REGIONAL DISTRICT OF NANAIMO

Water Service Area Annual Report 2017

Nanoose Bay Peninsula Water Service Area

June 2018

REGIONAL DISTRICT OF NANAIMO
Water & Utility Services Department
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1. Introduction

The following annual report describes the Nanoose Bay Peninsula (NBP) Water Service Area and summarizes the water quality and production data from 2017. This report also includes a summary of inquiries and complaints, completed and proposed maintenance activities, Operator Certification, the Emergency Response Plan, and the Cross Connection Control Program. This report is to be submitted to Island Health by the spring of 2018.

2. Nanoose Bay Peninsula Water System

The Nanoose Bay Peninsula Water System was established in 2005 by amalgamating the 7 small water service areas located within the Nanoose Bay Peninsula. The previous service areas, if referred to in this report, are noted as neighbourhoods within the NBP service area. In 2017, the Nanoose Peninsula Water System was comprised of 2158 residential and 67 commercial water service customers.

The water supply originates from groundwater wells located nearby, and is supplemented seasonally with water from the Englishman River. The water supply is chlorinated and stored in several reservoirs throughout Nanoose Bay. A drinking water filtration plant is located at 2480 Nanoose Road, and its purpose is to filter out iron, manganese, and ammonia from Fairwinds Wells #1, 2, and 3, and West Bay Well #3. A portable back-up generator is available in the event of a power outage. The back-up generator will run the West Bay Well #3 and the West Bay pumphouse controls. In the case of an extended power outage, drinking water will continue to be supplied but it will only be chlorinated, not filtered.

2.1 Groundwater Wells

Thirteen groundwater production wells are located within the Nanoose Bay Peninsula. Nanoose Wells #2, #3, and #4 are on standby for use during periods of high demand (if required). Nanoose Well #5 has not been in use since 2002 due to saltwater intrusion, and has been permanently converted to a provincial monitoring well. Nanoose Well #6 hasn't been used since 2010 due to operational challenges with chlorination. Nanoose Well #7 was drilled in 2008, but has not yet been approved for community drinking water supply.

Well / Name	Well Depth	Wellhead Protection In Place	Treated/Untreated with Chlorine
Wallbrook #1	16.9 m	Yes	Treated
Madrona #4	52.1 m	Yes	Un-treated
Madrona #8	17.1m	Yes	Treated
Nanoose #2	53.3 m	Yes	Treated
Nanoose #3	52.7 m	Yes	Treated
Nanoose #4	59.1 m	Yes	Treated
Nanoose #6	107.0 m	Yes	(Not in use)
Nanoose #7	60.6 m	Yes	(Not in use)
Fairwinds #1	69.8 m	Yes	Treated
Fairwinds #2	75.3 m	Yes	Treated
Fairwinds #3	72.2 m	Yes	Treated
West Bay #3	75.6 m	Yes	Treated
Parker Road	91.4 m	Yes	Treated

2.2 Reservoirs

Six water storage reservoirs are present in the Nanoose Bay Peninsula Water System as follows;

- Madrona (concrete) - 485 m^3 (100,000 imperial gallons) capacity
- Eagle Heights (concrete) - 341 m^3 (75,000 imperial gallons) capacity
- Dolphin (concrete) - 455 m^3 (100,000 imperial gallons) capacity
- Fairwinds Res #1 (concrete) - 701 m^3 (154,000 imperial gallons) capacity
- Fairwinds Res #2 (concrete) - 701 m^3 (154,000 imperial gallons) capacity
- Arbutus Park (lined concrete, wooden roof) - 568 m^3 (125, 000 imp. gallons) capacity

The Beachcomber reservoir was demolished in 2015. The location of a new water storage reservoir is currently being considered.

2.3 Distribution System

The water distribution system in Nanoose Bay is summarized in the table below. Fire hydrants (287) are located throughout the water service area.

Watermain Material	Length of mains in NBP Water Service Area	Prevalence in Water Service Area
Asbestos-concrete:		
150mm or smaller	9.7 km	12.2%
200mm or larger	2.7 km	3.4%
PVC:		
150mm or smaller	23.2 km	29.1%
200mm or larger	33.5 km	42.1%
Ductile Iron:		
150mm or smaller	0.2 km	0.2%
200mm or larger	10.3 km	13.0%

Note: 'PVC' is poly-vinylchloride (plastic)

Beachcomber Reservoir Demolition 2015

3. Water Sampling and Testing Program

Water sampling and testing is carried out weekly in the distribution system. Notably, the chlorine residual levels are tested weekly 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, pH, TDS, Temperature, Conductivity, Turbidity, Chlorine residual, Salinity
Monthly (Health Dept.)	BC Centre for Disease Control	Total coliforms, E.Coli
Monthly	RDN (in-house) Laboratory	Total Iron and Manganese
Annual Source Water Testing (every Fall)	Maxxam Labs	Complete potability testing of all raw well water, including T-Ammonia
Annual System Water Testing (every Spring)	Maxxam Labs	Complete potability testing of distribution system, including T-Ammonia
Filtration Plant Output Once per month	Maxxam Labs	True colour, Ammonia, Iron, Manganese, and Chloramines

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 in the SERVICES section, under "Water Services" then "WaterSmart Communities". 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

The tap water quality has improved with the installation of the Nanoose Bay Peninsula water filtration plant. Filtered groundwater from the Fairwinds and West Bay wells is mixed with treated water from the Englishman River (seasonally, as required) and stored in the same six reservoirs throughout Nanoose Bay.

Several inquiries were received from the Nanoose Bay Peninsula Water Service Area in 2017. Iron and manganese water discolouration was intermittently apparent in the Madrona Drive area. Flushing watermains and water services cleared things up. High water bills were addressed through the RDN's Leak Policy.

A few inquiries were received about subdividing large lots in Nanoose. No additional water supply was available from RDN water sources to facilitate subdivisions in 2017. However, several property owners purchased water allocations from Maz-Can Investments in 2016 and were able to proceed with their subdivisions once these private water allocations were secured.

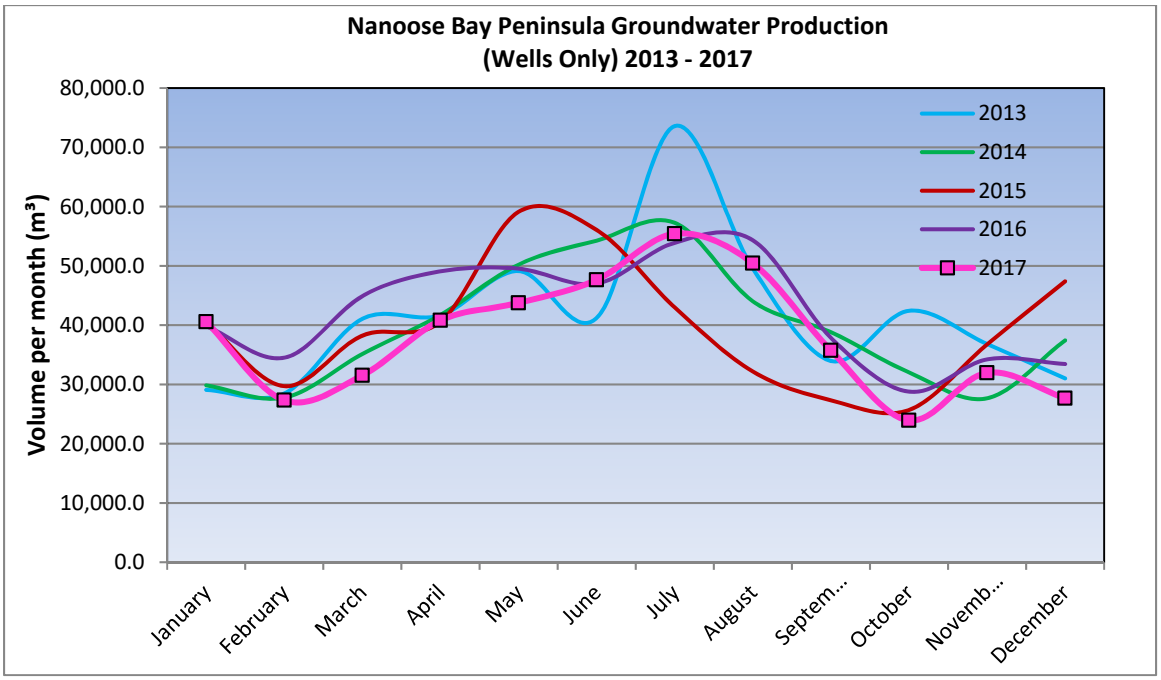
A summary of the water system incidents in 2017 is given in the table below.

Activity in 2017	Date(s)	History/Notes
Boil Water Advisories	None	None
High Turbidity Events	None	None
Equipment Malfunction	May	PLC, communication fail
Water Main Breaks	None	None
Pump Failures	June	West Bay Well #3 pump failed/replaced

6. Groundwater Production and Consumption

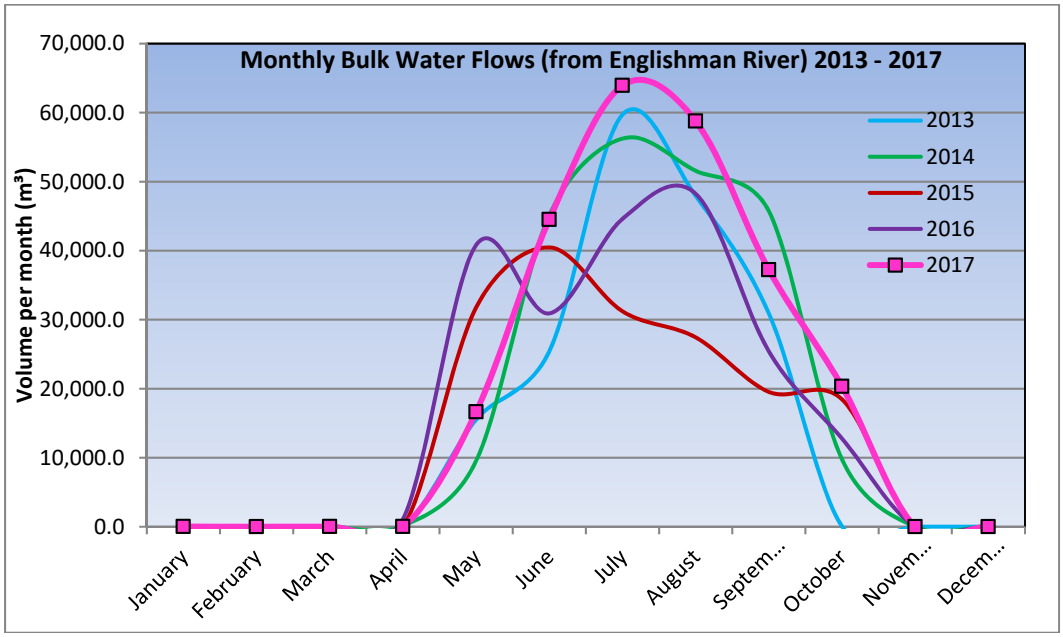
Groundwater Production

The monthly groundwater well production for the past 5 years is shown in the chart below. Groundwater production in 2017 was average in comparison to previous years. Production peaked earlier than 2016 but also fell earlier, which is likely a result of a dry spring and wetter fall conditions combined with increasing adoption of water conscious behavior in the area.



Surface Water Production

Bulk Water is supplied by the City of Parksville to supplement the RDN's well water during the high seasonal water use period (May to Sept). The bulk water comes from the Englishman River and is transmitted through the Nanoose Bay Water Service Area via a 16-inch (400mm) water main located along Northwest Bay Road. A comparison of the volume of bulk water supplied to the Nanoose Bay Water Service Area for the past 5 years is shown in the chart below. Bulk Water supply in 2017 appears to be above average in comparison to previous years.



Water Consumption

In the Fall/Winter of 2017, water billing records indicate that the average water usage per home in Nanoose Bay was 0.40 cubic metres per day (88 imperial gallons). In the summer, the average water usage was 1.24 cubic metres per day (272.8 imperial gallons). Based on these figures, the annual consumption per capita is estimated to be 285 L/day (based on 2.4 people/household). This consumption is *1% more* than the RDN system average of 283 L/day/capita in 2017.

7. Maintenance Program

Weekly pump station inspections are 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. Fire hydrants are serviced once per year (either 'A-level' or 'B-level' maintenance). Water storage reservoirs are drained and cleaned once every 3-4 years, as required. 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 are comprised of one Manager, one Project Engineer, one Engineering Technologist, one Chief Operator, and seven certified Level 2 Water Distribution System 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
- ✓ Traffic Control
- ✓ Fall Protection
- ✓ First Aid

9. Water System Projects

9.1 2017 Completed Studies & Projects

- Completed a desktop assessment of potential new well drilling sites;
- Completed Marine Drive water main replacement;
- Completed irrigation checks for high-water users;
- Advised residents regarding water leak repairs;
- Completed Cross Connection Control Bylaw in draft format;
- Completed Hydrant Maintenance;
- Rolled out the WaterSmart Garden rebate region-wide;
- Offered a rainwater harvesting incentive (rain barrels);
- Enforced outdoor sprinkling regulations;
- Added 15 new volunteer observation wells to our monitoring network;
- Completed the online GIS Water Map update for aquifer and watershed info;
- Issued a Public newsletter on State of Our Aquifers;
- Maintained a high level of water quality;
- Continued quality control through regular testing and monitoring of water system;
- Completed additional educational programs.

Fairwinds Reservoir No. 1

9.2 2018 Proposed Projects & Upgrades

- Carry out reservoir cleaning;
- Drill a test well near Fairwinds Well #1;
- Install a backup generator at Water Treatment Facility;
- Award the Anchor Way water main replacement project;
- Award the Craig Bay Pumpstation construction project;
- Complete a DCC (Development Cost Charge) bylaw update;
- Provide status updates to the public on the ERWS (Englishman River Water Service);
- Complete an asset condition study of waterworks components;
- Continue watermain flushing program and hydrant maintenance;
- Complete the Cross Connection Control Bylaw;
- Review and update the Drinking Water and Watershed Protection Action Plan;
- Create a Water Systems SCADA Master Plan; and
- Continue to offer rainwater harvesting (rain barrel) and other water-saving incentives.

10. Emergency Response Plan

The Regional District has an Emergency Response Plan (ERP) that 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 ERP was reviewed and updated in 2017, and copies are available on our website, at each RDN office, in each pumphouse, and in each Water Services vehicle. A copy of the ERP is also attached to this report in Appendix C.

A separate Emergency Response Plan has been developed exclusively for the water filtration plant at 2480 Nanoose Road. A copy of this ERP is located at the plant, at each RDN office and on the RDN website.

11. Cross Connection Control

In 2017, a more robust Cross Connection Control Plan was prepared that fully defines the CCC program, including standard operating procedures, plumbing code references, reporting procedures, survey schedules, backflow prevention standards, detailed installation schematics, blank test forms, testing reminders, and non-compliance letters. Two RDN Operators achieved their Backflow Assembly Tester re-certification in 2017. The RDN Chief Operator is the designated Cross Connection Control Manager.

In 2018, a stand-alone Cross Connection Control Bylaw will be adopted that contains definitions, authorizations, applications, liability, rules, regulations, testing requirements, and reporting requirements. The bylaw will address retrofits, prohibitions, special circumstances, reclaimed water use, alternate water sources, failure to comply, inspections, testing, offences, penalties and more. Sections of the existing RDN Water Supply Bylaw No. 1654 will be repealed so they do not conflict with the new Cross Connection Control Bylaw. A webpage will be established on the Water & Utility Services website that will educate RDN customers about cross connections and list the relevant links to current standards and resources.

Bulk Water Transmission Line Construction near Hwy 19 (2017)

12. Closing

An annual report for the year 2018 will be prepared and submitted to Island Health in the Spring of 2019. Annual reports are also available on our website at www.rdn.bc.ca in the SERVICES section, under "Water Services" then "WaterSmart Communities".

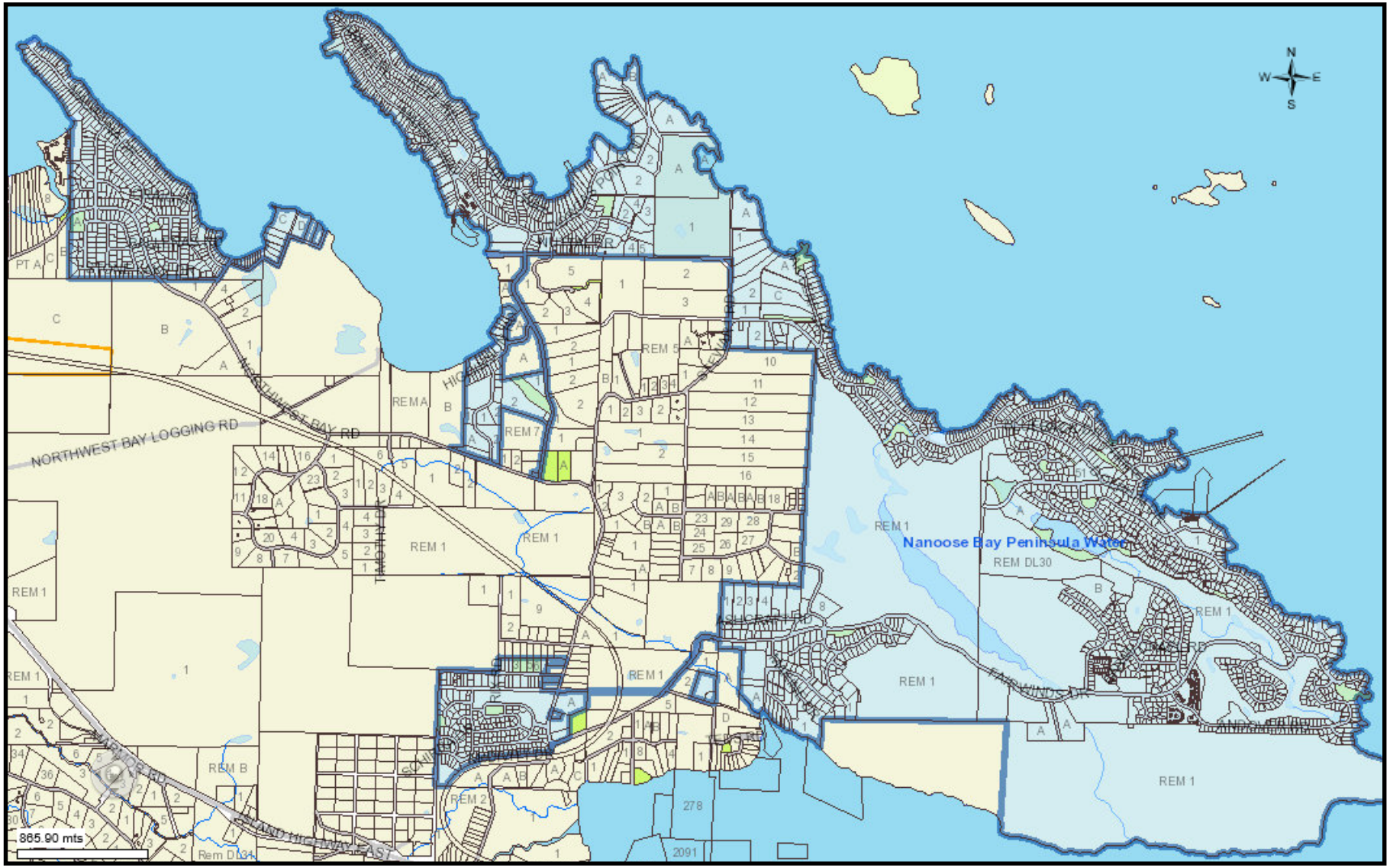
Arrowsmith Dam
April 2014

APPENDIX A

MAP OF NANOOSE BAY PENINSULA

WATER SERVICE AREA

NANOOSE BAY PENINSULA WATER SERVICE AREA



APPENDIX B

WATER QUALITY TESTING RESULTS

NANOOSE BAY PENINSULA WATER SYSTEM

Facility Location:
2330 Garry Oaks Drive
Nanoose Bay

Facility Information:

Facility Type: 301-10000 (DWT)

Facility Sampling History:

Location	Date	Total Coliform	E. Coli
1565 Stone Lake Drive, Nanoose Bay	13-Dec-2017	L1	L1
2329 Chain Way, Nanoose Bay	13-Dec-2017	L1	L1
2359 Higginson Road, Nanoose Bay	13-Dec-2017	L1	L1
2454 Armstrong Crescent, Nanoose Bay	13-Dec-2017	L1	L1
3383 Redden Road, Nanoose Bay	13-Dec-2017	L1	L1
Lot 54 Evanshire Crescent, Nanoose	13-Dec-2017	L1	L1
1270 Seadog Road, Nanoose Bay	6-Dec-2017	L1	L1
1358 Madrona Drive, Nanoose Bay	6-Dec-2017	L1	L1
2315 Ida Lane, Nanoose Bay	6-Dec-2017	L1	L1
3427 Tyee Crescent, Nanoose Bay	6-Dec-2017	L1	L1
3500 Fairwinds Drive, Nanoose Bay	6-Dec-2017	L1	L1
1996 Highland Road, Nanoose Bay	6-Dec-2017	L1	L1
1639 Marina Way, Nanoose Bay	29-Nov-2017	L1	L1
3465 Cambridge Road, Nanoose Bay	29-Nov-2017	L1	L1
1565 Stone Lake Drive	22-Nov-2017	L1	L1
2329 Chain Way, Nanoose Bay	22-Nov-2017	L1	L1
3541 Shelby Lane, Nanoose Bay	22-Nov-2017	L1	L1
Parking lot @ Golf Course, 3730 Fairwinds Drive, Nanoose Bay	22-Nov-2017	L1	L1
1358 Madrona Drive, Nanoose Bay	15-Nov-2017	A	
2315 Ida Lane, Nanoose Bay	15-Nov-2017	A	
2359 Higginson Road, Nanoose Bay	15-Nov-2017	A	
3383 Redden Road, Nanoose Bay	15-Nov-2017	A	
Lot 54 Evanshire Crescent, Nanoose Bay	15-Nov-2017	A	
1270 Seadog Road, Nanoose Bay	8-Nov-2017	L1	L1
1566 Arbutus Drive, Nanoose Bay	8-Nov-2017	L1	L1
2339 Garry Oak Drive, Nanoose Bay	8-Nov-2017	L1	L1
2454 Armstrong Crescent, Nanoose Bay	8-Nov-2017	L1	L1

Location	Date	Total Coliform	E. Coli
3427 Tyee Crescent, Nanoose Bay	8-Nov-2017	L1	L1
3500 Fairwinds Drive, Nanoose Bay	8-Nov-2017	L1	L1
1996 Highland Road, Nanoose Bay	8-Nov-2017	L1	L1
1639 Marina Way, Nanoose Bay	24-Oct-2017	L1	L1
3465 Cambridge Road, Nanoose Bay	24-Oct-2017	L1	L1
1566 Arbutus Drive, Nanoose Bay	18-Oct-2017	L1	L1
2339 Garry Oak Drive, Nanoose Bay	18-Oct-2017	L1	L1
3541 Shelby Lane, Nanoose Bay	18-Oct-2017	L1	L1
Parking lot @ Golf Course, 3730 Fairwinds Drive, Nanoose Bay	18-Oct-2017	L1	L1
1565 Stone Lake Drive, Nanoose Bay	10-Oct-2017	L1	L1
2315 Ida Lane, Nanoose Bay	10-Oct-2017	L1	L1
2329 Chain Way, Nanoose Bay	10-Oct-2017	L1	L1
2359 Higginson Road, Nanoose Bay	10-Oct-2017	L1	L1
3383 Redden Road, Nanoose Bay	10-Oct-2017	L1	L1
Lot 54 Evanshire Crescent, Nanoose Bay	10-Oct-2017	L1	L1
1270 Seadog Road, Nanoose Bay	4-Oct-2017	L1	L1
1358 Madrona Drive, Nanoose Bay	4-Oct-2017	L1	L1
2454 Armstrong Crescent	4-Oct-2017	L1	L1
3427 Tyee Crescent, Nanoose Bay	4-Oct-2017	L1	L1
3500 Fairwinds Drive, Nanoose Bay	4-Oct-2017	L1	L1
1996 Highland Road, Nanoose Bay	4-Oct-2017	L1	L1
1639 Marina Way, Nanoose Bay	27-Sep-2017	L1	L1
3465 Cambridge Road, Nanoose Bay	27-Sep-2017	L1	L1
1565 Stone Lake Drive, Nanoose Bay	19-Sep-2017	L1	L1
2329 Chain Way, Nanoose Bay	19-Sep-2017	L1	L1
3541 Shelby Lane, Nanoose Bay	19-Sep-2017	L1	L1
Parking lot @ Golf Course, 3730 Fairwinds Drive, Nanoose Bay	19-Sep-2017	L1	L1
1358 Madrona Drive, Nanoose Bay	13-Sep-2017	L1	L1
2359 Higginson Road, Nanoose Bay	13-Sep-2017	L1	L1
2454 Armstrong Crescent, Nanoose Bay	13-Sep-2017	L1	L1
3383 Redden Road, Nanoose Bay	13-Sep-2017	L1	L1
Lot 54 Evanshire Crescent, Nanoose Bay	13-Sep-2017	L1	L1
1270 Seadog Road, Nanoose Bay	6-Sep-2017	L1	L1
1566 Arbutus Drive, Nanoose Bay	6-Sep-2017	L1	L1
2315 Ida Lane, Nanoose Bay	6-Sep-2017	L1	L1
2339 Garry Oak Drive, Nanoose Bay	6-Sep-2017	L1	L1
3427 Tyee Crescent, Nanoose Bay	6-Sep-2017	L1	L1

Location	Date	Total Coliform	E. Coli
3500 Fairwinds Drive, Nanoose Bay	6-Sep-2017	L1	L1
1996 Highland Road, Nanoose Bay	6-Sep-2017	L1	L1
1639 Marina Way, Nanoose Bay	23-Aug-2017	L1	L1
3465 Cambridge Road, Nanoose Bay	23-Aug-2017	L1	L1
1566 Arbutus Drive, Nanoose Bay	15-Aug-2017	L1	L1
2339 Garry Oak Drive, Nanoose Bay	15-Aug-2017	L1	L1
3541 Shelby Lane, Nanoose Bay	15-Aug-2017	L1	L1
Parking lot @ Golf Course, 3730 Fairwinds Drive, Nanoose Bay	15-Aug-2017	L1	L1
1565 Stone Lake Drive, Nanoose Bay	9-Aug-2017	L1	L1
2329 Chain Way, Nanoose Bay	9-Aug-2017	L1	L1
2359 Higginson Road, Nanoose Bay	9-Aug-2017	L1	L1
2454 Armstrong Crescent, Nanoose Bay	9-Aug-2017	L1	L1
3383 Redden Road, Nanoose Bay	9-Aug-2017	L1	L1
Lot 54 Evanshire Crescent, Nanoose Bay	9-Aug-2017	L1	L1
1270 Seadog Road, Nanoose Bay	2-Aug-2017	L1	L1
1358 Madrona Drive, Nanoose Bay	2-Aug-2017	L1	L1
2315 Ida Lane, Nanoose Bay	2-Aug-2017	L1	L1
3427 Tyee Crescent, Nanoose Bay	2-Aug-2017	L1	L1
3500 Fairwinds Drive, Nanoose Bay	2-Aug-2017	L1	L1
1996 Highland Road, Nanoose Bay	2-Aug-2017	L1	L1
1639 Marina Way, Nanoose Bay	26-Jul-2017	L1	L1
3465 Cambridge Road, Nanoose Bay	26-Jul-2017	L1	L1
1565 Stone Lake Drive, Nanoose Bay	19-Jul-2017	L1	L1
2329 Chain Way, Nanoose Bay	19-Jul-2017	L1	L1
3541 Shelby Lane, Nanoose Bay	19-Jul-2017	L1	L1
Parking lot @ Golf Course, 3730 Fairwinds Drive, Nanoose Bay	19-Jul-2017	L1	L1
Lot 54 Evanshire Crescent Nanoose Bay	15-Jul-2017	L1	L1
1358 Madrona Drive, Nanoose Bay	12-Jul-2017	L1	L1
2315 Ida Lane, Nanoose Bay	12-Jul-2017	L1	L1
2359 Higginson Road, Nanoose Bay	12-Jul-2017	L1	L1
3383 Redden Road, Nanoose Bay	12-Jul-2017	L1	L1
1270 Seadog Road, Nanoose Bay	5-Jul-2017	L1	L1
1566 Arbutus Drive, Nanoose Bay	5-Jul-2017	L1	L1
2339 Garry Oak Drive, Nanoose Bay	5-Jul-2017	L1	L1
2454 Armstrong Crescent, Nanoose Bay	5-Jul-2017	L1	L1
3427 Tyee Crescent, Nanoose Bay	5-Jul-2017	L1	L1
3500 Fairwinds Drive, Nanoose Bay	5-Jul-2017	L1	L1

Location	Date	Total Coliform	E. Coli
1996 Highland Road, Nanoose Bay	5-Jul-2017	L1	L1
1639 Marina Way, Nanoose Bay	28-Jun-2017	L1	L1
3465 Cambridge Road, Nanoose Bay	28-Jun-2017	L1	L1
1358 Madrona Drive, Nanoose Bay	21-Jun-2017	L1	L1
3541 Shelby Lane, Nanoose Bay	21-Jun-2017	L1	L1
Parking lot @ Golf Course, 3730 Fairwinds Drive, Nanoose Bay	21-Jun-2017	L1	L1
1566 Arbutus Drive, Nanoose Bay	14-Jun-2017	L1	L1
2339 Garry Oak Drive, Nanoose Bay	14-Jun-2017	L1	L1
2359 Higginson Road, Nanoose Bay	14-Jun-2017	L1	L1
2454 Armstrong Crescent, Nanoose Bay	14-Jun-2017	L1	L1
3383 Redden Road, Nanoose Bay	14-Jun-2017	L1	L1
Lot 54 Evanshire Crescent, Nanoose Bay	14-Jun-2017	L1	L1
1270 Seadog Road, Nanoose Bay	5-Jun-2017	L1	L1
1565 Stone Lake Drive, Nanoose Bay	5-Jun-2017	L1	L1
2315 Ida Lane, Nanoose Bay	5-Jun-2017	L1	L1
2329 Chain Way, Nanoose Bay	5-Jun-2017	L1	L1
3427 Tyee Crescent, Nanoose Bay	5-Jun-2017	L1	L1
3500 Fairwinds Drive, Nanoose Bay	5-Jun-2017	L1	L1
1996 Highland Road, Nanoose Bay	5-Jun-2017	L1	L1
1639 Marina Way, Nanoose Bay	24-May-2017	L1	L1
3465 Cambridge Road, Nanoose Bay	24-May-2017	L1	L1
1565 Stone Lake Drive, Nanoose Bay	17-May-2017	L1	L1
2339 Garry Oak Drive, Nanoose Bay	17-May-2017	L1	L1
2359 Higginson Road, Nanoose Bay	17-May-2017	L1	L1
3541 Shelby Lane, Nanoose Bay BC	17-May-2017	L1	L1
Parking lot @ Golf Course, 3730 Fairwinds Drive, Nanoose Bay	17-May-2017	L1	L1
1270 Seadog Road, Nanoose Bay	10-May-2017	L1	L1
1566 Arbutus Drive, Nanoose Bay	10-May-2017	L1	L1
2315 Ida Lane, Nanoose Bay	10-May-2017	L1	L1
2329 Chain Way, Nanoose Bay	10-May-2017	L1	L1
3383 Redden Road, Nanoose Bay	10-May-2017	L1	L1
3500 Fairwinds Drive, Nanoose Bay	10-May-2017	L1	L1
1358 Madrona Drive, Nanoose Bay	3-May-2017	L1	L1
2454 Armstrong Crescent, Nanoose Bay	3-May-2017	L1	L1
3427 Tyee Crescent, Nanoose Bay	3-May-2017	L1	L1
Lot 54 Evanshire Crescent, Nanoose Bay	3-May-2017	L1	L1
1996 Highland Road, Nanoose Bay	3-May-2017	L1	L1

Location	Date	Total Coliform	E. Coli
1639 Marina Way, Nanoose Bay	26-Apr-2017	L1	L1
2339 Garry Oak Drive, Nanoose Bay	26-Apr-2017	L1	L1
3465 Cambridge Road, Nanoose Bay	26-Apr-2017	L1	L1
1565 Stone Lake Drive, Nanoose Bay	19-Apr-2017	L1	L1
2329 Chain Way, Nanoose Bay	19-Apr-2017	L1	L1
3541 Shelby Lane, Nanoose Bay	19-Apr-2017	L1	L1
Parking lot @ Golf Course, 3730 Fairwinds Drive, Nanoose Bay	19-Apr-2017	L1	L1
1358 Madrona Drive, Nanoose Bay	12-Apr-2017	L1	L1
2315 Ida Lane, Nanoose Bay	12-Apr-2017	L1	L1
2359 Higginson Road, Nanoose Bay	12-Apr-2017	L1	L1
3383 Redden Road, Nanoose Bay	12-Apr-2017	L1	L1
Lot 54 Evanshire Crescent, Nanoose Bay	12-Apr-2017	L1	L1
1270 Seadog Road, Nanoose Bay	5-Apr-2017	L1	L1
1566 Arbutus Drive, Nanoose Bay	5-Apr-2017	L1	L1
2454 Armstrong Crescent, Nanoose Bay	5-Apr-2017	L1	L1
3427 Tyee Crescent, Nanoose Bay	5-Apr-2017	L1	L1
3500 Fairwinds Drive, Nanoose Bay	5-Apr-2017	L1	L1
1996 Highland Road, Nanoose Bay	5-Apr-2017	L1	L1
1639 Marina Way, Nanoose Bay	29-Mar-2017	L1	L1
3465 Cambridge Road, Nanoose Bay	29-Mar-2017	L1	L1
1358 Madrona Drive, Nanoose Bay	22-Mar-2017	L1	L1
2339 Garry Oak Drive, Nanoose Bay	22-Mar-2017	L1	L1
3541 Shelby Lane, Nanoose Bay	22-Mar-2017	L1	L1
Parking lot @ Golf Course, 3730 Fairwinds Drive, Nanoose Bay	22-Mar-2017	L1	L1
1566 Arbutus Drive, Nanoose Bay	21-Mar-2017	L1	L1
2359 Higginson Road, Nanoose Bay	21-Mar-2017	L1	L1
2454 Armstrong Crescent, Nanoose Bay	21-Mar-2017	L1	L1
3383 Redden Road, Nanoose Bay	21-Mar-2017	L1	L1
Lot 54 Evanshire Crescent, Nanoose Bay	21-Mar-2017	L1	L1
1270 Seadog Road, Nanoose Bay	8-Mar-2017	L1	L1
1565 Stone Lake Drive, Nanoose Bay	8-Mar-2017	L1	L1
2315 Ida Lane, Nanoose Bay	8-Mar-2017	L1	L1
2329 Chain Way, Nanoose Bay	8-Mar-2017	L1	L1
3427 Tyee Crescent, Nanoose Bay	8-Mar-2017	L1	L1
3500 Fairwinds Drive, Nanoose Bay	8-Mar-2017	L1	L1
1996 Highland Road, Nanoose Bay	8-Mar-2017	L1	L1
1639 Marina Way, Nanoose Bay	28-Feb-2017	L1	L1

Location	Date	Total Coliform	E. Coli
3465 Cambridge Road, Nanoose Bay	28-Feb-2017	L1	L1
1566 Arbutus Drive, Nanoose Bay	22-Feb-2017	L1	L1
3541 Shelby Lane, Nanoose Bay	22-Feb-2017	L1	L1
Parking lot @ Golf Course, 3730 Fairwinds Drive, Nanoose Bay	22-Feb-2017	L1	L1
1565 Stone Lake Drive, Nanoose Bay	14-Feb-2017	L1	L1
2315 Ida Lane, Nanoose Bay	14-Feb-2017	L1	L1
2329 Chain Way, Nanoose Bay BC	14-Feb-2017	L1	L1
2359 Higginson Road	14-Feb-2017	L1	L1
3383 Redden Road, Nanoose Bay	14-Feb-2017	L1	L1
Lot 54 Evanshire Crescent, Nanoose	14-Feb-2017	L1	L1
1270 Seadog Road, Nanoose Bay BC	8-Feb-2017	L1	L1
1358 Madrona Drive, Nanoose Bay BC	8-Feb-2017	L1	L1
2339 Garry Oak Drive, Nanoose Bay	8-Feb-2017	L1	L1
2454 Armstrong Crescent, Nanoose Bay	8-Feb-2017	L1	L1
3427 Tyee Crescent, Nanoose Bay	8-Feb-2017	L1	L1
3500 Fairwinds Drive, Nanoose Bay	8-Feb-2017	L1	L1
1996 Highland Road, Nanoose Bay	8-Feb-2017	L1	L1
1639 Marina Way, Nanoose Bay	31-Jan-2017	L1	L1
3500 Fairwinds Drive, Nanoose Bay	31-Jan-2017	L1	L1
1996 Highland Road, Nanoose Bay	31-Jan-2017	L1	L1
1565 Stone Lake Drive, Nanoose Bay	25-Jan-2017	L1	L1
2339 Garry Oak Drive, Nanoose Bay	25-Jan-2017	L1	L1
3465 Cambridge Road, Nanoose Bay	25-Jan-2017	L1	L1
Lot 54 Evanshire Crescent, Nanoose Bay	25-Jan-2017	L1	L1
1358 Madrona Drive, Nanoose Bay	18-Jan-2017	L1	L1
2329 Chain Way, Nanoose Bay	18-Jan-2017	L1	L1
2359 Higginson Road, Nanoose Bay	18-Jan-2017	L1	L1
2454 Armstrong Crescent, Nanoose Bay	18-Jan-2017	L1	L1
3383 Redden Road, Nanoose Bay	18-Jan-2017	L1	L1
3427 Tyee Crescent, Nanoose Bay	18-Jan-2017	L1	L1
3541 Shelby Lane, Nanoose Bay	18-Jan-2017	L1	L1
Parking lot @ Golf Course, 3730 Fairwinds Drive, Nanoose Bay	18-Jan-2017	L1	L1
2315 Ida Lane, Nanoose Bay	4-Jan-2017	L1	L1
1270 Seadog Road, Nanoose Bay	3-Jan-2017	L1	L1
1566 Arbutus Drive, Nanoose Bay	3-Jan-2017	L1	L1

Interpreting Sample Reports

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

L1 Less than 1 (no detectable bacteria) - Meaning: No bacteria present
OG Overgrown - Meaning: Too many background bacteria to give an accurate count
EST Estimated Count
A Sample not tested; Too long in transit
C Sample leaked/broken in transit
D Sample not tested; No collection date given
T Sample submitted unsatisfactory. Exceeded 30 hours holding time, please resample.
NS No sample received with requisition

REGIONAL DISTRICT OF NANAIMO

Wall Brook Well # 1 Water Analysis
1610 Northwest Bay Road

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

water SMART zero waste

Red font indicates non-compliance with Canadian Drinking Water Guidelines

	Units	CDWG		April 23 2014	November 5 2014	October 27 2015	October 26 2016	September 20 2017	
Miscellaneous Inorganics									
Fluoride	mg/L	1.5	MAC	0.1	0.11	0.084	0.088	0.082	
Alkalinity (total as $CaCO_3$)	mg/L			160	158	143	148	139	
Anions									
Dissolved Sulphate	mg/L	500	AO	17.7	18.6	13.3	14.2	17.5	
Dissolved Chloride	mg/L	250	AO	5	5.4	13	9	23	
Nitrite	mg/L	1	MAC	<0.05	0.13	<0.0050	<0.0050	<0.0050	
Miscellaneous									
Apparent Colour	Colour Unit			8	8	10	5	10	
Nutrients									
Total Ammonia	mg/L			0.08	0.07	0.093	0.13	0.092	
Physical Properties									
Conductivity	µS/cm			341	335	341	343	366	
pH	pH	6.5:8.5	AO	8.1	8	8.17	8.2	8.29	
TDS	mg/L	500	AO	202	236	208	196	198	
Turbidity	NTU			<0.5	<0.5	<0.10	0.11	0.19	
Microbiological Parameters									
E.coli	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Total Coliforms	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Calculated Parameters									
Total Hardness ($CaCO_3$)	mg/L			160	150	134	142	140	
Nitrate	mg/L	10	MAC	<0.05	<0.05	<0.020	<0.020	<0.020	
Elements									
Total Mercury	mg/L	0.001	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
Total Metals									
Total Aluminum	mg/L	0.1	OG	<0.025	<0.005	<0.003	<0.003	<0.003	
Total Antimony	mg/L	0.006	MAC	<0.0005	<0.0001	<0.0005	<0.0005	<0.0005	
Total Arsenic	mg/L	0.01	MAC	0.0032	0.00297	0.00281	0.003	0.00273	
Total Barium	mg/L	1	MAC	0.0182	0.0172	0.016	0.0158	0.0162	
Total Beryllium	mg/L			<0.00025	<0.00005	<0.0001	<0.0001	<0.0001	
Total Bismuth	mg/L			<0.0005	<0.0001	<0.001	<0.001	<0.001	
Total Boron	mg/L	5	MAC	0.056	0.047	<0.05	<0.050	<0.050	
Total Cadmium	mg/L	0.005	MAC	<0.00005	<0.00001	<0.00001	<0.00001	<0.00001	
Total Chromium	mg/L	0.05	MAC	<0.0025	<0.0005	<0.001	<0.001	<0.001	
Total Cobalt	mg/L			<0.0005	<0.0001	<0.0005	<0.0005	<0.0002	
Total Copper	mg/L	1	AO	0.0067	0.0018	0.00247	0.00196	0.00024	
Total Iron	mg/L	0.3	AO	0.014	0.016	0.0088	0.011	0.0117	
Total Lead	mg/L	0.01	MAC	<0.0005	0.0006	<0.0002	<0.0002	<0.0002	
Total Manganese	mg/L	0.05	AO	0.133	0.129	0.113	0.110	0.115	
Total Molybdenum	mg/L			0.00132	0.00109	<0.001	0.0011	<0.001	
Total Nickel	mg/L			<0.0010	0.0004	<0.001	<0.001	<0.001	
Total Selenium	mg/L	0.05	MAC	<0.0005	<0.0001	<0.0001	<0.0001	<0.0001	
Total Silicon	mg/L			11.2	10.6	10.4	10.2	11.7	
Total Silver	mg/L			<0.00025	<0.00005	<0.00002	<0.00002	<0.00002	
Total Strontium	mg/L			0.128	0.122	0.114	0.111	0.116	
Total Thallium	mg/L			<0.00005	<0.00001	<0.00005	<0.00005	<0.00001	
Total Tin	mg/L			<0.005	<0.0001	<0.005	<0.005	<0.005	
Total Titanium	mg/L			<0.0025	<0.0005	<0.005	<0.005	<0.005	
Total Uranium	mg/L	0.02	MAC	0.00034	0.00026	0.00019	0.00022	0.00014	
Total Vanadium	mg/L			<0.0005	0.0004	<0.005	<0.005	<0.005	
Total Zinc	mg/L	5	AO	0.0126	0.0079	<0.005	<0.005	<0.005	
Total Zirconium	mg/L					<0.0005	<0.0005	<0.0001	
Total Calcium	mg/L			39.9	38.3	33.7	36.6	36.1	
Total Magnesium	mg/L			13.7	13	12.1	12.3	12.1	
Total Potassium	mg/L			1.6	1.5	1.35	1.26	1.36	
Total Sodium	mg/L	200	AO	18.8	19.4	17.2	18	18.4	
Total Sulphur	mg/L					6.1	4.9	5.7	

REGIONAL DISTRICT OF NANAIMO

Fairwinds Well # 1 Water Analysis
2275 Tippet Road
(well water has been sent to the WTP since 2012)

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

water SMART zero waste

Red font indicates non-compliance with Canadian Drinking Water Guidelines

	Units	CDWG		October 23 2013	November 5 2014	October 26 2015	October 26 2016	September 21 2017	
Miscellaneous Inorganics									
Fluoride	mg/L	1.5	MAC	0.16	0.11	0.16	0.14	0.16	
Alkalinity (total as $CaCO_3$)	mg/L			150	144	146	152	158	
Anions									
Dissolved Sulphate	mg/L	500	AO	9.1	9.4	9.38	11.8	13.3	
Dissolved Chloride	mg/L	250	AO	10.5	10.7	10	10	10	
Nitrite	mg/L	1	MAC	<0.05	0.13	<0.0050	<0.0050	<0.0050	
Miscellaneous									
Apparent Colour	Colour Unit			27	27	30	20	20	
Nutrients									
Total Ammonia	mg/L			1.24	1.28	1.3	1.4	1.3	
Physical Properties									
Conductivity	µS/cm			334	332	331	343	345	
pH	pH	6.5:8.5	AO	7.8	8	8.29	8.13	8.23	
TDS	mg/L	500	AO	190	208	208	204	196	
Turbidity	NTU			1.6	1.4	1	1.04	1.18	
Microbiological Parameters									
E.coli	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Total Coliforms	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Calculated Parameters									
Total Hardness ($CaCO_3$)	mg/L			130	120	122	120	125	
Nitrate	mg/L	10	MAC	<0.05	<0.05	<0.020	<0.020	<0.020	
Elements									
Total Mercury	mg/L	0.001	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
Total Metals									
Total Aluminum	mg/L	0.1	OG	<0.005	<0.005	<0.003	<0.003	<0.003	
Total Antimony	mg/L	0.006	MAC	<0.0002	<0.0001	<0.0005	<0.0005	<0.0005	
Total Arsenic	mg/L	0.01	MAC	0.0019	0.00167	0.0018	0.00174	0.00156	
Total Barium	mg/L	1	MAC	0.01	0.0106	0.0103	0.0109	0.0104	
Total Beryllium	mg/L			<0.00004	<0.00005	<0.0001	<0.0001	<0.0001	
Total Bismuth	mg/L			<0.001	<0.0001	<0.001	<0.001	<0.001	
Total Boron	mg/L	5	MAC	0.064	0.064	0.061	0.059	0.070	
Total Cadmium	mg/L	0.005	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
Total Chromium	mg/L	0.05	MAC	<0.0004	<0.0005	<0.001	<0.001	<0.001	
Total Cobalt	mg/L			0.00004	<0.0001	<0.0005	<0.0005	<0.0002	
Total Copper	mg/L	1	AO	<0.001	0.0007	0.00077	0.00022	<0.0002	
Total Iron	mg/L	0.3	AO	0.688	0.656	0.647	0.632	0.659	
Total Lead	mg/L	0.01	MAC	0.0001	<0.0001	<0.0002	<0.0002	<0.0002	
Total Manganese	mg/L	0.05	AO	0.3	0.275	0.265	0.275	0.278	
Total Molybdenum	mg/L			0.0003	0.00028	<0.001	<0.001	<0.001	
Total Nickel	mg/L			<0.001	0.0003	<0.001	<0.001	<0.001	
Total Selenium	mg/L	0.05	MAC	<0.0006	<0.0001	<0.0001	<0.0001	<0.0001	
Total Silicon	mg/L			15.1	15.3	17	15.5	15.9	
Total Silver	mg/L			<0.00001	<0.00005	<0.00002	<0.00002	<0.00002	
Total Strontium	mg/L			0.106	0.105	0.0971	0.108	0.105	
Total Thallium	mg/L			<0.00001	<0.00001	<0.00005	<0.00005	<0.00001	
Total Tin	mg/L			<0.0001	0.0012	<0.005	<0.005	<0.005	
Total Titanium	mg/L			<0.0010	0.0006	<0.005	<0.005	<0.005	
Total Uranium	mg/L	0.02	MAC	<0.0004	<0.00001	<0.0001	<0.0001	<0.0001	
Total Vanadium	mg/L			0.0004	0.0005	<0.005	<0.005	<0.005	
Total Zinc	mg/L	5	AO	0.016	0.018	<0.005	0.025	<0.005	
Total Zirconium	mg/L					<0.0005	<0.0005	<0.0001	
Total Calcium	mg/L			30.4	30.8	30.4	29.5	30.1	
Total Magnesium	mg/L			12.3	11.3	11.2	11.3	12.1	
Total Potassium	mg/L			2.65	2.6	2.5	2.44	2.71	
Total Sodium	mg/L	200	AO	24.1	22.9	22.4	20.2	21.6	
Total Sulphur	mg/L					<3.0	4	5.3	

REGIONAL DISTRICT OF NANAIMO

Fairwinds Well # 2 Water Analysis
2395 Nanoose Road
(well water has been sent to the WTP since 2012)

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

water SMART zero waste

Red font indicates non-compliance with Canadian Drinking Water Guidelines

	Units	CDWG		October 23 2013	November 5 2014	October 26 2015	October 26 2016	September 21 2017	
Miscellaneous Inorganics									
Fluoride	mg/L	1.5	MAC	0.19	0.14	0.19	0.19	0.19	
Alkalinity (total as $CaCO_3$)	mg/L			150	146	147	144	153	
Anions									
Dissolved Sulphate	mg/L	500	AO	9.3	10	10.4	12.4	14.6	
Dissolved Chloride	mg/L	250	AO	14.7	13.1	14	13	13	
Nitrite	mg/L	1	MAC	<0.05	0.11	<0.0050	<0.0050	<0.0050	
Miscellaneous									
Apparent Colour	Colour Unit			22	24	20	20	20	
Nutrients									
Total Ammonia	mg/L			1.56	1.53	1.7	1.7	1.6	
Physical Properties									
Conductivity	µS/cm			346	341	347	349	343	
pH	pH	6.5:8.5	AO	7.9	7.9	8.3	8.09	8.22	
TDS	mg/L	500	AO	202	224	214	196	206	
Turbidity	NTU			0.8	1.1	0.57	0.68	0.64	
Microbiological Parameters									
E.coli	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Total Coliforms	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Calculated Parameters									
Total Hardness ($CaCO_3$)	mg/L			110	110	105	110	112	
Nitrate	mg/L	10	MAC	<0.05	<0.05	<0.020	<0.020	<0.0020	
Elements									
Total Mercury	mg/L	0.001	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
Total Metals									
Total Aluminum	mg/L	0.1	OG	<0.005	<0.005	<0.003	<0.003	<0.003	
Total Antimony	mg/L	0.006	MAC	<0.0002	<0.0001	<0.0005	<0.0005	<0.0005	
Total Arsenic	mg/L	0.01	MAC	0.0012	0.00124	0.00111	0.00121	0.00146	
Total Barium	mg/L	1	MAC	0.008	0.00891	0.0077	0.0077	0.0073	
Total Beryllium	mg/L			<0.00004	<0.00005	<0.0001	<0.0001	<0.0001	
Total Bismuth	mg/L			<0.001	<0.0001	<0.001	<0.001	<0.001	
Total Boron	mg/L	5	MAC	0.088	0.085	0.085	0.079	0.088	
Total Cadmium	mg/L	0.005	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
Total Chromium	mg/L	0.05	MAC	<0.0004	<0.0005	<0.001	<0.001	<0.001	
Total Cobalt	mg/L			0.00004	<0.0001	<0.0005	<0.0005	<0.0002	
Total Copper	mg/L	1	AO	<0.001	0.0007	0.00036	0.00042	0.00115	
Total Iron	mg/L	0.3	AO	0.575	0.581	0.558	0.576	0.513	
Total Lead	mg/L	0.01	MAC	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	
Total Manganese	mg/L	0.05	AO	0.326	0.319	0.281	0.282	0.292	
Total Molybdenum	mg/L			0.0001	0.00015	<0.001	<0.001	<0.001	
Total Nickel	mg/L			<0.001	0.0002	<0.001	<0.001	<0.001	
Total Selenium	mg/L	0.05	MAC	<0.0006	<0.0001	<0.0001	<0.0001	<0.0001	
Total Silicon	mg/L			16.2	16.4	17.9	15	17.9	
Total Silver	mg/L			<0.00001	<0.00005	<0.00002	<0.00002	<0.00002	
Total Strontium	mg/L			0.11	0.111	0.0998	0.104	0.108	
Total Thallium	mg/L			<0.00001	<0.00001	<0.00005	<0.00005	<0.00001	
Total Tin	mg/L			<0.0001	0.0007	<0.005	<0.005	<0.005	
Total Titanium	mg/L			<0.0010	0.0006	<0.005	<0.005	<0.005	
Total Uranium	mg/L	0.02	MAC	<0.0004	<0.00001	<0.0001	<0.0001	<0.0001	
Total Vanadium	mg/L			0.0007	0.0008	<0.005	<0.005	<0.005	
Total Zinc	mg/L	5	AO	0.002	0.0064	<0.005	<0.005	<0.005	
Total Zirconium	mg/L					<0.0005	<0.0005	<0.0001	
Total Calcium	mg/L			26.6	28.1	26.5	27.1	27.6	
Total Magnesium	mg/L			10.8	10.2	9.54	10.3	10.4	
Total Potassium	mg/L			3.07	3.1	2.86	2.61	2.99	
Total Sodium	mg/L	200	AO	33.2	31.4	30.3	29	28.5	
Total Sulphur	mg/L					3.6	4.5	5.8	

REGIONAL DISTRICT OF NANAIMO

Fairwinds Well # 3 Water Analysis
2301 Nanoose Road
(well water has been sent to the WTP since 2012)

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

water SMART zero waste

Red font indicates non-compliance with Canadian Drinking Water Guidelines

	Units	CDWG		October 23 2013	November 5 2014	October 26 2015	October 26 2016	Septmeber 21 2017	
Miscellaneous Inorganics									
Fluoride	mg/L	1.5	MAC	0.12	0.13	0.12	0.12	0.13	
Alkalinity (total as $CaCO_3$)	mg/L			160	152	147	152	164	
Anions									
Dissolved Sulphate	mg/L	500	AO	8.8	11.3	9.08	11	13.6	
Dissolved Chloride	mg/L	250	AO	67	58	63	61	52	
Nitrite	mg/L	1	MAC	<0.05	<0.05	<0.0050	<0.0050	<0.0050	
Miscellaneous									
Apparent Colour	Colour Unit			25	27	30	30	20	
Nutrients									
Total Ammonia	mg/L			1.75	1.78	1.6	1.9	1.8	
Physical Properties									
Conductivity	µS/cm			533	505	525	512	488	
pH	pH	6.5:8.5	AO	7.8	7.9	8.28	8.14	8.23	
TDS	mg/L	500	AO	292	280	296	284	276	
Turbidity	NTU			1.2	1.5	0.93	1.11	1.02	
Microbiological Parameters									
E.coli	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Total Coliforms	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Calculated Parameters									
Total Hardness ($CaCO_3$)	mg/L			160	150	151	149	144	
Nitrate	mg/L	10	MAC	<0.05	<0.05	<0.020	<0.020	<0.020	
Elements									
Total Mercury	mg/L	0.001	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
Total Metals									
Total Aluminum	mg/L	0.1	OG	<0.005	0.005	<0.003	<0.003	<0.003	
Total Antimony	mg/L	0.006	MAC	<0.0002	<0.0001	<0.0005	<0.0005	<0.0005	
Total Arsenic	mg/L	0.01	MAC	0.0043	0.00418	0.00406	0.00395	0.00379	
Total Barium	mg/L	1	MAC	0.01	0.0103	0.0099	0.0095	0.0099	
Total Beryllium	mg/L			<0.00004	<0.00005	<0.0001	<0.0001	<0.0001	
Total Bismuth	mg/L			<0.001	<0.0001	<0.001	<0.001	<0.001	
Total Boron	mg/L	5	MAC	0.086	0.08	0.088	0.077	0.090	
Total Cadmium	mg/L	0.005	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
Total Chromium	mg/L	0.05	MAC	<0.0004	0.0009	<0.001	<0.001	<0.001	
Total Cobalt	mg/L			0.00005	<0.0001	<0.0005	<0.0005	<0.0002	
Total Copper	mg/L	1	AO	0.001	0.0015	0.00026	0.00035	<0.0002	
Total Iron	mg/L	0.3	AO	0.578	0.566	0.572	0.561	0.556	
Total Lead	mg/L	0.01	MAC	0.0003	<0.0001	<0.0002	<0.0002	<0.0002	
Total Manganese	mg/L	0.05	AO	0.274	0.253	0.243	0.231	0.230	
Total Molybdenum	mg/L			0.0002	0.00027	<0.001	<0.001	<0.001	
Total Nickel	mg/L			<0.001	0.0007	<0.001	<0.001	<0.001	
Total Selenium	mg/L	0.05	MAC	<0.0006	<0.0001	<0.0001	<0.0001	<0.0001	
Total Silicon	mg/L			15.3	15.1	17.4	14.5	16.8	
Total Silver	mg/L			<0.00001	<0.00005	<0.00002	<0.00002	<0.00002	
Total Strontium	mg/L			0.242	0.237	0.227	0.221	0.224	
Total Thallium	mg/L			<0.00001	<0.00001	<0.00005	<0.00005	<0.00001	
Total Tin	mg/L			<0.0001	<0.0001	<0.005	<0.005	<0.005	
Total Titanium	mg/L			<0.0010	0.0006	<0.005	<0.005	<0.005	
Total Uranium	mg/L	0.02	MAC	<0.0004	<0.00001	<0.0001	<0.0001	<0.0001	
Total Vanadium	mg/L			0.0008	0.0009	<0.005	<0.005	<0.005	
Total Zinc	mg/L	5	AO	<0.001	0.0091	<0.005	<0.005	<0.005	
Total Zirconium	mg/L					<0.0005	<0.0005	<0.0001	
Total Calcium	mg/L			38.8	37.4	37.8	37.1	35.6	
Total Magnesium	mg/L			15.4	13.5	13.8	13.7	13.4	
Total Potassium	mg/L			4.11	3.9	3.79	3.31	3.7	
Total Sodium	mg/L	200	AO	50.2	45.4	45.7	42.2	39.5	
Total Sulphur	mg/L					4.1	4.1	6.6	

REGIONAL DISTRICT OF NANAIMO

West Bay Well # 3 Water Analysis
2473 Nanoose Road
(well water has been sent to the WTP since 2012)

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

water SMART zero waste

Red font indicates non-compliance with Canadian Drinking Water Guidelines

	Units	CDWG		October 23 2013	November 5 2014	October 26 2015	October 26 2016	September 21 2017	
Miscellaneous Inorganics									
Fluoride	mg/L	1.5	MAC	0.16	0.25	0.16	0.16	0.16	
Alkalinity (total as $CaCO_3$)	mg/L			140	140	135	139	146	
Anions									
Dissolved Sulphate	mg/L	500	AO	2.7	3.3	3.67	4.49	6.5	
Dissolved Chloride	mg/L	250	AO	7.1	7	7.7	7.6	7.9	
Nitrite	mg/L	1	MAC	<0.05	<0.05	<0.0050	<0.0050	<0.0050	
Miscellaneous									
Apparent Colour	Colour Unit			21	21	20	20	20	
Nutrients									
Total Ammonia	mg/L			1.1	1.11	1.2	1.2	1.1	
Physical Properties									
Conductivity	µS/cm			296	293	296	303	296	
pH	pH	6.5:8.5	AO	7.9	7.9	8.22	8.09	8.23	
TDS	mg/L	500	AO	168	240	168	176	174	
Turbidity	NTU			0.8	0.9	0.56	1.06	1.14	
Microbiological Parameters									
E.coli	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Total Coliforms	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Calculated Parameters									
Total Hardness ($CaCO_3$)	mg/L			110	110	105	103	109	
Nitrate	mg/L	10	MAC	<0.05	<0.05	<0.020	<0.020	<0.020	
Elements									
Total Mercury	mg/L	0.001	MAC	0.00002	<0.00001	<0.00001	<0.00001	<0.00001	
Total Metals									
Total Aluminum	mg/L	0.1	OG	<0.005	<0.005	<0.003	0.013	<0.003	
Total Antimony	mg/L	0.006	MAC	<0.0002	<0.0001	<0.0005	<0.0005	<0.0005	
Total Arsenic	mg/L	0.01	MAC	0.0004	0.00043	0.00038	0.00041	0.0004	
Total Barium	mg/L	1	MAC	0.006	0.006	0.0053	0.006	0.0057	
Total Beryllium	mg/L			<0.00004	<0.00005	<0.0001	<0.0001	<0.0001	
Total Bismuth	mg/L			<0.001	<0.0001	<0.001	<0.001	<0.001	
Total Boron	mg/L	5	MAC	0.067	0.066	0.065	0.062	0.071	
Total Cadmium	mg/L	0.005	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
Total Chromium	mg/L	0.05	MAC	<0.0004	<0.0005	<0.001	<0.001	<0.001	
Total Cobalt	mg/L			0.00004	<0.0001	<0.0005	<0.0005	<0.0002	
Total Copper	mg/L	1	AO	0.001	0.0011	0.00051	0.0241	0.00215	
Total Iron	mg/L	0.3	AO	0.573	0.533	0.527	0.551	0.568	
Total Lead	mg/L	0.01	MAC	<0.0001	0.0003	<0.0002	0.00037	0.00032	
Total Manganese	mg/L	0.05	AO	0.228	0.209	0.2	0.203	0.196	
Total Molybdenum	mg/L			0.0002	0.00022	<0.001	<0.001	<0.001	
Total Nickel	mg/L			<0.001	<0.0002	<0.001	<0.001	<0.001	
Total Selenium	mg/L	0.05	MAC	<0.0006	<0.0001	<0.0001	<0.0001	<0.0001	
Total Silicon	mg/L			14.6	14.2	16	14.3	16.1	
Total Silver	mg/L			<0.00001	<0.00005	<0.00002	<0.00002	<0.00002	
Total Strontium	mg/L			0.101	0.102	0.0929	0.102	0.101	
Total Thallium	mg/L			<0.00001	<0.00001	<0.00005	<0.00005	<0.00001	
Total Tin	mg/L			<0.0001	<0.0001	<0.005	<0.005	<0.005	
Total Titanium	mg/L			<0.0010	0.0006	<0.005	<0.005	<0.005	
Total Uranium	mg/L	0.02	MAC	<0.0004	<0.00001	<0.0001	<0.0001	<0.0001	
Total Vanadium	mg/L			0.0006	0.0007	<0.005	<0.005	<0.005	
Total Zinc	mg/L	5	AO	0.002	0.0076	<0.005	0.0134	0.0157	
Total Zirconium	mg/L					<0.0005	<0.0005	<0.0001	
Total Calcium	mg/L			27.8	27.6	26.9	25.8	28	
Total Magnesium	mg/L			10.6	9.53	9.2	9.41	9.46	
Total Potassium	mg/L			2.6	2.4	2.35	2.26	2.36	
Total Sodium	mg/L	200	AO	21.8	20.6	20.5	18.5	18.5	
Total Sulphur	mg/L					<3.0	<3.0	<3.0	

REGIONAL DISTRICT OF NANAIMO

Parker Road Well Water Analysis
Parker Road
(*well not in use at this time)

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

water SMART zero waste

Red font indicates non-compliance with Canadian Drinking Water Guidelines

	Units	CDWG		October 26 2016*	September 21 2017				
Miscellaneous Inorganics									
Fluoride	mg/L	1.5	MAC	1.4	1.6				
Alkalinity (total as $CaCO_3$)	mg/L			143	155				
Anions									
Dissolved Sulphate	mg/L	500	AO	12.1	20.9				
Dissolved Chloride	mg/L	250	AO	5.1	18				
Nitrite	mg/L	1	MAC	<0.0050	<0.0050				
Miscellaneous									
Apparent Colour	Colour Unit			15	10				
Nutrients									
Total Ammonia	mg/L			0.31	0.21				
Physical Properties									
Conductivity	µS/cm			314	381				
pH	pH	6.5:8.5	AO	8.24	8.3				
TDS	mg/L	500	AO	182	204				
Turbidity	NTU			9.84	0.63				
Microbiological Parameters									
E.coli	MPN/100mL	<1	MAC	<1.0	<1.0				
Total Coliforms	MPN/100mL	<1	MAC	<1.0	<1.0				
Calculated Parameters									
Total Hardness ($CaCO_3$)	mg/L			82.7	97.6				
Nitrate	mg/L	10	MAC	<0.020	<0.020				
Elements									
Total Mercury	mg/L	0.001	MAC	<0.00001	<0.00001				
Total Metals									
Total Aluminum	mg/L	0.1	OG	0.174	<0.003				
Total Antimony	mg/L	0.006	MAC	<0.0005	<0.0005				
Total Arsenic	mg/L	0.01	MAC	0.00094	0.00096				
Total Barium	mg/L	1	MAC	0.139	0.166				
Total Beryllium	mg/L			<0.0001	<0.0001				
Total Bismuth	mg/L			<0.001	<0.001				
Total Boron	mg/L	5	MAC	0.327	0.444				
Total Cadmium	mg/L	0.005	MAC	<0.00001	<0.00001				
Total Chromium	mg/L	0.05	MAC	0.0015	<0.001				
Total Cobalt	mg/L			<0.0005	<0.0002				
Total Copper	mg/L	1	AO	0.00123	0.00022				
Total Iron	mg/L	0.3	AO	0.346	0.18				
Total Lead	mg/L	0.01	MAC	<0.0002	<0.0002				
Total Manganese	mg/L	0.05	AO	0.0173	0.0147				
Total Molybdenum	mg/L			0.0025	0.0022				
Total Nickel	mg/L			0.001	<0.001				
Total Selenium	mg/L	0.05	MAC	<0.0001	<0.0001				
Total Silicon	mg/L			7.75	7.14				
Total Silver	mg/L			<0.00002	<0.00002				
Total Strontium	mg/L			0.465	0.546				
Total Thallium	mg/L			<0.00005	<0.00001				
Total Tin	mg/L			<0.005	<0.005				
Total Titanium	mg/L			0.007	<0.005				
Total Uranium	mg/L	0.02	MAC	<0.0001	<0.0001				
Total Vanadium	mg/L			<0.005	<0.005				
Total Zinc	mg/L	5	AO	<0.005	<0.005				
Total Zirconium	mg/L			<0.0005	<0.0001				
Total Calcium	mg/L			23.5	27.2				
Total Magnesium	mg/L			5.82	7.2				
Total Potassium	mg/L			2.23	2.61				
Total Sodium	mg/L	200	AO	33	42.6				
Total Sulphur	mg/L			4.1	7.7				

REGIONAL DISTRICT OF NANAIMO

Madrona Well # 4 Water Analysis
Northwest Bay Logging Road

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

water SMART zero waste

Red font indicates non-compliance with Canadian Drinking Water Guidelines

	Units	CDWG		October 30 2013	November 5 2014	October 27 2015	October 26 2016	September 20 2017	
Miscellaneous Inorganics									
Fluoride	mg/L	1.5	MAC	0.14	0.19	0.13	0.13	0.12	
Alkalinity (total as $CaCO_3$)	mg/L			130	126	134	132	132	
Anions									
Dissolved Sulphate	mg/L	500	AO	6.2	6.1	6.29	6.38	6.4	
Dissolved Chloride	mg/L	250	AO	20.4	20.9	20	20	19	
Nitrite	mg/L	1	MAC	<0.05	<0.05	<0.0050	<0.0050	<0.0050	
Miscellaneous									
Apparent Colour	Colour Unit			15	9	10	15	10	
Nutrients									
Total Ammonia	mg/L			0.23	0.24	0.26	0.34	0.28	
Physical Properties									
Conductivity	µS/cm			333	325	335	334	322	
pH	pH	6.5:8.5	AO	8.6	8.4	8.32	8.35	8.33	
TDS	mg/L	500	AO	190	196	192	186	170	
Turbidity	NTU			0.9	<0.5	0.11	5.68	0.76	
Microbiological Parameters									
E.coli	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Total Coliforms	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Calculated Parameters									
Total Hardness ($CaCO_3$)	mg/L			41	40	38.5	42.7	43.4	
Nitrate	mg/L	10	MAC	<0.05	<0.05	<0.020	<0.020	<0.020	
Elements									
Total Mercury	mg/L	0.001	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
Total Metals									
Total Aluminum	mg/L	0.1	OG	0.135	0.006	<0.003	0.203	0.0107	
Total Antimony	mg/L	0.006	MAC	<0.0002	<0.0001	<0.0005	<0.0005	<0.0005	
Total Arsenic	mg/L	0.01	MAC	0.009	0.00963	0.00886	0.00962	0.00912	
Total Barium	mg/L	1	MAC	0.012	0.012	0.0112	0.0135	0.0111	
Total Beryllium	mg/L			<0.00004	<0.00005	<0.0001	<0.0001	<0.0001	
Total Bismuth	mg/L			<0.0010	<0.0001	<0.001	<0.001	<0.001	
Total Boron	mg/L	5	MAC	0.16	0.16	0.16	0.165	0.147	
Total Cadmium	mg/L	0.005	MAC	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
Total Chromium	mg/L	0.05	MAC	<0.0004	<0.0005	<0.001	<0.001	<0.001	
Total Cobalt	mg/L			0.0001	<0.0001	<0.0005	<0.0005	<0.0002	
Total Copper	mg/L	1	AO	0.002	0.0004	0.00157	0.00104	0.00041	
Total Iron	mg/L	0.3	AO	0.16	0.009	0.0128	0.219	0.0179	
Total Lead	mg/L	0.01	MAC	0.0002	<0.0001	<0.0002	<0.0002	<0.0002	
Total Manganese	mg/L	0.05	AO	0.0215	0.0241	0.0191	0.0257	0.0232	
Total Molybdenum	mg/L			0.0033	0.00362	0.0031	0.0038	0.003	
Total Nickel	mg/L			<0.001	0.0004	<0.001	<0.001	<0.001	
Total Selenium	mg/L	0.05	MAC	<0.0006	<0.0001	<0.0001	<0.0001	<0.0001	
Total Silicon	mg/L			7.23	7.14	7.8	7.12	8.01	
Total Silver	mg/L			<0.00001	<0.00005	<0.00002	<0.00002	<0.00002	
Total Strontium	mg/L			0.079	0.0781	0.0681	0.0751	0.0764	
Total Thallium	mg/L			<0.00001	<0.00001	<0.00005	<0.00005	<0.00001	
Total Tin	mg/L			0.0001	<0.0001	<0.005	<0.005	<0.005	
Total Titanium	mg/L			0.0105	<0.0005	<0.005	0.0138	<0.005	
Total Uranium	mg/L	0.02	MAC	<0.0004	0.00006	<0.0001	<0.0001	<0.0001	
Total Vanadium	mg/L			0.0006	0.0004	<0.005	<0.005	<0.005	
Total Zinc	mg/L	5	AO	0.005	0.0076	<0.005	<0.005	<0.005	
Total Zirconium	mg/L					<0.0005	<0.0005	<0.0001	
Total Calcium	mg/L			10.7	11.1	10.4	11.4	11.8	
Total Magnesium	mg/L			3.34	3.08	3.06	3.46	3.41	
Total Potassium	mg/L			1.89	1.8	1.71	1.57	1.61	
Total Sodium	mg/L	200	AO	67.2	64.2	61.7	59.1	53.3	
Total Sulphur	mg/L					3.2	<3.0	<3.0	

REGIONAL DISTRICT OF NANAIMO

Madrona Well # 8 Water Analysis
1565 Stonelake Drive

CDWG=Canadian Drinking Water Guidelines
OG= Operational Guidance Value

MAC=Maximum Acceptable Concentration
AO= Asthetic Objective.

water SMART zero waste

Red font indicates non-compliance with Canadian Drinking Water Guidelines

	Units	CDWG		October 30 2013	November 5 2014	October 27 2015	October 26 2016	September 20 2017	
Miscellaneous Inorganics									
Fluoride	mg/L	1.5	MAC	0.06	0.09	0.051	0.056	0.052	
Alkalinity (total as $CaCO_3$)	mg/L			98	194	187	189	194	
Anions									
Dissolved Sulphate	mg/L	500	AO	10	11.8	10.8	11.6	12.9	
Dissolved Chloride	mg/L	250	AO	10.1	11	12	13	15	
Nitrite	mg/L	1	MAC	<0.05	<0.05	<0.0050	<0.0050	<0.0050	
Miscellaneous									
Apparent Colour	Colour Unit			<5	<5	5	<5.0	5	
Nutrients									
Total Ammonia	mg/L			<0.02	<0.02	0.013	0.084	<0.020	
Physical Properties									
Conductivity	µS/cm			396	422	444	475	486	
pH	pH	6.5:8.5	AO	7.7	7.9	8.19	8.16	8.38	
TDS	mg/L	500	AO	222	252	246	260	270	
Turbidity	NTU			<0.5	<0.5	<0.10	0.12	<0.10	
Microbiological Parameters									
E.coli	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Total Coliforms	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Calculated Parameters									
Total Hardness ($CaCO_3$)	mg/L			200	210	217	232	229	
Nitrate	mg/L	10	MAC	2.78	3.37	4.56	5.98	7.45	
Elements									
Total Mercury	mg/L	0.001	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
Total Metals									
Total Aluminum	mg/L	0.1	OG	<0.005	<0.005	<0.003	0.003	<0.003	
Total Antimony	mg/L	0.006	MAC	<0.0002	<0.0001	<0.0005	<0.0005	<0.0005	
Total Arsenic	mg/L	0.01	MAC	0.0012	0.00121	0.00122	0.00124	0.00115	
Total Barium	mg/L	1	MAC	0.01	0.0114	0.0109	0.0114	0.0124	
Total Beryllium	mg/L			<0.00004	<0.00005	<0.0001	<0.0001	<0.0001	
Total Bismuth	mg/L			<0.0010	<0.0001	<0.001	<0.001	<0.001	
Total Boron	mg/L	5	MAC	0.019	0.017	<0.05	<0.050	<0.050	
Total Cadmium	mg/L	0.005	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
Total Chromium	mg/L	0.05	MAC	0.0006	0.0007	<0.001	<0.001	<0.001	
Total Cobalt	mg/L			0.00005	<0.0001	<0.0005	<0.0005	<0.0002	
Total Copper	mg/L	1	AO	0.002	0.0036	0.00464	0.00347	0.00449	
Total Iron	mg/L	0.3	AO	<0.010	0.014	0.006	0.006	<0.005	
Total Lead	mg/L	0.01	MAC	0.0002	0.0003	0.00025	0.00041	0.00034	
Total Manganese	mg/L	0.05	AO	<0.0050	<0.0010	0.0019	0.0013	<0.001	
Total Molybdenum	mg/L			0.0002	0.00023	<0.001	<0.001	<0.001	
Total Nickel	mg/L			<0.001	<0.0002	<0.001	<0.001	<0.001	
Total Selenium	mg/L	0.05	MAC	<0.0006	0.0004	0.00034	0.00043	0.00042	
Total Silicon	mg/L			9.96	9.84	10.6	10.1	11.6	
Total Silver	mg/L			<0.00001	<0.00005	<0.00002	<0.00002	<0.00002	
Total Strontium	mg/L			0.114	0.119	0.121	0.12	0.132	
Total Thallium	mg/L			<0.00001	<0.00001	<0.00005	<0.00005	<0.00001	
Total Tin	mg/L			0.0001	0.0002	<0.005	<0.005	<0.005	
Total Titanium	mg/L			<0.0010	<0.0005	<0.005	<0.005	<0.005	
Total Uranium	mg/L	0.02	MAC	<0.0004	0.00013	0.00014	0.00015	0.00016	
Total Vanadium	mg/L			0.0071	0.0078	0.0076	0.0069	0.0071	
Total Zinc	mg/L	5	AO	0.005	0.0066	<0.005	<0.005	<0.005	
Total Zirconium	mg/L					<0.0005	<0.0005	<0.0001	
Total Calcium	mg/L			53.1	57.4	57.6	63.7	60.9	
Total Magnesium	mg/L			15.4	15.7	17.8	17.6	18.8	
Total Potassium	mg/L			0.79	0.8	0.853	0.768	0.881	
Total Sodium	mg/L	200	AO	11.1	9.1	9.41	9.17	9.55	
Total Sulphur	mg/L					5.2	3.9	4.3	

REGIONAL DISTRICT OF NANAIMO

Nanoose Well # 2 Water Analysis
1987 Claudet Road
(Well not in use since October 2012)

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

water SMART zero waste

Red font indicates non-compliance with Canadian Drinking Water Guidelines

	Units	CDWG		October 30 2013	November 5 2014	October 27 2015	October 26 2016	October 18 2017	
Miscellaneous Inorganics									
Fluoride	mg/L	1.5	MAC	0.14	0.14	0.13	0.14	0.14	
Alkalinity (total as $CaCO_3$)	mg/L			150	156	138	140	144	
Anions									
Dissolved Sulphate	mg/L	500	AO	15.7	0.7	10.8	9.1	7.8	
Dissolved Chloride	mg/L	250	AO	10.7	7.1	10	11	9.7	
Nitrite	mg/L	1	MAC	<0.05	<0.05	<0.0050	<0.0050	<0.0050	
Miscellaneous									
Apparent Colour	Colour Unit			16	47	20	15	15	
Nutrients									
Total Ammonia	mg/L			0.93	0.88	0.95	1	0.94	
Physical Properties									
Conductivity	µS/cm			337	315	322	325	319	
pH	pH	6.5:8.5	AO	8.1	7.9	8.18	8.2	8.28	
TDS	mg/L	500	AO	192	192	200	176	162	
Turbidity	NTU			1.2	3.8	0.35	0.77	0.55	
Microbiological Parameters									
E.coli	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Total Coliforms	MPN/100mL	<1	MAC	<1.0	32.4	<1.0	<1.0	<1.0	
Calculated Parameters									
Total Hardness ($CaCO_3$)	mg/L			140	140	128	133	129	
Nitrate	mg/L	10	MAC	<0.05	<0.05	<0.020	<0.020	<0.020	
Elements									
Total Mercury	mg/L	0.001	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
Total Metals									
Total Aluminum	mg/L	0.1	OG	<0.005	0.006	0.0034	<0.003	<0.003	
Total Antimony	mg/L	0.006	MAC	<0.0002	<0.0001	<0.0005	<0.0005	<0.0005	
Total Arsenic	mg/L	0.01	MAC	0.0005	0.00097	0.00049	0.00043	0.00037	
Total Barium	mg/L	1	MAC	0.019	0.0163	0.0197	0.0177	0.019	
Total Beryllium	mg/L			<0.00004	<0.00005	<0.0001	<0.0001	<0.0001	
Total Bismuth	mg/L			<0.0010	<0.0001	<0.001	<0.001	<0.001	
Total Boron	mg/L	5	MAC	0.057	0.051	0.056	0.058	0.053	
Total Cadmium	mg/L	0.005	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
Total Chromium	mg/L	0.05	MAC	<0.0004	<0.0005	<0.001	<0.001	<0.001	
Total Cobalt	mg/L			0.00004	<0.0001	<0.0005	<0.0005	<0.0002	
Total Copper	mg/L	1	AO	0.002	0.0015	0.0003	0.00028	<0.0002	
Total Iron	mg/L	0.3	AO	0.24	1.12	0.185	0.198	0.194	
Total Lead	mg/L	0.01	MAC	0.0016	<0.0001	<0.0002	<0.0002	<0.0002	
Total Manganese	mg/L	0.05	AO	0.13	0.275	0.145	0.109	0.114	
Total Molybdenum	mg/L			0.0004	0.00023	<0.001	<0.001	<0.001	
Total Nickel	mg/L			<0.001	0.0019	<0.001	<0.001	<0.001	
Total Selenium	mg/L	0.05	MAC	<0.0006	<0.0001	<0.0001	<0.0001	<0.0001	
Total Silicon	mg/L			10.3	13.1	11.4	10.3	11	
Total Silver	mg/L			<0.00001	<0.00005	<0.00002	<0.00002	<0.00002	
Total Strontium	mg/L			0.158	0.116	0.142	0.137	0.139	
Total Thallium	mg/L			<0.00001	<0.00001	<0.00005	<0.00005	<0.00001	
Total Tin	mg/L			0.0004	<0.0001	<0.005	<0.005	<0.005	
Total Titanium	mg/L			<0.0010	<0.0005	<0.005	<0.005	<0.005	
Total Uranium	mg/L	0.02	MAC	<0.0004	<0.00001	0.00015	<0.0001	<0.0001	
Total Vanadium	mg/L			0.0003	0.0006	<0.005	<0.005	<0.005	
Total Zinc	mg/L	5	AO	0.107	0.0086	<0.005	<0.005	<0.005	
Total Zirconium	mg/L					<0.0005	<0.0005	<0.0001	
Total Calcium	mg/L			39.1	34.6	37.2	37.7	36.2	
Total Magnesium	mg/L			10.5	12.1	9.42	9.45	9.49	
Total Potassium	mg/L			2.74	2.3	2.47	2.32	2.57	
Total Sodium	mg/L	200	AO	17.2	19.7	13.7	14.5	14.3	
Total Sulphur	mg/L					5.5	3.5	<3.0	

REGIONAL DISTRICT OF NANAIMO

Nanoose Well # 3 Water Analysis
1900 Delanice Way
(Well not in use since October 2012)

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

water SMART zero waste

Red font indicates non-compliance with Canadian Drinking Water Guidelines

	Units	CDWG		October 30 2013	November 5 2014	October 27 2015	October 26 2016	October 18 2017	
Miscellaneous Inorganics									
Fluoride	mg/L	1.5	MAC	0.13	0.19	0.12	0.13	0.13	
Alkalinity (total as $CaCO_3$)	mg/L			150	140	162	160	166	
Anions									
Dissolved Sulphate	mg/L	500	AO	2.3	14	<0.50	<0.50	<1.0	
Dissolved Chloride	mg/L	250	AO	7.5	10.4	7.2	7.7	7.8	
Nitrite	mg/L	1	MAC	<0.05	<0.05	<0.0050	<0.0050	<0.0050	
Miscellaneous									
Apparent Colour	Colour Unit			51	9	20	30	30	
Nutrients									
Total Ammonia	mg/L			0.92	0.94	1	1.1	0.95	
Physical Properties									
Conductivity	µS/cm			318	322	325	330	332	
pH	pH	6.5:8.5	AO	7.8	8.1	8.16	8.14	8.26	
TDS	mg/L	500	AO	178	188	196	188	174	
Turbidity	NTU			1	0.6	2.8	3.75	3.15	
Microbiological Parameters									
E.coli	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Total Coliforms	MPN/100mL	<1	MAC	<1.0	<1.0	12.4	4.2	4.2	
Calculated Parameters									
Total Hardness ($CaCO_3$)	mg/L			130	140	128	133	130	
Nitrate	mg/L	10	MAC	<0.05	<0.05	<0.020	<0.020	<0.020	
Elements									
Total Mercury	mg/L	0.001	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
Total Metals									
Total Aluminum	mg/L	0.1	OG	0.005	<0.005	<0.003	<0.003	<0.003	
Total Antimony	mg/L	0.006	MAC	<0.0002	<0.0001	<0.0005	<0.0005	<0.0005	
Total Arsenic	mg/L	0.01	MAC	0.0012	0.0005	0.00122	0.00113	0.00116	
Total Barium	mg/L	1	MAC	0.016	0.0191	0.0151	0.0149	0.0164	
Total Beryllium	mg/L			<0.00004	<0.00005	<0.0001	<0.0001	<0.0001	
Total Bismuth	mg/L			<0.0010	<0.0001	<0.001	<0.001	<0.001	
Total Boron	mg/L	5	MAC	0.048	0.057	0.052	0.05	0.05	
Total Cadmium	mg/L	0.005	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
Total Chromium	mg/L	0.05	MAC	<0.0004	<0.0005	<0.001	<0.001	<0.001	
Total Cobalt	mg/L			0.00003	<0.0001	<0.0005	<0.0005	<0.0002	
Total Copper	mg/L	1	AO	0.014	0.0004	0.00202	0.00115	0.002	
Total Iron	mg/L	0.3	AO	1.13	0.198	1.07	1.13	1..14	
Total Lead	mg/L	0.01	MAC	0.0007	<0.0001	<0.0002	0.00035	0.00021	
Total Manganese	mg/L	0.05	AO	0.269	0.125	0.263	0.249	0.261	
Total Molybdenum	mg/L			0.0002	0.00053	<0.001	<0.001	<0.001	
Total Nickel	mg/L			<0.001	0.0006	<0.001	<0.001	<0.001	
Total Selenium	mg/L	0.05	MAC	<0.0006	<0.0001	<0.0001	<0.0001	<0.0001	
Total Silicon	mg/L			12.2	10.6	13	12.6	13.5	
Total Silver	mg/L			<0.00001	<0.00005	<0.00002	<0.00002	<0.00002	
Total Strontium	mg/L			0.111	0.147	0.106	0.107	0.112	
Total Thallium	mg/L			<0.00001	<0.00001	<0.00005	<0.00005	<0.00001	
Total Tin	mg/L			0.0003	<0.0001	<0.005	<0.005	<0.005	
Total Titanium	mg/L			<0.0010	<0.0005	<0.005	<0.005	<0.005	
Total Uranium	mg/L	0.02	MAC	<0.0004	0.00001	<0.0001	<0.0001	<0.0001	
Total Vanadium	mg/L			0.0005	0.0004	<0.005	<0.005	<0.005	
Total Zinc	mg/L	5	AO	0.007	0.009	0.0445	0.0182	0.0107	
Total Zirconium	mg/L					<0.0005	<0.0005	<0.0001	
Total Calcium	mg/L			32	39.1	31.7	33.2	32.5	
Total Magnesium	mg/L			10.5	12.1	11.7	12.1	12	
Total Potassium	mg/L			2.22	2.7	2.12	1.96	2.13	
Total Sodium	mg/L	200	AO	20.8	14.9	18.6	18.6	18.4	
Total Sulphur	mg/L					<3.0	<3.0	<3.0	

REGIONAL DISTRICT OF NANAIMO

Nanoose Well # 4 Water Analysis
2311 Northwest Bay Road
(Well no in use since October 2012)

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

water SMART zero waste

Red font indicates non-compliance with Canadian Drinking Water Guidelines

	Units	CDWG		October 30 2013	November 5 2014	October 27 2015	October 26 2016	October 18 2017	
Miscellaneous Inorganics									
Fluoride	mg/L	1.5	MAC	0.19	0.22	0.17	0.18	0.17	
Alkalinity (total as $CaCO_3$)	mg/L			150	158	161	158	164	
Anions									
Dissolved Sulphate	mg/L	500	AO	1.1	<0.5	<0.50	<0.50	<1.0	
Dissolved Chloride	mg/L	250	AO	3.2	3.2	3.5	3.7	3.8	
Nitrite	mg/L	1	MAC	<0.05	<0.05	<0.0050	<0.0050	<0.0050	
Miscellaneous									
Apparent Colour	Colour Unit			24	28	15	15	30	
Nutrients									
Total Ammonia	mg/L			1.03	1.05	1.2	1.2	1.1	
Physical Properties									
Conductivity	µS/cm			317	310	311	313	314	
pH	pH	6.5:8.5	AO	7.8	7.9	8.2	8.1	8.26	
TDS	mg/L	500	AO	184	196	188	190	166	
Turbidity	NTU			1.1	1.9	1.3	1.68	1	
Microbiological Parameters									
E.coli	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Total Coliforms	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Calculated Parameters									
Total Hardness ($CaCO_3$)	mg/L			120	120	116	117	113	
Nitrate	mg/L	10	MAC	<0.05	<0.05	<0.020	<0.020	<0.020	
Elements									
Total Mercury	mg/L	0.001	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
Total Metals									
Total Aluminum	mg/L	0.1	OG	0.005	<0.005	<0.003	<0.003	<0.003	
Total Antimony	mg/L	0.006	MAC	<0.0002	<0.0001	<0.0005	<0.0005	<0.0005	
Total Arsenic	mg/L	0.01	MAC	0.0021	0.00206	0.00216	0.00233	0.00247	
Total Barium	mg/L	1	MAC	0.008	0.00847	0.0082	0.0082	0.0088	
Total Beryllium	mg/L			<0.00004	<0.00005	<0.0001	<0.0001	<0.0001	
Total Bismuth	mg/L			<0.0010	<0.0001	<0.001	<0.001	<0.001	
Total Boron	mg/L	5	MAC	0.066	0.062	0.066	0.062	0.062	
Total Cadmium	mg/L	0.005	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
Total Chromium	mg/L	0.05	MAC	<0.0004	<0.0005	<0.001	<0.001	<0.001	
Total Cobalt	mg/L			0.00004	<0.0001	<0.0005	<0.0005	<0.0002	
Total Copper	mg/L	1	AO	0.001	0.0029	<0.0002	0.00175	0.00086	
Total Iron	mg/L	0.3	AO	0.591	0.567	0.601	0.599	0.619	
Total Lead	mg/L	0.01	MAC	0.0004	0.0003	<0.0002	0.00022	0.00025	
Total Manganese	mg/L	0.05	AO	0.26	0.235	0.243	0.231	0.242	
Total Molybdenum	mg/L			0.0006	0.00062	<0.001	<0.001	<0.001	
Total Nickel	mg/L			<0.001	0.0003	<0.001	<0.001	<0.001	
Total Selenium	mg/L	0.05	MAC	<0.0006	<0.0001	<0.0001	<0.0001	<0.0001	
Total Silicon	mg/L			15.4	15.3	16.5	15.2	15.4	
Total Silver	mg/L			<0.00001	<0.00005	<0.00002	<0.00002	<0.00002	
Total Strontium	mg/L			0.113	0.0991	0.0995	0.100	0.104	
Total Thallium	mg/L			<0.00001	<0.00001	<0.00005	<0.00005	<0.00001	
Total Tin	mg/L			<0.0001	0.0005	<0.005	<0.005	<0.005	
Total Titanium	mg/L			<0.0010	<0.0005	<0.005	<0.005	<0.005	
Total Uranium	mg/L	0.02	MAC	<0.0004	<0.00001	<0.0001	<0.0001	<0.0001	
Total Vanadium	mg/L			0.0005	0.0006	<0.005	<0.005	<0.005	
Total Zinc	mg/L	5	AO	0.009	0.0083	<0.005	0.0084	<0.005	
Total Zirconium	mg/L					<0.0005	<0.0005	<0.0001	
Total Calcium	mg/L			29.3	29.2	28.2	28.5	27	
Total Magnesium	mg/L			11.8	10.9	11	11.1	11.2	
Total Potassium	mg/L			2.34	2.4	2.24	2.05	2.22	
Total Sodium	mg/L	200	AO	24.3	22	21	20.6	20.2	
Total Sulphur	mg/L					<3.0	<3.0	<3.0	

REGIONAL DISTRICT OF NANAIMO

Nanoose Well # 6 Water Analysis
2500 Nuttal Drive
(Well is not in use)

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

water SMART zero waste

Red font indicates non-compliance with Canadian Drinking Water Guidelines

	Units	CDWG		October 30 2013	November 5 2014	October 27 2015	October 27 2016	October 18 2017	
Miscellaneous Inorganics									
Fluoride	mg/L	1.5	MAC	0.12	0.1	0.1	0.063	0.11	
Alkalinity (total as $CaCO_3$)	mg/L			190	168	185	172	181	
Anions									
Dissolved Sulphate	mg/L	500	AO	42.5	52.8	35.2	45.5	30	
Dissolved Chloride	mg/L	250	AO	8.7	9.5	9.2	8.5	8.1	
Nitrite	mg/L	1	MAC	<0.05	<0.05	<0.0050	<0.0050	<0.0050	
Miscellaneous									
Apparent Colour	Colour Unit			30	17	15	10	30	
Nutrients									
Total Ammonia	mg/L			0.02	0.02	0.04	0.069	0.02	
Physical Properties									
Conductivity	µS/cm			466	456	453	445	422	
pH	pH	6.5:8.5	AO	7.6	7.9	8.1	8.21	8.22	
TDS	mg/L	500	AO	280	280	278	258	234	
Turbidity	NTU			0.5	2.1	2.39	2.54	5.94	
Microbiological Parameters									
E.coli	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Total Coliforms	MPN/100mL	<1	MAC	<1.0	27.1	<1.0	<1.0	<1.0	
Calculated Parameters									
Total Hardness ($CaCO_3$)	mg/L			230	230	215	197	201	
Nitrate	mg/L	10	MAC	<0.05	0.1	<0.020	<0.020	<0.020	
Elements									
Total Mercury	mg/L	0.001	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
Total Metals									
Total Aluminum	mg/L	0.1	OG	0.01	0.03	0.0034	0.0429	0.0061	
Total Antimony	mg/L	0.006	MAC	<0.0002	0.0003	<0.0005	<0.0005	<0.0005	
Total Arsenic	mg/L	0.01	MAC	0.0006	0.0019	0.00124	0.00079	0.00106	
Total Barium	mg/L	1	MAC	0.074	0.0664	0.0722	0.0613	0.0637	
Total Beryllium	mg/L			<0.00004	<0.00005	<0.0001	<0.0001	<0.0001	
Total Bismuth	mg/L			<0.0010	<0.0001	<0.001	<0.001	<0.001	
Total Boron	mg/L	5	MAC	0.058	0.031	0.06	<0.050	0.053	
Total Cadmium	mg/L	0.005	MAC	0.00002	0.00001	0.000019	<0.00001	0.000012	
Total Chromium	mg/L	0.05	MAC	<0.0004	<0.0005	<0.001	<0.001	<0.001	
Total Cobalt	mg/L			0.00041	0.0004	<0.0005	<0.0005	0.00034	
Total Copper	mg/L	1	AO	0.002	0.0037	0.00852	0.00237	0.00178	
Total Iron	mg/L	0.3	AO	0.327	0.348	0.413	0.284	0.849	
Total Lead	mg/L	0.01	MAC	0.0004	0.0007	0.00128	0.00049	0.00083	
Total Manganese	mg/L	0.05	AO	0.106	0.116	0.0931	0.094	0.0855	
Total Molybdenum	mg/L			0.0007	0.00109	<0.001	<0.001	<0.001	
Total Nickel	mg/L			0.002	0.0009	0.0012	<0.001	<0.001	
Total Selenium	mg/L	0.05	MAC	<0.0006	<0.0001	<0.0001	<0.0001	<0.0001	
Total Silicon	mg/L			5.27	5.3	5.62	5.3	5.8	
Total Silver	mg/L			<0.00001	<0.00005	<0.00002	<0.00002	<0.00002	
Total Strontium	mg/L			0.226	0.203	0.206	0.195	0.182	
Total Thallium	mg/L			<0.00001	<0.00001	<0.00005	<0.00005	<0.00001	
Total Tin	mg/L			0.0001	<0.0001	<0.005	<0.005	<0.005	
Total Titanium	mg/L			0.0015	0.0015	<0.005	<0.005	<0.005	
Total Uranium	mg/L	0.02	MAC	<0.0004	0.00012	0.00015	0.00011	0.0001	
Total Vanadium	mg/L			0.0001	0.0002	<0.005	<0.005	<0.005	
Total Zinc	mg/L	5	AO	0.054	0.0625	0.121	0.037	0.2	
Total Zirconium	mg/L					<0.0005	<0.0005	<0.0001	
Total Calcium	mg/L			84.3	87	80.1	72.9	74.7	
Total Magnesium	mg/L			4.2	3.88	3.75	3.67	3.56	
Total Potassium	mg/L			0.92	0.9	0.859	0.791	0.782	
Total Sodium	mg/L	200	AO	14	9.1	10.9	7.73	10.2	
Total Sulphur	mg/L					12.1	15.2	11.2	

REGIONAL DISTRICT OF NANAIMO

Nanoose Well # 7 Water Analysis
2030 Claudet Road
*** Lab results from Maxxam Analytics, Sample collected by City of Parksville**

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

water SMART zero waste

Red font indicates non-compliance with Canadian Drinking Water Guidelines

	Units	CDWG		October 19 2010	October 26 2011	October 31 2012	October 21 2013	November 7 2013*	November 5 2014
Miscellaneous Inorganics									
Fluoride	mg/L	1.5	MAC	<1.0	0.1	0.17	0.15	0.14	0.18
Alkalinity (total as $CaCO_3$)	mg/L			160	160	160	160	149	158
Anions									
Dissolved Sulphate	mg/L	500	AO	4.9	5.3	4.9	4.7	13	3.6
Dissolved Chloride	mg/L	250	AO	4.9	6.2	5.4	5.6	8.6	4.6
Nitrite	mg/L	1	MAC	<0.1	<0.01	<0.05	<0.05	<0.0050	<0.05
Miscellaneous									
Apparent Colour	Colour Unit			10	11	14	16		17
Nutrients									
Total Ammonia	mg/L			1	1.48	1.39	1.21	1.21	1.1
Physical Properties									
Conductivity	µS/cm			331	324	328	325	340	322
pH	pH	6.5:8.5	AO	7.9	7.9	7.8	8	8.17	7.9
TDS	mg/L	500	AO	168	202	220	170	214	188
Turbidity	NTU			0.6	0.8	0.9	1		1.2
Microbiological Parameters									
E.coli	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Coliforms	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Calculated Parameters									
Total Hardness ($CaCO_3$)	mg/L			130	63	130	130	137	140
Nitrate	mg/L	10	MAC	<0.1	<0.01	<0.05	<0.05	<0.020	<0.05
Elements									
Total Mercury	mg/L	0.001	MAC	<0.00001	<0.00001	<0.0001	<0.00001	<0.00005	<0.00001
Total Metals									
Total Aluminum	mg/L	0.1	OG	0.008	<0.005	0.003	<0.005	<0.003	<0.005
Total Antimony	mg/L	0.006	MAC	<0.0002	<0.0002	<0.0001	<0.0002	<0.0005	<0.0001
Total Arsenic	mg/L	0.01	MAC	0.0008	0.0005	0.00041	0.0004	0.00025	0.00037
Total Barium	mg/L	1	MAC	0.014	0.013	0.0147	0.014	0.013	0.0143
Total Beryllium	mg/L				<0.00004	<0.00005	<0.00004	<0.0001	<0.00005
Total Bismuth	mg/L				<0.001	0.0001	<0.0010	<0.001	<0.0001
Total Boron	mg/L	5	MAC	0.056	0.053	0.062	0.052	<0.05	0.051
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	0.0008	<0.0004	<0.0005	<0.0004	<0.001	<0.0005
Total Cobalt	mg/L				0.00002	<0.0001	<0.00002	<0.0005	<0.0001
Total Copper	mg/L	1	AO	<0.001	0.001	0.0011	<0.001	<0.0002	0.0004
Total Iron	mg/L	0.3	AO	0.275	0.299	0.355	0.374	0.334	0.376
Total Lead	mg/L	0.01	MAC	0.0002	0.0003	<0.0001	0.0002	<0.0002	<0.0001
Total Manganese	mg/L	0.05	AO	0.168	0.162	0.175	0.179	0.164	0.181
Total Molybdenum	mg/L				0.0003	0.00037	0.0004	<0.001	0.0004
Total Nickel	mg/L			<0.001	<0.001	<0.0002	<0.001	<0.001	<0.0002
Total Selenium	mg/L	0.05	MAC	<0.0006	<0.0006	<0.0001	<0.0006	<0.0001	<0.0001
Total Silicon	mg/L				11	12.4	11.2	11.8	11.9
Total Silver	mg/L			<0.00001	<0.00001	<0.00001	<0.00001	<0.00002	<0.00005
Total Strontium	mg/L				0.117	0.13	0.129	0.126	0.131
Total Thallium	mg/L				<0.00001	<0.00001	<0.00001	<0.00005	<0.00001
Total Tin	mg/L				<0.0001	<0.0001	<0.0001	<0.005	<0.0001
Total Titanium	mg/L				<0.001	<0.0005	<0.0010	<0.005	<0.0005
Total Uranium	mg/L	0.02	MAC	<0.0004	<0.0004	<0.00001	<0.0004	<0.0001	<0.00001
Total Vanadium	mg/L				0.0006	0.0006	0.0005	<0.005	0.0006
Total Zinc	mg/L	5	AO	0.02	0.005	0.0028	0.004	<0.005	0.0074
Total Zirconium	mg/L								
Total Calcium	mg/L			32.7	33.5	34.2	32.9	36	36.2
Total Magnesium	mg/L			11	11.4	11.6	12.2	11.5	12
Total Potassium	mg/L			2.8	2.8	2.9	3.03	2.79	2.9
Total Sodium	mg/L	200	AO	18.7	17.6	18	19.4	14.8	17.5
Total Sulphur	mg/L								

REGIONAL DISTRICT OF NANAIMO

NB Peninsula WTP Blended Well Water Analysis
2480 Nanoose Road
(raw well water, before treatment process)

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

water SMART zero waste

Red font indicates non-compliance with Canadian Drinking Water Guidelines

	Units	CDWG		October 31 2012	November 5 2014	October 26 2015	October 26 2016	September 21 2017	
Miscellaneous Inorganics									
Fluoride	mg/L	1.5	MAC	0.21	0.18	0.16	0.16	0.16	
Alkalinity (total as $CaCO_3$)	mg/L			150	140	142	142	148	
Anions									
Dissolved Sulphate	mg/L	500	AO	5.7	7.3	6.39	8.13	9.4	
Dissolved Chloride	mg/L	250	AO	12.3	17.5	15	15	16	
Nitrite	mg/L	1	MAC	<0.05	<0.05	<0.0050	<0.0050	<0.0050	
Miscellaneous									
Apparent Colour	Colour Unit			23	23	20	20	20	
Nutrients									
Total Ammonia	mg/L			1.18	1.32	1.4	1.5	1.3	
Physical Properties									
Conductivity	µS/cm			339	343	336	344	342	
pH	pH	6.5:8.5	AO	7.8	8	8.28	8.14	8	
TDS	mg/L	500	AO	216	206	194	192	190	
Turbidity	NTU			0.8	1.1	0.65	0.96	1.35	
Microbiological Parameters									
E.coli	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Total Coliforms	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Calculated Parameters									
Total Hardness ($CaCO_3$)	mg/L			120	120	114	118	118	
Nitrate	mg/L	10	MAC	<0.05	<0.05	<0.020	<0.020	<0.020	
Elements									
Total Mercury	mg/L	0.001	MAC	<0.0001	<0.00001	<0.00001	<0.00001	<0.00001	
Total Metals									
Total Aluminum	mg/L	0.1	OG	0.078	<0.005	<0.003	<0.003	<0.003	
Total Antimony	mg/L	0.006	MAC	<0.0001	<0.0001	<0.0005	<0.0005	<0.0005	
Total Arsenic	mg/L	0.01	MAC	0.00133	0.00144	0.00134	0.00129	0.00137	
Total Barium	mg/L	1	MAC	0.00773	0.00765	0.0076	0.0076	0.0082	
Total Beryllium	mg/L			<0.00005	<0.00005	<0.0001	<0.0001	<0.0001	
Total Bismuth	mg/L			0.0001	<0.0001	<0.001	<0.001	<0.001	
Total Boron	mg/L	5	MAC	0.078	0.071	0.072	0.065	0.074	
Total Cadmium	mg/L	0.005	MAC	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
Total Chromium	mg/L	0.05	MAC	<0.0005	<0.0005	<0.001	<0.001	<0.001	
Total Cobalt	mg/L			<0.0001	<0.0001	<0.0005	<0.0005	<0.0002	
Total Copper	mg/L	1	AO	0.0003	0.0008	0.00041	0.00029	0.001	
Total Iron	mg/L	0.3	AO	0.529	0.561	0.555	0.588	0.678	
Total Lead	mg/L	0.01	MAC	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	
Total Manganese	mg/L	0.05	AO	0.294	0.247	0.232	0.23	0.238	
Total Molybdenum	mg/L			0.0003	0.00023	<0.001	<0.001	<0.001	
Total Nickel	mg/L			<0.0002	0.0027	<0.001	<0.001	0.0011	
Total Selenium	mg/L	0.05	MAC	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Total Silicon	mg/L			16.1	14.9	17.1	13.7	15.6	
Total Silver	mg/L			<0.00001	<0.00005	<0.00002	<0.00002	<0.00002	
Total Strontium	mg/L			0.12	0.123	0.112	0.113	0.122	
Total Thallium	mg/L			<0.00001	<0.00001	<0.00005	<0.00005	<0.00001	
Total Tin	mg/L			<0.0001	0.0015	<0.005	<0.005	<0.005	
Total Titanium	mg/L			<0.0005	0.0005	<0.005	<0.005	<0.005	
Total Uranium	mg/L	0.02	MAC	<0.00001	<0.00001	<0.0001	<0.0001	<0.0001	
Total Vanadium	mg/L			0.0006	0.0008	<0.005	<0.005	<0.005	
Total Zinc	mg/L	5	AO	0.0022	0.006	<0.005	<0.005	<0.005	
Total Zirconium	mg/L					<0.0005	<0.0005	<0.0001	
Total Calcium	mg/L			30	29.6	28.9	29.7	28.2	
Total Magnesium	mg/L			10.7	10.5	10.1	10.7	11.4	
Total Potassium	mg/L			2.7	2.8	2.5	2.36	2.78	
Total Sodium	mg/L	200	AO	26.4	27.4	25.1	23.9	24	
Total Sulphur	mg/L					3.3	<3.0	3.8	

REGIONAL DISTRICT OF NANAIMO

Nanoose Bay Peninsula Distribution Water Analysis
1566 Arbutus Drive (°Bulk water online)

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

water SMART zero waste

Red font indicates non-compliance with Canadian Drinking Water Guidelines

	Units	CDWG		June 5 2013°	May 14 2014	May 20 2015°	May 11 2016°	May 10 2017	
Miscellaneous Inorganics									
Fluoride	mg/L	1.5	MAC	<0.05	0.1	0.044	0.036	0.093	
Alkalinity (total as $CaCO_3$)	mg/L			60	150	70.4	45.8	158	
Anions									
Dissolved Sulphate	mg/L	500	AO	4.4	14.1	5.67	3.51	12.4	
Dissolved Chloride	mg/L	250	AO	7.1	7.6	14	7.6	8.8	
Nitrite	mg/L	1	MAC	<0.05	<0.05	<0.0050	<0.0050	<0.0050	
Miscellaneous									
Apparent Colour	Colour Unit			<5	12	5	10	30	
Nutrients									
Total Ammonia	mg/L			0.02	<0.02	0.0072	0.012	0.1	
Physical Properties									
Conductivity	µS/cm			144	366	199	122	336	
pH	pH	6.5:8.5	AO	7.4	7.9	7.9	7.8	8.37	
TDS	mg/L	500	AO	104	222	100	64	186	
Turbidity	NTU			<0.5	<0.5	0.24	0.24	0.61	
Microbiological Parameters									
E.coli	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Total Coliforms	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Calculated Parameters									
Total Hardness ($CaCO_3$)	mg/L			57	75	70.9	46	128	
Nitrate	mg/L	10	MAC	0.15	0.11	0.301	0.043	0.057	
Elements									
Total Mercury	mg/L	0.001	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
Total Metals									
Total Aluminum	mg/L	0.1	OG	0.011	<0.025	0.0056	0.0075	<0.003	
Total Antimony	mg/L	0.006	MAC	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	
Total Arsenic	mg/L	0.01	MAC	0.0014	0.0036	0.00087	0.00062	0.00292	
Total Barium	mg/L	1	MAC	0.008	0.0169	0.0103	0.0073	0.0155	
Total Beryllium	mg/L			<0.00004	<0.00025	<0.0001	<0.0001	<0.0001	
Total Bismuth	mg/L			<0.0010	<0.0005	<0.001	<0.001	<0.001	
Total Boron	mg/L	5	MAC	0.027	0.061	<0.050	<0.050	<0.050	
Total Cadmium	mg/L	0.005	MAC	0.00002	<0.00005	<0.00001	<0.00001	<0.00001	
Total Chromium	mg/L	0.05	MAC	<0.0004	<0.0025	<0.001	<0.001	<0.001	
Total Cobalt	mg/L			0.00005	<0.0005	<0.0005	<0.0005	<0.0002	
Total Copper	mg/L	1	AO	0.009	0.0167	0.0146	0.018	0.00733	
Total Iron	mg/L	0.3	AO	0.015	0.023	0.0289	0.0175	0.0092	
Total Lead	mg/L	0.01	MAC	0.0003	<0.0005	<0.0002	0.00026	<0.0002	
Total Manganese	mg/L	0.05	AO	0.0139	0.0842	0.0131	0.0166	0.0775	
Total Molybdenum	mg/L			0.0006	0.00121	<0.001	<0.001	0.0011	
Total Nickel	mg/L			<0.001	<0.0010	<0.001	<0.001	<0.001	
Total Selenium	mg/L	0.05	MAC	<0.0006	<0.0005	<0.0001	<0.0001	<0.0001	
Total Silicon	mg/L			4.49	11.8	6.39	4.41	10.9	
Total Silver	mg/L			0.00007	<0.00025	<0.00002	<0.00002	<0.00002	
Total Strontium	mg/L			0.053	0.122	0.0666	0.0488	0.111	
Total Thallium	mg/L			0.00002	<0.00005	<0.00005	<0.00005	<0.00001	
Total Tin	mg/L			0.0005	<0.0005	<0.005	<0.005	<0.005	
Total Titanium	mg/L			0.0026	<0.0025	<0.005	<0.005	<0.005	
Total Uranium	mg/L	0.02	MAC	<0.0004	0.00029	<0.0001	<0.0001	0.00021	
Total Vanadium	mg/L			0.0009	0.001	<0.005	<0.005	<0.005	
Total Zinc	mg/L	5	AO	0.003	0.0177	<0.005	<0.005	<0.005	
Total Zirconium	mg/L					<0.0005	<0.0005	<0.0001	
Total Calcium	mg/L			15.9	39.2	20	13.4	32.7	
Total Magnesium	mg/L			4.14	13.3	5.08	3.04	11.4	
Total Potassium	mg/L			0.57	1.4	0.518	0.379	1.42	
Total Sodium	mg/L	200	AO	10.3	25.1	8.38	5.99	19.6	
Total Sulphur	mg/L					<3.0	<3.0	4.6	

REGIONAL DISTRICT OF NANAIMO

Nanoose Bay Peninsula Distribution Water Analysis
1961 Harlequin Crescent (~Lot 51 Swallow Crescent)
(°Bulk Water online)

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

water SMART zero waste

Red font indicates non-compliance with Canadian Drinking Water Guidelines

	Units	CDWG		June 5 2013°	May 14 2014	May 20 2015°	May 11 2016~°	May 10 2017~	
Miscellaneous Inorganics									
Fluoride	mg/L	1.5	MAC	<0.05	0.15	0.14	0.11	0.32	
Alkalinity (total as $CaCO_3$)	mg/L			50	140	120	116	148	
Anions									
Dissolved Sulphate	mg/L	500	AO	3.9	8	6.45	6.92	100.6	
Dissolved Chloride	mg/L	250	AO	6.7	41.7	29	26	35	
Nitrite	mg/L	1	MAC	<0.05	<0.05	<0.0050	<0.0050	<0.0050	
Miscellaneous									
Apparent Colour	Colour Unit			5	6	<5	10	10	
Nutrients									
Total Ammonia	mg/L			0.04	<0.02	0.024	0.011	0.18	
Physical Properties									
Conductivity	µS/cm			131	415	350	321	416	
pH	pH	6.5:8.5	AO	7.3	7.6	8.11	8.05	8.25	
TDS	mg/L	500	AO	92	270	196	186	230	
Turbidity	NTU			<0.5	<0.5	0.12	0.11	0.15	
Microbiological Parameters									
E.coli	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Total Coliforms	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Calculated Parameters									
Total Hardness ($CaCO_3$)	mg/L			57	120	98.7	96.2	112	
Nitrate	mg/L	10	MAC	0.08	<0.05	<0.020	0.04	<0.020	
Elements									
Total Mercury	mg/L	0.001	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
Total Metals									
Total Aluminum	mg/L	0.1	OG	0.009	<0.025	<0.003	<0.003	<0.003	
Total Antimony	mg/L	0.006	MAC	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	
Total Arsenic	mg/L	0.01	MAC	0.0006	0.00149	0.00113	0.00088	0.001	
Total Barium	mg/L	1	MAC	0.007	0.00805	0.0059	0.0049	0.018	
Total Beryllium	mg/L			<0.00004	<0.00025	<0.0001	<0.0001	<0.0001	
Total Bismuth	mg/L			<0.0010	<0.0005	<0.001	<0.001	<0.001	
Total Boron	mg/L	5	MAC	0.019	0.074	0.055	<0.050	0.106	
Total Cadmium	mg/L	0.005	MAC	<0.00001	<0.00005	<0.00001	<0.00001	<0.00001	
Total Chromium	mg/L	0.05	MAC	<0.0004	<0.0025	<0.001	<0.001	<0.001	
Total Cobalt	mg/L			<0.00002	<0.0005	<0.0005	<0.0005	<0.0002	
Total Copper	mg/L	1	AO	0.005	0.0058	0.00951	0.0011	0.00121	
Total Iron	mg/L	0.3	AO	<0.010	0.037	0.0434	0.0243	0.0319	
Total Lead	mg/L	0.01	MAC	0.0002	<0.0005	0.00053	<0.0002	<0.0002	
Total Manganese	mg/L	0.05	AO	<0.0050	0.009	0.0149	0.0065	0.02	
Total Molybdenum	mg/L			0.0002	0.00033	<0.001	<0.001	<0.001	
Total Nickel	mg/L			<0.001	<0.0010	0.0017	<0.001	<0.001	
Total Selenium	mg/L	0.05	MAC	<0.0006	<0.0005	<0.0001	<0.0001	<0.0001	
Total Silicon	mg/L			4.62	14.6	13.6	12.5	14	
Total Silver	mg/L			<0.00001	<0.00025	<0.00002	<0.00002	<0.00002	
Total Strontium	mg/L			0.058	0.118	0.102	0.102	0.171	
Total Thallium	mg/L			<0.00001	<0.00005	<0.00005	<0.00005	<0.00001	
Total Tin	mg/L			<0.0001	<0.0005	<0.005	<0.005	<0.005	
Total Titanium	mg/L			0.0068	<0.0025	<0.005	<0.005	<0.005	
Total Uranium	mg/L	0.02	MAC	<0.0004	<0.00005	<0.0001	<0.0001	<0.0001	
Total Vanadium	mg/L			0.0005	0.0009	<0.005	<0.005	<0.005	
Total Zinc	mg/L	5	AO	0.004	0.0215	0.0059	0.0069	0.0066	
Total Zirconium	mg/L					<0.0005	<0.0005	<0.0001	
Total Calcium	mg/L			15.8	29.7	25.6	24.2	28.6	
Total Magnesium	mg/L			4.27	10.8	8.43	8.7	9.92	
Total Potassium	mg/L			0.62	2.5	2.06	1.97	2.58	
Total Sodium	mg/L	200	AO	8.2	44.3	28.1	27.1	38.3	
Total Sulphur	mg/L					<3.0	<3.0	3.5	

REGIONAL DISTRICT OF NANAIMO

Nanoose Bay Peninsula Distribution Water Analysis
1270 Sea Dog Road (°Bulk Water online)

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

water SMART zero waste

Red font indicates non-compliance with Canadian Drinking Water Guidelines

	Units	CDWG		June 5 2013°	May 14 2014	May 20 2015°	May 11 2016°	May 10 2017	
Miscellaneous Inorganics									
Fluoride	mg/L	1.5	MAC	<0.05	0.16	0.036	0.03	0.2	
Alkalinity (total as $CaCO_3$)	mg/L			48	140	49.3	48	148	
Anions									
Dissolved Sulphate	mg/L	500	AO	3.9	7.1	4.49	3.67	9.83	
Dissolved Chloride	mg/L	250	AO	5.9	43.5	11	7.4	37	
Nitrite	mg/L	1	MAC	<0.05	<0.05	<0.0050	<0.0050	<0.0050	
Miscellaneous									
Apparent Colour	Colour Unit			5	6	<5	10	10	
Nutrients									
Total Ammonia	mg/L			0.02	<0.02	0.012	0.014	0.1	
Physical Properties									
Conductivity	µS/cm			119	416	143	124	413	
pH	pH	6.5:8.5	AO	7.3	7.6	7.69	7.75	8.27	
TDS	mg/L	500	AO	92	278	68	80	232	
Turbidity	NTU			<0.5	<0.5	0.19	0.17	0.13	
Microbiological Parameters									
E.coli	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Total Coliforms	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Calculated Parameters									
Total Hardness ($CaCO_3$)	mg/L			50	120	49.2	45.7	117	
Nitrate	mg/L	10	MAC	<0.05	<0.05	0.037	0.053	<0.020	
Elements									
Total Mercury	mg/L	0.001	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
Total Metals									
Total Aluminum	mg/L	0.1	OG	0.01	<0.025	0.0043	0.0045	<0.003	
Total Antimony	mg/L	0.006	MAC	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	
Total Arsenic	mg/L	0.01	MAC	0.0005	0.0016	0.00039	0.0004	0.00124	
Total Barium	mg/L	1	MAC	0.006	0.00679	0.0067	0.0054	0.0089	
Total Beryllium	mg/L			<0.00004	<0.00025	<0.0001	<0.0001	<0.0001	
Total Bismuth	mg/L			<0.0010	<0.0005	<0.001	<0.001	<0.001	
Total Boron	mg/L	5	MAC	0.016	0.083	<0.05	<0.050	0.076	
Total Cadmium	mg/L	0.005	MAC	<0.00001	<0.00005	<0.00001	<0.00001	<0.00001	
Total Chromium	mg/L	0.05	MAC	<0.0004	<0.0025	<0.001	<0.001	<0.001	
Total Cobalt	mg/L			<0.00002	<0.0005	<0.0005	<0.0005	<0.0002	
Total Copper	mg/L	1	AO	0.004	0.0015	0.00137	0.00131	0.00119	
Total Iron	mg/L	0.3	AO	0.027	0.072	0.0358	0.0286	0.0475	
Total Lead	mg/L	0.01	MAC	0.0004	<0.0005	<0.0002	<0.0002	<0.0002	
Total Manganese	mg/L	0.05	AO	0.006	0.017	0.0063	0.0041	0.0094	
Total Molybdenum	mg/L			0.0002	<0.00025	<0.001	<0.001	<0.001	
Total Nickel	mg/L			<0.001	<0.0010	<0.001	<0.001	<0.001	
Total Selenium	mg/L	0.05	MAC	<0.0006	<0.0005	<0.0001	<0.0001	<0.0001	
Total Silicon	mg/L			4.08	15.7	4.28	4.34	14.1	
Total Silver	mg/L			<0.00001	<0.00025	<0.00002	<0.00002	<0.00002	
Total Strontium	mg/L			0.051	0.119	0.0605	0.0483	0.129	
Total Thallium	mg/L			<0.00001	<0.00005	<0.00005	<0.00005	<0.00001	
Total Tin	mg/L			<0.0001	<0.0005	<0.005	<0.005	<0.005	
Total Titanium	mg/L			0.0011	<0.0025	<0.005	<0.005	<0.005	
Total Uranium	mg/L	0.02	MAC	<0.0004	<0.00005	<0.0001	<0.0001	<0.0001	
Total Vanadium	mg/L			0.0004	0.0009	<0.005	<0.005	<0.005	
Total Zinc	mg/L	5	AO	0.002	0.0203	<0.005	<0.005	<0.005	
Total Zirconium	mg/L					<0.0005	<0.0005	<0.0001	
Total Calcium	mg/L			14	30.2	14.6	12.8	29.1	
Total Magnesium	mg/L			3.69	11	3.08	3.32	10.7	
Total Potassium	mg/L			0.49	2.8	0.358	0.37	2.54	
Total Sodium	mg/L	200	AO	7.42	48.6	6.34	5.82	39	
Total Sulphur	mg/L					<3.0	<3.0	3.6	

REGIONAL DISTRICT OF NANAIMO

Nanoose Bay Peninsula Distribution Water Analysis
2315 Ida Lane (°Bulk Water online)

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

water SMART zero waste

Red font indicates non-compliance with Canadian Drinking Water Guidelines

	Units	CDWG		June 5 2013°	May 14 2014	May 20 2015°	May 11 2016°	May 10 2017	
Miscellaneous Inorganics									
Fluoride	mg/L	1.5	MAC	0.12	0.16	0.088	0.1	0.19	
Alkalinity (total as $CaCO_3$)	mg/L			130	140	85.1	113	153	
Anions									
Dissolved Sulphate	mg/L	500	AO	5.4	6.3	5.44	7.13	10.2	
Dissolved Chloride	mg/L	250	AO	39.2	47.4	20	25	39	
Nitrite	mg/L	1	MAC	<0.05	<0.05	<0.0050	<0.0050	<0.0050	
Miscellaneous									
Apparent Colour	Colour Unit			6	6	5	10	10	
Nutrients									
Total Ammonia	mg/L			0.03	<0.02	0.01	0.023	0.094	
Physical Properties									
Conductivity	µS/cm			371	430	246	310	431	
pH	pH	6.5:8.5	AO	7.7	7.6	8.02	8.03	8.3	
TDS	mg/L	500	AO	240	268	128	164	240	
Turbidity	NTU			<0.5	<0.5	0.22	0.23	0.24	
Microbiological Parameters									
E.coli	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Total Coliforms	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Calculated Parameters									
Total Hardness ($CaCO_3$)	mg/L			110	120	75.3	92.5	117	
Nitrate	mg/L	10	MAC	<0.05	<0.05	0.037	0.049	<0.020	
Elements									
Total Mercury	mg/L	0.001	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
Total Metals									
Total Aluminum	mg/L	0.1	OG	<0.005	<0.025	0.0038	<0.003	<0.003	
Total Antimony	mg/L	0.006	MAC	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	
Total Arsenic	mg/L	0.01	MAC	0.0012	0.00122	0.0008	0.0009	0.00109	
Total Barium	mg/L	1	MAC	0.006	0.00574	0.0052	0.0062	0.0082	
Total Beryllium	mg/L			<0.00004	<0.00025	<0.0001	<0.0001	<0.0001	
Total Bismuth	mg/L			<0.0010	<0.0005	<0.001	<0.001	<0.001	
Total Boron	mg/L	5	MAC	0.068	0.082	<0.05	<0.050	0.074	
Total Cadmium	mg/L	0.005	MAC	<0.00001	<0.00005	<0.00001	<0.00001	<0.00001	
Total Chromium	mg/L	0.05	MAC	<0.0004	<0.0025	<0.001	<0.001	<0.001	
Total Cobalt	mg/L			0.00002	<0.0005	<0.0005	<0.0005	<0.0002	
Total Copper	mg/L	1	AO	0.005	0.0041	0.00276	0.00243	0.00124	
Total Iron	mg/L	0.3	AO	0.099	0.096	0.0722	0.0781	0.0672	
Total Lead	mg/L	0.01	MAC	0.0002	<0.0005	<0.0002	0.00023	<0.0002	
Total Manganese	mg/L	0.05	AO	0.0167	0.017	0.0114	0.0158	0.0098	
Total Molybdenum	mg/L			0.0002	0.00037	<0.001	<0.001	<0.001	
Total Nickel	mg/L			<0.001	0.0024	<0.001	<0.001	<0.001	
Total Selenium	mg/L	0.05	MAC	<0.0006	<0.0005	<0.0001	<0.0001	<0.0001	
Total Silicon	mg/L			13.3	15.9	8.91	11.7	14.6	
Total Silver	mg/L			<0.00001	<0.00025	<0.00002	<0.00002	<0.00002	
Total Strontium	mg/L			0.115	0.124	0.0815	0.094	0.131	
Total Thallium	mg/L			<0.00001	<0.00005	<0.00005	<0.00005	<0.00001	
Total Tin	mg/L			<0.0001	<0.0005	<0.005	<0.005	<0.005	
Total Titanium	mg/L			0.0041	<0.0025	<0.005	<0.005	<0.005	
Total Uranium	mg/L	0.02	MAC	<0.0004	<0.00005	<0.0001	<0.0001	<0.0001	
Total Vanadium	mg/L			0.0006	0.0007	<0.005	<0.005	<0.005	
Total Zinc	mg/L	5	AO	0.004	0.0159	<0.005	0.0076	0.0079	
Total Zirconium	mg/L					<0.0005	<0.0005	<0.0001	
Total Calcium	mg/L			29.5	31.2	21.3	24.5	30.5	
Total Magnesium	mg/L			9.36	10.3	5.35	7.63	9.87	
Total Potassium	mg/L			2.69	2.9	1.4	1.74	2.7	
Total Sodium	mg/L	200	AO	42.2	51.6	17.2	24.5	41.2	
Total Sulphur	mg/L					<3.0	<3.0	3.5	

REGIONAL DISTRICT OF NANAIMO

Nanoose Bay Peninsula Distribution Water Analysis
3500 Fairwinds Drive (°Bulk Water online)

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

water SMART zero waste

Red font indicates non-compliance with Canadian Drinking Water Guidelines

	Units	CDWG		June 5 2013°	May 14 2014	May 20 2015°	May 11 2016°	May 10 2017	
Miscellaneous Inorganics									
Fluoride	mg/L	1.5	MAC	0.16	0.15	0.14	0.12	0.31	
Alkalinity (total as $CaCO_3$)	mg/L			140	140	118	120	148	
Anions									
Dissolved Sulphate	mg/L	500	AO	5.7	6.3	6.75	7.11	10.5	
Dissolved Chloride	mg/L	250	AO	43.9	46	32	27	35	
Nitrite	mg/L	1	MAC	<0.05	<0.05	<0.0050	<0.0050	<0.0050	
Miscellaneous									
Apparent Colour	Colour Unit			6	6	<5	15	10	
Nutrients									
Total Ammonia	mg/L			0.02	<0.02	0.019	0.027	0.13	
Physical Properties									
Conductivity	µS/cm			401	426	348	329	414	
pH	pH	6.5:8.5	AO	7.7	7.7	8.2	8.09	8.25	
TDS	mg/L	500	AO	262	276	190	194	230	
Turbidity	NTU			<0.5	<0.5	0.17	0.16	0.25	
Microbiological Parameters									
E.coli	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Total Coliforms	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Calculated Parameters									
Total Hardness ($CaCO_3$)	mg/L			110	130	92.2	104	113	
Nitrate	mg/L	10	MAC	<0.05	<0.05	0.024	0.047	<0.020	
Elements									
Total Mercury	mg/L	0.001	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
Total Metals									
Total Aluminum	mg/L	0.1	OG	<0.005	<0.025	0.0034	<0.003	<0.003	
Total Antimony	mg/L	0.006	MAC	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	
Total Arsenic	mg/L	0.01	MAC	0.0013	0.00136	0.00111	0.00106	0.0011	
Total Barium	mg/L	1	MAC	0.005	0.00503	0.0053	0.0053	0.0236	
Total Beryllium	mg/L			<0.00004	<0.00025	<0.0001	<0.0001	<0.0001	
Total Bismuth	mg/L			<0.0010	<0.0005	<0.001	<0.001	<0.001	
Total Boron	mg/L	5	MAC	0.078	0.089	0.056	0.053	0.101	
Total Cadmium	mg/L	0.005	MAC	<0.00001	<0.00005	<0.00001	<0.00001	<0.00001	
Total Chromium	mg/L	0.05	MAC	<0.0004	<0.0025	<0.001	<0.001	<0.001	
Total Cobalt	mg/L			0.00003	<0.0005	<0.0005	<0.0005	<0.0002	
Total Copper	mg/L	1	AO	0.008	0.0179	0.00399	0.00749	0.00216	
Total Iron	mg/L	0.3	AO	0.057	0.068	0.0709	0.0752	0.113	
Total Lead	mg/L	0.01	MAC	0.0002	<0.0005	<0.0002	0.00086	<0.0002	
Total Manganese	mg/L	0.05	AO	0.0176	0.016	0.0163	0.021	0.0224	
Total Molybdenum	mg/L			0.0002	0.00025	<0.001	<0.001	<0.001	
Total Nickel	mg/L			<0.001	<0.0010	<0.001	<0.001	<0.001	
Total Selenium	mg/L	0.05	MAC	<0.0006	<0.0005	<0.0001	<0.0001	<0.0001	
Total Silicon	mg/L			14.4	17.1	12.3	12.9	14.4	
Total Silver	mg/L			<0.00001	<0.00025	<0.00002	<0.00002	<0.00002	
Total Strontium	mg/L			0.125	0.131	0.103	0.113	0.175	
Total Thallium	mg/L			<0.00001	<0.00005	<0.00005	<0.00005	<0.00001	
Total Tin	mg/L			<0.0001	0.0006	<0.005	<0.005	<0.005	
Total Titanium	mg/L			0.0029	<0.0025	<0.005	<0.005	<0.005	
Total Uranium	mg/L	0.02	MAC	<0.0004	<0.00005	<0.0001	<0.0001	<0.0001	
Total Vanadium	mg/L			0.0006	0.001	<0.005	<0.005	<0.005	
Total Zinc	mg/L	5	AO	0.006	0.0326	<0.005	0.029	0.007	
Total Zirconium	mg/L					<0.0005	<0.0005	<0.0001	
Total Calcium	mg/L			28.5	31.6	23.7	25.4	28.7	
Total Magnesium	mg/L			10.6	11.6	8	9.98	10.2	
Total Potassium	mg/L			2.76	3.1	1.94	2.34	2.67	
Total Sodium	mg/L	200	AO	46.2	54	27.2	32.4	39.4	
Total Sulphur	mg/L					<3.0	3.2	3.7	

REGIONAL DISTRICT OF NANAIMO

Nanoose Bay Peninsula Distribution Water Analysis
3383 Redden Road (°Bulk Water online)

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

water SMART zero waste

Red font indicates non-compliance with Canadian Drinking Water Guidelines

	Units	CDWG		June 5 2013°	May 14 2014	May 20 2015°	May 11 2016°	May 10 2017	
Miscellaneous Inorganics									
Fluoride	mg/L	1.5	MAC	0.13	0.15	0.14	0.12	0.32	
Alkalinity (total as $CaCO_3$)	mg/L			140	140	116	121	147	
Anions									
Dissolved Sulphate	mg/L	500	AO	5.4	6.4	6.35	7.35	10.4	
Dissolved Chloride	mg/L	250	AO	42.5	46.8	29	27	36	
Nitrite	mg/L	1	MAC	<0.05	<0.05	<0.0050	<0.0050	<0.0050	
Miscellaneous									
Apparent Colour	Colour Unit			8	5	5	15	10	
Nutrients									
Total Ammonia	mg/L			0.02	<0.02	0.024	0.012	0.17	
Physical Properties									
Conductivity	µS/cm			399	428	341	337	413	
pH	pH	6.5:8.5	AO	7.7	7.6	8.12	8.12	8.3	
TDS	mg/L	500	AO	252	284	176	204	234	
Turbidity	NTU			<0.5	<0.5	0.21	0.18	<0.10	
Microbiological Parameters									
E.coli	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Total Coliforms	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Calculated Parameters									
Total Hardness ($CaCO_3$)	mg/L			120	120	94.7	99.4	115	
Nitrate	mg/L	10	MAC	<0.05	<0.05	0.024	0.045	<0.020	
Elements									
Total Mercury	mg/L	0.001	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
Total Metals									
Total Aluminum	mg/L	0.1	OG	<0.005	<0.025	<0.003	0.0093	<0.003	
Total Antimony	mg/L	0.006	MAC	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	
Total Arsenic	mg/L	0.01	MAC	0.0013	0.00138	0.00112	0.00108	0.00107	
Total Barium	mg/L	1	MAC	0.006	0.00472	0.0051	0.0051	0.0227	
Total Beryllium	mg/L			<0.00004	<0.00025	<0.0001	<0.0001	<0.0001	
Total Bismuth	mg/L			<0.0010	<0.0005	<0.001	<0.001	<0.001	
Total Boron	mg/L	5	MAC	0.077	0.084	0.052	0.053	0.105	
Total Cadmium	mg/L	0.005	MAC	<0.00001	<0.00005	<0.00001	<0.00001	<0.00001	
Total Chromium	mg/L	0.05	MAC	<0.0004	<0.0025	<0.001	<0.001	<0.001	
Total Cobalt	mg/L			0.00012	<0.0005	<0.0005	<0.0005	<0.0002	
Total Copper	mg/L	1	AO	<0.001	0.004	0.00345	0.00117	0.00107	
Total Iron	mg/L	0.3	AO	0.07	0.073	0.0816	0.0782	0.0299	
Total Lead	mg/L	0.01	MAC	<0.0001	<0.0005	0.00021	<0.0002	<0.0002	
Total Manganese	mg/L	0.05	AO	0.0208	0.016	0.0192	0.0205	0.0057	
Total Molybdenum	mg/L			0.0002	0.00037	<0.001	<0.001	<0.001	
Total Nickel	mg/L			<0.001	<0.0010	<0.001	<0.001	<0.001	
Total Selenium	mg/L	0.05	MAC	<0.0006	<0.0005	<0.0001	<0.0001	<0.0001	
Total Silicon	mg/L			14.6	16.5	12.8	13.3	14	
Total Silver	mg/L			<0.00001	<0.00025	<0.00002	<0.00002	<0.00002	
Total Strontium	mg/L			0.124	0.127	0.101	0.105	0.18	
Total Thallium	mg/L			<0.00001	<0.00005	<0.00005	<0.00005	<0.00001	
Total Tin	mg/L			0.0003	<0.0005	<0.005	<0.005	<0.005	
Total Titanium	mg/L			0.0031	<0.0025	<0.005	<0.005	<0.005	
Total Uranium	mg/L	0.02	MAC	<0.0004	<0.00005	<0.0001	<0.0001	<0.0001	
Total Vanadium	mg/L			0.0006	0.001	<0.005	<0.005	<0.005	
Total Zinc	mg/L	5	AO	<0.001	0.0482	<0.005	<0.005	<0.005	
Total Zirconium	mg/L					<0.0005	<0.0005	<0.0001	
Total Calcium	mg/L			28.7	30.5	25	24.9	29.1	
Total Magnesium	mg/L			10.6	11.2	7.86	9.08	10.3	
Total Potassium	mg/L			2.76	3.1	1.93	2.13	2.65	
Total Sodium	mg/L	200	AO	46.8	52.8	28.2	29.6	40.6	
Total Sulphur	mg/L					<3.0	<3.0	3.7	

REGIONAL DISTRICT OF NANAIMO

Nanoose Bay Peninsula Distribution Water Analysis
2329 Chain Way (°Bulk Water online)

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

water SMART zero waste

Red font indicates non-compliance with Canadian Drinking Water Guidelines

	Units	CDWG		June 5 2013°	May 14 2014	May 20 2015°	May 11 2016°	May 10 2017	
Miscellaneous Inorganics									
Fluoride	mg/L	1.5	MAC	0.13	0.15	0.18	0.12	0.33	
Alkalinity (total as $CaCO_3$)	mg/L			140	140	141	121	150	
Anions									
Dissolved Sulphate	mg/L	500	AO	5.7	6.4	7.26	7.19	10.4	
Dissolved Chloride	mg/L	250	AO	46.5	48.9	36	27	36	
Nitrite	mg/L	1	MAC	<0.05	<0.05	<0.0050	<0.0050	<0.0050	
Miscellaneous									
Apparent Colour	Colour Unit			8	6	<5.0	10	10	
Nutrients									
Total Ammonia	mg/L			0.02	<0.02	0.022	0.012	0.16	
Physical Properties									
Conductivity	µS/cm			414	431	412	331	412	
pH	pH	6.5:8.5	AO	7.6	7.6	8.15	8.13	8.28	
TDS	mg/L	500	AO	262	284	224	188	234	
Turbidity	NTU			<0.5	<0.5	0.15	0.17	0.17	
Microbiological Parameters									
E.coli	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Total Coliforms	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	
Calculated Parameters									
Total Hardness ($CaCO_3$)	mg/L			110	130	102	98.9	112	
Nitrate	mg/L	10	MAC	<0.05	<0.05	<0.020	0.055	<0.020	
Elements									
Total Mercury	mg/L	0.001	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
Total Metals									
Total Aluminum	mg/L	0.1	OG	<0.005	<0.025	<0.003	<0.003	<0.003	
Total Antimony	mg/L	0.006	MAC	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005	
Total Arsenic	mg/L	0.01	MAC	0.0018	0.00214	0.00128	0.0013	0.00151	
Total Barium	mg/L	1	MAC	0.005	0.00537	0.0052	0.0048	0.022	
Total Beryllium	mg/L			<0.00004	<0.00025	<0.0001	<0.0001	<0.0001	
Total Bismuth	mg/L			<0.0010	<0.0005	<0.001	<0.001	<0.001	
Total Boron	mg/L	5	MAC	0.077	0.081	0.066	0.051	0.104	
Total Cadmium	mg/L	0.005	MAC	<0.00001	<0.00005	<0.00001	<0.00001	<0.00001	
Total Chromium	mg/L	0.05	MAC	<0.0004	<0.0025	<0.001	<0.001	<0.001	
Total Cobalt	mg/L			<0.00002	<0.0005	<0.0005	<0.0005	<0.0002	
Total Copper	mg/L	1	AO	0.002	0.0047	0.00265	0.0022	0.00358	
Total Iron	mg/L	0.3	AO	0.081	0.082	0.0706	0.0788	0.0757	
Total Lead	mg/L	0.01	MAC	0.0001	<0.0005	<0.0002	<0.0002	<0.0002	
Total Manganese	mg/L	0.05	AO	0.0212	0.021	0.0154	0.0252	0.0215	
Total Molybdenum	mg/L			0.0002	<0.00025	<0.001	<0.001	<0.001	
Total Nickel	mg/L			<0.001	<0.0010	<0.001	<0.001	<0.001	
Total Selenium	mg/L	0.05	MAC	<0.0006	<0.0005	<0.0001	<0.0001	<0.0001	
Total Silicon	mg/L			14.7	17.2	14.6	13	13.5	
Total Silver	mg/L			<0.00001	<0.00025	<0.00002	<0.00002	<0.00002	
Total Strontium	mg/L			0.124	0.131	0.112	0.103	0.169	
Total Thallium	mg/L			<0.00001	<0.00005	<0.00005	<0.00005	<0.00001	
Total Tin	mg/L			<0.0001	<0.0005	<0.005	<0.005	<0.005	
Total Titanium	mg/L			<0.0010	<0.0025	<0.005	<0.005	<0.005	
Total Uranium	mg/L	0.02	MAC	<0.0004	<0.00005	<0.0001	<0.0001	<0.0001	
Total Vanadium	mg/L			0.0006	0.0009	<0.005	<0.005	<0.005	
Total Zinc	mg/L	5	AO	0.002	0.0236	<0.005	<0.005	0.0105	
Total Zirconium	mg/L					<0.0005	<0.0005	<0.0001	
Total Calcium	mg/L			28.5	31.9	26.3	25.3	28.3	
Total Magnesium	mg/L			10.6	11.5	8.86	8.64	10.1	
Total Potassium	mg/L			2.84	3.2	2.39	2.07	2.65	
Total Sodium	mg/L	200	AO	47.4	56.9	35.4	28.7	39.8	
Total Sulphur	mg/L					<3.0	<3.0	3.6	

REGIONAL DISTRICT OF NANAIMO

Nanoose Bay Peninsula Distribution Water Analysis
Water Treatment Plant: 2480 Nanoose Road
Treated Water

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

water SMART zero waste

Red font indicates non-compliance with Canadian Drinking Water Guidelines

	Units	CDWG		October 31 2012	June 5 2013	May 14 2014	May 25 2015	May 11 2016	May 10 2017
Miscellaneous Inorganics									
Fluoride	mg/L	1.5	MAC	0.2	0.15	0.16	0.15	0.15	0.16
Alkalinity (total as $CaCO_3$)	mg/L			180	140	140	136	156	147
Anions									
Dissolved Sulphate	mg/L	500	AO	5.8	5.6	6.4	7.29	8.2	9.31
Dissolved Chloride	mg/L	250	AO	27.7	45.4	45.8	39	30	40
Nitrite	mg/L	1	MAC	<0.05	<0.05	<0.05	<0.050	<0.0050	<0.0050
Miscellaneous									
Apparent Colour	Colour Unit			5	7	6	<5	10	10
Nutrients									
Total Ammonia	mg/L			0.2	0.1	<0.02	0.062	0.023	0.2
Physical Properties									
Conductivity	µS/cm			407	409	424	413	403	424
pH	pH	6.5:8.5	AO	9.1	7.6	7.6	8.02	8.11	8.3
TDS	mg/L	500	AO	258	266	272	238	216	238
Turbidity	NTU			<0.5	<0.5	<0.5	0.26	0.23	0.15
Microbiological Parameters									
E.coli	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Coliforms	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Calculated Parameters									
Total Hardness ($CaCO_3$)	mg/L			150	120	120	120	111	117
Nitrate	mg/L	10	MAC	<0.05	<0.05	<0.05	<0.050	<0.020	<0.020
Elements									
Total Mercury	mg/L	0.001	MAC	<0.0001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Total Metals									
Total Aluminum	mg/L	0.1	OG	0.077	<0.005	<0.025	<0.003	<0.003	<0.003
Total Antimony	mg/L	0.006	MAC	<0.0001	<0.0002	<0.0005	<0.0005	<0.0005	<0.0005
Total Arsenic	mg/L	0.01	MAC	0.0012	0.0014	0.00136	0.00138	0.00112	0.0011
Total Barium	mg/L	1	MAC	0.00538	0.005	0.00534	0.0049	0.0049	0.005
Total Beryllium	mg/L			<0.00005	<0.00004	<0.00025	<0.0001	<0.0001	<0.0001
Total Bismuth	mg/L			0.0001	<0.0010	<0.0005	<0.001	<0.001	<0.001
Total Boron	mg/L	5	MAC	0.073	0.083	0.084	0.066	0.062	0.064
Total Cadmium	mg/L	0.005	MAC	0.00001	<0.00001	<0.00005	<0.00001	<0.00001	<0.00001
Total Chromium	mg/L	0.05	MAC	<0.0005	<0.0004	<0.0025	<0.001	<0.001	<0.001
Total Cobalt	mg/L			<0.0001	0.00005	<0.0005	<0.0005	<0.0005	<0.0002
Total Copper	mg/L	1	AO	0.0004	0.002	0.0083	0.00322	0.00258	0.00279
Total Iron	mg/L	0.3	AO	0.032	0.09	0.103	0.16	0.107	0.0733
Total Lead	mg/L	0.01	MAC	<0.0001	<0.0001	0.0006	0.00197	0.00121	0.00159
Total Manganese	mg/L	0.05	AO	0.0091	0.0258	0.025	0.0413	0.0292	0.0163
Total Molybdenum	mg/L			0.00031	0.0003	0.00038	<0.001	<0.001	<0.001
Total Nickel	mg/L			0.0006	<0.001	<0.0010	<0.001	<0.001	<0.001
Total Selenium	mg/L	0.05	MAC	<0.0001	<0.0006	<0.0005	<0.0001	<0.0001	<0.0001
Total Silicon	mg/L			15.6	14.9	16.8	16.1	16.6	15.2
Total Silver	mg/L			<0.00001	<0.00001	<0.00025	<0.00002	<0.00002	<0.00002
Total Strontium	mg/L			0.121	0.132	0.13	0.121	0.124	0.116
Total Thallium	mg/L			<0.00001	<0.00001	<0.00005	<0.00005	<0.00005	<0.00001
Total Tin	mg/L			<0.0001	<0.0001	<0.0005	<0.005	<0.005	<0.005
Total Titanium	mg/L			<0.0005	0.0029	<0.0025	<0.005	<0.005	<0.005
Total Uranium	mg/L	0.02	MAC	<0.00001	<0.0004	<0.00005	<0.0001	<0.0001	<0.0001
Total Vanadium	mg/L			0.0012	0.0006	0.0008	<0.005	<0.005	<0.005
Total Zinc	mg/L	5	AO	<0.0005	0.005	0.0281	0.0055	<0.005	<0.005
Total Zirconium	mg/L						<0.0005	<0.0005	<0.0001
Total Calcium	mg/L			29	29.3	31.2	29.6	27.7	29.7
Total Magnesium	mg/L			18.7	10.8	11.4	11.1	10.3	10.3
Total Potassium	mg/L			2.6	3.03	3.1	2.7	2.65	2.62
Total Sodium	mg/L	200	AO	35.3	48.2	53.5	39.6	35.3	38.3
Total Sulphur	mg/L						3.1	<3.0	3.2

Regional District of Nanaimo - Water Services Department

Nanoose Bay Peninsula Water Analysis - 2017 Monthly Report

		Health Department		In-House									
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-Dec-17	1358 Madrona	0	0	0	0	10	7.31	0.48	225.0	0.02	465.0	0.04	0.006
6-Dec-17	3427 Tyee	0	0	0	0	9	7.47	0.14	221.0	0.22	458.0	0.04	0.021
6-Dec-17	1270 Sea Dog	0	0	0	0	9	7.36	0.74	224.0	0.22	462.0	0.04	0.000
6-Dec-17	2315 Ida Lane	0	0	0	0	12	7.40	0.81	226.0	0.23	470.0	0.10	0.029
6-Dec-17	3500 Fairwinds	0	0	0	0	9	7.45	1.02	225.0	0.22	464.0	0.08	0.012
6-Dec-17	1996 Highland	0	0	0	0	10	7.43	0.60	222.0	0.22	460.0	0.02	0.000
6-Dec-17	Florence & Anchor	0	0	0	0	9	7.40	0.70	224.0	0.22	462.0	0.05	0.013
13-Dec-17	1565 Stonelake	0	0	0	0	10	7.16	0.55	216.5	0.21	450.0		
13-Dec-17	2359 Higginson	0	0	0	0	9.5	7.33	1.06	217.0	0.22	451.0		
13-Dec-17	2454 Armstrong	0	0	0	0	9.5	7.40	0.89	233.0	0.22	461.0		
13-Dec-17	Lot 54 Evanshire	0	0	0	0	10	7.45	0.62	219.0	0.22	453.0		
13-Dec-17	3383 Redden	0	0	0	0	9	7.48	0.81	219.4	0.22	455.0		
13-Dec-17	2329 Chain	0	0	0	0	9	7.45	0.25	212.0	0.21	439.0		
	Average	0	0	0	0	9.6	7.4	0.67	221.8	0.20	457.7	0.05	0.012
	Maximum	0	0	0	0	12	7.48	1.06	233.0	0.23	470.0	0.10	0.029
	Minimum	0	0	0	0	9	7.16	0.14	212.0	0.02	439.0	0.02	0.000

Red font indicates non-compliance with Canadian Drinking Water Guidelines

Aesthetic Objective for Iron is ≤0.3 mg/L Aesthetic Objective for Manganese is ≤0.05mg/L

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

Yellow Column Coliform tests are completed by Health Department

Blue column tests are completed by RDN

Comments:

Iron and manganese are found naturally in drinking water. Levels found in these samples are not a health concern.

Regional District of Nanaimo - Water Services Department

Nanoose Bay Peninsula Water Analysis - 2017 Monthly Report

		Health Department		In-House									
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)
8-Nov-17	1566 Arbutus	0	0	0	0	12	7.21	0.85	219.0	0.22	453.0	0.02	0.009
8-Nov-17	3427 Tyee	0	0	0	0	10	7.39	0.50	216.3	0.21	449.0	0.06	0.015
8-Nov-17	1270 Sea Dog	0	0	0	0	10	7.37	0.37	207.0	0.21	430.0	0.04	0.000
8-Nov-17	2454 Armstrong	0	0	0	0	12	7.40	0.64	218.5	0.22	452.0	0.11	0.025
8-Nov-17	3500 Fairwinds	0	0	0	0	10	7.46	0.97	214.0	0.21	444.0	0.06	0.028
8-Nov-17	1996 Highland	0	0	0	0	13	7.46	0.65	217.8	0.22	451.0	0.04	0.000
8-Nov-17	2339 Garry Oak	0	0	0	0	11	7.42	1.55	217.0	0.22	449.0	0.05	0.000
15-Nov-17	1358 Madrona		A*	0	0	11	7.48	0.46	218.3	0.22	452.0		
15-Nov-17	2359 Higginson		A*	0	0	10	7.37	1.08	214.0	0.21	444.0		
15-Nov-17	2315 Ida Lane		A*	0	0	13	7.51	0.78	218.4	0.22	453.0		
15-Nov-17	Lot 54 Evanshire		A*	0	0	11	7.47	1.01	214.0	0.21	443.0		
15-Nov-17	3383 Redden		A*	0	0	11	7.48	0.64	214.2	0.21	445.0		
15-Nov-17	Florence & Anchor		A*	0	0	10	7.47	0.22	194.9	0.19	403.0		
22-Nov-17	1565 Stonelake	0	0	0	0	12	7.53	0.71	219.3	0.22	454.0		
22-Nov-17	Lot 51 Swallow	0	0	0	0	9	7.47	0.01	214.0	0.21	440.0		
22-Nov-17	NB Elementary			0	0	11	7.43	1.21	220.0	0.22	456.0		
22-Nov-17	3730 Fairwinds	0	0	0	0	11	7.51	0.89	218.0	0.22	450.0		
22-Nov-17	3541 Shelby	0	0	0	0	10	7.53	0.96	217.4	0.22	450.0		
22-Nov-17	2329 Chain	0	0	0	0	9	7.44	0.26	201.0	0.20	416.0		
29-Nov-17	1566 Arbutus			0	0	11	7.26	0.57	215.2	0.21	446.0		
29-Nov-17	1639 Marina	0	0	0	0	10	7.37	0.53	215.0	0.21	445.0		
29-Nov-17	2454 Armstrong			0	0	11	7.41	0.83	222.0	0.22	460.0		
29-Nov-17	3465 Cambridge	0	0	0	0	10	7.55	0.92	221.0	0.22	455.0		
29-Nov-17	2339 Garry Oak			0	0	11	7.47	1.46	222.0	0.22	461.0		
	Average	0	0	0	0	10.8	7.4	0.75	215.3	0.21	445.9	0.05	0.011
	Maximum	0	0	0	0	13	7.55	1.55	222.0	0.22	461.0	0.11	0.028
	Minimum	0	0	0	0	9	7.21	0.01	194.9	0.19	403.0	0.02	0.000

Red font indicates non-compliance with Canadian Drinking Water Guidelines

Aesthetic Objective for Iron is ≤0.3 mg/L Aesthetic Objective for Manganese is ≤0.05mg/L

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

Yellow Column Coliform tests are completed by Health Department

Blue column tests are completed by RDN

Comments:

Iron and manganese are found naturally in drinking water. Levels found in these samples are not a health concern.

A*: Sample not tested; too long in transit

Regional District of Nanaimo - Water Services Department

Nanoose Bay Peninsula Water Analysis - 2017 Monthly Report

		Health Department		In-House									
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-Oct-17	1358 Madrona	0	0	0	0	15	6.98	0.26	85.2	0.08	179.2	0.03	0.079
4-Oct-17	3427 Tyee	0	0	0	0	15	7.19	0.31	126.9	0.13	265.0	0.07	0.058
4-Oct-17	1270 Sea Dog	0	0	0	0	16	7.16	0.62	68.8	0.07	145.2	0.05	0.063
4-Oct-17	2454 Armstrong	0	0	0	0	15	7.09	0.42	116.0	0.12	245.0	0.04	0.024
4-Oct-17	3500 Fairwinds Dr	0	0	0	0	14.5	7.28	0.75	127.9	0.13	267.0	0.04	0.039
4-Oct-17	1996 Highland	0	0	0	0	16.5	7.37	0.42	126.1	0.13	264.0	0.01	0.067
4-Oct-17	Florence&Anchor	0	0	0	0	14.5	7.37	0.46	149.2	0.15	311.0	0.03	0.081
10-Oct-17	1565 Stonelake	0	0	0	0	15	7.12	0.73	107.2	0.11	225.0		
10-Oct-17	2359 Higginson	0	0	0	0	15	7.14	0.42	69.5	0.07	146.8		
10-Oct-17	2315 Ida Lane	0	0	0	0	15	7.47	0.26	108.5	0.11	227.0		
10-Oct-17	Lot 54, Evanshire	0	0	0	0	14.5	7.42	0.38	128.6	0.13	269.0		
10-Oct-17	3383 Redden	0	0	0	0		7.33	0.55	118.8	0.12	249.0		
10-Oct-17	2329 Chain Way	0	0	0	0	14.5	7.25	0.19	130.0	0.13	272.0		
18-Oct-17	1566 Arbutus	0	0	0	0	14.5	7.26	0.23	81.9	0.08	173.9		
18-Oct-17	Lot 51 Swallow	0	0	0	0	14	7.40	0.08	148.4	0.15	310.0		
18-Oct-17	NB Elementary			0	0	12.5	7.42	1.94	215.0	0.21	447.0		
18-Oct-17	3730 Fairwinds	0	0	0	0	14	7.53	0.70	132.4	0.13	277.0		
18-Oct-17	3541 Shelby	0	0	0	0	14.5	7.54	0.62	129.6	0.13	272.0		
18-Oct-17	2339 Garry Oak	0	0	0	0	13	7.43	0.63	120.8	0.12	252.0		
24-Oct-17	1358 Madrona			0	0	15	7.49	0.37	171.5	0.17	357.0		
24-Oct-17	1639 Marina	0	0	0	0	13	7.33	0.93	140.0	0.14	292.0		
24-Oct-17	2454 Armstrong			0	0	14	7.34	0.45	162.8	0.16	339.0		
24-Oct-17	3465 Cambridge	0	0	0	0	13	7.43	0.93	170.7	0.17	355.0		
24-Oct-17	Florence&Anchor			0	0	13	7.43	0.32	161.7	0.16	336.0		
	Average	0	0	0	0	14.4	7.3	0.54	129.1	0.13	269.8	0.04	0.059
	Maximum	0	0	0	0	16.5	7.54	1.94	215	0.21	447	0.07	0.081
	Minimum	0	0	0	0	12.5	6.98	0.08	68.8	0.07	145.2	0.01	0.024

Red font indicates non-compliance with Canadian Drinking Water Guidelines

Aesthetic Objective for Iron is ≤0.3 mg/L **Aesthetic Objective for Manganese is ≤0.05mg/L**

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

Yellow Column Coliform tests are completed by Health Department

Blue column tests are completed by RDN

Comments:

Iron and manganese are found naturally in drinking water. Levels found in these samples are not a health concern.

Regional District of Nanaimo - Water Services Department

Nanoose Bay Peninsula Water Analysis - 2017 Monthly Report

		Health Department		In-House									
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-Sep-17	1566 Arbutus	0	0	0	0	18	7.41	0.49	71.9	0.07	151.8	0.02	0.023
6-Sep-17	3427 Tyee	0	0	0	0	18	7.39	0.40	156.1	0.15	325.0	0.09	0.039
6-Sep-17	1270 Sea Dog	0	0	0	0	19	7.26	0.46	67.0	0.07	141.5	0.07	0.017
6-Sep-17	2315 Ida Lane	0	0	0	0	19	7.30	0.18	109.9	0.11	231.0	0.05	0.014
6-Sep-17	3500 Fairwinds	0	0	0	0	18	7.40	0.87	169.9	0.17	353.0	0.05	0.021
6-Sep-17	1996 Highland	0	0	0	0	20	7.50	0.58	129.5	0.13	271.0	0.06	0.011
6-Sep-17	2339 Garry Oak	0	0	0	0	15	7.33	1.31	192.4	0.19	400.0	0.06	0.025
13-Sep-17	1358 Madrona	0	0	0	0	17	7.10	0.52	84.2	0.08	177.3		
13-Sep-17	2359 Higginson	0	0	0	0	18	7.12	0.19	64.4	0.06	136.2		
13-Sep-17	2454 Armstrong	0	0	0	0	18	7.36	0.24	114.3	0.11	240.0		
13-Sep-17	Lot 54 Evanshire	0	0	0	0	15	7.50	0.76	164.6	0.16	343.0		
13-Sep-17	3383 Redden	0	0	0	0	17	7.61	0.77	168.1	0.17	350.0		
13-Sep-17	Florence & Anchor	0	0	0	0	17	7.46	0.48	138.5	0.14	290.0		
19-Sep-27	1565 Stonelake	0	0	0	0	15.5	7.40	0.54	97.5	0.10	204.5		
19-Sep-27	Lot 51 Swallow	0	0	0	0	15	7.32	0.09	166.1	0.17	346.0		
19-Sep-27	NB Elementary			0	0	13.5	7.42	1.30	211.0	0.21	438.0		
19-Sep-27	3730 Fairwinds	0	0	0	0	10.5	7.54	0.91	174.6	0.17	300.0		
19-Sep-27	3541 Shelby	0	0	0	0	13.5	7.61	1.02	175.0	0.17	363.0		
19-Sep-27	2329 Chain way	0	0	0	0	12.5	7.57	1.30	211.0	0.21	438.0		
27-Sep-17	1566 Arbutus			0	0	17	7.07	0.47	79.5	0.08	167.6		
27-Sep-17	1639 Marina	0	0	0	0	17	7.06	0.42	71.7	0.07	151.3		
27-Sep-17	2315 Ida Lane			0	0	17	7.11	0.06	103.7	0.10	217.9		
27-Sep-17	3465 Cambridge	0	0	0	0	17	6.99	0.64	140.3	0.14	293.0		
27-Sep-17	2339 Garry Oak			0	0	15	7.22	1.01	157.6	0.16	328.0		
	Average	0	0	0	0	16.4	7.3	0.63	134.1	0.13	277.4	0.06	0.021
	Maximum	0	0	0	0	20	7.61	1.31	211	0.21	438.0	0.09	0.039
	Minimum	0	0	0	0	10.5	6.99	0.06	64.4	0.06	136.2	0.02	0.011

Red font indicates non-compliance with Canadian Drinking Water Guidelines

Aesthetic Objective for Iron is ≤0.3 mg/L **Aesthetic Objective for Manganese is ≤0.05mg/L**

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

Yellow Column Coliform tests are completed by Health Department

Blue column tests are completed by RDN

Comments:

Iron and manganese are found naturally in drinking water. Levels found in these samples are not a health concern.

Regional District of Nanaimo - Water Services Department

Nanoose Bay Peninsula Water Analysis - 2017 Monthly Report

		Health Department		In-House									
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-Aug-17	1358 Madrona	0	0	0	0	17.5	6.87	0.49	80.8	0.08	167.4	0.13	0.064
2-Aug-17	3427 Tyee	0	0	0	0	18	7.13	0.46	154.6	0.15	322.0	0.05	0.086
2-Aug-17	1270 Sea Dog	0	0	0	0	17	7.01	0.63	68.2	0.07	144.1	0.06	0.056
2-Aug-17	2315 Ida Lane	0	0	0	0	17	7.07	0.44	113.6	0.11	238.0	0.06	0.068
2-Aug-17	3500 Fairwinds	0	0	0	0	16.5	7.24		163.7	0.16	341.0	0.06	0.082
2-Aug-17	1996 Highland	0	0	0	0	17	7.26	0.73	155.0	0.15	323.0	0.05	0.021
2-Aug-17	Florence & Anchor	0	0	0	0	17.5	7.23	0.46	169.5	0.17	353.0	0.06	0.020
9-Aug-17	1565 Stonelake	0	0	0	0	17	7.24	0.49	128.9	0.13	270.0		
9-Aug-17	2359 Higginson	0	0	0	0	18	7.25	0.35	62.7	0.06	132.6		
9-Aug-17	2454 Armstrong	0	0	0	0	17	7.23	0.27	64.9	0.06	137.2		
9-Aug-17	lot 54 Evanshire	0	0	0	0	16	7.47	0.77	145.4	0.14	304.0		
9-Aug-17	3383 Redden	0	0	0	0	17	7.47	0.76	147.7	0.15	308.0		
9-Aug-17	2329 Chain	0	0	0	0	16	7.41	0.38	150.2	0.15	314.0		
15-Aug-17	1566 Arbutus	0	0	0	0	18	6.96	0.62	67.3	0.07	141.8		
15-Aug-17	Lot 51 Swallow	0	0	0	0	17	7.29	0.20	154.7	0.15	323.0		
15-Aug-17	NB Elementary			0	0	14	7.28	1.28	158.9	0.16	331.0		
15-Aug-17	3730 Fairwinds	0	0	0	0	15	7.50	0.77	150.8	0.15	315.0		
15-Aug-17	3541 Shelby	0	0	0	0	15	7.49	0.84	151.8	0.15	317.0		
15-Aug-17	2339 Garry Oak	0	0	0	0	13	7.47	1.04	140.2	0.14	293.0		
23-Aug-17	1358 Madrona			0	0	18	7.01	0.45	84.6	0.08	178.2		
23-Aug-17	1639 Marina	0	0	0	0	18	7.12	0.64	64.3	0.06	135.8		
23-Aug-17	2315 Ida Lane			0	0	19	7.26	0.25	77.5	0.08	163.6		
23-Aug-17	3465 Cambridge	0	0	0	0	17	7.50	0.76	141.5	0.14	296.0		
23-Aug-17	Florence & Anchor			0	0	18	7.43	0.28	148.1	0.15	311.0		
28-Aug-17	1565 Stonelake			0	0	18	7.05	0.36	98.6	0.10	207.3		
28-Aug-17	2359 Higginson			0	0	18	7.14	0.21	63.6	0.06	134.3		
28-Aug-17	2454 Armstrong			0	0	19	7.18	0.21	75.1	0.07	158.4		
28-Aug-17	3383 Redden			0	0	18	7.41	0.70	146.3	0.14	306.0		
28-Aug-17	2329 Chain			0	0	17	7.31	0.38	145.2	0.14	303.0		
	Average	0	0	0	0	17.0	7.3	0.54	119.8	0.12	250.6	0.07	0.057
	Maximum	0	0	0	0	19	7.50	1.28	169.5	0.17	353.0	0.13	0.086
	Minimum	0	0	0	0	13	6.87	0.20	62.7	0.06	132.6	0.05	0.020

Red font indicates non-compliance with Canadian Drinking Water Guidelines

Aesthetic Objective for Iron is ≤0.3 mg/L **Aesthetic Objective for Manganese is ≤0.05mg/L**

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

Yellow Column Coliform tests are completed by Health Department

Blue column tests are completed by RDN

Comments:

Iron and manganese are found naturally in drinking water. Levels found in these samples are not a health concern.

Regional District of Nanaimo - Water Services Department

Nanoose Bay Peninsula Water Analysis - 2017 Monthly Report

		Health Department		In-House									
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-Jul-17	1566 Arbutus	0	0	0	0	16	6.84	0.45	65.0	0.06	137.2	0.04	0.027
5-Jul-17	3427 Tyee	0	0	0	0	16	7.56	0.41	149.7	0.15	312.0	0.07	0.033
5-Jul-17	1270 Sea Dog	0	0	0	0	17	7.28	0.59	53.2	0.05	112.8	0.03	0.015
5-Jul-17	2454 Armstrong	0	0	0	0	14	7.20	0.41	57.8	0.06	122.4	0.05	0.040
5-Jul-17	3500 Fairwinds	0	0	0	0	14	7.41	0.78	146.1	0.14	304.0	0.04	0.012
5-Jul-17	1996 Highland	0	0	0	0	16	7.43	0.64	153.4	0.15	320.0	0.02	0.030
5-Jul-17	2339 Garry Oaks	0	0	0	0	13	7.42	1.42	220.0	0.22	456.0	0.07	0.022
12-Jul-17	1358 Madrona	0	0	0	0	15	6.88	0.49	69.6	0.07	147.5		
12-Jul-17	2359 Higginson	0	0	0	0	14	6.89	0.54	58.6	0.06	124.0		
12-Jul-17	2315 Ida Lane	0	0	0	0	16	7.14	0.43	64.2	0.06	135.8		
12-Jul-17	Lot 54 Evanshire	0	0	0	0	15	7.33	0.84	151.4	0.15	316.0		
12-Jul-17	3383 Redden	0	0	0	0	16	7.31	0.90	147.9	0.15	309.0		
12-Jul-17	Florence & Anchor	0	0	0	0	16	7.32	0.59	142.9	0.14	298.0		
19-Jul-17	1565 Stonelake	0	0	0	0	16	7.26	0.29	122.3	0.12	256.0		
19-Jul-17	Lot 51 Swallow	0	0	0	0	17	7.26	0.18	163.8	0.16	341.0		
19-Jul-17	NB Elementary			0	0	14	7.24	1.17	152.7	0.15	319.0		
19-Jul-17	3730 Fairwinds	0	0	0	0	16	7.35	0.83	161.0	0.16	336.0		
19-Jul-17	3541 Shelby	0	0	0	0	16	7.36	0.86	161.3	0.16	336.0		
19-Jul-17	2329 Chain	0	0	0	0	13	7.32	1.27	214.0	0.21	443.0		
26-Jul-17	1566 Arbutus			0	0	17	7.28	0.73	83.4	0.08	176.4		
26-Jul-17	1639 Marina	0	0	0	0	16	7.35	0.04	142.0	0.14	296.0		
26-Jul-17	2454 Armstrong			0	0	17	7.29	0.29	78.6	0.08	165.4		
26-Jul-17	3465 Cambridge	0	0	0	0	15	7.35	0.82	158.4	0.16	330.0		
26-Jul-17	2339 Garry Oaks			0	0	14	7.28	1.34	209.0	0.21	434.0		
	Average	0	0	0	0	15.4	7.26	0.68	130.3	0.13	272.0	0.05	0.026
	Maximum	0	0	0	0	17	7.56	1.42	220.0	0.22	456.0	0.07	0.040
	Minimum	0	0	0	0	13	6.84	0.04	53.2	0.05	112.8	0.02	0.012

Red font indicates non-compliance with Canadian Drinking Water Guidelines

Aesthetic Objective for Iron is ≤0.3 mg/L **Aesthetic Objective for Manganese is ≤0.05mg/L**

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

Yellow Column Coliform tests are completed by Health Department

Blue column tests are completed by RDN

Comments:

Iron and manganese are found naturally in drinking water. Levels found in these samples are not a health concern.

Total coliforms can be an indicator of adverse water quality if the result in the resample is positive (US Environmental Protection Agency). RDN water samples are always tested for E.coli coliform bacteria at the same time as total coliforms to rule out the presence of harmful pathogens. If background bacteria (BG), total or E.coli bacteria are detected location is resampled. If the bacteria test is overgrown (OG) location is also resampled.

Regional District of Nanaimo - Water Services Department

Nanoose Bay Peninsula Water Analysis - 2017 Monthly Report

		Health Department		In-House									
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-Jun-17	1565 Stonelake	0	0			14	7.12	0.80	115.5	0.11	243.0	0.01	0.014
5-Jun-17	3427 Tyee	0	0			17	7.27	0.59	174.4	0.17	363.0	0.04	0.027
5-Jun-17	1270 Sea Dog	0	0			14	7.06	0.60	67.7	0.07	142.9	0.03	0.005
5-Jun-17	2315 Ida Lane	0	0			15	7.29	0.50	131.3	0.13	275.0	0.08	0.007
5-Jun-17	3500 Fairwinds	0	0			14	7.36	0.80	166.8	0.17	348.0	0.06	0.023
5-Jun-17	1996 Highland	0	0			15	7.35	0.79	186.8	0.19	388.0	0.07	0.002
5-Jun-17	2329 Chain	0	0			14	7.38	1.33	209.7	0.21	434.0	0.10	0.012
14-Jun-17	1566 Arbutus	0	0			12	6.78	0.82	54.1	0.05	114.5		
14-Jun-17	2359 Higginson	0	0			13	6.75	0.57	51.3	0.05	108.8		
14-Jun-17	2454 Armstrong	0	0			12	6.98	0.56	89.1	0.09	186.8		
14-Jun-17	Lot 54 Evanshire	0	0			12	7.25	0.93	167.2	0.17	348.0		
14-Jun-17	3383 Redden	0	0			13.5	7.32	0.88	158.8	0.16	331.0		
14-Jun-17	2339 Garry Oak	0	0			11	7.31	1.40	214.0	0.21	442.0		
21-Jun-17	1358 Madrona	0	0			13	6.78	0.70	54.9	0.05	116.2		
21-Jun-17	Lot 51 Swallow	0	0			14.5	7.18	0.24	154.9	0.15	323.0		
21-Jun-17	NB Elementary					12	7.23	1.15	152.2	0.15	318.0		
21-Jun-17	3730 Fairwinds	0	0			14	7.28	0.72	148.1	0.15	310.0		
21-Jun-17	3541 Shelby	0	0			14	7.37	0.87	146.4	0.15	306.0		
21-Jun-17	Florence & Anchor	0	0			14	7.29	0.58	149.7	0.15	312.0		
28-Jun-17	1565 Stonelake					15	7.26	0.38	157.7	0.16	329.0		
28-Jun-17	1639 Marina	0	0			15	6.93	0.02	140.9	0.14	294.0		
28-Jun-17	2315 Ida Lane					16	7.16	0.49	67.2	0.07	141.8		
28-Jun-17	3465 Cambridge	0	0			15	7.03	1.12	138.2	0.14	289.0		
28-Jun-17	2329 Chain					15	7.28	0.31	146.9	0.15	307.0		
	Average	0	0	#DIV/0!	#DIV/0!	13.9	7.2	0.71	135.2	0.14	282.1	0.06	0.013
	Maximum	0	0	0	0	17	7.38	1.40	214.0	0.21	442.0	0.10	0.027
	Minimum	0	0	0	0	11	6.75	0.02	51.3	0.05	108.8	0.01	0.002

Red font indicates non-compliance with Canadian Drinking Water Guidelines

Aesthetic Objective for Iron is ≤0.3 mg/L **Aesthetic Objective for Manganese is ≤0.05mg/L**

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

Yellow Column Coliform tests are completed by Health Department

Blue column tests are completed by RDN

Comments:

Iron and manganese are found naturally in drinking water. Levels found in these samples are not a health concern.

Total coliforms can be an indicator of adverse water quality if the result in the resample is positive (US Environmental Protection Agency). RDN water samples are always tested for E.coli coliform bacteria at the same time as total coliforms to rule out the presence of harmful pathogens. If background bacteria (BG), total or E.coli bacteria are detected location is resampled. If the bacteria test is overgrown (OG) location is also resampled.

Regional District of Nanaimo - Water Services Department

Nanoose Bay Peninsula Water Analysis - 2017 Monthly Report

		Health Department		In-House									
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-May-17	1358 Madrona	0	0			10	7.65	0.85	178.2	0.18	370.0		
3-May-17	3427 Tyee	0	0			11	7.54	0.43	207.8	0.21	431.0		
3-May-17	2454 Armstrong	0	0			9	7.48	0.57	209.0	0.21	434.0		
3-May-17	Lot 54 Evanshire	0	0			10	7.56	0.77	205.6	0.21	427.0		
3-May-17	1996 Highland	0	0			11	7.55	0.50	205.0	0.20	425.0		
3-May-17	Florence & Anchor	0	0			10	7.58	0.48	205.2	0.20	427.0		
10-May-17	1566 Arbutus	0	0	0	0	11	7.81	1.10	168.9	0.17	352.0	0.01	0.086
10-May-17	Lot 51 Swallow	0	0	0	0	10	7.49	0.07	208.0	0.21	431.0	0.05	0.014
10-May-17	1270 Sea Dog	0	0	0	0	13	7.46	0.63	209.3	0.21	434.0	0.06	0.008
10-May-17	2315 Ida Lane	0	0	0	0	11	7.52	0.50	214.0	0.21	444.0	0.06	0.014
10-May-17	3500 Fairwinds	0	0	0	0	11	7.56	0.82	207.6	0.21	431.0	0.13	0.018
10-May-17	3383 Redden	0	0	0	0	12.5	7.49	0.74	207.0	0.21	428.0	0.04	0.000
10-May-17	2329 Chain	0	0	0	0	10	7.46	0.41	207.0	0.21	430.0	0.09	0.032
17-May-17	1565 Stonelake	0	0	0	0	11	7.71	0.73	188.7	0.19	392.0		
17-May-17	2359 Higgenson	0	0	0	0	12	7.75	0.52	184.0	0.18	382.0		
17-May-17	NB Elementry			0	0	11	7.43	1.50	212.8	0.21	441.0		
17-May-17	3730 Fairwinds	0	0	0	0	12	7.60	0.81	210.0	0.21	436.0		
17-May-17	3541 Shelby	0	0	0	0	12	7.60	0.86	211.0	0.21	435.0		
17-May-17	2339 Garry Oak	0	0	0	0	11	7.48	0.98	211.1	0.21	438.0		
24-May-17	1358 Madrona					10	7.55	0.65	108.1	0.11	227.0		
24-May-17	1639 Marina	0	0			11.5	6.99	0.66	70.6	0.07	149.0		
24-May-17	2454 Armstrong					11	7.26	0.26	86.3	0.09	181.9		
24-May-17	3465 Cambridge	0	0			12.5	7.47	0.93	154.6	0.15	322.0		
24-May-17	Florence & Anchor					12	7.42	0.57	180.5	0.18	375.0		
	Average	0	0	0	0	11.1	7.5	0.68	185.4	0.19	385.1	0.06	0.025
	Maximum	0	0	0	0	13	7.81	1.50	214.0	0.21	444.0	0.13	0.086
	Minimum	0	0	0	0	9	6.99	0.07	70.6	0.07	149.0	0.01	0.000

Red font indicates non-compliance with Canadian Drinking Water Guidelines

Aesthetic Objective for Iron is ≤0.3 mg/L Aesthetic Objective for Manganese is ≤0.05mg/L

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

Yellow Column Coliform tests are completed by Health Department

Blue column tests are completed by RDN

Comments:

Iron and manganese are found naturally in drinking water. Levels found in these samples are not a health concern.

Regional District of Nanaimo - Water Services Department

Nanoose Bay Peninsula Water Analysis - 2017 Monthly Report

		Health Department		In-House									
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-17	1566 Arbutus	0	0			10	7.41	0.97	176.3	0.18	365.0	0.07	0.102
5-Apr-17	3427 Tyee	0	0			8	7.43	0.20	197.7	0.20	411.0	0.10	0.028
5-Apr-17	1270 Sea Dog	0	0			10	7.41	0.32	195.3	0.20	405.0	0.03	0.001
5-Apr-17	2454 Armstrong	0	0			8	7.35	0.64	202.6	0.20	420.0	0.12	0.026
5-Apr-17	3500 Fairwinds	0	0			10	7.39	0.82	199.7	0.20	414.0	0.12	0.017
5-Apr-17	1996 Highland	0	0			9	7.40	0.60	197.0	0.20	410.0	0.03	0.011
5-Apr-17	Florence & Anchor	0	0			8	7.44	0.45	200.0	0.20	415.0	0.07	0.001
12-Apr-17	1358 Madrona	0	0			10	7.42	0.52	180.4	0.18	373.0		
12-Apr-17	2359 Higginson	0	0			9	7.62	0.50	170.1	0.17	355.0		
12-Apr-17	2315 Ida Lane	0	0			10	7.39	0.51	208.0	0.21	432.0		
12-Apr-17	Lot 54 Evanshire	0	0			10	7.44	0.75	200.7	0.20	417.0		
12-Apr-17	3383 Redden	0	0			9	7.44	0.64	199.9	0.20	415.0		
19-Apr-17	1565 Stonelake					10	7.44	0.63	182.9	0.18	380.0		
19-Apr-17	NB Elementary					10	7.34	1.04	205.7	0.20	427.0		
19-Apr-17	3730 Fairwinds					10	7.41	0.83	203.0	0.20	421.0		
19-Apr-17	3541 Shelby					10	7.43	0.82	203.2	0.20	422.0		
19-Apr-17	2329 Chain					9	7.40	0.50	202.0	0.20	419.0		
26-Apr-17	1566 Arbutus			0	0	10	7.42	0.95	176.5	0.18	368.0		
26-Apr-17	Lot 51 Swallow	0	0			9	7.37	0.06	205.0	0.20	424.0		
26-Apr-17	1639 Marina	0	0			10	7.29	0.81	210.9	0.21	437.0		
26-Apr-17	2315 Ida Lane			0	0	10	7.45	0.42	212.0	0.21	437.0		
26-Apr-17	3465 Cambridge	0	0			10	7.35	0.71	203.2	0.20	423.0		
26-Apr-17	2339 Garry Oak	0	0			10	7.36	1.32	209.0	0.21	434.0		
	Average	0	0	0	0	9.5	7.4	0.65	197.4	0.20	409.7	0.08	0.027
	Maximum	0	0	0	0	10	7.62	1.32	212.0	0.21	437.0	0.12	0.102
	Minimum	0	0	0	0	8	7.29	0.06	170.1	0.17	355.0	0.03	0.001

Red font indicates non-compliance with Canadian Drinking Water Guidelines

Aesthetic Objective for Iron is ≤0.3 mg/L Aesthetic Objective for Manganese is ≤0.05mg/L

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

Yellow Column Coliform tests are completed by Health Department

Blue column tests are completed by RDN

Comments:

Iron and manganese are found naturally in drinking water. Levels found in these samples are not a health concern.

Regional District of Nanaimo - Water Services Department

Nanoose Bay Peninsula Water Analysis - 2017 Monthly Report

		Health Department		In-House										
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)
8-Mar-17	1565 Stonelake	0	0	0	0	9	7.00	0.73	205.3	0.21	426.0	0.05	0.037
8-Mar-17	3427 Tyee	0	0	0	0	6	7.19	0.50	195.6	0.20	406.0	0.07	0.027
8-Mar-17	1270 Sea Dog	0	0	0	0	7	7.12	0.79	199.3	0.20	414.0	0.28	0.080
8-Mar-17	2315 Ida Lane	0	0	0	0	9	7.32	0.78	203.0	0.20	421.0	0.10	0.036
8-Mar-17	3500 Fairwinds	0	0	0	0	8	7.36	0.82	194.1	0.19	404.0	0.10	0.041
8-Mar-17	1996 Highland	0	0	0	0	8	7.29	0.47	196.2	0.20	407.0	0.02	0.010
8-Mar-17	2329 Chain	0	0	0	0	8	7.38	0.84	196.9	0.20	409.0	0.11	0.044
21-Mar-17	1566 Arbutus	0	0	0	0	7	7.44	1.18	177.2	0.18	367.0		
21-Mar-17	2359 Higginson	0	0	0	0	6.5	7.46	0.11	199.9	0.20	416.0		
21-Mar-17	2454 Armstrong	0	0	0	0	5.5	7.37	0.91	204.0	0.20	422.0		
21-Mar-17	Lot 54 Evanshire	0	0	0	0	6	7.48	1.04	199.7	0.20	414.0		
21-Mar-17	3383 Redden	0	0	0	0	6.5	7.52	0.70	199.1	0.20	413.0		
21-Mar-17	Florence & Anchor	0	0	0	0	6	7.54	0.76	200.9	0.20	417.0		
22-Mar-17	1358 Madrona	0	0	0	0	9	7.61	0.71	186.2	0.18	387.0		
22-Mar-17	Lot 51 Swallow	0	0	0	0	5	7.48	0.01	198.4	0.20	410.0		
22-Mar-17	NB Elementary			0	0	10	7.35	1.56	202.8	0.20	420.0		
22-Mar-17	3730 Fairwinds	0	0	0	0	9	7.47	0.89	198.4	0.20	409.0		
22-Mar-17	3541 Shelby	0	0	0	0	8	7.50	0.96	197.6	0.20	411.0		
22-Mar-17	2339 Garry Oak	0	0	0	0	9	7.40	1.29	201.0	0.20	416.0		
29-Mar-17	1565 Stonelake			0	0	9	7.41	0.76	190.5	0.19	396.0		
29-Mar-17	1639 Marina	0	0	0	0	8	7.35	0.73	200.5	0.20	417.0		
29-Mar-17	2315 Ida Lane			0	0	9	7.42	0.79	204.0	0.20	422.0		
29-Mar-17	3465 Cambridge	0	0	0	0	9	7.51	0.82	197.9	0.20	413.0		
29-Mar-17	2329 Chain			0	0	8	7.42	0.52	200.0	0.20	414.0		
	Average	0	0	0	0	7.7	7.4	0.78	197.9	0.20	410.5	0.10	0.039
	Maximum	0	0	0	0	10	7.61	1.56	205.3	0.21	426.0	0.28	0.080
	Minimum	0	0	0	0	5	7.00	0.01	177.2	0.18	367.0	0.02	0.010

Red font indicates non-compliance with Canadian Drinking Water Guidelines

Aesthetic Objective for Iron is ≤0.3 mg/L Aesthetic Objective for Manganese is ≤0.05mg/L

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

Yellow Column Coliform tests are completed by Health Department

Blue column tests are completed by RDN

Comments:

Iron and manganese are found naturally in drinking water. Levels found in these samples are not a health concern.

Regional District of Nanaimo - Water Services Department

Nanoose Bay Peninsula Water Analysis - 2017 Monthly Report

		Health Department		In-House									
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)
8-Feb-17	1358 Madrona	0	0	0	0	5	7.52	0.47	208.9	0.21	433.0	0.14	0.063
8-Feb-17	3427 Tyee	0	0	0	0	4.5	7.53	0.10	199.6	0.20	414.0	0.10	0.017
8-Feb-17	1270 Sea Dog	0	0	0	0	4.5	7.57	0.71	200.4	0.20	417.0	0.49	0.091
8-Feb-17	2454 Armstrong	0	0	0	0	4.5	7.36	0.49	203.0	0.20	422.0	0.10	0.023
8-Feb-17	3500 Fairwinds	0	0	0	0	5.5	7.47	1.13	198.0	0.20	411.0	0.10	0.033
8-Feb-17	1996 Highland	0	0	0	0	5.5	7.43	0.59	193.6	0.19	466.0	0.02	0.016
8-Feb-17	2339 Garry Oak	0	0	0	0	6	7.39	1.00	198.4	0.20	419.0	0.08	0.018
14-Feb-17	1565 Stonelake	0	0	0	0	8	7.28	0.68	206.8	0.21	429.0		
14-Feb-17	2359 Higginson	0	0	0	0	6	7.27	0.84	200.0	0.20	413.0		
14-Feb-17	2315 Ida Lane	0	0	0	0	8	7.30	0.82	203.3	0.20	422.0		
14-Feb-17	Lot 54 Evanshire	0	0	0	0	7	7.41	0.95	197.2	0.20	407.0		
14-Feb-17	3383 Redden	0	0	0	0	6	7.36	0.69	195.6	0.19	408.0		
14-Feb-17	2329 Chain	0	0	0	0	6	7.32	0.46	200.0	0.20	413.0		
22-Feb-17	1566 Arbutus	0	0	0	0	8	7.21	0.64	205.9	0.20	427.0		
22-Feb-17	Lot 51 Swallow	0	0	0	0	9	7.17	0.04	198.7	0.20	414.0		
22-Feb-17	NB Elementary			0	0	9	7.10	1.09	205.4	0.19	426.0		
22-Feb-17	3730 Fairwinds	0	0	0	0	8	6.99	0.74	193.8	0.19	404.0		
22-Feb-17	3541 Shelby	0	0	0	0	7	7.10	0.69	191.7	0.19	400.0		
22-Feb-17	Florence & Anchor	0	0	0	0	6	7.27	0.46	200.9	0.20	417.0		
28-Feb-17	1358 Madrona			0	0	8	7.08	0.37	203.7	0.20	423.0		
28-Feb-17	1639 Marina	0	0	0	0	8	7.07	0.88	198.5	0.20	411.0		
28-Feb-17	2454 Armstrong			0	0	6	7.19	0.79	200.1	0.20	416.0		
28-Feb-17	3465 Cambridge	0	0	0	0	8	7.31	0.82	197.1	0.20	408.0		
28-Feb-17	2339 Garry Oak			0	0	8	7.30	0.82	196.4	0.20	410.0		
	Average	0	0	0	0	6.7	7.3	0.68	199.9	0.20	417.9	0.15	0.037
	Maximum	0	0	0	0	9	7.57	1.13	208.9	0.21	466.0	0.49	0.091
	Minimum	0	0	0	0	4.5	6.99	0.04	191.7	0.19	400.0	0.02	0.016

Red font indicates non-compliance with Canadian Drinking Water Guidelines

Aesthetic Objective for Iron is ≤0.3 mg/L Aesthetic Objective for Manganese is ≤0.05mg/L

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

Yellow Column Coliform tests are completed by Health Department

Blue column tests are completed by RDN

Comments:

Iron and manganese are found naturally in drinking water. Levels found in these samples are not a health concern.

Regional District of Nanaimo - Water Services Department

Nanoose Bay Peninsula Water Analysis - 2017 Monthly Report

		Health Department		In-House									
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-Jan-17	1566 Arbutus	0	0	0	0	7	7.20	0.58	217.6	0.22	452.0	0.03	0.101
3-Jan-17	1270 Sea Dog	0	0	0	0	6	7.20	0.78	233.0	0.23	481.0	0.18	0.080
3-Jan-17	2315 Ida Lane	0	0	0	0	7	7.35	0.88	224.0	0.22	463.0	0.15	0.084
3-Jan-17	Florence & Anchor	0	0	0	0	6	7.43	0.44	220.0	0.22	456.0	0.10	0.054
18-Jan-17	1358 Madrona	0	0	0	0		7.32	0.55	222.0	0.22	461.0		
18-Jan-17	3427 Tyee	0	0	0	0		7.30	0.48	209.0	0.21	431.0		
18-Jan-17	2359 Higginson	0	0	0	0		7.34	0.87	203.5	0.20	422.0		
18-Jan-17	2454 Armstrong	0	0	0	0		7.32	0.88	203.0	0.20	421.0		
18-Jan-17	3730 Fairwinds	0	0	0	0		7.41	0.87	206.1	0.21	430.0		
18-Jan-17	3541 Shelby	0	0	0	0		7.42	0.98	204.0	0.20	422.0		
18-Jan-17	3383 Redden	0	0	0	0		7.45	0.86	206.8	0.21	429.0		
18-Jan-17	2329 Chain	0	0	0	0		7.43	0.39	214.0	0.22	444.0		
25-Jan-17	1565 Stonelake	0	0	0	0	7	7.13	0.77	206.0	0.21	426.0		
25-Jan-17	Lot 51 Swallow	0	0	0	0	4	7.33	0.06	207.9	0.21	434.0		
25-Jan-17	NB Elementary			0	0	7	7.31	1.35	201.0	0.20	417.0		
25-Jan-17	3465 Cambridge	0	0	0	0	6	7.37	0.84	201.7	0.20	419.0		
25-Jan-17	Lot 54 Evanshire	0	0	0	0	5	7.40	0.83	201.0	0.20	416.0		
25-Jan-17	2339 Garry Oak	0	0	0	0	6	7.33	1.27	200.4	0.20	416.0		
31-Jan-17	1566 Arbutus			0	0	8	7.30	0.61	203.1	0.20	422.0		
31-Jan-17	1639 Marina	0	0	0	0	8	7.24	1.21	202.0	0.20	417.0		
31-Jan-17	2315 Ida Lane			0	0	9	7.35	1.03	205.0	0.20	425.0		
31-Jan-17	3500 Fairwinds	0	0	0	0	7	7.43	1.03	201.0	0.20	417.0		
31-Jan-17	1996 Highland	0	0	0	0	8	7.42	0.49	200.9	0.20	417.0		
31-Jan-17	Florence & Anchor			0	0	7	7.37	0.54	206.0	0.21	427.0		
	Average	0	0	0	0	7	7.3	0.77	208.3	0.21	431.9	0.12	0.080
	Maximum	0	0	0	0	9	7.45	1.35	233.0	0.23	481.0	0.18	0.101
	Minimum	0	0	0	0	4	7.13	0.06	200.4	0.20	416.0	0.03	0.054

Red font indicates non-compliance with Canadian Drinking Water Guidelines

Aesthetic Objective for Iron is ≤0.3 mg/L **Aesthetic Objective for Manganese is ≤0.05mg/L**

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

Yellow Column Coliform tests are completed by Health Department

Blue column tests are completed by RDN

Comments:

Iron and manganese are found naturally in drinking water. Levels found in these samples are not a health concern.

APPENDIX C

EMERGENCY RESPONSE PLAN

REGIONAL DISTRICT OF NANAIMO

EMERGENCY RESPONSE PLAN

REGIONAL DISTRICT OF NANAIMO

WATER SYSTEMS

REVISION DATE – JUNE 2018

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Contents

Prime Responsibilities

- Provide safe drinking water.
- Provide potable water for sanitation purposes.
- Provide water for fire suppression.
- Prevent unnecessary loss of stored water.
- Restore the integrity of the entire water system as soon as possible.
- Maintain integrity and quality of supply.

Emergency Response and Recovery Actions

- Analyze the type and severity of the emergency.
- Provide emergency assistance to save lives.
- Reduce the probabilities of additional injuries or damage.
- Provide situational reporting to appropriate agencies as required.
- Perform emergency repairs based on priority demand.
- Return system to normal levels. (recovery)
- Evaluate response and preparedness plan.
- Revise plan as necessary.
- Provide maps, notices, and direction necessary for water recovery.

Communication Checklist

In an emergency it will be important to contact the key people shown below. This will help reduce confusion and assist in ensuring any important messaging is done so correctly and quickly.

IF REQUIRED, CONTACT EMBC or Island Health BEFORE
MAKING THE FOLLOWING CONTACTS AS PER THE EMERGENCY PLANS

Emergency Contact Numbers

RDN Priority Contacts

MANAGER OF WATER SERVICES	**MURRAY WALTERS** **(250) 668-4199**
WATER SERVICES PROJECT ENGINEER	**GERALD ST. PIERRE** **(250) 713-6957**
MGR. REGIONAL & COMMUNITY UTILITIES	**RANDY ALEXANDER** **(250) 729-5073**
COMMUNICATIONS COORDINATOR	**LISA MOILANEN** **(250) 927-0271**
EMERGENCY COORDINATOR (or alternate)	**ERICA BEAUCHAMP** **(250) 390-6517**

Electoral Area Directors

Electoral Area	Director	Phone	E-mail Address
A	Alec McPherson	250-722-9472	alecmcpherson@shaw.ca
B	Howard Houle	250-247-8250	howard.houle@rdn.bc.ca
C	Maureen Young	250-754-5896	maureen_young@shaw.ca
E	Bob Rogers	250-468-9986	bob.rogers@rdn.bc.ca
F	Julian Fell	250-248-4296	fjfell.at.rdn@gmail.com
G	Joe Stanhope	250-248-6401	jstanhope@shaw.ca
H (Chair)	Bill Veenhof	250-797-6313	bill.veenhof@shaw.ca

Government Agency Contacts

Ministry of Environment	Nanaimo	(250) 751-3100
Department of Fisheries and Oceans	Nanaimo	(250) 754-0230
Emergency Management BC (EMBC) and Dangerous Goods Spills (formerly PEP)	Victoria	1-800-663-3456
Island Health (Environmental Health Officer)	Parksville	(250) 947-8222

- Bill Wrathall- French Creek and San Pareil Water Systems
- Elizabeth Thomson- Surfside, Melrose, Whiskey Creek, Westurne Heights, and Horne Lake Water Systems

Island Health (Environmental Health Officer)	Nanaimo	(250) 755-6215

- Tim Bilyk- Decourcey Water System
- Anthony Griffin- Englishman River Community Water System and Nanoose Bay Peninsula Water System
- Jill Lucko- Descanso Bay and Rollo McClay Water Systems
- Murray Sexton, Public Health Engineer (250) 755-6293
- Dr. Paul Hasselback, Medical Health Officer (250) 739-6304
  or after hours 1-800-204-6166

Government Agency Contacts Continued

City of Parksville		(250) 248-5412
• Chief Operator, Scott Churko		(250) 927-1856 (cell)
Town of Qualicum Beach		(250) 752-6921
• Foreman, Cam Purdon		(250) 927-1144 (cell)
District of Lantzville		(250) 390-4006
• Superintendent, Fred Spears		(250) 713-0980 (cell)
North Cedar Improvement District		(250) 722-3711
Islands Trust Organization (Main office)	Gabriola Isl	(250) 247-2063
• Trustee Melanie Mamoser	Gabriola Isl	(250) 247-2008
• Trustee Heather O'Sullivan	Gabriola Isl	(250) 247-9574

Emergency Services

Hospital	Nanaimo	(250) 754-2141
	Parksville ph.	(250) 248-2332 (Nan hospital)
	Oceanside Ctr	(250) 951-9550
	Gabriola Clinic	(250) 247-9922
Ambulance	Nanaimo	911 or (250) 758-8181
	Parksville	911 or (250) 248-3511
Police	Nanaimo	911 or (250) 754-2345
	Parksville	911 or (250) 248-6111
	Gabriola Isl	911 or (250) 247-8333
Fire Department	Parksville	911 or (250) 248-3242
	Coombs-Hilliers	911 or (250) 752-2144
	Nanoose Bay	911 or (250) 468-7141
	Qualicum Beach	911 or (250) 752-6921
	Cedar	911 or (250) 722-3122
	Gabriola Isl	911 or (250) 247-5601

Priority Services

BC Hydro (Qualicum Beach number)	(250) 752-8012 or
BC Hydro (Power Outages & Electrical Emergencies)	1-888-769-3766
Telus	(250) 811-2323 or
FortisBC (Teresen Gas)	(250) 248-4880
Shaw Cable (Nanaimo)	(250) 754-5571
CP Rail	1-800-716-9132
French Creek Pollution Control Centre	(250) 248-5794
Chlorine Manufacturer (Brentagg)	1-800-661-1830

Community Contacts

District 69 School Board Office	(250) 248-4241
Nanoose Bay School	(250) 468-7414
Nanoose Children's Centre	(250) 468-1784
Nanoose Place	(250) 468-5339
Nanoose Post Office	(250) 468-7722
Canadian Forces Base Nanoose	(250) 756-5021 or 468-5004
or	(250) 468-2260 (MP Stn-24hr)
Descanso Bay Reg Park Operator(1)- Calvin Nguyen	(250) 713-4571
Descanso Bay Reg Park Operator(2)- Jessica Sedlock	(778) 806-0897
Horne Lake Reg Park Operator- Bill Woodhouse	(250) 927-4790

Other Services

EMCON Road Maintenance (Gabriola Isl)	(250) 247-9420
EMCON (Parksville) After Hours Emerg 1-866-353-3136 or	(250) 248-6212
EMCON (Nanaimo/Cedar)	(250) 722-9494

Media Services

Lisa Moilanen, RDN Communications Coordinator	(250) 927-0271
Radio Station (CKWV) Nanaimo and Parksville	(250) 758-1131
TV Station (CHEK)	(250) 383-2435
Newspaper (PQ News and The Weekender)	(250) 248-4341
Gabriola Sounder	(250) 247-9337

APPENDICES

BOIL WATER NOTICE INFORMATION FOR THE GENERAL PUBLIC
DURING A BOIL WATER NOTICE CAUSED BY:
INADEQUATE DISINFECTION

This information is provided as a guide to help individuals reduce the risk of becoming ill from ingesting non-potable water. Individuals who follow these guidelines will greatly reduce their chance of becoming ill.

What is a Boil Water Notice?

A Boil Water Notice is a public announcement advising water system users that they should boil their tap water for drinking and other domestic purposes. It is a notice intended to protect the Publics' health from waterborne infectious agents that could be present or are known to be present in the community's drinking water supply.

What is the difference between a Boil Water Notice and a Boil Water Order?

A Boil Water Notice is a notice issued to the public as a health warning. In most cases it is the water supplier who notifies the public.

A Boil Water Order is legal document issued to the water supplier by the Health Authority requiring the water supplier to notify the public of a boil water notice.

What are the health risks during a Boil Water Notice?

The health risks are associated with ingesting water that contains microbiological agents that can cause disease. These pathogenic (disease causing) agents could include *Giardia, Cryptosporidia, E. coli, Campylobacter, Salmonella* and *Hepatitis A*. Boiling tap water for one minute is sufficient to destroy pathogens that could be present in the water.

There are numerous factors that influence whether a person becomes ill. First, there must be pathogens present in the water you consume. Not every glass of water is likely to contain pathogens. Even if the water you consume contains pathogens, those pathogens that are present must be viable. That is, they must be in a state where they can cause an illness and they must be present in large enough numbers to cause an illness. The number of pathogens needed to cause illness depends on the type of pathogen present, a person's size, age, and immune status.

The incubation period (time for symptoms to develop) will vary depending on the type of pathogen. For example, Giardia (beaver fever) could take up to four weeks to develop symptoms whereas E. coli could take up to ten days and as little as two days. For more information on waterborne diseases go to the following BC Health File;

https://www.healthlinkbc.ca/health-topics/tf6354

Any persons believing that they are ill should see their doctor. Patients are sometimes requested to submit samples for laboratory analysis to assist in waterborne outbreak investigations.

It is important to note that Boil Water Notices are specific to microbiological threats. They are not appropriate to address threats from chemical contamination. Boiling chemically contaminated water will only result in the chemical becoming more concentrated or release the chemical into the air where it could be inhaled.

When there is a threat to a water supply from a chemical contaminated a more appropriate public health notice of "Do Not Drink the Water" would be issued.

What am I trying to kill when I'm boiling the water?

Boiling water is recommended to kill pathogenic microbes that may be present in contaminated water. Bacteria such as E. coli and Salmonella are killed rapidly at temperatures over 60°C and a temperature of 72.4°C for 1 minute is needed to inactivate cryptosporidium. *Hepatitis A* and *Norovirus* are rapidly inactivated at temperatures above 65°C.

Based on the above information there is no need to boil water for prolonged periods of time. Although heating water to boiling is not needed it is the only end point easily recognized by the public without the use of thermometers. It is therefore recommended that the public bring the water to a rolling boil for one minute to ensure that all pathogens have been inactivated.

One minute should be added to the above boiling times if the water is cloudy or highly colored to ensure proper mixing and that all pathogens have been exposed to the high temperature. When boiling water at altitudes above 2000m (6,500 ft), water should be boiled for 2 minutes.

How can the water become contaminated?

The water can become contaminated in a variety of ways.
Some of these include:

- Heavy rainfall can wash contaminants into the water source
- Accidental spills in the water supply
- Breakdown of the disinfection process
- Break in water supply mains
- Vandalism
- Connections within the water system between potable and non-potable piping.

Is it necessary to boil all the water in the home during a boil water notice?

No, it is not necessary to boil all your water. Water used for bathing, showering, laundry, toilet flushing and mopping of floors does not need to be boiled. During bathing, young children should be cautioned against swallowing the bath water or alternatively young children could be sponge bathed.

All other water should be boiled. Simply put, any water that has a chance of being ingested should be boiled. This would include water used for drinking, beverage concentrates, ice cubes, washing fruits and vegetables, or brushing teeth.

Severely immune-compromised individuals should always boil their tap water for the purposes above. See the link to BC Health Files below (updated in 2017).

https://www.healthlinkbc.ca/healthlinkbc-files/preventing-water-borne-infection

Infant formulas should always be prepared by using boiled tap water or bottled water that is boiled. See the link to Island Health below.

http://www.viha.ca/mho/water/boil_water/index.html

Drinking water for pets including dogs, cats, birds and reptiles should also be boiled.

How should tap water be boiled properly?

Tap water should be boiled for at least one minute. Use any clean pot or kettle. Kettles that have automatic shut offs are acceptable.

How should tap water be boiled properly? *(continued)*

Health Canada suggests that microwave ovens can also be used using microwave-safe containers but cautions against forming superheated water (water heated above its boiling point without the formation of steam). When using microwaves, Health Canada suggests inserting a glass rod, wooden or plastic spoon in the container to prevent forming superheated water.

After boiling, let the water cool by leaving it on the counter or in the refrigerator in covered containers. Once the water is boiled, it can be stored in food grade containers at room temperature or in the refrigerator.

Shaking the water in the container or pouring the water between two containers and/or adding a pinch of salt can bring back flavor after boiling.

Are there alternatives to boiling water?

Yes, there are. Although there are alternatives, not all of them will be feasible or practical in all situations. In part, it will depend on how much water you need and what you need it for. Safe alternatives to boiling water include:

- Using commercially prepared bottled water
- Obtaining water from an approved source that is not on a boil water notice, or
- Using bleach to disinfect small quantities of tap water. See the following chart or website for a guide to using bleach.

http://www.bchealthguide.org/healthfiles/hfile49b.stm

Disinfection using unscented household bleach (5% chlorine) works best with warm water. Add bleach to the water, shake or stir for thorough mixing and then let it stand for at least 30 minutes before drinking.

Gallons of water to disinfect (equivalent shown in brackets)	Amount of Household bleach (5%) to add*
1 gal. (4.5 litres)	2 drops (0.18 mL)
2 ½ gal. (10 litres)	5 drops (0.4 mL)
5 gal. (23 litres)	11 drops (0.9 mL)
10 gal. (45 litres)	22 drops (1.8 mL)
22 gal. (100 litres)	¾ teaspoon (4 mL)
45 gal. (205 litres)	1 ½ teaspoons (8 mL)
50 gal. (230 litres)	1 ¾ teaspoons (9 mL)
100 gal. (450 litres)	3 ½ teaspoons (18 mL)
220 gal. (1000 litres)	8 teaspoons (40 mL)
500 gal. (2200 litres)	6 tablespoons (90 mL)
1000 gal. (4550 litres)	6 ½ ounces or 12 tablespoons (180 mL)

A slight chlorine odour should still be noticeable at the end of the 30-minute waiting period if you have added enough bleach. If not, repeat the dosage and allow the water to stand an additional 15 minutes. If the water has too strong a chlorine taste, allow the water to stand exposed to the air for a few hours or pour it from one clean container to another several times.

The disinfection action of bleach depends as much on the waiting time after mixing as to the amount used. The longer the water is left to stand after adding bleach, the more effective the disinfection process will be.

NOTE: Bleach does not work well in killing off *Cryptosporidium* parasites.

The amount of bleach needed to kill *Cryptosporidium* makes the water almost impossible to drink. If *Cryptosporidium* is in the water, boiling is the best way to ensure that the water is safe to drink.

I have my own water treatment device do I still need to boil my water?

If the device is designed to improve taste or reduce odour such as an activated carbon filter the answer is **YES** you should still boil your water.

If the device is designed to improve the chemical quality of the water such as reducing the iron content then the answer is **YES** you should still boil your water.

If the device is designed to improve water that is already potable the answer again is **YES** you should still boil your water.

There are numerous filters on the market designed to remove microorganisms and particulates. Most of these filters are not capable of removing viruses. Therefore, you should boil your water if you have a unit that cannot remove viruses.

If the device is designed to disinfect (destroy pathogens) water such as in an ultraviolet light (UV) disinfection unit you **might not** need to boil your water. There are numerous ultraviolet units; some are designed to disinfect raw water and some are designed to disinfect water that has already been disinfected at a central facility. For example, if the unit is classified by the National Sanitation Foundation (NSF) as meeting NSF Standard 55 Class A, it is designed to disinfect raw water. However, if the water within the distribution system is too turbid or cloudy, even a UV unit meeting NSF Standard 55 Class A may not work properly and you should still boil your water.

Reverse osmosis (RO) units are designed to filter water at the molecular level and should provide water that is free of pathogens. Thus, you **do not** have to boil your water if you have a reverse osmosis water treatment device.

There are many types of units on the market each designed to address specific water quality issues. It is recommended that you check with the unit's manufacturer to know exactly what your unit can do.

Can I purchase water from vending machines?

It depends on how the water is treated. Local vending machines that use local water would only be acceptable if the vending machine can kill pathogens that might be present in the water. Check with the store or manufacturer to see if the unit is capable of providing water that is safe to drink.

Warning signs should be posted on vending units that are not capable of providing safe water. Alternatively, the machine should be turned off.

Are there any people or groups of people at higher risk?

Yes. These people include any individual whose immune system is not fully developed or whose immune system is under stress such as infants, the elderly, immune compromised individuals and individuals already suffering from an illness. For more information go to the following BC Ministry of Health websites:

BC Health File: weakened immune systems
http://www.bchealthguide.org/healthfiles/hfile56.stm.

BC Health File: preparing infant formula
http://www.bchealthguide.org/healthfiles/hfile69b.stm.

Boil water or provide an alternative safe supply of water that is used for:

- Drinking purposes- This includes all beverage concentrates such as fruit juice and iced tea
- Food preparation- This includes washing of fruits and vegetables
- Food contact surfaces

Boil water or provide an alternative safe supply of water that is used for: *(continued)*

Food contact surfaces are all those surfaces that food comes into contact with during the food preparation process. These surfaces include counter tops, cutting boards and chopping blocks. Food contact surfaces should be washed with clean water and then sanitized using an acceptable sanitizing agent. Sanitizing agents for food contact surfaces include bleach (12-15 mL of 5% bleach per litre of water), iodophors, quaternary ammonia compounds or hydrogen peroxide (3% solution).

- Oral hygiene (brushing teeth)
- Infant formula; see BC Health File; preparing infant formula at https://www.healthlinkbc.ca/healthlinkbc-files/making-storing-formula
- Ice making

It is important to note that freezing does not destroy most pathogens. Bacteria and viruses can survive in frozen products for long periods of time. Discard any ice made from contaminated or potentially contaminated water.

Hand washing

Using warm water and soap should be sufficient. Applying a hand sanitizer after washing with tap water would add an extra barrier of protection.

Dishwashing by hand

Dishes washed by hand should be sanitized for two minutes in a separate sink using a bleach solution (2 mL of bleach per litre of water) after the dishes have been washed and rinsed. The dishes should then be left to **air dry** prior to being used. Attempting to wash and sanitize dishes in the same sink at the same time is not recommended because soap, grease and food particles interfere with the sanitizing process.

Mechanical dishwashers

Most residential home-style dishwashers do not provide a high enough temperature to kill all pathogens. Dishwashing units that reach 82 degrees Celsius (180 Fahrenheit) for twelve seconds (or an equivalent time-temperature relationship) during the final rinse cycle will destroy pathogens.

To optimize the disinfection process while using a residential dishwasher you should consider:

1. Using the highest temperature setting possible.
2. Running dishes through the dishwasher twice.
3. Sanitizing dishes afterwards in a sink containing a weak bleach solution(see dishes washed by hand above).
4. Letting the dishes air dry prior to use

Fruit and vegetable washing

Thoroughly wash all produce with potable water especially those that are going to be eaten raw. This is a common sense practice that should be applied even when there is no public boil water notice.

Coffee Machines

Coffee machines usually produce water around 70 to 80 degrees Celsius, which is sufficient to destroy pathogens. However, a sufficient amount of time is needed to ensure that all harmful organisms are destroyed. Therefore, let the coffee stand for at least five minutes before drinking.

Home canning

To be safe, postpone home canning until the boil water notice has been rescinded.

Beer and wine making

To be safe, postpone beer and wine making until the boil water notice has been rescinded.

When will the Boil Water Notice be rescinded?

Only when the water supplier can provide potable water will the Health Authority rescind the Boil Water Notice. Once or more of the following usually achieves confirmation that the water is once again safe to drink.

These include:

- Identifying and fixing the source or sources of the problem,
- Implementing procedures to eliminate or reduce the chance for reoccurrence
- Performing water quality tests
- Flushing and disinfecting distribution lines and water storage facilities

Precautions to consider when the Boil Water Notice is lifted

- Flush all water-using fixtures for 1 minute
- Run cold-water faucets and drinking fountains for 1 minute before using water
- Drain and flush all ice-making machines in your refrigerator
- Run water softeners through a regeneration cycle
- Drain and refill hot water heaters set below 45 deg C (normal setting is 60 deg C)
- Change any pre-treatment filters (under sink style and refrigerator water filters, carbon block, activated carbon, sediment filters, etc.)

Can I speak to a person in Public Health if I have a question about the Boil Water Notice?

Yes you can. For further information contact Island Health Officers at the following locations:

- Victoria ph. 250-519-3401
- Nanaimo ph. 250-755-6215
- Parksville ph. 250-947-8222
- Courtenay ph. 250-331-8518
- Island Health Office 6475 Metral Drive, Nanaimo, BC
- Island Health Office 489 Alberni Hwy, Parksville BC

After hours Medical Health Officer on call is 1-800-204-6166.

Additional information can be found at the following BC, Canadian and US websites. These are:

BC Health File; how to disinfect drinking water
https://www.healthlinkbc.ca/healthlinkbc-files/disinfecting-drinking-water

BC Health File; weekend immune systems and water-borne infections
https://www.healthlinkbc.ca/healthlinkbc-files/preventing-water-borne-infection

BC Health; Drinking Water Health Topics
https://www2.gov.bc.ca/gov/content/health/about-bc-s-health-care-system/office-of-the-provincial-health-officer/current-health-topics/drinking-water-health-topics

BC Health File; cryptosporidiois
https://www.healthlinkbc.ca/healthlinkbc-files/cryptosporidium-infection

BC Health File; giardiasis
https://www.healthlinkbc.ca/healthlinkbc-files/giardia-infection

US EPA how to boil water and use bleach
https://www.epa.gov/ground-water-and-drinking-water/emergency-disinfection-drinking-water

US Centre for Disease Control; preventing cryptosporidiosis infection
https://www.cdc.gov/parasites/crypto/index.html

US Centre for Disease Control; Giardia fact sheet
https://www.cdc.gov/parasites/giardia/prevention-control-general-public.html

US Centre for Disease Control; Drinking bottled water
https://www.cdc.gov/healthywater/drinking/bottled/index.html

US Centre for Disease Control; Private Water Systems
https://www.cdc.gov/healthywater/drinking/private/index.html

Information sources for developing this package includes

- BC Ministry of Health
- Health Canada
- Alberta Environmental Health
- Washington State Department of Health
- BC Centre for Disease Control
- US EPA (Environmental Protection Agency)
- US Center for Disease Control
- NSF (National Sanitation Foundation)
- DWO (Drinking Water Officer's) Guide