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## **Alberta's Riparian Land Governance System**

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## **Abstract**

In Alberta, intact riparian lands are critical for sustaining water quality and quantity in wetlands, streams, rivers, lakes and alluvial aquifers. Constantly changing and adapting to surface and groundwater systems that sustain them, intact riparian lands provide numerous ecosystem services for humanity.

Riparian lands are aquatic environments or ‘aquatic ecosystems’ that reflect the presence of water. They are difficult to define and even more difficult to delineate and map. As diverse landscape features adjacent to surface water bodies, shallow alluvial aquifers and groundwater springs and seeps, they vary in extent and width both above and below ground with the fluctuation of water quantity and flow rates. They are complex, dynamic systems with distinctive combinations of soils and flora and fauna that require the presence of water to survive.

Legal pluralism regarding riparian lands - the plethora of societal rules, norms and best practices for controlling and managing human activities and interactions on or near riparian land - is alive and well in Alberta. Overlapping, and sometimes conflicting, federal, provincial, regional and municipal regulatory and management systems have been firmly entrenched for decades with little change. Depending on where riparian lands are located, for example on federal land, provincial public land, or privately owned property, there are often inconsistent regulatory and management systems governing how people interact with these landscape features. The governance system, that includes the diverse stakeholders involved in governing, is as complex and dynamic as the riparian landscape the system is intended to govern.

As population and economic growth continue in Alberta in the face of climate change, riparian lands will continue to be negatively impacted by urban land development, rural agricultural operations, and industrial encroachments unless the governance system becomes more effective at sustaining critical riparian land functions.

The purpose of this paper is to examine Alberta’s current cross-scalar riparian land governance system: this includes the people who govern, and the policies, laws, regulations, institutional arrangements and management strategies they implement. Taking a look at the riparian land governance system as a whole, and examining the many structural couplings of subsystems within, may help politicians, lawyers, land use planners, industry stakeholders, and landowners to identify emergent riparian land governance issues that require systemic improvements. Some recommendations for necessary systemic changes are included.

\*Dr. Judy Stewart is a Research Fellow at the Canadian Institute of Resources Law.

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## List of Acronyms

<b><u>Acronym</u></b>	<b><u>Description</u></b>
<b>ALSA</b>	<i>Alberta Land Stewardship Act</i>
<b>AWC</b>	Alberta Water Council
<b>Calgary's Strategy</b>	<i>Riparian Strategy: Sustaining Healthy Rivers and Communities Riparian Strategy: Sustaining Healthy Rivers and Communities</i>
<b>Edmonton's Growth Plan</b>	<i>Re-imagine, Plan, Build: Edmonton Metropolitan Region Growth Plan</i>
<b>ER</b>	Environmental Reserves
<b>EPEA</b>	<i>Environmental Protection and Enhancement Act</i>
<b>FHA</b>	Flood Hazard Area
<b>IDP</b>	Intermunicipal Development Plans
<b>LARP</b>	<i>Lower Athabasca Regional Plan, 2012-2022</i>
<b>LUBs</b>	Municipal Land Use Bylaws
<b>LUF</b>	<i>Alberta Land-use Framework</i>
<b>LUPs</b>	<i>Alberta Land Use Policies, 1996</i>
<b>MDP</b>	Municipal Development Plan
<b>MGA</b>	<i>Municipal Government Act</i>
<b>OHV</b>	Off Highway Vehicle
<b>Part 17</b>	Part 17: Planning and Development, MGA
<b>Province</b>	Province of Alberta, Alberta
<b>RAP</b>	<i>The Riparian Action Program: A Blueprint for Resilience</i>
<b>SSRP</b>	<i>South Saskatchewan Regional Plan, 2014-2024</i>
<b>SSRP Water Quality Framework</b>	<i>SSRP Surface Water Quality Management Framework</i>
<b>Stepping Back</b>	<i>Stepping Back from the Water: A Beneficial Management Practices Guide for New Development Near Water Bodies in Alberta's Settled Region</i>
<b>The Report</b>	<i>Riparian Land Conservation and Management Report and Recommendations</i>
<b>Water For Life</b>	<i>Water For Life: Alberta's Strategy for Sustainability</i>
<b>WCO</b>	Water Conservation Objective
<b>WPAC</b>	Water Planning and Advisory Council
<b>WSG</b>	Water Stewardship Group



## 1.0 Introduction to riparian lands

In Alberta, intact<sup>1</sup> riparian lands are critical for maintaining water quantity and quality in wetlands, streams, rivers, lakes, and aquifers, and for sustaining watershed health.<sup>2</sup> They ‘buffer’ receiving water bodies<sup>3</sup> during heavy precipitation and spring snowmelt events by filtering out and absorbing sediment, chemicals and other contaminants commonly found in urban storm drainage, and industrial and agricultural runoff.

Many Albertans are able to identify riparian lands as the vegetated green areas adjacent to surface water bodies, shallow alluvial aquifers and groundwater springs and seeps.<sup>4</sup> They recognize that riparian lands reflect the presence of water and the dynamic exchanges of energy, nutrients and materials as water flows beside, on, over and under the land. They understand that riparian lands are complex, dynamic landscape features with combinations of soils and flora that require different saturations of water to survive and provide habitat for other forms of life.<sup>5</sup>

A growing number of Albertans also recognize that riparian lands are self-regulating and evolving aquatic ecosystems, or ‘aquatic environments’ as defined in the *Water Act*.<sup>6</sup> While sometimes referred to as ‘riparian areas’, ‘riparian zones,’ or ‘riparian buffers,’ these lands emerge from the submerged beds and shores of water bodies and transition to dryer uplands.<sup>7</sup> Landscape ecologists

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<sup>1</sup> Riparian ‘**intactness**’ is a scientific methodology to measure the extent and health of riparian landscapes. See Fiera Biological Consulting, “Assessing Riparian Condition Using GIS and Remote Sensing,” (nd), online: <https://www.fieraconsulting.ca/case-studies/assessing-riparian-condition-using-gis-and-remote-sensing/>. (Accessed on April 21, 2020.) “Given the large area of riparian habitat within Alberta, Fiera Biological responded to the pressing need to develop a riparian assessment method that is rapid, reliable, repeatable, comparable, and objective. This GIS-based assessment method allows for a general assessment of riparian intactness for stream and lake shorelines using land cover layers derived from satellite data, thereby allowing for the assessment of riparian areas over large spatial extents.”

<sup>2</sup> Clare, S. and G. Sass. *Riparian lands in Alberta: Current state, conservation tools, and management approaches*. Report prepared for Riparian Land Conservation & Management Project Team, Alberta Water Council, Edmonton, Alberta. 2012, Fiera Biological Consulting Ltd. Report #1163, online: [https://d3n8a8pro7vhmx.cloudfront.net/yycbares/pages/20/attachments/original/1498653268/RiparianLands\\_FINAL\\_V2.pdf?1498653268](https://d3n8a8pro7vhmx.cloudfront.net/yycbares/pages/20/attachments/original/1498653268/RiparianLands_FINAL_V2.pdf?1498653268) [Clare and Sass] at pp.1-4. (Accessed on April 21, 2020.) See also, Judy Stewart, “Municipal Direction, Control and Management of Local Wetlands and Associated Riparian Lands: Section 60 of Alberta’s Municipal Government Act.” *Alta. L. Rev.* 47 (2009): 73 at pp. 75-79. (Accessed on May 1, 2020.)

<sup>3</sup> ‘**Water bodies**’ are defined in the *Water Act*, R.S.A. 2000, c.W-3, [Water Act] as follows: ss.1(ggg): ‘water body means any location where water flows or is present, whether or not the flow or the presence of water is continuous, intermittent or occurs only during a flood, and includes but is not limited to wetlands and aquifers....’

<sup>4</sup> See Government of Alberta, ‘Shorelands-Riparian Areas’ (nd), online: <https://www.alberta.ca/shorelands-riparian-areas.aspx>. (Accessed on April 21, 2020.) ‘Riparian areas: are lush, vegetated lands beside streams, rivers, lakes and wetlands; have vegetation and soils strongly influenced by the presence of water; make up only a small fraction of the land; are among the most productive and valuable of all landscape types.’ This description reflects the most common understandings among Albertans about riparian lands.

<sup>5</sup> Clare and Sass, *supra* note 2 at pp. 24-25.

<sup>6</sup> *Water Act*, *supra* note 3: ss. 1(h) ‘**aquatic environment** means the components of the earth related to, living in or located in or on water or the beds or shores of a water body, including but not limited to (i) all organic and inorganic matter, and (ii) living organisms and their habitat, including fish habitat and their interacting natural systems.’

<sup>7</sup> Government of Alberta, *Stepping Back From The Water: A Beneficial Management Practices Guide for New Development Near Water Bodies in Alberta’s Settled Region*, 2012, online: <https://open.alberta.ca/dataset/1c70eb43-a211-4e9c-82c3-9ffd07f64932/resource/6e524f7c-0c19-4253-a0f6-62a0e2166b04/download/2012-SteppingBackFromWater-Guide-2012.pdf> at p. 10. [Stepping Back]. (Accessed on May 1, 2020.) Also see Clare and Sass, *supra* note 2 at p. 3.

have identified three distinct riparian zones that provide different aquatic ecosystem functions, as described in *Stepping Back From the Water: A Beneficial Management Practices Guide for New Development Near Water Bodies on Alberta's Settled Region* [Stepping Back].<sup>8</sup> Stepping Back is Alberta's only guidance document regarding delineation of 'riparian setbacks' and 'riparian buffers,' and is intended for use by municipal planners for *new development* on privately owned land that contains or is near a water body. The zones include:

- ***the inner or streamside zone*** along the banks of surface water bodies where land first emerges from the water;
- ***the middle zone*** that is inland from the legal bank and usually includes the 1:100 year flood hazard area [FHA]<sup>9</sup> and steep slopes that rise up from the water; and
- ***the outer zone***, which is the vegetated riparian area that transitions into dryer uplands.<sup>10</sup>

An intact inner or streamside riparian zone consists of undisturbed vegetation along the bank with a complex root system that is critical for preventing bank erosion. The streamside riparian zone provides shade that regulates the water temperature for aquatic flora and fauna.

An intact middle riparian zone consists of spongy soil, organic and inorganic matter and flora that not only filter out sediment and chemicals from storm drainage and runoff, but store spring snowmelt in soils and root systems while recharging groundwater in associated shallow and alluvial aquifers. When intact, the middle riparian zone also mitigates against drought conditions by slowly releasing stored water during the summer months.

An intact outer riparian zone is furthest away from the water body, and is heavily vegetated with mature trees, shrubs, and grasses that survive when water is present in different quantities at different times of the year. The outer riparian zone provides the initial riparian filtering system. Inorganic and organic materials in the outer zone slow down the speed of storm drainage or runoff while trapping and absorbing sediment and chemicals. When intact, this zone protects the inner and streamside zones from the negative impacts of human enterprise, thereby preventing stream bank erosion and water pollution.<sup>11</sup> ***Conserving and managing the outer riparian zone is, therefore, the most critical element in any riparian land management system.***

Constantly changing and adapting to fluctuating levels of water in the water bodies, aquifers and springs that sustain them, intact riparian lands provide numerous ecosystem services for humanity. Stepping Back identifies 19 critical functions performed by intact riparian lands, categorized under five general headings, as follows:

- (a) Water Quality Functions;
- (b) Flood Water Conveyance and Storage;
- (c) Bank and Shoreline Stabilization;
- (d) Habitat and Biodiversity; and
- (e) Social and Economic Benefits.<sup>12</sup>

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<sup>8</sup> Stepping Back, *supra* note 7 at pp. 45-46.

<sup>9</sup> Government of Alberta, 'Flood Hazard Map Application,' (nd) online: <https://maps.alberta.ca/FloodHazard/>. (Accessed on June 1, 2020.)

<sup>10</sup> Stepping Back, *supra* note 7 at p. 45.

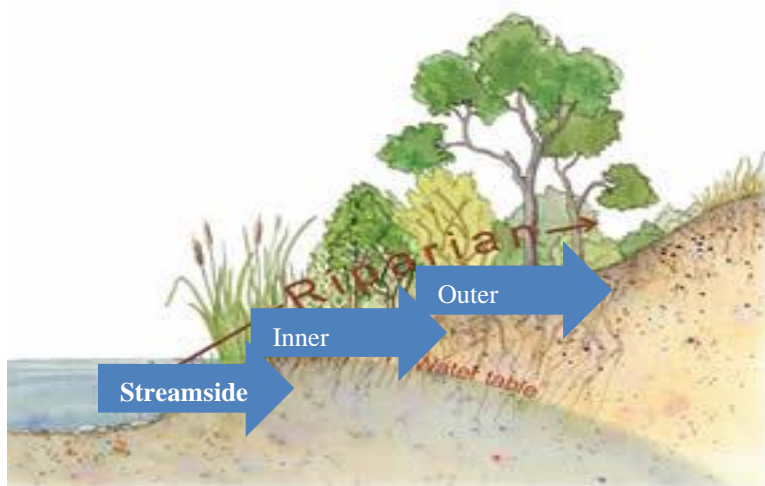
<sup>11</sup> *Ibid.*

<sup>12</sup> Stepping Back, *supra* note 7 at p. 11.

As Alberta's population and economic growth continue in the face of climate change, riparian lands in all three riparian zones continue to be negatively impacted by urban land development, rural agricultural operations, and industrial encroachments. These activities strip away surface vegetation, topsoil, and sometimes even the subsurface gravel and sand deposits. Usually, the land is then compacted to prepare for buildings and infrastructure, such as telecommunication corridors, pipelines, roads, and trails. The ability of degraded riparian land to function and provide quality ecosystem services is significantly reduced when the physical structure is altered.

***Of significant concern, Alberta's regulatory system does not protect riparian lands in the outer zone for their critical natural buffering functions.*** Where regulations do exist, they control some human activities or require minimal building and development setbacks from the water's edge. Lands protected in riparian setbacks in both the streamside and middle zones are often used for trails and park infrastructure, such as boat docks, and to allow public access to the water. These developments often defeat the purpose of regulatory intervention to protect riparian land functions. Often, urban water treatment facilities and wastewater and storm drainage infrastructure destroy the physical structure of all three riparian zones to build and maintain access, pipelines and parking lots.

**Figure 1: Illustration of three riparian zones**



**Source: Modified by Judy Stewart from Cows and Fish, 'What is Riparian.'**<sup>13</sup>

In Alberta, legal pluralism abounds in the provincial, regional and municipal governance systems that regulate and manage human activities and interactions on or near riparian land. Depending on whether riparian land is located on federally owned lands, provincial public lands, or privately owned parcels, there are different regulatory, institutional, and management systems in place. ***The complex, cross-scalar riparian land governance system includes political, regulatory, institutional and management subsystems, as well as the diversity of 'governors,' including regulators, non-government agencies, landowners, industry and public stakeholders.***

<sup>13</sup> Cows and Fish, 'What is Riparian,' (nd) online: <http://cowsandfish.org/riparian/riparian.html> [Cows and Fish]. (Accessed on May 1, 2020.)

Generally, the riparian land governance system is riddled with gaps where no regulations, institutions, or management practices apply at all.

The purposes of this paper are threefold: to examine Alberta's current riparian land governance system; to identify emergent governance issues; and to propose potential systemic improvements. First, riparian lands are defined using an ecological definition developed by the Alberta Water Council [AWC].<sup>14</sup> Second, Alberta's riparian land governance system is unravelled and presented in a series of figures and tables. Third, the regulatory, institutional and management subsystems are further examined to identify critical elements of each at different scales of government: federal, provincial, regional, and municipal. Finally, gaps in the governance system are identified with recommendations for systemic improvements.

## 2.0 An ecological definition of riparian land

Currently, there is no legal definition of 'riparian land' in Alberta, nor is the term defined in any federal law or regulation. In 2013, the AWC, a provincial-scale volunteer partnership formed under *Water For Life: Alberta's Strategy for Sustainability* [Water For Life],<sup>15</sup> gathered up a multi-sector Project Team to report on the status of Alberta's riparian land conservation and management system. The *Riparian Land Conservation and Management Report and Recommendations* [The Report]<sup>16</sup> includes an '**ecological definition**' of riparian land that was developed through a collaborative, iterative process to 'advance and inform conservation and management outcomes'<sup>17</sup> among the various AWC sectors. The ecological definition provides key ecological characteristics of riparian lands and is intended to help land use decisions-makers and landowners engage in conservation and management best practices.

Riparian lands are transitional areas between uplands and aquatic ecosystems. They have variable width and extent above and below ground and perform various functions. These lands are influenced by and exert an influence on associated water bodies, including alluvial aquifers and floodplains. Riparian lands usually have soil, biological, and other physical characteristics that reflect the influence of water and hydrological processes.<sup>18</sup>

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<sup>14</sup> Alberta Water Council, 'Welcome to Alberta Water Council,' (nd), online: [www.awchome.ca](http://www.awchome.ca). (Accessed on July 29, 2020.) 'Established in 2004 and incorporated as a not-for-profit society in 2007, the Alberta Water Council is a collaborative partnership that provides leadership, expertise, and sector knowledge and perspectives to help governments, Indigenous Peoples, industry, and non-governmental organizations to advance the outcomes of *Water for Life* and other water management priorities. The Council is made up of 24 Members from governments, industry, and non-government organizations. Guided by its vision of all Albertans working together to ensure safe, healthy and abundant water for future generations, the Alberta Water Council brings together the expertise and experience of its members, under a consensus-based partnership.'

<sup>15</sup> Government of Alberta, *Water For Life: Alberta's Strategy for Sustainability*, 2013, online: <https://open.alberta.ca/dataset/77189444-7456-47f7-944c-085272b1a79c/resource/17c41dc3-1692-4cf9-b931-2892c57a62b1/download/2003-water-life-albertas-strategy-sustainability-november-2003.pdf> [Water For life]. (Accessed on July 2, 2020.)

<sup>16</sup> Alberta Water Council, *Riparian Land Conservation and Management Report and Recommendations*, 2012, online: <https://www.awchome.ca/projectdocs/?file=e807bf3e2ed51423> [The Report]. (Accessed on June 1 1, 2020.)

<sup>17</sup> The Report, *supra* note 16 at p.10.

<sup>18</sup> *Ibid.*



The AWC Project Team was emphatic that the definition was ‘not intended to approve, prescribe or imply management restrictions, particularly in relation to regulation.’<sup>19</sup>

Although a legal definition of riparian land remains elusive in Alberta, some municipal land use bylaws [LUB] reflect the characteristics identified in AWC’s ecological definition. Table 1 provides examples of LUB definitions from the Calgary Metropolitan Region. They illustrate an evolution of understanding of key characteristics of riparian land based on initial work done by Alberta Riparian Habitat Management Society [Cows and Fish],<sup>20</sup> a volunteer non-profit society that works directly with landowners to achieve healthy riparian landscapes.

**Table 1: The evolution of municipal definitions of riparian land in the Calgary Metropolitan Region**

(Note: Calgary’s LUB does not define riparian land.)

<b>Municipality</b>	<b>Definition</b>	<b>Document</b>	<b>Year</b>
<b>Town of Cochrane</b>	<b>Riparian lands</b> means the lands adjacent to streams, rivers, wetlands, lakes, and other water bodies, where the vegetation and soils show evidence of being influenced by the presence of water. Riparian areas are the green zones around lakes, rivers, and wetlands. They are the transitional zone between surface water and the drier uplands and play a vital role in the healthy functioning of both.	<i>Cochrane Land Use Bylaw 01/2004</i> <b>(Based on Cows and Fish definition)</b>	<b>2004</b>
<b>City of Chestermere</b>	<b>Riparian lands</b> means lands adjacent to streams, rivers, wetlands, lakes, or other water bodies, where the vegetation and soils show evidence of being influenced by the presence of water. Riparian areas are transitional zones between surface water and drier uplands and play a vital role in the healthy functioning of both.	<i>Chestermere Land Use Bylaw No. 022-10</i>	<b>2010</b>
<b>Rockyview County</b>	<b>Riparian Protection Area</b> means the lands adjacent to naturally occurring watercourses, which the County has deemed necessary to protect by limiting certain forms of development within this area. The purpose and intent of the riparian protection area is to conserve and manage riparian lands. The riparian protection area is based on the Province of Alberta’s “Stepping Back from the Water Guidelines: A Beneficial Management Practices Guide for New Development near Water Bodies in Alberta’s Settled Region” as amended.	<i>Rockyview Land Use Bylaw C-4841-97</i>	<b>2014</b>
<b>Municipal District of Foothills</b>	<b>Riparian areas</b> means lands adjacent to a watercourse where the vegetation and soils show evidence of being influenced by the presence of water, the green zone around a watercourse, and the transitional zone between surface water and drier uplands which plays a vital role in the healthy functioning of both.	<i>Foothills Land Use Bylaw No. 60/2014</i>	<b>2014</b>
<b>City of Airdrie</b>	<b>Riparian area</b> means the lands adjacent to streams, rivers, wetlands, lakes, and other water bodies, where the vegetation and soils show evidence of being influenced by the presence of water. Riparian areas are the green zones around lakes, rivers, and wetlands. They are the transitional zone between surface water and the drier uplands and play a vital role in the healthy functioning of both.	<i>City of Airdrie Land Use Bylaw B-01/2016</i>	<b>2016</b>

<sup>19</sup> *Ibid.*

<sup>20</sup> Alberta Riparian Habitat Management Society, (nd) online: <https://cowsandfish.org/> “At Cows and Fish, we strive to foster a better understanding of how improvements in grazing and other management of riparian areas can enhance landscape health and productivity, for the benefit of landowners, agricultural producers, communities and others who use and value riparian areas.”

In *Stepping Back*, published in 2012, the Province identified 17 Alberta municipalities with policies and bylaws ‘affecting riparian areas.’ Most referred to ‘buffer strips’ and ‘setbacks’ from the water’s edge.<sup>21</sup> However, when Clare and Sass<sup>22</sup> completed their background study for the AWC in 2012, only Cochrane’s LUB included a so-called ‘legal definition’ of riparian land. In 2021, Cochrane’s LUB is being amended and the riparian land definition is being removed along with the LUB provisions that protected the lands from new development.

In 2013, the City of Calgary adopted the *Riparian Strategy: Sustaining Healthy Rivers and Communities* [Calgary’s Strategy].<sup>23</sup> In 2017, the city followed up the policy with *The Riparian Action Program: A Blueprint for Resilience* [RAP].<sup>24</sup> While Calgary’s Strategy and the RAP frame a comprehensive city-scale riparian land management system, the city does not define ‘riparian land.’ Instead, the RAP includes typical poetic verbiage about riparian areas based on earlier Cows and Fish information booklets.<sup>25</sup>

Riparian areas unfold like ribbons across our watershed, encompassing landscapes where land and water interact. They border rivers, creeks and wetlands and extend across the floodplain, down into the groundwater and upwards to include plants and trees ... These areas are unique ecosystems largely defined by the complex interactions that happen when land meets water. Along the water’s edge, higher-than-average levels of nutrient exchange give rise to rich soils that store water and support a diversity of plant and animal life. This natural diversity sustains many ecological, social and economic benefits that we depend on, including clean drinking water, resilience to flood and drought, plant and animal life, recreational opportunities and experiences of nature within our urban environment.<sup>26</sup>

While comprehensive, Calgary’s description of *riparian areas* does not lend itself easily to legal interpretation or scientific delineation of riparian lands, but perhaps the earlier definition in *Stepping Back* does:

Riparian areas are the place where water and land meet and interact. It is the interaction part that best defines a riparian area. They usually are distinctly different from surrounding lands because of unique soil and vegetation characteristics that are influenced by the presence of water above the ground and below the surface.<sup>27</sup>

The definitions and descriptions of riparian lands and areas in the Calgary Metropolitan Area confirm the AWC findings regarding *key ecological characteristics*. To sum up: intact riparian lands:

- are transitional lands between the water’s edge and dryer uplands;
- have variable width and extend both above and below the surface;

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<sup>21</sup> *Stepping Back*, *supra* note 7 at pp. 74-77.

<sup>22</sup> Clare and Sass, *supra* note 2.

<sup>23</sup> City of Calgary, *Riparian Strategy: Sustaining Healthy Rivers and Communities*, 2013, online: <https://www.calgary.ca/uep/water/watersheds-and-rivers/riparian-areas.html> [Calgary’s Strategy]. (Accessed on June 29, 2020.)

<sup>24</sup> City of Calgary, *The Riparian Action Program: A Blueprint for Resilience*, 2017, online: <https://www.calgary.ca/uep/water/watersheds-and-rivers/riparian-areas.html> [RAP]. (Accessed on June 29, 2020.)

<sup>25</sup> Cows and Fish information booklets include *Caring for the Green Zone: Riparian Areas and Grazing Management*; and *Riparian Areas: A User’s Guide to Health*, online: <https://cowsandfish.org/product-category/riparianareasandmanagement/>. (Accessed on June 29, 2020.)

<sup>26</sup> RAP, *supra* note 24 at p.5

<sup>27</sup> *Stepping Back*, *supra* note 7 at p.10.

- perform various ecological functions;
- are influenced by and exert an influence on associated water bodies, including alluvial aquifers and floodplains; and
- have soil, biological, and other physical characteristics that reflect the influence of water and hydrological processes.

A common problem for a governing agent (governor) who is trying to develop policy, rules or practices to control human activities and interactions on or near riparian land is that most government decision-makers, stakeholders and landowners do not have the required scientific background to define or delineate these landscape features. ***The lack of a provincial definition and approved methodology for identifying, delineating and mapping riparian lands is a major gap in the governance system.***

Understanding the five key characteristics and five key functions of intact riparian lands is critical to understanding how they might possibly be governed and managed through human interventions to sustain those functions.

### 3.0 Governance as a social system

Alberta's current riparian land governance system is both complex and dynamic. The system includes *social, political, regulatory, institutional, and management subsystems*. It is *cross-scalar* and includes a diversity of regulators, non-government agencies, landowners, and interested industry and public stakeholders who 'govern.' In this sense, governing human activities and interactions on or near riparian lands requires that all the people involved are 'steering and guiding'<sup>28</sup> the system in the same direction as it evolves over time.

*A system is made up of two or more elements interacting within an environment.*<sup>29</sup> As the elements interact with one another, new elements may emerge within the system as '*emergent phenomena*.' Emergent phenomena contribute to adaptations and evolution of the system over time.<sup>30</sup> As a result, "*the whole is greater than the sum of its parts,*"<sup>31</sup> and also very different from any of its parts. Most system elements also interact with their environment and these interactions determine the system's boundaries and structure. The structure of a system affects the functions that it is able to perform both internally and externally in its environment.<sup>32</sup> This is true of any governance system, including Alberta's riparian land governance system.

<sup>28</sup> Gerry Stoker, "Governance as theory: five propositions," *International Social Science Journal* (1998) 50:155 at 17-18 [Stoker].

<sup>29</sup> Ludwig Von Bertalanffy, 'The History and Status of General Systems Theory,' *Academy of Management Journal* (1972): 15: -4, online: <https://doi.org/10.5465/255139> [Bertalanffy]. (Accessed on July 1, 2020.)

<sup>30</sup> Marina Alberti et al., "Integrating humans into ecology: opportunities and challenges for studying urban ecosystems." *BioScience* 53, No. 12 (2003): 1169-1179.

<sup>31</sup> "The whole is greater than the sum of the parts" is attributed to Aristotle in Aristotle's *Metaphysics*: Book VIII, 1045a.8–10. Scholar, *Systems Thinking, SE Philosophy, Emergence* (nd), online: <http://se-scholar.com/se-blog/2017/6/23/who-said-the-whole-is-greater-than-the-sum-of-the-parts>. (Accessed on June 1, 2020.)

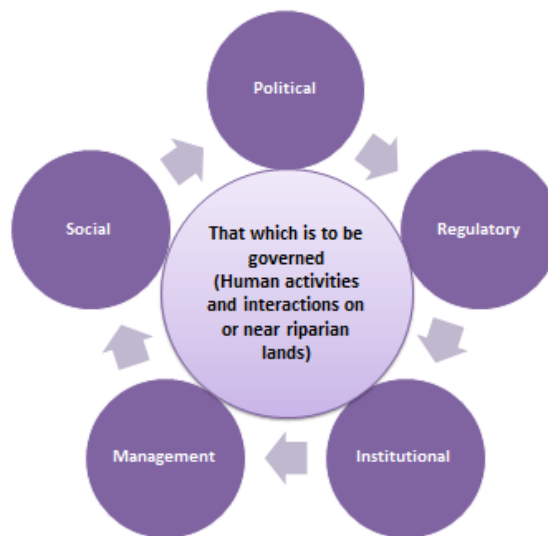
<sup>32</sup> Bertalanffy *supra* note 29. Also see Judy Stewart (2016). *A Reflexive Legal Framework for Bridging Organizations in Regional Environmental Governance and Management* (Unpublished doctoral thesis). University of Calgary, Calgary, AB. [Stewart, 2016], online: doi:10.11575/PRISM/24994. (Accessed on May 1, 2020).

### 3.1 A governance system is inherently a social system.<sup>33</sup>

Governance systems are critical elements of *'human ecology'*: the study of human societies, their evolution, and the effect people have on each other, other organisms, and the environment.<sup>34</sup> Humans are the most dominant species on the planet,<sup>35</sup> with human structures and artifacts found everywhere on Earth, in the biosphere, and even outer space. Humans affect all other ecosystems on the planet.

Figure 2 below is an illustration of critical elements, *or subsystems*, found within any governance system. These can be broken down into further elements, and so on. Each subsystem within a governance system affects the whole, but is also affected by other subsystems working in consort. The whole and the parts of the whole co-adapt and co-evolve as the system responds to both internal feedback and external feedback from its environment.

**Figure 2: Critical Elements of a Governance System**



**Source: Judy Stewart**

All subsystems are interconnected with everything else in the system, and some are *structurally coupled*,<sup>36</sup> which means that they are inextricably connected to one another and function within fluctuating and transitioning subsystem boundaries. For example, over time, policies formulated in the political subsystem become laws in the regulatory system.

Figures 3 and 4 below further illustrate the subsystems that interact within any governance system no matter what subject matter is to be governed (for example, human activities and interactions on or near riparian lands). All three figures repeat a human-form pattern to illustrate that a governance

<sup>33</sup> Niklas Luhmann, "Law as a social system." *Nw. UL Rev.* 83 (1988): 136.

<sup>34</sup> Amos A. Hawley, 1986, *Human Ecology: A Theoretical Essay*, University of Chicago Press: Chicago.

<sup>35</sup> Mary Ellen Tyler & Michael Quinn, "Identifying social-ecological couplings for regional sustainability in a rapidly urbanizing water-limited area of Western Canada," *Wessex Sustainable Development and Planning VI* (2013):175-191. [Tyler & Quinn].

<sup>36</sup> Luhmann, *supra* note 33.

system is inherently a social system. One might imagine that the top subsystem is the ‘brains’ of the whole; the two side elements are the ‘hands’ that manipulate, stabilize and control the evolution of the whole, and the bottom elements are the ‘feet’ where the rubber hits the road. The directional arrows illustrate the adaptive cycle and how feedback drives changes to the governance system over time. In reality, all subsystems interact with one another back and forth, up and down, and across in dynamic, complex and unpredictable ways to respond to and accommodate emergent phenomena. The most critical element in all these governance subsystems is the human actors – *the governors* and their interactions with one another.

Each of the subsystems of governance may be further broken down into critical elements, and this is illustrated in Figures 3 and 4 regarding the regulatory, institutional, and management subsystems respectively. The complex social and political subsystems determine how the governance system adapts and evolves over time. While these subsystems are critical components of any governance system (for example, note the major roles of Alberta’s highly influential religious and economic subsystems of society during the 2020 pandemic) this paper focuses primarily on the regulatory, institutional, and management subsystems.

The ecological subject matter of the governance system, (the riparian land ecosystem) is not being ‘governed’ at all, because it is a system (an ecosystem)<sup>37</sup> its own right that is self-regulating, adapting and evolving in response to changes in its own environment, including human governance processes and technological interventions.

What the governance system is governing in this case are *human activities and interactions on or near riparian land*. The riparian land ecosystem is responding and adapting over time. Society and the riparian landscape are sometimes said to be co-adapting and co-evolving over time in response to feedback within the structurally coupled ‘*socio-ecologic system*.’<sup>38</sup>

### 3.2 *The regulatory subsystem of governance*

Alberta’s regulatory subsystem of governance is authority-based and has emerged through legislative processes provided for in the Canadian Constitution<sup>39</sup> and British common law. Underlying the regulatory subsystem are policies that reflect political beliefs, cultural norms and power structures of Canadian society. Policies adopted by our federal, provincial or local elected bodies inform and drive the eventual enactment of laws, regulations and bylaws, and the adoption of administrative procedures and forms of coercion to ensure compliance.

Policies are, however, not legal instruments like laws and regulations or codes of practice, and therefore cannot be enforced through the court system unless they are enacted as laws or regulations (or bylaws at the municipal scale). Policies may change quickly with the election of new members of parliament, the legislative assembly or a town council, while laws may take decades to change, especially if the public is asked to participate in rule-making in a meaningful way. Policies provide directives and guidance to the administrative arm of government, and usually

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<sup>37</sup> The *Canadian Law Dictionary* defines an ‘*ecosystem*’ as a ‘dynamic complex of plant, animal and microorganism communities and their non-living environment interacting as a functional unit.’

<sup>38</sup> Tyler and Quinn, *supra* note 35.

<sup>39</sup> *The Constitution Act, 1982*, Schedule B to the Canada Act 1982 (UK), 1982, c-11 [Canadian Constitution].

reflect how the majority of the electorate expect the government to respond to repeating or emergent social or socio-ecological problems.

**Figure 3: Critical Elements of a Regulatory Sub-System**



**Source: Judy Stewart**

The evolution of the Alberta *Water Act*, enacted to address water scarcity, provides a good example of how the regulatory subsystem changes over time as society adapts to its environment. In the 1930s, as a matter of changing public policy, Alberta's legislative assembly enacted the *Water Resources Act*<sup>40</sup> to allow settlers in southeastern Alberta to obtain water licenses to divert surface water to irrigate dry lands. The First-In-Time-First-In-Right (FITFIR)<sup>41</sup> system of water allocation licenses was put in place and remains basically unchanged to this day. The oldest licenses were issued in perpetuity, and the first licensee had a right to divert all the water allocated in his or her license before the next licensee in line could divert any of his or her allocation. The new law abrogated the British bundle of 'riparian rights' to water that were brought to Alberta by European settlers in the late 1880s.<sup>42</sup>

Traditional riparian rights allowed a landowner who owned land that either contained, or was adjacent to a water body to divert and use as much water as the landowner wanted for any purpose. A landowner who did not have a water body located within his or her parcel, or did not own land that abutted a water body, had no right to divert and use surface water. The only choice was to drill a groundwater well (or series of wells) and hope to find a reliable aquifer close to the surface. Under provisions of the *Water Resources Act*, irrigation districts were granted licenses to divert and use large quantities of water to make dry lands fit for crop production, and irrigation canals and reservoirs sprouted up on dryer lands in southeast Alberta.

<sup>40</sup> *Water Resources Act*, R.S.A. 1980, c.W-5. (Repealed).

<sup>41</sup> David Percy, 'Water Rights in Alberta,' *Alberta Law Review* (1977)15:142.

<sup>42</sup> *Ibid.*

The *Water Resources Act* was repealed in 1999. The *Water Act* emerged through extensive public consultation to provide for water management planning, the protection of the aquatic environment, and water license transfers, among other significant changes.

These new institutional arrangements were necessary to address social problems arising in over-allocated surface water bodies in southern Alberta. Since 1999, new water allocation licenses were not issued in perpetuity but for specific terms. In addition, the requirement to adhere to any applicable water conservation objective (WCO) was included as a condition in new licenses.<sup>43</sup> WCOs reflected socio-political trade-offs reached through collaborative decision-making processes among government and stakeholders and determined how much water would be left in the surface water bodies to support social, economic and environmental values.

The *Water Act* clarified that riparian landowners retained most riparian rights except the right to divert as much water as they wanted for any purpose. Riparian landowners were now limited to diverting 2,500 cubic meters of water per year for ‘household purposes.’ In some cases, landowners were able to register ‘traditional agricultural use’ of water on their riparian lands for an additional 6,500 cubic meters annually.<sup>44</sup> Despite the new law and regulations, water scarcity remains the limiting factor to growth in southern Alberta. The new water governance system stabilized in the 2000s, but continues to evolve in response to emergent issues and technological advances. One of these emergent issues is how stakeholders can work together to sustain healthy aquatic ecosystems by conserving and managing riparian lands.

### **3.3 The management subsystem of governance**

Regulation and management refer to different social-political processes.<sup>45</sup> Through the regulatory subsystem of governance, government authorities provide the framework for how the management subsystem will unfold over time and how it will respond to regulatory shifts. Management activities must comply with the regulatory subsystem. Management strategies are put in place by government administrative agencies to achieve desired outcomes for that which is to be managed (for example human activities and interactions on or near riparian land).

Managers do not determine the desired outcomes of the regulatory subsystem - they work with regulators and each other on strategies, programs, projects and specific actions to achieve the outcomes once they have been identified by regulators. For the purpose of this paper, management refers to ***the activities of analysing and monitoring, and developing and implementing measures to keep the state of riparian lands within desirable bounds.***<sup>46</sup> Alberta’s riparian land management

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<sup>43</sup> *Water Act*, *supra* note 3, ss. 1(hhh): “**water conservation objective**” means the amount and quality of water established by the Director under Part 2, based on information available to the Director, to be necessary for the (i) protection of a natural water body or its aquatic environment, or any part of them, (ii) protection of tourism, recreational, transportation or waste assimilation uses of water, or (iii) management of fish or wildlife, and may include water necessary for the rate of flow of water or water level requirements.”

<sup>44</sup> *Water Act*, *supra* note 3. Subsections 23-24 address household users and traditional agricultural users.

<sup>45</sup> Stewart, 2016, *supra* note 32. Stewart explains the differences between government, governance, and management.

<sup>46</sup> *Ibid.* Also see J.M. Kooiman et al., ‘Interactive Governance and Governability: An Introduction,’ *The Journal of Transdisciplinary Environmental Studies* (2008) 7(1):1-11 at 3: “... governance considers longer term trends and requirements with regard to natural resources, basing itself on an assessment of institutions and a discussion of the values to be attained. Policy deals with specific subjects in tighter time frames, whereas management grapples with the practical dimensions of its implementation.”

subsystem relies heavily on science and technology. Science helps regulators set standards and prescribe limits on substance release into receiving water bodies. Scientific thresholds and triggers can be monitored to manage human activities and interactions on or near riparian land. Standards are often reflected in codes of practice or guidelines that provide the how, what, when, and where of requirements to comply with certain standard practices, substance release limits, appropriate land uses, and so on.

**Figure 4: Critical Elements of a Management Sub-System**



**Source: Judy Stewart**

Science and technology are structurally coupled. As new scientific findings emerge, entrepreneurs and researchers develop new technology to address previous shortcomings in standards, infrastructure, materials, and processes. Sometimes, technology is developed and must be tested before becoming being integrated into a code of practice or guideline. New technology drives pilot projects and government authorized experiments by stakeholders who test whether the technology is suitable for the intended purpose.

Monitoring performance measures and making changes in the management subsystem is critical to ensuring that recommended or standardized limits are not exceeded, or that triggers are recognized in time to keep performance measures below established thresholds. When certain management thresholds are exceeded, rapid management responses may be put in place by government agencies to try to bring the system back in line with the desired state.

Identifying systemic trends through analysis of monitoring data leads to new science, new technology, changes to standards, and so on, and eventually drives adaptions within the management subsystem. Subsystem changes influence changes in the regulatory subsystem with new rules and codes of practice emerging to accommodate new technology. The regulatory and management subsystems of governance are therefore also structurally coupled. The combined structure of these two subsystems, along with the institutional subsystem put in place to achieve desired outcomes determines the governance functions that can be performed within the system.

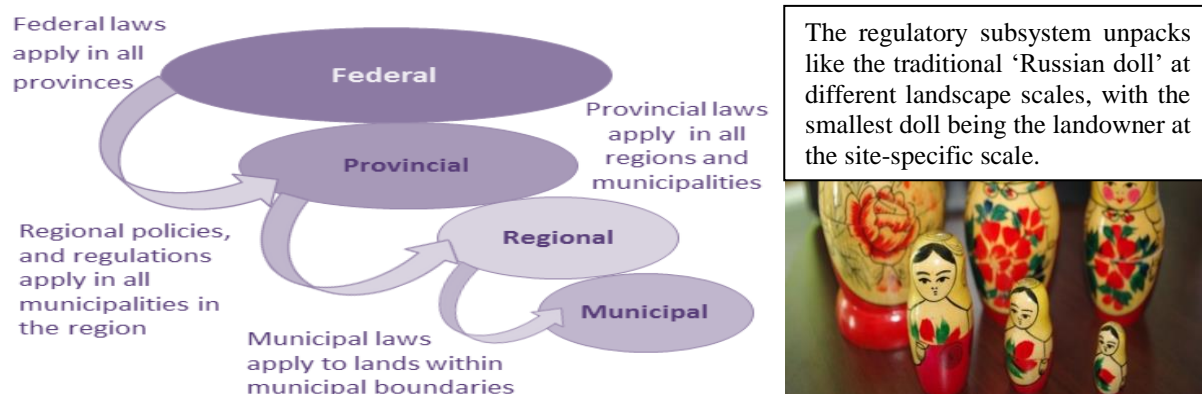


In Alberta, the riparian land governance system is disorganized and does not have a strong core of policies, laws or regulations. All the subsystems interacting within the whole are loosely connected with many gaps. The loose, decentralized structure of the governance system is not effective in controlling human activities and interactions on or near riparian land to sustain the five identified functions. Riparian landscapes are slowly being structurally altered beyond the capacity for restoration, or eliminated and replaced with human-made structures.

### 3.4 The levels of government within the regulatory subsystem of governance

Governance and government are not the same. Governments use formal and substantive laws (common law, constitutional and statutory laws and regulations) to regulate human activities and interactions in the natural biophysical environment.<sup>47</sup> **A governance system includes actors from within both government and civil society, while governments are composed of elected representatives, their designates and agencies.** Governments are critical in any governance system because they reflect shared community values and steer and guide the system over time.

Figure 5: The levels of government in the regulatory subsystem of governance



Source: Judy Stewart

Riparian land governance is extremely complex because of the many levels of government, government departments and agencies, stakeholders, non-government agencies, and landowners involved in governing. The 'hierarchy' of governments adds to the complexity of the governance system as a whole.

The **federal regulatory subsystem** includes policies, laws, regulations, codes and guidelines that supersede the **provincial regulatory subsystem**. Provincial laws, regulations and codes must be consistent with federal counterparts. Provincial laws may impose more restrictions than federal

<sup>47</sup>Stoker, *supra* note 28 at pp. 17-18. "Governance refers to a set of institutions and actors that are drawn from but also beyond government; Governance identifies the blurring of boundaries and responsibilities for tackling social and economic issues; Governance identifies the power dependence involved in the relationships between institutions involved in collective action; Governance is about autonomous self-governing networks of actors; Governance recognizes the capacity to get things done which does not rest on the power of government command or use of its authority. It sees government as able to use new tools and techniques to steer and guide."

laws, but may not be less restrictive. When laws are consistent, a person is able to comply with both sets of laws at the same time and violate neither.<sup>48</sup>

**Regional and municipal regulatory subsystems** arise from provincial legislation, and therefore must comply with both the federal and provincial regulatory subsystems. Regional regulatory subsystems for managing human activities and interactions on or near riparian land include regional land-use plans at the *watershed-scale* and growth plans at the *city-metropolitan-area scale*. Regional land-use plans are regulatory in nature and all provincial and municipal land-use decision-makers must comply. As well, participating municipalities who help create growth plans at the city-metropolitan-area scale must comply with the growth plans they help create. The regional and municipal regulatory subsystems are explained further in Chapters 6 and 7.

All levels of government try to interact with one another and other stakeholders in steering and guiding human activities and interactions on or near riparian land for the sake of consistency. However, there are many gaps in the system where interactions do not occur. The levels of government in the regulatory subsystem of riparian land governance are illustrated in Figure 5 above. These laws unpack much like the traditional ‘Russian doll’ at different landscape scales, with the smallest doll being the landowner at the site-specific scale who must comply with all laws put in place by all levels of government.

#### **4.0 A snapshot of the riparian land regulatory subsystem of governance**

***There are no laws in Alberta specifically enacted to control human activities and interactions on or near riparian land.*** Alberta’s regulatory subsystem of riparian land governance is indirect, cross-scalar and nested with many levels of government policies, laws, regulations, codes, bylaws, and voluntary self-governance happening at any one time. Everything within the system is changing, sometimes slowly, and sometimes rapidly in response to external social, political or ecological crises or unpredictable events, such as floods, droughts and wildfire.

Legal pluralism arises in the system with inconsistencies and gaps in regulation, sometimes leading to a free-for-all of human activities and interactions on or near Alberta’s riparian lands. The relatively uncontrolled access by off-highway-vehicles (OHV) on public shorelands<sup>49</sup> that are owned, regulated and managed by the Province provides a good example. The enforcement system is complaint-driven, and the average Albertan does not know the law concerning OHV access to public land, nor which level of government enforces illegal access.

Sustaining the ‘habitat and biodiversity function’ of intact riparian land is one of five functions identified in *Stepping Back* that reflects shared community values and desired outcomes of the governance system. Table 2 below provides an example of how different levels of government frame laws at different landscape scales to sustain critical breeding and nesting habitat for different species by controlling human activities and interactions on or near riparian land.

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<sup>48</sup> *Huot v. St-Jérôme (Ville de)*, (1993), JE 93-1052 (Sup Ct) at p.19. [Translation] “A finding that a municipal by-law is inconsistent with a provincial statute (or a provincial statute with a federal statute) requires, first, that they both deal with similar subject matters and, second, that obeying one necessarily means disobeying the other.”

<sup>49</sup> Government of Alberta, ‘Motorized Recreation on Public Land’ (nd), online <https://www.alberta.ca/motorized-recreation-on-public-land.aspx>. (Accessed on July 4, 2020.)

**Table 2: Riparian land regulations to sustain the ‘habitat and biodiversity’ function as framed by different levels of government at different landscape scales, and how a landowner responds**

Federal	Provincial	Regional	Municipal	Landowner is governed
<ul style="list-style-type: none"> <li>• <i>Migratory Birds Convention Act</i></li> <li>• <i>Species at Risk Act</i></li> <li>• <i>Fisheries Act</i></li> <li>• <i>Canadian Navigable Waters Act</i></li> </ul> <p>*These laws regulate human activities and interactions in breeding and nesting habitat for biodiversity, including migratory birds, fish, and species at risk.</p> <p><b>Conservation of riparian lands is promoted indirectly by the laws.</b></p> <p><b>Note: 2019 changes to the <i>Fisheries Act</i> may have a greater impact on protection of these lands as fish habitat. See DFO, ‘Projects Near Water’, (nd), online:<a href="https://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html">https://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html</a></b></p>	<ul style="list-style-type: none"> <li>• <i>Water Act</i> and regulations</li> <li>• <i>Wildlife Act</i></li> <li>• <i>Fisheries Act</i> (Alberta)</li> <li>• <i>Environmental Protection and Enhancement Act</i> (EPEA) and regulations</li> <li>• <i>Weed Control Act</i></li> <li>• Wetland Policy</li> <li>• Stepping Back</li> </ul> <p>*Disturbance of water body is an activity under the <i>Water Act</i>, requiring an approval.</p> <p>*The wetland policy and implementation tools determine that some wetlands that provide habitat to migratory birds, fish and species at risk are of high value and must be conserved.</p> <p>*The province implements federal fisheries legislation at the provincial scale.</p> <p>*EPEA regulates substance release that may pollute critical habitat. I.E. storm drainage and community and private wastewater systems.</p>	<p>*Regional land-use plan requires compliance with provincial management frameworks for surface water quality.</p> <p>*Regional land use plan requires all decision-makers in the region to apply Stepping Back.</p> <p>*Wetland policy and tools must be adhered to in the region.</p> <p>*Growth plans may regulate land-uses that may be appropriate in floodplains, wetlands and riparian lands.</p> <p>*Growth plans may require that all participating municipalities in a growth region adopt certain riparian setbacks and development restrictions on or near riparian lands.</p>	<p>*Land use bylaw may restrict development in riparian land, wetlands and flood hazard areas.</p> <p>*Development setbacks from the water’s edge may be required.</p> <p>*Storm drainage bylaws and master drainage plans control substance release into storm drainage systems</p> <p>*Land use bylaw may regulate specific land uses, such as car washes that release chemicals in storm drainage systems.</p> <p>*May require a development permit for a landowner to remove riparian vegetation, or may restrict what kind of equipment may be used or stored near a water body.</p> <p>*During subdivision process may require dedication of environmental reserves in riparian land to prevent pollution of the land and the bed and shore of the receiving water body.</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Must obtain a development permit to build or engage in activities on or near riparian land that provides habitat for migratory birds, species at risk, or fish.</li> <li><input type="checkbox"/> Must obtain an approval to disturb a wetland.</li> <li><input type="checkbox"/> Must control release of sediment and substances from land into storm sewers, riparian land and water bodies.</li> <li><input type="checkbox"/> Must obtain a fishing or hunting license.</li> <li><input type="checkbox"/> Must apply for a permit to remove riparian vegetation.</li> <li><input type="checkbox"/> Must comply with equipment use and storage in riparian land.</li> <li><input type="checkbox"/> Voluntarily engages in riparian land restoration and bioengineering projects.</li> <li><input type="checkbox"/> Voluntarily implements best management practices of solar off-stream watering to keep cattle out of riparian land and beds and shores of water bodies.</li> <li><input type="checkbox"/> Controls and removes invasive weeds and other invasive species in compliance with the law.</li> </ul> <p><b>GAP: Municipalities have no direct authority to regulate and control land-use to sustain the habitat and biodiversity function.</b></p>

In Table 2, four relevant *federal laws* are presented that regulate human activities where the protection of critical habitat for different species is the desired outcome. However, none of these laws identify intact riparian land as critical natural infrastructure to sustain the desired function.

The federal laws are interpreted in laws, regulations, bylaws and plans at provincial, regional and local scales, but again, without identification of the need to conserve and manage riparian land to sustain the function. (Full citations for laws/regulations referenced in Table 2 are provided in Appendix A).

**Provincial laws** only apply within provincial boundaries, and **regional regulations** only apply at the major watershed-scale where regional land-use plans have been enacted as regulations.<sup>50</sup> **In Alberta, there are no regional governments that make regional-scale laws.** The *Alberta Land Stewardship Act* [ALSA]<sup>51</sup> provides oversight by a Land Use Secretariat<sup>52</sup> for implementation and compliance with regional land-use plan regulations. ALSA is a provincial law administered by provincial employees, not by municipalities.

**Municipal bylaws** are the most specific regulations in the system because they apply on all municipally owned and privately owned lands within a municipality's boundaries. Municipal bylaws are enforceable in Alberta's court system. However, there are many emergent phenomena arising within the regulatory subsystem where municipalities have no jurisdiction to pass bylaws or to enforce provincial laws. Furthermore, municipal governments have no jurisdiction to regulate use of privately-owned land for the purpose of sustaining the habitat and biodiversity function of riparian lands.

Ultimately, it is the **landowner** who is responsible for complying with the entire regulatory subsystem of governance. The landowner may be on the receiving end of a compliance order if his or her activities or interactions on or near riparian land do not comply with the extensive body of law, codes, guidelines, and best practices reflected in LUBs.

## 5.0 Alberta's riparian land governance system

### 5.1 Five subsystems of Alberta's riparian land governance system

The five subsystems of Alberta's riparian land governance system are illustrated in Figure 2 above, and include the **social; political; regulatory; institutional; and management subsystems**. Alberta's regulatory, institutional and management subsystems are highlighted in this paper, while the social and political subsystems are used to provide relevant context or background as required. The social and political subsystems are structurally coupled and address social norms, and cultural matters, and achieve trade-offs among social, economic and environmental factors.

The regulatory, institutional and management subsystems are also structurally coupled, with each subsystem affected by and influencing the others. Institutional change may result in new management practices, and the reverse is true. Institutions may influence the development of new

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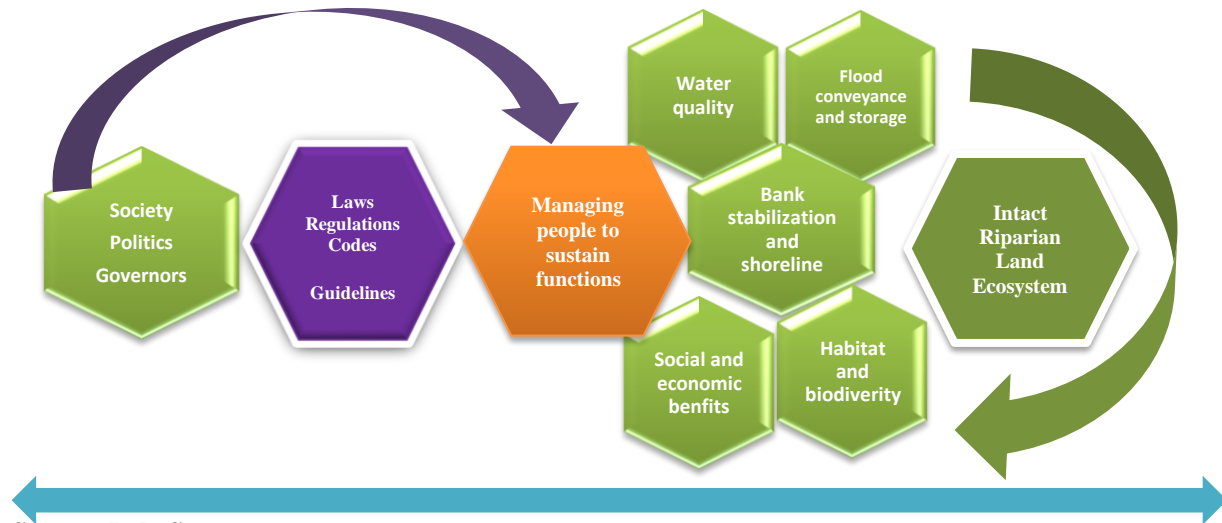
<sup>50</sup> See Government of Alberta, *South Saskatchewan Regional Plan, 2014-2024*, online: <https://open.alberta.ca/dataset/13ccde6d-34c9-45e4-8c67-6a251225ad33/resource/e643d015-3e53-4950-99e6-beb49c71b368/download/south-saskatchewan-regional-plan-2014-2024-may-2018.pdf> as an example of a land-use plan enacted as a regulation under the *Alberta Land Stewardship Act*, S.A. 2009, c.A-26.8 [ALSA].

<sup>51</sup> ALSA *supra* note 50.

<sup>52</sup> Government of Alberta, 'Land-use Framework,' 2008, online: <https://open.alberta.ca/dataset/30091176-f980-4f36-8f5a-87bc47890aa8/resource/bc4b3fac-5e59-473b-9a99-1a83970c28e7/download/4321768-2008-land-use-framework-2008-12.pdf>. [LUF]. (Accessed on June 1, 2020.)

codes of practice and guidelines, and as new laws and regulations are passed, new management practices and institutions may be put in place to achieve compliance. Management strategies, programs and practices may then lead to entirely new institutional arrangements both within government and within civil society. Eventually, institutional change and management may result in regulatory changes to accommodate system adaptations and evolution.

**Figure 6: Governors, regulatory system and five critical riparian land functions**



Source: Judy Stewart

Often, emergent institutional arrangements are structured as collaborations between representatives from government and civil society who come together to address common but ‘wicked’<sup>53</sup> problems that no one level of government or stakeholder can solve alone. In Alberta, watershed planning and advisory councils [WPACs] and watershed stewardship groups [WSGs] are partners to the provincial government under Water For Life, and they are examples of such collaborations.<sup>54</sup>

WPACs and WSGs also function as *bridging organizations*<sup>55</sup> connecting stakeholders who would otherwise not be connected at the watershed-scale to solve wicked problems. With no legal mandate, WPACs and WSGs function as *environmental networks*<sup>56</sup> where stakeholders with competing interests voluntarily collaborate. One of the wicked problems they tackle is sustaining the five critical riparian land functions introduced in Stepping Back: (a) Water Quality Functions;

<sup>53</sup> Horst W.J. Rittel & Melvin M. Webber, ‘Dilemmas in a General Theory of Planning,’ *Policy Sciences* 4 (1973), 155-169 at p. 167: “We are thus led to conclude that the problems that planners must deal with are wicked and incorrigible ones, for they defy efforts to delineate their boundaries and to identify their causes, and thus to expose their problematic nature. The planner who works with open systems is caught up in the ambiguity of their causal webs. Moreover, his would-be solutions are confounded by a still further set of dilemmas posed by the growing pluralism of the contemporary publics, whose valuations of his proposals are judged against an array of different and contradicting scales.”

<sup>54</sup> Water For Life, *supra* note 15.

<sup>55</sup> Stewart, 2016, *supra* note 32.

<sup>56</sup> *Ibid.*

(b) Flood Water Conveyance and Storage; (c) Bank and Shoreline Stabilization; (d) Habitat and Biodiversity; and (e) Social and Economic Benefits.<sup>57</sup>

**5.2 The regulatory subsystem that sustains the five critical riparian land functions**

In Chapter 4, a snapshot of the Alberta riparian land regulatory subsystem illustrated how different levels of government regulate human activities and interactions on or near riparian land to sustain **the habitat and biodiversity function**. The regulatory subsystem to control human activities and interactions on or near riparian land to sustain all five functions looks very similar. Two snapshots of parts of the body of law (See Appendix A) are provided in Tables 3 and 4 below.

**Table 3: Riparian land regulations to sustain the ‘water quality function’ as framed by different levels of government at different scales, and how a landowner responds**

Federal	Provincial	Regional	Municipal	Landowner is governed
<ul style="list-style-type: none"> <li>*Canada Water Act</li> <li>*Collaborations and federal funding of programs to sustain high quality drinking water supplies in inter-jurisdictional waters that cross several provincial borders.</li> <li>• Canadian Environmental Protection Act, 1999</li> <li>• Impact Assessment Act</li> <li>• Pest Control Products Act,</li> <li>• Transportation of Dangerous Goods Act</li> <li>• Fisheries Act (Deleterious substances that may harm fish.)</li> </ul>	<ul style="list-style-type: none"> <li>• Water Act</li> <li>• EPEA</li> <li>• Agricultural Operations Practices Act (AOPA)</li> <li>• Oil and Gas Conservation Act</li> <li>• Forests Act</li> <li>• Parks Act</li> <li>• Fisheries Act (Alberta)</li> <li>• Stepping Back</li> <li>*EPEA regulates release of substances that may pollute water or riparian habitat.</li> <li>*Regulates storm drainage systems, and both private and community wastewater systems.</li> <li>*Prescribes environment impact assessments for designated activities.</li> <li>*AOPA regulates intensive livestock operations</li> </ul>	<ul style="list-style-type: none"> <li>*Regional land-use plan requires compliance with provincial directives and management frameworks for surface water quality</li> <li>*Regional land use plan requires all decision-makers in the region to implement Stepping Back.</li> <li>*Growth plan: regulates appropriate land uses in riparian land to sustain water quality function</li> <li>*Growth plan: participating municipalities adopt consistent riparian setbacks in the region to protect water quality.</li> </ul>	<ul style="list-style-type: none"> <li>*Land use bylaw provisions for setbacks from water’s edge and restrictions on certain land uses on or near riparian land– require a development permit.</li> <li>*Environmental reserves dedicated during subdivision to prevent pollution.</li> <li>*Bylaws to keep chemicals and pesticides away from water’s edge.</li> <li>*Salt management plans</li> <li>*Phosphorous management plans</li> <li>*Storm drainage management systems</li> <li>*Systems for wastewater treatment and dilution.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Must obtain a development permit to build or engage in activities on or near riparian lands that may impact water quality.</li> <li><input type="checkbox"/> Must control release of sediment and substances into storm sewers, riparian lands and water bodies.</li> <li><input type="checkbox"/> Must apply for a permit to remove riparian vegetation</li> <li><input type="checkbox"/> Must comply with equipment use, storage and leak clean-up in riparian lands.</li> <li><input type="checkbox"/> Voluntarily engages in riparian land restoration projects.</li> <li><input type="checkbox"/> Voluntarily implements best management practices of solar off-stream watering to keep cattle out of riparian lands and beds and shores of water bodies</li> <li><input type="checkbox"/> Must maintain private septic systems</li> </ul> <p><b>Gap: Laws not understood by private landowners. Education is critical.</b></p>

<sup>57</sup> Stepping Back, *supra* note 7.

**Table 4: Riparian land regulations to sustain the ‘flood water conveyance and storage functions’ as framed by different levels of government at different landscape scales, and how a landowner responds**

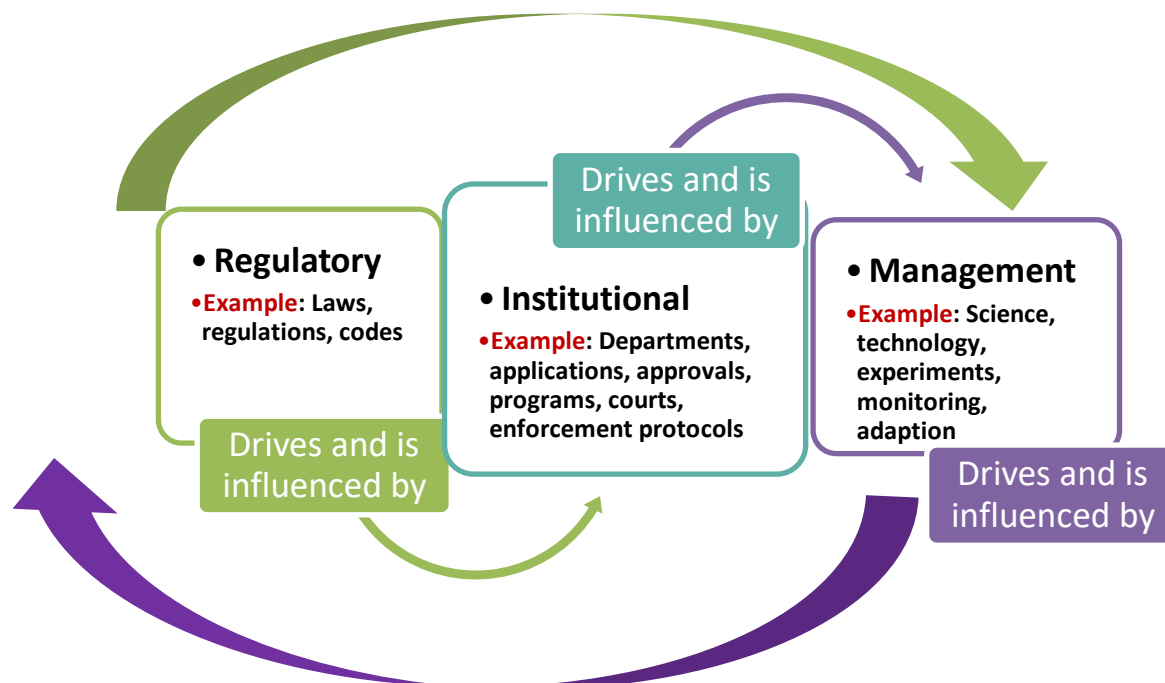
Federal	Provincial	Regional	Municipal	Landowner is governed
<p>• <i>Canada Water Act</i> *The Act provides a framework federal government cooperation with the provinces and territories in ‘conservation, development, and use’ of Canada’s water resources. *The Act enables collaborations such as the flood damage reduction program (now discontinued). *Under the Act, collaborators collect data; conduct research; formulate water management plans; and design management projects to sustain flood conveyance and water storage functions. * Assists provinces in flood damage recovery. * Funds and operates flood forecasting and warning systems. <b>GAP: Flood damage reduction program was not replaced – no federal policy regarding protecting flood conveyance and water storage function of riparian land.</b></p>	<p>• <b>Water Act</b> and regulations, s.96 • <b>Municipal Government Act, (MGA)</b> s. 693.1 • <b>Public Lands Act</b> *Structural alterations of water bodies to achieve flood protection are activities under the <i>Water Act</i> and Public Lands Act that require approvals. *s.96 of the <i>Water Act</i>: the province may restrict municipal development in FHA. *Province participates in watershed management; mapping FHA; acquiring property in the FHA; relocating structures in FHA; and establishing and maintaining flood forecasting and warning systems.  <b>GAP: Province has never used s. 96 of the Water Act and has not provided a regulation for implementing section 693.1 of the MGA.</b>  <b>GAP: Public Lands Act regulations rarely enforced.</b></p>	<p>*Regional land-use plan requires compliance with provincial policies regarding FHA. *Growth plan regulates setbacks and appropriate land uses in FHA. *Growth plan restricts development to lands outside the floodway and requires flood proofing of development in the flood fringe.  <b>GAP: Social and cultural norms allow development and buildings and industrial operations in flood fringe. (I.E. Gravel extraction is encouraged in flood fringe.)</b>  <b>GAP: Growth plans are in their infancy and may not address protecting the flood conveyance and water storage function in FHA.</b></p>	<p>*Land use bylaw provisions restrict development in riparian lands in mapped FHA. *Municipalities participate in watershed management; land use regulation in the FHA; flood proofing measures; acquiring property in the FHA; and relocating structures. *During subdivision processes <b>may</b> require dedication of riparian land adjacent to water bodies as environmental reserves in the FHA – but not to sustain the flood conveyance and water storage function. *<b>May</b> require development setbacks from the legal bank of surface water bodies to prevent flooding of buildings and infrastructure.  <b>GAP: None of these measures are mandated in the MGA but are left to the discretion of each local government.</b></p>	<p><input type="checkbox"/> Must obtain a development permit to build or engage in activities on or near riparian lands that may flood (1:100 event) <input type="checkbox"/> Must obtain a <i>Water Act</i> approval to alter the bed and shore of a water body to flood proof. <input type="checkbox"/> Must apply for a permit to remove riparian vegetation. <input type="checkbox"/> Must comply with bylaws re: equipment use and storage in FHA. <input type="checkbox"/> Voluntarily engages in riparian land restoration and bioengineering projects. <input type="checkbox"/> Voluntarily adopts best management practices to flood proof property. <input type="checkbox"/> Voluntarily relocates buildings out of the FHA.  <b>GAP: Buildings and pathways, trails and many inappropriate land uses that degrade the flood conveyance and water storage function are not restricted by law or custom. Education is required to help landowners understand the critical flood conveyance and water storage function. Cows and Fish partially fill this gap in rural areas. Example of cultural practices: Some cattle ranchers regularly allow cattle to access water bodies and graze on riparian lands, eroding the banks and degrading the flood conveyance and water storage function while causing pollution and sedimentation in the receiving water body.</b></p>

Laws and regulations to control human activities and interactions on or near riparian land to sustain the ‘*flood conveyance and water storage functions; ‘bank stabilization and shoreline functions;’* and the function of providing ‘*social and economic benefits*’ are similar to those listed in Tables 2 through 4 above. However, the *Public Lands Act is the most critical Alberta law* in place to sustain those specific functions because the Province owns and manages human use of the beds and shores of all permanent and naturally occurring water bodies, and all naturally occurring rivers, streams and lakes.<sup>58</sup> These beds and shores are ‘*public lands*’ even when an entire water body is located within a privately-owned parcel of land. Many Albertans do not understand this law and how it affects what they may do on or near what they consider their riparian land. *A major gap in the regulatory subsystem to sustain the bank and shoreline stabilization function of riparian land is that Public Land Act regulations that restrict activities on shorelands are not understood by landowners and are rarely enforced because the subsystem is complaint-driven.*

### 5.3 The structurally coupled regulatory, institutional, and management subsystems of Alberta’s riparian land governance system

Using examples of federal, provincial, regional and municipal regulations provided in Tables 2 through 4 above, the structural couplings of the regulatory, institutional, and management subsystems of Alberta’s riparian land governance system regarding the five critical riparian land functions are illustrated in Tables 5 and 6 below. Not every law, institution, or management practice is identified. Table 5 focuses on the *federal and provincial systems*, while Table 6 focuses on the *provincial and regional/municipal systems*. Both illustrate system complexity.

Figure 7: The structurally coupled regulatory, institutional and management subsystems



Source: Judy Stewart

<sup>58</sup> *Public Lands Act*, R.S.A. 1980, c.P-40 (PLA), s.3.



Table 5: Structurally coupled subsystems of the federal-Alberta riparian land governance system

Level of Government/ Riparian Land Function	Regulatory - R	Institutional – I	Management - M	Riparian lands transition from water to land – land to water
<b>Federal</b>				<b>Provincial equivalent</b>
<b>Water Quantity Function</b>	<i>Canada Water Act</i>  Federal Water Policy <sup>59</sup>	*Environment and Climate Change Canada [ECCC] *Prairie Provinces Water Board	Master Agreement on Apportionment between Alberta Saskatchewan and Manitoba	<b>R - Water Act</b> <b>I – Alberta Environment and Parks [AEP]</b> <b>M - Approved Water Management Plan for the South Saskatchewan River Basin (Alberta)</b>
<b>Water Quality Function</b>	<i>Fisheries Act (Canada)</i>  Subsection 36(3) of the <i>Fisheries Act</i> prohibits the deposit of <i>deleterious substances</i> into waters frequented by fish, unless the deposit is authorized by regulations- while not directed at riparian land, the law functions to sustain water quality to protect fish habitat.	Department of Fisheries, Oceans and the Canadian Coast Guard (DFO)	<i>Alberta Fishery Regulation, 1998</i>	<b>R – EPEA</b> <b>R - Substance Release Regulation, Alta Reg 124/1993</b> <b>R- Alberta Land Stewardship Act [ALSA] and regional watershed-scale land-use plans: i.e. Lower Athabasca and South Saskatchewan.</b> <b>R-SSRP Framework for Managing Surface Water Quality</b> <b>I – Land-use Secretariat</b> <b>M –Codes of Practice for release of substances</b> <b>R- Water Act</b> <b>M – Framework for Water Management Planning</b> <b>M- Strategy for Protection of the Aquatic Environment</b> <b>R - Fisheries Act (Alberta)</b> <b>M – Licensing requirements</b>
<b>Flood Conveyance and Water Storage</b>	<i>Canada Water Act</i>	ECCC	Federal government funds and operates flood forecasting and warning systems in Alberta. <b>GAP: No federal regulation or management of riparian lands in the FHA to sustain the function of flood conveyance and water storage.</b>	<b>R- Water Act, s. 96</b> <b>R- MGA, s. 693.1</b> <b>I - AEP</b> <b>I- Emergency Response Systems</b> <b>M - Flood Hazard Map Application</b> <b>GAP: Province does not regulate and control private or public land use in the FHA in order to sustain the function of flood conveyance and water storage.</b>

<sup>59</sup> Government of Canada, 'Water Governance: Federal Policy and Legislation', (nd), online: <https://www.canada.ca/en/environment-climate-change/services/water-overview/governance-legislation/federal-policy.html>. (Accessed on July 15, 2020.)



<b>Habitat and Biodiversity Function</b>	<i>Canadian Environmental Protection Act (CEPA)</i>  Regulates substances that have a deleterious effect on the environment.	ECCC	<b>Example:</b> Federal Code of Practice for Management of Road Salts	<b>R-</b> <i>Environmental Protection and Enhancement Act</i> <b>I-</b> AEP <b>I-</b> Framework for Water Management Planning <b>I-</b> Strategy for Protection of the Aquatic Environment <b>M-</b> Implementation through EPEA Regulations <b>M-</b> Stormwater Management Practices <b>M-</b> Snow Disposal Guidelines for the Province of Alberta <b>GAP: No implementation of the Strategy for Protection of the Aquatic Environment.</b>
<b>Social and Economic Benefits</b>	<i>Canada Water Act</i>  Best management practices for reducing pesticide contaminants at the farm level and for protecting water quality <sup>61</sup>	ECCC  Agriculture and Agri-Foods Canada * Environmental Stewardship and Climate Change - Producer program <sup>62</sup> supports producers in reducing negative impacts on the environment while enhancing sustainable production, managing climate change and increasing profitability in the agriculture sector.	Canada-Alberta Partnership (CAP). <sup>63</sup>  See Riparian Management: <input type="checkbox"/> Riparian Area Fencing and Management <input type="checkbox"/> Year-Round Summer Watering Systems <input type="checkbox"/> Watercourse Crossings <input type="checkbox"/> Riparian Management Strategies – OPEN <input type="checkbox"/> Wetland and Riparian Assessments	<i>Water Act</i> and EPEA are framed to sustain social and economic benefits of conserving the environment. <b>I-</b> Lethbridge Research and Development Centre <sup>64</sup> <b>M-</b> Alberta Environmental Farm Plan The objectives of CAP's riparian management program are to: <input type="checkbox"/> reduce the risks to agricultural contaminants entering water <input type="checkbox"/> enhance sustainable production while mitigating carbon emissions that impact air and soil quality <input type="checkbox"/> help producers manage and adapt to climate change.  <b>GAP: Lack of public awareness and education about social and economic benefits of intact riparian lands.</b>

<sup>61</sup> Government of Canada, 'Lethbridge Research and Development Centre', (nd), online: <https://www.agr.gc.ca/eng/scientific-collaboration-and-research-in-agriculture/agriculture-and-agri-food-research-centres-and-collections/alberta/lethbridge-research-and-development-centre/?id=1180547946064>. [Lethbridge Research Centre] (Accessed on July 15, 2020.)

<sup>62</sup> Environmental Stewardship and Climate Change-Producer – Canada-Alberta Partnership, (nd), online: [https://cap.alberta.ca/CAP/program/STEW\\_PROD](https://cap.alberta.ca/CAP/program/STEW_PROD). (Accessed July 15, 2020).

<sup>63</sup> Canadian Agricultural Partnership, 'Welcome to the Canadian Agricultural Partnership in Alberta', (nd), online: <https://cap.alberta.ca/CAP/> [CAP]. (Accessed on July 20, 2020).

<sup>64</sup> Lethbridge Research Center, *supra* note 61.

**Table 6: Structurally coupled subsystems of provincial – municipal riparian land governance system**

Level of Government/ Riparian Land Function	Regulatory - R	Institutional – I	Management - M	Riparian lands transition from water to land – land to water
<b>Provincial</b>				<b>Regional/Municipal Equivalent</b>
<b>Water Quantity Function</b>	<i>Water Act</i>	AEP  Prairie Provinces Water Board	*Master Agreement on Apportionment between Alberta Saskatchewan and Manitoba *Approved Water Management Plan for the South Saskatchewan River Basin (Alberta) *Water For Life *Framework for Water Management Planning *Strategy for Protection of the Aquatic Environment	Regions and municipalities do not address water quantity except through water conservation programs and water distribution bylaws and water conservation incentives, such as low flow fixtures, naturoscaping and low impact development. <b>GAP: Rarely address the critical function of water storage/retention performed by riparian lands.</b>
<b>Water Quality Function</b>	*EPEA *Substance Release Regulation, <i>Alta Reg 124/1993</i>  * <i>Municipal Government Act</i>  * <i>ALSA and regional watershed-scale land-use plans. Lower Athabasca Regional Plan [LARP] and SSRP</i> *SSRP <i>Frameworks for Managing Surface Water Quality</i> * <i>Agricultural Practices Act</i>	AEP      Municipal Councils      Land Use Secretariat	*Water For Life *Code of Practice for Release of Substances   *Part 17: Planning and Development *Section 7 Bylaws *Section 60 MGA *Alberta Farm Plan *Regional watershed-scale land-use plans (LARP and SSRP) *Conservation easements	Municipalities must comply with federal and provincial enactments regarding substance release from wastewater treatment facilities and storm drainage outfalls. See municipal storm drainage bylaws.  <b>M-</b> Municipal Land use bylaws – Natural Area Land Use Zones (See Edmonton) <sup>65</sup> <b>M-</b> Statutory planning documents <b>M-</b> Intermunicipal development plans <b>M-</b> Environmental reserves <b>M-</b> Conservation reserves <b>M-</b> health and safety bylaws <b>M-</b> participation on WPACs and WSGs <b>I-</b> Growth boards <b>M-</b> Growth plans <b>I-</b> WPACS <b>I-</b> WSGs <b>M-</b> See Calgary’s Strategy and RAP as examples of municipal riparian policy.

<sup>65</sup> City of Edmonton, Edmonton Zoning Bylaw 12800: ‘Natural Area Protection Zone’, 2017, online: [https://webdocs.edmonton.ca/zoningbylaw/ZoningBylaw/Part2/Urban/531\\_\(NA\)\\_Natural\\_Areas\\_Protectin\\_Zone.htm](https://webdocs.edmonton.ca/zoningbylaw/ZoningBylaw/Part2/Urban/531_(NA)_Natural_Areas_Protectin_Zone.htm) [Edmonton Natural Areas]. (Accessed on July 2, 2020.) Riparian areas are not specifically mention but are included by reference to buffers and lands associated with ecological processes for water bodies.

	<p><i>*Forestry Act</i>  <i>*Oil and Gas Conservation Act</i></p>	<p>Natural Resources Conservation Board [NRCB]</p> <p>Alberta Energy Regulator</p>	<p>Setback requirements and best management practices</p> <p>Setback directives</p>	<p><b>I</b>-Cows and Fish  <b>M</b>- Incentives and voluntary programs  <b>M</b>-Required setbacks  Municipalities have no role in implementing provincial laws.</p>
<p><b>Flood Conveyance and Water Storage</b></p>	<p><i>*Water Act, s.96</i>  <i>*Public Lands Act</i>  <i>*MGA, s. 693.1</i></p> <p><i>*ALSA</i></p> <p><b>GAP: Province does not regulate private or public land use in the FHA to sustain the flood conveyance and water storage function.</b></p>	<p>AEP</p> <p>AEP Lands Division</p> <p>Land Use Secretariat</p>	<p>Flood Hazard Map Application</p> <p>Regional Land-use plans - SSRP</p>	<p><b>R</b>- MGA  <b>R</b>-LUB provisions restricting development in the floodway.  <b>R</b>-LUB provisions restricting development in wetlands and riparian lands  <b>R</b>-Municipal development setbacks from water's edge  <b>R</b>-Environmental reserves dedicated during subdivision process  <b>R</b>-Conservation reserves dedicated during subdivision process  <b>I</b>- Municipal councils  <b>I</b>- Growth boards  <b>M</b>-Conservation easements  <b>GAP: Province does not regulate appropriate development in FHAs.</b></p>
<p><b>Bank and Shoreline Stabilization</b></p>	<p><i>*Public Lands Act, s.54</i> prohibits any unauthorized activity that may result in damage to beds or shores.</p> <p><i>* Municipal Government Act</i>  <i>*Alberta Land Use Policies, 1996</i>  <i>*Water Act</i>  <i>*Fisheries Act (Alberta)</i>  <i>*Code of Practice for Watercourse Crossings</i>  <i>*Code of Practice for Outfall Structures on Water Bodies</i></p>	<p>AEP – Land Management</p> <p>Municipalities</p> <p>AEP Regulatory Approvals Center</p> <p><b>GAP: In rural Alberta need enforcement of PLA s. 54</b></p>	<p><i>*Activities Requiring and Approval under Public Lands Act</i>  <i>*Section 54 of the Public Lands Act</i>  <i>*Conservation officers</i>  <i>*Environmental Appeals Board</i>  <i>*Part 17: MGA</i>  <i>*Section 7: MGA</i>  <i>*Section 60: MGA</i></p>	<p><b>Municipalities cannot enforce provincial laws without delegation.</b></p> <p><b>M</b>- Section 640(4) of MGA allows municipalities to establish building development setbacks from the water's edge.  <b>M</b>- Municipalities may determine appropriate land uses adjacent to water bodies.  <b>M</b>- Growth boards may establish policies about conservation and management of riparian lands to sustain bank and shoreline stabilization</p> <p><b>M</b>- Cows and Fish programs</p> <p><b>M</b>-WPACs and WSGs participate in bioengineering to stabilize banks and shorelines.</p>

<p><b>Habitat and Biodiversity Function</b></p>	<p>*<i>Fisheries Act</i> (Alberta) *<i>Water Act</i></p> <p>ALSA</p> <p><b>GAP: No Frameworks for Managing Biodiversity for LARP or SSRP.</b></p>	<p>AEP</p> <p>Land use Secretariat</p>	<p>*<i>Implementation of Fisheries Act</i> (Canada) *Fishing Licenses *Wetland Policy and implementation tools *Regional land-use plans-SSRP *Stepping Back</p> <p>*Regional land-use plans *Conservation easements *Integrated Resource Management Plans- i.e. Eastern Slopes</p>	<p><b>GAP: No regional/municipal role to sustain biodiversity and habitat function</b></p> <p>*Municipalities must comply with wetland policy *Municipal wetland policies *Municipal Development permits require that construction projects comply with federal and provincial enactments re fisheries, migratory birds and species at risk. *Municipalities must comply with regional land-use plans. *If no plan exists municipalities must comply with <i>Alberta Land Use Policies, 1996.</i></p> <p><b>GAP: Municipalities have no authority to sustain habitat for biodiversity function.</b></p>
<p><b>Habitat and Biodiversity Function (Pollution prevention)</b></p>	<p>*EPEA</p> <p>*<i>Water Act</i></p> <p><b>GAP: Strategy for Protection of the Aquatic Environment shelved and not implemented</b></p>	<p>AEP</p>	<p>* <i>Substance Release Regulation, Alta Reg 124/1993</i> *Stormwater Management Guidelines for the province of Alberta, 1999 *Snow Disposal Guidelines for the Province of Alberta *Framework for Water Management Planning *Strategy for Protection of the Aquatic Environment *Guide to Watershed Management Planning in Alberta<sup>66</sup></p>	<p><b>R- LUB</b> <b>M- Master Drainage Plans</b> <b>M- Snow Removal Policy</b></p> <p>Municipalities participate in WPACs and WSGs to prepare and implement watershed management plans</p> <p><b>GAP: No implementation of the Strategy for Protection of the Aquatic Environment.</b></p>
<p><b>Social and Economic Benefits</b></p>	<p><i>Water Act</i> and EPEA are framed to sustain social and economic benefits of conserving the environment.</p>	<p>Lethbridge Research and Development Centre</p> <p>CAP</p>	<p>Environmental Farm Plans</p>	<p>*Rural municipal agricultural societies. *Cows and Fish-work directly with landowners and others.</p> <p><b>GAP: Education is required so that landowners and industry understand social and economic benefits.</b></p>

<sup>66</sup> Government of Alberta, ‘Guide to Watershed Management Planning in Alberta,’ 2015, online: <https://open.alberta.ca/dataset/5a8bc71a-e08a-476e-abb3-f7454597797b/resource/97053643-777e-407e-800c-79e2a5975dfd/download/guidewatershedmanagementplanning-2015.pdf> (Accessed on July 5, 2020.)

It should be noted that there are specific regulations requiring different setbacks from the water's edge for most major industries in Alberta, for example, forestry, agricultural operations and oil and gas. However, none of these specific regulations protect or manage the outer riparian zone for the critical riparian land 'buffering' function. Usually, the setbacks only protect riparian land within the streamside and the middle riparian zones. The required setback widths are prescribed without any requirement for industry to scientifically determine whether the prescribed setback is sufficient to sustain any of the riparian land functions on the site where the industrial activity will occur, for example in different topographical or soil conditions. In some areas of Alberta, 100-meter setbacks are sufficient to sustain most of the functions, but in other areas 100 meters is not sufficient given gravel beds and steep slopes. Different species need different riparian corridor widths to breed, nest, and raise and their young. Different industrial activities may need wider setbacks to filter sediment and specific contaminants from industrial runoff.

## 6.0 Regional riparian land governance system

### 6.1 Regional land-use plans under ALSA

***There are no regional governments in Alberta.*** Instead the Province created regional land-use plan regulations through ALSA at the major watershed-scale to implement the *Land-use Framework*.<sup>67</sup> Regional planning regions reflect the boundaries of Alberta's major watersheds: they are large land masses that embed many smaller interconnected social-ecological systems and city-regions. All provincial and municipal decision-makers in the region must comply with regional lands-use plans when making land-use decisions. Provincial regulators are required to comply with the regional land-use plans when approving regulated activities on both public and private lands, for example forestry, oil and gas, aggregate extraction, and intensive livestock operations. All provincial land-use plans, provincial land-use regulations, municipal statutory land-use plans, and municipal LUBs must comply with applicable regional land-use plans.

Regional land-use plans are the Province's institutional arrangements for addressing integrated resource management, cumulative effects, and adaptive management. For example, the SSRP contains provincial policy, regulation and an implementation plan<sup>68</sup> to manage cumulative effects and to support adaptive land-use management processes on both provincial public land and privately-owned land in the South Saskatchewan watershed.

***There are direct references to riparian land management in the SSRP,*** as follows:

Riparian lands are important as they are highly productive, rich and resilient parts of the landscape. The Alberta Water Council led a collaborative initiative with the purpose of enhancing knowledge and providing recommendations for effective conservation and management of riparian land in support of the goals in the Water for Life strategy. The Government of Alberta will consider these recommendations for implementation. Existing initiatives such as the Alberta Riparian Habitat Management Society program... highlight the stewardship commitment and positive contributions of landowners to riparian health. The continued implementation of voluntary approaches such as Stepping Back from the Water provide practices intended to

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<sup>67</sup> LUF, *supra* note 52.

<sup>68</sup> SSRP, *supra* note 50 at p.42.

assist local authorities and watershed groups with policy creation, decision-making and watershed management relative to structural development near water bodies.<sup>69</sup>

In the SSRP implementation section, the Province clarified that *municipalities are expected to manage local impacts on water and water resources* such as riparian lands during land use decision-making processes.<sup>70</sup> SSRP identifies riparian lands as water resources, and expects municipalities to manage land-use with the five critical functions in mind.<sup>71</sup> However, the SSRP implementation section is not mandatory. The exact wording of provincial ‘expectations’ respecting municipal management of riparian lands in the implementation section is addressed under ‘water and watersheds,’ and recognizes the limited scope of municipal jurisdiction, as follows:

**Water and Watersheds:** Municipalities are expected to:

- 8.23 Utilize or incorporate measures which minimize or mitigate possible negative impacts on important water resources or risks to health, public safety and loss to property damage due to hazards associated with water, such as flooding, erosion and subsidence due to bank stability issues, etc., *within the scope of their jurisdiction.*
- 8.24 Incorporate measures in future land-use planning decisions to mitigate the impact of floods through appropriate flood hazard area management and emergency response planning for floods.
- 8.25 Prohibit unauthorized future use or development of land in the floodway in accordance with the Flood Recovery and Reconstruction Act and the Floodway Development Regulation under development, which will control, regulate or prohibit use or development of land that is located in a floodway and define authorized uses. **(Note: This provincial law and regulation have not received Royal Assent)**
- 8.26 Identify and consider, based on available information including information from the Government of Alberta, the values of significant water resources and other water features, such as ravines, valleys, riparian lands, stream corridors, lakeshores, wetlands and unique environmentally significant landscapes, within their boundaries.
- 8.27 Determine appropriate land-use patterns in the vicinity of these significant water resources and other water features.
- 8.28 Consider local impacts as well as impacts on the entire watershed.
- 8.29 Consider a range of approaches to facilitate the conservation, protection or restoration of these water features and the protection of sensitive aquatic habitat and other aquatic resources.
- 8.30 Establish appropriate setbacks from waterbodies to maintain water quality, flood water conveyance and storage, bank stability and habitat.
- 8.31 Assess existing developments located within flood hazard areas for long-term opportunities for redevelopment to reduce risk associated with flooding, including human safety, property damage, infrastructure and economic loss.
- 8.32 Facilitate public access and enjoyment of water features, to the extent possible.
- 8.33 Use available guidance, where appropriate, from water and watershed planning initiatives in support of municipal planning.<sup>72</sup> (Emphasis added.)

The 2018 amendment to the SSRP clarified that there was no provincial riparian land policy or law in place, or consistent methodology for delineating and mapping riparian land. In that amendment, the Province acknowledged that the recommendations in the Report made by the

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<sup>69</sup> SSRP, *supra* note 50 at pp. 80-81.

<sup>70</sup> SSRP, *supra* note 50 at pp. 111-113. ‘These policies ensure the safety and security of individuals, communities and property from hazards associated with water, such as flooding, erosion and subsidence due to bank stability issues; allow the protection of water resources, including lakes, rivers and streams, bed and shores and other water features; and would encourage environmental stewardship, responsible development and public access to provincial water bodies and watersheds.’

<sup>71</sup> *Ibid.*

<sup>72</sup> *Ibid.*



AWC Project Team had not been implemented. *This policy and regulatory gap in Alberta's riparian land governance system still exists in 2020.*

Before ALSA, in 1996 the Province adopted the *Alberta Land Use Policies* [LUPs]<sup>73</sup>, and section 622 of the *Municipal Government Act* [MGA]<sup>74</sup> was enacted, requiring that all municipal land use decision-making be consistent with the LUPs. Through the LUPs, the Province 'encouraged' municipalities to minimize and mitigate any local negative impacts on provincially owned 'natural resources' and 'water resources' during subdivision and development of private land. Riparian land and shorelands were identified as water resources. While the LUPs were not mandatory, all municipal decision-makers were required to ensure that their planning documents and decisions made under Part 17: Planning and Development of the MGA [Part 17] were consistent with the LUPs. However, the LUPs were rarely mentioned during municipal land-use decision-making processes.

Since the enactment of ALSA, the LUPs are automatically replaced in each region when a regional land-use plan is enacted. For example, municipal decision-makers in the South Saskatchewan and Lower Athabasca regional planning areas are now required to comply with the regional land-use plans which provide the Province's expectations. Where no regional plan is in place, municipalities are still required to comply with the LUPs.

The SSRP specifically provides that municipalities are expected to participate in management responses set out in the *South Saskatchewan Surface Water Quality Management Framework* [SSRP Surface Water Quality Framework]<sup>75</sup> through local enactment and enforcement of municipal bylaws. The Province does not limit these tools to LUB provisions under Part 17, but references local bylaws generally.<sup>76</sup>

Very few municipalities have specific riparian land management bylaws in place to sustain the five riparian land functions, although some communities have been proactive in this regard. For example, some municipalities have bylaws to prevent water pollution by restricting public access to riparian lands in municipally owned environmental reserves that were dedicated to the

<sup>73</sup> Government of Alberta, *Alberta Land Use Policies*, (Edmonton: Government of Alberta, 1996) [LUPs], Parts 5 and 6. The Province described environmentally significant features and water resources that municipalities were encouraged to enhance or protect during land use development and subdivision processes.

<sup>74</sup> *Municipal Government Act*, R.S.A. 2000, c. M-26 [MGA].

<sup>75</sup> Government of Alberta, *South Saskatchewan Surface Water Quality Management Framework*, (Edmonton: Government of Alberta, 2014) [SSRP Surface Water Quality Framework]. See especially Part 6 of the SSRP Surface Water Quality Framework, where municipal bylaws are considered an appropriate management response tool for surface water quality management at all three levels where management responses are required by land use decision-makers. See SSRP, *supra* note 49: "The development and implementation of environmental management frameworks is a new approach being used by the Government of Alberta to accomplish cumulative effects management. Management frameworks establish outcomes and objectives along with the strategies and actions to achieve them. The frameworks are intended to provide context within which decisions about future activities and management of existing activities should occur. They confirm regional objectives and establish thresholds. They are intended to add to and complement, not replace or duplicate, existing policies, legislation, regulation and management tools."

<sup>76</sup> *Ibid.*

municipality during subdivision processes.<sup>77</sup> Environmental reserves are more fully explained in Chapter 7 when addressing the municipal riparian land governance.

## **6.2 Growth boards under the Municipal Government Act [MGA]<sup>78</sup>**

In Alberta, a number of municipalities in both the Edmonton Metropolitan Region and Calgary Metropolitan Region respectively have been mandated by the Province to form and participate in growth boards to manage impacts of growth at the city-region scale. Municipalities who participate (participating municipalities) on a growth board must comply with the policies and directives in the growth plan they help to create.

So far, the Interim Growth Plan<sup>79</sup> for the newly formed Calgary Metropolitan Region Board does not specifically address development restrictions in riparian land, nor does the plan provide policy with respect to conserving and managing riparian land to sustain the five riparian land functions. The Interim Growth Plan does include policy that all participating municipalities must restrict development of buildings in the ‘floodway,’ while development in the flood fringe is still permitted as long as flood-proofing is provided.<sup>80</sup>

In the *Calgary Metropolitan Region Board Regulation*,<sup>81</sup> the Province mandated that the growth plan for the Calgary Metropolitan Region must include ‘policies regarding environmentally sensitive areas’ and specific actions to be taken by participating municipalities to implement those policies. The regulation clarifies that environmental health in the region is important. The Interim Growth Plan does not specifically address environmentally significant areas, nor identify the urgent need to conserve and manage riparian land to sustain the five critical functions. For example, Principle 2 of the plan is stated to ‘Protect Water Quality and Promote Water Conservation.’ The objectives are to: a) manage the risks to water quality, quantity, and drinking water sources in accordance with federal and provincial legislation and regulation; b) promote water conservation practices; c) recognize the importance of ecological systems within the region; and d) prohibit new development in the floodway.<sup>82</sup> Controlling human activities and interactions on or near riparian land to achieve these objectives is not mentioned.

Two of the objectives of the Calgary Metropolitan Region’s growth plan are: “to coordinate decisions in the Calgary Metropolitan Region to sustain economic growth and ensure strong communities and a healthy environment;” and “to promote the social, environmental and economic well-being and competitiveness of the Calgary Metropolitan Area.” There may be future opportunities for the Calgary Metropolitan Region Board to address riparian land conservation and management in the final growth plan as part of its mandate to manage the impacts of growth on environmentally significant areas.

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<sup>77</sup> Judy Stewart, *Pigeon Lake Model Land Use Bylaw: Lakeshore Environmental Development Provisions for Conservation and Management of Riparian Lands and Uplands to Minimize Nutrient Loading and Pollution of Pigeon Lake*. (Edmonton: Pigeon Lake Watershed Management Plan Steering Committee, 2013).

<sup>78</sup> MGA, *supra* note 74. See MGA Part 17.1, sections 708.1-708.25.

<sup>79</sup> Calgary Metropolitan Region Board, Interim Growth Plan, 2018: online: <https://static1.squarespace.com/static/5eb3220bf77e9b62db665c54/t/5ed169e626df7f3a80d92d5b/1590782484206/2018+10+04+CMRB+IGP+Approved+Version+REDUCED.pdf> [Interim Growth Plan] (Accessed on June 1, 2020.)

<sup>80</sup> Interim Growth Plan, *supra* note 79 at p.11. See Principle 2 of the Interim Growth Plan.

<sup>81</sup> *Calgary Metropolitan Region Board Regulation*, Alta Reg.190/217.

<sup>82</sup> Interim Growth Plan, *supra* note 79: Principle 2.

The Edmonton Metropolitan Region growth plan<sup>83</sup> specifically addresses riparian land management. Riparian land is identified as “a natural living system.” The objectives to achieve the “Guiding Principle” to “protect natural living systems and environmental assets” is included below, as follows:

We will practice wise environmental stewardship and promote the health of the regional ecosystem, watersheds, airsheds, and environmentally sensitive areas.

**Objectives**

- Conserve and restore natural living systems through an ecological network approach
- Protect regional watershed health, water quality and quantity
- Plan development to promote clean air, land and water and address climate change impacts
- Minimize and mitigate the impacts of regional growth on natural living systems.<sup>84</sup>

Management of riparian land is addressed through policies under “Natural Living System’s”: Objectives 2.1 through to 2.4 of the plan.<sup>85</sup> For example, Objective 2.2: Policy 2.2.1(c), and Objective 2.2: Policy 2.2.3 both address that regional-scale policies and bylaws are needed to manage “riparian zones” for most of the five critical functions, as follows:

2.2.1(c) incorporate best practices to minimize soil erosion, *protect and enhance riparian zones*, and conserve and enhance areas that contain habitat for significant, rare or endangered plant species...

2.2.3 All development shall be required to comply with all applicable provincial and federal acts, regulations and guidelines with respect to water quality, flood plains and hazard management. (Emphasis added.)

### **6.3 Intermunicipal development plans under the MGA<sup>86</sup>**

Municipalities are also enabled to prepare and implement intermunicipal development plans [IDPs]. These plans govern how both municipal councils in an intermunicipal planning area of two adjacent municipalities will develop on or near riparian land over time. As riparian landscapes are transboundary and interjurisdictional in nature, adjacent municipalities may develop intermunicipal development policies, LUB regulations and management practices that apply to riparian land within the planning area of both communities. However, riparian land conservation and management is rarely addressed in IDPs.

### **6.4 Intermunicipal collaboration frameworks under the MGA<sup>87</sup>**

Intermunicipal collaboration frameworks [ICFs], like growth management boards, are relatively new institutional arrangements whereby two or more adjacent municipalities are required to enter into collaborative agreements for intermunicipal servicing and financing.

<sup>83</sup> Edmonton Metropolitan Region Board, ‘Re-imagine, Plan, Build: Edmonton Metropolitan Region Growth Plan, Amended 2020, online: [https://www.qp.alberta.ca/documents/Regs/2017\\_190.pdf](https://www.qp.alberta.ca/documents/Regs/2017_190.pdf) pp.44-46. [Edmonton Growth Plan]. (Accessed on July 29, 2020.)

<sup>84</sup> Edmonton Growth Plan, *supra* note 83.

<sup>85</sup> *Ibid.*

<sup>86</sup> MGA, *supra* note 74, sections 631 and 631.1.

<sup>87</sup> MGA, *supra* note 74, Part 17.2, sections 708.26-708.52.

Alberta Municipal Affairs, in collaboration with Stantec, Alberta Urban Municipalities Association, and Rural Municipalities of Alberta, created guidance materials<sup>88</sup> to help municipalities create ICFs. The deadline for creating ICFs has been extended to April 2021. To date, ICFs have not been used to conserve and manage riparian land to sustain the five riparian land functions.

### 6.5 WPACS and WSGs

WPACs and WSGs are voluntary multi-stakeholder organizations created under Water For Life that function as bridging organizations, bridging the gaps between local and provincial legislative schemes and providing programs and services for watershed management at the intermunicipal and regional scales.<sup>89</sup> Municipal members actively participate in these organizations in watershed management activities and regional-scale planning and monitoring programs. They voluntarily participate to co-create and implement regional-scale watershed management plans through consensus-decision-making processes.<sup>90</sup> Most Alberta WPACS and WSGs have identified conservation and management of riparian land to sustain the five critical functions as a management priority that needs to be addressed by the Province and municipalities on an urgent basis.<sup>91</sup> However, **watershed management plans created through collaborative governance processes have no legal mandate and implementation is strictly voluntary and cannot be enforced through Alberta courts.**

## 7.0 Municipal riparian land governance system

### 7.1 Background to municipal law and governance of riparian lands

In *Dunsmuir v. New Brunswick*, Bastarache and LeBel J.J., speaking for the majority of the Supreme Court of Canada stated “[b]y virtue of the rule of law principle, all exercises of public authority must find their source in law. All decision-making powers have legal limits, derived from the enabling statute itself, the common or civil law or the Constitution.”<sup>92</sup> Municipalities are not a level of government, but are ‘creatures of the provincial government’ and, in accordance with the *Canadian Constitution Act, 1982*<sup>93</sup> may only exercise powers granted to them by the provincial

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<sup>88</sup> Alberta Urban Municipalities Association, Intermunicipal Collaboration Framework Workbook, 2020, online: [https://auma.ca/sites/default/files/Advocacy/Programs\\_Initiatives/MGA\\_Change\\_Mgt\\_Resources/icf\\_workbook\\_update\\_2020\\_final.pdf](https://auma.ca/sites/default/files/Advocacy/Programs_Initiatives/MGA_Change_Mgt_Resources/icf_workbook_update_2020_final.pdf) [ICF Workbook]. (Accessed on June 29, 2020.)

<sup>89</sup> Government of Alberta, ‘Watershed Advisory and Planning Councils,’ (nd), online: <https://www.alberta.ca/watershed-planning-and-advisory-councils.aspx> [WPACs]. (Accessed on August 1, 2020.)

<sup>90</sup> WPACs, *supra* note 89.

<sup>91</sup> Bow River Basin Council, Bow Basin Watershed Management Plan, Phase I and Phase II, 2012, online: <https://brbc.ab.ca/our-activities/bow-basin-watershed-management-plan> (Accessed on June 25, 2020.)

<sup>92</sup> *Dunsmuir v. New Brunswick*, 2008 SCC 9 (CanLII), [2008] 1 S.C.R. 190 at para 28.

<sup>93</sup> See The Constitution Act, *supra* note 38: s.92(8): “In each Province the Legislature may exclusively make Laws in relation to Matters coming within the Classes of Subjects next hereinafter enumerated; that is to say...8. Municipal Institutions in the Province.” As well, see *114957 Canada Ltée (Spraytech, Société d'arrosage) v. Hudson (Town)*, [2001] 2 SCR 241, 2001 SCC 40 (CanLII) [Spraytech] at para. 49: “If a local government body exercises a power, a grant of authority must be found somewhere in the provincial laws. Although such a grant of power must be construed reasonably and generously (*Nanaimo (City) v. Rascal Trucking Ltd.*, [2000] 1 S.C.R. 342, 2000 SCC 13 (CanLII)), it cannot receive such an interpretation unless it already exists. *Interpretation may not supplement the*

legislature. Elected municipal councils may enact bylaws for municipal purposes,<sup>94</sup> and bylaws must be consistent with federal and provincial enactments or will be deemed of no force and effect.<sup>95</sup>

***Municipalities have no direct delegated authority to regulate and control human activities and interactions on or near riparian land to sustain the five critical functions.*** In 1994 when the MGA was enacted, municipalities were granted authority and responsibility for land-use planning and development of privately owned lands within municipal boundaries through Part 17. In Part 17, section 640 authorizes enactment of municipal LUBs that prohibit, or regulate and control, local land-use and development.<sup>96</sup> Municipal statutory land-use plans<sup>97</sup> and LUB provisions determine how private landowners may develop riparian land on private parcels. If a private landowner wishes to develop his or her riparian land or construct a “building” as defined in the MGA,<sup>98</sup> before beginning any work, the landowner is required to obtain a ***municipal development permit*** in accordance with the LUB.

Section 60 of the MGA provides municipalities with the “direction, control, and management” of water bodies within municipal boundaries,<sup>99</sup> which indirectly authorizes municipal regulation and management of impacts on riparian land that abut beds and shores.<sup>100</sup> Section 60 is rarely used by municipalities for this purpose.

## ***7.2 A brief historical note about municipal planning and development law***

Historically, municipal land-use planning and development were regulated by the Province pursuant to the *Planning Act*,<sup>101</sup> which was repealed in 1994 when the MGA was enacted. Prior to 1994, regional planning commissions existed at the city-region scale throughout the Province. Regional planning commissions were made up of elected representatives and planners from different municipalities in the city-region and were authorized to create regional land-use plans, and oversee development and subdivision approvals by municipalities in the region.

When provincial oversight, regional plans, regional planning commissions and the Alberta Planning Board were discontinued in 1994, municipalities were encouraged to adopt IDPs<sup>102</sup> to jointly plan future development by agreement with their adjacent neighbours. IDPs address transjurisdictional and transboundary planning matters, such as future land-use and the location of

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*absence of power.*” Also see ” *R. v. Greenbaum*, 1993 CanLII 166 (SCC), [1993] 1 S.C.R. 674: “Municipalities can exercise only those powers which are explicitly conferred upon them by a provincial statute.”

<sup>94</sup> MGA, *supra* note 74, s.3. Fostering the well-being of the environment is a municipal purpose.

<sup>95</sup> MGA, *supra* note 74: ss. 1(j) “**enactment:** (i) an Act of the Legislature of Alberta and a regulation made under an Act of the Legislature of Alberta, and (ii) an Act of the Parliament of Canada and a statutory instrument made under an Act of the Parliament of Canada but does not include a bylaw made by a council.”

<sup>96</sup> MGA, *supra* note 74, s.640.

<sup>97</sup> MGA, *supra* note 74, Part 17: Division 4.

<sup>98</sup> “**Building**” is defined in ss.616 (a.1) of the MGA: “building” includes anything constructed or placed on, in, over or under land, but does not include a highway or road or a bridge that forms part of a highway or road.

<sup>99</sup> MGA, *supra* note 74, s.60.

<sup>100</sup> Stewart 2016 *supra* note 32, and Judy Stewart. “Do Recent Amendments to Alberta’s Municipal Government Act Enable Management of Surface Water Resources and Air Quality.” *Alta. L. Rev.* 55 (2018): 1009. [Stewart, 2018].

<sup>101</sup> *Planning Act*, R.S.A. 1980, c-P-9. Repealed.

<sup>102</sup> MGA, *supra* note 74, section 631 and 631.1: Intermunicipal development plans.

roads and servicing, for example, for water and wastewater pipelines. Generally, IDPs did not address environmental matters, such as management of river corridors and riparian land to sustain the five critical functions. Since recent amendments to the MGA,<sup>103</sup> adjacent municipalities with shared boundaries must jointly create IDPs. Municipalities must now consider “environmental matters within the area, either generally or specifically,” but there remains no direct reference to riparian land and the five critical functions.

631(2)(a) two or more municipalities, that are not members of a growth management board must create an intermunicipal development plan that (a) **must** address (i) the future land use within the area, (ii) the manner of and the proposals for future development in the area, (iii) the provision of transportation systems for the area, either generally or specifically, (iv) the co-ordination of intermunicipal programs relating to the physical, social and economic development of the area, (v) **environmental matters within the area, either generally or specifically**, and (vi) any other matter related to the physical, social or economic development of the area that the councils consider necessary.” (Emphasis added.)

In the mid to late 2000s, the Province recognized that land-use planning and water resource planning needed to be integrated at the watershed-scale to address ongoing water scarcity, and to manage cumulative effects of continued rapid population and economic growth. The LUF was adopted as provincial land-use policy. Shortly after, ALSA was enacted and regional planning at the major watershed-scale<sup>104</sup> was introduced to guide and steer land-use development on public and privately-owned land.

Arguably, recent amendments to the MGA that followed the LUF and ALSA grant municipalities authority to manage components of the environment, as defined in EPEA,<sup>105</sup> at the local and regional geopolitical landscape scales.<sup>106</sup>

### **7.3 Part 17 of the MGA and the environment**

The only enabling provisions in Part 17 that specifically address the “environment” are section 664 that enables the dedication of specifically described lands as “*environmental reserve*” [ER]<sup>107</sup> to the municipality during subdivision processes (under certain circumstances)<sup>108</sup>

Part 17 also includes section 632(3)(b)(iii) whereby a municipality is given discretionary authority to “address environmental matters within the municipality” in a municipal development plan [MDP]. A MDP is a high level planning policy document whereby a municipality addresses future growth and development patterns, and proposes and identifies locations for major infrastructure, transportation systems, and other municipal services and facilities. Many municipalities do include high level policy statements about environmental matters in their MDPs, however these policy

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<sup>103</sup> Stewart, 2018, *supra* note 100.

<sup>104</sup> *Water Act*, *supra* note 3. See ss.1(ff). While there are 7 major river basins in Alberta, the Red Deer and Lower Athabasca watersheds attract separate regional land-use plans due to unique water resources and social and economic planning considerations.

<sup>105</sup> *Environmental Protection and Enhancement Act*, R.S.A. 2000 E-12. [EPEA]: s.1(t): “*environment*” means the components of the earth and includes (i) air, land and water, (ii) all layers of the atmosphere, (iii) all organic and inorganic matter and living organisms, and (iv) the interacting natural systems that include components referred to in subclauses (i) to (iii).

<sup>106</sup> Stewart, 2018, *supra* note 100.

<sup>107</sup> MGA, *supra* note 74, s 664.

<sup>108</sup> *Ibid.*

statements are rarely translated into enforceable LUB provisions. That is because municipalities are not required to undertake any of the proposals or projects identified in an MDP or other statutory planning documents.<sup>109</sup> LUBs are the means whereby statutory plans like IDPs and the MDP are put into action.<sup>110</sup>

Through LUBs, municipalities may regulate and control land-use and the development of buildings on or near riparian land to sustain the five functions by requiring setbacks from water bodies.<sup>111</sup> Sometimes municipalities do not establish appropriate development and building setbacks. Sometimes they allow development encroachment into all three riparian zones during stripping and grading activities that prepare the land for servicing and buildings.

Environmental considerations during land-use planning and development processes are often restricted to determining whether a parcel of land proposed for subdivision or development is “suitable for the intended purpose,”<sup>112</sup> because the lands may be subject to flooding, slumping, or subsidence. Generally, environmental considerations revolve around hazardous lands that may impact human activities and interactions and buildings, rather than how the environment may be impacted during and post development. However, this may be changing due to the recent amendments to the MGA and the addition of the new municipal purpose to “foster the well-being of the environment.”<sup>113</sup>

#### **7.4 Environmental reserves and easements**

During subdivision processes, private lands that meet specific criteria may be required to be dedicated to a municipality as ER and, as such, they are subsequently owned and managed by the municipality. The ER provisions of the MGA were recently amended. Subsection 664(1) of the MGA is now subject to section 663 of the MGA and subsection 664(2), regarding **ER easements** for the protection and enhancement of the environment.<sup>114</sup>

In the MGA, ER easements are institutional arrangements whereby the landowner and the municipality agree, prior to an application to subdivide a parcel of land, that the lands that would otherwise be required to be dedicated to the municipality as environmental reserves will carry a municipal easement and will remain in their natural state. The title to the lands covered by the easement remains with the landowner, and runs with any disposition of the land. The ER easement constitutes an interest in the land that may be enforced by the municipality<sup>115</sup> in Alberta courts. Following subdivision, the landowner continues to control public access to the lands covered by the easement.<sup>116</sup>

Before amendment to the ER provisions, municipalities tended to require the dedication of ER without considering ER easements as a first option. ER parcels were often used by municipalities for municipal purposes, such as public parks and recreational facilities, as well as for pathways,

<sup>109</sup> MGA, *supra* note 74, s.637: “The adoption by a council of a statutory plan does not require the municipality to undertake any of the projects referred to in it.”

<sup>110</sup> *Hartel Holdings Co. Ltd. v. City of Calgary*, [1984] 1 SCR 337, 1984 CanLII 137 (SCC) at 352.

<sup>111</sup> MGA, *supra* note 74, s.640.

<sup>112</sup> See *Subdivision and Development Regulation*, Alta Reg. 43/2002.

<sup>113</sup> MGA, *supra* note 74, ss. 3(a.1).

<sup>114</sup> Stewart, 2018, *supra* note 100.

<sup>115</sup> MGA, *supra* note 1, ss. 664(2) and 664(3).

<sup>116</sup> Stewart, 2018, *supra* note 100.

and water and wastewater treatment and distribution intake and release systems, even though the ER parcels were originally considered undevelopable lands.<sup>117</sup>

Under subsection 664(1)(c) of the MGA, “a strip of land, not less than 6 metres in width, abutting the bed and shore of any body of water” may be required to be dedicated to a municipality at the time of subdivision for one of the purposes provided in section 664(1.1), as follows:

**664(1.1)** A subdivision authority may require land to be provided as environmental reserve only for one or more of the following purposes:

- (a) to preserve the natural features of land referred to in subsection (1)(a), (b) or (c) where, in the opinion of the subdivision authority, those features should be preserved;
- (b) to prevent pollution of the land or of the bed and shore of an adjacent body of water;
- (c) to ensure public access to and beside the bed and shore of a body of water lying on or adjacent to the land;
- (d) to prevent development of the land where, in the opinion of the subdivision authority, the natural features of the land would present a significant risk of personal injury or property damage occurring during development or use of the land. (Emphasis added.)

Before amendment, to require the dedication of a minimum 6 metre strip of land abutting a water body, a municipality had to demonstrate that the requirement was to provide public access or prevent pollution. It was not clear if the municipality was requiring the land to be dedicated to prevent pollution of the land or the water body or both. Subsection 664(1.1) now clarifies that the dedication of this strip is to prevent pollution of the land or of the bed and shore of an adjacent body of water. The Province thereby confirms that municipalities are not expected to prevent pollution of the water in an adjacent body of water, which is a provincial responsibility under EPEA.

The minimum 6 metre (or much wider) strips of riparian lands adjacent to bodies of water may now be required to be dedicated for two additional purposes, including the broadly stated purpose “to preserve the natural features of land referred to in subsection (1)(a), (b) or (c) where, in the opinion of the subdivision authority, those features should be preserved.” The new ER provisions may enable municipalities to require dedication of much wider strips of riparian land at the time of subdivision, perhaps to sustain several of the five riparian land functions.

### **7.5 Conservation reserves and conservation easements**

Since the recent MGA amendments, during subdivision processes municipalities may also require dedication of **conservation reserves**.<sup>118</sup> Conservation reserves are new institutional arrangements. Unlike ER dedications, a conservation reserve that is required to be transferred to a municipality<sup>119</sup> is considered a taking of land for which the municipality must pay full market value. Conservation reserves will, therefore, be recognized as valuable environmentally significant features when municipalities are creating MDPs and other statutory planning documents, such as Area Structure Plans.

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<sup>117</sup> *Ibid.*

<sup>118</sup> MGA, *supra* note 74, s.664.2

<sup>119</sup> MGA, *supra* note 74, section 661.1: “The owner of a parcel of land that is the subject of a proposed subdivision must provide to a municipality land for conservation reserve as required by the subdivision authority pursuant to this Division.”



Municipalities will need to identify and map *environmentally significant features* during statutory planning processes well in advance of a landowner or developer's application for subdivision and development of the parcel. This is because a land developer who purchases lands expecting to be able to use the land for development purposes should not be surprised by a requirement to sell these lands to the municipality as conservation reserves after buying the land to develop.<sup>120</sup> Unfortunately, environmentally significant features are not defined in the MGA. It is still unclear whether riparian lands are considered environmentally significant features for the purpose of the conservation reserve provisions, or whether they will be considered landscape features that could be required to be dedicated as ER.

The new section, 664.2 is provided below in its entirety, as follows:

- 664.2(1) A subdivision authority may require the owner of a parcel of land that is the subject of a proposed subdivision to provide part of that parcel of land to the municipality as conservation reserve if
- (a) in the opinion of the subdivision authority, the land has **environmentally significant features**,
  - (b) the land is not land that could be required to be provided as environmental reserve,
  - (c) the purpose of taking the conservation reserve is to enable the municipality to protect and conserve the land, and
  - (d) the taking of the land as conservation reserve is consistent with the municipality's municipal development plan and area structure plan.

Conservation reserves reflect the Province's intent that municipal governments are to protect and conserve environmentally significant features within their boundaries that are not otherwise able to be dedicated as ER. While this new provision clarifies that a municipality must compensate the landowner for lands required to be dedicated as conservation reserves, it does not describe the types of landscape features that might fit under the environmentally significant features description.

**Conservation easements** enabled under ALSA seem to be better tools to achieve conservation of environmentally significant features, because, as voluntary arrangements between a landowner and a municipality as the easement holder, the lands will be stewarded to a higher standard by the landowner who can restrict public access.<sup>121</sup> Municipalities may find it more difficult to restrict public access to conservation reserves because they will have been purchased with tax dollars. There is also a misconception by the average taxpayer that municipally-owned lands, such as ER and conservation reserves are 'public lands' that every member of the public may use as they see fit. However, public lands are any lands owned by the Province and their use is highly regulated under the *Public Lands Act*.

### **7.6 Other municipal bylaw powers to potentially conserve and manage riparian land**

In Part 3 of the MGA, subject to any other enactment, **section 60** provides municipalities with special bylaw passing powers for the "direction control and management of the rivers, streams, watercourses, lakes and other natural bodies of water within the municipality, including the air space above and the ground below," excepting out mines and minerals. However, section 60 is not

<sup>120</sup> Stewart, 2018, *supra* note 100.

<sup>121</sup> Stewart, 2018, *supra* note 100.

generally relied upon by municipal councils to manage local water bodies or riparian land, although the benefits of section 60 water body management bylaws have been raised.<sup>122</sup>

**Section 7** of the MGA provides general jurisdiction to pass bylaws for municipal purposes including to address the safety, health and welfare of people and the protection of people and property, and this provision is often relied upon by councils to pass bylaws for environmental purposes, such as to curb the use of cosmetic pesticide application to prevent pollution of bodies of water by phosphorus or nitrogen. Subsection 7(h) also provides municipalities with authority to pass bylaws for a municipal purpose respecting “wild and domestic animals and activities in relation to them,”<sup>123</sup> but this subsection does not authorize municipal management of riparian land to sustain the habitat and biodiversity function. Generally, municipalities do not conserve and manage habitat for wild animals.

While the Province recognizes the important role played by municipal governments in environmental governance at the local scale, other than section 60 with respect to water bodies, there are no special provisions that enable or require a municipal council to manage any component of the environment in the manner management is explained earlier in this paper.

However, the LUPS, ALSA and regional land-use plans, such as the SSRP do set out the Province’s *expectations* that municipalities will manage use of private lands to keep the state of identified water resources within desirable bounds. Unfortunately, there is no SSRP management framework in place for managing riparian land, or the aquatic environment in a general ecological sense. *The continued absence of biodiversity and critical habitat management framework associated with regional land-use plan regulations is a major gap in the riparian land governance system.*

## 8.0 Gaps in Alberta’s riparian land governance system

Many gaps in the regulatory, institutional and management subsystems of Alberta’s riparian land governance system have been identified. Table 7 below provides a summary of those gaps in relation to each of the riparian land functions. Where a specific governor, such as the Province, or a municipality or growth board lacks jurisdiction to regulate, this is also included in the ‘governor’ column of Table 7.

**Table 7: Gaps in Alberta’s riparian land governance system**

<b>Riparian Land Function</b>	<b>Policy/ Regulation Gap</b>	<b>Institutional Gap</b>	<b>Management Gap</b>	<b>Governor</b>
<b>Water quality</b>	No provincial policy or regulation of riparian lands to sustain this function.  No legal definition of ‘riparian land.’	No systemic methodology for delineation of riparian land –scientists need to design the methodology with governments.	No definition or systemic methodology for delineation of riparian land.	Municipalities have little authority to manage riparian lands to sustain water quality.  Municipalities lack resources to

<sup>122</sup> Judy Stewart, “Municipal “Direction, Control and Management” of Local Wetlands and Associated Riparian Lands: Section 60 of the *Municipal Government Act*,” 47 *Alta L.R.* (2009)1:73 [Stewart, 2009].

<sup>123</sup> MGA, *supra* note 1, ss.7(h).

	No MGA definition of ‘environmentally significant features’	No delegated authority for municipalities to manage riparian lands to sustain function.  WPACs have no authority to ensure that watershed management plans are implemented by their members. Growth plans do not reference watershed management plans.	Strategy for Protection of the Aquatic Environment to sustain function is shelved and not implemented by the Province or municipalities and is not referenced in growth plans.  Outer riparian zone is not managed by anyone for critical buffering function.	determine appropriate setbacks from water’s edge under section 640(4) of MGA to sustain function.  WPACs have no authority to ensure that watershed management plans are implemented by their members.
<b>Habitat and Biodiversity</b>	No provincial policy or regulation of riparian land to sustain function.  No legal definition of riparian land.	No definition or systemic methodology for delineation of riparian land.	No systemic methodology for delineation of riparian land.  No Framework for Managing Biodiversity for LARP or SSRP.	Municipalities have no authority to sustain this function.  Municipal planners do not have required expertise to implement Stepping Back.
<b>Flood Conveyance and Water Storage</b>	No provincial policy or regulation of riparian land to sustain function.  No federal policy regarding protecting flood conveyance and water storage function.	Social and cultural norms allow buildings and development in flood fringe. (I.E. Gravel extraction is encouraged in flood fringe.)  Lack of landowner education about the function, especially regarding economics.	No definition or systemic methodology for delineation of riparian land  Federal-provincial Flood Damage Reduction Program discontinued and was not intended to sustain this function  Flood proofing is still a viable option in the FHA.	Federal government has discontinued the Canada-Alberta Flood Reduction Program.  Province has not used its authority to regulate and control municipal development and subdivision approvals beyond the floodway.  Flood proofing of buildings in the flood fringe is still approved.
<b>Bank and Shoreline Stabilization</b>	No provincial policy or regulation of riparian land to specifically sustain function.	Little enforcement of <i>Public Lands Act</i> restrictions of human activities and interactions in rural areas, public land and parks.	Regulations under the <i>Public Lands Act</i> not always enforced.  Landowners do not understand this function.	Municipalities have no authority to manage riparian land to sustain this function.

<p><b>Social and Economic Benefits</b></p>	<p>No provincial policy or regulation of riparian land to sustain function.</p>	<p>Need public education for landowners and others about the social and economic benefits of intact riparian land.</p>	<p>Cows and Fish programs are not free.</p> <p>Need federal and provincial economic incentives.</p>	<p>Laws to regulate and control human activities and interactions on or near riparian land are not understood by private landowners.</p> <p><b>Education is critical.</b></p>
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## 9.0 Recommendations to improve Alberta’s riparian land governance system

The following 20 recommendations mirror recommendations made in AWC’s Report and flow from the analysis of the riparian land governance system in this paper. First, the recommendations are framed within the appropriate governance subsystem. Second, the time period for implementation is provided, for example within short (urgent), medium (within five years) or long term (ongoing) time periods. Third, each recommendation targets action by a responsible level of government, agency or stakeholder. Last, a gap-filler-action-statement to improve the governance system as a whole is provided.

### Short Term:

**Recommendation 1: Policy and Regulatory**

Federal and provincial governments agree on a consistent ‘legal definition’ of riparian land and environmentally significant features.

**Recommendation 2: Policy and Regulatory**

Federal government reinstates and funds the Canada-Alberta Flood Reduction Program and develops educational materials for other governments, industry and landowners on the flood reduction and water retention function of riparian land.

**Recommendation 3: Institutional and Management**

Province creates FHA maps for all significant water bodies and watercourses in the Province and develops a scientifically defensible methodology for keeping the maps current and available to the public.

**Recommendation 4: Institutional and Management**

Province works with AWC, Cows and Fish and consulting firms to develop an approved, consistent, scientifically defensible methodology for identifying and delineating (mapping) riparian land and riparian zones.

**Recommendation 5: Institutional and Management**

Province, working collaboratively with AWC, Cows and Fish and consulting firms, provides a scientifically defensible methodology for determining riparian land intactness and riparian health.

- **Recommendation 6: Institutional and Management**  
Province, working collaboratively with AWC, Cows and Fish and consulting firms develop performance measures to monitor and report on the state of riparian land intactness and health throughout Alberta.
  - **Recommendation 7: Regulatory**  
Province completes and releases the Framework for Managing Biodiversity for LARP and SSRP.
  - **Recommendation 8: Regulatory**  
Province develops compliance programs and consistently enforces *Public Lands Act* regulations regarding unauthorized use of shorelands with creative sentencing being a viable option for landowners.
  - **Recommendation 9: Regulatory, Institutional and Management**  
Province creates regulations and administrative processes to implement section 96 of the *Water Act* and section 693.1 of the MGA.
  - **Recommendation 10: Regulatory**  
Province enables municipal LUB provisions to control of human activities and interactions on or near riparian land to sustain the five critical functions.
  - **Recommendation 11: Policy and Regulatory**  
Municipalities use Intermunicipal Collaboration Frameworks to create policies and fund projects and programs to control human activities and interaction on or near riparian land and riparian corridors to sustain connectivity and the five critical functions.
  - **Recommendation 12: Policy and Regulatory**  
Province provides specific policy, regulation, and guidance restricting forestry, agricultural, oil and gas, and aggregate extraction operations within the outer riparian zone of the FHA, and removes current disincentives to voluntary industrial conservation of riparian land.
- Medium Term:**
- **Recommendation 13: Policy, Regulatory, Institutional and Management**  
Province updates the Strategy for Protection of the Aquatic Environment and provides recommended best management practices to all Water For Life partners (WPACs) and (WSGs) for inclusion in watershed management plans. Province requires municipalities to consider relevant watershed management plans during planning and development planning and decision-making processes,
  - **Recommendation 14: Regulatory**  
Province amends regional land-use plans to regulate municipal development and subdivision approvals in outer riparian zone of the FHA.

□ **Recommendation 15: Policy, Regulatory, Institutional and Management**

Municipalities use Intermunicipal Collaboration Frameworks to create policies and fund projects and programs to control human activities and interactions on or near riparian land to sustain the five critical functions.

□ **Recommendation 16: Policy, Regulatory, Institutional and Management**

Growth boards use growth plans to create policies and strategies to manage human activities and interactions on or near riparian land to sustain the five critical functions and require participating municipalities to consider relevant watershed management plans when making land-use decisions.

**Long Term:**

□ **Recommendation 17: Management**

All levels of government provide education programs to stakeholders and landowners about actions they can take to sustain the five critical functions.

□ **Recommendation 18: Policy and Management**

In watershed management plans, WPACs and WSGs provide policy and best management practice advice to governments and other stakeholders about controlling human activities and interactions on or near riparian land to sustain the five critical functions.

□ **Recommendation 19: Management**

Stakeholders and the public are encouraged (through incentives and market based instruments) to engage in educational programs and voluntary best management practices on or near riparian land to sustain the five critical functions.

□ **Recommendation 20: Policy and Regulatory**

Province create a cross-ministry panel to conduct a review of riparian land policy, legislation, institutional arrangements and management practices to ensure that all economic, legal, institutional and management disincentives to implementation are removed from the governance system.

## 10.0 Conclusion

There are no laws in Alberta specifically enacted to control human activities and interactions on or near riparian land. Alberta's riparian land governance system is complex and dynamic and riddled with gaps in the cross-scalar regulatory, institutional, and management subsystems. There is no provincial definition and approved methodology for identifying, delineating and mapping riparian lands. Furthermore, municipalities have no direct delegated authority to regulate and control human activities and interactions on or near privately owned riparian land to sustain the five critical functions. Unless the provincial government and all affected stakeholders take urgent steps to address these major gaps in governance, riparian lands will continue to be degraded, especially during periods of rapid population and economic growth. Degraded riparian lands are not able to perform the critical functions that Alberta's society relies upon to sustain our current culture and economy.

Conserving and managing the outer riparian zone is the most critical element in any riparian land management system. Currently, most management strategies on both public and private land in Alberta focus on creating minimal building and development setbacks from the water's edge. However, the riparian lands in these setbacks are vulnerable to pollution and degradation and lose much of their functionality if the outer riparian zone is compromised.

Recommendations to improve Alberta's riparian land governance system have been provided. Some of these mirror recommendations presented by the AWC to the Province in 2013. Leadership at the provincial and municipal levels of government, along with a set of desired outcomes and strategic actions to conserve and manage Alberta's intact riparian lands is urgently needed in 2021.

**Postscript: In 2020, through section 28 of *Bill 48: The Red Tape Reduction Implementation Act, 2020 (No.2)* the current government repealed subsection 640(4) of the *Municipal Government Act*. Subsection 640(4)(1) enabled municipal councils to regulate and control the development of buildings (i) on land subject to flooding or subsidence or that is low lying, marshy or unstable, and (ii) on land adjacent to or within a specified distance of the bed and shore of any body of water. There was no explanation given for why the complete subsection was removed.**

## Appendix A:

### Laws that Indirectly Regulate Human Activities and Interactions on or Near Riparian Land in Alberta

Law	Riparian Function Addressed	Purpose of the Law	Institution/ Agency	Management Tools of Note
<b>Federal</b>				
<i>Canada Water Act, R.S.C., 1985, c. C-11</i>	<ul style="list-style-type: none"> <li>* Water quality</li> <li>* Flood conveyance and water storage</li> <li>* Social and economic benefits</li> </ul>	to provide for management of Canadian water, including research and the planning and implementation of programs relating to the conservation, development and utilization of water resources	Environment and Climate Change Canada (ECCC)	Flood reduction program  Master Agreement on Apportionment  Lethbridge Research Center
<i>Fisheries Act, RSC 1985, c. F-14</i>	<ul style="list-style-type: none"> <li>* Biodiversity and habitat</li> <li>* Social and Economic Benefits</li> </ul>	to provide a framework for (a) the proper management and control of fisheries; and (b) the conservation and protection of fish and fish habitat, including by preventing pollution.	Department of Fisheries Oceans and Coastal Waters (DFO)	<i>Alberta Fisheries Regulations, 1998 SOR/98-246</i>
<i>Species at Risk Act SC 2002, c. 29</i>	<ul style="list-style-type: none"> <li>* Biodiversity and habitat</li> <li>* Social and Economic Benefits</li> </ul>	‘to prevent wildlife species from being extirpated or becoming extinct, to provide for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity and to manage species of special concern to prevent them from becoming endangered or threatened.’	COSEWIC means the Committee on the Status of Endangered Wildlife in Canada established by section 14 of the Act.	List of Wildlife Species at Risk (Referral Back to COSEWIC) Order, SI/2019-13  Critical habitat identified for each species.
<i>Migratory Birds Convention Act 1994, SC 1994, c. 22</i>	<ul style="list-style-type: none"> <li>* Biodiversity and habitat</li> <li>* Social and Economic Benefits</li> </ul>	‘to implement the Convention by protecting and conserving migratory birds — as populations and individual birds — and their nests.’	Minister of Environment (ECCC)	Federal and provincial wetland policies
<i>Canadian Navigable Waters Act RSC 1985, c N-22</i>	<ul style="list-style-type: none"> <li>* Bank and shoreline stabilization</li> <li>* Social and economic benefits</li> </ul>	to protect navigation in Canadian navigable waters	Minister of Transport	Development referrals to ensure that navigability is not impaired.
<i>Canadian Environmental Protection Act, 1999 S.C.1999, c. 33</i>	<ul style="list-style-type: none"> <li>* Water quality</li> <li>* Social and Economic Benefits</li> </ul>	to prevent pollution and the protect the environment and human health in order to contribute to sustainable development	Federal and provincial representatives on committee (ECCC)	Collaborative processes to prevent pollution of the environment
<i>Impact Assessment Act S.C. 2019, c. 28.</i>	<ul style="list-style-type: none"> <li>* Water quality</li> <li>* Social and Economic Benefits</li> </ul>	Multi-purpose impact assessments: relevant to riparian land governance: <i>to protect the components of the environment, and the health, social and economic conditions that are within the legislative</i>	Minister of the Environment (ECCC)	Replaces the CEAA, 2012 environmental impact assessment process. <b>New</b>



		<i>authority of Parliament from adverse effects caused by a designated project</i>		
<b><i>Pest Control Products Act, S.C. 2002, c. 28</i></b>	* Water Quality * Social and Economic Benefits	to protect human health and safety and the environment by regulating products used for the control of pests	Minister of Health and advisory panels	Farm plans and best management practices to control pests
<b><i>Transportation of Dangerous Goods Act S.C. 1992, c. 34</i></b>	* Water Quality * Social and Economic Benefits	to promote public safety in the transportation of dangerous goods	Minister of Transport	Setbacks from water's edge for storage and transportation and use of dangerous goods
<b>Provincial</b>				
<b><i>Water Act, RSA 2000, c. W-3</i></b>	* Water quantity * Flood conveyance and water storage * Bank and shoreline stabilization * Social and Economic Benefits	to support and promote the conservation and management of water, including the wise allocation and use of water  Regulates activities that disturb water through approvals	Alberta Environment and Parks (AEP)	Regulatory Approvals  s.96 restrictions on development in FHA.  Alberta Wetland Policy and implementation tools  <i>Stepping Back from the Water: A Beneficial Management Practices Guide for New Development Near Water Bodies in Alberta's Settled Region</i>  Codes of practice; such as <i>Code of Practice for Watercourse Crossings</i> .  <i>Water For Life: Alberta's Strategy for Sustainability</i>
<b><i>Environmental Protection and Enhancement Act RSA 2000, c. E-12</i></b>	* Water quality * Social and Economic Benefits	to support and promote the protection, enhancement and wise use of the environment  Regulates designated activities and substance release that may pollute through approvals	AEP	Approvals Regulations such as <i>Wastewater and Storm Drainage Regulation</i> Codes of Practice such as

				<i>Code of Practice for Pits.</i>
<b><i>Public Lands Act, RSA 2000, c.P-40.</i></b>	<ul style="list-style-type: none"> <li>* Bank and shoreline stabilization</li> <li>* Social and Economic Benefits</li> </ul>	<p>To control use and allocation of public land in Alberta.</p> <p>Section 3 – the province owns the beds and shores of most naturally occurring water bodies in Alberta.</p> <p>Regulates appropriate land use and management of beds and shores</p>	AEP Lands Division	<p>Shoreline management</p> <p>Public land use zones,</p> <p>Recreation areas and trails on public lands.</p>
<b><i>Agricultural Operations Practices Act, RSA 2000, c.A-7.</i></b>	<ul style="list-style-type: none"> <li>* Water quality</li> <li>* Bank and Shoreline Stabilization</li> <li>* Social and Economic Benefits</li> </ul>	Regulates agricultural operations, such as intensive livestock operations.	Natural Resources Conservation Board	<p>Approvals, registrations and reviews.</p> <p><i>Standards and Administration Regulation, Alta Reg 267/2001</i></p> <p>Requires setbacks of operations near aquifers and water bodies.</p> <p>Farm plans.</p>
<b><i>Forests Act, RSA 2000 c.F-22</i></b>	<ul style="list-style-type: none"> <li>* Water quality</li> <li>* Biodiversity and Habitat</li> <li>* Social and Economic Benefits</li> </ul>	Regulates and manages timber harvesting operations on public lands	AEP Forest Officers	<p>Regulations require forest management agreements and reviewed annual operation plans</p> <p>No operations allowed in prescribed setbacks from water's edge.</p>
<b><i>Provincial Parks Act, RSA 2000, c.P-35</i></b>	<ul style="list-style-type: none"> <li>* Water quality</li> <li>* Biodiversity and Habitat</li> <li>* Social and Economic Benefits</li> </ul>	Parks are established, and are to be maintained, (a) for the preservation of Alberta's natural heritage, b) for the conservation and management of flora and fauna, (c) for the preservation of specified areas, landscapes and natural features and objects in them that are of geological, cultural, historical, archeological, anthropological, paleontological, ethnological, ecological or other scientific interest or importance, (d) to facilitate their use and enjoyment for outdoor	AEP Conservation officers	<p>Park designation protects some riparian corridors.</p> <p>Restricts use of OHVs to trails and roads.</p>

		recreation, education and the appreciation and experiencing of Alberta's natural heritage, and (e) to ensure their lasting protection for the benefit of present and future generations.		
<b>Wildlife Act RSA 2000, c W-10</b>	* Biodiversity and Habitat * Social and Economic Benefits	Regulates and manages wildlife, wildlife habitat, hunting and export of wildlife.	Director of Fish and Wildlife  Fish and Wildlife Officers  Conservation officers	Aligns with the <i>Migratory Birds Convention Act</i>  Fish and Wildlife Fund used to conserve fish and wildlife habitat.  Licenses and permits required to hunt wildlife.
<b>Weed Control Act, SA 2008, c W-5.1</b>	* Biodiversity and Habitat * Social and Economic Benefits	Regulates noxious and prohibited noxious weeds on private land, including riparian land  Municipalities administer the law on municipal and privately-owned lands	AEP  Municipal weed inspectors  Municipal bylaw enforcement officers	Municipal nuisance bylaws  Municipal weed control bylaws
<b>Fisheries (Alberta) Act, RSA 2000, c. F-16</b>	* Water quality * Biodiversity and Habitat * Social and Economic Benefits	Regulates fishing and protection of fish habitat in Alberta in alignment with federal law.	AEP  Fish and Wildlife Officers	Administers and aligns with federal <i>Fisheries Act</i>  Protects fish habitat  Restricts human activities that may harm fish and fisheries including habitat.
<b>Alberta Land Stewardship Act, SA 2009, c A-26.8</b>	* Water Quality * Flood conveyance and water storage * Biodiversity and habitat * Bank and shoreline stabilization * Social and Economic Benefits	The purposes of this Act are (a) to provide a means by which the Government can give direction and provide leadership in identifying the objectives of the Province of Alberta, including economic, environmental and social objectives; (b) to provide a means to plan for the future, recognizing the need to manage activity to meet the reasonably foreseeable needs of current and future generations of Albertans, including aboriginal	Land Use Secretariat  Directors under <i>Water Act</i> , <i>EPEA</i> and <i>Public Lands Act</i>  Municipal councillors and land-use development authorities	Regional land-use plan regulations: LARP and SSRP and management frameworks.  Provides guidance and expectations that provincial and municipal decision-makers will protect riparian lands

		peoples; (c) to provide for the co-ordination of decisions by decision-makers concerning land, species, human settlement, natural resources and the environment; (d) to create legislation and policy that enable sustainable development by taking account of and responding to the cumulative effect of human endeavour and other events.		during land-use development.
<b><i>Municipal Government Act, RSA 2000, c.M-26</i></b>	<ul style="list-style-type: none"> <li>* Flood conveyance and water storage</li> <li>* Biodiversity and habitat</li> <li>* Bank and shoreline stabilization</li> <li>* Social and Economic Benefits</li> </ul>	Regulates municipalities and most land-use planning and development on municipal and privately owned lands	Department of Municipal Affairs  Municipal councils  Development authorities  Subdivision and Development Appeal Boards  Municipal Government Board	Land use bylaws  Section 693.1 – re: development in floodways.  Section 7 bylaws  Section 60 bylaws