Chapter 17
Regulating Drinking Water

1.0 Main Points

Municipalities, Saskatchewan Water Corporation, and others (e.g., Hutterite colonies, parks) own and operate public waterworks that provide drinking water to the majority of people in Saskatchewan. Public waterworks owners are ultimately responsible for providing safe drinking water to their consumers. The Water Security Agency (Agency) is responsible for regulating public waterworks owners.

The Agency regulates public waterworks by issuing permits, monitoring water test results, inspecting waterworks, and enforcing permits.

Our audit for the period of October 1, 2012 to March 31, 2013 found the Agency had effective processes to regulate public waterworks; however, improvements are needed to strengthen the Agency's processes to reduce the risk of a public waterworks providing unsafe drinking water. The Agency needs to:

- Perform timely inspections of all public waterworks
- Identify non-compliance in water tests in a timely manner
- Establish policies that result in consistent action when waterworks owners do not comply with permits
- Develop an enforcement policy for those waterworks owners that are failing to upgrade waterworks for new residential developments as promised
- Coordinate efforts with the Ministry of Government Relations to ensure feasible plans for water infrastructure upgrades are in place before approving new residential developments
- Align its regulations and permits with the national drinking water guidelines

Waterworks owners hire operators to run public waterworks. The first line of defence in providing safe drinking water is having a certified and skilled operator that runs the public waterworks and frequently tests the water to ensure it is safe. During our audit period, we found 18 public waterworks that did not have a certified operator. Some operators are working towards getting certified and six waterworks are planning to move to hygienic use where the permit will not require a certified operator. Waterworks without a certified operator are still required to test the water and are being inspected by the Agency.

The Agency issues permits to waterworks owners outlining expectations for keeping water safe. The second line of defence is that the Agency has the responsibility to regulate waterworks by receiving and monitoring the results of water testing and performing inspections to ensure permit expectations are being met. Where drinking water quality problems exist, the Agency issues drinking water advisories to notify the public of drinking water that is not safe. The Agency provides water quality information to the public through the SaskH20 website (www.saskh20.ca).

2.0 INTRODUCTION

Effective October 1, 2012, the Government reassigned (through Order in Council 519/2012) the responsibility for regulating drinking water provided by public waterworks under *The Environmental Management and Protection Act, 2002* (Act) and *The Water Regulations, 2002* (Regulations) to the Water Security Agency (Agency) from the Ministry of Environment. Public waterworks[1] include municipal waterworks, municipal wells connected to a distribution system, certain pipelines, and other public waterworks with a capacity of 18 cubic metres or more of water per day (which amounts to roughly 15 houses receiving water from one central source).

Municipalities and Saskatchewan Water Corporation (waterworks owners) own and operate the majority of public waterworks. The Agency is responsible for ensuring public waterworks owners are supplying safe drinking water to the public. The Agency regulates these public waterworks owners by issuing permits, periodically inspecting waterworks, and enforcing permits. Overall, the Agency regulates about 770 public waterworks.

These public waterworks provide drinking water to the majority of the people in Saskatchewan (around 85%) including schools and hospitals. Therefore, effective regulation of these waterworks is of particular importance to the health of the people in the province.

We audited the Agency's processes to regulate public waterworks.

3.0 BACKGROUND

3.1 Regulatory Standards

Safe drinking water is a vital component in the protection of public health and disease prevention and is therefore essential for the health and well-being of Saskatchewan citizens. Everyone in Saskatchewan needs a supply of safe, clean drinking water. Groundwater and surface water (i.e., lakes, reservoirs, rivers, and streams) serve as sources of drinking water for Saskatchewan residents.

As with many other provinces, Saskatchewan uses national drinking water quality guidelines set by Health Canada to establish indicators of drinking water quality. The national guidelines, known as the "Guidelines for Canadian Drinking Water Quality"[2] (Guidelines), cover bacteriological water quality standards, chlorine levels, turbidity (cloudiness) standards, and chemical (e.g., health and toxicity) standards. The Agency uses the Guidelines as the basis for its legal standards and requirements in permits it issues.

[1] A waterworks is a system of reservoirs, channels, mains, and a water treatment plant by which a water supply is obtained and distributed to homes, schools, hospitals, etc.
[2] The Guidelines are available on Health Canada's website at www.hc-sc.gc.ca/ewh-semt/water-eau/drink-potab/guide/index-eng.php (April 2013).

The Guidelines are established by the Federal-Provincial-Territorial Committee on Drinking Water,[3] and are published by Health Canada on its website. As part of the Guidelines, Health Canada updates and publishes a table of substances along with the maximum acceptable concentration level for each substance. If a substance is found to exceed the acceptable concentration level, it is considered a contaminant.

Establishing and enforcing drinking water quality standards helps to achieve safe, clean drinking water. Waterworks owners frequently sample the water to assess its quality. Frequent inspections of public waterworks and monitoring of water sample tests by the Agency also help ensure waterworks owners provide water that is safe.

To assess water quality, water is tested for certain substances including bacteria, chlorine, turbidity, and chemicals. The bacteriological quality of drinking water and testing for bacteria are important because contamination of this type can result in significant illness and/or death within a short time. Disinfection using chlorine-based products is widely used in Saskatchewan as one of the methods to prevent spread of waterborne diseases and maintain water quality at a safe level. Turbid water – water that is cloudy - may indicate a large number of suspended particles and can be an indicator of ineffective filtration and/or disinfection of drinking water. The Guideline's health and toxicity parameters cover a range of naturally-occurring chemical substances (e.g., arsenic, lead, uranium) and other substances such as trihalomethanes, which may be produced during chlorine-based disinfection processes. Ingesting these substances has a potential for adverse health effects over the longer term.

3.2 Regulatory Regime

As of March 31, 2013, the Agency's Drinking Water and Wastewater Management section had a staff of 31 including 15 environmental project officers (EPOs) who regulate public water and sewage works. These individuals review applications and grant permits to construct or alter waterworks. They also grant permits to operate waterworks. Waterworks owners must comply with the standards set out in the permits. To ensure the waterworks owners are meeting the standards, the Agency monitors the results of waterworks owners' required water testing and it periodically inspects each waterworks and the water it produces. When a waterworks owner does not comply with the permit, the Agency has a variety of ways to enforce compliance and communicate its concerns to the waterworks owners and, if necessary, the public.

4.0 Audit Objective, Scope, Criteria, and Conclusion

The objective of this audit was to assess whether the Water Security Agency had processes to effectively regulate public waterworks to ensure drinking water was safe for the period from October 1, 2012 to March 31, 2013.

This audit did not include waterworks that are not regulated by the Agency. The Agency does not regulate non-public waterworks (e.g., private wells), drinking water on First Nations reserves or other federal lands, or semi-public waterworks regulated by the

[3] The Federal-Provincial-Territorial Committee is a well-established Committee that has been active for more than 20 years. Health Canada provides scientific and technical expertise to the Committee regarding the health effects associated with various drinking water contaminants. The Committee determines changes needed to the Guidelines based on technical research at meetings twice a year.

Ministry of Health (Health). Health is responsible under *The Public Health Act, 1994* for the regulation of about 1600 semi-public waterworks and waterworks with a capacity of less than 18 cubic metres of water per day. These semi-public waterworks include on-site water systems serving some restaurants, motels, campgrounds, and small parks.

To conduct this audit, we followed the *Standards for Assurance Engagements* published in the *CICA Handbook - Assurance*. To evaluate the Agency's processes, we used criteria based on the work of other auditors and current literature listed in the selected references. Management agreed with the criteria (see **Figure 1**).

We examined the Agency's policies, processes, database, reports, and website. We tested a sample of permits, interviewed Agency staff, and attended various waterworks inspections with Agency staff.

Figure 1—Audit Criteria

To effectively regulate public waterworks to ensure drinking water is safe, the Water Security Agency should:

1. **Permit public waterworks**
   - 1.1 Set appropriate requirements for permits
   - 1.2 Communicate permit requirements to waterworks owners, operators and the public
   - 1.3 Verify applicants meet requirements
   - 1.4 Issue appropriate permits
2. **Monitor and enforce compliance with permits**
   - 2.1 Regularly assess compliance with permit terms and conditions
   - 2.2 Identify non-compliance
   - 2.3 Maintain records of water quality, complaints, and inspections
3. **Report and address identified non-compliance**
   - 3.1 Require action on non-compliance with permit terms and conditions
   - 3.2 Issue public advisories timely where appropriate
   - 3.3 Report non-compliance to waterworks owners, operators, Minister responsible and the public

We concluded that, for the period October 1, 2012 to March 31, 2013, the Water Security Agency had effective processes to regulate public waterworks except it needs to:

- **Inspect all waterworks and identify non-compliance with drinking water tests in a timely manner to better monitor waterworks owners**
- **Establish policies to direct staff to take consistent action on non-compliance**
- **Coordinate efforts with the Ministry of Government Relations to ensure feasible plans for water infrastructure upgrades are in place before approving new residential developments**
- **Develop an enforcement policy for those waterworks owners that are failing to upgrade waterworks for new residential developments as promised**
- **Align its regulations and permits with the national drinking water guidelines**

5.0 KEY FINDINGS AND RECOMMENDATIONS

In this section, we describe our key findings and recommendations related to the audit criteria in **Figure 1.**

5.1 Public Waterworks Being Permitted – Requirements Need Updating

5.1.1 Standards and Permits Need to be Updated

Waterworks owners must have a permit to operate a public waterworks. Permits require waterworks owners to keep drinking water within a certain standard, to sample and test drinking water periodically to ensure the standard is maintained, to hire qualified staff, and to annually report the water testing results to consumers.

Microbiological contaminants, such as E. coli and Giardia, if found in drinking water pose the greatest risk to human health, both in the short-term and long-term. Their effects range from nausea to liver infections to death. Chemical contaminants in drinking water are also a concern if found above certain levels. Long-term exposure can result in effects including cancer, decreased kidney function, and neurological disorders. Setting limits for these types of contaminants in drinking water helps keep people safe.

Saskatchewan drinking water standards are set out in *The Water Regulations, 2002* (Regulations). The Regulations refer to the Guidelines for Canadian Drinking Water Quality (described in **Section 3.1**). The Agency uses the Guidelines as the basis for its standard and requirements in its permits. Health Canada published its most recent Guidelines in August 2012. As of March 31, 2013, the Agency has been in the process of updating the Regulations to the August 2012 edition of the Guidelines. Therefore, at March 31, 2013, Regulations and requirements in certain permits were not up-to-date and in alignment with the Guidelines. For example, there were six relevant substances[4] found in the Guidelines that were not yet included in the Regulations and permit requirements for Saskatchewan. This means some permitted waterworks may not be monitoring and striving to achieve the current acceptable concentration levels as set out in the Guidelines.

1. **We recommend that the Water Security Agency complete its process to update *The Water Regulations, 2002* and its permits to align with the current Guidelines for Canadian Drinking Water Quality.**

In order to maintain water quality standards on a daily basis, waterworks owners are required to sample water on a daily, weekly, and monthly basis. The permits outline the required frequency of water testing. The Agency's protocol defines the minimum frequency that is dependent on various factors including water supply variations (surface or groundwater), treatment capabilities, and the size of the consumer population.

[4] The six chemicals are bromate, chlorate, chlorite, cyanobacterial toxins, haloacetic acids, and 2-methyl-4 chlorophenoxyacetic acid.

5.1.2 Communicated Permit Requirements

The Agency communicates its requirements to waterworks owners and operators through the permits and *Saskatchewan's Drinking Water Quality Standards and Objectives* (Quality Standards and Objectives). The Quality Standards and Objectives are available to the public online at www.saskh20.ca (SaskH20 website).

5.1.3 Applicants Met Requirements to Obtain Permits to Construct or Modify a Public Waterworks

The Agency issues two types of permits: a permit to construct or modify a public waterworks and a permit to operate a public waterworks.

To obtain a permit to construct or modify a public waterworks, waterworks owners must complete a standard Agency application. Applications must include engineering reports for new waterworks systems or major modifications. Agency staff review applications and engineering reports to determine whether the proposed design will meet the requirements set out in law and the Agency's guidelines. The Agency issued about 60 such permits in our audit period.

Once the Agency approves the initial constructed waterworks, it issues a permit to operate. If the Agency issues a permit to modify the waterworks, the operational permit continues but may be modified at the Agency's discretion. The Agency regulates about 770 waterworks using operational permits.

In 2009, the Agency adopted a "parallel growth" policy. Under the policy, the Agency approved construction permits with a condition that allows a distribution system for a new subdivision to be built at the same time as a new waterworks supply infrastructure is being built or upgraded to support the new development.

5.1.4 Appropriate Operational Permits Issued

Agency staff, called environmental project officers (EPOs), are responsible for issuing operational permits to waterworks owners. There are two types of operational permits: hygienic use and human consumptive use. Hygienic use permits are for public waterworks that provide water for bathing or showering only, while human consumptive permits are for waterworks that provide drinking water. Hygienic use waterworks owners must also provide a human consumptive source of water to their consumers. Out of the 770 public waterworks about 120 are for hygienic use only.

The Agency has detailed protocol and permit templates to help guide an EPO through the permitting process. Human consumptive use permits are issued for a period of two to five years depending on the risks associated with the waterworks (e.g., water source being surface vs. groundwater, compliance history). We found human consumptive permits issued had consistent and appropriate requirements (other than not aligning with the current Guidelines as noted in **Section 5.1.1**), and were approved by an EPO.

5.2 Need More Timely Monitoring of Compliance

5.2.1 Assessing Non-compliance Through Water Testing

Waterworks operators monitor drinking water quality through regular water sampling. Permits outline the frequency of water sampling required for certain substances (i.e., chlorine, turbidity, bacteria, and chemicals).

Chlorine and Turbidity Testing

As required by the operating permits, waterworks operators test for chlorine and turbidity on a daily basis, and record the results. Waterworks operators must log the daily sampling results. Daily logs are required to be reviewed by waterworks owners on a monthly basis. The only way the Agency's EPOs know if logs are being kept and monitored is through the inspection process. The inspection process is further described in **Section 5.2.2**. As noted in **Section 5.3.1**, operators are not always maintaining adequate logs.

Bacteria and Chemical Testing

Water is also sampled for bacteria and chemicals that can adversely impact human health. Human consumptive waterworks owners are required to submit bacteriological samples at least once per month, and chemical tests at least every two years to accredited laboratories that perform water testing (e.g., the Saskatchewan Disease Control Laboratory in Regina or Saskatchewan Research Council in Saskatoon). Water quality can change after leaving the treatment facility, so sampling water quality through the distribution system is required. We found that the laboratories complete the tests and provide electronic results to the Agency, and written results to the waterworks owners and the operators. Due to the immediate health risks posed, the Agency and operator are notified by the accredited laboratories immediately if a water sample exceeds the bacteriological standards so that action can be taken. As described in **Section 5.3.2**, the Agency takes action when a water sample exceeds the bacteriological standards.

We found that some waterworks owners are not submitting the water samples for chemical testing as frequently as required by their permits. We also found that the Agency is not monitoring the chemical test results on a timely basis as described in **Section 5.2.2**.

5.2.2 Lacking Timely Identification of Non-Compliance

The Agency inputs waterworks owners' water test results as well as the test results it obtains directly when inspecting waterworks into its database and then uploads the data to the SaskH20 website.

The Agency monitors to ensure timely bacteriological water test results are submitted. However, the Agency is not always identifying water that does not comply with permits in a timely manner. For example, the Agency does not currently use the database to automatically notify EPOs if chemical (e.g., health and toxicity) water samples are not being submitted in accordance with permit frequency requirements due to data entry

delays. The Agency does use the database to automatically notify EPOs when waterworks monitoring results indicate any instances where drinking water quality standards were not met. When they inspect, EPOs review water test results and parameters and discuss results with operators but, as noted below, some inspections are not taking place as regularly as required by policy.

Figure 2 shows sample submission and parameter result compliance for health and toxicity samples. In 2011-12, only 75%[5] of waterworks were submitting their health and toxicity water test results in accordance with the frequency required in their permit (health and toxicity sample submission compliance rate) and only 80%[6] of samples submitted complied with the acceptable concentration levels for health and toxicity substances (parameter standards compliance rate). **Figure 2** shows a decreased sample submission compliance rate over the past three years. This is because certain new health and toxicity standards took effect in December 2010 and therefore required waterworks to sample for health and toxicity substances by 2012 and not all waterworks complied.

Figure 2—Health and Toxicity (Chemical) Sample Submission and Parameter Result Compliance Rates

Fiscal Year	Health and Toxicity Sample Submission Compliance Rates (%)	Parameter Standards Compliance Rates (%)
2009-10	86	88
2010-11	89	84
2011-12	75	80

Source: 2011-12 State of Drinking Water Quality in Saskatchewan (Table 5)

As noted earlier, long-term exposure to health and toxicity chemicals can result in health problems including cancer, decreased kidney function, and neurological disorders. For most health and toxicity chemicals, boiling water will not remove the chemical; rather, there is a need for a varied water treatment method, which may require infrastructure changes. While not an immediate risk, testing and monitoring for these drinking water chemicals and striving to maintain them below water quality limits helps ensure people are kept safe.

2. We recommend that the Water Security Agency identify non-compliance with drinking water sampling requirements in a timely manner.

According to the Agency's inspection policy, all waterworks must have at least one inspection per year, and at least two per year if the waterworks serves a population greater than 500, or if a high risk has been identified (e.g., if the source water is surface water because surface water is subject to seasonal and other changes). An unannounced inspection is also required once every three years. **Figure 3** shows the number of inspections conducted in the past four years. We note a decrease in the number of inspections carried out in 2012-13 as compared to 2011-12 without a corresponding decrease in the number of waterworks.

[5] *2011-12 State of Drinking Water Quality in Saskatchewan* report, Table 5.
[6] Ibid.

Figure 3—Annual Number of Inspections Conducted

Fiscal Year	# of Inspections conducted
2009-10	886
2010-11	886
2011-12	910
2012-13	724

Source: 2009-10 - 2011-12 State of Drinking Water Quality in Saskatchewan Reports

The Agency had difficulty being able to inspect in accordance with its policy during our audit period. As of March 31, 2013, we found that the agency had not inspected 67 waterworks (54 of which are located in the northern part of the province) in the past year as required by its policy. The risk of not having a comprehensive monitoring program including timely inspections is that water quality problems may go unnoticed and result in human illness. As of March 31, 2013, the Agency has filled some but not all staff vacancies in northern Saskatchewan for positions that are responsible to carry out waterworks inspections.

3. We recommend that the Water Security Agency perform inspections of public waterworks in accordance with the frequency specified in its policies.

During inspections, EPOs confirm the maintenance of daily logging by operators. They also look for upset conditions (e.g., instances where the disinfection level was not achieved) that permit holders are required to report to the Agency. EPOs also complete a checklist during the inspection that helps them conclude whether requirements are being met. We found EPOs properly complete checklists. Using the checklist, staff inspect a number of areas as set out in **Figure 4**. This checklist appropriately covers all areas of the permits.

Figure 4—Summary of Areas Covered During Inspections of Human Consumptive Waterworks

- Distribution System (e.g., new and repaired pipelines are disinfected?)
- Water Storage Reservoirs (e.g., cover is tight? reservoir is in good repair?)
- Water Treatment Plants and Pump houses (e.g., drain lines to sanitary sewers have trap? water meter installed? facility is clean and orderly?)
- Disinfection (e.g., chlorine residual is being met?)
- Testing (e.g., chlorine monitoring occurring and meeting standards? chemical sampling being conducted and meeting standards? turbidity tests being conducted and meeting standards? samples are being submitted to an accredited laboratory?)
- Operational Records (e.g., samples being logged? upset conditions are being recorded? daily water meter reading is being recorded? able to identify the recorder?)
- Annual Notice to Customers (e.g., complete and is accurate?)

Source: Water Security Agency's Consumptive Use Inspection Report (can be found at www.saskh20.ca)

5.2.3 Records of Water Quality, Complaints and Inspections Maintained

The Agency maintains records of water quality and inspections through its database and maintains individual files for each permitted waterworks. Also, the Agency records any complaints it receives and how they were dealt with. The Agency stated that most public complaints are made directly to the waterworks owners. The Agency verifies the quality of water by monitoring water test results from accredited laboratories and testing water quality when conducting inspections. Water quality information and inspection results are available to the public on the SaskH20 website.

5.3 Non-Compliance Needs to be Addressed

5.3.1 Action Required on Non-Compliance With Permit Terms and Conditions

Once an inspection is complete, an EPO discusses all identified issues with the waterworks operator. Both parties sign the inspection report as evidence that the discussion took place. The Agency also provides the inspection results to waterworks owners. We found that inspections, once complete, are posted on the SaskH20 website in a timely manner.

The Agency has a quality control process for inspections. A Chief Inspector accompanies each EPO to at least one inspection per year to ensure they are adequately fulfilling their job responsibilities and consistently completing inspections. We found that the Chief Inspector completes a form that summarizes any performance concerns, and then provides this form to the EPO and the EPO's manager.

As discussed above, the Agency determines non-compliance with water quality through monitoring water test results, receiving notifications of upset conditions from the waterworks operator, and through conducting its own inspections. The Agency's staff inform waterworks operators about the law and Guidelines in a variety of ways. EPOs provide information sheets and verbal guidance. In addition, EPOs' inspection reports, given to waterworks owners and operators at the time of inspection, usually document the action required to address the non-compliance issues. For example, in a case of a water storage reservoir, the EPO will check that it is properly sealed. If it is not, the EPO will direct it be done.

Continued non-compliance with permit terms and conditions can result in a variety of actions. Non-compliance that does not result in immediate drinking water quality problems (e.g., poor recordkeeping, unclean water treatment plant) may result in verbal warnings. These are documented on the inspection form and in the EPO's notebook. The Agency can issue a notice of violation or a warning letter when follow-up requirements identified through previous inspections or correspondence were not complied with. In 2011-12, there were 23 written warnings issued.[7] The Regulations allow for administrative penalties up to $5,000 for non-compliance. Serious offences

[7] 2011-12 State of Drinking Water Quality Report, p. 25.

result in prosecution. In 2011-12, there were 16 cases where charges were laid and 5 convictions.[8]

In comparing inspection reports for 30 waterworks, we found that the Agency did not have a consistent way of addressing non-compliance with permit conditions. For example, 18 out of the 30 waterworks we looked at had issues that continued from one inspection to the next. Issues that continued included: sampling not being performed as required by the permit, drinking water quality standards not met, annual notices to consumers not being provided, and improperly sealed water storage reservoirs. Similar non-compliance issues were found during the Agency's inspections as shown in **Figure 5.**

Figure 5—Three Year Summary of Non-compliance Issues by Inspection Element

Inspection Element	2009-10	2010-11	2011-12
Disinfection of water not continuous at plant	16	10	18
Disinfection (i.e., free chlorine > or = 0.1 mg/L) of water leaving the plant on one or more days not at the appropriate level	111	76	126
Monitoring daily chlorine not occurring	60	59	62
Reservoirs not in good repair	17	16	20
Water treatment plant not in a clean and orderly condition	18	16	24
Chlorine in the distribution system on one or more days not at the appropriate level	112	120	128
Bacteriological testing after completion, alteration, extension or repair not done	19	12	14
Reporting of chlorine upsets not occurring	52	46	44
Inadequate record keeping	38	37	60

Source: 2009-10 to 2011-12 State of Drinking Water Quality in Saskatchewan Reports (Table 7)

Note: The Agency inspected 886 waterworks in 2009-10 and 2010-11 and 910 waterworks in 2011-12. Disinfection/chlorine issues in the table represent one or more days in the year where a waterworks did not maintain or record an adequate chlorine level. A waterworks owner tests for adequate disinfection levels on a daily basis.

Also, as of March 31, 2013, we found 18 waterworks that did not employ a certified operator as required by the permit. Some of these operators are working towards getting certified. Six of these waterworks are planning to move to hygienic use where the permit will not require a certified operator. Waterworks owners hire operators to run the waterworks. Waterworks without a certified operator are still required to test the water and are being inspected by the Agency. Most waterworks permitted for human consumptive use are required to have an operator certified through the provincial Operator Certification Board to oversee the waterworks. Some smaller municipal waterworks are only required to have an operator who is trained in waterworks operations but not certified, or the local waterworks operator can be overseen by a regional certified operator who visits the waterworks once a week. Certified operators

[8] Ibid.

can help maximize the performance of waterworks facilities, protect the waterworks infrastructure, and protect public health by having the skills, knowledge, and judgment to perform their work competently.

The Agency does not have adequate policies that guide staff when waterworks do not comply with permits. Without written guidance, the same problems may be handled differently, even in similar situations. This increases the risk of problems continuing, ultimately compromising drinking water safety.

4. **We recommend that the Water Security Agency establish policies to consistently address non-compliance by waterworks owners and take action when they do not comply with permit conditions.**

The Ministry of Government Relations (Government Relations) plays a part when it comes to the construction or modification of a public waterworks. Given the high cost of waterworks infrastructure, constructing or modifying a waterworks can cost millions of dollars. In the past, Government Relations provided financial support through federal-provincial funding initiatives to municipalities looking to undertake significant waterworks upgrades. To assist Government Relations in deciding funding approvals, the Agency provided a list of waterworks that are in need of upgrading because of poor water quality. As of December 31, 2012, this list included 70 waterworks.

Also, Government Relations is responsible for review and approval of certain subdivisions. When requested, the Agency provides comments to Government Relations for the subdivision review because Government Relations wants to know whether the existing waterworks will be able to adequately serve the residential development. However, sometimes Government Relations has given approvals for residential developments when the subdivision expansion will not be adequately served by the existing waterworks. Government Relations requires waterworks to be upgraded by the time development is done. However, such upgrades are not always occurring in a timely manner.

5. **We recommend that the Water Security Agency and the Ministry of Government Relations coordinate their efforts to ensure waterworks owners have feasible plans for upgrading water infrastructure before approving new residential developments to ensure sufficient infrastructure exists as development occurs.**

Once the subdivision is approved, the municipality will then apply to the Agency to extend water mains to serve the subdivision even though the existing waterworks may not be adequate to support further development. To deal with such instances, the Agency issues permits for construction under the "parallel growth" policy, as noted in **Section 5.1.3**. The policy allows construction permits issued to include conditions where waterworks owners provide written commitments that waterworks upgrades will take place as residential development occurs.

As of March 31, 2013, the Agency had approved 26 construction permits under the "parallel growth" policy. Five of these construction permits have drinking water implications and the remainder relate to wastewater treatment improvements needed. While such written commitments were provided, some waterworks owners have not fulfilled their commitments and undertaken upgrades by the deadlines required. This has resulted in residents moving into new developments before the upgraded water infrastructure is in place. During our audit period, we found instances where residential developments had inadequate wastewater capacity (i.e., lagoon capacity) but not inadequate drinking water infrastructure. As with all waterworks, the Agency inspects the water distribution system that serves the new development. If the Agency finds the new development impacts the quality of water, a drinking water advisory is issued (which is further described below).

6. We recommend that the Water Security Agency determine an appropriate enforcement policy for waterworks owners that do not fulfill their commitments to upgrade waterworks for new residential developments.

5.3.2 Timely Public Advisories Issued

When non-compliance with permit conditions indicates a drinking water quality problem, the Agency may issue a Precautionary Drinking Water Advisory (PDWA). If a confirmed threat to the public exists, the relevant Regional Health Authority (health region) will issue an Emergency Boil Water Order (EBWO). Health regions issue EBWOs in consultation with the Agency when a threat to public health (i.e., microbial contamination) has been confirmed. The Agency issues PDWAs in consultation with health regions when there is a possibility that problems may exist even if an immediate public health threat has not been identified. Waterworks owners are responsible for making the public and the affected consumers aware that a PDWA or an EBWO has been issued. We found that PDWAs were issued when required.

Under a PDWA or an EBWO, water must be boiled before it is used for drinking purposes or used for any other activities where it could be consumed (e.g., brushing teeth). As of December 2012, waterworks regulated by the Agency had 74 PDWAs and two EBWOs. 33 of those 74 PDWAs have been in place for more than two years. Most of those 33 PDWAs have inadequate disinfection and in certain cases, water infrastructure changes are required to fix the problem. See **Figure 6** for PDWAs over the past three years.

Figure 6—Number of Precautionary Drinking Water Advisories (PDWAs) and Emergency Boil Water Orders (EBWOs)

As of March 31	Number of PDWAs	Number of EBWOs
2010	68	-
2011	69	-
2012	76	2

Source: State of Drinking Water Quality in Saskatchewan (2011-12 and 2010-11)

5.3.3 Non-Compliance Publicly Reported

Waterworks owners are required to report water quality results to consumers on an annual basis. During the inspections, EPOs check for compliance with this requirement.

The Agency also collects and stores data on water quality. We found the Agency disseminates water quality information to the public on a regular basis via the SaskH20 website.

The Agency will continue to produce an annual report on the state of drinking water quality (previously done by the Ministry of Environment).

6.0 Selected References

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