

Study and Upgrades Allow Rescinding of Long-Standing Boil Water Notice



In 2019 the Regional District of Okanagan-Similkameen (RDOS) hired Western Water Associates Ltd. (Vernon, B.C.) to conduct a *Groundwater at Risk of Pathogens (GARP) Assessment* of the Willowbrook well. In July of 2020, the final report findings were released after the year long study. The main conclusion of the report was that the Willowbrook aquifer is believed to provide sufficient filtration to prevent protozoa such as *Giardia* and *Cryptosporidium* from entering the groundwater from the surface waters that recharge the aquifer. Viruses however, being significantly smaller in size, remain a risk as they cannot be filtered out by the aquifer. A number of factors that contribute to the risk for viruses in the Willowbrook aquifer include; the shallow aquifer source, the lack of a confining layer, history of flooding close to the well head, agricultural land use and the presence of potential sources of pathogens (septic systems) within 300m of the well. The infrequent but continuous detection of Total Coliforms from the well also supports the risk assessment. This means that only chlorine will need to be added to the water to meet the Provincial drinking water standards. This is a substantial savings to the community as higher levels of water treatment are not required at this time.



The RDOS was able to secure a grant that paid for 100% of the chlorination system and contact chamber project. In May of 2020 a contract was awarded to Grizzly Excavating Ltd. (Penticton, B.C.) to construct the chlorine contact chamber. The contact chamber consists of a network of oversized pipes underground that allow for the well water to have sufficient contact time with the added chlorine before it reaches the first users of the system. Construction of the contact chamber was completed in early July followed by the commissioning of the chlorination system. On July 29th, with approval from the Interior Health Authority, the long standing *Boil Water Notice* was rescinded from the Willowbrook water system. All of the upgrades have been 100% funded by Provincial and Federal grants.

IHA's Role

The Interior Health Authority's team of drinking water officers are responsible for providing the oversight to ensure compliance and drinking water safety. The IHA is responsible for issuing *Permits to Operate* to drinking water systems. IHA has four levels of water notifications.

WATER QUALITY ADVISORY (WQA)

-There is some level of risk associated with consuming the water, but a boil water notice is not needed.

- The risk is elevated for people with weakened immune systems.

BOIL WATER NOTICE (BWN)

- There are organisms in the water that can make you sick.

- To safely consume the water, you must bring it to a rolling boil for at least 60 seconds, or use a safe alternate source of water.

DO NOT CONSUME (DNC)

-There are harmful chemicals or other bad things in the water that can make you sick if you consume (swallow) it.

-You cannot make the water safe by boiling it.





-You can bath, shower, and water plants and gardens with the water.

DO NOT USE WATER (DNU)

- There are known microbial, chemical, or radiological contaminants in the water and that any contact with the water, with the skin, lungs, or eyes can be dangerous.

- Do not turn on your tap for any reason and do not use your water .

- You CANNOT make the water safe by boiling it.

	WATER QUALITY ADVISORY (WQA)
	BOIL WATER NOTICE (BWN)
	DO NOT CONSUME (DNC)
	DO NOT USE (DNU)



Water Quality Monitoring

In 2020 a total of **27** water samples were drawn from the Willowbrook well along with **32** samples from locations throughout the distribution system.

Samples were analyzed by an accredited laboratory for Total Coliforms and *Escherichia coli*. All samples drawn in 2020 had no detections for *E.coli*

however, there was **1** well sample and **2** distribution samples that were positive for Total Coliforms.

In addition to the bacteriological samples, field tests were conducted for temperature, pH, conductivity, free chlorine and turbidity. Free chlorine residuals are required to be maintained between 0.2 mg/L and 2.0 mg/L of free chlorine in the distribution system.

Sampling Location	Unit	Avg	Min	Max	Number of Results
Green Lake and Meyers Rd	mg/L	0.45	0.25	0.61	8
Green Lake Rd South	mg/L	0.57	0.4	0.73	7

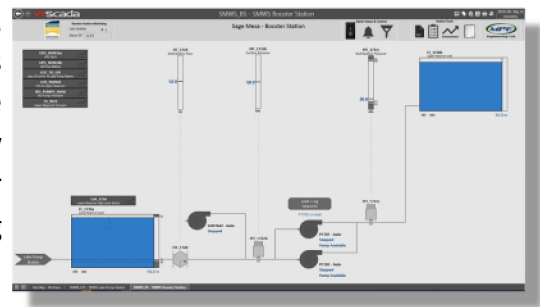
2020—Distribution System Free Chlorine Residuals

Water System Notices

- July 29th, 2020 - The *Boil Water Notice* issued in September of 2017 was rescinded upon approval of the operation of the chlorine dosing system by the Interior Health Authority.

The Role of SCADA Systems in Water Supply

A Supervisory Control and Data Acquisition (SCADA) system is an integral part of a modern water system. It is comprised of sensors, programmable controllers, communications and network devices installed at pump stations and treatment facilities. These components control equipment such as pumps and monitor system operations while storing important data. The system also provides the ability to monitor the system remotely through software packages along with the generation of alarms that will notify the system Operators when there is a problem or failure. In 2019 the RDOS developed a *SCADA Master Plan* that provides direction for upgrading the existing SCADA network and how to efficiently integrate new water systems into the existing network.



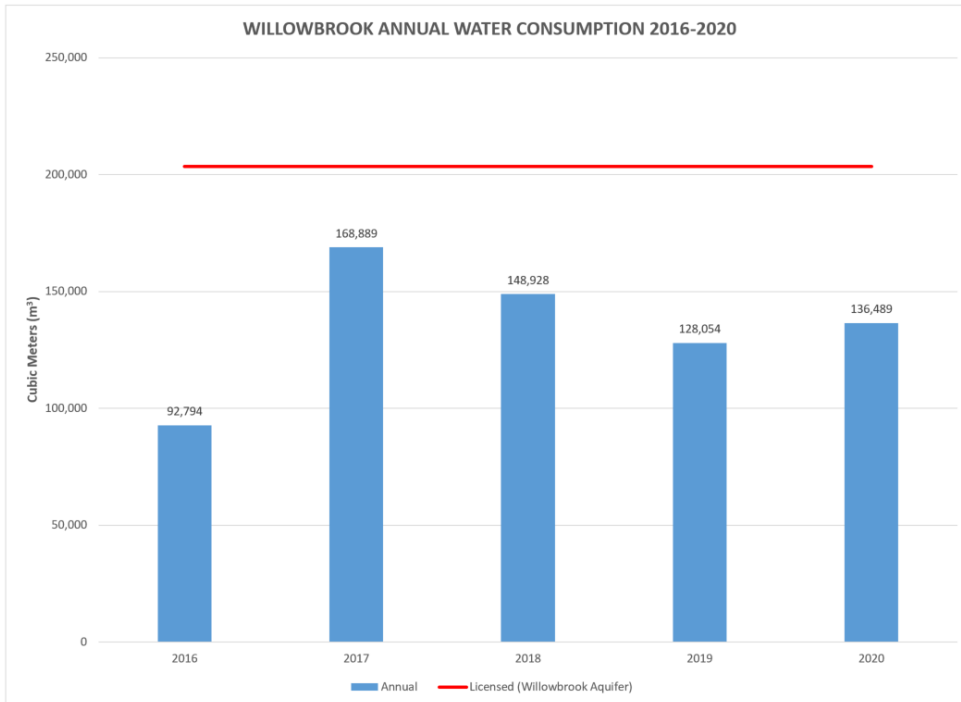
Potable Water – Willowbrook Well

A variety of tests are carried out in the water system on a weekly and annual basis. Annually, the RDOS submits a sample of the untreated well water to an accredited lab for full comprehensive potable water testing. This comprehensive test includes physical parameters (e.g. color, turbidity, temperature, ultraviolet transmittance), chemical parameters (e.g. hardness, total metals and nutrients) and bacteriological quality. Changes in these parameters may result in the need for water notifications for customers (i.e. *Boil Water Notice* or *Water Quality Advisory*) or the requirement for treatment processes to be implemented. In 2020, all of the tested parameters, with the exception of bacteriological quality, met the applicable potable water standards. These parameters are also trended annually and in 2020 there were no significant changes in any parameters.



Willowbrook Water Usage

The RDOS started trending the monthly and annual pumping volumes extracted from the Willowbrook aquifer in 2016. In 2020 a total of 136,489 cubic meters of water was pumped from the Willowbrook well, up from 128,054 cubic meters in 2019.



Annual Water Consumption 2016-2020

Standards for Potable Water

The *British Columbia Drinking Water Protection Act (DWPA)* and supporting Regulation along with the *Federal Guidelines for Canadian Drinking Water Quality (GCDWQ)* define parameters for potable water in BC. These include Aesthetic Objectives (AO) and Maximum Allowable Concentrations (MAC) for numerous water quality parameters.



Certified Water Operators

The British Columbia *Environmental Operators Certification Program (BC EOCP)* is responsible for the classification of water systems in BC. The EOCP is also responsible for certification of all water system Operators.

All RDOS Operators are certified through the *BC EOCP*. Operators may hold certification in the disciplines of Water Distribution and/or Water Treatment with 4 levels of certification achievable within each discipline.

Annually, RDOS Operators attend courses and seminars and complete online training required to maintain and augment their levels of certification.

BC Groundwater Protection Regulation

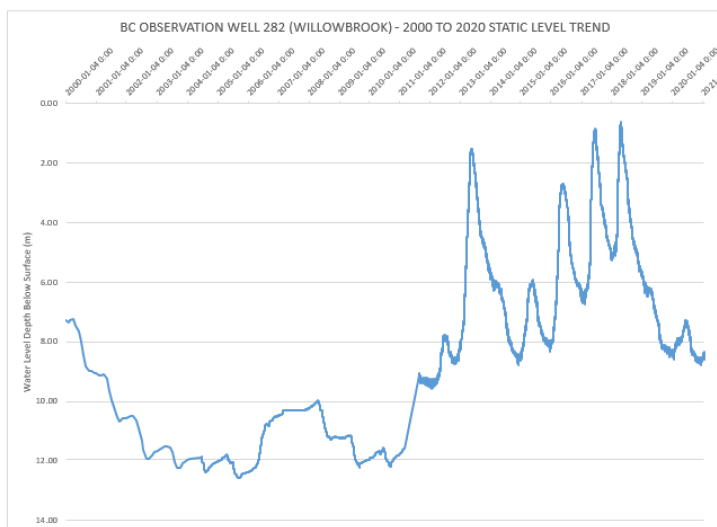
The Ground Water Protection Regulation (GWPR) falls under the *British Columbia Water Sustainability Act*. The GWPR sets standards for the construction, maintenance and deactivation and decommissioning of wells in BC. The GWPR also requires well drillers and pump installers be registered to work in BC.

Well Level Monitoring

Well level monitoring is one important aspect in determining the “health” of an aquifer. From a water supplier’s perspective, the water level in an aquifer is very important. If the aquifer level drops too much the well may not be able to provide water to the system. The interactions between surface water and groundwater are continually being better understood. For example, an increase in the pumping rate of a well can affect the flow in a nearby creek just as the removal of water from a stream for irrigation could affect the level in a nearby aquifer. Such interactions can add to the complexity of recharge of water to an aquifer. Recharge can occur quickly or could take a number of years before a change is observed in the aquifer level.

Willowbrook Well Level Monitoring

The aquifer that the Willowbrook well draws from is monitored continuously by the Province as part of its Groundwater Observation Network. Observation Well No. 282 is located in Willowbrook on Myers Road. The RDOS currently uses this well for monitoring the Willowbrook aquifer.



BC Observation Well 282 (Willowbrook) Trend for 2000 to 2020

New Requirements for Groundwater Users

With the *Water Sustainability Act (WSA)* that came into effect in 2016, came the requirement for non-domestic users of groundwater in British Columbia to obtain a water license and pay annual rentals and fees.

Licensing clarifies how much water you can legally use, and increases the security of your access to that water. Licensing establishes rights to groundwater based on the same priority scheme that currently exists for surface water, and will help to reduce conflicts between water users in times of scarcity.¹

In the fall of 2018 the RDOS completed the application for licensing both groundwater wells (Old and New) in Willowbrook. This involved compiling and reviewing information such as the well construction records, well identification numbers, pump test reports and operational records. From this data the RDOS determined a sustainable annual license volume for Willowbrook to be applied for in the well licensing application. Once the Province reviews the application and issues a license for the Willowbrook wells (expected in 2021), the RDOS will be required to submit a *Water Use Return* to the Province annually, indicating the annual volume of groundwater extracted from the Willowbrook well. This volume will be used to determine the applicable fees pertaining to the well license.

¹ Province of British Columbia, <https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-licensing-rights/water-licences-approvals/new-requirements-for-groundwater-users>, accessed February 26, 2019.



Water Conservation

New for 2021

RESIDENTIAL
Outdoor Water Use Restrictions

NO WATERING (except for lawns)
NO SPRINKLING (except for lawns and lawns)

NORMAL

3 Days / Week

MAKE WATER WORK for you!

- Water plants not pavement
- Low water plants save you money
- Wash the car on the lawn

www.rdos.bc.ca/restrictions
For more info, call Public Works
250.492.0237

WATER USE REGULATIONS in all RDOS water systems
year round unless notified

Hand held garden hose up to Stage 3 any day, anytime

NO watering on Mondays

STAGE NORMAL WATERING SCHEDULE:

EVEN numbered civic address: **TUE THU SAT** 6-10am & 6-10pm

ODD numbered civic address: **WED FRI SUN** 6-10am & 6-10pm

AUTOMATIC residential irrigation: 12:01am to 6am on your watering day

4 x 6 Magnet

These handy little reminders were provided to all property owners in RDOS owned or operated water systems. The hanger can be attached to exterior hose bibs, and the magnets to any metal surface like fridges, filing cabinets, or metal garage doors. If your property is a rental, please insure they are delivered to tenants, and all outdoor irrigation is set to align with regulations.

MAKE WATER WORK FOR YOU

2 x 3 outdoor faucet (hose bib) hanger

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Outdoor Water Use Restrictions

NO WATERING (except for lawns)
NO SPRINKLING (except for lawns and lawns)

NORMAL

3 Days / Week

MAKE WATER WORK for you!

See reverse for sprinkling regulations

- Water plants not pavement
- Low water plants save you money
- Wash the car on the lawn

www.rdos.bc.ca/restrictions

For the complete Water Use Restriction Stages visit: [Water Restrictions](http://www.makewaterwork.ca)
For more water wise tips visit : www.makewaterwork.ca

Provincial Drought Levels vs. Water Restrictions

It can be confusing when Provincial Drought Levels are circulated in the media and appear to contradict local Water Restriction Stages. They are two different rating systems.

Provincial Drought Levels are based on 'environmental flow needs' in creeks and rivers. BC River's Forecast Centre monitors volumes of water and water levels in order to insure water levels are adequate to support fish as they move through their life cycle. Fish are indicators of the overall health of the creek ecosystem, especially in times of increasing water scarcity during a drought. The Province developed a system to rate Drought Levels, and the response actions required at each incremental stage.

Regional Water (sprinkling) Restrictions relate to the capacity of each individual water system to provide potable water to users. Restrictions are required in times of heavy use or water scarcity (drought) and may not be at the same stage for all water systems.

The RDOS's *Regional Water Use Regulation Bylaw* and *Regional Water Conservation Strategy* are used to regulate the water use within the nine water systems that the RDOS owns/operates.

Restrictions begin at *Stage Normal* which represents normal (average) conditions for a local area and are in effect year round unless a higher stage (Stages 1 to 4) are in effect.

Water Quality Complaints

If you have a water quality complaint, concern, observe changes in your water or would like to request further information regarding any of the RDOS water systems please contact the following:

Public Works Department
RDOS Environmental Technologist
Toll Free: 1-877-610-3737
Phone: 250-490-4106
Email: info@rdos.bc.ca

Water Connections

During regular business hours water related emergencies, questions regarding applications for water service and water service turn on/off requests can be directed to the following:

Public Works Department
Administrative Assistant
Toll Free: 1-877-610-3737
Phone: 250-490-4135
Email: info@rdos.bc.ca

After-Hours Water Emergencies

For all after-hours water related emergencies please call:
Regional Dispatch
250-490-4141



Additional Resources

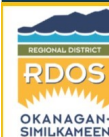
RDOS Water System Home Page
[Water Systems | RDOS](#)

Interior Health Authority Drinking Water Homepage
[Home \(interiorhealth.ca\)](#)

Federal Guidelines for Drinking Water Quality
[Water Quality - Reports and Publications - Canada.ca](#)

Be Safe—Be Informed—Be Involved In Your Community

SIGN UP TO RECEIVE IMPORTANT RDOS WATER SYSTEM NOTIFICATIONS



To ensure the residents and property owners of the Regional District of Okanagan-Similkameen are safe, informed and up-to-date with community activities, the RDOS has implemented a mass communication service called *CivicReady*. This system allows the RDOS to communicate out routine and emergency messages through email, text and/or phone call.

To sign up and or learn more about *CivicReady* go to: www.rdos.bc.ca & look for the alarm button or sign up link on the right-hand side



Routine Notifications:

- Community Events
- Water & Sewer System Alerts
- Curbside Pick Up & Landfill Hours
- Regional Recreation
- Land Use Changes
- And More....

Emergency Notifications:

- EOC Updates
- Sandbag Pick-Up Locations
- ESS Locations
- Wildfire Updates
- Dangerous Animals in the Area

Regional District of Okanagan-Similkameen
101 Martin St, Penticton,
BC V2A 5J9

T- 250.492.0237 TF- 1.877.610.3737

Web Site - www.rdos.bc.ca