Alberta Environment and Parks

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December 2, 2016

Mr. Ron Lutz
Wintergreen Woods Water Utility Ltd.
PO Box 666
Bragg Creek, AB T0L 0K0

Dear Mr. Lutz:

Subject: Compliance Inspection of Wintergreen Woods Waterworks System

Alberta Environment and Parks conducted an inspection of the above noted waterworks system on November 30, 2016. The purpose of the inspection was to assess compliance with the terms and conditions of the Wintergreen Woods Waterworks System Approval # 17543 and amendments as issued under the *Environmental Protection and Enhancement Act* (EPEA) and to identify any additional potential risks to the waterworks.

Attached for your information and attention is a copy of the inspection report prepared by Environment and Parks as documentation of the inspection. The inspection was conducted with operator Eric Faul of H2O Pro. A risk based assessment was completed by Environment and Parks and the Waterworks System passed the assessment and achieved an overall rating of 90%. A copy of the inspection assessment as well as the guidelines utilized is enclosed for your records.

Although the Waterworks system did pass the risk assessment there were some items noted that require your attention.

Please see questions See questions 14, 15, 16, 18, 19 and 25 of the attached Alberta Environment and Parks Waterworks Inspection Report for a more detailed explanation.

All necessary steps must be immediately taken by the approval holder to rectify any non-compliance issues that may have been identified during the inspection and to comply with all approval and Potable Water Regulation requirements.

If you have any questions regarding this letter or would like any additional information, please contact the undersigned, theresa.cole@gov.ab.ca or 403-297-8298.

Sincerely,

Theresa Cole, B.T.Envh, CPHI(C)
Environmental Protection Officer

Enclosure

cc: Craig Knaus, District Compliance Manager (Alberta Environment and Parks)
Craig Reich, Approval Writer (Alberta Environment and Parks)
Eric Faul, H2O Pro (h2opro@icloud.com)

AEP WATERWORKS

INSPECTION REPORT

Waterworks System Name:	Approval Registration #:	Plant classification (Type):
Wintergreen Woods	17543	SW
Approval Holder:	**Approval Expiry Date:**	**Plant classification (Level):**
Wintergreen Woods Water Utility Ltd	Monday, July 01, 2019	Level 2 Level 1
Facility Address:	**Facility Location GPS:**	**Diversion Location GPS:**
Street: Box 666	Latitude: (e.g. 51.1235)	Latitude: (e.g. 51.1235)
Province: AB Town: Bragg Creek Postal Code: T0L0K0	Longitude: (e.g.-114.2168)	Longitude: (e.g.-114.2168)
Facility Contact Number: 403 - 860 - 3821	Water Diversion Licence No.:	Municipal/Industrial Facility:
Facility Emergency Contact Number: 403 - 561 - 2285	08644/0205141	Municipal
Operator's Name: (Interviewed only)	**Source:**	**Daily Peak Flows (m3):**
Eroc Faul-H2O Pro	Elbow River	692m3(October 2016)
Operator's Certification Level: (Interviewed only)	**Population served:**	**Number of Connections:**
WT Level 3 WD Level 2	85 homes plus clubhouse	
Inspector's Name:	**Renewal Application Submitted (yes/no):**	**Daily Average Flows (m3):**
Theresa.Cole@gov.ab.ca SSR-Calgary	N/A	65m3(2016)
Inspection Number:	**Date and Time of Inspection:**	**Date of previous Inspection:**
November 2016	Wednesday, November 30, 2016 10:00 ◉ am ○ pm	Tuesday, January 19, 2016

Short Term Approval Conditions

A. Are there any Short-Term Approval Conditions?	○ NO ◉ YES (If YES, answer B & C)
B. What are the required due dates?	see below comments.
C. Have these Conditions been achieved?	Yes.
D. Have there been any changes to the waterworks system since the last AEP inspection?	No.

Comments:

June 1, 2011: Operations program-completed.
December 31, 2013: Drinking Water Safety Plan-completed.
Data for inspection is from January 1, 2016 to October 31, 2016.

	PRIMARY RISK ASSESSMENT QUESTIONS	ASSESSMENT	COMMENTS
1	Is the operator certification (including back-up operators) appropriate for this facility?	4 - Excellent	Main operator is Jay-Lynn Faul, WT2/WD2, other operators are Colby Faul, WT2/WD2, Eric Faul, WT3/WD2, , Adam Doyle, WT1/WD1 and Doug Haase, WT4/WD2.
2	Have Approval/Code of Practice/Potable Water Regulation contraventions been properly reported?	3 - Good	Two incidents reported since last inspection. Data log failure, shut downs mechanisms were still in place for turbidity, chlorine residual was checked daily in the reservoir. Data logger was repaired the same day Chlorate exceedence above the maximum acceptable concentration under the GCDWQ. Operator resampled November 25/2016, no results back yet. No other contraventions since last inspection.
3	Is monitoring equipment (includes portable, bench top, and continuous on-line meters) used to verify compliance properly maintained and calibrated?	4 - Excellent	No external third party calibrations being done. Eric uses up to date gel standards to calibrate handheld instruments and, expiry is September 2017. Comparison checks completed daily and recorded. Gel standards are used weekly and recorded.
4	Were emergency situations dealt with as required by the Approval, Code of Practice (COP), or legislation?	3 - Good	Data log failure, shut downs mechanisms were still in place for turbidity, chlorine residual was checked daily in the reservoir. Data logger was repaired the same day. Appropriate emergency measures taken. No other emergencies since last inspection.
5	Are treated water turbidity (prior to entering clear well reservoir) limits met?	4 - Excellent	Max turbidity was 0.24NTU in January 2016. Continuous monitoring with alarms, shut-downs and call-outs in place. Meets 2012 standards and guidelines.
6	Are chlorine/ozone residual and contact time (CT) ration requirements met entering the distribution system at the point where CT is achieved?	4 - Excellent	Range from 0.58mg/L(August 2016) to 1.41mg/L(August 2016). Minimum CT ratio 3. Meets best practice of 0.2-2.20mg/L chlorine and all CT ratios above 1.
7	Are UV disinfection approval requirements met (Typically includes UV reactor flow limits, UV transmittance (%T) limits and UV dose limits)?	N/A	No UV disinfection at this plant, not required under the current approval.
8	Are Approval/Code of Practice (COP) chlorine residual (in the distribution system) limits met?	4 - Excellent	Range from 0.34mg/L(April 2016) to 1.28mg/L(May 2016). Meets best practice of 0.1-1.50mg/L chlorine.
9	Is monitoring frequency for treated water bacteriological sampling in the distribution system being met?	4 - Excellent	4 bacteriological samples taken per month at random locations throughout the distribution system, meets GCDWQ. Additional bacteriological samples being taken per month, about 4 to 5 additional.
	PRIMARY RISK ASSESSMENT TOTAL:	30	Sum of ratings
	PRIMARY RISK ASSESSMENT RATING:	93	Average rating of Applicable questions (in %)

PRIMARY RISK ASSESSMENT: PASS PASS requires a 3 or 4 Rating for all applicable questions

	SECONDARY RISK ASSESSMENT QUESTIONS	ASSESSMENT	COMMENTS
10	Is the approval/Code of Practice holder diligent in ensuring that all bacteriological sampling is done properly?	4 - Excellent	No rejected or missed bacteriological samples in 2015. A full bacteriological monitoring plan is in place.
11	Are operators familiar with the current signed Approval or Registration and related legislation for the waterworks system?	4 - Excellent	Current approval available at the time of the inspection. All operators are familiar with the approval and following the requirements of the approval.
12	Are raw water wells located, protected and maintained in a sanitary manner (including Groundwater Under Direct Influence Systems)?	N/A	
13	What raw surface water protection measures are in place to optimize water quality entering the Water Treatment Plant?	4 - Excellent	Raw turbidity, pH and temperature are being taken daily through handheld equipment, no continuous monitoring. Intakes are inspected and both reservoirs were inspected in 2014. Basic ability to control raw water quantity. All waste streams are going to a retention pond on the golf course. Raw water storage at plant, 45m3 full, 3-4 days of reserve for both raw and treated full. All three reservoirs total 513m3.
14	Are Water Treatment chemicals used to the facility listed and used as specified?	3 - Good	12% Sodium Hypochlorite used, max dosage was 6.00mg/L(June 2016). CTI 4900 used, max dosage was 50.00mg/L(June 2016). MSDS sheets available and up to date. **No secondary containment at this plant.**
15	Are system water volumes metered?	3 - Good	Influent, effluent and backwash/filter to waste streams are metered. The homes in the new section are metered but there is no meters in the original development which accounts for most of the homes. This is still being reviewed and may be installed in the future. **There is a partial water balancing program in place but not a full program.**
16	Have preventative maintenance measures been established in the distribution system and treated water reservoir(s) to minimize adverse effects to water quality?	3 - Good	Hydrants are flushed twice per year. Uni-directional flushing and water balancing done with records kept. The two main valves are not being exercised. The reservoir was inspected in January 2014. A return to service protocol is in place for new or repaired mains. **No written maintenance program in place.**
17	Were treated water sample(s) taken as required, for all listed parameters and analyzed by an independent lab accredited for all the parameters analyzed?	4 - Excellent	schedule 4 analysis completed February 4 and August 11/2016. This is an older approval so the full schedule 4 analysis is not a requirement but operators are doing the full sweep. THM's completed February 4, May 5, August 11 and November 22/2016. Chlorate, Chlorite and NDMA also being sampled. Trending of sample results will be included in the 2016 annual report.

	SECONDARY RISK ASSESSMENT QUESTIONS	ASSESSMENT	COMMENTS
18	Does treated water meet the Guidelines for the Canadian Drinking Water Quality (GCDWQ) parameters based on the sampling required for the facility?	2 - Fair	Chlorate exceedence in summer sample, result was 1.30mg/L, MAC is 1.0. Reported to AEP. Operator has completed resample, awaiting results. All other MAC and AO's met.
19	Were reports (monthly and annual) properly compiled and submitted on time?	3 - Good	Annual report is due to be submitted electronically by February 28/2017. Ensure it is submitted to esrd.epeaapprovcal@gov.ab.ca. The 2015 annual report was hand delivered to the AEP office. Ensure section 6.3.3(f), any changes to the operations program is included in the 2016 annual report. Electronic reporting being completed.
20	Are treated water fluoride concentration limits and monitoring requirements met?	N/A	
21	Are filter(s) effluent turbidity monitoring (entering clear well reservoir) requirements met?	4 - Excellent	Continuous monitoring with alarms, shut-downs and call-outs. Alarm set point is over 0.27NTU for 30 seconds system will go into automatic backwash cycle, backwash cycle is 10 minutes, plant will shut down if over 0.28NTU for 24 seconds.
22	Are treated water chlorine residual monitoring (entering distribution system at the point where CT's have been achieved) Approval/COP requirements met?	4 - Excellent	Continuous monitoring with alarms and call-outs. Alarm set points: low alarm 0.50mg/L for 4 minutes, low low alarm 0.3mg/L for 4 minutes, high alarm 1.45mg/L for 20 minutes. Operators are using the minimum chlorine readings from trending for CT calculations.
23	Are treated water chlorine residual monitoring (in the distribution system) requirements met?	4 - Excellent	Done weekly, meets approval. There are additional bacteriological samples collected per week and a chlorine reading is taken at the same time.
24	Is the Operations Program completed as per the Approval/Code of Practice?	4 - Excellent	Operations program is complete. Now completed by operator and not approval holder. Operators have completed a review in 2016 and signed off on the review. No changes in 2016.
25	Is the Drinking Water Safety Plan completed as per the Approval/COP?	3 - Good	DWSP completed, done by operator as the approval holder was going to wait till the upgrade was completed in 2019 or later. Copy will be printed and stored at the plant. Operators reviewed DWSP in 2016. Risks are no back up generators and waste water plant upstream of the raw water reservoir. A new generator will be installed with the upgrade to the plant in 2019. **No actions have been taken to address key risks at this time.**

	SECONDARY RISK ASSESSMENT QUESTIONS	ASSESSMENT	COMMENTS
26	Are the data results of the on-line or continuous monitoring equipment (applies only to turbidity meters and/or chlorine/ozone residual meters) validated to ensure that the results reflect actual quality of the water (some examples of erroneous data results are when air bubbles in the turbidity meter influence the readings or with reduced/increased flow through the chlorine residual monitor)?	4 - Excellent	No issues with data validation in the 2015 annual report. **No written SOP in place for data validation.**
	SECONDARY RISK ASSESSMENT TOTAL:	53	Sum of Ratings
	SECONDARY RISK ASSESSMENT RATING:	88	Average rating of applicable questions (in %)

Overall Waterworks Rating:	90	Overall rating of both Primary and Secondary (in %)
Overall Waterworks System Risk Assessment:	PASS	PASS requires PASS of both Primary and Secondary Assessments

INSPECTION SUMMARY:

See questions 14, 15, 16, 18, 19 and 25.

FAC(AEP): 1.38mg/L TAC(AEP): 1.46mg/L FAC(Operator): 1.33mg/L
Turbidity(AEP): 0.09NTU (Operator): 0.09NTU

Any rating of 1 or 2 may indicate a contravention of the Environmental Protection and Enhancement Act and /or applicable Regulations. You should immediately take all necessary steps to comply with the above. Within thirty (30) days of this audit, you are requested to provide a written response as to how the above noted contraventions were remedied.

Alberta Environment and Parks

Compliance Inspection

The signing of this form hereby acknowledges that a compliance inspection was conducted at the Wintergreen Woods Waterworks System, Approval # 17543 by Alberta Environment and Parks on the date indicated below.

Compliance Inspectors Signature: Theresa Cole

Print Name: Theresa Cole

Operators Signature: _____

Print Name: _____

Other Approval Holder Representative Signature: _____

Print Name: _____

Date: November 30/2016

Alberta Environment and Sustainable Resource Development (ESRD) Potable Water System Risk-Based Inspection Assessment Guideline

These guidelines are to be used for risk-based inspections of Alberta potable water systems effective April 1, 2015.

Not all of the following questions will be applicable, depending upon the system being inspected. Use only applicable questions to carry out risk assessments. Note: Question 3 (Monitoring Equipment QA/QC) and 24 (Standard Operating Procedures) must be evaluated even if it is not required in the Approval or Code of Practice Registration.

Each question is based on a rating of between one and four with one being the lowest rating and four the highest. A rating of either a one or two on any question in the primary assessment section or a score of less than 75% overall will be considered a failure of the assessment.

To achieve a four rating on any question it needs to be demonstrated that more than what is required in the Approval or Code of Practice (as established by the guidelines) or best management practices are being achieved.

This risk-based inspection must be completed and signed, regardless of the pass or fail outcome.

Primary Risk Assessment Questions

1. Is the operator's certification (includes back-up operators) appropriate for the facility?

   (1) Operator(s) is uncertified or under certified with no supervision (or back-up) by an appropriately certified operator.

   (2) Operator(s) is uncertified or under certified and is working under the remote supervision of an appropriately certified operator(s) but does not meet the *Minimum Certified Operator Attendance Guidelines for Waterworks Systems.*

   (3) Attending operator(s) is certified to the level of the facility and meets the *Minimum Certified Operator Attendance Guidelines for Waterworks Systems.* Back-up operator(s) can be uncertified or under certified, but are working under the direction of a certified operator(s).

   (4) Attending operator(s) and one or more back-up operators are certified to the level of the facility. (For each level of operator required by the Approval/Code of Practice an equally certified backup operator must be available). A conditional certificate can't be used to achieve a rating of four.

2. Have Approval/Code of Practice (COP) and Potable Water Regulation contraventions been properly reported?

   (1) Have had unreported contraventions, or operator(s) failed to notice when contraventions occurred that should have been reported.

   (2) Contraventions reported but not as required (no written reports, late reports, incomplete reports, or reports sent to the wrong location) or contraventions reported properly, but the actions taken have failed to prevent a reoccurrence of the incident.

   (3) Contraventions reported properly with complete and appropriate written follow-up that resulted in the resolution of the issue(s) (i.e. no further non-compliances on that issue) or no contravention reports were required as the facility was operated to meet Approval/COP requirements.

   (4) No contravention reporting has been required during the previous two (or more) years.

3. Is the monitoring equipment (includes portable, bench top, and continuous on-line meters) used to verify compliance properly maintained and calibrated?

   (1) Equipment maintenance, calibration, and accuracy checks are not being completed.

   (2) Some equipment maintenance, calibration, and accuracy checks are being completed but supporting documentation is incomplete.

   (3) Annual equipment maintenance, calibration, and accuracy checks (on meters utilized for compliance monitoring) have been completed with supporting documentation available.

   (4) All monitoring equipment reflects best available technology, maintenance, and calibration is done annually by the manufacturer or by a qualified person(s), and verification checks (i.e. using primary or secondary standards) are performed at minimum on a quarterly basis, and all supporting documents are available as verification.

4. Were emergency situations (such as failure to meet chlorine/ozone residual limits, contact times, ultra violet disinfection limits, turbidity limits, bacteriological quality requirements, or loss of positive pressure, etc.) dealt with as required by the Approval, Code of Practice (COP), or legislation?

   (1) Operators did not recognize emergency situations where action was mandated or failed to take the appropriate actions necessary to address emergency situations.

   (2) Some emergency actions taken, but not as required.

(3) Appropriate emergency actions taken as required, and reported in a complete and timely manner.

(4) No emergency actions were necessary during the previous two (or more) years or where emergency actions were required the Drinking Water Safety Plan was reviewed and/or revised to reflect the lessons learned from the emergency incident.

5. Are treated water turbidity (prior to entering clear well reservoir) limits met?

(1) Unreported failure to achieve approval limit.

(2) Failure to achieve approval limit was reported but appropriate actions were not taken by the operator(s) and a drinking water safety concern resulted.

(3) Meets approval limits for the monitoring required or if a turbidity contravention occurred, it was reported, appropriate actions were taken by the operator(s) and no drinking water safety concerns resulted.

(4) The waterworks system has been upgraded to meet ESRD's 2012 Standards and Guidelines for turbidity reduction for each filter (i.e. <0.3 NTU for dual media filtration systems or <0.1 NTU for membrane filtration systems in 99% of the samples) with continuous monitoring and data capture, off each filter, in place to verify that treated water turbidity limits were met.

6. Are chlorine/ozone residual and contact time (CT) ratio requirements met entering the distribution system at the point where CT is achieved? This question applies to all waterworks facilities that have chlorine/ozone residual and contact time limits (for either giardia and/or viruses) specified in their Approval or Code of Practice (COP) Registration.

(1) Unreported failure to achieve Approval/COP limit.

(2) Reported failure to achieve Approval/COP limit but was not appropriately responded to or resulted in drinking water safety concern.

(3) Meets Approval/COP limit at all times or if a contravention is reported the incident response resolved the issue so that no drinking water safety concerns resulted.

(4) Meets best practices (with chlorine residuals between 0.2 – 2.20 mg/l at the point that CT's were achieved) and all CT Disinfection ratios were greater than 1.0.

7. Are UV disinfection approval requirements met (Typically includes UV reactor flow limits, UV transmittance (%T) limits and UV dose limits)?

(1) Unreported failure to achieve Approval limit.

(2) Reported failure to achieve Approval limit.

(3) Meets Approval limits at all times or if a contravention is reported the incident response resolved the issue so that no drinking water safety concerns resulted.

(4) Meets Approval limits with continuous monitoring for UV reactor flow, UV dosage, and UV transmittance. Operator alarms and system shutdowns in place to prevent any improperly UV disinfected water from entering the clearwell/distribution system.

8. Are Approval/Code of Practice (COP) chlorine residual (in the distribution system) limits met?

(1) Unreported failure to achieve Approval/COP limit.

(2) Reported failure to achieve Approval/COP limit.

(3) Meets Approval/COP limits at all times.

(4) Meets best practices (residuals between 0.1 – 1.50 mg/l) at all times.

9. Is the monitoring frequency for treated water bacteriological sampling in the distribution system being met?

(1) No bacteriological monitoring being done.

(2) Some bacteriological monitoring conducted in the distribution system, but not as specified by the *Guidelines for Canadian Drinking Water Quality* (GCDWQ) or the *Communication and Action Protocol for Failed Bacteriological Results in Drinking Water* (Bac-T Protocol).

(3) The bacteriological monitoring conducted in the distribution system consists of evenly spaced, weekly samples collected throughout the distribution system as specified by the *Guidelines for Canadian Drinking Water Quality*, the *Communication and Action Protocol for Failed Bacteriological Results in Drinking Water* (Bact-T protocol) or as specified in the *Code of Practice for a Waterworks System Consisting Solely of a Water Distribution System* for a small water system (less than 1500 people or less than 10 km of distribution system).

(4) Additional monthly bacteriological monitoring is routinely conducted in the distribution system, in conjunction with chlorine residual monitoring. Resamples and samples collected after repairs have been made in the distribution system are not counted for the purposes of additional compliance monitoring to meet the requirements of a 4 rating.

Secondary Risk Assessment Questions

10. Is the approval/registration holder diligent in ensuring that all bacteriological sampling is done properly - as determined by the *Communication and Action Protocol for Failed Bacteriological Results in Drinking Water* (Bac-T Protocol) and the *Environmental Public Health Manual for Safe Drinking Water?*

(1) Bacteriological re-sampling required due to initial sampling error (total coliforms or E. coli present) and operator did not follow the Bac-T Protocol when re-sampling, or poor re-sample techniques were used resulting in additional false positives.

(2) Bacteriological re-sampling required due to operator sampling error (total coliforms or E. coli present) but operator followed the Bac-T Protocol. There are ongoing issues with sample management and delivery (i.e. no ice packs included, incorrect labelling, courier issues, etc.).

(3) All bacteriological samples are collected and submitted properly with no repeat samples required as a result of operator sampling errors. If bacteriological re-sampling was required due to the presence of total coliforms or E. coli the operator followed the Bac-T Protocol and no other sample management issues were identified.

(4) All bacteriological samples are collected and submitted properly with no repeat samples required or samples rejected as a result of sample management issues. The system operator is following the *Bacteriological Quality Monitoring Plan* required in their *Operations Program* (i.e. where, when and how to sample).

11. Are operators familiar with their current signed Approval or Registration under the Code of Practice (COP), related legislation (i.e. Potable Water Regulations) and ESRD Standards and Guidelines for the waterworks system?

(1) Approval/COP not immediately available and operator cannot demonstrate awareness
of requirements.

(2) Approval/COP documents available, however operator is not aware of all requirements.

(3) Approval/COP documents were available at the time of inspection and the operator is aware and following all of the requirements.

(4) Approval/COP documents were available at the time of inspection and all operators are aware of and following all of the requirements.

12. Are raw water wells located, protected, and maintained in a sanitary manner (including Groundwater Under Direct Influence Systems)?

(1) The well(s) are in a poor location (low lying area, in close proximity to a watercourse, subject to runoff, accessible by livestock, or subject to contamination from other sources (i.e. manure is being spread close to the well site).

(2) The well(s) are in a good location.

(3) The well(s) are in a good location with protection measures in place (fencing, caplocks installed, well head is accessible for maintenance, well casing is vented, casing(s) that extend above the snowline, or have watertight caps, etc.).

(4) The well(s) are in a good location, protection measures are in place, and a documented preventative maintenance program (regular site inspection, shock chlorination, pump/screen cleaning, etc.) is in place.

13. What raw surface water protection measures are in place to optimize water quality entering the Water Treatment Plant? Note: A waterworks facility does not have to meet all of the criteria listed just those components that are applicable.

(1) *No ability to control the raw water quality or quantity entering the Water Treatment Plant* (WTP). No raw water storage available and/or the rate of raw water flow into WTP can't be adjusted to provide greater treatment retention time. Insufficient treated water storage to ride out poor source raw water quality episodes, or raw water quality is impacted by other wastewater sources (an intake location close to a municipal or industrial wastewater effluent discharge point).

(2) *Minimal ability to control raw water quality or quantity entering the Water Treatment Plant.* Minimal (< 1-2 weeks) raw water storage and/or the rate of raw water flow into WTP can be adjusted to provide greater treatment retention time. Nominal aeration (windmills) and/or rely on chemical addition to control algae (i.e. copper sulphate, citric acid) or rely on infiltration gallery or adjusting raw water intake levels to provide some natural buffering for water quality.

(3) *Basic ability to control raw water quality or quantity entering the Water Treatment Plant.* Long term raw water storage with good aeration technology (compressed air diffusers) placed at multiple locations in the reservoir(s) or deep water (>3m) reservoir cells to discourage algae growth. Direct source intake structures routinely inspected and cleaned with debris deflection structures in place. Raw water intakes and/or reservoir(s) access restricted (by fencing and signage) to prevent livestock, wildlife, and human activity from impacting raw water quality.

(4) *Comprehensive ability to control raw water quality* and quantity *entering the Water Treatment Plant.* In addition to meeting the requirements of point three, the approval holder conducts routine monitoring of raw water quality (turbidity, pH and temperature at minimum) and trends the results. WTP does not discharge waste streams (backwash water, clarifier blow down, etc.) back into the source water. Sufficient treated water storage to meet daily average flow for an extended period of time (at least 3 days).

14. Are the chemicals used at the Water Treatment Plant (includes both direct and indirect additives) listed and used as specified by ANSI (American National Standards Institute)/NSF (National Sanitation Foundation) Standard 60 or IISO/IEC 9000 or ISO (International Standards Organization)/IEC 14001?

(1) Not all of the chemicals used at the facility are listed in the ANSI/NSF Standard and/or the operator is not aware of this requirement.

(2) All of the chemicals used at the facility are listed in the ANSI/NSF Standard, but the chemical feed dosage exceeds the dosage specified as the Maximum Use Limit (specified in NSF Standard 60) or the limits set out in a Letter of Authorization (LOA) issued by the Director.

(3) All of the chemicals are specified in the ANSI/NSF Standard and the chemical feed dosages do not exceed the dosage specified as the Maximum Use Limit (MUL) or the Letter of Authorization limits.

(4) In addition to meeting the requirements of (3) above, all chemicals are stored properly with spills immediately cleaned up, secondary containment in place around the chemical storage area and current MSDS (< 3 years old) records are kept on site. Operator(s) is aware of the Maximum Use Limits for all the chemicals added to the water supply.

15. Are system water volumes metered?

(1) No metering of water volumes.

(2) Facility influent or effluent water volumes metered.

(3) Facility influent (from the source) and effluent water volumes metered.

(4) Facility influent and effluent water volumes metered, including backwash/filter to waste volumes and a full water distribution system metering program is in place. Water balancing is conducted and a program is in place to address water losses that occur throughout the waterworks system (plan to systematically replace leaking valves, water lines, etc.).

16. Have preventative maintenance measures been established in the distribution system and treated water reservoir(s) to minimize adverse effects to water quality?

(1) No scheduled maintenance program (valve exercising, water main flushing, treated water reservoir inspection) for the distribution system and treated water reservoir(s). Backflow preventers or air gaps are not installed on truck fill. No cross connection control program is in place.

(2) Distribution system maintenance and treated water reservoir inspection completed but no documentation is available to demonstrate when it was completed. Multiple water main breaks occur each year resulting in loss of positive pressure and interruption of key water services.

(3) Distribution system maintenance and treated water reservoir inspection completed with supporting documentation available to demonstrate when it was completed. Cross connection (connections with a wastewater system, a storm water system or another unapproved waterworks system) control inspection program is in place. Documented return to service protocol in place for new and repaired water mains.

(4) A full preventative maintenance program is in place that includes the requirements of point 3 as well as the completion of the following: a documented uni-directional flushing program, water valves to isolate water lines for repairs are located and exercised to ensure they are operational, documentation of a water main replacement schedule and future life expectancy is completed. The water distribution system infrastructure has the ability to maintain service to the rest of the community, and minimize disruption to consumers, while repairs are conducted on isolated sections (i.e. looped water lines to allow water to be distributed from multiple directions).

17. Were treated water sample(s) taken as required, for all listed parameters and analyzed by a lab that is CALA (Canadian Association for Laboratory Accreditation), ISO (International Standards Organization) 17025, or Standards Council of Canada accredited for all the parameters analyzed?

(1) Samples were not taken.

(2) Samples were taken, but did not meet frequency requirements and/or include all the parameters.

(3) All required samples were taken at the required frequency and analyzed for the required parameters by an appropriately accredited lab. The approval holder reviewed and understood the lab sample results and immediately reported any results which exceed the Maximum Acceptable Concentration values.

(4) In addition to point 3 sample results are trended to show if water quality is changing over time (are any of the parameters tested increasing/decreasing from historical values).

18. Does treated water meet the Guidelines for Canadian Drinking Water Quality (GCDWQ) parameters based on the sampling required for the facility?

(1) One or more parameters exceed the Maximum Acceptable Concentration (MAC), or required MAC sampling data is incomplete.

(2) All Maximum Acceptable Concentration requirements are met except Disinfection By Products (DBP's) such as Trihalomethanes (THMs), Halo Acetic Acids(HAA's), Chlorate, Chlorite, N-Nitroso dimethylamine (NDMA) and Bromate where required.

(3) All Maximum Acceptable Concentration requirements are met for the parameters required to be tested.

(4) All Maximum Acceptable Concentration and Aesthetic Objective (AO) requirements are met. (Note: For a water distribution system to achieve a (4) rating either additional sampling is required by the registration holder or the sample results from their treated water supplier are to be obtained and provided to ESRD.)

19. Were reports (monthly and annual) properly compiled and submitted on time?

(1) No reports and no records.

(2) Reports and records retained, but do not include all required information; either the monthly or annual report was incomplete.

(3) Complete reports were properly and accurately compiled, retained and available or submitted as required. This includes the electronic submission of annual reports to the correct district address as specified by the EPEA Report Submission Guidelines.

(4) Reports were properly and accurately compiled, retained and available, and the facility is submitting their monthly data electronically to the ESRD drinking water quality website.

20. Are treated water fluoride concentration limits and monitoring requirements met?

(1) Fluoride monitoring not conducted and/or unreported Approval/COP (Code of Practice) limit failure occurred.

(2) Fluoride monitoring conducted, but not with adequate frequency and/or reported Approval/COP limit failure occurred.

(3) Daily fluoride grab monitoring conducted and limits meet requirements of Approval/COP or if a contravention is reported the incident response resolved the issue so that no drinking water safety concerns resulted.

(4) In addition to the requirements of (3) above, the Approval/Registration Holder is splitting their samples and submitting (at least on a monthly basis) a fluoride sample to an accredited lab for comparison analysis.

21. Are filter(s) effluent turbidity monitoring (entering clearwell reservoir) requirements met?

(1) No filter effluent turbidity monitoring.

(2) Common header turbidity (continuous/grab) monitoring.

(3) Individual filter monitoring (continuous/grab) or meets approval requirements.

(4) Individual filter continuous turbidity monitoring with limit alarms and system shutdowns (before the turbidity exceeds the approval limits). The system also has filter to waste capability.

22. Are treated water chlorine residual monitoring (entering distribution system at the point where CT's have been achieved) Approval/COP requirements met?

(1) Chlorine residual monitoring not conducted.

(2) Chlorine residual monitoring conducted, but not with adequate frequency.

(3) Daily chlorine residual monitoring conducted (or monitored daily when facility is operating).

(4) Continuous chlorine residual monitoring is conducted with limit alarms and operator call outs when limits are not met. Operators are using the lowest chlorine residual (off the continuous analyzer) for the day to calculate their CT disinfection ratio.

23. Are treated water chlorine residual monitoring (in the distribution system) requirements met?

(1) Chlorine residual monitoring is not conducted.

(2) Some distribution system chlorine residual monitoring is conducted, but not at random locations throughout the system.

(3) Required approval/Code of Practice (COP) distribution system chlorine residual monitoring conducted at random locations throughout the distribution system.

(4) Additional distribution system chlorine residual monitoring is routinely conducted, with excellent representative coverage of the entire system.

24. Is the Operations Program completed as per the Approval/Code of Practice?

(1) Operations program has not been started.

(2) Operations program has been started but is not complete.

(3) Operations program is completed and readily available for ESRD to review.

(4) Operations program completed, updated annually, and signed off by all staff involved with the waterworks system. Staff has received training to ensure that they are knowledgeable on facility Standard Operating Procedures (SOP's).

25. Is the Drinking Water Safety Plan completed as per the Approval/Code of Practice (COP)? Completed means in accordance with the requirements in the Standards and Guidelines for Municipal Waterworks, Wastewater and Storm Drainage Systems; Part 1 Standards for Municipal Waterworks (2012), as amended. It also means that the completed Drinking Water Safety Plan has been presented to and reviewed by the person(s) responsible for the operation of the waterworks system (this could include the CAO, mayor, reeve, council, system owner, condo board, president of the water co-op, etc.)

(1) The Drinking Water Safety Plan has not been started.

(2) The Drinking Water Safety Plan has been started but is not complete.

(3) The Drinking Water Safety Plan has been completed, is updated annually, and is readily available for ESRD to review.

(4) The Drinking Water Safety Plan is completed and actions have been taken to address the key risks identified.

26. Are the data results of the on-line or continuous monitoring equipment (applies only to turbidity meters and/or chlorine/ozone residual meters) validated to ensure that the results reflect actual quality of the water (some examples of erroneous data results are when air bubbles in the turbidity meter influence the readings or with reduced/increased flow through the chlorine residual monitor)? (Note this question does not apply to those waterworks systems that do not use on-line or continuous monitoring equipment to verify compliance with their Approval or COP Registration).

(1) The Approval/Registration holder is submitting data results to ESRD without validation to ensure that they reflect actual water quality.

(2) The Approval/Registration holder is submitting some of the data results to ESRD, but not all, without validation to ensure that they reflect actual water quality. An attempt at data validation is being made but insufficient evidence as to why the data is not valid can't be provided.

(3) The Approval/Registration holder is validating the data results of the on-line or continuous monitoring equipment prior to submission to ESRD. If any data results are excluded the approval/registration holder is able to demonstrate that the excluded data does not reflect actual water quality (i.e. using a handheld meter to compare with on-line results). The original data is available for review in case there are any questions regarding the validation process.

(4) In addition to the requirements of point 3 above, the Approval/Registration holder has taken actions to correct any on-line or continuous monitoring equipment that has generated data results not reflective of actual water quality (examples include installation of an air trap to remove the air bubbles from the water, reinstallation of a meter in a more suitable location or replacement of a problematic meter). This includes data validation even when results are still within approval limits.