

Drinking Water Quality and Compliance Town Long Form – A Template for Annual Notice to Consumers

Saskatchewan Environment (SE) requires that at least once each year waterworks owners provide notification to consumers of the quality of water produced and supplied as well as information on the performance of the waterworks in submitting samples as required by a Minister's Order or Permit to Operate a waterworks. The following is a summary of the Town of Shellbrook water quality and sample submission compliance record for the 2011 time period. This report was completed on June 13, 2012 (*must be completed before June 30 each year on a calendar year based reporting frequency*). Readers should refer to SE's "Municipal Drinking Water Quality Monitoring Guidelines, November 2002, EPB 202" for more information on minimum sample submission requirements. Permit requirements for a specific waterworks may require more sampling than outlined in the department's monitoring guidelines. If consumers need more information on the nature and significance of specific water tests, for example, "what is the significance of selenium in a water supply", more detailed information is available from:

<http://www.hc-sc.gc.ca/hecs-sesc/water/dwgsup.htm>.

Water Quality Standards

Bacteriological Quality

| Parameter/Location | Limit | Regular Samples Required | Regular Samples Submitted | # of Positive Regular Submitted (Percentage) |
|--|--|--------------------------|---------------------------|--|
| Total Coliform and Background Bacteria | 0 Organisms/100 mg/L Less than 200 Organisms/100 mL | <u>52</u> | <u>53</u> | <u>0</u> (0%) |

The owner/operator is responsible to ensure that 100 per cent of all bacteriological samples are submitted as required. All waterworks are required to submit samples for bacteriological water quality; the frequency of monitoring depends on the population served by the waterworks.

Water Disinfection

Chlorine Residual in Distribution System for Test Results Submitted with Bacteriological Samples

| Parameter | Minimum Limit (mg/L) | Free Chlorine Residual Range | Total Chlorine Residual Range | # Tests Required | # Tests Submitted | # Adequate Chlorine (Percentage) |
|-------------------|------------------------------------|------------------------------|-------------------------------|------------------|-------------------|----------------------------------|
| Chlorine Residual | 0.1 mg/L free OR 0.5 mg/L total | <u>0.17-1.47 mg/l</u> | <u>0.44-2.22 mg/l</u> | <u>52</u> | <u>53</u> | <u>53</u> (102%) |

A minimum of 0.1 milligrams per litre (mg/L) free chlorine residual OR 0.5 mg/L total chlorine residual is required at all times throughout the distribution system unless otherwise approved. A proper chlorine submission is defined as a bacteriological sample submission form with both the free and total chlorine residual fields filled out. An adequate chlorine is a result that indicates that the chlorine level is above the regulated minimums. An adequate chlorine may be counted even if the chlorine results were submitted incorrectly. A waterworks is required to submit chlorine residual test results on every bacteriological sample they submit.

Water Disinfection

Free Chlorine Residual for Water Entering Distribution System from Waterworks Records-From Water Treatment Plant Records

| Parameter | Limit (mg/L) | Test Level Range | # Tests Performed | # Tests Not Meeting Requirements |
|------------------------|--------------|------------------|-------------------|----------------------------------|
| Free Chlorine Residual | at least 0.1 | <u>0.12-3.00</u> | <u>756</u> | <u>0</u> |

A minimum of 0.1 milligrams per litre (mg/L) free chlorine residual is required for water entering the distribution system. Tests are normally performed on a daily basis by the waterworks operator and are to be recorded in operation records. This data includes the number of free chlorine residual tests performed, the overall range of free chlorine residual (highest and lowest recorded values) and the number of tests and percentage of results not meeting the minimum requirement of 0.1 mg/L free chlorine residual.

Turbidity – From Water Treatment Plant Records

| Parameter | Limit (NTU) | Test Level Range | # Tests Not Meeting Requirements | Maximum Turbidity (NTU) | # Tests Required | # Tests Performed |
|------------------|--------------------|-------------------------|---|--------------------------------|-------------------------|--------------------------|
| Turbidity | <u>1.0 NTU</u> | <u>0.13-0.36 NTU</u> | <u>0</u> | <u>0.36</u> | <u>365</u> | <u>366</u> |

Turbidity is a measure of water treatment efficiency. Turbidity measures the “clarity” of the drinking water and is generally reported in Nephelometric Turbidity Units (NTU). All waterworks are required to monitor turbidity at the water treatment plant. The frequency of measurement varies from daily for small systems to continuous for larger waterworks.

Chemical – Health Category

| Parameter | Limit MAC (mg/L) | Limit IMAC (mg/L) | Sample Results | # Samples Exceeding MAC/IMAC | # Samples Required | # Samples Submitted |
|------------------|-------------------------|--------------------------|-----------------------|-------------------------------------|---------------------------|----------------------------|
| Arsenic | 0.025 | | <u>0.0005</u> | <u>0</u> | <u>1</u> | <u>1</u> |
| Barium | 1.0 | | <u>0.019</u> | <u>0</u> | <u>1</u> | <u>1</u> |
| Boron | | 5.0 | <u>0.67</u> | <u>0</u> | <u>1</u> | <u>1</u> |
| Cadmium | 0.005 | | <u><0.00001</u> | <u>0</u> | <u>1</u> | <u>1</u> |
| Chromium | 0.05 | | <u><0.0005</u> | <u>0</u> | <u>1</u> | <u>1</u> |
| Fluoride (avg.*) | 1.5 | | <u>0.12</u> | <u>0</u> | <u>1</u> | <u>1</u> |
| Lead | 0.01 | | <u>0.0004</u> | <u>0</u> | <u>1</u> | <u>1</u> |
| Nitrate (avg.*) | 45.0 | | <u>5.3</u> | <u>0</u> | <u>1</u> | <u>1</u> |
| Selenium | 0.01 | | <u>0.0003</u> | <u>0</u> | <u>1</u> | <u>1</u> |
| Uranium | 0.02 | | <u>0.0017</u> | <u>0</u> | <u>1</u> | <u>1</u> |

Substances within the chemical health category may be naturally occurring in drinking water sources or may be the result of human activities. These substances may represent a long-term health risk if the Maximum Acceptable Concentration (MAC) or Interim Maximum Acceptable Concentration (IMAC) is exceeded. All drinking water supplies are required to monitor for substances in the Chemical-Health category, the frequency of monitoring depends on the population served by the waterworks. Some waterworks will add fluoride to drinking water as a means to aid in the prevention of dental decay.

Chemical – Trihalomethanes

| Parameter | Limit IMAC (mg/L) | Sample Result (average) | # Samples Required | # Samples Required |
|------------------------|--------------------------|--------------------------------|---------------------------|---------------------------|
| Trihalomethanes (THMs) | 0.1 | <u>N/A</u> | <u>N/A</u> | <u>N/A</u> |

THMs are generated during the water disinfection process as a by-product of reactions between chlorine and organic material. THMs are generally found only in drinking water obtained from surface water supplies. THMs are to be monitored on a quarterly basis and the IMAC result is expressed as an average of 4 quarterly samples. Only water supplies derived from surface water or groundwater under the influence of surface water are required to monitor for THMs.

General Chemical

| Parameter | Aesthetic Objectives* (mg/L) | Sample Results (average) | # Samples Required | # Samples Submitted |
|------------------------|------------------------------|--------------------------|--------------------|---------------------|
| Alkalinity | 500 | <u>368</u> | <u>1</u> | <u>1</u> |
| Bicarbonate | No Objective | <u>449</u> | <u>1</u> | <u>1</u> |
| Calcium | No Objective | <u>97</u> | <u>1</u> | <u>1</u> |
| Carbonate | No Objective | <u><1</u> | <u>1</u> | <u>1</u> |
| Chloride | 250 | <u>442</u> | <u>1</u> | <u>1</u> |
| Conductivity | No Objective | <u>3080</u> | <u>1</u> | <u>1</u> |
| Hardness | 800 | <u>419</u> | <u>1</u> | <u>1</u> |
| Magnesium | 200 | <u>43</u> | <u>1</u> | <u>1</u> |
| PH | No Objective | <u>7.94</u> | <u>1</u> | <u>1</u> |
| Sodium | 300 | <u>530</u> | <u>1</u> | <u>1</u> |
| Sulphate | 500 | <u>680</u> | <u>1</u> | <u>1</u> |
| Total dissolved solids | 1500 | <u>2050</u> | <u>1</u> | <u>1</u> |

All waterworks serving less than 5000 persons are required to submit water samples for SE's General Chemical category once every two years if a ground water source or once per three months every second year if a surface water or blended surface/groundwater source. The General Chemical category includes analysis for alkalinity, bicarbonate, calcium, carbonate, chloride, conductivity, hardness (as CaCO₃), magnesium, sodium, sulphate and total dissolved solids.

The last sample for General Chemical analysis was required in 2012 and submitted on *Jan 14, 2011 and Jan 16, 2012*. Samples exceeded provincial aesthetic objectives for the General Chemical category for the following parameters: *Total dissolved solids, chloride, sodium* and sulphate.

*Objectives apply to certain characteristics of or substances found in water for human consumptive or hygienic use. The presence of these substances will affect the acceptance of water by consumers and/or interfere with the practice of supplying good quality water. Compliance with drinking water aesthetic objectives is not mandatory as these objectives are in the range where they do not constitute a health hazards. The aesthetic objectives for several parameters (including hardness as CaCO₃, magnesium, sodium and total dissolved solids) consider regional differences in drinking water sources and quality.

More information on water quality and sample submission performance may be obtained from:

Town/Village/Hamlet/Rural Municipality/Owner Name and Title
Postal Address
Telephone number/Facsimile number (if available)/E-mail address (if available)

(Note: This form may be used for communities or waterworks serving a population of less than 5000 persons.)

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