Saskatchewan Watershed Authority

Protecting our Water

A Watershed and Aquifer Planning Model for Saskatchewan

Introduction

Saskatchewan needs to ensure it has an adequate supply of quality water for the future. In 2002, the provincial government created the Saskatchewan Watershed Authority to manage and protect water quantity and source water quality in Saskatchewan. To achieve this goal and as an important element of Saskatchewan's *Long-Term Safe Drinking Water Strategy,* the Authority brought together staff from SaskWater, the Saskatchewan Wetland Conservation Corporation and Saskatchewan Environment.

Watershed and aquifer planning is an essential part of implementing the *Long Term Safe Drinking Water Strategy.* It is easier, more effective and more efficient to prevent contamination of water at source than to remove contaminants at a water treatment facility.

Sound management of watersheds and aquifers begins with planning and effective water management. Planning in the water management field can take many forms, ranging from a holistic approach whereby all aspects relating to water and the related ecological resources are evaluated and all issues are considered, to planning which is directed towards a specific issue or activity. With this range of perspectives, a planning model which is able to achieve a broad range of applications has been developed. Regardless of the scope, the model is designed to achieve consensus, collaboration and stakeholder involvement throughout the process.

This document will outline the principles of watershed planning, the steps involved in the planning process, the structure of the watershed plan, the implementation process, and the currently identified priority areas for watershed planning.

A Planning Model for Sound Watershed and Aquifer Management

The management and protection of the water resources for the benefit of Saskatchewan residents is best served when stakeholders collaborate through frank rapport and mutual respect, then commit to actions that support a common goal. Stakeholders in watershed management include residents, producers, land managers, those involved in industry or conservation, health and natural resource management.

Through the representation of these interests by municipal, First Nations, provincial and federal governments and other interest groups, substantial efforts will be undertaken to identify threats to source waters and provide a plan to address these threats. These representatives bring expectations and assumptions to the planning process, eventually forming a shared, common understanding among partners, working together in good faith, and firmly believing that sound water management and source water protection is everyone's business. The Saskatchewan Watershed Authority's planning through consultation in a watershed setting is designed to bring people to a common understanding resulting in tangible benefits for residents.

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Steps in the Planning Process

An effective watershed and aquifer planning process incorporates a number of key elements. To address the varied needs of Saskatchewan and in response to the recent focus on the protection of the water resources, the Saskatchewan Watershed Authority has developed a watershed and aquifer planning model. The model incorporates a series of components culminating in a watershed or aquifer plan.

This document provides a discussion of these components beginning with the establishment of three committee structures:

- the watershed advisory committee to provide local input, guide the process and share in the implementation of outcomes;
- the technical committee to collect information and conduct analysis as required; and
- the planning team to coordinate the activities with ultimate responsibility to develop the plan.

Steps in the Planning Process:

The watershed advisory committee meets regularly to understand and discuss issues, consider options and make decisions.

Watershed Advisory Committee

The watershed advisory committee has responsibilities to incorporate into the process all of the interests of the residents of the watershed. The committee is expected to provide significant input towards the development of the plan, become more informed about the relationship between activities and the environment, and share in initiatives to manage the water resources and improve and protect source water. Rural and urban municipalities, First Nations, Conservation Area Authorities, Watershed Associations and Irrigation Districts are entities established by legislation and will be represented on the committee. Participation of interest groups such as stewardship associations, producer groups and other locally-based organizations will also be considered for the committee to ensure there is a balanced representation of interests within the plan. The members represent their constituents; producers, community residents, recreation interests and other residents of the watershed who have a stake in the protection and management of the water resources.

To support the work of the committee, a framework to address general and specific aspects of the watershed advisory committee will be developed. It will include information to address terms of reference, rules of committee operation, setting objectives, promoting sound decision-making and efforts to ensure timely delivery of findings. Establishing the terms of reference as guidance helps clarify the purpose and scope of the committee and to identify and obtain agreement on the structure, influence and specific committee responsibilities. The watershed advisory committee meets regularly to understand and discuss issues, consider options and make decisions. In large watersheds, more than one watershed advisory committee may be needed to accommodate travel logistics and group dynamics. Organized around sub-watersheds, representatives from each of the areas would contribute to the development of a plan which would encompass the entire watershed.

Technical Committee

A key component of the development of a watershed or aquifer plan is the assembly and analysis of information. A technical committee of agency representatives specializing in natural resource management will be tasked with this responsibility. Chaired by the planning team, Saskatchewan Watershed Authority staff on the technical committee could include surface and ground water specialists, regional operations staff, water monitoring and projects and partnership representatives and communication specialists. From external agencies, typical representation on the committee could include Saskatchewan Environment; Saskatchewan Agriculture, Food and Rural Revitalization; Saskatchewan Health; Saskatchewan Government Relations and Aboriginal Affairs; Agriculture and Agri-Food Canada (through the Prairie Farm Rehabilitation Administration); Environment Canada; Fisheries and Oceans Canada; and Ducks Unlimited.

Initial activities of the technical committee will involve an assembly of existing information to facilitate discussions among the partner agencies and stakeholder representatives to develop an understanding of the watershed and the range of water management issues and concerns that exist. As issues arise within the study and the need for data collection and analysis become apparent, once again the onus shifts to the technical committee to provide assistance. Typically an issue can be addressed through a range of options. The technical committee will have responsibilities to identify and assess these options.

3

Planning Team

The planning team will usually consist of two staff from the Authority's Watershed and Aquifer Planning Branch, who coordinate activities and manage the planning process. Among the key responsibilities of the planning team are:

- establishment and guidance of the technical and watershed advisory committees;
- development of committee terms of reference;
- compilation of background information;
- management of the public consultation process;
- documentation of the findings of the technical committee and outcomes of stakeholder deliberations; and
- culmination in the development of the watershed plan.

The team facilitates meetings, becomes involved in the analyses of the strengths, threats and opportunities of the watershed, and guides solution-driven consensus and collaboration.

Emphasis should be placed on the important role of the planning team respecting the stakeholder representatives and the public at large. The team facilitates meetings, becomes involved in the analyses of the strengths, threats and opportunities of the watershed, and guides solution-driven consensus and collaboration. They must maintain public rapport, all the while intuitively balancing peoples' interests and getting the job done. The team guides participants in round table discussions to synthesize issues and set priorities. Simply put, planners encourage group validation and commitment to sound water management and source water protection.

The Planning Process

Upon establishment of the teams, the next step in the planning process is a thorough discussion of the issues. Local knowledge and discussion are central to this step, supplemented by technical input. Through planning committee agreement, the objectives of the planning process are established. This is a critical step since the eventual outcomes of a planning process are a direct response to these initial objectives.

Based on these objectives, information is gathered, analysis is undertaken and strategies to address the objectives are developed and evaluated. As a final step in the planning process, conclusions and recommendations are assembled. Although much of this work is directly linked to the activities of the technical committee and the planning team, this work is transparent, requiring considerable involvement and support from the planning committee representatives.

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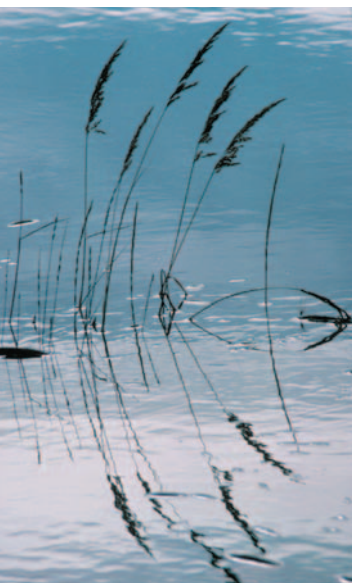
The last step in the planning process is the implementation of the findings. Emphasis must be placed on taking steps to implement the findings. All committee and team participants have invested considerable effort in the process and all expect a tangible outcome from this work.

To ensure the public has an ongoing awareness and input to the planning process, various communication activities will be scheduled during the planning process. Open houses, informal community meetings, interaction with local media to enhance awareness, educational initiatives, field days, newsletters, educational material and pilot projects to research solutions to issues are all tools available to increase public awareness.

The Watershed/Aquifer Plan

The watershed plan is developed by the planning team with the essential and critical support of the stakeholders and the technical team. The plan will contain background information, an environmental scan of the watershed, analysis of issues and perceived threats, a commitment to action, timelines and responsibilities, and a measure of results and an evaluation of effort. Generally, the plan consists of the following:



Background Information

The introductory step includes gathering relevant data to assist stakeholders in understanding the watershed and making decisions. This would include details about population and demographics, economic activities and land use, aboriginal knowledge, climate, physical and topographic characteristics including soils, surface and ground water availability, water allocations, trends in water use and wastewater disposal and treatment. There will also be a focus on the ecology of the watershed with an emphasis on ecological diversity, indicators of riparian health, native prairie sites and ecologically-sensitive areas. Real or perceived threats to the ecology will also be presented.

Issues

Issues that focus on water management, including associated ecological components, typically dominate the initial committee discussions within the planning process. Concerns about water management, the quality and quantity of the water resources in contrast to the demands that are placed on the resource, flooding and drought, climate change, the protection of riparian and wetland areas, and the maintenance of biodiversity are among the range of issues that regularly come to the fore. Validating these concerns, with the advice of the technical committee, and prioritizing these issues are important outcomes of this step in the process.

An improved operating plan for a reservoir, or taking steps to improve water supply and water quality are among specific objectives which could be pursued in a watershed or aquifer plan.

Objectives

As an outcome of the discussion and prioritization of the issues in the watershed or aquifer, efforts are then directed to the development of the planning objectives. Examples of objectives range from activities to provide the watershed residents with an improved understanding of the quality and quantity of the water resources and related ecological components, to the impact of development on these resources, to an assessment of a specific issue that is identified as having particular interest or concern to the stakeholders. An improved operating plan for a reservoir, or taking steps to improve water supply and water quality are among specific objectives which could be pursued in a watershed or aquifer plan.

Analysis

The assembly and analysis of information will be generally undertaken by the technical committee to address planning objectives. The type of information gathered and degree of analysis conducted is contingent upon the issues under consideration. In many cases, the analysis takes the form of evaluating a range of scenarios. For example, in drought prone areas evaluations ranging from developing water storage, improving the efficiency of existing water use, to reallocating water rights to better meet societal needs are among the range of options that could be addressed. The analysis provides the basis for activities to address watershed issues and concerns.

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Recommendations and Key Actions

The concluding section of the watershed or aquifer plan summarizes the outcomes of the committee discussions and technical analysis. Usually through a series of recommendations, responses to the planning objectives are presented and a general discussion of the perspectives of the watershed residents is provided. As noted earlier, actions to implement the recommendations are critical to the acceptance and ultimate success of the plan. Therefore a clear indication of what needs to be undertaken, and by whom, is needed.

As an action plan is developed, care should be exercised to ensure activities are realistic and can be completed within an acceptable timeframe. Lead responsibility for the actions should be identified.

Key actions are a function of the objectives and recommendations for a particular watershed or aquifer, but can range from a commitment to enhanced water quality monitoring, revisions to reservoir operating plans to address instream flow needs, the application of livestock grazing management alternatives to achieve sound riparian management, and the implementation of programming to protect wetlands.

Completion of the watershed plan, with the support of the stakeholder and technical committees, paves the way for delivery, program support, regular follow-up and updates, and the sharing of new information, programs and strategies that continue to support the management and protection of Saskatchewan's water resources.

In collaboration with stakeholders, the planning process serves to identify water management and associated ecological issues, and provides recommended solutions to resolve them.

Implementation Through Adaptive Resource Management

The Saskatchewan Watershed Authority employs an adaptive resource management approach whereby watershed and aquifer planning provides the basis for program delivery within both the Stewardship and Operations Divisions. In collaboration with stakeholders, the planning process serves to identify water management and associated ecological issues, and provides recommended solutions to resolve them. Through a partnership arrangement with stakeholders, the Projects and Partnerships Branch and the Regional Operations Branch deliver programming and other activities to effect solutions. The final component of the adaptive resource management approach is the activity of the Monitoring and Assessment Branch. It has a key role to assess the effectiveness of these activities. Through this approach, there is a significant expectation that a strong linkage will be maintained between the recommendations of the plan and subsequent activities on the ground.

Watershed Planning for Source Water Protection

The watershed planning model is structured to serve many different purposes of varying degree or magnitude. At one end of the scale, the watershed and aquifer planning model can be comprehensive in scope addressing all of the issues in a watershed, usually requiring substantial time and resources to complete. In contrast watershed planning can also focus on a single activity and its impact on one component of the ecosystem, for example the impact of a proposed water control structure on fish habitat, populations and migration. In each case,

the planning model can be effectively applied but the magnitude of the effort and the resources to support the process will vary significantly.

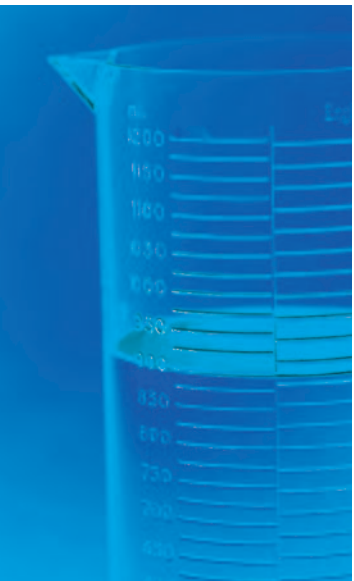
The current application of the planning model will provide a focus on source water protection, consistent with the Saskatchewan Watershed Authority's mandated responsibility and with Saskatchewan's *Long Term Safe Drinking Water Strategy*. Planning for source water protection will have an emphasis on both water supply and water quality issues. Drought and flood are significant issues in many areas of the province, with large variations between wet and dry cycles. The potential impact of climate change is another important factor. Water quality and the linkages between activities in the watershed or in the aquifer recharge areas are also becoming increasingly significant issues in many areas.

Planning for source water protection will have an emphasis on both water supply and water quality issues.

Although water quantity and quality will be stressed, there are other related issues that need to be considered in the planning process. Issues ranging from water use and future demand, unauthorized drainage, the protection of wetlands and riparian areas, and the health of the ecosystem are all affected by efforts to protect source waters and will therefore be addressed to some degree in the planning process.

Consistent with the model, watershed planning to achieve source water protection will be a collaborative effort among government and the primary stakeholders—those who have a vested interest in safe drinking water supplies. With stakeholder participation, the planning process will identify and explore threats to source water quantity and quality in watersheds and the aquifer recharge areas and provide a forum for stakeholders to discuss the factors that contribute to sound water management.

Background investigation and analysis will include geology, soils, hydrology and hydrogeology, land cover and associated land use, and other physical aspects of the watershed. Key focus and analysis will be on current water supply and use and future demand, and on potential point source contamination in areas of greatest risk such as sewage lagoons, landfills and concentrated agricultural operations. Impacts on healthy ecosystems, riparian areas and wetlands—the places with the most potential to impact water quantity and quality and those most compromised by contaminants—will be identified and assessed.



The product of this planning process will be a watershed or aquifer plan documenting the state of the water resources from a quantity and quality perspective, the health of the ecosystem as it impacts the water resources, and an overview of the basin water demand with an emphasis on source water. Further, the plan will provide written strategies to address these threats and include efforts to rank or prioritize the threats to drinking water quality. Actions to address source water protection will also address many other water-related issues in the watershed. Issues external to this focus will not be ignored but addressed outside of the planning process.

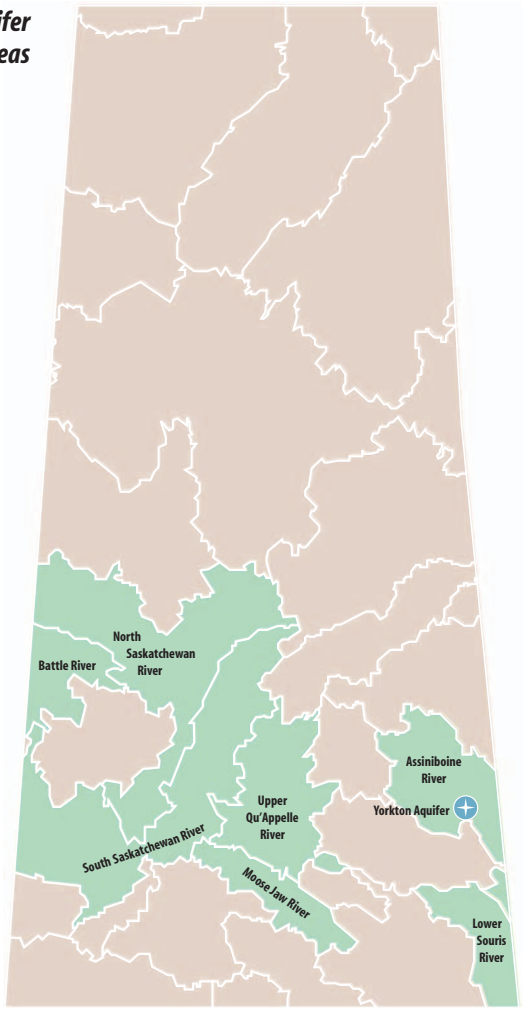
Watershed and Aquifer Planning: 2003/2004

Authority staff are developing a social priority and watershed health ranking to assist in focusing efforts on those watersheds most needing attention.

The Saskatchewan Watershed Authority will focus its planning and programming in geographically-defined watersheds deemed to be most in need. To help rank Saskatchewan watersheds by priority, Authority staff are developing a social priority and watershed health ranking to assist in focusing efforts on those watersheds most needing attention. Analysis of indicators that contribute to ranking both social priority and watershed health require information from external sources, and technical consultations with partner agencies. The results of this watershed prioritization will assist in selecting future planning areas.

While the criteria for prioritization are being finalized, watershed and aquifer planning activities have begun in seven areas. These areas were selected based on either need (North Saskatchewan River/Battle River Watershed, South Saskatchewan River Watershed, Upper Qu'Appelle River Watershed, Yorkton Aquifer) or pre-existing activity (Upper Assiniboine River Watershed, Lower Souris River Watershed, Moose Jaw River Watershed).

Watershed and Aquifer Planning Areas



Conclusion

Watershed and aquifer planning is a key activity of the Saskatchewan Watershed Authority. With a focus on the protection of water supplies, from both a quantity and quality perspective, the planning process is designed to identify threats and initiate opportunities to address these threats. Significant effort will be made to involve the key stakeholders in all aspects of the planning process.

The participation of technical specialists from the Authority and from other natural resource management agencies is an important element in the success of the planning process. Many provincial, federal and non-government agencies have a stake in healthy ecosystems and have resources available to help achieve this objective. Similarly, other agencies have management responsibilities for other components of the ecosystem and linkages among the processes are critical.

The Saskatchewan Watershed Authority is organized in a way that addresses the needs of stakeholders when it comes to source water protection. Through the application of an adaptive resource management approach, planning identifies the threat and other units within the agency direct programming and other resources to address the problems identified. Monitoring the impact of these activities is important in an effort to gauge how well we are doing.

Of particular importance is the role of the stakeholders in the planning process. It is expected that participation in the identification of threats to source water is only the first step. Solutions to the problems will be based on collaboration. Watershed residents with the support of government have responsibilities to take measures to protect source waters on behalf of all watershed residents. The Authority is committed to work with stakeholders to assist with this responsibility.

Internet: www.swa.ca

Saskatchewan Watershed Authority

People working together as watershed stewards…

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