



Government of
Saskatchewan

2006 - 2007 Annual Report

Saskatchewan
Environment

State of Drinking Water Quality
in Saskatchewan

and the

Safe Drinking Water Strategy

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Letters of Transmittal

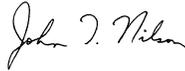


July 2007
His Honour the Honourable Dr. Gordon L. Barnhart, S.O.M., Ph.D.
Lieutenant Governor
Province of Saskatchewan

May It Please Your Honour:

I respectfully submit the combined Annual Report on the State of Drinking Water Quality and the Safe Drinking Water Strategy for the fiscal year ending March 31, 2007.

Respectfully submitted,



John T. Nilson, Q.C.
Minister of Environment



The Honourable John T. Nilson, Q.C.
Minister of Environment

Dear Sir:

I respectfully submit the combined Annual Report on the State of Drinking Water Quality and the Safe Drinking Water Strategy for the fiscal year ending March 31, 2007

The 2006-07 report describes the drinking water related goals and objectives of departments and agencies involved in drinking water and source water protection activities in Saskatchewan, including the Safe Drinking Water Strategy and related activities. Key partners in the implementation of the Safe Drinking Water Strategy include Saskatchewan Environment, Saskatchewan Health, Regional Health Authorities, Saskatchewan Watershed Authority, SaskWater, Saskatchewan Government Relations and Saskatchewan Agriculture and Food.

On behalf of the key partners, Saskatchewan Environment provides information on our collective accomplishments in the protection, conservation and sustainable development of drinking water and related source water resources during 2006-07. We use the services water provides: agricultural production, drought protection, waterpower, aquatic habitat, recreation and biodiversity. We rely on its steady supply for many purposes and we expect that every time we turn the tap, clean, safe water will fill our glass.

Our cities and our rural communities will benefit from our efforts to strengthen the health of our province and its citizens. The management of our groundwater and watersheds, and the continued abundant supply of clean water will be important markers of our sustainability success.

Respectfully submitted,



Alan Parkinson
Deputy Minister

Introduction

Safe drinking water is a vital component in the protection of public health and disease prevention and therefore essential for the health and well being of Saskatchewan's citizens. High quality water is important in maintaining natural ecosystems and the species that depend upon them, the productivity of industry, sustaining commerce and is vital to ensuring productive farms and ranches. The quality of drinking water, the condition of systems that produce it and protection of source waters remains an important public health and environmental issue in Saskatchewan at the present time and for the future.

Again this year, this report combines information on the status of drinking water, which was first reported on for the 2002-03 fiscal year, with annual reporting on the implementation of the Safe Drinking Water Strategy. The Safe Drinking Water Strategy was announced in April 2002 and continues to form the Government of Saskatchewan's strategic approach to improve the quality and management of drinking water in the province. Since the Strategy is intended to improve drinking water, reporting on the Strategy and the legislatively mandated annual report on the state of drinking water Strategy are being combined into this comprehensive report. Reporting in this manner will continue to improve understanding of the steps being taken and progress achieved towards improved drinking water in Saskatchewan.

This is the fifth annual report on the Status of Drinking Water in Saskatchewan. This report is intended to inform residents of Saskatchewan of the status of drinking water quality, waterworks infrastructure, source water protection and water related items and measures in the province over the April 1, 2006 to March 31, 2007 period. The report is a legislated requirement under *The Environmental Management and Protection Act, 2002* and will be provided on an annual basis in future years.

The report outlines the roles, responsibilities and resources of departments and agencies involved in water management, the regulatory framework and activities undertaken by the Government of Saskatchewan to manage drinking water. The report also discusses operator certification, drinking water quality monitoring, source protection, information management systems and public education initiatives which are key actions and indicators of performance in reaching the goals and objectives of the Safe Drinking Water Strategy. An update on progress in addressing the recommendations of the *Report of the Commission of Inquiry into the City of North Battleford's drinking water* is available on the Internet (http://www.saskh20.ca/WaterInformationFactSheet_annualreport.asp).

The report was built on contributions from Saskatchewan Environment; Saskatchewan Health; Saskatchewan Watershed Authority; SaskWater; Saskatchewan Government Relations; and Saskatchewan Agriculture and Food. Saskatchewan Environment's Drinking Water Quality Section compiled the report.

The complete 2006-07 performance plan for the strategy was published in conjunction with the 2006-07 budget on April 6, 2006 and is available on the Internet (<http://www.saskh20.ca/news.asp>). Reporting on planned actions and measures serves as a solid tool for communicating progress on improving the quality of drinking water. This annual report describes results for the key actions included in *Our Plan for 2006-07*, the Government-wide plan released with the 2006-07 budget, available on the Internet (<http://www.gov.sk.ca/finance/budget/budget06/2006papers.htm>).

This is the fourth time results from the Safe Drinking Water Strategy have been published in this comprehensive manner. In 2002-03, a report on the status of drinking water in Saskatchewan reported on some key results and measurement results. Improvements in the annual report are tied to continued implementation of the Government's Accountability Framework. Reporting year-end performance and financial results on both the Safe Drinking Water Strategy and the status of drinking water in Saskatchewan, increases accountability to the public. A performance plan for the Safe Drinking Water Strategy for the 2007-08 fiscal year was published on March 22, 2007 with the release of the 2007-08 provincial budget. A copy of the plan is available on the Internet (<http://www.saskh20.ca/news.asp>).

What is the Safe Drinking Water Strategy?

The Safe Drinking Water Strategy is a comprehensive plan of action designed to deal with the risks that affect drinking water and impacts the health of Saskatchewan residents. The Strategy will also provide more assurances to citizens of the province that government is helping to ensure the water we drink is safe. The Strategy was created as one of a series of Government measures to address drinking water quality and management following the tragedy in Walkerton, Ontario where people died because of contaminated drinking water. It also responds to recommendations from the North Battleford Commission of Inquiry, which examined the waterborne Cryptosporidiosis outbreak that affected that city in 2001. The vision of the Strategy is a sustainable, reliable, safe and clean supply of drinking water that is valued by the citizens of Saskatchewan.

Several departments and agencies are involved in implementing the Strategy including Saskatchewan Environment; Saskatchewan Health; Health Regions; Saskatchewan Watershed Authority; SaskWater; Saskatchewan Government Relations (formerly Saskatchewan Government Relations and Aboriginal Affairs); and Saskatchewan Agriculture and Food (formerly Saskatchewan Agriculture, Food and Rural Revitalization). The following is a summary of the major roles, priorities and actions of each of the government departments and agencies involved in the implementation of this Strategy.

Saskatchewan Environment

- leads ongoing planning, implementation and reporting work for the Strategy to which all participating departments and agencies contribute;
- implementation, inspections and compliance for 569 licensed municipal waterworks, 45 permitted pipelines, 42 regional or provincial park waterworks, 23 industrial waterworks, 49 other permitted waterworks, and 561 wastewater facilities regulated under *The Water Regulations, 2002*;
- issues permits for construction and operation of water and wastewater works;
- policy, protocol, water quality standard and guideline development to support protection of drinking water and implementation of *The Water Regulations, 2002*;
- operator certification liaison;
- manages the drinking water information system Environmental Management System that houses water quality and inspection data for all Saskatchewan Environment regulated waterworks (drinking water and wastewater) in the province; and
- manages the *SaskH2O.ca* website that supplies a broad range of drinking water related information gathered from water management authorities within the province.

Saskatchewan Government Relations

- water infrastructure financial assistance under the Canada-Saskatchewan Municipal Rural Infrastructure Fund (MRIF), the Canada-Saskatchewan Infrastructure Program (CSIP) and the Northern Water and Sewer Program;
- legislation and regulations regarding pricing policies and capital investment strategies for municipal waterworks; and
- legislation and regulations regarding municipal protection of water sources through planning bylaws.

Saskatchewan Watershed Authority

- source (surface/ground) water protection;
- watershed and aquifer planning;
- water management infrastructure;
- waterworks approval (except municipal);
- water allocation; and
- "State of Watershed Reporting".

Saskatchewan Health/Health Regions

- responsible for inspection and compliance at semi-public waterworks and certain other waterworks as required by *The Health Hazard Regulations*;
- data management systems for Public Health Inspectors and laboratory information;
- water analysis through the Saskatchewan Disease Control Laboratory (formerly known as the Provincial Laboratory); and
- provides advice and addresses waterborne illnesses.

Saskatchewan Agriculture and Food

- *The Agricultural Operations Act* – intensive livestock provisions;
- *The Irrigation Act, 1996*;
- pesticide (applicator) licenses;
- research, demonstrations and technology transfer;
- farm water supplies; and
- Environmental Farm Planning (Federal/Provincial Agricultural Policy Framework).

SaskWater

- Provides potable and non-potable water supply;
- Provides wastewater treatment and management;
- Designs, builds, owns and operates water supply and waste water systems;
- Provides certified operation and maintenance for customer-owned systems; and
- Provides project management services and operator training.

Saskatchewan Environment, Saskatchewan Health and the individual Health Regions deliver aspects of the Strategy through a system of centralized planning, protocol and standards development and regionalized inspection and compliance services. During 2006-07 Saskatchewan Environment's staff complement totaled 36.7 Full Time Equivalents (FTE) for delivery of all aspects of the department's contribution to the Strategy and drinking water management activities. An additional three FTEs are employed by Saskatchewan Environment in the management of the Environmental Management System and the *SaskH2O.ca* website. Saskatchewan Health's Saskatchewan Disease Control Laboratory has 19.5 FTEs that are dedicated to water testing and the accreditation program in support of the Safe Drinking Water Strategy. Health Region Public Health Inspectors, Medical Health Officers and Public Health Nurses also play a role in water related activities (i.e. inspection of semi-public water supplies, issuance of Emergency Boil Water Orders, water borne disease investigations). To enhance inspection capacity and drinking water safety, funding in the amount of \$506,000 was allocated to the Health Regions (formerly called Regional Health Authorities) and Regional Targeted Programs and Services. This amount does not include additional funding provided to Health Regions to offset increases to salaries and benefits through collective bargaining agreements.

Saskatchewan Agriculture and Food (SAF) has 10 FTEs that deliver intensive livestock inspection and regulatory approval services to ensure protection of water resources from intensive livestock operations. Two full time positions are housed within the Development Division addressing environmental issues related to livestock development with respect to research, development, engineering and technology transfer. Staff continue to participate in the Aquifer/Watershed planning activities and technical committees. The department also develops and distributes management and technology information for conservation and grazing and crop production that reduce and/or minimize impacts to water resources. The department has three FTEs delivering pesticide regulatory services.

The Pest Control Products (Saskatchewan) Act and regulations require any individual who uses or applies a pesticide hold a valid pesticide applicator license. An applicant for a pesticide applicator license must pass a pesticide applicator course, which is valid for five years. The Business and Agriculture Division of the Saskatchewan Institute of Applied Science and Technology offer pesticide applicator courses. There is a

high value placed on education of the user of pesticides to mitigate the risks associated with pesticide usage. Training is recognized internationally as a key tool in risk reduction. Training results in more responsible use of pesticides, while keeping the environment safe for the public. There are currently 2,653 licensed applicators in the province.

SAF administers *The Irrigation Act, 1996*. The legislation ensures soils and water are suitable for sustainable irrigation. Irrigation soils, water quality and water tables are monitored for sustainability.

Saskatchewan Government Relations' water related programming is mainly provided through centralized policy development and program delivery services. Key partners outside the provincial government include the federal government through the CSIP and MRIF programs, participants in the Agricultural Policy Framework, municipalities and other waterworks owners, the Saskatchewan Urban Municipalities Association, the Saskatchewan Association of Rural Municipalities, the Saskatchewan Water and Wastewater Association and the Operator Certification Board. The Saskatchewan Association of Rural Municipalities and the Saskatchewan Urban Municipalities Association were key partners during consultation on the Strategy, and continue to help in its further development and implementation through workshops and programming. The Saskatchewan Water and Wastewater Association and the Operator Certification Board have been instrumental in advancing waterworks operator certification in the province. The Operator Certification Board is appointed by Government, but operates at arm's length in considering the qualification and standing of water and wastewater works operators in the province. Key stakeholders are consulted on a periodic basis to aid in the ongoing development and delivery of the Strategy.

The sections of the report that follow provide information on the status of drinking water in Saskatchewan during 2006-07. Further information on drinking water quality is available on the SaskH2O Website (<http://www.SaskH2O.ca>) and on Saskatchewan Environment's Website (<http://www.se.gov.sk.ca>). Additional detailed background information regarding drinking water quality in Saskatchewan is available on the internet at <http://www.SaskH2O.ca/news.asp>. The following sections also report on the key actions and the level of performance in achieving key indicators of improvement in drinking water and related protection and enhancement measures of the Strategy.

Reporting on the Strategy is one step in implementing the Government of Saskatchewan's Accountability Framework. Transparency regarding the status of drinking water is intended to improve trust in drinking water supplies and the waterworks systems that produce it. Public reporting is intended to further the accountability of the departments and agencies that are implementing the Safe Drinking Water Strategy. Next year's annual report will again address both the status of drinking water and the published 2007-08 strategic plan.



2006-07 Results at a Glance

Key Accomplishments

Summary of Performance Results

This section provides readers with an overview of the status of drinking water and accomplishments on key actions, performance measures and financial expenditures for the Safe Drinking Water Strategy for 2006-07.

Goal 1 - Waterworks systems and operations provide safe, clean and sustainable drinking water

- As of March 31, 2007, the number of certified operators for waterworks regulated by Saskatchewan Environment increased by 63 for a total of 1,170. At the end of the reporting period 98.9 per cent of communities with human consumptive waterworks, operators have received some level of certification. A summary of communities with Certified Operators, System Classification and Operator Classification as of March 31, 2007 is available on the Internet (http://www.saskh2o.ca/WaterInformationFactSheet_annualreport.asp).
- Permitting for municipal waterworks continued through the 2006-07 fiscal year. During the reporting period, 181 waterworks operational permits were issued or renewed. Another 107 wastewater works permits were also issued or renewed.
- Compliance with bacteriological water quality standards (90 per cent of the time) increased from 95.4 per cent for the 2005-06 fiscal year to 97.1 per cent in the 2006-07 fiscal year.
- Compliance with the disinfection standard increased from 90.1 per cent in 2005-06 to 98.19 per cent in the 2006-07 fiscal year.
- The number of waterworks regulated by Saskatchewan Environment which do not meet minimum treatment requirements was 16 as of March 31, 2007, a 14 per cent increase from the previous year. This increase is the result of additional waterworks being regulated.
- In 2006, SaskWater trained a total of 89 water and wastewater operators at 38 First Nations.
- At the end of 2006, SaskWater had completed 28 Water System Assessments (WSA) in northern Saskatchewan communities and completed all of Saskatchewan Urban Municipalities Association's WSAs.
- SaskWater managed \$5.42 million of its own capital projects in 2006.
- SaskWater continues to apply its policy on meeting and exceeding North American water quality standards.
- SaskWater delivered 5.4 million cubic metres of high quality drinking water in 2006.
- Under the infrastructure financial assistance programs, \$9.4 million in federal and provincial funding was paid out under the MRIF to 41 water and sewer projects and \$3.9 million in federal and provincial funding was paid out under the CSIP to 32 water and sewer projects. Also \$2.5 million was spent on water and sewer projects in 19 northern communities under the provincial Northern Water and Sewer Program, of which \$549,000 was MRIF and CSIP funding.

Goal 2 – The drinking water regulatory system is clear and effective

- Saskatchewan Environment conducted 837 waterworks and 547 sewage works inspections.
- Health Region public health inspectors inspected 1,001 public water supplies that are regulated by *The Health Hazard Regulations, 2002*.
- The Bacteriological Follow-up Protocol for Waterworks Regulated by Saskatchewan Environment EPB 205 was reviewed in the 2006-07 fiscal year, however it was determined that there was no need to revise the document.
- During the fiscal year, there were 168 Precautionary Drinking Water Advisories (PDWA) and two Emergency Boil Water Orders (EBWO) issued for waterworks regulated by Saskatchewan Environment. At the end of the fiscal year, there were 59 PDWAs and two EBWOs in effect at waterworks regulated by Saskatchewan Environment.

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- There were 16 PDWAs and 45 EBWOs issued for waterworks regulated by Health Regions during the fiscal year.
 - A total of 98 unexpected upsets at waterworks were reported and addressed during 2006-07 due to problems like system depressurizations due to power loss or watermain breaks, low chlorine residuals, excessive turbidity/operational problems, positive bacteriological monitoring results, chemical contamination, or other failures and resulted in issuance of a PDWA or EBWO. A total of 55 PDWAs were issued due to anticipated events such as startup or seasonal or new waterworks or planned maintenance activities.
 - Approximately 160 permits to construct, upgrade or alter waterworks or sewage works were issued or amended by Saskatchewan Environment. Additionally, by the end of the reporting period, a total of 482 waterworks system assessments had either been initiated or completed.
 - All laboratories performing analysis for waterworks regulated by Saskatchewan Environment retained accreditation in 2006-07 in accordance with criteria established by the Standards Council of Canada or the Canadian Association for Environmental Analytical Laboratories as required by regulation.
 - Ongoing implementation of Saskatchewan Environment's Drinking Water and Wastewater Enforcement Protocol resulted in 56 written warnings, seven Ministerial Orders, and two charges laid under *The Environmental Management and Protection Act, 2002*. In addition, there were three convictions for waterworks related offences, and four charges were concluded through an alternative measures program.

Goal 3 – High quality source waters are protected now and into the future

- Source water protection plans were completed during the 2006-07 fiscal year for the Lower Souris River, Moose Jaw River and Assiniboine River watersheds and for the Yorkton Area Aquifers. The Saskatchewan Watershed Authority has been actively supporting the local committees as they commence the important work of plan implementation. This support includes assistance in the establishment of formal entities to undertake plan implementation, coordination of the provincial responses to the key actions, and financial support towards the hiring of local watershed coordinators.
- Saskatchewan Environment continues to serve as champion of the federal-provincial-territorial process to improve wastewater management across Canada. A second draft Canada Wide Strategy for management of Municipal Waste Water Management was completed and nation-wide consultation was largely completed during 2006-07. A task group was also formed to examine economic issues and solutions for upgrading to meet the anticipated national standards during 2006-07.
- The Authority participated in Environmental Farm Planning Workshops as technical advisors, workshop planners and coordinators, and assisted approximately 470 producers with the development of formal or informal Best Management Practice Plans.
- Approximately 12,500 acres of cultivated land was seeded to perennial cover through Authority programming with potential future benefits to watersheds including reduced soil erosion, reduced sedimentation of surface water bodies and improved condition of native rangelands.
- Saskatchewan Agriculture and Food (SAF) provides funding through the Agriculture Development Fund for research and development of technologies and practices that reduce or prevent agricultural impacts on the quality of water resources. Funding is provided for treatment and processing technologies that help to add value to agricultural by-products and minimize the potential for contaminants from agricultural operations to impact the environment. Research funding is provided to evaluate technologies that reduce or minimize the potential for pesticide use to impact water quality including improved products, improved application, reductions in quantities and alternatives to pesticide use such as biological controls.
- SAF is partnering with the Federal Government on Agricultural Environmental issues, including the implementation of Environmental Farm Plans (EFP). Staff provide technical assistance to EFP workshops and in the development and implementation of Best Management Practices.

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- Saskatchewan Government Relations undertook major public consultations on a new Act that includes implementation of municipal land use bylaws to protect water sources. *The Planning and Development Act, 2007* was passed in the 2007 Spring Legislature. Saskatchewan Government Relations worked with the Saskatchewan Watershed Authority on all of the current watershed plans, including municipal stakeholder meetings to provide information on implementation of watershed planning and water source protection.

Goal 4 – Citizens and consumers trust and value their drinking water and the operations which produce it

- Based on a May 2007 poll conducted by the Government of Saskatchewan 67.8 per cent of people polled are willing to pay more to improve their drinking water. This value is 3.0 per cent less than the previous poll in March 2006 of 70.8 per cent and 6.8 per cent greater than the December 2001 poll prior to implementation of the Strategy.
- Based on a May 2007 omnibus poll conducted by the Government of Saskatchewan, 82.6 per cent of people polled strongly agree or agree that they are confident in the safety of their own drinking water. Although still at a high level of confidence, these polling results represent a decrease of 4.7 per cent from March 2006 while remaining 10.6 per cent greater than December 2001 when 72 per cent of people surveyed were very or somewhat confident in the quality of their tap water.
- On June 29, 2003 the SaskH2O website went on line to provide up to date information on drinking water quality to the public on a community specific basis. Since its launch 196,746 visitors have logged onto the website. During 2006-07 there was an average of 2.62 visits per visitor and an average stay of nine minutes each time they visit the site. The length of stay is important as it represents activities such as research and downloading of water information items.
- In December 2006, SaskWater conducted a customer survey that indicated high quality drinking water was a key factor in signing on with SaskWater (55 per cent), followed by reliability (42 per cent) and availability of water (29 per cent).

Summary of Financial Results

Actual expenditures relating to the strategy in 2006-07 were \$23.942 million, which was \$9.759 million lower than the budgeted expenditures of \$33.701million. This net variance is primarily attributable to lower than anticipated funding provided to municipalities under the Canada Saskatchewan Infrastructure Program and Municipal Rural Infrastructure Fund due to project delays or project under expenditures. Within Saskatchewan Environment under expenditures were the result of vacancies, delayed staffing and secondments in comparison with a full staff compliment of 36.7 FTEs. A significant under expenditure occurred because of delays in an in-scope job evaluation process. Saskatchewan Health FTE utilization for the Saskatchewan Disease Control Laboratory was at the full level of 19.5 FTE's during the reporting period. In addition to the FTEs within Saskatchewan Health, funding is provided to Regional Health Authorities for water related programs and surveillance. It is not possible to state the actual number of Regional Health Authority FTEs that are dedicated to water as a number of different disciplines (i.e. Medical Health Officers, Public Health Inspectors and Public Health Nurses) can become involved in water and or water related disease surveillance and issue-specific time is not tracked.

- Under the MRIF and CSIP Saskatchewan Government Relations provides financial support to municipalities for priority drinking water and wastewater infrastructure improvements. In 2006-07, \$9.4 million in federal and provincial funding was paid out under the MRIF and \$3.9 million in federal and provincial funding was paid out under the CSIP. A list of 2006-07 approved projects for MRIF is available on the Internet (http://www.saskh20.ca/WaterInformationFactSheet_annualreport.asp).

2006-07 Performance Results and the Status of Saskatchewan's Drinking Water

The following is a summary of information on the status of drinking water in Saskatchewan and progress on the goals, objectives, key actions and performance measures of the Safe Drinking Water Strategy. Further information is available by contacting Saskatchewan Environment or on the Internet (from <http://www.SaskH2O.ca>).

Management uses performance information to assess overall progress towards the goals and objectives of the Strategy each year. In turn, review and assessment each year allows and directs the most effective adjustment of future plans and actions to address priority elements under the Strategy. Elements of the Strategy, refocused as a result of this assessment, will see further concentration on ensuring attainment of turbidity and chemical health drinking water quality standards, key actions to address wastewater management as well as continuing operator education in the 2007-08 fiscal year.

The key actions originally presented in the 2006-07 plan are listed below, followed by a report on actual progress for each. Actual results information is included for all key actions and performance measures that were published in our *2006-07 Performance Plan* as well as for all commitments related to the Safe Drinking Water Strategy in the government-wide *2006-07 Performance Plan Summary*. On April 6, 2006, the 2006-07 Performance Plan for the strategy was released and is available on the Internet (<http://www.saskh20.ca/news.asp>). Further descriptions of the performance measures are included in this document and can also be obtained from Saskatchewan Environment. Management affirms that all major external factors that could have an impact on performance results have been identified and explained. Additionally, significant efforts have been made in ensuring performance data is valid, through ongoing review and validation of data. In general, performance in addressing drinking water quality and source water protection management through the Safe Drinking Water Strategy in Saskatchewan has paralleled or exceeded performance in other Canadian provinces where similar strategic initiatives are in place.

Goal 1 - Waterworks systems and operations provide safe, clean and sustainable drinking water

Objective 1 – Waterworks staff are capable and well trained

Provision of safe drinking water is highly reliant on the knowledge and capabilities of waterworks operators and the manner in which they apply their skills to produce and monitor the quality of drinking water. Along with source protection, sound and capable infrastructure and water quality monitoring, knowledgeable operators capable of sound waterworks operations are one of the elements of a “multi-barrier approach” to ensure safe drinking water. During 2006-07, significant progress continued to be made by a variety of agencies in advancing this objective, with approximately 1,000 operators participating in training offered by Saskatchewan Institute of Applied Science and Technology (SIAS-T-Palliser Campus), Saskatchewan Water and Wastewater Association (SWWA), Saskatchewan Association of Rural Water Pipelines (SARWP) and ATAP Infrastructure Management. Furthermore, approximately 1,200 certification exams were written in the same time frame. Although the number of newly certified operators was smaller than the previous fiscal year, (133 newly certified operators 2006-07 fiscal year), nearly the same number of operators increased their level of certification or added new certification categories. A report on the review and consultation on operator certification requirements was submitted to the department. One of the recommendations introduced the feasibility of enhancing certification regulations to require all operators working at Saskatchewan Environment regulated waterworks be certified to some level by 2010.

Key Results

The key actions originally planned for 2006-07 are shown below, along with the responsible partner, followed by our actual progress towards the key action and changes affecting the status of drinking water.

- Support and advance ongoing achievement and compliance with Operator Certification and Operator Continuing Education requirements. [Environment]

To facilitate operator certification, Saskatchewan Environment worked to encourage SIAST, ATAP Infrastructure Management and some of the Regional Community Colleges to continue offering Certification Preparation classes. These classes last from three to five days in the areas of water treatment, distribution, wastewater treatment and collection at various levels; these classes included certification examinations. Continuing Education Units (CEU) are assigned to operators attending these classes, where 1.0 CEU represents 10 hours of formal classroom instruction. Successful completion of the certification examinations allows operators to meet one of the certification criteria; the other criteria are formal education and facility work experience.

Since July 15, 2005 operators had to attain on-going training in an area the Operator Certification Board (OCB) considered appropriate to their area of certification to qualify for certification renewal. The actual amount of training is generally measured in Continuing Education Units (CEU). *The Water Regulations, 2002* require operators to earn 1.0 CEU during the two-year term of their certificate, leading up to renewal. On-going training was provided by SIAST, ATAP Infrastructure Management, SWWA, SARWP, Regional Community Colleges, New North and by a number of other agencies within and outside Saskatchewan. Operators could also access appropriate correspondence courses such as those offered by SIAST. The rate of compliance with the training for certification renewal regulation is indicated by the fact that about 95 per cent of operators receiving renewal notification from the OCB, actually renewed their certification.

Saskatchewan Environment has contributed to workshops and conferences offered by SWWA, SARWP and New North.

- Finalize and implement changes arising from consultation with the Certification Advisory Committee, by evaluating need to certify small system waterworks operators and all operators working at Environment regulated waterworks to certify to some level by 2010. [Environment]

Saskatchewan Environment advanced the review of the operator certification program throughout the 2006-07 fiscal year by studying the recommendations of the stakeholder-based Certification Advisory Committee (CAC). The stakeholders consulted were in full support of the operator certification program and its administration by the Operator Certification Board. The CAC made recommendations regarding examinations, applicability of examinations, certification of individuals, use of National Occupational Guidelines for Canadian Water and Wastewater Operators, application of "direct responsible charge", certification upgrading and the use of Continuing Education Units for certification renewal. One of the issues submitted for CAC discussion requested that Saskatchewan Environment should assure adequate funding for the Operator Certification Board. Since official implementation of the certification program in 2000, well in excess of the number of operators required for board solvency had become certified thus assuring on-going financial independence.

The CAC made a number of recommendations to ease certification for smaller communities by encouraging Small Water and Small Wastewater certification; encouraging the "Regional Operator" option; and discussing the "Hygienic Use Water System" exemption to certification option. The CAC further recommended that every operator working in a waterworks or wastewater works should be encouraged to become certified to some level, and that SE put a mechanism in place to allow this to happen, possibly by 2010.

Saskatchewan Environment has studied the recommendations of the CAC and has made amendments to the Operator Certification Standards 2002 and to the Water and Wastewater Operator Certification Program Guide. Before final implementation of these policy amendments, they will be provided to the CAC for stakeholder review

In terms of overall progress on operator certification, the Operator Certification Board continued to certify water and wastewater works operators throughout 2006-07. As of March 31, 2007, there were 614 waterworks licensed by Saskatchewan Environment with at least one certified operator, regional operator or contract operator. Other communities or waterworks systems used the services of a regional or contract operator. Some operators continue to take exams and are in the process of obtaining certification or of upgrading their certification levels and categories. Saskatchewan Environment continues to work with municipalities, waterworks owners and others to maintain and to advance the implementation of operator certification and continuing education in the province.

Table 1 provides additional information on the number of waterworks with certified operators since 2000-01 for all waterworks regulated by Saskatchewan Environment.

Table 1: Certification Summary Water and Wastewater Works (Source – Saskatchewan Environment certification records database)

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
Certified operators*	44	293	403	533	682	1107	1170
All Waterworks with certified operators	24	116	217	219	326	532	614
All Waterworks meeting new standards	1	35	92	144	202	461	501
Per cent meeting new standard	0.2%	5.7%	15%	23%	35%	74%***	80%****
Number of licensed works**	609	609	617	630	641	714***	728****

* Operators working in Saskatchewan Environment regulated waterworks.

**Licensed works includes municipal water treatment works, water distribution systems, wastewater treatment works and wastewater collection systems.

*** 92 of the licensed waterworks in the province have applied for or been granted hygienic classification as of March 31, 2006. Waterworks classified as hygienic systems do not require a certified operator.

**** 101 of the licensed waterworks in the province have applied for or been granted hygienic classification as of March 31, 2007. Percentage of overall compliance is based on the reduced number of human consumptive systems waterworks requiring certification (628). Additionally, some other waterworks operators were in the process of examination or certification as of the end of the reporting period. Additionally, some works were permitted near the end of the reporting period.

Source: Operator Certification Board database and Saskatchewan Environment hygienic waterworks listing

Table 2 provides information on the number of operators certified at various levels in all categories of the water and wastewater treatment industry in Saskatchewan during 2006-07.

Table 2: Distribution of Certified Operators at Water and Wastewater Works - Fiscal Year 2006-07
 (Source: Saskatchewan Environment certification records database – all regulated systems)

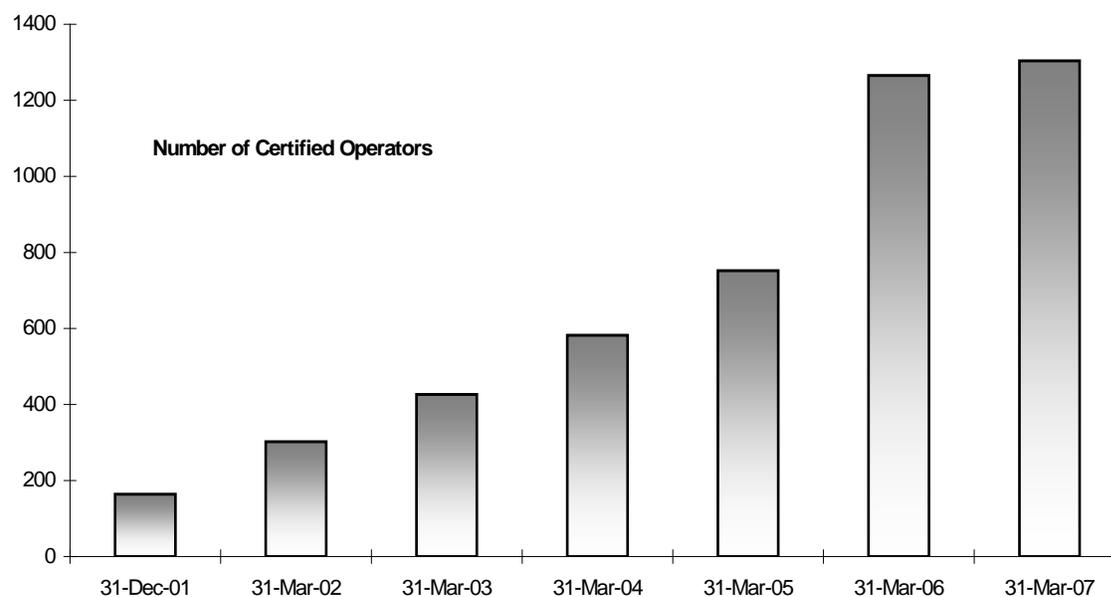
System Classification	Water Treatment	Water Distribution	Wastewater Treatment	Wastewater Collection
Small System ¹	221	227	126	125
Class-1	364	472	388	363
Class-2	254	254	77	132
Class-3	56	15	14	4
Class-4	34	12	24	7
Total	929	980	629	631

¹ There are several types of Small Systems. A Small Water System is defined as a Class-1 groundwater treatment and/or Class-1 distribution system, serving fewer than 500 people. Small treated drinking water pipelines serving fewer than 500 people can be classified as Small Systems and some of their operators have become certified as Small System operators, and are show only under Water Distribution. A Small Wastewater System is a Class-1 wastewater treatment system (generally a lagoon system) and/or a Class-1 collection system serving fewer than 500 people.

Source: Operator Certification Board Database

Figure 1 provides a historical summary of the number of operators certified to date. During 2006-07, the number of all certified operators reported by the Operator Certification Board increased to 1,304 as of March 31, 2007. These are all the certified operators, including those who do not operate waterworks regulated by Saskatchewan Environment. Indian and Northern Affairs Canada (INAC) required First Nation operators to become certified by the same criteria of education, experience and examination as operators mandated by Saskatchewan Environment. Since INAC did not have a certification program of its own, Saskatchewan Environment invited the First Nations operators to participate in its certification program and 134 were certified at the end of this fiscal year.

Figure 1: Summary of Certified Operator Trends



Source: Saskatchewan Environment certification records database

The smaller increase in the number of certified operators during this last fiscal year is the result of the certification program phase-in period having come to a close in July 2005. Indeed the 133 operators applying for initial certification was a smaller number than in the previous fiscal year, yet there were approximately 100 operators who applied to upgrade their certification by either increasing their level of certification or adding new categories of certification. A summary of communities with Certified Operators, System Classification and Operator Classification, updated after each Operator Certification Board meeting, is available on the Internet at www.SaskH2O.ca/foroperators.asp

Measurement Results

Per cent of communities with human consumptive waterworks whose operators have received some level of certification

Table 3: Per cent of communities with human consumptive waterworks whose operators have received some level of certification

	September 30, 2004	March 31, 2006	March 31, 2007	Annual Change
Per cent of communities with human consumptive waterworks whose operators have received some level of certification	54.3	96.8	98.9	2.1 ↑

Source: Saskatchewan Environment – Environmental Management System

As of March 31, 2007, 98.9 per cent of communities with human consumptive waterworks have operators that have achieved some level of certification (Table 3). This is a slight increase since the revised measure was developed in preparatory planning for the 2005-06 fiscal year. Approximately 99.96 per cent of the population served by a community (municipal) human consumptive waterworks have an operator that has received full certification or some level of training. Knowledgeable, certified operators help to ensure safe drinking water.

This measure was redefined earlier and has been retained for the 2006-07 reporting period as a better measure of the implementation of operator certification, and thereby the relative protection afforded to drinking water supplies. The performance measure was changed because in a simple count of certified operators, larger communities with a greater number of waterworks certified operators could result in a possible misrepresentation of the acceptance and implementation of operator certification in Saskatchewan. The performance measure is primarily controlled by the owner of the waterworks, but also requires cooperation from the waterworks operator(s). Acceptance and uptake of operator certification is key to ensuring the delivery of safe drinking water and therefore a reason this performance measure was selected. As a point of comparison, Alberta's (population 3.2 million) mandatory certification program took effect on January 1, 1983, and their program currently has 1,831 certified operators. Currently their certification examinations, certification applications and certificate renewals are free. Saskatchewan (population 0.9 million) has 1,304 certified operators, examinations cost about \$95.00 and certification and renewal fees (every two years) are \$130.00. All considered, Saskatchewan's certification program has progressed very well in comparison.

This performance measure quantifies the number of communities with waterworks operators that have been certified to some level and directly supports gauging progress towards the objective. The greater the number of communities with certified operators, the greater the safety of the water supply since operator knowledge will influence the quality of water produced. Saskatchewan Environment influences this measure by establishing regulations that require the certification of operators, however, it is up to each waterworks owner to ensure that they comply with the regulations.

Objective 2: Infrastructure produces water that meets the National Drinking Water Quality Guidelines

Infrastructure design, capability, condition and maintenance are critical in the production of safe drinking water. Standards, incentives, requirements, compliance measures and implementation plans must also be in place to ensure that waterworks are operated and monitored to achieve drinking water of a quality that protects human health. The *Guidelines for Canadian Drinking Water Quality* (see: http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/doc_sup-appui/sum_guide-res_recom/index_e.html) are used in Canada as the definitive measure of science-based safety criteria for drinking water. Saskatchewan has now adopted the guidelines as standards (see: http://www.se.gov.sk.ca/environment/protection/water/Drinking_Water_Standards_post.pdf).

During 2006-07, progress continued in advancing this objective. Compliance with bacteriological drinking water quality standards is high having increased slightly to 97.14 per cent. Compliance with the disinfection standard also increased significantly to 98.19 per cent in 2006-07. In cases where compliance is not attained, Saskatchewan Environment continues to follow up through the use of inspections, Precautionary Drinking Water Advisories or warnings as a means to help improve water quality and protect consumers. Phase-in of water quality standards continues at existing waterworks and are in full effect at new waterworks. In 2006-07, under the CSIP, \$3.9 million in federal and provincial funding was spent on 32 water and sewer projects and under the MRIF, \$9.4 million in federal and provincial funding was spent on 41 water and sewer projects. Also, \$2.5 million in provincial funding was spent under the Northern Water and Sewer Program in 19 communities, of which \$549,000 came from MRIF and CSIP.

Key Results

The key actions originally planned for 2006-07 are shown below, along with the responsible partner, followed by our actual progress towards the key action and changes affecting the status of drinking water.

- Finalize and implement strategies to aid small communities to ensure the provision of safe water by affordable and publicly acceptable means. [Environment]

Saskatchewan Environment completed regulatory amendments aimed at reducing the cost of provision of safe drinking water without compromising safety. Application of the hygienic waterworks requirements that alleviate many requirements for small waterworks while ensuring provision of safe water continued during 2006-07. As of March 31, 2007, 101 waterworks have received or applied for hygienic waterworks classification. The department also continued to implement the regional/contract operator certification policy to assist in ensuring waterworks operation are under the direction of a certified operator.

- Implement a “cluster strategy” to establish regional anchors from which water services are delivered. This strategy will allow the more cost-efficient and effective delivery of services compared to service provision on a one-off basis. [SaskWater]

SaskWater continues to develop business proposals/solutions with its municipal, industrial and community clients with a focus on growing its service areas through regional anchors from which water services are delivered. This strategy allows for more cost-efficient and effective delivery of services compared to service provision on a one-off basis.

SaskWater provides services in eight potable and non-potable regional locations and in five standalone communities. In total, SaskWater owns seven water treatment plants, 30 water pump stations and over 770 kilometres of pipeline. Through this regional network, the company provides potable and non-potable water to 55 municipal customers, 34 industrial customers, 51 public water boards, user groups, co-operatives and pipeline associations who supply water to about 3,100 rural households and farms.

To improve the monitoring of its regional locations, SaskWater has partnered with TransGas to make use of TransGas' supervisory control and data acquisition (SCADA) network. Implementation of an enhanced remote monitoring and control system in all of SaskWater's owned and contracted systems is intended to achieve a number of strategic goals over the long term. The goals include improved water quality, reduction of risk and increased operating efficiencies.

SaskWater also made significant progress on its Asset Management Program. A complete inventory of infrastructure with standardized maintenance schedules will see reduced equipment failures, increased infrastructure life and cost savings.

SaskWater's partnership agreement with the Saskatchewan Urban Municipalities Association (SUMA) proved successful in providing a cost effective way for small communities to complete water system assessments. The Water System Assessment (WSA) program had 309 participants when it concluded at the end of 2006.

In 2002, the Canada-Saskatchewan Water Supply Expansion Program was established to improve the regional water supply needs of the agriculture community in Saskatchewan. This program is part of a \$60 million Canada wide initiative to help improve the capacity of Canada's agriculture water supply concerns: commitment for program funding in Saskatchewan is \$5.4 million. SaskWater and Saskatchewan Watershed Authority are members of the Saskatchewan program along with Prairie Farm Rehabilitation Administration, Western Economic Diversification, Saskatchewan Agriculture and Food and Agrifood Canada. Through this initiative, Saskatchewan producers and rural water supply groups have access to financial support for the planning and development of projects that will improve their ability to develop and enhance long-term sustainable water supply for rural and agricultural communities. Of the \$5.4 million committed, \$1.1 million was spent in 2006-07.

- Participate in the Federal-Provincial Committee on Drinking Water as a means to support development of the Guidelines for Canadian Drinking Water Quality and thereby support provision of safe drinking water in Saskatchewan. [Environment]

Saskatchewan Environment participated as a member of the Federal-Provincial Committee on Drinking Water during 2006-07. During that time period national guidelines on Arsenic, Benzene, Chlorate/chlorite, chlorine, chloral hydrate, corrosion control, haloacetic acids, MCPA, MTBE, potassium, radiological parameters and Trihalomethanes/Bromodichloromethane were advanced through development and in some cases to completion. A national guidance document on boil water advisories was also initiated. These national guidelines form the basis for drinking water quality standards in Saskatchewan and other jurisdictions across Canada.

- Assist northern municipalities in providing safe drinking water and ensuring sewer systems do not contaminate surrounding areas and water sources; continue to provide funding under the Northern Water and Sewer Program, the Northern Emergency Water and Sewer Repair Program; and continue to provide engineering, operating and maintenance advice to northern communities on their water and sewage systems. Saskatchewan Government Relations is also developing a strategy to address longer-term critical northern water and sewer needs. [Government Relations and SaskWater]

In 2006-07, \$2.5 million in provincial funding was spent under the Northern Water and Sewer Program in 19 communities, of which \$549,000 was MRIF and CSIP funding. Under the Northern Emergency Program, about \$377,000 was spent in six communities on northern water and sewer system repairs that arose during the year. Also, \$528,000 was spent on engineering operating and maintenance advice to northern communities on water and sewer systems. The department is developing a strategy to address longer-term critical northern water and sewer needs. A list of the communities funded under the Northern Water and Sewer Program and the Northern Emergency Program is provided on the Internet (http://www.saskh20.ca/WaterInformationFactSheet_annualreport.asp).

SaskWater plays a role in Northern Saskatchewan, planning and managing the design and construction of water and wastewater infrastructure on behalf of Saskatchewan Government Relations. SaskWater provides ongoing technical advice to Northern communities for the expansion and maintenance of water and wastewater infrastructure, including responding to community emergencies related to that infrastructure and helping to conduct water system assessments. At the end of 2006, SaskWater had completed 28 water system assessments in Northern Saskatchewan communities.

- Continue to provide funding under the Municipal Rural Infrastructure Fund to assist municipalities in providing safe drinking water and ensuring sewer systems do not contaminate surrounding areas and water sources. Saskatchewan Environment provides technical advice to Saskatchewan Government Relations in reviewing applications to ensure the projects provide water that meets drinking water quality standards [Government Relations and Environment]

In 2006-07, under the MRIF, \$26.3 million in federal and provincial funding was approved for 42 water and sewer projects and \$9.4 million was paid out to 41 water and sewer projects under the program. During the 2006-07 fiscal year, Saskatchewan Environment's participation in the grant review committee in a technical advice capacity proved effective in helping to ensure that drinking water meets water quality standards and that the overall goals and objectives of the Safe Drinking Water Strategy are advanced.

- The last of the Canada Saskatchewan Infrastructure Program funding was allocated in April 2004. Funding will continue to be paid out to water and sewer projects to the end of 2007-08 as they are completed. [Government Relations]

Under the CSIP, \$3.9 million in federal and provincial funding was spent on 32 water and sewer projects. Payment of the remaining CSIP funding of \$4.9 million to 19 water and sewer projects has been extended to the end of 2007-08 to allow for completion of projects.

In terms of the status of drinking water in Saskatchewan, the bacteriological quality of water is a critical element, since when the related standards are exceeded there is a possibility of rapid significant health effects for consumers. Implementation of water quality standards continues through permitting, inspection and follow-up on monitoring results. Saskatchewan uses coliform bacteria as an indicator of the quality of drinking water. Monitoring of drinking water for *Escherichia coli* (*E. Coli*) is increasing in prevalence in North America and Saskatchewan Environment is tracking and implementing this change. The Saskatchewan Disease Control Laboratory and the Saskatchewan Research Council implemented routine analysis for *E. Coli* during the fiscal year to help in improving the meaning and rapidity of monitoring results. Saskatchewan's standards for bacteriological drinking water quality are more stringent than the Guidelines for Canadian Drinking Water Quality. The number of samples required for bacteriological water quality monitoring of a waterworks is based on the number of people served by the system (see Municipal Drinking Water Quality Monitoring Guidelines at <http://www.SaskH2O.ca/foroperators.asp>). When a routine water sample shows the presence of bacteria, follow-up activities including repeat sampling are performed. Saskatchewan Environment issued one Precautionary Drinking Water Advisory and two Emergency Boil Water Orders during 2006-07 when bacteriological related problems arose at waterworks

During 2006-07, there were 21,151 valid routine bacteriological water quality samples submitted of which 163 samples (0.77 per cent) exceeded the water quality standards of zero total coliforms, zero fecal coliforms or greater than 200 background bacteria per 100 millilitres of water. During 2006-07, a total 21,151 out of 21,772 (97.14 per cent) of the required regular samples for bacteriological water quality were submitted from waterworks regulated by Saskatchewan Environment. During 2005-06, there were 23,155 out of 23,084 (100.3 per cent) of the required regular samples for bacteriological water quality were submitted from waterworks regulated by Saskatchewan Environment. The slight decrease in total sample submission in 2006-07 resulted from 303 facilities submitting more than 100 per cent of required samples during 2005-06.

There were 109 waterworks in the province that exceeded the bacteriological standards at least one time during 2006-07. During the same time period, there was one waterworks that had 50 per cent of their routine bacteriological water samples show the presence of bacteria (Hitchcock). Three locations had between 25 and 45 per cent of their routine samples exceed the bacteriological water quality standards (Baildon Hutterite Colony, Shields and Mozart). A total of 21 regulated waterworks had greater than 10 per cent of their regular bacteriological samples test positive during the fiscal year. See Figure 3 for more information on the performance of waterworks regulated by Saskatchewan Environment in meeting bacteriological water quality standards.

Turbidity is a measure of the “cloudiness” of water and is an indirect measure of the number of suspended particles in water. Turbidity is a good indicator of the effectiveness of a water treatment system and is important because turbid water can harbor disease-causing organisms. Turbidity monitoring of Saskatchewan Environment regulated waterworks is required at least on a daily basis as a means to track water treatment system performance.

Saskatchewan Environment now has stringent standards for turbidity. These standards continue to be phased-in for existing waterworks and take effect upon the start-up of any new waterworks. During phase-in of the turbidity standards, the department generally applied a turbidity standard of 1.0 Nephelometric Turbidity Units (NTU) for existing waterworks. During the 2006-07 fiscal year, on-site monitoring for turbidity and record keeping continued to be required and these records are checked during site inspections by Environmental Project Officers.

During 2006-07, Saskatchewan Environment staff continued to ensure that waterworks owners and operators track turbidity-monitoring results and manage turbidity related water quality problems. There were 16 Precautionary Drinking Water Advisories issued during 2006-07 when turbidity related problems arose at waterworks. Turbidity testing results are being reported in conjunction with information submitted with regular bacteriological samples.

The range of turbidity results tested by all agencies in 2006-07 (municipal, private and government owners) is shown in Table 4.

Table 4: Range of Turbidity Testing Results – 2006-07

Turbidity Range (NTU)	Samples	Per Cent Samples	Systems*
0 – 1	19,009	90.75 %	533
1 – 2	1,162	5.52 %	254
2 – 3	370	1.76 %	99
3 – 4	195	0.93 %	64
4 – 5	124	0.59 %	29
5+	11,096	0.46 %	39
Totals	21,046	100 %	

* Some systems had turbidities in more than one range of turbidity values.

Source: Saskatchewan Environment Environmental Management System Database

Disinfection is widely used in Saskatchewan and Canada as is one of the key methods to prevent the spread of waterborne disease. Most disinfection of drinking water in the province is performed using chlorine-based products. Waterworks regulated by Saskatchewan Environment are required to maintain:

- a) a free chlorine residual of not less than 0.1 milligrams per Litre (mg/L) in the water entering a distribution system; and
- (b) a total chlorine residual of not less than 0.5 mg/L or a free chlorine residual of not less than 0.1 mg/L in the water throughout the distribution system.

Chlorine disinfectant monitoring usually includes two tests: total chlorine residual and free chlorine residual which are done from samples collected from the water distribution system. Free chlorine residual in drinking water is important in providing lasting protection in water distribution systems.

Total chlorine residual is helpful for waterworks operators to understand the effectiveness of disinfection and to judge cleanliness of the water distribution system. On-site monitoring for chlorine residual and associated record keeping is required and these records are checked during site inspections by Saskatchewan Environment's Environmental Project Officers. During 2006-07, Saskatchewan Environment issued 15 Precautionary Drinking Water Advisories as a result of chlorination related concerns or problems at waterworks. Department staff continue to emphasize the need for waterworks operators to monitor and track chlorine residual as a means to help ensure water quality.

Chlorine residual test results are reported in conjunction with information submitted with regular bacteriological samples. These measurements are taken at the same location as for bacteriological sampling and represent chlorine residuals in the distribution system. As previously noted, a total chlorine residual of not less than 0.5 mg/L or a free chlorine residual of not less than 0.1 mg/L must be maintained in the water throughout the distribution system. During 2006-07, waterworks reported 45,902 out of 46,746 distribution system free chlorine or total chlorine residuals within regulatory limits 90 per cent of the time for an overall reported compliance rate of 98.19 per cent. See Figure 4 for more information on the performance of waterworks regulated by Saskatchewan Environment in meeting disinfectant level requirements.

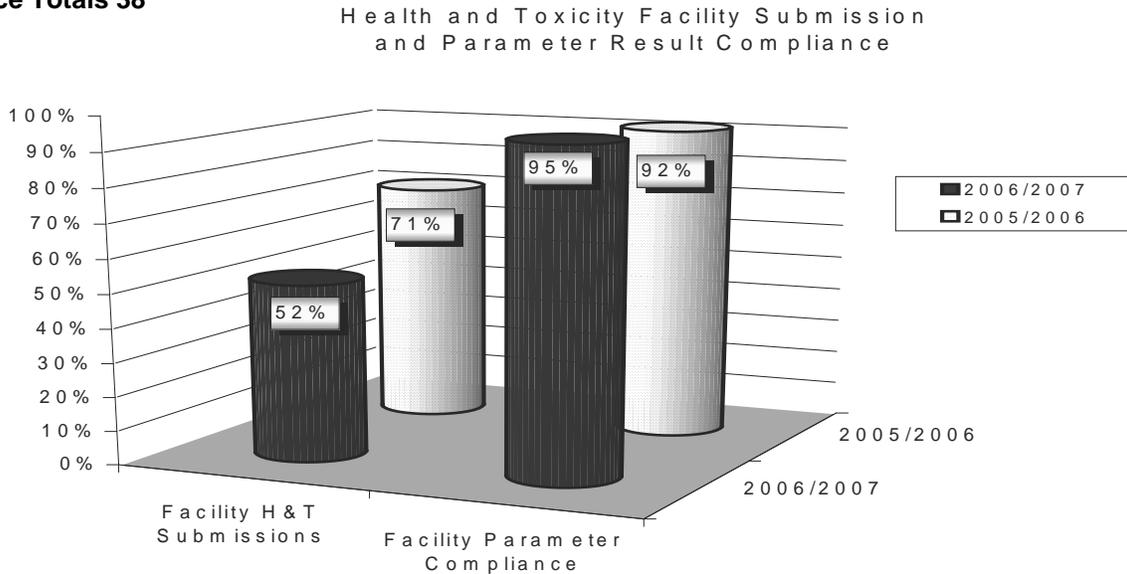
Saskatchewan Environment continues to use The Guidelines for Canadian Drinking Water Quality as the basis for the water quality standards found in *The Water Regulations, 2002*. These standards are included in each new or renewed waterworks permit. Permitting for municipal waterworks continued through the 2006-07 fiscal year. A total of 181 waterworks operational permits were issued or renewed. The drinking water quality standards are being phased-in over the next two to four years for existing waterworks and take effect upon the start-up of any new waterworks. Another 107 wastewater works permits were also issued or renewed during the reporting period.

In terms of the status of drinking water in Saskatchewan, the "health and toxicity" water quality parameters include a range of naturally occurring substances (i.e. arsenic, barium, boron, lead, nitrate, selenium, uranium, etc) and other substances such as trihalomethanes, which may be produced during chlorine based disinfection processes. These substances may represent a very small potential for adverse health effects to consumers over longer time periods. The safety gains associated with disinfection of drinking water to eliminate microbial water quality threats far outweighs any possible adverse health risks associated with disinfection by-products. A complete listing of the health and toxicity substances monitored at Saskatchewan Environment regulated waterworks is available at <http://www.SaskH2O.ca/foroperators.asp> (see Municipal Drinking Water Quality Monitoring Guidelines). Implementation of these water quality standards is achieved through permitting, inspection and follow-up on monitoring results. For existing waterworks, a regulatory phase-in period requires that all works meet health and toxicity standards by December 2008 (population of 5,000 or more) or by December 2010 (population of less than 5,000). Figure 2 depicts compliance with sample submission requirements and testing compliance for Health and Toxicity parameters during the 2006-07 fiscal year.

Figure 2: Health and Toxicity Facility Submission and Parameter Result Compliance – 2006-07

Arsenic	8	Barium	0
Nitrate	0	Lead	2
Selenium	2	Uranium	26

Exceedence Totals 38



Source: Saskatchewan Environment – Environmental Management System

In 2006-07, there were 15 facilities that exceeded at least one Health and Toxicity related chemical standard resulting in a total of 38 exceedences.

Based on the available information from the 2006-07 fiscal year, 52 per cent of Saskatchewan Environment’s licensed waterworks submitted the required Health and Toxicity samples. Ninety-five per cent of these waterworks met the drinking water quality objectives for Health and Toxicity related chemicals. Figure 2 shows these results compared to the results for last year. Owners of waterworks not submitting required samples are provided notification on a quarterly basis to ensure long-term compliance with sample submission requirements.

During the 2006-07 fiscal year, 7 facilities exceeded the maximum acceptable concentration for fluoride on 52 sampling occasions. One of these facilities (Frontier) has high, naturally occurring fluoride in their ground water supplies, which accounted for 28 of the 52 exceedences. Saskatchewan Environment monitors results from all systems that artificially fluoridate or have high naturally occurring fluoride.

The present standard for Trihalomethanes now being phased-in at existing waterworks is 100 parts per billion based on an average of four seasonal samples. Saskatchewan Environment has completed its examination of this water quality standard in accordance with the federal/provincial/territorial guideline development process and the water quality standard for Trihalomethanes will remain at the present level of 100 parts per billion based on an average of four seasonal samples. A new standard for Bromodichloromethane (16 parts per billion) may be introduced in the future.

A total of 191 surface water treatment and delivery facilities were required to participate in the Trihalomethane monitoring program during the 2006-07 fiscal year, which should result in 768 samples being submitted each year. The actual number of regulated waterworks that submitted samples was 191 (100 per cent). A total of 701 samples (91.3 per cent overall compliance) were submitted by the facilities. During 2006-07, 165 regulated waterworks (86.4 per cent) submitted 504 samples for analysis that met the maximum acceptable concentration for Trihalomethanes in drinking water. During 2006-07, 136 of 191 regulated waterworks (71.2 per cent) produced water that met the Trihalomethane objective of 100 ug/L based on the annual average of seasonal sampling.

In addition to progress made on planned actions, other key accomplishments included:

SaskWater

SaskWater continuously works with engineering firms and suppliers to develop and apply emerging technologies to provide quality drinking water to its customers. SaskWater and the Consulting Engineers of Saskatchewan (CES) co-hosted the first annual technology transfer seminar in 2006, where SaskWater and the CES consulting engineering firm members explored emerging technologies and best practices for water and wastewater treatment.

To address the need to upgrade water treatment infrastructure to meet new standards, SaskWater piloted a number of emerging technologies, including aeration pretreatment, advance membrane filtration and biological filtration systems.

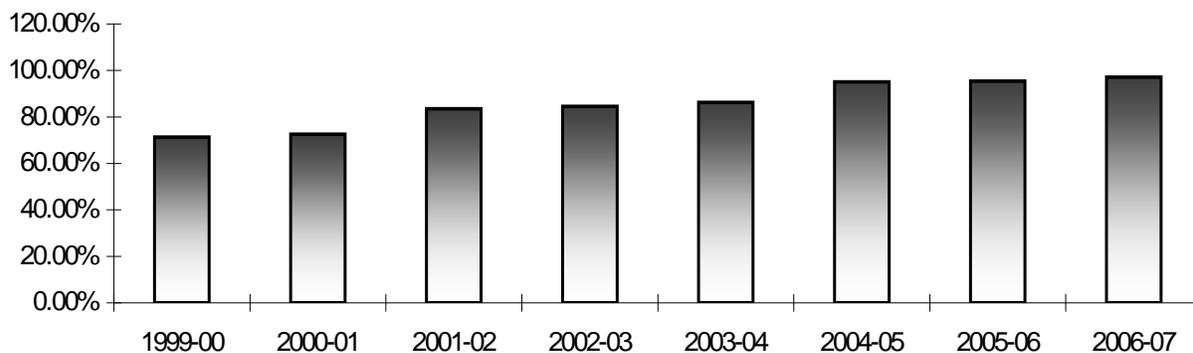
In 2006, SaskWater pilot tested aeration pretreatment equipment to control algae growth in an attempt to improve the water supply to Gravelbourg's treatment plant. SaskWater also pilot tested an advanced membrane filtration process at Kamsack to reduce dissolved minerals from well water.

SaskWater is currently in the process of piloting biological filtration technology at Gravelbourg as a possible treatment process to reduce organic carbon, turbidity, colour, odour, iron, manganese, arsenic and other contaminants from water. Through these different technologies, SaskWater hopes to enhance the quality of drinking water by meeting and exceeding potable water regulatory requirements well into the future.

Measurement Results

Per cent of facilities that meet bacteriological guidelines 90 per cent of the time

Figure 3: Bacteriological Standards Compliance



Source: Saskatchewan Environment – Environmental Management System

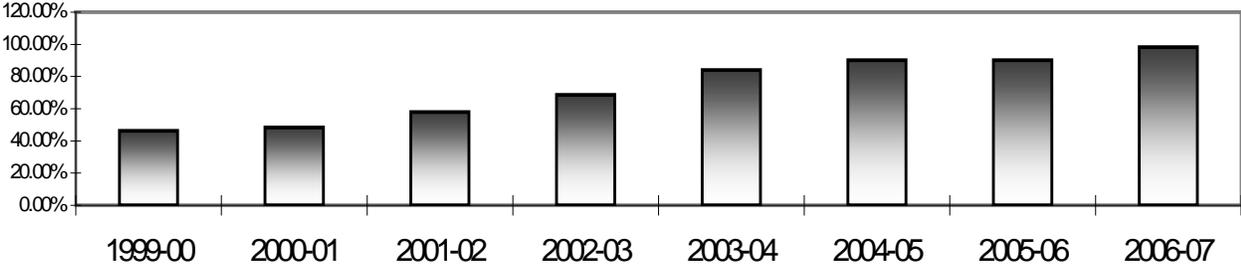
There has been a steady increase in compliance with bacteriological water quality standards (90 per cent of the time) over the past four fiscal years with a 9.1 per cent increase in compliance from 86.3 for 2003-04 to 95.2 per cent for the 2004-05 fiscal year to 95.4 per cent for the 2005-06 fiscal year and to 97.14 percent in 2006-07. Increases in bacteriological compliance also matches well with reductions in the number of Precautionary Drinking Water Advisories (PDWA) and Emergency Boil Water Orders (EBWO) issued in 2006-07 (one PDWA and two EBWOs – see pages 26 and 27). The steady increase in compliance with standards is the result of increased inspection and follow-up on water quality sampling results by Saskatchewan Environment staff as well as increased attention to water treatment and monitoring by waterworks owners and operators.

The bacteriological quality of drinking water is important since contamination of this type can result in significant illness within a short period of time. Compliance with bacteriological water quality standards was selected as a reportable performance measure, since it provides a good indication of drinking water quality, which is important to consumers.

The performance measure is primarily controlled by the owner of the waterworks, but also requires cooperation from the waterworks operator(s) in achieving bacteriological water quality compliance. Ongoing inspection and interaction with waterworks owners and operators is planned to sustain good performance in achieving water that is safe from bacteriological threats.

Per cent of waterworks [regulated by Saskatchewan Environment] that meet disinfection requirements 90 per cent of the time

Figure 4: Disinfection Standard Compliance



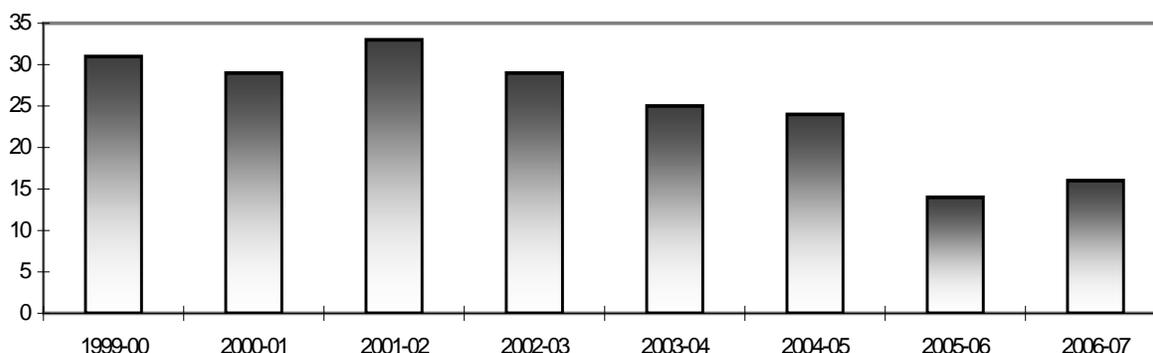
Source: Saskatchewan Environment – Environmental Management System

There has been a significant increase in compliance with the disinfection standards over the past four fiscal years with a 6.1 per cent increase in compliance from 84 per cent in 2003-04 to 90.2 per cent in 2004-05, to 90.1 per cent in 2005-06 and to 98.19 per cent in 2006-07. The increase in compliance with the disinfection standards can be directly attributed to an increased field presence by Saskatchewan Environment inspection staff and a renewed awareness by waterworks owners and operators of the regulatory requirements.

Proper disinfection of drinking water is one of the most important ways to ensure safe drinking water and prevent the outbreak of waterborne diseases. Compliance with chlorine residual requirements was selected as a reportable performance measure, since it provides a good indication of drinking water protection, which is important to consumers. The performance measure is primarily controlled by the owner of the waterworks, but also requires cooperation from the waterworks operator(s) in achieving disinfection standards compliance. Ongoing inspection and interaction with waterworks owners and operators is planned to sustain good performance in achieving water that is safe from bacteriological threats and meets disinfection standards.

Number of waterworks that do not meet Saskatchewan Environment's minimum treatment requirements (broken down by pre and post regulatory changes)

Figure 5: Number of Waterworks Regulated by Saskatchewan Environment that do not Meet Minimum Treatment Requirements [broken down by pre and post regulatory changes].



Source: Saskatchewan Environment - Environmental Management System

As of March 31, 2007 there are a net of 16 waterworks that do not meet Saskatchewan Environment's minimum treatment requirements, a net increase of 14 per cent since the previous year when there were 14 such works. Table 5 provides a summary of waterworks not meeting minimum treatment requirements broken down by pre and post regulatory changes. The increase is the result of further waterworks being added to the listing of systems regulated by Saskatchewan Environment and inspection of these works, which reveals deficiencies of the systems. Educational efforts are ongoing as is provision of funding through the MRIF to upgrade works. Saskatchewan Environment's educational and compliance efforts will continue during 2007-08 and beyond as a means to reduce the number of waterworks not meeting minimum treatment requirements. The owner of the waterworks primarily controls the achievement of this performance measure, however the regulator has significant influence through a number of mechanisms. Periodically, as newly regulated waterworks are permitted, inadequacies in water treatment capability are discovered, an increase in newly regulated waterworks not meeting minimum treatment will occur.

Table 5: Waterworks Not Meeting Minimum Treatment Requirements [broken down by pre and post regulatory changes].

	March 31, 2004	March 31, 2005	March 31, 2006	March 31, 2007	Annual Change
Waterworks regulated before regulatory changes	20	17	9	8	↓ 1
Waterworks regulated following regulatory changes	5	7	5	8	↑3
Total	25	24	14	16	↑2

Source: Saskatchewan Environment – Environmental Management System

The number of waterworks that do not meet minimum treatment requirements is a direct indication of the scale of potential water quality concerns due to infrastructure inadequacies. As of March 31, 2007, human consumptive waterworks that do not meet minimum treatment requirements serve a population of approximately 961 residents or 0.10 per cent of the population of the province (2006 census provincial population of 968,157). This measure was selected as a reportable performance measure, since it provides a direct count of the number of waterworks in the province not capable of producing safe drinking water.

Saskatchewan Environment continues to place all regulated waterworks not meeting minimum treatment on Precautionary Drinking Water Advisories as a means to protect consumers. The department also provides technical advice to communities not meeting minimum treatment requirements to aid waterworks owners to work towards system improvements.

Objective 3: Waterworks systems and operations are financially sustainable

Ensuring the financial sustainability of waterworks is critical in the production of safe drinking water over the long-term. Waterworks deteriorate over time and may need to be expanded or replaced. Municipalities will therefore need to know the condition of their waterworks and put in place pricing and capital investment policies for these systems. Public transparency will aid in ensuring that waterworks systems are sustainable into the future.

During 2005-06, regulations that support this objective were established in December 2005.

Key Results

The key action originally planned for 2006-07 is shown below, along with the responsible partner, followed by our actual progress towards the key action and changes affecting the status of drinking water.

- Municipalities are required by regulations to establish, by July 1, 2006, a waterworks pricing policy and capital investment strategy and to publicly report on an annual basis, beginning September 1, 2006, on key information on the financial sustainability of their waterworks, including the level of cost recovery. Municipalities will use the waterworks assessments required by the Saskatchewan Environment when establishing their rate policies and capital investment strategies. The public information will assist ratepayers' understanding of the financial soundness of their municipal waterworks and the need for cost recovery rates. Waterworks with cost recovery rates are more likely to be able to provide safe drinking water. [Government Relations]

By May 2, 2007, 49 per cent of the municipalities submitted a copy to the department of their public information on the financial sustainability of their waterworks for 2005. Of these municipalities, 48 per cent indicated they had in place a waterworks rate policy and capital investment strategy. This was the first year the regulations were in effect. Follow-up letters were sent to the municipalities in February 2007. Further follow-up will be required to remind municipalities of the regulation requirements.

Measurement Results

Number and percentage of municipalities that have waterworks rates that cover waterworks expenditures and debt payments (level of cost recovery)

Of the municipalities that submitted their public waterworks information to the department, 49 per cent reported waterworks revenues that covered the waterworks expenditures and debt payments.

Waterworks rates that cover waterworks expenditures and debt payments are a direct indicator of waterworks financial sustainability. The public reporting regulations facilitate consumers' understanding of the need for, and possibly acceptance of, waterworks rates that cover waterworks costs.

Saskatchewan Government Relations requires municipalities to establish a long-term financial sustainability plan for their waterworks in order to receive infrastructure funding for their waterworks.

Lack of municipal capacity will limit some smaller municipalities from establishing these waterworks policies and strategies.

SaskWater supports the movement towards full-cost pricing of water and wastewater services. In an effort to improve pricing for its customers, SaskWater is undergoing a cost of service rate study to determine rates required across its systems and customer types. Under the cost of service model, all costs to operate, maintain and upgrade the water and wastewater systems are to be recovered from customers in a fair and equitable manner.

Goal 2 – The drinking water regulatory system is clear and effective

Objective 1: Regulations are clear and ensure that health and drinking water quality will be protected

Provision of safe drinking water is reliant on regulatory requirements that are clear and communicated to owners and operators of waterworks. Additionally, accepted standards and practices are required to ensure requirements are achieved in the proper manner. Program delivery and related policies are necessary to track and ensure that regulatory requirements are being met. Collectively, these measures will help to ensure that drinking water is safe and that wastewater effluent discharges do not threaten the quality of source waters or adversely impact the environment.

During 2006-07, significant progress has continued on advancing this objective. Legislative and regulatory changes to clarify, simplify and reduce the cost of providing and maintaining safe drinking water, especially for smaller communities were completed by Saskatchewan Environment. Inspection protocols remain in place and Saskatchewan Environment conducted 832 waterworks/pipeline inspections and 547 wastewater works inspections based on existing protocols. During inspections revised information on regulatory requirements was provided directly to waterworks operators. A total of 482 waterworks system assessments were initiated or completed as of the end of the fiscal year. Implementation of protocols for upset reporting and hygienic waterworks continued as a means to offer immediate response to waterworks related problems and challenges.

Key Results

The key actions originally planned for 2006-07 are shown below, along with the responsible partner, followed by our actual progress towards the key action and changes affecting the status of drinking water.

- Implement mechanisms to clarify and simplify regulatory requirements for owners of waterworks to advance compliance and water safety. [Environment]

Saskatchewan Environment completed regulatory changes in March 2007 that were directed at aiding small waterworks to provide safe and affordable drinking water. Revisions reduce the frequency of waterworks system assessments, ease certification requirements for sewage works system operators and reduce requirements for formal operator certification at communities serving less than 50 persons with deep, protected groundwater supplies. Legislative amendments significantly reducing the requirements for interest and easement registration reached the second reading stage as of March 31, 2007. Implementation of these changes and strategies are expected early in 2007-08.

- Work will continue with SUMA, SaskWater, consulting engineers and others to implement a program to facilitate waterworks assessment in the province. [Environment]

Saskatchewan Environment continued to support the strategic partnership formed between Saskatchewan Urban Municipalities Association and SaskWater to facilitate coordination and price reduction for completing waterworks system assessments in Saskatchewan continued during 2006-07. By the end of the reporting period, a total of 482 waterworks system assessments had either been initiated or completed. Saskatchewan Environment continued to promote the value of waterworks

systems assessments by a variety of means such as convention workshops, discussions with waterworks owners and through inspections. Further information on waterworks system assessment is available on the internet

(http://www.se.gov.sk.ca/environment/protection/water/EPB233_Waterworks_System_Assessment_Standards.pdf).

- Semi-public water systems are regulated through *The Health Hazard Regulations*. Compliance with these regulations is monitored through inspections of the semi-public water systems, ensuring that the operators are routinely sampling the water supply and reviewing water quality test results. All health regions will be striving for 100 per cent inspections (approximately 1,400) of their public water supplies. To better address semi-public water systems in the far north (access only by plane/boat) Saskatchewan Health is working with the Mamawetan Churchill River Health Region in developing a self-evaluation process for assisting the health region in prioritizing inspections of water supplies that they regulate. [Health and Health Regions]

During the fiscal year, Health Region public health inspectors inspected 1,001 public water supplies that fall under *The Health Hazard Regulations*. The geographic location of semi-public water systems in the far north (access only by plane/boat) causes difficulties for the region. During the summer of 2006, the Population Health Unit with the three northern regional health authorities (Mamawetan Churchill River, Keewatin Yatthé and Athabasca Health Authority) have improved the inspection and monitoring of these remote type water supplies. In addition, the Population Health Unit conducted further assessment of usage of the self-evaluation forms and final decision on usage will be made in 2007-08.

- Inspect waterworks across the province at a frequency of two inspections at each surface water and priority groundwater waterworks and one inspection at every other regulated waterworks. Supplemental education and prevention activities will be delivered during inspections to help ensure waterworks meet operational and treatment requirements. [Environment]

During the 2006-07, Saskatchewan Environment staff continued to conduct waterworks inspections in accordance with the department inspection protocol and targets. A total of 832 waterworks inspections were conducted during the reporting period. During waterworks inspections, the need for activities or upgrading to meet drinking water quality standards and requirements are stressed by Environmental Project Officers. During 2006-07, added emphasis was placed on meeting pending turbidity standards so that waterworks owners were informed well in advance of the December 2008 compliance deadline for waterworks serving less than 5,000.

Components of the Drinking Water Information Binder and SaskH2O website are updated regularly by Saskatchewan Environment to keep owners and operators current with operational requirements and newly emerging information. During 2006-07, 10 new documents on water or wastewater related were prepared and another 41 publications were updated. January 2006 saw the results of waterworks inspections "on-line" at <http://www.saskh2o.ca/MyDrinkingWater.asp>. Having inspection results on line is intended to increase transparency and public trust in drinking water supplies and the associated regulatory processes.

Waterworks inspections are carried out by the Environmental Project Officers and are the most important point of contact and compliance mechanism to ensure proper management of drinking water. During a three-year cycle, at least one inspection will be unannounced. Water sources such as wells or surface water intakes are re-inspected every second year. Table 6 summarizes the findings of key elements for inspections conducted during the 2006-07 fiscal year.

Table 6: Waterworks Inspection Finding Summary.

Inspection Element	Non-Compliant	N/A or No Response*	Compliant
Disinfection continuous at plant	14	25	729*
Disinfection Free chlorine > or = 0.1 mg/L leaving the plant	88	56	688
Monitoring daily chlorine	78	67	687
Reservoirs in good repair	15	88	729
Water treatment plant in clean and orderly condition	14	41	777
A total chlorine residual not <0.5 mg/l or a free chlorine residual not <0.1 mg/l in the distribution system	110	22	700
Bacteriological testing after completion, alteration, extension or repair	19	32	781
Reporting of chlorine upsets	25	31	776
Record keeping	51	37	747

* N/A = Non-applicable. Some waterworks inspected do not have a treatment plant such as pipeline systems. These may be recorded as N/A or No response.

Source: Saskatchewan Environment – Environmental Management System

- Revise the Bacteriological Follow-up Protocol for Waterworks Regulated by Saskatchewan Environment EPB 205 and Contaminated Water System Follow-up Protocol EPB 290 as needed to reflect evolving requirements and developments which could affect water safety. [Environment]

Saskatchewan Environment commenced a review of the Bacteriological Follow-up Protocol for Waterworks Regulated by Saskatchewan Environment EPB 205 late in the fiscal year to examine needs for revision pertaining to bacterial testing methodologies and reporting. It was determined that no revisions to the protocol were required. Copies of the Contaminated Water System Follow-up Protocol EPB 290 were provided to other jurisdictions for comparative purposes, and the document was revised during the reporting period to address communications improvements.

The Bacteriological Follow-up Protocol for Waterworks Regulated by Saskatchewan Environment EPB 205 provides for the issuance of Precautionary Drinking Water Advisories by Saskatchewan Environment when there is a concern that problems (due to microbial or chemical contamination) may exist. Department staff also use a protocol for upset reporting and follow-up to protect consumer health and drinking water quality. Waterworks owners and operators continue to be advised of upset reporting requirements during inspections. A total of 113 unexpected upsets at waterworks were reported and addressed during 2006-07 due to problems like low chlorine residuals, excessive turbidity/operational problems, inadequate treatment, positive bacteriological monitoring results, breakages in water lines, depressurization, flooding or other failures and resulted in issuance of a PDWA. During the reporting period, further knowledge of requirements for reporting system depressurizations contributed significantly to the number of PDWAs issued for unexpected reasons. A total of 55 PDWA's were issued due to anticipated events such as startup or seasonal or new waterworks or planned maintenance activities.

EBWOs are issued by Health Region officials to deal with confirmed public health threats such as microbial contamination of drinking water. Tables 7 and 8 outline statistics for PDWAs and EBWOs issued for Saskatchewan Environment and Health Region regulated waterworks during the 2006-07 fiscal year.

Table 7: EBWO/PDWA Statistics for 2006-07 – Environment Regulated Waterworks.

Time	EBWO	PDWA
In Effect Prior to Reporting Period	4	56
Added During the Reporting Period	2	168
In Effect at End of Reporting Period	2	59

Source: Saskatchewan Environment – Environmental Management System

Table 8: EBWO/PDWA Statistics for 2006-07 – Health Region Regulated Waterworks.

Time	EBWO	PDWA
In effect prior to reporting period	13*	31*
Added during the reporting period	45	16
In effect at end of reporting period	38	22

* Improvements to data entry into the Environmental Health System (used to track health regulated public water supply information) has caused a variance from those numbers reported in 2005-06

Source: Information provided by the Health Regions in Saskatchewan

Tables 9 and 10 provide information regarding the reasons for PDWAs and EBWOs issued during the 2006-07 fiscal year for waterworks regulated by Saskatchewan Environment and Health Regions, respectively. Further information on the nature of a PDWA and EBWO issued during 2006-07 by Saskatchewan Environment is available from the department or on the Internet (<http://www.saskh2o.ca/advisories.asp>).

Table 9: Reason for Issuing PDWAs during 2006-07 – Environment Regulated Waterworks.

Reason for issuance of PDWA	Number
Startup of waterworks	28
Inadequate chlorine residual	11
Planned maintenance of system	20
Un-planned depressurization of system	62
Depressurization and high turbidity	2
Positive <i>E. coli</i> / bacti results	1
Inadequate treatment	3
High turbidity	13
Certified operator resigned	1
New system start-up	7
Chlorination equipment failure	3
Operational problems	5
High turbidity and low chlorine residual	1
Drinking water chemical contamination	2
Contamination during construction	1
Emergency repairs	1
Maximum acceptable concentration exceeded	1
Insufficient sample submission	1
Other causes	5
Total	168

Reasons for issuance of EBWO during 2006-07	Number
Detected presence of <i>E. coli</i>	2
Total	2

Source: Saskatchewan Environment – Environmental Management System

Table 10: Reason for Issuing EBWOs and PDWAs during 2006-07 – Health Region Regulated Waterworks.

Reasons for issuance of EBWO during 2006-07	Number
Positive <i>E. coli</i> results	44
Positive bacti results	1
Total	45
Reason for issuance of PDWA	Number
Supply unsafe water-miscellaneous	
Startup of waterworks	4
Positive bacti results	9
Lack of minimum treatment	3
Total	16

Source: Information provided by the Health Regions in Saskatchewan

- Continue to implement the water and wastewater compliance and enforcement protocol to attain compliance with drinking water regulatory requirements. Department technical staff will receive new compliance and enforcement related training. [Environment]

Saskatchewan Environment's Drinking Water and Wastewater Enforcement Protocol EPB 222 continues to provide direction and guidance for Environmental Project Officers to ensure uniform, effective and efficient compliance and enforcement practices are followed in dealing with non-compliance for drinking water and wastewater related violations. Protecting public health, safety of people and the environment is the overall purpose. The enforcement protocol requires that compliance be obtained through the use of public education and prevention as initial priorities while enforcement is a tool of last resort. Compliance related actions might also be applied when an issue is causing, or may cause a significant risk to public health and safety, or the environment. During 2006-07, the department continued to provide compliance related training for new and existing staff members. The Drinking Water and Wastewater Enforcement Protocol EPB 222 was reviewed so it remains current.

During 2006-07, implementation of the enforcement and compliance protocol continued and was integral in gaining compliance in problematic or difficult situations. Fifty-six written warnings were issued for waterworks and sewage works related infractions. As well, six waterworks protection orders and one sewage works protection order have been issued to non-compliant parties. Two charges have been laid for waterworks related infractions. In addition, four charges are presently before the courts awaiting judgment. There were three convictions registered for waterworks related offences, and four charges proceeded through alternative measures and were completed. The nature of water and wastewater related infractions encountered during the reporting period are summarized in Table 11.

Verbal Warnings

Verbal warnings are issued for minor offences encountered during inspection duties. Verbal warnings are documented on inspection forms used by inspection staff.

Written Warnings

Written warnings consist of letters of non-compliance and notices of violation. Written warnings are issued for non-compliance detected during inspections or when follow-up requirements identified through previous inspections or correspondence was not complied with. During 2006-07, 52 written warnings were issued to waterworks or sewage works owners. There were 56 infractions documented on the written warnings. Table 11 provides a breakdown of the infraction details.

Typically, the waterworks owners address all verbal and written warnings in a short time period. Department staff follow-up by repeat contacts or inspections to ensure warnings are addressed and protection of water quality is assured.

Waterworks Protection Orders and Sewage Works Protection Orders

Waterworks Protection Orders are issued to a person responsible for a waterworks, if in the opinion of the Minister of Saskatchewan Environment, it is necessary to do so to protect human health or the environment. Sewage Works Protection Orders are issued to a person responsible for a sewage works, if in the opinion of the Minister of Saskatchewan Environment, it is necessary to do so to protect human health or the environment. Based on ongoing implementation of Saskatchewan Environment's Enforcement and Compliance Framework, the department will always pursue prosecution when a Protection Order is not complied with. Six Waterworks Protection Orders were issued during the reporting period. Orders were issued to address non-compliance with sampling frequency, low chlorine residuals and failing to have a certified operator. One Sewage Works Protection Order was issued during the reporting period to address non-compliance with conditions of an operating permit. Table 11 provides a breakdown of infraction details. Saskatchewan Environment follows up on protection orders to ensure that problems are ultimately resolved.

Prosecutions

Two charges were laid during 2006-07 for waterworks related infractions pursuant to *The Environmental Management and Protection Act* or *The Water Regulations, 2002*. Prosecution will only be used when prevention, education and other enforcement tools do not compel the violator to comply with legislation. Four charges still remain in the court system awaiting final judgment. Three charges resulted in convictions of the accused. Four charges were handled and completed through alternative measures. Alternative measures are an alternative to traditional prosecution and involves the offender to accept responsibility for their actions and enter a mediation/diversion process. Table 11 provides a breakdown of infraction details.

Table 11: Enforcement and Compliance Activities-Drinking Water/Wastewater 2006-07.

Infraction	Written Warnings Issued	Ministerial Orders issued	Charges Laid	Convictions	Alternative Measures
Fail to report upset condition at waterworks	9		1		2
Fail to have water meter	2			1	
Fail to report upset condition at sewage works	2				
Improper record keeping	2				
Fail to have a quality assurance/quality control policy	3				
Fail to do required testing	11	2			
Chlorine residuals below minimums	3	3			
Fail to cause continuous chlorination	1			1	
No annual notice supplied to consumers	2				
Contravene conditions of operating permit	4	1			1
Fail to comply with waterworks protection order				1	
Supply false information to department			1		1
Discharge sewage without approval	2				
No certified operator	7	1			
Fail to complete waterworks system assessment	5				
No backflow prevention	1				
No monthly review of records	2				
Total	56	7	2	3	4

* Note: four charges still before courts from previous reporting period

Source: Saskatchewan Environment – Resource Intelligence Program database

Saskatchewan Environment issued 181 new or renewed waterworks operational permits during 2006-07 as a means to ensure waterworks technology and requirements keep pace with new developments and in order to help protect consumer health and drinking water quality. Another 107 wastewater works operational permits were also issued or renewed. A total of 160 permits to construct or upgrade water or sewage works were issued or amended over the 2006-07 reporting period. Comprehensive permitting protocols for human consumptive and hygienic waterworks have been developed, updated and posted on the internet (<http://www.SaskH2O.ca>). These protocols and permit application materials were revised to reduce duplication of requirements for interest and easement requirements during 2006-07 where possible within existing interpretation. SE also finalized draft legislative changes affecting and simplifying the requirement for interest and easement registration late in the fiscal year. These changes will reduce the cost and burden of registering interest and easements for waterworks and most sewage works system improvements in the future. Existing protocols and application forms will be further revised to address legislative changes for interest and easement registration before the Legislature as of March 31, 2007.

Starting January 1, 2006 the Saskatchewan Disease Control Laboratory (formerly Provincial Laboratory) has been analyzing potable water supplies for total coliform and E. coli bacteria using DC (differential coliform)

media. This ensures simultaneous reporting of total coliform and E. coli results following a 24-hour incubation period. [Health]

For the nine month period* (April 1 to December 31, 2006), a total of 32,901 drinking water samples were processed using the DC media by the Saskatchewan Disease Control Laboratory (SDCL) in Regina. This broke down as 56 per cent samples for water supplies regulated by Saskatchewan Environment, 29 per cent private customers and 15 per cent water supplies regulated by Saskatchewan Health.

The estimated annual cost savings in materials and supplies is around \$1,300 plus freeing up labour resources to work on processing samples through other testing in the laboratory.

* At the time of this report, changes to the information management system at the SDCL has temporarily prevented the reporting of samples numbers for the full fiscal year.

Measurement Results

Number of accredited drinking water testing laboratories

Table 12: Number of accredited drinking water testing laboratories

March 2002	March 2003	March 2004	March 2005	March 2006	March 2007	Annual Change
1	2	4	6	6	6 (all labs)	0

Source: Standards Council of Canada web (http://www.scc.ca/en/news_events/notices/lab.shtml)

Laboratory accreditation indicates that the laboratory has a quality system that is documented, communicated, understood, implemented and incorporates adequate review, audit and internal quality control and ensures accurate analytical results. Laboratory accreditation was selected as a performance measure to help gauge results in ensuring safe drinking water for Saskatchewan residents. As of March 31, 2007, all six laboratories located in Saskatchewan that perform analysis of drinking water samples retained accreditation by the Standards Council of Canada or the Canadian Association for Environmental Analytical Laboratories in accordance with regulatory requirements (Table 12). Accredited laboratories include: Saskatchewan Health – Saskatchewan Disease Control Laboratory, Saskatchewan Research Council, ALS Laboratory Group, BDS Laboratories, the City of Saskatoon Laboratory and the Buffalo Pound Filtration Plant laboratory. Any other water laboratories in operation in Saskatchewan do not serve waterworks regulated by Saskatchewan Environment. The owner and management of the laboratory primarily control the performance measure, however, the regulator and users of the laboratories have significant influence on compliance. Compliance with use of accredited laboratories is very high in Saskatchewan, similar to other provinces such as Ontario, which make requirements for laboratory accreditation.

Objective 2: Professional regulatory staff have access to the tools necessary to ensure compliance

Provision of safe drinking water is reliant in part on the training and tools that regulatory staff can access. The tools take the form of working agreements, computerized information systems as well as examples, guidelines and education information needed to deliver programming. Staff qualifications must also be assured and kept current with new or evolving water management processes. Collectively, these tools help to ensure that drinking water is safe and that wastewater effluent discharges do not threaten the quality of source waters or adversely impact the environment.

During 2006-07, significant progress was made in advancing this objective. Saskatchewan Health made significant progress on developing solutions to water sampling in the northern reaches of the province.

Significant progress on automating data reporting between the Saskatchewan Environment's Environmental Management System (SEEMS) information system and the Laboratory Information Management System used by the Saskatchewan Disease Control Laboratory to facilitate electronic data exchange was accomplished. Training of Saskatchewan Environment staff continued with courses on legal sampling, composition of orders and technical training. Ongoing information exchange meetings, during the 2006-07 fiscal year, between Saskatchewan Environment and Health Region officials help strengthened integration and keep overall drinking water protection efforts on track.

Key Results

The key actions originally planned for 2006-07 are shown below, along with the responsible partner, followed by our actual progress towards the key action and changes affecting the status of drinking water.

- Discussions will be held between officials (Environmental Project Officers, Medical Health Officers and Public Health Inspectors) to strengthen integration and exchange information on provincially regulated systems. [Environment and Health]

Saskatchewan Environment staff and Saskatchewan Health officials continue to discuss and consider items such as the bacteriological follow-up protocol and steps for implementation of hygienic systems and a means to ensure drinking water protection. Saskatchewan Environment program delivery staff and managers held meetings with Health Region representatives during 2006-07 fiscal year to discuss drinking water and wastewater related programming, progress and waterworks specific concerns in their particular service regions. Collectively, Saskatchewan Environment and Saskatchewan Health continue to coordinate activities for the Safe Drinking Water Strategy with other participating departments through a Policy and Programs Subcommittee.

- Further enhancement of the Environmental Management System (EMS) will be undertaken to support drinking water management, compliance activities and handle ever-increasing demand for data and information. Conversion of wastewater and surface water information into EMS this fiscal will allow this information to be available on SaskH2O.ca in 2006-07 [Environment]

With the implementation of the SEEMS, Environmental Project Officers have transitioned from a "paper and file" record-keeping model to a modern information system that enables immediate checking of waterworks performance and potential environmental risk to water quality. SEEMS drinking water information is also fed into the public website *SaskH2O.ca*, launched in June 2003, where citizens are able to check on current and historic water quality in their community. As of March 2007 the website has had an average of 171 visitors per day with an average stay on the website of nine minutes. A total of 1196,746 visits have been recorded since the website went live. By the end of the fiscal year significant progress had been made on linking data reporting between the SEEMS information system and the Laboratory Information Management System used by the Saskatchewan Disease Control Laboratory to facilitate electronic data exchange. Electronic links were established between Saskatoon laboratories at Saskatchewan Research Council and at ALS Laboratory Group which allows for the "flow" of water information into SEEMS.

- Saskatchewan Health and the Mamawetan Churchill River Health Region have completed a review of existing issues with respect to northern Health Regions water sample testing. Both Saskatchewan Health and the health region are working to develop strategies to address the issues that were identified during the review. [Health and Mamawetan Churchill Health Region]

The review's strategies as outlined above will form the basis of a report that will be completed in 2007-08. Actions to address the recommendations will take place in 2007-08.

Measurement Results

A measurement tool was under development

Goal 3 - High quality source waters are protected now and into the future

Objective 1: Risks to source water quality are known

Protection of source water quality is a component of the provision of safe drinking water. Identification of risks to source water quality is the first step in developing actions and strategies to protect source water and minimizing the cost to treat drinking water. Through the watershed planning actions outlined below, it is expected that other risks to source water quality will be identified.

During 2006-07, progress was made in advancing this objective. Annual sewage works inspections were completed at 547 sewage works in the province. Saskatchewan Environment and the Saskatchewan Watershed Authority completed and released the first State of the Watershed Report in March 2007. A study to determine the extent of agricultural non-point source contributions to Saskatchewan's water quality is occurring in the Lower Souris Watershed along Pipestone Creek. Some work was initiated on the planned annual Municipal Wastewater Reporting Protocol. Beyond planned actions, Saskatchewan Agriculture and Food continued to issue permits for intensive livestock operations to develop waste storage and management plans that will not contaminate water resources. Surface water quality monitoring of watercourses adjacent to intensive livestock operations is continuing.

Key Results

The key actions originally planned for 2006-07 are shown below, along with the responsible partner, followed by our actual progress towards the key action and changes affecting the status of drinking water.

- Assessing the health of watersheds is an essential aspect of source water protection. The Saskatchewan Watershed Authority will consider comments on its framework for State of Watershed Reporting, revise the indicators where necessary and publish the first State of the Watershed Report during the fiscal year. [Watershed Authority]

Saskatchewan's first State of the Watershed Report was released in March 2007.

- Initiate an assessment to determine the contribution of non-point agricultural sources to water quality and habitat degradation that can be used in the watershed planning activities and to measure the efficiency of Best Management Practices. [Watershed Authority]

A study to determine the extent of agricultural non-point source contributions to Saskatchewan's water quality is occurring in the Lower Souris Watershed along Pipestone Creek. Funding partners and local contacts are in place. This study involves four principal components; land use assessments, water quality testing, hydrological measurements and evaluation of aquatic biological communities (macroinvertebrates). Land use assessment is now being conducted. The first year of water quality sampling, flow measurements and macroinvertebrate evaluation will occur during the spring and summer of 2007.

Saskatchewan Agriculture and Food provided funding assistance for a paired watershed study. Staff assisted in the assessment and selection of watersheds for the study and several staff are members of the study steering committee.

- Complete annual sewage works inspections to identify which systems represent a risk to source water quality and to ensure sewage works meet operational and treatment requirements. Improvements in wastewater management will be continued through owner and operator education and permitting methods. [Environment]

A total of 547 inspections at wastewater works across the province were completed by Saskatchewan Environment staff during the 2006-07 reporting period. Information gained from the comprehensive inspection results is useful in protecting source water, aquatic habitat and will also continue to be used to advance wastewater management in the province. Information gained during wastewater works inspections will also be used to inform and help direct implementation of the Canada-wide Strategy for Municipal Waste Water Effluent (MWW) in the future. A total of 107 additional wastewater works operational permits were issued or renewed in 2006-07.

- Develop and implement an annual municipal wastewater reporting protocol. [Environment]

The planned annual Municipal Wastewater Reporting Protocol was not completed as planned during 2006-07. However, significant progress to supporting materials and information necessary for the development of the protocol was completed including revisions to the wastewater monitoring requirements and database updates to sewage works specific permit requirements. Additionally, further delays were encountered as a re-evaluation of wastewater sites in the province for compliance with possible future Canada-wide Standards for MWW was undertaken. However, Saskatchewan Environment staff review the results of wastewater monitoring at least on an annual basis. Further work on the municipal wastewater reporting protocol will be completed during 2007-08.

Other actions important to identifying and minimizing the risks to source water quality developed and delivered during 2006-07 included the following:

Saskatchewan Agriculture and Food requires intensive livestock operations to develop waste storage and management plans that will not contaminate water resources. In 2006-07, there were 34 approvals issued for intensive beef, dairy, pork and chicken operations. Some of the approvals were for expansions and/or modifications to existing operations. Surface water quality monitoring of watercourses adjacent to Intensive Livestock operations is continuing. Flow measurement equipment has been purchased to enhance monitoring and flow measurements will be completed when collecting water samples. The 2003 Surface Water Quality Monitoring Report is on the Internet (<http://www.agr.gov.sk.ca/docs/environment/ILOSurfaceWaterQuality03.asp>). An updated Surface Water Quality Monitoring Report for Intensive Livestock Operations is pending and will include results from the spring of 2006.

Under *The Pest Control Products (Saskatchewan) Act*, there were 2,653 pesticide applicator licences issued along with 416 pesticide vendor licenses. Each vendor maintains an approved storage facility supported by the industry and Saskatchewan Environment. An applicant for a pesticide applicator license must pass a pesticide applicator course. The applicator training is valid for a five year period, however, the applicator license is renewed on an annual basis.

Measurement Results

Number of sewage effluent discharges that represent a risk to source waters

Table 13: Number of sewage effluent discharges that represent a risk to source waters

March 2004	March 2005	March 2006	March 2007	Annual Change
93	93	85	116*	↑ 31**

*The department has initiated preventative and compliance actions to resolve problems or advance progress at 18 sewage works in the province since 2004-05.

** Performance measure evaluates likely compliance with pending Canada-wide Standards for Municipal Wastewater Effluents as of 2006-07.

Source: Saskatchewan Environment – Environmental Management System

As of March 31, 2007, approximately 116 wastewater systems have been identified as having discharge that may reach a surface water body under certain conditions and may require compliance with pending Canada-wide Standards for MWWWE (Table 13). Saskatchewan Environment has increased preventative and compliance actions to resolve problems or advance progress at 18 sewage works in the province since 2004-05 and department staff on an annual basis reviews the quality of effluent from each regulated works. Reduction of ammonia and chlorine residual emissions within treated wastewater effluent, sewage works capacity or other treatment capability issues typically involve significant planning, investment and construction. Therefore, it can be expected that reductions in the number of works, which represent a risk to source waters, will be a time consuming process.

The number of sewage effluent discharges that represent a risk to source waters is a direct indication of the potential for source water contamination due to poor wastewater treatment. The performance measure now incorporates the need for future possible compliance with MWWWE standards. This measure was selected as a performance measure, since it is the most direct measure of the number of potential contamination point sources. This measure was established during 2003-04 and most significant follow-up actions began in 2004-05. Further work to resolve problematic wastewater systems is planned for 2007-08 beyond.

Objective 2: Watersheds are protected, natural purification and protection processes are maximized and potential for contamination is minimized

Protection of source waters can reduce the costs of water treatment and improve water quality while helping to maintain other water uses. Sound water resource management means that the processes, which break down wastes, must be protected as must land use practices that can protect water quality from contamination. Actions in terms of both organizational structure and watershed/water management are improving source water protection in the province.

During 2006-07, significant progress was made in advancing this objective. Watershed protection plans have been completed for three watersheds and one aquifer area and further work is ongoing on watershed planning in three other areas. Major public consultations on the new *Planning and Development Act, 2007* were completed in 2006 and the act was passed in the spring 2007 Legislative Session. The Canada-wide Standards for Municipal Waste Water Effluent have progressed to a full draft and near complete consultation stage. Significant work on the Echo Regional Wastewater System was completed during 2006-07 and will help protect source and recreational water use in the Qu'Appelle Valley area in the future. Work also began on the development of an Integrated Water Management Framework in the province. Research investigating the impacts of agriculture on surface water quality was initiated in 2006 and a Five-year Report on the work of the Spirit Creek Watershed Monitoring Committee (SCWMC) was completed. Implementation of Environmental Farm Planning, riparian protection initiatives and research on agricultural technologies for improved management and/or reduced environmental risks of pesticides and livestock manure continues.

Key Results

The key actions originally planned for 2005-06 are shown below, followed by our actual progress towards the key action and changes affecting the status of drinking water.

- Continue to lead the development of a Canada-wide Strategy for the Management of Municipal Wastewater Effluent (MWWWE). [Environment]

Saskatchewan Environment continues as “champion” and “chair” of the CCME – Development Committee, which is charged with development of a Canada-Wide Strategy for MWWWE. During the reporting period, a revised draft strategy was completed and nation-wide consultation was largely completed. A task group was also formed to examine economic issues and solutions for upgrading to meet the anticipated national standards during 2006-07. The environmental risk management model to protect source waters for a variety of uses was completed. Harmonized requirements for improved

management of wastewater effluents, particularly with respect to ammonia and residual chlorine based disinfectants are the intended outcomes. It is anticipated the Canada-wide Strategy for MWWWE will be completed during the 2007-08 fiscal year with implementation to follow. Implementation planning in some communities within the province is underway, upgrades are being constructed or are already complete.

- Facilitate the work of local planning committees to complete source water protection plans for the Assiniboine, Lower Souris, North Saskatchewan, South Saskatchewan and Upper Qu'Appelle River watersheds and coordinate the development of the provincial responses to these plans. [Watershed Authority]

Source water protection plans were completed during the 2006-07 fiscal year for the Lower Souris River, Moose Jaw River, Assiniboine River watersheds and for the Yorkton Area Aquifers. The Authority has been actively supporting the local committees as they commence the important work of plan implementation. This support includes assistance in the establishment of formal entities to undertake plan implementation, coordination of the provincial responses to the key actions, and financial support towards the hiring of local watershed coordinators.

The Spirit Creek Watershed Monitoring Committee (SCWMC) submitted a Five-year Report on the work completed by the committee. This report is available at <http://www.spiritcreek.ca> on the SCWMC website. In 2000, the SCWMC was established by the Minister of Saskatchewan Agriculture and Food to provide independent monitoring of water resources in the Spirit Creek Watershed Basin.

Research investigating the impacts of agriculture on surface water quality was initiated in 2006. This work is focused on assessing long-term trends in water quality in Saskatchewan's rivers and utilizing other database information (e.g. Agriculture Census Data) to further develop our understanding of the landscapes and agricultural activities that influence surface water quality. It is anticipated this knowledge will facilitate more effective land management decisions and lead to improved program delivery.

- Assist designated watershed groups with the implementation of watershed plans and annually report progress. [Watershed Authority]

The Authority continues to actively support watershed and aquifer source water protection planning throughout the province. Led by locally-based watershed and aquifer advisory committees, and with the support of the technical committees, members contribute their perspectives and expertise, distribute information to the groups they represent, and ultimately implement the key actions contained in their completed plans.

A draft source water protection plan for the South Saskatchewan River watershed is under public review and is expected to be released early in the new fiscal year. Plans are also at an advanced stage in the North Saskatchewan and Upper Qu'Appelle River watersheds and should be completed in coming months.

- Initiate cooperative development of an Integrated Water Management Framework. [All agencies participating in the Safe Drinking Water Strategy]

A committee existing of federal and provincial agencies with direct involvement in water issues has been formed and is meeting on a regular basis. The Saskatchewan Watershed Authority co-chairs the committee and provides secretariat support to the committee members. Work on the framework is progressing as scheduled with completion anticipated in 2007.

-
- Present to the Legislature a renewed *Planning and Development Act* that includes water source protection. [Government Relations]

Major public consultations on the new *Planning and Development Act, 2007* were completed in 2006 and the act was passed in the spring 2007 Legislative Session. The significant aspect of the new legislation is the provision for provincial interests and direction on municipal land use bylaws to protect water sources. These regulations are being developed.

- Work with municipalities and the Saskatchewan Watershed Authority to continue to develop and implement municipal water source protection bylaws on a watershed basis that are coordinated with staged implementation of watershed plans. This will help to ensure that the municipalities have bylaws in place that meet the standards required to protect the watersheds. [Government Relations]

Government Relations worked directly with the Saskatchewan Watershed Authority and the technical advisory committees on the development of a number of watershed plans and participated in a workshop in conjunction with the Association of Professional Community Planners of Saskatchewan to provide information to municipalities on how to implement water source protection within local municipal bylaws.

Other actions to enhance watershed protection and water use beyond the actions planned as part of the Safe Drinking Water Strategy include:

In November 2005, SaskWater and the Town of Fort Qu'Appelle announced the replacement of the town's aging and overburdened wastewater treatment system. Construction of the \$5.8 million Echo Regional Wastewater System began in spring 2006.

The old Fort Qu'Appelle Wastewater System discharged effluent into the Qu'Appelle Lakes system. The new wastewater system will pump the wastewater out of the valley where the effluent disposal will occur by evaporation. The system has an aerated holding pond serving as the central collection point for the town's wastewater, and a transfer pump station to pump the wastewater out of the valley to a new lagoon. The lagoon will provide an effective treatment area, sustainable storage volume and require limited operation and maintenance.

The Echo Regional wastewater system will be commissioned in 2007. As the owner, SaskWater is responsible for the system's ongoing operation and maintenance and ensuring compliance with Saskatchewan Environment's regulations.

The Saskatchewan Watershed Authority and partners' (Environment Canada, Agriculture and Agri-Food Canada, Saskatchewan Agriculture and Food, Saskatchewan Environment, Nature Conservancy of Canada and Ducks Unlimited Canada) are working on Saskatchewan's strategic plan for North American Waterfowl Management Plan delivery within the Prairie Habitat Joint Venture is nearing completion. This plan will describe new target areas, estimates of waterfowl productivity deficits, habitat conservation and restoration activities and goals required to eliminate waterfowl productivity deficits and protocols for tracking progress. Completion is anticipated by summer 2007.

The Authority also began a Pilot Project with the Pasqua First Nation, targeted at the development of a water co-management agreement. The agreement will need to be substantially complete before a final agreement can be reached with the First Nation in the resolution of the flood claim.

Saskatchewan Agriculture and Food continues to work with the Saskatchewan Watershed Authority on several riparian enhancement and or protection projects and in the publication of "beneficial" management practices to keep riparian areas healthy and functional. The two agencies are active partners in the pilot

Agro-Equivalent Environmental Farm Plan situated in the Lower Souris River Watershed. This group plan will be the first of its kind in Canada and focuses on source water protection. Nine other watershed based group plans were developed and are now up and operating. These are: Swift Current Creek, Gull Lake, Wood River, Moose Jaw Creek, Buffalo Pound, Lower Assiniboine Lake of the Prairie, Lanigan Manitou, Redberry Lake and South East Upper Souris River.

Saskatchewan Agriculture and Food continues to provide funding through the Agriculture Development Fund for research and development of agricultural technologies for improved management and/or reduced environmental risks of pesticides, fertilizers and livestock manure.

Saskatchewan Agriculture and Food is in the process of implementing “environmental farm planning” as part of the Federal/Provincial Agriculture Policy Framework. Environmental Farm Plans (EFP) will help farmers to identify environmental risks, including risks to water resources. The framework provides partial funding for the implementation of practices that reduce or minimize some of the risks identified. From the start of the program in early 2005 to the end of March 2007, the Provincial Council of Agriculture Development and Diversification (ADD) Boards (PCAB – delivery agency for Environmental Farm Plans in Saskatchewan) had delivered over 1,500 workshops to producers in the province with over 19,000 farm units attending. PCAB has issued over 7,700 endorsements for completed farm plans and farmers have made application for funding of more than 5,500 projects under the Canada Saskatchewan Farm Stewardship Program to implement beneficial management practices on their farms.

Saskatchewan Agriculture and Food administers *The Irrigation Act, 1996*. The legislation ensures soils and water are suitable for sustainable irrigation. Irrigation soils, water quality and water tables are monitored for sustainability. Technical assistance is provided when requested to Saskatchewan Environment on effluent disposal via land application to help ensure a high level of environmental protection and ongoing agricultural productivity.

Measurement Results

Water Quality Index (WQI) ratings for lakes

Table 14: Water Quality Index (WQI) ratings for lakes

Waterbody	Water Quality Index Rating (March 2004)	Water Quality Index Rating 2005*	Water Quality Index Rating 2006*
Jackfish Lake	56.4 Marginal	64.3 Fair	68.7 Fair
Murray Lake	67.6 Fair	86.8 Good	91.5 Good
Good Spirit Lake	83.9 Good	88.5 Good	91.9 Good
Anglin Lake**	Not calculated	100.0 Excellent	91.7 Good
Christopher Lake**	Not calculated	88.2 Good	83.8 Good
Emma Lake Baseline 1**	Not calculated	100.0 Excellent	92.5 Good
Emma Lake Baseline 2**	Not calculated	100.0 Excellent	95.6 Excellent
Lac Pelletier**	Not calculated	85.1 Good	87.3 Good
Last Mountain Lake Baseline 1 - Pelican Point**	Not calculated	79.8 Fair	73.1 Fair
Last Mountain Lake Baseline 2 – Arlington**	Not calculated	77.5 Fair	81.4 Good
Moosomin Reservoir**	Not calculated	77.0 Fair	83.5 Good
Round Lake (Kelvington)**	Not calculated	92.5 Good	96.2 Excellent
Turtle Lake**	Not calculated	92.5 Good	100.0 Excellent
Brightsand Lake**	Not calculated	83.0 Good	82.8 Good
Big Shell Lake 1 – South**	Not calculated	92.3 Good	100.0 Excellent
Big Shell Lake 3 – North**	Not calculated	100.0 Excellent	100.0 Excellent
Pike Lake**	Not calculated	85.1 Good	91.6 Good

* Modifications for these performance measures were required during 2006-07 to allow for greater accuracy and improved clarity. The objectives of the Water Quality Index were updated to be consistent with Saskatchewan's Surface Water Quality Objectives, which were changed in 2006. As a result of the above changes, the baseline data for the Water Quality Index rating for rivers have effectively been re-calculated and re-established to 2005 and 2006, respectively.

** The number of lakes monitored has been increased to 14 (using 17 sampling sites).

Source: Saskatchewan Watershed Authority water quality monitoring results

Water Quality Index ratings for rivers

Table 15: Water Quality Index ratings for rivers

Waterbody – River System	Water Quality Index Rating (March 2004)	5 Year Rolling Average* WQI Score - Rating		15 Year Rolling Average* WQI Score - Rating	
Assiniboine River**	Good to excellent	75.5	Fair	75.2	Fair
Battle River **		63.2	Fair	64.4	Fair
Beaver River**	Good to excellent	75.5	Fair	76.2	Fair
Beaver River – Beauval		91.7	Good	91.7	Good
Beaver River - Dorintosh		85.5	Good	85.5	Good
Carrot River **		63.3	Fair	62.1	Fair
Churchill River**	Excellent	92.9	Good	93.3	Good
Churchill River - Otter Rapids		100.0	Excellent	100.0	Excellent
North Saskatchewan River**	Good to excellent	70.9	Fair	71.5	Fair
North Saskatchewan River – Cecil Ferry (downstream)		86.0	Good	78.4	Fair
North Saskatchewan River – Cecil Ferry (upstream)		78.8	Fair	76.8	Fair
North Saskatchewan River – Prince Albert		74.2	Fair	77.4	Fair
Moose Jaw River***	Poor to fair	Insufficient data		Insufficient data	
Qu'Appelle River**	Fair to good	66.2	Fair	66.8	Fair
Qu'Appelle River – below Qu'Appelle Dam		100.0	Excellent	92.2	Good
Qu'Appelle River – below Wascana Creek		74.1	Fair	77.3	Fair
Qu'Appelle River – Hwy # 11 at Lumsden		63.6	Fair	57.5	Marginal
Qu'Appelle River - Edenwold		63.8	Fair	56.3	Marginal
Saskatchewan River	Good to excellent	Not calculated		Not calculated	
Souris River at 18 Highway	Fair to good	Insufficient data		Insufficient data	
South Saskatchewan River**	Good to excellent	100.0	Excellent	91.6	Good

* Modifications for these performance measures were required during 2006-07 to allow for greater accuracy and improved clarity. The objectives of the Water Quality Index were updated to be consistent with [Saskatchewan's Surface Water Quality Objectives](#), which were changed in 2006. As a result of the above changes, the baseline data for the Water Quality Index rating for rivers have effectively been re-calculated and re-established to 2005 and 2006, respectively. For the river sites, the Water Quality Index is now calculated on a rolling 5 year and rolling 15 year average which helps buffer potential significant flow influence on the Index (which can lead to incorrect observations and conclusions). The rolling five year Water Quality Index averages for the rivers are heavily (60 per cent) weighted for the current year of the cycle (2006) with the remaining 40 per cent spread out over 2005 to 2002.

** Prairie Provinces Water Board monitoring site.

*** Major water quality concerns along the Moose Jaw River stem from nutrients and suspended solids from man-made sources (waste water discharge and agricultural activities) and natural variation (flow, run-off and snow melt).

Source: Saskatchewan Watershed Authority and Saskatchewan Environment water quality monitoring results

The Water Quality Index (WQI) is a good overall measure of the quality of water for specific uses such as the protection of aquatic life, livestock watering, recreation, etc that may not otherwise be apparent through individual water quality test results. The levels of chemicals and organisms in the samples are compared with the WQI levels for safety and health of the people. The Index is a composite measure of different chemicals and organisms in the water and whether the water quality is safe for particular uses. It is a good measure of the quality of surface or groundwater. The WQI incorporates three elements:

- scope - the number of variables that don't meet the water quality objectives;
- frequency - the number of times that variables do not meet the objectives; and
- amplitude - the amount by which the objectives are not being met.

From these elements, the Water Quality Index produces a score between 0 and 100. The revised Saskatchewan WQI was first applied to sites across four major waterbodies by the end of the 2003-04 fiscal

year (South Saskatchewan, North Saskatchewan, Qu'Appelle and Moose Jaw rivers). Government has limited direct control over the results of this broad measure of water quality. While government regulates point source pollution, many human and natural factors can influence water quality. Water quality from surface water sources tends to change over seasons and may change over successive years as a result of pollution or other water management practices.

The following descriptive categories are used to further explain the Water Quality Index results:

- Excellent: (WQI value 95-100) - water quality is protected with a virtual absence of threat or impairment; conditions very close to natural or pristine levels. These index values can only be obtained if all measurements are within objectives virtually all of the time.
- Good: (WQI value 80-94) - water quality is protected with only a minor degree of threat or impairment; conditions rarely depart from natural or desirable levels.
- Fair: (WQI value 60-79) - water quality is usually protected but occasionally threatened or impaired; conditions sometimes depart from natural or desirable levels.
- Marginal: (WQI value 45-59) - water quality is frequently threatened or impaired; conditions often depart from natural or desirable levels.
- Poor: (WQI value 0-44) - water quality is almost always threatened or impaired; conditions usually depart from natural or desirable levels.

Number and percentage of municipalities with bylaws in place to protect their drinking water supplies

Baseline - December 2005		Baseline - December 2006	
Number of Municipalities	Per cent of Municipalities	Number of Municipalities	Per cent of Municipalities
178	22	178	22

Source: Saskatchewan Government Relations file records

The number of municipalities with bylaws in place to protect their drinking water supplies is a direct indication of the level of municipal protection of water sources.

In 2006, no new municipal planning bylaws were prepared, so the per cent of the urban and rural municipalities that have some form of water management policy contained in their community planning bylaws remains at 22 per cent (12 per cent with mandatory provisions and 10 per cent with permissive or discretionary provisions). Implementation of the new *Planning and Development Act, 2007* and regulations that include municipal water source protection and the new Municipal Capacity Development Program and funding should result in more municipalities establishing bylaws with water source protection provisions. (Source: Government Relations manual filing system on municipal bylaws).

Goal 4 – Citizens and consumers trust and value their drinking water and the operations which produce it

Objective 1: Consumers value quality water and are willing to pay for it

Saskatchewan residents are not always aware of the cost of providing safe drinking water. Protection of source waters, the ability to treat source water and ensure sustainable supplies is dependant on consumers that recognize the value of water and are willing to pay for it at present and in the future.

Polling results continue to show ongoing public recognition of the value of water or willingness to pay for it. Polling information results collected in May 2007 show 67.8 per cent of respondents indicate they are willing to pay more for their drinking water, a decrease of 3.0 per cent since the previous poll in March 2006.

Key Results

The key actions originally planned for 2006-07 are shown below, along with the responsible partner, followed by our actual progress towards the key action and changes affecting the status of drinking water.

- Complete development of a native prairie teacher activity guide, linked to the Saskatchewan curriculum, by completing material for grades three to six and making it available on the Saskatchewan Watershed Authority's website. [Watershed Authority]

The Authority has been unable to complete this project due to a staff shortage, an inability to locate qualified contractors and production difficulties. The completed Grade 1 Native Plants unit is ready to be posted on the Authority website. The Grade 2 Native Plants unit content was completed in the design template format. The student activity sheets and wildlife cards were prepared to the draft format level. Work is planned to continue.

- Provide public education material that focuses on the cost and value of water, benefits of better management of water demand and reducing water consumption. [Environment]

Saskatchewan Environment continues to advanced educational efforts on water cost and value directly through distribution of brochures and at water related workshops and presentations including forums such as the Saskatchewan Urban Municipalities Association annual convention. During 2006-07, 10 new documents on water or wastewater related were prepared and another 41 publications were updated. These documents are either distributed directly during waterworks inspections or are provided by electronic means (at http://www.se.gov.sk.ca/environment/protection/water/Binder_TofC.htm). The SaskH2O website also continues to remain up-to-date and is offered as an important educational and information source for the public.

Saskatchewan Environment delivered regulatory and progress updates to the Saskatchewan Water and Wastewater Association annual convention in November 2006 and participated as a representative in the convention trade show as a means to further understanding of the importance of operator certification. Department staff continue to support education efforts at the Saskatchewan Rural Water Pipelines Association annual meeting and trade show in December 2006 by means of a presentation to delegates and provision of information and documents. The department also assisted with the planning and delivery of a northern water workshop in April 2006.

Measurement Results

Per cent of survey respondents indicating that they are willing to pay more for their drinking water

Table 16: Per cent of survey respondents indicating that they are willing to pay more for their drinking water

December 2001	May 2003	March 2005	March 2006	May 2007	Change
61	61.9	68	70.8	67.8	↓ 3.0

Source: Government of Saskatchewan Omnibus Polling Results – May 2007

Based on a May 2007 omnibus poll conducted by the Government of Saskatchewan, 67.8 per cent of people polled are willing to pay more to improve their drinking water (strongly agree or agree) (Table 16). This

value is 3 per cent less than the previous poll in March 2006 and is 6.8 per cent greater than the December 2001 poll before implementation of the Strategy. The polling results continue to show ongoing public recognition of the value of water or willingness to pay for it, although not quite as strong as in past cases. The polling results may be related to the high level of confidence in safety of drinking water as noted for Goal 4, Objective 2, and may also be influenced by ready access to information on drinking water quality. How consumers value quality water and their willingness to pay for it is an indication of their understanding of the importance of safe drinking water and the true cost to produce it.

Objective 2: Citizens and consumers trust the quality and reliability of their drinking water systems and are confident in the regulatory system

Consumer trust in drinking water and regulatory systems that govern them is vital to ensuring the long-term sustainability of waterworks. Consumers who trust the quality and reliability of their water supplies are more willing to support the production of safe drinking water in the future. Release of polling results also bolsters transparency and public trust.

Polling associated with this objective has shown relatively consistently high confidence in the quality of drinking water. Based on a May 2007 omnibus poll conducted by the Government of Saskatchewan, 82.6 per cent of people polled strongly or moderately agree they are confident in the safety of their own drinking water, a decrease of 4.7 per cent since March 2006.

Key Results

The key actions originally planned for 2006-07 are shown below, along with the responsible partner, followed by our actual progress towards the key action and changes affecting the status of drinking water.

- Continue to implement the drinking water polling strategy and publish results, which will allow tracking of public opinion and trust in drinking water and the associated regulatory systems. [Environment]

Saskatchewan Environment has continued to implement its polling strategy to gain important insight into public opinion associated with drinking water. The strategy employs three main tools in terms of its strategy related to public polling on water related issues. Its primary tool is the omnibus polling conducted by the provincial government to ask questions it believes important to performing its duties regarding drinking water. When possible, the polling results produced by GlobeScan Inc. (formerly Environics) polling company, which does quarterly polling of Canadian attitudes towards environmental and natural resources issues, are used to track the department’s performance in relation to other provinces. The department also, from time to time, conducts its own polling in Saskatchewan related to the overall performance of the department in relation to its mandate. Polling on drinking water related issues will continue in 2007-08. The most recent May 2007 omnibus polling results are shown in the measurement results for Goal 4, Objectives 1 and 2.

Measurement Results

Per cent of survey respondents indicating that they are very or somewhat confident in the quality of their tap water

Table 17: Per cent of survey respondents indicating that they are very or somewhat confident in the quality of their tap water

December 2001	May 2003	March 2005	March 2006	May 2007	Change
72	87	86	87.3	82.6	↓ 4.7

Source: Saskatchewan Environment Polling Results – March 2006

Based on a May 2007 omnibus poll conducted by the Government of Saskatchewan, 82.6 per cent of people polled strongly agreed or agreed they are confident in the safety of their own drinking water (Table 17). Although still at a high level of confidence these polling results represent a decrease of 4.7 per cent from March 2006 while remaining 10.6 per cent greater than December 2001 when 72 per cent of people surveyed were very or somewhat confident in the quality of their tap water. Actions initiated under the Strategy such as consumer education efforts, waterworks inspections, implementation of water quality standards, water workshops and consumer notification help build confidence in the safety of drinking water at a relatively high level in excess of 80 per cent. Ongoing attention to the elements of the strategy will help to maintain the high level of public confidence in safety of drinking water in the future. The measure is important since it provides an indication of how efforts to ensure safe drinking water are progressing.

Objective 3: Citizens have meaningful access to information about the quality of their water

Information on water quality is important in building public trust in water systems. Information must be understandable, current and readily accessible. To build full trust, information needs to be available both from the waterworks owner and the regulator.

Significant progress has been made in advancing this objective. Close to 50 per cent of municipalities have compiled and submitted information on the financial sustainability of their waterworks. The number of communities that publicly release water quality results has increased slightly to 511 systems and a meaningful drinking water quality index has been developed to help public understanding of the relative quality of their water supplies. Further enhancements were made to the SaskH2O website (see <http://www.SaskH2O.ca>) which include the posting on inspection results online as a means to provide direct information on drinking water quality. SaskWater published its second comprehensive water quality report at <http://www.saskwater.com/MediaCentre/Publications.asp?sub=subPublications&type=Pub2007> with its 2006 Annual report. All of these improvements help provide meaningful access to information to consumers on the quality of their drinking water.

Key Results

The key actions originally planned for 2006-07 are shown below, along with the responsible partner, followed by our actual progress towards the key action and changes affecting the status of drinking water.

- By September 1, 2006, and annually thereafter, municipalities will be required to provide to the public key information on the financial sustainability of their waterworks, including the level of cost recovery. This information will help ratepayers to understand the financial soundness of their municipal waterworks and the need for cost recovery rates. Waterworks with cost recovery rates are more likely to be able to provide safe drinking water. [Government Relations]

By May 2, 2007, 49 per cent of the municipalities submitted a copy to the department of their public information on the financial sustainability of their waterworks. This was the first year the regulations were in effect. Follow-up letters were sent to municipalities in February 2007. Further follow-up with municipalities will be required regarding the regulation requirements.

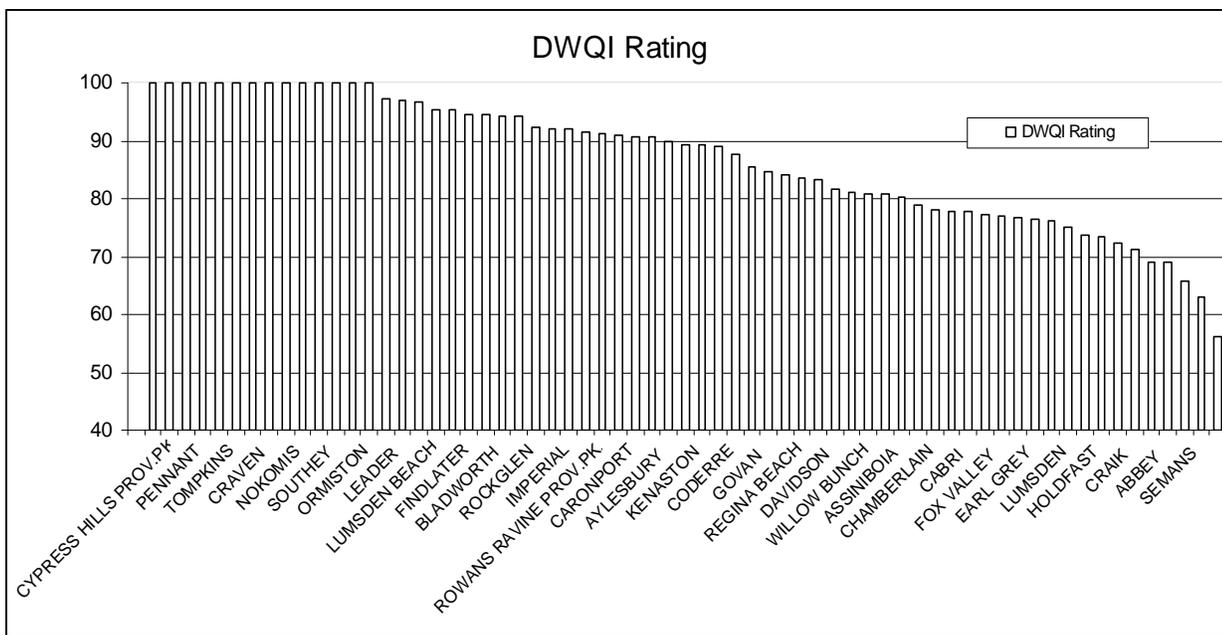
- Initiate polling to measure public attitudes towards source water protection. [Watershed Authority]

The Authority conducted a survey of Saskatchewan radio stations in May 2006 to determine satisfaction and use of Runoff Roundup media information line. In conjunction with the Canadian Plains Research Centre, the Authority hosted a public opinion research workshop, which was attended by several partner groups, including representatives from Watershed Advisory Committees. The Authority participated in the Government of Saskatchewan's Omnibus Polling in the fall of 2006.

- Extend implementation of a Drinking Water Quality Index (DWQI) to more water users to convey easy to understand information to consumers on water quality and the adequacy of the systems that produce drinking water. [Environment]

Saskatchewan Environment has completed a system of ranking the chemical and aesthetic quality of water of drinking water in the province, which gives a numeric and possible narrative description of water quality for each system. The Drinking Water Quality Index (DWQI) is based on a similar system developed by Newfoundland and Labrador as a means to provide more meaningful information (see: <http://www.env.gov.nl.ca/env/Env/waterres/Surfacewater/DWQI/DWQI.asp>). Full application of the DWQI is planned for 2007-08. Figure 6 provides a representation of DWQI values for select communities within the province.

Figure 6: Example Drinking Water Quality Index ratings for select Saskatchewan communities



Source: Saskatchewan Environment Environmental Management System.

In addition to progress made on planned actions, other key accomplishments included:

SaskWater

SaskWater published its second comprehensive water quality report with its 2006 Annual report (<http://www.saskwater.com/MediaCentre/Publications.asp?sub=subPublications&type=Pub2007>). SaskWater reports on provincial water quality parameters for all of its customers who purchase potable water. In addition to meeting and reporting on the water quality parameters set by Saskatchewan, SaskWater also reports on water quality standards set by the United States Environmental Protection Agency as per the corporation’s water quality policy.

Measurement Results

Number of system owners that publicly release water quality results

Table 18: Number of system owners that publicly release water quality results

March 2002	March 2003	March 2004	March 2005	March 2006	March 2007	Annual Change
3	118	359	508	494	511	↑ 17

Source: Saskatchewan Environment – Environmental Management System

As of March 31, 2007, 511 of waterworks owners publicly released water quality results to the consumers that they serve (Table 18). This value represents a slight increase since the 2005-06 fiscal year. Notification of consumers is required on an annual basis for waterworks regulated by Saskatchewan Environment. Saskatchewan Environment will continue to pursue further progress on attainment of public reporting requirements during 2007-08 and beyond. The number of system owners that publicly release water quality results is a good way to determine if consumers have direct meaningful access to information about the quality of their water.

Objective 4: Reduced consumption of water

Reduced consumption of water is important in minimizing costs and thereby properly valuing water. Water conservation is also necessary to protect water source quality and abundance, particularly in time of increased demand.

Based on the latest available information, average provincial water consumption decreased in 2005 to 72.2 imperial gallons per capita per day or 328 litres per capita per day, a decrease of 1.4 percent.

Key Results

The key action originally planned for 2006-07 is shown below, along with the responsible partner, followed by our actual progress towards the key action and changes affecting the status of drinking water.

- Develop public information on water conservation initiatives. [Watershed Authority]

The Saskatchewan Water Conservation Plan was released in the Legislative Assembly on November 6, 2006. Activities in support of the development and implementation of the plan included:

- Publication of the plan and accompanying brochure;
- Promotion of the plan through Mysask.com web banner advertisements, radio advertisements, billboards, television public service;
- announcements, print advertisements and news articles;
- Inclusion of household water saving tips and copies of the plan on the Saskatchewan Watershed Authority Website, and;
- Inclusion of household water saving tips and copies of the Plan on the Saskatchewan Watershed Authority Website.

In addition to progress made on planned actions, other key accomplishments included:

SaskWater

In 2006, SaskWater introduced a more transparent billing system with detailed consumption data, so customers can track their usage and make informed decisions about their water consumption. SaskWater is currently in the process of developing a sustainability strategy that identifies the need to implement conservation initiatives on its systems. As part of the Saskatchewan Water Conservation Plan, Saskatchewan Watershed Authority is providing SaskWater with a grant to develop and pursue water conservation messaging to its customers in 2007.

Measurement Results

Average per capita consumption [gallons per capita per day]

Table 19: Average per capita consumption [gallons per capita per day]

2000-01	2001-02	2002-03	2003	2004	2005*	2006	Annual Change
80.3	80.7	77.4	81.2	73.2**	72.2***	N/A	↓ 1.0

NA: Not available

* Latest available information

** For 2005 the LCD (litres/Capital/Day) was 328 (72.15 gallons per day) and the weighted LCD was 427 (93.92 gallons).

*** For 2004 the LCD (litres/Capital/Day) was 328 (72.15 gallons per day) and the weighted LCD was 437 (96.13 gallons).

Source: Saskatchewan Community Water Use records for 2005, published June 19, 2006

Measuring the municipal per capita water consumption provides for total annual urban water use (in-home, business and municipal irrigation) within communities. The annual consumption is affected by summer irrigation demands, which vary between wet and dry years causing the performance measure to vary between years. However, because the goal of water conservation is to become more efficient in all water uses, this is a good measure of water conservation in the urban setting. The Authority does not have direct control over this measure, but through water conservation programs does influence the measure.

This measure is computed by summing the LCD for each community and dividing by the number of communities. The weighted LCD is computed by summing the yearly water consumption for each community and dividing by the total population and 365 days. The Saskatchewan Community Water Use Records maintained by the Authority is the dataset used in this determination. The change in the water consumption rate is attributed to the natural annual variability found in water consumption records and climatic influences on water use. As the water conservation plan has only recently been implemented, it is not anticipated that a measurable decrease in water use will be measured for several more years.

Average provincial consumption for the period Jan 1 to Dec 31 2005 was 72.2 gallons per capita per day (328 imperial gallons) (Table 19). A complete dataset for 2006 is not currently available. The database source of the performance results for this measure has a time lag of about six months; January 1 to December 31 2006 data will be available in July 2007.

Reduction of water is partly the result of promotional efforts by SaskWater as well as greater general emphasis through application of the Strategy on the true value of drinking water quality.

During 2005-06 and 2006-07, brochures that focus on water use in and around the home were distributed by Saskatchewan Environment to help reduce water consumption by domestic water users.

2006-07 Financial Results

The following table outlines information on the actual and budgeted expenditures relating to the Safe Drinking Water Strategy. Funding for this Strategy comes from various Government departments and agencies and is contained in their respective budgets. Variance explanations have been provided for all variances that are greater than \$5,000.

Department	Budget (\$000s)	Actual Expenditure (\$000s)	Variance Over (Under) (\$000s)
Saskatchewan Environment	3,096	2,835	(261) ¹
Saskatchewan Watershed Authority	6,537*	6,537	0
Saskatchewan Government Relations			
- CSIP	5,209	3,920	(1,289) ²
- MRIF	17,636	9,421	(8,215) ²
Saskatchewan Government Relations - Total	22,845	13,341	(9,504) ²
Saskatchewan Health			
Regional Health Services			
- Regional Health Authorities (Health Regions)	456**	456	0
Base Operating Funding			
- Regional Targeted Programs and Services	30	10	(20) ³
- Regional Programs Support	20	0	(20) ⁴
Saskatchewan Disease Control Laboratory –	717**	763	46 ⁵
Environmental Services			
Saskatchewan Health - Total	1,223	1,229	6 ⁵
Total	33,701	23,942	(9,759)

* Expenditures shown are grants from the General Revenue Fund to the Saskatchewan Watershed Authority for these programs.

** This amount does not include additional funding provided to health regions and the Saskatchewan Disease Control Laboratory to offset increases to salaries and benefits through collective bargaining agreements.

Explanations of Major Variances

¹ Under expenditure resulted from prolonged staffing activities and secondment opportunities encountered by Saskatchewan Environment, Drinking Water Quality Section during the fiscal year. These vacancies resulted in a net reduction in the rate of waterworks and sewage works inspections during the fiscal year for Saskatchewan Environment. Saskatchewan Environment Drinking Water Quality Section staffing levels totaled 36.7 FTEs, down one FTE due to a loss of a position to the Information Technology Office.

² The 2006-07 budget provided an estimated \$5.209 million under CSIP and \$17.636 million under the MRIF for water and sewer projects. By the end of the year, \$3.920 million was spent on the CSIP projects and \$9.421 million was spent on the MRIF projects. The full amounts budgeted were not spent because some projects were delayed and have been rolled over to the following year. Also, the actual cost of some projects came in below the estimated cost.

³ \$10,000 was used to help support a public health inspector conference that included presentations on water quality/treatment and private sewage disposal methods. Under-expenditure resulted from other water related training and manuals not being developed during 2006-07.

⁴ Saskatchewan Health is awaiting the completion of a northern health authority report (Northern Health Regulated Supplies and Water Sampling due 2007/08) before determining how this funding can be used.

⁵ \$46,000 over-expenditure for the Laboratory is due to more laboratory reagents being required to address increased testing which resulted in a \$6,000 over-expenditure for the total Saskatchewan Health Safe Drinking Water Strategy Budget.

For More Information

Further information on the Safe Drinking Water Strategy and information contained in this report is available on the SaskH2O Website (<http://www.SaskH2O.ca>) and on Saskatchewan Environment's Website (<http://www.se.gov.sk.ca/environment/protection/water/water.asp>).

Further detailed information on the status of drinking water in Saskatchewan is available from Saskatchewan Environment or at the SaskH2O Website (<http://www.SaskH2O.ca/news.asp> or <http://www.SaskH2O.ca/MyDrinkingWater.asp>).

A performance plan for the Safe Drinking Water Strategy for the 2006-07 fiscal year was published on April 6, 2006 with the release of the 2006-07 provincial budget.

A copy of the performance plan for the 2006-07 Safe Drinking Water Strategy is available on the Internet at (<http://www.se.gov.sk.ca/environment/protection/water/2006-07PerformancePlan-DrinkingWater.pdf>).

Next year's annual report will address both the status of drinking water and the published 2006-07 strategic plan.

Further information is also available by contacting:

Drinking Water Quality Section
Environmental Protection Branch
Saskatchewan Environment
3211 Albert Street
REGINA, SK S4S 5W6
Telephone: (306) 787-6504

or at Saskatchewan Environment's inquiry center toll free in Saskatchewan at 1-800-567-4224.

Feedback on the performance results may also be provided to Saskatchewan Environment through the contact information immediately above.

An electronic copy of this report is available on the Internet (<http://www.SaskH2O.ca/news.asp>).

