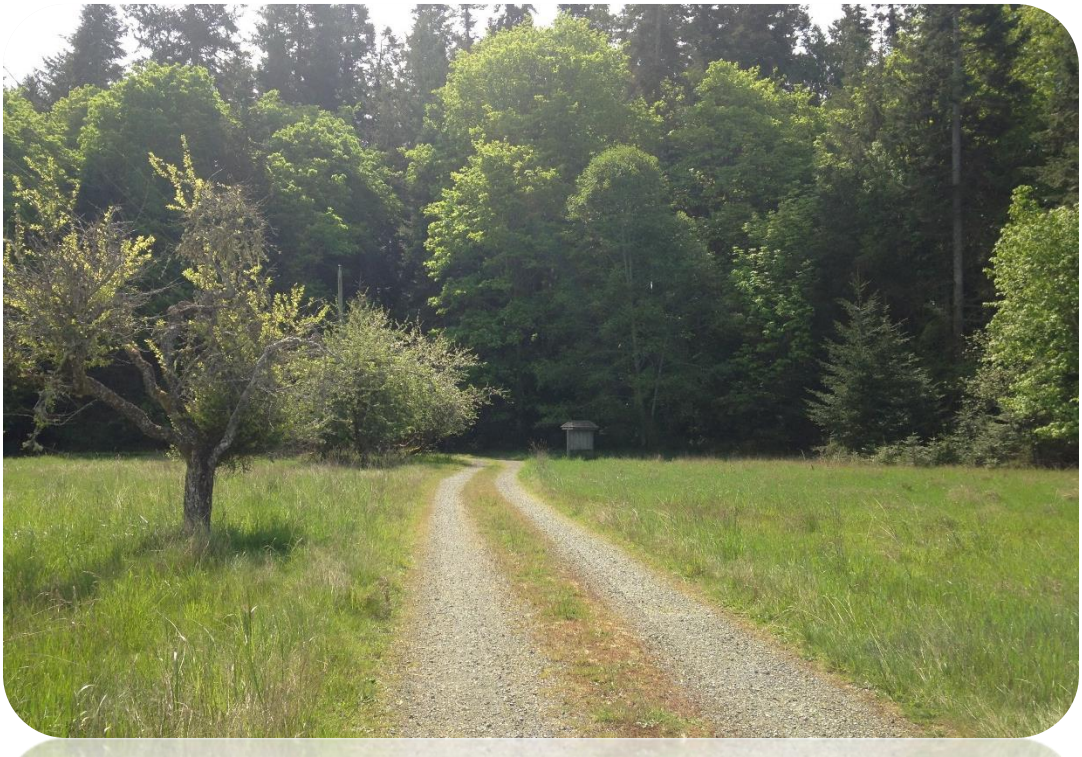
# REGIONAL DISTRICT OF NANAIMO

## Water Service Area Annual Report 2022



# Surfside Water Service Area

June 2023

**REGIONAL DISTRICT OF NANAIMO**
*Water Services Department*
6300 Hammond Bay Rd, Nanaimo, BC Canada V9T 6N2 | Ph 250-390-6560

**Table of Contents**

## 1. Introduction

The following annual report describes the Surfside Water Service Area and summarizes the water quality and production data from 2022. This report also includes a summary of inquiries and complaints, completed and proposed maintenance activities, Operator Certification, the Emergency Response & Contingency Plan, and the Cross Connection Control Program. This report is to be submitted to Island Health by the spring of 2023.

## 2. Surfside Water Service Area

The Surfside Water Service Area was established in 1986 and comprises an area northwest of Qualicum Beach on Surfside Drive and part of McFeely Drive. There are 39 water service connections in the Surfside Water Service Area. The water source comes from two groundwater wells located nearby. The water source is chlorinated and pumped into the system on-demand via two pressure tanks. A back-up generator is present at the pumphouse, should it be required. A map of the Surfside Water Service Area is provided in Appendix A for reference.

### 2.1 Groundwater Wells

Two groundwater production wells are present in the well field at 3547 West Island Highway, north of Qualicum Beach, B.C.

| Well / Name | Well Depth | Wellhead Protection In Place | Treated/Untreated with Chlorine |
|---|---|---|---|
| #1 | 9.4 m | Yes | Treated |
| #2 | 9.8 m | Yes | Treated |

### 2.2 Reservoirs

There is no water storage reservoir in the Surfside Water Service Area. Water supply is pumped into the system via a dual pressure tank arrangement.

### 2.3 Distribution System

The water distribution system in Surfside is summarized in the table below. Flushouts are present, but there are no fire hydrants on the system.

| Watermain Material | Length of mains in Surfside Water Service Area | Prevalence in Water Service Area |
|---|---|---|
| AC: 150mm or smaller<br>AC: 200mm or larger | 0.8 km<br>none | 72.5%<br>n/a |
| PVC: 150mm or smaller<br>PVC: 200mm or larger | 0.006 km<br>0.3 km | 0.5%<br>27% |

*Note: 'AC' is Asbestos-Concrete, 'PVC' is poly-vinylchloride (plastic)*

## 3. Water Sampling and Testing Program

Water sampling and testing is carried out weekly in the distribution system. Notably, an in-line chlorine analyzer was installed in 2020 that monitors chlorine residual in the drinking water constantly, and will send alarm to RDN Operators when chlorine level drops below the operating level. Chlorine residual levels are maintained in order to ensure the absence of bacterial regrowth in the watermains. The following table includes a summary of all testing:

| Timing | Location | Tests |
|---|---|---|
| Weekly | RDN (in-house) Laboratory | Total coliforms, E.Coli<br>Temperature, pH, Conductivity<br>Free chlorine residual, Salinity, TDS |
| Weekly<br>(or as required) | BC Centre for Disease Control | Total coliforms, E.Coli |
| Monthly/Quarterly<br>(well water only) | Bureau Veritas | Monthly- Chloride<br>Quarterly- Chloride, Sodium, Conductivity, TDS |
| Annual Source Water Testing (every Fall) | Bureau Veritas | Complete potability testing of raw well water, including T-Ammonia |
| Annual System Water Testing (every Spring) | Bureau Veritas | Complete potability testing of distribution system , including T-Ammonia |

## 4. Water Quality - Source Water and Distribution System

Up-to-date water quality reports and lab data are posted monthly on the RDN website at www.rdn.bc.ca/surfside. Tables of water quality testing results for both the source water and distribution system are provided at the end of this report under Appendix B.

## 5. Water Quality Inquiries and Complaints

Very few complaints and inquiries were received from the Surfside water service area, and were typically related to high water bill inquiries.

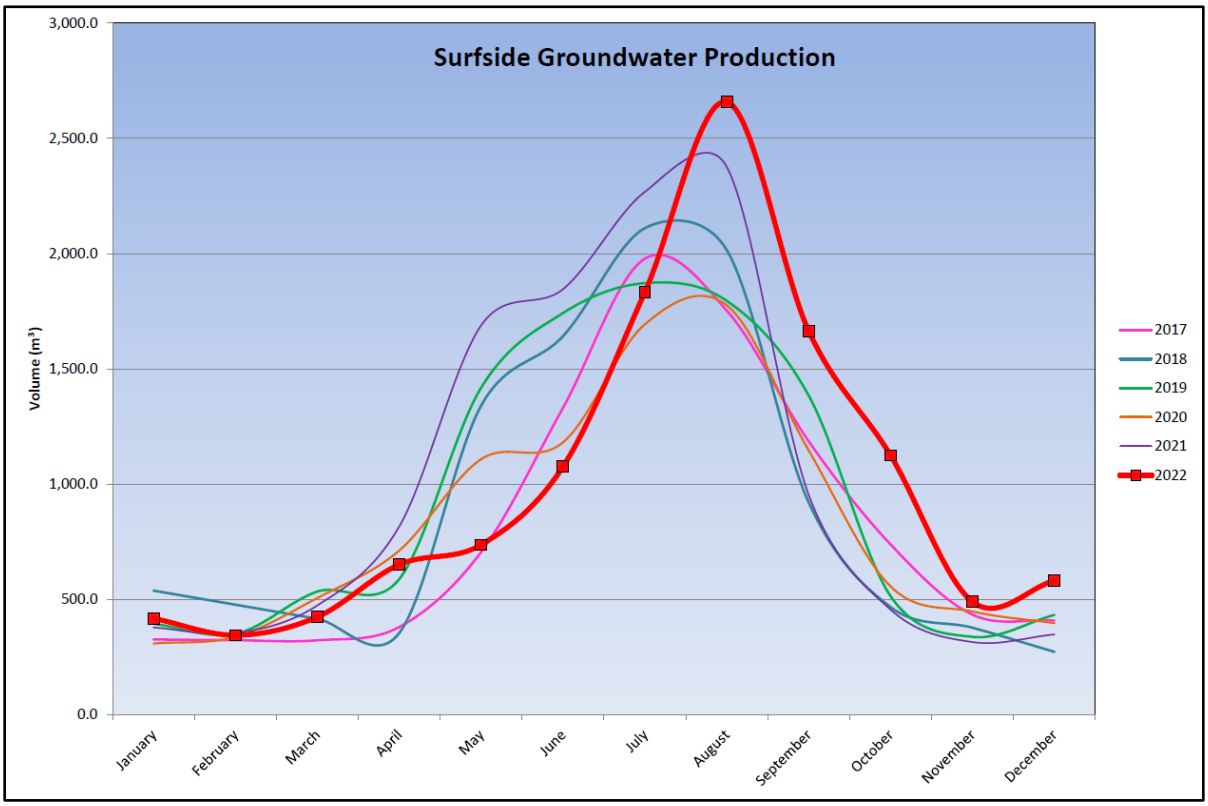
**Surfside Pumphouse**

A summary of the water system incidents in 2022 is given in the table below.

| Activity in 2022 | Date(s) | History/Notes |
|---|---|---|
| Boil Water Advisories | None | None |
| High Turbidity Events | None | None |
| Equipment Malfunction | None | None |
| Water Main Breaks | None | None |
| Pump Failures | None | None |

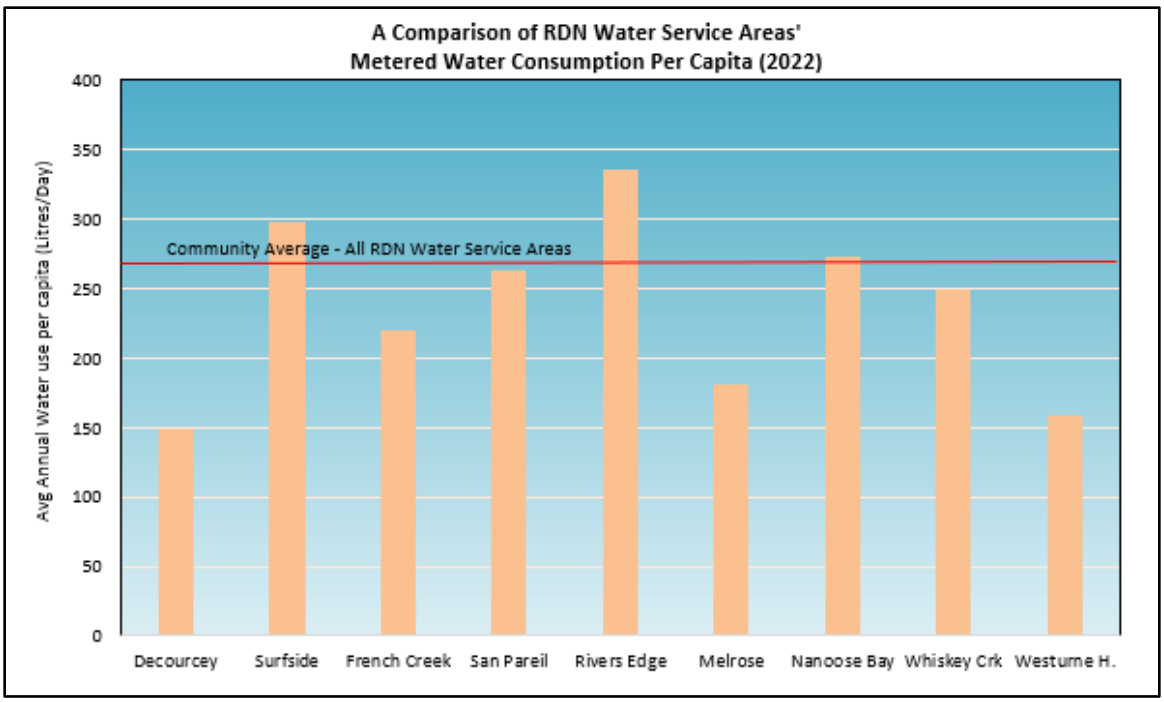
## 6. Groundwater Production

Monthly groundwater production in the Surfside Water Service Area for the past 6 years is shown in the chart below. Groundwater production in 2022 was above average in the fall in comparison to previous years due to high seasonal temperatures.




*Consumption*

In the Fall/Winter of 2022, the average usage per home in Surfside was 0.39 cubic metres per day (85.8 imperial gallons). In the summer, the average water usage was 1.36 cubic metres per day (299 imperial gallons). Based on these figures, the annual consumption per capita is estimated to be 298 L/day (based on 2.4 people/household). This consumption is *11% more* than all the other RDN system averages of 269 L/day/capita in 2022.




## 7. Maintenance Program

A weekly pump station inspection is carried out to reduce or eliminate the risk of contamination and system failure, and to ensure the consistent application of chlorine for treatment purposes. Watermains are flushed once annually in the spring. There are no fire hydrants in this water service area due to insufficient supply and capacity for fire flows. Twenty-four hour on-call coverage is in place to respond to water system emergencies and alarms.

## 8. Operator Certification

The Regional District Water & Utility Services staff is comprised of one Manager, one Project Engineer, one Engineering Technologist, one Chief Operator, one Engineering Technician, and seven certified operators. The operators receive ongoing training and certification in:

- ✓ Water Treatment
- ✓ Water Distribution
- ✓ Wastewater Collection
- ✓ Cross Connection Control
- ✓ Asbestos Awareness
- ✓ Chlorine Handling
- ✓ WHMIS (Workplace Hazardous Material Information System)
- ✓ TDG (Transportation of Dangerous Goods)
- ✓ Confined Space Awareness
- ✓ Fall Protection
- ✓ First Aid
- ✓ Silica Awareness

## 9. Water Service Area Projects

### 9.1 2022 Completed Studies & Projects

- Corresponded with residents regarding water conservation;
- Utilized leak detection equipment and tracking;
- Set new water rates structure based on rewarding conservation;

- Followed Cross Connection Control program to reduce backflow prevention risks;
- Enforced outdoor sprinkling regulations;
- Advised residents regarding water leak repairs;
- Continued the 2021-2030 Water Conservation Plan;
- Completed regular watermain flushing and hydrant maintenance;
- Maintained a high level of water quality;
- Continued quality control through regular testing and monitoring of water system;
- Continued valve maintenance program.

### 9.2 2023 Proposed Projects & Upgrades

- Upgrade well pumps to improve efficiency;
- Complete irrigation checks for high-water users;
- Begin billing for metered consumption based on revised water rates;
- Continue watermain flushing program;
- Continue leak detection equipment utilization program;
- Investigate new watermain flushing and metering procedures to promote conservation;
- Continue valve maintenance program;
- Implement Phase 2 Water Systems SCADA Master Plan;
- Continue the 2021-2030 DWWP Water Conservation Plan; and
- Continue to offer numerous water-saving incentives via rebates.

**Waterfront access from Surfside Drive**

## 10. Emergency Response & Contingency Plan

The Regional District Emergency Response & Contingency Plan (ERCP) contains procedures and contact information to efficiently respond to water system emergencies such as contamination of water supply, loss of supply, pump failure, and drought management. The ERCP was reviewed and updated in 2022, and copies are available on our website, at each RDN office, in each pump house, and in each Water Services vehicle. A copy of the ERCP is also attached to this report in Appendix C.

## 11. Supply Security

The RDN continues to effectively manage water supply in its service areas in response to ongoing demand and the effects of climate change. Most RDN water service areas are not expected to expand, so growth in demand is not expected. Initiatives that provide resiliency for the groundwater sources that serve residents remain a high priority. Reservoir capacity and redundancy are reviewed with regards to water storage during periods of drought, and water from backup sources is available to be delivered in the case of an emergency. Groundwater quality is regularly tested in all RDN water service areas. The aquifers within the regional district are monitored through the RDN's Drinking Water and Watershed Protection (DWWP) program. The most sustainable way to protect water supply is through demand management (conservation), which is promoted through outreach and stewardship initiatives provided by the RDN's Team WaterSmart , as well as the RDN Water Service Area's Water Conservation Plan 2020-2030.

Rebates for well water testing, water smart landscaping, and rainwater harvesting further assist RDN residents to reduce water usage in high demand seasons. A new tiered system for water rates taking effect in 2023 will help promote conservation by rewarding low water users with reduced rates and encouraging high water users to seek ways to use less. Additional planning and preparation initiatives will be introduced in the future to support water supply security.

## 12. Cross Connection Control

The RDN's Cross Connection Control Program was put in place to protect the public health by reducing the risk of contaminants flowing back into the public water supply. The RDN Manager of Water Services is the designated Cross Connection Control Manager.

The RDN's Cross Connection Control Program addresses cross connection threats through operating policies and procedures, as well as assisting customers with backflow preventer selection, installation, testing, maintenance and reporting. The program receives its authority from *RDN Cross Connection Control Regulation Bylaw No. 1788*, and the *British Columbia Building Code, Part 7*, which requires that potable water be protected from contamination. Additionally, a webpage has been established at https://rdn.bc.ca/cross-connection-control-program to educate RDN water service customers about cross connection hazards, and lists the relevant links to current standards and resources.

Two of the RDN's water system operators received certification as backflow assembly testers through the British Columbia Water & Waste Association (BCWWA).

## 13. Cyber Security

The RDN uses a multi-level approach to cyber-security. Corporate network security is employed via a universal threat management gateway that implements various methods of data security, which includes daily definition updates to block known cyber threats. In addition, all RDN PC's are protected with anti-virus software. RDN water systems are connected to the corporate network via IP-Sec VPN's for remote management by information technology and equipment operators. Future infrastructure upgrades will see our water systems located on segregated networks to limit the vulnerability from cybersecurity threats.

## 14. Closing

An annual report for the year 2023 will be prepared and submitted to Island Health in the spring of 2024. Annual reports are also available on our website at: www.rdn.bc.ca/surfside.

**Surfside Well #2**

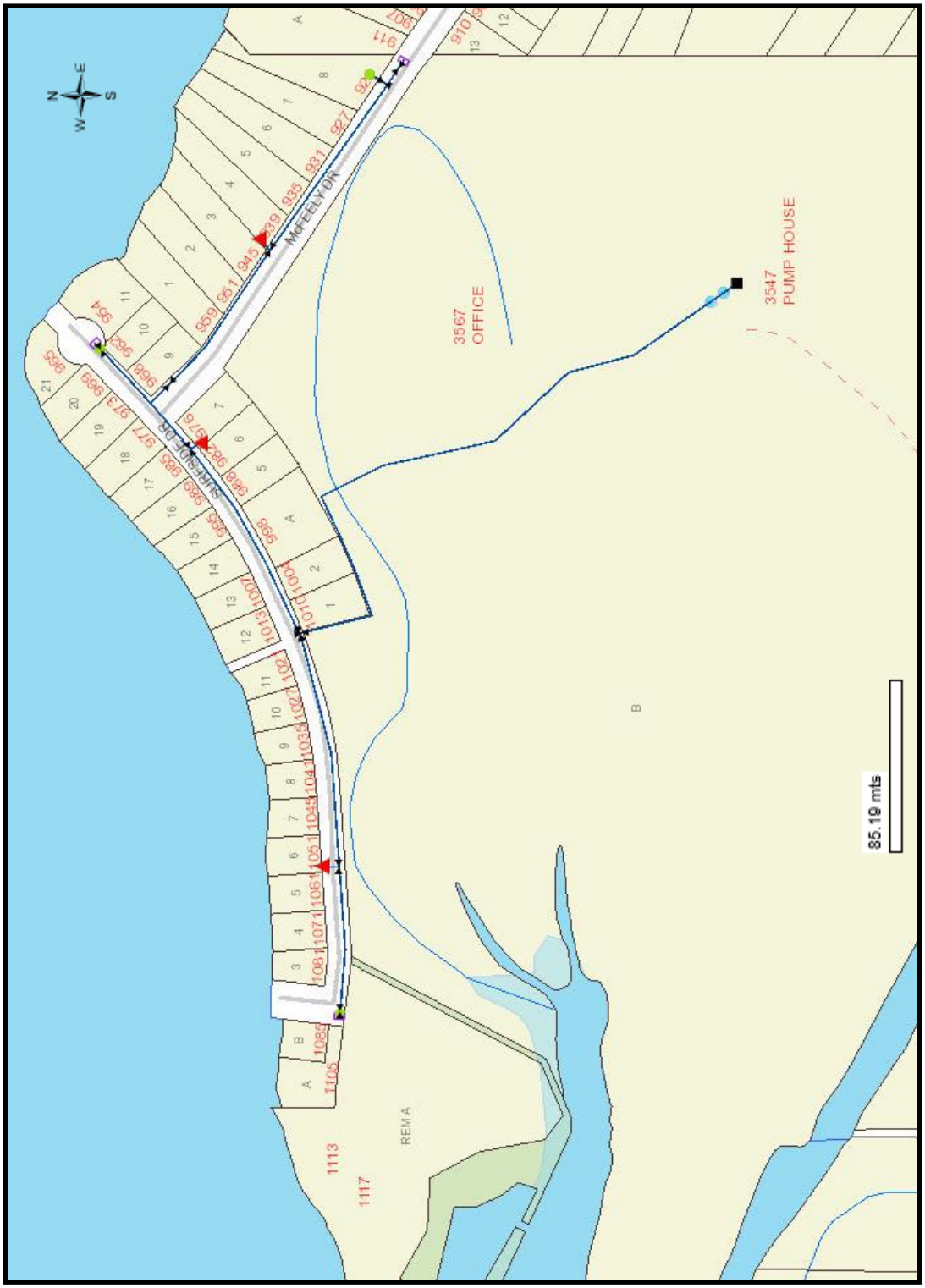
**APPENDIX A**

**MAP OF SURFSIDE**

**WATER SERVICE AREA**

**SURFSIDE**

**WATER SERVICE AREA**



# APPENDIX B

# WATER QUALITY TESTING RESULTS

# SURFSIDE
# WATER SERVICE AREA

**Facility Location:** 3547 Island Highway West, Qualicum Beach

**Facility Information:** Facility Type: 15-300 (DWC)

**Facility Sampling History:**

| Date Collected | Total Coliform | Total E. Coli | Site Name |
|---|---|---|---|
| 01/05/2022 | QRWRT | QRWRT | 1105 Surfside |
| 01/26/2022 | LT1 | LT1 | 1105 Surfside |
| 02/02/2022 | LT1 | LT1 | 1105 Surfside |
| 03/02/2022 | LT1 | LT1 | 1105 Surfside |
| 04/05/2022 | LT1 | LT1 | 1105 Surfside |
| 05/04/2022 | LT1 | LT1 | 1105 Surfside |
| 06/27/2022 | LT1 | LT1 | 1105 Surfside |
| 07/06/2022 | LT1 | LT1 | 1105 Surfside |
| 08/02/2022 | LT1 | LT1 | 1105 Surfside |
| 09/07/2022 | LT1 | LT1 | 1105 Surfside |
| 10/05/2022 | LT1 | LT1 | 1105 Surfside |
| 11/02/2022 | LT1 | LT1 | 1105 Surfside |
| 12/05/2022 | LT1 | LT1 | 1105 Surfside |
| 01/17/2022 | LT1 | LT1 | 923 McFeely |
| 02/08/2022 | LT1 | LT1 | 923 McFeely |
| 03/08/2022 | LT1 | LT1 | 923 McFeely |
| 04/13/2022 | LT1 | LT1 | 923 McFeely |
| 06/08/2022 | LT1 | LT1 | 923 McFeely |
| 06/27/2022 | LT1 | LT1 | 923 McFeely |
| 07/13/2022 | LT1 | LT1 | 923 McFeely |
| 08/09/2022 | LT1 | LT1 | 923 McFeely |
| 09/14/2022 | LT1 | LT1 | 923 McFeely |
| 10/12/2022 | LT1 | LT1 | 923 McFeely |
| 11/07/2022 | LT1 | LT1 | 923 McFeely |
| 12/21/2022 | REJCT DELAY3 | REJCT DELAY3 | 923 McFeely |
| 02/16/2022 | LT1 | LT1 | 962 Surfside |
| 03/16/2022 | LT1 | LT1 | 962 Surfside |
| 04/20/2022 | LT1 | LT1 | 962 Surfside |
| 06/15/2022 | LT1 | LT1 | 962 Surfside |
| 07/19/2022 | LT1 | LT1 | 962 Surfside |

| | | | |
|---|---|---|---|
| 08/16/2022 | LT1 | LT1 | 962 Surfside |
| 09/21/2022 | LT1 | LT1 | 962 Surfside |
| 10/17/2022 | LT1 | LT1 | 962 Surfside |
| 11/14/2022 | LT1 | LT1 | 962 Surfside |
| 12/14/2022 | LT1 | LT1 | 962 Surfside |

**Interpreting Sample Reports**

In VIHA, the results of drinking water sampling are reported using the following coding system:

LT1 Less than 1 (no detectable bacteria) - Meaning: No bacteria present

L1 Less than 1 (no detectable bacteria) - Meaning: No bacteria present

# Regional District of Nanaimo - Water Services Department

## Surfside Water Analysis - 2022 Monthly Report

| | | BC Centre for Disease Control | | RDN In-House Laboratory and Spectrophotometer | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Sample Location (Address) | E. coli * | Total Coliform * | E.coli * | Total Coliform * | Temp. (°C) | pH | Free Chlorine Residual (mg/L) | Total Dissolved Solids (mg/L) | Salinity (%) | Conductivity (µS/cm) | Total Iron (mg/L) | Manganese (mg/L) |
| 5-Dec-22 | 1105 Surfside | 0 | 0 | 0 | 0 | 8 | 7.09 | 0.30 | 110.7 | 0.11 | 233.0 | Fe and Mn are no longer tested in-house. See Annual Tap Water Results at https://www.rdn.bc.ca/surfside | |
| 14-Dec-22 | 962 Surfside | 0 | 0 | 0 | 0 | 8 | 7.05 | 0.49 | 86.3 | 0.09 | 181.4 | | |
| 21-Dec-22 | 923 McFeely | 0 | 0 | 0 | 0 | 7 | 7.00 | 0.20 | 82.3 | 0.08 | 173.8 | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| CDN Drinking Water Guidelines | | <1 | <1 | <1 | <1 | n/a | 7.0-10.5 | n/a | 500 | n/a | n/a | 0.3 | **0.02** AO **0.12** MAC |

**Legend:**

*** Coliforms are measured in colony forming units (CFU) per 100 millilitres of water (CFU/100mL)**

**Green font indicates a value flagged for operational consideration**

**Red font indicates non-compliance with the Maximum Acceptable Concentration (MAC) in the CDWG**

**Comments:**

**A full potability scan, including metals and minerals, is completed once per year at an external lab.**

Notes below about pH (2015) from https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html#_ftn1

| Type | Parameter (published, reaffirmed) | MAC (mg/L) | Other value (mg/L) | Common sources of parameter in water | Health considerations | Comments |
|---|---|---|---|---|---|---|
| Treatment-related | pH (2015) | None | 7.0-10.5 | Not applicable | Not applicable | The control of pH is important to maximize treatment effectiveness, control corrosion and reduce leaching from distribution system and plumbing components. |

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| Date | Sample Location (Address) | E. coli * | Total Coliform * | E.coli * | Total Coliform * | Temp. (°C) | pH | Free Chlorine Residual (mg/L) | Total Dissolved Solids (mg/L) | Salinity (%) | Conductivity (µS/cm) | Total Iron (mg/L) | Manganese (mg/L) |
| 3-Nov-22 | 1105 Surfside | 0 | 0 | 0 | 0 | 13 | 7.48 | 0.24 | 104.4 | 0.10 | 219.3 | Fe and Mn are no longer tested in-house. See Annual Tap Water Results at https://www.rdn.bc.ca/surfside | |
| 8-Nov-22 | 923 McFeely | 0 | 0 | 0 | 0 | 12 | 6.89 | 0.26 | 77.7 | 0.08 | 163.7 | | |
| 14-Nov-22 | 962 Surfside | 0 | 0 | 0 | 0 | 12 | 6.85 | 0.43 | 85.9 | 0.09 | 181.1 | | |
| 21-Nov-22 | 1105 Sufside | | | 0 | 0 | 10 | 6.88 | 0.22 | 89.6 | 0.09 | 188.5 | | |
| 28-Nov-22 | 923 McFeely | | | 0 | 0 | 10 | 6.85 | 0.31 | 78.9 | 0.08 | 166.7 | | |
| CDN Drinking Water Guidelines | | <1 | <1 | <1 | <1 | n/a | 7.0-10.5 | n/a | 500 | n/a | n/a | 0.3 | **0.02** AO<br>**0.12** MAC |

**Legend:**

*** Coliforms are measured in colony forming units (CFU) per 100 millilitres of water (CFU/100mL)**

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| 5-Oct-22 | 1105 Surfside | 0 | 0 | 0 | 0 | 16 | 6.82 | 0.30 | 97.3 | 0.10 | 204.3 | Fe and Mn are no longer tested in-house. See Annual Tap Water Results at https://www.rdn.bc.ca/surfside | |
| 12-Oct-22 | 923 McFeely | 0 | 0 | 0 | 0 | 16 | 6.77 | 0.44 | 98.6 | 0.10 | 206.7 | | |
| 17-Oct-22 | 962 Surfside | 0 | 0 | 0 | 0 | 15 | 6.65 | 0.48 | 93.9 | 0.09 | 197.1 | | |
| 24-Oct-22 | 1105 Surfside | | | 0 | 0 | 15 | 6.74 | 0.39 | 93.6 | 0.09 | 197.0 | | |
| | | | | | | | | | | | | | |
| CDN Drinking Water Guidelines | | <1 | <1 | <1 | <1 | n/a | 7.0-10.5 | n/a | 500 | n/a | n/a | 0.3 | **0.02** AO<br>**0.12** MAC |

**Legend:**

*** Coliforms are measured in colony forming units (CFU) per 100 millilitres of water (CFU/100mL)**

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| 7-Sep-22 | 1105 Surfside | 0 | 0 | 0 | 0 | 17 | 6.89 | 0.38 | 96.3 | 0.10 | 202.5 | Fe and Mn are no longer tested in-house. See Annual Tap Water Results at https://www.rdn.bc.ca/surfside | |
| 14-Sep-22 | 923 McFeely | 0 | 0 | 0 | 0 | 18 | 7.04 | 0.35 | 105.9 | 0.10 | 222.0 | | |
| 21-Sep-22 | 962 Surfside | 0 | 0 | 0 | 0 | 16 | 7.20 | 0.59 | 106.1 | 0.11 | 233.0 | | |
| 27-Sep-22 | 1105 Surfsie | | | 0 | 0 | | 6.77 | 0.44 | 99.2 | 0.10 | 208.2 | | |
| | | | | | | | | | | | | | |
| CDN Drinking Water Guidelines | | <1 | <1 | <1 | <1 | n/a | 7.0-10.5 | n/a | 500 | n/a | n/a | 0.3 | **0.02** AO **0.12** MAC |

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| 2-Aug-22 | 1105 Surfside | 0 | 0 | 0 | 0 | n/a | 7.33 | 0.50 | 75.5 | 0.07 | 159.3 | Fe and Mn are no longer tested in-house. See Annual Tap Water Results at https://www.rdn.bc.ca/surfside | |
| 9-Aug-22 | 923 McFeely | 0 | 0 | 0 | 0 | 19 | 6.72 | 0.48 | 76.8 | 0.08 | 161.9 | | |
| 16-Aug-22 | 962 Surfside | 0 | 0 | 0 | 0 | 18 | 7.18 | 0.42 | 89.5 | 0.09 | 188.0 | | |
| 22-Aug-22 | 1105 Surfside | | | 0 | 0 | 17 | 6.59 | 0.51 | 88.3 | 0.09 | 186.0 | | |
| 31-Aug-22 | 923 McFeely | | | 0 | 0 | 20 | 7.50 | 0.41 | 91.6 | 0.09 | 193.6 | | |
| CDN Drinking Water Guidelines | | <1 | <1 | <1 | <1 | n/a | 7.0-10.5 | n/a | 500 | n/a | n/a | 0.3 | **0.02** AO<br>**0.12** MAC |

**Legend:**

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Sample Location (Address) | E. coli * | Total Coliform * | E.coli * | Total Coliform * | Temp. (°C) | pH | Free Chlorine Residual (mg/L) | Total Dissolved Solids (mg/L) | Salinity (%) | Conductivity (µS/cm) | Total Iron (mg/L) | Manganese (mg/L) |
| 6-Jul-22 | 1105 Surfside | 0 | 0 | 0 | 0 | 17 | 7.65 | 0.44 | 67.7 | 0.07 | 143.4 | Fe and Mn are no longer tested in-house. See Annual Tap Water Results at https://www.rdn.bc.ca/surfside | |
| 13-Jul-22 | 923 McFeely | 0 | 0 | 0 | 0 | 18 | 6.79 | 0.33 | 69.2 | 0.07 | 146.9 | | |
| 20-Jul-22 | 962 Surfside | 0 | 0 | 0 | 0 | 18 | 6.77 | 0.30 | 70.7 | 0.07 | 147.7 | | |
| 26-Jul-22 | 1105 Surfside | | | 0 | 0 | 17 | 7.02 | 0.41 | 72.5 | 0.07 | 153.2 | | |
| | | | | | | | | | | | | | |
| CDN Drinking Water Guidelines | | <1 | <1 | <1 | <1 | n/a | 7.0-10.5 | n/a | 500 | n/a | n/a | 0.3 | **0.02** AO<br>**0.12** MAC |

**Legend:**

*** Coliforms are measured in colony forming units (CFU) per 100 millilitres of water (CFU/100mL)**

**Green font indicates a value flagged for operational consideration**

**Red font indicates non-compliance with the Maximum Acceptable Concentration (MAC) in the CDWG**

**Comments:**

**A full potability scan, including metals and minerals, is completed once per year at an external lab.**

Notes below about pH (2015) from https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html#_ftn1

| Type | Parameter (published, reaffirmed) | MAC (mg/L) | Other value (mg/L) | Common sources of parameter in water | Health considerations | Comments |
|---|---|---|---|---|---|---|
| Treatment-related | pH (2015) | None | 7.0-10.5 | Not applicable | Not applicable | The control of pH is important to maximize treatment effectiveness, control corrosion and reduce leaching from distribution system and plumbing components. |

# Regional District of Nanaimo - Water Services Department

## Surfside Water Analysis - 2022 Monthly Report

| | | BC Centre for Disease Control | | RDN In-House Laboratory and Spectrophotometer | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Sample Location (Address) | E. coli * | Total Coliform * | E.coli * | Total Coliform * | Temp. (°C) | pH | Free Chlorine Residual (mg/L) | Total Dissolved Solids (mg/L) | Salinity (%) | Conductivity (µS/cm) | Total Iron (mg/L) | Manganese (mg/L) |
| 1-Jun-22 | 1105 Surfside | | | 0 | 0 | 12 | 7.03 | 0.44 | 68.9 | 0.07 | 145.6 | Fe and Mn are no longer tested in-house. See Annual Tap Water Results at https://www.rdn.bc.ca/surfside | |
| 8-Jun-22 | 923 McFeely | 0 | 0 | 0 | 0 | 15 | 6.87 | 0.30 | 67.9 | 0.07 | 143.6 | | |
| 15-Jun-22 | 962 Surfside | 0 | 0 | 0 | 0 | 14 | 7.00 | 0.28 | 68.0 | 0.07 | 143.9 | | |
| 27-Jun-22 | 1105 Surfside | 0 | 0 | 0 | 0 | 16 | 8.09 | 0.36 | 65.0 | 0.07 | 137.9 | | |
| | | | | | | | | | | | | | |
| CDN Drinking Water Guidelines | | <1 | <1 | <1 | <1 | n/a | 7.0-10.5 | n/a | 500 | n/a | n/a | 0.3 | **0.02** AO<br>**0.12** MAC |

**Legend:**

*** Coliforms are measured in colony forming units (CFU) per 100 millilitres of water (CFU/100mL)**

**Green font indicates a value flagged for operational consideration**

**Red font indicates non-compliance with the Maximum Acceptable Concentration (MAC) in the CDWG**

**Comments:**

**A full potability scan, including metals and minerals, is completed once per year at an external lab.**

Notes below about pH (2015) from https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html#_ftn1

| Type | Parameter (published, reaffirmed) | MAC (mg/L) | Other value (mg/L) | Common sources of parameter in water | Health considerations | Comments |
|---|---|---|---|---|---|---|
| Treatment-related | pH (2015) | None | 7.0-10.5 | Not applicable | Not applicable | The control of pH is important to maximize treatment effectiveness, control corrosion and reduce leaching from distribution system and plumbing components. |

# Regional District of Nanaimo - Water Services Department

## Surfside Water Analysis - 2022 Monthly Report

| | | BC Centre for Disease Control | | RDN In-House Laboratory and Spectrophotometer | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Sample Location (Address) | E. coli * | Total Coliform * | E.coli * | Total Coliform * | Temp. (°C) | pH | Free Chlorine Residual (mg/L) | Total Dissolved Solids (mg/L) | Salinity (%) | Conductivity (µS/cm) | Total Iron (mg/L) | Manganese (mg/L) |
| 4-May-22 | 1105 Surfside | 0 | 0 | 0 | 0 | 10 | 6.91 | 0.39 | 75.0 | 0.07 | 158.2 | Fe and Mn are no longer tested in-house. See Annual Tap Water Results at https://www.rdn.bc.ca/surfside | |
| 9-May-22 | 923 McFeely | 0 | 0 | 0 | 0 | 10 | 6.83 | 0.26 | 69.4 | 0.07 | 146.6 | | |
| 16-May-22 | 962 Surfside | 0 | 0 | 0 | 0 | 11 | 6.80 | 0.44 | 69.7 | 0.07 | 143.3 | | |
| 25-May-22 | 1105 Sufside | | | 0 | 0 | 12 | 6.75 | 0.39 | 70.5 | 0.07 | 148.8 | | |
| | | | | | | | | | | | | | |
| CDN Drinking Water Guidelines | | <1 | <1 | <1 | <1 | n/a | 7.0-10.5 | n/a | 500 | n/a | n/a | 0.3 | **0.02** AO<br>**0.12** MAC |

**Legend:**

*** Coliforms are measured in colony forming units (CFU) per 100 millilitres of water (CFU/100mL)**

**Green font indicates a value flagged for operational consideration**

**Red font indicates non-compliance with the Maximum Acceptable Concentration (MAC) in the CDWG**

**Comments:**

**A full potability scan, including metals and minerals, is completed once per year at an external lab.**

Notes below about pH (2015) from https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html#_ftn1

| Type | Parameter (published, reaffirmed) | MAC (mg/L) | Other value (mg/L) | Common sources of parameter in water | Health considerations | Comments |
|---|---|---|---|---|---|---|
| Treatment-related | pH (2015) | None | 7.0-10.5 | Not applicable | Not applicable | The control of pH is important to maximize treatment effectiveness, control corrosion and reduce leaching from distribution system and plumbing components. |

# Regional District of Nanaimo - Water Services Department

## Surfside Water Analysis - 2022 Monthly Report

| | | BC Centre for Disease Control | | RDN In-House Laboratory and Spectrophotometer | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Sample Location (Address) | E. coli * | Total Coliform * | E.coli * | Total Coliform * | Temp. (°C) | pH | Free Chlorine Residual (mg/L) | Total Dissolved Solids (mg/L) | Salinity (%) | Conductivity (µS/cm) | Total Iron (mg/L) | Manganese (mg/L) |
| 5-Apr-22 | 1105 Surfside | 0 | 0 | 0 | 0 | 9 | 7.15 | 0.27 | 84.1 | 0.08 | 177.1 | Fe and Mn are no longer tested in-house. See Annual Tap Water Results at https://www.rdn.bc.ca/surfside | |
| 13-Apr-22 | 923 McFeely | 0 | 0 | 0 | 0 | 9 | 6.78 | 0.38 | 71.3 | 0.07 | 150.5 | | |
| 20-Apr-22 | 962 Surfside | 0 | 0 | 0 | 0 | 8 | 6.85 | 0.38 | 69.9 | 0.07 | 147.5 | | |
| 25-Apr-22 | 1105 Surfside | | | 0 | 0 | 8 | 6.83 | 0.38 | 85.2 | 0.08 | 186.0 | | |
| | | | | | | | | | | | | | |
| CDN Drinking Water Guidelines | | <1 | <1 | <1 | <1 | n/a | 7.0-10.5 | n/a | 500 | n/a | n/a | 0.3 | **0.02** AO<br>**0.12** MAC |

**Legend:**

*** Coliforms are measured in colony forming units (CFU) per 100 millilitres of water (CFU/100mL)**

**Green font indicates a value flagged for operational consideration**

**Red font indicates non-compliance with the Maximum Acceptable Concentration (MAC) in the CDWG**

**Comments:**

**A full potability scan, including metals and minerals, is completed once per year at an external lab.**

Notes below about pH (2015) from https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html#_ftn1

| Type | Parameter (published, reaffirmed) | MAC (mg/L) | Other value (mg/L) | Common sources of parameter in water | Health considerations | Comments |
|---|---|---|---|---|---|---|
| Treatment-related | pH (2015) | None | 7.0-10.5 | Not applicable | Not applicable | The control of pH is important to maximize treatment effectiveness, control corrosion and reduce leaching from distribution system and plumbing components. |

# Regional District of Nanaimo - Water Services Department

## Surfside Water Analysis - 2022 Monthly Report

| | | BC Centre for Disease Control | | RDN In-House Laboratory and Spectrophotometer | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Sample Location (Address) | E. coli * | Total Coliform * | E.coli * | Total Coliform * | Temp. (°C) | pH | Free Chlorine Residual (mg/L) | Total Dissolved Solids (mg/L) | Salinity (%) | Conductivity (µS/cm) | Total Iron (mg/L) | Manganese (mg/L) |
| 2-Mar-22 | 1105 Surfside | 0 | 0 | 0 | 0 | 6 | 6.90 | 0.36 | 79.8 | 0.08 | 168.3 | Fe and Mn are no longer tested in-house. See Annual Tap Water Results at https://www.rdn.bc.ca/surfside | |
| 8-Mar-22 | 923 McFeely | 0 | 0 | 0 | 0 | 7 | 7.25 | 0.40 | 80.8 | 0.08 | 170.8 | | |
| 16-Mar-22 | 962 Surfside | 0 | 0 | 0 | 0 | 7 | 6.91 | 0.32 | 83.8 | 0.08 | 176.5 | | |
| 23-Mar-22 | 1105 Surfside | | | 0 | 0 | 8 | 7.11 | 0.35 | 82.0 | 0.08 | 172.5 | | |
| 29-Mar-22 | 923 McFeely | | | 0 | 0 | 9 | 7.49 | 0.35 | 70.6 | 0.07 | 149.3 | | |
| CDN Drinking Water Guidelines | | <1 | <1 | <1 | <1 | n/a | 7.0-10.5 | n/a | 500 | n/a | n/a | 0.3 | **0.02** AO<br>**0.12** MAC |

**Legend:**

*** Coliforms are measured in colony forming units (CFU) per 100 millilitres of water (CFU/100mL)**

**Green font indicates a value flagged for operational consideration**

**Red font indicates non-compliance with the Maximum Acceptable Concentration (MAC) in the CDWG**

**Comments:**

**A full potability scan, including metals and minerals, is completed once per year at an external lab.**

Notes below about pH (2015) from https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html#_ftn1

| Type | Parameter (published, reaffirmed) | MAC (mg/L) | Other value (mg/L) | Common sources of parameter in water | Health considerations | Comments |
|---|---|---|---|---|---|---|
| Treatment-related | pH (2015) | None | 7.0-10.5 | Not applicable | Not applicable | The control of pH is important to maximize treatment effectiveness, control corrosion and reduce leaching from distribution system and plumbing components. |

# Regional District of Nanaimo - Water Services Department

## Surfside Water Analysis - 2022 Monthly Report

| | | BC Centre for Disease Control | | RDN In-House Laboratory and Spectrophotometer | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Sample Location (Address) | E. coli * | Total Coliform * | E.coli * | Total Coliform * | Temp. (°C) | pH | Free Chlorine Residual (mg/L) | Total Dissolved Solids (mg/L) | Salinity (%) | Conductivity (µS/cm) | Total Iron (mg/L) | Manganese (mg/L) |
| 2-Feb-22 | 1105 Surfside | 0 | 0 | 0 | 0 | 6 | 7.09 | 0.27 | 77 | 0.08 | 161.9 | Fe and Mn are no longer tested in-house. See Annual Tap Water Results at https://www.rdn.bc.ca/surfside | |
| 8-Feb-22 | 923 McFeely | 0 | 0 | 0 | 0 | 6 | 6.91 | 0.31 | 68.9 | 0.07 | 145.1 | | |
| 16-Feb-22 | 962 Surfside | 0 | 0 | 0 | 0 | 6 | 7.00 | 0.41 | 74.9 | 0.08 | 159.6 | | |
| 23-Feb-22 | 1105 Surfside | | | 0 | 0 | 7 | 6.95 | 0.41 | 82.4 | 0.08 | 173.5 | | |
| | | | | | | | | | | | | | |
| CDN Drinking Water Guidelines | | <1 | <1 | <1 | <1 | n/a | 7.0-10.5 | n/a | 500 | n/a | n/a | 0.3 | **0.02** AO<br>**0.12** MAC |

**Legend:**

*** Coliforms are measured in colony forming units (CFU) per 100 millilitres of water (CFU/100mL)**

**Green font indicates a value flagged for operational consideration**

**Red font indicates non-compliance with the Maximum Acceptable Concentration (MAC) in the CDWG**

**Comments:**

**A full potability scan, including metals and minerals, is completed once per year at an external lab.**

Notes below about pH (2015) from https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html#_ftn1

| Type | Parameter (published, reaffirmed) | MAC (mg/L) | Other value (mg/L) | Common sources of parameter in water | Health considerations | Comments |
|---|---|---|---|---|---|---|
| Treatment-related | pH (2015) | None | 7.0-10.5 | Not applicable | Not applicable | The control of pH is important to maximize treatment effectiveness, control corrosion and reduce leaching from distribution system and plumbing components. |

# Regional District of Nanaimo - Water Services Department

## Surfside Water Analysis - 2022 Monthly Report

| | | BC Centre for Disease Control | | RDN In-House Laboratory and Spectrophotometer | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Sample Location (Address) | E. coli * | Total Coliform * | E.coli * | Total Coliform * | Temp. (°C) | pH | Free Chlorine Residual (mg/L) | Total Dissolved Solids (mg/L) | Salinity (%) | Conductivity (µS/cm) | Total Iron (mg/L) | Manganese (mg/L) |
| 5-Jan-22 | 1105 Surfside | 0 | 0 | 0 | 0 | 6 | 7.41 | 0.26 | 74.2 | 0.07 | 156.5 | Fe and Mn are no longer tested in-house. See Annual Tap Water Results at https://www.rdn.bc.ca/surfside | |
| 12-Jan-22 | 923 McFeely | | | 0 | 0 | 5 | 6.95 | 0.30 | 66.2 | 0.07 | 140.3 | | |
| 17-Jan-22 | 923 McFeely | 0 | 0 | 0 | 0 | 5 | 6.91 | 0.39 | 68.2 | 0.07 | 144.2 | | |
| 26-Jan-22 | 1105 Surfside | 0 | 0 | 0 | 0 | 7 | 7.08 | 0.16 | 76.0 | 0.08 | 160.3 | | |
| CDN Drinking Water Guidelines | | <1 | <1 | <1 | <1 | n/a | 7.0-10.5 | n/a | 500 | n/a | n/a | 0.3 | **0.02** AO<br>**0.12** MAC |

**Legend:**

*** Coliforms are measured in colony forming units (CFU) per 100 millilitres of water (CFU/100mL)**

**Green font indicates a value flagged for operational consideration**

**Red font indicates non-compliance with the Maximum Acceptable Concentration (MAC) in the CDWG**

**Comments:**

**A full potability scan, including metals and minerals, is completed once per year at an external lab.**

Notes below about pH (2015) from https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html#_ftn1

| Type | Parameter (published, reaffirmed) | MAC (mg/L) | Other value (mg/L) | Common sources of parameter in water | Health considerations | Comments |
|---|---|---|---|---|---|---|
| Treatment-related | pH (2015) | None | 7.0-10.5 | Not applicable | Not applicable | The control of pH is important to maximize treatment effectiveness, control corrosion and reduce leaching from distribution system and plumbing components. |

REGIONAL DISTRICT OF NANAIMO

# Surfside #1 Raw Well Water Analysis
## 3547 Island Highway

CDWG=Canadian Drinking Water Guidelines
OG= Operational Guidance Value
MAC=Maximum Acceptable Concentration
AO= Asthetic Objective

**Green font indicates a value flagged for operational considerations.**
**Orange font indicates non-compliance with the Aesthetic Objective in the Canadian Drinking Water Guidelines (CDWG)**
**Red font indicates non-compliance with the Maximum Acceptable Concentration (MAC) in the CDWG**

| | Units | CDWG | | Sept 18 2017 | October 25 2018 | October 3 2019 | October 21 2020 | October 21 2021 | October 13 2022 |
|---|---|---|---|---|---|---|---|---|---|
| **Miscellaneous Inorganics** | | | | | | | | | |
| Fluoride | mg/L | 1.5 | MAC | 0.026 | 0.023 | <0.05 | <0.05 | <0.05 | <0.05 |
| Alkalinity (total as $CaCO_3$) | mg/L | | | 55.3 | 53.4 | 53 | 50 | 57 | 50 |
| **Anions** | | | | | | | | | |
| Dissolved Sulphate | mg/L | 500 | AO | 6.2 | 4.8 | 4.1 | 4.4 | 5.1 | 4.8 |
| Dissolved Chloride | mg/L | 250 | AO | 14 | 11 | 22 | 9 | 14 | 13 |
| Nitrite | mg/L | 1 | MAC | <0.0050 | <0.0050 | <0.005 | <0.005 | <0.005 | <0.005 |
| **Miscellaneous** | | | | | | | | | |
| Apparent Colour | Colour Unit | | | 5 | 5 | <5 | 5 | <5 | <5 |
| **Nutrients** | | | | | | | | | |
| Total Ammonia | mg/L | | | <0.020 | <0.020 | 0.045 | <0.015 | <0.015 | <0.015 |
| **Physical Properties** | | | | | | | | | |
| Conductivity | µS/cm | | | 170 | 149 | 190 | 140 | 160 | 170 |
| pH | pH | 7.0:10.5 | OG | 7.56 | 7.75 | **6.95** | 7.03 | 7.01 | 7.12 |
| TDS | mg/L | 500 | AO | 120 | 94 | 130 | 100 | 110 | 100 |
| Turbidity | NTU | | | 0.23 | <0.10 | <0.1 | 0.13 | <0.1 | 0.1 |
| **Microbiological Parameters** | | | | | | | | | |
| E.coli | MPN/100mL | <1 | MAC | <1.0 | <1.0 | 0 | 0 | 0 | 0 |
| Total Coliforms | MPN/100mL | <1 | MAC | **17** | <1.0 | 0 | 0 | 0 | 0 |
| **Calculated Parameters** | | | | | | | | | |
| Total Hardness ($CaCO_3$) | mg/L | | | 64.6 | 60.6 | 77.4 | 57.8 | 62.4 | 63.2 |
| Nitrate | mg/L | 10 | MAC | 0.519 | 0.525 | 0.609 | 0.597 | 0.482 | 0.479 |
| **Elements** | | | | | | | | | |
| Total Mercury | mg/L | 0.001 | MAC | <0.00001 | 0.0000053 | <0.000002 | <0.0000019 | <0.0000019 | <0.0000019 |
| **Total Metals** | | | | | | | | | |
| Total Aluminum | mg/L | 0.1 | OG | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | 0.003 |
| Total Antimony | mg/L | 0.006 | MAC | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Total Arsenic | mg/L | 0.01 | MAC | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| Total Barium | mg/L | 1 | MAC | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Total Beryllium | mg/L | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| Total Bismuth | mg/L | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Total Boron | mg/L | 5 | MAC | <0.050 | <0.050 | <0.05 | <0.05 | <0.05 | <0.05 |
| Total Cadmium | mg/L | 0.005 | MAC | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 |
| Total Chromium | mg/L | 0.05 | MAC | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Total Cobalt | mg/L | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Total Copper | mg/L | 1 | AO | 0.00235 | 0.00339 | 0.00301 | 0.00366 | 0.00272 | 0.00293 |
| Total Iron | mg/L | 0.3 | AO | 0.0072 | 0.0067 | 0.0054 | <0.005 | <0.005 | <0.005 |
| Total Lead | mg/L | 0.01 | MAC | <0.0002 | 0.00044 | 0.00041 | 0.00048 | 0.00021 | <0.0002 |
| Total Manganese | mg/L | 0.02<br>0.12 | AO<br>MAC | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Total Molybdenum | mg/L | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Total Nickel | mg/L | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Total Selenium | mg/L | 0.05 | MAC | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| Total Silicon | mg/L | | | 7.54 | 7.37 | 7.76 | 7.76 | 7.69 | 7.89 |
| Total Silver | mg/L | | | <0.00002 | <0.00002 | <0.00002 | <0.00002 | <0.00002 | <0.00002 |
| Total Strontium | mg/L | | | 0.0463 | 0.0429 | 0.0536 | 0.0406 | 0.0426 | 0.0445 |
| Total Thallium | mg/L | | | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.0001 | <0.00001 |
| Total Tin | mg/L | | | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Total Titanium | mg/L | | | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Total Uranium | mg/L | 0.02 | MAC | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| Total Vanadium | mg/L | | | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Total Zinc | mg/L | 5 | AO | <0.005 | <0.005 | 0.0062 | 0.0089 | 0.0085 | <0.005 |
| Total Zirconium | mg/L | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| Total Calcium | mg/L | | | 19.4 | 18.4 | 23.6 | 17 | 18.9 | 19.1 |
| Total Magnesium | mg/L | | | 3.92 | 3.56 | 4.5 | 3.5 | 3.7 | 3.77 |
| Total Potassium | mg/L | | | 0.403 | 0.349 | 0.389 | 0.35 | 0.366 | 0.368 |
| Total Sodium | mg/L | 200 | AO | 6.25 | 5.21 | 6.64 | 5.29 | 5.49 | 5.66 |
| Total Sulphur | mg/L | | | <3.0 | <3.0 | <3.0 | <3 | <3 | <3 |

Notes below about pH (2015) from https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/ewh-semt/alt_formats/pdf/pubs/water-eau/sum_guide-res_recom/summary-table-EN-2020-02-11.pdf

| Type | Parameter (published, reaffirmed) | MAC (mg/L) | Other value (mg/L) | Common sources of parameter in water | Health considerations | Comments |
|---|---|---|---|---|---|---|
| Treatment-related | pH (2015) | None | 7.0-10.5 | Not applicable | Not applicable | The control of pH is important to maximize treatment effectiveness, control corrosion and reduce leaching from distribution system and plumbing components. |

REGIONAL DISTRICT OF NANAIMO

# Surfside #2 Raw Well Water Analysis
## 3547 Island Highway

*resampled Metals only

CDWG=Canadian Drinking Water Guidelines
MAC=Maximum Acceptable Concentration
OG= Operational Guidance Value
AO= Asthetic Objective

**Green font indicates a value flagged for operational considerations.**

**Orange font indicates non-compliance with the Aesthetic Objective in the Canadian Drinking Water Guidelines (CDWG)**

**Red font indicates non-compliance with the Maximum Acceptable Concentration (MAC) in the CDWG**

| | Units | CDWG | | Sept 18 2017 | October 25 2018 | October 3 2019 | October 21 2020 | October 21 2021 | October 13 2022 |
|---|---|---|---|---|---|---|---|---|---|
| **Miscellaneous Inorganics** | | | | | | | | | |
| Fluoride | mg/L | 1.5 | MAC | 0.023 | 0.02 | <0.05 | <0.05 | <0.05 | <0.05 |
| Alkalinity (total as $CaCO_3$) | mg/L | | | 56.6 | 49.6 | 49 | 48 | 53 | 51 |
| **Anions** | | | | | | | | | |
| Dissolved Sulphate | mg/L | 500 | AO | 9.8 | 5.8 | 6.4 | 5.3 | 5 | 7.7 |
| Dissolved Chloride | mg/L | 250 | AO | 32 | 11 | 47 | 9.9 | 16 | 31 |
| Nitrite | mg/L | 1 | MAC | <0.0050 | <0.0050 | <0.005 | <0.005 | <0.005 | <0.005 |
| **Miscellaneous** | | | | | | | | | |
| Apparent Colour | Colour Unit | | | 5 | <5.0 | <5.0 | 5 | <5 | <5 |
| **Nutrients** | | | | | | | | | |
| Total Ammonia | mg/L | | | <0.020 | <0.020 | 0.058 | <0.015 | <0.015 | <0.015 |
| **Physical Properties** | | | | | | | | | |
| Conductivity | µS/cm | | | 243 | 142 | 270 | 150 | 160 | 240 |
| pH | pH | 7.0:10.5 | OG | 7.51 | 7.51 | 7.38 | 6.99 | 7.07 | 7.08 |
| TDS | mg/L | 500 | AO | 170 | 74 | 160 | 100 | 140 | 170 |
| Turbidity | NTU | | | <0.10 | 0.1 | <0.1 | 0.17 | <0.1 | 0.12 |
| **Microbiological Parameters** | | | | | | | | | |
| E.coli | MPN/100mL | <1 | MAC | <1.0 | <1.0 | 0 | 0 | 0 | 0 |
| Total Coliforms | MPN/100mL | <1 | MAC | <1.0 | <1.0 | 0 | 0 | 0 | 0 |
| **Calculated Parameters** | | | | | | | | | |
| Total Hardness ($CaCO_3$) | mg/L | | | 85.2 | 55.4 | 96.8 | 54.8 | 39.5 | 83.6 |
| Nitrate | mg/L | 10 | MAC | 0.463 | 0.498 | 0.542 | 0.525 | 0.424 | 0.404 |
| **Elements** | | | | | | | | | |
| Total Mercury | mg/L | 0.001 | MAC | <0.00001 | 0.0000044 | <0.000002 | <0.0000019 | <0.0000019 | <0.0000019 |
| **Total Metals** | | | | | | | | | |
| Total Aluminum | mg/L | 0.1 | OG | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 |
| Total Antimony | mg/L | 0.006 | MAC | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Total Arsenic | mg/L | 0.01 | MAC | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| Total Barium | mg/L | 1 | MAC | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Total Beryllium | mg/L | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| Total Bismuth | mg/L | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Total Boron | mg/L | 5 | MAC | <0.050 | <0.050 | <0.050 | <0.05 | <0.05 | <0.05 |
| Total Cadmium | mg/L | 0.005 | MAC | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 |
| Total Chromium | mg/L | 0.05 | MAC | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Total Cobalt | mg/L | | | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Total Copper | mg/L | 1 | AO | 0.00368 | 0.00277 | 0.00217 | 0.00204 | 0.00263 | 0.00311 |
| Total Iron | mg/L | 0.3 | AO | 0.0087 | 0.0154 | 0.0152 | 0.0097 | 0.0087 | 0.0085 |
| Total Lead | mg/L | 0.01 | MAC | 0.00104 | 0.00073 | 0.00047 | 0.00023 | 0.00025 | 0.00025 |
| Total Manganese | mg/L | 0.02<br>0.12 | AO<br>MAC | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Total Molybdenum | mg/L | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Total Nickel | mg/L | | | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Total Selenium | mg/L | 0.05 | MAC | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.001 | <0.0001 |
| Total Silicon | mg/L | | | 7.81 | 7.03 | 7.66 | 7.26 | 7.29 | 8.3 |
| Total Silver | mg/L | | | <0.00002 | <0.00002 | <0.00002 | <0.00002 | <0.00002 | <0.00002 |
| Total Strontium | mg/L | | | 0.0651 | 0.0409 | 0.0805 | 0.0413 | 0.0423 | 0.0645 |
| Total Thallium | mg/L | | | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 |
| Total Tin | mg/L | | | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Total Titanium | mg/L | | | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Total Uranium | mg/L | 0.02 | MAC | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| Total Vanadium | mg/L | | | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Total Zinc | mg/L | 5 | AO | 0.0303 | 0.0107 | 0.0083 | 0.0052 | 0.0138 | 0.0081 |
| Total Zirconium | mg/L | | | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| Total Calcium | mg/L | | | 26 | 16.8 | 29.7 | 16.5 | 18.2 | 25.1 |
| Total Magnesium | mg/L | | | 4.95 | 3.24 | 5.48 | 3.31 | 3.36 | 5.07 |
| Total Potassium | mg/L | | | 0.459 | 0.314 | 0.455 | 0.328 | 0.339 | 0.43 |
| Total Sodium | mg/L | 200 | AO | 12.1 | 6.41 | 13.6 | 7.06 | 7.12 | 10.5 |
| Total Sulphur | mg/L | | | <3.0 | <3.0 | <3.0 | <3 | <3 | <3 |

Notes below about pH (2015) from https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/ewh-semt/alt_formats/pdf/pubs/water-eau/sum_guide-res_recom/summary-table-EN-2020-02-11.pdf

| Type | Parameter (published, reaffirmed) | MAC (mg/L) | Other value (mg/L) | Common sources of parameter in water | Health considerations | Comments |
|---|---|---|---|---|---|---|
| Treatment-related | pH (2015) | None | 7.0-10.5 | Not applicable | Not applicable | The control of pH is important to maximize treatment effectiveness, control corrosion and reduce leaching from distribution system and plumbing components. |

REGIONAL DISTRICT OF NANAIMO

# Surfside Distribution (Tap Water) Analysis
## 1105 Surfside Drive

CDWG=Canadian Drinking Water Guidelines
MAC=Maximum Acceptable Concentration
OG= Operational Guidance Value
AO= Asthetic Objective.

**Green font indicates a value flagged for operational consideration**
**Orange font indicates non-compliance with the Aesthetic Objective in the Canadian Drinking Water Guidelines (CDWG)**
**Red font indicates non-compliance with the Maximum Acceptable Concentration (MAC) in the CDWG**

| | Units | CDWG | | May 13 2014 | May 19 2015 | May 10 2016 | May 8 2017 | May 7 2018 | May 13 2019 | May 20 2020 | May 6 2021 | May 5 2022 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Miscellaneous Inorganics** | | | | | | | | | | | | |
| Fluoride | mg/L | 1.5 | MAC | <0.05 | 0.024 | 0.026 | 0.029 | 0.026 | 0.025 | <0.05 | <0.05 | <0.05 |
| Alkalinity (total as $CaCO_3$) | mg/L | | | 54 | 53.7 | 61.4 | 66.7 | 51.8 | 57.2 | 51 | 54 | 55 |
| **Anions** | | | | | | | | | | | | |
| Dissolved Sulphate | mg/L | 500 | AO | 4.1 | 5.19 | 5.38 | 5.11 | 5.7 | 4.5 | 4.1 | 7.2 | 4.6 |
| Dissolved Chloride | mg/L | 250 | AO | 9 | 10 | 8.6 | 13 | 11 | 10 | 11 | 8.8 | 11 |
| Nitrite | mg/L | 1 | MAC | <0.05 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.005 | <0.005 | <0.005 | <0.005 |
| **Miscellaneous** | | | | | | | | | | | | |
| Apparent Colour | Colour Unit | | | <5 | <5 | 10 | 10 | 5 | <2 | 5 | 10 | <5 |
| **Nutrients** | | | | | | | | | | | | |
| Total Ammonia | mg/L | | | 0.02 | 0.017 | 0.017 | 0.091 | <0.020 | <0.015 | 0.021 | <0.015 | <0.015 |
| **Physical Properties** | | | | | | | | | | | | |
| Conductivity | µS/cm | | | 161 | 154 | 157 | 184 | 157 | 153 | 150 | 140 | 160 |
| pH | pH | 7.0:10.5 | AO | 7 | 7.68 | 7.55 | 7.85 | 7.72 | 7.32 | 7.09 | 7.3 | **6.99** |
| TDS | mg/L | 500 | AO | 126 | 90 | 78 | 108 | 98 | 100 | 90 | 88 | 94 |
| Turbidity | NTU | | | <0.5 | <0.10 | 0.2 | 0.17 | 0.27 | 0.2 | <0.1 | <0.1 | <0.1 |
| **Microbiological Parameters** | | | | | | | | | | | | |
| E.coli | MPN/100mL | <1 | MAC | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | 0 | 0 | 0 | 0 |
| Total Coliforms | MPN/100mL | <1 | MAC | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | 0 | 0 | 0 | 0 |
| **Calculated Parameters** | | | | | | | | | | | | |
| Total Hardness ($CaCO_3$) | mg/L | | | 66 | 59.4 | 60 | 85.3 | 61 | 59.2 | 58.9 | 52.2 | 61.7 |
| Nitrate | mg/L | 10 | MAC | 0.71 | 0.533 | 0.555 | 0.529 | 0.637 | 0.633 | 0.85 | 0.773 | 0.713 |
| **Elements** | | | | | | | | | | | | |
| Total Mercury | mg/L | 0.001 | MAC | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.000002 | <0.000002 | <0.0000019 | <0.0000019 | <0.0000019 |
| **Total Metals** | | | | | | | | | | | | |
| Total Aluminum | mg/L | 0.1 | OG | <0.025 | 0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | <0.003 | 0.003 |
| Total Antimony | mg/L | 0.006 | MAC | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| Total Arsenic | mg/L | 0.01 | MAC | <0.00025 | <0.0001 | <0.0001 | <0.001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| Total Barium | mg/L | 1 | MAC | 0.00357 | 0.0011 | 0.0017 | 0.0035 | 0.0018 | 0.0018 | 0.0011 | <0.001 | 0.0021 |
| Total Beryllium | mg/L | | | <0.00025 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| Total Bismuth | mg/L | | | <0.0005 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Total Boron | mg/L | 5 | MAC | 0.023 | <0.050 | <0.050 | <0.050 | <0.050 | <0.05 | <0.05 | <0.05 | <0.05 |
| Total Cadmium | mg/L | 0.005 | MAC | <0.00005 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 |
| Total Chromium | mg/L | 0.05 | MAC | <0.0025 | <0.001 | <0.001 | <0.001 | <0.001 | 0.001 | <0.001 | <0.001 | <0.001 |
| Total Cobalt | mg/L | | | <0.0005 | <0.0005 | <0.0005 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 | <0.0002 |
| Total Copper | mg/L | 1 | AO | 0.0088 | 0.00594 | 0.00898 | 0.00451 | 0.00513 | 0.00789 | 0.00638 | 0.00692 | 0.00523 |
| Total Iron | mg/L | 0.3 | AO | 0.068 | 0.011 | 0.0288 | 0.0483 | 0.0137 | 0.0296 | 0.0223 | 0.0194 | 0.0427 |
| Total Lead | mg/L | 0.01 | MAC | 0.0019 | 0.00054 | 0.00101 | 0.0003 | 0.00034 | 0.00048 | 0.00044 | 0.00042 | 0.00034 |
| Total Manganese | mg/L | 0.02<br>0.12 | AO<br>MAC | <0.0050 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | 0.0011 | <0.001 | <0.001 |
| Total Molybdenum | mg/L | | | <0.00025 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Total Nickel | mg/L | | | <0.0010 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |
| Total Selenium | mg/L | 0.05 | MAC | <0.0005 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | 0.0001 | <0.0001 |
| Total Silicon | mg/L | | | 8.18 | 7.91 | 8.16 | 10.4 | 7.87 | 7.66 | 7.69 | 7.19 | 7.66 |
| Total Silver | mg/L | | | 0.00031 | <0.00002 | <0.00002 | <0.00002 | <0.00002 | <0.00002 | <0.00002 | <0.00002 | <0.00002 |
| Total Strontium | mg/L | | | 0.065 | 0.0495 | 0.0551 | 0.0799 | 0.0549 | 0.0517 | 0.0466 | 0.0421 | 0.0542 |
| Total Thallium | mg/L | | | <0.00005 | <0.00005 | <0.00005 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 | <0.00001 |
| Total Tin | mg/L | | | <0.0005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Total Titanium | mg/L | | | <0.0025 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Total Uranium | mg/L | 0.02 | MAC | <0.00005 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| Total Vanadium | mg/L | | | <0.0005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Total Zinc | mg/L | 5 | AO | 0.0229 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 | <0.005 |
| Total Zirconium | mg/L | | | | <0.0005 | <0.0005 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 | <0.0001 |
| Total Calcium | mg/L | | | 22.8 | 18.9 | 19.4 | 29.7 | 20 | 19.5 | 18.5 | 15.9 | 20.7 |
| Total Magnesium | mg/L | | | 2.31 | 2.96 | 2.81 | 2.69 | 2.69 | 2.54 | 3.06 | 3.05 | 2.4 |
| Total Potassium | mg/L | | | <0.5 | 0.355 | 0.404 | 0.569 | 0.386 | 0.411 | 0.381 | 0.353 | 0.443 |
| Total Sodium | mg/L | 200 | AO | 8.2 | 6.63 | 7.03 | 8.58 | 6.48 | 6.71 | 6.53 | 6.11 | 7.03 |
| Total Sulphur | mg/L | | | | <3.0 | <3.0 | <3.0 | <3.0 | <3 | <3 | <3 | <3 |

Notes below about pH (2015) from https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html#_ftn1

| Type | Parameter (published, reaffirmed) | MAC (mg/L) | Other value (mg/L) | Common sources of parameter in water | Health considerations | Comments |
|---|---|---|---|---|---|---|
| Treatment-related | pH (2015) | None | 7.0-10.5 | Not applicable | Not applicable | The control of pH is important to maximize treatment effectiveness, control corrosion and reduce leaching from distribution system and plumbing components. |