

Annual Drinking Water  
Report - 2023

# Comox Valley Water System



 **Comox Valley**  
REGIONAL DISTRICT

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The CVRD respectfully acknowledges that the land on which it operates is on the unceded traditional territory of the K'ómoks First Nation, the traditional keepers of this land.

## Introduction

The Comox Valley Regional District strives to provide high-quality drinking water through responsible operation and management of the water system. The CVRD is regulated by Island Health for its activities as a potable water supplier, and is required under the *Drinking Water Protection Act* to report annually on the Comox Valley Water System. This report includes information on water quality, consumption, maintenance, and capital projects.

The CVRD provides water to roughly 55,000 residents: the Town of Comox, the City of Courtenay, K'ómoks First Nation, and the Comox Valley Water Local Service Area.

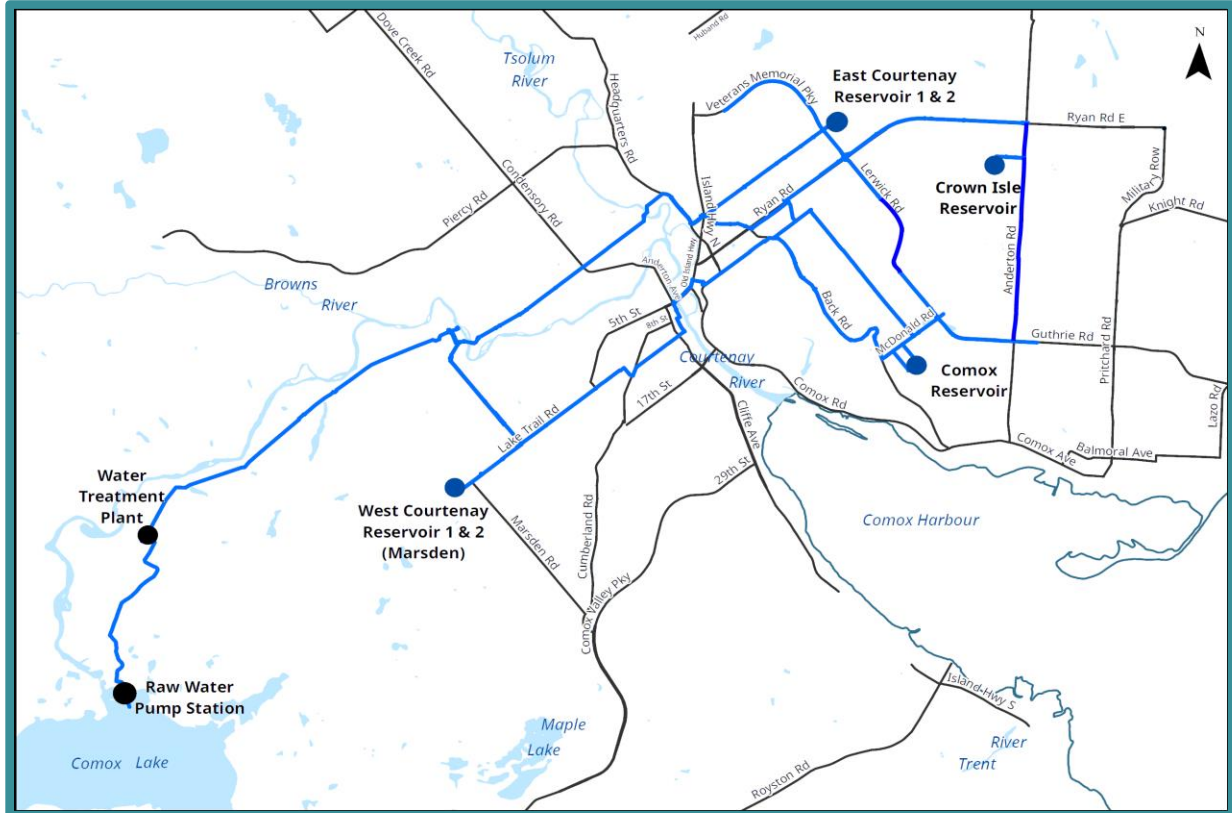


Above: Comox Valley Water Treatment Plant.



Above: East Courtenay Reservoirs.

Below: Overview of treatment and transmission.

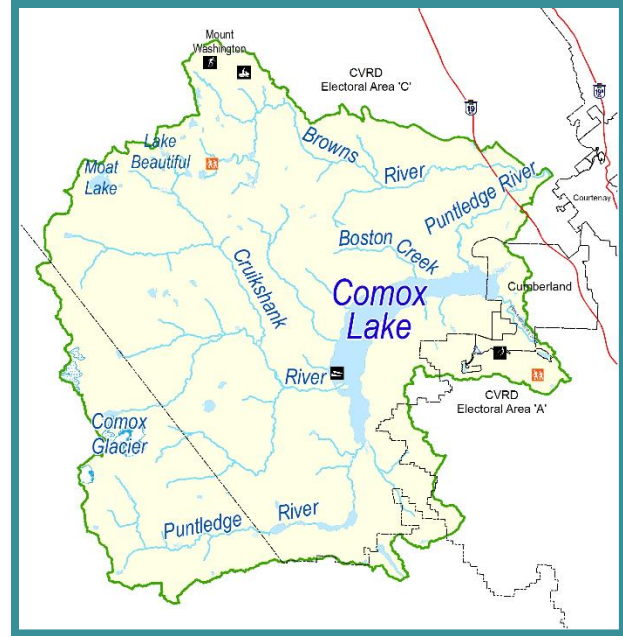


## Source Water

Water for the Comox Valley Water Service Area is sourced from Comox Lake, a glacier-fed lake with several tributaries – including the Puntledge, Perseverance, and Cruikshank rivers.

The lake watershed is 461 square kilometres of drainage basin and much of it is privately owned and managed for timber supply.

The lake itself is a reservoir not only for drinking water, but is controlled by BC Hydro for power generation and fish flows into the Puntledge River.



*Above: Map of the Comox Lake watershed.*

*Below: Comox Lake*

In 2016, the CVRD partnered in a multi-stakeholder effort to create the Watershed Protection Plan. This plan identifies the various activities within the watershed, their risks, and aims to reduce incidents by facility upgrades, emergency preparedness, public education initiatives, land protection, water quality monitoring, and signage.



## Water Treatment

All water supply systems using surface water are governed by Island Health and are required to adhere to provincial “4-3-2-1-0” treatment objectives to ensure effective elimination of disease-causing viruses, bacteria, and parasites.

The “4-3-2-1-0” treatment objectives are as follows:

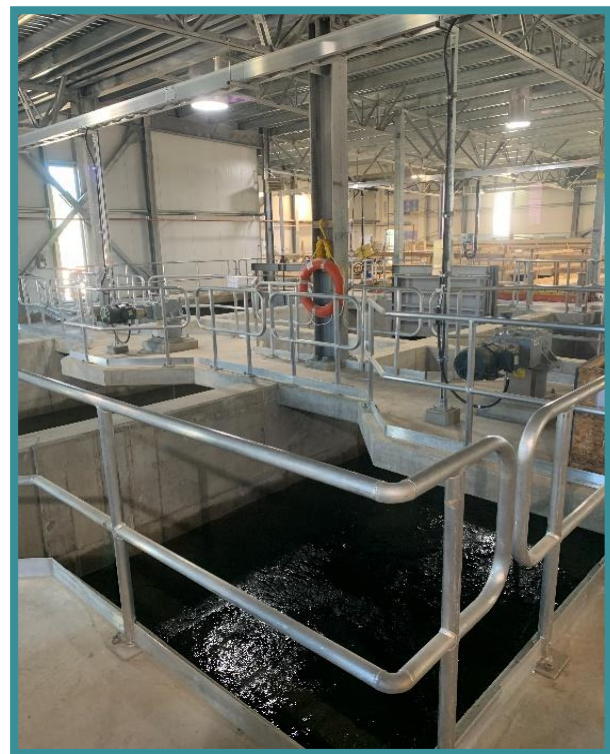
- 4-log (99.99 per cent) removal/inactivation of viruses
- 3-log (99.9 per cent) removal/inactivation of Giardia and Cryptosporidium
- 2 types of treatment processes
- 1 maximum Nephelometric Turbidity Units in treated water
- 0 detectable E. Coli, fecal coliforms and total coliforms in treated water

The journey from source to tap begins at the intake suspended above the bed of Comox Lake. Water enters the screened intake and flows to the underground wet well located on the shore; from there it is pumped 2.7 km to the water treatment plant.

When it arrives, a coagulant is added; this causes particulate to clump together into ‘floc’, and large, slow-moving mixers gently agitate the water to aid in this process. It then flows into sand and anthracite filter beds where the water passes through the media but the ‘floc’ becomes caught.



*Comox Valley Water Treatment Plant*



*Flocculation tanks and mixing motors.*

The filtered water is disinfected by passing through ultra-violet light reactors – this inactivates pathogens such as viruses, bacteria, and protozoa.

Then sodium hypochlorite is added for two purposes: to provide a final form of treatment, and to establish a residual disinfectant that persists in small amounts throughout the distribution network.

After disinfection, the water enters a large reservoir divided by a maze of channels called a 'clear well' that provides contact time for the sodium hypochlorite to disinfect any remaining bacteria.

The finished water then travels through two transmission mains: one to West Courtenay and Marsden Reservoirs, and the other crosses underneath the Puntledge and Tsolum Rivers on its way to East Courtenay Reservoirs.

Planning of the water treatment plant began in 2015, construction started in 2019, and the facility began treating water in October of 2021.



*One of five filter beds at the treatment plant.*

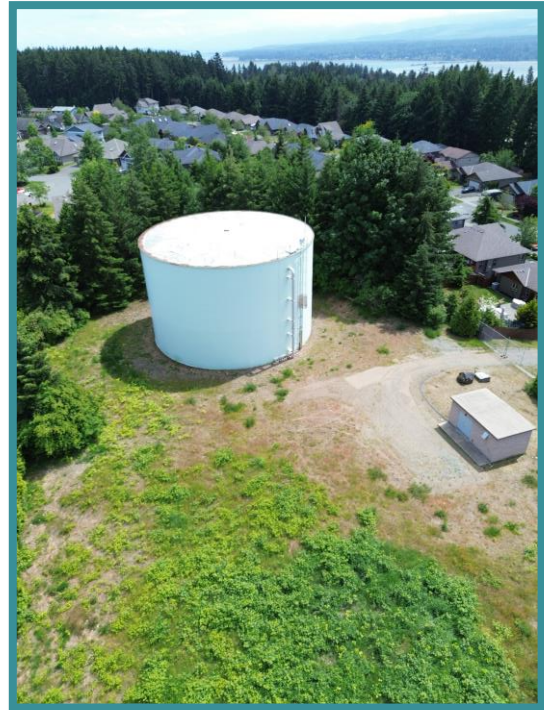


*Construction of the water treatment plant in 2020.*

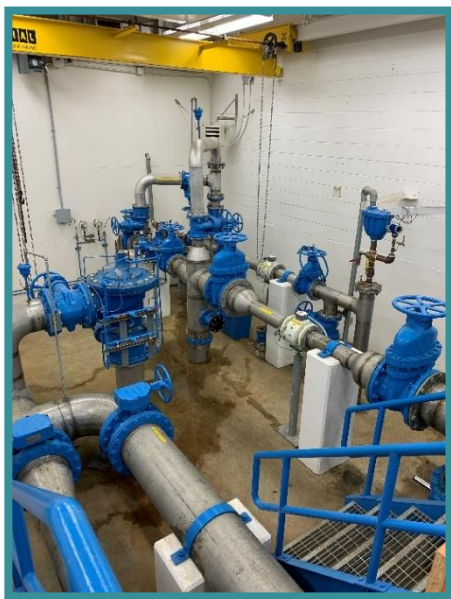
## Water Distribution

Water leaves the treatment plant clear well and flows to reservoirs located at high points throughout the service area. These reservoirs act as storage for fire protection, and their elevation provides head pressure for distribution. At these facilities, water is managed by automated valves and pumps, and is monitored for basic water quality parameters as it leaves in pipes to supply the distribution network. Altitude valves manage the fill needs of reservoirs, and respond to changing demands.

As water flows to lower elevations, the water pressure builds. Pressure reducing valves in underground chambers serve to reduce the pressure to a manageable level.



*Comox Reservoir and valve house.*



*West Courtenay and Marsden control room.*

Variations in the topography of the service area create high points in the distribution mains where air becomes trapped. Air valves operate autonomously at these sites to release the air and prevent lockup.

Water flows through the distribution mains branching off again and again to create a vast network of pipes that supply fire hydrants, businesses, and households.

## Water Quality

The Ministry of Health, through its regional body Island Health, regulates municipal drinking water quality through the *Drinking Water Protection Act* and the *Drinking Water Protection Regulation*. Both documents set out certain requirements for drinking water purveyors to ensure the provision of safe drinking water to their customers.

The *Guidelines for Canadian Drinking Water Quality* are developed by the Federal-Provincial-Territorial Committee on Drinking Water and they provide a limit on microbial, chemical, physical, radiological substances called a “maximum acceptable concentration”. The guidelines also assign aesthetic objectives to substances that do not cause risk to human health, but influence consumer acceptance of the water based on factors such as taste, odour and colour.

The CVRD collects and analyzes weekly water samples at the water treatment plant, Comox Lake, six reservoirs, and from various other strategic points within the distribution system to ensure that water is meeting regulatory objectives. Additionally, beyond the scope of this document, water from select locations is tested periodically throughout the year for over 200 different analytes to confirm the effectiveness of treatment processes, the quality of our source water, and the integrity of the distribution system.

### Water Quality Summary

Source Water	2022	2023	
<b>Turbidity</b> (Average, NTU)	0.42	0.64	
<b>Temperature</b> (Average, °C)	10.6	12.9	
<b>pH</b> (Average)	7.1	7.5	
Distribution Water	2022	2023	Target
<b>Turbidity</b> (Average, NTU)	0.12	0.12	<1
<b>Temperature</b> (Average, °C)	11.7	11.7	<15
<b>pH</b> (Average)	7.7	7.8	7-10.5
<b>Chlorine Residual</b> (Average, mg/L)	0.77	0.70	0.4 $\geq$ ≤2.0
<b>Total Coliforms</b> (Positive Samples)	0	0	0
<b>E. Coli</b> (Positive Samples)	0	0	0
<b>Trihalomethanes</b> (Average, mg/L)	0.01	0.01	<0.1

- More information regarding each parameter is available later on in the report.



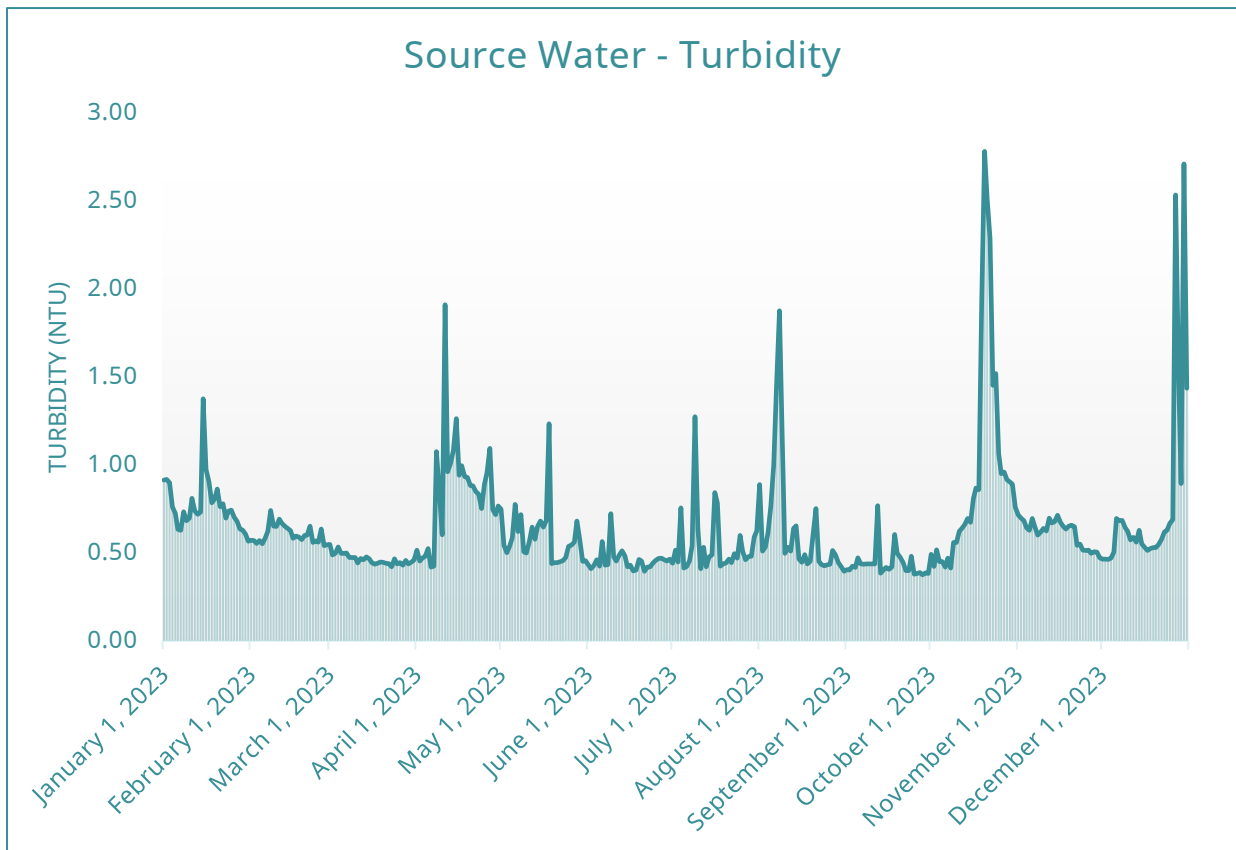
## Source Water - Turbidity

Turbidity is a measure of the clarity of water in nephelometric turbidity units, or NTUs. Heavy rainfall and washouts can cause turbidity events on Comox Lake, but the intake and dual-media filtration at the Water Treatment Plant has mitigated the need for turbidity-related boil-water notices.

The average turbidity of the lake in 2023 was 0.64 NTU, with a peak of 2.78 NTU in October.



*Turbid water entering Comox Lake from Perseverance Creek.*

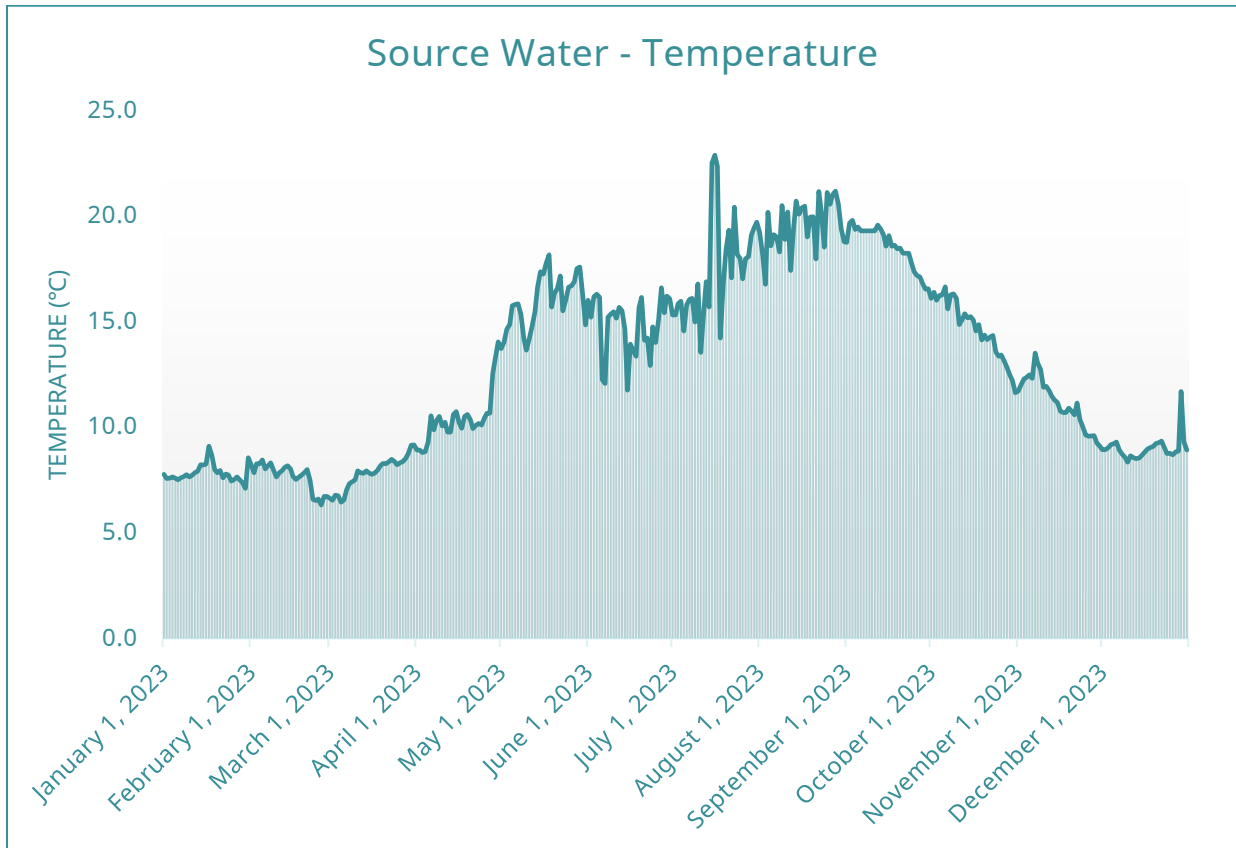


## Source Water - Temperature

Gradual variations in source water temperature occur throughout the seasons, however, significant changes can upset various water treatment processes. The average source water temperature in 2023 was 12.9°C.



*Thermistor buoy deployment on Comox Lake.*



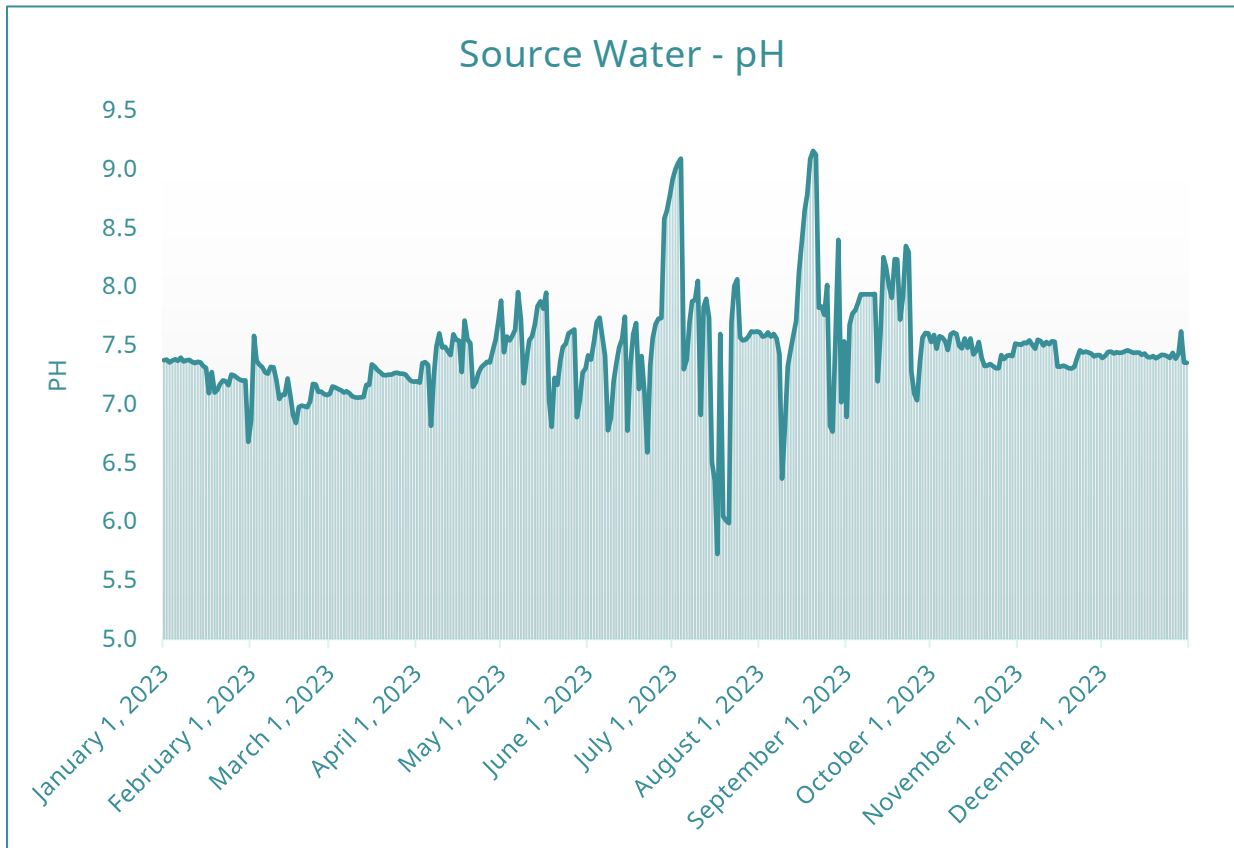
## Source Water - pH

pH is a measure of the acidity or alkalinity of a substance. It is a logarithmic scale value that ranges from 0 to 14, with 7 being neutral - below 7 is acidic, above is alkaline. The pH of water affects its chemical and physical properties, thereby influencing the behavior of contaminants, and various treatment processes.

pH adjustment by chemical means is not needed for the source water from Comox Lake. The average pH in 2023 was 7.5.



*Pumps at the raw water wet well.*

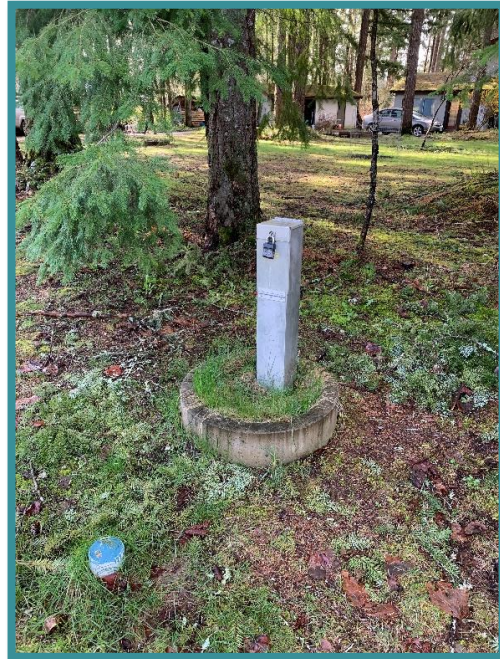


## Distribution Water - Turbidity

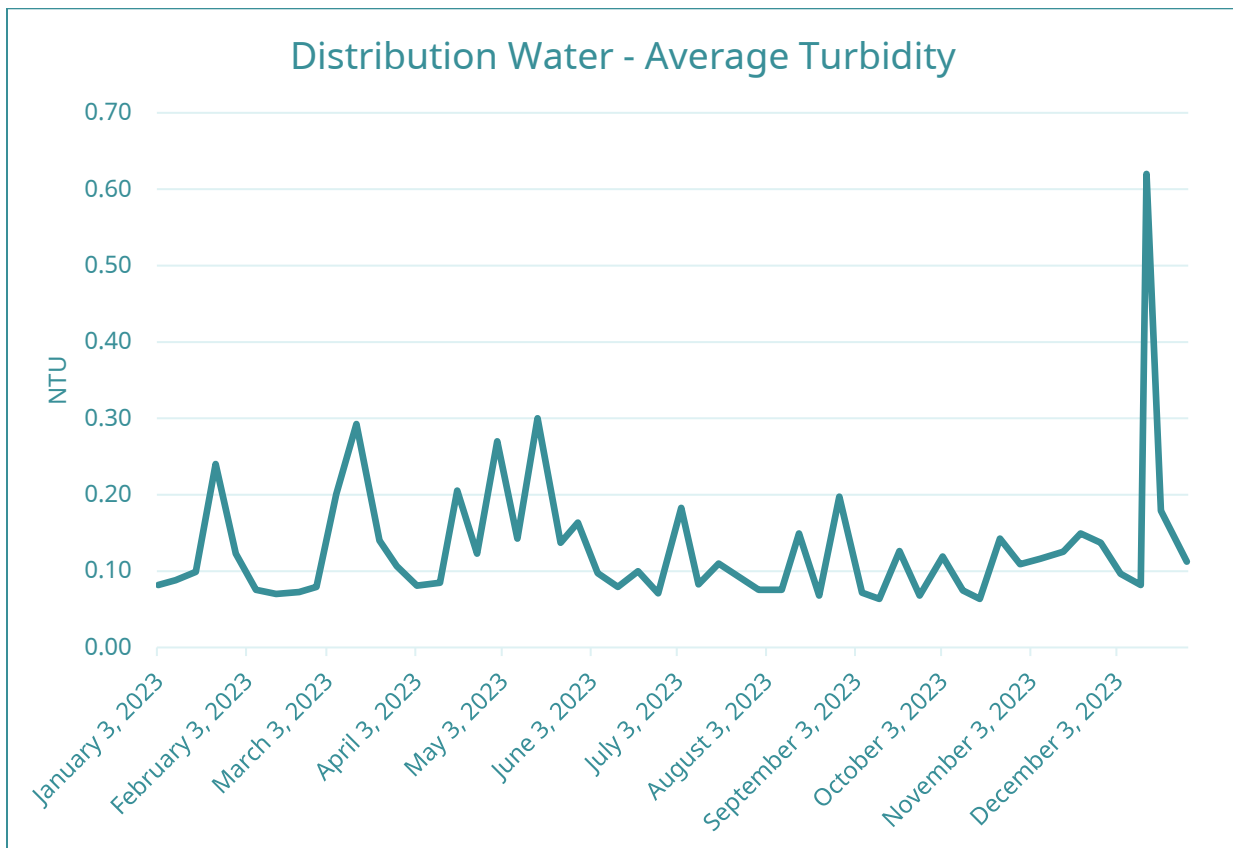
Samples are collected from various points in the distribution system on a weekly basis and field analysis of turbidity is carried out. The following chart displays a compiled average of those weekly samples.

Turbidity is a measure of the clarity of water. It is an optical characteristic and is measured by capturing the amount of light scattered by material in the water. The guideline for turbidity in the distribution system is <math><1.0</math> NTU.

In 2023, no sample exceeded 1 NTU and the average was 0.12 NTU.



*A sample station in the distribution system.*



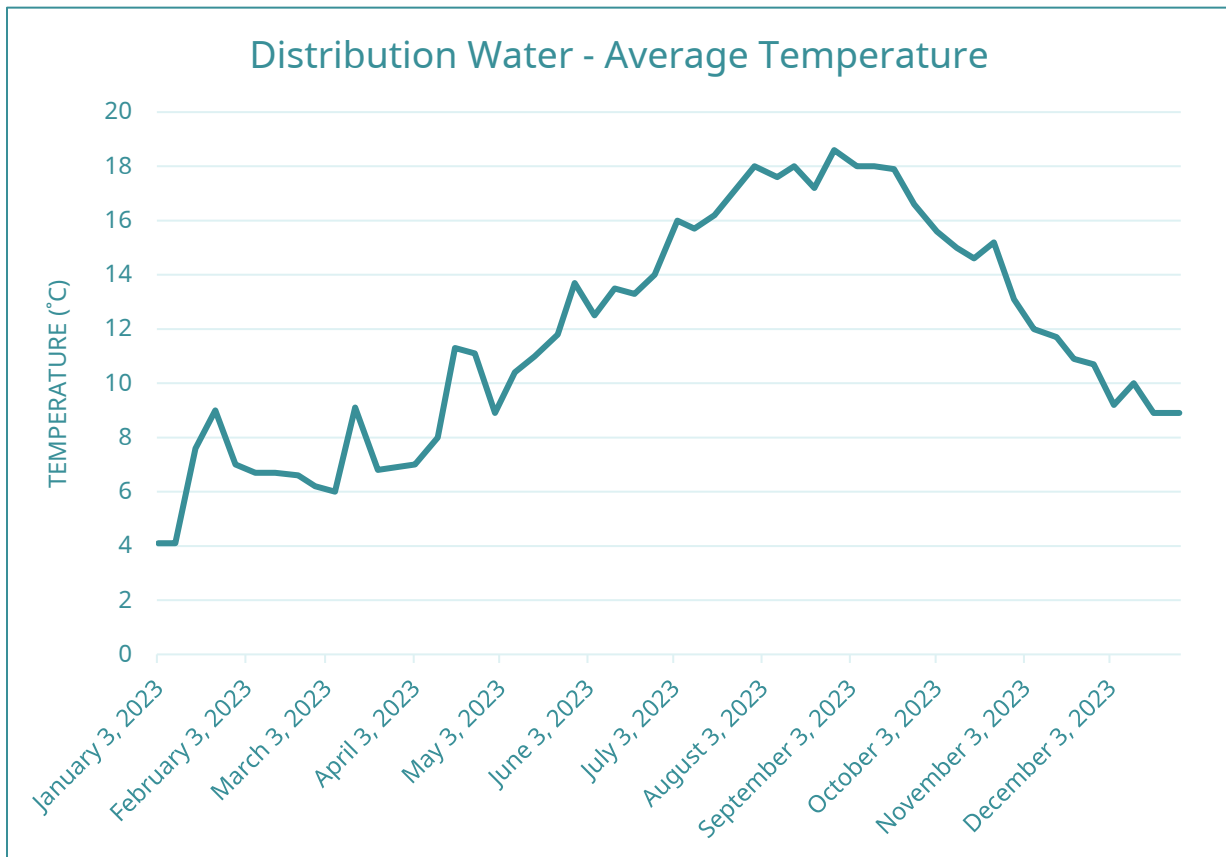
## Distribution Water - Temperature

Samples are collected from various points in the distribution system on a weekly basis and field analysis of temperature is carried out - the operational goal is  $<15^{\circ}\text{C}$ . The following chart displays a compiled average of those weekly samples.

The average temperature across the distribution system in 2023 was  $11.7^{\circ}\text{C}$ , with a lowest sample temperature of  $3.6^{\circ}$  on January 3<sup>rd</sup>, and a highest sample temperature of  $19.7^{\circ}\text{C}$  on August 8<sup>th</sup>.



Sample taps at West Courtenay Reservoir.



## Distribution Water - pH

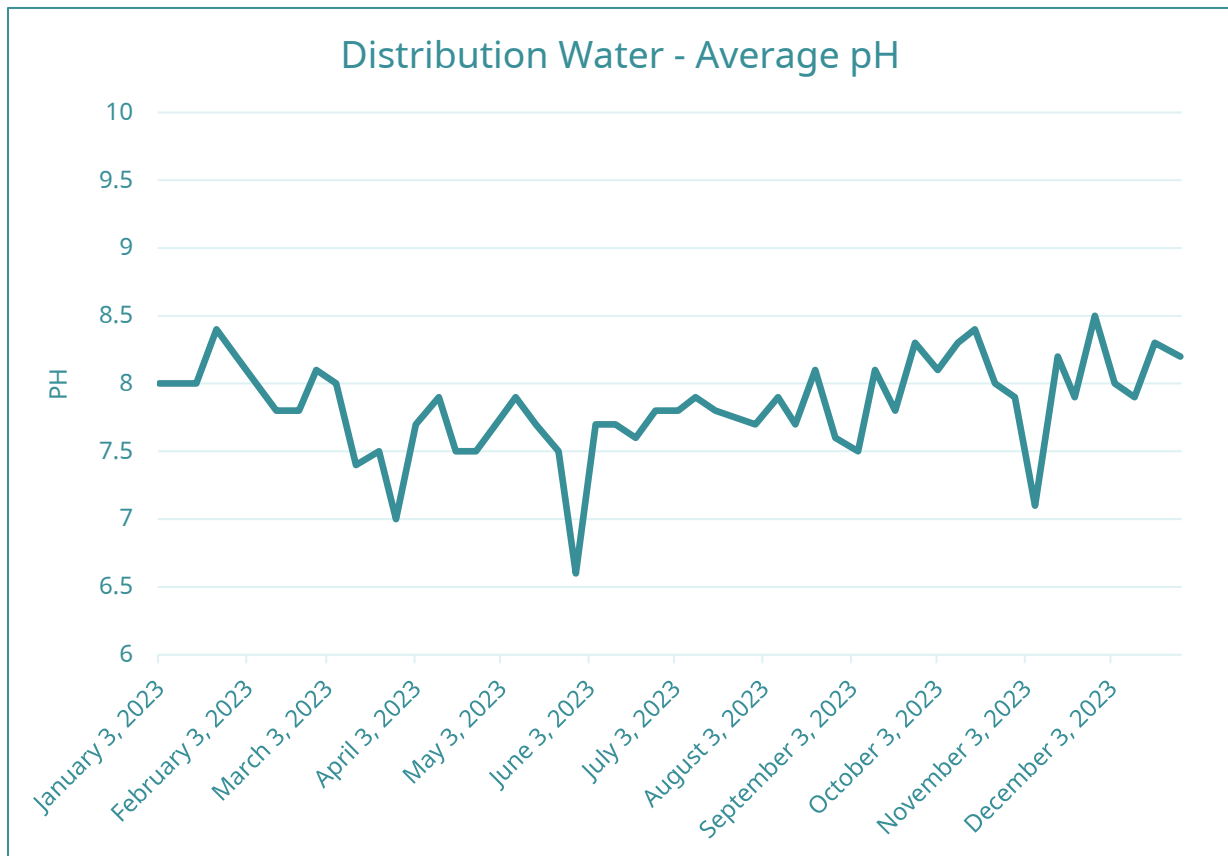
Samples are collected from various points in the distribution system on a weekly basis and field analysis of pH is carried out. The following chart displays a compiled average of those weekly samples.

The operational goal of pH in distribution systems is between 7-10.5.

The average pH across the distribution system in 2023 was 7.8, with the lowest pH value of 6.2 and the highest of 10.3.



Marsden Reservoir.

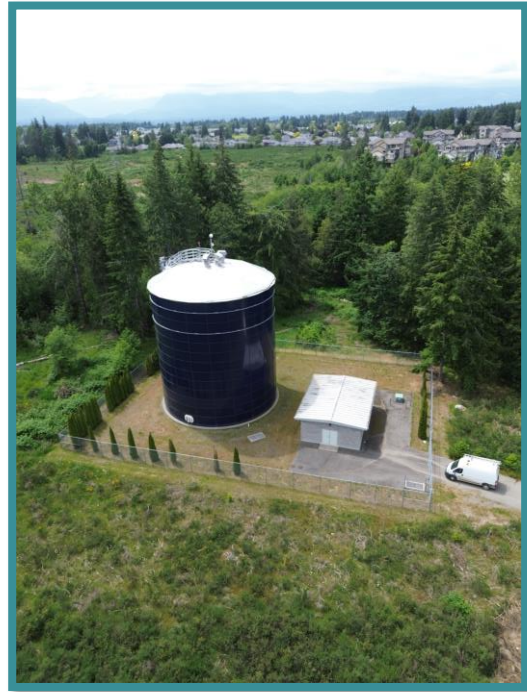


## Distribution Water – Chlorine Residual

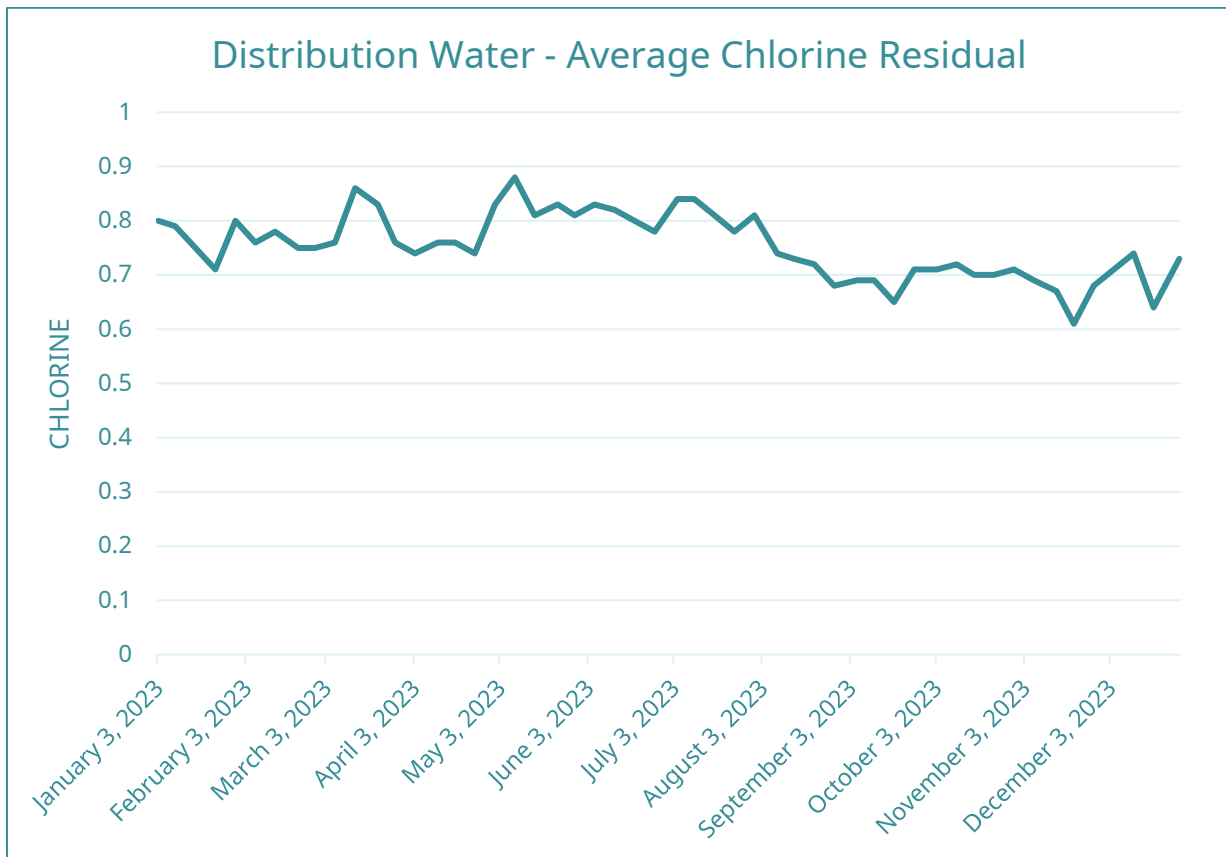
Samples are collected from various points in the distribution system on a weekly basis and field analysis of chlorine is carried out.

The operational goal of chlorine levels in distribution systems should be between 0.04 – 2.0 mg/L.

The average chlorine level across the distribution system in 2023 was 0.70 mg/L, with no samples below 0.04 mg/L and none exceeding 2.0 mg/L.



*Crown Isle Reservoir and valve house.*



## Distribution Water – Total Coliforms

Samples are collected from the distribution system on a weekly basis and sent to a laboratory for total coliform testing. Total coliforms are naturally found in surface water, on plants, soils, and in the intestines of humans and warm-blooded animals. The presence of total coliforms in drinking water does not, on its own, indicate potential health effects from pathogenic microorganisms; testing for them helps determine how well the water treatment system is operating and to indicate water quality changes in the distribution system.



*Lab equipment at the water treatment plant.*

The standards that pertain to total coliform bacteria are written in two parts: at least 90% of all samples collected in a system must be free of total coliform bacteria, and if any samples have the bacteria present, it must be in a concentration of less than 10 total coliform per 100mL.

2023		
Analyte	Standard	Results from 616 Samples
Total Coliform Bacteria	At least 90% of samples must have no detectable total coliform bacteria per 100 ml	All samples had no detectable total coliform bacteria
	No sample has more than 10 total coliform bacteria per 100 ml	No sample exceeded 0 total coliform bacteria per 100ml



## Distribution Water – E. Coli

Samples are collected from the distribution system on a weekly basis and sent to a laboratory for E. Coli testing. The presence of E. Coli in drinking water indicates recent fecal contamination and possibly the presence of disease-causing pathogens, such as bacteria, viruses, and parasites.

The standard for E. Coli in drinking water is: no detectable E. Coli per 100ml.



*A wall of analyzers and sample points.*

2023		
Analyte	Standard	Results from 616 Samples
E. Coli	No detectable E. Coli per 100mL	No detectable E. Coli per 100mL

## Distribution Water – Trihalomethanes

Samples are collected quarterly from Comox Reservoir and tested for disinfection by-products. Disinfection by-products are formed when chlorine interacts with natural organic materials in water – the most common type are called trihalomethanes. This term refers to the sum of bromodichloromethane, bromoform, chloroform, and dibromochloromethane. At elevated levels, they are associated with negative health effects such as cancer and adverse reproductive outcomes. The standard for total trihalomethanes is <0.1mg/L.



*Ultraviolet bulbs inside a reactor.*

2023 (mg/L)					
Analyte	Maximum Acceptable Concentration	Crown Isle Reservoir Results			
		Mar. 22	June 6	Sept. 11	Dec. 13
Bromodichloromethane	N/A	<0.001	<0.001	<0.001	<0.001
Bromoform	N/A	<0.001	<0.001	<0.001	<0.001
Dibromochloromethane	N/A	<0.001	<0.001	<0.001	<0.001
Chloroform	N/A	0.0083	0.0091	0.011	0.014
<b>Total Trihalomethanes</b>	<b>0.1</b>	<b>0.0083</b>	<b>0.0091</b>	<b>0.011</b>	<b>0.014</b>

## Distribution Water – Data by Sample Site

Date	74 Salisbury Rd.			2874 Arden Rd.			1750 Astra Rd.			2490 Waveland Rd.		
	Cl <sup>2</sup>	pH	NTU	Cl <sup>2</sup>	pH	NTU	Cl <sup>2</sup>	pH	NTU	Cl <sup>2</sup>	pH	NTU
03-Jan	0.68	8.0	0.11	0.79	7.8	0.10	0.74	8.3	0.08	0.79	8.5	0.07
09-Jan	0.79	8.1	0.09	0.82	8.0	0.10	0.86	8.2	0.06	0.74	8.8	0.07
16-Jan	0.72	8.0	0.10	0.79	7.5	0.05	0.66	8.3	0.13	0.71	8.9	0.10
23-Jan	0.72	8.3	0.17	0.75	8.0	0.09	0.68	8.7	0.14	0.82	9.1	0.11
30-Jan	0.84	8.8	0.13	0.83	7.9	0.14	0.69	8.4	0.08	0.73	8.8	0.16
06-Feb	0.76	8.2	0.06	0.77	7.9	0.06	0.72	8.4	0.07	0.75	8.7	0.09
13-Feb	0.76	7.9	0.09	0.77	7.4	0.07	0.70	8.6	0.06	0.78	8.1	0.09
21-Feb	0.73	7.8	0.08	0.78	7.4	0.08	0.65	8.7	0.09	0.75	8.6	0.09
27-Feb	0.78	8.2	0.07	0.83	7.8	0.05	0.74	8.2	0.26	0.75	8.4	0.08
06-Mar	0.73	7.8	0.13	0.78	7.9	0.10	0.78	7.4	0.38	0.78	8.4	0.22
13-Mar	0.88	7.5	0.32	0.82	7.2	0.28	0.78	7.4	0.18	0.79	7.8	0.44
21-Mar	0.88	7.6	0.17	0.85	7.6	0.11	0.75	6.7	0.24	0.78	7.8	0.12
27-Mar	0.76	8.0	0.09	0.67	7.8	0.06	0.70	7.9	0.06	0.74	6.6	0.10
03-Apr	0.74	7.7	0.12	0.76	7.5	0.06	0.71	8.0	0.07	0.72	8.2	0.08
11-Apr	0.77	8.0	0.11	0.77	7.7	0.07	0.77	7.5	0.22	0.72	8.2	0.07
17-Apr	0.75	7.5	0.22	0.78	7.4	0.16	0.69	7.5	0.08	0.75	7.9	0.17
24-Apr	0.76	7.4	0.21	0.74	7.1	0.14	0.73	7.5	0.34	0.83	7.7	0.08
01-May	0.80	7.7	0.89	0.86	7.7	0.09	0.89	8.0	0.21	0.85	7.6	0.09
08-May	0.82	8.0	0.13	0.87	7.7	0.11	0.76	7.4	0.20	0.77	8.2	0.16
15-May	0.83	7.7	0.28	0.80	7.6	0.23	0.78	7.5	0.15	0.81	7.4	0.45
23-May	0.80	7.6	0.18	0.84	7.5	0.14	7.70	7.8	0.12	0.76	7.8	0.14
29-May	0.79	7.9	0.14	0.81	7.7	0.13	0.79	7.7	0.07	0.82	7.8	0.12
05-Jun	0.79	7.8	0.15	0.82	7.7	0.17	0.77	7.8	0.12	0.89	7.8	0.08
12-Jun	0.77	7.7	0.07	0.81	7.5	0.08	0.78	7.7	0.14	0.83	7.9	0.06
19-Jun	0.76	7.8	0.10	0.82	7.6	0.07	0.67	7.8	0.07	0.77	7.8	0.14
26-Jun	0.73	7.8	0.06	0.86	7.7	0.05	0.76	7.4	0.13	0.82	7.9	0.09
04-Jul	0.84	8.2	0.21	0.84	7.4	0.11	0.77	7.9	0.07	0.84	7.8	0.24
10-Jul	0.83	7.9	0.10	0.78	7.9	0.06	0.66	7.7	0.10	0.77	8.0	0.09
17-Jul	0.64	7.8	0.15	0.79	7.8	0.09	0.71	7.8	0.09	0.78	7.9	0.07
31-Jul	0.72	7.8	0.09	0.80	7.6	0.06	0.79	8.1	0.07	0.78	8.0	0.05
08-Aug	0.77	8.1	0.09	0.74	7.8	0.04	0.67	7.8	0.15	0.75	8.3	0.07
14-Aug	0.70	7.8	0.14	0.69	7.6	0.13	0.63	8.1	0.05	0.76	7.9	0.16
21-Aug	0.66	8.1	0.06	0.76	7.9	0.08	0.62	7.5	0.22	0.67	8.4	0.05
28-Aug	0.66	7.5	0.20	0.74	7.5	0.21	0.59	7.8	0.09	0.69	7.6	0.24
05-Sep	0.67	7.9	0.05	0.70	7.6	0.08	0.62	8.2	0.07	0.62	8.1	0.06
11-Sep	0.64	8.3	0.07	0.69	8.1	0.05	0.55	8.1	0.08	0.65	8.6	0.06
18-Sep	0.60	7.8	0.22	0.82	7.9	0.21	0.60	8.4	0.07	0.63	7.8	0.09
25-Sep	0.60	8.6	0.09	0.79	8.1	0.06	0.58	8.5	0.20	0.50	9.0	0.05
03-Oct	0.66	8.0	0.12	0.67	8.0	0.15	0.65	8.5	0.09	0.68	8.8	0.10
10-Oct	0.65	8.4	0.06	0.73	8.1	0.06	0.61	8.6	0.06	0.65	9.1	0.07
16-Oct	0.67	8.8	0.08	0.76	8.1	0.06	0.61	8.0	0.12	0.64	9.0	0.05
23-Oct	0.70	8.3	0.10	0.72	8.0	0.18	0.61	8.3	0.14	0.58	8.5	0.12
30-Oct	0.69	7.8	0.10	0.74	7.8	0.11	0.61	7.5	0.13	0.54	8.3	0.18
06-Nov	0.64	7.3	0.12	0.70	7.0	0.11	0.59	8.4	0.10	0.57	7.8	0.14
14-Nov	0.65	8.3	0.11	0.60	7.8	0.13	0.59	7.9	0.14	0.55	9.3	0.16
20-Nov	0.67	7.9	0.15	0.74	7.6	0.28	0.70	8.8	0.11	0.56	8.7	0.11
27-Nov	0.68	8.4	0.13	0.70	8.3	0.13	0.60	8.2	0.12	0.61	9.3	0.13
04-Dec	0.73	8.4	0.08	0.77	7.8	0.08	0.54	8.0	0.11	0.73	8.6	0.09
11-Dec	0.66	8.1	0.09	0.69	7.9	0.04	0.67	8.2	0.18	0.57	8.9	0.08
18-Dec	0.73	8.3	0.19	0.77	8.2	0.16	0.61	8.3	0.10	0.64	8.9	0.31
27-Dec	0.73	8.2	0.16	0.77	8.0	0.09	0.67	8.3	0.10	0.64	8.9	0.13

Date	4871 Greaves Rd.			3441 Cumberland Rd.			Comox Reservoir			Crown Isle Reservoir		
	Cl <sup>2</sup>	pH	NTU	Cl <sup>2</sup>	pH	NTU	Cl <sup>2</sup>	pH	NTU	Cl <sup>2</sup>	pH	NTU
03-Jan	0.78	7.8	0.07	0.79	7.8	0.08	0.79	7.8	0.08	0.76	8.1	0.07
09-Jan	0.73	7.9	0.07	0.81	7.9	0.14	0.73	7.9	0.07	0.81	7.8	0.10
16-Jan	0.74	8.0	0.13	0.73	7.9	0.08	0.75	8.0	0.08	0.74	8.2	0.08
23-Jan	0.87	8.0	1.68	0.83	8.1	0.36	0.83	8.1	0.34	0.71	8.3	0.41
30-Jan	0.78	8.1	0.16	0.80	7.7	0.09	0.81	7.9	0.10	0.77	8.1	0.09
06-Feb	0.83	7.8	0.09	0.79	7.7	0.07	0.81	7.9	0.09	0.78	8.2	0.06
13-Feb	0.80	7.4	0.06	0.70	7.2	0.05	0.80	7.6	0.07	0.77	8.0	0.07
21-Feb	0.77	7.4	0.09	0.76	7.4	0.06	0.79	7.1	0.06	0.78	7.9	0.06
27-Feb	0.81	7.7	0.06	0.80	7.5	0.06	0.78	7.7	0.06	0.71	8.0	0.09
06-Mar	0.93	7.9	0.33	0.84	7.8	0.12	0.89	7.7	0.22	0.78	7.8	0.18
13-Mar	0.88	7.2	0.36	0.84	7.3	0.15	0.78	7.4	0.07	0.80	7.5	0.39
21-Mar	0.78	7.5	0.12	0.75	7.5	0.16	0.82	7.2	0.18	0.75	7.1	0.15
27-Mar	0.79	7.5	0.08	0.74	7.6	0.06	0.85	7.1	0.14	0.77	6.6	0.08
03-Apr	0.74	7.5	0.07	0.74	7.6	0.06	0.77	7.6	0.21	0.79	7.6	0.06
11-Apr	0.77	7.6	0.07	0.76	7.6	0.08	0.80	6.2	0.07	0.75	7.8	0.07
17-Apr	0.77	7.2	0.31	0.80	7.3	0.22	0.76	7.6	0.06	0.74	7.4	0.19
24-Apr	0.95	7.2	0.28	0.81	7.2	0.09	0.70	7.7	0.07	0.87	7.3	0.09
01-May	0.91	7.4	0.41	0.88	7.4	0.12	0.94	7.3	0.16	0.89	7.5	0.24
08-May	0.87	7.7	0.12	0.81	7.7	0.10	0.82	7.2	0.10	0.76	7.8	0.11
15-May	0.89	7.6	0.21	0.83	7.4	0.17	0.87	7.5	0.18	0.79	7.5	0.29
23-May	0.84	7.3	0.19	0.79	7.4	0.11	0.82	7.8	0.14	0.84	7.4	0.11
29-May	0.81	7.6	0.21	0.76	7.7	0.22	0.90	7.6	0.44	0.85	7.5	0.11
05-Jun	0.88	7.6	0.07	0.74	7.6	0.08	0.84	7.3	0.14	0.83	7.7	0.07
12-Jun	0.81	7.6	0.06	0.73	7.5	0.10	0.89	7.7	0.13	0.77	7.6	0.09
19-Jun	0.86	7.5	0.10	0.76	7.5	0.08	0.86	7.7	0.09	0.78	7.7	0.08
26-Jun	0.90	7.7	0.06	0.85	7.7	0.06	0.84	7.2	0.10	0.82	7.7	0.07
04-Jul	0.89	7.8	0.28	0.80	7.8	0.14	0.92	7.6	0.08	0.81	7.8	0.11
10-Jul	0.89	7.8	0.16	0.78	7.8	0.09	0.87	7.6	0.08	0.77	7.8	0.05
17-Jul	0.81	7.7	0.14	0.68	7.7	0.11	0.84	7.7	0.07	0.76	7.7	0.08
31-Jul	0.90	7.5	0.10	0.78	7.6	0.09	0.84	7.8	0.11	0.82	7.7	0.05
08-Aug	0.78	7.7	0.08	0.69	7.8	0.07	0.65	7.8	0.07	0.71	8.0	0.06
14-Aug	0.82	7.5	0.16	0.71	7.6	0.14	0.81	7.7	0.11	0.73	7.6	0.14
21-Aug	0.70	7.9	0.07	0.64	7.9	0.07	0.76	7.5	0.05	0.73	8.0	0.06
28-Aug	0.76	7.8	0.24	0.61	7.4	0.23	0.76	7.8	0.07	0.69	7.6	0.09
05-Sep	0.73	7.5	0.06	0.66	7.6	0.05	0.72	7.5	0.11	0.65	7.7	0.06
11-Sep	0.80	7.9	0.07	0.61	8.0	0.05	0.73	7.9	0.05	0.72	8.0	0.05
18-Sep	0.78	7.9	0.20	0.68	7.8	0.15	0.77	7.4	0.09	0.69	7.9	0.10
25-Sep	0.88	8.0	0.06	0.53	8.0	0.06	0.85	7.5	0.07	0.68	8.2	0.05
03-Oct	0.78	7.8	0.12	0.70	7.9	0.08	0.75	7.5	0.08	0.70	8.1	0.12
10-Oct	0.75	8.0	0.07	0.70	8.2	0.06	0.73	7.8	0.06	0.68	8.3	0.09
16-Oct	0.80	7.9	0.07	0.70	8.0	0.06	0.77	8.0	0.08	0.70	8.5	0.06
23-Oct	0.81	7.4	0.17	0.70	7.6	0.17	0.83	7.9	0.11	0.74	7.7	0.05
30-Oct	0.72	7.7	0.08	0.71	8.0	0.12	0.74	8.1	0.06	0.65	7.7	0.11
06-Nov	0.72	7.0	0.12	0.68	7.0	0.16	0.75	8.1	0.05	0.63	0.7	0.06
14-Nov	0.69	7.8	0.13	0.67	7.8	0.14	0.53	7.6	0.10	0.67	8.0	0.12
20-Nov	0.75	7.8	0.11	0.68	7.6	0.10	0.78	7.7	0.08	0.77	7.7	0.17
27-Nov	0.76	7.9	0.12	0.71	8.1	0.11	0.77	0.7	0.09	0.72	8.2	0.11
04-Dec	0.71	7.7	0.08	0.78	7.7	0.08	0.79	8.1	0.12	0.58	7.9	0.13
11-Dec	0.68	8.7	0.21	0.66	7.6	0.06	0.65	7.6	0.14	0.73	7.8	0.09
18-Dec	0.86	7.9	0.08	0.73	8.0	0.17	0.81	8.0	0.13	0.71	8.0	0.15
27-Dec	0.86	7.9	0.08	0.73	7.8	0.08	0.81	7.9	0.06	0.73	8.1	0.09

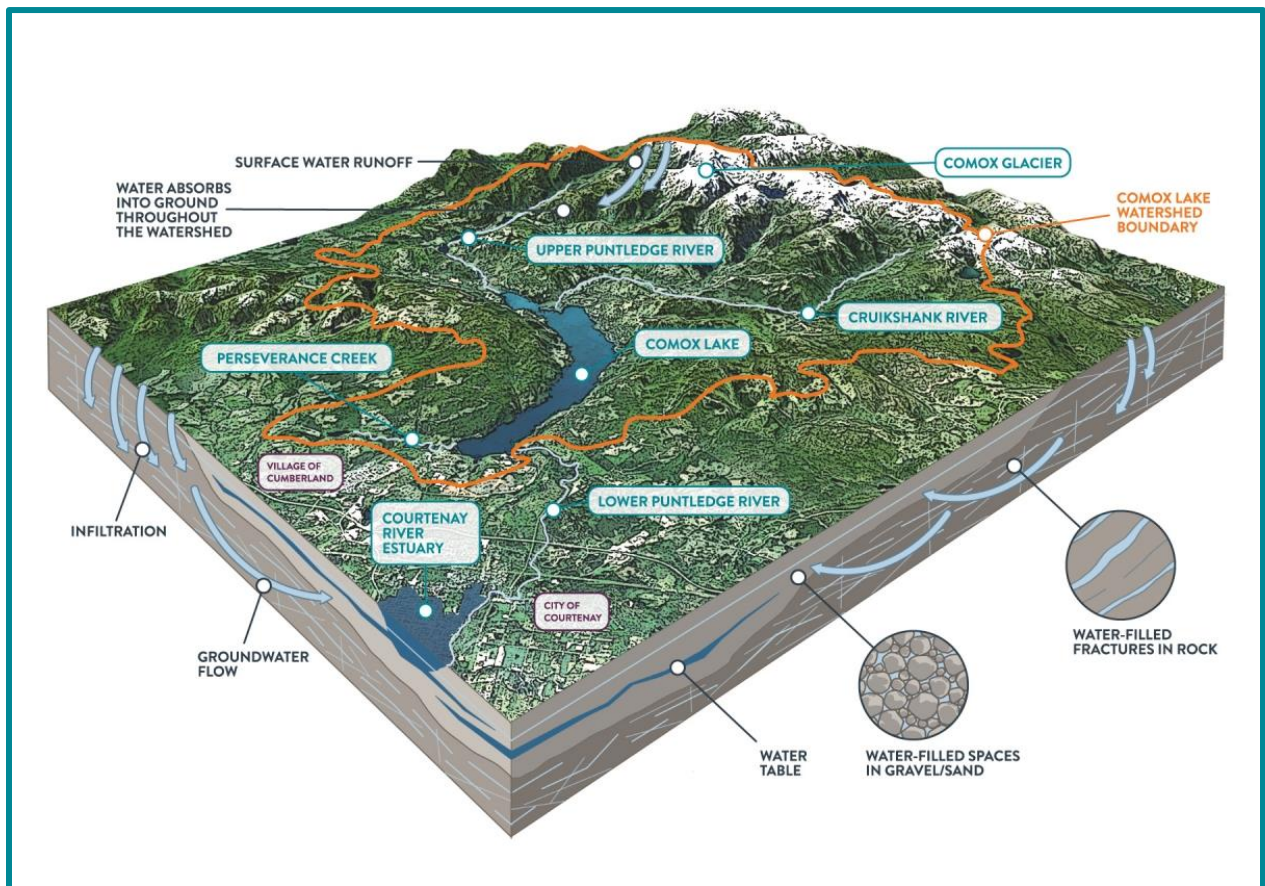
Date	East Courtenay Res.			Marsden Reservoir			West Courtenay Res.			2390 Rennison Rd.		
	Cl <sup>2</sup>	pH	NTU	Cl <sup>2</sup>	pH	NTU	Cl <sup>2</sup>	pH	NTU	Cl <sup>2</sup>	pH	NTU
03-Jan	0.81	7.7	0.08	0.84	7.9	0.07	0.73	7.8	0.07	0.65	8.6	0.09
09-Jan	0.80	8.0	0.05	0.78	8.0	0.07	0.83	7.9	0.09			
16-Jan	0.75	7.9	0.09	0.77	7.1	0.09	0.80	7.1	0.09	0.70	9.0	0.12
23-Jan	0.73	8.0	0.16	0.86	7.9	0.08	0.79	7.8	0.08			
30-Jan	0.87	7.9	0.09	0.75	7.9	0.06	0.90	7.7	0.09	0.58	9.8	0.18
06-Feb	0.78	7.9	0.07	0.76	7.7	0.06	0.81	7.8	0.07	0.69	9.0	0.09
13-Feb	0.80	7.7	0.06	0.77	7.5	0.06	0.84	7.6	0.05			
21-Feb	0.78	7.8	0.06	0.65	7.4	0.06	0.82	7.4	0.06	0.84	8.8	0.10
27-Feb	0.79	7.7	0.07	0.65	7.7	0.07	0.85	7.7	0.07	0.65	9.9	0.15
06-Mar	0.80	7.8	0.09	0.84	8.1	0.06	0.82	8.0	0.06	0.72	8.9	0.5
13-Mar	0.79	7.2	0.24	0.85	7.2	0.14	0.98	7.2	0.18			
21-Mar	0.89	7.0	0.11	0.80	7.6	0.11	0.86	7.7	0.16	0.68	7.9	0.12
27-Mar	0.77	6.4	0.08	0.73	7.6	0.06	0.79	7.6	0.07	0.74	8.0	0.14
03-Apr	0.75	7.5	0.13	0.87	7.5	0.09	0.85	7.6	0.09	0.73	8.2	0.07
11-Apr	0.78	7.7	0.07	0.79	7.6	0.05	0.81	7.7	0.09			
17-Apr	0.74	7.6	0.16	0.77	7.2	0.16	0.82	7.2	0.13	0.82	8.0	0.29
24-Apr	0.82	7.2	0.09	0.89	7.1	0.07	0.83	7.7	0.08	0.84	9.5	0.11
01-May	0.88	7.5	0.22	0.86	7.8	0.07	0.89	8.3	0.08	0.85	7.9	0.31
08-May	0.81	7.7	0.16	0.87	7.7	0.09	0.92	7.7	0.09			
15-May	0.86	7.6	0.49	0.80	8.2	0.19	0.89	8.0	0.21	0.70	7.8	0.31
23-May	0.82	7.3	0.11	0.84	7.4	0.10	0.89	7.4	0.09	0.62	8.0	0.14
29-May	0.86	7.6	0.15	0.81	0.7	0.11	0.85	0.0	0.27			
05-Jun	0.83	7.8	0.06	0.83	7.6	0.09	0.91	7.6	0.12	0.58	7.9	0.08
12-Jun	0.81	7.5	0.09	0.80	7.6	0.06	0.84	7.6	0.05			
19-Jun	0.86	7.6	0.11	0.87	7.6	0.07	0.82	7.5	0.09	0.56	7.8	0.11
26-Jun	0.86	7.6	0.06	0.88	7.7	0.06	0.84	7.7	0.05			
04-Jul	0.87	7.7	0.12	0.99	7.8	0.18	0.88	7.8	0.28	0.47	8.1	0.21
10-Jul	0.98	7.8	0.09	0.88	7.8	0.05	0.89	7.8	0.05			
17-Jul	0.85	7.8	0.08	0.79	7.8	0.13	0.99	7.7	0.10	0.53	7.8	0.12
31-Jul	0.85	7.6	0.04	0.75	7.6	0.08	0.90	7.7	0.12			
08-Aug	0.80	7.8	0.07	0.67	7.8	0.09	0.84	7.8	0.09	0.55	8.1	0.07
14-Aug	0.72	7.5	0.15	0.77	7.6	0.14	0.80	7.6	0.17			
21-Aug	0.70	8.0	0.06	0.76	7.9	0.07	0.78	7.9	0.12	0.53	8.6	0.06
28-Aug	0.76	7.4	0.19	0.66	7.6	0.13	0.59	7.7	0.12			
05-Sep	0.62	7.7	0.06	0.69	7.6	0.09	0.80	7.6	0.12	0.57	8.5	0.05
11-Sep	0.80	8.0	0.05	0.76	7.9	0.05	0.76	7.9	0.07			
18-Sep	0.81	8.0	0.09	0.88	7.1	0.08	0.65	7.0	0.07	0.49	8.1	0.10
25-Sep	0.85	8.0	0.07	0.77	8.0	0.08	0.82	8.0	0.08			
03-Oct	0.80	8.2	0.11	0.72	7.9	0.08	0.91	7.9	0.10	0.47	8.4	0.10
10-Oct	0.71	8.0	0.09	0.76	8.0	0.07	0.82	8.0	0.07			
16-Oct	0.69	8.0	0.05	0.72	8.0	0.06	0.82	8.0	0.06	0.53	9.4	0.09
23-Oct	0.70	7.7	0.13	0.82	7.8	0.10	0.80	8.2	0.13			
30-Oct	0.68	7.7	0.10	0.73	7.7	0.07	0.78	7.7	0.07			
06-Nov	0.58	7.2	0.06	0.68	6.8	0.09	0.77	7.1	0.08	0.55	7.4	0.18
14-Nov	0.79	7.9	0.09	0.77	7.6	0.12	0.68	7.7	0.12			
20-Nov	0.76	7.6	0.08	0.75	7.6	0.20	0.86	7.8	0.08	0.53	8.8	0.16
27-Nov	0.74	7.9	0.12	0.78	8.1	0.16	0.75	8.5	0.21			
04-Dec	0.65	7.7	0.09	0.73	7.8	0.08	0.82	7.9	0.08	0.57	8.8	0.15
11-Dec	1.21	7.6	0.05	0.79	7.5	0.07	0.78	7.5	0.12			
18-Dec	1.22	7.9	0.14	0.93	8.2	0.15	0.87	8.3	0.08	0.49	9.2	0.23
27-Dec	0.77	7.4	0.14	0.79	7.9	0.09	0.87	7.8	0.08			

Date	2472 Gibson Rd.			2701 Elmo Rd.		
	Cl <sup>2</sup>	pH	NTU	Cl <sup>2</sup>	pH	NTU
03-Jan						
09-Jan	0.81	9.0	0.11			
16-Jan						
23-Jan				0.57	10.1	0.10
30-Jan						
06-Feb						
13-Feb	0.84	8.8	0.08			
21-Feb						
27-Feb						
06-Mar						
13-Mar	1.00	8.6	0.30			
21-Mar						
27-Mar						
03-Apr						
11-Apr	0.73	8.9	0.16			
17-Apr						
24-Apr						
01-May						
08-May	0.84	8.8	0.24			
15-May						
23-May						
29-May						
05-Jun						
12-Jun	0.88	8.0	0.06			
19-Jun						
26-Jun				0.59	9.0	0.13
04-Jul						
10-Jul	0.83	8.2	0.08			
17-Jul						
31-Jul				0.69	8.2	0.05
08-Aug						
14-Aug	0.73	8.4	0.16			
21-Aug						
28-Aug				0.75	8.5	0.30
05-Sep						
11-Sep	0.81	8.9	0.08			
18-Sep						
25-Sep				0.66	9.5	0.05
03-Oct						
10-Oct	0.64	9.1	0.09			
16-Oct						
23-Oct				0.57	9.6	0.25
30-Oct				0.6	8.7	0.11
06-Nov						
14-Nov	0.63	9.1	0.13			
20-Nov						
27-Nov				0.34	10.2	0.16
04-Dec						
11-Dec	0.81	8.9	0.09			
18-Dec						
27-Dec				0.44	10.3	0.14

## Watershed Protection Plan

Providing high-quality drinking water requires preservation of water at its source. The Watershed Protection Plan includes collaboration with stakeholders, hydrodynamic modelling, and water quality monitoring within the watershed. Water quality parameters are observed at all major tributaries to the Comox Lake and the data is recorded in a watershed database.

The CVRD has partnered with the Town of Comox, City of Courtenay, Village of Cumberland and K'ómoks First Nation on a multi-year initiative with the Municipal Natural Asset Initiative. The goal of the project is to value natural assets in the watershed to better understand, measure and manage the drinking water services that are provided.



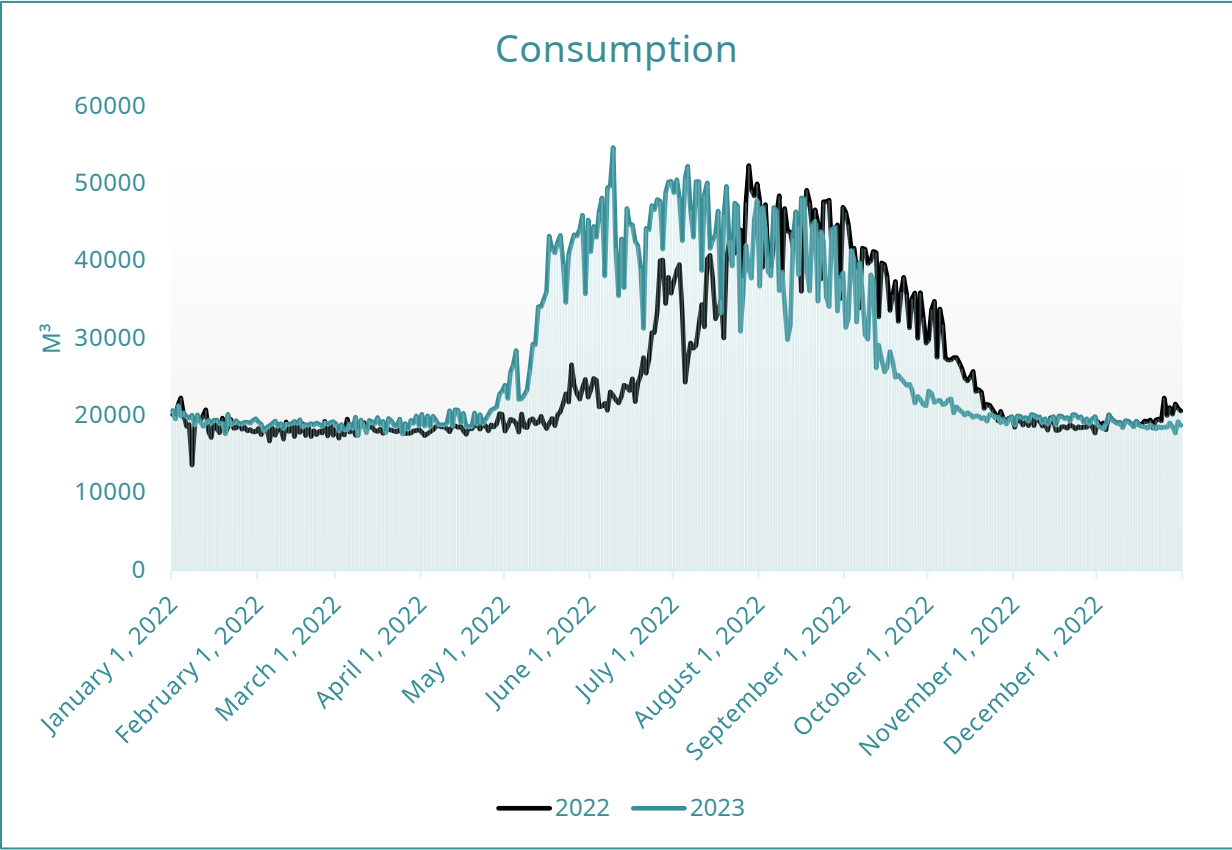
Comox Lake watershed.

# Consumption Metrics and Water Rates

The average daily water production in 2023 was 25.3 million litres per day, or approximately 456L per person, compared to the Canadian average of 329 litres per person per day. Demand is highest during the summer months - approximately twice as much as during the winter. In 2023, system demand reached its highest point on June 9th with 54.6 million liters of water being produced.

In response to the COVID-19 pandemic, water rates for 2021 and 2022 were decreased to \$0.80/m<sup>3</sup>. Rates increased in 2023 to \$0.96/m<sup>3</sup>, and \$1.00/m<sup>3</sup> in 2024.

To help reduce consumption the CVRD has rebate programs in place to encourage Comox Valley residents to be water-efficient. In 2023 this included rebates for smart irrigation controllers, and soil amendments.





## Conservation

Water conservation is an increasingly important initiative and while it seems as if there is an abundance of water available, our supply is truly a limited resource, particularly during the summer months.

The CVRD has a four-stage system in place for managing water consumption. Stage one is the least restrictive and comes into effect annually on May 1 unless otherwise noted. Stages two and three are more restrictive and are implemented as per the water-use agreement with BC Hydro which is primarily based on the environmental flow needs of the Puntledge River. Stage four can be implemented in circumstances where it is essential to bring water consumption down as low as possible to maintain critical flows to accommodate major repairs or extremely low river flows.

## Comox Valley Water System Watering Schedule

Residential lawn and garden watering is permitted with a sprinkler during the specified days and hours as follows:

Stage	Starts	Hours	Mon	Tues	Wed	Thu	Fri	Sat	Sun
1	Starting May 1	5-8 am & 7-10 pm	No Watering	Even Address	Odd Address	Even Address	Odd Address	Even Address	Odd Address
2	Starting July 1	6-8 am & 8-10 pm	No Watering	Even Address	Odd Address	No Watering	No Watering	Even Address	Odd Address
3	When Notified	Any day or time	No lawn watering permitted. Hand watering or micro/drip irrigation of trees, shrubs, flowers and vegetables only.						
4	When Notified	N/A	No watering						

Hand watering or micro/drip irrigation of trees, shrubs and vegetables is permitted anytime during Stage 1 and 2.

For more information, call: **250-334-6000** or visit: [www.comoxvalleyrd.ca/restrictions](http://www.comoxvalleyrd.ca/restrictions)



CITY OF  
**COURTENAY**



TOWN OF COMOX

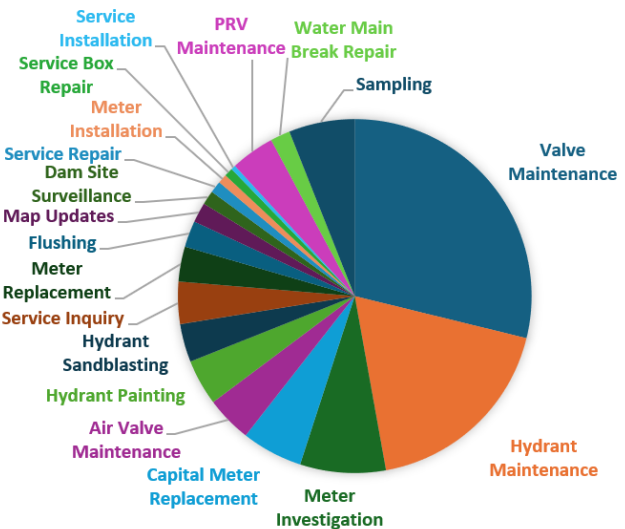


comoxvalleyrd.ca

## Operations

The water treatment plant and distribution system are operated by 15 qualified operators. In 2023, several ongoing and annual maintenance activities were carried out, as well as improvements to work order tracking, data collection, and map improvements.

Additionally, many non-annual projects were completed such as reservoir cleaning, and hydrant painting.



### 2023 Achievements

- Cleaned East Courtenay Reservoir and West Courtenay Reservoir
- Fully serviced and painted all fire hydrants
- Fully serviced all pressure reducing valves
- Optimized chemical tanks to reduce the number of deliveries per year
- Recoated backwash pump bowls
- Upgraded polymer treatment systems to improve process and reduce costs
- Upgraded sodium hypochlorite injection quills which addressed safety and access concerns

### 2024 Objectives

- Decommission old Sandwick water reservoir
- Various distribution reservoir maintenance and repairs
- Update water system hydraulic modeling software
- Paint East Courtenay reservoir
- Install seismic sensors at the West Courtenay Reservoir site
- Chlorine scrubber decommissioning and removal
- Implement a sampling program to test Comox Valley water for PFAs
- Continue progress on the South Water Extension Project
- Continue the next phase of the fibre optic project connecting remote sites