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Water Governance in the Saskatchewan River Basin: A Preliminary Study

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Abstract

The Saskatchewan River Basin (SRB) is a vital and essential resource for the three Canadian prairie provinces of Alberta, Saskatchewan and Manitoba. The cumulative impacts of past and future development combined with the realities of climate change raise new questions about the current regime of water governance in the region. At present, multiple agencies affect different aspects of water governance across the SRB. This study is a preliminary assessment, based on key informant interviews, of existing water governance efficacy in the SRB. Using a range of probing questions, key informant perceptions regarding the strengths, weaknesses, and opportunities respecting water governance in the SRB are uncovered. The findings of this study suggest that the advantages of the current fragmented, multi-agency regime of water governance in the SRB are outnumbered by the disadvantages.

Keywords: Canada; water governance; Saskatchewan River Basin; jurisdictional fragmentation

1.0 Introduction

The Saskatchewan River Basin (SRB) is one of the largest watersheds in North America and is an invaluable resource for the Prairie Provinces (Partners FOR the Saskatchewan River Basin, 2009). The watershed area of the SRB covers three provincial jurisdictions, extending south into the USA, and provides water and wastewater services to over five million people in some of Canada's largest urban

areas. Currently there exists no single watershed organization to oversee the multiple land uses and growing human impacts across this vast watershed. At the same time, urban expansion, intensive livestock operations (feedlots), as well as oil and gas exploration and development, only exacerbate cumulative impacts on the watershed (Noble et al., 2011).

Recently, attention has been directed toward an impending water crisis across Canada's prairie region, the result of climate uncertainty and development pressure from industry in the face of uncertain water management frameworks (Schindler & Donahue 2006). As stated by Saunders and Wenig (2007, p. 119), "[w]ise management of water resources presents challenges for any government, but the challenges may be particularly difficult when they are aggravated by a fragmentation of constitutional responsibilities and/or where the water resources cross political boundaries." Consequently, there is increasing attention in the water resources literature to the governance of water (de Loë et al., 2007). Watershed governance is an essential component to successfully maintaining a sustainable watershed ecosystem (de Loë & Kreutzwiser, 2007). As defined by Nowlan and Bakker (2007), water governance includes "[t]he range of political, organizational and administrative processes through which interests are articulated, input is absorbed, decisions are made and implemented, and decision makers are held accountable in the development and management of water resources and delivery of water services." According to the UN World Water Development Report, good governance depends on "participation by all stakeholders, transparency, equity, accountability, coherence, responsiveness, integration and ethical issues" (World Water Assessment Programme, 2003).

In this paper we examine the efficacy of the multi-jurisdictional governance structure that exists in the SRB. This preliminary assessment uses key informant interviews to identify perceptions, strengths, and weaknesses of the existing water governance regime. Opportunities to enhance and improve the efficacy of water governance in the SRB are presented.

In the sections that follow we first provide context to the current state of watershed governance in the SRB followed by a description of the study area and research methods. We then present key informant interpretations of the existing water governance regime with recommendations from the key informants on how to improve water governance efficacy within the SRB. The purpose of the study is to provide a preliminary survey of key informant perceptions around water governance in the SRB. This is not an exhaustive case study but rather an introductory, regional examination into the much larger project of effective water governance in Canada.

2.0 Study Area and Methods

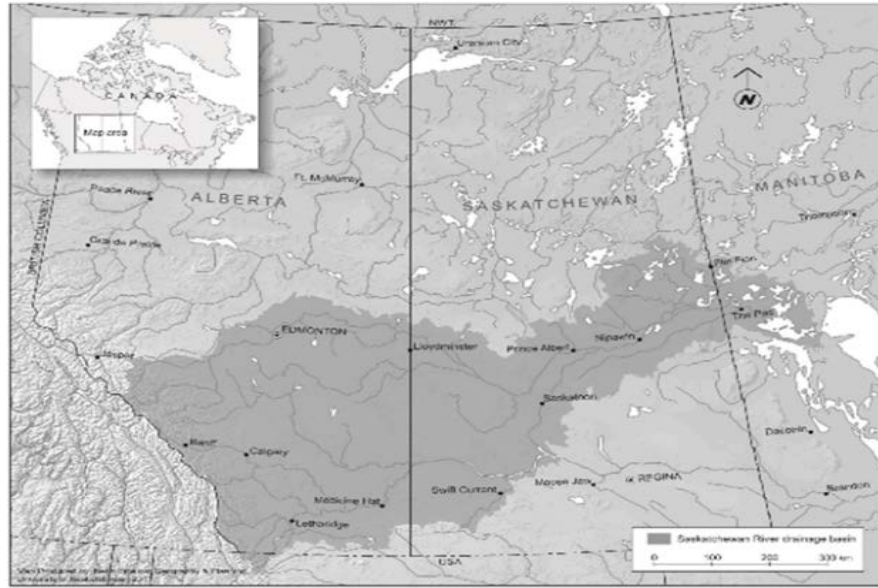
In this section we describe the study area, the Saskatchewan River Basin (SRB). For the purposes of this study, only the Canadian portion of SRB will be discussed, for the reason that only a very small portion (0.4%) of the SRB extends into the State of Montana, USA. We also introduce the research method for this study, namely a participant questionnaire and document review.

2.1 Saskatchewan River Basin

The Saskatchewan River Basin (SRB) is a vital and essential natural resource for a large geographic region, with great influence on the social, economic and

environmental well-being of a large population within Canada. Aboriginal occupation of the region dates back millennia. The river basin is one of the longest flowing river systems in North America with a surface area of 405 864 km², hosting a population of over 5 million people (Partners FOR the Saskatchewan River Basin, 2009). Because the SRB is a system of waterways which flows through three provinces and into the United States, multiple agencies and organizations at various levels develop, govern, regulate, allocate, plan and manage water in the basin (see Figure 1).

Figure 1: Saskatchewan River Basin.



Source: Keith Bigelow, Department of Geography and Planning, University of Saskatchewan.

2.2 Data Collection and Analysis

A questionnaire was created and distributed to twenty-seven representatives (key informants) of various water agencies and organizations in the three Prairie Provinces. The water agencies and organizations were identified during a web-review of organizations in the SRB and a list was compiled of possible key informants. The initial key informants were asked to provide additional names of other potential key informants with prairie province water expertise, a technique known as ‘snowballing.’ In an attempt to gather responses from various levels of influence, representatives were contacted within Federal and Provincial ministries, municipal institutions, First Nations governments and organizations as well as numerous non-government organizations (NGOs), all within the SRB. A total of sixteen key informants from Alberta and Saskatchewan responded and completed the questionnaire.

Key informants (see Table 1) were provided with background information regarding the nature of the research, the goals of the research and the voluntary nature of their participation.

3.0 Results and Discussion

We report on the results of our assessment of the current watershed governance model in the SRB as well as the main issues and concerns respecting water governance related by key informants in the project. Based on the responses from key informants we provide an assessment of the institutional and capacity building needs required to support a more effective water governance model in the SRB. A limitation of this research, ironically, was the very topic of study, that is, the multi-jurisdictional governance structure that is in place. It was not possible to gain feedback from all potential key informants or from all relevant agencies and organizations with a role in water governance within the SRB.

Table 1. *Key Informants*

Organization Type (location)	Organization Name (number)
Non-governmental organizations (Saskatoon)	Meewasin Valley Authority(1)
	Saskatchewan Environmental Society (2)
	Partners FOR the Saskatchewan River Basin (1)
Provincial Watershed Groups (SK)	North Saskatchewan River Basin Council (1)
	South Saskatchewan River Basin Council (1)
	Swift Current Creek Watershed Stewards (1)
	Saskatchewan Association of Watersheds (1)
Provincial Government Agency (SK)	Saskatchewan Watershed Authority (2)
Watershed Planning Advisory Council (AB)	Oldman Watershed Council (1)
	North Saskatchewan Watershed Alliance (1)
Private Industry	Rescan (1)
Inter-jurisdictional government organization	Prairie Provinces Water Board (1)
Saskatchewan Advisory Planning Commission	WaterWolf (1)
Federal Government Agency	Agriculture and Agri-Food Canada (1)
Total	16

3.1 Organizational Role

Key informants were asked to reflect on the role of their institution in the SRB governance structure. The actual or perceived role that each organization plays in watershed governance in the SRB is indicated in Table 2. It should be noted that for the purposes of this research, “governance” is defined as any agent, organization or individual that is influencing, controlling, planning or managing water resources (de Loë et al., 2007).

Of the sixteen responses received, six key informants answered that their organization was not responsible, had a limited role, or no direct role in watershed governance. Four key informants answered that their organization provided advice and input to government, industry and land planners but had no legislated mandate for governance

of the SRB. The remaining respondents report a range of organizational roles, each reflecting a predisposed jurisdictional boundary equated to a spatially derived governance responsibility. For example, one participant responded that their organization represented thirty-eight municipalities while another organization was responsible for 80 kilometres of river valley in and around Saskatoon.

Table 2. *Organizational Role*

Role in Watershed Governance	Responses
Not responsible, limited role, no direct role	6
Provides advice, planning, input, but no legislated authority basin wide	4
Lead government agency on watersheds in Saskatchewan	2
Responsible for 80km of river valley in and around Saskatoon	1
Reports to governments of Canada, AB, SK, MB on Master Agreement on Apportionment	1
Represents thirty-eight municipalities around land-use planning framework	1
Provincial umbrella group which represents watershed groups to governments	1
Total	16

Understanding participant perspectives respecting their organizational role in watershed governance of the SRB was an important starting point of this research. Numerous agencies reported having some role in watershed management, yet most respondents were in the category of reporting no responsibility, a limited role, or no direct role. All other respondents identified a watershed governance role based on a geographic area. The range of responses indicates that governance of the SRB is spatially divided, with no single organization charged with basin-wide governance. Instead, multiple organizations hold responsibility over various politically defined spatial areas, a strong indication of a fragmented governance regime.

3.2 Responsibility for Watershed Governance

In an effort to better understand differing perspectives on accountability for watershed governance and to further describe the existing governance structure, key informants were asked who they believed to be responsible for watershed governance in the SRB. All sixteen key informants answered this question. Over 56% of respondents reported that the Federal Government, Provincial Governments, watershed stewardship organizations and First Nations are jointly responsible for watershed governance. Just over 31% of key informants reported that the Provincial Government and other provincial organizations such as regional watershed groups and NGOs are responsible for watershed governance. Over 12% of key informants reported that no single organization is responsible for watershed governance in the SRB. The range of responses on this issue reflects the mixed understanding of the governance structures held by those affected by or involved in watershed governance and decision making in the SRB.

The issue of jurisdictional responsibility is complicated in the SRB as the basin occupies three provinces: “[f]ederal and provincial governments both have constitutionally assigned powers touching on water management” (Saunders & Wenig 2007, p. 119). While municipal and regional land use is seen as a provincial responsibility, arguments have been made to constitutionally support federal jurisdiction as well. Saunders and Wenig argue the legitimacy of Federal involvement in water management (2007). These constitutionally based arguments to legitimize a federal role include: the inter-jurisdictional (both provincial and international) nature of surface and groundwater, the national importance of this resource, as well as the transboundary migration of aquatic species (2007, p. 121).

The majority of key informants responded to the question of jurisdiction by listing multiple agencies responsible for this resource. One participant stated: “[u]nder the Constitution Act, responsibility for management of natural resources primarily falls to provincial governments. Federal powers are more or less reserved for inter-jurisdictional transfers, inland fisheries, navigable waters, federal spending authority and, of course, peace order and good government.” This statement highlights the complexities in governance of the SRB and of water governance in Canada more generally.

3.3 Overarching Organization

Key informants were asked if they believed any one, overarching organization is responsible for watershed governance in the SRB. This question was asked in order to gain a deeper understanding of perceptions of jurisdiction regarding watershed governance and to further the research goal of describing the current governance structure of the SRB. All sixteen key informants answered this question and five different responses were given (see Table 3).

Table 3. *Perceived Responsible Authority*

Stated Authority	Responses
No overarching organization/agency/authority	9
Provincial government	3
Prairie Provinces Water Board (PPWB)	2
Partners FOR the Saskatchewan River Basin (PFSRB)	1
PPWB & PFSRB	1
Total	16

More than half of respondents (nine key informants, 56%) answered that there is no over-riding authority. Three respondents (18%) pointed to their respective provincial organization (either SWA for Saskatchewan or Government of Alberta) as being responsible for watershed governance in their region. Two key informants (12%) stated that since the Prairie Provinces Water Board (PPWB) was the only organization with inter-jurisdictional authority, it was responsible for watershed governance in the SRB. One respondent stated that both the Prairie Provinces Water Board and Partners FOR the Saskatchewan River Basin have an inter-provincial mandate, which makes them the only two agencies with authority over the entire basin. Again, the varied responses from the key informants to this question reveal

uncertainty with respect to any clear understanding of responsible governance authority over the SRB.

3.4 Watershed Governance Issues and Concerns

Key informants were asked to rank their concerns regarding governance issues in the SRB. Many concerns were common among multiple respondents such as perceived organizational fragmentation and lack of resources for effective management. In order to determine which answers were valued highest among all key informants, responses were assigned values based on their level of importance. Responses of primary concern were given a value of three, secondary concerns were given a value of two, and tertiary responses a value of one. In addition to the valued ranking, the number of times a concern was mentioned among the different key informants is also provided (see Table 4). Fifteen key informants chose to answer this question, thirteen provided three ranked responses, and one chose to provide their top two concerns and another key informant provided only one top concern.

Table 4. *Watershed Governance Issues and Concerns*

Ranking	Themes	Value ranking	Times Provided
1	Lack of inter-jurisdictional/basin-wide focus	24	12
2	Fragmented governance structure	19	10
3	Lack of resources/capacity/funding	18	8
4	Limited public education/awareness/engagement	12	5
5	Ecosystem health is not a priority	5	4
6	Consumption rates unknown	5	2
7	First Nation water rights	3	1
Totals		86	42

A total of forty-two issues and concerns were provided and seven themes emerged from the responses. Lack of inter-jurisdictional/basin-wide focus, fragmentation of the governance structure, lack of resources, and limited public education and awareness were the top four themes that emerged, based on participant responses. These responses are consistent with related discussion in the water resources literature. For example, Ferreyra et al. (2008) note that the governance of large-scale watersheds is rarely straight-forward and problem-free. Moreover, others note that issues such as fragmentation, lack of resources and limited public engagement are not uncommon among watersheds within Canada and globally (Heathcote, 2009; Ivey et al., 2006). The four highest ranked concerns will be elaborated upon in the following sub-section.

3.4.1 Lack of inter-jurisdictional/basin-wide focus. A lack of watershed based management was the top concern of key informants in both ranking and number of responses. One participant asked, "...if the governance is at the provincial level, how do you resolve disputes that cross jurisdictions?" This question highlights a concern for the watershed as a whole, as the quality and quantity of water available in one region affects the entire basin. Without a basin-wide or inter-jurisdictional approach

to governance, it can be difficult to address issues and concerns that cross jurisdictional boundaries. Another participant remarked that within the SRB "...no single [agency] has a mandate to co-ordinate the others and play a decisive role in protecting water quality and quantity..." This style of governance can lead to additional issues such as fragmented governance.

3.4.2 Fragmented governance structures. Fragmented governance structures were the second highest reported concern. One participant from a watershed planning group in Saskatchewan stated that there "is no effective governance mechanism to identify, understand, and come to agreement on the cultural ecosystem impacts from surface water allocation decisions nor to establish (and adjust) a balance for competing allocation priorities within and across the basin." While this statement does not explicitly mention "fragmentation" as a key concern, it speaks to a lack of communication and connection between different influencing agencies in the basin, which is a symptom of fragmentation.

3.4.3 Lack of resources, capacity and funding. Among key informants, a lack of resources, capacity and funding was provided as the third highest concern of watershed governance within the SRB. One participant expressed their frustration with budget cuts by saying, "[e]ven with the current institutions in place, water governance is challenging because of a universal lack of funding and resources." When program budgets are constantly at risk of being cut, it can be difficult for organizations to create long-term strategies and to have a positive, lasting impression on resource management. Another participant stated that it is necessary for there to be "adequate levels of funding enabling jurisdictions to satisfactorily discharge their respective responsibilities." Stable and consistent funding to environmental programs and organizations was an important theme mentioned by numerous key informants and was held to be a key component to future governance success in the SRB.

3.4.4 Limited public education, awareness and engagement. The fourth highest concern relating to water governance was limited public education, awareness, and engagement. One participant from a watershed stewardship organization in Saskatchewan stated that there is a disconnection between those who make decisions (managers) and those who are affected by the decisions (general public).

The challenge, then, is to bring the message of water conservation to that disconnected public, because if human development of the watershed continues in an environment where there is a lack of water conservation practices, and protection from both point and non-point contaminant sources, I believe very soon there will be a water crisis in Saskatchewan.

As a suggestion to remedy this disconnect, another participant offered a potential solution: "[e]nhancing the level of current and potential issues within the basin is required in order to build public support for enhanced governance." Only when the public is educated and aware of issues occurring within the natural environment can they provide useful input into the decision-making process. By ensuring local public participation in watershed governance you can improve the success of your management initiatives".

3.5 Positive Aspects of Existing Governance Structure

In order to identify existing governance structures that are working well key informants were asked to identify positive aspects of the current governance structure in the SRB. This was an open-ended question, meaning that key informants

had the opportunity to provide as many or as few attributes as they desired. Fifteen key informants answered this question and nineteen responses were provided (see Table 5).

Table 5. *Positive attributes of the current governance structure*

Positive Attributes	Number of responses
Work by watershed groups/agencies (sub-basin planning, education, awareness, communication)	10
Inter-provincial water quantity management under MAA	7
Water and land use planning in Alberta	2
Total	19

A total of three themes emerged from this question, with work by watershed groups—such as sub-basin planning, education, awareness, and communication—being the most common attribute listed. Over half of the responses identified the work of watershed groups as one of the positive attributes of the current watershed governance framework. Another theme, mentioned multiple times by key informants, was that of the effectiveness of inter-provincial water quantity management to fulfill its required apportionment needs under the Master Agreement on Apportionment (MAA) for the Prairie Provinces. We now discuss these two main positive themes in greater detail.

3.5.1 Work by watershed groups and agencies. A scientist working in the private sector stated, “[t]here are numerous groups/agencies within the governance structure with clear goals and visions aiming towards social, ecological and economic sustainability within the Saskatchewan River Basin.” This sentiment was echoed by over half of key informants who completed this question, indicating overwhelming support for regional planning and watershed groups within the SRB.

Some of the successes of watershed groups and agencies were identified by another participant: “[t]he emergence of watershed advisory groups has helped to identify and promote best management practices and source water protection plans across much of the basin.” Another participant described watershed groups and agencies as being: “very passionate and motivated to tackle issues specific to their mandate, interest, or cause... [t]hat is the strength of what we call ‘grassroots-driven’ governance.” Watershed groups and regional organizations are seen by many of the key informants who completed this questionnaire as a beneficial and positive contribution to the current governance structure of the SRB.

3.5.2 Inter-provincial water quantity management. Within Western Canada, water licenses are distributed on a “first in time, first in right” manner, which means once a water license is given, that user has first right to the water and all those who receive subsequent water licenses have secondary access to water (Bakker, 2007). Across the three Prairie Provinces, the Master Agreement on Apportionment (MAA) attempts to ensure that equitable sharing of water is achieved between the provinces. As stated by a former member of a watershed group in Saskatchewan, “[t]he three provinces have come to agreement on water quantity management through the PPWB to a degree sufficient so far to avoid violent conflicts.” Inter-provincial water quantity management under the MAA was listed by 33% of key informants as a positive attribute of the current governance structure.

According to one participant, conflicts over water use occur in other jurisdictions, such as the United States: “[f]or an alternative one only needs to look to the Missouri River Basin where most issues are dealt with through the courts.” No such arguments over water use have occurred to date in the SRB and this is seen to be a result of the success of the MAA. As summarized by another participant, “[t]he water allocation agreement between Alberta, Saskatchewan and Manitoba has worked well and is one of the positive attributes of the current governance structure of the SRB.” However, as one research scientist commented, “the apportionments between the prairie provinces has worked for human use rather well in the past but environmental flows are not well understood. Did anyone think to consult with the fish when these apportionment agreements were drawn together?”

3.6 Negative Aspects

In order to identify areas that could use improvement, key informants were asked to identify negative aspects of the existing governance structure of the SRB. All sixteen key informants answered this question and a total of five themes emerged among thirty responses listed (see Table 6). The first three of these negative aspects will be elaborated upon below.

Table 6. *Negative attributes of the current governance structure*

Negative Attribute	Number of responses
Lack of inter-jurisdictional/basin-wide governance	16
Lack of communication and consistency	5
Lack of monitoring and available data	4
Watershed groups are underfunded/not supported	3
Little opportunity for First Nation involvement	2
Total	30

3.6.1 Lack of inter-jurisdictional/basin-wide governance. The most common theme, listed by over half of the respondents, was that watershed governance of the SRB is not inter-jurisdictional or comprehensive of the entire basin. Other responses that were listed multiple times included: lack of communication and consistency, lack of monitoring and data availability, lack of funding and support to watershed groups. Over 43% of respondents noted a lack of inter-jurisdictional governance of the SRB. One respondent clearly stated this by noting: “[w]e are not inter-jurisdictional...we assume the river ends at our borders.” Others also echoed this sentiment:

The issue of jurisdiction arises because watersheds don’t respect political boundaries: thus a watershed like the Saskatchewan River Basin crosses provincial jurisdictions without a clear authority to oversee and rule on inter-provincial jurisdictional issues.

As a suggestion to improve this situation, one participant stated the need for “improved awareness of the Saskatchewan River Basin as a holistic system.”

3.6.2 Lack of communication and consistency. Effective and frequent communication is an important asset to any management organization (Matthews et

al., 2007). Three respondents to the questionnaire mention a lack of communication and consistency between the various watershed organizations and agencies as a concern. As stated by one of those key informants, “[t]here is a lack of communication between different government organizations, NGOs and other interest groups regarding activities in the basin.” This lack of communication and consistency can be viewed as a symptom of the fragmentation of the current governance structure. Recommendations for improving this undesirable characteristic of the current governance structure were provided by key informants and will be discussed in the following section.

3.6.3 Lack of monitoring and available data. Data collection and monitoring of both water quality and quantity is a critical component of decision making as it is the only way to have accurate information regarding the health of an ecosystem (Bakker, 2007). A lack of monitoring and data was identified by 19% of the key informants as being a negative attribute of the current governance structure. As summarized by one participant, “[m]onitoring budgets are constantly under attack. Good decisions are made through the support of dependable and accurate information.” Monitoring environmental changes facilitate adaptive management through sound decisions to manage resources in a sustainable manner (Muldoon & McClenaghan, 2007). Again, 19% of key informants stated that more consistent and wide-spread monitoring of both water quality and quantity throughout the basin would address this concern regarding the current governance structure.

4.0 Recommendations

Once key informants identified the positive and negative aspects of the current structure, they were invited to provide recommendations for improving water governance in this region. All sixteen key informants responded to this question and a total of thirty-six recommendations were provided with a total of eleven key themes emerging (see Table 7). All multiple recommendations provided by a single participant were included.

Table 7. *Recommendations for improving water governance*

Recommendation	Responses
Inter-jurisdictional body with basin-wide planning	11
More communication and cooperation between organizations	7
Improve public engagement, education and awareness	4
Give PPWB greater responsibility/review mandate	2
Review Master Agreement on Apportionment	2
Additional support for watershed groups	2
Give FN groups funding to participate in watershed planning and management	2
More proactive management strategies	2
Clarify roles	2
Enforce water conservation	1
Give ultimate authority to provincial government	1
Total	36

The most common response was the suggestion that a single, inter-jurisdictional body was needed in order to improve watershed governance in the SRB. The second most common recommendation was that cooperative dialogue between agencies needs to be improved. More communication and cooperation between organizations was suggested by seven respondents (43.75%) and made up a total of 19.4% of total suggestions made.

In the following sub-section we discuss in greater detail the top three recommendations for improved water governance as indicated in Table 7. These top three recommendations account for over half of the total responses for improved water governance in the SRB.

4.1 Inter-jurisdictional, Basin-wide Planning

Finding ways to incorporate inter-jurisdictional, basin-wide planning was the most frequent recommendation to improve the governance structure of the SRB among key informants. Current barriers to implementing this strategy include: the vastness of the watershed, the constitutionally legislated roles for governing this resource (political, not geographical boundaries) as well as lack of funding. As one participant recommended:

The creation of basin-wide governance institutions with broad mandates and flexible water management mechanisms[sic]. Basin-wide governance institutions must have legislated power/responsibilities within federal and provincial governments and adequate resources (funding, qualified staff, etc.) to be effective.

While many key informants believed that an overarching organization would be useful and beneficial to the SRB, there were differing opinions as to which organization/s should be responsible for this task. Suggestions included having the PPWB take on further responsibilities or to broaden their mandate. As one participant suggested, “restructure the PPWB with greater responsibilities would help improve basin wide planning.”

Other key informants believed inter-jurisdictional, basin-wide planning could be achieved not through single-agency but by improving co-operation between agencies. For example, one participant recommended a multi-step approach to basin-wide planning: the suggested first step, to “[m]andate Environment Canada to take responsibility for regulating inter-provincial pollution and setting stricter water quality standards for source water in the Saskatchewan River Basin.” In addition to broadening Environment Canada’s responsibilities, a further suggestion was made by this participant to:

[m]andate a single agency (in Saskatchewan the logical agency would be the Saskatchewan Watershed Authority) to address non-point pollution problems and other source water quality issues throughout the Saskatchewan portion of the Saskatchewan River Basin. The single agency would work with all other stakeholders to accomplish its goal.

This proposal embodies elements of collaborative or integrative governance and is a strong recommendation for improving water governance in the SRB.

4.2 More Communication and Cooperation between Organizations

There are numerous watershed organizations, agencies and groups with an interest or responsibility in the governance of the SRB. When many groups are involved, as one participant succinctly stated, it is important to “[i]mprove on communications; there needs to be more two way dialogue.” While it is likely that communication is quite effective *within* each organization, communication *between* the organizations may be lacking according to numerous respondents. To improve co-operation between organizations, one participant recommended “a more concerted effort for inter-provincial co-operation would be beneficial.” A report by the International Conference on Adaptive and Integrated Water Management argues “social learning” is a critical component of IWRM, including the effective communication and cooperation of stakeholders (2007).

4.3 Improve Public Engagement, Education, and Awareness

Within Canada, natural resources, including fresh water, are managed by public institutions (e.g., government) in the best interest of the general public; it is therefore important that the general public is aware of issues and concerns which occur or could occur in the future (National Round Table on the Environment and on the Economy, 2010). One of the top recommendations for improving water governance of the SRB is to expand meaningful public engagement in the SRB. As stated by one participant, “public education, awareness, and participation could be improved: there needs to be a greater connectivity between the organizations that are supposed to represent the public, and those who actually have an impact on the watershed.” This statement implies a disconnection between those making decisions and those affected by decisions. A suggestion by another participant, which could potentially improve this situation, emphasized “building awareness within each province, especially urban awareness within prairie cities.” This suggestion is supported by Ferreyra et al.: “public education is deemed to be fundamental for a meaningful stakeholder dialogue...” (2008:316). Özerol and Newig (2008) note the importance of communication, stakeholder engagement, and public involvement in effective water resource management.

5.0 Conclusion

The results from this preliminary study suggest that there are positive attributes to the current multiple agency structure of the SRB. These positive attributes include the work of many different watershed groups, the co-operation between the Prairie Provinces in water quality management, and the integrated watershed planning and land-use planning currently underway in Alberta. While these positive attributes are noted we also identify those attributes that are perceived as negative by the key informants of this study.

The negative attributes include the fragmentation of the current governance structure, a lack of institutional capacity and funding for effective management, including support for monitoring and data collection and analysis, as well as a lack of a basin-wide approach to governance. These attributes, as provided by key informants, point to a lack of priority, focus and coordination among federal and provincial government organizations.

Key informant recommendations for improving water governance from this study included: creating an inter-jurisdictional body with basin-wide planning as a

priority, ensuring more communication and cooperation between organizations, improving public engagement, education, and awareness, and either giving the PPWB greater responsibility based on their existing jurisdiction or reviewing their mandate. Other recommendations included providing additional support for watershed groups, giving First Nations additional funding to participate in watershed planning and management, ensuring management strategies are more proactive, clarifying roles, enforcing water conservation, and finally, giving ultimate authority to the provincial government. The range of responses shows the range of opinions regarding water governance prioritization in the SRB as well as the diversity of concerns of key informants who contributed to this research.

In response to this preliminary study it would be informative to broaden the number of key informants in a second questionnaire survey. A refined questionnaire with more targeted questions could also follow from this research. In addition, watershed basins in other regions of Canada could similarly be investigated to draw any comparisons to the SRB. Other methods beyond questionnaires such as interviews, focus group discussions, and document review would add depth to this research project. The overall goal of such a project is to improve the efficacy of water governance in Canada.

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References

- Bakker, K. (Ed). (2007). *Eau Canada: the future of Canada's water*. Vancouver, British Columbia, Canada: UBC Press.
- Constitution Act. (1867). British North America Act, 1867, 30 & 31 Victoria, c.3. Retrieved from <https://www.canlii.org/en/ca/laws/stat/30---31-vict-c-3/latest/30---31-vict-c-3.html>
- de Loë, R. & Kreutzwiser, R. (2007). Challenging the status quo: The evolution of water governance in Canada. In K. Bakker (Ed.), *Eau Canada: the future of Canada's water* (pp. 119–142). Vancouver, British Columbia, Canada: UBC Press.
- de Loë, R., Varghese, J., Ferreyra, C., & Kreutzwiser, R. (2007, October 1). *Water allocation and water security in Canada: Initiating a policy dialogue for the 21st century*. Paper prepared for the Walter and Duncan Gordon Foundation. Retrieved from http://www.wpgg.ca/sites/default/files/1-de_Loe_et_al_2007_Final_Report.pdf
- Ferreyra, C., de Loë, R., & Kreutzwiser, R. (2008). Imagined communities, contested watersheds: Challenges to integrated water resources management in agricultural areas. *Journal of Rural Studies*, 24 (2008), 304–321.
- Heathcote, I. W. (2009). *Integrated watershed management: Principals and practice*. 2nd edition. New Jersey: John Wiley & Sons Inc.

- Ivey, J. L., de Loë, R., Kreutzwiser, R., & Ferreyra, C. (2006). An institutional perspective on local capacity for source water protection. *Geoforum*, 37(6), 944–957.
- Matthews, C., Gibson, R. & Mitchell, B. (2007). Rising waves, old charts, nervous passengers: Navigating towards a new water ethic. In Karen Bakker (Ed.), *Eau Canada: the future of Canada's water* (pp. 119–142). Vancouver, British Columbia, Canada: UBC Press.
- Muldoon, P., & McClenaghan, T. (2007). A tangled web: Reworking Canada's water laws. In Karen Bakker (Ed.), *Eau Canada: the future of Canada's water* (pp. 119–142). Vancouver, British Columbia, Canada: UBC Press.
- National Round Table on the Environment and the Economy. (2010). *Changing currents: Water sustainability and the future of Canada's natural resource sectors*. Report. Retrieved from <http://www.blue-economy.ca/sites/default/files/reports/resource/changing-currents-water-report-eng-1.pdf>
- Noble, B. F., Sheelanere, P., & Patrick, R. (2011). Advancing watershed cumulative effects assessment and management: Lessons from the South Saskatchewan River Watershed, Canada. *Journal of Environmental Assessment Policy and Management* 13(4):567–590.
- Nowlan, L., & Bakker, K. (2007, November). *Delegating water governance: Issues and challenges in the BC context*. Paper for the BC Water Governance Project. UBC Program on Water Governance Nov. 2007. Retrieved from http://www.obwb.ca/fileadmin/docs/fbc_watergovernance_final.pdf
- Özerol, G., & Newig, J. (2008). Evaluating the success of public participation in water resources management: Five key constituents. *Water Policy*, 10(6), 639–655.
- Partners FOR the Saskatchewan River Basin. (2009). From the mountains to the sea: Summary of the state of the Saskatchewan River Basin. Retrieved from <http://www.saskriverbasin.ca/file/SRB%20Summary.pdf>
- Patrick, R. (2009). Source water protection in a landscape of “New Era” deregulation. *The Canadian Geographer*, 53(2), 208–221.
- Saunders, J. O., & Wenig, M. M. (2007). Whose water? Canadian water management and the challenges of jurisdictional fragmentation. In K. Bakker (Ed.), *Eau Canada: the future of Canada's water* (pp. 119-141). Vancouver, British Columbia, Canada: UBC Press.
- Schindler, D. W., & Donahue, W. F. (2006). An impending water crisis in Canada's western prairie provinces. *Proceedings of the National Academy of Sciences of the United States of America*, 103(19), 7210–7216.
- World Water Assessment Programme. (2003). *Water for people, water for life: The United Nations World Water Development Report*. New York, NY: UNESCO.