

Application Form and Guide for an EPEA Registration Code of Practice for Waterworks Systems Using High Quality Groundwater

Introduction

The attached form and guidelines outline the information required for an application for a registration of a waterworks system using a high quality groundwater supply. The application has been prepared in accordance with the *Environmental Protection and Enhancement Act (EPEA) RSA 2000, c.E-12* and the *Environmental Protection and Enhancement Act (Miscellaneous) Regulation 118/1993*. Please ensure that each section of the application is completed in a concise and clear manner.

A waterworks system includes high quality groundwater wells, water supply line(s), water treatment plant, storage, pumping and distribution systems.

For your information, the general steps and procedures that are followed when reviewing and issuing a Registration for municipal waterworks system is illustrated by the attached flow chart (Figure 1).

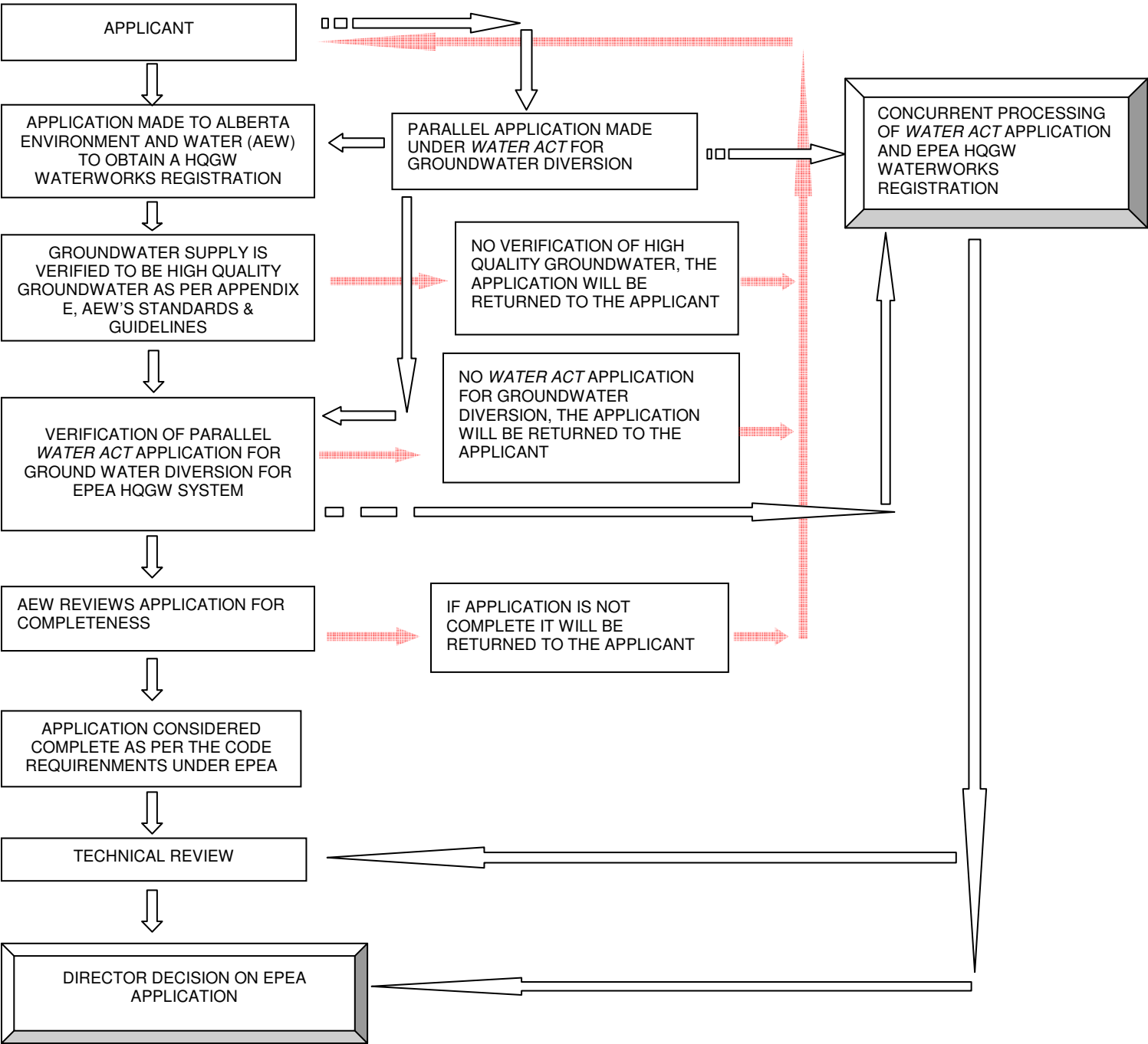
Application for a new Registration for systems using high quality groundwater must contain written confirmation, by a Professional Engineer, that all aspects of the waterworks design conform to the requirements of the Code of Practice, the Regulations under the Act, or a statement identifying and justifying and deviation. The plans and specifications submitted in support of the Code of Practice registration must also be signed and stamped by a Professional Engineer.

All information spaces in this application must be filled in or marked not applicable (N/A). Failure to provide all necessary information may cause the application to be rejected and returned to the applicant.

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**FIGURE 1 - THE PROCEDURE FOR A
CODE OF PRACTICE REGISTRATION – HQGW WATERWORKS SYSTEM**



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1.0 Administrative Information

1.1 Name of the proposed High Quality Groundwater Waterworks System:

1.2 Legal land description of the existing or proposed High Quality Groundwater Waterworks System:

Land Location _____ SEC _____ TWP _____ RG _____ M _____

or other (street address) _____

GPS Co-ordinates: Latitude: _____ Longitude: _____

1.3 Submission of a map / plan of the area showing the location of the following landmarks must be submitted in support of the application. The map should show:

- (a) the raw water supply well(s);
- (b) any raw water reservoirs or pump stations;
- (c) the water treatment plant (including a schematic of the plant);
- (d) any treated water reservoir(s) and pump stations (if any);
- (e) the layout of any existing or proposed treated water distribution piping.

1.4 *Water Act* application number, preliminary certificate, or Licence number for a groundwater diversion.

1.5 Proposed date for waterworks construction: _____

1.6 Name and Address of waterworks Owner (Municipality / Commission / Utility / Water Co-op / Company):

Name: _____

Address: _____

Contact Person: _____ Position: _____

Telephone: _____ Fax: _____

Email Address: _____

Is your organization listed and in good standing on the Corporate Registry?

Yes No

1.7 If the facility is to remain privately owned and operated, provide confirmation that:

- (a) a long term framework (i.e.: condominium association or other association acceptable to the department) has been set up for ownership and operation:

Yes No

Details: _____

- (b) a legal instrument such as a caveat or restrictive covenant has been registered on each land title, clearly outlining the property owners responsibility:

Yes No

Details: _____

1.8 Operating staff and person(s) that will be responsible for the day to day operation of the waterworks system:

NAME OF OPERATOR(S)	POSITION	AEW CERTIFICATION		WORK PHONE #
		CERT. #	CLASS	

2.0 Waterworks System (Technical Data)

- 2.1 Submission of EPEA Standards and Guidelines, Appendix E documentation that verifies that the raw water supply is not Groundwater Under the Direct Influence of Surface Water. (GWUDI)

Yes No

If No, explanation for lack of submission, and projected date of submission of information: _____

- 2.2 Raw water analysis (physical, inorganic and organic chemical and pesticide parameters) must be submitted in support of this application. Included: Yes

Date of analysis: _____

- 2.3 Confirmation that a written Operations Plan as per this Code of Practice has been prepared governing the operation of the waterworks system. Yes

- 2.4 Submission of plans and specifications (signed and stamped by a Professional Engineer) of the water treatment plant. (including design capacity) Yes

2.5 Submission of engineering drawings including piping profiles and specifications (signed and stamped by a Professional Engineer) of the treated water distribution system.

Yes

2.6 All aspects of the design of the waterworks systems complies with the design requirements of:

(a) this Code of Practice, and

(b) the regulations under the Act.

Yes No

If No, identification and justification of the deviation from this Code of Practice and/or the regulations under the Act: (with Engineers signature and stamp):

2.7 Length in kilometres of treated water distribution system: _____ kms

2.8 Population that will ultimately be served by the waterworks system: _____ persons.

FLOWS)	AVERAGE DAILY FLOW (m ³ / DAY)	MAXIMUM DAILY FLOW (m ³ / DAY)	PEAK HOURLY FLOW (L / HOUR)
Current			
Design			

2.9 Are there any other Municipality(ies), Development(s) Commissions / Co-ops / or Companies outside the municipal boundaries obtaining potable water from the waterworks system (other than truck haul)?

Yes No

If yes, please provide a list of the systems, the name and phone number of the contact person(s) and approximate annual flows or population.

NAME OF SYSTEM	CONTACT PERSON	PHONE NUMBER	ANNUAL FLOW (m ³) OR POPULATION

2.10 Are there any truck fill stations? Yes No If yes, how many? _____
 Are the truck fill stations metered? Yes No Average monthly flows (m³) _____

2.11 Raw Water Supply:

High Quality Groundwater

Details of well(s):

Water Resources Act / Water Act Licence No.	Well No.	Legal Land Description ----- GPS Co-ordinates	Date Well Came Into Production Month/Year	Well Completion Depth (m)	Intake Depth (m)	Present Annual Water Use (m ³) per Year (if applicable)	Production Rate (L/s)	Rated Pump Capacity (L/s)
			/					
			/					
			/					
			/					

Raw water pumping:

UNIT	POWER RATING (kW)	CAPACITY (L/s)

2.12 Water Metering:

(a) Please list all flow monitoring locations:

i) Monitoring in the Treatment Process:

A) Raw water monitoring location: _____

B) Treated water monitoring location: _____

C) Other monitoring location: _____

ii) In the distribution system (i.e.: residential, commercial, industrial, public / government, or any combination of): _____

2.13 Raw Water Storage Reservoir(s):

DESCRIPTOR OR NAME	ELEVATED, SURFACE, OR UNDERGROUND	CONSTRUCTION MATERIAL	VOLUME (m ³)	LOCATION (STREET ADDRESS / LEGAL LAND LOCATION / GPS CO-ORDINATES)

Total volume of raw water storage _____(m³).

2.14 Mandatory Water Treatment Requirement - High Quality Groundwater Systems:

RAW WATER VIRUS LEVELS	LOG REDUCTION REQUIREMENT
	4.0 log

2.15 Discretionary or Aesthetic Parameter Water Treatment Processes - High Quality Groundwater Systems:

- (a) **Aeration (raw water):** Yes No Type of aeration _____
- (b) **Pre-disinfection or oxidation:** Yes No Chemical used _____
- (c) **Filters – Greensand:** (Iron and / or Manganese removal) Yes No

GREENSAND FILTER NUMBER	SURFACE AREA	DESIGN LOADING RATE (M/H)
1		
2		
3		

(d) **Filter(s) – Membrane:**

Microfiltration Ultrafiltration Nanofiltration Reverse Osmosis

MEMBRANE FILTER MODULES	PORE SIZE (μ)

2.16 Mandatory Water Treatment Requirement – Disinfection:
Disinfection (indicate type of primary disinfection practiced):

Chlorine Gas Sodium Hypochlorite
 Chloramination Calcium Hypochlorite
 Ozonation Chlorine Dioxide

Location of injection of primary disinfectant introduction _____

CT Disinfection:

Use the formula below for CT disinfection calculation (*Viruses*).

CT Required – Viruses – AEW Appendix B _____

Log reduction (Viruses) target for disinfection – 4-log reduction

Minimum temperature (°C) _____ Maximum pH _____

Baffling Factor of treated water reservoir(s) (T_{10}/T) _____

Please include reservoir details (length, width, height, inlet/outlet details, to verify baffling factor).

V_{min} (designed minimum volume in reservoir in Litres) _____

Q_{peak} (max designed hourly flow (L/min) or twice the daily designed flow (L/min)) _____

$$CT_{\text{lowest actual}} = C \times \frac{T_{10}}{T} \times \frac{V_{min}}{Q_{peak}}$$

where: C = lowest recorded daily free chlorine residual concentration (in milligrams per litre) at the point T_{10} is measured;

$$\frac{T_{10}}{T} = 0.1; \quad \text{OR}$$

varies based on the empirical method using typical baffling conditions as per Appendix D in the Standards and Guidelines Document; OR

varies based on a tracer study, where

T_{10} = the contact time (in minutes) established from the most recent tracer study; and

T = the calculated contact time (in minutes), assuming no short-circuiting and obtained by dividing the treated water chlorine contact storage volume that was used to determine T_{10} , by the flow that was used to determine T_{10} ;

V_{\min} = the daily designed minimum volume (in Litres) of treated water in the disinfection contact reservoir;

Q_{peak} = maximum recorded hourly flow (Litres per minute) or twice the daily average flow (Litres per minute)

2.17 Confirmation that all water treatment chemicals used in the waterworks are NSF approved: Yes No

If No, include non-NSF chemicals in the table below).

2.18 Inventory of all water treatment chemicals used (including non NSF). (Please identify all the chemicals used seasonally or continuously, including descalents, pH adjusters, and chlorine as a pre-oxidant or disinfectant.)

CHEMICAL NAME	NSF APPROVED YES/NO	CHEMICAL TYPE AND FUNCTION	LOCATION OF POINT OF INJECTION	SEASONAL / CONTINUOUS

2.19 Confirmation that the system has an on-line chlorine analyzer:

(a) entering the distribution system: Yes No

(b) with alarm to operator: Yes No

(c) with data capture to record chlorine residual values: Yes No

2.20 Disposal and handling of wastewater and wastewater from water treatment plant:

TYPE OF WASTE STREAM	DECHLORINATION OF WASTE STREAM BEFORE DISCHARGE (YES/NO)	METHOD / LOCATION OF WASTE DISPOSAL
Filter Backwash (if applicable)		
Filter-to-waste(if applicable)		
Waste from on-line Chlorine analyzer		
Drain down (membranes) (if applicable)		
Clean in place (membranes) (if applicable)		
Rejection stream (membranes) (if applicable)		
Waste from lab sink or floor drain(s) (if applicable)		
Wastewater from toilet and/or bathroom (if applicable)		
Other (Specify)		

3.0 Treated Water Distribution System

3.1 Treated Water Storage Reservoir(s):

DESCRIPTOR	ELEVATED SURFACE, OR UNDERGROUND	CONSTRUCTION MATERIAL	VOLUME (m ³)	LOCATION (STREET ADDRESS / LEGAL LAND LOCATION / GPS CO-ORDINATES)

Total volume of treated water storage _____(m³).

3.2 Treated Water Distribution Pumps:

UNIT	POWER RATING (kW)	CAPACITY (L/s)

3.3 Emergency Pumping and Genset:

UNIT	POWER RATING (kW)	CAPACITY (L/s)

Total capacity of emergency pumps _____ (L/s).

Description and location of fuel source for emergency pumping _____

4.0 Monitoring Parameter Requirements

TYPE OF MEASUREMENT	LOCATION	TYPE OF SAMPLE ANALYSES REQUIRED (GRAB, OR ON-LINE)
Chlorine residual	Leaving the water treatment plant	On-line
Chlorine residual	In the distribution system	Grab
CT Disinfection Parameters (Viruses)		
pH (raw water)	In the raw water	Grab or On-line
Temperature (raw water)	In the raw water	Grab or On-line
Reservoir Volume	In the treated water reservoir	Measured
Maximum pump flow	Leaving the water treatment plant	Measured
CT Viruses (4-log)	Leaving the water treatment plant	Calculated

5.0 Operations Plan

- 5.1 An operations plan must be submitted in support of this application. The operations plan shall contain the following:
- (a) Routine Operational Procedures, which shall, at a minimum, include:
 - i) contact name and telephone numbers for the system owner, system operator, engineering consultants and equipment suppliers,
 - ii) operating instructions:
 - A) general description of treatment process and operating procedures,
 - B) performance requirements, and
 - C) location of equipment major controls;

- iii) general maintenance schedule, and
 - iv) general maintenance instructions for:
 - A) treatment / process equipment,
 - B) monitoring equipment,
 - C) pumping equipment; and
 - v) the schedule and procedures for cleaning and flushing of the water distribution system, including potable water storage reservoirs;
- (b) Routine Operational Procedures for Monitoring Parameter Requirements, which shall, at a minimum, include:
- i) operational and compliance tests to be performed,
 - ii) bacteriological quality monitoring plan,
 - iii) methods used for monitoring and analysis,
 - iv) locations of monitoring points, and
 - v) laboratory data quality assurance information;
- (c) Emergency Response Plan, which shall, at a minimum, includes steps to be taken in the event of the following:
- i) bacteriological results exceeding the prescribed limits,
 - ii) low Chlorine residual,
 - iii) CT not being met,
 - iv) equipment breakdown,
 - v) flood and other natural disasters,
 - vi) water distribution system pipeline break and repair, and the return of the pipeline to service,
 - vii) power failure,
 - viii) the waterworks system becoming inoperable, including steps in providing an alternate potable water supply, and
 - ix) list of contacts: Alberta Environment and Water, Alberta Health, Regional Health Authorities, Fire Department, Disaster Coordinator, and other agencies.

6.0 Waterworks Application Signature (OWNER)

The *Environmental Protection and Enhancement Act* and Regulations, provide a specific definition for the "owner" and "person responsible for a waterworks system". Therefore, the person(s) responsible/person signing this document should be familiar with the applicable sections of the *Environmental Protection and Enhancement Act* and the Regulations.

The sections of the *Environmental Protection and Enhancement Act* and Regulations that are of particular relevance to waterworks system are:

- (a) *Environmental Protection and Enhancement Act (EPEA) RSA 2000, c.E-12;*
- (b) *Environmental Protection and Enhancement Act Part 2, Division 2 (Approvals, Registrations and Certificates); Part 5 (Release of Substances); Part 7 (Potable Water); Part 10 (Enforcement);*
- (c) *Activities Designation Regulation 276/2003;*
- (d) *Environmental Protection and Enhancement Act (Miscellaneous) Regulation 118/1993;*
- (e) *Approvals and Registrations Procedure Regulation 113/1993;*
- (f) *Code of Practice for Waterworks Systems Using High Quality Groundwater, April 1, 2009;*
- (g) *Potable Water Regulation 277/2003.*

I certify that I am the owner of the system and am familiar with the information contained in this application, and that to the best of my knowledge and belief, such information is true, complete and accurate.

Printed Name of Person Signing

Title

Address

Postal Code

Telephone Number

Fax Number

Date of Application

Signature