



# 25 YEAR *Saskatchewan Water Security Plan*





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## **Message from the Honourable Ken Cheveldayoff, Minister Responsible for the Saskatchewan Water Security Agency**



Saskatchewan's economy is strong; our population is at a record high and continues to grow. It's fantastic to see so many people moving back to our province where they can work and raise a family and enjoy a great quality of life. With the creation of the 25 Year Water Security Plan, our Government is fulfilling a commitment made during the 2011 election, providing a sustainable approach to water use that will protect the quality and quantity of water now and for the future.

Regardless of where we live or what we do, water is essential to life and will be treated as a finite resource that is used efficiently and effectively to best reflect its economic, social, and environment importance. We need it in our homes for drinking, cooking and bathing. We irrigate our gardens. Water is essential to farmers, ranchers and many industries. Most of us spend at least some of our leisure time in water-based recreation, often along our majestic lakes and rivers.

Growth does create challenges. One of those challenges is ensuring a sustainable water supply to support business and industry needs, a healthy environment and our quality of life. To support our growing population and economy, we must take strong action to ensure effective water management.

Your Government, with this Plan, is moving forward to address the challenges of growth. The Plan sets out a road map for strengthening water management. The new Water Security Agency will lead implementation of the Water Security Plan and will work with many partners to achieve our vision. Federal and municipal governments have roles in water management and are important partners, as are farmers, home owners and corporations. As we move our province forward, we will work together to use water more efficiently and develop and implement source water protection plans to ensure our water supplies are adequate and will contribute to our quality of life.

With the help of many individuals and agency representatives who have taken the time to participate in consultation sessions and make written submissions, I thank all of you for contributing your wisdom, experience and time to help us develop a solid Plan that will make Saskatchewan a great place to live, work and raise a family.

I look forward to your continuing support and advice as we work to implement this vision for the future of one of our province's most precious resources.

Sincerely,

A handwritten signature in black ink, appearing to read 'Ken Cheveldayoff', written in a cursive style.

Ken Cheveldayoff

Minister Responsible for the Saskatchewan Water Security Agency



## WATER SECURITY

means ensuring water services—such as water for drinking and sanitation, the food we grow with water, the fish we catch, and the water used in industry, energy production, transportation and recreation—are sustained. At the same time, water security recognizes that all of these services are reliant upon healthy and productive ecosystems.<sup>1</sup>

## INTRODUCTION

# THE 25 YEAR SASKATCHEWAN WATER SECURITY PLAN

Water is a public resource and managing water is a provincial responsibility. Managing a resource of this importance requires a long-term vision and a well-planned series of actions.

Many water management initiatives, such as implementing source water protection or developing new infrastructure, take years to plan and complete. Even though we cannot foresee all actions that may be necessary in the future, maintaining a 25-year planning horizon that projects our future water demands and stresses provides the timeframe required for long-term water management initiatives and ensures consideration of future generations.

Our province is experiencing unprecedented economic and population growth, giving rise to increased water demand for industrial, municipal and irrigation uses and for the production of energy. At the same time sustainability, health and quality of life require that water quality and important aquatic habitats be protected. As communities and the economy grow, pressures on existing water infrastructure also increase.

Saskatchewan's geography intensifies the need to focus on water. Situated in the heart of the prairies, southern Saskatchewan is a relatively arid area with a high variability in annual water supply that causes situations ranging from drought to flood. The water supplies in the northern part of the province tend to be more abundant and dependable than in the south due to greater precipitation and less evaporation. Climate change can also affect drinking water supplies, necessitating infrastructure changes or improvements.

These pressures pose a significant challenge to water managers. In managing water systems, a long-term view that projects future water needs and evaluates them against current needs and ecological requirements allows a plan to be developed that ensures these multiple demands are met. Decisions made in the absence of a long-term plan could jeopardize our future by creating the risk of water shortages and deteriorating water quality.

The 25 Year Saskatchewan Water Security Plan is a forward-looking document that seeks to deal with water issues not currently being addressed or in need of review or revitalization. The Plan sets out a vision, seven principles, seven goals and 29 action areas.

The vision and principles provide guidance for all of the province's work around water and ensure a long-term perspective is maintained. The goals reflect the major areas where the province must have success to achieve its vision. The action areas identify the areas of focus needed to achieve the goals. Some actions can be undertaken immediately. Others may require more research and consideration and some, when treaty or aboriginal rights or pursuit of traditional uses may be adversely impacted, will give rise to the duty to consult with First Nations and Métis communities.



The Plan is not intended to be static. While the principles and goals provide a long-term perspective, action areas and commitments to action will be regularly reviewed and adjusted to ensure they address current and emerging conditions.

With appropriate implementation of the 25 Year Saskatchewan Water Security Plan, our water will support our growth, quality of life and environmental well-being now and into the future.

Development of the Plan began with consultations in 2011. A total of 174 individuals, representing 92 organizations participated in consultation sessions. Collectively they indicated strong support for the development of a new plan and identified four main water-related themes:

- water plays a critical role in Saskatchewan's future;
- a number of factors impede the quick resolution of water issues;
- vigorous government leadership is required in water management activities; and,
- too many ministries and agencies are involved in water management, resulting in confusion to clients and raising the potential for conflicting or inconsistent decision making.

In spring 2012, government directed the development of a 25 Year Saskatchewan Water Security Plan consultation document based on the 2011 consultations. On July 24, 2012, Minister Cheveldayoff released the consultation document to the public. A second round of consultation meetings, focussed on the consultation document, were conducted in Regina, Saskatoon and Prince Albert. The consultation meetings involved 78 individuals representing 56 organizations or governance groups. The consultation document was sent to all First Nations and Métis locals and the document was posted on the Saskatchewan Watershed Authority website to encourage written submissions.

Across all of the consultation sessions and in written public submissions, broad support was expressed for the development of a 25 Year Water Security Plan for Saskatchewan and for the content and focus of the consultation document. A broad consensus on the importance of a long-term view and need for regular renewal of the Plan, perhaps every five years, was also apparent. Throughout the consultation, the importance of good data and accessible information in all aspects of water and water management was stressed, as was the importance of new legislation and strong governance and decision making processes. Many participants noted that good information and governance (Goals 6 and 7 in the Plan) are fundamental to achieving the rest of the goals in the Plan.

The Plan is meant to take the province into the future with attention to the needs, interests and concerns of the people of Saskatchewan and to the protection and sustainable development of the resource.

A new provincial organization, the Water Security Agency, will lead implementation of the 25 Year Saskatchewan Water Security Plan. Creation of the Water Security Agency will consolidate government's core water management expertise and bring various provincial responsibilities for water together, eliminating overlap and improving service delivery through the use of one-window approaches to applications, licensing and program accessibility.



*"Water security is...  
the foundation for  
food and energy  
security, and for  
overall long-term  
social and economic  
development. Water  
underpins health,  
nutrition, equity,  
gender equality,  
well-being  
and economic  
progress..."<sup>2</sup>*

- Thomas S. Axworthy  
and Bob Sandford



# VISION

*Water supporting economic growth, quality of life and environmental well-being*

## PRINCIPLES

### Long-Term Perspective

Water management decisions will be undertaken within the context of a 25-year time horizon

### Water for Future Generations

A sustainable approach to water use will protect the quality and quantity of water now and for the future

### Integrated Approach to Management

Water decisions will integrate the multiple objectives and information pertaining to the economic development, ecological, hydrological, human health, and social aspects of water, considering circumstances and needs that may be unique to a watershed or region, to achieve a balanced outcome

### Partnerships and Participation

The provincial government will facilitate collaboration in the development and implementation of water management decisions

### Shared Responsibility

All residents, communities and levels of government share responsibility for the wise use and management of water

### Value of Water

Water is essential to life and will be treated as a finite resource that is used efficiently and effectively to best reflect its economic, social, and environmental importance

### Continuous Improvement

Water management will be adaptive and supported by sound monitoring, risk assessment, evaluation, research, innovation, and best practices



## GOALS

The following goals are not presented as a prioritized list. The goals and the action items associated with them are all important components of the 25 Year Saskatchewan Water Security Plan. In particular, goals 6 and 7 are supporting goals, influencing all of the other goals and action items, and critical to the ultimate success of the Plan.

### 1 sustainable supplies

Ensure the sustainability of our surface and ground water supplies

### 2 safe drinking water

Ensure our drinking water is safe by protecting supplies from the source to the tap

### 3 protection of water resources

Ensure water quality and ecosystem functions are sustained

### 4 safe dams

Ensure dams safely meet water supply and management needs

### 5 flood and drought damage reduction

Ensure measures are in place to effectively respond to floods and drought

### 6 adequate data, information and knowledge

Ensure adequate water data, information and knowledge are available to support decision making

### 7 effective governance and engagement

Ensure water management and decision making processes are coordinated, comprehensive and collaborative



### WATER CONSERVATION

is using less water to achieve the same outcomes (efficiency) or choosing different outcomes that require less water

### SUSTAINABILITY

is the ability to indefinitely maintain a resource; for example, "sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs"<sup>3</sup>

### WATER ALLOCATION

is the regulation and licensing of the use of water for a specific purpose

## GOAL ONE SUSTAINABLE SUPPLIES

### *Ensure the sustainability of our surface and ground water supplies*

Growth will bring with it an increasing demand for water and water services to satisfy our domestic, agriculture, business, industry, environmental, recreation, and power generation needs. **Water conservation** can moderate this growing demand, but additional infrastructure such as dams and water supply channels may also be required. There is potential for irrigation expansion in the province, raising important considerations about adequate infrastructure and supplies. Climate change may also pose long-term water supply challenges. Key to ensuring **sustainability** will be the development of a new approach to **water allocation** that is supported by updated and modern legislation. Understanding basic information about our water, including current and projected demands and availability, ecosystem needs, and the value of alternative uses of water, will provide an important foundation for decision making.

In Saskatchewan, water rights licences are required for all uses of ground and surface water, with the exception of domestic uses. The licence specifies when the water is to be used and the amount that can be taken. Licences are not attached to the land; they expire when the land the water use occurs on is transferred.

*"In recognizing that there is only a finite amount of water in the world, we realize that the water we drink today is the same water we will drink tomorrow and our grand-children will drink generations from now. This necessitates the promotion of an ethic of water usage and a realization that water is simply too valuable not to manage appropriately."<sup>4</sup>*

- The Rt. Hon. Jean Chrétien.



## action area 1.1

### efficient use of water

Managing water demand and use through conservation practices is a critical strategy to relieve increased pressures on supplies. Efficiencies can be achieved in a number of ways, including the implementation of appropriate pricing strategies, establishment of sector-based conservation targets (industrial, agricultural and municipal), regulations, setting of licence conditions, promotion of new practices and technologies, and **water reuse**.

#### actions

- a. Promote adoption of best conservation and efficiency practices and technology through education, regulations, water licence conditions and new programming *(ongoing)*
- b. Investigate pricing strategies as a means of promoting water conservation *(2016)*
- c. Work with partners to promote research and development of innovative technology that improves the efficient use of water *(2016)* see also action area 6.3



#### WATER REUSE

involves the reclamation or recycling of runoff or wastewater to another use, such as irrigation or industrial applications

#### WaterSense Labeling

Under an initiative of the Council of the Federation Water Stewardship Council, the Government of Saskatchewan partnered with the United States Environmental Protection Agency to use the WaterSense label.

The WaterSense water efficiency labeling program for water-using appliances identifies products that are at least 20 per cent more water efficient and perform as well as, if not better than, conventional models.

The WaterSense labeling system will benefit Saskatchewan consumers, who will be able to identify and purchase more water efficient products. It will also assist Saskatchewan manufacturers who are interested in having their water saving product certified under WaterSense.



*“...water is central to the expansion of economic development in the province.”*

- written submission from the Board of the Saskatchewan Association of Rural Municipalities, 2012



## RESERVOIRS

are water bodies formed by creating a depression in which water will collect or by damming a natural water course to hold back and store water

## WATERSHED

or drainage basin refers to a region that drains into a specific body of water, such as a river, pond, lake or ocean. It includes all the land, air, plants and animals within its borders

## action area 1.2

### new water supply infrastructure

Managing water demand and use may not fully address the needs related to economic and population growth in the province. Additional water infrastructure, including new **reservoirs**, pipelines, and canals may be necessary to secure the water needed for growth. New infrastructure is costly to build and maintain, and requires significant ongoing funding. Long-term planning is needed to anticipate water supply needs, identify options to meet needs and design and construct new infrastructure.

#### actions

- Evaluate existing water supplies and future demands for the next 25 years and beyond to determine the need for new infrastructure across the province (2016 and ongoing)
- Investigate alternative measures to increase the delivery of water from Lake Diefenbaker to Buffalo Pound Lake, including evaluation of the feasibility of the Qu'Appelle South irrigation project (2014) *see also action 1.4a*
- Examine alternative ways of instituting the concept of “user-pay” with respect to the development of additional provincially owned, multi-purpose water supply infrastructure (2016)

#### Upper Qu'Appelle Diversion from Lake Diefenbaker

Construction of the Qu'Appelle River Dam in the 1960s included outlet works to release water to the Qu'Appelle River to meet downstream needs. These include the municipal requirements of the cities of Regina and Moose Jaw, industrial requirements like those of Mosaic, Kalium and Yara at Belle Plaine, irrigation in the Qu'Appelle Valley and the maintenance of the eight lakes in the Qu'Appelle River valley for recreational use.

Over the past four decades, the needs of the existing users have increased. More recently, new potash mines, other industrial developments and irrigation projects have been proposed that would require significant additional diversions to the Qu'Appelle River system. The maximum amount of water the reservoir can supply to the Qu'Appelle system is limited to the capacity of the conveyance channel. This channel has lost some of its original design capacity since it was built because of erosion and summer weed growth. As a result, increased calls for water from the Qu'Appelle system to meet new demands in the southern part of the province will require an improved conveyance system.



## action area 1.3

### water allocation system

Industrial, oil and gas, potash, and irrigation expansion are important growth sectors and all rely on adequate and sustainable water supplies. These development opportunities place demands on water resources and can potentially affect other uses, such as municipal, recreational, power generation and ecological uses. Different **watersheds** and **aquifers** face different pressures. This raises challenging questions around setting water use priorities and understanding the trade-offs inherent in those decisions. Currently, the watersheds under the greatest pressure are those in the southwest part of the province, many of which are fully allocated, and the South Saskatchewan and Qu'Appelle river basins, which are experiencing the greatest growth and development related pressure in the province.

Appropriate allocation rules are needed to achieve the desired balance of water management objectives. A modern water allocation system includes: achieving optimal use of water that best serves the public interest (priority of use); streamlined approvals and licensing; a monitoring and compliance strategy; and protecting ecosystems and **environmental flows**.

#### actions

- a. Develop a modern system of water allocation, including a new allocation policy and regulations (2014)
- b. Review existing water rights licences and assess **current water use** (2014 in priority watersheds; 2016 other)
- c. By watershed, determine the existing use of water, level of protection of environmental flows and how much water is available for future allocation and identify areas where water scarcity may be a factor (2014 in priority watersheds; 2016 other) see also action area 1.6

#### Priority watersheds are those which are:

- subject to pressure from current and/or projected demands that may threaten the long-term sustainability of the water supply;
- particularly vulnerable or critical in terms of water quality, biodiversity, habitat and/or ecosystem health.



#### AQUIFERS

are underground formations that can provide usable quantities of water; typically, aquifers are composed of sands and gravels, but may also be formed from cracked shale or coal<sup>5</sup>

#### ENVIRONMENTAL FLOWS

are the "quantity, timing, and quality of water flows required to sustain freshwater and estuarine ecosystems and the human livelihoods and well-being that depend on these ecosystems"<sup>6</sup>

#### CURRENT WATER USE

refers to actual water withdrawals, in contrast to the amount authorized to be withdrawn under licence



## Groundwater

Groundwater supplies are often highly mineralized and thus inferior in quality compared to that of surface water. Groundwater quality varies, but in general, deep aquifers have higher levels of total dissolved solids than shallow aquifers.

Groundwater supplies are often available where surface water supplies are non-existent. As a result, groundwater is an important source of domestic and drinking water in rural Saskatchewan. Approximately 75 per cent of Saskatchewan communities depend on groundwater for their drinking water. Used properly, groundwater can provide a reliable source that is relatively constant in both quantity and quality.

Anyone other than a domestic user of groundwater must first complete a groundwater evaluation by a qualified consultant and undertake pump tests to establish the availability. They can then secure a licence to use groundwater. Saskatchewan has required licences to use groundwater since the 1960s.



Groundwater is generally available throughout the province, and in many instances its quantity exceeds that of the surface water supply. In Saskatchewan, aquifers vary in size from a few hectares to thousands of square kilometres in area, and from a few metres to almost a hundred metres thick.

With the exception of some watersheds in the southwest, Saskatchewan has adequate ground and surface water supplies to meet the current demand under most situations.

During drought periods, however, some shallow ground and surface water supplies have gone dry – requiring users to locate alternate, more secure supplies.



## action area 1.4

### irrigation

Irrigation is an important regional economic growth opportunity for Saskatchewan, as it increases agricultural output and employment and can support value-added processing. Currently in Saskatchewan, there are roughly 350,000 acres of irrigation and over 3 million acres of land is suitable for irrigation. Around Lake Diefenbaker, infill of existing irrigation districts could add up to 50,000 new irrigated acres. Infill represents the lowest cost means of expanding irrigation, as it increases the use of existing water supply infrastructure. A further 500,000 acres could potentially benefit from irrigation in the area around Lake Diefenbaker. A “critical mass” of irrigated acres is required to support value-added processing in the province. Like all infrastructure, irrigation infrastructure requires ongoing maintenance and in some cases, rehabilitation may be necessary. Although the federal government has a long history of involvement in irrigation, it is now undertaking steps to remove itself from the ownership and management of irrigation projects.

#### actions

- a. Work with Canada to continue to assess and seek funding support for further irrigation opportunities (*ongoing*) *see also action 1.2b*
- b. Develop an irrigation strategy that prioritizes opportunities for infill and new irrigation projects for development and assess the need for irrigation infrastructure rehabilitation (*2014*)
- c. Work with Canada to transfer ownership of federal irrigation projects to local patrons (*2017*)
- d. Develop new criteria for allocation licensing based on best practices and new technologies to sustainably support irrigation (*2016*)





## CLIMATE CHANGE

is the "changes in long-term weather patterns caused by natural phenomena and human activities that alter the chemical composition of the atmosphere through the build-up of greenhouse gases which trap heat and reflect it back to the earth's surface"<sup>7</sup>

## action area 1.5

### climate change adaptation

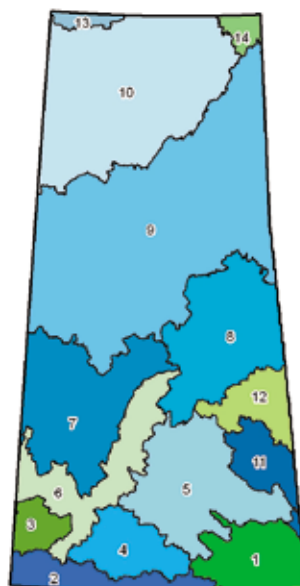
**Climate change** science suggests that extreme events, including drought and flooding, could become more frequent and more severe. In addition, changes in timing of runoff, stream flow and groundwater levels, increased evaporation, and impacts to water quality might occur. Water management decision making depends on the ability to estimate future water availability. However, the past may not be a good predictor of the future because the hydrology is changing in ways not yet understood. While it remains important to consider historical conditions, it will be necessary to use the latest science to model future water supplies and develop adaptation options to address the extremes that may be coming.

#### actions

- Continue work with research partners on climate change impacts to identify possibilities for adaptation (*ongoing*) see also action area 6.3

The **Prairie Adaptation Research Collaborative** (PARC) is a partnership between the governments of Canada, Alberta, Saskatchewan and Manitoba. PARC's mandate is to pursue climate change impacts and adaptation research in the Prairie Provinces. It is headquartered at the University of Regina with the objective to generate practical options to adapt to current and future climate change.

The **major basins** in Saskatchewan are defined as the following 14 watersheds:



#### Major Basins:

- 1 Souris River
- 2 Missouri River
- 3 Cypress Hills (North Slope)
- 4 Old Wives Lake
- 5 Qu'Appelle River
- 6 South Saskatchewan River
- 7 North Saskatchewan River
- 8 Saskatchewan River
- 9 Churchill River
- 10 Lake Athabasca
- 11 Assiniboine River
- 12 Lake Winnipegosis
- 13 Tazin River
- 14 Kasba Lake

## action area 1.6

### water availability study

The eight-year Water Availability Study is a major study initiated in 2009 to help determine the availability of surface and ground water to support provincial growth. It will provide critical information on water supply, demand and use. Although the study as a whole will be fully complete by 2016, portions of the study will be complete before that date and information will be integrated into decision making as soon as it becomes available.

#### actions

- a. Develop detailed **aquifer maps** (2016)
- b. Analyze the water supply situation in the major rivers (2016)
- c. Determine the existing water use by sector and delineated by the **major basins** (2016)
- d. Examine projected water demand by sector within major basins to the year 2060 (2016)
- e. Identify environmental flows to support the aquatic ecosystem (2016) see also action area 3.3

*“The more we can do to understand the use of water and balance the use of water, the more industry can continue to grow and minimize risk.”*

- mining sector representative, 2012 consultation session

## action area 1.7

### value of water

The purpose of the Value of Water Study is to provide a general assessment of the relative value or importance of the many needs that are supported by our water resources. The study will form a key policy development tool that can be applied to various water management issues including water allocation decision making, infrastructure investment, and conservation strategies.

#### actions

- a. Determine economic value of water in alternative uses (2016)
- b. Assess how the economic value of water could be used in allocation decision making (2016)



#### AQUIFER MAPS

show the distribution, extent, and depth of potential aquifers and include details on water supply potential and sensitivity to contamination



## SOURCE WATER

is the raw, untreated surface or ground water from which drinking water is withdrawn

## WATERWORKS

are any work designed to supply, collect, treat, store or distribute water that is intended or actually used for human consumption or hygiene

# GOAL TWO SAFE DRINKING WATER

*Ensure our drinking water is safe by protecting supplies from the source to the tap*

Drinking water safety involves a series of safeguards along the water supply route to prevent or reduce potential contamination. The key actions in improving the safety of drinking water in Saskatchewan are ground and surface **source water** protection and monitoring, **waterworks** operator training, appropriate treatment processes and equipment, infrastructure maintenance and inspection, drinking water quality monitoring, information management systems, and public education initiatives.

As noted, a fundamental step in drinking water safety is the protection of raw water sources from contamination, which is dealt with specifically in Goal 3.

After the 2002 North Battleford Water Inquiry, the province enhanced drinking water safety for public systems by implementing new standards, mandatory certification for operators and new monitoring and compliance regulations. The province requires the construction and expansion of all public water and wastewater works to be approved and permitted for use. Routine inspections of water and wastewater facilities ensure compliance with the regulations. As part of the regulatory requirements, communities need certified operators to run these systems.

As part of the drinking water program, the province monitors disease outbreaks to allow quick reaction in determining the source and cause of the outbreak. Quick reaction to water borne disease outbreaks can reduce the severity of the health impact and limit the number of cases reported.



*The State of Drinking Water Quality in Saskatchewan Annual Report, identifies drinking water results for the province.*



## action area 2.1

### municipal systems

Much has changed since the publication of the *Laing Report* in 2002. Municipal and other public water systems have benefited from improved regulatory and enforcement activities. However, meeting standards can be difficult for some small communities and municipal water infrastructure requires ongoing maintenance and periodic renewal. An updated strategy for safe public drinking water is required that considers the current situation in the province, both in terms of what is working well and what needs to be improved.

To continue to improve on the safety of drinking water, key elements for consideration include the need for review and/or enhancement of: source water protection; water quality standards; treatment objectives; operational standards, training and certification opportunities, and operator support; comprehensive inspection, audit and enforcement; emergency response and advice; compliance and enforcement approaches; management of infrastructure renewal, rehabilitation and maintenance; and roles and responsibilities of municipal, provincial and federal governments.

#### The Safe Drinking Water Strategy

was developed in 2002 in response to the *Laing Report*, and had three main focuses: a clear and effective regulatory regime, source water protection, and better drinking water treatment.

#### actions

- a. Review and update the province's approach to safe drinking water, including consideration of the 2002 *Laing Report* and the 2002 *Safe Drinking Water Strategy* (2014)
- b. Investigate and encourage opportunities for regional water treatment plants and distribution pipelines to increase access to, and protection of, high quality drinking water (ongoing)
- c. Evaluate the financial needs of communities for operation, maintenance and renewal of water infrastructure (2014)
- d. Develop a strategy to encourage communities to renew drinking water infrastructure (2015)
- e. Assess, with federal and First Nations governments, opportunities for the province to provide infrastructure, including connections to regional water systems, and technical and inspection services on reserves on a cost-recovery basis (2014)



#### LAING REPORT

refers to the Report of the Commission of Inquiry into matters relating to the safety of the public drinking water in the City of North Battleford, Saskatchewan, released March 28, 2002



## action area 2.2

### semi-public systems

Semi-public water systems are those systems that are accessible to the public but deliver less than 18 cubic metres of water per day. They include on-site systems serving restaurants, motels, work camps, campgrounds and small parks, and municipal wells with no distribution system. Semi-public systems are regulated; however, the requirements are different from those of public systems.

#### actions

- a. Review and rationalize the regulatory regime applying to semi-public systems (2015)
- b. Support research on water treatment technologies for point-of-use water systems (ongoing)

Owners and operators of semi-public systems must ensure that water is potable at the point of delivery, follow proper design and maintenance procedures, and regularly submit water samples for testing.



## action area 2.3

### private systems

Roughly 100,000 people obtain their water from private systems, including those living on farms and acreages. Users of these systems would benefit from additional support and information as to how to best maintain safe drinking water systems. At present, there is limited regulatory oversight of these systems.

In higher density developments that rely on private water systems, one threat is potential contamination from land uses and private sewage systems (see action area 3.1). There are actions that can be taken to reduce the risk of drinking water related illness, such as: increased testing of water; proper maintenance, operation and design of drinking and wastewater systems; the use of properly designed and certified treatment devices suitable for the proposed raw water source; promotion of appropriate disinfection technique; and using proper source water protection.

Rural Municipalities are encouraged to work with the Ministry of Government Relations to ensure that new subdivisions are established in suitable locations and that the existing infrastructure is adequate to support the additional infrastructure associated with new subdivisions.

#### actions

- a. Implement an effective education and information strategy to raise awareness of drinking water safety issues, including information on proper well management, system operation and maintenance, water quality testing, and identification of and solutions for groundwater quality problems *(2015)*
- b. Encourage testing of private water supplies, including testing for heavy metals *(2015)*
- c. Provide water testing and treatment advice in at-risk locations during emergency events such as flooding that pose a high risk of drinking water contamination *(ongoing) see also action 2.2b*

The province provides support to privately owned and operated systems (such as those found in farmyards) through educational material and advice to help owners maintain safe water systems. The provincial laboratory provides certain water testing services (general chemical and bacteriological) at a subsidized rate for individuals in order to encourage testing of private water supplies.





## WATER QUALITY

is a measure of biological, chemical, and physical characteristics of water in relation to its suitability for an environmental or specific human use<sup>8</sup>

## ECOSYSTEM FUNCTIONS

or ecological functions, are the “physical, chemical and biological processes” that occur within an ecosystem that “contribute to the self-maintenance of the ecosystem” and also produce beneficial outcomes (ecosystem services)<sup>9</sup>

## ECOLOGICAL HEALTH

can be described as a state where an ecosystem can maintain its structure and functions, even when subject to disturbance or external stress<sup>10</sup>

## ECOSYSTEM SERVICES

are the economic and social benefits humans derive, directly and indirectly, from the natural environment, such as provision of clean air and water, productive soils, usable goods, and breakdown of contaminants<sup>11</sup>

## THE BOREAL WATERSHED INITIATIVE

is a five-year project that addresses six priority areas: water quality, aquatic ecosystem health, air quality, soil quality, biodiversity and traditional land use and knowledge in the boreal region

## GOAL THREE

# PROTECTION OF WATER RESOURCES

### *Ensure water quality and ecosystem functions are sustained*

Water supplies are of much greater value—for all uses—if **water quality** and **ecosystem functions** are maintained. Furthermore, source water protection is an essential component of drinking water safety. Contamination of surface or ground water, degradation of **ecological health** and function, and loss of biodiversity and wetlands, comes with real economic, social and environmental costs. These include health risks, loss of recreational opportunity, loss of **ecosystem services**, reduced water supply and increased water treatment costs. Local source water protection planning can be an effective approach to identify ways to achieve water protection.

## Water Quality Across Saskatchewan

Water quality issues vary across the province, and in particular from North to South. Some lakes and rivers in the agricultural portion of the province can appear to have water quality problems, as they are rich in nutrients, sediments and organic material. Eutrophic lakes tend to produce algal blooms and increased production of phytoplankton and vegetation, which can reduce recreational potential and deplete the water of available oxygen as they decompose, negatively impacting other aquatic species. However, many of these systems are naturally eutrophic, with high amounts of nutrient loads due to the nutrient rich soils of the prairies.

On the other hand, Saskatchewan has excellent water quality in many of its northern boreal lakes and rivers. However, these lakes are potentially vulnerable to degradation from economic activities. Current monitoring and data collection allows for sound decision making and development of permit and compliance requirements.

The Ministry of Environment is in its second year of development of **the Boreal Watershed Initiative**, which will include examination of such things as acidification of lakes from air borne contaminants.





## action area 3.1

### water quality

Many of our southern lakes are naturally eutrophic and prone to severe algae growth. Much of the province's groundwater is also highly mineralized and of relatively poor quality. The lakes containing Saskatchewan's best quality surface water are those found in the north and Lake Diefenbaker. Preventing deterioration of water quality in lakes, streams and aquifers is of critical importance to sustaining water supplies and ecosystem health.

Threats to water come from point sources, such as industrial and municipal effluent, stormwater discharge, contaminated sites and landfills, and from non-point sources such as land use practices that lead to the transportation of soil, pesticides, fertilizers, nutrients, and manure into water bodies and groundwater. This is of particular concern in riparian areas and groundwater **recharge zones**.

Industrial emission of pollutants such as nitrogen dioxide and sulphur dioxide can be transported to water bodies through the air, falling in precipitation. Our northern lakes and rivers are particularly sensitive to acidification from these contaminants. The Boreal Watershed Initiative will identify risks and thresholds to protect northern waters.

Aquifers are a valuable part of our supply and once contaminated, can be very difficult to restore. Risks to aquifers occur in recharge areas, where contaminants can move down with the water, and when human activities, such as well drilling, breach the protective layers of clay that protect many aquifers. Applications of fertilizer and chemicals and effluent discharge through septic fields on areas with limited barriers to the aquifer create risk of contaminating a water supply.

Failure to maintain the quality of water supplies will place additional stresses on Saskatchewan's ability to meet the demands for water created by a growing population and economy. Ensuring the protection of water quality can include regulatory and non-regulatory approaches to address site-specific and cumulative impacts of water and land development and management practices.

**Eutrophication**, a process whereby a body of water becomes richer in nutrients such as phosphorous and nitrogen, is a natural process and is common to shallow (and hence warm) prairie lakes. The process can be dramatically accelerated, however, by activities such as the disposal of sewage or erosion of soil into the water, which can increase the concentration of available nutrients in a water body.<sup>12</sup>



#### RECHARGE ZONES

are the areas through which water on the surface can easily infiltrate into an aquifer, thus "recharging" the groundwater supply

*"An abundant growth of green confervae (algae) covered the surface... the lake is full of weeds and its water emits a very disagreeable odour."<sup>13</sup>*

- Henry Youle Hind describing Echo and Pasqua Lake, near Fort Qu'Appelle in 1858



## ENVIRONMENTAL FARM PLAN PROGRAM

encourages producers to develop farm plans that address the environmental risks and opportunities on their operations. The program was introduced in 2008 as part of the federal-provincial Growing Forward Framework

## action area 3.1: water quality *continued*

### actions

- a. Evaluate the status of existing municipal wastewater facilities to determine needs for upgrades (2014)
- b. Develop an agreement with Environment Canada for coordinated implementation of the Canadian Council of Ministers of the Environment Municipal Waste Water Effluent Canada-Wide Strategy and the Federal Wastewater System Effluent Regulations (2013)
- c. Develop a strategy to encourage the renewal of municipal wastewater treatment infrastructure to ensure protection of water quality in receiving water bodies (2015)
- d. Develop coordinated policies to reduce risk of water contamination that may result from residential wastewater management in high density rural developments and cottage subdivisions (2014)
- e. Define water quality objectives, including nutrient-related objectives, for surface water bodies and watercourses in the province, beginning with the highest priority systems and including work on key transboundary sites (ongoing)
- f. Implement a recreational lake water quality monitoring program for swimming areas at lakes across the province (2014)
- g. Provide information and encourage the implementation of beneficial land and water management practices to reduce non-point sources of nutrients and other contaminants to surface and ground water (ongoing)
- h. Complete the Boreal Watershed Initiative (2016)
- i. Define a strategy to reduce the contamination risk posed to groundwater sources by abandoned water wells (2014)
- j. Negotiate with Canada a new commitment to continue the **Environmental Farm Plan Program**, with a focus on nutrient management and protection of water supplies (2013)

Abandoned wells, if not maintained, pose an increased risk of groundwater contamination by providing a direct pathway from the surface to the aquifer. They can also pose a significant threat to public safety. Proper well decommissioning can reduce the risks.



## Livestock Production and Water Quality

Intensive livestock operations are regulated under the provisions of The Agricultural Operations Act to ensure that provincial lakes, rivers and streams are not negatively affected. The Act requires livestock operators to develop and operate according to approved plans for storing their manure and managing the nutrients and mortalities so that water resources are not at risk.

Proper design and operation of wastewater systems is an important part of protecting source water. With the exception of a few small communities, all public wastewater treatment works in the province meet the provincial sewage treatment standard. However, like drinking water systems, wastewater treatment systems need proper maintenance and periodic upgrading, and many public systems require upgrading to ensure that they continue to operate properly.



There are 31 municipalities in Saskatchewan which dispose of treated effluent through irrigation.



## WETLANDS

are lands where water collects on the land surface long enough to promote soil development and support the types of plant and animal communities adapted to saturated conditions<sup>14</sup>

## action area 3.2 wetland conservation

**Wetlands** can be permanent or temporary bodies of water. Their benefits vary as a function of their location within the watershed, their physical characteristics with respect to area and depth, and the length of time they contain water during the year. Wetlands are often important habitats for many different flora and fauna and support the maintenance of biodiversity. They can provide a means of water storage, which can provide benefits during dry periods and in some cases help reduce runoff during moderate flood events. They can also provide water quality benefits and some are effective at removal of nutrients, sediment, metals and pathogens. Many wetlands store large amounts of carbon and it has been demonstrated that restoring wetlands sequesters greenhouse gases from the atmosphere.

However, economic pressures and in some cases, a lack of knowledge, have meant that many prairie wetlands have been altered or removed in order to facilitate farming practices (see also action area 5.2), transportation, resource extraction, and urban and recreational developments. While no comprehensive inventory of wetlands has ever been done in Saskatchewan, we do know that wetland loss is variable across the province, with some areas experiencing severe losses. Loss of wetlands means a loss of the benefits that wetlands provide. Understanding the value and status of wetlands is fundamental to understanding the impacts of wetland loss and developing meaningful policy and programming to encourage wetland conservation.

### actions

- a. Prepare a new provincial wetland policy that includes an assessment of the status of wetlands in the province and identification of conservation priorities, including a strategy to retain and restore wetlands (2015)





## action area 3.3

### ecosystem health and biodiversity protection

Water and land development and management practices can have long-term consequences on **aquatic ecosystems**, both directly – by altering **riparian areas**, water bodies, and water quality – and indirectly – by modifying land use, natural **flow regimes** and water levels. Introduction of **alien invasive species** can also have detrimental effects on ecosystem health and biodiversity. Ecosystem health, in turn, plays an important role in the maintenance of water quality. Recreational values are also negatively impacted when ecosystems are degraded. Maintaining biodiversity, ecosystem function, fisheries habitat and **species at risk** must be considered when making decisions relating to water and land uses.

#### actions

- Establish site-specific objectives for environmental flows in priority surface water systems (2016) *see also action areas 1.6 and 4.2*
- Prepare an aquatic alien species strategy to identify and address significant threats to biodiversity and ecosystem health (2015)
- Develop protocols with the Department of Fisheries and Oceans to ensure the ongoing protection of fish habitat under the new federal *Fisheries Act* (2013)

*“The importance of fully-functioning, natural areas such as wetlands and riparian areas [is] often overlooked. These areas help provide both flood and drought protection, filter our source water, and provide habitat, among other functions.”*

- written submission from the Saskatchewan Wildlife Federation, 2012

Biomonitoring of a water body uses species assessments to infer the ecological condition of the water body, based on the knowledge that different species groupings will predominate under different conditions. Biomonitoring research is fundamental in defining environmental health and informing understanding of the environmental flow needs of aquatic ecosystems.



#### AQUATIC ECOSYSTEMS

include temporary and permanent water-based environments, such as ponds, lakes, creeks, rivers, floodplains and wetlands, and the organisms and habitat features within them

#### RIPARIAN AREAS

are the transition zones between water and upland areas that border streams, rivers, lakes, and wetlands. Riparian areas can perform unique ecosystem services such as filtration and sediment trapping and groundwater recharge, contributing to clean, abundant water and wildlife habitat<sup>15</sup>

#### FLOW REGIMES

describe the variation of a water body over time related to the following: magnitude of flows or elevations, the frequency of occurrence of flows or elevations, the duration of flows or elevations, the timing or predictability of flows or elevations, and the rate of change between different flow volumes or elevations<sup>16</sup>

#### ALIEN INVASIVE SPECIES

are those that have become established outside their natural range and can cause “significant harm to the environment, the economy or to society”<sup>17</sup>

#### SPECIES AT RISK

are species listed as a species at risk under federal or provincial legislation in the following categories: extirpated, endangered, threatened, or vulnerable/special concern



## SOURCE WATER PROTECTION PLANNING

in Saskatchewan is a process, specific to a defined watershed or aquifer, in which stakeholders and local residents collaborate to develop a plan to prevent the pollution of lakes, reservoirs, rivers, streams and groundwater that serve as sources of drinking water

## SASKATCHEWAN ASSOCIATION OF WATERSHEDS

is an umbrella organization for watershed groups in Saskatchewan

## action area 3.4

# source water protection planning

The **source water protection planning** process brings together communities, stakeholder groups and local governments to develop objectives and potential strategies for the protection of water in their local watershed or aquifer. Planning conducted by local residents can inform government organizations about local perspectives on water and related land management issues. Planning also provides committee members with technical information related to water management and source water protection, and engages the public. Planning outcomes include locally led and collaborative initiatives to improve water quality and the protection of aquatic ecosystems.

## actions

- Update the source water protection planning process to achieve resilient, locally appropriate source water protection plans that are informed by science to identify key local threats to source water protection, address drinking water source protection, and identify achievable solutions for implementation (2014)
- Work with **Saskatchewan Association of Watersheds** to more clearly identify the future roles and responsibilities of watershed and aquifer planning groups, including the renewal of source water protection plans (2014)
- Evaluate the need to expand source water protection planning to additional watersheds or aquifers (2014)
- Assess and renew the approach to implementing source water protection plans to ensure that threats to source water are mitigated into the future (2013)

## Source Water Protection Planning in Saskatchewan

With 10 watershed protection plans and one aquifer source water protection plan completed, approximately 85 per cent of Saskatchewan's population lives in areas for which a plan has been prepared to help protect source water. As of March 2012, over 350 actions identified in the plans had been implemented. The province provides funding support to the watershed associations to help implement actions.



## GOAL FOUR

### SAFE DAMS

#### *Ensure dams safely meet water supply and management needs*

Dams owned by the province, other governments and agencies, or privately play a central role in ensuring a sustainable water supply. Many dams are aging and require rehabilitation; failure of these works could put property and human safety at risk. Furthermore, competing water uses and managing flood and drought events makes planning and managing dam operations a complex task.

#### Dams in Saskatchewan

Approximately 9,000 dams exist in Saskatchewan, the majority of which are small stock-watering dams. Of these, 1,300 have a storage capacity of 30 cubic decametres or greater, but only 416 of the larger dams meet **Canadian Dam Association** size criteria to qualify as a dam (a height of at least 2.5 metres and a storage capacity of 30 cubic decametres or greater). The Water Security Agency owns and operates 45 dams, including the largest structures and those of critical importance for managing Saskatchewan's water. The other major dam owners in the province include the federal government with about 35 dams and SaskPower, which owns seven.



#### THE CANADIAN DAM ASSOCIATION

"is a group of dam owners, operators, regulators, engineers and others who share the goal of advancing knowledge and practices related to dams, consistent with social and environmental values"<sup>18</sup>

#### CANADIAN DAM SAFETY GUIDELINES

have been developed by the Canadian Dam Safety Association and include principles of dam safety and the processes and criteria by which dam safety should be managed to meet these principles





## DAM SAFETY LEGISLATION

typically outlines requirements for dams that pose a relatively significant safety and/or environmental risk, including professional engineering of dam design and oversight of construction, as well as submission of maintenance and operating plans

## MAJOR DAMS

of the Water Security Agency are the Gardiner, Qu'Appelle River, Rafferty and Alameda dams; the failure of these dams would pose significant risks to people, environmental and cultural values, or infrastructure and services or significant restoration costs

## action area 4.1

# dam safety and maintenance

To ensure adequate water supply and public safety, dams must be of an adequate standard and in good operating condition. The Water Security Agency and SaskPower have adopted the requirements of the Canadian Dam Association in this regard. There are over 1,300 privately and publicly owned dams with a storage capacity greater than 30 cubic decametres in Saskatchewan. The Water Security Agency's new 10-year plan for infrastructure renewal will significantly decrease the risks associated with its infrastructure. Meeting safety standards for privately owned dams poses different challenges, particularly financial. **Dam safety legislation** has not been enacted in Saskatchewan.

## actions

- Implement the Water Security Agency's 10-year plan for infrastructure rehabilitation and dam safety (*ongoing*)
- Establish legislative requirements for dam safety for both public and private dams and identify long-term strategies for compliance (*2014*)
- Complete emergency preparedness plans for Water Security Agency **major dams** (*2013*)

In fall 2011, the Saskatchewan Government announced a 10-year plan to improve dam safety and rehabilitate aging water supply and management infrastructure.

The 2012-13 Provincial Budget included a \$1.4 million dollar increase in dam safety funding and authorization for a \$2.6 million increase in rehabilitation spending.





## action area 4.2

### dam benefits and sustainable operation

Many reservoirs, particularly larger ones, are designed to provide an array of benefits including municipal, industrial, and irrigation water supply, power generation, recreational use and flood control. However, some uses are in conflict with each other and inappropriate land use around reservoirs can restrict operating options. A reservoir operating plan defines how the reservoir is best operated to meet the needs of various users, and addresses issues like shoreline protection, fisheries and species at risk, environmental flow needs, habitat protection and how to manage flood and drought events. The province is in the process of developing and renewing operating plans for its reservoirs.

#### actions

- a. Review existing reservoir operating plans and update them on a priority basis *(2014 for priority reservoirs)*
- b. Negotiate transfer of federally-owned infrastructure to the province where appropriate to meet provincial interests *(2017)*



#### Lake Diefenbaker: Our Most Important Water Source

Lake Diefenbaker is a reservoir formed by Gardiner Dam, constructed across the South Saskatchewan River valley 100 kilometres upstream of Saskatoon, and the Qu'Appelle River Dam, which prevents the reservoir from spilling east, down the Qu'Appelle River valley.

Lake Diefenbaker is the most important source of water in Saskatchewan. It provides source water for 60 per cent of the province's population, including its two largest cities, and for agriculture (including the major irrigation areas), hydropower generation (about 15 per cent of electricity produced), industries, mining, and aquaculture. In addition, the lake is prized for its recreational and aesthetic characteristics.





### 1:500 FLOOD

is a term used to describe a flood event that has a 1 in 500 or 0.2 % chance of occurring in any given year<sup>19</sup>

### 1:500 FLOOD LEVEL

or zone outlines the area that has a 1 in 500 or 0.2 % chance being flooded in any given year

## GOAL FIVE

# FLOOD AND DROUGHT DAMAGE REDUCTION

*Ensure measures are in place to effectively respond to floods and drought*

Floods and drought are natural events that will continue to occur. They can cause significant hardship and must be appropriately addressed to reduce their effect on the provincial economy and prevent potential social and environmental damage. Excessive water on agricultural lands is also an important area of action, considering the benefits and potential negative impacts that drainage can pose. Research indicates that climate change may intensify the degree and frequency of these extremes and the flexibility to adapt to these situations will become increasingly important.



Saskatchewan's relatively dry climate is characterized by its extremes and its water supply can vary dramatically from year to year. On average in southern Saskatchewan, annual evaporation exceeds precipitation.

*"In 1852, a year memorable in Rupert's Land for the great floods which covered an immense tract of country, the Indians represent the Qu'Appelle Valley as filled with a mighty river throughout its entire length, flowing with a swift current."<sup>20</sup>*

- Henry Youle Hind 1860

## action area 5.1

# flood damage prevention and emergency response in developed areas

Floods can cause significant damage to residential, municipal, commercial and industrial property and infrastructure. The province has used emergency programs to pay for prevention of flood damages (Emergency Flood Damage Reduction Program) and to pay for damages related to flooding (**Provincial Disaster Assistance Program**). The best approach to flood damage prevention is to map flood prone areas and keep vulnerable developments out of flood plains. The province now has regulations that prevent building in flood plains below the **1:500 flood level**. Individuals should be encouraged to access information about flood risks and build homes and other key infrastructure in areas unlikely to flood. However, many developments already exist in flood prone areas, emphasizing the need for forecasting, emergency response and flood protection measures. In 2011, the federal government indicated its desire to develop a federal-provincial agreement for the implementation of long-term flood mitigation projects.

### actions

- a. Develop improved flood forecasting tools (2016)
- b. Develop a provincial emergency flood response plan that addresses community, individual and local government responsibilities (2014)
- c. Develop a strategy to ensure communities and the public have access to flood hazard information and are aware of potential flood risks (2014)
- d. Undertake a flood risk assessment of municipal drinking water and wastewater infrastructure (2016)
- e. Encourage municipalities to map flood risk areas associated with under-capacity of wastewater and storm sewer infrastructure as projected in the Insurance Bureau of Canada's report on impacts associated with climate change (ongoing)
- f. Implement the flood protection and prevention measures established in **The Statements of Provincial Interest Regulations** into local official community plans and zoning bylaws (ongoing)
- g. Pursue negotiations with Canada to develop and implement a new long-term federal-provincial program for flood mitigation as part of an all hazards program (2014)

The Insurance Bureau of Canada recently commissioned a research report entitled, *Telling the Weather Story: Can Canada Manage the Storms Ahead?* The report, released in June 2012, examines changing weather patterns across Canada and projects expected changes in the future.



### PROVINCIAL DISASTER ASSISTANCE PROGRAM

provides Saskatchewan residents, businesses, agricultural operations, communal organizations, non-profit organizations, parks and communities with up to a 95 per cent cost share of expenses related to recovering from the effects of natural disasters, including flooding

### THE STATEMENTS OF PROVINCIAL INTERESTS REGULATIONS

include direction for community planning documents and decisions to prohibit development of new buildings and additions to buildings within the 1:500 year flood elevation of any watercourse or water body and require flood-proofing of new buildings and additions to buildings to an elevation 0.5 metres above the 1:500 year flood elevation of any watercourse or water body in

#### the flood fringe

### THE FLOOD FRINGE

is the portion of the flood plain where the waters in the 1:500 year flood are projected to be less than a depth of one metre or a velocity of one metre per second





## DRAINAGE

is defined here as any human-made activity intended to remove or reduce water on land or just below the land surface

## EXCESSIVE MOISTURE

or "excess moisture" is an agriculture-specific term referring to moisture in the soil that is greater than desired for sustained production<sup>21</sup>

## action area 5.2

# agricultural drainage and flooding

**Drainage** of agricultural land can improve the efficiency of farming operations by eliminating obstacles and allowing landowners to gain earlier access to their fields – activities with significant and immediate economic benefits to farmers. In wet years, large areas of farmland can be flooded, with significant economic impacts on producers.

However, inappropriate and unorganized drainage can affect neighbouring landowners and receiving water bodies. There is a lack of understanding and appreciation of the impacts of drainage and the benefits that accrue to the farmer who drains. There are calls for government to respond to unauthorized drainage with increased enforcement.

Properly constructed drainage projects with controls could be an effective means of addressing excess water problems. Education, effective management options (including watershed and organized drainage approaches, encouraging wetland

retention and restoration, and use of control gates on drainage outlets), tools for conflict resolution, an appropriate regulatory and compliance framework (including possible use of financial incentives and/or penalties) and increased enforcement are potential solutions.

Saskatchewan has more agricultural land than both Alberta and Manitoba combined. As a result, issues such as agricultural drainage pose different challenges in Saskatchewan.

## actions

- Assess the range of alternatives and implement strategic actions to manage drainage (2013)
- Develop a results-based drainage works approval process and associated enforcement strategy, including the potential use of financial penalties (2014)
- Develop new strategies to effectively address **excessive moisture** concerns on agricultural lands, including provision of information and advice on proper drainage design and management and consideration of the benefits of wetland retention and restoration (2014)

Within Canada, Saskatchewan has the greatest area of watersheds with no natural outlet. These internal drainage areas drain into local lakes, sloughs or wetlands rather than into a river system. Because water is not leaving the basin, after a series of wet years this can result in prolonged levels of high water.

The Saskatchewan Conservation and Development Association is an umbrella organization for more than 90 Conservation and Development and Watershed Associations in the province.



## action area 5.3

### drought response

Drought is a recurring phenomenon and historic data suggests that over the past several centuries there have been a number of droughts more severe than any experienced during the last century.

The province has established a committee charged with developing a drought and excessive moisture monitoring plan for the province. From the perspective of a water strategy, approaches to reduce the consequences of **hydrologic drought** include provision of emergency water supplies, better private and regional water supply systems, **water storage infrastructure**, efficient use and reuse of water, and effective water rationing and **water sharing** strategies. These activities could form part of a comprehensive provincial approach to drought.

#### actions

- a. Develop a coordinated provincial drought response plan that includes monitoring, preparedness, response, and recovery approaches (2014)
- b. Develop new regulations for water allocation to help manage water shortages during droughts (2014) *see also action 1.3a*



#### HYDROLOGIC DROUGHT

refers specifically to drought that is characterized by a drop in water levels in lakes, rivers, or aquifers below an established average

#### WATER STORAGE INFRASTRUCTURE

includes dugouts and impoundment structures such as dams that capture water and create reservoirs

#### WATER SHARING

refers to the reduction of water withdrawals by licensed water users, below the volumes authorized in their licences, in times of water shortage



## DATA

are "discrete, objective facts or observations" that have not been processed or analysed<sup>22</sup>; e.g., monthly water use submissions

## INFORMATION

is data that has been organized or processed to make it useful<sup>23</sup>; e.g., a report on average monthly water use or trends in water use

## KNOWLEDGE

is the transformation of information into a form which can be applied to a decision; e.g., identification of opportunities to reduce water use based on an analysis of the information

## AVAILABLE WATER

refers to the amount of unallocated water that is available for use/withdrawal from a given water resource

## RISK

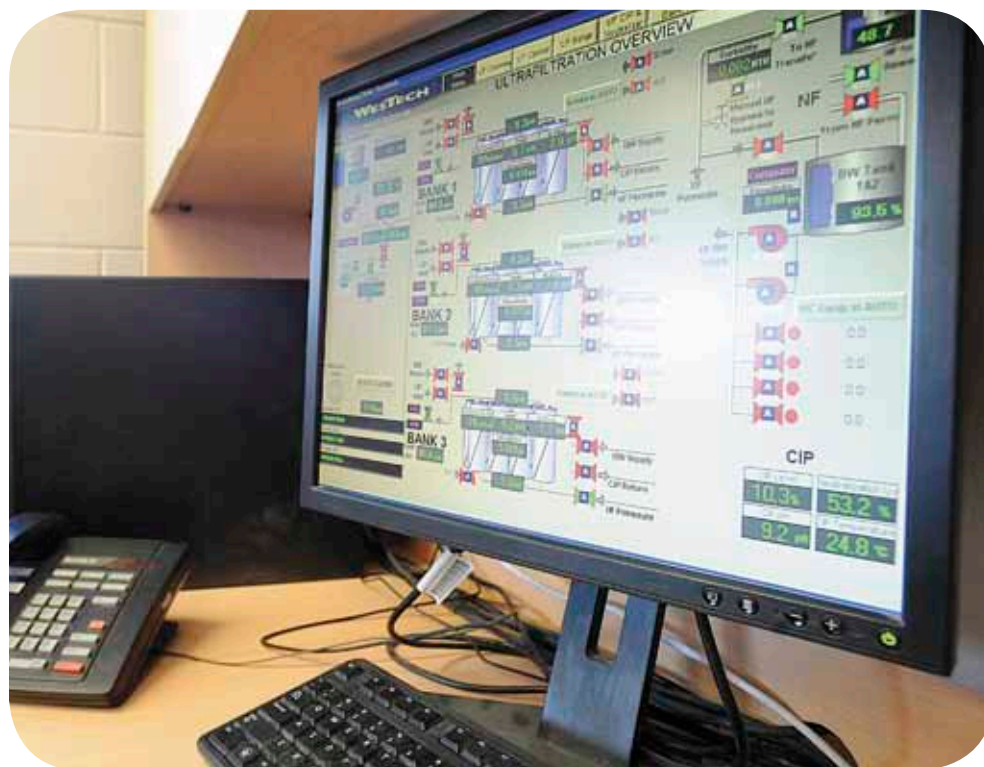
here refers to the estimated probability of a flood or drought event occurring and includes consideration of the severity of the event

## GOAL SIX

# ADEQUATE DATA, INFORMATION AND KNOWLEDGE

*Ensure adequate water data, information and knowledge is available to support decision making*

The collection and assessment of **data** creates fundamental **information** and **knowledge** about our water critical to understanding and addressing potential threats to water and supporting wise water use. Public access to information about **available water** supplies, drinking water, flood and drought **risk**, effluent and other priority information about water is critical to public safety and to promoting understanding and effective decision making. Water research will be critical to innovation and increasing our ability to successfully manage water.



*"SUMA supports a fact-based approach to water management; science should guide the decision-making."*

- written submission from SUMA (Saskatchewan Urban Municipalities Association), 2012

## action area 6.1

### data collection and management

In order to create the knowledge necessary to support water management decision making, important information requirements must be identified and the needed data strategically and effectively gathered, managed and analyzed. This includes information related to ground and surface water quality, drinking water quality, municipal effluent, stream flow, water use, level, and availability, drainage activity and infrastructure. Drinking water quality and municipal effluent information is currently collected and available online. Completion of the Water Availability Study (*see Action Area 1.6*) will provide important baseline information for water management. Increased use of internet-based submission of water use information may also improve the efficiency of data collection and assessment. Cooperative arrangements with other government and non-government organizations can be an effective means of ensuring data and information is available for expedient and appropriate decision making.

#### actions

- a. Complete a strategic review of major monitoring programs, including surface water, groundwater and water quality (2015)
- b. Develop an integrated geographically referenced database to provide government-wide and public access to water-based information (2015) *see also action 6.2b*
- c. Consolidate precipitation data and information through the development of cooperative agreements and partnerships with government and non-government organizations (2014)

The federal-provincial hydrometric network consists of 300 hydrometric stations in the province providing real-time information on water levels and stream flow.







## action area 6.2

### communication and information

Providing clients and the public with easily accessible information related to surface and ground water supplies and quality can assist in development planning and decision making. Education and information about effective land and water management practices, water conservation and efficiency, and regulatory requirements can facilitate management of water and provide clients with the tools they need to optimize economic opportunities and protect the resource. Effective emergency communication is important for public safety and damage prevention.

Risk assessment is an important decision making tool and should be continually refined and improved to ensure risks to water supply are identified. Risk assessment processes focus on the use of consistent procedures for risk identification, documenting the practices used to collect information on water supply, the identified risks to water supply, and improving risk communication.

#### actions

- a. Establish protocols for informing the public during emergencies related to flood, drought, infrastructure failure, and water quality and drinking water concerns (2014)
- b. Develop a user-friendly water information portal on the new Water Security Agency's website to make information on water and water management issues widely available (2013)
- c. Report on progress in implementing the 25 Year Saskatchewan Water Security Plan (ongoing)
- d. Publish the State of the Watershed Report every five years in an expanded form which can be applied by government in the renewal of the 25 Year Saskatchewan Water Security Plan and by the public in decision making (ongoing)

*"Education is critical to promote the vision and goals of an integrated water strategy... All citizens need to be in a position where they can consider and... assess risk related to water use and impact."*

- written consultation response, 2012



## action area 6.3

### research partnerships

Strategically targeting research at key gaps in our knowledge of water resources and management will improve our ability to protect and reliably use water resources. Examples may include determination of cumulative impacts and environmental flow needs, understanding of **nutrient loading**, identification of **priority wetlands**, modeling impacts of climate change, and determining the public's perception of water issues and values.

Research can lead to innovative approaches to address water management issues. Partnerships with the Saskatchewan Research Council, federal agencies, and external groups and institutions, such as the Global Institute for Water Security at the University of Saskatchewan and the Prairie Adaptation Research Collaborative at the University of Regina, could enhance research reach and success.

#### actions

- a. Support the work of the Global Institute for Water Security at the University of Saskatchewan in their assessment of the water supply and quality issues in the South Saskatchewan River (*ongoing*)
- b. Identify opportunities to collaborate with external academic and research partners on defining and undertaking strategic research initiatives (*ongoing*)

#### NUTRIENT LOADING

refers to the quantity of nutrients (such as phosphorus and nitrogen) entering the water in a given period of time <sup>24</sup>

#### PRIORITY WETLANDS

may be identified based on a variety of characteristics, including vulnerability to loss or the value of the economic, ecological and hydrological services they provide

#### Global Water Institute in Saskatchewan

The Global Institute for Water Security at the University of Saskatchewan brings together multi-disciplinary science, engineering and social science teams to work with industry and government on five broad water security issues:

- Climate change and water security;
- Land-water management and environmental change;
- Sustainable development of natural resources;
- Socio-hydrology; and
- Water and health

The institute is funded through the Canada Excellence Research Chair in Water Security – a seven-year, \$30 million, joint federal-provincial-university commitment. “Led by Dr. Howard Wheater, one of the world’s foremost hydrologists, teams at the institute are developing the tools, techniques and policies to sustainably manage the world’s freshwater resources.”

“Knowledge gained at the institute will result in better modeling of hydrological systems for flood and drought management; better policy development and improved protection of safe drinking water supply; and better understanding of mining and oilsands remediation problems, agricultural water use and pollution.”<sup>25</sup>





## ENGAGEMENT

refers to a full range of activities, including transfer of information and educational activities, gathering community input, and sharing development and/or implementation of initiatives with communities

## RESULTS-BASED

rules focus on outcomes rather than process control, allowing water users to determine efficient and innovative methods of achieving objectives that have been clearly set out

## COMPLIANCE

is the condition where individuals, institutions or agencies maintain or bring their behaviour in line with laws, policies and programs

## ENFORCEMENT

is the imposition or compelling of compliance

## GOAL SEVEN

# EFFECTIVE GOVERNANCE AND ENGAGEMENT

*Ensure water management and decision making processes are coordinated, comprehensive, and collaborative*

Governance includes the rules, processes and structures by which decisions are made and has a significant impact on the outcomes of those decisions. Because water is essential to so many human activities, water management is an issue that crosses most sectors of society, levels of government and provincial boundaries. Integrated governance aims to account for this complexity by considering the many aspects of water management within legislation, planning processes, organizations, and coordinating bodies. Effective **engagement** with First Nations and Métis communities, as well as the public and local authorities, can promote cooperation and strong working relationships that strengthen the province's water management capacity.

*"...the failure of governance with respect to water management is often a failure to integrate water management at different levels and to take local and regional approaches into consideration."<sup>26</sup>*

- Dr. Gro Harlem Brundtland

## History of Water Law in Saskatchewan

The *North-west Irrigation Act* was passed in 1894 and was the first piece of legislation in western Canada to give the Crown the right to regulate water. Before this time, water law was based on riparian rights that accorded the right to use water to owners of land adjacent to water. The new Act imposed a licensing system for all uses of water except domestic use. The Act also established priorities for use and established a "first-in-time, first-in-right" priority among similar types of use. The fundamental aspects of this original legislation remained in place until the 1980s, when Saskatchewan enacted *The Water Corporation Act* that removed both the legislated priority and first-in-time, first-in-right systems. These systems still exist in Alberta and Manitoba.

## action area 7.1

### modern legislation

Successful water management requires that the resource be regulated clearly and effectively to ensure sustainability while meeting the needs of users. Water is largely a provincial responsibility. Much of the province's water legislation is based on laws written over 50 years ago that have been amended in a sometimes piecemeal fashion. Comprehensive, streamlined legislation, using **results-based** legislation and the Environmental Code where appropriate, could clarify and provide the tools to address current and future water management issues. An effective **compliance** and **enforcement** approach is needed to complement new legislation. Effective consultation is critical to any policy changes that will be reflected in new legislation.

#### actions

- a. Develop modern and comprehensive water legislation (2014)

## action area 7.2

### provincial and federal coordination

Numerous federal and provincial government organizations have an interest in and regulatory role related to water. Saskatchewan is responsible for water management in the province except for the regulation of navigable waters, inland fisheries, aspects of transboundary water management, deleterious substances in water, migratory birds and species-at-risk protection, which fall within Canada's purview. This shared responsibility can lead to a lack of coordination in decision making with respect to protecting and managing water resources. It also underlines the importance of and opportunities for both levels of government to work together on water management initiatives. Effective means of coordination and collaboration are critical to addressing this issue.

#### actions

- a. Establish provincial Deputy Ministers' Water Committee (2013)
- b. Work with Canada to identify opportunities to improve regulatory and program coordination and collaboration (ongoing)

The *Natural Resources Transfer Agreement* of 1930 moved provincial natural resources, including water, under the jurisdiction of the provincial government. The federal government's transfer to Saskatchewan of its rights to and interests in water made the province responsible for licensing and regulating water projects.



*"Integrated governance is an effective way to manage complex water issues."*

- written submission from the Saskatchewan Urban Municipalities Association, 2012



### TREATY RIGHTS

were established in treaties signed between First Nations and Canada and include recognition of Indian rights to hunt, fish, and trap on Crown lands and any other lands to which they have a right of access, subject to some regulation

### ABORIGINAL RIGHTS

are based on the right to engage in activities related to the customs, practices, and traditions of aboriginal peoples that were an integral part of the distinctive cultures of First Nations at the time of contact with Europeans or, in the case of Métis, at the time when a European or Canadian government asserted effective control over the area<sup>27</sup>

### TRADITIONAL USES

of lands and resources include the gathering of plants for food and medicinal purposes and the carrying out of ceremonial and spiritual observances and practices on unoccupied Crown lands and other lands to which First Nations and Métis have a right of access for these purposes<sup>28</sup>

### LEGAL DUTY TO CONSULT

refers to the direction provided by the Supreme Court of Canada, that the Crown may not adversely affect aboriginal and treaty rights unless (1) the Aboriginal people affected have been consulted and (2) the infringement can be justified against a series of principles set out by the Court

## action area 7.3

# Engagement and Consultation with First Nations and Métis communities

Engaging with First Nations and Métis communities is important to water management. Aboriginal peoples in Saskatchewan have a unique position in the province and communities often hold a distinct perspective on water. Much can be learned by listening to these perspectives.

In addition, consideration must be given to the potential of water projects and decisions to have a negative impact on **treaty rights** and **aboriginal rights** and the importance of managing water in a manner that is consistent with the recognition and affirmation of existing aboriginal and treaty rights under Section 35 of the *Constitution Act* (1982). Government has developed the First Nations and Métis Consultation Policy Framework to guide consultations where there are potential adverse impacts on the exercise of treaty and aboriginal rights and pursuit of **traditional uses** that trigger the **legal duty to consult**. Consultation allows government to understand and address, where appropriate, any potential infringements.

## actions

- a. Develop improved models for engagement with First Nations and Métis to better understand their perspectives on water and water management and facilitate effective working relationships (*ongoing*)
- b. Where water management decisions may have an adverse impact on the exercise of treaty and aboriginal rights and pursuit of traditional uses, consult with First Nations and Métis in accordance with the First Nations and Métis Consultation Policy Framework and the legal duty to consult (*ongoing*)

### Treaties in Saskatchewan

There are six different Treaties applicable in Saskatchewan – Treaty Nos. 2, 4, 5, 6, 8 and 10. The earliest of these Treaties, No. 2, was entered into in 1871. The purpose of the Treaties was to forge a new relationship between the Crown and First Nations and to open up the West for developments, such as the construction of the transcontinental railway and agricultural settlement. The terms of each of these Treaties are similar. According to their written text, in exchange for giving up their title to the land, the First Nations received promises of reserve lands, guaranteed hunting, fishing and trapping rights, annual payments and other commitments. The oral histories of the First Nations offer a different view of the intent of the Treaties.<sup>29</sup>



## action area 7.4

### provincial water council

The Provincial Water Council, comprised of approximately 12 sectoral representatives, will provide a source of information and advice to government in relation to significant water issues. The Council will report directly to the Minister Responsible for the Water Security Agency.

The mandate of the Council will be to help achieve the outcomes of the 25 Year Saskatchewan Water Security Plan. In addition, the Council could consider and report on existing and emerging water issues and help set priorities for water research.

#### actions

- a. Establish the Provincial Water Council with sector-based representation (2013)

## action area 7.5

### engagement with the public and local governments

Engaging citizens and communities can improve water management decisions. Local interests and perspectives are important considerations in government decision making. Engaging and informing citizens and local authorities improves water **stewardship**. Mechanisms for effective communication between government and the public, communities, local planning groups and local governments can ensure information, interests, and concerns are shared.

#### actions

- a. Investigate new approaches to engage the public and local governments on water issues and decisions of importance to them (2015)

Urban municipal governments in Saskatchewan manage the urban water cycle of wastewater, stormwater and drinking water, as well as the infrastructure associated with these.



#### STEWARDSHIP

is "the careful and responsible management of something entrusted to one's care"<sup>30</sup>

*"Safe water is every citizen's responsibility..."*

- written submission from the Upper Souris Watershed Association and the Long Creek, North Moose Mountain Creek, and Cornerstone Agri-Environmental Group Plans, 2012



### PRAIRIE PROVINCES WATER BOARD

administers the Master Agreement on Apportionment and has permanent committees charged with technical work in the areas of hydrology, groundwater, and water quality

### MASTER AGREEMENT ON APPORTIONMENT

establishes a formula for sharing eastward-flowing interprovincial streams among Saskatchewan, Alberta and Manitoba

### MACKENZIE RIVER BASIN BOARD

was created in 1997 by the Transboundary Waters Master Agreement between the governments of Canada, Saskatchewan, Alberta, British Columbia, Yukon and Northwest Territories

### INTERNATIONAL SOURIS RIVER BOARD

assists the International Joint Commission in preventing and resolving disputes relating to the transboundary waters of the Souris River basin

### INTERNATIONAL JOINT COMMISSION

administers the Canada-United States 1909 Boundary Waters Treaty; more than 20 boards are in place to carry this out

## action area 7.6

### interjurisdictional water management

Water crosses provincial and national boundaries, and interjurisdictional management with the federal government, other provinces and territories, and with the United States is central to our water security. In most cases, Saskatchewan has transboundary agreements with regard to how surface water is shared and quality is maintained. Similar agreements regarding groundwater are under active discussion. Coordinated planning and decision making bodies and improved collaborative approaches can help to prevent and address interjurisdictional issues.

#### actions

- a. Continue to work with the **Prairie Provinces Water Board** to evaluate the resiliency of the **Master Agreement on Apportionment** (ongoing)
- b. In support of the **Mackenzie River Basin Board**, negotiate bilateral agreements with Alberta and Northwest Territories (2016)
- c. Continue to work with the **International Souris River Board** of the **International Joint Commission** to establish an enhanced operating plan for Rafferty and Alameda reservoirs (2015)
- d. Continue to support the work of the **Council of the Federation Water Stewardship Council** to use information and experience from other jurisdictions across Canada to address water problems in Saskatchewan (ongoing)
- e. Continue to work with the **Canadian Council of Ministers of the Environment** to address emerging water issues common to all jurisdictions (ongoing)

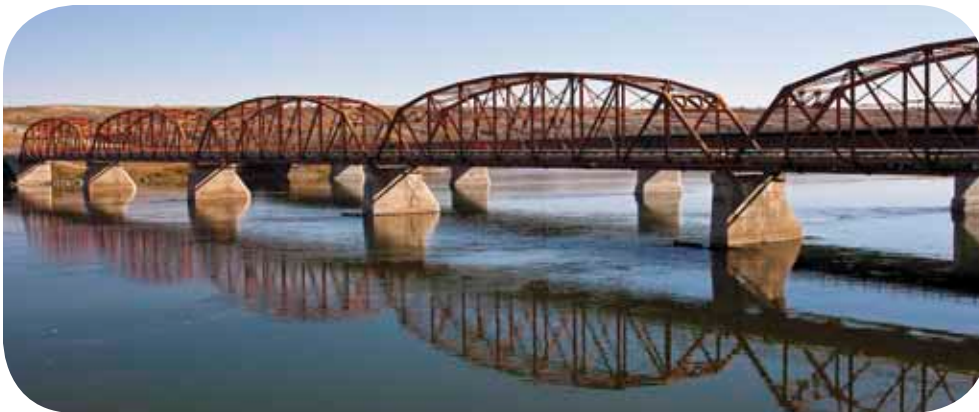
*“The very nature of Saskatchewan’s political boundaries compared to its watersheds means that interprovincial and international co-operation must be an essential element in water management.”*

- written consultation submission from the Association of Professional Community Planners of Saskatchewan, 2012

## Managing Transboundary Waters

Runoff from the eastern slopes of the Rocky Mountains is the major source for the larger southern rivers of the Prairie Provinces, flowing eastward across Alberta, Saskatchewan and Manitoba to empty into Hudson Bay. The ownership of the waters of a river system flowing through two or more jurisdictions can create administrative and water use issues. To resolve conflicts between upstream uses and downstream needs, Manitoba, Saskatchewan, Alberta and Canada established the Prairie Provinces Water Board in 1948. In 1969, the four governments signed the Master Agreement on Apportionment in Alberta and Manitoba.

In 2012, the Council of the Federation approved a Water Charter that recognizes the collective responsibility of all Canadians and their governments to promote water conservation and protect water quality.<sup>31</sup>



The Prairie Provinces Water Board is currently developing nutrient objectives for all eastward flowing watercourses that cross the boundaries between Saskatchewan, Alberta and Manitoba.



## COUNCIL OF THE FEDERATION WATER STEWARDSHIP COUNCIL

was established in 2011 to provide information and strategic advice to premiers on key trends, issues and opportunities related to Canada's water resources

## CANADIAN COUNCIL OF MINISTERS OF THE ENVIRONMENT

is made up of the 14 environment ministers from the federal, provincial and territorial governments; in 2009 ministers endorsed a Canada-wide strategic vision for water and in 2010 approved an action plan to implement the vision



## CUMULATIVE IMPACTS

or effects are “changes to the environment that are caused by an action in combination with other past, present and future human actions”<sup>32</sup>

## action area 7.7

# comprehensive planning to enhance decision making

Proposals for economic development often have significant water use requirements and government decisions about the availability of water are crucial to allowing development to proceed. The decision to allocate water to a project involves multiple considerations including: long-term availability of water; infrastructure capacity to ensure availability; impact of the allocation on quality and quantity of water in the source and related ground and surface bodies; impacts on water bodies that may receive industrial discharge; impacts to other uses such as municipal source water; issues related to impact on fisheries, fish habitat, endangered species and aquatic health; and First Nations and Métis rights.

It is critical that sound allocation decisions are made, and also important that they serve the need for timely decision making in the early stages of a proposal, when the proponent needs to consider the viability of the project prior to major investment. To this end, The Water Security Agency will undertake comprehensive technical analysis to support water management decisions that will ensure the sustainability of the allocation for the development and sustainability of the resource. This water management planning and analysis will consider current water withdrawals and inputs, projected water demands, water quality and ecosystem health objectives, **cumulative impacts** assessment, and consideration of any issues regarding the legal duty to consult with First Nations and Métis communities or potential impacts on species of concern. Planning in advance of or early in the development process will allow more efficient, comprehensive and reliable decision making benefitting the resource and users.

## actions

- a. Undertake comprehensive water management analyses for priority surface and groundwater systems (2014 in priority systems; 2016 other)
- b. Implement new watershed modeling and database management systems to allow efficient evaluation of new requests for water and ensure that cumulative effects are considered (2014 in priority watersheds; 2016 other)

*“Water is the primary, critical resource. Nothing is sustainable without it.”*

- municipal sector representative, 2012 consultation session



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## APPENDIX 1:

### Actions with completion dates and involved provincial agencies

ACTION			Year Complete	Lead Provincial Ministry/Agency	Supporting Provincial Ministries/Agencies
1.1	a	Promote adoption of best conservation and efficiency practices and technology through education, regulations, water licence conditions and new programming	Ongoing	Water Security Agency	Agriculture, Economy, Environment, Government Relations, Health, SaskWater
	b	Investigate pricing strategies as a means of promoting water conservation	2016	Water Security Agency	Agriculture, Economy, Government Relations, SaskWater
	c	Work with partners to promote research and development of innovative technology that improves the efficient use of water	2016	Water Security Agency	Agriculture, Economy, Government Relations, SaskWater
1.2	a	Evaluate existing water supplies and future demands for the next 25 years and beyond to determine the need for new infrastructure across the province	2016 and Ongoing	Water Security Agency	Agriculture, Economy, Environment, Government Relations, SaskWater
	b	Investigate alternative measures to increase the delivery of water from Lake Diefenbaker to Buffalo Pound Lake, including evaluation of the feasibility of the Qu'Appelle South irrigation project	2014	Water Security Agency	Agriculture, Economy, Environment, Government Relations, SaskWater
	c	Examine alternative ways of instituting the concept of "user-pay" with respect to the development of additional provincially owned, multi-purpose water supply infrastructure	2016	Water Security Agency	Agriculture, Economy, Finance, SaskWater
1.3	a	Develop a modern system of water allocation, including a new allocation policy and regulations	2014	Water Security Agency	Agriculture, Economy, Health, SaskPower, SaskWater
	b	Review existing water rights licences and assess current water use	2014 (priority) 2016 (other)	Water Security Agency	Agriculture, SaskPower, SaskWater
	c	By watershed, determine the existing use of water, level of protection of environmental flows, how much water is available for future allocation, and identify areas where water scarcity may be a factor	2014 (priority) 2016 (other)	Water Security Agency	Environment

ACTION			Year Complete	Lead Provincial Ministry/Agency	Supporting Provincial Ministries/Agencies
1.4	a	Work with Canada to continue to assess and seek funding support for further irrigation opportunities	Ongoing	Agriculture	Water Security Agency, Highways and Infrastructure
	b	Develop an irrigation strategy that prioritizes opportunities for infill and new irrigation projects for development and assess the need for irrigation infrastructure rehabilitation	2014	Agriculture	Water Security Agency
	c	Work with Canada to transfer ownership of federal irrigation projects to local patrons	2017	Agriculture	Water Security Agency
	d	Develop new criteria for allocation licensing based on best practices and new technologies to sustainably support irrigation	2016	Agriculture	Water Security Agency
1.5	a	Continue work with research partners on climate change impacts to identify possibilities for adaptation	Ongoing	Water Security Agency	Agriculture, Environment, Highways and Infrastructure, Saskatchewan Research Council
1.6	a	Develop detailed aquifer maps	2016	Water Security Agency	Saskatchewan Research Council
	b	Analyze the water supply situation in the major rivers	2016	Water Security Agency	---
	c	Determine the existing water use by sector and delineated by the major basin	2016	Water Security Agency	Agriculture, Economy, SaskPower
	d	Examine projected water demand by sector within major basins to the year 2060	2016	Water Security Agency	Agriculture, Economy, Finance, SaskPower
	e	Identify environmental flows to support the aquatic ecosystem	2016	Water Security Agency	Environment
1.7	a	Determine economic value of water in alternative uses	2016	Water Security Agency	Agriculture, Economy, Environment, Health, SaskPower, SaskWater
	b	Assess how the economic value of water could be used in allocation decision making	2016	Water Security Agency	Agriculture, Economy, Environment, SaskPower, SaskWater
2.1	a	Review and update the province's approach to safe drinking water, including consideration of the <i>2002 Laing Report</i> and the <i>2002 Safe Drinking Water Strategy</i>	2014	Water Security Agency	Health, Government Relations, SaskWater

ACTION			Year Complete	Lead Provincial Ministry/Agency	Supporting Provincial Ministries/Agencies
	b	Investigate and encourage opportunities for regional water treatment plants and distribution pipelines to increase access to, and protection of, high quality drinking water	Ongoing	Water Security Agency	Government Relations, Health, SaskWater
	c	Evaluate the financial needs of communities for operation, maintenance and renewal of water infrastructure	2014	Government Relations	Water Security Agency
	d	Develop a strategy to encourage communities to renew drinking water infrastructure	2015	Government Relations	Water Security Agency
	e	Assess, with federal and First Nations governments, opportunities for the province to provide infrastructure, including connections to regional water systems, and technical and inspection services on reserves on a cost-recovery basis	2014	Water Security Agency / SaskWater	---
2.2	a	Review and rationalize the regulatory regime applying to semi-public systems	2015	Health / Water Security Agency	---
	b	Support research on water treatment technologies for point-of-use water systems	Ongoing	Health / Water Security Agency	---
2.3	a	Implement an effective education and information strategy to raise awareness of drinking water safety issues, including information on proper well management, system operation and maintenance, water quality testing, and identification of and solutions for groundwater quality problems	2015	Water Security Agency	Government Relations, Health
	b	Encourage testing of private water supplies, including testing for heavy metals	2015	Water Security Agency	Health, SaskWater
	c	Provide water testing and treatment advice in at-risk locations during emergency events such as flooding that pose a high risk of drinking water contamination	Ongoing	Water Security Agency	Government Relations, Health, SaskWater
3.1	a	Evaluate the status of existing municipal wastewater facilities to determine needs for upgrades	2014	Water Security Agency	Government Relations



ACTION		Year Complete	Lead Provincial Ministry/Agency	Supporting Provincial Ministries/Agencies
b	Develop an agreement with Environment Canada for coordinated implementation of the Canadian Council of Ministers of the Environment Municipal Waste Water Effluent Canada-Wide Strategy and the Federal Wastewater System Effluent Regulations	2013	Water Security Agency	---
c	Develop a strategy to encourage the renewal of municipal wastewater treatment infrastructure to ensure protection of water quality in receiving water bodies	2015	Government Relations	Water Security Agency, SaskWater
d	Develop coordinated policies to reduce risk of water contamination that may result from residential wastewater management in high density rural developments and cottage subdivisions	2014	Water Security Agency / Health	Government Relations
e	Define water quality objectives, including nutrient-related objectives, for surface water bodies and watercourses in the province, beginning with the highest priority systems and including work on key transboundary sites	Ongoing	Water Security Agency	Agriculture, Environment
f	Implement a recreational lake water quality monitoring program for swimming areas at lakes across the province	2014	Health	Water Security Agency
g	Provide information and encourage the implementation of beneficial land and water management practices to reduce non-point sources of nutrients and other contaminants to surface and ground water	Ongoing	Water Security Agency	Agriculture, Environment
h	Complete the Boreal Watershed Initiative	2016	Environment	Water Security Agency
i	Define a strategy to reduce the contamination risk posed to groundwater sources by abandoned water wells	2014	Water Security Agency	Economy, Environment
j	Negotiate with Canada a new commitment to continue the Environmental Farm Plan Program, with a focus on nutrient management and protection of water supplies	2013	Agriculture	Water Security Agency

ACTION			Year Complete	Lead Provincial Ministry/Agency	Supporting Provincial Ministries/Agencies
3.2	a	Prepare a new provincial wetland policy that includes an assessment of the status of wetlands in the province and identification of conservation priorities, including a strategy to retain and restore wetlands	2015	Water Security Agency	Agriculture, Environment, Highways and Infrastructure
3.3	a	Establish site-specific objectives for environmental flows in priority surface water systems	2016	Water Security Agency	Environment
	b	Prepare an aquatic alien species strategy to identify and address significant threats to biodiversity and ecosystem health	2015	Environment	Water Security Agency
	c	Develop protocols with the Department of Fisheries and Oceans to ensure the ongoing protection of fish habitat under the new federal Fisheries Act	2013	Water Security Agency	Environment
3.4	a	Update the source water protection planning process to achieve resilient, locally appropriate source water protection plans that are informed by science to identify key local threats to source water protection, address drinking water source protection, and identify achievable solutions for implementation	2014	Water Security Agency	Agriculture, Economy, Environment, Government Relations
	b	Work with Saskatchewan Association of Watersheds to more clearly identify the future roles and responsibilities of watershed and aquifer planning groups, including the renewal of source water protection plans	2014	Water Security Agency	Agriculture, Environment
	c	Evaluate the need to expand source water protection planning to additional watersheds or aquifers	2014	Water Security Agency	Agriculture, Environment
	d	Assess and renew the approach to implementing source water protection plans to ensure that threats to source water are mitigated into the future	2013	Water Security Agency	Government Relations
4.1	a	Implement the Water Security Agency's 10-year plan for infrastructure rehabilitation and dam safety	Ongoing	Water Security Agency	---

ACTION			Year Complete	Lead Provincial Ministry/Agency	Supporting Provincial Ministries/Agencies
	b	Establish legislative requirements for dam safety for both public and private dams and identify long-term strategies for compliance	2014	Water Security Agency	Government Relations, SaskPower
	c	Complete emergency preparedness plans for Water Security Agency major dams	2013	Water Security Agency	Government Relations
4.2	a	Review existing reservoir operating plans and update them on a priority basis	2014 (priority)	Water Security Agency	Agriculture, Economy, Environment, Parks, Culture and Sport, SaskPower, SaskWater
	b	Negotiate transfer of federally owned infrastructure to the province where appropriate to meet provincial interests	2017	Water Security Agency	Agriculture, Executive Council, Government Relations
5.1	a	Develop improved flood forecasting tools	2016	Water Security Agency	---
	b	Develop a provincial emergency flood response plan that addresses community, individual and local government responsibilities	2014	Government Relations	Water Security Agency, Agriculture, Health, Highways and Infrastructure, SaskPower, Social Services
	c	Develop a strategy to ensure communities and the public have access to flood hazard information and are aware of potential flood risks	2014	Water Security Agency	Government Relations, Health
	d	Undertake a flood risk assessment of municipal drinking water and wastewater infrastructure	2016	Water Security Agency	Government Relations
	e	Encourage municipalities to map flood risk areas associated with under-capacity of wastewater and storm sewer infrastructure as projected in the Insurance Bureau of Canada's report on impacts associated with climate change	Ongoing	Government Relations	Water Security Agency
	f	Implement the flood protection and prevention measures established in <i>The Statements of Provincial Interest Regulations</i> into local official community plans and zoning bylaws	Ongoing	Government Relations	Water Security Agency

ACTION			Year Complete	Lead Provincial Ministry/Agency	Supporting Provincial Ministries/Agencies
	g	Pursue negotiations with Canada to develop and implement a new long-term federal-provincial program for flood mitigation as part of an all hazards program	2014	Government Relations	Water Security Agency, Agriculture
5.2	a	Assess the range of alternatives and implement strategic actions to manage drainage	2013	Water Security Agency	Agriculture, Environment, Government Relations
	b	Develop a results-based drainage works approval process and associated enforcement strategy, including the potential use of financial penalties	2014	Water Security Agency	Agriculture, Environment, Government Relations
	c	Develop new strategies to effectively address excessive moisture concerns on agricultural lands, including provision of information and advice on proper drainage design and management and consideration of the benefits of wetland retention and restoration	2014	Water Security Agency	Agriculture, Environment, Government Relations, Saskatchewan Crop Insurance Corporation
5.3	a	Develop a coordinated provincial drought response plan that includes monitoring, preparedness, response, and recovery approaches	2014	Agriculture	Water Security Agency, Government Relations, SaskPower
	b	Develop new regulations for water allocation to help manage water shortages during droughts	2014	Water Security Agency	Agriculture, Economy, SaskPower
6.1	a	Complete a strategic review of major monitoring programs, including surface water, groundwater and water quality	2015	Water Security Agency	---
	b	Develop an integrated geographically referenced database to provide government-wide and public access to water-based information	2015	Water Security Agency	Agriculture, Economy, Environment, Government Relations, Health
	c	Consolidate precipitation data and information through the development of cooperative agreements and partnerships with government and non-government organizations	2014	Water Security Agency	Agriculture



ACTION			Year Complete	Lead Provincial Ministry/Agency	Supporting Provincial Ministries/Agencies
6.2	a	Establish protocols for informing the public during emergencies related to flood, drought, infrastructure failure, and water quality and drinking water concerns	2014	Water Security Agency	Environment, Government Relations, Health, Highways and Infrastructure, SaskPower, Social Services
	b	Develop a user-friendly water information portal on the new Water Security Agency website to make information on water and water management issues widely available	2013	Water Security Agency	Agriculture, Environment, Government Relations, Health, SaskWater
	c	Report on progress in implementing the 25 Year Water Security Plan	Ongoing	Water Security Agency	Agriculture, Environment, Government Relations, Health, SaskWater
	d	Publish the <i>State of the Watershed Report</i> every five years in an expanded form which can be applied by government in the renewal of the 25 Year Saskatchewan Water Security Plan and by the public in decision making	Ongoing	Water Security Agency	Agriculture, Economy, Environment, Government Relations, Health
6.3	a	Support the work of the Global Institute for Water Security at the University of Saskatchewan in their assessment of the water supply and quality issues in the South Saskatchewan River	Ongoing	Water Security Agency	---
	b	Identify opportunities to collaborate with external academic and research partners on defining and undertaking strategic research initiatives	Ongoing	Water Security Agency	Health, Saskatchewan Research Council
7.1	a	Develop modern and comprehensive water legislation	2014	Water Security Agency	Agriculture, Economy, Environment, Executive Council, Government Relations, Health, Highways and Infrastructure, SaskPower, SaskWater
7.2	a	Establish provincial Deputy Ministers' Water Committee	2013	Water Security Agency	Agriculture, Economy, Environment, Executive Council, Government Relations, Health, Highways and Infrastructure, Parks, Culture and Sport, SaskPower, SaskWater

ACTION			Year Complete	Lead Provincial Ministry/Agency	Supporting Provincial Ministries/Agencies
	b	Work with Canada to identify opportunities to improve regulatory and program coordination and collaboration	Ongoing	Water Security Agency	Agriculture, Economy, Environment, Executive Council, Government Relations, Health, Highways and Infrastructure, SaskPower, SaskWater
7.3	a	Develop improved models for engagement with First Nations and Métis to better understand their perspectives on water and water management and facilitate effective working relationships	Ongoing	Water Security Agency	Economy, Environment, Government Relations, SaskPower
	b	Where water management decisions may have an adverse impact on the exercise of treaty and aboriginal rights and pursuit of traditional uses, consult with First Nations and Métis in accordance with the First Nations and Métis Consultation Policy Framework and the legal duty to consult	Ongoing	Water Security Agency	Government Relations
7.4	a	Establish the Provincial Water Council with sector-based representation	2013	Water Security Agency	---
7.5	a	Investigate new approaches to engage the public and local governments on water issues and decisions of importance to them	2015	Water Security Agency	---
7.6	a	Continue to work with the Prairie Provinces Water Board to evaluate the resiliency of the Master Agreement on Apportionment	Ongoing	Water Security Agency	---
	b	In support of the Mackenzie River Basin Board, negotiate bilateral agreements with Alberta and Northwest Territories	2016	Water Security Agency	Environment, SaskPower
	c	Continue to work with the International Souris River Board of the International Joint Commission to establish an enhanced operating plan for Rafferty and Alameda reservoirs	2015	Water Security Agency	SaskPower
	d	Continue to support the work of the Council of the Federation Water Stewardship Council to use information and experience from other jurisdictions across Canada to address water problems in Saskatchewan	Ongoing	Water Security Agency	---

ACTION			Year Complete	Lead Provincial Ministry/Agency	Supporting Provincial Ministries/Agencies
	e	Continue to work with the Canadian Council of Ministers of the Environment to address emerging water issues common to all jurisdictions	Ongoing	Water Security Agency	Environment
7.7	a	Undertake comprehensive water management analyses for priority surface and groundwater systems	2014 (priority) 2016 (other)	Water Security Agency	---
	b	Implement new watershed modeling and data base management systems to allow efficient evaluation of new requests for water and ensure that cumulative effects are considered	2014 (priority) 2016 (other)	Water Security Agency	---



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