ALBERTA WATER COUNCIL

recommendations for an

Alberta Wetland Policy Implementation Plan

SEPTEMBER 16, 2008

Contents

Introduction

The Alberta Wetland Policy Goal

The purpose of the Alberta Wetland Policy is to provide direction and a framework for protecting, conserving and restoring Alberta's wetlands. The policy goal is as follows:

The goal of the Alberta Wetland Policy is to maintain wetland area in Alberta such that the ecological, social, and economic benefits that wetlands provide are maintained, thereby helping to ensure Albertans have healthy watersheds that provide safe and secure drinking water supplies, healthy aquatic ecosystems, and reliable, quality water supplies for a sustainable economy. In recognition of the high rates of wetland loss in some watersheds, this policy also encourages Albertans to be proactive in increasing wetland area.

Purpose of The Implementation Plan

The Government of Alberta (GOA) intends to achieve the policy goal by working with Albertans on the following five strategic directions:

1. Manage Impacts to Wetlands
2. Be Proactive by Setting Wetland Objectives and by Integrating Policy and Planning
3. Encourage Voluntary Stewardship
4. Build Knowledge and Capacity
5. Protect Wetlands of Exceptional Value

The Implementation Plan supports the Alberta Wetland Policy, and guides the implementation of the approvals process required under the ***Water Act***, to facilitate actions to protect, conserve and restore the province's wetlands. The plan is also intended to help inform other Alberta water and land policies, planning processes and initiatives in their efforts to protect, conserve and restore wetlands, including the Land-use Framework, the Cumulative Effects Management Framework, and the Biodiversity Action Plan.

This plan should in all cases act an essential companion document to the policy document. As the first edition of the Alberta Wetland Policy Implementation Plan, this document begins the task of providing direction and detail on the tasks required to achieve the policy goal, establishing a foundation for further efforts to come once the GOA approves the policy. It is expected that detailed work plans and guidelines will continue to be refined with the identification of an implementation coordinator, required participants and a process for moving forward. This plan is a living document that will evolve as knowledge and capacity to manage wetlands evolve, so the strategic actions identified should continue to be adapted to both guide and reflect current knowledge, objectives and practices.

This plan presents a series of implementation actions for each of the strategic directions identified in the Alberta Wetland Policy, and their associated outcomes.

The actions contained in this plan are classified by four timeframes:

- Immediate (less than 1 year)
- Short-term (1-2 years)
- Medium-term (3-4 years)
- Long-term (5+ years)

The timeframe classification reflects the urgency of the actions identified in the plan, the logical progression of inter-related actions, and the type and amount of resources required to implement the actions.

Implementation of the Alberta Wetland Policy requires partnership, knowledge-building, and a suite of tools for all stakeholders, including provincial and local governments and their departments; Aboriginal communities, First Nations, Métis Settlements and other Aboriginal communities and individuals; industry; non-government conservation organizations; and individual Albertans.

This Implementation Plan provides a framework for cooperation to achieve the shared goal of the Alberta Wetland Policy.

Scope and Application of the Policy

Scope

There is a need to unify and integrate direction to ensure Alberta's wetland resource is sustained. The Alberta Wetland Policy is intended to provide this direction while strengthening existing initiatives. The objective is a collaborative approach in which all Albertans are aware of and have the knowledge and tools to protect, conserve and restore the province's wetland resource through actions that support the core goals of the *Water for Life* strategy.

There is a considerable variation in the wetlands of Alberta, including differences in their loss, abundance and type. There is also large variation in the province's landscapes and land uses. To address this wide range of variation, new methods, programs and initiatives are needed to help implement the Alberta Wetland Policy. Developing these new tools will require time, partnerships and the commitment of governments and stakeholders. Development of new tools should be pursued proactively, but use of existing tools remains essential and should not be delayed while new tools are developed. Ultimately, a comprehensive suite of existing and new tools is required to be in place to support the policy goal.

The recommended Alberta Wetland Policy is a go-forward policy, with recommendations implemented only from the date the GOA approves the policy. Neither the Alberta Wetland Policy nor its companion Implementation Plan apply retroactively to *Water Act* approvals received prior to the policy approval date. Plans and requirements set out under existing approvals will not be superseded by the implementation of the new policy or plan but, as existing licenses or approvals are negotiated for renewal, the regulator and proponent will negotiate the conditions of renewal, informed by the Alberta Wetland Policy.

Upon approval by the GOA, the Alberta Wetland Policy will do the following:

- Replace the 1993 interim policy, *Wetland Management in the Settled Area – An Interim Policy.*
- Replace *Beyond Prairie Potholes — A Draft Policy for Managing Alberta's Peatland and Non-Settled Area Wetlands.*
- Provide a comprehensive wetland policy for the entire province including the White and Green Areas.[1]
- Include all natural wetlands described in the Canadian Wetland Classification System including bogs; fens; swamps; marshes; and shallow open water.
- Include Types 1 through 7 of the Stewart and Kantrud Wetland Classification System including ephemeral waterbodies; temporary ponds; seasonal ponds and lakes; semi–permanent ponds and lakes; permanent ponds and lakes; alkali ponds and lakes; and fen ponds.
- Include all restored natural wetlands, as well as wetlands constructed and enhanced for the purposes of wetland mitigation.

1 The *Water Act* does not distinguish between wetlands in the White Area and those in the Green Area.

Finding the Right Balance

Albertans have stated that indefinite loss of wetlands and their benefits on the landscape is no longer acceptable. Since society derives and values many benefits from wetlands, it is important to ensure that this resource, like other natural resources in the province, is sustained for future generations. The challenge for Albertans is to balance growth and economic development while safeguarding the environment, including wetlands. While retaining wetlands may provide Albertans with services such as groundwater recharge and water purification, it may also constrain other land use activities and values. For example, building a road improves transportation, but may result in the loss of a wetland that enhances local water quality.

The strategic directions set out in the Alberta Wetland Policy will achieve a balance to meet the ecological, social and economic needs of Albertans. Hence, objectives for wetlands may conflict with objectives for other land uses. Choosing one land use or value over another has many ecological, social and economic implications that must be analyzed carefully. Ultimately, choices must be made, and not every water and land use and objective may be achieved. It is intended that the new Alberta Wetland Policy and Implementation Plan provide the strategic direction and tools required to make these types of management choices wisely.

Ephemeral Waterbodies

Activities impacting ephemeral waterbodies, as for all other types of waterbodies in Alberta, are subject to the *Water Act*. At this time, however, ephemeral waterbodies are not subject to the Wetland Mitigation Decision Framework because of the current challenges in delineating and inventorying them. Notwithstanding, all Albertans are encouraged to avoid or minimize their impacts on ephemeral waterbodies so as to maintain the important functions they provide, in particular those relating to groundwater recharge and wildlife habitat. The GOA will be proactive in educating Albertans about ephemeral waterbodies.

Achieving The Policy Goal

Implementation Infrastructure and Capacity

To achieve the policy goal, it is imperative that the GOA takes a leadership role in policy implementation. A number of collaborations must also be formed, strategies developed and action plans implemented. All of this will take coordination, infrastructure, and both financial and human capacity. To begin building the foundational blocks, a number of actions have been identified in the companion Implementation Plan. Additional planning work is needed to determine implementation timelines, project leads, partners, and resources required.

Stakeholders indicated throughout the consultation process that adequate capacity of the GOA and others is critical to successful uptake and implementation of an Alberta Wetland Policy. They also indicated that implementation needs to occur across many levels of decision-making, making education, communication and coordination within and between those levels critical. In particular, enhanced cooperation between individuals, local municipalities, Aboriginal communities, and provincial government departments must occur. Inter-sectoral linkages will be equally important to the cooperation necessary to achieve the policy goal.

Accountability, Linkages and Policy Review

To ensure success in achieving the policy's goal, strategic directions, and outcomes, the actions identified in the Alberta Wetland Policy and its companion Implementation Plan recognize the need for partnerships among governments, industry, environmental and other non-governmental organizations, and private citizens. The Alberta Wetland Policy is intended to guide implementation of the approvals process required under the *Water Act*, to facilitate their actions to protect, conserve and restore the province's wetlands. The policy and implementation plan are also intended to help inform other water and land policies, planning processes and initiatives in their efforts to protect, conserve and restore Alberta's wetlands, including the Land-use Framework, the Cumulative Effects Management Framework, and the Biodiversity Action Plan.

The *Water Act* requires the GOA to manage and protect the aquatic environment, including wetlands. The GOA is responsible for coordinating and implementing the policy and for ensuring that the implementation plan is kept current and relevant.

Principles of Compensation

The goal of the Alberta Wetland Policy is to maintain wetland area in Alberta such that the ecological, social, and economic benefits that wetlands provide are maintained. Where avoidance or minimization of wetland loss are not achievable, the objective of compensation will be to replace the area of wetland lost and the associated wetland functions.

The following principles will be considered when determining compensation under the Wetland Mitigation Decision Framework:

- Compensation will be balanced in the context of ecological, social and economic considerations.
- Compensation will strive to replace the highest priority wetland functions.
- Compensation must consider the wetland (natural area) policy objectives and plans that municipalities are trying to achieve.
- Where achievable, replacement will occur in the area where it is lost, but where replacement is not achievable in that area, wetlands will be constructed in other appropriate areas, with no penalty incurred for the distance from the area where loss occurred.
- Where achievable, wetlands will be replaced type-for-type and, where type-for-type is not achievable, lost wetlands will be replaced with a wetland type determined in the approval process.
- Compensation credit will be given for wetland reclamation and construction plans set out in Environmental Protection and Enhancement Act approvals.
- Where higher functioning wetlands are constructed or restored, an equivalent area of replacement may not be required, when supported by performance monitoring.
- Compensation will be based on the best available science.
- The administration of the Wetland Mitigation Decision Framework will be kept administratively efficient for both the regulator and the proponent.

Performance Measurement, Monitoring, and Reporting

Performance measures must be developed and used to evaluate progress in achieving the policy goal and outcomes associated with the policy's strategic directions, and to ensure actions supporting wetland protection, conservation and restoration remain relevant. If evaluations find the policy or aspects of its implementation require modification, these must be adaptively managed in a timely manner. An annual report of actions taken towards achieving the policy goal must be incorporated into the annual reports of the *Water for Life* strategy. The Alberta Wetland Policy and Implementation Plan should be reviewed at least every five years to reflect the status of the province's wetlands, and to ensure that factors such as advances in wetland science are incorporated.

Implementation Actions

Strategic Direction 1

Manage Impacts to Wetlands

In managing impacts to wetlands, the GOA will use the Wetland Mitigation Decision Framework to achieve the policy goal of maintaining wetland area in Alberta such that the ecological, social, and economic benefits that wetlands provide are maintained.

The Wetland Mitigation Decision Framework

When development is proposed that affects a wetland, the GOA, through the *Water Act* approval process, will require the regulator and proponent to use the following in descending order of preference, considering watershed and regional wetland objectives where they exist:

- Avoid loss or degradation of wetlands.
- Minimize loss or degradation, where avoidance is not fully achieved. The proponent must make a reasonable case to the regulator why the proponent cannot achieve avoidance.
- Compensate, as a last resort, for loss of wetland area or for wetland degradation. Compensation, as assessed by the regulator, refers to a suite of options to replace lost wetland area through science-based actions that are consistent with watershed and regional objectives, where they exist.

Listed in descending order of preference, the suite of compensation options is as follows:

i. Restoration of wetlands, where they existed previously.

ii. Construction of wetlands, where they did not exist previously or where their form has been removed through development activities.

iii. Enhancement of existing wetlands.

Additional compensation options such as securement of existing wetlands and research for wetland reestablishment may be considered as partial compensation by the regulator if an equal area of wetland is replaced and the combination of these options contributes to the policy goal.

Outcome 1 The Wetland Mitigation Decision Framework is followed where development affects wetlands, ensuring that the policy goal is achieved of maintaining wetland area in Alberta such that the ecological, social, and economic benefits that wetlands provide are maintained.

To achieve the policy goal, a process is required to manage impacts to wetlands, and tools are needed to compensate for loss of wetland area and benefits, to be used when restoring, constructing and enhancing wetlands.

Anyone proposing an activity that would remove, use or alter a wetland in Alberta is required to obtain an approval and/or a license from the GOA under the *Water Act*. In many cases, an approval under the *Public Lands Act* for loss or conversion of wetland that is Crown-owned may be required.

Under the Alberta Wetland Policy, any proponent seeking a *Water Act* approval for activity that impacts a wetland is required to use the Wetland Mitigation Decision Framework. This mitigation framework requires that the regulator and the proponent avoid loss or degradation of wetlands. Where avoidance is not fully achieved, the regulator and the proponent must minimize loss or degradation of wetlands. As a last resort, where avoidance and minimization are not achieved, a proponent who receives an approval and/or license under the *Water Act* to drain, infill or alter a wetland must submit a plan for approval by the regulator to compensate for loss of wetland area or for wetland degradation.

Avoidance is the only mitigation option for wetlands that are designated as being of exceptional value.

Strategy 1.1 Implement the Wetland Mitigation Decision Framework

The Wetland Mitigation Decision Framework must be used for all development impacting wetlands in Alberta. The principles of compensation identified in the Alberta Wetland Policy apply.

Action#	What	When
1.1.1	Implement the Wetland Mitigation Decision Framework across the province, using avoidance, minimization or compensation for all *Water Act* approvals and/or licenses (including temporary approvals to take water from wetlands) that affect wetlands, through the *Water Act* approval process.	Immediate
1.1.2	Develop guidelines on how to avoid (e.g. smart-growth planning) and how to minimize (e.g. maintaining wetland hydrology through the use of flow-through culverts) development impacts, using sound ecological principles and the best science available.	Short-term
1.1.3	Working with stakeholders, develop guidance for compensation to support the policy. Until new guides are developed, the Provincial Wetland Restoration/Compensation Guide (2007) will continue to provide guidance to the regulator for the White Area.	Immediate

Strategy 1.2 Determine Proxies for Loss of Wetland Benefits

Since it is not yet possible to fully measure, and replicate, the complexity of natural wetland ecosystems, the Alberta Wetland Policy currently uses area as a proxy to maintain wetland benefits including their functions and values. Accordingly, until such time as a practical and scientifically sound function-based approach is available, the objective of compensation under the current Wetland Mitigation Decision Framework is to replace the area of wetland loss and the associated wetland benefits.

Action#	What	When
1.2.1	Review the literature and provide evidence on appropriate implementation of the area-based approach for Alberta that can be incorporated into the revised Provincial Wetland Restoration/ Compensation Guide.	Immediate
1.2.2	Develop a research and/or pilot program to assess the scientific and economic feasibility of moving toward a function-based rather than an area-based approach for compensation.	Medium-term
1.2.3	If successful, incorporate the option of a function-based approach into the revised Provincial Wetland Restoration/Compensation Guide.	Long-term

Strategy 1.3 Explore the Feasibility of Compensation Mitigation Banking and Restoration Opportunities

Mitigation banking is a compensation tool whereby a wetland or complex of wetlands is restored, constructed or enhanced, and used to provide timely compensation options. A unit of restored, constructed or enhanced wetland area in a mitigation bank is typically referred to as a credit (e.g. in hectares) that can be purchased or used when a proponent must compensate for wetland loss.

Action#	What	When
1.3.1	Explore a regulatory framework for mitigation banks as a compensation option for wetland loss and, if established under the appropriate legislative component, ensure these banks are appropriately regulated in law.	Medium-term
1.3.2	If proceeding with mitigation banking, establish criteria for suitable providers of mitigation banks and maintain a registry of approved bankers.	Medium-term
1.3.3	If proceeding with mitigation banking, set up a monitoring system to support and help achieve the policy goal.	Medium-term
1.3.4	Explore systems of trading wetland credits to provide mechanisms that reward stewardship actions on private land as appropriate.	Medium-term
1.3.5	Develop a repository of restoration opportunities.	Immediate

Strategy 1.4 Develop Best Practices to Restore, Construct and Enhance Wetlands

Examples of restored, constructed and enhanced wetlands exist in many areas of the province. These, together with examples in other jurisdictions provide a basis for continuous improvement of practices for restoring, constructing and enhancing wetlands in Alberta.

Outside of those used for process operations, constructed wetlands may be used in the wetland compensation process when they incorporate into their design as many wetland functions as possible. A monitoring period for restored, constructed and enhanced wetlands may be required to demonstrate evidence that the wetland has taken on some natural wetland function, particularly if new techniques are used.

Action#	What	When
1.4.1	Compile existing information on best practices through a review and assessment of the literature and existing restoration, construction and enhancement projects, within the last five to ten years in Alberta and elsewhere.	Short-term
1.4.2	Provide guidelines on the best practices for restored, constructed and enhanced wetland design and monitoring for various landscapes.	Short-term
1.4.3	Develop consistent monitoring protocols, conditions for requirement under the *Water Act*, and assessment tools to assess wetland health and functions, for individual constructed, restored and enhanced wetlands, and on a landscape level.	Medium-term

Strategic Direction 2

Be Proactive by Setting Wetland Objectives and By Integrating Policy and Planning

There is a considerable variation in the wetlands of Alberta, including differences in their loss, abundance and type. To achieve the policy goal, and to address potential tradeoffs among land and water uses, the GOA, working with stakeholders and incorporating watershed and regional diversity, will take an outcome-based, place-based and adaptive management approach that includes all of the following:

- Developing a framework for setting watershed and regional wetland objectives in a multi-stakeholder process that considers ecological, social and economic values.
- Integrating wetland objectives into watershed and land use planning, policy and management processes.
- Using performance measurement, monitoring and reporting to determine if wetland objectives are being met.

Wetland objectives do not need to be in place before the Wetland Mitigation Decision Framework is implemented. However, setting and including wetland objectives in watershed and land use planning are necessary and proactive steps toward identifying and acting on opportunities to protect wetlands of exceptional value; identifying areas suitable for wetland restoration, construction or enhancement; and managing impacts to existing wetlands.

The policy goal for Alberta is to maintain wetland area such that the ecological, social and economic benefits that wetlands provide are maintained. However, wetland objectives may differ from place to place. In areas where high levels of loss or degradation have occurred, objectives may be designed to ensure that there is a net gain of wetlands. In areas where current degradation or loss of wetlands has been demonstrated to be very low, objectives may be designed to allow some loss at a regional and watershed scale provided that a comparable wetland gain occurs elsewhere. Since not all wetlands are the same, it is important to protect, conserve and restore a variety of wetland types, based on best available science, for proper watershed functionality and sustainability on the landscape.

Outcome 2 Watershed and regional wetland objectives are developed and implemented through watershed and land use planning processes across Alberta.

Strategy 2.1 Develop and Implement a Process for Setting Wetland Objectives

The Alberta Wetland Policy requires that a framework be developed to set watershed and regional wetland objectives to help inform protection, conservation, and restoration activities. Objectives are to be developed in a multi-stakeholder process, and consider ecological, social and economic values.

Action#	What	When
2.1.1	With stakeholders, develop a guidance framework for establishing watershed and regional wetland objectives.	Short-term
2.1.2	Ensure that a sound knowledge foundation supports and informs the objective-setting process, including inventory, watershed models and other predictive tools.	Medium-term
2.1.3	Examine how a watershed or water management plan developed under the provisions of the *Water Act*, or any future revisions of those plans, would recognize the Wetland Policy.	Short-term
2.1.4	Improve access to provincial wetland inventory information to municipalities, industry, Watershed Planning and Advisory Councils, or other multi–stakeholder groups, to use in the development of wetland objectives for watershed management and other planning processes.	Immediate

Strategy 2.2 Integrate Wetland Objectives into Watershed and Land Use Planning

It is essential to incorporate the variety of wetland objectives that reflect watershed and regional diversity into the programs, initiatives and other directives of the GOA and its partners, as they relate to protecting, conserving and restoring wetlands in Alberta.

Action#	What	When
2.2.1	Incorporate wetland objectives from the watershed and/or regional scale into the programs, initiatives and directives of the GOA and its partners.	Short-term

Strategy 2.3 Measure, Monitor and Report on Achievement of Objectives

Responsibility for protecting, conserving and restoring Alberta's wetlands does not rest with any single GOA department. Integration and coordination of implementation actions to meet wetland objectives are required within and across departments, and within and across local governments and government partners in the province. Specifically, integration of the Alberta Wetland Policy must occur on the following levels:

1. In internal policy, programs, initiatives, and directives
2. In general policy, program, and regulatory decision-making and implementation
3. In designing and carrying out projects and activities where the government body or delegate is a proponent
4. In regulatory processes where the government body or delegate plays a referral or approval authority role
5. In processes where a government body or delegate has authority to designate land with a protected status

Outcome 3 The Alberta Wetland Policy is successfully integrated into the legislation, policies, planning and programs of the GOA and its partners.

Strategy 3.1 Integrate w Wetland Policy with GOA Policies, Programs, Initiatives and Directives

Action#	What	When
3.1.1	Create and maintain a website repository of provincial, municipal and federal legislative tools and directives, and common law pertaining to or potentially impacting wetlands.	Immediate
3.1.2	Revise and update "Alberta's Wetlands: A Law and Policy Guide" to incorporate the Alberta Wetland Policy.	Medium-term
3.1.3	Establish and manage a process to review all appropriate legislation, policies, directives and intergovernmental processes for consistency and alignment with the Alberta Wetland Policy.	Medium-term
3.1.4	When developing new regulatory or policy instruments, government bodies and delegates will ensure that the policy is appropriately incorporated in all areas of the province.	Medium-term
3.1.5	Integrate the policy into the determination of equivalent land capability for the purposes of reclamation under the *Environmental Protection and Enhancement Act*.	Immediate

Strategy 3.2 Integrate the Policy and Implementation with the GOA Regulatory Process

The Alberta Wetland Policy and Implementation Plan need to be integrated into current GOA regulatory processes.

Action#	What	When
3.2.1	Build capacity in the regional regulatory approvals and inspection system to successfully implement the Alberta Wetland Policy.	Immediate
3.2.2	When a government body or delegate is a proponent of a proposed project or an activity that could impact a wetland, it will ensure that the policy is implemented in the proposal and project or activity process.	Immediate
3.2.3	Where a government body or delegate plays an approval, referral or other role in a regulatory process (including public land dispositions), the entity will ensure that the policy is implemented in the process.	Immediate

Strategy 3.3 Integrate the Policy with Local Government Processes

Local governments, including municipal, First Nations and Métis Settlements are well situated to implement wetland protection, conservation and restoration through their local planning processes. These processes must be integrated with, and supported by, provincial policy, legislation and programs.

Action#	What	When
3.3.1	Work with Municipal Affairs to strengthen the current requirements under the *Municipal Government Act* where municipalities "may consider" environmental matters in preparing their Municipal Development Plans and are not required to consider environmental matters when developing Area Structure Plans.	Short-term
3.3.2	Work with Municipal Affairs to review the wetland conservation provisions in the Land Use Policies under the *Municipal Government Act* and consider broadening the environmental reserve and setback provisions to allow for a range of uses to manage lands within municipalities, including the protection of other environmental purposes/components based on the best available science; or develop a new Wetland Reserve, or Ecological Reserve dedication clause.	Short-term
3.3.3	Set up a committee with municipalities, Métis Settlements and Summer Villages to investigate how GOA can better support their efforts to protect wetlands within their jurisdiction.	Short-term
3.3.4	Revise the Land-Use Framework to require municipal land use plans, including the Municipal Development Plan, bylaws (including zoning bylaws), and actions to reflect and incorporate the Alberta Wetland Policy.	Short-term
3.3.5	Develop and implement an education and awareness program for municipalities to review and align with provincial legislation and directives.	Short-term
3.3.6	Review the federal wetland policy and ensure there is congruence with the provincial policy on federal lands in Alberta.	Medium-term
3.3.7	Provide guidance that considers wetlands and mosquito abatement, health considerations, pesticide use and wetland drainage practices.	Medium-term

Strategic Direction 3

Encourage Voluntary Stewardship

In addition to using the Wetland Mitigation Decision Framework to maintain wetland area and the benefits wetlands provide, the GOA encourages Albertans to increase wetland area through voluntary stewardship. Further, the GOA and its partners will work with willing landowners on wetland restoration and construction. The GOA and its partners will develop tools that facilitate stewardship to increase wetland area, as well as tools that facilitate working with willing landowners on wetland restoration, construction and enhancement. These tools may include initiatives such as education and awareness, and voluntary programs and/or incentives that encourage wetland protection, conservation and restoration activities.

Not all Albertans are aware of the functions and values that wetlands provide. Increasing awareness about wetlands and their benefits is critical for building support for undertaking effective wetland protection, conservation and restoration in Alberta.

Outcome 4 Albertans are aware of, and value, the functions and benefits that wetlands provide.

Strategy 4.1 Develop a Wetland Education Plan

An over-arching wetland education plan is required that identifies appropriate audiences, initiatives and tools needed to increase Albertans' awareness of the Alberta Wetland Policy and wetland benefits. The plan should include existing and new programs and materials dealing with wetland functions, values, and actions needed to maintain and increase wetland area in Alberta through protection, conservation and restoration. Potential partners for successful wetland education in Alberta may include the GOA, Ducks Unlimited Canada, and Cows and Fish.

Action#	What	When
4.1.1	Create a wetland education plan that provides an overarching framework for developing and coordinating wetland education and outreach activities to targeted audiences.	Immediate
4.1.2	Continue to develop, update and deliver wetland education material for grades 5, 8 and 12 school curriculums.	Short-term
4.1.3	Develop and use targeted education, awareness and compliance programs, including social-based marketing programs, to discourage draining of ephemeral waterbodies and other wetlands.	Short-term
4.1.4	Develop, communicate and share beneficial management practices for activities in and around wetlands.	Short-term
4.1.5	Integrate the wetland education plan with existing programs like Cows and Fish and the Alberta Stewardship Network, and disseminate it to other organizations, government departments and stakeholder organizations.	Medium-term
4.1.6	Work with First Nations, Métis Settlements and other Aboriginal communities and individuals to develop an increased awareness of wetland values and functions using traditional knowledge and ecological perspectives.	Medium-term

Strategy 4.2 Increase Awareness about Ephemeral Waterbodies

Activities impacting ephemeral waterbodies, as for all other types of waterbodies in Alberta, are subject to the *Water Act*. At this time, however, ephemeral waterbodies are not subject to the Wetland Mitigation Decision Framework because of the current challenges in delineating and inventorying them. Notwithstanding, all Albertans are encouraged to avoid or minimize their impacts on ephemeral waterbodies so as to maintain the important functions they provide, in particular those relating to groundwater recharge and wildlife habitat.

The GOA will be proactive in educating Albertans about ephemeral waterbodies by maximizing all opportunities for education and information exchange.

Action#	What	When
4.2.1	Develop education and communication materials and programs on the *Water Act* and the value of ephemeral waterbody, appropriate for the intended audience.	Short-term
4.2.2	Using the social-based community marketing approach, incorporate education and communication materials on the value of ephemeral waterbodies into education initiatives, where appropriate.	Immediate
4.2.3	Develop and communicate beneficial management practices and/or codes of practice for activities around ephemeral waterbodies when they are dry, such as grazing, haying, hunting and gathering, linear disturbance, etc.	Medium-term
4.2.4	Determine performance measures and annually review education initiatives to determine beneficial management practice adoption.	Long-term
4.2.5	Undertake research to better understand the value and functions of ephemeral waterbodies, their status including their rate of occurrence and/or loss, and the cumulative impact of current and future impacts including climate change.	Long-term

Outcome 5 Appropriate tools including incentives are available to promote wetland protection, conservation, and restoration, and disincentives are removed.

In addition to the application of the Wetland Mitigation Decision Framework, voluntary actions and incentives will enhance the achievement of the Alberta Wetland Policy goal, especially in encouraging Albertans to increase wetland area. Improving incentives and removing disincentives will encourage the protection, conservation and restoration of the province's wetland resource. Removing perverse incentives or disincentives that encourage wetland loss or degradation is essential.

Strategy 5.1 Identify and Promote Existing Incentives

It is essential to undertake a review to identify, evaluate and retain existing incentives for wetland protection, conservation and restoration, and to ensure that wetland managers are aware of them.

Action#	What	When
5.1.1	Identify, review and communicate (i.e. develop a landowner directory) of existing incentives, including matters relating to tax assessment (e.g. conservation easement and agriculture property tax issues) to encourage the protection, conservation and restoration of wetlands.	Immediate
5.1.2	Develop a Wetland Stewardship recognition program as an incentive by identifying, encouraging, promoting and awarding innovative and effective wetland protection, conservation and restoration efforts by governments, industry, conservation organizations and individuals.	Medium-term

Strategy 5.2 Develop New Incentives

It is necessary to develop and communicate new incentives that promote activities, research and innovation in support of protecting, conserving and restoring wetlands.

Action#	What	When
5.2.1	Undertake a review of existing and new incentives in Alberta and other jurisdictions to explore the development of new incentives including market incentives that encourage protecting, conserving and restoring wetlands.	Short-term
5.2.2	Undertake a review of the use of mitigation banking and credit trading in other jurisdictions to determine if such market-based mechanisms create monetary value and provide incentive for landowners to protect wetlands.	Medium-term
5.2.3	Explore incentives to reduce costs (e.g. expenses/fees for legal, planning, surveying and accounting) that are a barrier to using conservation easements. GOA could provide incentives to cover costs.	Medium-term
5.2.4	Explore the development of incentive programs to encourage academia, industry and others to undertake research and innovation projects to improve all aspects of wetland management.	Medium-term

Strategy 5.3 Identify and Eliminate Disincentives

It is necessary to identify existing disincentives for wetland protection, conservation, and restoration, and to take steps to eliminate them.

Action#	What	When
5.3.1	All GOA departments and agencies should review and revise relevant policies, programs, directives, statutes and departmental or agency regulations to identify and remove disincentives to wetland protection, conservation and restoration.	Short-term

Strategic Direction 4

Build Knowledge and Capacity

To support the achievement of the Alberta Wetland Policy goal, the GOA will work with its partners to undertake research, fill information gaps, and develop the tools and capacity required to ensure a sustainable wetland resource is available to Albertans, now and in the future.

In recent years, the understanding of wetland functions and values has advanced, but gaps still exist with regard to important baseline information. New research needs to be undertaken to address these gaps. Monitoring programs should be put into place to provide the information required to continuously improve wetland protection, conservation and restoration efforts in the province.

Outcome 6 Albertans have the information, tools and programs to effectively protect, conserve, and restore wetlands.

Strategy 6.1 Develop a Wetland Research Plan

Partnerships are needed among the GOA, industry, academia, and others to identify knowledge gaps and develop a prioritized research plan to improve knowledge of wetlands and the tools to protect, conserve and restore them. This knowledge should be used in an adaptive management style, so that wetland management is constantly improved by using new research and tools.

Action#	What	When
6.1.1	Develop and fund a wetland research plan that identifies current research needs and priorities.	Short-term
6.1.2	Create a mechanism to distribute the results of wetland research and monitoring to water and land managers.	Medium-term
6.1.3	Promote research efforts to better understand effectiveness of restoration activities.	Medium-term

Strategy 6.2 Develop a Wetland Classification System

It is necessary to create and use a consistent provincial wetland classification system to provide a shared understanding and classification of wetlands in Alberta.

Action#	What	When
6.2.1	Establish a wetland classification system (or systems) that reflect all areas of Alberta and that meets the needs of stakeholders.	Immediate
6.2.2	Communicate the classification system to stakeholders and use it in wetland inventories, landscape assessments and other tools.	Short-term

Strategy 6.3 Conduct Wetland Inventories

A comprehensive wetland inventory of the types and distribution of wetlands within the province is necessary so that water and land managers are better able to understand the state of Alberta's wetlands. Wetland inventories are necessary to measure success in achieving the goal of the Alberta Wetland Policy.

Action#	What	When
6.3.1	Develop provincial wetland inventory data standards, including how frequently inventories will be repeated.	Immediate
6.3.2	Develop a seamless provincial wetland inventory of the distribution of wetland classes in Alberta.	Medium-term
6.3.3	Disseminate provincial wetland inventories to municipalities, industry, First Nations, Métis Settlements and other Aboriginal communities for use in their planning and development activities, as soon as available.	Immediate
6.3.4	Where applicable, through the Environmental Impact Assessment process under the *Environmental Protection and Enhancement Act,* ensure any required wetland inventories are conducted using the provincial inventory and classification standards, and that such data are supplied to the GOA for compilation in the provincial wetland inventory database.	Medium-term
6.3.5	Classify and incorporate into the provincial wetland inventory any restored, constructed and enhanced wetlands.	Long-term

Strategy 6.4 Develop Tools for Assessing Wetland Health

It is necessary to develop wetland assessment tools that enable landowners, professionals, municipalities, Watershed Planning and Advisory Councils, and others to assess the health of individual wetlands and landscape-level wetland health.

Action#	What	When
6.4.1	Develop a standardized methodology, appropriate indicators, and guidance material for conducting individual and landscape-level wetland health assessments.	Short-term
6.4.2	Where appropriate, develop long-term wetland monitoring programs for assessing wetland health.	Medium-term
6.4.3	Periodically evaluate, at various scales, the rate and extent of wetland degradation and loss, as well as any associated watershed impairment. This information should be integrated with other *State of the Watershed* reporting and planning processes.	Long-term
6.4.4	Improve understanding of the relationship of wetlands to ground and surface water quality and supply.	Short-term

Strategy 6.5 Improve Expertise to Reliably Restore, Construct and Enhance Wetlands

To replace those wetlands where impact cannot be avoided, wetland restoration, construction or enhancement may be required under the Wetland Mitigation Decision Framework. Restoration, construction and enhancement also may be undertaken voluntarily. The process may involve the reestablishment of a lost wetland by attempting to reverse the initial impacts that caused its loss. Restoring lost wetlands may be easier than constructing new ones because many of the underlying physical attributes like soil types and seed banks may still be present. Some examples of successful wetland restoration, construction and enhancement exist in Alberta, but research is required to continuously improve techniques.

It is necessary to increase the number of Qualified Wetland Aquatic Environmental Specialists having the necessary expertise to ensure that wetland functions and values are reliably assured when restoring, constructing or enhancing wetlands.

Action#	What	When
6.5.1	Develop criteria, an accreditation process and a registry to promote the development of Wetland Restoration and Construction Agencies.	Short-term
6.5.2	Hold awareness and training workshops with interested parties to improve expertise and share learnings on wetland restoration, construction and enhancement techniques, and in what is required to become accredited.	Short-term
6.5.3	Encourage research, development and continuous improvement of restoration, construction and enhancement techniques.	Medium-term
6.5.4	Provide users with the appropriate guidelines, and best practices for restoring, constructing and enhancing functioning wetlands in natural and working landscapes, particularly for areas of mining, urban stormwater management, road-building and municipal development.	Short-term
6.5.5	Develop monitoring protocols for constructed and restored wetlands for various landscapes.	Medium-term
6.5.6	Ensure restoration, construction and enhancement guidelines and codes of practices for various sectors are consistent with the overarching policy goals and outcomes.	Medium-term

Strategy 6.6 Provide Professional Development Opportunities

Encourage the GOA, academic institutions, industry, professional accreditation organizations and environmental practitioners to participate in professional development opportunities that improve their understanding of wetland functions and benefits; as well as their ability to delineate, assess, restore and monitor wetlands.

Action#	What	When
6.6.1	Encourage post-secondary institutions to provide opportunities for undergraduate and graduate students to develop knowledge and understanding of wetland functions and processes.	Medium-term
6.6.2	Develop, facilitate and promote the use of professional educational opportunities.	Medium-term

Strategic Direction 5:

Protect Wetlands of Exceptional Value

The GOA will develop a Wetland Protection Program to protect wetlands of exceptional value.

Outcome 7 The process, criteria and tools are in place to identify and protect Alberta wetlands that are locally, regionally, provincially, nationally or internationally exceptional.

Strategy 7.1 Identify and Protect Wetlands of Exceptional Value

It is necessary to develop a process, criteria and the tools to identify and protect locally, regionally, provincially, nationally and internationally wetlands of exceptional value. Some wetlands are exceptional at various scales for a variety of reasons. Tools to protect these wetland areas could include acquisitions, designations, conservation easements, and municipal environmental reserves.

Action#	What	When
7.1.1	Establish a process, criteria, tools and programs for identifying, designating and protecting local, regional and provincial wetlands of exceptional value.	Immediate
7.1.2	Where appropriate, investigate using statutory and policy tools to designate wetlands of exceptional value for protection.	Immediate
7.1.3	Where wetlands suitable for protection have been identified on Crown land, utilize existing tools to protect and identify these areas within GOA databases (e.g. protective notation) so that developers, regulators and approvals staff are aware of wetland status.	Short-term
7.1.4	When municipalities approve subdivision of land, use environmental reserve dedications to protect wetlands of exceptional value in the development area.	Immediate
7.1.5	Work with Land Trusts and other appropriate organizations to encourage the use of conservation easements to protect wetlands of exceptional value.	Medium-term
7.1.6	Where appropriate, purchase or lease lands and designate them as appropriate to protect wet lands of exceptional value.	Medium-term
7.1.7	Develop guidelines for appropriate use of low-impact activities (bird-watching, gathering natural foods, etc.) on wetlands of exceptional value, including when water is absent.	Medium-term

Appendices

APPENDIX A

Glossary

Avoid
To prevent impacts to a wetland by identifying an alternate project, activity, design, or site, or by abandoning the project or activity altogether or by the regulator denying an application. Avoidance applies to both direct impacts (changes that alter a wetland's area or function), as well as indirect impacts (changes that alter drainage areas or adjacent uplands that are integral to maintaining a wetland).

Bog
A wetland characterized by peat deposits, acidic water, and extensive surface mats of sphagnum moss. Bogs receive their water from precipitation rather than from runoff, groundwater, or streams, which decreases the availability of nutrients needed for plant growth. Many plants and animals have specific adaptations to deal with the low nutrient levels, waterlogged conditions, and acidic waters that characterize bogs.

Canadian Wetland Classification System
A classification system that includes bogs, fens, swamp, marsh and shallow open water.

Compensation
A variety of options including wetland restoration, construction and enhancement to make up for the loss or degradation of wetland area.

Conservation
The planned management and wise use of wetlands to ensure they are available for future generations.

Constructed Wetland
The construction of a new wetland in a location that was not previously a wetland or where the previous wetland was completely removed, both for utilitarian purposes and/or to mimic natural wetlands. May include a wetland constructed for stormwater management in an urban landscape or one constructed in a reclaimed mining landscape.

Degradation
Disturbing the biophysical characteristics or chemistry of a wetland, and hence causing a decrease in one or more wetland functions due to human causes.

Enhancement	Increasing one or more wetland functions in an existing, but degraded, wetland.
Ephemeral Waterbody	An area that is periodically covered by standing or slow-moving water for less than three weeks in a year but usually just for a few days. The area is typically dominated by vegetation of the low prairie zone (i.e. not wetland vegetation), similar to the surrounding lands. Because of the porous condition of the soils, the rate of water seepage from these areas is very rapid. Surface water may be retained for only a brief period in early spring with rapid seepage occurring after the underlying frozen soil thaws. Water may be retained long enough to establish some wetland or aquatic processes.
Fen	A wetland characterized by slow internal drainage from groundwater movement and seepage from upslope sources. Fens are characterized by peat accumulation, but due to the seepage of nutrient-rich water, fens are typically less acidic and more nutrient rich than bogs. As a result, fens are able to support a more diverse assemblage of plants and animals.
Hydric Soils	Soils that are low or deficient in oxygen because of the frequent presence of water. This is often reflected by high iron concentrations and evidence of gleying and mottling.
Hydrophytic	Water-dependent vegetation, such as cattails, sedges and mosses.
Loss	The elimination, as a result of human activity, of wetland area, or disturbance to a wetland or its drainage basin, such that most wetland functions are lost.
Maintain	To protect, conserve or restore wetland area such that wetland benefits are retained.

Marsh	Slough/marsh wetlands are shallow, depressional areas that are permanently or periodically covered by standing water or slowly moving water. Water levels fluctuate and open water may or may not be present. Vegetation may range from floating or submerged plants in the centre, to cattails, rushes, sedges and grasses, and willows and other shrubs along the fringes or margins. Potholes and sloughs are the most common marsh wetland types in central and southern Alberta.
Minimize	Reducing adverse effects on the area, functions and values of wetlands to the smallest practicable degree in the planning, design and implementation stages of development.
Mitigation	A process for conserving wetlands by applying a hierarchical progression of alternatives, which includes avoiding impacts, minimizing unavoidable impacts, and compensating for impacts that cannot be avoided.
Peatlands	Ecosystems that occur in waterlogged, poorly drained areas where the lack of oxygen and increased acidity of the water inhibits decomposition. As a result, plant debris slowly accumulates to form peat.
Proponent	A person proposing activities in and around a wetland or considering restoring or constructing a wetland.
Protection	Keeping a wetland in a natural state by preventing any activity that would affect it, through the use of incentives, tenure, securement, formal agreement, policy or legislation.
Qualified Wetland Aquatic Environment Specialist	A person with detailed knowledge of the aquatic environment, wetland soils, wetland species, hydrology and wetland riparian areas and their management or assessment, recognized or accredited through their professional association.

Reclamation	Action to aid the recovery of land or other natural resources including wetlands after an activity has ceased. This includes removal of equipment and buildings, decontamination, and stabilization and conservation of the land surface. Specific definitions of reclamation are provided in the *Environmental Protection and Enhancement Act* and its regulations.
Restoration	The re-establishment of a wetland with a functioning natural ecosystem whose characteristics are as close as possible to pre-disturbance conditions.
Riparian Area	Land and vegetation surrounding a wetland that is at or below the demarcation between aquatic and terrestrial vegetation, not including the flooded area.
Shallow Open Water	Small bodies of standing water less than two metres deep that act as transitional areas between lakes and marshes. Shallow open waters do not contain emergent aquatic vegetation, like cattails and reeds, but may support floating vegetation, like lily pads.
Slough	An informal term commonly used in Alberta to describe marshes and ponds.
Stormwater	Precipitation that flows across the landscape and accumulates in natural and/or constructed storage and stormwater systems during and immediately following a storm event or snowmelt event. This is not to be confused with stormwater runoff pollution which is deleterious material that stormwater accumulates as it flows across the landscape and eventually carries into its drainage waterbody.
Stewart and Kantrud Wetland Classification System	A classification system generally used in the Parkland and Prairie Ecoregions of Alberta. This system includes seven types of wetlands from ephemeral waterbodies, temporary ponds, seasonal ponds and lakes, semi–permanent ponds and lakes, permanent ponds and lakes, alkali ponds and lakes and fen ponds.

Temporary Wetland	A wetland that is periodically covered by standing or slow-moving water and that has a basin typically dominated by wet meadow zone vegetation. Water seepage is fairly rapid, but surface water usually lingers for a few weeks after spring snowmelt and for several days after heavy rainstorms at other times of the year. Water is retained long enough to establish wetland or aquatic processes.
Upland	An area of dry land surrounding or upstream of a wetland.
Waterbody	Under Alberta's *Water Act*, any location where water flows or is present, whether or not it is continuous, intermittent, or occurs only during a flood, including but not limited to, wetlands and aquifers.
Wetland	Land having water at, near, or above the land surface, or which is saturated with water long enough to promote wetland or aquatic processes as indicated by poorly drained hydric soils, hydrophytic vegetation, and various kinds of biological activity that are adapted to the wet environment.
Wetland Area	Includes the flooded portion of a wetland up to and including the boundary between aquatic and terrestrial vegetation. The same definition shall be used in the case of climatically dry wetlands.
Wetland of Exceptional Value	Designated wetlands with local, regional, provincial, national, or international importance for one or more reasons identified through a program.

APPENDIX B

Stewart and Kantrud Wetland Classification System[2]

The most commonly used wetland classification system in Alberta is the Stewart and Kantrud Wetland Classification System. Developed primarily for Prairie and Parkland ecoregion wetlands, this system recognizes different wetland types, ranging from temporary to permanent. The classes do not imply a level of importance.

Class I — Ephemeral Wetlands

Typically have free surface water for only a short period of time after snowmelt or storm events in early spring. Because of the porous condition of the soils, the rate of water seepage from ephemeral wetlands is very rapid after thawing of the underlying frost seal. They may be periodically covered by standing or slow moving water. Water is retained long enough to establish some wetland or aquatic processes. They are typically dominated by vegetation such as Kentucky bluegrass, goldenrod and other wetland or low prairie species.

Class II — Temporary Wetlands

A wetland that is periodically covered by standing or slow moving water. They typically have open water for only a few weeks after snowmelt or several days after heavy storm events. Water seepage is fairly rapid, but surface water usually lingers for a few weeks after spring snowmelt and for several days after heavy rainstorms at other times of the year. Water is retained long enough to establish wetland or aquatic processes. They are dominated by wet meadow vegetation such as fine-stemmed grasses, sedges and associated forbs.

Class III — Seasonal Ponds and Lakes

Shallow marsh vegetation generally occurs in the deepest zone, which is usually dry by midsummer. They are typically dominated by emergent wetland grasses, sedges and rushes.

Class IV — Semi-permanent Ponds and Lakes

Deep marsh vegetation is found in the central zone, and coarse emergent plants or submerged aquatics like cattails, bulrushes and pondweeds are present. They frequently maintain surface water throughout the growing season.

2 Adapted from Stewart, Robert E. and Harold A. Kantrud. 1971. Classification of Natural Ponds and Lakes in the Glaciated Prairie Region. Resource Publication #92. Bureau of Sport Fisheries and Wildlife, U.S. Fish and Wildlife Service: Washington, D.C. 57 pp.

Class V — Permanent Ponds and Lakes

Have permanent open water in central zone that is generally devoid of vegetation. Submergent plants may be present in the deepest zone, while emergent plants are found along the edges.

Class VI — Alkali Ponds and Lakes

Deep water is typically not permanently present. Alkali wetlands are characterized by a pH above 7 and a high concentration of salts. The dominant plants are generally very salt tolerant. These wetlands are especially attractive for shore birds.

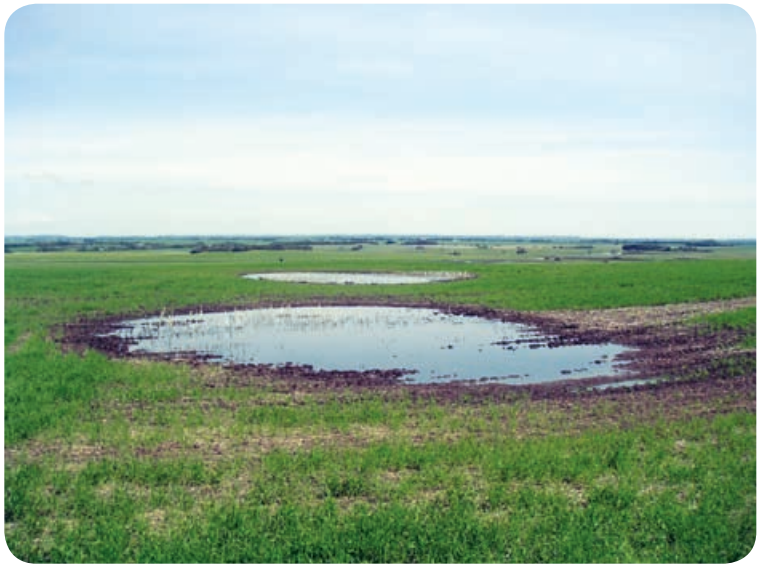
Class VII — Fen Ponds

An alkaline bog in which fen vegetation dominates the deepest portion of the wetland area. This wetland type often has wet meadow and low prairie vegetation present on the periphery. The soils are normally saturated by alkaline groundwater seepage. Fen ponds often have quaking or floating mats of emergent vegetation.

APPENDIX C

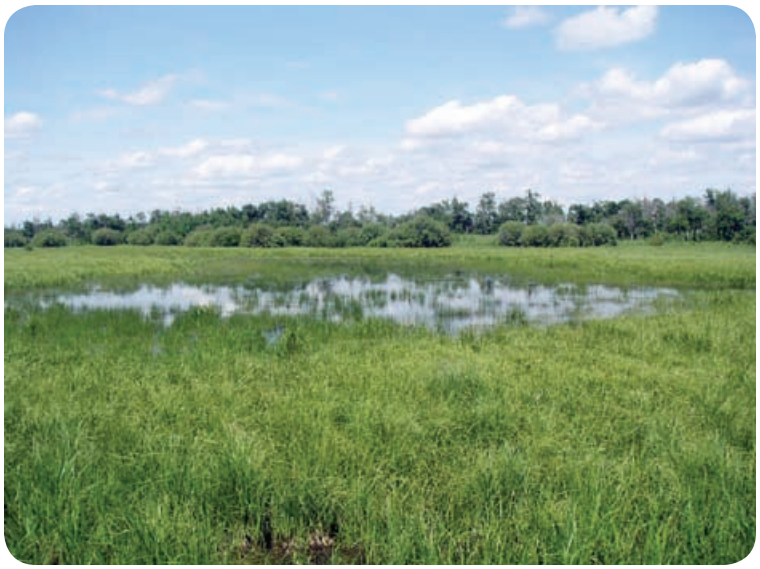
Photographs of the Primary Stewart and Kantrud Wetland Types

Ephemeral



Temporary

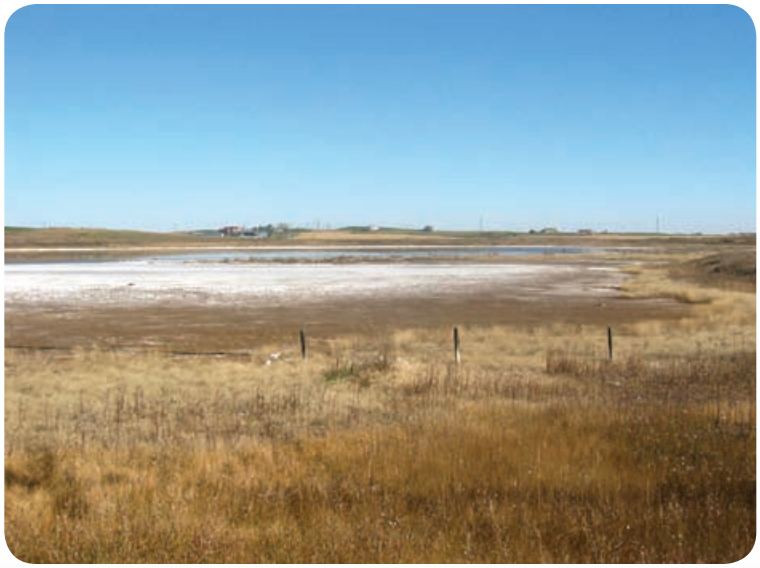
Seasonal



Semi-permanent

Permanent

Alkali



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