

PART 4 GUIDELINES FOR ASSESSMENT AND DEMONSTRATION OF WATER QUALITY – GROUND WATER AND SURFACE WATER SOURCES

Qualified Professionals

4.1 The **Owner** should engage **Qualified Professionals** having appropriate qualifications to complete the testing, analysis, and interpretation requirements of this Part.

Assessment and Demonstration of Water Quality Program

4.2 Water quality should be tested against the following parameters:

Parameter	Required Testing Parameters for Ground Water	Required Testing Parameters for Surface Water
Microbiological and Related		
Escherichia Coli*	✓	✓
Total and Faecal Coliforms*	✓	✓
Heterotrophic Plate Count	✓	✓
Cyanobacterial toxins--microcystin-LR*		✓
Chemical and Physical		
Alkalinity	✓	✓
Ammonia	✓	✓
Colour**	✓	✓
Conductivity	✓	✓
Total and Dissolved Organic Carbon	✓	✓
Hardness	✓	✓
Nitrate*	✓	✓
Nitrite*	✓	✓
pH**	✓	✓
Sulphate**	✓	✓
Sulphide (as H ₂ S)**	✓	✓
Total dissolved solids (TDS)**	✓	✓
Total Kjeldahl Nitrogen	✓	✓
Total Suspended Solids (TSS)	✓	✓
Turbidity***	✓	✓
UV Transmittance	✓	✓

Parameter	Required Testing Parameters for Ground Water	Required Testing Parameters for Surface Water
Metals - Total and Dissolved		
Aluminum**	✓	✓
Antimony*	✓	✓
Arsenic*	✓	✓
Barium*	✓	✓
Beryllium	✓	✓
Boron*	✓	✓
Cadmium*	✓	✓
Calcium	✓	✓
Chloride**	✓	✓
Chromium*	✓	✓
Cobalt	✓	✓
Copper**	✓	✓
Cyanide*	✓	✓
Fluoride*	✓	✓
Iron**	✓	✓
Lead*	✓	✓
Magnesium	✓	✓
Manganese*	✓	✓
Mercury*	✓	✓
Molybdenum	✓	✓
Nickel	✓	✓
Phosphorus	✓	✓
Potassium	✓	✓
Selenium*	✓	✓
Silver	✓	✓
Sodium**	✓	✓
Uranium*	✓	✓
Zinc**	✓	✓

* As of October, 2009, parameter has a maximum acceptable concentration identified in the Guidelines for Canadian Drinking Water Quality.

** As of October, 2009, parameter has an aesthetic objective or operational guidance value identified in the Guidelines for Canadian Drinking Water Quality.

*** As of October, 2009, parameter has a health based guideline identified in its Guideline Technical Document supporting the Guidelines for Canadian Drinking Water Quality.

4.3 The water quality testing parameters set out in this bylaw should, at the **Owner's** discretion, be supplemented with additional parameters based on local knowledge or recommendations from the **Qualified Well Driller** or other qualified person, including hydrocarbons, pesticides, herbicides, radiological, or other parameters.

- 4.4** Samples collected for testing must be representative of the water quality to be expected once the proposed system is in service, and in particular
- a) if a **Ground Water** source is proposed, then the samples must be collected at the end of the pump test; and
 - b) if a surface water source is proposed, then the samples must be collected at a depth and location that is representative of the proposed intake location.
- 4.5** At a minimum, the following sampling sets must be completed:
- a) for a surface water source, at least one sampling set taken during the period May to August must be completed;
 - b) for a **Ground Water** source, a minimum of one sample set must be taken in conjunction with the pump test, during the period from August of one year to April of the following year; and
 - c) for both **Ground Water** and surface water sources, additional sampling sets must be taken at appropriate times as recommended by the **Qualified Professional** to determine pre-treatment requirements.
- 4.6** All samples should be collected, preserved, stored, handled, and analyzed in accordance with the Standard Methods for the Examination of Water and Wastewater, published by the American Public Health Association, the American Waterworks Association and the Water Environment Federation, as amended or replaced from time to time.
- 4.7** Testing for pH, temperature, oxidation reduction potential (ORP) and turbidity must be completed in the field.
- 4.8** The following data should be recorded at the time of sampling:
- a) date;
 - b) time;
 - c) weather conditions;
 - d) name of person completing sampling;

- e) location and how sampling was completed;
- f) sample clarity and colour; and
- g) sample odour.

4.9 Testing must be completed by a laboratory certified by the Canadian Association for Laboratory Accreditation for chemical analysis, and a laboratory accredited by the Provincial Health Officer for bacteriological analysis.

4.10 A laboratory chain of custody document must be submitted to the **Regional District** with all test results.

4.11 If the testing results are conflicting or inconclusive, then additional testing must be completed.

Interpretation of Results

4.12 The **Owner** should engage a **Qualified Professional** to determine how the **Independent On-site Water System** will comply with the water quality requirements of this bylaw. This assessment should include the following:

- a) review of the general information for the proposed subdivision;
- b) review of the assessment and demonstration of water availability requirements and report;
- c) review of the water quality results, and determination of whether adequate information has been collected to complete the assessment; and
- d) preparation of water system design, including but not limited to treatment and disinfection components, and guidelines to the owner for a future testing regimen.

Assessment and Demonstration of Water Quality Report

4.13 Upon completion of the assessment and demonstration of water quality requirements, the **Owner** should submit a report completed by a **Qualified Professional** in a form satisfactory to the **Regional District**, which should contain, at a minimum, the following information:

- a) description of the water system proposed for each **Parcel**;

- b) a summary of the water quality testing including:
 - i. a copy of the field sampling notes and results;
 - ii. a copy of the laboratory chain of custody document;
 - iii. a comparison of the results to the definition of **Potable Water** contained in this bylaw and any additional parameters for which the water has been tested;
 - iv. any tested quality parameter which falls outside of either health or aesthetic limitations;
 - v. any recommended treatment methodologies or equipment required to achieve potability requirements, together with maintenance programs for treatment methods; and,
 - vi. any suspected deficiencies with the sampling or testing;
- c) design details and plans for each **Independent On-site Water System**, signed and sealed by a **Qualified Professional**;
- d) copies of relevant permits and approvals;
- e) a determination of whether the **Potable Water** is expected to comply with the definition of that term contained in this bylaw when the recommended system is installed and operated; and
- f) a summary regarding outcomes of the assessment and demonstration of water quality investigation, indicating whether the proposed water source meets the requirements of this bylaw, and whether any changes are being made to the application.