

**Regional District of
Central Okanagan**

Large Water Systems Drinking Water Annual Report 2023

Killiney Beach, Westshore Estates and Sunset Ranch



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Introduction

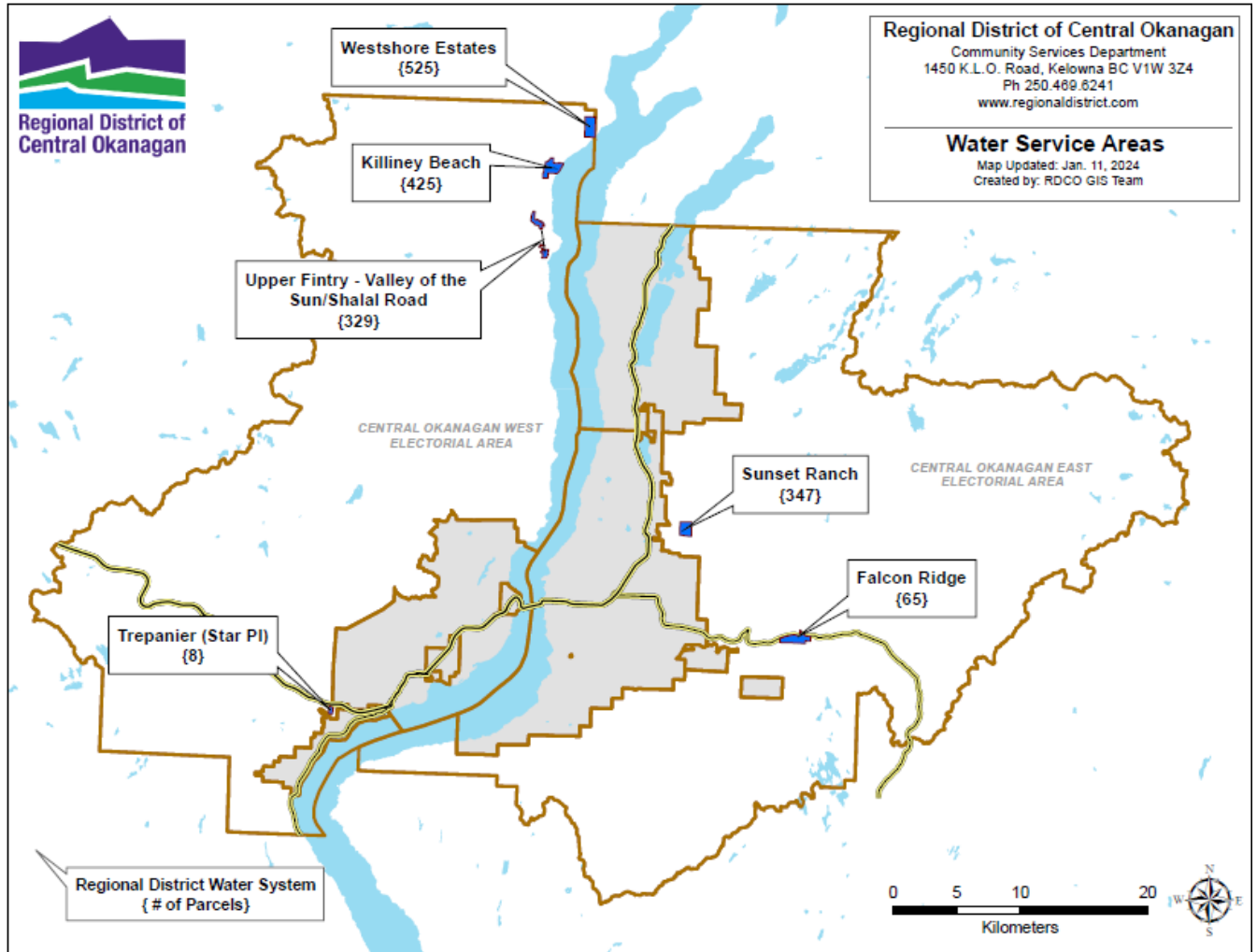
The purpose of this report is to provide information on the monitoring and maintenance of the Regional District of Central Okanagan's (RDCO) water distribution systems directed by the Interior Health Authority (IH) as set forth by the Drinking Water Protection Act.

During 2023 the RDCO continued to monitor and improve the domestic water supply. This document will provide an overview of the distribution system, maintenance performed and water system data results and trending.

Water Distribution System

The RDCO administers eight water systems (two are Fire/Community Halls located in the Joe Rich area). These systems vary in size with five of the systems classified as Small and three as Large. This Report will contain information for the large systems only – Killiney Beach, Westshore Estates and Sunset Ranch.

Figure 1 - RDCO Water Service areas and number of parcels



The Large Water Systems administered by the RDCO, the number of users/customers for each system and the assigned EOCP number (Environmental Operators Certification Program) are outlined below.

Table 1 – RDCO Water Systems and EOCP information

Water System	EOCP Number	EOCP Classification	Number of Connections (approximate)	Water Source	Meets Drinking Water Objectives
Killiney Beach	1850	WD-3, WT-2	285	Okanagan Lake-sodium-hypochlorite injection disinfection	*no
Westshore	1852	WD-2, WT-2	321	Okanagan Lake-sodium-hypochlorite injection disinfection	*no
Sunset Ranch	678	WD-3	346	Groundwater Well-sodium hypochlorite injection disinfection	yes

* Killiney and Westshore water systems meet many of Interior Health’s water quality objectives including zero Coliforms, zero E.coli and inactivation of viruses and bacteria. However, both systems are not compliant regarding having two water treatment processes and inactivation of Cryptosporidium - water users can choose to boil their water rapidly for at least one minute prior to consumption or food preparation. Currently chlorination is the only method used to treat drinking water delivered to Killiney and Westshore customers.

Interior Health Website

<https://www.interiorhealth.ca/YourEnvironment/DrinkingWater/Pages/default.aspx>

Regulations and Management

The regulations for the management of the water distribution systems and the terms and conditions under which water services may be provided are set out in RDCO **Bylaw 1513**. User fees and asset renewal fees vary according to the number of users and the maintenance required for each system. Fees are set under the RDCO Water System Fees & Charges Amended **Bylaws No. 1371, 1375, 1373 (Appendix 1)**.

Testing and Monitoring Program

The monitoring program integrates source monitoring (where possible) as well as the quality in the distribution system. Routine weekly samples were collected at each site throughout the distribution system including raw water sources and results are reported to Interior Health monthly.

RDCO staff also conducts in-house testing including free and total chlorine residual, pH, conductivity, turbidity, iron, manganese, and temperature. This data was used as background information to supplement on-line monitoring and as a checking procedure within the Drinking Water Monitoring

program. The RDCO tests each system every 2 years for physical and chemical parameters. Any additional chemical testing done in 2023 is included in (**Appendix 2**).

Maintenance and Repairs

The RDCO continued to implement an operations and maintenance program (mPulse) that includes annual cleaning/disinfection for the reservoirs, annual hydrant inspection and flushing, annual generator service and distribution flushing including valve exercising and dead-end flushing.

Conditions on Permit/System Improvements 2023

Killiney Beach

- » General water system improvements – *long-term planning to meet DWO*
- » Leak detection (ongoing) – *long-term planning to meet DWO*
- » Hydrant Maintenance
- » Source Protection Plan
- » Per-and Polyfluorinated Substances (PFAS) sampling program (ongoing)
- » Electrical Asset Management – Udell and Killarney
- » Valve replacement program

Westshore

- » General water system improvements – *long-term planning to meet DWO*
- » Leak detection (ongoing) – *long-term planning to meet DWO*
- » Hydrant Maintenance
- » Source Protection Plan
- » Intake exhaust fan replacement
- » Header replacement
- » Mountain reservoir roof repair (ongoing)
- » New chlorine analyzer – Lake Pumphouse
- » Valve replacement program
- » Turbidity meter replacement
- » Mountain isolation valve

Sunset Ranch

- » Hydrant Maintenance
- » Replace pressure tanks
- » Hypo tank level sensor
- » General improvements
- » Well #1 pump motor replacement
- » Manganese quarterly monitoring

Grants/Water Conservation

Grants

No grants were received in 2023.

Water Conservation

Outdoor Irrigation restrictions are in place for the customers RDCO water systems, as outlined below (Stage 2 water restrictions were implemented for all water systems on June 16, 2023, and Stage 3 water restrictions were issued July 18, 2023).

Further tips on water conservation including the **Water Talk Newsletter - Your Water-wise Information Source** can be found on the RDCO website at regionaldistrict.com. The newsletter was sent out to all RDCO water customers in the spring and fall of 2023, discussing system updates, new construction and conservation tips and ideas. Each water system has its own webpage on the RDCO website using the link **My Water System**.

Table 2 - RDCO Outdoor water irrigation schedule

Stage 1 Alternate Days Sprinkling:	
Effective	September 16th to June 15th, unless Notice of Stage 3 or 4 in Effect
Even numbered addresses:	<i>Sprinkling is only permitted on Even Calendar Days</i>
Odd numbered addresses:	<i>Sprinkling is only permitted on Odd Calendar Days</i>
Stage 2 Twice a Week Sprinkling:	
Effective	June 16th to September 15th, unless Notice of Stage 3 or 4 in Effect
Even numbered addresses:	<i>Sprinkling is only permitted on Saturdays & Tuesdays</i>
Odd numbered addresses:	<i>Sprinkling is only permitted on Sundays & Wednesdays</i>
Stage 3 Restriction Period - Once a Week Sprinkling:	
Effective	Upon Notice Issued by <i>Regional District Officer</i>
Even numbered addresses:	<i>Sprinkling is only permitted on Saturdays</i>
Odd numbered addresses:	<i>Sprinkling is only permitted on Sundays</i>
Stage 4 Restriction Period – No Sprinkling	
Effective	Upon Notice Issued by <i>Regional District Officer</i>

Source Water Protection

Killiney Beach and Westshore Estates

A source water assessment was completed in 2015 and a source protection planning spreadsheet was created in 2016. Treatment options are still being investigated for both Killiney and Westshore including source location so raw water sampling is not possible currently. The spreadsheet is reviewed annually and updated as required. An Okanagan Basin Water Board Gant was obtained in 2020 to conduct a study on the impact of septic fields on the foreshore of Okanagan Lake in the Killiney Beach and Westshore Estates area. The study and sampling (periphyton and water chemistry) were contracted out to Larratt Aquatic Consulting and results indicated there was no evidence of septic influence in the study areas.

Killiney Beach

Per-and Polyfluorinated Substances (PFAS) monitoring of the source water at Killiney Beach Lakeside Pumphouse was initiated in 2022 after the White Rock Lake Wildfire in 2021. Samples are taken twice annually at the Lake Pumphouse and will be monitored for background purposes.

Sunset Ranch

A source water assessment was completed in 2013.

Operator Education

The RDCO has established a training program that follows Environmental Operators Certification Program (EOCP) guidelines and required training, including First Aid, Transportation of Dangerous Goods and Backflow Prevention. Operators have been qualifying to write exams as per EOCP guidelines and will continue to increase their certification levels for successorship as well as redundancy for all water systems annually. The Regional District of Central Okanagan currently employs seven (6) staff working in the utilities department as seen below.

Table 3 - EOCP Certifications

Employee	EOCP Certification #	Level
Shane Dorey	9216	WT-2, WD-1
Kevin Trottier	4607	WT-3, WD-3, CH
Doug Murray	8948	WD-1
Peter Meersma	8244	CCCT, WD-2, WT-2, PLUMBER
Angela Lambrecht	6468	WT-1, WD-1, CH
Greg Beloin	7787	WT-1, WD-1, CH

Cross Connection Control/Backflow Events

On-going assessments of all RDCO managed water facilities continued in 2023 to minimize the risk of cross connections. Certified staff conducted annual servicing and maintenance on all back flow preventers in the water systems and documentation will be added to a Maintenance Management Program for future scheduling and tracking.

The Water Meter Reader Software will be updated to Neptune 360 in 2024 - all installed water meters are read on a quarterly basis and continue to help operations in the cross-connection program as the Neptune meters have the capacity to record backflow conditions.

Unaccounted water reports are compiled quarterly using the water meter software and include any reverse flow events which are then investigated. There were 9 reverse flow events recorded in 2023, four for Killiney Beach (Q1, Q3), five for Westshore Estates (Q4) in one for Sunset Ranch (Q2), all were investigated and were related to area specific isolation and/or winterizing of the property.

SCADA System

The RDCO uses a *Supervisory Control and Data Acquisition* (SCADA) system that allows integrated real-time automated control that can respond quickly enough to compensate for process changes. Within the SCADA system there are several controls in place and RDCO staff can make changes on an as needed basis.

All reporting is done daily, and trending is in real time unless noted above. Trending and reporting are also compiled into monthly and yearly reports.

The following list is a description of some of the information that the RDCO currently trends and reports on our SCADA system.

Killiney Beach

- » Reservoir level and trending – Udell, Killarney and Winchester
- » On-line turbidity, chlorine, temperature, and pH
- » Pump control (amp, hours, pressure)
- » Total flow m³
- » Remote access and control of pumps and chlorinator (stat/stop times)

Westshore

- » Reservoir level and trending – Upper and Mountain
- » On-line turbidity, chlorine, temperature, and pH
- » Pump control (amp, hours, pressure)
- » Total flow m³
- » Remote access and control of pumps and chlorinator (stat/stop times)

Sunset Ranch

- » Reservoir level and trending
- » Pump control (amp, hours, pressure)
- » Well levels
- » Total flow m³
- » Check valve control
- » On-line turbidity, chlorine, temperature, and pH

Emergency Response/Events

All notifications were put on and lifted after consultation with IH and in accordance with guidelines set forth in the RDCO Emergency Response Manual, which is updated annually.

Killiney Beach – emergency response enacted five times for 2023

April 25, 2023, a localized BOIL notice was issued when pressure was lost during a repair and was removed April 28, 2023.

April 26, 2023, another localized BOIL was issued in a new area when pressure was lost during a repair, it was removed May 1, 2023.

May 2, 2023, a system wide WQA was issued due to elevated turbidity in the source water, this WQA was upgraded to a BOIL on May 9, downgraded to a WQA on May 25 and finally removed September 6, 2023.

September 14, 2023, a localized WQA was issued after repair work and removed September 20, 2023.

December 7, 2023, a localized BOIL notice was issued when pressure was lost during a repair and removed December 13, 2023.

Westshore - emergency response enacted two times

May 2, 2023, a system wide WQA was issued due to elevated turbidity in the source water and was removed June 14, 2023.

November 22, 2023, a localized WQA was issued after repair work and was removed November 30, 2023.

Future Plans for 2024

Killiney Beach

- » Killiney Beach intake building exterior
- » Source protection plan updates
- » Instrumentation critical spares
- » Water source study(ongoing)
- » PRV design and replacement - Kildare
- » Chlorine and turbidity analyzer replacement at Lake pumphouse
- » Re-key locks
- » Hydrant maintenance

Westshore

- » Source protection plan updates
- » Instrumentation critical spares
- » Water source study (ongoing)
- » Level sensor Mountain Reservoir
- » Mountain Reservoir surge relief (design) and install
- » Mountain Reservoir exterior and roof repairs
- » Re- key locks
- » Hydrant maintenance
- » Reservoir cleaning
- » SCADA upgrades

Sunset Ranch

- » Instrumentation critical spares
- » Chlorine and turbidity analyzer
- » Surge anticipation Valve
- » Reservoir cleaning
- » Replacement options for chlorine injection line
- » Re-key locks

Weekly sample analysis results

Results for Total Coliform and E. coli are included in **Appendix 3**, and include the date, time, location, and chlorine residual.

Turbidity Analysis (NTU)

Turbidity must be monitored on-line for surface water distribution systems with greater than 300 connections. All turbidity data can be found in **Appendix 3** and include the date and location of the analysis. **Table 4** and **Figures 2-4** show turbidity trends and average data throughout the year.

Figure 2 – Killiney Beach turbidity

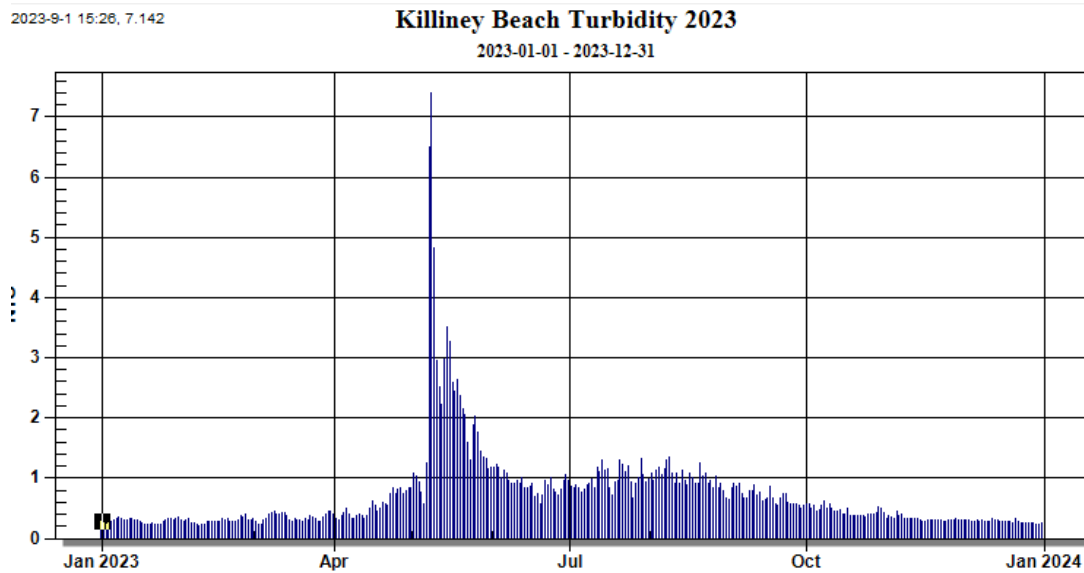
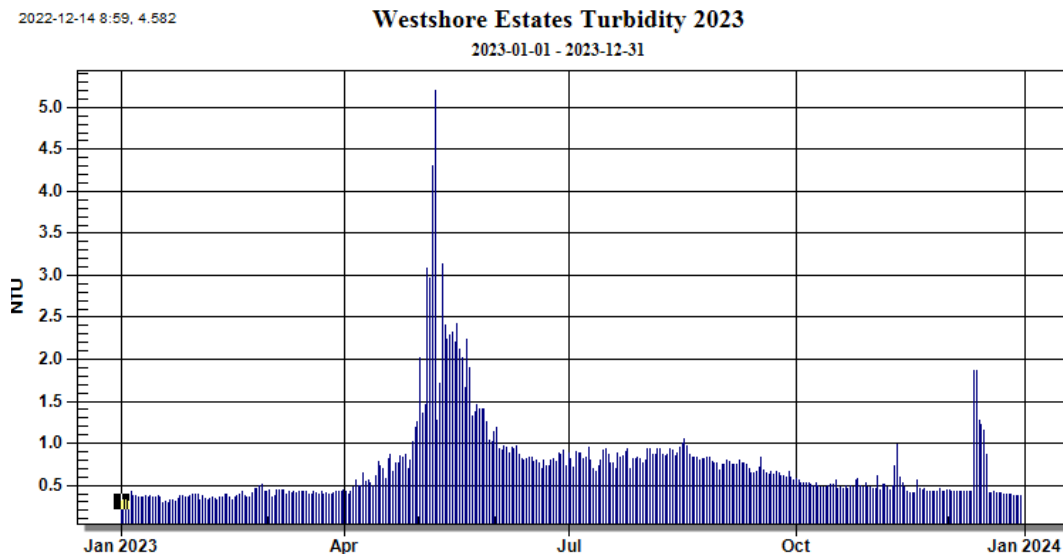


Figure 3 – Westshore Estates turbidity



Note turbidity spike in December as online analyzer was disconnected for work in the pumphouse.

Figure 4 – Sunset Ranch turbidity

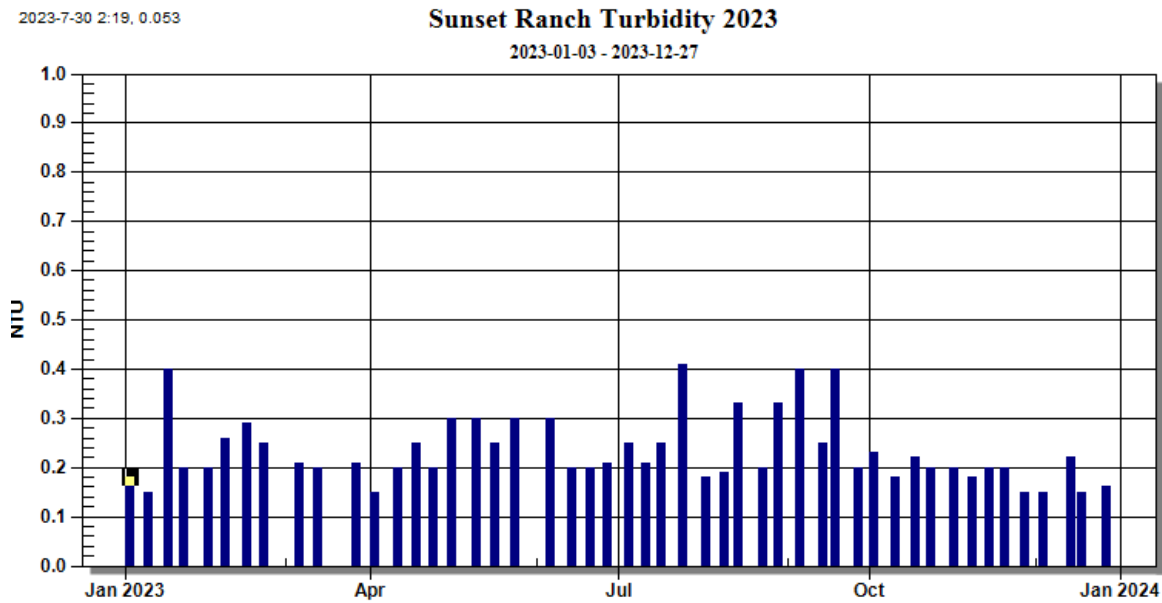


Table 4 – Average monthly turbidity data for Killiney Beach and Westshore Estates – 2023

Month	Killiney Beach (ntu range)	Westshore Estates (ntu range)
January 2023	0.22-0.35	0.29-0.43
February 2023	0.21-0.40	0.32-0.51
March 2023	0.23-0.45	0.35-0.45
April 2023	0.30-0.85	0.40-1.18
May 2023	0.58-7.39	1.01-5.20
June 2023	0.56-1.22	0.69-1.18
July 2023	0.68-1.32	0.67-0.95
August 2023	0.68-1.36	0.68-1.05
September 2023	0.51-0.91	0.56-0.84
October 2023	0.35-0.61	0.46-0.57
November 2023	0.28-0.45	0.41-0.99
December 2023	0.23-0.32	0.37-0.45
Total days >1.0	62	35
Total days >5.0	2	1

In 2023 Killiney Beach documented 62 days over 1.0 ntu (daily average) while Westshore Estates recorded 35. Killiney Beach also logged two days over 5.0 ntu, and Westshore Estates recorded one. Sunset Ranch does not have an on-line turbidity meter and it is a groundwater well, with all weekly grab sample turbidity results below 1.0 ntu.

Disinfection By-Product Results (THM and HAA)

Disinfection by-product samples are tested twice a year where “worst case” organic loading and chlorine residual is considered high. Samples are analyzed for Trihalomethanes (THM) and Haloacetic Acids (HAA). All Disinfection by-product data can be found in **Appendix 2** and include the date and location of the analysis.

Table 5 indicates the sample results for total THM and HAA (HAA testing was not done at Sunset Ranch). The Average THM for Killiney Beach and Westshore was 0.10 mg/L, while Sunset Ranch was under. The Maximum Acceptable Concentration (MAC) for THM under the **Canadian Drinking Water Guidelines (CDWG)** is **0.100 mg/L**.

Table 5 – Total THM and HAA for Killiney Beach, Sunset Ranch and Westshore Estates

Month	Killiney Beach		Sunset Ranch	Westshore Estates	
	THM (mg/L)	HAA (mg/L)	THM (mg/L)	THM (mg/L)	HAA (mg/L)
January 2023					
February 2023					
March 2023					
April 2023					
May 2023					
June 2023	0.203	0.102	0.009	0.190	0.073
July 2023					
August 2023					
September 2023	0.063	0.033	0.019	0.070	0.036
October 2023					
November 2023	0.058			0.042	
December 2023					
Average	0.108	0.068	0.014	0.101	0.054
CDWG MAC	0.100	0.008	0.100	0.100	0.080

Per -and Polyfluorinated Substances (PFAS)

PFAS are a group of chemicals used to make fluoropolymer coatings and products that resist heat, oil, stains, grease, and water. Certain foams used to fight wildfires can contain PFAS and these chemicals can pollute ground and surface water in the areas in which they are used. PFAS monitoring of the source water at Killiney Beach Lakeside Pumphouse was initiated in 2022 after the White Rock Lake Wildfire in 2021. Samples are taken twice per year with the results listed below (all PFAS data can be also found in **Appendix 2**). Like 2022, no detectable PFAS were recorded in 2023. The RDCO will continue to monitor for these substances to establish background information/trends for source water quality.

Table 6 – PFAS for Killiney Beach Lakeside Pumphouse 2023

	Perfluorobutanoic acid PFBA	Perfluoropentanoic acid PFPeA	Perfluorohexanoic acid PFHxA	Perfluorooheptanoic acid PFHpA	Perfluorooctanoic acid PFOA	Perfluorononanoic acid PFNA	Perfluorodecylsulfonate PFBS	Perfluorododecylsulfonate PFHxS	Perfluorooctanesulfonate PFOS	6:2 Fluorotelomer sulfonate 6:2FTS	8:2 Fluorotelomer sulfonate 8:2FTS
Month	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Jan 2023											
Feb 2023											
Mar 2023	25.00	.20	.20	.20	.20	.02	10.00	.20	.20	.20	.20
Apr 2023											
May 2023											
Jun 2023											
Jul 2023											
Aug 2023											
Sep 2023	25.00	.20	.20	.20	.20	.02	10.00	.20	.20	.20	.20
Oct 2023											
Nov 2023											
Dec 2023											
Average	25.00	.20	.20	.20	.20	.02	10.00	.20	.20	.20	.20

Summary

The RDCO is committed to protecting Public and Environmental Health through a comprehensive monitoring program that meets the **Canadian Drinking Water Quality Guidelines** and the **BC Drinking Water Protection Act**.

The RDCO works closely with Interior Health and our Drinking Water Officer to deliver a program that encompasses water quality monitoring, treatment monitoring, and distribution maintenance which enables us to deliver a safe potable water supply to consumers.

Appendix 1

RDCO Bylaws 1513, 1371, 1375, 1373

Appendix 2

Additional Chemical Data

Appendix 3

Monthly Water System Data - total coliform, free chlorine, and turbidity