Beaver Hills Initiative
Land Use Planning and
Land Management Framework –
Phase I Report

Final Report

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1.0 INTRODUCTION

The Beaver Hills/Cooking Lake moraine is a relatively large geomorphological feature to the east of Edmonton and overlapping five municipal counties: Beaver, Camrose, Lamont, Leduc, and Strathcona. Its hummocky, hilly terrain with numerous depressions is now occupied by wetlands and lakes. The moraine lands have low agricultural capability due to terrain and soil conditions, which has largely prevented clearing for agricultural uses. As a result, the area still supports native forests, grasslands and wetlands uncharacteristic of the broader agricultural landscape. This natural feel is part of the quality of life valued by area residents and others in the region that use the area for recreational pastimes. The area is under increasing pressure due to development and other land uses. As a result, the Beaver Hills ecosystem is at risk of fragmentation and degradation of those natural features contributing to the essential character of the area valued by its residents and others.

The Beaver Hills Initiative (BHI) is a collaboration comprising the five municipalities within the Beaver Hills/Cooking Lake moraine, federal and provincial land management agencies, plus non-governmental organizations with interests in the area. In recognition of the natural features that contribute to the essential character of the area, these partners have come together to promote a regional approach to land management in the moraine. Currently, the multi-stakeholder group wishes to foster regional cooperation through a common land use/management framework that will conserve the moraine now and into the future. They envisioned creation of a Land Management Framework in a form that could facilitate adoption of sustainable planning practices by member municipalities, through a two-phase project.

BHI retained Spencer Environmental and IMI *strategics* to prepare the framework. Phase I, discussed in this report, began with a comprehensive review of current and proposed land use planning bylaws and policies of each municipality overlapping the Beaver Hills moraine. It also included a review of provincial and federal environmental legislation that applies to development projects, in order to identify existing permitting pathways and opportunities for municipalities to 'fill the gaps' to create a seamless environmental management system. That overview formed the background for recommendations on the framework and an initial implementation plan that the BHI could use to promote the framework to its municipal partners. Each of these elements, plus an analysis of current land use planning zones in the context of the Landscape Management Areas previously mapped within the BHI area, are summarized in this document.

1.1 Objectives

The Request for Proposal (RFP) for a Land Use Planning and Land Management Framework outlined the broad expectations for this two phase project. These were refined in consultation with the BHI Planners Working Group with a focus on Phase I, in order to develop a sound foundational framework to which additional detail could be added in Phase II.

Phase I focused on creating two main products: the Land Management Framework and an associated Initial Implementation Plan. These products were to be broad-level planning

documents designed in such a way that any of the partner municipalities could incorporate the recommended planning practices into their land use planning system. Phase I forms the basis for Phase II of the project, establishing priority areas in which the BHI could assist partner municipalities in implementing and applying the framework. Phase I was to provide the following deliverables, documented within this Phase I Report:

- A summary of the similarities and differences of the Municipal Development Plans (MDPs), Land Use Bylaws (LUBs) and non-statutory environmental policies of the five BHI municipalities. This review also discussed how these planning tools are implemented in each Municipality.
- A comprehensive classification system that standardizes the land use and policy area definitions of each County, documented in a table and as a GIS map layer.
- A review of the federal and provincial environmental legislation and policies applied to proposed developments, and areas in which the *Municipal Government Act* would allow municipalities to 'fill the gaps' to ensure critical resources within their jurisdictions are adequately protected.
- Recommendations for a Land Management Framework that builds on the BHI Land Management Area (LMA) mapping model and principles and the findings from the previous three objectives.
- Recommendations for an Initial Implementation Plan – a process to facilitate incorporation of the Land Management Framework by any partner municipality into their MDP and LUB documents.
- Recommendations for Indicators that could be used as a means for the municipalities to track and manage critical resources in all policy areas.

2.0 LAND USE PLANNING REVIEW

Before discussing a potential common land management framework, some understanding of current environmental management policies within the municipalities was necessary. We reviewed existing and proposed draft Municipal Development Plan (MDP), Land Use By-law (LUB) and non-statutory environmental policies for all 5 municipalities. In order to compare the depth and coverage of environmental policy, the review proceeded through successive levels of planning policy within each document:
:

- *Goals, objectives, definitions (MDP)*
- *Broad policy areas and implementation provisions (MDP)*
- *Specific policies and LUZ zoning (LUB, policies)*

We found that although all five partner municipalities have environmental goals, objectives and implementation policies incorporated in their MDPs, LUBs and non-statutory policies, the approach and level of detail varies considerably. The distribution of environmental land use provisions among statutory and non-statutory policies of the five counties is summarized in Figure 1 and outlined in more detail in Appendix A. The section below summarizes the review results, examining the extent to which environmental protection has been incorporated at the MDP, LUB and policy level. The section is presented by the successive levels of policy as reviewed during the assessment and is meant to accompany Figure 1. For more detailed description of the policies mentioned below, including policy clause references, see Appendix A.

2.1 Municipal Development Plans

All five municipalities have general environmental goals within their MDPs, however references to the Beaver Hills moraine area are not consistently provided (Figure 1). In fact, the moraine is specifically mentioned only in the recently revised MDPs of Strathcona and Beaver County. This is not surprising, considering the relatively recent interest in managing the moraine as a landscape unit. However, where reference exists, protection does not include all of the moraine within the jurisdiction of the given municipality.

Leduc identifies only the Ministik area within the moraine as a distinct policy area with environmental concerns. Technically, this area is under management by the province and outside municipal control.

Specific environmental protection measures are also variable in detail and force of law (in policy, vs. MDP or LUB) (Figure 1). Environmental protection provisions (beyond references to Environmental and Municipal Reserve dedication) are described for Agriculture and Country Residential areas in all but Camrose County. Authority to manage environment in terms of potential hazards to development and environmental resources significant at the local level is conferred by the MGA. Of the two, however, the ability to manage environmentally significant areas is not always exercised. All five counties have general policies regarding development near environmental hazards (listed

as environment and wildlife policies in Figure 1). All municipalities have adopted the development restrictions recommended in the MGA for wet, steeply sloped or potentially unstable lands, or those within the 1:100 year floodplain.

Only two counties have implementation policies regarding development around environmentally significant areas. For the purpose of this review, we considered any MDP policy managing development in terms of environmental considerations to be an Implementation Policy. In the environment and wildlife sections of their MDP's, only Strathcona and Leduc have referenced Environmentally Sensitive or Significant Areas (ESAs) and provided guidelines for development near such features. Leduc has also defined an ESA, a definition that includes cultural as well as environmental features. Strathcona has focused on areas of key ecological function defined as Priority Environmental Management Areas. Although not specifically identifying ESAs, Camrose has provided restrictions for development related to both hazard lands and ecological functions (e.g., wildlife corridors and tree retention, focusing on recreational lakes). We considered these to fall in the category of Environmental Protection Measures rather than ESA protection.

Despite common goal statements regarding a sound environment within all five municipalities, only Strathcona and Leduc have defined the key aspects of that environment in their MDPs. Strathcona, for example, has definitions for the Beaver Hills Moraine Policy Area, Green Infrastructure and Priority Environmental Management Area. Leduc's definition of an ESA was mentioned above. None have defined the aspects of the environment (i.e., land, air, water, ecological functions) of interest within their management context.

2.2 Land Use By-laws and Supporting Non-Statutory Policy

Environmental management policies appear in several sections of the Land Use By-laws (LUBs) of the five counties:

- development application requirements,
- application referrals,
- general regulations and
- land use districting procedures.

Application requirements generally include an environmental assessment or provision of other information deemed necessary within the development approval process. All but Camrose require some environmental information to support the application, but the level of detail and role in the approval process varies. Few of the municipalities have incorporated a formal environmental review within the development approvals process. Although such assessments are commonly used at the provincial and federal level to ensure sustainable development, relatively few municipalities in the province have established similar processes.

Figure 1. Land Use Provision Summary Checklist

Legend: Yes No

Municipal Development Plan	Nature of Provision	Strathcona	Beaver	Leduc	Lamont	Camrose
Goals and Objectives	**Environmental (General)**	■	■	■	■	■
	Beaver Hills (Specific)	■	■			
Agriculture/Country Residential	**Environmental Protection Provisions**	■	■	■	■	
	Beaver Hills (Specific)	■				
Environment/Wildlife Policies	**General**	■	■	■	■	■
	Beaver Hills (Specific)	■				
Riparian Protection	**Environmental Reserve Provisions**	■	■	■	■	■
	Riparian Area Protection (Specific)	■	■	■		■
Implementation Policies	**Environment (Specific)**	■		■		
Definitions	**Environmental**	■		■		

Land Use Bylaw	Nature of Provision	Strathcona	Beaver	Leduc	Lamont	Camrose
Application Requirements	**EIA/ESA/Other Specific Requirement**	■		■	■	
	Additional Information (Non-Specific)		■			
Application Referrals	**General Requirement**	■	■			
	Environment (Specific)			■	■	
General Regulations	**Environmental Standards**	■		■	■	
Land Use Districts	**Environment/Conservation**	■		■		
	Other District					■
	Tree Removal or Other Restriction		■	■	■	■
Definitions	**Environment or Related Terms**	■	■	■		

Non-Statutory Requirements **Environmental Protection**

Leduc requires an EIA when a proposed development may impact an internationally, provincially or regionally significant Environmentally Significant Area. That requirement is provided in both their MDP and LUB. Lamont's LUB requires an EIA of industrial developments, through the Industrial Heartland IDP. Strathcona has a discretionary requirement for a Biophysical Assessment or EIA under its LUB. The accompanying non-statutory policy clarifies that the Biophysical Assessment is intended to identify potential lands for conservation as Environmental or Municipal Reserve, or through a conservation easement. The review is not a condition of the development permitting process. Environmental assessment, with its comprehensive view of environmental costs of development, is a relatively new approach for all levels of government, and, its utility in a municipal context has not yet been widely accepted. This issue is discussed in more detail in Section 4.0, Environmental Legislation Review.

The requirement for referral of an application potentially involving other jurisdictions is set out in the MGA, and all counties except Camrose contain a provision for referrals in their LUBs. Only Leduc and Lamont refer specifically to an environmental trigger for that referral.

Strathcona, Leduc and Camrose have land use districts for conservation or watershed protection. All but Strathcona have environmental restrictions (e.g., tree clearing) as a limitation for subdivision or development within the LUB. Strathcona has placed such restrictions in various non-statutory policies (e.g., the Tree Policy).

Only Strathcona, Beaver and Leduc have environment-specific definitions in place within the LUB. Beaver defines "lake" and Strathcona, "conservation easement". Leduc has several definitions, including "Conservation Easement", "Environmentally Sensitive Area" and "Wildland".

2.3 Key Conservation Mechanisms in Municipal Development Policies

The different emphasis on environmental management among the policies partly reflects the type of landscape and environmental character within the 5 partner municipalities. For all but Strathcona, the majority of land managed by the county is under some form of agricultural use. Natural features, where they remain, are generally small and isolated in these landscapes. The exception is in the small section of the moraine within these counties. Here, the rolling terrain and abundant waterbodies (and associated groundwater functions) characteristic of the moraine have limited the extent of agricultural or other development. In some counties, the moraine remains largely treed. In Leduc, the moraine topography is flatter and much of the moraine land has been cleared for agriculture. Lakes and wetlands are still abundant in this area, however. Half of Strathcona County lies within the moraine, and terrain, soil and surface water conditions have limited agricultural use to grazing or in some area, hay production.

As a result of past development trends, the key issues confronting land use managers in the BHI municipalities have related to agriculture. Not surprisingly, the bulk of their policy has focused on that land use and the means to sustain that important industry, and for most, that focus remains in current policy. In a landscape with few natural features remaining, environmental concerns are limited mainly to clean air, clean water and

environmental hazards where development is unsuitable. Where environmental policies exist in the planning documents of these counties, they focus on those main issues. Provincially, the tax system also favored agricultural development and cleared lands are subject to lower taxes than uncleared properties.

More recently, the increased demand for country residential development has forced land use planners to shift attention to the management of rural residential land use. Given the past emphasis on agricultural development, many municipalities initially permitted such development in lands with less agricultural potential. Often these were treed areas appealing for rural residents, where soils, terrain or abundant water limited agricultural capacity. Recreational use, particularly around lakes, has been another important pressure in some counties. Only very recently has public concern for the very natural features that sparked the demand for rural living raised concerns about the suitability of the moraine for residential and other land use. Strathcona has had the most experience with this issue, due to its proximity to Edmonton and the extent of natural landscapes. Their policy, as a result, is the most diverse and complex of the partner municipalities. It also tends to incorporate more environmental management than other more agriculturally-focused municipalities.

Add to this context the changing climate of environmental management, and the reasons for inconsistent attention to environmental concerns at the municipal level becomes even clearer. Federal and provincial regulatory systems have expanded the scope of environmental management and become much stricter in enforcing penalties. Even the definition of environment and therefore, the approach to management has changed, from a resource-specific basis to a more comprehensive, cumulative approach (see Section 4.0 for more explanation of this trend). Municipal governments have traditionally focused attention on land use planning, leaving broader environmental management largely to higher levels of government. As a result, they have been largely unconcerned with the changes in management approach of other jurisdictions, except where they may be directly affected, or have specific experience with other jurisdictional processes.

The public, in the meantime, have become more aware of environmental issues in general, and more vocal about local concerns. The public expect all levels of government to manage the areas under their control for the common good, which for many, now includes management in an environmentally-responsible way. Municipalities, particularly agriculturally-based counties, are caught on the cusp of change: they are faced with new environmental issues, a dynamic regulatory and development climate and constituents demanding higher environmental standards. This is certainly true of the BHI municipalities, who are realizing they must develop new management strategies, but have not yet been able to incorporate those strategies in their policies.

3.0 LMA ANALYSIS OF EXISTING PLANNING ZONES

3.1 Comparative Land Use Policy Mapping

As a first step in completing the LMA analysis, we developed a comparative MDP map that combined the MDP policy areas of each of the 5 municipalities. A similar map combining Land Use Districts of the 5 counties was also created. Next, we analyzed each of the policy maps against the Landscape Management Areas (LMA) GIS layer developed by the BHI to determine how well key environmental features were currently protected.

The comparative MDP map includes the policy areas proposed in Strathcona and Beaver County's Draft MDPs, which are currently under review (Figure 2). Developing a common policy area nomenclature was beyond the scope of this assignment. Instead, we attempted to standardize color coding representative of the form of land use across the 5 counties. Gold and beige represent agriculture, yellow through brown indicate increasing density of residential (low to high), reds show commercial, purples industrial, grey urban areas, and green, conservation areas. Camrose has only the CFO overlay in their MDP, with various zones to protect different types of features. Color coding for each CFO restriction zone attempted to avoid any others used for policy areas to avoid confusion, although there is some color overlap.

The LUB map incorporated land use districts proposed in Draft LUB's for Leduc and Camrose (Figure 3). Both were currently under review and have not yet been accepted by council. Color coding for this map attempted to follow a similar system to that used in the MDP map. Again, our scope did not include development of a common nomenclature and we displayed similarity in land use through color only. Here, gold/light yellow represents agricultural districts, tan through brown the residential areas (darker tones represent increasing density), green areas designated for conservation/watershed protection, purple the industrial areas (darker indicating increasing heavy industry) and lastly, red for commercial zones.

3.2 LMA Areas – A Review of Key Areas

The LMA analysis was primarily a visual exercise. The complexity of the MDP and LUB maps did not lend themselves to an overlay analysis, in which the LMA zones would be draped over the policy layer. Instead, the MDP and LUB mapping was reviewed to determine what type of land use would be permitted within areas identified as Blue and Yellow LMA zones in the LMA map (Figure 4).

The BHI's LMAs were previously identified based on a variety of biophysical features representing land, water and biodiversity. Because the LMA model provides a composite view of the landscape, it is the combination of these elements that determines whether a given area was identified as Blue, Yellow or White (with no significant features). As a result, the distribution of Blue and Yellow Areas, the two areas with relatively abundant environmental features, roughly follows the pattern of either surface water, forested lands or groundwater recharge zones. The other factors in the model (rare species, lower

capability agricultural soils) tend to coincide with these other features and are, in fact, what separates the more resource-diverse Blue from Yellow zones in most cases.

Strathcona County is unique among the BHI partner municipalities in that half of the county lies within the moraine. It is also unique due to the character of the moraine in this area. The land slopes to the northwest, particularly steeply in the northern area, so that in addition to the lakes and wetlands found throughout the moraine, numerous drainage channels also run through the county. As a result, many of the Blue LMAs in the more developed parts of the county are related to these drainage courses and there is no transition to a predominately Yellow LMA at the edges of the moraine as in the other counties.

Identifying appropriate planning zones to protect the resources comprising the Blue and Yellow LMAs is a difficult task in this context. Fortunately, residential development in Strathcona has tended to spread east from the Edmonton area, and industrial development has been clustered along the eastern and northern edges of the county. Although there has been some clearing for agriculture and country residential subdivision, large areas of forested lands remain along the eastern parts of the county. This includes the southeastern corner of the county, which with the forested lands to the east in Beaver County, provide a continuous link between Cooking Lake/Blackfoot Reserve and Elk Island National Park to the north and Ministik and Miquelon protected areas to the south. Additional forested lands and wetlands surround these protected areas on all sides, with the exception of the cleared lands between Cooking Lake, Hastings Lake and the Cooking Lake/Blackfoot Reserve boundary, in both Strathcona and Beaver Counties. These lands have good agricultural soils and were developed for agriculture long ago.

The southeast 'bulb' of the moraine is also unique. Here, the terrain is flatter, and thus, more amenable to agricultural use. As a result, much of the area has been cleared for cultivation. In Leduc, these lands are predominately Class 3 CLI soils, relatively good agricultural soils. In Strathcona, they are mainly Class 4 and 5, more suited to forage crops due to various constraints. Blue LMAs tend to be concentrated around water features: lakes, wetlands and streams. Little native vegetation remains on the uplands. Ministik is largely surrounded by such lands, except for a band of treed land that extends northeast of the protected area toward Cooking Lake. The band continues through Strathcona County lands, and provides a linkage between the lake, Ministik and on to Miquelon.

Thus, the key areas on the LMA map are the mostly continuous Blue LMAs along the east side of the moraine and surrounding the protected areas, and the more discontinuous Blue areas associated with water features through the rest of the moraine. The Yellow areas that fill the rest of the moraine lands are not without value: through restoration, these could provide vital linkages between the Blue LMAs, the protected (Green) areas and other significant ecological features outside the moraine. Within a land use planning context, we considered both conservation and opportunities for restoration/retention of remnant features to be important criteria in evaluating suitability of MDP and LUB areas.

3.3 Land Use Planning Policy Analysis Results

3.3.1 Comparative MDP Map Analysis

Strathcona's and Beaver County's recent Draft MDPs relied on BHI data and the LMA analysis used here to evaluate proposed policy areas. For Strathcona, the most significant change from the past MDP is the creation of the new Beaver Hills Moraine Policy Area (Figure 2). That area covers much of Strathcona's section of the moraine, including the most dense Blue LMA zone in that area, and provides a buffer along both Elk Island National Park and the Cooking Lake/Blackfoot Reserve (Figure 4). The policy area was extended west, well past Cooking Lake, to enclose most of the Blue LMAs and the lands around Cooking Lake. As a result, it provides a linkage between the key protected areas of the moraine: Elk Island National Park and the Cooking Lake/Blackfoot Reserve to the north and Ministik and Miquelon to the south. Environmental protection will be a primary focus in this area, and subdivision will not be permitted beyond first parcel out or 80 acre split. Land use will remain largely agricultural, although previously subdivided and developed areas will remain distributed across the area. Existing Confined Feeding Operations (CFOs) in the area will remain, but new facilities will not be encouraged in the moraine. Opportunities for restoration will be pursued in cooperation with landowners, and through public awareness activities.

The Agricultural Small Holding Policy Area, immediately west of the new Beaver Hills Moraine area, will provide a zone of transition from the more dense and urban policy areas to the west (Country Residential, Colchester Growth Area, Commercial Hwy 16, Figure 2). Just north of Highway 16, the new Beaver Hills Moraine area extends to the edge of the moraine in most areas, and captures most of the Blue LMAs in this region (Figure 4). The adjacent Agricultural Large Holdings Policy Area outside the moraine provides a compatible land use zone.

Beaver County established the Ministik Lake Game Bird Sanctuary Buffer and the Rural Country Residential Policy Areas in their draft MDP, which captures much of the Blue LMA lands in the southeast part of the moraine (Figure 4). The boundary of the Cooking Lake/Blackfoot Reserve, and the Blue LMA lands to the eastern edge of the moraine boundary, remain without formal protection however.

Lamont's MDP manages the lands within the moraine, along the north and east border of Elk Island National Park, as Agricultural Policy Areas (their MDP policy areas are the same as the LUB districts, Figure 2). The moraine lands directly east of the Park have a White-tailed deer overlay that captures a large Blue LMA zone in this part of the moraine (Figure 4). A small lake between that area and Highway 16 is a valued waterfowl area and includes the Blue LMA zone surrounding that waterbody. The MDP states that critical fish and wildlife areas such as these should be conserved where possible, but does not provide any specific measures related to these identified areas (Appendix A). Other Blue LMAs to the north and immediately adjacent Highway 16 and the park are not protected with any special policy areas.

Camrose County has only Confined Feeding Operation (CFO) areas delineated in the MDP (Figure 2). All of their lands within the moraine fall within two CFO overlay zones (the Recreational Lakes and F zones), which captures the broad area of Blue LMA at the

southern tip of the moraine (Figure 4). The County has no other specific policy areas associated with this part of the moraine. They do, however, have a requirement for a lake management plan for recreational lakes (including Miquelon) in their MDP, which considers both recreational potential and sustainable development. The Environment/Wildlife section of the MPD also outlines other protective measures for groundwater function, wildlife corridors, tree and native vegetation retention and key wildlife habitat that could be applied to maintain key features in this part of the moraine.

Leduc County has one main policy area within their part of the moraine (Agricultural Area A) that extends right to the boundary of the Ministik Game Bird Sanctuary (Figure 2). Small parcels of Crown lands, including those within Ministik, are the only other policy areas within this area. Leduc's section of the moraine contains a roughly equal mix of Yellow and White LMAs, with Blue LMAs clustered around wetlands and lakes (Figure 4). There is no distinction in terms of policy areas for the Blue LMAs (mainly waterbodies), or for the lands immediately adjacent Ministik.

Instead, like Camrose, their MDP provides measures for protection of environmental features, primarily waterbodies. Unlike Camrose, no protection measures to address specific environmental features such as groundwater or large areas of naturally vegetated land are provided. Country residential uses are permitted in these agricultural areas, provided they meet certain criteria and are set back from any waterbodies (Appendix A). Development adjacent regional, provincial or international ESAs (which would include Ministik) requires prior evaluation through the EIA process, and will only be approved if there is no adverse impact to the ESA. Developers are generally encouraged to minimize impact as much as possible and retain the natural features in such sites. Landowners are generally encouraged to create and maintain wildlife habitat on private and municipal lands through various incentive programs, and to maintain tree cover and natural vegetation within ESAs. There are no specific policies to foster restoration of the agricultural lands adjacent Ministik, however, and no criteria defining an appropriate transition in land use between Ministik, a Provincial ESA. In the absence of the definition of key environmental features to be conserved and guidance for land use immediately adjacent Ministik, the predominately Yellow LMAs of this area will, at best, be maintained and possibly expanded.

3.3.2 Comparative LUB Map Analysis

The overlay of the LMAs with the comparative LUB mapping shows that only roughly half of the Blue LMA within the moraine is currently protected (Figure 4). Between Cooking Lake/Blackfoot and the Ministik and Miquelon protected areas, both Beaver and Strathcona have zoned the area for agricultural land use, leaving a large gap between these protected areas. Camrose has largely buffered both Miquelon and Ministik with a Watershed Protection district in their recent Draft LUB, although several isolated areas of Country Residential 1 and 2 lie to the north of Miquelon. These areas were permitted to be developed several years ago, but only a few of the subdivision lots have sold, leaving the area largely naturally vegetated. Both CR areas are separated from Miquelon, the closest park, by a quarter section of Watershed Protection zoning. A quarter section within an indentation on Miquelon's east side is zoned as Lake Resort (see Figure 2 for best view), but from interpretation of aerial imagery (Google Earth), limited development

has occurred in the area to date and it is largely still naturally vegetated. Leduc's draft LUB has placed a similar Lake Watershed district as a buffer (minimum of one section wide) on Ministik's western border. Neither Beaver nor Strathcona have such buffers on their corresponding boundaries with these natural areas, however neither municipality has updated their by-laws recently.

To the north, Elk Island National Park and the Cooking Lake/Blackfoot reserve are bounded by agricultural land use districts on all sides (Figure 3). Small pockets of Country Residential (Strathcona, Beaver County) lie directly against the protected area boundaries in some areas. A similar pocket of higher density Rural Mixed Center Mixed District (Strathcona) on the northeast end of Cooking Lake is immediately adjacent the Cooking Lake/Blackfoot reserve boundary. Lamont's Agriculture 1 and 2 districts border the northeast side of the park, to Highway 16. Neither zone allows subdivision beyond first parcel out, with a minimum of 32 ha for agriculture (Appendix A). A game farm (zoned Small Holdings) is within one quarter section of the park's eastern boundary, within the Agriculture 1 zone.

The restrictions on subdivision in these agricultural lands should result in conservation of much of the Blue LMAs. Restoration programs would help to fill gaps and enhance wildlife corridor linkages, particularly near the borders of the protected areas.

The west side of the moraine lies primarily in Strathcona County. This area has experienced more residential development in the past, primarily Country Residential and Rural Center Mixed District subdivision. The smaller lakes and wetlands between Cooking Lake and Sherwood Park have been a focus for this type of development in the past. Present zoning will expand this denser level of development around Sherwood Park and the western boundary of the moraine, and in scattered locations around Beaver Hills moraine. Although riparian buffers are usually recommended for such development, landowner cooperation will likely also be required to sustain the features within the Blue LMAs associated with these waterbodies. Tree retention or in some cases, restoration will be important to retain these Blue zones and perhaps, enhance the adjacent Yellow LMAs. Awareness and incentive programs are not currently provided in Strathcona's LUB, but could be, as this policy will be reviewed in the next few years.

3.4 Summary

The extent of conservation offered to the Blue LMAs by current and draft statutory planning documents is variable. This is due in part to the relatively recent updating of Strathcona and Beaver's MDPs and Leduc's LUB, which were deliberately adjusted to incorporate the moraine within the municipality. Camrose has also recently updated its LUB, and although the moraine is not mentioned specifically, the forested lands surrounding Miquelon and Ministik have been protected under its districting.

For both the Blue and Yellow LMAs , both the location of policy areas/districts and the underlying policies are important in land management. This is particularly true for the Yellow LMAs, where few natural resources remain. Although it may be tempting for municipalities to encourage more intensive development in these areas, they also offer an opportunity for ecological restoration. Where Yellow LMAs lie next to significant

patches of Blue LMAs, restoration may play a significant role in sustaining the essential elements of the moraine. Such measures are included in the implementation policies of some MDPs and LUBs (notably Camrose's LUB), and provide excellent examples of this type of land management tool.

Figure 2. Comparative MDP Map

Figure 3. Comparative LUB Map

Figure 4. Landscape Management Areas

4.0 ENVIRONMENTAL LEGISLATION REVIEW

4.1 Introduction

In order for each municipality to develop environmental policies within the common land management framework, they must first determine the limits of their jurisdiction and how the environment is managed by higher levels of government. In this section, we present the results of a review of the MGA, and federal and provincial environmental legislation, which addressed three main questions:

- ***What laws apply to development in municipalities?***
- ***How is federal/provincial legislation typically applied in development situations?***
- ***Do municipalities have jurisdiction to develop their own environmental by-laws and policies?***

The sections below outline some background on the present environmental management approach in Canada, the scope for environmental management authorized under the MGA, and the specific federal and provincial legislation currently used to regulate the environment. A short summary section outlines the opportunities (and potential limitations) for municipalities to address environmental issues within their own jurisdictions, including the Beaver Hills moraine.

4.2 Background – Current Environmental Management Approaches

Canada's current approach to sustainable development through appropriate environmental management was heavily influenced by the definition proposed by Brundtland Commission in 1987:

> "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

That definition became a guiding principle for federal and provincial governments and has been incorporated in various forms of environmental legislation since 1987. In fact, the definition was included verbatim in the *Canadian Environmental Assessment Act (CEAA)*, the federal environmental impact assessment process enacted during the early 1990's. The *CEAA* is the most comprehensive of those laws; similar legislation has been adopted by provincial and some municipal governments.

The *Canadian Environmental Assessment Act* also formally defined the environment in terms of broad elements and included the interactions between those elements:

"Environment" means the components of the Earth, and includes:

(a) land, water and air, including all layers of the atmosphere,
(b) all organic and inorganic matter and living organisms, and
(c) the interacting natural systems that include components referred to in paragraphs (a) and (b).

Recognition of the environment as a complex, interactive system was a departure from earlier Acts that specified management for individual resources, with limited attention to the dependencies between them. The concept of the environment as a comprehensive unit has now also been adopted by the provincial government and some municipal governments.

Definition of process and the terminology used within that process are critical components of statute law: laws formally recognize the importance of the resource being protected and create a common understanding of what is included under that protection. Defining sustainable development and the environment were no less important to environmental management within Canada. With those definitions came recognition of the requirement to manage development on an ecosystem basis.

The environmental assessment process manages new development under this sustainable development model. Other legislation controls the use of certain resources within established, existing operations. Federal and provincial governments are directly responsible for management of water, wildlife, fish, rare species, historical resources and air quality. Provincially, management also extends to natural resources traded as commodities (e.g., oil, gas, aggregates and minerals) and to industries with potential to impact natural resources (e.g., agriculture, petrochemical extraction and refining). For most of these pieces of legislation, the responsible agency can permit development and on-going industrial activities provided certain guidelines and requirements reflecting sustainable use are met. In some cases, activities potentially impacting a resource are strictly forbidden and the agency is responsible only for enforcement of infractions. This principle of management through either permitting or enforcement is a critical component of environmental law. Conditions for development can be attached to a permit, so that Environmental Best Practices are introduced at the development stage. This effectively sets standards for new development that industry must follow to obtain approvals in a timely fashion. Enforcement, in contrast, can only be applied after an adverse activity has occurred. Permitting has its limitations, however. There must be some regulatory trigger (e.g., a development permit) to initiate the permitting process. Using permitting to improve existing operations is therefore difficult and enforcement may be the only alternative.

The strength of the environmental impact assessment (EIA) process is the comprehensive review of a proposed project it produces. The EIA summarizes in one document the potential impacts on all aspects of the environment and thus, the environmental costs should the project proceed. Under both federal and provincial processes, however, review is not automatic and a trigger is required to initiate the process. Typically, the permit application under other resource management Acts (e.g., the federal *Fisheries Act* or provincial *Water Act*) triggers the assessment process. Other triggers can also apply, but some form of federal or provincial involvement is always present (e.g., projects with government funding, on government land or conducted by government departments). The form of environmental review depends on project-specific factors, including project type, location and size; specific large projects are automatically reviewed in a comprehensive assessment under the Act. Smaller scale projects with few regulatory

permitting requirements may not be reviewed at all. Renewal of existing permits typically does not require an EIA and is instead based on past performance.

For most projects initiated by private companies and individuals, the requirement for permits and approvals controlling use of specific resources is often the only trigger for a federal or provincial EIA. Where the resources under their jurisdictions would not be affected, an EIA would not be triggered, and these agencies would have no further involvement. For small projects considered to have minimal potential impact, permitting may only require the proponent to satisfy certain general conditions in their project design rather than submitting an EIA. Thus, proposed projects that may affect resources considered significant within a municipality may not always be reviewed or permitted by provincial or federal jurisdictions. These are gaps in environmental management that municipalities could fill, if they chose.

Determining where and how municipalities could implement such environmental management measures most effectively requires an understanding of the requirements and limitations of federal and provincial environmental legislation. It also requires an understanding of the responsibilities and powers conferred onto municipalities through the *Municipal Government Act* (*MGA*). The section below provides an overview of the *MGA* as it would apply to environmental management. The subsequent section identifies those pieces of provincial and federal legislation typically applied to developments in municipalities. Next, current federal, provincial and (where it exists) municipal requirements for environmental assessment are reviewed. Lastly, the gaps and opportunities for municipalities to play a more active role in environmental management are summarized. That summary, in addition to the review results documented in preceding sections formed the basis for the Land Management Framework and Initial Implementation Plan detailed in Section 6.0, Recommendations.

4.3 Municipal Government Act

4.3.1 Purpose of the Act

Under the Alberta *Municipal Government Act (MGA),* the general purposes of a municipality are

(a) to provide good government,
(b) to provide services, facilities or other things that, in the opinion of council, are necessary or desirable for all or a part of the municipality, and
(c) to develop and maintain safe and viable communities (Section 3).

At the broadest level, municipal jurisdiction includes those matters affecting the safety, health and welfare of people and the protection of people and property (*MGA,* s.4(a)). Further, municipal control can be applied to any development, activity, industry, business or thing within municipal boundaries (s.8). That jurisdiction is exercised through by-laws that can be passed and enforced by the municipality. By-laws can regulate or prohibit; divide development, industry and other activities into classes that can be managed in specific ways; establish a process for permitting and approvals of activities (s.8). The *MGA* defines the scope of by-law powers as follows:

a) "to give broad authority to councils and to respect their right to govern municipalities in whatever way the councils consider appropriate, within the jurisdiction given to them under this or any other enactment and,
b) to enhance the ability of councils to respond to present and future issues in their municipalities" (s.9).

The *MGA* also provides a variety of tools for conservation of natural areas. In addition, the *MGA* gives municipalities control over rivers, streams, lakes and other natural waterbodies within their boundaries (s.60(1)). Municipal authority extends also to the air space above those waterbodies. Although the municipality controls these waterbodies, the province owns any waterbodies and their beds and shores and can influence management in the capacity of an owner. Municipalities do not often seem to exercise their management option, likely due to this fact.

4.3.2 Land Use Planning Authority

The *MGA* gives to municipalities considerable authority over private land use, by delegating to them the responsibility for planning land use objectives. With the ability to create by-laws, the Act allows municipalities to specify both the type and location of development and to regulate development within their boundaries. Several planning instruments are available under the Act, all of which are considered statutory documents, with a force of law (Environmental Law Centre 2003, *MGA* s.631-646). Those instruments range from broad level planning for future land use to more specific rules guiding subdivision and development:

- **Municipal Development Plans (MDPs)**: this is the broadest guiding document that sets out the goals and objectives of future development. It outlines the future vision for the community, but does not discuss the means to achieve that vision.
- **Area Structure Plans and Area Redevelopment Plans**: still general in scope, these plans outline planning guidelines for a specific area within the municipality. These are intended to provide a framework for subdivision and development of the subject area, outlining sequencing, land uses, density and general location of supporting infrastructure (roads, utilities). Councils can request that these documents address other matters it considers necessary
- **Land Use Bylaws (LUB) and districting:** this document is the regulatory tool used to implement the vision of the MDP. It creates the structure and processes to manage development, as well as the specific rules and guidelines for subdivision and development. It also divides the municipality into districts or zones for specific forms of development.
- **Intermunicipal Development Plans (IDPs):** this is a plan outlining consistent broad future land use principles for lands within jurisdiction of two or more councils. The plan is adopted through by-laws passed by each council.

In developing a LUB, the municipality must protect agricultural operations (s639.1): this is the only land use specifically protected by the *MGA*.

The *MGA* also provides specific tools for conservation of natural areas (Environmental Law Centre 2003). Environmental reserves (ER) can be taken during the subdivision

process to protect certain natural features (mainly steep slopes and wetlands). Municipal reserve (MR) lands are intended for parks, schools, recreational areas or other community (public) amenities. Typically MR lands represent 10% of the subdivision parcel, although the municipality can request a larger proportion. Municipalities can also place restrictive covenants on the land title of a parcel of land for the benefit of lands under their control (s651.1(2)).

Other provincial legislation provides municipalities with additional tools for conservation. Under the *Environmental Protection and Enhancement Act (EPEA)*, a municipality can enter into agreements with landowners that create a conservation easement limiting development of the parcel, or portions of it. The *Historical Resources Act* also allows certain natural areas to be protected for their cultural value.

Although the scope of municipal interests is quite broad, the means of implementing controls are generally limited to planning, permitting and enforcement. Similar permitting and enforcement restrictions apply to federal and provincial governments, thus most environmental control for new development is tied to a permitting process. Enforcement is applied to situations that could cause irreparable damage to health and safety (e.g., penalties for release of toxic materials). For a municipality, environmental issues would have to be addressed through development permits, rezoning and subdivision applications and other regulatory aspects of municipal land use. For example, an environmental assessment might be a condition applied during the development approval process. Upgrading to a new septic system might be linked to redevelopment proposals on existing developed lands. Enforcement is also an option. The municipality has the power to ban or limit certain activities considered detrimental to environmental goals through by-laws; however enforcement of such restrictions would require resources municipalities may not current have available.

4.3.3 Regulation of Subdivision and Development

MDPs and LUBs outline in successive levels of detail the means by which a municipality will administer and manage land use and development. Conditions for new development can be added to the LUB and associated policies to address specific concerns of the municipality, but the subdivision process is one aspect that is clearly defined in the regulations of the *MGA*. The *Subdivision and Development Regulation* of the *MGA* outlines the elements that must be included in an application for subdivision, and the discretionary powers of a municipality to add other requirements. It also directs the subdivision authority to refer applications regarding resources outside municipal jurisdiction to the responsible agencies. To assist in this referral process, the regulations stipulate resources under other the control of other jurisdictions that must be included in the application for subdivision:

- public utilities and other rights-of-way,
- highways and access,
- bed and shore of any river, stream, watercourse. Lake or other body of water within the parcel,
- existing or proposed water wells, and
- existing or proposed sewage system.

Contacts for referral are also stipulated in the regulation, and include school authorities, Alberta Energy and Utilities Board, Ministries of Environment, Infrastructure and Transportation, and Sustainable Resource Development (Public Lands) and adjacent municipalities. In addition, the subdivision authority can require other information at their discretion, including

- the location of the 1:100 year floodplain,
- surrounding land use and land surface characteristics in the surrounding parcels
- information from AEUB regarding sour gas facilities within 1.5 km of the parcel,
- a conceptual scheme that relates the application to future subdivision and development of adjacent areas
- any additional information that may be required to determine if the application meets Section 654 of the *MGA* regarding subdivision approvals.

The regulation further outlines the criteria on which a subdivision authority must base its approval of a subdivision application. Environmental considerations within this section of the regulation (s.7) include topography; soil characteristics; stormwater management; potential for subsidence, erosion or flooding; available water supply and capacity for sewage and solid waste disposal. A last, broad clause allows the use of any other information necessary to determine if the land is suitable for the purpose the subdivision intends (s. 7(i)). This particular clause permits considerable discretion within the subdivision approval process to address broader municipal goals, including those related to the environment and sustainable development.

4.3.4 Property Rights

Land in the province is held either privately or publicly through the federal government, the province, or the municipality. Use of private lands can be regulated by any level of government, provided the government authority acts in accordance with the legislation conferring that power (Environmental Law Centre 2003). Those areas of regulation must be authorized through statute created within parliament, legislature or municipal council, which provides the public the opportunity to comment and adapt legislation before it is enacted.

Once passed, there are other opportunities to question and clarify legislated authority. If such legislation appears to create limitations that seem unfair, unreasonable or oppressive, an individual can challenge that authority through the courts. The interpretation by the courts on such matters creates a body of common law that identifies specific limits or a requirement for adaptation of the laws in question. In general, governments attempt to develop laws that test but do not exceed current perceptions of social responsibility to avoid the expense of litigation and erosion of credibility.

Under common (case) law, the courts have interpreted private ownership to include a bundle of rights belonging to the landowner (Environmental Law Centre 2003). The largest, most comprehensive bundle of rights is called title in fee simple, which permits the landowner to:

- sell, mortgage, lease or will the estate in land;
- use or develop land in accordance with law,
- grant to others some of the rights in the bundle of rights (e.g., through lease, easement or restrictive covenant), and
- exclude others from entering their land.

There are limitations on the ownership of private lands with respect to government. Even on private land, surface water, groundwater and sub-surface minerals are owned and regulated by the province, with few exceptions (Environmental Law Centre 2003). Minerals can be owned by private landowners through a grant included in the original land title. The province can grant interests to businesses and individuals to extract oil, gas, coal and other minerals that provide ownership of the resource once extracted.

The owner of land adjacent to a natural watercourse or waterbody or overlying groundwater resources is termed a 'riparian owner' and has certain rights with respect to that water under common law (Environmental Law Centre 2003). These rights apply even where the landowner does not own or control the water, beds or shores (subject to certain legislative controls). These rights include:

- Right of access to the water, right to unpolluted water (quality) and rights and consequences relating to the accretion and erosion. None of these rights are limited by statute (legislation).
- Rights of use and quantity (flow). These have been modified under legislation (notably, the Alberta *Water Act*).
- Rights regarding flooding. These may be somewhat limited by the *Alberta Water Act*, but those limits have not yet been tested in the courts (Environmental Law Centre 2003).

Private land owners have some independence regarding land use, but ultimately, governments have considerable flexibility to impose restrictions to protect the public interest in shared resources and environmental conditions. Although municipalities have a broad scope of influence over privately-held lands under the *MGA*, that power is checked by the right of the individual to challenge by-laws made under the Act through the courts. As a result, municipalities must carefully consider the extent of their authority and the aim of any proposed legislation within that context before imposing any restriction on private land ownership.

4.3.5 Interpretation of the MGA for Environmental Management

Although environmental permitting and regulation of larger industrial facilities is a provincial or federal responsibility, all other forms of land use and land management fall almost entirely within municipal control. This includes designating appropriate areas for specific land use within its boundaries, through the land use planning process. Municipalities also directly control new development at the site-specific level through development permitting. In addition to planning and permitting of new development, the *MGA* allows councils to create management guidelines and regulations for existing residential, industrial, (municipal) recreational and municipal lands. Managing

environmental impact of both proposed and existing development would certainly fall within municipal jurisdiction. Indeed, it appears to be a responsibility conferred by the *MGA.*

Municipal authority to address environmental issues is well-established with respect to engineering and health issues: most municipalities have by-laws addressing wastewater, stormwater and waste management. Many also address conservation issues, through by-laws or policy that encourage retention of natural areas or treed lands. Non-traditional environmental by-laws that appear to restrict economic opportunities or real (or perceived) civil liberties are typically approached cautiously by councils. For example, many municipalities have grappled with the issue of protection of natural areas on private lands. Prohibition against clearing identified natural areas, unless the land is protected through some form of conservation easement, is perceived by landowners and public officials alike as an unreasonable or unfair restriction of land ownership rights. This is despite the clear authority in the *MGA* to manage for common good of the community with respect to safety, health and welfare and the lack of guarantees within the Act regarding economic rights of landowners.

Such non-traditional applications have been legally challenged at the Supreme Court of Canada. A landmark case in 2001 affirmed the right of the Municipality of Hudson, Quebec to regulate the use of pesticides for cosmetic purposes (NSWA 2006). The essence of the challenge would likely also apply in Alberta: did the municipality have the authority to pass such by-laws, and how far does that authority extend? Like the Alberta *MGA*, the Quebec *Cities and Towns Act* prohibits municipalities from enacting bylaws that would contradict federal or provincial law, or other special provisions within the *Cities and Towns Act* itself (McClenaghan and Muldoon 2000). A broad scope is implied by this Act and the question of where the limits might lie was central to this case, and any other similar circumstance.

In their successful defense, the municipality pointed out the assumption that since the province originally conferred powers to a municipality, it would ensure that any potential overlap would be prevented in the enabling legislation (McClenaghan and Muldoon 2000). While the resulting scope outlined by the *Cities and Towns Act* is admittedly broad, other case law cited in the defense established that it is the intent of the by-law that is critical. By-laws constructed in an obviously unfair, unreasonable or oppressive manner, or that exercise powers in bad faith with the objectives in the enabling legislation, would contravene the Act. Although the case did not establish where the full limits may lie for municipal control of environmental issues, it does suggest there is considerably greater latitude than is generally assumed.

4.3.6 Opportunities for Municipal Management of the Environment

Provided the intent is sound management for the common good, it seems there are many opportunities for municipalities to manage environmental issues through by-laws. To successfully implement such laws, which requires avoiding public resistance or in the worst case, potential litigation, municipalities must develop such laws cautiously and with intent clearly demonstrated. The science-based approach promoted by the BHI will provide critical support to any proposed legislation, particularly where such policy will

deviate from more traditional environmental controls (witness the successful implementation of smoking by-laws in Edmonton and Strathcona County).

4.4 Environmental Management Legislation

Although there is considerable flexibility in the scope of municipal powers in the *MGA*, it also clearly prohibits enacting by-laws contradictory to existing federal or provincial law. In such instances, the by-law would have no effect in law (*MGA*, s.13). Understanding the extent of jurisdiction and intent of federal or provincial environmental law is therefore a critical step for any municipality contemplating expanded environmental controls.

The *Constitution Act* (1867) divides jurisdictional control of most elements of governance between the federal and provincial governments. In most instances, it provides exclusive control of matters, except for the environment, which was not recognized as requiring comprehensive management until well into the 20th century (Environmental Law Centre 2003). It and the later *Natural Resources Transfer Agreement* (1930) between the federal and Alberta governments granted control of most natural resources to the provinces, reserving management of only those resources that may extend over provincial or international boundaries. Within Alberta, the province has developed legislation regarding surface and groundwater, air quality, publicly-owned land, soils, historical resources, wildlife (including rare species) and commercially exploited resources (e.g., petroleum, minerals, aggregates, timber). Under the *Constitution Act*, the federal government retained control of certain plant and wildlife species (i.e., migratory birds, rare species), fish and fish habitat, toxics, waterways with respect to navigation and activities crossing provincial or international borders (including pipelines). There is some duplication of provincial environmental law that is intended to manage federal activities with respect to the natural environment. Where natural resources lie entirely within federally-controlled lands, that federal legislation supersedes provincial law (e.g., for water, wetlands, wildlife). Similarly, federal, then provincial law, supersedes municipal bylaws affecting the same resource.

Described below are the provincial and federal laws that would apply to proposed developments and existing operations within the BHI municipalities. Provincial law typically applies to a broader range of resources and circumstances than federal law (and thus would impact development more), and so provincial legislation is discussed first. In each case, the responsible agency, requirements and limitations are described. Relevance to the types of development and activities occurring in the municipalities are also discussed. Municipal by-laws and policies for those municipalities within the moraine regarding environmental management were described in Section 4.0.

4.4.1 Province of Alberta

4.4.1.1 Alberta Environmental Protection and Enhancement Act

Alberta's *Environmental Protection and Enhancement Act (EPEA)* was developed to provide comprehensive environmental management of any activity throughout the project's life cycle, from the proposal stage through to operation and finally, decommissioning. It established several key principles in the provincial approach to

environmental management (bold emphasizes points important for the Land Management Framework):

(a) "the protection of the environment is essential to the integrity of ecosystems and human health and to the well-being of society;
(b) the need for Alberta's economic growth and prosperity in an **environmentally responsible manner** and the need to integrate environmental protection and economic decisions **in the earliest stages of planning**;
(c) the principle of **sustainable development**, which ensures that the use of resources and the environment today does not impair prospects for their use by future generations;
(d) the importance of preventing and mitigating the environmental impact of development and of government policies, programs and decisions;
(e) the need for Government leadership in areas of environmental research, technology and protection standards;
(f) the **shared responsibility** of all Alberta citizens for ensuring the protection, enhancement and wise use of the environment through individual actions;
(g) the opportunities made available through this Act for c**itizens to provide advice** on decisions affecting the environment;
(h) the responsibility **to work co-operatively** with governments of other jurisdictions to prevent and minimize transboundary environmental impacts;
(i) the responsibility of **polluters to pay** for the costs of their actions;
(j) the important role of **comprehensive and responsive action** in administering this Act" (s.2).

Administered by Alberta Environment, the Act and several regulations (Appendix B) control a wide variety of activities, including:

- Hazardous material and pesticide handling, sales and use;
- Conservation and reclamation of land;
- Authorization for municipalities and other select agencies to hold conservation easements;
- Potable water quality;
- Substance release (including permitting of effluent release and management of contaminated sites);
- Waste minimization, recycling, and waste management;
- Wastewater and stormwater management and drainage; and
- Enforcement.

The *EPEA* has some overlap with other legislation that requires approvals for activities. For example, separate from *Water Act* approvals, construction of proposed stormwater management facilities, including outfalls, requires an approval pursuant to the *EPEA*. In decreasing order of application process complexity and potential environmental impact, the Act requires an **approval**, **registration** or filing of a **notice** in order for certain

activities to proceed. The *Activities Designation Regulation* lists those activities that require such authorizations.

Once approvals under the Act are issued, compliance is monitored and enforced by AENV. The approvals must be periodically renewed, providing an opportunity to check those operators in non-compliance, in addition to the controls offered by enforcement options. The *EPEA* is an extensive piece of legislation, detailed review of which is beyond the scope of this document. For additional information the reader is referred to the more comprehensive review in Alberta Environmental Law Center (2003).

The *EPEA* also establishes a legislated process for environmental assessments (EA) of prescribed proposed developments (see Section 5.3 below). In fact, many of the approvals required under the Act can trigger assessment, depending on the size and type of project.

Relevant to: all proposed development or activities requiring stormwater or waste water management, effluent or other material releases (including air-borne releases), land disturbance, waste handling, and hazardous materials or pesticides

4.4.1.2 Alberta Water Act

The Province owns all surface and groundwater resources. Alberta's *Water Act*, administered by Alberta Environment, is one of two pieces of legislation governing the use and management of Alberta's water resources. The *Act* provides regulatory guidance for the allocation and use of surface and groundwater resources. It also charges the province with regional management of both surface and groundwater systems through water management plans. Water quality is addressed under the *Environmental Protection and Enhancement Act* (*EPEA*), discussed above.

Generally speaking, the *Act* controls use of water resources through **licenses** and controls activities that could impact water resources through **approvals**. For the purposes of the *Act*, surface water is defined as all waterbodies, watercourses and their floodplains, and permanent and temporary wetlands. With the notable exceptions in section 1.2.11, under Section 36 of the *Act* an approval is required for all activities that may impact surface water and the aquatic environment, including permanent and temporary redirection of surface drainage, permanent and temporary water withdrawal, and, disturbing, draining or infilling of a wetland.

Licenses apply to withdrawal or diversion of surface or groundwater. With respect to both surface and groundwater use, the *Act* controls withdrawal rates and establishes priority of use. Section 49 requires any water diversion or water works to be licensed, with exceptions for household and agricultural use. Household use has highest priority for use of water resources. Such diversions do not require a license, provided use is below 6250 cubic meters of water per year (or within limits of an approved water management plan). Agricultural users are also exempted from requirements for a license, approval or well registration, provided withdrawal is below either the volume or management plan limits. In the event of another competing application for water use, however, such agricultural users do not have priority under the Act. Agricultural users

can only establish priority for use by applying for a diversion license or registering a well. Residents within a subdivision can divert groundwater for household use only after requesting an assessment of impact on groundwater supply by a professional engineer or geologist (Section 23(3)). The volume of withdrawal for the subdivision residences must also fall within the limits of an approved water management plan or in the absence of such a plan. AENV must also approve the withdrawal, based on submission of the technical engineering report.

Although registration of groundwater wells is not required, it is encouraged. All new groundwater wells must be reported to AENV through a drilling report that documents the location and discharge (flow) rate of the well. This allows the province to track the number of users accessing aquifers and the volume of withdrawal.

Under Section 16(1), permits under the *Water Act* cannot be issued if the project triggers an environmental assessment under *EPEA* and has not yet undergone such a review. Although preliminary approvals can be provided, the actual license or approval cannot be granted until the assessment process is complete (Section 16(2)).

Relevant to: all proposed development activities with potential to affect surface or ground water

4.4.1.3 Alberta Water Act Codes of Practice

Alberta's *Water Act* allows management of certain routinely constructed structures at/in and under watercourses according to three codes of practice rather than through approvals:

- *Code of Practice for Watercourse Crossings;*
- *Code of Practice for Pipelines and Telecommunications Lines Crossing a Water Body;* and
- *Code of Practice for Outfall Structures on Water Bodies.*

Proponents of developments involving the prescribed activities must follow the design and construction practices and information requirements set out in the codes. They must also submit a Notice, including the required supporting information, to the Director of Alberta Environment (for the BHI area this would be the Manager Regional Support – Northeast Boreal Region). Importantly, the codes recognize that rivers and streams provide different types of aquatic habitat that may require specific mitigation to minimize impacts related to construction and operation of the relevant structures. Most streams and rivers within the moraine have been mapped into one of four Classes: generally larger rivers are considered Class A or B, while smaller streams are Class C or D.

No approval or official acknowledgement is provided after submission of a Notice under the relevant Code of Practice, other than acknowledgement of its receipt and satisfactory compliance with Code requirements. If an environmental assessment is completed, it may be used to support the Notice, but no assessment is triggered by the Code of Practice process.

Relevant to: all bridges, culverts and utilities that will cross rivers or creeks within the moraine, all new stormwater outfalls

4.4.1.4 Alberta's Draft Wetland Policy

Pursuant to the *Water Act*, in 1993, the Province released an Interim Draft Wetland Policy. In 2003, the interim policy was replaced by a Draft Wetland Policy. And in 2006, as a top priority of Alberta's Water for Life Strategy, the Province is drafting a new Wetland Policy for ratification by Cabinet.

A central theme of these successive policies has been to prohibit wetland destruction or disturbance. The 2003 version introduced the concept of no-net loss of wetland area or function and compensation for sites where loss was unavoidable. Such compensation was to occur either as part of the project or by contributing to other projects (mitigation banking). A follow-up document, *A Guide to Using Wetland Restoration as Compensation for Wetland Loss in Alberta* (2004), further outlined the responsible parties and form of compensation. At a minimum, a 3:1 ratio (created/restored to lost) was recommended, but could be increased depending on site-specific issues (e.g., presence of rare species, sensitive or significant wetlands). Compensation provided outside of a given project effort must be undertaken by an approved Wetland Restoration Agency (WRA). Currently Ducks Unlimited is the only recognized WRA although several municipalities in the province are currently attempting to attain WRA status (e.g., Edmonton and Calgary).

Applications to AENV for approvals under the *Water Act* involving wetlands are circulated to Alberta Sustainable Resource Development (ASRD) for input regarding impacts to aquatic habitat and wildlife. The province asks proponents to have regard for wetlands and demonstrate they have attempted to avoid and minimize development impacts on wetlands before considering compensation. Until the new Wetland Policy is confirmed by Cabinet, the Draft Wetland Policy (2003) is the current policy administering wetland loss and the compensation.

As noted under the discussion of the *Water Act*, an approval for wetland disturbance cannot be granted until an environmental assessment under *EPEA* is completed, if the project triggers such an assessment. For most small development projects (e.g., subdivision development) within municipalities that would disturb wetlands, an *EPEA* assessment is not required and the *Water Act* approval process is the sole environmental review. Information describing the wetlands affected by the project must be provided to support the approval application, and in the event of wetland loss (either in area or function), a wetland compensation plan is also required.

Relevant to: all proposed development with potential to disturb any natural wetland, even those not claimed by the province

4.4.1.5 Alberta Public Lands Act

Pursuant to Alberta's *Public Lands Act*, the Province owns the bed and shore of all permanent and naturally occurring waterbodies, including wetlands, unless the waterbody

is specifically exempted in land parcel titles. The *Public Lands Act* defines a permanent water body as one that exhibits persistent evidence of a bank, bed and shore and a tendency to return to normal water levels under ordinary circumstances after periods of drought or flood. Alberta Sustainable Resource Development, Public Lands Division, administers this Act. Development within a crown-owned waterbody resulting in occupation or alteration of a watercourse or waterbody, and/or infilling or draining of a permanent, naturally-occurring wetland requires **approval** from Public Lands Division. Compensation for any loss would be required and any compensatory waterbodies created as an approval condition must revert to Crown ownership.

The province also owns lands within the White Area that are managed for agriculture, recreation and some resource extraction. The most relevant example in the moraine is the Cooking Lake/Blackfoot Recreational Area (and Grazing Reserve), which is used for both agricultural and recreational purposes. Dispositions for use are also authorized under the Public Lands Act and its regulations, in the form of leases, permits, licenses, quotas and sales.

Relevant to: all proposed development that will encroach on permanently and naturally occurring watercourses and waterbodies, including wetlands, or development on provincial lands

4.4.1.6 Wildlife Act

Alberta's *Wildlife Act*, administered by AENV, defines all wildlife in the province as the property of the Crown. The Act prohibits disturbance of prescribed species or their habitat (typically nests and dens) during certain times of the year and, therefore, should be considered when development is scheduled and implemented. For example, Section 36(1) prohibits disturbance of active snake hibernacula. Unlike the other Acts discussed to this point, this is enforcement legislation. No approvals can be granted for activities impacting species managed under the *Act* and violations may result in fines.

Potential for disturbance is associated with proposed development that requires vegetation clearing or earthworks, either of which could disturb sensitive habitat. Clearing impacts to breeding birds (including waterfowl) arise most frequently. Alberta Sustainable Resource Development (ASRD) has developed geographically relevant timing restrictions to allow developers to schedule construction activities outside key breeding periods. In central Alberta, ASRD recommends that vegetation clearing and wetland disturbance be avoided between 15 April to 15 July. If those dates cannot be respected, breeding bird and wildlife surveys should be performed prior to any construction activity, to ensure that no active nests or dens are disturbed.

Relevant to: all proposed development that will require vegetation clearing during bird breeding season, earthworks in the vicinity of well-drained soils that are potential dens or hibernacula

4.4.1.7 Weed Control Act

Alberta's *Weed Control Act* provides the legal authority to deal with native or introduced weed species that affect agricultural production. The *Act* applies to control of weeds in all environments. It designates restricted, noxious or nuisance weeds, empowers municipalities to do the same within bylaws, and delegates power to local authorities to destroy or control designated weeds. The Province is actively involved in activities to manage invasive plant species. Development proponents are obliged to control weeds during project construction and as part of subsequent maintenance activities. Landowners are similarly required to manage problem species on their properties.

Relevant to: construction and maintenance activities that could disturb soils; any lands with suitable growing conditions

4.4.1.8 Soil Conservation Act

The Soil Conservation Act is intended to manage soil quality and quantity, particularly with respect to topsoil. Administered by Alberta Agriculture, Food and Rural Development (AFRD), the Act delegates enforcement to municipal authorities, who must provide at least one officer responsible for soil conservation (s.3). Provincial officers can also be identified. The Act requires every landowner to prevent soil loss or deterioration or, where it is already occurring, to stop such impacts (s.21(1)). Where topsoil may be removed or stubble burned, the municipality and province are authorized to issue a **permit** for the activity. The permit will identify terms and conditions applicable to the activity.

Relevant to: developments that cannot use topsoil within the completed project and must dispose of it off-site, or agricultural landowners

4.4.1.9 Natural Resource Conservation Board (NRCB) Act

The *Alberta Natural Resources Conservation Board (NRCB) Act* outlines the purpose, structure and responsibilities of the NRCB. Under the Act, the board is responsible for regulation of a variety of activities ranging from intensive livestock operations, to pulp mills, metallic and industrial mineral projects, water management projects, and large recreation and tourism projects. The board assesses and approves proposed projects through statutory authorizations under the *Natural Resources Conservation Board Act* and the *Agricultural Operation Practices Act* (see subsection 5.2.1.11 below).

Large-scale projects covered under the Act typically also trigger an environmental assessment process under the *EPEA.* This aspect of the board's responsibilities is discussed in Section 5.3.1.2 below.

4.4.1.10 Agricultural Operation Practices Act

The *Alberta Agricultural Operation Practices Act* was prepared by Alberta Agriculture, Food and Rural Development (AAFRD), but is administered by the NRCB. It outlines the standards for management of new and expanding confined feeding operations (CFOs) and manure storage facilities. It outlines sustainable practices regarding siting, managing

run-on and –off water and soil and groundwater protection. The NRCB issues approvals, registrations, authorizations and amendments for confined feeding operations, based on various factors:

- **Approval** – for larger scale new/expanded CFOs (based on number of animals and manure production)
- **Registration** – for medium sized new/expanded CFOs (based on number of animals and manure production)
- **Authorization** – for new/expanded manure collection areas or manure storage facilities
- **Amendment** – for changes to existing permits issued by the NRCB, a municipal district or a health authority (where there is no change in number of animals and manure production).

Technical information regarding local surface and groundwater conditions and soils is required for the application process, but no formal EIA is required. The application process is meant to function as a one-window process, so that the applicant can also apply for approvals required from other provincial agencies. The requirements for such permits depend on the potential to affect other regulated resources and infrastructure, which will vary with the project. Other approvals that can be addressed in this application at the proponent's discretion include:

- A license under the *Water Act* for water diversion (for use as a ground or surface water supply),
- A license under the *Water Act* to change a natural drainage or for any activity within a waterbody (including wetlands),
- A license or approval under the *EPEA,*
- An authorization under the *Public Lands Act* for activities and/or structures on public lands (including the bed and shores of waterbodies), and/or
- A permit under the *Public Highways Act* to construct a development within 300 m of a highway right-of-way boundary or 800 m of the center point of an intersection of the highway with another public road.

4.4.1.11 Energy and Utilities Board (EUB) Administered Acts

The Alberta Energy and Utilities Board (EUB) is guided by the Energy Resources Conservation Act, which outlines its responsibilities and processes. It administers a variety of legislation regarding development of energy resources, including:

- Oil and Gas Conservation Act and Regulations (oil and gas wells, and gas plants),
- Pipeline Act(pipelines),
- Coal Conservation Act (coal extraction),
- Hydro and Electric Energy Act and Regulation (transmission lines) and
- Water, Gas, and Electric Companies Act (utilities and telecommunications).

It also administers the *Mines and Minerals Act* and associated *Exploration Regulation*, which guide exploration activities. The larger projects covered by these pieces of

legislation trigger an environmental assessment under EPEA, but the review process is administered by the EUB. The EUB environmental assessment process is discussed in Section 5.3.1.3 below.

4.4.2 Federal Government

4.4.2.1 Fisheries Act

Pursuant to Section 35 (1 and 2) of the federal *Fisheries Act*, any development or activity that has potential to result in Harmful Alteration, Disruption or Destruction (HADD) of fish habitat requires a formal authorization by the Department of Fisheries and Oceans (DFO). This typically translates to any project that requires in-stream work, including work in areas within select floodplains. It can also apply to projects that would release potentially deleterious substances (e.g., effluent) to fish-bearing waters.

Projects with little potential for HADD but undertaken in the vicinity of fish habitat will likely not require an **Authorization** but DFO may issue a **Letter of Advice**. The North Saskatchewan River and all of its tributaries are considered by DFO to be fish-bearing. The first step for any proposed development with potential to affect fish habitat is to submit a detailed project description to DFO for their determination regarding HADD and appropriate permitting. The requirement for an authorization will trigger an EIA under the CEAA (see section 5.4.2.1 below for requirements of that process).

In addition, Environment Canada, the agency responsible for administration of Section 36(3) of the *Fisheries Act* respecting deposition of deleterious substances in fish habitat, reviews all proposals submitted to DFO. Although certain depositions can be authorized under Section 36(4) (regarding ocean dumping), the Act is intended to prevent release of pollutants. A project with potential to release non-permitted deleterious substances would be subject to penalties if completed. That agency may include some recommendations or conditions in any Letter of Advice or Authorization issued by DFO to minimize the risk of contravening this section of the Act.

Existing operations are similarly restricted from release of deleterious substances into fish habitat under those same sections of the *Fisheries Act*. Under it and the *Canadian Environmental Protection Act (CEPA*, discussed below*)*, offences can be penalized through financial penalty and/or criminal charges. Agricultural land practices are receiving increased attention regarding these two Acts, because of the broad variety of hazardous materials typically handled during operation. Education, rather than enforcement is the main focus of current efforts.

Relevant to: all proposed development that encroaches on a shoreline, or a floodplain or requires construction activity in fish-bearing waterbodies, including wetlands hydrologically linked to watercourses. Existing operations with potential to release deleterious substances to fish habitat.

4.4.2.2 Canadian Environmental Protection Act (CEPA)

The *Canadian Environmental Protection Act (CEPA)* is the other main piece of federal legislation regarding pollution control. The *CEPA* is intended to foster sustainable

development through the control of pollutants, protecting the environment, human life and health from toxic substances. It establishes comprehensive pollution control by identifying and classifying toxic materials, appropriate management strategies and outright prohibition and enforcement capacity. Management actions range from national standards for vehicle emissions to management of waste material.

Toxic substances are defined as those posing a risk to ecosystems and biodiversity, and can include chemicals and more recently, living products of biotechnology (including genetically modified plants). Health Canada works with Environment Canada to identify toxic materials and appropriate management strategies. Environment Canada has sole enforcement responsibility.

The *CEPA* also authorizes Environment Canada to undertake research to develop appropriate standards and limits regarding the management of toxic substances. The Canadian Council of Ministers of Environment (CCME) is the main body responsible for this part of the Act. They and Environment Canada have developed industry and material specific regulations, Guidelines and Codes of Practice that outline specific requirements. Schedule 1: Toxic Substances List identifies those materials addressed under the Act, a list regularly reviewed and updated by Environment Canada. Guidelines and Codes of Practice relevant to municipalities include those for environmental management of road salts, above and below ground fuel storage tanks, and contaminated sites.

Relevant to: any activity that requires use, handling, storage or trade of chemicals, hazardous materials or genetically modified organisms (including agriculture)

4.4.2.3 Navigable Waters Protection Act

Pursuant to the federal *Navigable Waters Protection Act* (NWPA), any development in, on, over, under or through navigable water is subject to a formal approval, administered by Transport Canada and the Canadian Coast Guard (CCG). Navigable water has been defined as any water body capable of being navigated by any floating vessel, be it for transportation, recreation, or commerce. The North Saskatchewan River and many of its larger tributaries have been recognized as a navigable water. Developments that involve construction of facilities within navigable waterbodies will require submission of detailed design and hydraulic information in support of application for approval. The approval can then trigger an environmental review pursuant to CEAA (discussed in Section 5.4.2.1 below).

Relevant to: all structures proposed within navigable waterbodies, all water-based facilities

4.4.2.4 Canada Wildlife Act

The Canada Wildlife Act empowers Environment Canada to acquire lands for wildlife research, conservation, and interpretation. It also allows agreements with any province for cooperative efforts in these areas, including measures to protect wildlife in danger of extinction. National Wildlife Areas created under the Act are managed under the regulations of this act to protect lands offering wildlife habitat of national significance. It

also guides management of wildlife occurring on federally-owned or managed lands, provided such measures are in agreement with applicable provincial legislation.

Relevant to: federal lands and other lands supporting species in danger of extinction and other species at risk

4.4.2.5 Migratory Birds Convention Act

The *Migratory Birds Convention Act (MBCA)* prohibits damage, destruction, removal or disturbance of prescribed migratory bird species, including waterfowl and songbirds, or active migratory bird nests during breeding season. Moreover, a recent amendment to that act prohibits the release of deleterious substances in waters or areas frequented by migratory birds. The Act, administered by Environment Canada, provides guidelines for enforcement only and permits or approvals are not issued, however, violation of the MBCA may result in penalties. The best means of ensuring that active bird nests are not disturbed is to avoid any activities with potential to disturb nests, such as pruning, vegetation clearing, and disposal of woody debris that has been left in situ, undisturbed during part of the breeding season. For this region of Alberta, Environment Canada suggests avoiding such activity during the period 01 May to 31 July. If potentially disturbing activities must occur within this period, a survey for active nests should first be undertaken.

Relevant to: all proposed development that will require vegetation manipulation/ clearing during bird breeding season

4.4.2.6 Species at Risk Act

Environment Canada also administers the federal *Species at Risk Act (SARA).* The *SARA* prohibits harm to extirpated, endangered or threatened wildlife or plant species, and disturbance to habitat used by those species. Permits or approvals are not granted pursuant to *SARA*; the *Act* provides guidelines for enforcement only. Violation of the *Act* may result in penalties. To prevent contravention of the *Act*, Environment Canada, through their participation in other agencies environmental assessments, requests information specific to the potential for a project to affected species listed under *SARA.* They also recommend avoiding vegetation clearing during the period 01 May to 31 July in the greater Edmonton area. If any special status species or their nest/dens are encountered in the course of a project development, work should be halted immediately and Alberta Sustainable Resource Development, Environment Canada's local partner in administration, should be contacted for counsel.

Similarly, listed species (endangered or threatened species) occupying any lands regardless of proposed development are protected from destruction and disturbance. Any activity related to existing operations that would cause harm to the individual (or critical habitat for some species) would contravene the Act. The presence of sensitive species is not intended to prevent use of the land by landowners. Good stewardship incentives through cooperation with Environment Canada are also provided under the Act, so that landowners and sensitive species can co-exist.

Relevant to: all proposed development funded by federal government or requiring a federal approval (for environmental assessment); any lands supporting endangered or threatened species

4.4.2.7 Federal Water Act and Federal Water Policy

The federal *Water Act* outlines the framework for cooperation between federal government and the provinces and territories with respect to conservation, development and use of Canada's water resources. It, and the federal *Water Policy,* promote sustainable use of freshwater within Canada. It delegates control of waters within provincial boundaries to the provinces, but identifies a role in joint management for regulation, sharing, and monitoring of water resources. Where surface waters cross federal lands (including national parks, first nation reserves, wildlife sanctuaries and military areas), the Act empowers the federal government to manage them and regulate their use.

Relevant to: higher level management of surface waters, water management near national parks

4.4.2.8 Federal Policy on Wetland Conservation

This federal policy promotes the conservation of Canada's wetlands to sustain their ecological and socio-economic functions, now and in the future. In support of the above objective, the federal government strives to achieve numerous goals including no-net loss of wetland functions on all federal lands and waters; and, recognition of wetland functions in resource planning, management and economic decision-making with regard to all federal programs, policies and activities. Although the federal government only has jurisdiction of wetlands situated on federally-owned lands, their policy and associated guidelines must be respected when a federally-funded project has potential to adversely affect wetlands. Their wetland policy calls for a mitigation sequence of avoidance of impacts, minimization of impacts and compensation for unavoidable residual impacts.

Relevant to: all projects receiving federal funding that have potential to affect wetlands

4.5 Environmental Assessment Legislation and Processes

At the provincial and federal levels of government, application for permits/approvals can trigger an environmental review or assessment process. Such reviews are comprehensive, and require analysis of environmental information, at varying levels of detail relevant to the project and the application. In some of the municipalities, a similar assessment may also be required. While approvals granted by the respective jurisdictions are mutually exclusive, in many circumstances the environmental review processes can be harmonized, resulting in more than one level of government reviewing the same environmental assessment document in support of their respective permit/approval processes. Harmonization between federal and provincial assessment processes is formally outlined in the *Canada-Alberta Agreement for Environmental Assessment Cooperation*. No similar agreement currently exists between those municipalities with an

environmental assessment process and higher levels of government, but coordinated review is typically undertaken by informal agreement.

Following is a discussion of the potential environmental permits/approvals and environmental review processes that could be required by the federal, provincial and partner municipal governments, in the context of today's regulatory regime, for the types of developments that are reviewed in the BHI area.

4.5.1 Provincial Jurisdiction

4.5.1.1 Alberta Environmental Protection and Enhancement Act

As mentioned above, the *EPEA*, in addition to outlining permitting requirements relevant to certain resources and industries, also provides a legislated process for an environmental impact assessment (EIA) of certain proposed developments. The *Act* outlines the assessment and EIA approval process and identifies AENV as the responsible agency to coordinate such reviews. For certain projects, the EUB or NRCB are designated as the EIA coordinating agency (see sections following). For projects triggering both provincial and federal review, joint review is permitted under the federal-provincial harmonization agreement. The agency with highest level jurisdiction leads the assessment, but must solicit and coordinate input from all other interested agencies.

For some larger, more complex projects such as dams or mines, an EIA is mandatory; other more minor developments are exempt from an EA. The *Environmental Assessment (Mandatory and Exempted Activities) Regulation* identifies those projects requiring a mandatory EIA. The *Act* also provides for Ministerial discretion to ask for an EIA, based on the location, nature and scale of the project or potential for public concern. This allows AENV to evaluate any proposed project to determine whether an EIA is required and to establish the scope of the assessment on a case-by-case basis. Such review is typically triggered by application for an approval under *EPEA* or the *Water Act*.

Public consultation is a key provision in the process and there are several opportunities during the process for public comment. Municipalities are often considered an affected party in the assessment process, which confers priority status in the consultation process. For NRCB and EUB projects, this may be the only avenue for a municipality to provide input to the EIA, as there is no formal involvement of the municipality under those reviews. If public concern is high enough, or at the discretion of the Minister, a public hearing may be convened to review the results and conclusions of an EIA. The review of such projects can extend over a long period, as EIA study and review period can be lengthy.

Approval of the EIA is by the Minister and is not the same as authorizations required under *EPEA* or other provincial Acts. Such approvals, licenses and registrations can only be issued by the responsible department after the approval of the EIA.

Relevant to: any proposed development with potential for significant environmental impact

4.5.1.2 NRCB

As mentioned above, the NRCB administers an environmental assessment process relevant to pulp mills, metallic and industrial mineral projects, water management projects, and large recreation and tourism projects. In such cases, the assessment and EIA approval process are administered by the NRCB under the guidelines in the *NRCB Act*. Once the board approves the EIA, allowing the project to proceed, AENV can issue approvals for activities covered under the *EPEA*. Importantly from a municipal perspective, the *MGA* clearly grants authority for regulation of these projects to the NRCB. An approval by the NRCB will prevail over the municipal planning and development approval process, thus the municipality must issue a subdivision or development permit to an approved project (Environmental Law Centre 2003).

Relevant to: pulp mills, metallic and industrial mineral projects (including large scale aggregate extraction), water management projects, and large recreation and tourism projects

4.5.1.3 EUB

Similar to the NRCB, the EUB administers an EIA process for those activities under their jurisdiction. As with the NRCB process, any approvals required under *EPEA* are dependant on the EUB's review: none can be issued until the EIA process is completed and the project approved by the board. Municipal government restrictions are similar to those for NRCB projects.

Relevant to: oil and gas projects (from wells to plants), pipelines, coal extraction, power generation and transmission

4.5.1.4 Historical Resources Act

Historical resources, as defined under the *Historical Resources Act*, are recognized in the Province of Alberta as nonrenewable resources subject to protective measures. Management and protection of historical resources is the responsibility of Alberta Community Development (ACD). Any development with potential to disturb historical resources (typically indicated by potential for surface disturbance) requires assessment, and then clearance by ACD. Assessment of potential for disturbance to historical resources is accomplished through a two-staged review: a Historical Resources Overview and, where warranted, a more comprehensive Historical Resources Impact Assessment.

Relevant to: all proposed development with potential to disturb the terrain's surface

4.5.2 Federal Jurisdiction

4.5.2.1 Canadian Environmental Assessment Act

Pursuant to the Canadian Environmental Assessment Act *(CEAA)*, projects that require prescribed federal permits, or are located on federal lands or are funded by identified federal government departments or agencies, are subject to an environmental review

pursuant to *CEAA*. Federal lands within the BHI area are limited to Elk Island National Park, which by definition, lie outside municipal jurisdiction. On municipal lands, the *CEAA* would be most likely triggered by proposed projects that require a federal permit or receive federal funding. It is commonly triggered by projects that require a *Fisheries Act* Authorization or an approval pursuant to the *NWPA*. Issue of a Letter of Advice (as opposed to an Authorization) from DFO does not trigger a review under the *CEAA*. At least some basic information describing the project must still be provided in order for DFO to determine whether Harmful Alteration, Disturbance or Destruction (HADD) of fish habitat would result. If HADD would likely result, an Authorization, and an EIA are required.

Within the *CEAA* are four Regulations that outline the specific types of projects to which the act applies and in some cases, the required level of assessment. Generally, small projects are reviewed in a Screening Assessment; Class Screenings are used to review smaller, routine projects that can be grouped together. Projects with potential to cause significant adverse impact or to generate public concern are on the *Comprehensive Study List*. Such projects automatically undergo a more detailed Comprehensive Study. Larger oil and gas projects, mineral processing, industrial facilities or waste management facilities are example projects on this list. The *Law List* describes all projects that require a federal license, permit, certificate or other regulatory authorization and therefore must undergo an EIA. The *Inclusion List* applies to projects that are a physical activity, rather than a physical work (e.g., ocean dumping, cutting of timber in a national park). The most common activity that might occur within the BHI would be release of potentially damaging materials (e.g., effluent) to a fish-bearing waterbody. Lastly, the *Exclusion List* describes those undertakings related to a physical work that do not need an environmental assessment. Such activities might include routine maintenance, minor renovations or emergency response (e.g. to an oil spill). Together, these Regulations outline the types of projects that require environmental assessment.

Under *CEEA*, the government department issuing the funding or the permit becomes the project's Responsible Authority and must then undertake an internal environmental review, typically an Environmental Screening. The Responsible Authority may call on other relevant federal or provincial agencies with expertise relevant to the project to provide Expert Advice to the review. The Responsible Authority typically issues a request to the project proponent for specific information to support their assessment. This is usually provided in the form of an environmental assessment document.

Relevant to: all projects requiring federal approval or receiving federal funding

4.5.2.2 Other Federal EIA Agencies

The National Energy Board administers energy projects that cross international or provincial boundaries. The board coordinates an environmental impact assessment similar to that of the EUB, guided by the *CEAA*. The potential for such projects to occur within the moraine are limited, but nonetheless, there are examples. Continental pipelines have been constructed across broad areas of the province in the past: many of these have been routed through the Industrial Heartland. Municipalities are granted

affected stakeholder status in the public consultation process for such projects, their only means of influence within this EIA process.

4.5.3 Municipal Jurisdiction

Municipalities are not provided any direct authority to manage environmental resources by the federal government through the *Constitution Act*. The *MGA* implies flexibility to manage environmental matters, which some municipalities have used to establish a municipal environmental assessment process. Because the *MGA* states that municipal by-laws cannot contradict either federal or provincial law, assessments under *CEAA* or *EPEA* would supersede a municipal review. In many cases, however, municipalities have been able to coordinate with other jurisdictional processes, so that their own assessment requirements can be met within one document (e.g., the City of Edmonton, under the North Saskatchewan River Valley Redevelopment Plan (By-law 7188)). Of those municipalities within the BHI, only Leduc and Strathcona County have established a requirement for environmental assessment. Their requirements are summarized below.

4.5.3.1 Leduc County

Leduc County's proposed updated (2005) Land Use Bylaw recognizes several areas within their county as environmentally sensitive areas. These include the section of the North Saskatchewan River Valley within the county and lands bordering the Ministik Lake Game Bird Sanctuary. Section 6.5 of the new by-law (Environmental Considerations), states that an Environmental Impact Assessment may be required prior to subdivision or development within or adjacent to an environmentally sensitive area and the Development Authority may require special conditions to protect resources such as vegetation and slopes.

Relevant to: all proposed development near the Ministik Lake Game Bird Sanctuary or other environmentally sensitive areas

4.5.3.2 Strathcona County

Biophysical Assessments

Strathcona County, under the Biophysical Assessment Policy (SER-009-032), requires that an environmental assessment of any development proposed within the County be completed by the proponent. The scope of the assessment is limited to specific resources outlined in the policy. It is triggered by any application that would require dedication of environmental or municipal reserve lands and is intended to identify priorities for conservation through these tools, or through a conservation easement. Through this trigger, it has incorporated a sustainable development approach in a municipal power granted by the province through the *MGA* and *EPEA*. The limitation is that the assessment is intended only to inform one aspect of the development approval process (ER and MR designation): the policy does not allow any control of the approval (e.g., denying the project on environmental grounds).

The county has also created an environmental assessment process specifically for construction of wireless communication facilities (towers). Unlike the Biophysical

Assessment policy, this assessment supports the development approval process directly and could affect its outcome. It is also a By-law, rather than a policy, and thus provides statutory control. By-law 82-2001 specifies the requirement for an environmental assessment for wireless communication facilities proposed in certain environmentally sensitive locations. An environmental assessment or geotechnical assessment must be completed for any facility located within a priority Wildlife Habitat Unit (identified in the County's Priority Landscape Ecology Assessment) or within 50 m of such a site as a condition for a development permit. A proposed location for a taller structure (> 61 m) within 500 m of such natural sites also triggers an assessment under the by-law. Specific features to be addressed are outlined in the *A Terms of Reference for Environmental Assessment of Wireless Communication Facilities*. Like the federal and provincial assessment processes, public consultation is an essential and required component.

Relevant to: all proposed developments

Heartland Area Structure Plan

Although applicable outside the Beaver Hills moraine, the Heartland Area Structure Plan (ASP) is considered here because it regulates industrial development immediately north of the moraine. Such developments could indirectly affect conditions within the moraine, and so environmental requirements outlined in the ASP may be relevant in the context of this review.

The ASP is unique among the partner municipalities as it was created through an Intermunicipal Development Plan. The agreement between Strathcona, Lamont and Sturgeon counties and Fort Saskatchewan has been adopted as an ASP by each municipal partner. This includes two of the BHI partners, Strathcona and Lamont.

The plan divided the area into six policy areas for heavy industrial, light/medium industrial and environmental conservation land uses. Various jurisdictions have regulatory control within the Heartland, including each partner municipality, and provincial and federal regulators. The plan was developed as an inclusive document to allow the municipalities to facilitate development and ensure that all regulatory requirements were met. The requirements of each level of government were identified and merged into a comprehensive system that allows the municipality and prospective developers to assess the compatibility of their proposed development. For example, any specific requirement for environmental assessment incorporated within the ASP would be pre-empted by the provincial *EPEA*. As a result, the ASP only references the requirements for an EIA under *EPEA* and if applicable, the EUB. Under the guidelines of the *EPEA* and EUB, municipalities would participate as an affected stakeholder in the EIA process. Through the ASP format, though, the municipality can direct developers to the appropriate provincial and federal agencies, in addition to administering their own development approvals process.

Instead of an EIA process, the ASP incorporates certain environmental requirements to be satisfied by the developer. For example, the plan identifies the Environmental Policy Area as that section of North Saskatchewan River valley within the Industrial Heartland. Environmentally and culturally sensitive areas within this part of the river valley are to be

conserved through sensitive development within the area. Tree retention is encouraged and a landscape management plan is required of any development near such a site. Compatible development on privately-held lands within the area and participation of landowners in conservation and enhancement efforts is also encouraged. In the industrial policy areas, development would most often be under provincial or federal jurisdiction and the county has less control over the process. In these areas, the county will encourage the applicable landowner or regulatory jurisdiction to identify environmentally sensitive areas and adopt management strategies to conserve soils, water or wildlife habitat.

Relevant to: all proposed developments within the Industrial Heartland

4.5.3.3 Lamont County

The requirements outlined in Strathcona's Heartland ASP also apply within Lamont County, as the ASP was adopted in a similar form by all participating municipalities. The county has no other environmental assessment processes guiding development.

Relevant to: all proposed developments within the Industrial Heartland

4.6 Summary

4.6.1 Historical Federal and Provincial Approach to Environmental Management

Legislation defines not only the jurisdiction, process and limits governing our communities, it confirms the importance of a given issue to those communities. Legislation and policy do not often create public awareness of an issue, instead they reflect a level of public acceptance of the necessity for management for the greater good. In the context of this current exercise, a review of environmental legislation identifies not only the extent of legal requirements, but the broader view of environmental issues of concern and areas where regulation of use is considered acceptable.

Past approaches to environmental management in Canada have focused mainly on specific environmental features (see Table 1). The environmental features to be managed and the processes for management originally came from the Constitution, which identified specific features considered valuable commercially or for human use or survival (e.g., game species and water management). Arable land was viewed as a limited resource in the same sense as water, minerals, and certain wildlife species, and it too has been identified within the *MGA* as a resource to be protected within the suite of key resources.

Responsibility for those resources was delegated in the *Constitution Act* to either the federal or provincial government, who in turn created specific legislation for each resource (e.g., the provincial *Water Act*, federal *Fisheries Act*). The provinces delegated to municipal governments land use planning and local level administration of any resource, activity or thing critical to the health of community. Alberta's *MGA* provides considerable latitude to manage issues relevant to the community, limited only by

superseding federal or provincial legislation and the boundaries of fair and reasonable treatment of residents.

Provincial and federal legislation takes precedence over that of the municipality, including statute addressing environmental concerns. Federal jurisdiction is limited to those resources that overlap provincial or international boundaries, or those that impact the broader national welfare. The constitution provided control of all natural resources and most commercially important resources (e.g., oil, gas, minerals, timber) to the provinces. Where those resources occur on federal lands, they are entirely within federal control, otherwise the province is responsible for management of their designated resources, including all permitting for resource use (summarized in Table 1). There are exceptions where the federal government retained management control across all Canadian lands. Federal jurisdiction addresses pollution from toxic materials, rare species, fish and fish habitat, navigable waters and where federal departments are the proponents, wetlands. Much of this legislation is administered through enforcement, although fish habitat and navigable waters impacts can be permitted through authorization.

In Alberta, the province regulates surface and groundwater (quantity and quality), air quality, soil conservation and wildlife species (mainly population management). That legislation is applied through authorization of use and enforcement. Municipalities are granted some authority over surface waters and the air above them and domestic and wild animals through the MGA, although provincial legislation would supersede any by-law that overlapped directly on provincial jurisdiction.

4.6.2 A New Era – The Sustainable Resource Development Approach

After a century of managing federal and provincial lands for their resource value and utility, focus has shifted in this level of legislation to a broader, integrated management approach intended to result in sustainable development. Environmental assessment legislation and its underlying principles of the right land use, in the right place, with least impact, came into being only in the early 1990's. As a result, there is some inconsistency in the approach to environmental management in the three levels of legislation and in perception of "the environment" by regulators and public alike. Although the importance of a sustainable environment is typically stated in the broader policy statements, remnants of the specific resource approach persist in all levels of legislation and more importantly, in the application of the law.

Currently, comprehensive assessment of environmental effects of development through the environmental impact assessment (EIA) process is applied only to projects that trigger the federal *CEAA* or the provincial *EPEA* (Table 1). This tool is currently the main means of applying sustainable management principles to development and it is applied on a project-specific basis. Not all projects are automatically reviewed. Triggers under these two Acts include the requirement for permitting, involvement of government proponents or funding and large projects with potentially significant impacts (listed projects) will trigger assessment. The legislation related to specific resources typically provides the permitting trigger, and the EIA process serves to collect background

information for the related permitting process. As a result, the assessment captures review of impact to sustainability at the comprehensive and specific resource level.

Only specific resource law applies to small development projects and operation activities of existing development. Smaller projects that would not require permitting and do not have other triggers would not be considered under either environmental assessment Act. In some instances, projects that are considered typical, or with standard impacts, may only be required only to meet best practice guidelines (e.g., the *Water Act Code of Practice for Watercourse Crossings*). Activities related to daily operations and management on private lands are not considered projects, and therefore would never be subject to EIA legislation. If they affect specific resources (water, fish and fish habitat, soil, certain wildlife species including rare species, air quality, public lands), these activities may be assessed in order to obtain and renew permits, but again, only the specific resources would be addressed. Thus, at the local level, the sustainable development approach is inconsistently applied by federal and provincial regulators, leaving resources and areas of concern to the municipality potentially unmanaged.

There is another risk to municipalities that have not identified the resources of concern within their jurisdiction. Although the federal and provincial EIA processes try to consider those resources and concerns important at the local municipal level, the regulatory reviewers rely on municipal statutory requirements and policies to identify those concerns. If equivalent legislation that documents the resources and locations of concern at the local level and associated policies for their management, they will not be considered by these higher level assessments.

4.6.3 Municipal Environmental Management Opportunities

4.6.3.1 Current Municipal Legislation

The *MGA* provides authority for the municipality to exert considerable control over land use planning and land management, from broad level planning to site-specific permitting and management. Its scope of management is broad: protection of the safety, health and welfare of people and community is the main focus of municipal control under the *MGA*. Most municipalities concentrate their administrative control on the land use planning process and in designating conditions and locations for development. Although the Act also gives municipalities considerable flexibility to incorporate sustainable environmental management principles into the planning process, detailed direction is limited and the specific resource management approach, rather than the integrated resource approach required for sustainable development, is promoted.

For example, the Subdivision and Development Regulation of the MGA outlines various environmental conditions (terrain, floodplains, soils, erosion potential and other land use) that should be considered in authorizing an application for subdivision. All of these criteria focus on the hazards to the development related to the environment or on conservation of certain key resources (e.g., soils). Although the clause also has an open-ended statement that allows consideration of "any other matters [the municipality] considers necessary to determine whether the land … is suitable for the purpose for which the subdivision is intended" (s7(i)), there is little guidance as to what other

environmental conditions might be considered. Environmental Reserve is similarly defined in terms of hazards to development. Nowhere in the MGA is the environment defined as a comprehensive, interactive unit, as it is in federal and provincial environmental policy.

Without some guidance in the MGA on the aspects of the environment that should be considered within a sustainable development scenario, many municipalities have focused only on the specific hazards, relying on that as their definition of "environment". Others have borrowed the definition from federal or provincial legislation, and expanded their scope of planning focus to incorporate environmental features and their functions. Some have even adopted a formal EIA process to review environmental features of concern. The variation in approach seems partly dictated by the type of development typically reviewed within the municipality, and the resources and experience of the municipality with regard to environmental management. Particularly for smaller municipalities, a comprehensive environmental review process may not be possible, due to the lack of personnel and expertise. This presents a significant opportunity for the BHI, and perhaps one of the most critical elements in implementing a sustainable development approach to land use planning: providing environmental science and legal expertise to support municipalities within the region.

A sustainable management approach has been applied inconsistently in statutory plans and policies among the BHI partners (see section 2.0). In many cases, this is a result of past development pressure and planning focus. Lamont, Beaver, Leduc and Camrose are primarily dominated by agricultural land use. Naturally-vegetated areas are few and typically small; larger areas have already been protected by other jurisdictions (e.g., Miquelon and Ministik). The moraine comprises a relatively small part of the lands under their control, and is an anomaly in terms of its landscape and management issues. Rural residential demand in their parts of the moraine, and the associated impact on environmental, social and economic resources, has been minimal until recently. Strathcona's landbase, on the other hand, is dominated by the moraine, much of which remains naturally vegetated. Due to their proximity to the City of Edmonton and the natural features offered by the moraine, they were the first to face high demand for rural residential development, and have developed policy to deal with those pressures over many years. Not surprisingly, their statutory plans have incorporated a more environmental focus.

Now, the partner municipalities are beginning to see rural residential development expand into their own lands, and have become concerned that the unique features of the moraine may be lost without appropriate management. Public expectations regarding the environment have gradually shifted to a sustainable approach in recent years, adding another, different pressure on land managers. The broader public interest in conserving the resources contributing to "quality of life" is forcing municipalities to reconsider their definition of 'environment' and promote future development near natural areas carefully.

The need for sustainable development is no longer driven entirely by existing development pressure, but also the threat of such pressure and the corresponding loss of the quality of life valued by residents. For many of the partner municipalities, this is new

ground, with nothing other than the threat of development to justify the necessity for change. Again, the BHI offers the information required to make informed decisions in this uncharted territory, and the participation of the partner municipalities in the initiative recognizes the inherent value in such collaboration.

4.6.3.2 Opportunities for Change in Land Use Planning

Through their participation in the BHI, the partner municipalities have expressed an interest in adjusting their land use planning systems to a sustainable development approach. Luckily, the groundwork to implement such an approach is already included in most of the MDPs of the partner municipalities. A healthy environment (in some cases described as a sustainable environment) is listed as a goal in the MDP of most of the municipalities in the BHI. It is the specific policies related to environmental management that are less common.

There is considerable opportunity to incorporate environmental management into the MDP, LUB and non-statuary policy levels of planning. Relevant examples of such policy already exist in the current statuary documents of the partner municipalities, regarding issues such as ER, MR and conservation dedication and Tree Policies. The partner municipalities may wish to use Figure 1 and Appendix A to as a resource for example policies to address specific issues of concern.

At a minimum, there are a few areas in which the partner municipalities could achieve some consistency with respect to environmental legislation, in defining their areas of environmental interest and jurisdiction. Adopting the broader definition of the environment as in federal and provincial legislation would redefine 'environment' at the municipal (and public) level and shift focus to a broader and more realistic ecological level. Considering environmental capability in that context, at all levels of planning from MDP policy area designation to review of individual development applications, would help shift the local development process away from the more narrowly-focused specific resource approach. Clearly identifying which conditions trigger referral of applications to other jurisdictions would ensure due diligence is applied by the municipality during its own review of development proposals. Linking development approval to the successful approval from these other jurisdictions can also provide the municipality with expert review, without committing additional staff or obtaining requisite expertise. As a fringe benefit, it would clarify the environmental review process for administrators and developers alike. Some of the partner municipalities have already incorporated such provisions and these clauses will provide suitable examples for those missing such statements.

Recognition in law is an important first step in confirming the importance of an issue. In this case, recognition of a broader definition of environment would complement the higher levels of legislation, and bring municipal statute and policy more closely in line with the current environmental management approach at those levels. Providing a clear link to the regulatory review processes of other jurisdictions will also help identify areas in which a municipality may want to provide additional requirements, to address issues of local concern. Without these important first steps to define the resources of interest and

differences in jurisdiction, more specific regulation will not likely receive ready acceptance from the public.

This last point illustrates the biggest potential limitation to any environmental by-law or policy developed under authority of the *MGA:* the test of litigation. Any member of the public can challenge a by-law on its fairness and compliance with the spirit of the *MGA*. The costs of such challenges in terms of finances and credibility foster a cautious attitude among municipalities in developing policy. The risk of litigation is tied to public acceptance of the need for regulation. Any regulation limits individual freedoms and those regulations that do not have a clear and accepted rationale for their necessity tend to be ignored, side-stepped, contravened or challenged. It is generally much easier to implement policy with an outcome that is already a public goal. The smoking by-laws recently implemented in Strathcona County and Edmonton are excellent examples of this concept. Despite initial fears, the by-laws have been successfully implemented, mainly because there was enough public support for smoking bans. Similar action even 20 years ago would likely not have been as successful.

In the case of environmental management and the BHI Land Management Framework, many constituents of the Beaver Hills moraine and municipal administrations are looking for an integrated resource management approach to land use planning and management. The extent of common understanding and acceptance for sustainable management is harder to estimate though, and in order to successfully incorporate environmental concerns into policy, each municipal partner must be able to tailor policy to their own circumstances, armed with the background information on legislative authority and scientific understanding. Certainly, clarification of private land owner rights regarding subdivision, agricultural land use and provincial and federal restrictions on certain activities (e.g., filling wetlands) is a key hurdle that all five municipalities must deal with in order for environmental restrictions to be accepted.

In general, the municipalities within the Beaver Hills moraine have few environmental assessment policies, and even at the broader policy level of the MDP, sustainable environmental management is inconsistently recognized. For environmental issues, the stigma of unnecessary limitation of economic opportunity is an obstacle that must be overcome before environmental policy will be accepted by the public, and in some cases, municipal councils. Depending on the municipality, raising public awareness of the background issues may be required before implementing elements of the Land Management Framework can begin.

Phase II of this project should address the means by which the BHI could help implement the Land Management Framework. Science-based public awareness programs demonstrating the principles behind such recommendations and the need for policy should certainly be discussed in Phase II. The BHI, through its various scientific initiatives and NGO partners, can play a significant role in supporting environmental policies contemplated by the municipalities, to the organization as well as the broader public. The information it has already gathered is sufficient to support the proposed Land Management Framework, which will recommend approaches to ensure that land use planning incorporates principles of sound environmental management.

Table 1. Federal and Provincial Environmental Legislation and Applicable Land Use Policy Areas

		Provincial									Federal									
		Environmental Protection and Enhancement Act	Water Act (including COPs and Draft Wetland Policy)	Public Lands Act	Wildlife Act	Weed Control Act	Soil Conservation Act	Natural Resources Conservation Board Act (and Agricultural Operation Practices Act)	Energy Utility Board administered Acts	Historic Resources Act	Fisheries Act	Canadian Environmental Protection Act (CEPA)	Navigable Waters Protection Act	Canada Wildlife Act	Migratory Birds Convention Act	Species At Risk Act	Federal Water Act and Policy	Federal Policy on Wetland Conservation	Canadian Environmental Assessment Act	National Energy Board
Legislative Powers	**Permitting**	√	√	√	√		√	√	√	√	√	√	√					√	√	√
	Enforcement	√	√		√	√	√		√	√	√	√		√	√	√				
	Environmental Impact Assessment (process or trigger)	√	√	√				√	√	√	√		√					√	√	√
	Policy Development [a]	√	√		√	√		√	√			√		√		√	√			√
Land Use	**Industry**	√	√	√	√	√	√	L [b]	√	√	√	√	√		√	√		F [b]	F	F
	Commercial	√	√	√	√	√	√			√	√	√			√	√		F	F	
	Agricultural	√	√	√	√	√	√	L		√	√	√			√	√			F	
	Intensive Livestock Operations	√	√	√	√	√	√	√		√	√	√			√	√		F	F	
	Urban Residential	√	√	√	√	√	√			√	√	√			√	√			F	
	Rural Residential	√	√	√	√	√	√			√	√	√			√	√			F	
	Recreational	√	√	√	√	√	√	L		√	√	√	√		√	√		F	F	
	Institutional	√	√	√	√	√	√			√	√	√	√		√	√		F	F	
Supporting Infrastructure	**Utility Facility or Lines**	√	√	√	√	√	√	L	√	√	√	√	√		√	√		F	F	
	Stormwater Facility	√	√	√	√	√	√			√	√	√	√		√	√		F	F	
	Roads		√	√	√	√	√			√	√	√	√		√	√		F	F	
Miscellaneous Projects	**On federal lands or with federal participation**										√	√	√	√	√	√	√	√	√	

[a] Agency identified in Act is responsible for setting standards or cooperative policies across jurisdictions

[b] L = applies mainly to large projects; F= applies only for projects with federal funding, federal agency proponent, federal lands, or crossing provincial or international boundaries

5.0 RECOMMENDATIONS

5.1 Status of Existing Municipal Environmental Policies and Opportunities for Change

Although all five partner municipalities have environmental goals, objectives and policies incorporated in MDP, LUB and other non-statutory policies, the approach and level of detail varies considerably. Specific environmental protection measures are also variable in detail and force of law (in policy, vs. MDP or LUB). Definitions of the environmental aspects of interest within the municipal context are also inconsistently addressed among the policies of the five municipalities. This is in part driven by differences in the landbase administered by the municipality and the past land use pressures they have faced.

The types of statements included in the MDP and LUB documents suggests the inconsistent attention to environment is an artifact of the MGA. Requirements for statutory documents are outlined in the MGA, which considers the environment in only three contexts:

- Environmental features that pose a threat to development and should be considered in development proposals ("hazard lands"),
- Lands that should be protected by the municipality for environmental reasons, typically those same hazard lands or lands suitable as park resources (Environmental and Municipal Reserve), and
- Lands of significance within the local environmental context that could be managed through land owner agreements (conservation easement provision, other management provisions within the Subdivision Regulation).

Although under the Subdivision Regulation, municipalities can consider any other factors that might be of concern in determining the most appropriate use of a parcel, there is no indication of specific environmental issues that might be considered under that clause. Most of the member municipalities have developed policies that address the first two concerns; few have taken advantage of the authority under the MGA to manage environmentally significant lands, perhaps because of the limited definition of "environment" in the Act.

The extent to which the Blue and Yellow LMAs are protected under current MDP and LUB policy is also variable. Both levels of policy are currently under review in the several partner municipalities. In some, changes to Policy Areas and Land Use Districts have expanded to protect the Blue LMAs, at a minimum. Others rely on general restrictions and conditions for development to protect key resources. Both methods have their advantages, and could be used by those municipalities considering review of their planning documents in the immediate future.

At a minimum, defining the environment as a comprehensive entity possessing both form and function (see the definition used in the Canadian Environmental Assessment Act) would help shift focus to the broader view required for a sustainable development

approach. Explicit statements identifying the requirement to refer applications that deal with resources under provincial and federal jurisdiction to the appropriate agency within policy describing the planning process have also been inconsistently provided among the partner municipalities. Clearly stating the activity triggering such referral (e.g., work within a fish-bearing stream, or disturbance of a wetland) would clarify the jurisdictional requirements for the developer as well as administrators.

While these minor changes to existing policy would help open the door for development of a sustainable development approach within the moraine, a more comprehensive, consistent approach is the goal promoted by the BHI. The common Land Management Framework envisioned by the BHI would provide a consistent approach to planning decision-making that will result in sustainable development. It must incorporate the BHI Land Management Principles, but provide more specific direction to land use planners on appropriate management of the resources comprising the essential character of the moraine.

The LMA analysis has identified the location of areas with abundant natural features of concern to the BHI. Ideally, the common Land Management Framework would capture within appropriate policy areas and land use zones, the areas with highest concentrations of Blue LMAs. Accompanying policy statements would balance conservation of the key environmental features in those areas with the other social and economic benefits of development. For the less clustered Blue and Yellow LMAs that cannot be easily grouped into such areas, a common set of policies with general management guidelines and criteria for development would similarly conserve or enhance the resources that comprise those LMAs. If desired, those same policies could be applied outside the moraine, as the management principles incorporated in them are not location-specific, and will be derived from "Environmental Best Practices" gleaned from other development experiences.

In order to develop appropriate management zones and guidelines most effectively, the specific environmental resources contributing to a Blue or Yellow LMA (e.g., wildlife corridors, ground and surface water linkages) must be identified and documented to justify the recommended management approach. Because the distribution of these resources varies among the municipalities, as does the level of awareness and political will related to their management, developing a one-size-fits-all solution would not be appropriate. Instead, we recommend development and implementation of the common Land Management Framework as a group of management practices that could be adopted by councils, according to their own circumstances and readiness. This is explained more fully in the subsequent section, which describes the proposed common Land Management Framework, and the approach to its implementation in Phase II of this project.

5.2 The BHI Land Management Framework

5.2.1 Objectives

The Land Management Framework envisioned by the BHI will facilitate adoption of sustainable planning practices by member municipalities that will protect the ecological function of the Beaver Hills Moraine. The designation of land use lies within the exclusive jurisdictional domain of member municipalities, and the respective federal and provincial authorities responsible for the protected areas in the Moraine. It is recognized by all of the involved authorities that the land management practices in the Moraine are distinctly different from the majority of their jurisdictions, and thus, pose a unique challenge within the planning context. The BHI can provide a valuable support service to these authorities by researching and identifying sound environmental practices applicable to the unique ecological function of the Moraine, for adoption and integration into practice by those planning authorities.

5.2.2 Approach

The approach we have taken in developing the Framework is one that will provide an evidence-based foundation for land use decision-making. This approach is supportive to land use decision makers, and will be successful because it provides a consistent, science-based foundation for land use decisions oriented toward determining the right land use in the right place.

The approach is bottom-up, first creating the tools necessary for a more comprehensive environmental style of land management and developing the public acceptance of that new approach. In this sense, it follows a similar approach to that taken during MDP development. Based on a set of principles established by council, best practices are identified through research and assessment of public response to issues, which leads to new policy development. Rarely are new policies developed without some level of preparation justifying their necessity.

The bottom-up process to development and implementation of the Landscape Management Framework would follow the sequence outlined in Figure 5 below. The BHI's Landscape Management Principles have already established the guidelines for planning policy. These can be distilled into a succinct set of principles outlining goals specific to land use planning (Principles of Land Use Management). Next, a series of Environmental Best Practices outlining specific planning guidelines would be developed and will help to promote organizational (municipal) and public awareness of the necessity and means for action. Adoption of formal LUB policy, the statutory instrument allowing most flexibility for change, would follow those steps. Such policy changes would likely receive more support due to the higher level of organizational and public awareness built during these early stages of the process. Lastly, the changes in policy created in the LUB can be easily captured in the broader MDP policy areas. All changes would be made by the individual municipality, incorporating the guidelines most suited to their landscape, and their political and public environment.

Figure 5. The Bottom-up Approach to the Land Management Framework

These last two steps are in contrast to the top-down approach more typically taken in land use planning, which starts from the MDP then drills down into the LUB. Such strategies work well when public acceptance for the changes are already in place. In this case, with varying levels of public awareness of the environmental concerns facing the moraine and their importance, such an approach would likely have only limited success. In fact, the top-down approach would likely still require an intensive awareness-raising campaign within councils and the affected public in order for the policy documents to be passed.

The sequence of tasks to implement this approach is as follows:

a) ***Identification of Environmental Best Practices*** – Through research, the BHI will identify sound environmental practices that will protect the ecological resources and function of land, air, water, and biodiversity. The preferred outcomes of these practices will be defined to provide a basis for performance measurement and monitoring. These practices are generally defined in the BHI Principles for Landscape Management Areas, but will be supplemented with practical guidelines derived from environmental assessment experience with rural developments.

b) ***Definition of Ecological Function Zones*** – The BHI has assembled considerable data on the ecological resources within the Moraine. These have been merged to create the Landscape Management Areas (Blue & Yellow Map), which identify locations where numerous resources occur and thus, may require more sensitive management. While the Blue and Yellow LMAs will be helpful in identifying land use policy areas and zones, in order to manage the constituent resources and the functions that sustain them, those zones must be de-constructed to identify where the specific resources occur. These ecological function zones (e.g., travel corridors, groundwater recharge

areas) will be identified to a level sufficient for analysis at the land parcel level (with some limitation on interpretation due to data resolution) and so can support specific land use decisions. The Environmental Best Practices will also apply directly to these zones, and thus, can link appropriate management to specific locations. Ecological function zones consistent with the Land Management Principles of the BHI could include:

- Wetlands,
- Uplands,
- Wildlife corridors,
- Species of concern,
- Watersheds, and
- Airsheds.

Ecological objectives and appropriate environmental practices would be defined for each of these ecological function zones to aid in identification of best land use, and where appropriate, conditions that could be placed on development by the responsible authority would also be depicted. Two questions must be answered in these Ecological Function Zones: (1) what is the resource and (2) why does it need management. Defining clear environmental objectives and strategies will provide a foundation for effective performance measurement.

c) **Implementing organizational and public awareness programs** –In order for the Environmental Best Practices and Ecological Function Zones to be applied at the municipal level, awareness of the requirement and benefits of such tools must be generated within the partner municipal organizations. Without such support, these tools are unlikely to achieve the wide-spread acceptance necessary to carry them forward into policy. Administrative support will also help create public awareness, through implementation on specific development proposals. Ultimately, organizational and public awareness and support will greatly facilitate the incorporation into land use policy of those environmental best practices that municipalities feel are most appropriate. The BHI's Councilors, Communications and NGO Working Groups offer the means to raise awareness of the issues facing the moraine, the need for a special management approach for this area, and the benefits of the tools the BHI has developed.

d) ***Integration into Land Use Bylaws*** – Once the Environmental Best Practices and Ecological Function Zones have become established within the land use planning process, and a consensus has developed on the suitability, effectiveness, and usefulness of the Framework, land use planning authorities in the BHI could integrate the Framework into land use management policies. During this period of acceptance, individual applications could be referred to the BHI for analysis and recommendation within the Framework, allowing refinement of the Environmental Best Practices or perhaps, standardization of approach to similar problems. As the opportunities arise (and public and municipal acceptance allows), these more standard elements of the Framework could be integrated into individual Land Use Bylaws. This stage

would be a longer-term one, with Framework elements being incorporated across all municipalities by mutual agreement, or by individual municipalities to address their own circumstances, on timelines appropriate to the political and public will.

e) ***Support for MDP*** – As the definition of the Ecological Function Zones and the supporting Environmental Best Practices becomes more widely adopted, it would provide an excellent foundation for revisions to individual MDPs. Integration of the various overlapping ecological function zones will provide considerable information on cumulative environmental impacts that should be given consideration in the MDP.

5.2.3 Implementation Strategy

The implementation strategy is based upon building understanding and a consensus among the land use decision makers regarding good environmental practices and appropriate land uses in defined zones. Following the steps in the approach outlined above, the phases of the implementation strategy could include the following:

Task 1: ***Development of the Framework*** including research and identification of good practices, ecological function zones, and related mapping

Task 2: ***Public information and monitoring*** providing planners, decision-makers and land-owners with information that they need to make appropriate decisions regarding individual land parcels. This could include public information campaigns, and baseline studies on environmental performance indicators.

Task 3: ***Adoption of land use policies and practices*** as a decision making tool for land use decision makers. As these practices gain wider acceptance and voluntary compliance, the BHI can provide a resource to member authorities as a referral agency to provide commentary on individual applications and their consistency with adopted practices. This could result in standard policies used by all permitting authorities regarding zoning and EIA review.

Task 4: ***Adoption into statutory documents*** such as land use bylaws and MDPs. As consistent environmental management by the responsible authorities becomes accepted by both planning authorities and landowners, inclusion of recognized practices into statutory documents would enable better enforcement of good practices for the more reluctant. This would enable consistent environmental management of the Moraine as a single geophysical unit through policies that have been adopted by the individual authorities, and in use throughout the Moraine with proven results.

5.3 Environmental Indicators and Monitoring

The BHIs Land Management Framework will enable any of the partner municipalities to incorporate recommended planning principles that are consistent with the Landscape Management Principles for the Beaver Hills into their land use planning systems. Monitoring and measuring the success of the framework in meeting the BHI's objectives will provide important feedback to the BHI and its member municipalities. During Phase I, we began considering what performance indicators might be appropriate for this project.

The purpose of this section is to begin the discussion on the very complex topic of performance measurement, beginning with some general concepts on what we are attempting to accomplish in performance measurement, what constitutes a "good" measure, a framework for thinking about possible measures, and some initial thoughts on potential performance measurement related to the BHI Landscape Management Area Principles.

5.3.1 Why Measure Performance?

There are numerous benefits to measuring performance, particularly for an organization like the BHI, which must report to funding agencies and partner municipalities. Some advantages offered by performance monitoring, based on the consulting team's experience, follow below.

Accountability – With rising public interest in the effectiveness of publicly funded organizations; stakeholders, partners and constituents want a clear demonstration that the organization is accomplishing what it has proposed to accomplish.

Strategic Planning – Performance measures identify where improvements are possible, and what constitutes satisfactory performance to guide strategic planning.

Program Management and Service Quality - Performance measures identify where and how we can get better at what we do.

Budgeting and Resource Allocation – Within an effective evidence-based planning system, performance measures substantiate requests for the most effective allocation of resources.

Contract Monitoring - Performance measures enable agencies to contract for performance outcomes rather than supervising specific activities.

Personnel Management – Within an effective performance management system, personnel have clearly identified performance targets.

Collaboration - Performance measures enable organizations to clearly demonstrate to their partners what they do best as a foundation for effective collaboration.

Communication with the Public - Performance measures provide information to the public about what the organization is doing, what it proposes to do, and how effective it is in meeting its objectives.

5.3.2 What is a "Good" Performance Measure?

Identifying a suitable performance measure is at first glance, a simple activity. On deeper consideration of criteria defining "suitable", however, selection becomes a more complex process. We recommend the following criteria be used in selecting good performance measures, particularly for longer-term monitoring programs, or those reporting to a broad audience.

Relevant - Linked to activities, goals and strategies

Reliable – Results can be duplicated using the same methodology

Responsive – Responds meaningfully to the interventions of the organization

Credible - Reputation for accuracy and stability

Unbiased - Neutral and fair in collection and reporting

Useful - Useful for making planning decisions

Timely - Reported in time to influence decisions

Comparable - Allow comparisons yearly and among similar initiatives

Outcome Oriented - Focus on outcomes obtained through interventions of the organization

Cost Effective - Benefits of the measure should exceed costs

5.3.3 What Should We Measure in the BHI?

The BHI has consistently promoted a balance between a sustainable environment, economy, and society as represented in the following BHI principles:

1. Quality of Life
   - Essential Character
   - Property Rights
2. Biodiversity
   - Wetlands
   - Native Upland Habitat and Corridors
   - Species of Concern
3. Water
   - Watersheds
   - Water Quality
4. Land
   - Land Use
5. Air
   - Air Quality

We suggest that performance monitoring follow a similar outline of topic areas, identifying suitable performance measures representative of each. This will allow the BHI to report its success in terms of its Landscape Management Principles, which have

been accepted by the BHI Board and its member organizations as guiding principles for the BHI's focus.

In Phase II of this project, specific performance measures, strategies, and targets for each of these principles will be identified through consultation with relevant Working Groups of the BHI. The Research Working Group has already expressed an interest and some potential measures. The Protected Areas and NGO Working Groups would also likely be able to contribute to this discussion.

5.4 Next Steps

In Phase II of the Land Management Framework project, we would recommend focusing on Phase I of the Implementation Strategy and working towards selection of appropriate Performance Indicators through consultation with relevant Working Groups. There were a number of other items listed in the RFP that could also be incorporated in that program, as funding allowed. Such refinement of the Phase II scope would certainly form an important first step of Phase II.

6.0 LITERATURE CITED

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Appendix A: Land Use Policy Review Data

Figure A1. Municipal Development Plan Policies

Policy Area		Strathcona County (Draft)		Beaver County (Draft)		Leduc County		Lamont County		County of Camrose
Goals and Objectives	**8**	**A large portion of SC lies within the boundaries of the Beaver Hill Moraine. The moraine covers approximately one half of the County and supports a variety of significant and sensitive environmental features. There is an acknowledged desire to protect this important natural area wherever feasible.** **Minimize the impact of human activity and development on the natural environment.**	**2(c)**	**To discourage development in areas which are susceptible to flooding or groundwater contamination, or are environmentally sensitive;**	**7**	**Protection of significant environmental areas and prevention of land, water, air, noise and visual pollution.**	**2(e)**	**To minimize negative impacts of agricultural operations on the quality of the environment.**	**7**	**Many uses compete for a limited number of lakes in the County of Camrose. Natural uses include wildlife habitat, maintenance of stream flow, and in some cases groundwater recharge. Human demands include municipal water supply, recreation, stock watering, and industrial uses.**
	8(1)	**Increase community awareness regarding the impact of activity on the natural environment.**	**10**	**Beaver County has a rich natural environment comprised of the Beaver Hills Moraine, as identified on Map 1A (also known as the Cooking Lake Moraine), lakes, and wetlands. Often regarded as "useless" in the strict economic sense, these areas are becoming increasingly critical as groundwater storage areas, wind breaks preventing erosion, storage areas for surface waters, reservoir areas in times of flood, and habitats for wildlife.** **Therefore, it is the intent of this Plan to ensure environmentally sensitive areas are not jeopardized by land use and development.**	**2.1.2**	**To minimize conflicts between proposed rural industrial development, existing land uses and ESAs.**	**3(c)**	**To ensure that residential development in the rural area is compatible with surrounding land uses and has a minimum impact on the environment.**		
	8(3)	**Encourage the practice of agriculture in an environmentally responsible manner.**			**3.1.7**	**To ensure that country residential development occurs in an orderly manner that is compatible with neighbouring land uses and the environment.**	**5(f)**	**To ensure that the development capacity of environmentally sensitive or unique areas is not exceeded.**	**8**	**Aquifers require recharging to replace water that is lost from wells and springs. Known recharge areas will be protected.**
	14(7)				**6.1.1**	**To protect and conserve those areas of the County with the greatest scenic and recreational value.**	**8(c)**	**To ensure that industrial development meets high environmental standards.**	**15**	**Wildlife management is a provincial responsibility but the County can assist through its authority over land use.**
					7.1.2	**To minimize impacts of extraction activities on neighbouring land uses and the environment.**	**11(a)**	**To ensure that critical fish and wildlife areas are conserved where possible.**		
			10(a)	**To conserve lands and sites containing important wildlife habitat and unique flora.**	**8.1.1**	**To identify and protect internationally, provincially and regionally significant ESAs.**				
			10(b)	**To minimize conflicts between non-compatible land uses and environmentally sensitive areas, including the Beaver Hills Moraine as identified on Map 1A.**	**8.1.2**	**To control the subdivision and use of land in ESAs.**				
			10(c)	**To discourage development from areas which are susceptible to flooding or groundwater contamination, or which would affect groundwater flow.**	**8.1.3**	**To ensure compatibility between uses and ESAs.**				
Agriculture/Country Residential	**5.16**	**Require an amendment to the Land Use Bylaw to the appropriate land use district for newly subdivided parcels unless the parcel involved is … (b) the first parcel out of the quarter section and is located in the Agriculture-Large Holdings Policy Area or Beaver Hills Moraine Policy Area…**	**2.6**	**Country residential development shall comply with policies regarding the preservation of environmentally sensitive areas and critical wildlife habitat, resource extraction, recreation, and historical and archaeological features.**	**3.3.8**	**The County encourages landowners to retain tree cover and plant shelterbelts as a means of preventing soil erosion.**	**3.4**	**Residential development within 1.6 km (1 mile) of a lake shall be subject to any controls the County deems necessary to provide that the development will be compatible with the lake environment.**		
	5.22	**Ensure new residential developments within the Agriculture-Small Holdings Policy Area adhere to the following conservation design based principles: (a) the ecology of the site must be considered. Lands identified as High and Medium PEMA must be left undeveloped wherever possible, but incorporated into the overall development. Wildlife corridors or connections between all PEMA must be maintained wherever possible through the use of green infrastructure; (b) development will be directed to lands that are determined to be of**	**New**	**Multi-lot country residential development shall only be allowed in the area identified on Map 1A. Subdivision of properties outside of this area and districted country residential prior to (insert date of 3rd reading of bylaw) shall not be permitted. The minimum parcel size in a multi-lot subdivision shall be 2.02 hectares (5.0 acres). Notwithstanding any other provisions of this bylaw, within one and one-half (1½ miles) of the Ministik Lake Game Bird Sanctuary, the minimum parcel size shall be 16.2 hectares (40 acres).**	**3.3.14**	**Country residential uses shall only be allowed on low capability land: (a) in the Agricultural Areas where the subdivision : (i) is small scale, well defined and compatible with neighbouring land uses and sensitive areas; and … in compliance with an area structure plan or Lake Management Plan in effect …**				
					3.3.25	**New or expansion of existing lakeshore resort areas may be allowed only when adequate study has been undertaken to prove that there will not be any … adverse**				

Policy Area		Strathcona County (Draft)		Beaver County (Draft)	Leduc County	Lamont County	County of Camrose
Agriculture/Country Residential (cont'd)		**lesser environmental significance such as those identified as Low PEMA; and (c) the natural landscape and topography must be considered and incorporated into the overall design of the site.**		**2.10 Country residential lots may be clustered or grouped to reduce potential land use conflicts and minimize service costs, and preserve environmentally sensitive areas. The parcel sizes of any new development adjacent to an existing country residential development shall be of appropriate size to achieve a transition between lower and higher density development. Buffers may separate transitional land uses.**	**impact on the aesthetics or natural environment of the lakeshore area including water quality and wildlife or fishery habitats.**		
	5.23	**Allow subdivision for residential purposes in the Agriculture-Small Holdings Policy Area subject to the following criteria … (h) if part of the plan area is identified as High PEMA the following will apply *(criteria listed)*; (i) if part of the plan area is identified as Medium PEMA the following will apply *(criteria listed)*; (j) if the entire site is identified as Low PEMA, development will be directed to previously cleared, disturbed, and isolated areas.**					
	5.26	**Allow the subdivision of land for residential purposes within the Beaver Hills Moraine Policy Area subject to the following: (a) first parcel out of an unsubdivided quarter section for an existing residence; (b) first parcel out of an unsubdivided quarter section for a new residence; (c) for severed quarter sections, where the two portions of the quarter section are unequal in size, the larger remaining portion of the quarter section if unsubdivided, will be considered as an unsubdivided quarter section for the purpose of (a) and (b) above; and (d) for severed quarter sections where the two portions of the quarter section are equal in size, only one of the two portions will be considered as an unsubdivided quarter section for the purpose of (a) and (b) above.**					
	5.30	**Ensure new country residential developments adhere to the following conservation design based principles: (a) the ecology of the site must be considered. Lands identified as High and Medium PEMA must be left undeveloped wherever possible, but incorporated into the overall development. Wildlife corridors or connections between all PEMA must be maintained wherever possible through the use of green infrastructure; (b) development will be directed to lands that are determined to be of lesser environmental significance such as those defined as Low PEMA; and (c) the natural landscape and topography must be considered and incorporated into the overall design of the site.**					
		Allow subdivision for country residential uses within the Country Residential Policy Area subject to the following … (g) if part of the plan area is identified as High PEMA *(criteria listed)*; (h) if part or all of the plan area is identified as a Medium PEMA *(criteria listed)* (i) if the entire					

Policy Area		Strathcona County (Draft)		Beaver County (Draft)		Leduc County		Lamont County		County of Camrose
		site is identified as Low PEMA, the development will be directed to previously cleared, disturbed, and isolated areas.								
Agriculture/Country Residential (cont'd)		**Promote agricultural practices that are sustainable and/or environmentally responsible.**								
	5.31	**Promote agriculture, conserve high and medium priority environment management areas (PEMA) and allow large rural residential land uses to be developed within the Agriculture-Small Holdings Policy Area where such uses are compatible with adjacent uses.**								
		Continue to support agricultural uses on lands that are not identified as high or medium PEMA within the Beaver Hills Moraine Policy Area.								
		Limit the subdivision of land within the Beaver Hills Moraine Policy Area in order to help preserve and enhance the unique ecosystem.								
	14.3									
	14.8									
	14.15									
	14.16									
Environment/Wildlife	**8.1**	**Identify the following priority environment management areas: (a) High PEMA; (b) Medium PEMA; and (c) Low PEMA.**	**10.1**	**Unless unique site requirements determine otherwise, development shall not be permitted: (a) on steep slopes (in excess of 15 degrees); (b) on unstable slopes or lands characterized by soil instability; (c) on lands exhibiting evidence of poor drainage or flooding; (d) on lands containing important wildlife habitat; or (e) on lands containing unique endangered flora.**	**8.2.1**	**Land uses and subdivisions may only locate within or adjacent to an internationally, provincially or regionally significant ESA where the proposed land use or subdivision: (a) does not create a significant adverse impact on the natural environment; (b) can be integrated in terms of design with the ESA; (c) will retain the area in a predominantly natural state; and (d) will retain the physical features of the natural environment, wherever possible.**	**5.6**	**Development on sandy or unstable soil may only be permitted if measures to control erosion are implemented. Development on steep slopes and other ESAs should not be allowed.**	**7.1**	**Where a lake management plan exists, Council and staff will be guided by the plan in making land use decisions.**
	8.2	**With respect to areas identified as High PEMA: (a) protect the most significant natural features such as … lakes through the use of environmental and municipal reserves; (b) protect rare and sensitive flora, fauna or habitat; (c) protect areas prone to flooding, erosion, soil instability and other potential hazards; (d) create a larger network of habitat corridors; (e) create buffers around unique habitats; (f) restrict development, such as the filling in of wetlands; and (g) require a biophysical assessment. Geotechnical assessment and/or EIA**	**10.4**	**Development shall not be permitted on lands which have characteristics hazardous to development, or in areas characterized by inherent physical characteristics which pose severe limitations to development. It shall be the responsibility of the developer of any**	**8.2.8**	**The County may require the proponent of a development or**	**5.7**	**Unless unique site requirements determine otherwise, development proposals should conform with the Alberta Environment Land Conservation Guidelines so far as they pertain to setback requirements from valley breaks, ravines and watercourses.**	**7.4**	**Buffalo Lake, Little Beaver Lake, Miquelon Lake, and Red Deer Lake are regarded as recreational lakes, and, subject to any other statutory plan, nearby land will be managed to maximize the lakes' recreational value.**
									7.5	**Maximizing recreation does not mean uncontrolled development. Council's rule will be to allow**

Policy Area		Strathcona County (Draft)		Beaver County (Draft)		Leduc County		Lamont County		County of Camrose
		prior to subdivision or development, as determined by the development authority.		**development within an environmentally sensitive area to ensure all mandatory permits and approvals necessary for development within these areas be obtained from the appropriate regulatory bodies prior to the start of the development.**		**subdivision to submit an EIA report … containing an assessment of the environmental impact of the proposed development or subdivision on an internationally, provincially or regionally ESA. An EIA report shall: (a) describe the proposed development; (b) describe the existing environmental conditions that existed prior to development; (c) identify possible environmental effects of the development; (d) propose measures to lessen possible adverse effects; and (e) identify possible adverse effects for which there is no satisfactory resolution and analyze their implications.**	**8.4**	**Before approving any development proposal for an industrial use, the County may require the preparation of an EIA that will assess the impact of the proposed development on the natural and human environment, and indicate both if and how any negative impacts can be mitigated. The County will require the implementation of any mitigating actions indicated in the assessments as a condition of any development approval.**		**development at sustainable levels, which may be established in management plans for each lake.**
		Create development guidelines to protect areas identified as Medium PEMA natural areas, through the use of tools such as municipal reserves and conservation easements and educational programs.		**The County shall consult with the appropriate Provincial agencies and any other agencies deemed appropriate prior to approving any development proposals which may affect environmentally sensitive areas.**		**The County will encourage the creation and maintenance of wildlife habitat on private and municipal lands by: (a) exploring the possible use of incentive programs for landowners to maintain wildlife habitat; (b) incorporating consideration wildlife habitat into the planning and design of outdoor recreation systems; and (c) increasing the awareness of the provincial farm shelterbelt programs as a way of increasing the availability of wildlife habitat in agricultural and natural vegetation.**			**7.9**	**Other lakes in the County will be managed to optimize water quality and stream flow, and to support the needs of wildlife and agriculture.**
Environment/Wildlife (cont'd)	**8.3**	**Ensure new developments are designed to conserve High and Medium PEMA in both the urban and rural areas by: (a) preventing the development of permanent structures within the 1:100 year flood plain; (b) supporting the registration of conservation easements; and (c) introducing conservation subdivision design criteria.**	**10.5**	**Subdivision or development proposals may be permitted only when it can be proven to the satisfaction of the County that the proposed subdivision or development will not jeopardize or significantly damage those characteristics of the resources vital to habitat and species maintenance.**	**8.2.9**		**11.1**	**The key wildlife areas identified on Map B shall be subject to the policies of this Section. Council may designate additional key wildlife areas with assistance from provincial government staff.**	**7.10**	**Council encourages landowners to maintain tree cover around all lakes. One way of doing this is to have the land subdivided into lots of at least ten acres. Experience elsewhere shows that on parcels of this size, most of the land will be left in natural vegetation.**
	8.5	**Develop an educational program for Strathcona County residents to raise awareness about environmental issues and promote actions or initiatives that work toward creating a more environmentally responsive community.**	**10.7**	**Subdivision or development proposals shall ensure that the disturbance of treed areas and alterations to site topography are minimized. The County may require a site plan detailing the protection of existing treed areas and site topography with any application for subdivision or development.**			**11.2**	**Council should cooperate with Canada Parks Service authorities when making land use decisions that may affect Elk Island National Park. (a) All subdivision and discretionary development proposals within 1 mile (1.6 km) of Elk Island National Park should be referred to the Park authorities for comment. Such comments should be considered by the County in reviewing the proposal. (b) Industrial, multi-lot residential and intensive agricultural uses should not be permitted within 1 mile (1.6 km) of the Park boundary.**	**8.3**	**Council encourages work to identify groundwater recharge areas within the County. Academic research will be encouraged, and land developers may be required to identify recharge areas as part of their subdivision applications.**
	8.10	**Encourage the restoration and rehabilitation of disturbed natural areas.**	**10.8**	**Identify, conserve and protect to the greatest extent possible, environmentally sensitive lands such as … the Beaver Hills Moraine …**	**8.2.10**	**The County encourages landowners to maintain tree cover and natural vegetation in ESAs …**	**11.3**	**Subdivision or development that, in the County's opinion, would be significantly incompatible with the wildlife resource or habitat shall not be permitted.**		**Council may negotiate conservation easements covering groundwater recharge areas.**
	8.11	**Assess the type, density and size of recreation/tourism development permitted within the Beaver Hills Moraine Policy Area and over time eliminate those uses that are not compatible with the main objective of preservation.**			**8.2.14**	**The County will use the ESA Study as a guide in reviewing subdivision and development proposals.**	**11.5**	**When reviewing a subdivision or development proposal within or adjacent to a key wildlife area, The County should request a site plan be completed detailing ho disturbance to vegetation and topography is to be minimized.**	**8.4**	**Experience has shown that the owners of large residential acreages usually retain the tree cover. The County will consider allowing such subdivision as a way of retaining tree cover in groundwater recharge areas. Conservation easements and environmental reserve easements may be used to further protect tree cover in these areas.**
	8.12	**Protect lands where sensitive groundwater resources have been identified, through environmental protection instruments and policies.**					**11.6**	**Council shall encourage all development in the County to have regard for the maintenance of wildlife resources and their habitats. When reviewing an**	**8.6**	**Area structure plans must identify critical wildlife habitat and travel corridors.**
	8.13	**Promote higher densities and more compact developments in appropriate locations to lessen encroachment onto agricultural lands/natural habitat and to reduce sprawl.**							**15.1**	**Council will consider using money paid in place of reserves to purchase land which is valuable as wildlife habitat. Wildlife managers are invited to suggest suitable land.**
		Encourage land uses and forms of development which conserve natural habitat.							**15.3**	**Council encourages landowners to maintain natural vegetation on land near watercourses and on**
	8.27	**Support the implementation of the Legacy Lands Policy to: (a) acquire lands of historical, cultural and environmental significance to the community; (b) purchase and add to the bank of municipal lands for the protection and**								
	8.29	**enjoyment of future generations; and (c) provide access and enjoyment to significant natural and**								

Policy Area		Strathcona County (Draft)		Beaver County (Draft)		Leduc County		Lamont County		County of Camrose
		heritage lands.						**application for development, consideration of the possible negative impacts should be evaluated and mitigative measures suggested to minimize such negative impacts.**	**15.7**	**steep slopes. In sensitive areas, land may be rezoned to allow tree-covered land to be subdivided into 20 acre residential/recreational parcels which experience shows are very unlikely to be cleared.**
	8.31	**As a condition of subdivision or development approval, require the protection of treed areas through reserve dedication and easements. Additional areas may be protected through conservation agreements, conservation lots and land trusts.**								
	8.32									
Environment/Wildlife (cont'd)										
	8.39									
Riparian Protection/ Environmental Reserve	**8.7**	**Ensure that areas prone to flooding, shoreline erosion or slope instability hazards, are limited in the types of land uses and developments that may be allowed. Uses and developments must be consistent with the nature of the hazard and not cause an increase in the degree of hazard.**	**10.2**	**Unless unique site requirements determine otherwise, development proposals should conform with Alberta Environment Land Conservation guidelines so far as they pertain to setback requirements from valley breaks, ravines and watercourses.**	**3.3.20**	**Where country residential subdivision is proposed adjacent to a water course, lake or waterbody, the County may require: (a) shoreline vegetation to be maintained … and (b) development to be set back from the watercourse …**	**5.8**	**The County may, at the time of subdivision of lands for non-agricultural purposes, require an ER strip of a minimum 6 metres (20 feet) measured from either the top of the bank of the river or stream or the high water mark of a lake or other body of water. Defining the maximum width of the strip is subject to the discretion of the approving authority.**	**1.12**	**Landowners are encouraged to keep natural vegetation on land next to rivers and streams. In order to provide an economic incentive, Council may, if requested, rezone such land for recreational or residential uses.**
	8.8	**Ensure that no permanent structures are allowed within the 1:100 year flood plain of SC's rivers, streams, lakes and natural watercourses. Consideration may be given to non-residential developments proposed in the 1:100 year flood plain, subject to appropriate flood proofing and the proponent demonstrating to the municipality's satisfaction, the precise boundary of the flood plain.**	**10.3**	**All development shall be designed to retain buffer strips between roads and water bodies, ravines, watercourses and bog areas so as to prevent soil erosion and siltation of streams.**	**8.2.2**	**The County considers the North Saskatchewan River and significant streams and shoreland ravines to be open space corridors and will endeavor to: (a) protect such assets from encroachment by incompatible development; (b) allow only the integration of uses which are considered compatible with the landscape and sensitivities of the valley; (c) encourage the retention and conservation of river and ravine natural features; (d) acquire as environmental reserve or environmental reserve easement through the subdivision process, if possible and practical; and (e) restrict uses within these corridors to maintain compatibility with the natural environment.**	**5.9**	**Where ER lands are not necessary to provide public access to the feature, the County shall, at the time of subdivision, consider the option of dedication as an ER easement.**	**8.5**	**If land containing a groundwater recharge area is proposed for subdivision into small lots, the land will normally be taken into public ownership as MR or ER. In some places ER easements may be used.**
		Create development guidelines to protect lands and riparian corridors adjacent to watercourses and waterbodies.	**10.6**	**Alterations to the bed and shores of water bodies within the County shall not be undertaken without the necessary authorization and/or permits in accordance with Provincial legislation.**					**8.10**	**Council encourages landowners to keep tree cover on land adjacent to watercourses. As far as possible, these policies will use incentives and avoid compulsion. For example, tree covered land may be granted subdivision approval more easily than cleared land.**
	8.19	**Ensure development on parcels where wetlands, water bodies and/or watercourses are located within or adjacent to the subject property, are developed in accordance with SC's "Wetland Policy" by ensuring: (a) wetlands/low areas are**	**10.9**	**In order to protect environmentally sensitive areas, the County will encourage the use of conservation/environmental easements, environmental or municipal reserves, or environmental reserve easements.**	**8.2.11**	**Where public ownership is desired, ER may be acquired at the time of subdivision.**			**8.12**	**The ASB will not recommend grants for land clearance or drainage schemes if there is any risk of increasing peak flows in nearby watercourses.**
	8.20	**not filled in, drained or altered to accommodate development; (b) a professional biophysical and/or geotechnical assessment is completed and confirms that there are no environmental issues and the potential for hazards such as flooding or instability of land are eliminated; (c) sufficient setbacks are identified and incorporated into the site design; and (d) mitigative measures and/or compensation are incorporated into the site design.**			**8.2.12**	**Where private ownership is more appropriate, ER easement may be acquired at the time of subdivision or bareland condominium development.**			**15.2**	**When land is subdivided and reserves are due, the location of those reserves will be guided in part by the needs of wildlife, especially the need for travel corridors and refuge areas.**
		Protect watersheds to maintain the water quality								

Policy Area		Strathcona County (Draft)	Beaver County (Draft)		Leduc County	Lamont County		County of Camrose
		of surface and ground water systems.			**In identifying the location of reserve or easement lands, the SAA should consider the need to: (a) minimize the negative impacts on environmentally sensitive lands; (b) provide buffer areas between environmentally sensitive and incompatible land uses; (c) provide for wildlife habitat; and (d) protect public access to significant recreation areas, such as waterbodies.**		**16.1**	**When land is subdivided, the County will protect ESA's by taking them as ER or by registering a ER easement.**
		Ensure lands classified as environmental reserve as per the MGA are identified and protected as such.						**Whether a piece of land is taken into municipal ownership as ER, or is made subject to an ER easement, will be determined after consultation with the landowner, the neighbours, and environmental agencies.**
Riparian Protection/ Environmental Reserve	**8.21**	**Maintain a buffer to protect lands and water resources adjacent to watercourses for: … (b) all other lakes, waterbodies and watercourses a minimum of 30 metre (98 feet) buffer from the top of bank must be maintained. No buildings or structures will be allowed within the minimum**			**8.2.13**			
	8.24	**setback requirement, except under unique and appropriate circumstances as determined by the DA.**						
	8.25	**Ensure that where there is no defined bed and shore, a biophysical assessment is completed.**						
	8.28							
Implementation	**17.27**	**Reduce activities that encroach upon floodplains by … (b) preserving or restoring wetland areas along rivers, creeks and lakes for natural flood control.**			**1**			
	17.28	**Reduce activities that encroach upon nature by … (d) eliminating wetland destruction and requiring the restoration of those wetlands already degraded.**						
	17.34	**Reduce activities that encroach upon nature by promoting: (a) appropriate development and population growth policies linked to the carrying capacity of natural systems and community facilities; and (b) development patterns that respect natural systems such as watersheds and wildlife corridors.**						
Definitions		Agriculture – Large Holdings Policy Area: **an area that is intended to allow for the development of large/extensive agricultural operations on large, un-fragmented parcels that are greater than or equal to 32.3 hectares (80 acres).**			**5**			
Definitions (cont'd)		Agriculture – Small Holdings Policy Area: **an area intended to accommodate smaller agricultural operations and large parcel rural residential on parcels greater than or equal to 8.1 hectares (20**			ESA **means (a) hazard lands and areas which are unsuitable for development in their natural state (egg. floodplains, steep and unstable slopes); (b) areas which perform a vital environmental, ecological or hydrogeological function (egg. aquifer recharge of groundwater storage areas): (c) areas which contain unique geological or**			

Policy Area	Strathcona County (Draft)	Beaver County (Draft)	Leduc County	Lamont County	County of Camrose
	acres). Beaver Hills Moraine Policy Area: **an area that accommodates agriculture, residences tied to agriculture and low impact recreational uses. The primary intent of the Beaver Hills Moraine Policy Area, however, is to preserve the Beaver Hills Moraine ecosystem and landscape.** Green Infrastructure: **the ecological processes, both natural and engineered, that provide economic and environmental benefits in urban areas. These include but are not exclusive to: (a) creeks, streams and wetlands that retain and carry stormwater, improve water quality and provide habitat; (b) parks and greenways that link habitat and provide recreation opportunities; (c) working lands such as agricultural or forested areas; and (d) engineered wetlands; stormwater management facilities that retain stormwater and improve infiltration.** Priority Environmental Management Area: **areas that may or may not include sensitive environmental or natural resources. Numerous variables are considered in the ranking and mapping of priority environmental management areas which include wetlands, hydrology, rare species, groundwater, native vegetation, CLI soil class, topography, and natural area quality and sustainability (i.e. current land management, habitat type, ecological connectivity, ecological condition, and wildlife use.) The ranking of priority environmental management areas is as follows: (a) High Priority: an area that includes a large amount of sensitive environmental or natural resources; (b) Medium Priority: an area that includes a moderate amount of sensitive environmental or natural resources; (c) Low Priority: an area that has very few, if any, sensitive environmental or natural resources.** Riparian Corridors: **areas bordering streams, lakes, rivers, and other watercourses. These areas have high water tables and support plants requiring saturated soils during all or part of the year.**		**physiographic features; (d) areas, buildings or features which are important for cultural, historical, prehistoric or archaeological reasons; (e) areas which contain significant, rare or endangered animal and/or plant species; (f) areas which are unique habitats with limited representation in the region or areas that represent small remnants of previously abundant habitats which have virtually disappeared; (g) areas which contain large and relatively undisturbed habitats and provide sheltered habitats for species which are intolerant of human disturbance; and (h) areas which provide an important linking function and permit the movement of wildlife over considerable distances.** **6 ESA Study means the "ESAs Study: County of Leduc", prepared by D.A. Westworth & Associates Ltd. and published by the EMRPC in September 1990.**		

Table A2. Land Use Bylaw Provisions

Policy Area	Strathcona County (Draft)		Beaver County		Leduc County (Draft)		Lamont County		Camrose County	
DP Application Requirements	**3.2.4(n)**	**Geotechnical report, biophysical assessment, hydrogeological report, environmental site assessment, EIA may be required.**	**2.1.1(d)**	**Any information which is deemed necessary to evaluate a proposed development.**	**3.3.6**	**A DP application may be required to include a groundwater and/or geotechnical analysis to the satisfaction of the DA.**	**2.1.4**	**EIA may be required for industrial uses.**		
					9.17.8(a)	**For both agricultural and non-agricultural uses, the DA may require a EIA in order to ascertain whether a proposed development may have detrimental effects on the natural environment …**				
General Environment Regulations or Requirements	**6.6.5**	**A DO may increase any required setback or yard for any permitted or discretionary use where the regulation in the District would allow development that may be detrimental to the preservation of shoreland or environmentally sensitive areas, may be affected by being in a floodplain or in proximity to steep or unstable slopes, or may increase the degree of hazard.**	**7.3.2**	**The DA in considering an application may impose conditions requiring the retention of trees, or additional planting of such a type and extent that is considered necessary on any application for development.**	**6.5.5**	**Within an environmental setback, land disturbance and the removal of trees or vegetation shall be minimized to reduce environmental effects and the risk of property damage.**	**6.1.1**	**Site plan may be required detailing how vegetation, topography disturbance or erosion to be minimized.**	**6.14.2**	**The DO/MPC in considering an application may impose conditions requiring the retention of trees, or additional plantings of such a type and extent that are considered necessary for the approval of the development.**
					6.5.8	**The proponent of a development in or near an ESA may be required to submit an environmental impact analysis as part of the development permit application.**	**6.1.6**	**The DA may require the retention of trees or additional planting of such type and extent as considered necessary.**		
	6.6.6	**When new lots in the Rural Service Area are created that contain watercourses, building site areas shall be designed that will conform to these required environmental setbacks. The building site areas shall have a minimum developable area of 0.4 ha with a near surface ground water table of not less than 2.0 m below the surface. They shall be located to ensure positive drainage to the nearest receiving watercourse.**			**6.5.11**	**A DP issued for a permitted or discretionary within an ESA may include conditions for meeting specific environmental objectives determined by the DA. Such conditions may include, but are not limited to, restrictions on site clearing and grading, additional setback requirements, retention of shelterbelts, fencing, siting and standards of buildings, emission controls, and buffering requirements.**	**6.3.1**	**Site plan may be required for proposals within a Key Wildlife Area detailing how vegetation, topography disturbance or erosion to be minimized.**		
					6.5.12	**Removal of natural vegetation and alterations to the natural drainage of lands within or adjacent to an ESA shall be discouraged.**				
					6.15.3	**When considering an application for tree clearing, the DA shall have regard for the environmental significance of the area to be cleared and the potential impacts on adjacent lands.**				
DP Approval Processes	**3.3.1(a)**	**DO may refer DP application to any municipal, provincial, federal, or inter-jurisdictional department or any other agency or body**	**1.6.5(b)**	**DA may refer DP application to any federal, provincial or any other agency or body**	**3.4.3**	**The DA may refer an application to any municipal, provincial, federal or inter-jurisdictional department, or any other agency or person**	**6.2.2**	**DP applications within or adjacent to a Key Wildlife Area may be referred to AB Fish and Wildlife for comment.**		
					6.5.10	**When considering development involving land in or near an ESA, the DA may refer the application to**	**6.2.3**	**All subdivision proposals and DP applications for significant discretionary uses within 1.6 km**		

Policy Area	Strathcona County (Draft)	Beaver County		Leduc County (Draft)	Lamont County	Camrose County
				provincial departments and other relevant environmental agencies for comments prior to reaching a decision.	**of Elk Island NP shall be referred to Park Superintendent for comment.**	
			9.17.8(b)	**For both permitted and discretionary uses, the DA may impose development conditions, including those that may have been identified in an EIA, in order to mitigate any potential negative development impacts …**		
			9.17.8(c)	**The County may refer development, subdivision, redistricting, outline plan, ASP or ARP applications to the Province for review and comments for proposals involving lands that are possibly environmentally sensitive …**		
Environmental Districts (Purpose Statement)	**PC** **The** Conservation District **provides for the preservation of environmentally sensitive and significant areas and lands having significant natural capability for conservation, passive recreation, and education.**		**RLW**	**The** Lake Watershed Residential District **accommodates large predominantly treed residential lots within the lake watershed having due regard to environmental impacts including the integrity of the watershed, demands on lake access, and the adequate provision of utility servicing and roads. New residential lots created after passage of this Bylaw will be at least 2 ha within 400m of the lake and 5 ha for lots located further from the lake.**		**RR1** **The** Recreational Resort District Lower Density **conserves natural parkland and wooded areas around major lakes, preserves the scenic beauty of the area for public and private enjoyment, and to allow cottage development in areas compatible with watershed protection.**
			ROS	**The** Recreation/Open Space District **protects areas with unique or high scenic or natural values, while providing for primarily active and passive recreation activities, as well as educational uses and compatible agricultural and limited non-recreation land uses.**		**RR3** **The** Recreational Resort District Medium Density **provides for medium density resort cottage development adjacent to Miquelon Lakes while simultaneously maintaining its ecology.**
			LW	**The** Lake Watershed District **protects the integrity of the lakes and watersheds, preserving tree cover, and minimizing adverse environmental impacts while allowing for minimal development of recreational, residential and agricultural uses. Lot sizes in this district will be between 1.0 ha and 2.0 ha for a country residential acreage and no less than 8.0 ha for a residential woodlot.**		
Subdivision/Development Limitations	**AG** **2 parcels per quarter; 32 ha minimum lot size in most cases.**	**A** **1 parcel out. With exception of first parcel, 32 ha minimum.**	**AG**	**1–2 ha lot area for residential.**	**A1** **1 parcel out. 32 ha minimum for agriculture.**	**A** **1 parcel per quarter, 2 per quarter on poor land. 32 ha minimum for agriculture.**
			AGR	**1–2 ha lot area for residential.**		

Policy Area		Strathcona County (Draft)	Beaver County		Leduc County (Draft)		Lamont County		Camrose County
	RA	**8 ha minimum lot area.**		**RC**	**1–4 ha lot area**	**A2**	**1 parcel out. 32 ha minimum for agriculture.**	**CRA**	**1 ha lot area, max. 40 lots. Clear cutting of trees not permitted except to clear building site.**
	RC	**0.8 ha minimum lot area.**		**RA**	**0.4-1.2 ha lot area**			**CRA 1**	**1-2 ha, max 24 lots. Clear cutting of trees not permitted except to clear building site.**
	PC	**No regulations.**		**RLW**	**2-8 ha; 5-8 ha lot are more than 400m from lake. Extensive tree coverage shall be required for lots exceeding 2 ha.**			**CRB**	**12 ha lot area. Clear cutting of trees not permitted except to clear building site.**
				ROS	**1-8 ha lot area. Extensive tree coverage shall be required for lots exceeding 2 ha.**			**RR1**	**4 ha lot area.**
				LW	**1-8 ha lot area. Extensive tree coverage shall be required for lots exceeding 2 ha. All development shall be encouraged to retain existing tree cover and/or plant additional trees to reduce erosion and nutrient loading of the lake.**			**RR3**	**1 ha lot area**
Defined Terms		**“Conservation Easement”**	**“Lake”**		**“Conservation Easement”**				
					“Environmentally Sensitive Area”				
					“Environmentally Sensitive Area Study”				
					“Wildland”				

Table A3. Land Use Bylaw Subdivision Standard Comparison

Category	Strathcona County		Leduc County (Draft)		Beaver County *		Lamont County *		County of Camrose (Draft)	
	District	**Standards**	**District**	**Standards**	**District**	**Standards**	**District**	**Standards**	**District**	**Standards**
Agriculture	**Ag General - AG** Purpose to foster agriculture and conserve agricultural land outside of Urban Service Area.	2 parcels per quarter. 32 ha min. except for severances (may reduce to 8 ha for agricultural uses). 8 ha min. for intensive agriculture. 0.8 ha - 2 ha for first parcel residential (may be increased for improvements).	**Agricultural - AG** Purpose to provide for larger agricultural operations and limited higher intensity agricultural activities on smaller lots.	No density listed. 32.4 ha min. for agricultural lots (may be reduced), except for severances. 1 ha - 2 ha for residential. Non-agricultural parcels no larger than required for improvements unless in statutory or management plan.	**Agricultural - A** Purpose to permit activities associated with primary agricultural production.	1 parcel per quarter, except for severances. 1.2 ha min. for first parcel residential (0.4 ha for lots prior to 01/14/04). Half of quarter min. for other Permitted Uses. Min. size at discretion of DA for Discretionary Uses.	**Agricultural - A1** Purpose to permit activities associated with primary production and conserve large tracts for agricultural use.	1 parcel per quarter, excluding public or institutional uses. Includes (min.) 26.5 ha split, farmstead or country residential acreage, or severance. 0.4 ha - 1.21 ha for farmstead or country residential acreage (may be increased). 32.4 ha min. for extensive agriculture (may be reduced). 0.4 ha min. for severances.	**Agricultural - A** Purpose to accommodate agricultural land uses while having regard for character of the area.	1 parcel per quarter, excluding public or quasi-public use, on good agricultural land for farmstead, extensive agriculture or CFO. Severances allowed if natural split due to RR, streams. 40 ha min. for extensive livestock or extensive agriculture.
							Agricultural - A2 Purpose to allow a wider variety of agricultural and non-agricultural uses.	1 parcel per quarter, excluding public or institutional uses. Includes (min.) 26.5 ha split, farmstead or country residential acreage, of severance. 0.4 ha - 1.21 ha for farmstead or country residential acreage (may be increased). 32.4 ha min. for extensive agriculture (may be reduced). 0.4 ha min. for severances.		
Residential	**Rural Residential/Ag - RA** Purpose to foster agriculture and a rural lifestyle of properties larger than 8 ha.	8 parcels per quarter. 8 ha min. (4 ha if prior to 06/01) May be reduced to 4 ha for minor intensive agriculture or intensive horticulture.	**Country Residential - RC** Purpose to provide for residential development on larger acreage lots within multi-lot residential subdivisions.	Maximum density based on policies of MDP and other statutory plans. 1 ha - 4 ha.	**Country Residential - CR** Purpose to regulate the development of country residences.	No density listed. 1.2 ha min. (0.4 ha if prior to 01/14/04) for single lot country residential. (Will be updated to 2 ha min in upcoming revision of LUB) All other uses at discretion of DA.	**Small Holdings - SH** Purpose to provide opportunities for development of residential uses at rural densities.	No density listed. 2.83 ha min. for residential. All other uses at discretion of DA.	**Country Residential - CRA** Purpose to provide for country residential development while maintaining environmental qualities and natural beauty.	40 parcels per quarter. 1 ha min. for residential. 56 ha min. for agricultural uses. All other uses at discretion of MPC.
	Country Residential - RC Purpose to foster a rural residential lifestyle on residential properties of 0.8 ha or larger.	8 parcels per quarter. 8 ha min. (4 ha if prior to 06/01) May be reduced to 4 ha for minor intensive agriculture or intensive horticulture.	**Acreage Residential - RA** Purpose to provide for residential development on small acreage lots within multi-lot residential subdivisions.	Maximum density based on policies of MDP and other statutory plans. 0.4 ha - 1.2 ha.					**Country Residential - CRB** Purpose to provide for low density country residential development and hobby farming while maintaining ecology.	No density listed. 56 ha min. for agricultural uses. 12 ha min. for all other permitted uses. All discretionary uses at discretion of MPC.

Category	Strathcona County		Leduc County (Draft)		Beaver County *		Lamont County *		County of Camrose (Draft)	
	District	Standards	District	Standards	District	Standards	District	Standards	District	Standards
	Hamlet - RH Purpose to accommodate development in existing hamlets without an approved ASP.	0.2 ha min. 0.13 ha if municipal water or sewer 0.05 ha if both water and sewer								
Environment	**Conservation - PC** Purpose to provide for preservation of environmentally sensitive and significant areas.	No standards.	**Lake Watershed Residential - RLW**	2.0 ha minimum lot size within 400 m of lake, 5.0 ha minimum lot size further from lake. Clearing restrictions apply (<15% of lot, no clearing within 50 m of waterbody)					**Watershed Protection - WP** Noted on comparative map, but not in LUB text provided.	Covers areas around lakes. Similar standards to CRA and CRB
									Prov_Regs. Provincial Lands Noted on comparative map, but not in LUB text provided.	Lands under provincial jurisdiction
Recreation	**Recreation - PR** Provide wide range of parks and public and private recreation activities.		**Agricultural 2 - Ag2** Purpose to protect areas with unique or high scenic or natural values, while providing for primarily active and passive recreation activities.	Maximum density based on policies of MDP and other statutory plans. 1 ha - 8 ha.					**Lake Resort - LR** Noted on comparative map, but not in LUB text provided.	Lands considered R1 and R2 under current LUB.
Commercial	**Recreation Commercial - C6** Purpose to provide a range of seasonal commercial recreation and tourist uses and other recreation activities.									
Urban Expansion	**Ag Future Devel - AD** Purpose to provide transitional agricultural uses that will not prejudice the future use of land for urban development.	No standards.					**Urban Fringe - UF** Purpose to provide for orderly development around towns and villages.	1 parcel per quarter, excluding public or institutional uses. Includes (min.) 26.5 ha split, farmstead or country residential acreage, or severance. 0.4 ha - 1.21 ha for farmstead or country residential acreage (may be increased). 32.4 ha min. for extensive agriculture (may be reduced). 0.4 ha min. for severances.		
Other	**Utilities - PU** **Direct Control - DC**	No standards.								

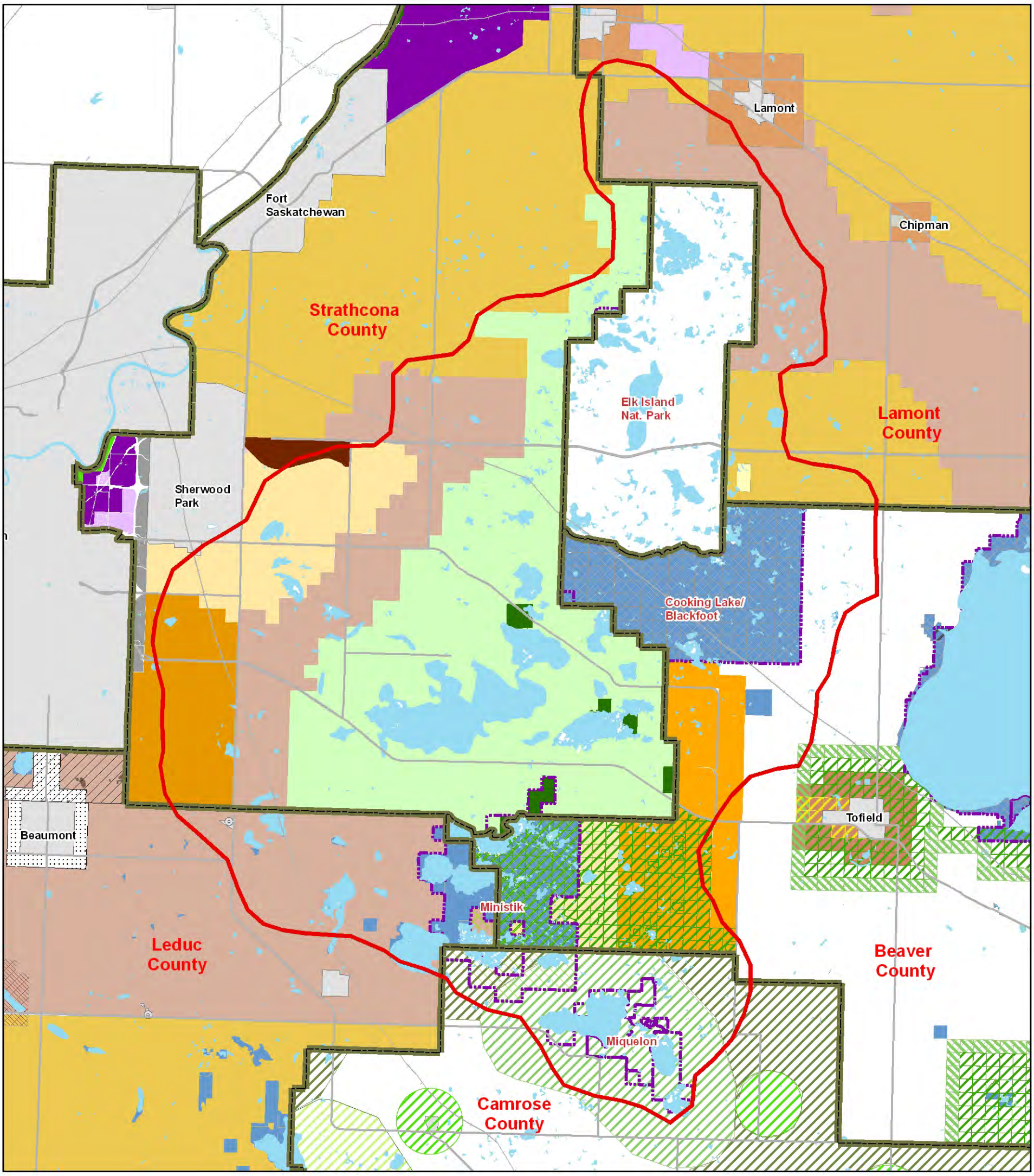
* These Counties will be updating their LUBs within this year

Appendix B: Alberta *EPEA* Regulations

Alberta *EPEA* Regulations

The provincial Environmental Protection and Enhancement Act is intended to provide sustainable development through a comprehensive system of management for natural resources. There are a number of regulations supporting the Act, which cover a broad range of environmental issues:

- Beverage Container Recycling Regulation (AR 128/93)
- Conservation and Reclamation Regulation (AR 115/93)
- Environmental Appeal Board (AR 114/93)
- Environmental Protection and Enhancement (Miscellaneous) Regulation (AR 118/93)
- Ozone-Depleting Substances Regulation (AR 125/93)
- Amendments to the Ozone-Depleting Substances Regulation (AR 125/93)
- Pesticide (Ministerial) Regulation (AR 43/97)
- Pesticide Sales, Handling, Use and Application Regulation (AR 24/97)
- Potable Water Regulation (AR 122/93)
- Release Reporting Regulation (AR 117/93)
- Substance Release Regulation (AR 124/93)
- Waste Control Regulation (AR 129/93)
- Wastewater and Storm Drainage Regulation (AR 119/93)
- Wastewater and Storm Drainage (Ministerial) Regulation (AR 120/93)



Legend

- Beaverhills Moraine
- County Boundary
- Railroads
- Highways
- Major Protected Areas
- Urban Areas

Lamont Land Use

LU Code, LU Zone

- A1 Agricultural
- A2 Agricultural
- Industrial/Commercial
- Small Holdings
- Urban Fringe
- Urban Area

Camrose MDP overlay

CFO Restriction Areas

- B - Smaller urban areas
- C - Recreational lakes
- E
- F

Strathcona Draft MDP

MDP_TYPE

- Agriculture Large Holdings Policy Area
- Agriculture Small Holdings Policy Area
- Beaver Hills Moraine Policy Area
- Colchester Growth Area
- Commercial Arterial Policy Area
- Commercial Community Policy Area
- Commercial Hwy 16 Policy Area
- Commercial Service Policy Area
- Conservation Policy Area
- Country Residential Policy Area
- Horticulture Small Holdings Policy Area
- Industrial Heavy Policy Area
- Industrial Light/Medium Policy Area
- Institutional Policy Area
- Low Residential Policy Area
- Medium Residential Policy Area
- Open Space
- Transportation Utility Corridor

Beaver Airport Overlay

- AP_Vicinity

Beaver CFO Overlay

- No CFO
- No Swine CFO

Beaver Wildlife Area Overlay

Special Status Wildlife Area

- SSWA
- SSWA?

Beaver Urban Buffer Overlay

CR Buffer

- Ministik Buffer
- Rural CR
- Urban Fringe CR

Crown Land

- Crown

Leduc Overlay Policy Areas Map 3

Area_name

- City of Leduc IDP
- Town of Beaumont IDP
- Nisku ASP
- Nisku West ASP
- Blackmud Creek ASP
- Ministik Lake Bird Sanctuary

Leduc Intermunicipal Fringe Area Map 4

Layer

- County_Edmonton Intermunicipal Fringe
- 4101-AGRI-SOIL-L

Leduc MDP Land Use Concept Map

LU_Area

- Agricultural Area A
- Agricultural Area B
- Edmonton International Airport
- North Major ASP

Leduc MDP Map 2 Overlays

LU_Area

- Crown Land
- Ministik Lake Sanctuary
- Saunders Lake ASP

Figure 2.
Comparative MDP Map

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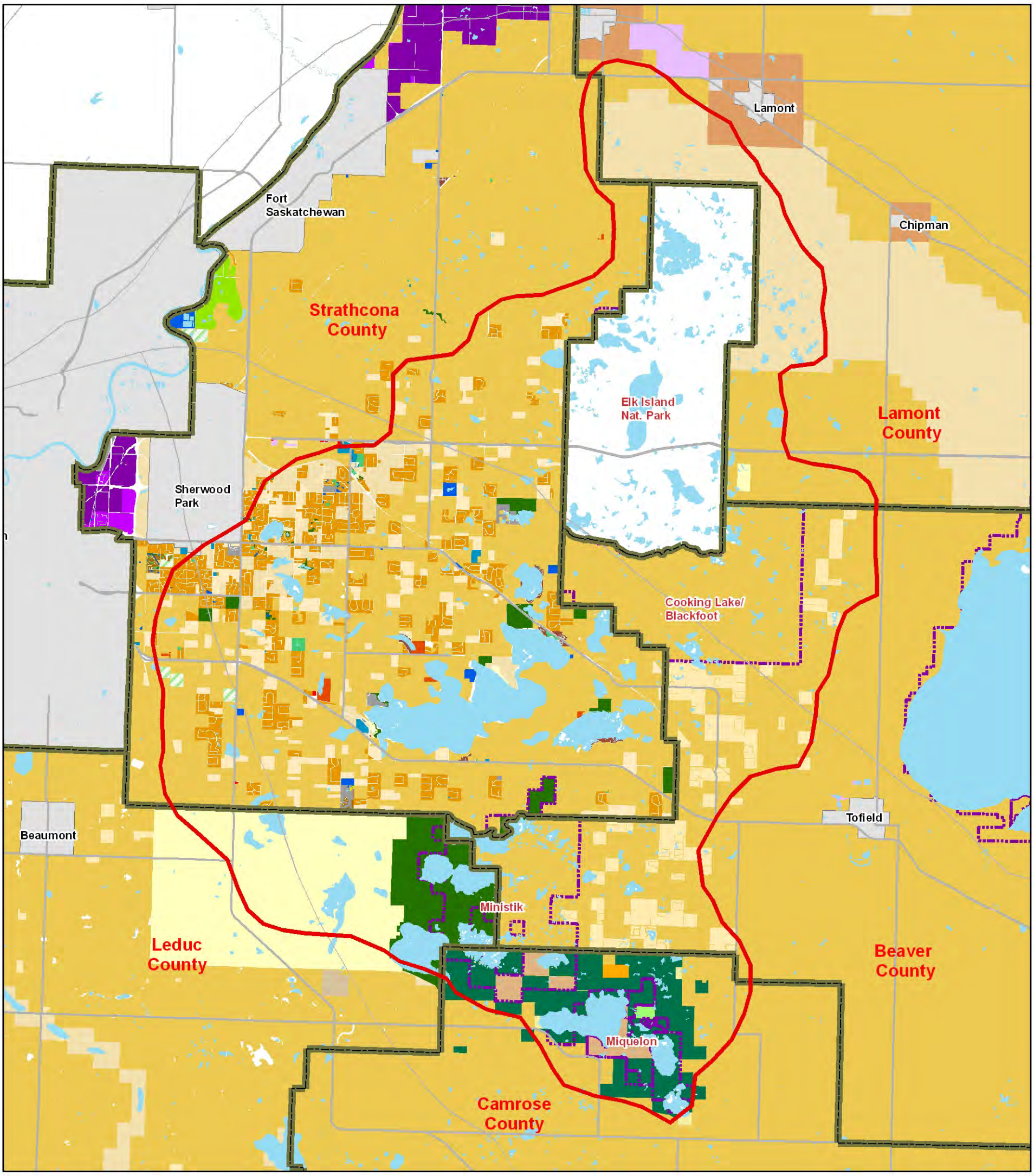

Legend

- Beaverhills Moraine
- County Boundary
- Railroads
- Highways
- Major Protected Areas
- Urban Areas

Lamont Land Use

LU Code, LU Zone

- A1, Agricultural
- A2, Agricultural
- IC, Industrial/Commercial
- SH, Small Holdings
- UF, Urban Fringe
- Urban Area

Beaver Land Use

LU Zone

- Agricultural
- Country Residential
- Rural Commercial
- Rural Industrial

Leduc Draft Land Use 2006

LU Code, LU Zone

- AG - Agricultural
- AG2 - Agricultural
- AG-CR Transitional
- RA - Acreage Residential
- RC - Country Residential
- RMH - Manufactured Home Residential
- RR - Resort Residential
- RCM - Rural Centre Mixed District
- CH - Highway Commercial
- CS - Service Commercial
- DC - Direct Control
- IAR - Industrial-Agricultural-Resource
- IND - Industrial
- GP - Genesee Power Project Overlay
- Hamlet
- Village
- Town
- Nisku
- City
- LW - Lake Watershed
- Lake Watershed (BH)

Strathcona Major Land Use

LU Code, LU Zone

- A, Airport
- AG, Agriculture General
- AR, Agriculture River Valley
- AD, Future Development
- C1, Community Commercial
- C2, Arterial Commercial
- C3, Highway Commercial
- C4, Major Commercial
- C5, Service Commercial
- C6, Recreation Commercial
- C7, Local Commercial
- DC34, Direct Control
- IL, Local Industrial
- ILT, Light Industrial District
- IM, Medium Industrial
- IH, Heavy Industrial
- PC, Conservation
- PG, Golf Course
- PR, Recreation
- PS, Services
- PU, Utilities
- R1A, Single Detached Residential A
- R1B, Single Detached Residential B
- R1C, Single Detached Residential C
- R2A, Semi Detached Residential
- R3, Low Density Multiple
- R4, Medium Density Multiple
- R5, High Density Multiple
- RA, Rural Residential/Agriculture
- RC, Country Residential
- RE, Estate Residential
- RH, Hamlet
- RM, Manufactured Home

Camrose Draft Land Use

LU Code, LU Zone

- A, Agriculture
- CR-1, Country Residential 1
- CR-2, Country Residential 2
- RMX, Residential Mixed Use
- RC, Rural Commercial
- RI, Rural Industrial
- G3, General Urban Industrial District
- UREC, Urban Recreational
- LR, Lake Resort
- WP, Watershed Protection
- Prov_Regs, Provincial Lands

Figure 3.
Comparative LUB Map

1:250,000

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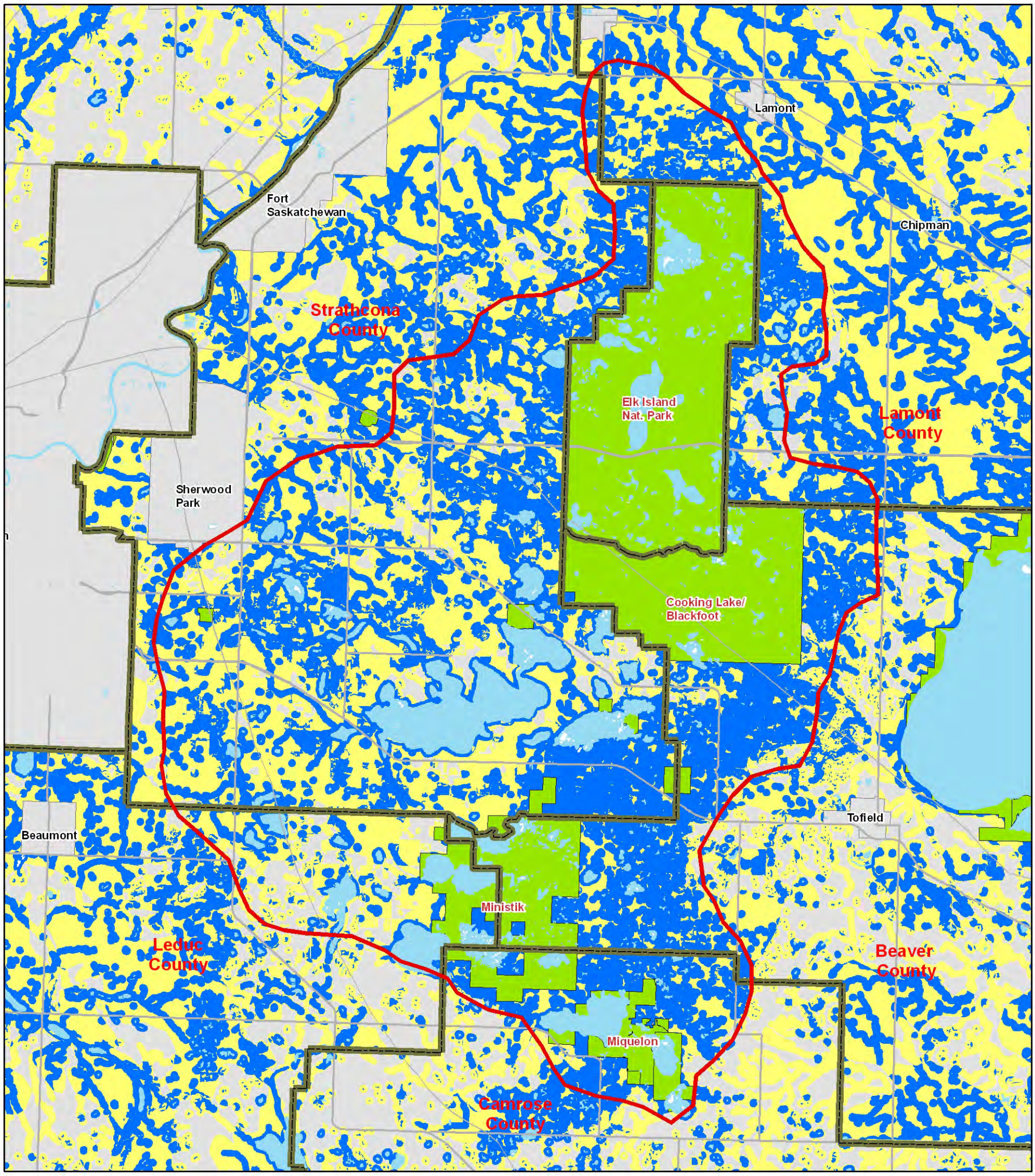

Legend

- Beaverhills Moraine
- County Boundary
- Railroads
- Highways
- Protected Areas
- Urban Areas

BHI LMA Areas

- Blue
- Yellow
- White

Figure 4.
Landscape Management Areas

1:250,000

N

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