such expansion will be affected by many factors, including world oil prices and available technology, and is difficult to predict.
9. Communities are looking to tourism and outdoor recreation for economic development. Wetlands could be affected in two ways. First, they provide some of the natural attractions desired by tourists. Second, wetlands may be affected by the development of tourism infrastructure. For example, a marina development may destroy some marsh habitat along a lake margin.



Peat moss for horticultural use is harvested from some wetlands. (G. Bergstrom)

What Principles Should Guide Wetland Management?

The following principles for wetland management were discussed during the drafting of this report:

1. *Wetlands should be managed as ecosystems. They are an integral and important part of our environment.* The best way to ensure that as many values of an ecosystem are protected as possible is to ensure that the ecosystem is kept healthy and functioning normally. Activities occurring on the land surrounding a wetland may impact the wetland, just as activities in or changes to a wetland may affect surrounding land. As a result, the interactions between wetlands and the surrounding watershed must be considered in management decisions.
2. *Wetland policy and management should recognize the variability in wetland type, size, distribution, functions, and significance, in different regions of the province.* Wetlands should be managed on a regional basis to address these variations.
3. *Different types of wetlands have different social, economic, and environmental functions and values. This variety of values should be reflected in our decision-making processes.*
4. *Wetland management involves and affects many Albertans. Public involvement in policy development and resource management is essential and should be supported by adequate public information.* This will allow the concerns of non-government organizations and private individuals to be included in policy and management decisions.
5. *Government departments and agencies at local, provincial, federal, and international levels should cooperate in wetland management.* The impact of wetland management will be felt at various scales, and all agencies with a responsibility for wetlands should cooperate.
6. *Wetlands should be managed using the best available information, as it is obtained, recognizing the uncertainty inherent in the information. Ongoing research to improve our understanding of wetland functions and values is necessary.*

7. *Options for future generations should be retained as much as possible. This is especially important for peatlands because they may take hundreds or thousands of years to form.* If a peatland resource is used up, say by peat harvesting, it cannot be recreated over a short time frame.

Who Manages Wetlands Now?

Currently no single department has the mandate to manage wetlands. Similarly, no one law specifically addresses wetlands. Several departments have mandates which may affect wetlands, including: Agriculture, Food and Rural Development; Environmental Protection; Municipal Affairs; and Transportation and Utilities. Although no planning program currently focuses on wetlands, wetland functions and values are considered as part of other resource planning which is undertaken. Specific projects which may have impacts on wetlands are reviewed by various agencies as part of ongoing referrals between the departments. Local governments, such as improvement or municipal districts, may be responsible for land use decisions which may affect wetlands.



Wetlands support a variety of plant species, including yellow lady's slippers. (M. Bailey)

What are Your Views About Wetlands?

The draft policy recommendations presented in this document are meant to generate discussion about wetlands in Alberta, focusing on peatlands throughout Alberta and slough/marsh wetlands in the Non-settled Area. Your comments about these wetlands, and how they should be managed, will be considered when the final policy statements are prepared. The draft statements of policy goal and intent are listed below with the management strategy recommendations. Please write

your comments in the space provided and return the form to the Alberta Water Resources Commission at #910, 10045-111 Street, Edmonton, Alberta, T5K 2M5. If you wish, you may provide additional written comments on the draft policy recommendations. Or feel free to contact us at 422-4232 in Edmonton. We would appreciate receiving all comments before November 30, 1993. Thank you for your help!

Policy Statements

Comments

Policy Goal

The goal of the Government of Alberta is to sustain the social, economic and environmental benefits that functioning wetlands provide, now and in the future.

Policy Intent

Peatlands: The intent of the draft policy with respect to **peatlands** located throughout the province is:

- to ensure that representative, rare, and unique peatland ecosystems are set aside to protect identified values;
- to allow use of peatlands where the social and economic benefits of development are considered to be greater than the loss of wetland functions and values; and,
- to minimize, and mitigate where necessary, the adverse effects of developments in the watershed which impact peatlands, as well as the effects of peatland developments on the watershed.

Slough/Marsh Wetlands: The intent of the draft policy with respect to **slough/marsh wetlands** located throughout the province is:

- to conserve slough/marsh wetlands in a natural state;
 - to mitigate degradation or loss of slough/marsh wetland benefits as near to the site of disturbance as possible; and,
 - to enhance, restore, or create wetlands in areas where slough/marsh wetlands have been depleted or degraded.
-

Policy Statements**Comments**

Shallow Open Water, Swamps: The intent of the draft policy with respect to wetlands classified as **shallow open water or swamps** is:

- to recognize shallow open water or swamps as a component of the adjacent wetland type, whether that be peatland (bogs and fens) or slough/marsh, and to manage them as part of that wetland type.

Regional Application: The intent of the policy with respect to **regional variation** in wetlands is:

- to develop regional wetland management objectives and targets that recognize the regional variation in the distribution of different wetland types, functions, values, and ownership.

Management Strategies**Policy Administration:**

- Alberta Environmental Protection will be responsible for coordinating wetland management and the implementation of the wetland policy among the existing government departments.

Planning:

- An integrated approach to wetlands planning and management will be used. Wetlands will be managed as functional ecosystems, and the impacts on wetlands of activities occurring on surrounding land will be considered. Regional wetland management objectives will be determined as part of wetland planning.

Inventory:

- Alberta Environmental Protection will coordinate the development and maintenance of a provincial information base about wetlands. The information base will be used to facilitate wetland planning and to allow informed wetland management decisions to be made.
-

Policy Statements**Comments**

Coordination and Cooperation:

- Management activities of the different levels of government (federal, provincial, and local), the provincial government departments, non-governmental organizations, and individuals will be coordinated to encourage wetland policy implementation.
-

Conservation and Preservation:

- Social, economic, and environmental values derived from wetlands will be considered when making decisions concerning development that may alter the function or values of a wetland. Activities on public lands that may result in wetland degradation will be controlled through regulations and guidelines on dispositions to prevent or minimize impacts on wetlands. Representative, rare, and unique wetlands will be protected. Development that may impact wetlands will proceed cautiously and with consideration of other possible values.
-

Drainage:

- Proposals involving drainage of wetlands will be evaluated comparing all benefits and costs related to draining the wetland to those of leaving it in its natural state. Other projects will be assessed and possibly altered to minimize indirect changes to wetland hydrology.
-

Water Management:

- The value of certain wetlands for water management purposes will be recognized in management decisions.
-

Surrounding Land and Wetland Margins:

- The roles that the upland area surrounding a wetland and that the wetland margins play in the ecosystem will be considered in wetland management decisions.
-

Transportation, Utility, and Energy Development, and Urban Expansion:

- The impacts of road, industrial, or community development on wetlands will be evaluated in the decision-making process and minimized.
-

Policy Statements**Comments**

Wetland Ownership:

- Management of wetlands on both publicly and privately held lands will be addressed by this policy.
-

Legislation:

- Existing legislation and mandates will be used to manage wetlands, with modifications as necessary.
-

Research:

- Wetland research will continue to be conducted to improve the quality of information available to assist decision making. Attempts to coordinate research activities will be supported. Some peatland research areas include peatland restoration, forest hydrology and the impacts of drainage, and the agricultural potential of peatlands.
-

Education:

- Available information concerning wetlands will be provided to Albertans to assist in their understanding of the functions and values of wetlands and to enable the public to participate effectively in wetland management.
-

Public Consultation:

- Public consultation will be an integral part of wetland planning and management, including development of wetland policy and regional objectives.
-

General Comments:

If you would like to have your name added to our mailing list to receive future wetlands information, please complete this section:

Name

Address

City/Town

Postal Code

What is the Proposed Goal of the Policy?

Wetland management in Alberta should be guided by a clear policy goal. The recommended policy goal states:

The goal of the Government of Alberta is to sustain the social, economic and environmental benefits that functioning wetlands provide, now and in the future.

This goal provides direction for wetland management, including peatlands, slough/marsh wetlands, swamps, and shallow open water wetlands. Incorporated in the goal statement is the recognition that wetlands provide diverse benefits, and that all these benefits must be considered in any management decision.

What is the Intent of the Draft Policy?

Peatlands: The intent of the draft policy with respect to peatlands located throughout the province is:

- to ensure that representative, rare, and unique peatland ecosystems are set aside to protect identified values;
- to allow use of peatlands where the social and economic benefits of development are considered to be greater than the loss of wetland functions and values; and,
- to minimize, and mitigate where necessary, the adverse effects of developments in the watershed which impact peatlands, as well as the effects of peatland developments on the watershed.

Peatlands are relatively abundant in Alberta, especially in the Non-settled Area, and extensive peatland development has not occurred in the province to date. Therefore the opportunity still exists for some peatlands to be set aside now to meet specific goals, such as preserving a unique peatland. This is particularly important because peatlands take thousands of years to form, and cannot be recreated or fully restored if they are disturbed. However, the extensive nature of peatlands means there is also room for some development to occur to meet social and economic objectives, as long as development impacts are minimized.

Slough/Marsh Wetlands: The intent of the draft policy with respect to slough/marsh wetlands is:

- to conserve slough/marsh wetlands in a natural state;
- to mitigate degradation or loss of slough/marsh wetland benefits as near to the site of disturbance as possible; and,
- to enhance, restore, or create wetlands in areas where slough/marsh wetlands have been depleted or degraded.

These statements for slough/marsh wetlands were developed as part of the Settled Area wetland policy process, and are stated in descending order of preference. They would also apply to the Non-settled Area because slough/marsh wetlands perform similar functions, such as providing waterfowl habitat, regardless of their location in the province. The emphasis on conservation reflects the historical loss of this type of wetland in the province, although the loss has occurred primarily in the Settled Area. Wetland enhancement or restoration is feasible with slough/marsh wetlands, and has been the subject of extensive research.

Shallow Open Water, Swamps: The intent of the draft policy with respect to wetlands classified as shallow open water or swamps is:

- to recognize shallow open water or swamps as a component of the adjacent wetland type, whether that be peatland (bogs and fens) or slough/marsh, and to manage them as part of that wetland type.

This will allow complexes of different wetland types to be managed as a single functioning ecosystem.

Regional Application: The intent of the draft policy with respect to regional variation in wetlands is:

- to develop regional wetland management objectives and targets that recognize the regional variation in the distribution of different wetland types, functions, values, and ownership.

Distinct management approaches may be required in different parts of the province.

What Management Strategies are Proposed?

Management strategies aimed at achieving the recommended policy intents are presented here for discussion. In each category a brief description is included, and issues especially affecting Non-settled Area wetlands or provincial peatlands are identified. Recommendations are presented in *italics*.

Policy Administration

Responsibility for managing wetlands does not rest with a single provincial government agency. The departments of Agriculture, Food and Rural Development; Environmental Protection; Municipal Affairs; Transportation and Utilities; as well as other departments, have mandates which could affect wetland management. Given this division of responsibilities, it is important to clearly designate an agency responsible for coordinating wetland policy implementation.

Recommendation: Alberta Environmental Protection will be responsible for coordinating wetland management and the implementation of the wetland policy among the existing government departments.



Peatlands can support sedges (foreground) or trees, depending on moisture conditions. (G. Bergstrom)

Planning

Wetlands are ecosystems where complex interactions occur among components of air, water, land, vegetation, and wildlife. These interactions can be affected by activities occurring within the wetland, or on the adjacent land within the watershed. These interactions must be considered in resource planning, management, and decision making. Systematic wetland planning does not occur currently in Alberta, although wetlands are addressed under processes such as water management planning and planning for projects such as forestry development that may impact wetlands. Planning also must address the regional variations that exist in wetland types and demands.

Recommendation: An integrated approach to wetland planning and management will be used. Wetlands will be managed as functional ecosystems, and the impacts on wetlands of activities occurring on surrounding land will be considered. Regional wetland management objectives will be determined as part of wetland planning.

Inventory

Information about wetlands in the Non-settled Area and provincial peatlands is limited. However, new information continues to be collected by a variety of agencies. Government agencies as well as private sector organizations such as Ducks Unlimited have collected wetland



Some species, such as carnivorous pitcher plants, are found only in wetlands. (G. Bergstrom)

information for different areas of the province for various purposes. The forest industry has also collected vegetation information which indirectly provides information about wetlands. A map showing the distribution of Alberta peatlands was published in 1992 as a result of activities at the University of Alberta.

Recommendation: Alberta Environmental Protection will coordinate the development and maintenance of a provincial information base about wetlands. The information base will be used to facilitate wetland planning and to allow informed wetland management decisions to be made.

Coordination and Cooperation

All levels of government, including federal, provincial, and local, have an interest in wetland management in Alberta, and are responsible for programs and policies affecting wetlands. For example, the federal government is responsible for implementing the federal policy on wetland conservation in the national parks. In addition, various non-governmental organizations have important roles to play in wetland management.

Recommendation: Management activities of the different levels of government (federal, provincial, and local), the provincial government departments, non-governmental organizations, and individuals will be coordinated to encourage wetland policy implementation.

Conservation and Preservation

Some wetland use for various development activities may occur to meet economic and social goals. Wise use or conservation of the resource is necessary to increase the likelihood of sustained and productive use of that resource. Activities on land adjacent to wetlands may indirectly affect wetlands, and this should be addressed. For example, road construction may alter the near-surface flow patterns of the groundwater, affecting the water balance in an adjacent wetland. Actions occurring away from wetlands, which generate conditions such as acid precipitation or climate warming, may also degrade wetlands. Water quality and the biological processes in wetlands may be impaired if pollution levels from sources such as pipeline leaks or soil erosion are excessive.

In addition to the wise use of some wetlands, representative, rare, and unique wetlands should be afforded some level of protection from development. This will assist in maintaining certain wetland values, preserving biodiversity, securing wetlands of importance to Albertans, and maintaining sufficient areas for uses such as recreation. Protection mechanisms range from minor limitations on land use to total restriction of activities within an area.

Recommendation: Social, economic, and environmental values derived from wetlands will be considered when making decisions concerning development that may alter the function or values of a wetland. Activities on public lands that may result in wetland degradation will be controlled through regulations and guidelines on dispositions to prevent or minimize impacts on wetlands. Representative, rare, and unique wetlands will be protected. Development that may impact wetlands will proceed cautiously and with consideration of other possible values.

Drainage

Wetland drainage involves the removal of some or all of the water from a wetland to increase its suitability for a variety of uses. A licence is required from Alberta Environmental Protection for any project involving drainage. For peatlands, drainage generally refers to the practice of lowering the groundwater table. For slough/marsh wetlands, drainage may involve removing all surface water from the wetland. Drainage is a standard technique used in horticultural peat harvesting to allow peat moss to be harvested. Drainage has been used experimentally to improve tree growth for timber harvesting in Alberta, and may also be appropriate to improve reforestation success in wet areas. Drainage may increase the agricultural capability of wetlands, including peatlands.

Various environmental impacts are associated with drainage. Drainage will alter the conditions in the wetland, changing such things as the vegetation or wildlife the wetland supports, or the role of the wetland in the water cycle in the area. Drainage may have downstream effects on water quality or quantity or timing of flows.

Recommendation: Proposals involving drainage of wetlands will be evaluated comparing all benefits and costs related to draining the wetland to those of leaving it in its natural state. Other projects will be assessed and possibly altered to minimize indirect changes to wetland hydrology.

Water Management

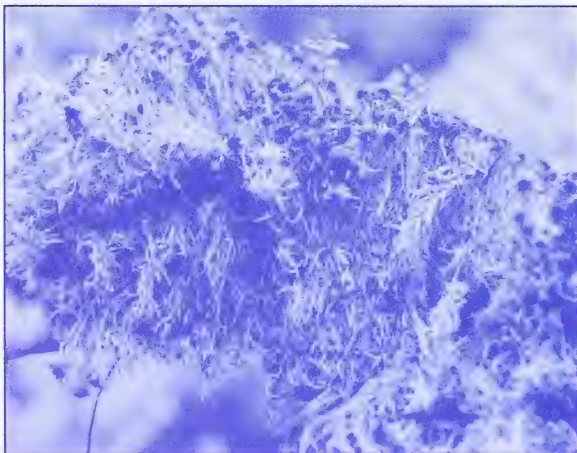
Wetlands serve useful water management functions, such as flood control, water purification, flow regulation, or groundwater recharge, depending on the type and location of the wetland. Wetlands can be used as a tool in water management. They can actually be created or altered to improve their usefulness as a water management tool.

Recommendation: The value of certain wetlands for water management purposes will be recognized in management decisions.

Surrounding Land and Wetland Margins

Activities on land adjacent to wetlands can have significant effects on wetlands. Many benefits of wetlands such as forage, recreational opportunities and wildlife habitat may be lost if wetland margins are cleared of natural vegetation to the edge of open water.

Recommendation: The roles that the upland area surrounding a wetland and that the wetland margins play in the ecosystem will be considered in wetland management decisions.



Sphagnum mosses which dominate some peatlands hold large quantities of water. (G. Bergstrom)

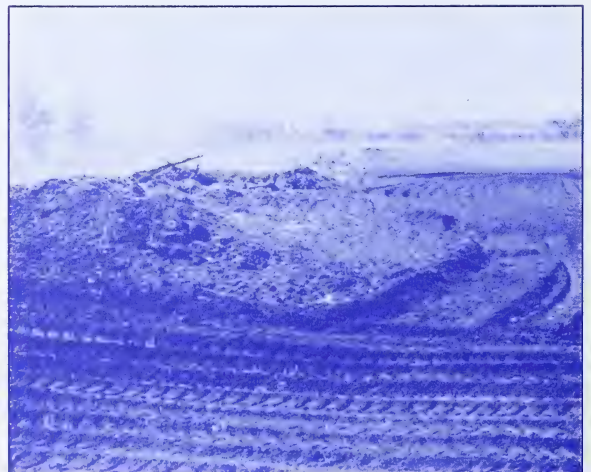
Transportation, Utility, Energy, and Community Development

Transportation, utility, energy, and community developments, such as roads, pipelines, well-sites, or mines, have contributed directly to the loss or degradation of wetlands where construction occurs on or through wetlands. Indirect impacts are also possible, for example through the alteration of natural drainage patterns caused by road construction.

Recommendation: The impacts of road, industrial, or community development on wetlands will be evaluated in the decision-making process and minimized.

Wetland Ownership

Wetland ownership is a complicated matter. Ownership of water in all wetlands, including peatlands, is vested in the province under the Water Resources Act. In addition, wetlands located on public land, including all wetlands in the Non-settled Area, belong to the province. The government may grant individuals or companies the rights to certain uses of the land such as grazing, peat harvesting, or timber harvesting, but the land ownership remains with the province. On private land, the bed and shore of wetlands that are “permanent and naturally occurring water bodies” are owned by the government under Section 3 of the Public Lands Act unless the title has been specifically granted to a private landowner.



Sometimes peat is stripped and burned to allow agricultural use of underlying soils. (G. Bergstrom)

Recommendation: Management of wetlands on both publicly and privately held lands will be addressed by this policy.

Legislation

Wetland resources are covered indirectly by several laws which address development or conservation of various land, water, and wildlife resources. The mandate to manage both land and water resources in the Non-settled Area now rests primarily with Alberta Environmental Protection, although other departments have mandates that have some impact on wetland management.

Recommendation: Existing legislation and mandates will be used to manage wetlands, with modifications as necessary.

Research

Wetland research is being conducted in Alberta by government agencies, private industry and the academic community in an effort to better understand the functions and values associated with wetlands in general, and peatlands in particular. Many questions about peatlands remain. More research will give resource managers a better understanding and will assist them in making informed decisions about wetland management. Initial efforts are being made by the research community to coordinate peatland research.

Recommendation: Wetland research will continue to be conducted to improve the quality of information available to assist decision making. Attempts to coordinate research activities will be supported. Some peatland research areas include peatland restoration, forest hydrology and the impacts of drainage, and the agricultural potential of peatlands.

Education

Many Albertans are unaware of the extent of wetlands, particularly peatlands, in Alberta. They may not know what peatlands look like, or where they are located. They may not understand the values, benefits, or costs associated with wetlands, either in their natural state, or under various development scenarios. Existing informa-

tion should be collected and specific education programs prepared for distinct audiences.

Recommendation: Available information concerning wetlands will be provided to Albertans to assist in their understanding of the functions and values of wetlands and to enable the public to participate effectively in wetland management.

Public Consultation

Public consultation is an effective way to determine the public values associated with wetlands, and to determine how to manage the resource to achieve those values. The policy will incorporate public consultation to ensure that the desires of the public are adequately reflected in wetland policy and management decisions.

Recommendation: Public consultation will be an integral part of wetland planning and management, including development of wetland policy and regional objectives.

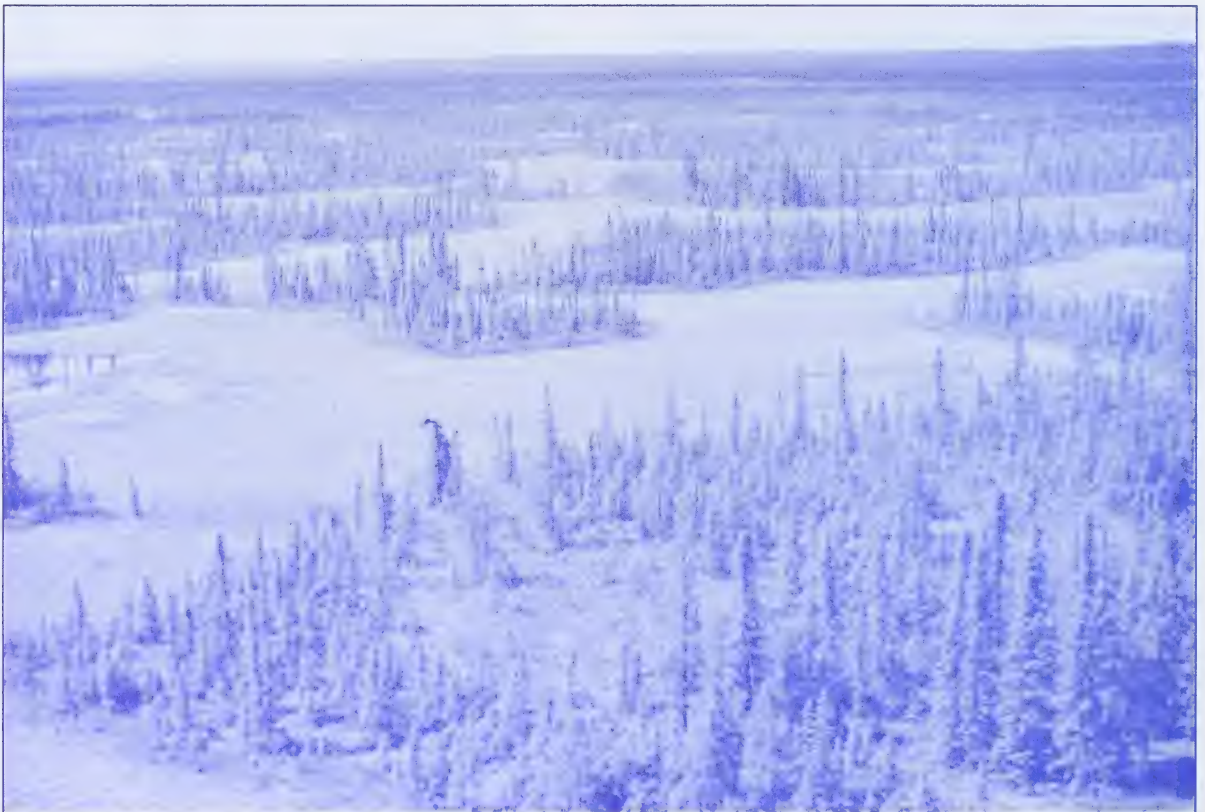
How Will Albertans Have a Chance to Influence Wetland Policy?

This draft policy document and the companion background document are meant to summarize the available information concerning Alberta's wetlands in the Non-settled Area, and peatlands located across the province. Draft policy statements are presented concerning Alberta's wetland resources.

There are several ways for Albertans to have input to the policy development process. The comment form inserted in this document can be completed and returned to the Water Resources Commission. Letters and briefs from individuals or organizations addressing concerns about peatlands or Non-settled Area wetland management will also be accepted. Open houses and public workshops will be held in various locations across the province in the fall of 1993, at which time any inter-

ested individual or group may discuss the issues pertaining to peatlands and to wetland management in the Non-settled Area.

This information will be used by the Alberta Water Resources Commission and the interdepartmental steering committee in charge of the policy development to revise the policy statements. A comprehensive wetland policy will be written that combines the information included in *Wetland Management in the Settled Area of Alberta: An Interim Policy* with the Non-settled Area and peatland issues addressed during this round of public consultation. Input will also be solicited from the involved government departments. When the policy has been approved by the Water Resources Commission, it will be forwarded to the government for formal approval.



Peatlands in Alberta may be a complex mixture of open water, sedges, and trees. (P. Lee)

Is There More Information About Peatlands, and Other Non-settled Area Wetlands?

The companion report to this document is titled *Alberta's Peatlands and Non-settled Area Wetlands: A Background Report*. Limited copies are available from the Water Resources Commission, free of charge. It provides the detailed background information that was used to prepare this report and the draft policy statements. Other sources of information include:

Alberta Water Resources Commission. 1990. *Wetland Management in the Settled Area of Alberta: Background for Policy Development*. Edmonton, Alberta.

Bond, W.K., K.W. Cox, T. Heberlein, E.W. Manning, D.R. Witty, D.A. Young. 1992. *Wetland Evaluation Guide: Final Report of the Wetlands are not Wastelands Project*. Sustaining Wetlands Issues Paper No. 1992-1. Environment Canada (Canadian Wildlife Service) and North American Wetlands Conservation Council (Canada): Ottawa, Ontario.

Environment Canada. 1991. *The Federal Policy on Wetland Conservation*. Minister of Supply and Services Canada: Ottawa, Ontario.

Hillman, G.R., J.D. Johnson, S.K. Takyi. 1990. *The Canada-Alberta Wetlands Drainage and Improvement for Forestry Program; Project #1413-1417-86*. Forestry Canada and the Alberta Forest Service: Edmonton, Alberta.

Keys, David. 1992. *Canadian Peat Harvesting and the Environment*. Sustaining Wetlands Issues Paper No. 1992-3. North American Wetlands Conservation Council (Canada): Ottawa, Ontario.

Lynch-Stewart, P. 1992. *No Net Loss: Implementing "No Net Loss" Goals to Conserve Wetlands in Canada*. Sustaining Wetlands Issues Paper No. 1992-2. Environment Canada (Canadian Wildlife Service) and North American Wetlands Conservation Council (Canada): Ottawa, Ontario.

National Wetlands Working Group, Canada Committee on Ecological Land Classification. 1988. *Wetlands of Canada*. Ecological Land Classification Series, No. 24. Sustainable Development Branch, Environment Canada: Ottawa, Ontario, and Polyscience Publications Inc., Montreal, Quebec.

Wedeles, Christopher H.R., J. Donald Meisner, Michael J. Rose. 1992. *Wetland Science Research Needs in Canada*. North American Wetlands Conservation Council (Canada): Waterloo, Ontario.

